Response to Comments for Draft Modified Class VI Permit Issued to Archer Daniels Midland (ADM)

United States Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

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INTRODUCTION

On November 8, 2016, the United States Environmental Protection Agency (EPA) issued a draft modified Class VI permit to authorize the injection of carbon dioxide for the purpose of geologic sequestration (permit no. IL-115-6A-0001) to Archer Daniels Midland (ADM) for its CCS#2 injection well and invited public comment. EPA issued the original permit in 2014.

Two parties submitted comments to EPA. These commenters are presented in Table 1.

This document is organized as follows.

- Section 1: Administrative/General Comments: comments including general introductory statements and comments that are "out of scope" for this permitting action.
- Section 2: Comments on SDWA and other Authorities: comments related to the jurisdiction of other authorities, e.g., real property law, the federal or Illinois Endangered Species Act, or the National Historic Preservation Act.
- Section 3: Technical Comments: comments on aspects of the draft modified permit that reflect Class VI rule requirements, e.g., related to Area of Review (AoR) delineation, well construction, or the geologic environment of the project.

Table 1: Commenters on ADM's draft Class VI permit modification

Jeffrey Sprague
Archer Daniels Midland

SECTION 1. ADMINISTRATIVE/GENERAL COMMENTS

#	Commenter	Comment Text	EPA Response
1	Jeffrey Sprague [2016]	The full administrative record must be made available locally at USEPA's designated information repository (Decatur Public Library). USEPA has only made available the draft modified permit and a fact sheet at the local information repository. Viewing the full administrative record (including raw data sets, relevant correspondence, revised model inputs, model output, etc.) is only possible by scheduling a time during shortened workday hours (9:00 AM – 4:00 PM) on a regular workday (Monday – Friday), and only by traveling to Chicago, Illinois (USEPA offices). When one considers that round-trip travel from Macon County (IL) to Chicago, IL is well in excess of 300 miles, that there are significant travel expenses associated with such travel, and that multiple trips would undoubtedly be necessary, it should be apparent that USEPA has absolutely no interest in providing the residents of Macon County with reasonable accommodation, and certainly not convenient access, to viewing the full administrative record. This arrangement is not acceptable. USEPA is effectively conducting a charade of seeking public input while severely limiting the ability of local individuals to access all potentially relevant information. This is not consistent with the intent of the statutory requirement for public notice and comment. If time and expense considerations are the basis for USEPA not providing the full administrative record at the local information repository, then the permit applicant/recipient (ADM) needs to provide the resources with which to rectify this situation and make the information available.	EPA made the Administrative Record (AR) for the draft modified permit available to the public at its Region 5 office located in Chicago. The AR index and documents identified in the index for the draft modification to the CCS #2 permit were also available for delivery to an interested party upon request either informally or via the Freedom of Information Act. There are 446 documents (totaling thousands of printed pages) identified in the Administrative Record Index for this permit modification. Given the complexity of the computational modeling (for delineation of the Area of Review) and the volume of associated data, certain files are stored on a dedicated electronic file system and require specific software to open in a readable form. Making such a volume of information available at the Decatur Public Library was not feasible given the volume and format of information associated with the project. In an effort to provide the information most relevant to this modification, a copy of the draft modified permit (including attachments), a fact sheet and a detailed table of all permit modifications made since 2014 were at the Decatur Public Library for public viewing. These files were also made available online at: https://www.epa.gov/uic/proposed-permit-modification-adm-class-vi-well-decatur-ill. EPA took numerous steps to let people know about and comment on the draft permit modification. EPA's actions exceeded what the Agency was required to do under the public notice and comment requirements in 40 CFR 124. The regulations at 40 C.F.R. 124.10(d)(vi) require only that EPA provide physical access to the record and do not require the permitting authority to provide copies to interested parties or make the permitting record

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			available online. *See In re City of Taunton,* NPDES Appeal No. 15-08, 2016 EPA App. LEXIS 25, *45 (EAB May 3, 2016); *In re Energy Answers Arecibo, LLC*, PSD Appeal Nos. 13-05 through 13-09, 2014 EPA App. LEXIS 11, *101 (EAB March 25, 2014); and *In re J & L Specialty Products Corporation*, 5 E.A.D. 31, 81 (EAB 1994)(holding that the regulations at 40 CFR 124.10(d)(vi) contemplate making the administrative record available and open for public inspection, *not mailing in its entirety to interested persons.*)(Emphasis added). EPA elected to create an information repository in Decatur and, in addition, post the permit materials on EPA's website. Please see the paragraph immediately above, the AR for the final permit decision, and the response to comment 2, below.
2	Jeffrey Sprague [2016]	This commenter requests an extension of the public comment period to 120 days in order to obtain the necessary time to conduct a thorough review of the full administrative record. USEPA has taken well over a year's time to prepare the draft amended permit. It is incomprehensible that a 30 day public review and comment period, which would include the hardship of traveling to Chicago to review the full administrative record, would be sufficient time for a full-time employed individual with normal obligations to provide more than just a cursory response on the amended permit. Clearly, a 30 day comment period is woefully insufficient. It also seems more than coincidental that USEPA has scheduled the public comment period to coincide with the end of the year holiday period, just when outside obligations seem to multiply.	The regulations at 40 CFR 124.10 "Public Notice of Permit Actions and Public Comment Period" require EPA to public notice a draft permit action for at least 30 days. The 34-day comment period for this draft modification is in compliance with the regulations at 40 CFR 124.10. No other individuals have asked for an extension of the comment period, and ADM is the only other party that commented on the draft modification. The public comment period for the draft modification opened on November 10 and closed on December 14, 2016. EPA held a public hearing on the draft modification in Decatur on December 13, 2016. The timing of EPA's draft decision and the associated comment period coincided with EPA's receipt of complete information from the permittee and completion of our analysis. The timing reflects a commitment to making timely permitting decisions while fully considering the information submitted to ensure a protective decision. EPA's decision on the length of the public comment period is commensurate with the scope of changes made since the permit

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			was issued in 2014 and the level of public interest in the initial permits for this project. EPA's assessment of the level of public interest is based on multiple interactions with the Decatur community. The interactions included, but were not limited to, outreach that targeted gathering places and civic organizations in Decatur, an EPA organized "open house" during the permit application phase, two prior public comment periods, two additional "open house" events, and two prior public hearings that focused on draft permits for the CCS #2 and CCS #1 wells. The regulations at 40 CFR 124 do not require EPA to engage in such informal outreach in a community, and do not require EPA to hold open house events. The regulations require public hearings when a significant degree of public interest is demonstrated based on written requests, or at the Water Division Director's discretion. Since the permit for CCS #2 was issued in 2014, EPA has received no inquiries on the injection wells from any parties other than the applicant and did not anticipate heightened public interest or comment for this draft permit modification. Nonetheless, EPA elected to hold a comment period which included a public hearing without waiting for a request from the public to allow an additional opportunity for public input.
3	ADM [2016]	I did find a minor discrepancy in the Attachment B (AoR) first sentence on B12 should read: *ADM used the Nicot method to calculate the pressure differential based on an injection depth of -6,628 ft KB and a lowermost USDW depth of approximately -3,450 ft KB. The results yield an estimate of approximately 62.2 psi (0.43 MPa).*	EPA acknowledges this typographical error and has amended Attachment B of the permit to reflect this change.

SECTION 2. SDWA/OTHER AUTHORITIES

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4	Jeffrey Sprague [2016]	The draft amended permit does not contain any provisions consistent with Illinois Real Property Law for compensating local land owners whose property overlies the projected extent of the subsurface carbon dioxide (CO_2) plume and pressure front. Whether out of ignorance, willful disregard, or by conscious design, USEPA is, in effect, colluding to violate Illinois civil law by issuing a permit without such provisions. Illinois case law follows the American Jurisprudence treatise (63C Am. Jur. 2d Property) regarding ownership of the pore space of the geologic formation receiving the injected CO2 and to pore space for which the injected fluid subsequently migrates. Quoting in pertinent part from Section 12 (regarding land): "The word 'land' includes not only the soil, but everything attached to it . . ." It goes on to say that "the title to land extends downward from the surface to the center of the earth and upward indefinitely to the heavens, so that whatever is in a direct line between the surface of any land and the center of the earth, whether it is rock, soil, or water, belongs to the owner of the surface, who may use it for his or her own purpose." USEPA's Fact Sheet at the information repository shows the modified geographical extent of the subsurface CO_2 plume and pressure front. With time, the CO_2 plume and pressure front will extend to areas for which ADM does not have surface land ownership rights. USEPA has not addressed in the draft amended permit the fundamental legal question of whether ADM has the mineral rights ("pore rights") that would allow them to conduct subsurface injection when the CO_2 plume and pressure front extends to areas directly	EPA clarifies that property/land ownership rights, mineral rights and pore space ownership are outside the scope of this permit action and EPA's authority under the Safe Drinking Water Act. For clarity, Section A of the permit states that "issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State of local laws or regulations." Property rights issues are outside of EPA jurisdiction and are governed by legal principles other than the UIC regulations. See also 40 CFR 144.35 and *In re Bear Lake Props.*, 15 E.A.D. 630 (EAB 2012*), In re Am. Soda, LLP*, 9 E.A.D. (EAB 2000), and *In re Envotech, L.P.*, 6 E.A.D. 260, 286 (EAB 1996) ("[T]he SDWA ... and the UIC regulations ... establish the *only* criteria that EPA may use in deciding whether to grant or deny an application for a UIC permit."), *In re Columbia Gas Transmission Company*, 2 E.A.D. 347, 348 (EAB 1987) (the Region is not required to take ownership of land into account when acting on a UIC permit application).

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		below the ground surface where ADM doesn't have surface land ownership. In the absence of these mineral rights, a permit cannot be issued.	
5	Jeffrey Sprague [2016]	USEPA has violated the federal Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) by failing to consult with the U.S. Fish & Wildlife Service (FWS) regarding the potential impact to threatened and endangered species resulting from issuance of the amended draft permit. The USEPA must consult with FWS on "any action authorized, funded, or carried out" that falls within the embrace of the ESA. The full text of the relevant portion of the statute (Section 7.(a)(2)) reads as follows: "Each federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected states, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to Subsection (h) of this section. In fulfilling the requirement of this paragraph each agency shall use the best scientific and commercial data available."	In approving ADM's initial permit in 2014, EPA received sufficient information from ADM regarding the company's analysis of potential project impacts on species and habitats. EPA determined that there would be no effect on listed species, or critical habitat. No formal consultation was required with FWS, since EPA determined the proposed action would have no effect on any federally-listed species, or critical habitat. See *In re Indeck-Elwood, LLC*, 13 E.A.D. 126, 196 n.134 (EAB 2006); see also *In re Phelps Dodge Corp. Verde Valley Ranch Dev.*, 10 E.A.D. 460, 486 (EAB 2002) ("if an agency decides its proposed action will have no effect...the section 7 process ends"). EPA received recent reports from ADM confirming that well construction activities authorized by the 2014 permit had been completed at the site. EPA inspectors have also visited the site twice and witnessed that all well construction activities had been completed. Thus, EPA determined that the proposed modifications are only administrative in nature, and the proposed modifications will not affect any listed species, or critical habitat and will only impact the permitted injection zone between 5,553 feet and 7,043 feet below the ground surface. AR #424 documents this determination.
6	Jeffrey Sprague [2016]	USEPA has violated the National Historic Preservation Act (Public Law 89-665; 54 U.S.C. 300101 et seq.) and potentially the Illinois State Agency Historic Resources Preservation Act [20 ILCS 3420] by failing to consult with the Illinois State Historic Preservation Officer regarding the impacts of the	EPA received reports from the permittee confirming that well construction activities had already taken place at the site as authorized by the 2014 permit. EPA inspectors have also visited the site twice and witnessed that all well construction activities had been completed. Thus, EPA determined that the proposed modifications are only administrative in nature, and the proposed

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		proposed amended permit on national and state historic sites that are present in the area. There is no indication that USEPA conducted a Section 106 review process, as required under the National Historic Preservation Act. There is no documentation indicating that details of the draft amended permit have been outlined to the State Historic Preservation Officer at the Illinois Historic Preservation Agency(IHPA). USEPA has not identified historic properties and what effects, if any, activities covered under the draft amended permit may have on historic properties. There is no evidence that the applicant (ADM) received a Letter of Compliance from IHPA stating that no historic properties are expected to be affected by the proposed CCS Well #2 activities.	modifications will not affect any historic properties and will only impact the permitted injection zone between 5,553 feet and 7,043 feet below the ground surface. AR #424 documents this determination. Additionally, EPA received a letter from the Illinois Historic Preservation Agency (IHPA) during the comment period in response to the EPA public notice. The IHPA stated in its letter of December 13, 2016 (AR #487) that no historic properties are affected.
7	Jeffrey Sprague [2016]	The Illinois Endangered Species Protection Act [520 ILCS 10/11 (b)] and the Illinois Natural Areas Preservation Act [525 ILCS 30/17] require that state agencies and local governments consult with the Illinois Department of Natural Resources (IDNR) whenever they will "authorize, fund, or perform" actions which alter environmental conditions. Neither the Illinois State Geological Survey (under the auspices of the University of Illinois) nor the Macon County Board (county government) have undertaken this consultation with IDNR. These entities have or should have exercised at least peripheral involvement in authorizing, funding, or performing actions associated with CCS Well #2 activities. An evaluation of the impacts of this permitting action on the essential habitats of state listed species [Title 17 Illinois Administrative Code Part 1010 and Part 1050] and on Illinois Natural Areas Inventory (INAI) sites by either of these entities in consultation with IDNR has not been conducted as required by state law.	EPA clarifies that comments on the actions and responsibilities of other State agencies and local governments (i.e., Illinois State Geological Survey and the Macon County Board) are outside the scope of this EPA action.

SECTION 3. TECHNICAL COMMENTS

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8	Jeffrey Sprague [2016]	The draft modified permit identifies changes to the reservoir model inputs (the result of updated petrophysical information obtained from drilling and testing the well) and to the modeling results that form the basis of USEPA's revised Area of Review (AoR). The proprietary (Schlumberger) model---ECLIPSE 300 (v 2011.2) reservoir simulator with the CO2STORE module---which was used by USEPA to delineate the maximum extent of the plume and pressure front, must be made readily available by USEPA to the public, at little or no expense, to allow for independent evaluation of the modeling methodology and results. The public cannot adequately respond to the modeling results, nor to the choices made by USEPA regarding modeling assumptions, data inputs, and model implementation without having access to the model itself. Though the model inputs would certainly be part of the administrative record, the software to run those inputs is certainly not. The UIC Branch of USEPA's Water Division needs to immediately adopt the practice of USEPA's Air and Radiation Division of making readily available the modeling software that is acceptable for permitting and other regulatory applications. The general public cannot and should not be expected to accept on faith USEPA's modeling methodology and results without being provided the software and data to independently corroborate or refute those procedures and findings. If there are licensing or cost considerations that are the basis for USEPA not making the software readily available then, once again, the permit	EPA conducted its evaluation of the AoR modeling effort using STOMP, a multi-fluid subsurface flow and transport simulator developed by the Pacific Northwest National Laboratory (PNNL). The STOMP-CO2 and STOMP-CO2e simulators were designed specifically to investigate geologic sequestration of CO_2 in deep saline reservoirs such as the Mt. Simon. The permit applicant, ADM, used Schlumberger's ECLIPSE simulator referenced by the commenter. Please see the responses to comments 9 and 12 for further information on the modeling approach and regulatory requirements. The commenter's suggestion that the UIC Branch of EPA's Water Division which implements regulations under authority of the Safe Drinking Water Act should adopt practices of the Air and Radiation Division (which implements regulations under the Clean Air Act and other authorities) is misguided. The two programs' approaches are not analogous. Under the Clean Air Act, Congress mandated that EPA's Office of Air and Radiation ensure "consistency and encouraged the standardization of model applications" (see 40 CFR 51) by regulation. In support of this mandate and the associated regulations, EPA's Office of Air and Radiation made certain modeling software available online. Much of the modeling conducted under the Clean Air Act involves simplified situations of a steady state, single source, inert pollutant. In contrast, the Safe Drinking Water Act does not mandate the use of specific software. Furthermore, EPA's Office of Water - UIC Program intentionally developed the Class VI regulations to afford

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		applicant/recipient (ADM) needs to provide the resources to remedy the situation.	each permit applicant/owner or operator the flexibility to select an appropriate computational modeling approach for delineating the Area of Review "that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and is based on available site characterization, monitoring and operational data" (40 CFR 146.84). Computational modeling of Class VI projects is complex, multi-phase, and consists of potentially multi-source scenarios which can include millions of nodes (data points) that often require supercomputing capabilities. There are various computational approaches that a permit applicant can choose depending on site and project specific factors such as geology and operational design. Considering continuous advances in this area of science, EPA thought it appropriate to ensure that owners or operators have sufficient flexibility to adequately identify the area with increased risks to USDWs using the most current and compliant modeling approach. This approach also ensures that as technologies advance, new, innovative technologies that meet the regulations can be applied at Class VI projects. EPA adds that it is not required to provide a temporary license for the software or provide members of the public an opportunity to conduct their own simulations. In its evaluation, EPA assessed ADM's computational approach (including the specific software used); conceptual/geologic model and its consistency with formation testing results; constitutive relations; model boundaries; maximum injection pressure; and all other model inputs. This assessment was conducted to ensure that the modeling effort meets the requirements of the Class VI Rule and that the model accurately reflects the available site characterization data as well as the pre-operational logging and

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			testing results. The report "ADM CCS2 Memo to the Record - AoR" (AR #433) documents this evaluation, including the model inputs and the results of EPA's evaluation. The report is part of the administrative record for the draft permitting and remains available upon request. As a result of this assessment, EPA confirmed that ADM's model is based upon a reasonably constructed and applied approach.
9	Jeffrey Sprague [2016] 2nd comment email	1.) The draft permit was amended, in part, as a result of a significant change in the delineation of the Area of Review (AoR). This change highlights the inherent uncertainty in the assumptions and inputs to the model simulations determining the maximum extent of the CO2 plume and pressure front. The permit applicant (ADM) has not rigorously addressed the uncertainty associated with the new extent of the AoR. In the absence of an uncertainty analysis, the basis for the new AoR is technically deficient. The current depiction of the AoR may or may not be a reasonably accurate portrayal. What is certainly clear is that more information needs to be provided.	Pursuant to requirements at 40 CFR 146.82(c) and in compliance with specific permit conditions (see Section Q of the permit), the permit applicant conducted additional tests (i.e., logging, sampling and testing) to gather site-specific information, updated their model to reflect this new information, which included a range of simulations including a base case simulation and sensitivity/uncertainty analyses, and submitted the information to EPA. This re-evaluation meets the Class VI requirements and is designed to reduce uncertainty by ensuring that site-specific information is considered and integrated into the permit prior to EPA issuing authorization to inject. A detailed description of the information submitted, ADM's approach, and EPA's analysis are documented in "ADM CCS2 Memo to the Record - AoR" (AR #433), a report which remains available upon request. Additionally, EPA notes that the following files in the Administrative Record were evaluated for the purpose of making an affirmative, conservative decision on the final AoR that addresses uncertainties and ensures that USDWs are not endangered: AR #40, AR #46, AR #47, AR #48, AR #49, AR #50, AR #51, AR #52, AR #53, AR #54, AR #55, AR #56, AR #57, AR #58, AR #59, AR #60, AR #61, AR #62, AR #63, AR #64, AR #65, AR #66, AR #67, AR #68, AR #75, AR #76, AR #79, AR #80, AR #81, AR #82, AR #83 , AR #98, AR #99, AR #100, AR #101, AR #102, AR #103, AR #104, AR #105, AR #106, AR #107, AR # 113, AR #117, AR #298, AR

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			#299, AR #300, AR #301, AR #302, AR #303, AR #304, AR #305, AR #358, AR #359, AR #360, AR #361, AR #362, AR #363, AR #364, AR #369, AR #398, AR #408, AR #433, and AR #436. The EPA's evaluations confirmed that the base case simulation (which is the final, permitted AoR) was developed using a conservative approach and utilizing site-specific data where available. Sensitivity analyses were also conducted by ADM and evaluated by EPA addressing a set of site-specific model inputs, including porosity, permeability, residual saturation values, and endpoint relative permeabilities, among other things. As a result of this assessment, EPA confirmed that the final AoR was delineated adequately per 40 CFR 146.84, based on the results of the base case simulation which was sufficiently conservative so as to address uncertainties and ensure that USDWs are not endangered. Additionally, EPA acknowledges that while there is an inherent level of uncertainty in the early stages of any injection project, this uncertainty will diminish as operational and post-injection monitoring data is collected and the model is validated. The Class VI regulations were designed to continuously ensure USDW protection, accommodate and reduce uncertainty, and manage risk of USDW endangerment over time as a comprehensive suite of monitoring data becomes available. Specific measures and permit conditions designed to reduce uncertainty over time include: a robust testing and monitoring approach during injection and post-injection (i.e., monitoring wells both in the Mt. Simon formation and shallower formations to track the CO2 plume and pressure in the subsurface; the use of passive and active seismic monitoring to aid in CO2 plume tracking); reevaluation of the AoR at least every five years to integrate new,

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			site-specific information into the model to improve predictions of system behavior; and, regulatory requirements (40 CFR 146.84(e)) and permit conditions at Section G.2 that require unscheduled reevaluation of the AoR if monitoring and operational conditions warrant.
10	Jeffrey Sprague [2016]	USEPA has identified a large number of oil and gas wells within the AoR, ten of which "are located within approximately 2.4 km (1.5 miles) of the injection well location". Unfortunately, USEPA is silent on the prospect of potential endangerment to Underground Sources of Drinking Water (USDWs) from these and other wells associated with oil and gas extraction through high volume horizontal hydraulic fracturing of the Eau Claire Formation (confining zone to the Mt. Simon injection reservoir), the Ordovician Maquoketa Formation, and/or the Devonian New Albany Shale. The Hydraulic Fracturing Regulatory Act (Public Act 098-0022) provides for high volume fluid hydraulic fracturing in Illinois. The draft amended permit provides no assurances that the injected CO_2 will not migrate to USDWs as a result of induced fractures from potential hydraulic fracturing in area wells. A risk mitigation strategy needs to be incorporated into the amended permit.	In evaluating wells that could potentially serve as conduits for fluid movement, EPA searched Illinois State Geological Survey's online Illinois Oil and Gas Resources (ILOIL) database. Of the ILOIL well records in the AoR, the maximum identified total depth was 2,970 feet, which is more than 4,000 feet above the injection zone and more than 2,200 feet above the confining zone (the Eau Claire). EPA found no evidence that any of these wells penetrate the confining zone; therefore, there is no evidence that any wells were used in hydraulic fracturing operations of the Eau Claire confining zone formation. EPA has no evidence that there has been any hydraulic fracturing in the Maquoketa or New Albany formations that would compromise the integrity of the confining zone (Eau Claire) within the AoR, therefore supporting the conclusion that USDWs remain protected. EPA's evaluation of wells in the Area of Review is documented in AR #408. While the available data sets do not provide information about potential future hydraulic fracturing operations, EPA works with regulatory agencies in the State of Illinois (e.g., one of the research partners on this project is the Illinois State Geological Survey) to identify any potential activities related to injection and oil and gas production that may affect, or be affected by, the Class VI operation. These activities include: other injection activities that could interact with the carbon dioxide plume and pressure front; drilling or other activities associated with oil and gas exploration that may reveal new information about the geology of the area; or

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			land use changes that could affect water needs or bring resources/populations into the AoR of the Class VI project. ADM will monitor the site in accordance with the Testing and Monitoring Plan (Attachment C of the permit). The monitoring approach outlined in the Plan would detect any carbon dioxide or fluid movement via fractures. In the unlikely event that any fractures would form in subsurface formations at the project site as a result of hydraulic fracturing activities or another cause, the Emergency and Remedial Response Plan (Attachment F of the permit; AR #488) provides for expeditious responses to any adverse event, including fluid (e.g. brine) leakage to a USDW or carbon dioxide leakage to a USDW or the surface.
11	Jeffrey Sprague [2016] 2nd comment email	Within the supporting attachments to the draft permit, it is noted that the bottom of the well bore is cemented back many feet out of concern for contact of the injection fluids with the preCambrian granite. The text, however, is silent as to specifically why there is this concern. Additionally, it is not known if this same concern is held for the Argenta Formation, which immediately underlies the injection zone in the Mt. Simon Formation (Lower Zone), Unit A (Note: The text fails to provide any information on the lithologic and petrophysical characteristics of the Argenta Formation).	EPA confirms that Attachment G of the permit states "The injection well has approximately 80 feet of cement above the casing shoe to prevent injection fluid from coming in contact with the Precambrian granite basement." The permit does not contain the phrase introduced by the commenter: "out of concern for." As such, EPA cannot directly respond to the comment of whether or not "this same concern is held for the Argenta Formation." The permit defines the injection zone as the Mount Simon formation between 5,553 feet and 7,043 feet below ground surface. The cement placed within the bottom of the well casing ensures that the injectate is only emplaced within the permitted injection zone via the casing perforations. The Argenta Formation to which the commenter refers (and which is identified in Attachment G to the permit on page G3), is a relatively newly discovered/differentiated unit (circa 2014-2015) and has not yet been formally recognized. The permitee's submittals in compliance with 40 CFR 146.82(c) reference it as

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			both "Argenta" and "pre-Mt. Simon" (e.g., AR #27; AR #29) and use these terms interchangeably. In ADM's submittals, the pre-Mt. Simon is characterized by significantly lower porosity and permeability than the overlying Mt. Simon Sandstone. The applicant's model, consisting of 148 vertical layers (each with specific geologic and hydrologic properties), captures these characteristics in its lower four layers. Those lower four layers correspond to the relevant depths accounting for the existence of this formation in the delineation of the project AoR. EPA appreciates the comment as it allows us the opportunity to further clarify the terminology used. Based on communication with the Illinois State Geologic Survey, EPA confirmed that the Argenta Formation has not yet been officially recognized as a separate formation (which occurs through a formal process governed by the International Stratigraphic Code). In response to this comment and to ensure clarity and consistency, Attachments B, C, D, E and G (the five permit attachments that make reference to either the "Argenta" or the "pre-Mt. Simon") have been updated to reference the "pre-Mt. Simon." Additionally, a sentence was added to page B4 of Attachment B on the lithologic and petrophysical characteristics of the subject formation based on information submitted by ADM in AR #29.
12	Jeffrey Sprague [2016]	The petrophysical data obtained from the construction and pre-injection testing of the CCS #2 Well has overlooked or ignored the presence and potential migration of interstitial, authigenic clays during perforation, injection, and stimulation. The potential pore space occlusion and permeability reduction would dramatically change the results of the	EPA disagrees that information gathered during construction and pre-injection testing of the CCS#2 well was overlooked or ignored. The regulations at 40 CFR 146.82 require the owner or operator to submit to EPA and EPA to evaluate, formation testing and logging and testing data and information on CO_2 compatibility to confirm that a suitable geologic system exists with injection and confining zones that meet the requirements of 40 CFR 146.83. The permittee complied with the requirements to collect and submit

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		reservoir plume simulations, but more importantly, would change the expected CO_2 injection volumes. USEPA has indicated that the basal 600 feet of the Mt. Simon Sandstone is the "target injection zone". It is described as an arkosic sandstone with abundant secondary porosity due to feldspar dissolution. USEPA needs to conduct a thorough assessment of the composition and quantities of clay mineral assemblages in the injection zone from available core, cuttings, and wireline logs, and supplement this with additional analyses (e.g., x-ray diffraction) as necessary to better characterize expected reservoir behavior.	the required information and the EPA considered this information in the context of ensuring protection of Underground Sources of Drinking Water at the CCS#2 project to inform this permitting action. EPA documented this evaluation in the AoR report (AR # 433). Additionally, EPA clarifies that pursuant to requirements at 40 CFR 146.82 and 146.87, the well has already been constructed, perforated, and tested. During perforation and testing, the permittee and its consultants did not observe indications of pore space occlusion or permeability reduction. Additionally, the CCS#1 injection well project operated by ADM, which injected nearly 1 million metric tons of CO2 into the Mt. Simon over three years, behaved as predicted. No pore space occlusion and/or permeability reduction were observed at CCS#1, located approximately 0.7 miles from CCS#2. There are currently no plans to conduct stimulation at CCS#2 that could affect interstitial authigenic clays (see Attachment I of the permit; AR #488). Observations during CCS#2 perforation and testing, information submitted in compliance with 40 CFR 146.82(c), and operations at CCS#1 provide strong support to conclude that potential migration of interstitial, authigenic clays will not result in pore space occlusion or permeability reduction. The commenter's statement that injection at CCS#2 will occur at the basal 600 feet of the well is not correct. The CCS#2 well is perforated from 6,630 to 6,825 feet below ground surface (See Attachment G of the permit). From a theoretical perspective, EPA concurs that pore space occlusion or permeability reduction are possibilities in certain

#	Commenter	Comment Text	EPA Response
			geologic settings (although not observed at CCS#1) and that there is an inherent level of uncertainty in early stages of any injection project. EPA affirms that such uncertainty is addressed by both the CCS#2 permit and the Class VI requirements: • The permit establishes a Maximum Injection Pressure (Attachment A of the permit; AR #488) which limits the injection pressure regardless of any difference between the measured and operational permeabilities in order to ensure USDW protection; • The technologies deployed for purposes of testing and monitoring of the plume and pressure front within the AoR (see Attachments C and E of the permit, the Testing and Monitoring Plan and the Post-Injection Site Care and Site Closure Plan) were proposed and approved to ensure that site-specific information is collected during both the injection and the post-injection site care phases to confirm project behavior. These results can be compared against predictions and be used to identify any deviations and to refine predictions and reduce uncertainty over time; • The Class VI Rule was designed to anticipate and accommodate operational changes over time. Specifically, the Class VI Rule (40 CFR 146.84(b)), requires that the AoR and Corrective Action Plan (Attachment B of the permit; AR #488) include: "(2)(i) a description of the minimum fixed frequency not to exceed five years at which the owner or operator proposes to reevaluate the area of review; and (ii) the monitoring and operational conditions that would warrant a reevaluation of the area of review prior to the next scheduled reevaluation as determined by the minimum fixed frequency. . .";

#	Commenter	Comment Text	EPA Response
			• Attachment B of the permit (AR #488) contains the CCS#2-specific conditions that would warrant an AoR reevaluation (see *Triggers for AoR Reevaluation Prior to the Next Scheduled Reevaluation* on pages B21 and B22). Pressure is one of the CCS#2-specific triggers identified in Attachment B. One would reasonably expect that where pores are occluded or permeability reduced, both injection pressure and formation pressure would indicate behavior outside of predicted/anticipated ranges but not necessarily outside of permitted ranges. This last point is of great importance. The UIC Program's authority under the Safe Drinking Water Act is USDW protection. It is possible that a change in porosity or permeability may reduce the amount of CO_2 that can be sequestered but such reduction may pose no endangerment to USDWs. In such circumstances, reevaluations of the AoR, which are required every five years or when other conditions warrant it (see page B20 of Attachment B), pursuant to 40 CFR 146.84(b)(2)(i), would account for and facilitate project modifications that address the changes (e.g., changes in the Testing or Monitoring Plan or Post-Injection Site Care and Site Closure Plan). EPA affirms that the permit conditions address the theoretical scenario presented by the commenter. The permit would be equally protective if, as some studies indicate, the injection of anhydrous carbon dioxide were to have the effect of shrinking clay minerals by removing trapped water molecules, theoretically increasing porosity and permeability (see e.g., *Clay interaction with liquid and supercritical CO2: The relevance of electrical and capillary forces* by Espinoza and Santamarina (2012); International Journal of Greenhouse Gas Control).

#	Commenter	Comment Text	EPA Response
			EPA has worked to ensure USDW protection at the project site, while acknowledging and addressing uncertainty, by including protective permit conditions and requirements which will monitor the project continuously and reevaluate the AoR at a fixed frequency, or when certain conditions identified in the permit indicate the need for a reevaluation.

In accordance with 40 CFR 124.19(a), any person who filed comments on the draft permit modification or participated in the public hearing on the modification may petition the EAB to review any condition of the final permit modification decision. Additionally, any person who failed to file comments or failed to participate in the public hearing on the draft permit modification may petition for administrative review of any permit conditions reopened for modification during the public comment period and set forth in the final permit modification decision, but only to the extent that those final permit conditions reflect changes from the proposed draft permit modification. Any petition shall identify the contested permit condition or other specific challenge to the permit decision and clearly set forth, with legal and factual support, petitioner's contentions why the permit decision should be reviewed, as well as a demonstration that any issue raised in the petition was raised previously during the public comment period (to the extent required), if the permit issuer has responded to an issue previously raised, and an explanation of why the permit issuer's response to comments was inadequate as required by 40 CFR 124.19(a)(4).

If you wish to request an administrative review, documents in EAB proceedings may be filed by mail (either through the U.S. Postal Service ("USPS") or a non-USPS carrier), hand-delivery, or electronically. The EAB does not accept notices of appeal, petitions for review, or briefs submitted by facsimile. All submissions in proceedings before the EAB may be filed electronically, subject to any appropriate conditions and limitations imposed by the EAB. To view the Board's Standing Orders concerning electronic filing, click on the "Standing Orders" link on the Board's website at www.epa.gov/eab. All documents that are sent through the USPS, except by USPS Express Mail, must be addressed to the EAB's mailing address, which is: Clerk of the Board, U.S. Environmental Protection Agency, Environmental Appeals Board, 1200 Pennsylvania Avenue, NW, Mail Code 1103M, Washington, D.C. 20460-0001. Documents that are hand-carried in person or that are delivered via courier or a non-USPS carrier such as UPS or Federal Express must be delivered to: Clerk of the Board, United States Environmental Protection Agency, Environmental Appeals Board, 1201 Constitution Avenue, NW, WJC East Building, Room 3334, Washington, D.C. 20004.

A petition for review of any condition of a UIC permit decision must be filed with the EAB within 30 days after EPA serves notice of the issuance of the final permit decision. 40 CFR 124.19(a)(3). When EPA serves the notice by mail, service is deemed to be completed when the notice is placed in the mail, not when it is received. However, to compensate for the delay caused by mailing, the 30-day deadline for filing a petition is extended by three days if the final permit decision being appealed was served on the petitioner by mail. 40 CFR 124.20(d). Petitions are deemed filed when they are received by the Clerk of the Board at the address specified for the appropriate method of delivery. 40 CFR 124.19(a)(3) and 40 CFR 124.19(i). The request will be timely if received within the time period described above. For this request to be valid, it must conform to the requirements of 40 CFR 124.19. A copy of these requirements is enclosed. The regulations are also available electronically at http://www.gpo.gov/fdsys/pkg/CFR-2013-title40-vol23/pdf/CFR-2013-title40-vol23-sec124-19.pdf This request for review must be made prior to seeking judicial review of any permit decision. Additional information regarding petitions for review may be found in the Environmental Appeals Board Practice Manual (August 2013) and A Citizen's Guide to EPA's Environmental Appeals Board, both of which are available at
http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/General+Information/Environmental+Appeals+Board+Guidance+Documents?OpenDocument

The EAB may also decide on its own initiative to review any condition of a UIC permit decision for which review is available under 40 CFR 124.19(a). The EAB must act within 30 days of the service date of notice of the Regional Administrator's action. Within a reasonable

time following the filing of the petition for review, the EAB shall issue an order either granting or denying the petition for review. To the extent review is denied, the conditions of the final permit decision become final agency action when a final permit decision is issued by the EPA pursuant to 40 CFR 124.19(l).

Final Permit

The final permit modification and Response to Comments document are available for viewing at the Decatur Public Library, 130 N. Franklin Street, Decatur, Illinois.

Please contact Andrew Greenhagen of my staff at (312) 353-7648, or via email at greenhagen.andrew@epa.gov if you have any questions about the Archer Daniels Midland injection well permit.

Date 1/19/2017

Christopher Korleski
Director, Water Division
U.S. Environmental Protection Agency
Region 5

February 2, 2017

Clerk of the Board
U.S. Environmental Protection Agency
Environmental Appeals Board
1200 Pennsylvania Avenue, NW
Mail Code 1103M
Washington, D.C. 20460-0001

Dear Clerk of the Board,

Enclosed, please find a Petition for Review of the U.S. Environmental Protection Agency modified permit (Permit Number IL-115-6A-0001) for the Archer Daniels Midland Company CCS#2 well in Decatur, Illinois, along with two copies of that document. I, Jeffrey Sprague, am the Petitioner submitting this Petition for Review.

Respectfully,

Jeffrey Sprague

Jeffrey Sprague
P.O. Box 442
Argenta, Illinois 62501
Telephone: 217-795-2131
E-mail: 6sprague@gmail.com

BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

IN THE MATTER OF:)	UIC PERMIT NUMBER: IL-115-6A-0001
ARCHER DANIELS MIDLAND CO.)	
DECATUR, ILLINOIS)	
UIC CLASS VI WELL CCS#2)	

PETITION FOR REVIEW

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INTRODUCTION

Pursuant to 42 U.S.C. 7607(b)(1) and 40 C.F.R. § 124.19(a), Jeffrey Sprague ("Petitioner") petitions for review of Underground Injection Control (UIC) Class VI approval set forth in Final Modified Permit IL-115-6A-0001, which the U.S. Environmental Protection Agency ("USEPA") issued to Archer Daniels Midland Company ("ADM") on January 19, 2017. The Permit authorizes the injection by ADM of carbon dioxide (CO2) into the well identified as CCS#2 for the purpose of geologic sequestration.

Petitioner contends that USEPA's refusal to extend the public comment period was an arbitrary and capricious act, and an abuse of discretion. Petitioner also contends that USEPA's failure to enter into consultation with the U.S. Fish and Wildlife Service ("USFWS") on the potential impacts of this project on threatened and endangered species was clearly erroneous as a matter of law in violation of the Endangered Species Act of 1973, as amended ("ESA"). Further, petitioner contends that pore space (geologic formation porosity) ownership as it relates to Illinois Real Property Law, and the reasonable access to proprietary modeling software in order to assure and safeguard full public participation in the permit evaluation process, are important policy and/or potential legal considerations that the Board should review.

THRESHOLD PROCEDURAL REQUIREMENTS

Petitioner satisfies the threshold requirements for filing a petition for review under 40 C.F.R. Part 124. Petitioner has standing to petition for review of the permit decision because of participating in the public comment period by submitting written comments (December 6, 2016; December 13, 2016) on the draft amended permit. 40 C.F.R. § 124.19(a)(2). The issues raised by Petitioner were raised with USEPA during the public comment period (*See* Response to Comments for Draft Modified Class VI Permit Issued to Archer Daniels Midland (ADM)). Consequently, the Environmental Appeals Board (EAB) has jurisdiction to consider Petitioner's request for review.

ISSUES PRESENTED FOR REVIEW

Petitioner respectfully requests Board review of the following issues:

1. Whether USEPA's denial of Petitioner's request for an extension of the public comment period was an arbitrary and capricious act, thus warranting consideration by the Board for review and reversal.
2. Whether USEPA's failure to enter into consultation with USFWS in accordance with Section 7 of the Endangered Species Act is a clear violation of law.
3. Whether USEPA's failure to address pore space ownership concerns through permit conditions constitutes a clearly erroneous conclusion of law or an important policy consideration that the Board should review and reverse.
4. Whether USEPA's failure to provide reasonable access to proprietary modeling software from which key decisions regarding permit issuance were made constitutes an important policy consideration that the Board should review and reverse.

STATEMENT OF FACTS

USEPA notified the public of the opportunity to comment on the draft modified Underground Injection Control Class VI permit for the CCS#2 well (Permit number IL-115-6A-0001) on November 10, 2016. On December 6, 2016 and December 13, 2016, Petitioner submitted comments to USEPA. The public comment period ended on December 14, 2016. Petitioner's comments included issues raised on this appeal, as well as issues that the Petitioner has decided not to appeal. In correspondence from USEPA to Petitioner dated January 19, 2017, notification was given of final issuance of the UIC Class VI permit. This correspondence also provided relevant information regarding petitioning the EAB for review of the permit modification decision and a copy of the Response to Comments for Draft Modified Class VI Permit Issued to Archer Daniels Midland (ADM) (*hereinafter*, Response to Comments for Modified Permit). USEPA made no changes to the Permit concerning any of the issues raised in this appeal.

ARGUMENTS

1. The EAB Must Remand the Permit with an Order for Extension of the Public Comment Period to Redress USEPA's Arbitrary and Capricious Denial of Public Accommodation in Evaluating the Administrative Record

Petitioner has presented in written comment (*see comments #1, #2 in* Response to Comments for Modified Permit) the constraints and hardships associated with viewing and evaluating the full Administrative Record at USEPA Region V offices (Chicago). Issues of access to the proprietary modeling software used by ADM, access to the alternative software used by USEPA, and obtaining the data and time to conduct simulations to corroborate or dispute USEPA's findings regarding the extent of the Area of Review (AoR) are not insignificant concerns and constraints. USEPA has not provided an extension of the comment period that would facilitate a thorough public audit of the modeling procedures and results and a full scrutiny of the administrative record. The magnitude of this undertaking is not trivial, and would require months to accomplish. However, it is not a feasibility issue; it simply requires USEPA to be willing to work with the public. USEPA's response to Petitioner's comments is both an implicit and explicit acknowledgement of volume and format challenges associated with viewing the Administrative Record, though offered as an attempt to justify not providing the full record locally (Decatur Public Library, Decatur, Illinois). The relevant content of USEPA's response is as follows:

> "There are 446 documents (totaling thousands of printed pages) identified in the Administrative Record Index for this permit modification. Given the complexity of the computational modeling (for delineation of the Area of Review) and the volume of associated data, certain files are stored on a dedicated electronic file system and require specific software to open in a readable form".

Despite the on-line availability of some of the Administrative Record, the preceding comment highlights the fact that travel to Chicago (entailing multiple trips with lengthy stays) to view and evaluate the full Administrative Record would be unavoidable in the absence of USEPA providing it locally (Decatur Public Library or an alternative venue). A Freedom of Information Act request would have offered no realistic relief from this hardship because of inherent content and

format considerations and the highly uncertain delivery of requested material within the 30-day comment period.

Some insight as to the basis for the extension denial is provided in USEPA's response to Petitioner's Comment #2:

> "EPA's decision on the length of the public comment period is commensurate with the scope of changes made since the permit was issued in 2014 and the level of public interest in the initial permits for this project".

USEPA's detailed table of all permit modifications contained in the amended permit is impressive, spanning 51 pages, and identifying formatting, administrative, and technical changes. It is inconceivable that the scope of these changes could be construed so narrowly as to warrant not granting a request for a public comment period extension. Furthermore, USEPA seems to have chosen to ignore the extensive comments (May 6, 2014 and May 30, 2014 – See Response to Comments for Draft Class VI Permit Issued to Archer Daniels Midland (ADM)) (*hereinafter*, Response to Comments for 2014 Draft Permit) that Petitioner provided in response to the initial draft permit issued in 2014 to construct the CCS#2 carbon dioxide injection well. These comments were the basis for a follow-up petition for review by the EAB that was later withdrawn. There can be no question that Petitioner was deeply interested in the permitting activity for this project. It seems clear that USEPA was intent on meeting a self-imposed schedule and was unwilling to be inconvenienced by a legitimate request for an extension of the comment period. This is totally inappropriate given the voluminous and complicated nature of the Administrative Record and the associated travel hardships faced by Petitioner. This is effectively an abuse of regulatory discretion.

2. The EAB Must Remand the Permit Because USEPA Violated the ESA by Failing to Consult with FWS

In accordance with the requirements of Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. § 1531 *et. seq.*, and 50 CFR § 402.01 *et. seq.*), the United States Environmental Protection Agency (USEPA) must consult with the U.S. Fish & Wildlife Service (FWS) on "any action authorized, funded, or carried out" that falls within the embrace of the ESA. The full text of the relevant portion of the statute (Section 7.(a)(2)) reads as follows:

> "Each federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected states, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to Subsection (h) of this section. In fulfilling the requirement of this paragraph each agency shall use the best scientific and commercial data available."[1]
>
> [1](http://www.nmfs.noaa.gov/pr/laws/esa/text.htm#section7)

USEPA failed to consult with USFWS prior to issuance of the modified Underground Injection Control (UIC) permit (and, for that matter, with the previous 2014 UIC permit) to address any potential acute or chronic adverse effects to any of the threatened and endangered species or their respective critical habitats. Adverse effects would continue to be possible from ongoing permitted activities including "any planned workover, stimulation, or other well test" (*see* Modified Permit, page 16), "any surface gas monitoring and/or soil gas monitoring" (see Modified Permit, page 14), any potential emergency or remedial response, and anticipated plugging of the well at the end of the injection period. These activities may have associated physical disturbances of the ground surface, elevated noise and vibration levels, and air pollutant emissions associated with the operation of equipment (e.g. diesel generators) and vehicles.

Contrary to USEPA's response to Petitioner's Comment #5 in the Modified Permit, USEPA is not at liberty to forego consultation with FWS. In the September 27, 2006 EAB order denying review in part and remanding in part the Indeck-Elwood, LLC permit appeal (*In re* Indeck-Elwood, LLC, 13 E.A.D. 126, 196 n.134 (EAB 2006)), the Board provides a particularly relevant footnote (Pages 112 and 113, Footnote 154) regarding the issue of consultation:

> "In *Ash Grove*, as in this case, the relevant Region did not consult with FWS regarding ESA impacts or receive written concurrence of no adverse effect to endangered or threatened species or critical habitat until after the permit (RCRA) was issued, and there, as here, we found consultation during the pendency

of the appeal sufficient for ESA purposes. In the course of so ruling, however, we stated in dicta, "it appears that the [r]egion *failed to satisfy the regulatory requirements* for endangered species consultation prior to issuance of the permit." *Id.* (emphasis added)."

3. The EAB Must Remand the Permit Because USEPA has Failed to Include Provisions Consistent with Illinois Real Property Law that Compensate Owners of Pore Space Impacted by the CO_2 Plume

Illinois case law follows the American Jurisprudence treatise (63C Am. Jur. 2d Property) regarding ownership of the pore space of the geologic formation receiving the injected CO_2 and to pore space for which the injected fluid subsequently migrates. Quoting in pertinent part from Section 12 (regarding land):

> "The word 'land' includes not only the soil, but everything attached to it . . ." It goes on to say that "the title to land extends downward from the surface to the center of the earth and upward indefinitely to the heavens, so that whatever is in a direct line between the surface of any land and the center of the earth, whether it is rock, soil, or water, belongs to the owner of the surface, who may use it for his or her own purpose."

The modified geographic extent of the subsurface CO_2 plume and pressure front (*see* USEPA's Fact Sheet) indicates that over time the plume will extend to areas for which ADM does not have surface land ownership rights. Petitioner stated in Comment #4 of the Response to Comments for Modified Permit the following:

> "USEPA has not addressed in the draft amended permit the fundamental legal question of whether ADM has the mineral rights ("pore rights") that would allow them to conduct subsurface injection when the CO_2 plume and pressure front extends to areas directly below the ground surface where ADM doesn't have surface land ownership. In the absence of these mineral rights, a permit cannot be issued."

USEPA cannot absolve itself of responsibility in this matter, despite statements made to that effect (see page 2 of the Modified Permit). To accept USEPA's claim that this permit "does not convey property rights", would necessitate an enforceable permit condition restricting the extent of the subsurface plume. Such a condition does not currently exist in the permit. USEPA could impose a condition limiting injection volumes at specified stratigraphic intervals and thereby prevent plume migration to areas where ADM does not have "pore rights". The total CO_2 injection volumes currently permitted and anticipated by ADM could be accommodated by allowing for additional perforation and completion of shallower intervals within the Mt. Simon Formation.

The current situation, in which there is an absence of conditions in the UIC permit that would require notification to potentially impacted landowners, negotiated fair compensation to these landowners prior to CO_2 injection, and recordkeeping that documents these transactions (and which is readily available for public viewing), is an "exercise of discretion or an important policy consideration that the Environmental Appeals Board should, in its discretion, review" (40 CFR Ch. I §124.19 (a)(4)(i)(B)).

4. The EAB Must Remand the Permit Because USEPA has not Provided the General Public with Reasonable Access to Proprietary Software in Order to Independently Verify and Provide Comment Upon Modeling Results

Regrettably, USEPA has failed in its obligation to provide members of the public with reasonable opportunity to provide comment on all aspects of the administrative record and decision-making elements that have resulted in permit issuance. Most notably, USEPA has asked the public to accept on faith their modeling conclusions, the result of changes to the reservoir model inputs (the result of updated petrophysical information obtained from drilling and testing the well), as well as those of the applicant, without providing reasonable accommodation for access to the proprietary software that forms the basis for these conclusions and for an opportunity to independently audit the modeling methodology and results. This stands in stark contrast to the publicly available (and highly complex) photochemical modeling systems software (CMAQ, CAMx, and supporting meteorological and emissions models) recognized for use by USEPA (Region 5, Air and Radiation Division) for evaluating ozone, fine particulate

matter (PM2.5), and regional haze in Prevention of Significant Deterioration (PSD) air quality reviews and State Implementation Plan (SIP) development. Though the UIC reservoir models and air quality photochemical models were developed for different media applications, they are both being used as regulatory tools, and therefore need to be readily available to the public.

The Petitioner, with a Bachelor of Science degree in Geology (Western Washington University, 1979) and graduate level training in Hydrogeology (University of Illinois), along with years of oil and gas industry experience in making well completion recommendations, and over 28 years of computer modeling experience, has acquired skill sets that are uniquely applicable to evaluating USEPA's modeling procedures and results.

The UIC Branch of USEPA's Water Division has chosen not to make the modeling software available by claiming that it is not statutorily required, that it is inherently complex, and that there are potential computer platform and other operational limitations. None of these claims are sufficient to deny the public access to the software and the opportunity to evaluate the modeling process. The ECLIPSE 300 (v2011.2) reservoir simulator model with CO2STORE module is proprietary software (Schlumberger) that was used by ADM for supporting the UIC permit. USEPA's AoR delineation modeling relied upon alternative software (STOMP, with STOMP-CO2 and STOMP-CO2e simulators) developed by the Pacific Northwest National Laboratory. These software tools are only available to the public at considerable cost. It is unreasonable to expect the general public to incur such cost in order to evaluate model assumptions, model implementation, and modeling results. Furthermore, it is disingenuous by USEPA to claim that they are providing opportunity for public comment, while rejecting a request for making temporarily available to the public the software (ECLIPSE 300 and STOMP) on which critical components of the permit decision-making were based. USEPA should make available a temporary license for the software, as well as all model input files, in order to provide opportunity for conducting model simulations for evaluating reservoir behavior and plume development.

CONCLUSION

Petitioner has raised in this appeal erroneous conclusions of law by USEPA and/or important policy considerations that the Environmental Appeals Board should review and reverse regarding the final modified Underground Injection Control permit (Permit Number IL-115-6A-0001) for the Archer Daniels Midland Company CCS#2 Well in Macon County, Illinois. The Petitioner respectfully requests that this Permit be remanded to USEPA for change consistent with the arguments presented in this petition.

BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

IN THE MATTER OF:)	UIC PERMIT NUMBER: IL-115-6A-0001
ARCHER DANIELS MIDLAND CO.)	
DECATUR, ILLINOIS)	
UIC CLASS VI WELL CCS#2)	

PROOF OF SERVICE

I, Jeffrey Sprague, do hereby certify that I have served the Petition for Review on the USEPA Regional Administrator and on Archer Daniels Midland Company (permit applicant) through First Class U.S. Mail as of February 2, 2017 to the individuals and addresses indicated below:

Robert A. Kaplan, Acting Regional Administrator
Office of the Regional Administrator, R-19J
United States Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Mr. Steve Merritt, Corn Plant Manager
Archer Daniels Midland Company – Corn Processing
4666 Faries Parkway
Decatur, Illinois 62526

From: Jeffrey Sprague (Petitioner)
P.O. Box 442
Argenta, Illinois 62501
Telephone: 217-795-2131
E-mail: 6sprague@gmail.com

To: Well File for IL-115-6A-0001, CCS#2
From: Jeffrey McDonald
Date: 10/26/16

RE: EVALUATION OF NHPA AND ESA AT ADM's CCS #2

The Illinois State Historic Preservation Officer (SHPO) was contacted during the initial permitting of CCS # 2. The SHPO replied on 10/1/13 stating that there were no issues identified with the site. Since all ground disturbance associated with the construction of the well, associated pipelines, monitoring wells, and other surface equipment have been completed, there is no reasonable probability of potential impacts to historical artifacts covered under the NHPA.

Information from ADM and the Richland Community College submitted in November 2013 supported EPA's determination that the two federally endangered species for Macon County (the Indiana Bat and the Eastern Prairie Fringed Orchid) were not present and would not inhabit the largely industrial and agricultural area where the well is located. As with the NHPA finding, all ground disturbance associated with the construction of the well, associated pipelines, monitoring wells, and other surface equipment have been completed. There are no anticipated impacts to any federally endangered species.

Attention Sr. License Associate
902 Battelle Blvd., P.O. Box 999
Mailstop K1-53
Richland, WA 99352
Telephone (509) 372-6308
Telefax (509) 375-4487

Pacific Northwest
NATIONAL LABORATORY

SCHEDULE A
(Government Use)

1. Organization Requesting Software: _____

User:		Administrative Contact (if different from User):	
Name:		Name:	
Address:		Address:	
Address:		Address:	
City, State:		City, State:	
Zip:	Country:	Zip:	Country:
Telephone:	FAX:	Telephone:	FAX:
email:		email:	

2. Software: **STOMP (Subsurface Transport Over Multiple Phases)**
Check one or more of the following modules:

- ☐ **STOMP-W (Water)**
- ☐ **STOMP-WAE (Water-Air-Energy)**
- ☐ **STOMP-WO (Water-Oil)**
- ☐ **STOMP-WOA (Water-Oil-Air)**
- ☐ **STOMP-WS (Water-Salt)**
- ☐ **STOMP-CO2 (Water-CO2-Salt)**
- ☐ **STOMP-HYD (Water-CO2-CH4-Salt-Energy)**

Documentation: **STOMP Application, Theory, and User Guides**

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4. Sponsoring Agency: Federal Contract Number:

The undersigned has read and agreed to the terms of this Software User Agreement.

User's Agency or Contractor:

Signed By: _____

Print Name: _____

Title: _____

Date: _____

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SOFTWARE USER ACKNOWLEDGMENT

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   - Notify PNNL of any publication of new findings that may be discovered through the use of the Software.
   - Communicate any errors it discovers in the Software to the code developers at PNNL.
   - Make available to PNNL any nonproprietary improvements or modifications to the Software code.

It should be noted that modifications of the Software that are not later incorporated by PNNL into the standard version of the Software will not be supported by PNNL, but may be supported by others.

4. **User recognizes that the Software code is provided by PNNL on an as-is basis without support. Neither the U.S. Government nor the U.S. Department of Energy, nor any of their employees, nor Battelle Memorial Institute, nor any of its affiliates or subsidiaries, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.**

5. If Software maintenance, support, or upgrades are made available by PNNL, they will be provided only to those Users who have signed and returned to PNNL Schedule A on the reverse side hereof.

6. User's subcontractors, consultants, visiting scientists, etc., are authorized to use the Software only on projects funded by the Federal Government.

7. User represents and warrants that it shall not export the Software from the United States directly or indirectly without first complying with all requirements of the Export Administration Regulations, including the requirement for obtaining any export license, if applicable.

BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In re:	)	
	)	
Archer Daniels Midland Company	)	UIC Appeal No. 17-05
Decatur, Illinois	)	
Facility CCS#2	)	
	)	
Underground Injection Control	)	
Permit No.: IL-115-6A-0001	)	

CERTIFICATE OF SERVICE

I hereby certify, pursuant to the Rules of the Environmental Appeals Board of the U.S. Environmental Protection Agency, that on March 8, 2017, the foregoing was filed electronically with the Clerk of the Environmental Appeals Board using the EAB eFiling System, as authorized in the August 12, 2013, Standing Order titled Revised Order Authorizing Electronic Filing Procedures Before The Environmental Appeals Board Not Governed By 40 C.F.R. Part 22. The foregoing is also being served via U.S. Mail in hard copy paper form on the following:

Clerk of the Board
U.S. Environmental Protection Agency
Environmental Appeals Board, Mail Code 1103M
1200 Pennsylvania Avenue, NW
Washington, DC 20460-0001

And via electronic mail to:

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