

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
)
STANDARDS FOR THE DISPOSAL OF) **R20-19**
COAL COMBUSTION RESIDUALS) **(Rulemaking – Land)**
IN SURFACE IMPOUNDMENTS:)
PROPOSED NEW 35 ILL. ADM. CODE 845)

NOTICE OF FILING

To: ALL PARTIES ON THE ATTACHED SERVICE LIST

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board **Dynegy's First Post-Hearing Comment**, copies of which are herewith served upon you.

Respectfully submitted,

/s/ Ryan C. Granholm

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Dated: October 30, 2020

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Dynegy’s First Post-Hearing Comment

NOW COMES Dynegy Midwest Generation, LLC; Electric Energy Inc.; Illinois Power Generating Company; Illinois Power Resources Generating, LLC; and Kincaid Generation, LLC (collectively, “Dynegy”) by their attorneys, pursuant to 35 Ill. Adm. Code 102.108 and the Hearing Officer’s October 2, 2020 Order, and submits this Prehearing Comment. Dynegy appreciates the Illinois Environmental Protection Agency’s (“IEPA” or “Agency”) and the Illinois Pollution Control Board’s (“Board”) careful work in drafting and reviewing proposed Part 845. Dynegy agrees with much of IEPA’s proposal, which builds on U.S. EPA’s CCR Rule to establish a site-specific approach for closure and corrective action of CCR surface impoundments. This approach will allow owners/operators to develop plans that are best suited to the specific conditions of each site.

Dynegy presented testimony from seven different witnesses in this matter, however, to provide evidence regarding a number of discrete provisions that should be changed to ensure that the Part 845 regulations are supported by the record, technically feasible, and economically reasonable. Dynegy submits this Comment to provide a summary of the key aspects of the proposed Part 845 regulations that it recommends the Board change. First, in Part II, this Comment highlights six key revisions that Dynegy requests. Each of these revisions is intended to ensure the proposal is economically reasonable, technically supported, and protective of

human health and the environment. Second, in Part III, this Comment briefly describes one change that would be inappropriate. Third, Attachment A to this Comment includes a redline of Dynegey's recommended revisions to proposed Part 845—some of which are not included in the text of this comment—along with a brief justification for each.

I. Standards for Board Rulemakings

All rules promulgated by the Board must be based on the evidence that is presented to it. The Illinois Supreme Court has explained that an administrative body exceeds its authority when it “(1) relies on factors which the legislature did not intend for the agency to consider; (2) entirely fails to consider an important aspect of the problem; or (3) offers an explanation for its decision which runs counter to the evidence before the agency, or which is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.” *Greer v. Illinois Hous. Dev. Auth.*, 524 N.E.2d 561, 581 (Ill. 1988). Illinois appellate courts have specifically applied this standard to the Board. *IEPA v. IPCB*, 721 N.E.2d 723, 730 (Ill. App. Ct., 2d Dist. 1999).¹

In addition to this general standard, the Illinois Environmental Protection Act requires the Board to specifically “consider” and “take into account” the technical feasibility and economic reasonableness of all regulatory proposals before it. 415 ILCS 5/27(a); *Shell Oil Co. v. IPCB*, 346 N.E.2d 212, 219 (Ill. App. Ct., 2d Dist. 1976); *Granite City v. IPCB*, 613 N.E.2d 719, 734 (Ill. 1993). As part of this analysis, the Board has historically “employed a cost-benefit analysis in its proceedings, which generally has involved measuring the cost of implementing pollution control technology against the benefit to the public in reducing pollution.” *IEPA v. IPCB*, 721

¹ The Illinois Supreme Court has described the three elements described in Greer as a “useful rubric” in analyzing Board regulations. *Cty. of Will v. IPCB*, 135 N.E.3d 49, 61 (Ill. 2019).

N.E.2d at 730.² In conducting cost-benefit analysis, however, the Board has generally refused to consider benefits that are purely speculative in nature. *Id.* at 731 (“We agree in theory with the Agency that the Board should take into consideration tangible benefits that have been established with some certainty. In practice, however, the benefits the Agency claimed Swenson would derive were purely speculative. Thus, the Board did not err in declining to consider the alleged benefits.”).

Keeping these standards in mind, the Board should ensure that the Part 845 regulations are supported by the evidence before it and appropriately weighs the costs and potential benefits associated with the rules.

II. Dynegy recommends several key revisions to proposed Part 845, where it unnecessarily exceeds the CCR Rule.

As IEPA has acknowledged, Part 845 is based on U.S. EPA’s CCR Rule. IEPA, Statement of Reasons at 1 (Mar. 30, 2020). The CCR Rule is a conservative, overly protective regulation that was based on years of study, including a comprehensive risk assessment. Bradley Prefiled Testimony at 18-24 (Aug. 27, 2020), Hrg. Ex. 23. Because it is based on the CCR Rule, proposed Part 845 is protective of human health and the environment. In fact, as Dynegy’s Cynthia Vodopivec noted, proposed Part 845 *exceeds* the CCR Rule in at least 29 ways, the majority of which Dynegy is not requesting be modified. Vodopivec Prefiled Testimony at Attach. A (Aug. 27, 2020), Hrg. Ex. 21. However, as further noted below, and in Attachment A to this Comment, a number of the ways in which proposed Part 845 exceeds the CCR Rule are

² See, e.g., R76-21, *In the Matter of: Amendments to Chapter 3: Water Pollution (Effluent Standards)*, Proposed Opinion of the Board (Sept. 24, 1981) (containing a “Cost/Benefit Analysis” section for each of the four pollutants at issue in the rulemaking); R91-20, *In the Matter of Potentially Infectious Medical Waste: (PIMW): Treatment, Storage, and Transfer Facilities and Transportation, Packaging, and Labeling*, Order and Opinion at 19 (Mar. 25, 1993) (Board’s decision contains “Cost-Benefit Analysis” section.).

not supported by the record compiled in this rulemaking and could impose substantial unnecessary costs.

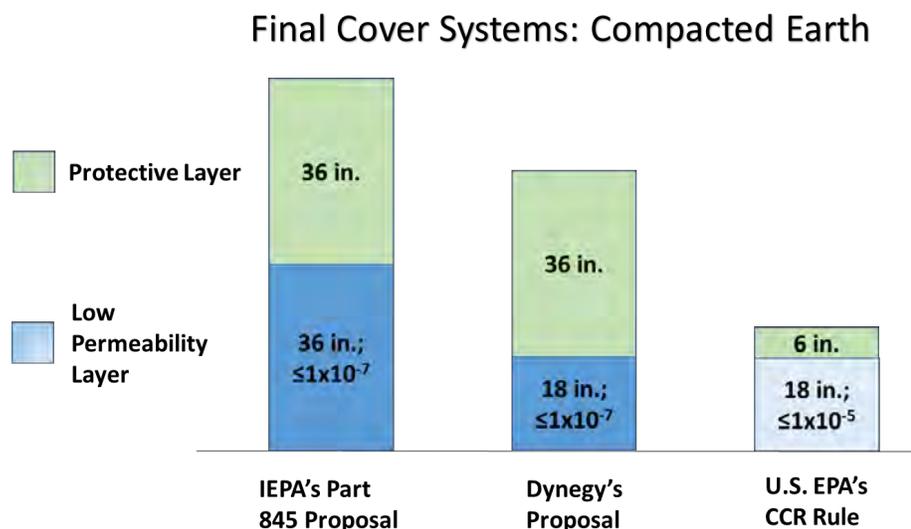
A. Section 845.750's default final cover standards can and should be reduced.

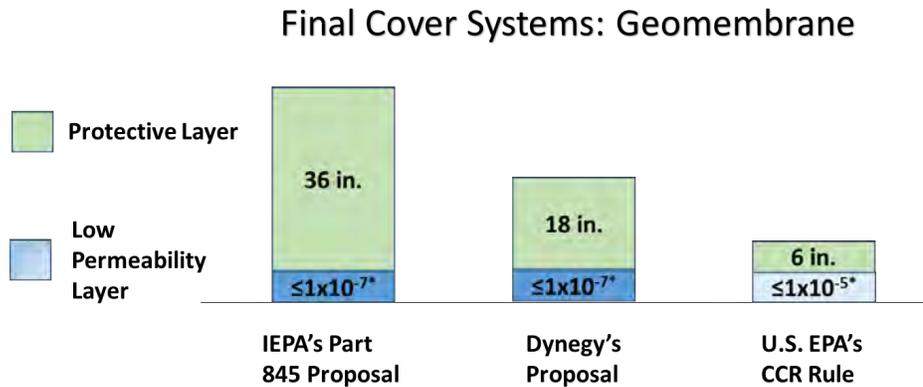
Proposed Section 845.750 includes default standards for the use of final cover systems when closing CCR surface impoundments in place. Proposed Section 845.750 requires a two-part final cover system: (1) a low permeability layer; and (2) a final protective layer. For both layers, when using compacted earth, proposed Part 845's default requirement is 36 inches. Section 845.750(c)(1)(A) & (c)(2)(B). As Dynegy explained in its Prehearing Comment (Sept. 25, 2020), these default final cover standards greatly exceed the requirements of the CCR Rule and should be reduced in order to prevent unnecessary construction and costs, without compromising protectiveness.

IEPA has stated that its proposed final cover system standards were based on regulations for municipal solid waste ("MSW") landfills, not CCR surface impoundments. IEPA First Supplement to Prefiled Answers, Dynegy Q. 76-77, p. 54 (Aug. 5, 2020), Hrg. Ex. 3. But IEPA agreed that there are key distinctions between CCR surface impoundments and landfills—specifically, that landfills experience substantially more post-closure settling than CCR surface impoundments. Transcript 106:21-107:7 (Aug. 25, 2020); IEPA Prefiled Answers, CWLP Q. 18, p. 133 (Aug. 3, 2020), Hrg. Ex. 2; *see* Bonaparte Prefiled Testimony at 8-9 (Aug. 27, 2020), Hrg. Ex. 31. IEPA has admitted that it did not perform its own independent assessment—nor did it rely on any scientific or technical materials—to determine whether the final cover standards from the landfill program are appropriate for CCR surface impoundments. Transcript 107:8-108:1 (Aug. 25, 2020). The Board, therefore, should not merely accept proposed Part 845's default final cover standards.

Instead, Dynegy’s expert witness Dr. Rudy Bonaparte testified that Part 845’s default final cover standards can safely be reduced. Specifically, because CCR surface impoundments experience less post-closure settling, the thickness of earthen low permeability layers can be reduced to 18 inches. Bonaparte Prefiled Testimony at 8-9, Hrg. Ex. 31. Additionally, because Part 845 specifically allows for the use of geomembrane low permeability layers, which are not vulnerable to damage by freeze/thaw cycles or root penetration, the thickness of the protective layer can be reduced to 18 inches where geomembranes are used. *Id.* at 10. Agreeing with Dr. Bonaparte, Dynegy’s expert witness David Hagen used groundwater modeling to show that Dynegy’s proposed final cover standards will not meaningfully effect the amount of precipitation entering an impoundment after closure, nor will it have a meaningful impact on the time required to achieve the groundwater protection standards. Hagen Prefiled Testimony at 32-34 (Aug. 27, 2020), Hrg. Ex. 34; D. Hagen Prefiled Responses, ELPC, PRN and SC Question Q. 163, p. 53 (Sept. 24, 2020), Hrg. Ex. 35.

As shown below, Dynegy’s proposal represents a compromise between the CCR Rule and IEPA’s proposed standards, maintaining the stringent hydraulic conductivity requirements of IEPA’s proposal, while reducing the amount of earthen material used to construct a cover.





*See below for further explanation of permeability standards for geomembranes.³

Moreover, Dynegey's proposed revisions are consistent with IEPA's past practice. The Agency has repeatedly approved final cover systems that do not meet the default requirements it proposed for Part 845.750. For example, it approved thinner cover systems for Coffeen Ash Pond 2, the Hennepin West Ash Pond System, Duck Creek Ash Ponds 1 & 2, and the Baldwin Fly Ash Pond System. Bonaparte Prefiled Testimony at 12-13, Hrg. Ex. 31. IEPA has testified that it has no information to suggest that these previously-approved final cover systems are inadequate to protect human health and the environment. IEPA First Supplement to Prefiled Answers, Dynegey Q. 81, p. 54-55, Hrg. Ex. 3. Thus, the Agency has not explained why more stringent default final cover system standards are appropriate for Part 845. Adopting IEPA's proposed default final cover system standards would "run[] counter to the evidence before the agency," and therefore be arbitrary and capricious. *Greer v. Illinois Hous. Dev. Auth.*, 524 N.E.2d 561, 581 (Ill. 1988).

³ Under IEPA's proposal, a geomembrane must be "be equivalent or superior to a 3 foot layer of soil with a hydraulic conductivity of 1×10^{-7} cm/sec." 845.750(c)(1)(B)(1). Dynegey's proposal would require a geomembrane to "be equivalent or superior to an 18 inch layer of soil with a hydraulic conductivity of 1×10^{-7} ." The CCR Rule requires geomembranes to achieve "an equivalent reduction in infiltration" as an 18 inch layer of soil with a permeability no greater than 1×10^{-5} . 40 C.F.R. 257.102(d)(3)(ii)(B).

Not only are Dynegy's proposed standards technically supported, more stringent than the CCR Rule, and consistent with IEPA past practice, they are also more economically reasonable than IEPA's proposed standards. As both Cynthia Vodopivec and Dr. Rudy Bonaparte testified, the additional cover materials required by IEPA would cost tens of thousands of dollars per acre, totaling up to \$50-\$100 million for Dynegy's facilities in Illinois. Vodopivec Prefiled Testimony at 18, Hrg. Ex. 21; Bonaparte Prefiled Testimony at 9-13, Hrg. Ex. 31. Further, there may be environmental costs and safety hazards associated with excavating additional materials, transporting them, and placing them on a CCR surface impoundment—including greenhouse gas, particulate matter, and NO_x emissions. *See* Bittner Prefiled Testimony at 22 (Aug. 27, 2020), Hrg. Ex. 37 (noting that increased construction activity results in increased safety and emissions concerns). To avoid these financial, environmental, and safety costs, while continuing to ensure the protectiveness of final cover systems, Dynegy recommends the following revisions to the proposed rule:

Section 845.750(c)(1)(A)(i):

The minimum allowable thickness must be ~~0.91 meter (3 feet)~~18 inches; and . . .

Section 845.750(c)(2)(B):

Be at least three feet thick, when used in combination with a low permeability layer meeting the requirements of Section 845.750(c)(1)(A); or 18 inches thick, when used in combination with a low permeability layer meeting the requirements of Section 845.750(c)(1)(B), and must be sufficient to protect the low permeability layer from freezing and minimize root penetration of the low permeability layer.

B. The definition of “inactive CCR surface impoundments” must be corrected to avoid a conflict with the Illinois Legislature’s definition of “CCR surface impoundment.”

As Dynegy noted in its Prehearing Comment (Sept. 25, 2020), IEPA has created confusion as to whether units that did not contain liquids as of the date the CCR Rule became effective may be regulated under Part 845. Dynegy recommends that the Board resolve this

confusion by correcting the definition of “inactive CCR surface impoundment” to match the definition that was used in the CCR Rule.

Copying the CCR Rule, the Illinois Legislature defined “CCR surface impoundment” as a unit “which is designed to hold an accumulation of **CCR and liquids**, and the unit treats, stores, or disposes of CCR.” 415 ILCS 5/3.143 (emphasis added). 40 C.F.R. § 257.53. IEPA has stated that only units that meet this definition are subject to Part 845. Transcript 41:24-42:4 (Aug. 11, 2020). In other words, only units that are “designed to hold an accumulation of CCR and liquids” are subject to this rule. But IEPA’s proposed definition of “inactive CCR surface impoundment” creates confusion as to whether a unit may be regulated if it does not first meet the definition of “CCR surface impoundment,” because it was not “designed to hold . . . liquids.” This confusion results from the fact that, while IEPA stated that it “has done its best to mirror the language as much as possible with [Part] 257,” it deleted the phrase “and liquids” from the definition of “inactive CCR surface impoundments” that appears in the CCR Rule:

<u>Proposed 845.120</u>	<u>40 C.F.R. 257.53</u>
“‘Inactive CCR surface impoundment’ means a CCR surface impoundment in which CCR was placed before but not after October 19, 2015 and still contains CCR on or after October 19, 2015” (emphasis added)	“Inactive CCR surface impoundment means a CCR surface impoundment that no longer receives CCR on or after October 19, 2015 and still contains both CCR and liquids on or after October 19, 2015.” (emphasis added)

By altering U.S. EPA’s definition, IEPA has created uncertainty as to whether units that were not “designed to hold an accumulation of **CCR and liquids**” as of the date of the CCR Rule can nonetheless be regulated under Part 845 as “inactive CCR surface impoundments.” If they can, then IEPA has expanded the scope of Part 845 beyond the CCR Rule, and, more importantly, beyond the statutory mandate, by regulating units that do not fit the legislature’s definition of “CCR surface impoundment.” As Dynegy’s expert Dr. Lisa Bradley has testified,

units that contain CCR but do not impound liquid do not pose the type of risks that the CCR Rule sought to mitigate. Bradley Prefiled Testimony at 31, Hrg. Ex. 23.

IEPA has provided only one justification for its change—to ensure that units do not simply de-water, without completing a full closure in accordance with Part 845. Transcript 56:1-17 (Aug. 11, 2020). But that result would not be possible under proposed Part 845. Under the definition of “CCR surface impoundment” that the Illinois legislature adopted, and the permitting program proposed by IEPA, units that begin closure under Part 845 must complete closure and post-closure care. A unit that de-waters, without completing closure, would risk a violation of its Part 845 permits, as well as a number of the substantive provisions of proposed Part 845. Thus, no revision to the definition of “inactive CCR surface impoundment” is required to ameliorate IEPA’s purported concern—Part 845 will ensure that closure and post-closure care are completed for all units that are subject to the rule.

Therefore, to avoid confusion and ensure that Part 845 is consistent with the Board’s legislative mandate, the Board should revise the definition of “Inactive CCR surface impoundment” to conform Part 845 with the CCR Rule and the definition of “CCR surface impoundment”⁴:

Section 845.120:

“Inactive CCR surface impoundment” means a CCR surface impoundment in which CCR was placed before but not after October 19, 2015 and still contains both CCR and liquids on or after October 19, 2015

⁴ Additionally, Dynegy supports Ameren’s suggestion that Part 845 specifically exclude units that ceased receiving waste before October 21, 1976—the effective date of the Resource Conservation and Recovery Act (RCRA). Prefiled Testimony of Gary King at 21 – 22 (Aug. 27, 2020), Hrg. Ex. 55.

C. The Section 845.710 analysis should be expanded to explicitly include consideration of worker safety and cost.

As Dynegy anticipates addressing in its second post-hearing comment, proposed Section 845.710 is sufficient to ensure that closures will be protective of human health and the environment, accounting for all site-specific conditions. IEPA Prefiled Response, Dynegy Q. 71, p. 53, Hrg. Ex. 3. However, Dynegy recommends that the Board revise Section 845.710 to explicitly require consideration of worker safety and cost as part of the closure alternatives analysis. Both of these factors are consistent with other existing state and federal programs and will help ensure that the most appropriate closure is selected at each site.

1. Worker Safety

Worker safety was raised as a concern by a number of participants in this rulemaking. For example, IEPA asked Dynegy a number of questions regarding federal OSHA standards and the steps it takes to ensure OSHA compliance. *See* IEPA Prefiled Questions for C. Vodopivec, Qs. 1-3 (Sept. 10, 2020); IEPA Prefiled Questions for L. Bradley, Qs. 4-6, 10 (Sept. 10, 2020); Environmental Groups' Prefiled Questions for L. Bradley, Qs. 2(e), 7(g), 9 (Sept. 10, 2020). Similarly, the Environmental Groups' witnesses raised concerns regarding worker safety: "I understand that there are risks related to moving and transporting coal ash both for workers and communities. . . ." Rehn Prefiled Testimony at 10 (Aug. 27, 2020), Hrg. Ex. 16. Adding worker safety as an explicit consideration in the closure alternatives analysis under Section 845.710 would further ensure that these concerns are addressed by closures under Part 845.

Consideration of worker safety would also be consistent with a number of federal programs. As Dynegy's expert witness Andrew Bittner testified, effects on workers are part of the closure or corrective action alternatives analysis under RCRA, the Board's MSW landfill

regulations, and CERCLA. Bittner Prefiled Testimony at 12, Hrg. Ex. 37; 40 C.F.R.

258.57(c)(1)(iv); 35 Ill. Adm. Code 811.325(c)(1)(D); 40 C.F.R. 300.430(e)(9)(iii)(E).

Therefore, Dynege recommends that the Board make the following revisions:

Section 845.710(b)(1)(D):

the short-term risks that might be posed to workers, the community or the environment during implementation of such a closure, including potential threats to human health and the environment associated with excavation, transportation, and re-disposal of contaminants;

2. Costs

The Board should also make cost an explicit consideration in the Section 845.710 closure analysis. Consideration of cost in closure decisions will help ensure that Part 845 is economically reasonable, a factor which the Board is required to consider. 415 ILCS 5/27(a).

Consideration of cost, it is important to note, will not come at the expense of environmental protectiveness. While Section 845.710(b) lists a number of factors that must be considered in the closure alternatives analysis, none of these factors excuses an owner/operator from selecting a closure method that will satisfy the performance standards in Section 845.740 or 845.750, and the requirement in 845.710(g) that the closure method “ensure the protection of human health and the environment, and achieve compliance with the groundwater protection standards in Section 845.600.” Therefore, consideration of cost will only influence the selection of a closure alternative when multiple closures alternatives can achieve the groundwater protective standards and meet all applicable performance standards.

Consideration of costs is consistent with the CCR Rule, and other longstanding regulatory programs. U.S. EPA stated in its preamble to the CCR Rule that it expected that cost would likely be an important factor in selecting a closure alternative. 80 Fed. Reg. at 21,412 (Apr. 17, 2015), Hrg. Ex. 5 (“As EPA acknowledged in the proposal, most facilities will likely

not clean close their CCR units given the expense and difficulty of such an operation.”). IEPA admitted at hearing that the CCR Rule *does not* preclude consideration of costs, where performance standards are otherwise met. Transcript 238:3-8 (Aug. 13, 2020). In practice, as Dynegey’s expert witness Mark Rokoff explains, cost has often been an important factor as owners/operators have selected closures across the country. Transcript 32:9-19 (Sept. 30, 2020). Moreover, like worker safety, costs are considered as part of the corrective measures assessments under U.S. EPA’s CERCLA regulations, its RCRA program, and the Board’s landfill regulations. Bittner Prefiled Testimony at 12-14, Hrg. Ex. 37; 40 C.F.R. 300.430(e)(9)(iii)(G); 40 C.F.R. 257.26(c)(1)(iv); 35 Ill. Adm. Code 811.324(d).

Therefore, Dynegey recommends that the Board make the following revisions:

Section 845.710(b)(3)(D)-(F):

(D) availability of necessary equipment and specialists; ~~and~~

(E) available capacity and location of needed treatment, storage, and disposal services-
and;

(F) the costs of closure implementation.

D. Groundwater quality monitoring requirements should be reduced during the post-closure care period.

Proposed Part 845 requires quarterly groundwater monitoring for a suite of twenty constituents until the post-closure care period is complete. 845.600(a); 845.610(c). In other words, if a unit is closed in place, quarterly groundwater monitoring would be required for more than thirty years. 845.780(c)(1). This exceeds the requirements of the CCR Rule, which requires only semi-annual monitoring. Vodopivec Prefiled Testimony at Attach. A, Hrg. Ex. 21. Dynegey estimates that the cost of the additional monitoring events will be between \$150,000 to \$200,000 per unit, per year. *Id.* at 15. As shown by Dynegey’s expert witness David Hagen—who examined groundwater monitoring data from several CCR surface impoundments that have

already closed in place in Illinois—constituent concentrations often fall relatively quickly once closure is completed. Hagen Prefiled Testimony at 21-27, Hrg. Ex. 34. Therefore, it may not always be necessary to require owners/operators to continue to incur the costs associated with increased monitoring for the entire 30-year post-closure period.

In the past, IEPA has allowed monitoring frequency to be reduced during post-closure care, where certain conditions are met, for CCR surface impoundments closing pursuant to the Board's Part 620 rules. IEPA First Supplement to Prefiled Answers, Dynegy Q. 51, p. 48, Hrg. Ex. 3. The Board's site-specific rule for Hutsonville Ash Pond D also allows reduced monitoring during post-closure care, where the owner/operator demonstrates that doing so will not reduce monitoring effectiveness, that sufficient data has been collected to characterize the site, and monitoring shows no statistically significant increasing trends. 35 Ill. Adm. Code 840.114(b).

In order to reduce the costs associated with Part 845, without reducing its protectiveness, Dynegy recommends that the Board adopt a similar approach for Part 845 as it used in the Hutsonville site-specific rule. IEPA has indicated its openness to such an approach, so long as monitoring is not reduced to less than semi-annual frequency and a trigger is provided for restoring quarterly monitoring if a statistically significant increasing trend is detected. IEPA Response to Board Qs. For Second Hearing, Q.28, p. 5-6 (Sept. 24, 2020).

Accepting IEPA's recommendation, Dynegy recommends the below revisions, in addition to revisions to the groundwater elevation monitoring requirements described in Part II.F of this comment. These changes are based on the Board's Hutsonville rule, with the additional conditions IEPA recommends:

Section 845.650(b):

(1) The monitoring frequency for all constituents with a groundwater protection standard in Section 845.600 and Calcium shall be at least quarterly during the active life of the CCR surface impoundment and the post-closure care period or period specified in Section 845.740(b) when closure is by removal, unless such frequency has been reduced pursuant to Section 845.780(g).

....

(3) Five years after the completion of closure activities, the owner or operator of a CCR surface impoundment may request modification of the post-closure care plan to reduce the frequency of groundwater monitoring to semi-annual sampling, to eliminate daily groundwater elevation monitoring pursuant to Section 845.650(b)(2), or both. IEPA may approve of such a modification where the owner or operator demonstrates the following:

A) That monitoring effectiveness will not be compromised by the reduced frequency of monitoring;

B) That sufficient data has been collected to characterize groundwater; and

C) That concentrations of constituents monitored pursuant to Section 845.650(a) at the down-gradient monitoring well(s) show no statistically significant increasing trends that can be attributed to the CCR surface impoundment.

(4) If, after revising the post-closure care plan pursuant to Section 845.780(g)(1), a statistically significant increasing trend is detected, monitoring shall revert to a quarterly frequency, pursuant to Section 845.650(b)(1).

E. A clarification is required to confirm that units with only de minimis amounts of CCR are not “CCR surface impoundments.”

As U.S. EPA repeatedly explained in the preamble to the CCR Rule, the units that are the “source of the risks” it sought to regulate were those that contain a large amount of CCR managed with water, under a hydraulic head. 80 Fed. Reg. at 21,357, Hrg. Ex. 5. It is this hydraulic head, the preamble explains, that has the potential to promote the leaching of contaminants. *Id.* In contrast, it determined that units containing “truly ‘de minimis’ levels of CCR are unlikely to present the significant risks [the CCR Rule] is intended to address.” *Id.* For that reason, U.S. EPA clearly stated that “cooling water ponds, process water ponds, wastewater treatment ponds, storm water holding ponds, or aeration ponds” and other units not designed to

hold an accumulation of CCR and not containing “significant” amounts of CCR are not subject to the CCR Rule. *Id.*; Bradley Prefiled Testimony at 32-33, Hrg. Ex. 23; Transcript 144:20-145:3 (Sept. 29, 2020).

Although, as explained in Part II.B above, Part 845 relies on the same definition of “CCR surface impoundment” used by the CCR Rule, IEPA has stated that, unlike U.S. EPA, it interprets that definition to apply to units that contain **any** amount of CCR. IEPA First Supplement to Prefiled Answers at Dynegey Q. 15, p. 40, Hrg. Ex. 3.⁵ This reading is unsupported by U.S. EPA’s Risk Assessment, which determined that de minimis units do not pose a significant risk. IEPA admitted that it did not perform its own risk assessment, nor did it provide any justification for departing from U.S. EPA’s interpretation. Transcript 59:23-60:4, 61:14-20 (Aug. 11, 2020). Therefore, there is no basis in the record to regulate de minimis units and it would be inappropriate for the Board to do so. *Greer v. Illinois Hous. Dev. Auth.*, 524 N.E.2d 561, 581 (Ill. 1988).

IEPA’s interpretation could create absurd results, in which any body of water near a coal-fired power plant could potentially become subject to the extensive requirements of Part 845 if extremely small amounts of CCR entered that waterbody indirectly, for example, by stormwater runoff or even air deposition. Again, there is no basis in the record for the Board to adopt such a regulation.

In response to the testimony of Dynegey’s expert witness Dr. Lisa Bradley, the Board’s Chief Environmental Scientist, Anand Rao asked Dynegey to suggest language to clarify Part 845’s applicability to de minimis units. Transcript 185:15-186:12 (Sept. 29, 2020). Therefore,

⁵ At hearing, the Agency could not identify any limiting principle for which units are regulated by Part 845. Transcript 72:1-21 (Aug. 11, 2020).

in order to ensure that Part 845 is supported by U.S. EPA's Risk Assessment, and to avoid the absurd results that could result from attempting to regulate de minimis units, Dynegy recommends the following revision:

Section 845:120:

“De minimis unit” means any surface impoundment, including but not limited to process water or cooling water ponds, that only received CCR incidentally and does not contain an amount of CCR and liquid presenting a reasonable probability of adverse effects on human health or the environment. De minimis surface impoundments are not CCR surface impoundments.

Alternatively, should the Board choose not to define or explicitly exclude “de minimis” units in the text of Part 845, Dynegy recommends that the Board’s Final Order express the intent that Part 845 not apply to units containing only de minimis amounts of CCR, using language similar to that used by U.S. EPA in the preamble to the CCR Rule, 80 Fed. Reg. at 21,357.

F. Part 845’s groundwater elevation monitoring requirements should be revised to reduce the compliance burden, while also increasing the amount of useful data.

While proposed Part 845 requires groundwater quality monitoring on a quarterly basis, it requires that groundwater elevation monitoring occur monthly. 845.640(c) & 845.650(b)(2). The proposed rule would require groundwater elevations to be measured until post-closure care is completed—well after the groundwater model is prepared and a closure alternative is selected. 845.610(c). As IEPA acknowledged, it currently requires groundwater monitoring at mine refuse disposal areas, wastewater treatment impoundments, and sites subject to the Site Remediation Program to occur only quarterly. IEPA’s Prefiled Answers, CWLP Q. 6(b), p. 130, Hrg. Ex. 3; Transcript 158:18-159:17 (Aug. 13, 2020); *see also* Transcript 95:16-18 (Sept. 30, 2020) (Midwest Generation’s witness Richard Gnat agreed: “I’ve never encountered a groundwater monitoring requirement that detailed on a monthly basis for any type of monitoring we’ve done.”). Similarly, the Board’s site-specific rule for Hutsonville Ash Pond D also requires

quarterly groundwater elevation monitoring. 35 Ill. Adm. Code 840.114(a). The Agency admitted that it has no information to suggest that the quarterly data collected in these other programs is insufficient. Transcript 160:2-11 (Aug. 13, 2020). Instead, the Agency's *only* basis for proposing a monthly monitoring requirement was that some commenters had asked for daily monitoring, which IEPA believes would be too burdensome. Transcript 160:12-16 (Aug. 13, 2020) ("Does the Agency have any rationale other than the public comments it received for [requiring] monthly elevation monitoring here? Mr. Dunaway: No.").

The science of groundwater explains why quarterly groundwater monitoring is appropriate. As multiple witnesses explained, generally, groundwater in Illinois moves predictably. Transcript 239:10-20 (Sept. 29, 2020) (Hagen: "I don't know why groundwater direction would change. . . . [P]articularly given the fact that in this part of the [world], like in Illinois, by in large groundwater flows towards rivers."); Transcript 20:20-22 (Aug. 13, 2020) (Dunaway: "The groundwater would typically – will flow from a higher elevation to a lower elevation."). As Dr. Mindy Hahn explained, groundwater also tends to move relatively slowly:

[M]y understanding is that the groundwater monitoring frequency is by quarter. So three months. And groundwater moves – tends to move very slowly. Quick groundwater velocity in a sandy environment is about 100 feet per year. So I don't that a three-month lag is very significant – in terms of the distance groundwater might flow in that time.

Transcript 205:24-206:7 (Sept. 29, 2020); *see* Bittner Prefiled Testimony at 34, Hrg. Ex. 37 ("most groundwater moves slowly, much slower than most surface water"). Therefore, as David Hagen explained, quarterly groundwater monitoring is sufficient. Hagen Prefiled Testimony at 28-29, Hrg. Ex. 34.

In their testimony, witnesses for the Environmental Groups made clear that their primary concern with respect to groundwater elevation monitoring is that it could "miss" brief

fluctuations in groundwater levels or changes in flow patterns potentially caused by river flooding. Transcript 104:12-105:15 (Sept. 29, 2020). IEPA has stated that such changes in groundwater occur “occasionally” in Illinois. Transcript 21:4-9 (Aug. 13, 2020). Data reflecting these flood events, the Environmental Groups’ witnesses contend, is “required to prepare groundwater flow maps, determine relationships between surface water stage . . . and groundwater flow, and to evaluate the separation of CCR from groundwater and potential for leaching.” Payne and Magruder Prefiled Testimony at 9 (Aug. 27, 2020), Hrg. Ex. 19. In other words, they argue, frequent groundwater elevation monitoring is useful when designing and implementing corrective action and closure plans, to ensure that those plans account for “occasional” groundwater fluctuations that could be caused by floods.

Dynegy previously advocated for a compromise that would employ publicly-available National Oceanic and Atmospheric Administration river stage data, a process which witnesses for the Environmental Groups suggested could be used to estimate groundwater elevations based on river data. Vodopivec Prefiled Responses, IEPA Q. 12(a), p.10 (Sept. 24, 2020), Hrg. Ex. 22; Transcript 105:24-106:10 (Sept. 29, 2020). But Dynegy also supports a potential compromise offered by the Environmental Groups’ witnesses, which would allow for additional data to be collected to inform site characterization and groundwater modeling activities. Specifically, transducers could be installed at one upgradient and one downgradient well for each CCR surface impoundment, to collect daily groundwater elevation data. Transcript 106:22-24 (Sept. 29, 2020) (Scott Payne: “We highly recommend, encourage, that daily data are collected using transducers in selected wells.”); Payne and Magruder Prefiled Testimony at 40, Hrg. Ex. 19 (recommending that “[w]ater table depth recorded at least daily in one monitoring well

upgradient and one downgradient of the CCR impoundment” be collected as part of the hydrogeologic site characterization).

This daily measurement in select wells should replace the monthly groundwater elevation monitoring requirement that IEPA proposed in Section 845.650(b)(2). The daily measurements in a single well upgradient and downgradient of each CCR surface impoundment would identify any localized, short-term fluctuations in groundwater elevations. Quarterly groundwater monitoring—including groundwater elevation measurements—would be used to track longer-term groundwater trends. 845.640(c). This structure—daily measurements in select wells, in combination with quarterly measurements in all wells—would also reduce the compliance costs and burden for owners/operators by trimming the number of wells that need to be monitored and eliminating the need to send personnel to each site every month.

Finally, daily elevation measurements should be required only so long as they are helpful for the purposes of site characterization, groundwater modeling, and assessing the performance of a closure/corrective action plan. Once a unit enters the post-closure care period, frequent groundwater elevation monitoring is no longer required, and it would therefore be an unnecessary burden on owners/operators. *See* Transcript 95:19-23 (Sept. 30, 2020) (R. Gnat: “I agree that upfront, you know, we want to get a good understanding of the flow system, so monthly measurements may be appropriate. But after two or three years of those, you would have a sufficient understanding of the flow system.”). Instead, groundwater quality monitoring will demonstrate whether the closure/corrective action is performing as planned. Therefore, as recommended in Part II.D above, Dynegy recommends that an owner/operator be permitted to request a modification to the post-closure care plan to eliminate daily groundwater elevation measurements during post-closure care, where certain conditions are met.

Therefore, Dynegy recommends the following revisions, in addition to the revisions to the groundwater monitoring schedule listed in Part II.E of this Comment:

Section 845.650(b):

(2) The groundwater elevation monitoring frequency shall be monthly. In addition to measuring groundwater elevations in accordance with Section 845.640(c), daily groundwater elevation data must be collected from one monitoring well located upgradient and one well located downgradient of the CCR surface impoundment.

III. Part 845 should not list the units that are subject to the rule.

While this initial Post-Hearing Comment focuses on key changes which Dynegy recommends the Board make to proposed Part 845, this Comment also describes one change which the Board should reject. Dynegy anticipates responding to issues raised by other rulemaking participants in its second post-hearing comment.

A. Part 845 should not include a list of units that are subject to the rule.

Part 845 was proposed to the Board as a “rule of general applicability.” IEPA, Statement of Reasons at 1 (Mar. 30, 2020). While IEPA has provided the Board with a list of units that it believes will be subject to Part 845, it would be inappropriate for the Board to include that list in the text of the final regulation or in its Final Opinion and Order, for two reasons.

First, a record of the relevant facts has not been developed for every potential “CCR surface impoundment” in the state. The applicability of Part 845, as defined by the Illinois Legislature and as proposed by the Agency, relies largely on one key definition: “CCR surface impoundment.” That definition, in turn, requires a fact-specific analysis regarding, inter alia, the construction of a unit, its design, and its contents at the time Section 22.59(g) was adopted. The Agency itself described its table of potential CCR surface impoundments as being based on its “knowledge and belief.” IEPA’s Prefiled Responses, Board Q.1(a), p. 148, Hrg. Ex. 3. But the specific facts of each alleged CCR surface impoundment—such as whether it was designed to

contain CCR and liquids or currently contains CCR and liquids—was not entered into the record in this matter. In fact, the Hearing Officer repeatedly precluded rulemaking participants from discussing the specifics and applicability of the proposed rules to specific units. *See, e.g.*, Transcript 17:6-10 (Aug. 13, 2020) (Hearing Officer Horton: “I caution Ms. Cassel to please not go into specifics about specific facilities or sites, but only in generalities.”); *Id.* at 215:23-216:3 (Hearing Officer Horton: “I’ll sustain the objection just based on prior objections relating to specific [sites] such as in 13-15. If you could perhaps make a general question.”). Based on these rulings, including a list of units subject to Part 845 in either the Board’s Order or in the text of the regulation itself could put the Board in the position of “fail[ing] to consider an important aspect of the problem,” which would be inappropriate. *Greer v. Illinois Hous. Dev. Auth.*, 524 N.E.2d 561, 581 (Ill. 1988).

Second, as was also noted several times during the rulemaking process, disputes regarding the definition of “CCR surface impoundment” are already ongoing in other forums. IEPA Prefiled Answers, Ameren Q.6, p. 14, Hrg. Ex. 2; Transcript 74:11-20 (Aug. 11, 2020). It would be inappropriate for the Board to decide the applicability of that definition, short-circuiting the procedural mechanisms provided by Illinois law to resolve those disputes, such as Section 31 of the Illinois Environmental Protection Act and the Illinois Supreme Court Rules.

IV. Conclusion.

For the reasons stated in this initial Post-Hearing Comment above, as well as Attachment A, Dynegy recommends that the Board revise IEPA’s proposed regulations to ensure that the Part 845 regulations are supported by the record, technically feasible, and economically reasonable.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, the undersigned, certify that on this 30th day of October, 2020, I have served electronically the attached **Dynegy's Post-Hearing Comment**, upon the individuals on the attached service list. I further certify that my email address is rgranholm@schiffhardin.com; the number of pages in the email transmission is 81; and the email transmission took place today before 5:00 p.m.

Respectfully submitted,

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Attachment A

TITLE 35: ENVIRONMENTAL PROTECTION SUBTITLE G: WASTE DISPOSAL

CHAPTER I: POLLUTION CONTROL BOARD

SUBCHAPTER j: COAL COMBUSTION WASTE SURFACE IMPOUNDMENTS

PART 845

STANDARDS FOR THE DISPOSAL OF COAL COMBUSTION

RESIDUALS IN SURFACE IMPOUNDMENTS

SUBPART A: GENERAL PROVISION

Section 845.100	Scope And Purpose
Section 845.110	Applicability of Other Regulations
Section 845.120	Definitions
Section 845.130	Surface Impoundment Identification
Section 845.140	Right of Inspection
Section 845.150	Incorporations by Reference
Section 845.160	Severability
Section 845.170	Inactive Closed CCR Surface Impoundments

SUBPART B: PERMITTING

Section 845.200	Permit Requirements and Standards of Issuance
Section 845.210	General Provisions
Section 845.220	Construction Permits
Section 845.230	Operating Permits
Section 845.240	Pre-Application Public Notification and Public Meeting
Section 845.250	Tentative Determination and Draft Permit
Section 845.260	Draft Permit Public Notice and Participation
Section 845.270	Final Permit Determination and Appeal
Section 845.280	Transfer, Modification and Renewal
Section 845.290	Construction Quality Assurance Program

SUBPART C: LOCATION RESTRICTIONS

Section 845.300	Placement Above The Uppermost Aquifer
Section 845.310	Wetlands
Section 845.320	Fault Areas
Section 845.330	Seismic Impact Zones
Section 845.340	Unstable Areas
Section 845.350	Failure to Meet Location Standards

SUBPART D: DESIGN CRITERIA

Section 845.400	Liner Design Criteria For Existing CCR Surface Impoundments
Section 845.410	Liner Design Criteria for New CCR Surface Impoundments and Any Lateral Expansion of a CCR Surface Impoundment
Section 845.420	Leachate Collection and Removal System
Section 845.430	Slope Maintenance
Section 845.440	Hazard Potential Classification Assessment
Section 845.450	Structural Stability Assessment
Section 845.460	Safety Factor Assessment

SUBPART E: OPERATING CRITERIA

Section 845.500	Air Criteria
Section 845.510	Hydrologic and Hydraulic Capacity Requirements for CCR Surface Impoundments
Section 845.520	Emergency Action Plan
Section 845.530	Safety and Health Plan
Section 845.540	Inspection Requirements for CCR Surface Impoundments
Section 845.550	Annual Consolidated Report

SUBPART F: GROUNDWATER MONITORING AND CORRECTIVE ACTION

Section 845.600	Groundwater Protection Standards
Section 845.610	General Requirements
Section 845.620	Hydrogeologic Site Characterization
Section 845.630	Groundwater Monitoring Systems
Section 845.640	Groundwater Sampling and Analysis Requirements
Section 845.650	Groundwater Monitoring Program
Section 845.660	Assessment of Corrective Measures
Section 845.670	Corrective Action Plan
Section 845.680	Implementation of the Corrective Action Plan

SUBPART G: CLOSURE AND POST-CLOSURE CARE

Section 845.700	Required Closure or Retrofit of CCR Surface Impoundments
Section 845.710	Closure Alternatives
Section 845.720	Closure Plan
Section 845.730	Initiation of Closure
Section 845.740	Closure by Removal
Section 845.750	Closure with a Final Cover System
Section 845.760	Completion of Closure Activities
Section 845.770	Retrofitting
Section 845.780	Post-Closure Care Requirements

SUBPART H: RECORDKEEPING

Section 845.800 Facility Operating Record
Section 845.810 Publicly Accessible Internet Site Requirements

SUBPART I: FINANCIAL ASSURANCE

Section 845.900 General Provisions
Section 845.910 Upgrading Financial Assurance
Section 845.920 Release of Financial Institution and Owner or Operator
Section 845.930 Cost Estimates
Section 845.940 Revision of Cost Estimates
Section 845.950 Mechanisms for Financial Assurance
Section 845.960 Trust Fund
Section 845.970 Surety Bond Guaranteeing Payment
Section 845.980 Surety Bond Guaranteeing Performance
Section 845.990 Letter of Credit

AUTHORITY: Implementing Sections 12, 22, and 22.59 of the Environmental Protection Act [415 ILCS 5/12, 22, and 22.59] and authorized by Sections 22.59, 27, and 28 of the Environmental Protection Act [415 ILCS 5/22.59, 27, and 28].

SOURCE: Adopted in R__ - __ at __ Ill. Reg._____, effective _____.

SUBPART A: GENERAL PROVISION

Section 845.120 Definitions

Except as stated in this Section, or unless a different meaning of a word or term is clear from the context, the definition of words or terms in this Part will be the same as that applied to the same words or terms in the Environmental Protection Act (Act):

“Act” means the Illinois Environmental Protection Act [415 ILCS 5].

“Active facility” or “active electric utilities” or “independent power producers” means any facility subject to the requirements of this Part that is in operation on or after October 19, 2015. An electric utility or independent power producer is in operation if it is generating electricity that is provided to electric power transmission systems or to electric power distribution systems on or after October 19, 2015. An off-site CCR surface impoundment is in operation if it is accepting or managing CCR on or after October 19, 2015.

“Active life” or “in operation” means the period of operation beginning with the initial placement of CCR in the CCR surface impoundment and ending at completion of closure activities in accordance with Subpart G.

“Agency” means the Illinois Environmental Protection Agency.

“Aquifer” means a geologic formation, group of formations, or portion of a formation capable of yielding usable quantities of groundwater to wells or springs.

“Area-capacity curves” means graphic curves which readily show the reservoir water surface area, in acres, at different elevations from the bottom of the reservoir to the maximum water surface, and the capacity or volume, in acre-feet, of the water contained in the reservoir at various elevations.

“Areas susceptible to mass movement” means those areas of influence (i.e., areas characterized as having an active or substantial possibility of mass movement) where, because of natural or human-induced events, the movement of earthen material at, beneath, or adjacent to the CCR surface impoundment may result in the downslope transport of soil and rock material by means of gravitational influence. Areas of mass movement include, but are not limited to, landslides, avalanches, debris slides and flows, soil fluctuation, block sliding, and rock fall.

“Beneficial use of CCR” means CCR that meets the definition of coal combustion by product in the Act and the definition of “beneficial use of CCR” pursuant to 40 C.F.R. 257.53.

“Board” means Illinois Pollution Control Board.

“Certified Laboratory” means any laboratory certified under Section 4(o) of the Act, or certified by USEPA for the specific constituents to be examined.

“Closed” means placement of CCR in a CCR surface impoundment has ceased, and the owner or operator has completed closure of the CCR surface impoundment and has initiated post-closure care in accordance with Subpart G.

“*Coal combustion residuals*” or “*CCR*” means *fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.* [415 ILCS 5/3.142]

“CCR fugitive dust” means solid airborne particulate matter that contains or is derived from CCR, emitted from any source other than a stack or chimney.

“CCR storage pile” means any temporary accumulation of solid, non-flowing CCR placed on the land that is designed and managed to control releases of CCR to the environment. CCR contained in an enclosed structure is not a CCR storage pile. Examples of control measures to control releases from CCR storage piles include: periodic wetting, application of surfactants, tarps or wind barriers to suppress dust; tarps or berms for preventing contact with precipitation and controlling run-on/runoff; and impervious storage pads or geomembrane liners for soil and groundwater protection.

“*CCR surface impoundment*” or “*impoundment*” means *a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR.*[415 ILCS 5/3.143]

“De minimis unit” means any surface impoundment, including but not limited to process water or cooling water ponds, that only received CCR incidentally and does not contain an amount of CCR and liquid presenting a reasonable probability of adverse effects on human health or the environment. De minimis surface impoundments are not CCR surface impoundments.

[Explanation: In response to the Board’s request during the September 29th Hearing, Dynegy suggests the above definition of “de minimis units,” which should not be regulated by Part 845. See Dynegy’s First Post Hearing Comment at Part II.E.]

“Dike” means an embankment, berm, or ridge of either natural or man-made materials used to prevent the movement of liquids, sludges, solids, or other materials.

“Displacement” means the relative movement of any two sides of a fault measured in any direction.

“Disposal” means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste as defined in section 1004(27) of the Resource Conservation and Recovery Act into or on any land or water or into any well so that such solid waste, or constituent thereof, may enter the environment or be emitted into the air or discharged into any waters, including groundwaters. For purposes of this Part, disposal does not include the beneficial use of CCR.

“Downstream toe” means the junction of the downstream slope or face of the CCR surface impoundment with the ground surface.

“Enclosed structure” means:

- (1) A completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support itself, the CCR, and any personnel and heavy equipment that operate within the structure, and to prevent failure due to settlement, compression, or uplift; climatic conditions; and the stresses of daily operation, including the movement of heavy equipment within the structure and contact of such equipment with containment walls;
- (2) Has containment walls that are designed to be sufficiently durable to withstand any movement of personnel, CCR, and handling equipment within the structure;
- (3) Is designed and operated to ensure containment and prevent fugitive dust emissions from openings, such as doors, windows and vents, and the tracking of CCR from the structure by personnel or equipment.

“Exceedance of the groundwater protection standard” means:

For existing CCR surface impoundments and inactive CCR surface impoundments, an analytical result with a concentration greater than the numerical value of the constituents

listed in 845.600(a), in a down gradient well, or when the up gradient background concentration of a constituent exceeds the numerical value listed in 845.600(a), an analytical result with a concentration at a statistically significant level above the up gradient background concentration, in a down gradient well.

For new CCR surface impoundments and lateral expansions of existing CCR surface impoundments, an analytical result with a constituent concentration at a statistically significant level above the up gradient background concentration, in a down gradient well.

“Existing CCR surface impoundment” means a CCR surface impoundment in which CCR is placed both before and after October 19, 2015, or for which construction commenced prior to October 19, 2015 and in which CCR is placed on or after October 19, 2015. A CCR surface impoundment has commenced construction if the owner or operator has obtained the federal, state, and local approvals or permits necessary to begin physical construction and a continuous on-site, physical construction program had begun prior to October 19, 2015.

“Facility” means all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, disposing, or otherwise conducting solid waste management of CCR. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them).

“Factor of safety” or “Safety factor” means the ratio of the forces tending to resist the failure of a structure to the forces tending to cause such failure as determined by accepted engineering practice.

“Fault” means a fracture or a zone of fractures in any material along which strata on one side have been displaced with respect to that on the other side.

“Flood hydrograph” means a graph showing, for a given point on a stream, the discharge, height, or other characteristic of a flood as a function of time.

“Free liquids” means liquids that readily separate from the solid portion of a waste under ambient temperature and pressure.

“Groundwater” means water below the land surface in a zone of saturation.

“Hazard potential classification” means the possible adverse incremental consequences that result from the release of water or stored contents due to failure of the diked CCR surface impoundment or mis-operation of the diked CCR surface impoundment or its appurtenances. The hazardous potential classifications include Class 1 and Class 2, which mean:

Class 1 CCR surface impoundment means a diked surface impoundment where failure or mis-operation will probably cause loss of human life.

Class 2 CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.

“Height” means the vertical measurement from the downstream toe of the CCR surface impoundment at its lowest point to the lowest elevation of the crest of the CCR surface impoundment, not including spillways.

“Holocene” means the most recent epoch of the Quaternary period, extending from the end of the Pleistocene Epoch, at 11,700 years before present, to present.

“Hydraulic conductivity” means the rate at which water can move through a permeable medium (i.e., the coefficient of permeability).

“Inactive CCR surface impoundment” means a CCR surface impoundment in which CCR was placed before but not after October 19, 2015 and still contains **both CCR and liquids** on or after October 19, 2015. Inactive CCR surface impoundments may be located at an active facility or inactive facility.

[Explanation: Dynegy recommends the above changes, so that Part 845’s definition of “Inactive CCR surface impoundment” mirrors the definition provided in the CCR Rule and is consistent with the definition of CCR surface impoundment provided in Section 22.59 of the Act. See Dynegy’s First Post-Hearing Comment at Part II.B.]

“Inactive Closed CCR surface impoundment” means an inactive CCR surface impoundment that completed closure before October 19, 2015 with an Agency-approved closure plan.

“Inactive facility” or “inactive electric utilities or independent power producers” means any facility that is not in operation on or after October 19, 2015.

“Incised CCR surface impoundment” means a CCR surface impoundment which is constructed by excavating entirely below the natural ground surface, holds an accumulation of CCR entirely below the adjacent natural ground surface, and does not consist of any constructed diked portion.

“Inflow design flood” means the flood hydrograph that is used in the design or modification of the CCR surface impoundments and its appurtenant works.

“In operation” means the same as “active life.”

“Karst terrain” means an area where karst topography, with its characteristic erosional surface and subterranean features, is developed as the result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terranes include, but are not limited to, dolines, collapse shafts (sinkholes), sinking streams, caves, seeps, large springs, and blind valleys.

“Lateral expansion” means a horizontal or vertical expansion of the waste boundaries of an existing CCR surface impoundment made after October 19, 2015.

“Liquefaction factor of safety” means the factor of safety (safety factor) determined using analysis under liquefaction conditions.

“Lithified earth material” means all rock, including all naturally occurring and naturally formed aggregates or masses of minerals or small particles of older rock that formed by crystallization of magma or by induration of loose sediments. This term does not include man-made materials, such as fill, concrete, and asphalt, or unconsolidated earth materials, soil, or regolith lying at or near the earth surface.

“Maximum horizontal acceleration in lithified earth material” means the maximum expected horizontal acceleration at the ground surface as depicted on a seismic hazard map, with a 98% or greater probability that the acceleration will not be exceeded in 50 years, or the maximum expected horizontal acceleration based on a site-specific seismic risk assessment.

“New CCR surface impoundment” means a CCR surface impoundment or lateral expansion of an existing or new CCR surface impoundment that first receives CCR or commences construction after October 19, 2015. A new CCR surface impoundment has commenced construction if the owner or operator has obtained the federal, state, and local approvals or permits necessary to begin physical construction and a continuous on-site, physical construction program had begun after October 19, 2015.

“Operator” means the person(s) responsible for the overall operation of a CCR surface impoundment.

“Outermost damage zone of a fault” means the volume of deformed wall rocks around a fault surface that results from the initiation, propagation, interaction and build-up of slip along faults.

“Owner” means the person(s) who owns a CCR surface impoundment or part of a CCR surface impoundment.

“Poor foundation conditions” means those areas where features exist which indicate that a natural or human-induced event may result in inadequate foundation support for the structural components of an existing or new CCR surface impoundment. For example, failure to maintain static and seismic factors of safety as required in Section 845.460 would cause a poor foundation condition.

“Probable maximum flood” means the flood that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the drainage basin.

“Qualified person” means a person or persons trained to recognize specific appearances of structural weakness and other conditions which are disrupting or have the potential to

disrupt the operation or safety of the CCR surface impoundment by visual observation and, if applicable, to monitor instrumentation.

“Qualified professional engineer” means an individual who is licensed under the Professional Engineer Act of 1989, 225 ILCS 32, to practice one or more disciplines of engineering and who is qualified by education, technical knowledge and experience to complete the engineering analyses and make the specific technical certifications required under this Part.

“Recognized and generally accepted engineering practices” means engineering maintenance or operation activities based on established codes, widely accepted standards, published technical reports, or a practice widely recommended throughout the industry. Such practices generally detail approved ways to perform specific engineering, inspection, or mechanical integrity activities.

“Retrofit” means to remove all CCR and contaminated soils and sediments from the CCR surface impoundment, and to ensure the surface impoundment complies with the requirements in Section 845.410.

“Run-off” means any rainwater, leachate, or other liquid that drains over land from any part of a CCR surface impoundment or lateral expansion of a CCR surface impoundment.

“Run-on” means any rainwater, leachate, or other liquid that drains over land onto any part of a CCR surface impoundment or lateral expansion of a CCR surface impoundment.

“Sand and gravel pit” or “quarry” means an excavation for the extraction of aggregate, minerals or metals. The term sand and gravel pit and/or quarry does not include subsurface or surface coal mines.

“Seismic factor of safety” means the factor of safety (safety factor) determined using analysis under earthquake conditions using the peak ground acceleration for a seismic event with a 2% probability of exceedance in 50 years, equivalent to a return period of approximately 2,500 years, based on the U.S. Geological Survey (USGS) seismic hazard maps for seismic events with this return period for the region where the CCR surface impoundment is located.

“Seismic impact zone” means an area having a 2% or greater probability that the maximum expected horizontal acceleration, expressed as a percentage of the earth’s gravitational pull (g), will exceed 0.10 g in 50 years.

“Slope protection” means engineered or non-engineered measures installed on the upstream or downstream slope of the CCR surface impoundment to protect the slope against wave action or erosion, including but not limited to rock riprap, wooden pile, concrete revetments, vegetated wave berms, concrete facing, gabions, geotextiles, or fascines.

“Solid waste management” or “management” means the systematic administration of the activities which provide for the collection, source separation, storage, transportation, processing, treatment, or disposal of solid waste.

“Static factor of safety” means the factor of safety (safety factor) determined using analysis under the long-term, maximum storage pool loading condition, the maximum surcharge pool loading condition, and under the end-of-construction loading condition.

“Structural components” means liners, leachate collection and removal systems, final covers, run-on and run-off systems, inflow design flood control systems, and any other component used in the construction and operation of the CCR surface impoundment that is necessary to ensure the integrity of the surface impoundment and that the contents of the surface impoundment are not released into the environment.

“Temporary accumulation” means an accumulation on the land that is neither permanent nor indefinite. To demonstrate that the accumulation on the land is temporary, all CCR must be removed from the pile at the site. The entity engaged in the activity must have a record in place, such as a contract, purchase order, facility operation and maintenance, or fugitive dust control plan, documenting that all of the CCR in the pile will be completely removed according to a specific timeline.

“Unstable area” means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity, including structural components of some or all of the CCR surface impoundment that are responsible for preventing releases from such surface impoundment. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and karst terrains.

“Uppermost aquifer” means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility’s property boundary. Upper limit is measured at a point nearest to the natural ground surface to which the aquifer rises during the wet season.

“Waste boundary” means a vertical surface located at the hydraulically downgradient limit of the CCR surface impoundment. The vertical surface extends down into the uppermost aquifer.

“Wetlands” means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

SUBPART B: PERMITTING

Section 845.200 Permit Requirements and Standards of Issuance

- a) Permit Requirements
 - 1) No person shall construct, install, or modify a CCR surface impoundment or related treatment or mitigation facilities, pursuant to corrective action measures under Subpart F, without a construction permit issued by the Agency pursuant to this Part.
 - 2) Except as provided in Section 845.230(d), no person shall operate a CCR surface impoundment without an operating permit issued by the Agency pursuant to this Part. For the purposes of this Part, a CCR surface impoundment commences operation upon initial receipt of CCR.
 - 3) No person shall perform corrective action at a CCR surface impoundment without obtaining a construction permit for corrective action and modifying the facility's operating permit, or modifying the facility's operating permit when the approved corrective action does not require the modification of the CCR surface impoundment or the installation or modification of related treatment or mitigation facilities.
 - 4) Except as provided in Section 22.59(e) of the Act, no person shall close a CCR surface impoundment without obtaining a construction permit for closure issued by the Agency pursuant to this Part.
 - 5) A CCR surface impoundment must maintain an operating permit until:
 - A) the completion of post-closure care when the CCR surface impoundment is closed with a final cover system; or
 - B) the completion of groundwater monitoring pursuant to Section 845.740(b) when the CCR surface impoundment is closed by removal.
 - 6) The Agency may issue a joint construction and operating permit.
- b) Standards for Issuance
 - 1) Except as provided in subsection (b)(2), the Agency shall not issue any construction or operating permit required by this Part unless the applicant submits adequate proof that the CCR surface impoundment will be constructed, modified or operated so as not to cause a violation of the Act or Board rules.

- 2) The existence of a violation of the Act, Board regulation, or Agency regulation will not prevent the issuance of a construction or operating permit under this Part if:
 - A) the applicant has been granted a variance or an adjusted standard from the regulation by the Board;
 - B) the permit application is for construction, installation, or operation of equipment to alleviate or correct a violation; or
 - C) the permit application is for construction, installation, or operation of equipment necessary to restore, protect or enhance the environment.
- 3) In granting permits, the Agency ~~shall~~may impose ~~such other~~ conditions as may be necessary to accomplish the purposes of the Act, and as are not inconsistent with this Part. [415 ILCS 5/39(a)]

[Explanation: These changes are intended to ensure this provision accurately quotes the Illinois Environmental Protection Act.]

- 4) In making its determinations on permit applications under this Part, the Agency may consider prior adjudications of noncompliance with this Act by the applicant that involved a release of a contaminant into the environment. [415 ILCS 5/39(a)]

Section 845.210 General Provisions

- a) All permit applications shall be made on such forms as are prescribed by the Agency and shall be mailed or delivered to the address designated by the Agency on the forms. The Agency shall provide a dated, signed receipt upon request. The Agency's record of the date of filing shall be deemed conclusive unless a contrary date is proved by a dated, signed receipt.
- b) Required Signatures of Owners or Operators
 - 1) All permit applications shall contain the name, address, email address and telephone number of the operator, or duly authorized agent, and the property owner to whom all inquiries and correspondence shall be addressed.
 - 2) All permit applications shall be signed by the owner, operator or a duly authorized agent of the operator.
 - 3) An application submitted by a corporation shall be signed by a principal executive officer of at least the level of vice president, or his or her duly authorized representative, if such representative is responsible for the

overall operation of the facility described in the application form. In the case of a partnership or a sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively. In the case of a publicly owned facility, the application shall be signed by either the principal executive officer, ranking elected official, or other duly authorized employee.

- c) Legal Description. All permit applications shall contain a legal description of the facility boundary and a description of the boundaries of all units included in the facility.
- d) Previous Assessments, Investigations, Plans and Programs
 - 1) The Agency may approve the use of any hydrogeologic site investigation or characterization, groundwater monitoring well or system, groundwater sampling data, or groundwater monitoring plan completed prior to the effective date of these rules to satisfy the requirements of this Part.

[Explanation: This change is intended as a clarification, to explicitly authorize the Agency to approve the use of existing groundwater data. Most of the existing groundwater data for CCR surface impoundments was collected pursuant to the CCR Rule or an IEPA-approved sampling plan. Allowing use of this data, upon approval from IEPA, will conserve resources, create additional opportunities to meet the groundwater sampling and analysis deadlines set forth in Part 845, and allow for a more robust data set when developing groundwater modeling.]

- 2) For existing CCR surface impoundments, the owner or operator of the CCR surface impoundment may use a previously completed location restriction demonstration required by Section 845.300 (Placement Above The Uppermost Aquifer), Section 845.310 (Wetlands), Section 845.320 (Fault Areas), Section 845.330 (Seismic Impact Zones), and Section 845.340 (Unstable Areas) provided that the previously completed assessments meet the applicable requirements of those Sections.
- 3) For existing CCR surface impoundments, the owner or operator of the CCR surface impoundment may use a previously completed assessment to serve as the initial assessment required by Section 845.440 (Hazard Potential Classification Assessment), Section 845.450 (Structural Stability Assessment) and Section 845.460 (Safety Factor Assessment) provided that the previously completed assessment:
 - A) was not completed more than five years ago; and
 - B) meets the applicable requirements of those Sections.
- 4) For inactive closed CCR surface impoundments, the owner or operator of the CCR surface impoundment may use a post-closure care plan previously approved by the Agency.

- e) The Agency shall mail all notices of final action by certified mail, post marked with a date stamp and with return receipt requested. Final action shall be deemed to have taken place on the post marked date that such notice is mailed.
- f) Violation of any permit condition or failure to comply with the Act or regulations promulgated under the Act shall be grounds for enforcement action as provided in the Act, including revocation of a permit.
- g) Issuance of a permit under this Part does not relieve the applicant of the obligation to obtain other permits required by law.
- h) The owner or operator shall place in the facility's operating record all permit applications submitted to the Agency and all permits issued under this Part, as required by Section 845.800(d)(1).

Section 845.240 Pre-Application Public Notification and Public Meeting

- a) At least 30 days before the submission of a construction permit application, the owner or operator of the CCR surface impoundment must hold at least ~~two~~one public meetings, after 5:00 p.m., to discuss the proposed construction, ~~where at least one meeting is held after 5:00 p.m. in the evening~~. Any public meeting held under this Section must be located at a venue that is accessible to persons with disabilities, and the owner or operator must provide reasonable accommodations upon request.

[Explanation: There is no evidence in the record suggesting two public meetings held before the submittal of a permit application is necessary to satisfy the requirements of Section 22.59(g)(6) of the Act. IEPA acknowledged, the proposed Part 845 permitting process is “modeled after the existing NPDES program,” but that program requires only one public meeting, not two. IEPA’s First Supplement to Prefiled Answers, Response to Dynegy Q. 11, p. 7 (Aug. 5, 2020). Further, IEPA admitted that requiring only a single public meeting would be “as protective” as the CCR Rule. Transcript 25:1-6 (Aug. 12, 2020).

As listed on IEPA’s Table 1 (IEPA’s Prefiled Answers at 181 (Aug. 3, 2020)) Dynegy owns 30 units potentially subject to Part 845, which could require as many as 60 public meetings. The requirement to hold two public meetings prior to submitting a permit application creates logistical and personnel issues. Depending on how these units are categorized, Dynegy may have 10 or more units submitting permit applications at the same time, resulting in having to hold 20 public meetings within a 30 day period. A single pre-application meeting is sufficient to satisfy Section 22.59(g)(6)’s requirement to provide meaningful public participation.]

- b) The owner or operator must prepare and circulate a notice explaining the proposed construction project and any related activities and the time and place of the public meeting. The owner or operator of the CCR surface impoundment must:

- 1) mail or hand-deliver the notice to the Agency ~~and all residents within a one mile radius from the facility boundary;~~
- 2) post the notice on the website required pursuant to Section 845.810 ~~all of the owner or operator's social media outlets; and~~
- 3) ~~post-mail~~ the notice to the clerk of the city, town or village located within 10 miles of the facility requesting posting in conspicuous locations throughout the villages, towns, or cities within 10 miles of the facility, or use appropriate broadcast media (such as radio or television); and
- 4) emailing the notice to the Agency's listserv for the facility.

[Explanation: There is no support in the record for requiring the owner/operator to provide public notice in a manner different than that which is required of the Agency in Section 845.260(b)(3).]

- c) When a proposed construction project or any related activity is located in an area with a significant proportion of non-English speaking residents, the notification must be circulated, or broadcast, in both English and the appropriate non-English language.
- d) The owner or operator of the CCR surface impoundment must prepare documentation recording the public meeting and place the documentation in the facility's operating record, as required by Section 845.800(d)(2).
- e) At least 14 days prior to a public meeting, the owner or operator of the CCR surface impoundment must post on the owner or operator's publicly accessible internet site all documentation relied upon in making their tentative construction permit application.
- f) At the public meeting, the owner or operator of the CCR surface impoundment must outline its decision-making process for the construction permit application, including, where applicable, the corrective action alternatives and the closure alternatives considered.
- g) This Section does not apply to applications for minor modifications as described in Section 845.280(d).

SUBPART C: LOCATION RESTRICTIONS

SUBPART D: DESIGN CRITERIA

Section 845.440 Hazard Potential Classification Assessment

- a) Hazard potential classification assessments
 - 1) The owner or operator of the CCR surface impoundment must conduct an initial and ~~annual~~ every five years thereafter hazard potential classification assessment of the CCR surface impoundment. The owner or operator must document the hazard potential classification of each CCR surface impoundment as either a Class 1 or Class 2 CCR surface impoundment. The owner or operator must also document the basis for each hazard potential classification.

[Explanation: IEPA has not provided any support for deviating from the CCR Rule's requirement to perform an assessment every five years. As discussed in Dr. Rudy Bonaparte's pre-filed testimony, annual assessments are excessive and unnecessary. Bonaparte Prefiled Testimony at 20-21 (Aug. 27, 2020). Therefore, Dynegy recommends the above and below changes to Section 845.440 to reduce the frequency of assessments to once every five years.]

- 2) The owner or operator of the CCR surface impoundment must obtain a certification from a qualified professional engineer stating that the initial hazard potential classification and each ~~subsequent~~ annual classification was conducted in accordance with the requirements of this Section.
- 3) Timeframe for submission of the Hazard Potential Classification Assessments and Certifications
 - A) The owner or operator of a new CCR surface impoundment must submit the initial hazard potential classification assessment certification with the initial operating permit application prior to the initial receipt of CCR in the surface impoundment.
 - B) The owner or operator of an existing CCR surface impoundment must submit the initial hazard potential classification assessment certification with its first annual inspection report required by Section 845.540(b).

- C) The owner or operator of a CCR surface impoundment must submit the ~~annual~~-hazard potential classification assessment certification ~~each year~~ with the annual inspection required by Section 845.540(b).
 - D) The owner or operator of a CCR surface impoundment must place each hazard potential classification assessment in the facility's operating record, as required by Section 845.800(d)(4).
- b) The requirements of this Section apply to all CCR surface impoundments, except for those CCR surface impoundments that are incised CCR surface impoundments. If an incised CCR surface impoundment is subsequently modified (e.g., a dike is constructed) such that the CCR surface impoundment no longer meets the definition of an incised CCR surface impoundment, the CCR surface impoundment is subject to the requirements of this Section.

Section 845.450 Structural Stability Assessment

- a) The owner or operator of a CCR surface impoundment must conduct initial and ~~annual~~ every five years thereafter structural stability assessments and document whether the design, construction, operation, and maintenance of the CCR surface impoundment is consistent with recognized and generally accepted engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded therein.

[Explanation: As noted above, IEPA has not provided any support for deviating from the CCR Rule's requirement to perform an assessment every five years. As discussed in Dr. Rudy Bonaparte's pre-filed testimony, annual assessments are excessive and not needed. Bonaparte Prefiled Testimony at 20-21 (Aug. 27, 2020). Therefore, Dynegy recommends the above and below changes to Section 845.450 to reduce the frequency of assessments to once every five years.]

The assessment must, at a minimum, document whether the CCR surface impoundment has been designed, constructed, operated, and maintained with:

- 1) Stable foundations and abutments;
- 2) Adequate slope protection to protect against surface erosion, wave action, and adverse effects of sudden drawdown;
- 3) Dikes mechanically compacted to a density sufficient to withstand the range of loading conditions in the CCR surface impoundment;
- 4) Slope protection consistent with Section 845.430;
- 5) A single spillway or a combination of spillways configured as specified in subsection (a)(5)(A) of this Section. The combined capacity of all spillways must be designed, constructed, operated, and maintained to adequately

manage flow during and following the peak discharge from the event specified in subsection (a)(5)(B) of this Section.

- A) All spillways must be either:
 - i. Of non-erodible construction and designed to carry sustained flows; or
 - ii. Earth- or grass-lined and designed to carry short-term, infrequent flows at non-erosive velocities where sustained flows are not expected.
- B) The combined capacity of all spillways must adequately manage flow during and following the peak discharge from a:
 - i. Probable maximum flood for a Class 1 CCR surface impoundment; or
 - ii. 1000-year flood for a Class 2 CCR surface impoundment.
- 6) Hydraulic structures underlying the base of the CCR surface impoundment or passing through the dike of the CCR surface impoundment that maintain structural integrity and are free of significant deterioration, deformation, distortion, bedding deficiencies, sedimentation, and debris which may negatively affect the CCR surface impoundment; and
- 7) For CCR surface impoundments with downstream slopes which can be inundated by the pool of an adjacent water body, such as a river, stream or lake, downstream slopes that maintain structural stability during low pool of the adjacent water body or sudden drawdown of the adjacent water body.
- b) The ~~annual~~ assessment described in this Section must identify any structural stability deficiencies associated with the CCR surface impoundment in addition to recommending corrective measures. If a deficiency or a release is identified during the periodic assessment, the owner or operator of the surface impoundment must submit to the Agency a construction permit application including documentation detailing proposed corrective measures and must obtain any necessary permits from the Agency as soon as feasible.
- c) The owner or operator of the CCR surface impoundment must obtain a certification from a qualified professional engineer stating that the initial structural stability assessments and each annual assessment thereafter was conducted in accordance with the requirements of this Section.
- d) Timeframe for submission of structural stability assessment
 - 1) The owner or operator of a new CCR surface impoundment must submit the initial structural stability assessment certification with the initial operating

permit application prior to the initial receipt of CCR in the surface impoundment.

- 2) The owner or operator of an existing CCR surface impoundment must submit the initial structural stability assessment certification with its first annual inspection report required by Section 845.540(b).
 - 3) The owner or operator of a CCR surface impoundment must submit the ~~annual~~ structural stability assessment certification ~~each year~~ with the annual inspection required by Section 845.540(b).
 - 4) The owner or operator of a CCR surface impoundment must place each structural stability assessment in the facility's operating record, as required by Section 845.800(d)(5).
- e) The requirements of this Section apply to all CCR surface impoundments, except for those CCR surface impoundments that are incised CCR surface impoundments. If an incised CCR surface impoundment is subsequently modified (e.g., a dike is constructed) such that the CCR surface impoundment no longer meets the definition of an incised CCR surface impoundment, the CCR surface impoundment is subject to the requirements of this Section.

Section 845.460 Safety Factor Assessment

- a) The owner or operator of a CCR surface impoundment must conduct an initial and ~~annual~~ every five years safety factor assessments for each CCR surface impoundment and document whether the calculated factors of safety for each CCR surface impoundment achieve the minimum safety factors specified in this Section for the critical cross section of the embankment. The critical cross section is the cross section anticipated to be the most susceptible of all cross sections to structural failure based on appropriate engineering considerations, including loading conditions. The safety factor assessments must be supported by appropriate engineering calculations.

[Explanation: As noted above, IEPA has not provided any support for deviating from the CCR Rule's requirement to perform an assessment every five years. As discussed in Dr. Rudy Bonaparte's pre-filed testimony, annual assessments are excessive and not needed. Bonaparte Prefiled Testimony at 20-21 (Aug. 27, 2020). Therefore, Dynegy recommends the above and below changes to Section 845.460 to reduce the frequency of assessments to once every five years.]

- 1) For new CCR surface impoundments, the calculated static factor of safety under the end-of-construction loading condition must equal or exceed 1.30. The assessment of this loading condition is only required for the initial safety factor assessment and is not required for subsequent assessments.
- 2) The calculated static factor of safety under the long-term, maximum storage pool loading condition must equal or exceed 1.50.

- 3) The calculated static factor of safety under the maximum surcharge pool loading condition must equal or exceed 1.40.
 - 4) The calculated seismic factor of safety must equal or exceed 1.00.
 - 5) For dikes constructed of soils that have susceptibility to liquefaction, the calculated liquefaction factor of safety must equal or exceed 1.20.
- b) The owner or operator of the CCR surface impoundment must obtain a certification from a qualified professional engineer stating that the initial safety factor assessment and each ~~annual~~-assessment thereafter was conducted in accordance with the requirements of this Section.
- c) Timeframe for submission of the safety factor assessment
- 1) The owner or operator of a new CCR surface impoundment must submit the initial safety factor assessment certification with the initial operating permit application prior to the initial receipt of CCR in the surface impoundment.
 - 2) The owner or operator of an existing CCR surface impoundment must submit the initial safety factor assessment certification with its first annual inspection report required by Section 845.540(b).
 - 3) The owner or operator of a CCR surface impoundment must submit the ~~annual~~-safety factor assessment certification ~~each year~~ with the annual inspection required by Section 845.540(b).
 - 4) The owner or operator of a new CCR surface impoundment must place each safety factor assessment in the facility's operating record as required by Section 845.800(d)(6).
- d) Failure to document minimum safety factors.
- 1) For new CCR surface impoundments, until the date an owner or operator of a CCR surface impoundment documents that the calculated factors of safety achieve the minimum safety factors specified in this section, the owner or operator is prohibited from placing CCR in such CCR surface impoundment.
 - 2) An owner or operator of the CCR surface impoundment who either fails to complete a timely safety factor assessment or fails to demonstrate minimum safety factors as required by this Section is subject to the requirements of Section 845.700.
- e) The requirements of this Section apply to all CCR surface impoundments, except for those CCR surface impoundments that are incised CCR surface impoundments. If an incised CCR surface impoundment is subsequently modified (e.g., a dike is constructed) such that the CCR surface impoundment no longer meets the definition

of an incised CCR surface impoundment, the CCR surface impoundment is subject to the requirements of this Section.

SUBPART E: OPERATING CRITERIA

Section 845.540 Inspection Requirements for CCR Surface Impoundments

- a) Inspections by a qualified person.
 - 1) All CCR surface impoundments and any lateral expansion of a CCR surface impoundment must be examined by a qualified person as follows:
 - A) At intervals not exceeding seven days and after each 25-year, 24hour storm, inspect for the following:
 - i. any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR surface impoundment;
 - ii. deterioration, malfunctions or improper operation of overtopping control systems where present;
 - iii. sudden drops in the level of the CCR surface impoundment's contents;
 - iv. erosion that creates rills, gullies, or crevices six inches or deeper, other signs of deterioration including failed or eroded vegetation in excess of 100 square feet, or cracks in dikes or other containment devices; and
 - v. any visible releases.
 - B) At intervals not exceeding seven days, inspect the discharge of all outlets of hydraulic structures which pass underneath the base of the CCR surface impoundment or through the dike of the CCR surface impoundment for abnormal discoloration, flow or discharge of debris or sediment;
 - C) At intervals not exceeding 30 days, monitor all CCR surface impoundment instrumentation; and
 - D) The owner or operator shall prepare a report for each inspection which includes the date of the inspection, condition of the CCR surface impoundment, any repairs made to the CCR surface impoundment and the date of the repair. The results of the inspection

by a qualified person must be recorded in the facility's operating record as required by Section 845.800(d)(13).

- 2) The owner or operator of a CCR surface impoundment must initiate the inspections required under subsection (a) no later than March 30, 2021, or by initial receipt of CCR in an CCR surface impoundment if the owner or operator becomes subject to this Part after March 30, 2021. The inspections required under subsection (a) must continue until the completion of closure by removal or the completion of post-closure care.
- b) Annual inspections by a qualified professional engineer.
- 1) **During the active life,** ~~the~~ CCR surface impoundment must be inspected on an annual basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR surface impoundment is consistent with recognized and generally accepted engineering standards. The inspection must, at a minimum, include:

[Explanation: IEPA has offered no support for requiring annual inspections by a qualified professional engineer during the post closure care period. As discussed in Dr. Rudy Bonaparte's pre-filed testimony, such inspections are unnecessary and burdensome given the extensive requirements placed on the design, construction, and quality assurance of a surface impoundment closure. Furthermore, inspections will be performed during the post-closure care period in accordance with Section 845.540(a). Bonaparte Prefiled Testimony at 18-20 (Aug. 27, 2020). Therefore, Dynegy recommends the above and below changes to Section 845.540.]

- A) A review of available information regarding the status and condition of the CCR surface impoundment, including, but not limited to, files available in the operating record (e.g., CCR surface impoundment design and construction information required by Sections 845.220(a)(1) and 845.230(d)(2)(A), previous structural stability assessments required under Section 845.450, the results of inspections by a qualified person, and results of previous annual inspections);
- B) A visual inspection of the CCR surface impoundment to identify signs of distress or malfunction of the CCR surface impoundment and appurtenant structures;
- C) A visual inspection of any hydraulic structures underlying the base of the CCR surface impoundment or passing through the dike of the CCR surface impoundment for structural integrity and continued safe and reliable operation;
- D) The ~~annual~~ hazard potential classification certification, required by Section 845.440, if applicable;

- E) The ~~annual~~-structural stability assessment certification, required by Section 845.450, if applicable;
 - F) The ~~annual~~-safety factor assessment certification, required by Section 845.460, if applicable; and
 - G) The inflow design flood control system plan certification, required by Section 845.510(c).
- 2) Inspection report. The qualified professional engineer must prepare a report following each inspection that addresses the following:
- A) Any changes in geometry of the impounding structure since the previous annual inspection;
 - B) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection;
 - C) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;
 - D) The storage capacity of the impounding structure at the time of the inspection;
 - E) The approximate volume of the impounded water and CCR at the time of the inspection;
 - F) Any appearances of an actual or potential structural weakness of the CCR surface impoundment, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR surface impoundment and appurtenant structures; and
 - G) Any other changes which may have affected the stability or operation of the impounding structure since the previous annual inspection.
- 3) By January 31 of each year, the inspection report must be completed and submitted with the annual consolidated report required by Section 845.550.
- 4) Frequency of inspections. The owner or operator of the CCR surface impoundment must conduct the inspection required by subsections (b)(1) and (2) of this Section on an annual basis during the active life of the CCR surface impoundment. The deadline for conducting a subsequent inspection is based on the date of conducting the previous inspection.

- 5) If a deficiency or release is identified during an inspection, the owner or operator must submit to the Agency documentation detailing proposed corrective measures and obtain any necessary permits from the Agency.

Section 845.550 Annual Consolidated Report

- a) No later than January 31 of each year, the owner or operator of the CCR surface impoundment must prepare an annual consolidated report for the preceding calendar year that includes the following:
 - 1) Annual CCR fugitive dust control report, required by Section 845.500(c);
 - 2) ~~Annual~~ inspection report, required by Section 845.540(b), including
 - A) ~~annual~~ hazard potential classification certification, required by Section 845.440, if applicable;
 - B) ~~annual~~ structural stability assessment certification, required by Section 845.450, if applicable;
 - C) ~~annual~~ safety factor assessment certification, required by Section 845.460, if applicable; and
 - D) inflow design flood control system plan certification, required by Section 845.510(c).
 - 3) Annual Groundwater Monitoring and Corrective Action Report, required by Section 845.610(e).
- b) The owner or operator of the CCR surface impoundment must place the annual consolidated report in the facility's operating record as required by Section 845.800(d)(14).

[Explanation: The changes to Section 845.550 correspond to the changes recommended to Sections 845.440, 450, and 460 above.]

SUBPART F: GROUNDWATER MONITORING AND CORRECTIVE ACTION

Section 845.610 General Requirements

- a) All CCR surface impoundments and lateral expansions of CCR surface impoundments are subject to the groundwater monitoring and corrective action requirements under this Subpart.
- b) Required submissions and Agency approvals for groundwater monitoring

- 1) Existing CCR surface impoundments. The owner or operator of an existing CCR surface impoundment must submit the following to the Agency in an initial operating permit application:
 - A) a hydrogeologic site characterization meeting the requirements of Section 845.620;
 - B) design and construction plans of a groundwater monitoring system meeting the requirements of Section 845.630;
 - C) a groundwater sampling and analysis program that includes selection of the statistical procedures to be used for evaluating groundwater monitoring data as required by Section 845.640; and
 - D) a monitoring program that includes a minimum of eight independent samples for each background and downgradient well as required by Section 845.650(b).
- 2) New CCR surface impoundments. The owner or operator of a new CCR surface impoundment and all lateral expansions of a CCR surface impoundment must submit the information required in subsection (b)(1)(A)-(C) in a construction permit application, and the information required in subsection (b)(1)(D) in an operating permit application.
- 3) All owners and operators of CCR surface impoundments must:
 - A) conduct groundwater monitoring pursuant to a monitoring program approved by the Agency under this Subpart;
 - B) evaluate the groundwater monitoring data for statistically significant levels over background levels the groundwater protection standards for each well at the waste boundary for the constituents listed in Section 845.600 after each sampling event;

[Explanation: A statistically significant increase over background does not trigger any requirements under Part 845 and is not necessary to ensure compliance with the CCR Rule. As discussed in Dr. Bradley's testimony and Mr. Hagen's testimony, corrective action should be required when a statistically significant level over a groundwater protection standard has been detected. Bradley Prefiled Testimony at 25-28 (Aug. 27, 2020); Hagen Prefiled Testimony at 29-31 (Aug. 27, 2020).]

- C) determine compliance with the groundwater protection standards in Section 845.600 after each sampling event; and
- D) submit all groundwater monitoring data to the Agency and any analysis performed under subsection (b)(3)(B) and (b)(3)(C) within 60 days after completion of sampling, and place the groundwater

monitoring data in the facility's operating record as required by Section 845.800(d)(15).

- c) Once the groundwater monitoring system and the groundwater monitoring program have been established at the CCR surface impoundment as required by this Subpart, the owner or operator must conduct groundwater monitoring and, if necessary, corrective action throughout the active life and post-closure care period of the CCR surface impoundment or the time period specified in Section 845.740(b) when closure is by removal.
- d) In the event of a release of CCR from a CCR surface impoundment, the owner or operator must immediately take all necessary measures to control all sources of the release so as to reduce or eliminate, to the maximum extent feasible, further releases of contaminants into the environment. The owner or operator of the CCR surface impoundment must comply with all applicable requirements in Sections 845.660, 845.670, 845.680.

[Explanation: This change, like the proposed revisions to Section 845.610(d) recommended by IEPA in its First Post-Hearing Comments, is intended to add clarity to the provision. Proposed Section 845.610(d) mirrors 40 C.F.R. 257.90(d). In the preamble to the CCR Rule US EPA makes it clear that this provision is intended to cover releases of CCR. Hearing Ex. 5, 80 Fed Reg. at 21,399 (Apr. 17, 2015) (left and center columns).]

- e) Annual Groundwater Monitoring and Corrective Action Report
 - 1) The owner or operator of the CCR surface impoundment must prepare and submit to the Agency an annual groundwater monitoring and corrective action report as a part of the annual consolidated report required by Section 845.550.
 - 2) For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action plan for the CCR surface impoundment, summarize key actions completed, including but not limited to the status of permit applications and Agency approvals, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year.
 - 3) At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:
 - A) A map, aerial image, or diagram showing the CCR surface impoundment, all background (or upgradient) and downgradient monitoring wells, including the well identification numbers, that are part of the groundwater monitoring program for the CCR surface impoundment, and a visual delineation of any exceedances of the groundwater protection standards;

- B) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
- C) A potentiometric surface map ~~showing groundwater elevation for each groundwater elevation sampling event required by Section 845.650(b)(2);~~

[Explanation: As discussed below and in Dynegy's First Post-Hearing Comment, Dynegy is recommending, that daily groundwater elevation data be collected at one upgradient and one down gradient well. It would be extremely burdensome to prepare potentiometric surface maps for each daily elevation measurement.]

- D) In addition to all the monitoring data obtained under this Subpart, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, and the dates the samples were collected;
- E) A narrative discussion of any statistically significant ~~increases level~~ over ~~background levels~~ the groundwater protection standards for the constituents listed in Section 845.600; and

[Explanation: This subsection should be consistent with the Dynegy's proposed trigger for corrective action in 845.610(b)(3)(B): a statistically significant level over the groundwater protection standards. As discussed in Dr. Bradley's testimony and Mr. Hagen's testimony, corrective action should be required when a statistically significant level over a groundwater protection standard has been detected. Bradley Prefiled Testimony at 25-28 (Aug. 27, 2020); Hagen Prefiled Testimony at 29-31 (Aug. 27, 2020). Dr. Bradley stated in her prefiled responses that using statistics to trigger corrective action requirements is not only consistent with the CCR Rule, it is also consistent with the Illinois landfill program. Bradley Prefiled Responses, Board Q.20, p. 2-3 (Sept. 24, 2020) (citing 35 Ill. Adm. Code 811.318(b)(5), 811.320(a)(2), 812.317).]

- F) Other information required to be included in the annual report as specified in this Subpart.
- 4) A section at the beginning of the annual report must provide an overview of the current status of groundwater monitoring program and corrective action plan for the CCR surface impoundment. At a minimum, the summary must:
- A) specify whether groundwater monitoring data shows a statistically significant ~~increase level~~ over ~~background concentrations~~ the groundwater protection standards for one or more constituents listed in Section 845.600;
 - B) identify those constituents having a statistically significant ~~increase level~~ over ~~background concentrations~~ the groundwater protection

standards and the names of the monitoring wells associated with such an increase;

- C) ~~specify whether there have been any exceedances of the groundwater protection standards for one or more constituents listed in Section 845.600;~~
- D) ~~identify those constituents with exceedances of the groundwater protection standards in Section 845.600 and the names of the monitoring wells associated with such an exceedance;~~

[Explanation: A statistically significant increase over background does not trigger any requirement under Part 845 and is not necessary to ensure compliance with the CCR Rule. As discussed in Dr. Bradley's testimony and Mr. Hagen's testimony, corrective action should be required when a statistically significant level over a groundwater protection standard has been detected. Bradley Prefiled Testimony at 25-28 (Aug. 27, 2020); Hagen Prefiled Testimony at 29-31 (Aug. 27, 2020).]

- E) provide the date when the assessment of corrective measures was initiated for the CCR surface impoundment;
- F) provide the date when the assessment of corrective measures was completed for the CCR surface impoundment;
- G) specify whether a remedy was selected pursuant to Section 845.670 during the current annual reporting period, and if so, the date of remedy selection; and
- H) specify whether remedial activities were initiated or are ongoing pursuant to Section 845.780 during the current annual reporting period.

Section 845.620 Hydrogeologic Site Characterization

- a) The owner or operator of the CCR surface impoundment must design and implement a hydrogeologic site characterization.
- b) The hydrogeologic site characterization shall include but not be limited to the following:
 - 1) Geologic well logs/boring logs;
 - 2) ~~Climatic aspects of the site~~Aquifer thickness, groundwater flow rate, and groundwater direction, including seasonal and temporal fluctuations in groundwater flow;

[Explanation: “Climatic aspects” of the site is vague and ambiguous. For clarification purposes, Dynegy recommends using the specific factors included above.]

- 3) Identification of ~~nearby~~ surface water bodies and drinking water intakes located within a half mile of the site boundary;
- 4) Identification of ~~nearby~~ pumping wells and associated uses of the groundwater located within a half mile of the site boundary;
- 5) Identification of ~~nearby~~ dedicated nature preserves located within a half mile of the site boundary;

[Explanation: “Nearby” is vague and ambiguous. Dynegy therefore recommends using the distance required by Illinois regulations for potable water supply well surveys (35 Ill. Adm. Code 1600.210(a)(1)-(2)) (a half mile) to provide more specificity. See Hahn Prefiled Responses, Response to ELPC, PRN, SC Q. 4, p.6-7 (Sept. 24, 2020).]

- 6) Geologic setting;
- 7) Structural characteristics;
- 8) Geologic cross-sections;
- 9) Soil characteristics;
- 10) Identification of confining layers;
- 11) Identification of potential migration pathways;
- 12) Groundwater quality data;
- 13) Vertical and horizontal extent of the geologic layers to a minimum depth of 100 feet below land surface, including lithology and stratigraphy;
- 14) A map displaying any known underground mines beneath a CCR surface impoundment;
- 15) Chemical and physical properties of the geologic layers to a minimum depth of 100 feet below land surface;
- 16) Hydraulic characteristics of the geologic layers identified as migration pathways and geologic layers that limit migration, including:
 - A) water table depth;
 - B) hydraulic conductivities;

- C) effective and total porosities;
 - D) direction and velocity of groundwater flow; and
 - E) map of the potentiometric surface;
- 17) groundwater classification pursuant to 35 Ill. Adm. Code 620; and
- 18) Any other information requested by the Agency.

Section 845.630 Groundwater Monitoring Systems

- a) Performance standard. The owner or operator of a CCR surface impoundment must install a groundwater monitoring system that consists of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples that:
- 1) Accurately represent the quality of background groundwater that has not been affected by leakage from a landfill containing CCR or CCR surface impoundment. A determination of background quality may include sampling of wells that are not hydraulically upgradient of the CCR ~~management area~~surface impoundment where:

[Explanation: The term “management area,” is undefined and ambiguous. For clarification, Dynegy recommends replacing it with the defined term CCR surface impoundment.]

- A) Hydrogeologic conditions do not allow the owner or operator of the CCR surface impoundment to determine what wells are hydraulically upgradient; or
 - B) Sampling at other wells will provide an indication of background groundwater quality that is demonstratively as representative or more representative than that provided by the upgradient wells; and
- 2) Accurately represent the quality of groundwater passing the waste boundary of the CCR surface impoundment. The downgradient monitoring system must be installed at the waste boundary that ensures detection of groundwater contamination in the uppermost aquifer. All potential groundwater contaminant pathways must be monitored.

[Explanation: The objective of a groundwater monitoring system is to intercept groundwater at the waste boundary to determine whether the groundwater has been contaminated by a CCR surface impoundment. “Waste boundary” is defined in Section 845.120 to extend down into the uppermost aquifer. Therefore, to add clarity, Dynegy recommends the changes set forth above.]

- b) The number, spacing, and depths of monitoring system wells shall be determined based upon site-specific technical information identified in the hydrogeologic site characterization conducted under Section 845.620.
- c) The groundwater monitoring system must include a sufficient number of monitoring wells necessary to meet the performance standards specified in subsection (a) of this Section based on the site-specific information specified in subsection (b) of this Section. The groundwater monitoring system must contain:
 - 1) a minimum of one upgradient and three downgradient monitoring wells; and
 - 2) additional monitoring wells as necessary to accurately represent the quality of background groundwater that has not been affected by leakage from the CCR surface impoundment and the quality of groundwater passing the waste boundary of the CCR surface impoundment.
- d) Multiunit groundwater monitoring system
 - 1) The owner or operator of multiple CCR surface impoundments may install a multiunit groundwater monitoring system instead of separate groundwater monitoring systems for each CCR surface impoundment.
 - 2) The multiunit groundwater monitoring system must be equally as capable of detecting monitored constituents at the waste boundary of the CCR surface impoundment as the individual groundwater monitoring system specified in subsections (a) through (c) of this Section for each CCR surface impoundment based on the following factors:
 - A) number, spacing, and orientation of each CCR surface impoundment;
 - B) hydrogeologic setting;
 - C) site history; and
 - D) engineering design of the CCR surface impoundment.
- e) Monitoring wells must be properly constructed in a manner consistent with the standards of 77 Ill. Adm. Code 920.170.
 - 1) The owner or operator must document and include in the facility's operating record the design, installation, development, and decommissioning of any monitoring wells, piezometers and other measurement, sampling, and analytical devices. The qualified professional engineer must be given access to this documentation when completing the groundwater monitoring system certification required under subsection (g) of this Section.

- 2) The monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to the design specifications throughout the life of the monitoring program.
- f) The owner or operator of a new CCR surface impoundment must submit a construction permit application containing documentation showing that the groundwater monitoring system is designed to meet the requirements of this Section. The owner or operator of all CCR surface impoundments must submit an operating permit application containing documentation showing that the groundwater monitoring system has been constructed to meet the requirements of this Section.
- g) The owner or operator must obtain a certification from a qualified professional engineer stating that the groundwater monitoring system has been designed and constructed to meet the requirements of this Section. If the groundwater monitoring system includes the minimum number of monitoring wells specified in subsection (c)(1) of this Section, the certification must document the basis supporting this determination. The certification must be submitted to the Agency with the appropriate permit application.

Section 845.640 Groundwater Sampling and Analysis Requirements

- a) The groundwater monitoring program must include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide an accurate representation of groundwater quality at the background and downgradient wells required by Section 845.630. The owner or operator of the CCR surface impoundment must develop a sampling and analysis program that includes procedures and techniques for:
 - 1) Sample collection;
 - 2) Sample preservation and shipment;
 - 3) Analytical procedures;
 - 4) Chain of custody control; and
 - 5) Quality assurance and quality control.
- b) The groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure constituents and other monitoring parameters in groundwater samples. For purposes of this Subpart, the term constituent refers to both constituents and other monitoring parameters listed in Section 845.600.
- c) Groundwater elevations must be measured in each well prior to purging, each time groundwater is sampled. The owner or operator of the CCR surface impoundment must determine the rate and direction of groundwater flow each time groundwater

is sampled. Groundwater elevations in wells which monitor the same CCR management area must be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction.

- d) The owner or operator of the CCR surface impoundment must establish background groundwater quality in a hydraulically upgradient or background well(s) for each of the constituents listed in Section 845.600. Background groundwater quality may be established at wells that are not located hydraulically upgradient from the CCR surface impoundment if it meets the requirements of Section 845.630(a)(1).
- e) The number of samples collected when conducting monitoring (for both downgradient and background wells) must be consistent with the statistical procedures chosen under subsection (f) of this Section and the performance standards under subsection (g) of this Section. The sampling procedures shall be those specified under Section 845.650(a) through (c).
- f) The owner or operator of the CCR surface impoundment must select one of the statistical methods specified in subsections (f)(1) through (5) of this Section to be used in evaluating groundwater monitoring data for each specified constituent. The statistical test chosen shall be conducted separately for each constituent in each monitoring well.
 - 1) A parametric analysis of variance followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.
 - 2) An analysis of variance based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.
 - 3) A tolerance or prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.
 - 4) A control chart approach that gives control limits for each constituent.
 - 5) Another statistical test method that meets the performance standards of subsection (g) of this Section.
 - 6) The owner or operator of the CCR surface impoundment must obtain a certification from a qualified professional engineer stating that the selected statistical method is appropriate for evaluating the groundwater monitoring

data for the CCR surface impoundment. The certification must include a narrative description of the statistical method selected to evaluate the groundwater monitoring data. The certification must be submitted to the Agency with the appropriate permit application.

- 7) The owner or operator of the CCR surface impoundment must submit the following to the Agency in an operating permit application:
 - A) documentation of the statistical method chosen; and
 - B) the qualified professional engineer certification required under subsection (f)(6).
- g) Any statistical method chosen under subsection (f) of this Section shall comply with the following performance standards, as appropriate, based on the statistical test method used:
 - 1) The statistical method used to evaluate groundwater monitoring data shall be appropriate for the distribution of constituents. Normal distributions of data values shall use parametric methods. Non-normal distributions shall use non-parametric methods. If the distribution of the constituents is shown by the owner or operator of the CCR surface impoundment to be inappropriate for a normal theory test, then the data must be transformed or a distribution-free (non-parametric) theory test must be used. If the distributions for the constituents differ, more than one statistical method may be needed.
 - 2) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a groundwater protection standard, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparison procedure is used, the Type I experiment wise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts.
 - 3) If a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its associated constituent values shall be such that this approach is at least as effective as any other approach in this Section for evaluating groundwater data. The constituent values shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.
 - 4) If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain,

shall be such that this approach is at least as effective as any other approach in this Section for evaluating groundwater data. These constituents shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

- 5) The statistical method must account for data below the limit of detection with one or more statistical procedures at least as effective as any other approach in this Section for evaluating groundwater data. Any practical quantitation limit that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility. For the constituents identified in Section 845.600(a)(1), the practical quantitation limit must be less than the groundwater protection standards.
- 6) If necessary, the statistical method must include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.
- h) The owner or operator of the CCR surface impoundment must determine whether or not there is a statistically significant ~~increase-level~~ over ~~background-values~~ the groundwater protection standard for each constituent in Section 845.600.
 - 1) In determining whether a statistically significant ~~increase-level~~ has occurred, the owner or operator must compare the groundwater quality of each constituent at each monitoring well designated pursuant to Section 845.630(a)(2) or (d)(1) to the ~~background-value-of-that-constituent~~ groundwater protection standard, according to the statistical procedures and performance standards specified under subsections (f) and (g) of this Section.
 - 2) Within 60 days after completing sampling and analysis, the owner or operator must determine whether there has been a statistically significant ~~increase-level~~ over ~~background-the~~ the groundwater protection standard for any constituent at each monitoring well.

[Explanation: A statistically significant increase over background does not trigger any requirement under Part 845 and is not necessary to ensure compliance with the CCR Rule. As discussed in Dr. Bradley's testimony and Mr. Hagen's testimony, corrective action should be required when a statistically significant level over a groundwater protection standard has been detected. Bradley Prefiled Testimony at 25-28 (Aug. 27, 2020); Hagen Prefiled Testimony at 29-31 (Aug. 27, 2020).]

- i) The owner or operator must measure total recoverable metals concentrations in measuring groundwater quality. Measurement of total recoverable metals captures

both the particulate fraction and dissolved fraction of metals in natural waters. Groundwater samples shall not be field-filtered prior to analysis.

- j) All groundwater samples taken pursuant to this Subpart must be analyzed by a certified laboratory using Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, incorporated by reference in Section 845.150.

Section 845.650 Groundwater Monitoring Program

- a) The owner or operator of a CCR surface impoundment must conduct groundwater monitoring consistent with this Section. At a minimum, groundwater monitoring must include groundwater monitoring for all constituents with a groundwater protection standard in Section 845.600 and Calcium. The owner or operator of the CCR surface impoundment must submit a groundwater monitoring plan to the Agency with its operating permit application.
- b) Monitoring Frequency
 - 1) The monitoring frequency for all constituents with a groundwater protection standard in Section 845.600 and Calcium shall be at least quarterly during the active life of the CCR surface impoundment and the post-closure care period or period specified in Section 845.740(b) when closure is by removal, unless such frequency has been reduced pursuant to subsection 2.
 - A) For existing CCR surface impoundments, a minimum of eight independent samples from each background and downgradient well must be collected and analyzed for all constituents with a groundwater protection standard listed in Section 845.600(a) and Calcium no later than 180 days after the effective date of this Part.
 - B) For new CCR surface impoundments, and all lateral expansions of CCR surface impoundments, a minimum of eight independent samples for each background well and downgradient well must be collected and analyzed for all constituents with a groundwater protection standard listed in Section 845.600(a) and Calcium during the first 180 days of sampling.
 - 2) The groundwater elevation monitoring frequency shall be monthly. In addition to collecting groundwater elevation data in accordance with Section 845.640(c), daily groundwater elevation data must be collected from one monitoring well located upgradient and one well located downgradient of the CCR surface impoundment.
 - 3) Five years after the completion of closure activities, the owner or operator of a CCR surface impoundment may request for approval a modification of the post-closure care plan to reduce the frequency of groundwater monitoring during the post-closure care period or period specified in

Section 845.740(b) to semi-annual sampling by demonstrating all of the following:

- A) That monitoring effectiveness will not be compromised by the reduced frequency of monitoring;
 - B) That sufficient data has been collected to characterize groundwater; and
 - C) That concentrations of constituents monitored pursuant to Section 845.650(a) at the down-gradient monitoring well(s) show no statistically significant increasing trends that can be attributed to the CCR surface impoundment.
- 4) If, after revising the post-closure care plan pursuant to subsection 2, a statistically significant increasing trend is detected, monitoring shall revert to a quarterly frequency.

[Explanation: See Dynegey's First Post-Hearing Comment at Parts II.D & F.]

- c) The number of samples collected and analyzed for each background well and downgradient well during subsequent quarterly sampling events must be consistent with Section 845.640, and must account for any unique characteristics of the site, but must include at least one sample from each background and downgradient well.
- d) If one or more constituents are detected at a statistically significant level above a , and confirmed by an immediate resample, in exceedance of the groundwater protection standards in Section 845.600 in any sampling event, the owner or operator must notify the Agency which constituent exceeded the groundwater protection standard and place the notification in the facility's operating record as required by Section 845.800(d)(16). The owner or operator of the CCR surface impoundment also must:

[Explanation: As discussed in Dr. Bradley's testimony and Mr. Hagen's testimony, corrective action should be required when a statistically significant level over a groundwater protection standard has been detected. Bradley Prefiled Testimony at 25-28 (Aug. 27, 2020); Hagen Prefiled Testimony at 29-31 (Aug. 27, 2020).]

- 1) Characterize the nature and extent of the release and any relevant site conditions that may affect the remedy ultimately selected. The characterization must be sufficient to support a complete and accurate assessment of the corrective measures necessary to effectively clean up all releases from the CCR surface impoundment pursuant to Section 845.660. The owner or operator of the CCR surface impoundment must submit the characterization to the Agency and place the characterization in the facility's operating record as required by Section 845.800(d)(16). Characterization of the release includes the following minimum measures:

- A) Install additional monitoring wells necessary to define the contaminant plume(s);
 - B) Collect data on the nature and estimated quantity of material released including specific information on the constituents listed in Section 845.600 and the levels at which they are present in the material released;
 - C) Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well in accordance with subsection (a) and (b) of this Section; and
 - D) Sample all wells in accordance with subsection (a) and (b) of this Section to characterize the nature and extent of the release.
- 2) Notify all persons who own the land or reside on the land that directly overlies any part of the plume of contamination if contaminants have migrated off-site as indicated by sampling of wells in accordance with subsection (d)(1) of this Section. The owner or operator must send notifications made pursuant to this subsection (d)(2) to the Agency and place the notifications in the facility's operating record as required by Section 845.800(d)(16).
- 3) Except as provided in subsection (d)(4), within 90 days of the detected exceedance of the groundwater protection standard, initiate an assessment of corrective measures as required by Section 845.660.
- 4) Alternative Source Demonstration. The owner or operator of a CCR surface impoundment may, within 60 days of the detected exceedance of the groundwater protection standard, submit a demonstration to the Agency that a source other than the CCR surface impoundment caused the contamination and the CCR surface impoundment did not contribute to the contamination, or that the exceedance of the groundwater protection standard resulted from error in sampling, analysis, statistical evaluation, natural variation in groundwater quality, or a change in the potentiometric surface and groundwater flow direction. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer.
- A) The Agency shall provide a written response either concurring or not concurring with the demonstration within 30 days.
 - B) If the Agency concurs with the demonstration, the owner or operator must continue monitoring in accordance with this Section. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by

Section 845.610(e), in addition to the certification by a qualified professional engineer.

- C) If the Agency does not concur with the written demonstration made pursuant to subsection (d)(4) of this Section, the owner or operator of the CCR surface impoundment must initiate the assessment of corrective measures requirements under Section 845.660.

Section 845.660 Assessment of Corrective Measures

- a) Unless the Agency has concurred with an alternative source demonstration made pursuant to Section 845.650(d)(4), the owner or operator must initiate an assessment of corrective measures to prevent further releases, to remediate any releases and to restore the affected area.
 - 1) The assessment of corrective measures must be initiated within 90 days of finding that any constituent listed in Section 845.600 has been detected in exceedance of the groundwater protection standards in Section 845.600, or immediately upon detection of a release of CCR from a CCR surface impoundment.

[Explanation: This change, like the proposed revisions to Section 845.610(d) recommended by IEPA in its First Post-Hearing Comments, is intended to add clarity to the provision.]

- 2) The assessment of corrective measures must be completed and submitted to the Agency within 90 days of initiation of assessment of corrective measures, unless the owner or operator demonstrates to the Agency the need for additional time to complete the assessment of corrective measures due to site-specific conditions or circumstances. The owner or operator must submit this demonstration along with a certification from a qualified professional engineer attesting that the demonstration is accurate to the Agency within 60 days of initiating an assessment of corrective measures. The Agency shall either approve or disapprove the demonstration within 30 days. The 90-day deadline to complete the assessment of corrective measures may be extended for no longer than 60 days. The owner or operator must also include the Agency approved demonstration in the annual groundwater monitoring and corrective action report required by Section 845.610(e), in addition to the certification by a qualified professional engineer.
- b) The owner or operator of the CCR surface impoundment must continue to monitor groundwater in accordance with the monitoring program as specified in Section 845.650.
- c) The assessment under subsection (a) of this Section must include an analysis of the effectiveness of potential corrective measures in meeting all of the requirements

and objectives of the corrective action plan as described under Section 845.670 addressing at least the following:

- 1) The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;
 - 2) The time required to begin and complete the corrective action plan; and
 - 3) The institutional requirements, such as state or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the corrective action plan.
- d) The owner or operator of the CCR surface impoundment must discuss the results of the corrective measures assessment at least 30 days prior to the selection of remedy in a public meeting with interested and affected parties as required by Section 845.240.
- e) When the owner or operator of a CCR surface impoundment is completing closure and corrective action simultaneously, the owner or operator may combine the requirements of this Section and Section 845.710 into one assessment of alternatives.

SUBPART G: CLOSURE AND POST-CLOSURE CARE

Section 845.700 Required Closure or Retrofit of CCR Surface Impoundments

- a) Required closure. The owner or operator of the following CCR surface impoundments must cease placing CCR or non-CCR waste streams in the CCR surface impoundment and must initiate closure of the CCR surface impoundment:
- 1) an existing CCR surface impoundment that has not demonstrated compliance with any of the following location restrictions:
 - A) uppermost aquifer location as specified in Section 845.300;
 - B) wetlands, as specified in Section 845.310;
 - C) fault areas, as specified in Section 845.320;
 - D) seismic impact zones, as specified in Section 845.330; or
 - E) unstable areas, as specified in Section 845.340.

- 2) The owner or operator of any CCR surface impoundment that has failed to complete the initial or any subsequent annual safety factor assessment required by Section 845.460 or that has failed to document the calculated factors of safety for the CCR surface impoundment to achieve the minimum safety factors specified in Section 845.460(a)(1) through (5).
- b) Required Closure or Retrofit. The owner or operator of an existing unlined CCR surface impoundment, as determined under Section 845.400(f), must cease placing CCR and non-CCR waste streams into such CCR surface impoundment and either retrofit or close the CCR surface impoundment in accordance with the requirements of Subpart G. The owner or operator of a CCR surface impoundment electing to retrofit must submit a construction permit application to retrofit pursuant to Section 845.770 according to the schedule in subsection (h);
- c) Beginning on the effective date of this Part, the owner or operator of the CCR surface impoundment required to close under subsection (a) or electing to close under subsection (b) must immediately take steps to categorize the CCR surface impoundment pursuant to subsection (g) of this Section and to comply with the closure alternatives analysis requirements in Section 845.710. No later than 30 days after the effective date of this Part, the owner or operator must send the category designation, including a justification for the category designation, for each CCR surface impoundment to the Agency for review. The owner or operator of the CCR surface impoundment must submit a construction permit application containing a final closure plan pursuant to the schedule in subsection (h) of this Section.
- d) Timeframes for Closure
 - 1) Except as provided in subsection (d)(2), the owner or operator must cease placing CCR and non-CCR waste streams in the impoundment and initiate closure within six months of failing to complete any of the demonstrations listed in subsection (a).
 - 2) For CCR surface impoundments required to close under subsection (a)(1) or electing to close under subsection (b):

[Explanation: Dynegy understands that IEPA is proposing revisions to this subsection to account for recent amendments to 40 C.F.R. 257.103. Dynegy, supports revising this subsection to better align with those amendments.]

- A) If, on the effective date of this Part, the owner or operator of a CCR surface impoundment has not satisfied an alternative closure requirement of 40 CFR 257.103 that allows for the continued receipt of CCR or non-CCR waste streams, the owner or operator must not place CCR or non-CCR waste streams into the CCR surface impoundment after the effective date of this Part.
- B) If, on the effective date of this Part, the owner or operator of a CCR surface impoundment has demonstrated that alternative disposal

capacity is infeasible under 40 CFR 257.103, the owner or operator must cease placing CCR or non-CCR waste streams into the CCR surface impoundment by the end of the initial time extension approved under 40 CFR 257.103 or once alternative capacity becomes available, whichever is sooner. In no case may the owner or operator of the CCR surface impoundment place CCR or non-CCR waste streams into the CCR surface impoundment after October 15, 2023.

- C) If, on the effective date of this Part, the owner or operator of a CCR surface impoundment has demonstrated permanent cessation of coal-fired power boiler(s) by a certain date under 40 CFR 257.103, the owner or operator must:
 - i. for CCR surface impoundments that are 40 acres or smaller, cease operation of the coal-fired boiler and complete closure no later than October 17, 2023; or
 - ii. for CCR surface impoundments that are larger than 40 acres, cease operation of the coal-fired boiler and complete closure no later than October 17, 2028.
- D) Failure to remain in compliance with any of the requirements of this Part will result in the automatic loss of authorization under subsection (d)(2)(B) and subsection (d)(2)(C).
- E) The owner or operator of the CCR surface impoundment will not be given extensions of the timeframes for closure.
- e) Semi-Annual Reports. The owner or operator of a CCR surface impoundment closing under the time frames in subsection (d)(2)(B) and (d)(2)(C) shall prepare semi-annual reports consistent with the requirements in 40 CFR 257.103 until the owner or operator has initiated closure.
- f) An owner or operator of a CCR surface impoundment required to close pursuant to this Section must prepare the notification required under Section 845.730(d) that the CCR surface impoundment is closing under this Section.
- g) Closure Prioritization
 - 1) The owner or operator of a CCR surface impoundment required to close under this Section must assign the CCR surface impoundment to one of the following categories. Category 1 has the highest priority for closure. Category 7 has the lowest priority category for closure.
 - A) Category 1 includes CCR surface impoundments that have impacted an existing potable water supply well or that have impacted

groundwater quality within the setback of an existing potable water supply well.

- B) Category 2 includes CCR surface impoundments that are an imminent threat to human health or the environment ~~as determined~~ and have been designated by the Agency pursuant to subsection (g)(5).

[Explanation: As discussed in Dr. Lisa Bradley's pre-filed testimony, and in her opening statement, there is not automatically an imminent threat to human health or the environment where a unit fails to meet a location restriction or where an exceedance of the groundwater protection standard has been detected off-site. Bradley Prefiled Testimony at 29-30; L. Bradley Hearing Slides at 9 (Sept. 28, 2020) Hearing Ex. 25. Therefore, for a unit to be designated as a Category 2 unit, a finding regarding its threat to human health and the environment should be made along with a determination under subsection (g)(5).]

- C) Category 3 includes CCR surface impoundments located in areas of environmental justice concern as determined by the Agency pursuant to subsection (g)(6).
 - D) Category 4 includes inactive CCR surface impoundments that have an exceedance of the groundwater protection standards in Section 845.600.
 - E) Category 5 includes existing CCR surface impoundments that have exceedances of the groundwater protection standards in Section 845.600.
 - F) Category 6 includes inactive CCR surface impoundments that are in compliance with the groundwater protection standards in Section 845.600.
 - G) Category 7 includes existing CCR surface impoundments that are in compliance with the groundwater protection standards in Section 845.600.
- 2) If a CCR surface impoundment can be categorized in more than one category, the owner or operator of the CCR surface impoundment must assign the CCR surface impoundment the highest priority category.
 - 3) Whenever an owner or operator of a CCR surface impoundment has more than one CCR surface impoundment that must close under this Section, the owner or operator shall initiate closure of the CCR surface impoundments in order of priority.

[Explanation: Dynegy recommends this change to avoid any ambiguity regarding what closure means in this context. As IEPA stated in its prefiled responses,

“Closure’ means the initiation of closure as described in Section 845.730.” IEPA First Supplement to Prefiled Responses at Dynegy Q.65, p. 52 (Aug. 5, 2020).]

- 4) If the CCR surface impoundment meets the criteria for Category 1, the owner or operator must take immediate steps to mitigate the impact to any existing potable water supply. The owner or operator of the CCR surface impoundment shall act to replace the water supply with a supply of equal or better quality and quantity within 30 days of notice that such impact has occurred.
- 5) The Agency may designate a CCR surface impoundment as a Category 2 surface impoundment when it presents an imminent threat to human health or the environment and:

[Explanation: As noted above, Dynegy’s expert Dr. Lisa Bradley shows that units that fail to meet a location restriction or where an exceedance of the groundwater protection standard is detected off-site do not automatically present an imminent threat to human health or the environment. Bradley Prefiled Testimony at 29-30; L. Bradley Hearing Slides at 9 (Sept. 28, 2020) Hearing Ex. 25.]

- A) the CCR surface impoundment has failed to document that the calculated factors of safety for the CCR surface impoundment achieve the minimum safety factors specified in Section 845.460(a)(1) through (5);
 - B) the CCR surface impoundment has not demonstrated compliance with the location restrictions in Subpart C of this Part;
 - C) the owner or operator has been enjoined pursuant to 415 ILCS 5/43;
 - D) an exceedance of the groundwater protection standards in Section 845.600 has migrated off-site; or
 - E) the Agency finds that an emergency condition exists creating an immediate danger to public health or welfare, or the environment.
- 6) For the purposes of this Part and only this Part, areas of environmental justice concern are identified as any area that meets either of the following:
 - A) any area within one-mile of a census block group where the number of low-income persons is twice the statewide average, where low income means the number or percent of a census block group’s population in households where the household income is less than or equal to twice the federal poverty level; or
 - B) any area within one-mile of a census block group where the number of minority persons is twice the statewide average, where minority means the number or percent of individuals in a census block group

who list their racial status as a race other than white alone or list their ethnicity as Hispanic or Latino.

- 7) For purposes of subsection (6), if any part of a facility falls within one-mile of the census block group, the entire facility, including all of its CCR surface impoundments, shall be considered an area of environmental justice concern.
 - 8) The Agency may designate a CCR surface impoundment as another Category when site-specific conditions contradict the designations provided by the owner or operator in Section 845.700(c) and the categories in Sections 845.700(g)(1)(A) through 845.700(g)(1)(G).
- h) Application Schedule
- 1) Category 1, Category 2, and Category 3, ~~and Category 4~~ CCR surface impoundment owners or operators must submit either a construction permit application containing a final closure plan or submit a construction permit application to retrofit the CCR surface impoundment in accordance with the requirements of this Part no later than January 1, 2022.
 - 2) Category 4 CCR surface impoundment owners or operators must submit either a construction permit application containing a final closure plan or submit a construction permit application to retrofit the CCR surface impoundment in accordance with the requirements of this Part no later than March 30, 2022.
 - 3) Category 5 CCR surface impoundment owners or operators must submit either a construction permit application containing a final closure plan or submit a construction permit application to retrofit the CCR surface impoundment in accordance with the requirements of this Part no later than ~~July 1~~September 30, 2022.
 - 4) Category 6 and Category 7 CCR surface impoundment owners or operators must submit either a construction permit application containing a final closure plan or submit a construction permit application to retrofit the CCR surface impoundment in accordance with the requirements of this Part no later than July 1, 2023.

[Explanation: As discussed by Dynegy's experts David Hagen and Mark Rokoff, the application deadlines provide insufficient time to ensure a robust and complete application is provided. Hagen Prefiled Testimony at 34-38 (Aug. 27, 2020); Rokoff Prefiled Testimony at 29-30 (Aug. 27, 2020). Thus, as set forth in Mrs. Vodopivec's pre-filed testimony, Dynegy is proposing a three month extension for Categories 4 and 5. Vodopivec Prefiled Testimony at 13-14 (Aug. 27, 2020).]

- 5) Owners or operators consolidating one or more CCR surface impoundments for closure must meet the application schedule of the highest priority CCR surface impoundment.
- 6) If the Agency denies a construction permit application submitted pursuant to this Section, the owner and operator must submit a revised construction permit application addressing all deficiencies identified by the Agency. The revised construction permit application for closure must be submitted to the Agency within 90 days after the Agency's denial if the Agency's denial is not appealed pursuant to Section 845.270. If the Agency's denial is appealed, the owner or operator must submit a revised construction permit application for closure within 90 days after a final decision by the Illinois Pollution Control Board is rendered. The owner or operator of the CCR surface impoundment must discuss the owner or operator's proposed response to all deficiencies identified by the Agency in a public meeting with interested and affected parties held pursuant to Section 845.240.

Section 845.710 Closure Alternatives

- a) Closure of a CCR surface impoundment, or any lateral expansion of a CCR surface impoundment, must be completed either by leaving the CCR in place and installing a final cover system or through removal of the CCR and decontamination of the CCR surface impoundment, as described in Sections 845.720 through 845.760.
- b) Before selecting a closure method, the owner or operator of each CCR surface impoundment must complete a closure alternatives analysis. The closure alternatives analysis must examine the following for each closure alternative:
 - 1) the long- and short-term effectiveness and protectiveness of the closure method, including identification and analyses of the following factors:
 - A) the magnitude of reduction of existing risks;
 - B) the magnitude of residual risks in terms of likelihood of future releases of CCR;
 - C) the type and degree of long-term management required, including monitoring, operation, and maintenance;
 - D) the short-term risks that might be posed to the community, workers or the environment during implementation of such a closure, including potential threats to human health and the environment associated with excavation, transportation, and re-disposal of contaminants;

[Explanation: See Dynegy's First Post-Hearing Brief at Part II.C.1.]

- E) the time until closure and post-closure care or the completion of groundwater monitoring pursuant to Section 845.740(b) is completed;
 - F) the potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, redisposal, containment or changes in groundwater flow;
 - G) the long-term reliability of the engineering and institutional controls, including an analysis of any off-site, nearby destabilizing activities; and
 - H) potential need for future corrective action of the closure alternative.
- 2) the effectiveness of the closure method in controlling future releases based on analyses of the following factors:
- A) the extent to which containment practices will reduce further releases; and
 - B) the extent to which treatment technologies may be used.
- 3) the ease or difficulty of implementing a potential closure method based on analyses of the following types of factors:
- A) degree of difficulty associated with constructing the technology;
 - B) expected operational reliability of the technologies;
 - C) need to coordinate with and obtain necessary approvals and permits from other agencies;
 - D) availability of necessary equipment and specialists; **and**
 - E) available capacity and location of needed treatment, storage, and disposal services; **and**
 - F) **the cost of remedy implementation.**

[Explanation: See Dynegy's First Post-Hearing Comment at Part II.C.2.]

- 4) the degree to which the concerns of the residents living within communities where the CCR will be handled, transported and disposed are addressed by the closure method.
- c) The owner or operator of the CCR surface impoundment must analyze complete removal of the CCR as one closure alternative in the closure alternatives analysis. The closure alternative analysis must identify whether the facility has an onsite

landfill with remaining capacity, which can legally accept CCR, and, if not, whether constructing an onsite landfill is possible. The owner and operator of the CCR surface impoundment must include any other closure method in the alternatives analysis if requested by the Agency.

- d) In selecting a closure alternative under this Part, the owner or operator of a CCR surface impoundment may elect to implement Environmental Land Use Controls, pursuant to the procedures set forth in 35 Ill. Adm. Code 742.1010.

[Explanation: Dynegy recommends that owners/operators be explicitly authorized to use ELUCs as part of closure. While closure-by-removal or closure-in-place will limit the future release of contaminants and restore groundwater quality, empowering owners to also implement ELUCs would provide an additional layer of protection for the public.]

- e) The analysis for each alternative completed pursuant to this Section must:
- 1) meet or exceed a class 4 estimate under the AACE Classification Standard, incorporated by reference in Section 845.150, or a comparable classification practice as provided in the AACE Classification Standard;
 - 2) contain the results of groundwater contaminant transport modeling and calculations showing how the closure alternative will achieve compliance with the applicable groundwater protection standards;
 - 3) include a description of the fate and transport of contaminants with the closure alternative over time including consideration of seasonal variations; and
 - 4) assess impacts to waters in the state.
- f) At least 30 days before submission of a construction permit application for closure, the owner or operator of the CCR surface impoundment must discuss the results of the closure alternatives analysis in a public meeting with interested and affected parties as required by Section 845.240.
- g) After completion of the public meeting pursuant to subsection (e), the owner or operator of a CCR surface impoundment must select a closure method and submit a final closure plan to the Agency pursuant to Section 845.720(b). All materials demonstrating completion of the closure alternatives analysis specified in this Section must be submitted with the final closure plan.
- h) The selected closure method must meet the requirements and standards of this Part, ensure the protection of human health and the environment, and achieve compliance with the groundwater protection standards in Section 845.600.

Section 845.750 Closure with a Final Cover System

Closure performance standard when leaving CCR in place:

- a) The owner or operator of a CCR surface impoundment must ensure that, at a minimum, the CCR surface impoundment is closed in a manner that will:
 - 1) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere;
 - 2) Preclude the probability of future impoundment of water, sediment, or slurry;
 - 3) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;
 - 4) Minimize the need for further maintenance of the CCR surface impoundment; and
 - 5) Be completed in the shortest amount of time consistent with recognized and generally accepted engineering practices.
- b) Drainage and stabilization of CCR surface impoundments. The owner or operator of a CCR surface impoundment or any lateral expansion of a CCR surface impoundment must meet the requirements of subsection (b) of this Section prior to installing the final cover system required under subsection (c) of this Section.
 - 1) Free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues.
 - 2) Remaining wastes must be stabilized sufficient to support the final cover system.
- c) Final cover system. If a CCR surface impoundment is closed by leaving CCR in place, the owner or operator must install a final cover system that is designed to minimize infiltration and erosion, and at a minimum, meets the requirements of this subsection (c) of this Section. The final cover system must consist of a low permeability layer and a final protective layer. The design of the final cover system must be included in the preliminary and final written closure plans required by Section 845.720 and the construction permit application for closure submitted to the Agency.
 - 1) Standards for the low permeability layer. The low permeability layer must have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a hydraulic conductivity no

greater than 1×10^{-7} cm/sec, whichever is less. The low permeability layer must be constructed in accordance with the following standards in either subsections (c)(1)(A) or (c)(1)(B) of this Section, unless the owner or operator demonstrates that another low permeability layer construction technique or material provides equivalent or superior performance to the requirements of either subsections (c)(1)(A) or (c)(1)(B) of this Section and is approved by the Agency.

- A) A compacted earth layer constructed in accordance with the following standards:
 - i. The minimum allowable thickness must be ~~0.91-meter (3 feet)~~18 inches; and
 - ii. The layer must be compacted to achieve a hydraulic conductivity of 1×10^{-7} cm/sec or less and minimize void spaces.

- B) A geomembrane constructed in accordance with the following standards:
 - i. The geosynthetic membrane must have a minimum thickness of 40 mil (0.04 inches) and, in terms of hydraulic flux, be equivalent or superior to an 18 inch layer of soil with a hydraulic conductivity of 1×10^{-7} cm/sec;
 - ii. The geomembrane must have strength to withstand the normal stresses imposed by the waste stabilization process; and
 - iii. The geomembrane must be placed over a prepared base free from sharp objects and other materials that may cause damage.

[Explanation: Dynegy recommends that the cover system be revised to account for the differences between CCR surface impoundments and landfills, consistent with IEPA practice. Dynegy's proposed revisions are substantially more stringent than the CCR Rule. See Dynegy's First Post-Hearing Comment at Part II.A.]

- 2) Standards for the final protective layer. The final protective layer must meet the following requirements, unless the owner or operator demonstrates that another final protective layer construction technique or material provides equivalent or superior performance to the requirements of subsection (c)(2) of this Section and is approved by the Agency.
 - A) Cover the entire low permeability layer;
 - B) When covering a compacted earth low permeability layer, Bbe at least 3 feet thick and must be sufficient to protect the low

permeability layer from freezing and minimize root penetration of the low permeability layer;

- C) When covering a geomembrane low permeability layer, be at least 18 inches thick and must be sufficient to protect the low permeability layer from freezing and minimize root penetration of the low permeability layer;

[Explanation: Dynege recommends that the cover system be revised to account for the differences between CCR surface impoundments and landfills, consistent with IEPA practice. Dynege's proposed revisions are substantially more stringent than the CCR Rule. See Dynege's First Post-Hearing Comment at Part II.A.]

- D) Consist of soil material capable of supporting vegetation;
- E) Be placed as soon as possible after placement of the low permeability layer; and
- F) Be covered with vegetation to minimize wind and water erosion.
- 3) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.
- 4) The owner or operator of the CCR surface impoundment must obtain a written certification from a qualified professional engineer that the design of the final cover system meets the requirements of this Section.
- d) This subsection specifies the allowable uses of CCR in the closure of CCR surface impoundments closing pursuant Section 845.700. Notwithstanding the prohibition on further placement in Section 845.700, CCR may be placed in such surface impoundments, but only for the purposes of grading and contouring in the design and construction of the final cover system if:
- 1) The CCR placed must have been generated at the facility and be located at the facility at the time closure was initiated;
- 2) CCR must be placed entirely above the elevation of CCR in the surface impoundment, following dewatering and stabilization as required in subsection (b);
- 3) The CCR must be placed entirely within the perimeter berms of the CCR surface impoundment; and
- 4) The final cover system must be constructed with either:
- A) A slope not steeper than 510% grade after allowance for settlement;
or

[Explanation: As Dynegy's experts have testified, consolidating two or more units during closure enhances the protectiveness of Part 845 by potentially reducing the footprint of CCR that is closed in place. Bittner Prefiled Testimony at 28 (Aug. 27, 2020); Bonaparte Prefiled Testimony at 13-15 (Aug. 27, 2020). IEPA has provided no basis for limiting the slope of final cover systems to 5% where CCR from multiple units is consolidated for closure. Landfills routinely close with cover slopes of 25-33%. Bonaparte Prefiled Testimony at 13-15 (Aug. 27, 2020). Further, as Dr. Bonaparte explains, steeper final cover system slopes can actually *reduce* infiltration into closed CCR surface impoundments, increasing their protectiveness. *Id.* at 15.]

- B) At a steeper grade, if the Agency determines that the steeper slope is necessary based on conditions at the site, to facilitate run-off and minimize erosion, and that side slopes are evaluated for erosion potential based on a stability analysis to evaluate possible erosion potential. The stability analysis, at a minimum, must evaluate the site geology; characterize soil shear strength; construct a slope stability model; establish groundwater and seepage conditions, if any; select loading conditions; locate critical failure surface; and iterate until minimum factor of safety is achieved.

SUBPART H: RECORDKEEPING

SUBPART I: FINANCIAL ASSURANCE

Section 845.900 General Provisions

- a) This Subpart provides procedures by which the owner or operator of a CCR surface impoundment, subject to this Part, provides financial assurance satisfying the requirements of Section 22.59(f) of the Act.
- b) The owner or operator must provide financial assurance to ensure the following:
- 1) completion of closure;
 - 2) completion of post-closure care, if applicable; and
 - 3) ~~remediation of releases from a CCR surface impoundment~~corrective action, if applicable.

[Explanation: Part 845 requires three activities: closure, post-closure care, and corrective action. This change is intended to add clarity and consistency with Section 845.920(b)(3).]

- c) The owner or operator shall maintain financial assurance equal to or greater than the current cost estimates calculated pursuant to Section 845.930 at all times, except as otherwise provided by Section 845.910.
- d) Financial assurance shall be provided, as specified in Section 845.950, by a trust agreement, a surety bond guaranteeing payment, a surety bond guaranteeing payment or performance, or an irrevocable letter of credit. The owner or operator shall provide financial assurance to the Agency within the timeframe(s) set forth in Section 845.950(c).
- e) This Subpart does not apply to the State of Illinois, its agencies and institutions, to any unit of local government, or to any not-for-profit electric cooperative as defined in Section 3.4 of the Electric Supplier Act [220 ILCS 30].
- f) The Agency is authorized to enter into such contracts and agreements as it may deem necessary to carry out the purposes of this Subpart and of Section 22.59(f) of the Act. Neither the State, nor the Director of the Illinois Environmental Protection Agency, nor any State employee shall be liable for any damages or injuries arising out of or resulting from any action taken under this Part.
- g) The Agency may sue in any court of competent jurisdiction to enforce its rights under financial instruments. The filing of an enforcement action before the Board is not a condition precedent to such an Agency action, except when this Subpart or the terms of the instrument provide otherwise.
- h) The Agency shall have the authority to approve or disapprove any financial assurance mechanism posted or submitted pursuant to this Subpart.
- i) The following Agency actions may be appealed to the Board as a permit denial pursuant to Section 845.270(e) and Section 22.59(f)(3) of the Act:
 - 1) A refusal to accept financial assurance tendered by the owner or operator;
 - 2) A refusal to release the owner or operator from the requirement to maintain financial assurance;
 - 3) A refusal to release excess funds from a trust;
 - 4) A refusal to approve a reduction in the penal sum of a bond; and
 - 5) A refusal to approve a reduction in the amount of a letter of credit.
- j) An owner or operator must notify the Agency by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 of the

United States Code (Bankruptcy) naming any of the owners or operators as debtor, within 10 days after commencement of the proceeding.

- k) An owner or operator that fulfills the requirements of Sections 845.960, 845.970, 845.980, or 845.990 by obtaining a trust fund, surety bond, or letter of credit will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee or of the institution issuing the surety bond or letter of credit to issue such instruments. The owner or operator must establish alternative financial assurance within 60 days after such an event.