

**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

IN THE MATTER OF: )  
 )  
COAL COMBUSTION WASTE (CCW) ASH ) R14-10  
PONDS AND SURFACE IMPOUNDMENTS ) (Rulemaking - Water)  
AT POWER GENERATING FACILITIES: )  
PROPOSED NEW 35 ILL. ADM. CODE 841 )

**NOTICE OF ELECTRONIC FILING**

To: **Attached Service List**

PLEASE TAKE NOTICE that on July 17, 2014, I electronically filed with the Clerk of the Illinois Pollution Control Board the **Environmental Groups' Answers to the Illinois Pollution Control Board's June 11, 2014 Questions for the Environmental Groups, the Illinois Environmental Protection Agency's June 11, 2014 Questions for the Environmental Groups, the Illinois Pollution Control Board and Illinois Environmental Protection Agency's April 30, 2014 Questions for Traci Barkley, and the Illinois Environmental Protection Agency's April 30, 2014 Questions for Keir Soderberg** on behalf of Environmental Integrity Project, Environmental Law & Policy Center, Prairie Rivers Network, and Sierra Club. A copy is attached hereto and herewith served upon you.

Dated: July 17, 2014

Respectfully submitted,



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**The Illinois Pollution Control Board's June 11, 2014 Questions to the Environmental Groups**

**Section 841.105 Applicability**

- 11. The proposed subsection (c) sets forth that a unit exempted from Part 841 pursuant to subsection (b) is required to maintain records demonstrating how the exemption in subsection (b) applies. In addition to maintaining records, please comment on whether a unit that is exempt pursuant to subsection (b)(2) should be required to comply with the proposed closure requirements of Part 841 Subpart D when the owner or operator of such a unit decides to close the unit.**

The Environmental Groups support the Board's approach that a unit that is exempt pursuant to the Agency's proposed subsection (b)(2) should be required to comply with the proposed closure requirements of Part 841 Subpart D.

On a related note, the Environmental Groups urge that any CCW impoundment that has not yet been properly closed should be subject to the rules in full. This was an impetus for the Environmental Groups' proposed definition of "operate" in proposed Section 841.110. The Environmental Groups therefore support the modification to Section 841.105(a)(2) suggested by the Board in Question 1(d) to the Agency, with the further qualification that the exemption in proposed section 841.105(a)(2) should apply only if such units have initiated closure pursuant to a closure plan that will require the removal of all coal combustion waste and leachate, or cover with a final cover system meeting the standards of Section 841.420, before the effective date of the proposed regulations.

**Section 840.130 Compliance Period**

- 12. If closure is not presently being contemplated, please explain the rationale for suggesting that the proposed rules require the owner or operator of a unit in operation before the effective day of the proposed subpart to submit a "closure plan, and post-closure care plan" within one year of the effective date.**

First, the requirement of closure and post-closure care plans supports the Environmental Groups' proposed modification of the rules to include design standards for existing impoundments. There are over fifty unlined impoundments in the State, and, under the Environmental Groups' proposal, they would need to close or retrofit within 5 years of the effective date of the proposed rules.

Second, the Board's regulations should require a closure and post-closure care plan for all CCW impoundments for the same reasons these plans are required for other waste management sites in the State—to determine the amount of financial assurance required and to determine what the operator's ultimate plan for disposing the waste is. *See* 35 Ill. Adm. Code 807.501(c) ("The closure plan and post-closure care plan form the basis of the cost estimates and financial assurance required by Subpart F for disposal sites. The closure plan is also used for making the determination as to whether a unit is a disposal unit or indefinite storage unit, which must provide financial assurance.").

### Section 841.135 Recordkeeping

13. **Please explain the rationale for increasing the retention time period for an approved closure report from 10 years to 30 years at subsection (a)(6).**

In proposed Section 841.440, the Environmental Groups have proposed extending the required post-closure care period from ten years to thirty years. Therefore, with a minimum post-closure care period of 30 years, it would be appropriate for the retention period of the closure report to be 30 years.

The Environmental Groups further note that increasing the post-closure care period to 30 years would align these proposed regulations with U.S. EPA's proposed Subtitle D regulations at proposed 40 C.F.R. 257.101.

As U.S. EPA noted in discussing its proposed requirement of a 30-year post-closure care period, "The 30-year proposal is consistent with the period required under the criteria for municipal solid waste landfills." 75 Fed. Reg. 35128, 35209 (June 21, 2010). Further, U.S. EPA stated that it "has no information to indicate that a different period would be appropriate for post-closure care for coal combustion residual disposal units." *Id.*

Finally, the Environmental Groups emphasize that even 30 years is less than ideal given U.S. EPA projections of the arrival of peak well concentrations for coal ash pollutants decades or centuries after a coal ash disposal operation begins. U.S. EPA, *Human and Ecological Risk Assessment of Coal Combustion Wastes (Draft)* (April 2010), at 4-10 to 4-12.

### Section 841.150 Modification of Existing Permits

14. **The proposed change to this section requires an owner or operator to submit a revised preventive response, corrective action, or closure plan to the Agency within 90 days if an application to revise an operating permit or NPDES permit is denied by the Agency. Please comment on whether the proposed change limits the owner or operator's option to appeal the Agency's denial to the Board.**

It is not the intent of the Environmental Groups to limit any appeal options otherwise allowed by law. It would be acceptable to the Environmental Groups to amend the proposed language as follows:

**If any activities required under the proposed preventive response, corrective action, or closure plan cannot be completed because of the denial of an operating permit or NPDES permit, then the owner or operator must submit a revised preventive response, corrective action, or closure plan to the Agency within 90 days of the denial or the conclusion of an unsuccessful subsequent appeal by the owner or operator, whichever is later.**

This revision is reflected in the Environmental Groups' redlined proposal, attached as Exhibit A to the Environmental Groups' Answers to the Agency's June 11, 2014 Questions to the Environmental Groups.

**Section 841.170 Inspection**

**15. The proposed subsection (e) requires owners or operators of units that have incorporated earthen dams in their design to "install, maintain, and monitor instruments to monitor the water content or pore water pressures within the earthen dam." Exh. 21 at 15.**

- (a) Please clarify whether the monitoring of moisture content or pore water pressure is intended to provide indication of dam stability or some other information.**
- (b) If so, is there a moisture content or pore water pressure threshold above which an owner or operator may have to take any response actions?**
- (c) Also, comment on whether parameters concerning dam safety issues, including any monitoring of moisture content or pore water pressure, is addressed by the Illinois Department of Natural Resources as part of its dam safety program.**

- (a) The monitoring of moisture content or pore water pressures is intended to provide an indication of the earthen dam's structural integrity. The Board has authority to require the owner or operators to ensure the structural integrity of CCW impoundments that are adjacent to surface waters and the failure of which would cause water pollution in violation of Section 12 of the Illinois Environmental Protection Act, 415 ILCS 5/12.
- (b) The Environmental Groups are not proposing a specific threshold over which an owner or operator would have to take a response action. Instead, the Environmental Groups are proposing that the instruments be installed so that information that is relevant to assessing the structure's stability is known and available for consideration by the Agency and the public.
- (c) The Environmental Groups are not aware that the Illinois Department of Natural Resources ("IDNR") has required any assessment of monitoring of moisture content or pore water pressure. Generally, the Environmental Groups note that, while IDNR may have responsibility over dam safety, this Board has broad authority under the Illinois Environmental Protection Act to impose such requirements as are necessary to protect the waters of the State. CCW surface impoundments constructed adjacent to surface waterways pose a unique threat of discharging harmful contaminants into State waters, as demonstrated by recent catastrophic discharges at the Duke Energy Dan River Steam Station in North Carolina and the TVA Kingston Fossil Plant in Tennessee. This threat of water pollution is a violation of Section 12 of the Illinois Environmental Protection Act. The Board would be within its authority to regulate the manner in which CCW is stored adjacent to waterways, even if there potentially could be some crossover with IDNR's more general regulation of dam safety issues.

**Section 841.165 Public Notice**

**16. (a) Under the Environmental Groups suggested Section 841.165(c), please explain the reasoning behind suggesting the Agency hold a "public**

**informational meeting" in addition to posting notice on its webpage and accepting written comments from the public.**

The Environmental Groups' intent in requiring a public informational hearing is to allow the residents of an affected community the opportunity to provide comments and to hear, in person, any Agency explanation of its decisions relating to the impoundment. As evidenced by the large number of members of the public who traveled to Springfield and Chicago from across the State to provide comments in this rulemaking proceeding, the issue of how to close and remediate CCW impoundments that are contaminating groundwater and surface water is one of intense public interest.

- (b) **In holding a public informational meeting, the Environmental Groups suggest the Agency not be "required to comply with the procedures of 35 Ill. Adm. Code Part 164" Procedures for Informational and Quasi-Legislative Public Hearings. Please comment what type of procedure the Agency would be expected to follow and if such procedure is currently codified anywhere in the rules.**

The Environmental Groups are in no way opposed to requiring that informational hearings under these proposed regulations be conducted in accordance with the procedures of 35 Ill. Adm. Code Part 164. During the Agency's stakeholder process on these regulations in 2013, the Environmental Groups discussed the possibility of informational public hearings with the Agency. The Agency expressed concern with holding hearings that complied with all of the requirements of Part 164. The Environmental Groups' proposal here, which also was made to the Agency during the stakeholder process, was intended to be a concession to the Agency's expressed concern.

If the Agency does hold hearings pursuant to the Environmental Groups' originally proposed language, the Environmental Groups suggest that the Agency could follow the procedures required in Part 164, with the exception of Section 164.401's requirement of a "summary and Agency statement."

Again, though, the Environmental Groups would have no objection to requiring that informational hearings be held in accordance with Part 164. Given the concerns raised by the Agency and regulated parties during the hearing regarding what standards would apply to the proposed hearings if Part 164 did not apply, the Environmental Groups have modified their proposed language in the redlined proposal attached as Exhibit A to the Environmental Groups' answers to the Agency's June 11, 2014 Questions for the Environmental Groups as follows:

- c) The Agency shall hold a public informational meeting whenever it finds a significant degree of public interest in a proposed **alternative cause demonstration, corrective action plan, closure plan, or post-closure care plan, or modification thereto**, on the basis of public comment. ~~In holding meetings under this Part,~~

~~the Agency is not required to comply with the procedures of 35 Ill. Adm. Code Part 164.~~

**841.230 Sampling Frequency**

17. **Under suggested section 841.230(c)(3), please explain the reasoning for not allowing monitoring frequency to be reduced for total dissolved solids.**

The Environmental Groups propose that owners and operators not be allowed to reduce monitoring frequency for total dissolved solids because the presence of total dissolved solids is particularly indicative of coal ash contamination of groundwater. For example, U.S. EPA has proposed total dissolved solids as a constituent to be monitored to detect groundwater contamination from CCW impoundments, noting that total dissolved solids and other specific constituents "are present in CCRs, and would rapidly move through the subsurface and thus provide an early detection as to whether contaminants were migrating from the disposal unit." *See* 75 Fed. Reg. 35128, 35206.

**841.400 Surface Impoundment Closure**

18. **The Environmental Groups proposal would require removal of CCW upon closure unless "that removal is technically infeasible or would not result in greater protection of human health and the environment", except where units are present in the water table, floodplain, wetland, or above mine or fault. PC 1879 at 841.400(b).**

**Section 27(a) of the Act directs the Board to take into account the "technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution" when conducting a substantive rulemaking. 415 ILCS 5/27(a) (2010). Section 27(b) of the Act requires the Board to determine whether a proposed substantive regulation "has any adverse economic impact on the people of the State of Illinois." 415 ILCS 5/27(b) (2010).**

- (a) Please describe ways CCW could be completely removed from a surface impoundment.**

The process generally is described in the Agency's proposed Section 841.400(b). CCW can be dredged from a surface impoundment. For example, Springfield City Water Light and Power's *Environmental Compliance Study for Dallman Power Station*, admitted as Exhibit 44 in this proceeding, discusses dredging up to four cells of one impoundment, disposing of the CCW in a landfill, and relining the cells to create an impoundment that would comply with USEPA's proposed Subtitle D regulations. This discussion is at pages 7-13 to 7-17 of the study.

- (b) Please describe circumstances when such removal could be technically infeasible.**

The Environmental Groups are not contending that closure by removal would prove technically infeasible at any given CCW impoundment, but the Environmental Groups' originally proposed language leaves open the possibility

that the Agency would make that finding based on site-specific considerations. Generally, in the Environmental Groups' view, if an owner or operator is not capable of completing closure by removal, that means that removal would be technically infeasible.

**(c) Please provide cost information for accomplishing complete CCW removal for the purposes of closure as proposed by the Environmental Groups.**

First, it should be noted that CCW removal would not be required at every impoundment across the State under the Environmental Groups' proposed rule.

Costs of removal will depend on both the amount of CCW to be removed and the location at which it may be disposed. Springfield City Water Light and Power's *Environmental Compliance Study for Dallman Power Station* projected a cost of \$5 per cubic yard to dredge the Lakeside Ash Pond. See Exhibit 44, Appendix E (fifth page). This estimate appears to include transportation costs, insofar as it "assumes ½ to landfill and ½ to gob piles at mine." For an impoundment containing 517,800 cubic yards, the total cost of "General Earthwork/Ash Dredging" was \$3,537,500.

**(d) Please also address how those costs would impact the people of the State of Illinois.**

Under the Environmental Groups' proposal, removal would be required only where it is more protective of human health and the environment than close in place, and determined by the Agency to be "technically feasible." In these cases, keeping coal ash in place would threaten significant ecological harm to the State of Illinois, such that removal would be beneficial. The incremental costs of closure by removal compared to closure by dewatering and capping would not be significant enough to detrimentally impact the State of Illinois. For example, the difference in estimated costs between "redeveloping" one 15-acre portion of the Springfield City Water Light and Power's Lakeside Ash Pond (\$6,445,920), and closing another 15-acre portion (\$2,424,410) is not so significant as to impact the people of the State of Illinois.

**Section 841.405 Closure Prioritization**

**19. Please elaborate on the reasoning for the suggested changes to Section 841.405 to reduce the number of proposed categories for closure prioritization from four to two.**

The Environmental Groups recognize that different classes of groundwater have been identified in regulations implementing the Illinois Groundwater Protection Act. However, the Environmental Groups' intent in reducing the number of proposed categories for closure was to reduce the length of time required for the longer categories.

It is arbitrary to require that inactive impoundments close within 5-1/2 years of the confirmation of exceedences (should the owner or operator elect), active impoundments within 7 years, and impoundments over Class IV waters within 9 years. Particularly if an impoundment is being closed by cover, in place, it is reasonable for it to close within 5 years. Absent evidence in this rulemaking that closure within 5 years is impracticable, there is no good reason to allow impoundments to remain open.

**Section 841.450 Design Standards for New and Existing Impoundments**

**20. Please clarify whether the proposed design standards should be subject to the construction quality assurance program specifies at Section 841.155. If so, please propose changes to Section 841.155 to include design standards under the CQA program.**

The Environmental Groups believe that it would reasonable to make the proposed design standards subject to the CQA program. The Board's standards for new solid waste landfills contain relevant provisions that could be incorporated verbatim into these regulations, at 35 Ill. Adm. Code 811.506 to 811.509.

**21. Please clarify whether the liner hydraulic conductivity must be tested to demonstrate compliance with the proposed hydraulic conductivity requirement of less than  $1 \times 10^{-7}$  cm/sec. If so, comment on the methods that may be used to make the permeability determination.**

Under the Environmental Groups' proposed language—which was taken from U.S. EPA's proposed rule—the compacted-soil layer of the composite liner is required to have a hydraulic conductivity of less than  $1 \times 10^{-7}$  cm/sec. This is the same as the existing requirements for new solid waste landfills. *See* 35 Ill. Adm. Code 811.306. The Environmental Groups believe that it would be appropriate to look to the Board's solid waste landfill regulations for guidance on whether liner hydraulic conductivity should be tested.

There is a regulation on quality assurance for the construction of compacted earth liners. *See* 35 Ill. Adm. Code 811.507. This regulation describes the process of constructing a test fill and testing it for various physical properties. The tests include “field testing techniques” to determine the hydraulic conductivity; samples to be tested “in the laboratory” for hydraulic conductivity; and “other engineering parameters, including but not limited to particle size distribution, plasticity, water content, and in-place density, that are needed to evaluate the full-scale liner.”

**22. The proposed design standards require existing and new impoundment units to be constructed with composite liners and leachate collection system, but the standards do not prescribe any standards or specification for leachate drainage and collection system.**



**Please clarify whether the design standards should include standards for leachate drainage and collection system. If so, please propose additional design standards for leachate drainage and collection system.**

The Environmental Groups' proposed regulations do not mandate a detailed leachate drainage and collection system design. The Environmental Groups' intent is to propose design standards that are consistent with U.S. EPA's proposed rule in requiring both a composite liner and a leachate collection system.

- 23. Although the Environmental Groups state their proposed design standards for new and operating CCW units were derived from USEPA's proposed rules for existing impoundments under Subtitle D, the design standards do not address USEPA's proposed "Location Restrictions" for new CCW surface impoundments under proposed 40 CFR 257.60-257.64 (75 FR 35241-35243), covering placement above the natural water table, wetlands, fault areas, seismic impact zones, and unstable areas. PC1879 at 10. Please comment on potential design criteria for new CCW surface impoundments that would incorporate location restrictions.**

The Environmental Groups would support the Board's adoption of the location restrictions required in proposed 40 CFR 257.60-257.64.

#### **Subpart F: Financial Assurance**

- 24. The Environmental Groups have proposed a new Subpart F: Financial Assurance.**

- (a) Please identify financial assurance requirements in other Parts of the Board's rules and the corresponding statutory authority in the Illinois Environmental Protection Act (Act).**

The Board's rules require financial assurance for several types of waste disposal. The Board's financial assurance requirements include:

- Class I hazardous waste injection wells.
  - 35 Ill. Adm. Code 704.213. These are rules "identical in substance" to the federal Safe Drinking Water Act and Resource Conservation and Recovery Act ("RCRA") (financial assurance provision can be found at 40 CFR 144.63), authorized by 415 ILCS 5/7.2, 13, and 22.4.
- Hazardous waste treatment, storage, and disposal facilities.
  - 35 Ill. Adm. Code 724.240-724.251. These are rules "identical in substance" to the federal RCRA (Resource Conservation and Recovery Act), authorized by 415 ILCS 5/7.2 and 22.4.
- Excluded hazardous secondary materials
  - 35 Ill. Adm. Code 721.243. Much like the hazardous waste regs, these are "identical in substance" to federal rules.
- Interim status standards for hazardous waste treatment, storage, and disposal facilities
- Hazardous waste facilities operating under a RCRA permit
- Solid waste and special waste hauling

- 35 Ill. Adm. Code 807.601, required by 415 ILCS 5/21.1.
- New solid waste landfills
- (Landscape waste) compost facilities
  - 35 Ill. Adm. Code 830.602, *et seq.* Financial assurance required by statute, § 415 ILCS 5/22.33
- Used and waste tires
  - 35 Ill. Adm. Code 848.400-415. Financial assurance required by 415 ILCS 5/55.2.

**(b) Please indicate if there are any financial assurance requirements in the Board's rules that are not derived from the Environmental Protection Act.**

The Environmental Groups have not found any financial assurance requirements in the Board's rules that were not derived from the Act. The Environmental Groups contend that financial assurance in this instance is specifically authorized by the Act, because CCW impoundments can be classified as "waste disposal operations" under 415 ILCS 5/21.1, which prohibits any waste disposal operation which requires a permit under 415 ILCS 5/21(d) from operating unless the owner has posted a performance bond or other security.

**(c) As mentioned above, Section 27(a) of the Act directs the Board to take into account the "technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution" when conducting a substantive rulemaking. 415 ILCS 5/27(a) (2010). Section 27(b) of the Act requires the Board to determine whether a proposed substantive regulation "has any adverse economic impact on the people of the State of Illinois." 415 ILCS 5/27(b) (2010).**

**(i) Please provide information on expected costs for owners or operators of CCW surface impoundments to provide financial assurance to cover closure and post-closure care as would be required by the Environmental Groups' suggested Subpart F.**

U.S. EPA's *Regulatory Impact Analysis For EPA's Proposed RCRA Regulation of Coal Combustion Residues (CCR) Generated by the Electric Utility Industry*, at 58 (Apr. 30, 2010), attached hereto as Exhibit A, identifies an annual cost of 1-3% of the total cost of closure and post-closure care in order to maintain a letter of credit; U.S. EPA assumed a mid-range cost of 2% annually. (The Appendix to the Analysis is attached as Exhibit B.) For owners or operators who intend to close impoundments within a short period of time, this will not impose significantly higher closure costs. Also, for owner or operators of adequately lined impoundments in stable settings, total closure costs would be limited to dewatering and capping.

- (ii) Please also address how those costs would impact the people of the State of Illinois.**

The costs from financial assurance requirements would not have a significant impact on the people of the State of Illinois. Financial assurance requirements have been successfully implemented for other solid waste disposal operations without causing any appreciable economic harm.

**The Illinois Environmental Protection Agency's June 11, 2014 Questions for the Environmental Groups**

- 1. Please explain what surface impoundments fall within the applicability of the Environmental Groups' counter proposal.**

Please see the definition of "surface impoundment" in the Environmental Groups' proposed Section 841.410 of the redlined proposal attached hereto as Exhibit A. Under the Environmental Groups' proposed Section 841.105, all surface impoundments at power generating facilities that contain CCW or leachate from CCW are subject to the proposed rules in some respect.

- 2. Please explain whether unpermitted landfills are within the applicability of the Environmental Groups' counter proposal.**

No, the Environmental Groups do not intend for any "landfills," whether permitted or unpermitted, to fall within the applicability of the proposed rules. The distinction between "surface impoundments" and "landfills" is drawn in existing Board regulations, including 35 Ill. Adm. Code 810.103.

That distinction also was recognized in the Agency's proposed definition of "surface impoundment" in its March 25, 2014 redline, which excluded "landfills." Given these definitions, in the Environmental Groups' view, it is possible to identify whether a particular structure is serving as a "surface impoundment" or a "landfill" at any given time. The two categories are mutually exclusive under the definitions. As the Agency stated in its pre-filed answers to the Board's pre-filed question 15(c) (submitted as Exhibit 5 in this proceeding) (emphasis added):

15(b): Please clarify whether CCW surface impoundments operating under Part 815 are subject to all operating, closure and postclosure care requirements under 35 Ill. Adm. Code 811, 813, and 814. If not, please identify the specific requirement under those Parts that apply to the CCW surface impoundments. Also, please comment on whether the CCW surface impoundments operating under Part 815 are subject to all recordkeeping and reporting requirements of that Part.

AGENCY RESPONSE: There are no CCW surface impoundments operating under Part 815. Section 815.101 states that Part 815 applies to exempt landfills. Under Section 810.103, surface impoundments are excluded from the definition of landfills. See 35 Ill. Adm. Code 815.101; 35 Ill. Adm. Code 810.101; 35 Ill. Adm. Code 810.103.

See also from the Agency's response to Question 16 in the same document: "Landfills are not surface impoundments and surface impoundments are not landfills."

**2.1 If any landfills are subject to the proposed part, please provide a list of all landfill facilities in Illinois to which this proposed Part would apply.**

The Environmental Groups are not aware of any landfills that would be subject to the proposed rules.

**3. Under the Environmental Groups' counter proposal, if a site only has a single CCW surface impoundment, must the owner or operator complete a hydrogeologic site characterization, groundwater monitoring plan, and statistical analysis if the CCW surface impoundment is exempt pursuant to proposed Section 841.105(b)?**

There is nothing in the Environmental Groups' proposal that requires the owner of an exempt impoundment from complying with any requirements other than those set out in the Environmental Groups' proposed Section 841.105(c). For an impoundment at a site that is not otherwise required to submit any completed hydrogeologic site characterizations, groundwater monitoring plans, or statistical analyses to the Agency, the owner or operator is required only to "maintain records demonstrating how an exemption in subsection (b) of this Section applies." Proposed Section 841.105(c).

**4. Are exempt CCW surface impoundments required to conduct routine groundwater monitoring under the Environmental Groups' proposal? If so, how frequently, and for which parameters?**

No, exempt CCW impoundments are not required under the proposal to conduct routine groundwater monitoring on any specific timeline.

Under both the Agency's and the Environmental Groups' proposal, to remain exempt, an impoundment that is not being "operated" must not be causing or contributing to exceedences of groundwater quality standards. The Agency's proposal contains no requirement that the owners or operators provide to the Agency or the public any justification that the impoundments are not actually causing or contributing to exceedences of groundwater quality standards, though. The Environmental Groups' proposal includes a recordkeeping requirement that obligates the owner or operator of an impoundment claimed to be exempt to retain records that demonstrate that the exemption applies. If submissions are made to the Agency for other impoundments at the site, those submissions should include a justification for the impoundment's exemption.

**5. In proposed Section 841.105(c), any unit that is exempt from the requirements of this proposed Part must maintain records demonstrating the basis for its exemption. How would this requirement apply to Hutsonville Ash Pond D, which is subject to a sitespecific rulemaking (35 Ill. Adm. Code 840)?**

In the case of Hutsonville Ash Pond D, the basis for its exemption is clear-cut. As a practical matter, the owner/operator of Hutsonville Ash Pond D already will be retaining records about the impoundment and its obligations under 35 Ill. Adm. Code 840, so this

requirement would not impose any new recordkeeping requirements related to that impoundment.

It would be acceptable to the Environmental Groups to modify their proposed section 841.105(c) to begin:

A unit that is otherwise exempt from the requirements of this Part under the operation of subsections (b)(2), (3), and/or (4) of this Section . . . . ,

and for the second sentence to begin:

Justification for an exemption under subsections (b)(2), (3), and/or (4) of this Section . . . .

Please see the redlined proposal attached as Exhibit A.

**6. Please explain the purpose and effect of the Environmental Groups' proposed revisions to the definition of surface impoundment.**

The Environmental Groups amended the definition to more closely track the existing definition of "surface impoundment" in 35 Ill. Adm. Code 615.102. The Environmental Groups further proposed to add the language "and/or transfer" to the definition. The Environmental Groups' intent in proposing that additional language was to account for unlined conveyance ditches, trenches, or other conveyance systems in which CCW is transferred into coal ash pits. The Environmental Groups are concerned about the impact such facilities have on groundwater quality, but have determined that this rulemaking proceeding is not the best forum for addressing those issues. In the redlined proposal attached as Exhibit A, the Environmental Groups have withdrawn the "or transfer" language.

**6.1 Why was the requirement that a surface impoundment derive its structural integrity from earthen materials deleted?**

The Environmental Groups' deletion of the language "where earthen materials provide structural support" is consistent with the language in 35 Ill. Adm. Code 615.102 and 35 Ill. Adm. Code 810.103. The Environmental Groups will consider any language proposed by the Agency in response to Question 2 from the Board's pre-filed Questions of June 11, 2014.

**6.2 Do the Environmental Groups intend tanks, piping or leachate collection systems to be included in the definition of surface impoundment?**

No.

**6.3 Would a ditch or drainage conveyance system that transfers wastewater be considered a surface impoundment under the Environmental Groups' proposal?**

No.

**7. Please explain the purpose and effect of the definition of "operate."**

The purpose of the definition of "operate" is to provide a definition to a term that is undefined in the Agency's proposal. The effect is summarized in Question 7.1, below.

**7.1 Does the proposed definition of "operate" expand the scope of the rule to include any surface impoundment containing CCW or leachate from CCW that is open to the atmosphere? If not, what is meant by "receiving stormwater as direct precipitation"?**

Yes.

**7.2 Why do the Environmental Groups consider rain falling as direct precipitation to be a waste?**

The Environmental Groups do not consider rain that is falling as direct precipitation to be waste.

**7.3 Are you aware of any other regulations, state or federal, where operate is defined as any unit as open to the atmosphere.**

Yes, 35 Ill. Adm. Code 810.103 (emphasis added) provides:

"Operator" means the person responsible for the operation and maintenance of a solid waste disposal facility.

*"Disposal" means the discharge, deposit, injection, dumping, spilling, leaking or placing of any solid waste into or on any land or water or into any well such that solid waste or any constituent of the solid waste may enter the environment by being emitted into the air or discharged into any waters, including groundwater. [415 ILCS 5/3.185] If the solid waste is accumulated and not confined or contained to prevent its entry into the environment, or there is no certain plan for its disposal elsewhere, such accumulation will constitute disposal.*

Therefore, under the Board's regulations, a person may "operate" a waste disposal facility where solid waste has been accumulated and there is no certain plan for its disposal elsewhere.

## MONITORING

### 8. What are water fluxes as it relates to groundwater and surface water interaction?

A water flux is a transfer of some volume of water from the groundwater to surface water, or from surface water to groundwater.

### 9. Are modeling and monitoring well networks two of the methods to assess flux between surface water and groundwater described in “Field Techniques for Estimating Water Fluxes Between Surface Water and Ground Water” Techniques and Methods 4-D2 (2008), which you have proposed to incorporate by reference?

Yes.

#### 9.1 Are monitoring and modeling required by the Agency's proposal?

Monitoring and modeling are required generally by some provisions of the Agency's proposed rule, but not specifically of water fluxes. Groundwater monitoring is required by proposed Section 841.215, consistent with an approved groundwater monitoring plan under proposed Section 841.210. Contaminant transport modeling is required under proposed Section 841.235(c)(2).

### 10. Please describe the method of obtaining the best sample of water from the hyporheic zone.

Please refer to the U.S. EPA Region IV guidance document proposed to be incorporated by reference in the rules (“Operating Procedure – Pore Water Sampling”). Also, please see Environment Agency, *The Hyporheic Handbook - A Handbook on the Groundwater-Surface Water Interface and Hyporheic Zone for Environment Managers* (2009), attached as an exhibit to Keir Soderberg's prefiled testimony. See also Washington State Department of Ecology, *High-resolution Porewater Sampling Near the Groundwater/Surface Water Interface* (Apr. 2009), attached hereto as Exhibit B.

EPA Region IV provides guidance on the use of a simple portable pore water sampler that could be used either by wading into a stream or from a boat in up to 10 feet of water. If wading into the stream, care must be taken not to disturb the sediments. With either a portable or static sampler, a peristaltic pump would be the preferred type of pump to minimize carryover between samples. In redox-sensitive situations, purging the sample container with inert gas is recommended prior to collection. A limited purging procedure is also described in the EPA Region IV guidance document.

The best sampling method can depend on field conditions and the question being asked. For example, if determining redox-sensitive or pH-sensitive speciation of dissolved constituents will be important to answering the question, then passive diffusion samplers may not provide all of the necessary information. In most cases, though, a multi-level pore water sampler would be expected to provide good quality samples for both bulk



parameters such as pH as well as specific dissolved constituents such as dissolved iron. These samplers can provide, at the same time, information on the vertical hydraulic gradient within the sediments.

**10.1 How does one prevent cross-contamination with surface water when collecting a sample from the hyporheic zone?**

The EPA Region IV guidance describes a pore water sampler with a wide flat metal disc that sits on the sediment surface to help prevent leakage of surface water down to the sampling location. See also the Environmental Groups' answer to Question 10.2, below.

**10.2 How does one know whether cross contamination with surface water has occurred?**

Cross-contamination can be a concern, but there are techniques available to address it. See, for example, U.S. EPA Region IV, "Operating Procedure – Pore Water Sampling". See also Washington State Department of Ecology, *High-resolution Porewater Sampling Near the Groundwater/Surface Water Interface* (Apr. 2009), at 15-17. Depending on conditions of the pore water and surface water, temperature, pH, dissolved oxygen, and electrical conductivity can be good indicators of cross-contamination. Sequential sampling during purging can also give an indication of changing conditions due to cross-contamination.

**10.3 Has anyone testifying on behalf of the Environmental Groups sampled pore water in the hypohreic zone?**

No. Keir Soderberg has reviewed data from pore water sampling conducted as part of projects he has worked on, but he has not sampled pore water in the hyporheic zone himself.

**10.4 In cases where an engineered barrier is present, and groundwater monitoring shows no exceedence of a groundwater quality standard, what is the purpose of hyporheic monitoring?**

The Environmental Groups' proposed Section 841.205(c)(6) (emphasis added) would require the installation of a groundwater monitoring system sufficient to "establish the hydraulic gradient between the unit and any nearby surface water . . . ." As discussed in response to the Agency's Questions 14-16, below, the Environmental Groups intend "nearby" to refer to any surface water that could be impacted by groundwater contaminated by the unit. If a long-lasting engineering barrier is in place that would prevent any groundwater that might be contaminated by the unit from entering the surface water, then it would be reasonable for the Agency to conclude that the surface water is not "nearby" for the purposes of these proposed rules.

The Environmental Groups propose the following definition of "nearby" for proposed Section 841.110:

“Nearby” means that the surface water or pumping well could be impacted by groundwater contaminated by the unit.

The Environmental Groups also propose a modification to proposed Section 841.205(c)(6). The Environmental Groups’ primary intent in proposing this new section is to make sure that the groundwater monitoring system is sufficient to establish the hydraulic gradient between the unit and any “nearby” surface water. If the owner or operator proposes in its groundwater monitoring plan that existing or planned monitoring wells are sufficient to establish the hydraulic gradient between the unit and any “nearby” surface water, and the Agency agrees, the Environmental Groups do not intend that it should be required that new monitoring points be installed or identified. (“Installed,” in the case of hyporheic monitoring through installed piezometers, or “identified,” in the case of sampling conducted by portable instruments.) Therefore, the Environmental Groups propose the following language:

- 6) establish the hydraulic gradient between the unit and nearby surface water, including as necessary the installation and/or identification of monitoring points for measuring water levels and collecting water samples from multiple depths within the hyporheic zone where exchange between groundwater and surface water occurs.

**11. Can the Agency request additional information from an owner or operator regarding a plan submitted for review under its proposal?**

Under the Agency’s proposed Section 841.500, there is no explicit mechanism allowing the Agency to request additional information from an owner or operator regarding a plan submitted for review.

**12. Would a requirement for an owner or operator to complete contaminant transport modeling when doing a corrective action or prior to closure be a reasonable substitute for a hyporheic zone monitoring?**

No, not in all cases.

**12.1. If no, please explain why.**

Hyporheic zone monitoring is the most direct evidence of chemical constituents in sediment pore water as well as the vertical hydraulic gradient. Modeling can supplement and potentially make use of these measurements to provide a broader spatial and temporal view of the situation. They are related.

There are situations when modeling would be a reasonable substitute for monitoring: where there is no interaction or no discharge from groundwater to surface water. Another example is where a stream is a losing stream: losing water from the bottom of the stream to the ground water (where the water table is far below the stream bottom). It is possible to show that, and if shown, there would be no need for hyporheic zone monitoring. In

that case, the surface water would not be a “nearby” surface water, under the Environmental Groups’ proposed rule.

If modeling shows that there is a going to be an interaction, though, then the Environmental Groups urge that hyporheic zone monitoring is needed.

**13. Do any units that would be subject to the Environmental Groups’ proposal currently have groundwater monitoring systems that are equipped to determine the potential for any release of a contaminant to surface water?**

The Environmental Groups do not know if any CCW impoundments in the State have groundwater monitoring systems that are equipped to determine the potential for any release of a contaminant to surface water.

**13.1 If so, what units are so equipped?**

The Environmental Groups are not aware of which units are so equipped.

**13.2 If not, have the Environmental Groups conducted an economic analysis to determine the costs of including such a requirement? If the Environmental Groups have conducted such an analysis, could it provide that analysis?**

The Environmental Groups have not conducted an analysis of the overall cost. Dr. Soderberg testified that piezometers are “typically quite inexpensive to install.” (May 14, 2014 Trans. at 255-56). Costs will vary depending on the site conditions and the type of monitoring approved by the Agency.

**14. In the Environmental Groups’ proposed Section 841.200(c)(4), an owner or operator must identify all down gradient or downstream community water supplies. What distance downstream or down gradient is intended here?**

As an initial point, the Agency first proposed in its March 25, 2014 redlined proposal that Sections 841.200(c)(3) and (c)(4) require the identification of “nearby” surface water bodies and pumping wells. The Environmental Groups’ added language in proposed Section 841.200(c)(4), “down gradient and downstream community water supplies,” is meant to provide a nonexclusive example of “pumping wells.”

The concept of a “nearby surface water and groundwater” is already used in the Board’s regulations at 35 Ill. Adm. Code 731.166, concerning the Agency’s consideration of corrective action plans for underground storage tanks.

As discussed above in their answer to Question 10.4, above, the Environmental Groups propose that “nearby” should mean any surface water body or pumping well that could be impacted by the unit.

- 15. In the Environmental Groups' proposed Section 841.200(c)(3), an owner or operator must identify nearby surface water bodies and down gradient hyporheic zones. What is meant by "nearby"?**

The term "nearby," again, is the Agency's proposed language, so the Environmental Groups cannot explain what the Agency meant by "nearby." As discussed above in their answer to Question 10.4, above, the Environmental Groups propose that "nearby" should mean any surface water body or pumping well that could be impacted by the unit.

- 16. In the Environmental Groups' proposed Section 841.200(c)(5), an owner or operator must identify any potential hydrologic connection between the unit and nearby surface water bodies and pumping wells. What is meant by "nearby"?**

As discussed above in their answer to Question 10.4, above, the Environmental Groups propose that "nearby" should mean any surface water body or pumping well that could be impacted by the unit.

- 16.1 What is meant by "any potential hydrologic connection"?**

Ideally, "any potential hydrologic connection" means any hydrologic connection. The term "potential" is meant to take into account the possibility that the existence of a connection may not yet have been fully established.

- 16.2 Must the hydrologic connection be significant?**

The term "any hydraulic connections with underground sources of drinking water" is used in 35 Ill. Adm. Code 730.107 as a factor for the Agency to consider when determining corrective action related to underground injection. In that regulation, no particular degree of significance is required.

Similarly to the definition of "nearby," the Environmental Groups interpret "any potential hydrologic connection" to mean that, if a unit could not impact the surface water body or pumping well, there is not a hydrologic connection for purposes of this rule.

- 16.3 Can the Environmental Groups identify a specific hydraulic conductivity which quantifies what is meant by "hydrologic connection"?**

No. Citing again to 35 Ill. Adm. Code 730.107, there is no specific degree of hydraulic conductivity that is required under that regulation for there to be a "hydraulic connection." Instead, the Environmental Groups submit that what is important is the significance of a potential impact on a receiving surface water body or pumping well. Hydraulic conductivity is only one parameter necessary for describing the transport of chemical constituents along these pathways. Other parameters include the hydraulic gradient and transport properties specific to the chemical constituent. It should be noted that these chemical-specific properties, as well as the vertical and horizontal hydraulic

conductivities, are likely to be variable within the subsurface—as opposed to an engineered barrier, for example, where specifying a hydraulic conductivity is appropriate.

**16.4 Is it possible that engineered barriers such as a liner would sever any hydrologic connection between a unit and surface water body?**

Yes, it is possible that an engineered barrier can sever any hydrologic connection between a unit and surface water body, at least during the time the barrier remains intact, in place, and adequate to actually slow contamination. The Agency has testified earlier in this proceeding that it suspected that the liners at some Midwest Generation impoundments were, in fact, incapable of severing the connection between the impoundment and groundwater.

**17. Proposed Section 841.210(b)(3)(B)(i) requires each groundwater monitoring plan to include "the date or anticipated date of the installation of any pollution control technology that affected, or will affect the type or composition of coal combustion waste received by the unit." Please explain how the Agency can adequately review a plan that requires an owner or operator to speculate as to the nature and timing of future regulations, the technology that might be required and the impact the technology may have on CCW characteristics?**

The Agency's proposed language in Question 17.1 is acceptable to the Environmental Groups.

**17.1 Would the following be a better approach?**

\* \* \*

The Agency's proposed language is acceptable to the Environmental Groups.

**18. Please explain why the owner or operator should not supply the Agency with an explanation of the sample size, sample procedure and statistical method for compliance monitoring? See proposed changes to Section 841.210(b)(7).**

With respect to both this proposed modification and a proposed modification to Section 841.225(a), the Environmental Groups' intent was to replace "compliance monitoring" and "assessment monitoring" with simply "monitoring," because the terms "compliance monitoring" and "assessment monitoring" are not defined in the Agency's proposed rules. In the case of Section 841.210(b)(7), the Environmental Groups inadvertently removed both uses of the word "monitoring." The Environmental Groups' corrected redlined proposal reads:

- 7) An explanation of sample size, sample procedure and statistical method used to determine background concentrations and the potentiometric surface, and to conduct monitoring.

**CORRECTIVE ACTION:**

- 19. Please list any other regulatory program, state or federal, that requires closure when there has been a release from a surface impoundment or landfill causing groundwater contamination and does not allow corrective action to achieve compliance.**

The intent of the Environmental Groups' proposed revision is to address what the Environmental Groups see as a central weakness of the Agency's proposal: the lack of requirements to close unlined and inadequately lined CCW impoundments that are causing groundwater contamination. The Agency has previously testified that, with one potential exception identified by the Environmental Groups (relating to Midwest Generation's impoundments), all groundwater quality exceedences from CCW impoundments are being caused by unlined impoundments.

The purpose of the Environmental Groups' proposed modifications on corrective action is to address this weakness by requiring the timely closure of unlined and inadequately lined impoundments that are causing groundwater contamination. U.S. EPA's proposed standards allow for corrective action—which U.S. EPA contemplates could include closure—but it also proposes to require that unlined and inadequately lined impoundments be phased out through the design standards. Another example is from the Board's adoption of landfill regulations in 1990. Existing landfills that could not meet minimum safety requirements—including a requirement of a leachate collection system—were required to close by a date certain.

The Agency has proposed no similar design standards to phase out unlined or inadequately lined CCW impoundments, even those that have been documented to contaminate groundwater. Therefore, the Environmental Groups have proposed revisions to the corrective action program that will require the closure of such impoundments.

- 20. Please explain the purpose of the corrective action process when closure must be initiated after a confirmed exceedence of the groundwater quality standards pursuant to the Environmental Groups' proposed Section 841.300.**

The purpose of corrective action is to address groundwater contamination. Closure—a form of “source removal”—is one type of corrective action and may be a sufficient corrective action. Further corrective action could be necessary to address existing groundwater contamination, though. For example, the Hutsonville site-specific rule requires a groundwater collection trench in addition to closure. As provided in the Environmental Groups' proposed Section 841.410, “as appropriate, the owner or operator may submit a combined corrective action and closure plan.”

- 21. Can a CCW surface impoundment achieve compliance with the groundwater quality standards through corrective action alone?**

In Illinois, there is apparently only one example of corrective action actually achieving compliance with groundwater quality standards. At the Dynegy Midwest Generation

Havana Station, a GMZ was established for some CCW impoundments. According to the Agency's October 2011 Ash Impoundment Strategy Report, "groundwater at the site has returned to compliance with the applicable numerical groundwater standards." See <http://www.epa.state.il.us/water/ash-impoundment/documents/ash-impoundment-progress-102511.pdf> at 7. However, this appears to be the only case in which a CCW surface impoundment in Illinois has achieved compliance with groundwater quality standards.

**21.1 In cases where compliance with the groundwater quality standards can be obtained through corrective action, why do the Environmental Groups propose mandatory closure when a release attributable to the CCW surface impoundment has caused an exceedence of the groundwater quality standards?**

The Environmental Groups do not agree that "compliance with the groundwater quality standards" typically can be obtained in a timely fashion through the Agency's usual version of "corrective action," as evidenced by the fact that only one GMZ for a CCW impoundment in the State has resulted in compliance to date. Closure of the impoundments—a form of source removal—is a much more effective form of corrective action than the corrective allowed, for example, at the Hennepin Plant cited in Ms. Barkley's testimony.

**21.2 Do you agree that the groundwater quality standards are established at concentrations that are protective of human health and the environment?**

As a general matter, yes.

**21.3 If a corrective action results boron concentrations equal to groundwater quality standard, 2 milligrams per liter (mg/l) (the most mobile contaminant in groundwater), is it likely that the other chemical constituents will be reduced?**

Yes, a decreasing trend in boron concentration can be an indication that the concentrations of other chemical constituents from a unit will decrease. However, such a trend could also result from the passing of a peak boron concentration due to a single release or intermittent releases from a unit. In this case, less mobile constituents could subsequently have increases in concentration as their respective peaks occur at this monitoring point.

**21.4 Is it true that the Class I groundwater quality standard for boron is more stringent than the chronic general use surface water quality standard for boron?**

Yes.

- 22. If closure is required when there is an exceedence of the groundwater quality standards, why do the Environmental Groups require an assessment of all the possible corrective actions in proposed Section 841.310(e)(5)?**

Please see the Environmental Groups' answer to the Agency's Question 20, above.

- 22.1 Is it the Environmental Groups' expectation that some corrective actions will achieve groundwater quality standards, and therefore closure is not required?**

It is a possibility that corrective action could achieve groundwater quality standards at a facility. The Environmental Groups' proposed rule requires that CCW impoundments should be closed within five years if any previous attempts at corrective action have proven to be ineffective in attaining compliance, though. If, through whatever selected method, corrective action is effective in ending the exceedence of the numerical groundwater quality standard for four straight quarters, then closure would not be required.

- 22.2 Should the Agency review corrective action alternatives that an owner or operator has determined will not be successful in achieving compliance? If so, please explain why.**

No.

- 23. What standard is used to determine the extent to which a corrective action protects human health and the environment?**

As discussed at the hearing, 35 Ill. Adm. Code 811.325 relates to the selection of corrective action for municipal solid waste landfills. This Section sets forth a list of requirements for corrective action at municipal solid waste landfills. One requirement is that the selected remedies must be "protective of human health and the environment." The factors that must be considered in determining whether a remedy is "protective of human health and the environment," as set out in 35 Ill. Adm. Code 811.325(c), similarly should be considered in approving corrective action under these proposed rules.

**ALTERNATIVE CAUSE DEMONSTRATION:**

- 24. Do the Environmental Groups propose requiring an owner or operator of a CCW surface impoundment to identify the specific cause of contamination even if that cause is offsite?**

No. This question does not reflect the language of the Environmental Groups' proposal. The exact language from the Environmental Groups' proposed Section 841.305(a) is that:

In order to demonstrate an alternative cause, the report must describe and justify a specific cause, with documentation that establishes the existence of the asserted error, natural cause, or alternate contamination source.



In order to meet this standard, the report “must describe and justify a specific cause,” including an asserted error, natural cause, or alternate contamination source. There is no requirement that the report “identify the specific cause of contamination.” Rather, if the owner or operator claims that an exceedance is due to an offsite contamination source (or sources), then the owner or operator should supply the documentation available to it that supports its theory. This does not require the owner or operator to “identify” or “prove” that any specific source is responsible for contamination to any level of certainty—just “describe” and “justify” the claimed “alternative cause.”

**24.1 If yes, please explain the legal authority of an owner or operator to conduct investigations on property owned by another.**

There is no requirement under the Environmental Groups’ proposed rule that an owner or operator conduct a physical on-site investigation to “describe” and “justify” an alternative cause.

**24.2 If the owner or operator of a CCW surface impoundment was denied access to an offsite property and, as a result, was unable to identify the specific alternative contamination source, would the owner or operator be unable to make an alternative cause demonstration?**

No. Again, there is no requirement to “identify” the specific alternative contamination source, just to “describe and justify” the claimed alternative cause. Publicly available records can establish the historic uses of nearby properties. If the owner or operator claims that an alternative cause is contamination from an offsite operation, then the owner or operator should state, for example, what offsite operation (or operations) are claimed could have caused the contamination.

**24.3 Under the facts described in question 24.2, would the owner or operator be required to close the CCW surface impoundment under the Environmental Groups’ proposal?**

No. Please see the Environmental Groups’ answer to Question 24.2.

As another option for the sentence proposed above (“In order to demonstrate an alternative cause, the report must describe and justify a specific cause, with documentation that establishes the existence of the asserted error, natural cause, or alternate contamination source.”), the Environmental Groups propose that the Board might also look to its regulations applicable to new solid waste landfills. These regulations require that an owner or operator that seeks to make an “alternative source demonstration” for a monitored increase of a constituent “must demonstrate a source other than the facility and provide the rationale used in such a determination.” 35 Ill. Adm. Code 811.319(a)(4)(B)(iii) (emphasis added). The Environmental Groups prefer the sentence proposed above, but also would support adding the following language to proposed Section 841.305(a):

- a) In making such demonstration, the owner or operator shall submit a report to the Agency that demonstrates an alternative cause **and provides the rationale used in such a determination** within 180 days after the date of submission of the confirmation samples pursuant to Section 841.300 of this Part.

**25. If two CCW surface impoundments up-gradient from a compliance point each have a release of the same contaminant, is it possible, in all cases, to determine which CCW surface impoundment caused an exceedence of the groundwater quality standards at the compliance point?**

No, not in all cases.

**25.1 If it is not possible to determine which unit caused the exceedence, would both CCW surface impoundments have to close under the Environmental Groups' proposal?**

Not necessarily. The Environmental Groups' proposed Section 841.300 requires corrective action for and closure of all units, releases from which have caused an exceedence of a groundwater quality standard. Proposed Section 841.305 allows an alternative cause demonstration under which the owner or operator may seek to "demonstrate that an exceedence of a groundwater quality standard confirmed at a compliance point is not attributable to a release from a unit." In the Agency's hypothetical scenario in Question 25, the owner or operator could present evidence to the Agency that the exceedence was not attributable to either of the units. If there is evidence that either of the units is not causing the exceedence, then the Agency may accept an alternative cause demonstration for one or both of the units. If the Agency does not approve an alternative cause demonstration, though, then the exceedence would be attributable to both units, and corrective action for, and closure of, both units would be required.

**26. Is it possible for naturally occurring concentrations in groundwater to increase naturally?**

Yes. A statistically significant change in natural conditions is possible but unlikely if the background distribution has been well established. Such changes could occur due to drought/wet cycles that could occur across several years. However, background is not necessarily natural, but rather describes historical conditions that may include contamination from off-site or prior operations on the site. U.S. EPA's 2009 Unified Guidance provides procedures for detecting trends in background data and how to conduct background comparisons in such cases.

**26.1 Is it possible the natural increase could occur after the background concentration has been established?**

Yes.

**26.2 If the background concentration for a particular contaminant has been established at levels lower than the groundwater quality standards, should an owner or operator be precluded from showing any future exceedence of the numeric groundwater quality standards listed in Part 620.Subpart D is from natural causes?**

No.

**26.3 If the Environmental Groups' answer to question 26.1 is yes, please explain.**

n/a

**26.4 If the Environmental Groups' answer to question 26.1 is no, please explain how the Illinois EPA's proposal regarding alternative cause demonstration "directly contradicts" the groundwater quality standards, as stated on page 18 of the Environmental Groups' Post Hearing Comments, filed June 9, 2014.**

The Environmental Groups' statement reflects an exchange between the Agency and Keir Soderberg at the Board's May 15, 2014 hearing (See May 15, 2014 Trans. at 33, line 9 to 34, line 16.). The Agency questioned Dr. Soderberg's testimony that data from the statewide groundwater quality network could be useful in assessing alternative cause demonstrations. The Agency ended with the question, "But correct me if I'm wrong. If it is naturally occurring, it wouldn't be above the standards, is that correct?" (*Id.* at 34, line 11-13).

Based on this exchange, it is the Environmental Groups' understanding that the Agency is taking the position that, if the concentration of a chemical constituent is elevated due to natural causes, then there is no exceedence of the groundwater quality standards in Part 620, Subpart D. If there is no exceedence of a groundwater quality standard, no alternative cause demonstration is required under proposed Section 841.305.

In the Environmental Groups' view, this position would be problematic because one of the potential alternative causes that an owner or operator is required to demonstrate under proposed Section 841.305 is "natural causes." If an owner or operator could assert that there is no exceedence of groundwater quality standards because natural causes have increased the applicable standard at the site, then "natural causes" would be written out of the "alternative cause" section.

At the June 19, 2014 hearing, the Environmental Groups proposed the following addition to Section 841.300 to clarify that:

For purposes of this Section, concentrations of chemical constituents due to natural causes are not considered in determining the applicable groundwater standard.

27. **Is an alternative cause demonstration required when a constituent has a statistically significant increase, but does not exceed the numerical groundwater quality standard?**

An alternative cause demonstration is allowed under proposed Section 841.235(c)(1) in the event of a statistically significant increase.

28. **Is it true that the monitoring conducted from a high production community water supply well can mask groundwater chemical constituent levels?**

Yes, in certain situations.

29. **Are the Environmental Groups aware that the numerical groundwater quality standards, which apply except due to natural causes, for Total Dissolved Solids (TDS) and Sulfates are based on the statewide background data collected from the Illinois EPA's ambient network of community water supply (CWS) wells?**

No.

30. **If the natural occurring level of TDS and Sulfate at a site is below the respective numerical groundwater quality standards in Part 620, how would the Environmental Groups envision that the state wide background data collected from the ambient network of CWS wells be used to compare to naturally occurring background?**

In that particular hypothetical situation, data from the statewide groundwater quality network would not be useful. The Environmental Groups stress that nothing in their proposed rules would require the Agency to consider background data collected from the statewide groundwater quality network in any way. Dr. Soderberg has suggested that it could be useful to compare site-specific monitoring results with data from the statewide groundwater quality network in the absence of a site-specific background statistic that is compliant with the 2009 U.S. EPA Unified Guidance. Again, though, this comparison is not required in the Environmental Groups' proposed rules.

Dr. Soderberg's view is supported by the Illinois Groundwater Protection Act. 415 ILCS 55/7 provides that one of the purposes of the statewide monitoring well network is "to help identify the need for corrective action." Along these lines, Dr. Soderberg has simply identified data from the statewide groundwater quality network as useful information for the Agency to consider.

**COMPLIANCE PERIOD:**

31. **If all closure plans and post closure plans for existing CCW surface impoundments are submitted within one year of the effective date of the rule, should the Agency be afforded more time to review these additional documents?**

The Agency is the best authority on the amount of resources that it has to review closure and post-closure care plans. If the Agency needs more time to review closure and post-

closure plans upon the initial adoption of the Environmental Group's proposed rule, the Environmental Groups support allowing such time as the Agency reasonably requires.

**31.1 Have the Environmental Groups considered the impact to the Agency in reviewing and public noticing closure plans and post closure plans for all CCW surface impoundments, when these plans are submitted simultaneously within one year of the effective date of the proposed rule?**

Yes. Please see the Environmental Groups' answer to the Agency's Question 31, above.

**32. When must new facilities submit a closure plan?**

A new facility must submit a closure plan on or before first receiving CCW or leachate from CCW. Please see the Environmental Groups' proposed Sections 841.130(a) and 841.410.

**32.1 Where does the rule proposed by the Environmental Groups reflect this requirement?**

The Environmental Groups' proposed Section 841.410 requires the owner or operator of "any unit" to submit a closure plan. Under proposed Section 841.130(a), the compliance period for a new impoundment begins when the impoundment first receives CCW or leachate from CCW.

**33. If circumstances at the facility change and modifications to the closure plan or post closure plan are needed, would the Agency need to review the closure plan or post closure plan again?**

Yes.

**34. How many times do the Environmental Groups anticipate the Agency must review the closure plan before a facility actually commences closure?**

The number of times that an owner or operator would resubmit a closure plan to the Agency for review would vary significantly on a site-by-site basis.

**34.1 Can the Environmental Groups provide an estimate of how long an existing CCW surface impoundment will remain operating after the approval of the closure plan?**

No, the amount of time any impoundment would remain open after the approval of the closure plan would vary significantly on a site-by-site basis.

**34.2 Can the Environmental Groups provide an estimate of how long a new CCW surface impoundment will remain operating after the approval of the closure plan?**

No, the amount of time any impoundment would remain open after the approval of the closure plan would vary significantly on a site-by-site basis.

**35. Have the Environmental Groups performed an economic analysis of the impact of requiring all CCW surface impoundments to submit a closure plan within one year of the effective date of the proposed regulations?**

The Environmental Groups note that, under the proposed rules, every impoundment subject to the rules eventually will need to have a closure plan in order to close. The impact of requiring such plans within one year of the effective date of the proposed regulations would be limited to the time-value of the cost of the plan, between the deadline and the time at which the plan would have been needed to be produced under the Agency's proposed regulations.

**SURFACE IMPOUNDMENT CLOSURE:**

**36. What is the economic impact of mandating closure for all units that have caused an exceedence of the groundwater quality standards at a compliance point?**

The economic impact would be no greater than under U.S. EPA's proposed rule, which would require all unlined and inadequately lined impoundments to be closed within five years. Please see U.S. EPA's Regulatory Impact Analysis and Appendix attached as Exhibits A and B to the Environmental Groups' Answers to the Board's June 11, 2014 Questions.

**37. Does U.S. EPA's proposal for CCW surface impoundments contain a presumption that the surface impoundment be closed by removal?**

No.

**37.1 Please identify other state regulatory programs containing a presumption that CCW surface impoundments will be closed by removal when there is an exceedence of the applicable groundwater quality standard?**

Please see CAL. CODE REGS. tit. 27, § 21400 (2014) (relating to surface impoundments, in general).

**38. Under the Environmental Groups' proposal, would an owner or operator be required to close its CCW surface impoundment by removal of all coal ash if removal of coal ash and closure by some other means are equally protective of human health and the environment?**

No.

39. **On page 2 of the Environmental Groups' Post Hearing Comments, the following statement is made: "If the Agency concludes in a particular case that closure by removal is technically feasible and would clearly afford more protection to human health and the environment, then closure should be by removal." Is the standard by which the Agency must evaluate closure plans whether a particular plan "clearly affords more protection"?**

No. The proposed standard is "greater protection of human health and the environment." See proposed Section 841.400(b).

- 39.1 **If yes, please explain how the Agency should implement this standard?**

n/a

- 39.2 **If no, please explain the appropriate standard by which the Agency will determine whether one closure plan is more protective of human health and the environment than another closure plan?**

As discussed at the hearing, 35 Ill. Adm. Code 811.325 relates to the selection of corrective action for municipal solid waste landfills. This Section sets forth a list of requirements for corrective action at municipal solid waste landfills. One requirement is that the selected remedies must be "protective of human health and the environment." The factors that must be considered in determining whether a remedy is "protective of human health and the environment," as set out in 35 Ill. Adm. Code 811.325(c), should similarly be considered under the Environmental Groups' proposed Section 841.400(b). If one form of closure is deemed by the Agency as not protective of human health and the environment under that analysis, but a second form of closure is deemed protective of human health and the environment, then the second form of closure is more protective of human health and the environment. If both forms of closure are deemed equally protective of human health and the environment, then they are equally protective.

40. **On page 4 of the Environmental Groups' Post Hearing Comments, the following statement is made: "Closure by removal is increasingly employed in other states as a safe and economical method of dealing with CCW impoundments. For example, Santee Cooper, a South Carolina utility, agreed in November 2013 to remove 1.3 million tons of coal ash from ponds at its Grainger plant in Conway, South Carolina, through a plan that a Santee Cooper executive described as "cost-effective". Steve Jones, Santee Cooper to empty Grainger ash ponds in Conway, Myrtle Beach Sun News (Nov. 19, 2013), available at <http://www.myrtlebeachonline.com/2013/11/19/3849209/santee-cooper-toempty-grainger.html>. Large-scale removal of coal combustion waste presents difficulties, but is far from impossible." How long will it take to remove 1.3 million tons of coal ash from the impoundments?**

The consent decree between several environmental groups and the South Carolina Public Service Authority ("Santee Cooper") referenced in this question, and entered as Exhibit

56 in this proceeding, requires that removal be complete in no more than 10 years (*i.e.*, by the end of 2023).

- 40.1 In the above cited article, the owner of the utility is quoted as follows: "It is cost effective, which means it is responsive to our customers' best interest." What are the specific facts that support the utility's statement that removal of 1.3 million tons of coal ash is cost effective?**

Please see the article, *Santee Cooper's recycling efforts at Myrtle Beach-area electric plant a win for utility and environmentalists*, entered as Exhibit 45 in this proceeding, for further explanation of the utility's position on the cost effectiveness of closure by removal.

- 40.2 Isn't it true that the same article also indicates that a contract for a new \$40,000,000 recycling facility is being built?**

Yes.

- 40.3 Is it also true that this recycling facility is located only 36 miles away?**

The Environmental Groups are not aware of the exact distance between the plant and the new recycling center.

- 40.4 Even though this recycling plant is only located 36 miles away, is it true that it will take 10-15 years to remove 1.3 million tons of coal ash from the Grainger electric generating plant?**

No.

- 40.5 Is it true that the down gradient monitoring wells at Grainger plant in Conway, South Carolina ash ponds show exceedences for arsenic?**

Yes.

- 40.6 How many down gradient monitoring wells associated with CCW surface impoundments in Illinois have shown arsenic groundwater standards exceedences?**

The monitoring data attached as Exhibit A to the January 15, 2014 prefiled testimony of Richard Cobb demonstrated the existence of three facilities with associated exceedences of arsenic groundwater quality standards: Meredosia, Pearl, and Powerton. In a FOIA response from the Agency, the Environmental Groups received groundwater monitoring results from Springfield CWLP, Venice and Waukegan that show exceedences of the maximum contaminant level ("MCL") for arsenic.



- 40.7 The Santee Cooper article states: “The settlement agreement says that Santee Cooper shall continue to monitor the area for contamination during the removal process and report its findings every six months to the S.C. Department of Health and Environmental Control and lawyers representing the environmental groups. The groups have agreed not only to dismiss the current lawsuits but also bar any future litigation even if future findings change the current picture of contamination to the groundwater or river.” Is it possible that contamination levels could get worse in the groundwater and surface water while removal is occurring?**

Yes, that possibility is addressed on page 4, paragraph 1(k), of the consent decree entered as Exhibit 56 in this proceeding.

- 41. On page 6 of the Post Hearing Comments filed by the Environmental Groups the following statement is made: “The Environmental Groups reiterate their position at hearing that, while engineering measures may be available to address the conditions in (b)(3) (mines, voids or other unstable terrain), the long-term concerns posed by the conditions in (b)(1) and (2) preclude engineering solutions.” Please explain why engineering controls should be precluded from surface impoundments in the 100 yr flood plain and the water table?**

Surface impoundments left in the 100 year floodplain and water table will be subject to the continued connection with and weathering effects of water. In these situations, greater protection of human health and the environment will be afforded by removal of CCW than by engineering controls.

- 41.1 Please explain why engineering controls should be precluded in instances when CCW is present in the water table.**

Please see the Environmental Groups’ answer to Question 41, above.

- 41.2 Why is closure by removal preferred by the Environmental Groups over the use of engineering measures to insure structural integrity and compliance with standards?**

Closure by removal permanently removes the direct connection of CCW to water present in the groundwater and floodplain. Especially in a dynamic, ever-changing floodplain, engineering methods to insure structural integrity are near impossible.

- 41.3 How does one determine whether CCW from a particular unit is present in the water table?**

This can be determined using the depth of the CCW unit and the height of the water table based on available historical information from the site and monitoring, if needed.

**41.4 Would Section 841.400(b)(1) be applicable if the CCW in the water table is from a source other than the unit?**

No.

**41.5 For the purposes of the Environmental Groups' proposal, if a wetland has been altered by construction or other industrial activity such that it no longer supports vegetation typically adapted for life in saturated soils, is it still a wetland and the requirements of proposed Section 841.400(b)(2) apply?**

No.

**41.6 Are you aware of any active municipal solid waste landfills constructed over a mine tunnel?**

No.

**42. On page 18 of the Environmental Groups' Post Hearing Comments, the following statements are made: "The Environmental Groups also propose the addition of a requirement that the failure of corrective action to promptly control contamination triggers a requirement of closure. See Ex. 1, Section 841.405(a)(2)(B). The Agency's proposed rule allows continued contamination of groundwater, putting it into conflict with the Illinois Groundwater Protection Act, 415 ILCS 55/2(b), because the Agency's rule lacks provisions to address ongoing contamination from impoundments where there has been an unsuccessful attempt at corrective action. Consequently, the Board should adopt a rule that contains a requirement for closure where the owner operator fails to implement a viable corrective action plan." What do you mean by failure of corrective action? What constitutes a failed corrective action?**

The Environmental Groups' proposal requires closure if a confirmed exceedence of a groundwater quality standard has not been remedied within five years.

**42.1 What do you mean by "promptly"?**

Within five years.

**42.2 On average, how long does it take to cap a surface impoundment?**

It varies on a site-by-site basis, and depends on the size of the impoundment.

**42.3 Can the Environmental Groups describe how removal is prompt in comparison to alternative corrective action or closure measures designed to achieve the Board's groundwater quality standards?**

In terms of corrective action, we have seen that even long-term corrective action plans have not yielded attainment of groundwater quality standards. Closure by removal may take longer than closure by cover but, in the Environmental Groups' view, is more protective overall.

**42.4 How does proposed Section 841.405(a)(2)(B) reflect the above additional requirement?**

Proposed Section 841.405(a)(2)(B) requires closure within five years of a confirmed exceedence, unless corrective action has been effective in attaining compliance with the numerical groundwater quality standards in Part 620 Subpart D. This is adequate time to allow closure by cover. However, five years may not be enough time in all cases to allow closure by removal. The Environmental Groups propose the following addition to proposed Section 841.405(a)(2)(B):

Notwithstanding this requirement, the Agency may allow up to ten years for closure by removal of CCW and leachate in accordance with a closure plan approved by the Agency.

**42.5 What is meant by "viable corrective action plan?"**

A corrective action plan that will result with compliance with groundwater quality standards within five years.

**42.6 What is required under Part 620 when the appropriate groundwater quality standards cannot be achieved?**

35 Ill. Adm. Code 620.450(a)(4)(B) provides as follows:

- 4) After completion of a corrective action as described in Section 620.250(a), the standard for such released chemical constituent is:

\* \* \*

- B) The concentration as determined by groundwater monitoring, if such concentration exceeds the standard for the appropriate class set forth in Section 620.410, 620.420, 620.430, or 620.440 for such constituent, and:

- i) To the extent practicable, the exceedence has been minimized and beneficial use, as appropriate for the class of groundwater, has been returned; and

- ii) Any threat to public health or the environment has been minimized.

**42.7 Can the Environmental Groups explain whether 35 Ill. Adm. Code 620.450(a)(4)(B) is consistent with the Illinois Groundwater Protection Act?**

The Environmental Groups agree that the Board's regulations are consistent with the Act. Our concern is with how groundwater management zones have been applied to CCW impoundments and the ineffectiveness of corrective action.

**43. What facilities in Illinois are permitted to accept CCW that has been removed from a CCW surface impoundment?**

See Illinois EPA, *Coal Combustion Residue Management in Illinois* (Sept. 2010) at 2, available at <http://www.epa.state.il.us/water/ash-impoundment/documents/coal-ash-fact-sheet.pdf> and attached hereto as Exhibit C:

Power plants can determine how to manage their coal ash, but it all must meet the applicable Illinois regulations. The options include: on-site disposal cell (dry); off-site disposal cell (dry); disposal in surface coal mines (dry); disposal in underground coal mines (wet or dry); disposal in special waste landfills (dry); and beneficial reuse.

**43.1 Must the CCW be dewatered before these facilities will accept the CCW?**

Please see the Environmental Groups' answer to Question 43, above.

**43.2 Do you anticipate facilities in Illinois will have to be built to accommodate all the CCW removed from surface impoundments under the Environmental Groups' proposal?**

The Environmental Groups' proposal does not require any specific CCW impoundments to close by removal; therefore, it is not possible at this time to state whether any new facilities would need to be built.

**43.3 Is a CCW surface impoundment still required to close by removal if the existing facilities permitted to accept CCW do not have space available for the CCW?**

Yes, if the owner or operator would be capable of arranging for disposal in new facilities. The Environmental Groups expect that all potential means of disposal be evaluated, including expanding storage capacity both on- and off-site. If an owner or operator is not able to access sufficient storage capacity, whether new or existing, that would mean that closure by removal is technically infeasible and would not be required under Section 841.400(b).

- 44. Have the Environmental Groups conducted an economic analysis of the cost of removing CCW from surface impoundments relative to the cost of closing surface impoundments with CCW left in place? If so, could the Environmental Groups please provide that information.**

Please see the Environmental Groups' answer to the Board's Question 18.

- 45. How long, generally speaking, will it take to close a 60 acre CCW surface impoundment that is 20 feet deep?**

The amount of time required would be a very site-specific determination, dependent on whether closure is by removal or by cover. In the case of removal, the time required for closure would depend upon the pace of removal.

- 45.1 Is it possible to close the above described unit within five years of submission of the groundwater monitoring results confirming an exceedence of the groundwater quality standards? If so, how much CCW must be removed per day?**

Yes, it is possible to close the unit by removing the CCW. Approximately 1,060 cubic yards per day would need to be removed. This is within the realm of possibility. According to Ellicott Dredges, a manufacturer of dredging equipment that has leased equipment to Springfield City Water Light and Power ("CWLP"), CWLP was able to use Ellicott equipment to dredge "over 100,000 cubic yards" of CCW in three months. See Ellicott Dredges, *Coal Plant Uses Ellicott Series 370 Dredge to Produce Four Beneficial Use Materials*, available at [http://www.dredge.com/370dredge/case\\_studies/flyash1.html](http://www.dredge.com/370dredge/case_studies/flyash1.html) and attached hereto as Exhibit D. According to the technical specifications for Ellicott Dredges' 370 HP "Dragon" Dredger, it has a nominal pump capacity range of up to 250 cubic yards per hour. See <http://www.dredge.com/dredge-equipment-models/370HP-Dragon-Dredge.html>, attached hereto as Exhibit E.

- 45.2 What impacts will occur to groundwater during this removal period?**

Dr. Soberberg addressed this line of questioning at the May 15, 2014 hearing, stating that, during removal, "some additional contamination could leach through to the groundwater." (May 15, 2014 Trans. at 72, lines 11-13). This would be a continuation of a process that is already occurring at the impoundment. So long as a CCW impoundment remains open to the atmosphere or without an adequately protective cover system, hydraulic head can cause continuing leaching of chemicals to groundwater. Continued groundwater contamination during the removal process therefore would not be a changing situation but rather a continuation of the status quo.

There are ways to mitigate groundwater contamination during removal. For example, dewatering the impoundment (as required at proposed Section 841.400(c)(1)) at the beginning of the removal process would lower the hydraulic head.

- 45.3 While the removal process is on-going, is the CCW in the impoundments exposed to recharge, and thereby continuing or exelling transport of pollutants to the groundwater?**

Please see the Environmental Groups' answer to Question 45.2, above. Dewatering the impoundment at the beginning of the removal process would lower the hydraulic head.

- 46. On page 2 of the Environmental Groups' Post Hearing Comments, the following statements are made: "It is clear that the State's CCW impoundments will need to be dealt with, and sooner rather than later. Putting in place plans for doing so now, in conjunction with financial assurance designed to ensure that adequate resources are available to carry out the plans, is a much more reasonable way to deal with the impoundments than continuing to deferring the problem. " Isn't it true that removal of all CCW waste may take decades?**

No, the Environmental Groups are not aware of any evidence that removal in any case would take "decades."

- 46.1 Does requiring a unit to undertake corrective action that results in compliance with the groundwater quality standards "defer" the problem of the State's CCW surface impoundments? If so, how?**

Yes. Under the Agency's approach to corrective action, compliance with the numeric groundwater quality standards in Part 620 Subpart D may not be achieved for decades, if ever.

- 47. Can waste stored in landfills be recycled or reused?**

The Environmental Groups are not aware that waste stored in landfills is typically recycled or reused.

- 47.1 Do landfills have multiple ways to close, which could include capping, removal, recycling or reuse?**

Generally, a landfill will close with a final cover system. See, *e.g.*, 35 Ill. Adm. Code 811.314.

- 47.2 Are landfills in Illinois required to close by removal?**

Generally, no, landfills in Illinois are not required to close by removal.

48. **Please define "technically infeasible" as the phrase is used in proposed Section 841.400?**

As used for purposes of proposed Section 841.400, "technically infeasible" means that the owner or operator is incapable of complying with the requirement of closure by removal.

- 48.1 **Would it be technically infeasible if a CCW surface impoundment that is closing by removal is unable to locate a landfill to accept the dewatered CCW, and a new landfill cannot be constructed within the 5 years following the confirmation of a groundwater quality standard exceedence?**

As discussed in the Environmental Groups' answer to Question 42.4, the Environmental Groups propose a modification to proposed Section 841.405(a)(2)(B), under which the Agency would be authorized to allow up to 10 years for closure by removal. If new or existing landfill space is not available within 10 years, then the Agency could consider the lack of availability in assessing technical feasibility, for purposes of this proposed Section 841.400.

49. **Do the Environmental Groups know which CCW surface impoundments in Illinois could close by means other than removal under their proposal?**

No. Under the Environmental Groups' proposal, whether or not a surface impoundment will close by removal would depend upon a site-specific assessment.

50. **The Environmental Groups proposed the following revision to Section 841.405(a)(1)(A): "Category 1 applies where an existing potable water supply well or is impacted by a release attributable to the unit." What is the purpose of this revision?**

The word "or" in the Environmental Groups' proposed language was included inadvertently. It has been removed in the redlined proposal attached hereto as Exhibit A.

51. **The Environmental Groups propose in Section 841.405(a)(1)(C) to require a CCW surface impoundment to close "within two years of the Agency's approval of the closure plan, or within two years of notice that an impact on an existing potable water supply has occurred, whichever occurs later, unless the Agency approves a longer timeline." Please explain the purpose and intent of this language.**

The purpose and intent of this language in proposed Section 841.405(a)(1)(c) is to reflect that, under the Environmental Groups' proposal, a closure plan must be submitted for every impoundment within one year of the effective date of the proposed rule. Under the Environmental Groups' proposal, then, it is possible that there could be an approved closure plan in place for an impoundment before notice that the impoundment is impacting a potable water supply. Therefore, the Environmental Groups have proposed this language to allow the owner or operator two years to close, either from the date the

closure plan was approved, or from the notice of an impact on a potable water supply, whichever date is later.

- 51.1 Do the Environmental Groups intend to require closure of CCW surface impoundments that are near, but did not cause, an impact on an existing potable water supply well?**

No.

- 51.2 If the Board were to adopt this revision, should it be revised to state "...or within two years of notice that a release attributable to the unit caused an impact on an existing potable water supply has occurred. . .?"**

That language is acceptable to the Environmental Groups, though the Environmental Groups suggest striking "has occurred" at the end as unneeded.

- 52. Please explain why the Environmental Groups proposed eliminating the distinction between active and inactive CCW surface impoundments in the Agency's proposed Section 841.405(a)(2), (3) and (4).**

Please see the Environmental Groups' answer to Board's Question 19.

- 53. The Environmental Groups proposes revising Section 841.405(a)(2) to require a CCW surface impoundment with a confirmed exceedence to close "within five years of the Agency's approval of a closure plan, or within five years of the submission of groundwater monitoring results that confirm an exceedence of the applicable groundwater standards, whichever is later. The requirement to close the impoundment following the exceedence is waived if no groundwater quality standard is exceeded for four consecutive quarters following the groundwater monitoring results confirming the exceedence."**

- 53.1 Under the Environmental Groups' proposal, if a CCW surface impoundment with a confirmed exceedence seeks an alternative cause demonstration with which the Agency does not concur, must the owner or operator of that CCW surface impoundment initiate closure within 90 days of the Agency's non-concurrence in accordance with Section 841.305(c)(1)?**

The Environmental Groups clarified their position on this point at the June 18, 2014 hearing. (See June 18, 2014 Trans. at 82, line 6, to 83, line 15.) Proposed clarifying language in Sections 841.300(b)(2) and 841.305(c)(1) is reflected in the Environmental Groups' redlined proposal attached as Exhibit A.

- 53.2 Under the scenario above, could the owner or operator elect not to close in order to obtain four quarters of monitoring data to determine whether it may avoid closure under Section 841.405(a)(2)? If so, what provision in ELPC's proposal would allow this?**



Yes. Please see proposed clarifying language in Sections 841.300(b)(2) and 841.305(c)(1).

- 53.3 If an owner or operator was required to proceed under Section 841.305(c)(1) and initiate closure, could it cease closure and resume operation if, after four quarters, no exceedences of the groundwater quality standards were detected?**

Yes. Please see proposed clarifying language in Sections 841.300(b)(2) and 841.305(c)(1).

- 53.4 If a unit is not required to close if it does not have a release that contributes to an exceedence for four consecutive quarters, why must an owner or operator of a CCW surface impoundment prepare a closure plan within one year of the proposed regulations becoming effective?**

Please see the Environmental Groups' answer to the Board's Question 12.

- 53. Is it the Environmental Groups' intent that all CCW surface impoundments, not already required to close under a shorter schedule pursuant to 841.405(a)(1), be closed within five years?**

No. The Environmental Groups withdraw their striking of introductory language in proposed Section 841.405(a)(1). The Environmental Groups propose the following redlined language in the proposal attached as Exhibit A:

**Section 841.405 Closure Prioritization**

- a) Whenever any applicable groundwater standards under 35 Ill. Adm. Code 620.Subpart D are exceeded, this exceedence is confirmed pursuant to Section 841.300 of this Part, the owner and operator has not made an alternative cause demonstration pursuant to Section 841.305 of this Part, ~~and the owner or operator elects to close the unit(s),~~ the owner or operator shall close the unit according to the following schedule . . . .

- 54. Proposed Section 841.405(a)(2)(B) provides: "The unit shall be closed within five years of the Agency's approval of the closure plan, or within five years from the submission of groundwater monitoring results confirming an exceedence of the applicable groundwater quality standard attributable to a release from the unit at an approved compliance point, whichever occurs later." What is meant by the phrase "applicable groundwater quality standard?"**

This language refers to the phrase "any applicable groundwater standards under 35 Ill. Adm. Code 620.Subpart D" used in proposed Section 841.405(a).

**54.1 Do you mean the numeric groundwater quality standards contained in Part 620 Subpart D, or do you mean the nondegradation provisions of Part 620 Subpart C?**

The Environmental Groups are referring to the groundwater quality standards contained in Part 620 Subpart D.

**55. If an owner or operator plans to close a CCW surface impoundment by removal, is the surface impoundment considered a “waste disposal operation”? If yes, please explain.**

Yes, the Environmental Groups submit that a CCW surface impoundment may be considered a “waste disposal operation” even if the owner or operator ultimately intends to close by removal. Prior to closure, the owner or operator’s placement of waste into the impoundment that may enter the environment constitutes “disposal.”

**56. On Page 4, you state: “First, the Environmental Groups propose that, in all cases, closure of surface impoundments should be accomplished by the removal of all coal combustion waste and leachate from the impoundment unless the Agency determines that such removal is technically infeasible or would not result in greater protection of human health and the environment.” Is this more stringent than U.S. EPA’s proposal?**

Yes, the Environmental Groups’ proposal is more stringent than U.S. EPA’s proposed regulations in this respect, insofar as U.S. EPA’s proposed regulations do not require closure by removal in any specific case.

**57. Should existing CCW surface impoundments relined pursuant to the Environmental Groups’ design criteria be required to close if there is an exceedence of the groundwater quality standards?**

No. As discussed in response to the Agency’s Question 19, the Environmental Groups have proposed a requirement that impoundments causing groundwater quality exceedences be closed within five years precisely because the Agency has not proposed any design standards for existing impoundments. Should the Agency propose design standards for existing impoundments in line with U.S. EPA’s proposed design standards, then the Environmental Groups would consider withdrawing their proposed amendments requiring closure of leaking impoundments within five years.

To clarify the Environmental Groups’ intent that impoundments that have been or will be relined in accordance with the proposed design standard do not have to be closed, please see clarifying language in Sections 841.300(b)(2), 841.305(c)(1), and 841.400 in the redlined proposal attached as Exhibit A.

**57.1 When would the relined CCW surface impoundment be required to close if there is no groundwater exceedence?**

Under the Environmental Groups' proposed rules, there is no closure requirement for a CCW surface impoundment that has been relined in compliance with the design standard in the Environmental Groups' proposed Section 841.450.

**58. Is a closure alternative that can reasonably be expected to meet groundwater quality standards adequate to allow closure in place? Why or why not?**

In the Environmental Groups' view, answering that question would require a site-by-site determination. Under the Environmental Groups' proposed rules, closure in place is allowed where it is equally protective of human health and the environment as closure by removal. However, in addition to considering impacts on groundwater, the Environmental Groups' proposal also calls on the Agency to take into account the threat to human health and the environment from closure in place of CCW impoundments located at sites that are not appropriate places for the long-term disposal of CCW. See Proposed Section 841.400(b)(1)-(3).

**59. To your knowledge do municipal solid waste (MSW) landfills ever have releases to groundwater?**

Yes.

**59.1 Are MSW landfills required to initiate closure by removal if they have a release to groundwater?**

Generally, no.

**59.2 Are MSW landfills with no known releases to groundwater required to initiate closure by removal?**

No.

**59.3 Are you aware of any MSW landfill that has been closed by removal?**

No.

**61. Are the low permeability cover requirements of the proposed Section 841.420 substantially the same as the requirements of 35 Ill. Adm. Code 814?**

Yes.

**62. Please explain why it is not appropriate for CCW surface impoundments to close with a low permeability cover that mimics a MSW landfill cover.**

Under the Environmental Groups' proposed rule, a CCW surface impoundment may close with a low permeability cover, so long as the Agency makes the determination that closure by removal would not be more protective of human health and the environment

(and the impoundment is not sited in a location identified in Proposed Section 841.400(b)(1)-(3)).

The Agency's comparison of a MSW landfill with a CCW surface impoundment is inapt. An MSW landfill is required to be lined and have a leachate collection system.

**62.1 Would closure like MSW landfills be appropriate if the CCW surface impoundment was lined in substantially the same manner as MSW landfill?**

The Environmental Groups are not aware of any CCW surface impoundments in Illinois that are lined in substantially the same manner as MSW landfills, insofar as the Environmental Groups are not aware of any CCW surface impoundments with a leachate collection system.

Again, under the Environmental Groups' proposed rule, a CCW surface impoundment may close with a low permeability cover, so long as the Agency makes the determination that closure by removal would not be more protective of human health and the environment (and the impoundment is not sited in a location identified in Proposed Section 841.400(b)(1)-(3)).

**STATISTICAL ANALYSIS:**

**63. In response to Ms. Franzetti's question (Hrg. Trans. May 14, 2014, 175:8-12), Dr. Soderberg testified that the Environmental Groups' proposal clarified parts of the statistical analysis in Section 841.225(c) by adding a minimum sample size (i.e. minimum of eight data points). Is it the Environmental Groups' intent that submission of a statistical analysis as required in proposed 841.235(g) be done only each time eight additional data points are collected for a well?**

No, this is not the Environmental Groups' intent. This issue was discussed during the May 15, 2014 hearing. (See May 15, 2014 Trans. at 11-13). As stated in Dr. Soderberg's prefiled testimony, the U.S. EPA's 2009 Unified Guidance recommends that a minimum of eight data points be used to establish background. This established background would then be used as the basis for further statistical analyses. Please see, however, the Environmental Groups' answer to the Agency's Question 72 for a proposed alternative approach to the issue of sample size.

**64. The Unified Guidance 2009 recommends recalculation of background chemical concentrations every one to three years. Please explain why it would be appropriate to do a statistical comparison of compliance monitoring on what in many cases will be a quarterly basis, when the background concentration to which the data is being compared will only be recalculated every one to three years?**

There are statistical methods described in the Unified Guidance that allow for a statistical comparison to background each time a new data point is generated at a compliance monitoring location. When an owner or operator has a new quarterly data point, that

single data point can be compared to the background. See 2009 Unified Guidance at 5-4; Chapter 18 (“Prediction Limit Prediction”).

**65. Please explain the rationale for decreasing the time allowed for submission of a preventive response plan from 180 to 90 days.**

The Environmental Groups’ proposed redline withdraws the requirement for submission of a preventive response plan within 90 days.

**65.1 Has anyone testifying on behalf of the Environmental Groups performed modeling as required under proposed section 841.235(c)(2)(B)?**

Please see the Environmental Groups’ answer to the Agency’s Question 65.

**65.2 If so, how long did the modeling take?**

Please see the Environmental Groups’ answer to the Agency’s Question 65.

**65.3 Is it possible for complicated sites that the modeling could take upwards of 180 days?**

Please see the Environmental Groups’ answer to the Agency’s Question 65.

**66. Please explain when preventive response would be required under the Environmental Groups' proposal.**

Please see the Environmental Groups’ proposed Section 841.235(c)(3). Preventive response is required “[w]hen the owner or operator determines pursuant to subsection (c)(2)(C) of this Section that a release attributable to a unit causes, threatens or allows an impairment or exclusion of existing or potential use.”

**66.1 Under the Environmental Groups' proposal, how does the class of groundwater impact whether a preventive response is required?**

The class of groundwater does not impact whether a preventive response is required. Instead, preventive response is determined based on the existing or potential use of the water.

**66.2 Would you expect groundwater within the spoil of a surface coal mine or former surface mine to have good groundwater quality?**

No, not relative to other types of groundwater.

**66.3 Is the groundwater quality within the spoil of a surface coal mine or former surface mine generally fit for human consumption in accordance with accepted water supply principles and practices?**

Likely no.

**66.4 How many Class III groundwater areas are located in the spoil of a surface coal mine or former surface mine?**

The Environmental Groups have not researched that issue.

**66.5 Is it practical to treat groundwater within the spoil of a surface coal mine or former surface mine for use by a private well owner?**

Likely no.

**66.6 Is the groundwater classification system adopted by the Board under Part 620 consistent with Section (8)(b)(2) of the Illinois Groundwater Protection Act?**

Yes, the Board's regulations are consistent with the Illinois Groundwater Protection Act.

**66.7 Do you believe that groundwater within non-aquifer materials requires the same level of protection as the groundwater contained in aquifer materials?**

Groundwater within non-aquifer materials nevertheless may have some existing or potential uses, which should be protected.

**66.8 Isn't it true that the susceptibility of groundwater contamination is less in saturated geologic material with hydraulic conductivity (k) less than  $1 \times 10^{-4}$  centimeters per second (cm/sec) versus saturated geologic materials with a k greater than or equal to  $1 \times 10^{-4}$  cm/sec?**

Yes, all other variables being equal. However, the hydraulic gradient and the specific chemical constituent at issue also will influence the "susceptibility of groundwater contamination."

**66.9 Should the Agency expend the same resources on groundwater that is of limited quality or quantity as would be expended on protecting a high quality sand and gravel or bedrock aquifer?**

That is a policy determination, but if the groundwater "of limited quality or quantity" is being used as a drinking water supply, and the "high quality sand and gravel or bedrock aquifer" is not, then yes.

The intent of the Environmental Groups' proposed amendments is that all current and potential uses of groundwater be protected.

**66.10 Please provide an environmental or technical justification for requiring a preventive response plan to be developed following impacts to Class IV groundwater.**

The Environmental Groups' proposed amendments do not require a preventive response plan to be developed unless a potential or existing use of groundwater has been threatened. In the event that the Class IV groundwater has an existing or potential use that is being impaired or excluded by contamination from a CCW surface impoundment, preventive response should be required.

**67. Do the Environmental Groups propose that a CCW surface impoundment with quarterly monitoring submit a potentiometric surface map every quarter?**

No. Under proposed Section 841.235(g), statistical analyses, including the potentiometric surface map, shall be submitted to the Agency in accordance with a schedule approved by the Agency in the groundwater monitoring plan pursuant to Section 841.210 of this Part. The Environmental Groups' proposal retains the Agency's request for annual statistical reports in proposed Section 841.210(b)(9). The Environmental Groups' proposed Section 841.235(g) does require the production of a potentiometric surface map every quarter, though.

**67.1 What is the intended purpose, effect and cost of this requirement?**

The intended purpose of this requirement of the quarterly production of a potentiometric surface map is to detect any seasonal or other changes to the potentiometric surface. Potentiometric surface can change from season to season over the course of the year, and gaining an understanding of seasonal dynamics is important to understanding the impoundment's potential impacts on groundwater. The cost would be limited to approximately 8 to 10 hours of expert time per quarter. The Environmental Groups would be amenable to allowing the requirement for the quarterly production of a potentiometric to sunset after two years into a requirement for annual production.

**FINAL SLOPE AND STABILIZATION:**

**68. For CCW surface impoundments being capped, how should the slopes that promote storm water run-off be formed?**

The Environmental Groups' primary concern is that no CCW be left exposed to erosion or oxidation. In the Agency's proposed rule, there is no requirement that the low permeability layer and final protective layer cover the entire unit. To address their concern, the Environmental Groups propose incorporating the following requirement (adapted from 35 Ill. Adm. Code 811.314(b)(2)) into proposed Section 841.420(b)(1):

The low permeability layer must cover the entire unit and connect with the liner system, if the unit has a liner system.

**69. On page 19 of their Post Hearing Comments, the Environmental Groups state: "None of the requirements referenced in the Agency's prefiled questions on this topic and none of the requirements of Sectoin 841.415 on Final Slope and**

**Stabilization or Section 841.420 on Final Cover System actually require a final cover system to eliminate exposed CCW used for the final grade and slope or address that CCW that may be exposed on the berms.” Please explain how CCW used to establish the final grade would be exposed when the final cover must consist of a low permeability layer and a final protective layer that is at least three feet thick?**

Please see the Environmental Groups’ answer to the Agency’s Question 68.

**69.1 The Agency is not aware of CCW surface impoundment berms being constructed with CCW. Are the Environmental Groups aware of CCW surface impoundment berms being constructed with CCW?**

Please see the Environmental Groups’ answer to the Agency’s Question 68.

**69.2 If no CCW surface impoundment berms are constructed with CCW, do the Environmental Groups still have a concern about CCW being exposed on the berms?**

Please see the Environmental Groups’ answer to the Agency’s Question 68.

**MODIFICATION OF EXISTING PERMITS:**

**70. Please explain why it would be necessary to revise a closure, corrective action or preventive response plan if an NPDES or operating permit is denied, instead of modifying the permit that was denied.**

The Environmental Groups do not understand this question. If a permit has been denied, then it cannot be modified.

**STATISTICAL METHODS:**

**71. Please explain why an owner or operator should not specify which statistical method(s) they intend to use when conducting compliance or assessment monitoring.**

This question does not reflect the Environmental Groups’ position. The Agency apparently refers to the Environmental Groups’ proposed language in proposed Section 841.225(a). The Environmental Groups propose striking words “compliance or assessment” because neither “compliance monitoring” nor “assessment monitoring” is defined in the Agency’s proposed rules. The Environmental Groups’ proposed rules would require the owner or operator to specify its selected statistical method or methods for any type of monitoring conducted pursuant to the rules.

**72. If a statistical method can meet the requirements Section 841.225(b), without collecting eight samples, why should the method be rejected?**



The method should be rejected if the requirements of Section 841.225(b) are not fully consistent with the statistical analyses called for in U.S. EPA's 2009 Unified Guidance. Proposed Section 841.225(b) provides performance criteria for statistical tests, but only specifically addresses minimizing the false-positive rate of proposed tests (*i.e.*, Type I error). The Unified Guidance, Chapter 5, page 5-3, and Chapter 7, page 7-2, recognizes that such an approach can increase the false-negative rate (*i.e.*, Type II error, or statistical power), especially when dealing with small sample sizes and low imposed false-positive rates. The Unified Guidance therefore recommends (see Chapter 22) a procedure that relates the desired level of statistical power to the achievable false-positive rate for a given data set. Following the Unified Guidance in this regard would provide a quantitative path forward to "ensure with reasonable confidence that a contaminant release to groundwater from a facility will be detected," as stated in Section 841.225(c).

As an alternative to the previously-proposed requirement of a minimum of eight data points, the Environmental Groups propose the following language for Section 841.225(c):

- c) Sample Size: The sample size must be as large as necessary to ensure with reasonable confidence that a contaminant release to groundwater from a facility will be detected **while achieving the performance criteria in 841.225(b). Consistent with the 2009 Unified Guidance, an evaluation of this statistical power should be made as part of the justification for using a particular statistical test.**

#### **CLOSURE AND POST-CLOSURE ANNUAL REPORTING:**

73. **An owner or operator can certify that at installation and up until the time it is covered by the protective layer that the low permeability layer has not been compromised. Please describe how an owner or operator would certify that there are no holes or tears in the low permeability layer once it is buried under three feet of soil with vegetation on top.**

The Agency apparently is referring to the Environmental Groups' proposed language in Section 841.445(b)(1). This language includes direct, verbatim quotes of requirements from proposed Section 841.430(f) and (i), relating to post-closure maintenance of the impoundment. The owner or operator can certify in its annual post-closure report that it has complied with those post-closure maintenance requirements.

#### **ANTIDEGRADATION ANALYSIS:**

- 74. Under the Environmental Groups' proposal, must an antidegradation analysis be completed for every corrective action plan and closure plan with planned discharges to waters of the United States, even if not otherwise required by Subtitle C?**

Per the Environmental Groups' proposed Section 841.410(a)(2), an antidegradation analysis is required "if the closure plan would lead to a new or increased loading of pollutants to surface waters."

**FINAL COVER SYSTEM:**

- 75. Would it be acceptable to ELPC to move the requirement for the demonstration of the cover system permeability by a standard field method or laboratory method proposed in Section 841.420(b)(1) to proposed Section 841.155 as part of the Construction Quality Assurance Program?**

That change would be acceptable to the Environmental Groups.

**PUBLIC NOTICE:**

- 76. Please explain why the requirements in proposed Section 841.165(c) are necessary in light of the procedures for informational and quasi-legislative public hearings found in 35 Ill. Adm. Code 164.**

This question was discussed during the Board's June 18, 2014 hearing. (See June 18, 2014 Trans. at 74, line 7, to 76, line 7.) As stated at the hearing, 35 Ill. Adm. Code Part 164 does not in any case require the Agency to hold public hearings; it just provides procedures to follow if the Agency elects to hold public hearings. The Environmental Groups' proposed Section 841.165(c) would require the Agency to hold a public hearing when it finds there is a "significant degree of public interest." This same standard is contained in several other existing Board regulations, among them 35 Ill. Adm. Code 309.115 and 35 Ill. Adm. Code 705.182.

- 76.1 Why do the Environmental Groups propose that the Agency is not required to comply with the procedures in 35 Ill. Adm. Code 164?**

Please see the Environmental Groups' answer to the Board's Question 16(b).

- 77. Please explain what the phrase "a significant degree of public interest" means.**

This standard—that the Agency should hold a public hearing whenever it finds that there is a "significant degree of public interest"—is contained in several existing Board regulations, among them 35 Ill. Adm. Code 309.115, applicable to public hearings on NPDES permit applications, and 35 Ill. Adm. Code 705.182, relating to the issuance of RCRA (Resource Conservation and Recovery Act) and UIC (Underground Injection Control) permits. This standard should be familiar to the Agency. The Environmental Groups argue for a liberal interpretation of the standard. The Environmental Groups believe that the public's submission of comments and requests for hearings evidences a significant degree of public interest.

**77.1 Should the Agency consider multiple form letters as a significant degree of public interest?**

Yes.

**77.2 Can the Agency determine there is not a significant degree of public interest when the comments received from the public lack detail, citations to specific plans, or technical or economic analysis of the proposed plans?**

The Environmental Groups would ask that the Agency apply the standard as it does in other contexts under the Board's regulations. The Environmental Groups do not believe that a failure of the comments to achieve some abstract level of technical specificity that might satisfy the Agency would serve as a justification for not holding a public hearing. By its definition, the hearing would be an "informational" hearing. If citizens in the area of a specific coal ash impoundment are concerned about the way in which it will be closed, or its contamination of the community's groundwater, even if they do not express their concern in what the Agency believes is the appropriate level of technical specificity, then, yes, the Environmental Groups believe a hearing is appropriate.

**78. In proposed Section 841.165(c), the Environmental Groups propose that the Agency hold a public meeting when there is a significant degree of public interest in a proposed "plan". Does this requirement also apply to alternative cause demonstrations?**

Yes. The Environmental Groups suggest that the phrase "all proposed alternative cause demonstrations, corrective action plans, closure plans, or post-closure care plans, or modifications thereto" could be substituted for the word "plans" in Section 841.165(c).

**79. Must alternative cause investigations under the Environmental Groups' proposed section 841.235(c) be posted on the Agency's webpage for public notice?**

Yes.

**80. In the Environmental Groups' opinion, approximately how many alternative cause demonstrations will the Agency receive in one year?**

The Environmental Groups do not have an opinion on the number of alternative cause demonstrations that the Agency will receive in one year.

**81. In proposed section 841.165(e) of this Section, the Environmental Groups propose that the Agency post its decision made under this Section on its website "on the postmarked date that the notice is mailed." To what "notice" is this a reference?**

The Environmental Groups' intent was that the "notice" was the Agency's "notice" of a final decision to the owner or operator.

**82.1 Does ELPC intend for the Agency to provide notice of its decision to every individual that participated in the public notice process?**

No, the Environmental Groups do not intend for the Agency to provide notice of its decision to every individual that participated in the public notice process, other than to post the decision on the Agency's webpage.

**INSPECTION:**

**82. In Section 841.170(a), the Environmental Groups propose requiring CCW surface impoundment owners or operators conduct inspections of units subject to this Part. Can owners or operators hire or contract the services of qualified individuals to conduct the required inspections, or must the owner or operator conduct the inspections?**

Yes, as with other section of the proposed rules, such as proposed Section 841.200, which would provide that "[t]he owner or operator of any unit must design and implement a hydrogeologic site characterization," the Environmental Groups agree that owners or operators may hire the services of qualified individual to conduct required activities, and that the owner or operator need not personally conduct the inspection.

The intent of the Environmental Groups is to conform the language of this section with the language of other sections of the proposed rules.

**83. In Section 841.170(b), the Environmental Groups propose requiring CCW surface impoundment owners or operators "promptly perform repairs necessary to correct any problem observed during an inspection." What is meant by promptly?**

First, the Environmental Groups note that they have proposed this language because nothing in the Agency's proposal would actually require the owner or operator to address any problems observed during an inspection of an impoundment.

The requirement that owner or operator "must repair [a problem] promptly" is used elsewhere in the Board's regulations, for example at 35 Ill. Adm. Code 724.1101(c)(3). The amount of time required to correct a problem will vary based upon the nature of the problem. However, the Environmental Groups interpret a requirement that repairs be performed "promptly" to mean that the owner or operator will proceed without delay to determine what repairs must be performed and then to perform the repairs.

**84. In Illinois, which state agency regulates the construction and maintenance of dams?**

Generally, the Illinois Department of Natural Resources is responsible for dam safety.

- 85. In Traci Barkley's testimony, p. 5, Ms. Barkley states "In U.S. EPA's structural integrity assessments of the surface impoundments containing coal combustion residuals and with maximum embankment heights of six (6) feet at electric utilities in Illinois, 16 of the 38 impoundments received a rating of 'poor.' Another 16 impoundments received a rating of 'fair', only four (4) were rated as 'satisfactory' and one (1) evaluation was still 'in progress.'" Are the Environmental Groups aware that the dam safety ratings quoted in Ms. Barkley's testimony from the U.S. EPA's inspection report have been further evaluated and reviewed by in the Office of Water Resources at the Illinois Department of Natural Resources?**

The Environmental Groups are aware of verbally stated plans by the Illinois Department of Natural Resources' Office of Water Resources to visually inspect permitted coal ash impoundments in the State.

**DESIGN CRITERIA:**

- 86. Does proposed Section 841.450(a) apply to existing unlined units?**

Yes.

- 86.1 If so, describe the process by which a unit that currently contains CCW would be fit with a composite liner?**

Generally speaking, the impoundment would need to be dredged and fitted with a composite liner that meets the requirements of proposed Section 841.450.

- 86.2 If CCW would have to be removed in order to fit an existing unit with a liner, what would be done with the CCW during the construction of the liner?**

CCW could be stored in another impoundment. Please see also the Environmental Groups' answer to the Agency's Question 43.

- 86.3 How many existing units would be required to construct a new liner?**

No units would be required to construct a new liner. First, the proposed rule allows the Agency to determine on a case-by-case basis that an existing liner has equivalent performance to the design standard. Second, an owner or operator could elect to close the impoundment as an alternative to constructing a new liner. Until owners and operators make a decision as to how to proceed, and until the Agency assesses whether any units meet or exceed performance, it is uncertain how many existing units would be required to construct a new liner.

- 86.4 How much CCW would have to be removed from existing units in order to construct new liners within five years of the effective date of this Part?**

No CCW would necessarily have to be removed under the Environmental Groups' proposed rules. Again, an owner or operator with a noncompliant impoundment could

elect to either close the impoundment in accordance with the regulations or to construct a new liner.

**86.5 Where would the CCW removed from those units be stored?**

CCW could be stored in another impoundment. Please see also the Environmental Groups' answer to the Agency's Question 43.

**86.6 What would the potential environmental impacts of removing CCW from an existing unit during the construction of a liner be?**

There could be environmental impacts that would be associated with typical construction activities. These can be mitigated through methods already used by the construction industry.

**86.7 Has ELPC conducted an analysis of the economic impacts of requiring that existing CCW surface impoundments that currently house CCW be lined? If so, could ELPC provide that analysis?**

No, the Environmental Groups have not performed such an analysis. Please see U.S. EPA's Regulatory Impact Analysis and Appendix attached as Exhibits A and B to the Environmental Groups' Answers to the Board's June 11, 2014 Questions.

**87. Please explain what the following language in the Environmental Groups' proposed Section 841.450(a)(2): "the FML component must be installed in direct and uniform contact with the compacted soil component."**

This language is taken from the U.S. EPA's proposed 40 C.F.R. 257.71 and 257.72. 75 Fed. Reg. 35243-35245. It describes an FML component that is installed directly on top of the compacted soil component of a composite liner.

**88. Can the Environmental Groups explain in detail the leachate collection system design?**

The Environmental Groups' proposed regulations do not mandate a detailed leachate collection system design. One example of how these two components could be installed together is in Pennsylvania's required design standards for new coal ash storage impoundments and new Class II residual waste disposal impoundments, at 25 Pa. Code 290.410 and 25 Pa. Code 289.531, respectively.

**88.1 Can you provide details on the design of the drainage layer component of the leachate collection system?**

Please see the Environmental Groups' answer to Question 88.

**88.2 Should leachate collection systems be designed and function differently depending on the expected amounts of leachate to be collected?**

Yes. The basic function of a leachate collection system will remain the same, but the engineered system will need to consider the amounts of leachate expected at any given unit.

**88.3 What is the anticipated amounts of CCW leachate collected from a CCW surface impoundments, and how do these amounts compare to a municipal solid waste landfill?**

The Environmental Groups' proposal does not include any leachate depth requirement. We have not done any comparison of the amount leachate collected from CCW surface impoundments and from municipal solid waste landfills.

**88.4 Does the leachate collection system proposed by the Environmental Groups use the U.S. EPA design criteria described on 75 Fed. Reg. 35174 which indicates the leachate collection system must be designed to maintain less than 30 cm depth of leachate over the liner?**

The Environmental Groups based their proposed design standard on U.S. EPA's proposed 40 C.F.R. 257.71 and 257.72. 75 Fed. Reg. 35243-345. The U.S. EPA's proposed design standards for existing and new CCW impoundments do not contain any leachate depth requirement for the required leachate collection system. This can be contrasted with the requirement for leachate collection systems for new landfills in proposed 40 C.F.R. 257.70.

**88.5 What is the depth of leachate typically found in a CCW surface impoundment?**

The amount of leachate could depend upon the size of the unit and the type of CCW contained. Again, the Environmental Groups' proposal does not include any leachate depth requirement.

**88.6 How would the depth of leachate in a CCW surface impoundment be maintained at less than 1 foot?**

This design requirement would have to be incorporated into the engineered system. Again, the Environmental Groups' proposal does not include any leachate depth requirement.

**89. Do you recommend the installation of the leachate collection system in a surface impoundment above or below the composite liner?**

The Environmental Groups are not recommending the installation of the leachate collection system above or below the composite liner. Rather, the Environmental Groups' intent is to propose design standards that are consistent with U.S. EPA's proposed rule in requiring both a composite liner and a leachate collection system. Under the Environmental Groups' proposed rule, the leachate collection system could be installed either above or below the composite liner.

**89.1 What purpose does the leachate collection system serve above the composite liner?**

The purpose of a leachate collection system above a liner is to maintain a low hydraulic head. A low hydraulic head means less hydrostatic pressure on the liner and less water movement across the liner. Water movement across the liner means leachate will flow into the subsurface. Therefore, the leachate collection system above the liner reduces the chance of leachate contaminating groundwater.

**89.2 What purpose does the leachate collection system serve below the composite liner?**

The purpose of a leachate collection system below a liner is to collect leachate that has penetrated the liner. Such a system would serve as a leakage detection system.

**90. On Pg. 11 of the Environmental Groups' proposal, the following statement is made: "The Agency's proposed rule is in conflict with 415 ILCS 55/2(b) by allowing continued degradation of groundwater by permitting existing unlined and inadequately lined impoundments to remain open without lining or relining, even if they are causing groundwater contamination."**

**90.1 Under the Agency's proposal, can groundwater exceedences remain without corrective action or closure? If no, please explain how the Agency's proposed rule is in conflict with 415 ILCS 55/2(b).**

Under the Agency's proposed rules, if there is a confirmed exceedence of a groundwater quality standard, and no alternative cause demonstration is made, then corrective action is required under proposed Section 841.310. Closure is never required by the Agency's proposed rules unless the owner or operator elects to close.

Under the Agency's proposal, though, yes, groundwater quality exceedences may remain for decades. If the Agency considers only whether corrective action might eventually yield compliance in approving proposed corrective action plans, then the Agency could approve corrective action plans that could take decades to reach compliance with the numeric groundwater quality standards, if ever, while allowing the unlined or inadequately lined impoundment to continue to receive CCW. In practice, then, the Agency's proposed rules would mean that groundwater exceedences could remain for decades. This is not consistent with the Illinois Groundwater Protection Act's expressed policy to "restore, protect, and enhance the groundwaters of the State." 415 ILCS 55/2(b).

**90.2 What do you mean by inadequately lined impoundments?**

"Inadequately lined impoundments" in the sentence quoted above refers to impoundments that have some form of lining but nevertheless are allowing groundwater contamination to the extent that they are causing exceedences of groundwater quality standards.



- 90.3 Should an existing CCW surface impoundment that is lined with two feet of compacted earthen material with a hydraulic conductivity of less than or equal to  $1 \times 10^{-7}$  centimeters per second or a synthetic liner that provides equivalent protection and that has no groundwater quality exceedance be required to be relined pursuant to the Environmental Groups' proposed Section 841.450?**

Yes, such an impoundment would be required to either close or be relined, subject to the possibility that the owner or operator could make a showing that the existing liner provides "equivalent or superior performance" to the composite liner and leachate collection system required by the Environmental Groups' proposed design standards. See answers to Questions 93 and 93.1, below.

- 91. Does the Environmental Groups' proposal contain siting requirements for new facilities? Why or why not?**

The Environmental Groups' proposal does not contain the same sort of location requirements as in U.S. EPA's proposed rules. The Environmental Groups support the Board's adoption of the location restrictions required in proposed 40 CFR 257.60-257.65.

- 92. Did the Environmental Groups consult the design criteria for municipal solid waste landfills in Parts 811-815 when drafting their proposed design criteria?**

Yes, but the Environmental Groups' proposed design standards are based on U.S. EPA's proposed rules for existing and new CCW impoundments.

- 93. Proposed Section 841.450(a)(3) requires any impoundment in operation on or before the effective date to be lined with a composite liner and leachate collection system. Proposed Section 841.450(a)(1), however, requires the installation of a composite liner and leachate collection system, or a liner system with equivalent or superior performance. Are existing units with liner systems of equivalent or superior performance required to install the composite liner and leachate collection system under proposed Section 841.450(a)(3)?**

No, it is not the Environmental Groups' intent that existing units with liner systems of equivalent or superior performance would be required to install the new composite liner and leachate collection system required by the proposed design standards.

- 93.1 Would the Environmental Groups be willing to provide language clarifying its proposed intent?**

Yes, the Environmental Groups propose adding the phrase "or with a liner system of equivalent or superior performance" to proposed Section 841.450(a)(3), following the phrase "leachate collection system".

**Illinois Pollution Control Board's April 30, 2014 Questions for Traci Barkley**

- 19. In your pre-filed testimony, you refer to “monetary damages from coal ash to the sports recreation industry at 22 waterways due to the absence of the safeguards needed to protect the adjacent game fish habitat at (coal ash) impoundments sites.” Barkley Test. at 2. Would you please elaborate more specifically on the “safeguards” to which you refer that were absent?**

Please see A. Dennis Lemly, *A White Paper on Environmental Damage from Coal Combustion Waste: The Cost of Poisoned Fish and Wildlife* (Dec. 15, 2010), attached as Exhibit A.

From the report's summary of the 22 cases, “Five of these cases resulted from structural failure of disposal ponds, two were caused by unpermitted discharge of ash pond effluent, two occurred at unregulated impoundments, and twelve, which includes the most costly cases, happened because of legally permitted releases allowed by the National Pollutant Discharge Elimination System (NPDES). Only one case, which was a landfill, resulted from exceedance of specified contaminant limits of an NPDES permit. The sites range from locations where historical poisoning has led to corrective actions that have greatly improved environmental conditions to those where contamination has just recently been discovered and the level of ecological damage has yet to be determined.” Exhibit A at 2.

Though none of the sites investigated were in Illinois, the findings are valuable in informing decision-making nationwide. According to Dr. Lemly, “Evidence revealed through this study indicates that: (1) For the past 43 years, environmental damage has been a recurring theme with surface impoundment of CCW, (2) The NPDES, which was created as part of the federal Clean Water Act in 1972, has not been effective in preventing serious environmental damage from coal combustion waste, (3) EPA's Regulatory Impact Analysis of the benefits of pollution control afforded by a RCRA Subtitle C hazardous waste designation for CCW fails to include benefits of avoided damages to natural resources, specifically, poisoned fish and wildlife, (4) Surface impoundments pose unacceptably high ecological risks regardless of location or design,” among other findings. Exhibit A at 2.

- 20. Would you please provide copies of the references you cited in the footnotes of your April 9, 2014 pre-filed testimony?**

Yes, they have been provided to the Board.

**Illinois Environmental Protection Agency's April 30, 2014 Questions for Traci Barkley**

- 39. On Page 1 of your pre-filed testimony you state: "Corrective action plans as proposed by IEPA are insufficient to address pollution problems." Is it possible that the corrective performed at one site with CCW surface impoundments might be different than the corrective action performed at another site with CCW surface impoundments?**

The corrective action process laid out by IEPA's proposed rulemaking does allow for various plans to address pollution problems, but it falls short on protecting surface waters, does not require source control, and allows too long of a timeline for problems to be resolved. For example, there are two GMZs that were put in place at Hennepin in 1996 where exceedences of numerical groundwater quality standards still have not been resolved. See Exhibit N to Exhibit 5 in this proceeding. At the west ash pit, boron standards are still being exceeded at 5 groundwater wells. See *Hennepin Power Station, Dynegy Midwest Generation, LLC, West Ash Pond System: Nos. 1 and 3, 2013 Closure Work Plan Annual Report*, attached as Exhibit B, at table 3. Dissolved boron at 6 downgradient wells for the east ash pit are still in violation as of Q4 2013. See *Hennepin Power Station, Existing East Ash Pond and Coal Combustion Waste (CCW) Landfill Systems, Groundwater Monitoring Report: 4th Quarter 2013*, attached as Exhibit C, at table 5. There is nothing in the Agency's proposed rule that prevents this from being the Agency's corrective action strategy moving forward.

- 39.1 When there has been exceedance of the groundwater quality standards at a CCW surface impoundment, is it possible that the groundwater quality standards could be met through two different types of corrective action?**

Yes.

- 39.2 Did Illinois EPA propose in Part 841 a corrective action plan or a corrective action process?**

The Agency proposed a corrective action process that allows deficient corrective action plans due to prolonged timelines, no consideration for surface waters, and no requirement to consider source control.

- 39.3 Please explain how proposed Section 841.310 is insufficient.**

Section 841.310 does not require:

- an assessment of alternatives to the proposed corrective action, including whether any alternative corrective action would result in greater protection of human health and the environment.
- an antidegradation demonstration as required by 35 Ill. Adm. Code 302.105(f); i.e., if the corrective action would lead to a new or

increased loading of pollutants to surface waters. This is a problem because one corrective action we have seen employed when groundwater has been contaminated by coal ash is to pump back the contamination plume and dump it into a nearby waterway. At the Ameren Hutsonville facility, a “pump-and-dump” of approximately 1.9 million gallons per day (MGD) for decades was proposed, but with no waterway designated at the time the corrective action was approved. Years later the draft NPDES permit for the facility proposed dumping of this contaminated water into the Wabash River, a drinking water supply for many downstream communities. See the draft NPDES permit admitted as Exhibit 52 in this proceeding. A valid NPDES permit still has not been issued for this treatment.

Section 841.310 also does not require:

- estimates of the cost of the corrective action, including of each evaluated corrective action alternative. We can assume that the utilities will choose the least expensive and easiest way to take corrective action, but an evaluation of the associated costs and benefits of various alternatives will inform a more comprehensive, long range and responsible plan.

**39.4 Did Prairie Rivers Network recommend a public participation element be included in proposed Part 841?**

Yes.

**39.5 Does proposed Section 841.165 require the Agency to post on its website corrective action plans and closure plans and any modification thereto, for public review?**

Yes, though someone has to know to look in the first place. Folks living in areas impacted or threatened by these ash pits are unlikely to be regularly checking the Agency’s website for this information. Furthermore, the Agency is not required to post alternative cause demonstrations or post-closure care plans and there is no requirement to hold a public meeting or hearing if sufficient interest is exhibited.

**39.6 Does proposed Section 841.165 require to Agency to accept and consider comments from the public with regard to corrective action plans and closure plans and any modifications thereto, in its final decisions regarding such plans?**

Accept and consider, yes. Responses, explanations, or enforcement of these provisions, no.

- 39.7 Do you plan to participate when the Agency posts corrective action and closure plans on its website for public comment?**

Yes, although it is not clear how these plans can be enforced through public participation.

- 40. On page 2 of your testimony you state: "According to the Human Health and Ecological Risk Assessment completed by U.S. EPA in 2010, the excess cancer risk for people drinking groundwater contaminated with arsenic from unlined coal ash ponds is estimated to be as high as 1 in 50.3 For context, U.S. EPA in its Assessment viewed cancer risk as significantly high when environmental exposures resulted in more than one additional cancer per 100,000 people. Consequently, a lifetime cancer risk of 1 in 50 represents a risk 2000 times U.S. EPA's level of significance. This is an especially high risk when the impoundment is located in a shallow aquifer recharge area such as at Will County, Joliet 9, Joliet 29, Powerton, Meredosia, Venice, and Wood River facilities." Does the USEPA assessment specifically identify the health risk associated with the generating facilities you've listed or is the assessment speaking in general terms about potential risks under certain circumstances?**

The U.S. EPA Risk Assessment is a national-scale analysis and the best source of risk-based information available, and in fact is the basis for U.S. EPA's upcoming rule for how coal ash should be managed. The Environmental Groups feel the Board should use this assessment as a guide in setting closure standards in Illinois.

According to the report, "EPA modeled CCW waste management units that were located across the United States, in locations that represent a subset of the coal-fired power plants that were in use in the mid-1990s. The models used to represent the movement of chemical constituents from a landfill or surface impoundment through the environment rely on data such as weather patterns, soil types, and subsurface geology, which influence the speed and direction in which the chemical constituents move. Thus, the environmental setting, or geographic location, of a landfill or surface impoundment can influence the resulting estimated risk. By conducting the analysis at a national scale, EPA estimated risks at locations across the United States." U.S. EPA, *Human Health and Ecological Risk Assessment (Draft)* (April 2010), at ES-2.

- 41. On page 2 of your testimony you state: "Dr. Dennis Lemly, Ph.D., U.S. Fish and Wildlife Service Biologist, recently submitted a report that discloses \$2.3 billion in monetary damages from coal ash to the sports recreation industry at 22 waterways due to the absence of the safeguards needed to protect the adjacent game fish habitat at these impoundment sites." How many of the waterways and what percentage of the damages are in Illinois?**

Please see my answer to the Board's Question 1.

42. **On page 3 of your testimony you state: “Two important points stand out: 1) for most sites, IEPA only has about 2 years of data upon which it has based its regulatory proposal” Do you believe the Agency should not have proposed Part 841 until additional data had been collected?**

The available data shows that there are coal ash contaminants in water resources at each power plant in Illinois and emphasizes the need for immediate action to prevent further pollution and mitigation and cleanup of existing pollution. Please see attached as Exhibit D a chart summarizing the state of coal ash impoundments in Illinois. This chart is based on the chart included as Attachment 2 to the Agency’s April 30, 2014 comments, with additional information from four other documents:

- 1) IEPA, *Assessment of Ash Impoundments Permitted Within the State of Illinois* (Feb. 3, 2009) (including the number of wells within 1 mile of each facility) (attached as Exhibit E);
- 2) IEPA, *Ash Impoundment Strategy Status Report* (Oct. 2011)
- 3) U.S., EPA, *Coal Combustion Damage Case Assessments* (July 9, 2007) (attached as Exhibit F); and
- 4) Ameren, Technical Support Document, PCB R13-19.

43. **On page 3 of your testimony you state: “2) even looking at only these limited data, contamination by coal ash pollutants has been demonstrated at every coal-fired power plant in Illinois.” Please describe which chemical constituents being monitored at the Havana east ash pond system exceed the applicable groundwater quality standard?**

My testimony clearly states that contamination by coal ash pollutants has been demonstrated at every coal-fired power plant in Illinois, not every coal ash impoundment. I am not aware that the Agency has submitted any groundwater data for the Havana east ash pond system to the Board. It is important to note that a GMZ was in place at the Havana Station, so clearly there has been contamination at this plant before.

44. **On pages 3 and 4 of your testimony you state: “The data that IEPA have reviewed do not present an accurate characterization of how leaching progresses over time. According to the Human Health and Ecological Risk Assessment completed by the EPA in 2010, peak pollution from dump sites can occur long after the waste is placed. For example, peak exposures from unlined coal ash ponds are projected to occur approximately 70 to 76 years after the ponds first began operation—thus retired sites still pose very significant threats 10.” (The superscript refers the reader to a footnote citing the USEPA risk assessment Table 4-7). The second paragraph below Table 4-7 in the USEPA risk assessment states: “The arrival times presented in Table 4-7 correspond to the arrival of the maximum estimated risks for each model run. However, for model runs where the risk range or HQ criterion was exceeded, the first exceedance would sometimes occur earlier than the maximum risk arrivals reported in Table 4-7. This is consistent with the appearance of damage cases described in U.S. EPA (2007), which were sometimes observed sooner than the time-to-peak estimates in Table 4-7.” Does proposed Part 841 require that the maximum modeled concentration of monitored chemical constituents be exceeded before preventive response or corrective action is required?**

The Agency stated in their testimony that contamination has already peaked. It is important to note that the two years’ of monitoring data that the Agency has provided in this proceeding are not sufficient to support the plant operators and the Agency determining the maximum modeled concentration of monitored chemical constituents. Different pollutants move through the underlying strata and groundwater at different rates. The pollutant concentrations we are currently seeing may only be the tip of the iceberg. Allowing impoundments to remain open and allowing GMZs to remain in place without any kind of source control is a problem. The Agency’s proposed rule would allow for open-ended corrective action with no consideration of source control and no date by which standards must be met.

- 44.1 **When does proposed Part 841 require the owner or operator to develop a preventative response plan?**

Please see the Agency’s proposed Section 841.235(c)(3).

- 44.2 **When does proposed Part 841 require the owner or operator to develop a corrective action plan or a closure plan?**

Please see the Agency’s proposed Section 841.310(d).

45. **Can you please describe the rating system used by the USEPA structural integrity assessments which you reference on page 5 of your testimony?**

Please see the August 13, 2013 letter from U.S. EPA to IEPA admitted as Exhibit 13 in this proceeding.

**45.1 How many categories are there in the rating system used in the USEPA structural integrity assessments.**

There are four condition ratings: satisfactory, fair, poor, and unsatisfactory. There are four hazard potential ratings: high hazard, significant hazard rating, low hazard, and less than low hazard. Notably, hazard potential ratings do not specifically consider protection of downstream or underlying drinking water supplies or sensitive populations.

As described by U.S. EPA in its letter admitted as Exhibit 13:

**CONDITION RATINGS**

The condition rating of an impoundment represents an assessment of the overall expected performance of the impoundment at the time of assessment considering all pertinent engineering conditions. Each impoundment at each facility was rated using the following categories:

Satisfactory

No existing or potential management unit safety deficiencies are recognized. Acceptable performance is expected under all applicable loading conditions (static, hydrologic, seismic) in accordance with the applicable criteria. Minor maintenance items may be required.

Fair

Acceptable performance is expected under all required loading conditions (static, hydrologic, seismic) in accordance with the applicable safety regulatory criteria. Minor deficiencies may exist that require remedial action and/or secondary studies or investigations.

Poor

A management unit safety deficiency is recognized for a required loading condition (static, hydrologic, seismic) in accordance with the applicable dam safety regulatory criteria. Remedial action is necessary. "Poor" also applies when further critical studies or investigations are needed to identify any potential dam safety deficiencies.

Unsatisfactory

Considered unsafe. A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution. Reservoir restrictions may be necessary.

**HAZARD POTENTIAL RATINGS**

The hazard potential ratings refer to the potential for loss of life or damage if there is a dam failure. The ratings do not refer to the structural stability of the dam. Specifically:



High Hazard Potential

Dams assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life.

Significant Hazard Potential

Dams assigned the significant hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environment damage, disruption of lifeline facilities, or impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas, but could be located in areas with population and significant infrastructure.

Low Hazard Potential

Dams assigned the low hazard potential classification are those where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

Less Than Low Hazard Potential

Dams which do not pose high, significant, or low hazard potential.

**45.2 Please list the categories in the rating system used in the USEPA structural integrity assessments and how each category is defined.**

See above.

**46. Does the USEPA regulation proposed in 40 C.F.R. Part 257 utilize the rating system result found in the USEPA structural integrity assessments to require the owner or operator of an impoundment to implement closure by removal of coal ash from an impoundment.**

Not that I am aware of, but U.S. EPA's proposed rule on coal ash management and disposal does address "unstable areas" in 40 C.F.R. 257.64 and 257.65, and if an owner or operator cannot assure an impoundment's integrity, it requires closure by five years after the effective date of the final rule. Section 257.83 also requires that all CCR surface impoundments be examined at intervals not exceeding 7 days for appearances of structural weakness and other hazardous conditions.

Clearly structural integrity of ash impoundments is highly valued by U.S. EPA since it undertook a nationwide assessment of impoundment stability in 2010 and 2011.

- 46.1 Does the USEPA regulation proposed in 40 C.F.R. Part 257 utilize the rating system result found in the USEPA structural integrity assessments to require any action by the owner or operator of an impoundment.**

Not that I am aware of.

- 47. On page 5 of your testimony, you reference CCW surface impoundments "with maximum embankment heights of six (6) feet." Please list the surface impoundments located in Illinois containing coal combustion residuals and with a maximum embankment height of six (6) feet.**

I am not sure that the Agency has made this sort of information available to the Board or the Environmental Groups. Of the 91 ash pits in the state of Illinois, 38 were assessed by U.S. EPA and include:

IL	38
Baldwin Energy Complex	1
Coffeen Power Station	2
Dallman Power Station	1
Duck Creek Power Station	2
E. D. Edwards Power Station	1
Havana Power Station	2
Hennepin Power Station	1
Hutsonville Power Station	4
Joppa Power Station	1
Kincaid Power Station	1
Lakeside	1
Marion Plant	13
Meredosia Power Station	2
Newton Power Station	2
Vermilion Power Station	2
Wood River Power Station	2

It is clear there are some ash impoundments that are unpermitted and therefore, uninspected for safety and stability. For example, the North Ash Pond System and the Old East Ash Pond System at the Dynegy Vermilion Plant are not permitted.

- 48. Do you know when the USEPA structural integrity assessment was completed for each of the impoundments listed in response to question 48.0 above? Please provide the date, if known.**

All of these reports are available on U.S. EPA's website, but I believe most of the assessments were completed in 2010 and 2011. Please see <http://www.epa.gov/wastes/nonhaz/industrial/special/fossil/surveys2/>.

49. **Do you know of any impoundments in Illinois where the USEPA has completed studies to assess the structural integrity of the surface impoundments and provided a final report condition rating for the impoundment?**

See Exhibit 13 and <http://www.epa.gov/wastes/nonhaz/industrial/special/fossil/surveys2/>. The U.S. EPA's website is excerpted below:

**Ameren**

- [Final Letter \(PDF\)](#) (3 pp, 380 KB)

**Ameren – Coffeen Facility**

- [Cover Letter \(PDF\)](#) (4 pp, 66 KB)
- [Comments \(PDF\)](#) (4 pp, 55 KB)
- [Draft Report \(PDF\)](#) (78 pp, 19 MB)
- [Final Report \(PDF\)](#) (78 pp, 19 MB)
- [Company Response/Action Plan \(PDF\)](#) (27 pp, 1.2 MB)

**Ameren – Duck Creek Facility**

- [Cover Letter \(PDF\)](#) (4 pp, 190 KB)
- [Comments \(PDF\)](#) (4 pp, 52 KB)
- [Draft Report \(PDF\)](#) (98 pp, 24 MB)
- [Final Report \(PDF\)](#) (91 pp, 24 MB)
- [Company Response/Action Plan \(PDF\)](#) (27 pp, 1.2 MB)

**Ameren – ED Edwards Facility**

- [Cover Letter \(PDF\)](#) (3 pp, 55 KB)
- [Comments \(PDF\)](#) (4 pp, 65 KB)
- [Draft Report \(PDF\)](#) (98 pp, 23 MB)
- [Final Report \(PDF\)](#) (92 pp, 23 MB)
- [Company Response/Action Plan \(PDF\)](#) (27 pp, 1.2 MB)

**Ameren – Hutsonville Power Station**

- [Cover Letter \(PDF\)](#) (3 pp, 40 KB)
- [Comments \(PDF\)](#) (7 pp, 102 KB)
- [Draft Report \(PDF\)](#) (121 pp, 36 MB)
- [Final Report \(PDF\)](#) (120 pp, 36 MB)

**Ameren / Electric Energy Inc. – Joppa Plant**

- [Cover Letter \(PDF\)](#) (3 pp, 181 KB)
- [Comments \(PDF\)](#) (5 pp, 761 KB)
- [Draft Report \(PDF\)](#) (85 pp, 4.4 MB)
- [Final Report \(PDF\)](#) (47 pp, 2.5 MB)
- [Company Response/Action Plan \(PDF\)](#) (42 pp, 10.3M)

Ameren – Meredosia Power Station

- [Cover Letter \(PDF\)](#) (4 pp, 192 KB)
- [Comments \(PDF\)](#) (4 pp, 65 KB)
- [Draft Report \(PDF\)](#) (85 pp, 58 MB)
- [Final Report \(PDF\)](#) (80 pp, 58 MB)
- [Company Response/Action Plan \(PDF\)](#) (27 pp, 1.2 MB)

Ameren – Newton Power Station

- [Cover Letter \(PDF\)](#) (4 pp, 65 KB)
- [Comments \(PDF\)](#) (4 pp, 135 KB)
- [Draft Report \(PDF\)](#) (71 pp, 16 MB)
- [Final Report \(PDF\)](#) (71 pp, 16 MB)
- [Company Response/Action Plan \(PDF\)](#) (27 pp, 1.2 MB)

**Dynegy Midwest Generation**

- [Final Letter \(PDF\)](#) (3 pp, 361 KB)

Dynegy Midwest Generation Inc – Baldwin Power Station

- [Cover Letter \(PDF\)](#) (4 pp, 92 KB)
- [Comments \(PDF\)](#) (19 pp, 5 MB)
- [Draft Report \(PDF\)](#) (179 pp, 17 MB)
- [Final Report \(PDF\)](#) (180 pp, 17 MB)

Dynegy Midwest Generation Inc – Havana Power Station

- [Cover Letter \(PDF\)](#) (2 pp, 436 KB)
- [Comments \(PDF\)](#) (15 pp, 2 MB)
- [Draft Report \(PDF\)](#) (26 pp, 2 MB)
- [Final Report \(PDF\)](#) (32 pp, 4 MB)
- [Final Report Appendices \(PDF\)](#) (414 pp, 38 MB)
- [Company Response/Action Plan \(PDF\)](#) (2 pp, 27 KB)

Dynegy Midwest Generation Inc – Hennepin Power Station

- [Cover Letter \(PDF\)](#) (4 pp, 87 KB)

- [Comments \(PDF\)](#) (27 pp, 7 MB)
- [Draft Report \(PDF\)](#) (192 pp, 11 MB)
- [Final Report \(PDF\)](#) (195 pp, 11 MB)

Dynegy Midwest Generation Inc – Vermilion Power Station

- [Cover Letter \(PDF\)](#) (3 pp, 33 KB)
- [Comments \(PDF\)](#) (15 pp, 3.7 MB)
- [Draft Report \(PDF\)](#) (81 pp, 8.4 MB)
- [Final Report \(PDF\)](#) (171 pp, 10.8 MB)
- [Company Response/Action Plan \(PDF\)](#) (2 pp, 37.5 KB)

Dynegy Midwest Generation Inc – Wood River Power Station

- [Cover Letter \(PDF\)](#) (2 pp, 433 KB)
- [Comments \(PDF\)](#) (27 pp, 804 KB)
- [Draft Report \(PDF\)](#) (25 pp, 464 KB)
- [Final Report \(PDF\)](#) (31 pp, 617 KB)
- [Final Report Appendices \(PDF\)](#) (666 pp, 66 MB)
- [Company Response/Action Plan \(PDF\)](#) (1 pg, 7 KB)

**49.1 Please identify each surface impoundment of which you are aware.**

See above.

**49.2 What was the final report condition rating for each impoundment?**

Please see Exhibit 13.

**49.3 Can you explain what the final report condition rating for each impoundment identified in question 6.0 based on?**

Please see the reports available at

<http://www.epa.gov/wastes/nonhaz/industrial/special/fossil/surveys2/>.

**50. Do you know whether any impoundments in Illinois received a final report condition rating of poor because a management unit (impoundment) safety deficiency is recognized for a required loading condition (static, hydrologic, seismic) in the USEPA structural integrity assessment?**

Attached as Exhibits G, H, I, and J are structural integrity assessments for the Baldwin, Hennepin, Hutsonville, and Marion plants.

None of the assessments use the term “management unit (impoundment) safety deficiency . . . for a required loading condition (static, hydrologic, seismic),” so I will not

attempt to characterize the reasons for “poor” ratings. Please see excerpted the full description of deficiencies:

BALDWIN

Assessments

In general, the overall condition of the PFAP impoundment was judged to be POOR. The PFAP impoundment was found to have the following deficiencies:

1. Thick vegetation and trees along the upstream and downstream slopes;
2. Minor potholes and rutting along the crest gravel access road;
3. Damaged discharge pipe from the northern decant;
4. The absence of erosion protection on the embankment near the discharge location of the northern decant has allowed erosion of the embankment;
5. No hydraulic/hydrologic analysis has been performed to confirm adequate freeboard and decant capacity at the design storm event;
6. The stability analysis completed does not account for storm event loading conditions; and,
7. No stability analysis was provided for the Intermediate Embankment.

In general, the overall condition of the SFAP impoundment was judged to be POOR. The SFAP impoundment was found to have the following deficiencies:

1. Thick vegetation and trees along the upstream and downstream slopes;
2. Minor potholes and rutting along the crest gravel access road;
3. Scarp present on the downstream slope of the northern embankment;
4. The stability analysis for the SFAP is incomplete for portions of the embankments and does not indicate that the embankments meet generally accepted levels of stability for the sections analyzed; and
5. No hydraulic/hydrologic analysis has been performed to confirm adequate freeboard and decant capacity at the design storm event.

In general, the overall condition of the Secondary Pond impoundment was judged to be POOR. The Secondary Pond impoundment was found to have the following deficiencies:

1. No hydraulic/hydrologic analysis has been performed to confirm adequate freeboard, decant and overflow spillway capacity; and,
2. No seepage and/or stability analysis has been performed for the Secondary Dike.

In general, the overall condition of the Intermediate Pond impoundment was judged to be POOR. The Intermediate Pond impoundment was found to have the following deficiencies:

1. Thick vegetation and trees along the upstream and downstream slopes;
2. Potholes along the crest gravel access road;

3. Concrete covering the downstream slope prohibits monitoring of potential erosion;
4. No hydraulic/hydrologic analysis has been performed to confirm adequate freeboard and decant/overflow spillway capacity;
5. In GZA's opinion, the stability analysis for the impoundment was incomplete; and,  
Additional analysis was completed and provided to GZA after issuance of the DRAFT report that satisfies our recommendation. No further analysis is recommended at this time.
6. No evaluation has been conducted to verify the stability of the overflow section against piping or fines erosion.

In general, the overall condition of the Final Pond impoundment was judged to be POOR. The Final Pond impoundment was found to have the following deficiencies:

1. Thick vegetation and trees along the downstream slopes;
2. Minor potholes along the crest gravel access road;
3. No hydraulic/hydrologic analysis has been performed to confirm adequate freeboard and decant/overflow spillway capacity;
4. In GZA's opinion, the stability analysis for the impoundment was incomplete; and, Additional analysis was completed and provided to GZA after issuance of the DRAFT report that satisfies our recommendation. No further analysis is recommended at this time.
5. No evaluation has been conducted to verify the stability of the overflow section against piping or fines erosion.

#### HENNEPIN Assessments

In general, the overall condition of the EAPS impoundment was judged to be POOR. The EAPS impoundment was found to have the following deficiencies:

1. Trees were present along the upstream and downstream slopes;
2. Minor potholes and rutting along the crest gravel access road; and,
3. The stability analysis completed indicates that the 1979 embankments that support the underlying ash along the Illinois River have a calculated factor of safety less than the generally accepted value and assumptions in the analysis about subsurface conditions should be verified.

In general, the overall condition of the AEAPS impoundments was judged to be POOR. The AEAPS impoundment was found to have the following deficiencies:

1. Minor potholes and rutting along the crest gravel access road;
2. Trees were present along the downstream slope of the northern embankment; and,

3. The stability analysis completed indicates that the 1979 embankments that support the underlying ash along the Illinois River have a calculated factor of safety less than the generally accepted value.

In general, the overall condition of the WAPS impoundment was judged to be POOR. In GZA's professional opinion, the embankment(s) visually appear to be sound and no immediate remedial action appears to be necessary. However, based on EPA's assessment criteria, the impoundment has been given a POOR Condition Rating, because complete hydraulic and geotechnical computations were not provided/available for GZA's for review. Thus, the stability of the embankment(s) could not be independently verified. The WAPS impoundment was found to have the following deficiencies:

1. Thick vegetation and trees along the downstream slopes;
2. Minor potholes and rutting along the crest gravel access road;
3. Erosion along the downstream slope of the northern embankment;
4. No seepage and/or stability analysis has been performed for the WAPS; and
5. No hydraulic/hydrologic analysis has been performed to confirm adequate freeboard and decant capacity at the design storm event.

#### HUTSONVILLE

In general, the overall condition of the Pond A was judged to be POOR and was found to have the following deficiencies:

1. Animal burrows along the crest;
2. Minor sloughing on the downstream slope;
3. No documented hydrologic/hydraulic analysis; and,
4. Conditions leading to inadequate freeboard.

In general, the overall condition of Pond B was judged to be POOR and was found to have the following deficiencies:

1. No documented stability analysis.

In general, the overall condition of the Pond D was judged to be POOR and was found to have the following deficiencies:

1. The calculated factor of safety under seismic loading was less than the generally accepted value 1.0.

#### **50.1 If yes, please identify each impoundment.**

See above.



- 51. Do you know whether any impoundments in Illinois received a final report condition rating of poor in the USEPA structural integrity assessment because further critical studies or investigations are needed to identify any potential dam safety deficiencies.**

See above.

- 51.1 If yes, please identify each impoundment.**

See above.

- 52. Please identify all impoundments in Illinois where site specific conditions predict declining stability of the CCW surface impoundment.**

In IEPA's post hearing comments filed on March 25, 2014, questions 7-10 list the CCW impoundments known by the Agency to have been constructed over a mine void, groundwater recharge area, wetlands, and/or a shallow aquifer. For instance, 7 ash pits are known to have been constructed over mine voids, where subsidence is possible; 56 ash pits were built over groundwater recharge areas; 9 ash pits are known to been constructed over wetlands; and 62 ash pits were constructed over a shallow aquifer.

It is also important to note that not all utilities are aware of the construction features of the ash pits they are responsible for maintaining. For instance, at the Dynegy Vermilion site, Dynegy knows no details about the embankment construction and whether seepage reduction and control features such as drains and filters were built into the older unlined ash pits. Please see the geotechnical report for the Vermilion site entered as Exhibits 42 and 43 in this proceeding.

- 53. Do you know whether mercury, selenium, arsenic, chromium, cadmium groundwater quality standards violations have been documented in groundwater sampling results related to CCW surface impoundments in Illinois?**

IEPA issued a violation notice to Ameren for exceedences of arsenic at Meredosia. In Exhibit A to Richard Cobb's prefiled testimony in this proceeding for the Agency, the following violations are shown:

Powerton: arsenic, selenium, mercury

Meredosia: arsenic

Pearl: arsenic

We are also aware of recent monitoring results that exceed the surface water quality standard and human health standard for mercury (Hg) at the Newton Power Plant. In 2011, two Hg data points at Newton's ash pond outfall to Newton Lake exceeded the Human Health Standard (HHS) for mercury (0.012 ug/L) prior to the doubling of mercury loading to the Lake, and since then, nearly half of the ash pond discharges have

exceeded the Hg HHS. Please see a summary of discharge monitoring reports attached as Exhibit L. The fish tissue analyses conducted to date show that fish flesh exceeded the HHS prior to the doubling of the mercury loading to the lake. There is an existing fish consumption advisory at the Lake due to mercury and the Lake is listed as impaired for fish consumption use due to high levels of mercury.

In their application for a modified NPDES permit for Newton, Ameren predicted the chromium concentration at their ash pond outfall to be equal to the chronic water quality standard. Please see the NPDES permit modification responsiveness summary attached as Exhibit M. There is no limit in the permit, and in fact the quarterly monitoring requirement sets the detection limit at 0.05mg/L (50ug/L), which will never let compliance with the chronic standard be evaluated. The facility and IEPA did not consider the impact, fact or effect of this pollutant (and others such as arsenic, barium, cadmium, lead, aluminum, molybdenum and vanadium) on the receiving water body and existing uses. Chromium is of great concern due to toxicity, as evidenced here: <http://www.environmentalintegrity.org/documents/CoalAshChromeReportFINAL.pdf>.

Finally, I am overseeing work conducted by two ecotoxicologists from the Illinois Natural History Survey in which they are investigating levels of coal ash pollutants in the water, sediment and biota, including invertebrates and fish, of the Middle Fork of the Vermilion River in the vicinity of the Dynegy Vermilion power plant. Preliminary findings suggest that:

- concentrations of nine elements were appreciably greater in water samples collected downstream. This was especially true for cadmium, chromium, mercury, lead and zinc. Concentration of boron and selenium were also higher in downstream samples.
- 10 of the 14 detectable elements were present in significantly greater concentrations in snails collected downstream of the Vermilion ash pits, including mercury, arsenic, cadmium, cobalt, chromium, molybdenum, thallium, vanadium, zinc, and lead.

When complete, we will submit the final report to the Board.

Please see *Vermilion Generating Station: Risks to the Aquatic Resources of the Middle Fork of the Vermilion River, Interim Report to Prairie Rivers Network*, attached as Exhibit N.

**53.1 Please describe how site specific conditions predict declining stability of coal ash impounding structures.**

The foundation of ash pits and their impounding walls can be compromised by subsidence of underlying mine void and soft bases from standing water from wetlands, flooding or high water tables. Meandering rivers will erode riverbank walls over time, threatening ash impoundment walls located in the floodplain. Tree roots and erosion can wear away at walls' integrity.

**54. On top of page 4 in your testimony, what do you mean by "those data have shown contamination "progressing" in nearly every instance."?**

By "contamination progressing", I meant that the contamination plume was moving, advancing or permeating the underlying or adjacent strata to the coal ash pits.

**54.1 Can you give specifics on what the instances are to which you refer?**

Every site.

**55. Do you believe more accurate results are obtained when you base your professional opinion on site-specific information or on information gathered from generally applicable scholarly resources?**

Both site-specific information and scholarly research should inform responsible rulemaking.

**56. On page 4 in your testimony where you refer to Vermilion River. Does the surface water of the Middle Fork of the Vermilion River show impairment of the water quality standards found in 35 Ill. Adm. Code 309?**

It is my understanding that IEPA monitoring of WQSs in the area is based on sampling at an Ambient Water Quality Monitoring station located over 1 mile downstream of the power plant and does not reflect site-specific conditions or impacts due to the plant.

Further, we have evidence that the aquatic community in the Middle Fork of the Vermilion River are impacted per our ongoing ecotoxicological research. This could be considered an impairment of the aquatic life use designation.

There is also evidence of ongoing unpermitted seeps/discharges that our members have been tracking for several years. Unpermitted discharges violate the Illinois Environmental Protection Act and the Clean Water Act.

There is no necessity for this impoundment to remain in place. Yet currently there is no requirement for the operator to get this CCW out of the water table.

**57. Does the Edwards plant have an NPDES permit to pump into the IL River?**

Not yet, but Ameren requested permission during their last NPDES permit renewal (or modification). See the letter from Ameren to IEPA admitted as Exhibit 38 in this proceeding. According to the letter, Ameren had been pumping into the river during times of flooding.

**58. Is the Meredosia plant permitted to have stormwater flow through the coal ash impoundments?**

Please see the NPDES Permit for the Meredosia plant, attached as Exhibit O. Yes, the Meredosia plant has permitted outfalls for the stormwater flow discharges from the coal ash ponds through Outfalls 003 and 004. Stormwater will continue to flush out coal ash pollutants through the outfalls to the Illinois River as long as they remain open.

**59. When closure is by removal, where would you recommend moving the coal ash? Please explain how this new location would not pose a hazard to humans or the environment.**

Of course, a proper site characterization would need to be conducted, as is done for new landfills. Coal ash moved to high, dry, lined waste management facilities and away from surface waters and shallow aquifers should reduce the risk or hazard to humans and the environment.

I can point to several examples where coal ash has been removed. In 2002, the Massachusetts Department of Environmental Protection entered into an administrative consent order with plant owners to remove all waste from the coal ash ponds at the Salem Harbor and Brayton Point Power Stations in Salem and Somerset, MA, respectively, and dispose of it in a special waste facility. See Exhibit P.

Another example is the 2013 requirement to remove all coal ash at the Santee Cooper Grainger Station within roughly 10 years. That ash must be placed in a landfill, sold, or recycled. See the settlement agreement admitted as Exhibit 56 in this proceeding.

Environmental groups also entered into a 2012 settlement agreement with South Carolina Electric & Gas Company requiring closure by removal at SCE&G's Wateree plant. See Exhibit Q. Under the agreement, all ash and an additional two feet minimum of underlying soil will be removed from an impoundment and must be either sold, recycled or placed in a landfill by the end of 2020. This requirement will require SCE&G to remove 2.4 million tons of coal ash within eight years. See Meg Kinnard, *SCE&G removes 280K tons of coal ash from Wateree*, available at <http://www.businessweek.com/ap/2013-07-30/sce-and-g-removes-280k-tons-of-coal-ash-from-wateree> and attached as Exhibit R. The plant will construct a new, lined ash pond to begin collecting new coal ash by the end of 2017 at the latest.

**60. Please elaborate on your training or background regarding the structural integrity of CCW surface impoundments.**

In the last 10 years of working for Prairie Rivers Network, I have participated in several cases involving coal ash pits including NPDES proceedings, the Hutsonville site-specific rulemaking, and investigation of coal ash pollution of both groundwater and surface water at several sites; witnessed coal ash impacts at several sites; and reviewed assessments and reports from U.S. EPA, IEPA, industry consultants, and independent consultants.

**The Illinois Environmental Protection Agency's April 30, 2014 Questions for Keir Soderberg**

24. **Does the United States Environmental Protection Agency's (USEPA) proposed regulation in 40 C.F.R. Part 257 require permanent removal of CCW from existing impoundments by an owner or operator?**

No.

25. **Does the USEPA's proposed regulation in 40 C.F.R. Part 257 allow for closure with ash left in place?**

Yes.

26. **Does the USEPA's proposed regulation in 40 C.F.R. Part 257 allow for corrective actions to be implemented?**

Yes.

27. **Does the USEPA's proposed regulation in 40 C.F.R. Part 257 require that a unit that is out of compliance after an attempt at a corrective action be closed?**

Please see proposed 40 C.F.R. § 257.98. If an owner or operator determines that it cannot comply with the requirements for corrective action “with any currently available methods,” 40 C.F.R. § 257.98(c), then the owner or operator must, among other things, “[i]mplement alternate measures for control of the sources of contamination or for removal or decontamination of equipment, units, devices, or structures that are consistent with the overall objective of the remedy,” 40 C.F.R. § 257.98(c)(3).

28. **Does proposed 40 C.F.R. §257.97(e) allow an owner or operator to determine that the remediation of a release from a surface impoundment is not necessary?**

Yes, subject to requirements set out in the proposed section. See also 40 C.F.R. § 257.97(f):

A determination by the owner or operator pursuant to paragraph (e) of this section shall not affect the obligation of the owner or operator to undertake source control measures or other measures that may be necessary to eliminate or minimize further releases to the groundwater, to prevent exposure to the groundwater, or to remediate the groundwater to concentrations that are reasonable and significantly reduce threats to human health or the environment.

- 28.1 Does the corrective action section of proposed 40 C.F.R. §257.97(e)(3) allow an owner or operator to determine that the remediation of a release from a surface impoundment is not necessary if the remediation of the release is technically impracticable?**

Yes, subject to the requirements set out in the proposed section. See also 40 C.F.R. § 257.97(f).

- 31. On page 10 of your testimony you state “Section 841.415 Final Slope and Stabilization should include a prohibition on using CCW to establish the final grade and slope of the impoundments. As written subsection 841.415(d) could be interpreted to allow for CCW to be exposed on the earthen berms surrounding the unit. CCW exposed in this way would come in to contact with storm water and become part of eroded sediment transported away from the closed unit. Section 841(d) should be clarified to prevent this exposure.”**

- 31.1 Does proposed Section 841.420 specify the requirements for the final cover of an impoundment?**

Yes.

- 31.2 What are the requirements in the proposed Section 841.420 for the final cover on an impoundment?**

Please see the Agency’s proposed Section 841.420 and the Environmental Groups’ answers to the Agency’s Questions 31.3-31.8.

- 31.3 Is it true that that proposed Section 841.420 requires an owner or operator to design and construct a final cover system for an impoundment if the unit is not closed by removal of all coal combustion waste?**

Yes.

- 31.4 Is it true that that proposed Section 841.420 requires an owner or operator to design and construct a final cover system which includes a low permeability layer and a final protective layer?**

Yes.

- 31.5 Is it true that that proposed Section 841.420(b)(1)(A) requires an owner or operator to design and construct a final cover system with a compacted earth layer which is three feet thick?**

Yes.

- 31.6 Is it true that that proposed Section 841.420(b)(1)(A) requires an owner or operator to design and construct a compacted earth layer which is 3 feet thick and has a hydraulic conductivity of  $1 \times 10^{-7}$  centimeters per second or less?**

Yes.

- 31.7 Is it true that that proposed Section 841.420 requires a final protective layer?**

Yes.

- 31.8 Is it true that that proposed Section 841.420 requires a final protective layer which is three feet thick and must be sufficient to protect the low permeability layer from freezing and minimize root penetration of the low permeability layer?**

Yes.

- 33. Does the proposed Section 841.305(a) require that a demonstration of alternative cause be made within 180 days?**

The Agency's proposed Section 841.305(a) provides that "the owner or operator shall submit a report to the Agency that demonstrates an alternative cause within 180 days after the date of submission of the confirmation samples pursuant to Section 841.300 of this Part."

- 34. Does Proposed Section 841.305(b) require the Agency to provide a written response of concurrence or non-concurrence to the demonstration of alternative cause provided by the owner or operator?**

Yes.

- 35. On page 8 of your testimony, you reference a 2010 letter from Ameren to the Agency regarding arsenic at the Venice facility. Do you believe this letter alone would constitute an alternative cause demonstration under the proposed rules?**

The Environmental Groups will not speculate whether the Agency would concur with the letter as an adequate demonstration of an alternative cause, as required by the Agency's proposed rule. The Environmental Groups do not believe the letter adequately demonstrates an alternative cause.

- 35.1 Are you aware of any other documentation Ameren provided to the Agency regarding the source of the arsenic?**

No, the Environmental Groups are not aware of any other documentation. Dr. Soderberg reviewed all publicly available information.



- 36. Does the proposed rule require the Agency to approve the use of previous submittals to fulfill the obligations under the proposed rule?**

No.

- 37. May the Agency request submittal of additional information if previous submittals are found be inadequate under the proposed rules?**

It is not clear to the Environmental Groups which section of the proposed rules the Agency is referring to in this question.

- 38. Does the proposed rule require an alternative cause demonstration show that a specific source other than the unit be identified if the exceedence is not due natural causes, or an error in sampling, analysis or evaluation?**

No.

**CERTIFICATE OF SERVICE**

I, Andrew Armstrong, hereby certify that I have served the attached **Environmental Groups' Answers to the Illinois Pollution Control Board's June 11, 2014 Questions for the Environmental Groups, the Illinois Environmental Protection Agency's June 11, 2014 Questions for the Environmental Groups, the Illinois Pollution Control Board and Illinois Environmental Protection Agency's April 30, 2014 Questions for Traci Barkley, and the Illinois Environmental Protection Agency's April 30, 2014 Questions for Keir Soderberg** on behalf of Environmental Integrity Project, Environmental Law & Policy Center, Prairie Rivers Network, and Sierra Club in R14-10 upon the attached service list by depositing said documents in the United States Mail, postage prepaid, in Chicago, Illinois on July 17, 2014.

Respectfully submitted,



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