BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

PETITION OF BRICKYARD DISPOSAL & RECYCLING, INC. FOR AN ADJUSTED STANDARD PURSUANT TO 35 ILL. ADM. CODE 814.402(B)(3) and FROM 35 ILL. ADM. CODE 810.103, 811.318(b)(3) and 811.320(c)	)	AS 14-03 (Adjusted Standard - Land)

NOTICE OF FILING

PLEASE TAKE NOTICE that today I have filed with the Office of the Clerk of the Pollution Control Board the AMENDED PETITION FOR ADJUSTED STANDARD. A Copy of this document is hereby served upon you.

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Dated: November 6, 2014

Respectfully submitted,
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AMENDED PETITION FOR ADJUSTED STANDARD

NOW COMES Brickyard Disposal & Recycling, Inc. ("Brickyard" or "Petitioner"), by and through its attorneys Brown, Hay & Stephens, LLP, and respectfully amends its Petition requesting the Illinois Pollution Control Board ("Board") to grant an adjusted standard pursuant to Section 28.1 of the Illinois Environmental Protection Act (the "Act") (415 ILCS 5/28.1), Part 104 of the Board's Procedural Rules (35 Ill. Adm. Code 104) and Section 814.402(b)(3)[1] of the Board's regulations (35 Ill. Adm. Code 814.402.(b)(3)). Brickyard requests an adjusted standard pursuant to Section 814.402(b)(3), as well as relief related to the requirements of Sections 810.103, 811.318(b)(3), and 811.320(c). See proposed Board Order, Attachment A.

I. BACKGROUND

Brickyard consists of two separate permitted waste units: Brickyard I and Brickyard II. Pursuant to the relevant landfill regulations, Brickyard I is considered an "existing unit" subject to Part 814, Subpart D, as it initiated closure in 1997 and has not accepted waste since that time. Brickyard II, on the other hand, is a newer landfill, subject to the new landfill rules found at Part 811, which were promulgated to be consistent with the federal "Subtitle D" rules. Brickyard I is the subject of the Adjusted Standard Petition; Brickyard II is not.

[1] Hereinafter, references to Board regulations will be by section number only.

The underlying Adjusted Standard Petition filed on June 27, 2014, seeks a Board Order designating a compliance boundary and zone of attenuation ("ZOA"), pursuant to Section 814.402(b)((3) of the Board's rules, as well as relief pursuant to Sections 810.103, 811.318(b)(3), and 811.320(c). In an Order issued September 18, 2014 ("Order"), the Board accepted this Adjusted Standard Petition, found that notice was appropriate, but identified certain "informational deficiencies" and directed Brickyard to file an Amended Petition by October 20, 2014 (extended by Hearing Officer Order to November 6, 2014). This filing is in direct response to the Board's Order. Brickyard provides the information requested by the Board in a manner consistent with Section 104.416(a) of the Board's procedural rules, since this amended filing does "not repeat the entire unchanged portion of the original filing" but instead repeats "a sufficient portion of the original filing….so that the context of the amendment is made clear." 35 Ill. Adm. Code 104.418(d). Moreover, the information is provided in a manner that does not require a "substantive change to the requested relief" so, accordingly, no additional notice is necessary.

As the Board recognized in its Order, citing Brickyard's Petition, the relief sought is "in furtherance of [Brickyard I's] effort to obtain approval of final closure and post-closure care" certification from the Illinois Environmental Protection Agency ("Agency") and:

> During the landfill's operation, railroad ties and other construction debris…were deposited and/or utilized in an area contiguous to the landfill, and now provide stability and support for Brickyard I, so that any environmentally responsible final closure *will require* ***consideration*** *of this fill area.*[2] To adequately address monitoring of Brickyard I and the fill area, an adjustment to the groundwater compliance boundary and related regulatory provisions is required. (emphasis added).

[2] The Board's Order of September 18, 2014 incorrectly quoted the italicized phraseology above, stating that responsible final closure will require "*incorporation* of this fill area" instead of the actual language Brickyard utilized: "*consideration* of this fill area." Brickyard purposefully utilized the term "consideration" instead of "incorporation" in order to eliminate any confusion over whether the fill area is intended to be *incorporated* into the permitted landfill area (i.e., included within the permit). It is not.

Pet. at 2.

Section 814.402(b)(3) authorizes the Board to identify an alternative compliance boundary (and a ZOA) upon demonstration that "the alternative compliance boundary will not result in contamination of groundwater which may be needed or used for human consumption." The Section identifies certain factors that the Board may consider in making its determination. Section 814.402(b)(3) reads as follows:

> 3) Groundwater Standards
>
> A unit shall not contaminate a source of drinking water at the compliance boundary, defined as any point on the edge of the unit at or below the ground surface. At any point on the compliance boundary, the concentration of constituents shall not exceed the water quality standards specified in 35 Ill. Adm. Code 302.301, 302.303, 302.304, and 302.305. The Board may provide for a zone of attenuation and adjust the compliance boundary in accordance with Section 28.1 of the Act and the procedures of 35 Ill. Adm. Code 106.Subpart G *upon petition demonstration by the owner or operator that the alternative compliance boundary will not result in contamination of groundwater which may be needed or used for human consumption.* In reviewing such petitions, the Board will consider the following factors:
>
> A) *The hydrogeological characteristics of the unit and surrounding land, including any natural attenuation and dilution characteristics of the aquifer;*
>
> B) The volume and physical and chemical characteristics of the leachate;
>
> C) *The quantity, quality, and direction of flow of groundwater underlying the facility;*
>
> D) The proximity and withdrawal rates of groundwater users;
>
> E) The availability of alternative drinking water supplies;
>
> F) *The existing quality of the groundwater, including other sources of contamination and their cumulative impacts on the groundwater;*

> G) Public health, safety, and welfare effects; and
>
> H) *In no case shall the zone of compliance extend beyond the facility property line or beyond the annual high water mark of any navigable surface water.*
>
> I) Notwithstanding the limitations of subsection 814.402(b)(3)(H), in no case shall the zone of compliance at an existing MSWLF unit extend beyond 150 meters from the edge of the unit.

35 Ill. Adm. Code 814.402(b)(3) (emphasis added).

The requested Adjusted Standard also seeks relief, as necessary, from Sections 810.103 ("Definitions"), 811.318(b)(3) ("Location of Monitoring Points") and 811.320(c) ("Groundwater Quality Standards"). Although these rules are generally applicable to new Subtitle D landfills, and Brickyard I is not a new landfill but an "existing landfill" subject to Part 814 Subpart D of the Board's rules, the Board found that relief from the above-referenced provisions of Part 811 would be necessary in the context of the facts presented by Brickyard. See *In the Matter of Brickyard*, AS 13-4, Opinion and Order (Jan. 23, 2014).

Specifically, in AS 13-4 the Board stated:

> (T)he Board finds that, since Brickyard is requesting the Board adjust the compliance boundary per Section 814.402(b)(3) such that the compliance boundary is not at the edge of the unit, the exemption from Section 811.320(c) under Section 814.402(a)(8) no longer applies. 35 Ill. Adm. Code 814.402(a)(8), (b)(3), 811.320(c). Section 814.402(b)(3) provides that the Board will both provide for a zone of attenuation **and** adjust the compliance boundary upon view of a satisfactory demonstration. 35 Ill. Adm. Code 814.402(b)(3). Without providing for a zone of attenuation, the Board will not adjust the compliance boundary and grant a petition for adjusted standard from Section 811.318(b)(3) pursuant to Section 814.402(b)(3). 35 Ill. Adm. Code 811.318(b)(3), 814.402(b)(3).
>
> *Id.* at 18. (emphasis in original).

Thus, the Board found that the relief sought by Brickyard (adjust the compliance boundary so

that compliance monitoring wells are located outside the fill area) also requires:

- ***Relief from Section 811.318(b)(3) which reads*:**

  b) Standards for the Location of Monitoring Points

  > 3) Monitoring wells shall be established as close to the potential source of discharge as possible without interfering with the waste disposal operations, and within half the distance from the edge of the potential source of discharge to the edge of the zone of attenuation downgradient, with respect to groundwater flow, from the source.

  35 Ill. Adm. Code 811.318(b)(3)

- ***And a determination of a Zone of Attenuation which reads***:

  c) Determination of the Zone Attenuation

  > 1) The zone attenuation, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard of this Section, is a volume bounded by a vertical plane at the property boundary or 100 feet from the edge of the unit, whichever is less, extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste.
  >
  > 2) Zones of attenuation shall not exceed to the annual high water mark of navigable surface waters.
  >
  > 3) Overlapping zones of attenuation from units within a single facility may be combined into a single zone for the purposes of establishing a monitoring network

  35 Ill. Adm. Code 811.320(c)

II. RESPONSE TO BOARD'S REQUESTED INFORMATION

The Board asks ten questions, in three different categories. First, the Board asks questions concerning the hydrologic characteristics of the area, including the three dimensional aspect of the proposed zone of attenuation (Items #1-4). Those questions relate to Sections 814.402(b)(3)(A), (C), and (F) above and are addressed below in Section II (A). Second, the

Board asks questions related to Brickyard's intended long-term maintenance of the proposed Cover Plan (Pet. App. C) (Items #5-9). Those questions are addressed in Section II (B). Third, the Board asks a final question related to information Brickyard presented concerning the "average annual high water mark" (Item #10). This question relates to Section 814.402(b)(3)(H) and is addressed below in Section II (C).

A. Hydrological Characteristics: Items 1 – 4

Since the overriding objective of an adjusted standard pursuant to Section 814.402(b)(3) is to provide for an alternative compliance boundary that "will not result in contamination of groundwater which may be needed or used for human consumption" the Board's first four questions presumably inquire, at their core, as to whether Brickyard's proposed compliance boundary and ZOA are sufficiently protective of public health and safety, particularly from contamination of drinking water sources.

(1) ***Is the described "water-bearing zone" an "aquifer" as defined in Section 810.103 [and as utilized in Section 814.402(b)(3)(A)]?***

The Board's Order recites the definition of "aquifer" contained in 35 Ill. Adm. Code 810.103:

> "Aquifer" means saturated (with groundwater) soils and geologic materials which are sufficiently permeable to readily yield economically useful quantities of water to wells, springs, or streams under ordinary hydraulic gradients and whose boundaries can be identified and mapped from hydrogeologic data. (Section 3 of the Illinois Groundwater Protection Act [415 ILCS 55/3]).
>
> 35 Ill. Adm. Code 810.103.

Further, in its Order the Board points out that Section 814.402(b)(3)(A) refers to the hydrogeological characteristics of the unit, "including natural attenuation and dilution characteristics of the *aquifer*." Order at 2 (emphasis in original). The Board notes that Brickyard has referred to the water underlying the area proposed to be included within the

confines of the Compliance Boundary, and the Zone of Attenuation ("ZOA"), in terms of "groundwater" and "water bearing zone" but not "aquifer". Thus, the Board inquires as to whether the water bearing zone referred to in the Technical Support Document ("TSD") prepared by Andrews Engineering, Inc. ("AEI") and presented as Appendix B in the Petition is the same as an "aquifer" as defined in the Board's regulations.

For purposes of monitoring the groundwater at Brickyard I, the term "water-bearing zone" referenced in the TSD is synonymous with the definition of "aquifer" contained in Section 3 of the Illinois Groundwater Protection Act, 415 ILCS 55/3, and Section 810.103 of the Board's rules. See Attachment B, Affidavit of Bradley J. Hunsberger ("Hunsberger Affidavit") at ¶ 7. Brickyard's intention was to provide the Board a more detailed and accurate description of the area proposed to be monitored. *Id.* Nonetheless, the water bearing zone identified in the TSD meets the Board's definition of aquifer because hydraulic gradients and boundaries can be identified and mapped using hydrogeologic data. *Id*.

As "aquifer" is often utilized to depict groundwater that is a useful source of drinking water, Brickyard utilized terminology that it believed more specifically portrayed the type of aquifer at this particular site, which is limited in extent. *Id*. Brickyard used the terminology "water bearing zone" as a more apt description of the water being monitored at this site. Moreover, such terminology is consistent with the nomenclature previously used in IEPA's permitting of Brickyard I. *Id*. As explained in the TSD, the aquifer is of limited extent (TSD, Sect. 5.1) and will have no adverse impact on any potential well utilized for drinking water purposes.[3] See Hunsberger Affidavit at ¶ 8.

[3] Four community water supply wells were identified to the northeast of Brickyard I; all are located on the opposite side of the Vermilion River. TSD at Section 4.4; Attachment 6, Sheet 1. In a review of fourteen of the wells most proximate to Brickyard I, only two potential residential wells were identified; neither would be impacted. One

The water-bearing zone beneath and directly adjacent to Brickyard I is, in actuality, a combination of the coal seam, mine voids (where the coal has been removed via underground mining) and spoil/bedrock interface where surface mining has occurred; it is continuous beneath Brickyard I. TSD at 7; Hunsberger Affidavit at ¶ 9. As stated in the TSD, groundwater within this zone is confined vertically at its bottom by a low hydraulic conductivity bedrock deposits. *Id* at ¶ 10. This lower confining unit has been identified as the Middle Shale. *Id*. On the eastern side of the property, the Middle Shale transitions to a Silty Sandstone deposit; both constitute the lower confining layer. *Id*. The referenced water-bearing zone (*i.e.,* aquifer) is also the most probable migration pathway in the event of a release from the waste unit or extraneous materials. *Id*. at ¶11.

The groundwater within the water-bearing zone is not useful for human consumption because of impacts from prior mining. TSD at 13. Nonetheless, as stated in the TSD: "(T)he most probable route of contaminant migration has been identified as the coal seam, the mine void where the coal has been removed via underground mining, or the spoil/bedrock interface where surface mining has occurred. The pathway is continuous beneath Brickyard I." TSD at 3. As evident from permitting of the current groundwater monitoring network, the Agency has concurred that this is the appropriate water source to be monitored for purposes of migration of any contaminants from Brickyard I. Hunsberger Affidavit at ¶ 11. The Agency has also concurred that groundwater within the water-bearing zone is Class IV groundwater due to historical mining activities. *Id*.

In terms of a detailed description of the geological conditions underlying the site, voluminous data has been provided to the Agency in the initial permitting of the temporary

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(identified as Well 01505) is upgradient of Brickyard I; the other (identified as Well 24029) is 3,200 feet east of Brickyard I, on the opposite side of the Vermilion River. *Id.*

groundwater monitoring network, now in place for at least five years. *Id*. at ¶ 13; TSD at 3. References to that permit and current monitoring network are found throughout the TSD. In this Petition, Brickyard seeks an adjusted standard that will allow for permitting of a final groundwater monitoring network, by identifying a logical Compliance Boundary via Section 814.402(b)(3). Hunsberger Affidavit at ¶ 14. As directed by the Board in AS 13-4, Brickyard's Petition also proposes a ZOA.

(2) ***Clarify if the "water-bearing zone" identified in Brickyard's TSD is the "uppermost aquifer" as defined in Section 810.103 of the Board's solid waste regulations*.**

The "water-bearing zone" described in the TSD is consistent with the "uppermost aquifer" as defined in Section 810.103. *Id*. at ¶ 15. The bottom of the aquifer (or, as referred to in the TSD, the "water-bearing zone") is the top of the shale located under Brickyard I and the extraneous materials and is described in Section 4.1.1 of the TSD. TSD at 7. As depicted in Sheet Nos. 4 and 6, Attachment 2 to the TSD, that Middle Shale is largely present beneath the extraneous material area, but transitions to the east to a "Sandy Siltstone" deposit, identified in the aforementioned cross sections. Hunsberger Affidavit at ¶ 17. The Sandy Siltstone deposit contains nearly the same horizontal hydraulic conductivity as the Middle Shale. *Id*. at ¶ 18. As described in Brickyard's permit applications, the geometric mean of the horizontal hydraulic conductivities for the Middle Shale and the Sandy Siltstone are 3.46x10-7 cm/sec and 4.68x10-7 cm/sec, respectively. *Id*. Therefore, the bottom of the uppermost aquifer is the top of the Middle Shale (from the west end to the area under the extraneous materials) and the top of the Sandy Siltstone (east of the extraneous materials area). *Id*. at ¶ 19. Both of these geologic formations serve as the bottom of the uppermost aquifer. *Id.* Since these deposits are sedimentary, the vertical hydraulic conductivity is typically 1 to 2 orders of magnitude lower than the horizontal

value. *Id*. at ¶ 20. The vertical confining properties of the bedrock are better than current liner quality requirements. *Id*. at ¶ 21. Thus, the water-bearing zone is an aquifer, and it is the uppermost aquifer. Moreover, it is the most probable contaminant migration pathway as described in Section 811.318(b)(2) and confirmed by the Agency through current permitting. The monitor well network is designed based on groundwater movement within this zone and to provide early detection of a change in groundwater quality due to influences from Brickyard I or the extraneous materials. *Id*. at ¶ 14.

(3) ***If the "water-bearing zone" is different than the "uppermost aquifer," address how wells screened in the water-bearing zone, in addition to the uppermost aquifer, could be used to discern changes in groundwater quality in the event of a release from Brickyard I. See TSD at 33.***

As discussed above, the water-bearing zone described in the TSD is the uppermost aquifer, consistent with the Board's regulations and an appropriate groundwater monitoring network.

(4) ***Integrate the specifics for the bottom of the uppermost aquifer as well as the proposed lateral extent in Figure 1, dated June 2014, to describe the proposed zone of attenuation and compliance boundary. Pet. Fig. 1. If Figure 1 of the petition no longer accurately represents Brickyard's requested relief, provide an update Proposed Compliance Boundary and Zone of Attenuation figure along with the requested information.***

As depicted in Illustration #1, the bottom of the uppermost aquifer is the upper part of the Middle Shale and the Sandy Siltstone. *Id*. at ¶ 16. Figure 1 has been revised to provide a depiction of the contours of the top of those deposits. *Id*. at ¶ 22. Those contours constitute the bottom of the uppermost aquifer and Brickyard believes best represent the vertical extent of the ZOA, which is the bottom of the uppermost aquifer. *Id*. The specifics related to the depth of those deposits are contained in the TSD and in the response to Items 1 and 2 above. The water-bearing zone beneath and directly adjacent to Brickyard I has been identified as the coal seam, the mine void where the coal has been removed via underground mining, or the spoil/bedrock

interface where surface mining has occurred; it is continuous beneath Brickyard I. *Id.* at ¶ 9. The lower confining unit has been identified as the upper part of the Middle Shale and the Sandy Siltstone. *Id.* at ¶ 10. The lower confining unit creates a vertical hydraulic barrier beneath the coal/void/spoil. Groundwater moves laterally along the bedrock contact. Therefore, the bottom of the zone of attenuation is coincident with the Middle Shale or Sandy Siltstone. *Id.*

Geologic cross sections were provided in Attachment 1 and Attachment 2 to the TSD that illustrated the site stratigraphy, demonstrating a cross section view at E-3000 which shows that the Middle Shale is present directly under the coal seam. Middle Shale and Sandy Siltstone elevations obtained from mine maps, boring investigations and monitor well installations have been used to create an approximate topographic surface of the bottom of the uppermost aquifer. This surface represents the bottom of the ZOA. The subject topographic surface has been overlain by the Brickyard I waste boundary and the proposed compliance boundary.

As the Board's questions appear to suggest the need to identify a three-dimensional illustration of the proposed ZOA, a revised Figure 1 is provided in Attachment A (proposed Board Order). *Id.* at ¶¶ 22, 23. The revised Figure 1 then demonstrates the horizontal extent of the ZOA (via the topographical contours of the bottom of the uppermost aquifer) as well as the vertical (or lateral) extent of the ZOA (the compliance boundary, as revised by Brickyard's Response to the IEPA Recommendation filed with the Board on August 27, 2014).

B. <u>Cover Plan: Items 5 – 9</u>

In its Petition and TSD, Brickyard utilized the terminology "institutional control" to describe the Cover Plan (which was attached to the Petition as Exhibit C) and, in doing so, has apparently caused some degree of confusion. Petitioner used the term in its pre-Part 742 context – to describe a type of legally recognized constraint applicable to a particular facility; Petitioner

did not intend to link this constraint with the Part 742 rules which, as the Board knows, are applicable to remedial action projects, which this is not. More accurately then, Brickyard's intention was to identify requirements that will be subject to Order of the Board via this Adjusted Standard, which are not existing legal obligations contained in statute or Board regulations.[4]

Nonetheless, the Cover Plan *was* proposed, consonant with pre-filing discussions with the Agency, as a method of ensuring protection of the environment by establishing a condition which evidences a commitment on the part of Brickyard to maintain an identified type of cover on the extraneous materials. In that context, Brickyard below responds to Items 5 – 9 of the Order. (For example, in response to Item 5, the Petitioner provides a description of what means will be used to keep the proposed cover system in place and what legal mechanisms will be employed, without utilization of the terminology "institutional controls".)

(5) ***Identify which institutional control(s) Petitioner will use to ensure the cover system will stay in place over the extraneous materials***.

(a) Maintenance of Cover. Pursuant to Section 4.4 of the Cover Plan, the cover overlying the extraneous materials will be maintained in a manner consistent with the final cover for Brickyard I, protecting the integrity of the final cover throughout the minimum 30-year post-closure care period. As reported in the Cover Plan, the existing cover (*i.e.*, the soil material and vegetation currently covering the extraneous material) was extensively evaluated and determined to be in excellent condition.

The existing cover, which will be supplemented subsequent to this Order, has performed better than the typical clay cover that is required for Subpart C facilities that are regulated pursuant to 35 Ill. Adm. Code Part 814, Subpart C. Pet., Exhibit C at 6. Thus, the integrity of

[4] As the Board recognized, the Cover Plan was not intended to meet the conditions of Section 811.314, since the area described is not intended to be part of the permitted boundary of the landfill. (Also, as the extraneous materials pre-existed closure, and as a Subpart D landfill is prohibited from expanding, the proposed Adjusted Standard, with a commitment to maintain adequate cover, is believed to be the best option to move forward.)

the cover is expected to continue beyond the post-closure care period. Nonetheless, to assure the Board of Brickyard's commitment, Brickyard has added a new Condition #8 to the proposed Board Order. See Attachment A.

(b) Recording and Restriction of Use. As part of the certification of closure of Brickyard I, an Affidavit for Certification of Closure of Solid Waste Landfills Permitted under 35 Ill. Adm. Code Parts 813 and 814 will be required and must be submitted to the Agency for approval. Included in this certification is a deed notation, as required by Section 811.110(g), which provides in full:

> g) Deed notation.
>
> 1) Following closure of all MSWLF units at a site, the owner or operator shall record a notation on the deed to the landfill facility property or some other instrument that is normally examined during title search. The owner or operator shall place a copy of the instrument in the operating record, and shall notify the Agency that the notation has been recorded and a copy has been placed in the operating record.
>
> 2) The notation on the deed or other instrument must be made in such a way that in perpetuity notifies any potential purchaser of the property that:
>
> A) The land has been used as a landfill facility; and
>
> B) Its use is restricted pursuant to Section 811.111(d).
>
> BOARD NOTE: Subsection (g) is derived from 40 CFR 258.60(i) (1992).

35 Ill. Adm. Code 811.110(g).

Brickyard will be subject to this provision upon closure and, as is evident from the language itself, the entire "landfill facility property" (inclusive of the extraneous material area) is required to be identified on the deed that will be recorded subsequent to closure. Thus, any potential purchaser of this property will have notice of its prior use as a landfill facility and legal

restrictions attendant thereto. As part of this recording, Brickyard will specifically identify the area of extraneous material, in addition to the landfill cell referred to as Brickyard I.

Section 811.110(h), which is derived from the federal Subtitle D rules, further provides that Brickyard is only allowed to remove the notation from the deed if the owner or operator demonstrates that "all wastes are removed from the facility". Section 811.110(h) states, in full:

> h) The Agency shall allow the owner or operator of a MSWLF unit to remove the notation from the deed only if the owner or operator demonstrates to the Agency that all wastes are removed from the facility.
>
> BOARD NOTE: Subsection (h) is derived from 40 CFR 258.60(j) (1992).
>
> 35 Ill. Adm. Code 811.110(h).

Brickyard's intention is that the area containing the extraneous material be subject to the above-referenced provisions, such that the notation on the deed, even as it relates to the extraneous materials, will only be removed pursuant to Section 811.110(h). A new Condition #9 has been added to the proposed Board Order to address the applicability of Section 811.110(g) and (h). See Attachment A.

(6) ***Specify whether groundwater monitoring will continue beyond the time period required under Section 811.319 of the Board's landfill standards and what institutional controls will be used to ensure continued monitoring.***

The groundwater monitoring network is subject to the Brickyard I's permit, even though the area containing the extraneous materials is not a permitted landfill area. Thus, the groundwater monitor program will be operated pursuant to, and consistent with, Section 811.319. As Section 811.319(a)(1) dictates, the groundwater monitor network will continue for a minimum of thirty years after closure, or as otherwise approved by the Agency. 35 Ill. Adm. Code 811.319(a)(1). Brickyard has no expectation that groundwater monitoring would cease any

sooner than the time prescribed in Section 811.319. The Petition has been designed to allow for monitoring of both Brickyard I and the extraneous material – at the same time and for the same time period. The proposed ZOA will include the area from the Brickyard I waste boundary to the proposed compliance boundary. Brickyard's proposed condition (now renumbered as Condition #10) commits that any influence due to the extraneous materials that causes an exceedance of a relevant concentration will be addressed pursuant to Parts 811 or 814, as appropriate. Brickyard does not believe there is any need for groundwater monitoring of the extraneous material for any longer period than is applicable to groundwater monitoring of Brickyard I itself. Rather, the Petition seeks to address both areas by this one (permitted) monitoring system. As a consequence, IEPA's approval of the Affidavit for Certification of Completion of Post-Closure Care for Non-Hazardous Waste Facilities will be the trigger for termination of the monitoring network, for both purposes.

(7) ***Propose a condition to the adjusted standard that would encompass the recording, if necessary, of any institutional control(s) with Vermilion County.***

See new proposed Condition #9, Attachment A.

(8) ***Describe how the institutional control(s) will be transferred upon conveyance of the site.***

See new proposed Condition #9, Attachment A.

(9) ***Identify the costs associated with the maintenance of the institutional control(s) beyond the postclosure care.***

As explained in response to Item 6, once the Affidavit for Certification of Closure of Solid Waste Landfills Permitted under 35 Ill. Adm. Code Parts 813 and 814 has been approved, groundwater monitoring and facility maintenance will no longer be necessary, for either

Brickyard I or the area containing the extraneous materials. Therefore, there will be no maintenance costs beyond post-closure care costs. Also as explained above, Brickyard will assume all costs related to maintenance of the cover during the minimum 30 year post-closure care period. See Condition #8, Attachment A.

C. Annual High Water Mark: Item 10

The Board's Order recites Section 814.402(b)(3)(H) which provides: "In no case shall the *zone of compliance* extend beyond the facility property line or beyond the *annual high water mark* of any navigable surface water." 35 Ill. Adm. Code 814.402(b)(3)(H) (emphasis added). The Board's final question deals with the latter part of that prohibition: the zone of compliance shall not extend beyond the annual high water mark of any navigable surface water. The Board inquires as to Brickyard's use of the terminology "average annual high water mark" instead of "annual high water mark." A search of the Environmental Protection Act, the Groundwater Protection Act, the Board's rules, and the Board's published Opinions and Orders (those available online) suggests that the term "annual high water mark" has never been defined. Moreover, there appears to be no published "*annual* high water mark" available through the U.S. Geological Survey, the Illinois State Geological Survey, or the Illinois State Water Survey.

(10) ***Explain how the "average annual high water mark" as proposed in the Petition is consistent with the requirements of 35 Ill. Adm. Code 814.402(b)(3)(H).***

In Brickyard's TSD, AEI suggested that the term "annual high water mark" is "ambiguous and does not fit the typical terminology for the study of hydrology." TSD at 26. Hunsberger Affidavit at ¶ 26. In attempting to extrapolate what the Board may have meant in 1988 when it utilized the term "annual high water mark" in the context it is used here (a

prohibition against a "zone of compliance" extending beyond an "annual high water mark") AEI assumed "zone of compliance" to be synonymous with "compliance boundary". [5] *Id.* at ¶ 27.

Then, since the annual high water mark varies from year to year, an averaging of continuous data over the course of several years would be appropriate and still accomplish the presumed goal of this provision: to ensure that monitoring is conducted in a manner to ensure public health and safety. Accordingly, to be conservative Brickyard read Section 814.402(b)(3)(H) as implicating the highest water elevation that occurs on a frequency of one time per year (one-year recurrence interval). Since the "annual high water mark" will vary from year to year, an average annual high (maximum) elevation was derived, which is believed to represent conservative (worst case) conditions. *Id.* at ¶ 28. In developing this average annual high (maximum) elevation, AEI utilized water level data from USGS Station 03339000 (the station on the Vermilion River most proximate to the subject area). *Id.* AEI reviewed available data dating back to 1960. *Id.* The annual maximum river elevations (*i.e.*, the highest river elevation on the single day of each of the years evaluated) were assembled and averaged over the subject time interval. *Id.* at ¶ 29. On the basis of the above, the "annual high water mark" (*i.e.*, maximum average annual high water mark) was calculated to be 519.14 feet above mean sea level ("MSL"). *Id.*; TSD at 27. The highest individual recorded river elevation was 534.66 feet

[5] Brickyard notes that "zone of compliance" is also a term that is not defined anywhere in Illinois law and regulations. A thorough review of R88-7, the rulemaking proceedings that enacted Section 814.402(b)(3), provides no insight as to what constitutes a "zone of compliance". Instead, it demonstrates that this terminology has proved confusing from the inception of the rule. The terms "edge of the zone of compliance" and "zone of compliance" were used in multiple portions of the First Notice version of Section 814.402(b)(3). R88-7 (Feb. 25, 1988) at 125-126. However, in response to comments related to this terminology, the Board's now disbanded Scientific/Technical Section ("STS") recommended in Appendix A2, "Response to Comments on Proposed Parts 807 Through 815" that the terms "edge [sic] of the zone of compliance" and "zone of compliance" be removed from Section 814.402(b)(3) because the terms were "not needed". R88-7 (Aug. 17, 1990) at Appendix A2 pg. 249-250. Apparently upon the recommendation of the STS, changes were incorporated into the Final Rule that removed or replaced the terms "edge of the zone of compliance" and "zone of compliance" from all portions of Section 814.402(b)(3), *except* in subsection (b)(3)(H). *Id.* This implicitly means that the inclusion of the term "zone of compliance" in the Final Rule was a scriveners error, and should have been replaced with the term "compliance boundary" as had been done in Section 814.402(b)(3)(A).

MSL and occurred on April 13, 1994. TSD at Attachment 8, USGS Gage Section Data; *Id*. at ¶ 29. This is within less than two feet of the 100-year flood elevation (533.40 MSL), which by definition has a one percent probability of occurring annually. *Id*. The terminology annual high water mark, however defined, implies an occurrence of once a year or a 100% probability of occurring annually. *Id*.

A contour of the 534.66 foot elevation is shown with a green line in the upper right corner of Figure 9-3 (contained in Attachment 9 of the TSD). This area is approximately 550 feet northeast of the northeast extent of the proposed compliance boundary. The location of the 100 year flood boundary is also included in the TSD at Figure 9-3. Meanwhile, the lowest ground surface elevation along the proposed compliance boundary is 531.82 feet above mean sea level, between wells T114 and T115. TSD at Figure 9-3. Accordingly, on the basis of the available annual high river elevation data (high water mark) averaged over more than five decades, the proposed compliance boundary does not extend beyond the "annual high water mark". Hunsberger Affidavit at ¶¶ 29 -31.

Certainly, with this data, Brickyard has demonstrated that the annual high water mark, however reasonably defined, will not encroach on the proposed compliance boundary in a manner that will adversely impact health and safety or drinking water sources (i.e., the "zone of compliance" will not extend beyond the "annual high water mark" of any navigable river body in any manner of concern.)

III. CONCLUSION

On the basis of the information submitted in this Amended Petition, Brickyard's Response to the Agency's Recommendation, and in the Petition and supporting documents, Brickyard requests a favorable and expeditious ruling from the Board on this important petition.

Believing its requested relief to be justified and relatively straightforward, and recognizing the Board's time commitments in other matters, Brickyard has not demanded a hearing. However, if a hearing is necessary for the Board to further understand Brickyard's proposed adjusted compliance boundary and defined zone of attenuation, Brickyard would prefer a hearing as opposed to a Board denial of the requested relief. In that context, Brickyard does not waive its right to a hearing, should one be necessary in order for the Board to grant relief.

In sum, the Adjusted Standard Petition filed on June 27, 2014 and this Amended Petition simply seek to locate monitoring wells so that Brickyard will not be required to monitor in the fill area containing historically deposited extraneous materials on the perimeter of Brickyard I. This simple "relief" (which is more protective than circumstances would be without it) is necessitated pursuant to language contained in the Board's pre-Subtitle D landfill rules which, unlike Subtitle D, appear to require placement of monitoring wells at the unit's edge (or as close thereto as possible). Rarely used by the Board and environmental practitioners, these old rules have been the source of much confusion in this proceeding and in the prior AS 13-4. Nonetheless, the unique circumstances at Brickyard I, and provisions of the Board's rules at issue, require the relief sought.

Moreover, even though the adjusted standard provisions of Section 811.402(b)(3) have rarely been utilized, the overriding policy objective of that section is clear: the Board has the authority to grant an adjusted standard that will establish an alternative compliance boundary and a ZOA "upon petition demonstration by the owner or operator that the alternative compliance boundary will not result in contamination of groundwater which may be needed or used for human consumption." In this proceeding, Brickyard is simply seeking the Adjusted Standard so that the proper permitting can be obtained to further the closure of Brickyard I. Brickyard has

provided sufficient evidence and information to justify its request for relief. Additional burdens on the Petitioner that are beyond the scope of the above-referenced provisions may impede upon the Agency's authority. See *Lake County v. Illinois Pollution Control Bd.*, 120 Ill. App. 3d 89, 99, 457 N.E.2d 1309, 1316 (2d Dist. 1983) ("[T]he Agency has the exclusive authority to issue a permit. The PCB is not vested with this power.").

Here, without this adjusted standard, the Board will effectively be requiring placement of permanent monitoring wells at the edge of the landfill unit and above the extraneous materials – and will not be advancing environmental protection since wells so located will not be monitoring any actual excursions from the landfill unit or the adjacent area containing the extraneous materials. Rather, the Board should recognize that the *relief* sought here (i.e., the proposed compliance boundary and zone of attenuation) is actually completely consistent with the compliance boundary and zone of attenuation that will apply to any Subtitle D unit – including Brickyard II which is immediately above and adjacent to Brickyard I. In short, the requested relief is both environmentally sound and warranted by the Board's rules.

As Petitioner has justified such relief in accordance with all relevant provisions of the Act and the Board's regulations, it respectfully requests that the Board grant the requested Adjusted Standard, as amended.

WHEREFORE, the Petitioner request that the Board grant an adjusted standard pursuant to Section 28.1 of the Illinois Environmental Protection Act, 415 ILCS 5/28.1, Part 104 of the Board's procedural regulations and Section 814.402(b)(3) of the Board's landfill regulations, as sought herein.

Respectfully submitted,

By: _____
One of Its Attorneys

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EXHIBIT A

PROPOSED BOARD ORDER

Pursuant to Section 28.1 of the Act (415 ILCS 5/28.1) (2012) and Section 814.402(b)(3) of the Board's landfill regulations (35 Ill. Adm. Code 814.402(b)(3)), the Board grants Brickyard Disposal and Recycling, Inc. (Brickyard) an adjusted standard from the definition of "zone of attenuation" in 35 Ill. Adm. Code Section 810.103 and requirements of 35 Ill. Adm. Code Sections 811.318(b)(3) and 811.320(c). The adjusted compliance boundary and the designated zone of attenuation, as set forth below, are applicable to Brickyard's Unit I (permit 1981-24-DE, Site Number 1838040029) located at 601 Brickyard Road, Danville, Vermilion County.

1. The compliance boundary for Brickyard I is adjusted to the line as shown in attached Figure 1, which is 100 feet or less from the waste boundary of Brickyard I or the extent of the extraneous materials, whichever is relevant.

2. The definition of "zone of attenuation" from 35 Ill. Adm. Code 810.103 is modified as applied to Brickyard I as follows:

   > "Zone of attenuation" means the three dimensional region formed by excluding the volume occupied by the waste placement in Brickyard I from the volume resulting from a vertical plane drawn from the compliance boundary to the bottom of the uppermost aquifer as shown in the attached Figure 1.

3. The provisions of 35 Ill. Adm. Code Section 811.318(b)(3) ("Standards for Location of Monitoring Points") are modified as follows:

   > Monitoring wells shall be established as close as possible to the potential source, either the waste boundary of Brickyard I or the maximum extent of the area containing extraneous materials, within the zone of attenuation downgradient, with respect to groundwater flow, from the source.

4. The provisions of 35 Ill. Adm. Code Section 811.320(c)(1) ("Determination of the Zone of Attenuation") are modified as applied to Brickyard I as follows:

   > The zone of attenuation, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard of this Section, is a volume bounded by a vertical plane at the compliance boundary line shown in Figure 1, attached hereto, extending from the ground surface to the bottom of the uppermost aquifer, as shown by elevation contours in Figure 1, and excluding the volume occupied by the waste in Brickyard I. The Zone of Attenuation will include any areas containing extraneous materials.

5. Within 90 days of the date of this Order, Brickyard shall submit a significant permit modification application to the Agency for approval of the groundwater monitoring well network for Brickyard I consistent with the relief granted herein.

6. Within 12 months of the date of this Order, Brickyard shall complete installation of the final groundwater monitoring well network following the permitting process through a significant modification permit application.

7. Within 12 months of the date of this Order, Brickyard shall complete placement of additional cover to those areas identified in the Cover Plan, Pet. Exh. C, and as otherwise determined necessary during cover placement operations. The Construction Certification Report shall be submitted to the Illinois EPA within 60 days of completion of cover placement.

8. Brickyard shall maintain said cover consistent with the Cover Plan, Pet. Exh. C, Section 4.4, p. 7 until such time as the postclosure care for Brickyard I is concluded.

9. Brickyard shall identify the area containing extraneous materials on the deed which will be recorded upon completion of closure activities, as set forth in Section 811.110(g) and shall be subject to the restriction set forth in Section 811.110(h).

10. Any releases indicated by the groundwater monitoring network shall be subject to 35 Ill. Adm. Code Part 811 and/or 814 as applicable and appropriate.

UNIT 2

UNIT 1

E 1500 E 2000 E 2500 E 3000 E 3500 E 4000 E 4500 E 5000 E 5500

N 51000 N 50500 N 50000 N 49500

552.56 561.56 555.89 557.66 X 559.48 X 558.74 X 556.78

T123 537
T121 536.5
T120 552
T104 558
T119 559
T103 560.7
R127 559.3
A126 564.9
G125 563.3
T116 549.3
T118 557.5
T117 563
T111 550.5
G131 561.47
T101 541.4
R124 560.9
T106 558.5
T107 549.5
R123 552.2
T108 526.5
T113 529.4
T115 527.3
T114 537.5
R132 546.8
R106 551.7

540 545 550 555 560 565 535 530

N

0 150 300 600

SCALE: IN FEET

NOTE:
THE PROPOSED COMPLIANCE BOUNDARY REPRESENTS THE LATERAL EXTENT OF THE UPPERMOST AQUIFER. THE CONTOURS DEPICT THE ELEVATION OF THE BOTTOM OF THE UPPERMOST AQUIFER, WHICH CORRELATES WITH THE TOP OF THE MIDDLE SHALE/SILTSTONE. THE AREA BETWEEN THE SURFACE OF THE COMPLIANCE BOUNDARY AND THE BOTTOM OF THE UPPERMOST AQUIFER (THE TOP OF THE MIDDLE SHALE/SILTSTONE) REPRESENTS THE VERTICAL EXTENT OF THE ZONE OF ATTENUATION.

EXPLANATION

- PROPERTY BOUNDARY UNIT
- APPROXIMATE WASTE BOUNDARY
- EXISTING GMZ
- MAXIMUM COMPLIANCE BOUNDARY (150m)
- PROPOSED COMPLIANCE BOUNDARY
- TXXX — PERMITTED MONITORING WELL
- TEMPORARY WELL
- 550 — BOTTOM ELEVATION OF UPPERMOST AQUIFER

REVISIONS

NO.	DATE	DESCRIPTION	BY

ANDREWS ENGINEERING, INC.
3300 Ginger Creek Drive, Springfield, IL 62711-7233
Tel (217) 787-2334 Fax (217) 787-9495
Pontiac, IL • Naperville, IL • Indianapolis, IN • Warrenton, MO
Professional Design Engineering and Land Surveying Firm #184-001541

APPROVED BY: DG DESIGNED BY: DG DRAWN BY: MPN

EXTENT OF THE UPPERMOST AQUIFER

PLANS PREPARED FOR
BRICKYARD DISPOSAL & RECYCLING
DANVILLE, ILLINOIS

DATE: OCTOBER 2014

PROJECT ID: 1989-115A

SHEET NUMBER:

FIG. 1

Attachment B

AFFIDAVIT OF BRADLEY J. HUNSBERGER

I. BACKGROUND AND QUALIFICATIONS

1. My name is Bradley J. Hunsberger. I am the Director of Hydrogeological Services for Andrews Engineering, Inc. My business address is 3300 Ginger Creek Drive, Springfield, Illinois 62711. I provide this affidavit in support of the Amended Petition for Adjusted Standard filed by Brickyard Disposal & Recycling, Inc. ("Brickyard"). I make this affidavit based on personal knowledge, technical expertise and on knowledge I have obtained through my technical review and experience.

2. I am a Licensed Professional Geologist in Illinois. Additionally, I am a Registered Geologist in Missouri and a Professional Geologist in Tennessee, Wisconsin and Indiana. I hold a certification as a Certified Professional Geologist (AIPG), as well as OSHA certifications. My areas of specialty are hydrogeological investigations, expert witness testimony, regulatory affairs and solid waste management.

3. I have been employed full time by Andrews Engineering for 27 and one-half years. During that time I have managed numerous projects and provided expert support and testimony for several projects related to geologic and hydrogeologic issues pertaining to public health, safety, and welfare. Generally, I am responsible for design and implementation of hydrogeologic site investigations and studies of environmentally sensitive sites, such as solid waste disposal facilities, CCDD facilities, compost facilities, CCB sites, LUST sites, industrial facilities, and agri-chemical facilities.

4. As an environmental consultant, I have worked with Republic Services, Inc. at various landfill sites in Illinois and Indiana, including the Brickyard Disposal and Recycling,

both Units I and II, for approximately the last decade. I have been intimately involved in the permitting of that facility, including the initial significant modification application (Log No. 1993-057) and permitting related to the current groundwater monitoring network. In relation to AS 14-3, and previously AS 13-4, I am responsible for the preparation and drafting of the Technical Support Document and the Cover Plan Document that accompanied those petitions. Further, I have attended all of the meetings between Brickyard and the Illinois Environmental Protection Agency Bureau of Land that concerned these Adjusted Standard Petitions.

5. In my professional capacity, I routinely utilize the Board's landfill regulations, including those particularly relevant here: the Board's landfill rules (35 Ill. Adm. Code Parts 807, and 810 – 815) and the Board's groundwater protection rules (35 Ill. Adm. Code Part 620).

6. In this Affidavit, I specifically respond to the technical items raised by the Board concerning Brickyard Unit I's hydrological characteristics as related to Section 814.402(b)(3)(A), (C) and (F) of the Board's rules (Items 1-4) and the items concerning Brickyard's interpretation and calculation of the "average annual high water mark" as related to Section 814.402(b)(3)(H). (Item 10). Further, I concur with the assessments presented in the Amended Petition as related to the Board's questions concerning Brickyard's intended long-term maintenance of the proposed cover plan (Items 5-9).

II. HYDROLOGICAL CHARACTERISTICS OF UNIT I – Items 1 -4.

7. The term "water-bearing zone" in the Technical Support Document ("TSD") is used synonymously with the term "aquifer" in Section 3 of the Illinois Groundwater Protection Act, and Section 810.103 of the Board's rules. The intention was to provide a

more detailed and accurate description of this "aquifer" however, which is limited in extent. Thus, the term "water-bearing zone" is consistent with the nomenclature previously used in IEPA permitting. This water-bearing zone is encompassed by the Board's definition of aquifer because hydraulic gradients and boundaries of the zone can be identified and mapped using hydrogeologic data. Accordingly, I answer the Board's Item #1 in the affirmative.

8. More specifically, the terminology "water bearing zone" or "groundwater" was used to describe the water being monitored at Brickyard 1. The aquifer is of limited extent, and it will have no adverse impact on any potential well utilized for drinking water purposes. Those potential wells are identified in the Technical Support Document, and reiterated in Footnote 3 of the Amended Petition.

9. The water-bearing zone beneath and directly adjacent to Brickyard I is, in actuality, a combination of the coal seam, mine voids (where the coal has been removed via underground mining) and spoil/bedrock interface where surface mining has occurred. This zone is continuous beneath Brickyard I.

10. Any groundwater in this zone is confined vertically by low hydraulic conductivity bedrock deposits. This confining layer was identified in the Technical Support Document as the Middle Shale. On the eastern side of the property, the Middle Shale transitions to a Silty Sandstone deposit. In actuality, both constitute the lower confining layer.

11. It is my understanding that the Agency concurs that, however identified, this is the appropriate water source to be monitored for purposes of early detection of migration of any contaminants from Brickyard I and that, due to impacts from prior mining, the Agency

also concurs that the groundwater within this water-bearing zone (or "aquifer") is Class IV groundwater.

12. The temporary groundwater monitoring network in place at Brickyard Unit I, through prior permitting, has been in place for at least 5 years. In the permitting applications and discussions that led to this temporary network, detailed descriptions of the geological conditions underlying the site, and voluminous other data, has been provided to the Agency and resulted in the permitting of this temporary network. References to those permitting efforts are contained throughout the TSD.

13. It is my understanding from discussions with Agency permitting personnel that permanent permitting of the groundwater monitoring network, without this adjusted standard, will require placing the monitoring wells in the area containing extraneous materials, based upon specific provisions of the Board's landfill rules, specifically Section 811.318(b)(3). Accordingly, Brickyard seeks this adjusted standard in order to identify a logical Compliance Boundary, in the specific context of this site, via Section 814.402(b)(3). This will allow for early detection of a change in groundwater quality due to influences from either Brickyard Unit I or the extraneous materials.

14. The area identified as the "water-bearing zone" is the same as the "uppermost aquifer" in the context of this site.

15. The bottom of the uppermost aquifer is the upper part of the Middle Shale and the Sandy Siltstone deposits. See Illustration #1, attached hereto.

16. The Middle Shale is largely present beneath the extraneous material area, but transitions at the eastern edge of the landfill property to a "Sandy Siltstone" deposit.

17. The Sandy Siltstone deposit contains nearly the same horizontal hydraulic conductivity as the Middle Shale. As reported in the Application for Significant Modification (Log No. 1994-419), the geometric mean of the horizontal hydraulic conductivities for the Middle Shale and the Sandy Siltstone are 3.46x10-7 cm/sec and 4.68x10-7 cm/sec, respectively, as determined from falling head tests.

18. Therefore, the bottom of the uppermost aquifer is the top of the Middle Shale (from the west end to the area under the extraneous materials) and the top of the Sandy Siltstone (east of the extraneous materials area). The actual transition of the Middle Shale to the Sandy Siltstone at the bedrock surface will vary with location. Both of these geologic formations serve as the bottom of the uppermost aquifer.

19. These deposits are sedimentary. As such, the vertical hydraulic conductivity is typically 1 to 2 orders of magnitude lower than the horizontal value. See Domenico, P.A. and F.W. Schwartz, *Physical and Chemical Hydrology*, John Wiley & Sons, New York (1990) [Table 3, page 67] .

20. Given the reference by Domenico and Schwartz, the vertical hydraulic conductivity of the Middle Shale and Sandy Siltstone should be approximately $6.7x10^{-8}$ to $6.7x10^{-9}$ cm/sec. This correlates well with the laboratory derived average vertical hydraulic conductivity ($1.54x10^{-9}$ cm/sec) for the Sandy Siltstone, as reported in the aforementioned permit application (Log No. 1994-419). The vertical confining properties of the bedrock appear better than liner hydraulic conductivity currently required of Subtitle D landfills ($1x10^{-7}$ cm/sec). See 35 IAC 811.306(d)(2)) .

21. Figure 1 has been modified (Attachment A of the Amended Petition) to reflect the contours of the top of the Middle Shale and the Sandy Siltstone deposits. It is my

opinion that this best represents the vertical extent of the zone of attenuation, which is the bottom of the uppermost aquifer. The bottom of the zone of attenuation is coincident with the upper part of the Middle Shale or Sandy Siltstone. More specific information related to the depth of those deposits is contained in the TSD, at Section 4.1.1 and Attachments 1 and 2.

22. The modification to Figure 1does not represent a change in Brickyard's requested zone of attenuation. The modification is made simply to better identify the vertical extent of the zone of attenuation, in response to the Board's items.

23. The proposed lateral extent of the zone of attenuation is the same as requested in the original petition as it is contiguous with the proposed compliance boundary. The proposed compliance boundary contained in this Amended Petition, however, has been modified pursuant to post-filing discussions with the IEPA and is now consistent with the illustrations and figure Brickyard presented in its Response to IEPA Recommendation, filed on August 27, 2014.

24. Since these deposits are sedimentary, the vertical hydraulic conductivity is typically 1 to 2 orders of magnitude lower than the horizontal value, which is even more restrictive. The vertical confining properties of the bedrock are anticipated to be better than current liner quality requirements, as further evidences by the laboratory testing reported in application Log No. 1994-419. Thus, the water-bearing zone is an aquifer, and it is the uppermost aquifer.

III. ANNUAL HIGH WATER MARK – BOARD ITEM #10

25. The term "annual high water mark" is ambiguous and is not a common term in the lexicon of hydrology. The annual high water mark varies from year to year, and

averaging the annual maximum elevation of the river over the course of several years is an appropriate measure for ensuring that the zone of compliance does not extend past the annual high water mark.

26. "Zone of Compliance" is also a term that is confusing in the context of Section 814.402(b)(H) as that term is not defined in Illinois law and regulations. In reviewing the background related to the Board's landfill rules, particularly R88-7, we determined that Zone of Compliance should, for the purposes here, be used synonymously with zone of attenuation.

27. Since the "annual high water mark" will vary from year to year, the average annual high (maximum) elevation was determined, which represents conservative (worst case) conditions. In developing this average annual high (maximum) elevation, water level data were utilized from USGS Station 03339000, which is the USGS station on the Vermilion River closest to the subject area. Data dating back to 1960 was reviewed for this determination. The data was infrequent from 1960 to October 1, 1993, with no data being available for the years 1961, 1962, 1963, 1965 and 1967. However, from October 1, 1993 through July 18, 2012, daily measurements were available.

28. The highest river elevation on the single day for each of the years for which data was available was utilized to determine the annual maximum river elevation (i.e., high water mark) for that year, and these were averaged over the subject time interval. On the basis of the above, the "annual high water mark" was calculated to be 519.14 feet above mean sea level ("MSL").

29. The highest individual recorded river elevation was 534.66 feet MSL, occurring on April 13, 1994. This is within less than two feet of the 100-year flood elevation (533.40

MSL), which by definition has a one percent probability of occurring annually. The annual high water mark as referenced in Section 814(b)(3)(H) implies an occurrence of once a year, or a 100% probability of occurring annually.

30. The lowest ground surface elevation along the proposed compliance boundary is 531.82 feet above mean sea level, between wells T114 and T115. This is well above average annual maximum elevation, and very close to the 100-year flood elevation. Figure 9-3 of Attachment 9 to the TSD illustrates the location of the proposed compliance boundary with respect to the 100-year flood elevation and the average annual high water mark. Pursuant to these calculations, the proposed compliance boundary does not extend beyond the "annual high water mark".

FURTHER AFFIANT SAYETH NOT.

Bradley J. Hunsberger

Bradley J. Hunsberger, Affiant

Subscribed and **Sworn** to me this 6th day of November, 2014.

Laura Jo Smoczyk

Notary Public

OFFICIAL SEAL
LAURA JO SMOCZYK
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 3-14-2016

CERTIFICATE OF SERVICE

I, Claire A. Manning, certify that I have date served the attached Notice of Filing and Amended Petition for Adjusted Standard, by means described below, upon the following persons:

To: Pollution Control Board, Attn: Clerk
100 West Randolph Street
James R. Thompson Center, Suite 11-500
Chicago, Illinois 60601-3218
(Via Electronic Filing)

Kyle N. Davis, Esq.
Division of Legal Counsel
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Carol Webb
Hearing Officer
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Dated: November 6, 2014

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