July 30, 2024

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Submitted via eplanning.blm.gov

Re: Comment on Draft Environmental Assessment, SW Wyoming Carbon Dioxide Sequestration project, DOI-BLM-WY-D090-2023-0010-EA

Dear Ms. Lamborn:

On behalf of our millions of members and online activists, the Natural Resources Defense Council (NRDC) respectfully submits the following comments on the Draft Environmental Assessment (Draft EA) for Moxa Carbon Storage, LLC's proposed SW Wyoming Carbon Dioxide Sequestration project (Moxa CO_2 Project) in Lincoln, Sweetwater, and Uinta counties in Southwestern Wyoming, DOI-BLM-WY-D090-2023-0010-EA.

In summary, these comments follow up on our letter, dated July 15, 2024, in which we requested that the BLM consider a 30-60 day extension of the comment period for this Draft EA. That request was based on the lack of meaningful information about the project under review, aside from the acreage overlying the federal pore space at issue and the proposed boundaries of that acreage. We reiterate our call in this comment for significantly more information, which would allow stakeholders to adequately assess whether this project is likely to have significant environmental impacts.

In addition to these points, our comment also raises the following concerns:

1. That the BLM is inappropriately segmenting this project by considering a pore-space-only right-of-way (ROW) instead of a whole-of-project ROW following a complete and detailed application from the proponent.
2. The Moxa CO_2 Project is likely to have significant environmental impacts due to a number of factors not considered in the Draft EA, all of which require the preparation of a full environmental impact statement.
3. The BLM must do more than reference its Instruction Memorandum on UIC Class VI CO_2 wells when reviewing the environmental consequences of these projects and should show stakeholders that it is, at the very least, following the outlines of this IM.
4. The BLM should pause consideration of this project until the agency has adopted appropriate ROW regulations applicable specifically to UIC Class VI CO_2 sequestration wells to ensure that applicants and interested stakeholders can understand how the BLM will approach the review, permitting, and regulation of these projects, including the types of information project proponents must provide in their applications and supporting project documentation.

We expand on these points and more in detail below.

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I. The Draft EA is incomplete and requires substantial additional information before stakeholders can adequately comment on the proposed project.

Though the regulatory requirements for the content of environmental assessments are de minimis, the Draft EA prepared for the Moxa CO_2 Project is so lacking in detail that the interested public cannot meaningfully understand the purpose or need for the project or whether its environmental impacts might be significant. This is in direct conflict with the requirements for preparing environmental assessments, which state that an agency must at least "provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact."[1] The BLM has not met that standard here.

The Draft EA prepared for the Moxa CO_2 Project contains virtually no information about the project's plan of operation. Because this information is lacking—and there is no evidence that the BLM itself has received anything from Moxa Carbon describing the company's actual plans—the entire document is devoid of meaningful consideration of the foreseeable impacts relating to injection of CO_2 into the pore space in question. As touched on in Section II, *infra*, depending on information and analysis not presented in the Draft EA, those impacts could be quite significant. But the lack of even basic operational plans also means that it is especially difficult for interested stakeholders to understand what Moxa Carbon is proposing and, by extension, what the BLM is considering permitting. The extent of information provided about the actual project in the Draft EA can be summarized in two bullets:

- Tallgrass High Plains Carbon Storage, LLC, now known ostensibly as Moxa Carbon Solutions, LLC, has proposed a project named the "Southwest Wyoming CO_2 Sequestration Project" that would inject CO_2 into federally-managed pore space beneath more than 600,000 acres underlying parts of three southwestern Wyoming counties.[2]
- Moxa Carbon Solutions, LLC plans to use the pore space within the proposed project area as part of "a larger project that will consist of CO_2 capture infrastructure at planned ammonia production facilities and other potential CO_2 source points, CO_2 compression and pumps, a CO_2 pipeline, and sequestration surface facilities."[3]

Unlike in the one other instance we have to compare the BLM's approach to these proposed projects,[4] here, this is the complete extent of what is known about Moxa Carbon's plans. This cannot be the basis for an environmental analysis of a project—indeed, this amounts to little more than drawing a line on a map and saying that perhaps someday the pore space could be used in some as-yet-unknown way for a similarly unknown purpose.

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[1] 40 C.F.R. § 1501.5(c)(1).
[2] BLM, Draft Environmental Assessment, SW Wyoming Carbon Dioxide Sequestration, DOI-BLM-WY-D090-2023-0010-EA (July 2024) at 1 (hereinafter "Draft EA").
[3] Draft EA at 4.
[4] *See* Denbury, Snowy River CO2 Sequestration Project Plan of Development, available at https://eplanning.blm.gov/public_projects/2026556/200564713/20104232/251004232/1_BLM%20Snowy%20River%20POD_2024_02_508.pdf. We do not wish to suggest that the BLM's review of the Snowy River CO2 Sequestration Project is a model for review of projects of this type, but we do wish to emphasize how much more information the BLM provided to the public as part of the environmental review and public comment phase of its project review.

The extent to which a lack of information has been provided is further exhibited by the fact that the project proponent's identity cannot be clearly ascertained or confirmed. According to state records, Tallgrass High Plains Carbon Storage, LLC is a Colorado-based entity that remains actively in business as of July 23, 2024.[5] Meanwhile, media reporting suggests that Moxa Carbon Solutions, LLC is based in Leawood, Kansas,[6] but the company contacts in that reporting are employees of Tallgrass,[7] which is a company primarily in the business of operating natural gas pipelines and the parent company of Tallgrass High Plains Carbon Storage, LLC. Additionally, a search of the Kansas Secretary of State database does not turn up a company by this name. Nor does a search of the Colorado Secretary of State database bring up a company by this name. Regardless of who may actually own or control this project, the public needs more information to fully understand the participants and their plans.

In addition to providing no information upon which the public can understand the corporate entities backing this project, there is no information available in the Draft EA or elsewhere online to demonstrate how CO_2 will reach the project area. There are no existing CO_2 pipelines that appear to serve the area proposed for carbon dioxide injection. While pipelines are therefore almost certain to be proposed, the review and permitting of CO_2 pipelines can be time-consuming and the lack of an identifiable proposal for this area suggests this project is in such an early developmental stage that consideration of a right-of-way permit for use of pore space is extremely premature. Additionally, pipelines in relatively close proximity are currently proposed to serve other CO_2 injection well projects,[8] suggesting the need for significant, non-existent surface infrastructure to be built prior to this project ever becoming operational.

Taking Moxa Carbon's assertion at face value that the CO_2 to be injected for this project would come from coal-to-ammonia plants only reiterates the need for additional information. These plants have not been built and appear, from the limited information available, to remain in the early proposal stages, and their commercial viability is highly dependent on global commodity prices.[9] If additional existing sources of CO_2 would be connected to this project, that information is both important for determining the environmental impact significance of permitting this project, as well as understanding the project's timeline, as new carbon capture infrastructure would almost certainly need to be constructed to actually create a viable source of injectable CO_2.[10]

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[5] Colorado Secretary of State, Business Entity History: Tallgrass High Plains Carbon Storage, LLC, https://www.sos.state.co.us/biz/BusinessEntityHistory.do?quitButtonDestination=BusinessEntityDetail&pi1=1&nameTyp=ENT&masterFileId=20221690972&entityId2=20221690972&srchTyp=ENTITY (last visited July 23, 2024).
[6] Pat Maio, "Kansas Company Planning Gigantic 600,000-Acre Carbon Capture Project In SW Wyoming," Cowboy State Daily, July 4, 2024, https://cowboystatedaily.com/2024/07/04/plan-would-store-huge-amounts-of-co2-under-600-000-acres-of-sw-wyoming/.
[7] Tallgrass, Contact, https://tallgrass.com/contact/ (last visited July 23, 2024).
[8] *See* Denbury, Snowy River CO2 Sequestration Project Plan of Development, available at https://eplanning.blm.gov/public_projects/2026556/200564713/20104232/251004232/1_BLM%20Snowy%20River%20POD_2024_02_508.pdf.
[9] Pat Maio, "New Project Would Make Kemmerer Home To $2.5 Billion Coal-To-Ammonia Plant," Cowboy State Daily, Apr. 4, 2024, https://cowboystatedaily.com/2024/04/04/kemmerer-could-become-home-to-2-5-billion-coal-to-ammonia-plant/.
[10] There are, for example, two existing coal-fired electricity generating plants in relative proximity to the project area—Naughton Power Plant and Jim Bridger Power Plant—though neither is connected by a CO_2 pipeline to the project area and neither has yet installed carbon capture technology that could provide CO_2 to the Moxa CO_2 Project

Finally, and most critically, the Draft EA is completely silent regarding the volume, quality, injection depth, monitoring plan, etc. of CO_2 that could be or that will be injected or the time period for injection. These factors will have a profound impact on the eventual magnitude of surface-disturbing activities and are of direct relevance to the pore space ROW permit being requested. Without this information, the project proponent and the BLM have not provided even the most basic information needed to adequately determine whether the agency has demonstrated any basis for making an environmental impact significance decision.

II. The BLM has unlawfully segmented this project by only considering a pore space right-of-way in this Draft Environmental Assessment.

As a preliminary matter, the Draft EA for the Moxa CO_2 Project is legally deficient due to the BLM's acknowledged segmenting of the project into different development stages. Federal regulations and the courts have made clear that federal agencies are prohibited from segmenting their National Environmental Policy Act (NEPA) reviews of proposed projects by "divid[ing] connected, cumulative, or similar federal actions into separate projects and thereby fail[ing] to address the true scope and impact of the activities that should be under consideration."[11] The NEPA regulations that entered into force on July 1, 2024, reiterate this longstanding prohibition by stating that an agency cannot avoid considering an action "significant" by "segmenting an action into smaller component parts."[12]

Nonetheless, in this Draft EA, the BLM is unequivocal that it is segmenting this project's review. The Draft EA states,

> *The BLM's ROW authorization would only provide for use of the subsurface BLM-administered federal pore space* within the project area . . . . The BLM's pore space ROW grant would not authorize surface-disturbing activities or surface occupancy of BLM administered public lands.
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> *Additional ROWs may be submitted to the BLM in the future*, should Moxa Carbon eventually seek BLM authorization to construct and use surface infrastructure on BLM-administered public lands. As Moxa Carbon explained . . . *the pore space ROW is the "first step in a larger project* that will consist of CO_2 capture infrastructure [including] CO_2 compression and pumps, a CO_2 pipeline, and sequestration surface facilities. *Once the details of the larger sequestration project are finalized, [Moxa Carbon] will request the use of specific federal surface lands* through a separate ROW application.[13]

(though the Jim Bridger plant has announced plans to consider installing carbon capture equipment in 2028). *See* Nicky Ouellet, "Carbon capture technology proposed for two of Jim Bridger's coal-fired units," Wyoming Public Media, Apr. 3, 2024, https://www.wyomingpublicmedia.org/natural-resources-energy/2024-04-03/carbon-capture-technology-proposed-for-two-of-jim-bridgers-coal-fired-units.

[11] *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976).

[12] 40 C.F.R. § 1501.3(b)

[13] Draft EA at 4.

While the BLM tries to suggest that future surface disturbances or occupancy may not happen on federally managed lands, Moxa Carbon itself is clear on the matter when it states that it "will request the use of specific federal surface lands."[14] Indeed, a map of the project area clearly shows the impossibility of Moxa Carbon eventually injecting CO_2 into federal pore space without occupying portions of the federally-managed surface estate, since the entire area is composed of a federal-state-county land ownership checkerboard that infrastructure like pipelines, roads, and powerlines must eventually cross to make this project work.[15]

Subsequently, the BLM again tries to justify this inappropriate project segmenting by noting that,

> [d]etails regarding the construction and operation of the Class VI injection wells (and appurtenant infrastructure) are unknown at this time. The BLM cannot predict with reasonable certainty how many Class VI wells will be constructed, where exactly they will be constructed, or the timing and duration of associated operations.[16]

However, instead of bolstering their justification for proceeding with review of this ROW, this statement calls the entire project into question: if there are not obviously foreseeable wells, wellpads, pipelines, roads, powerlines, etc. there can be no plausible injection of CO_2 into federal pore space and there is thus no project. Instead of proceeding to this Draft EA, the BLM should instead have demanded a complete project application from Moxa Carbon—including a detailed plan of development—which appears to have done virtually nothing to justify this permit request.

This point is of particular importance. If the BLM does not demand more information from Moxa Carbon and subsequently issues a pore space ROW permit, it is committing the agency to a future course of action—permitting surface disturbing activities and surface occupancy—without considering the environmental impacts of such activity at the point in time when it is directed to do so by law. For this reason and all those above, the BLM must withdraw this Draft EA, request critically missing information from Moxa Carbon, and return to stakeholders with a comprehensive suite of materials that presents information and data related to the entire planned scope of the Moxa CO_2 Project. As discussed in Section III, *infra*, given the near-certain significant effects of this project, these materials should be part of a comprehensive environmental impact statement (EIS).

III. The Moxa CO_2 Project is likely to have "significant effects" on the environment and therefore should be subject to an environmental impact statement.

Under the National Environmental Policy Act (NEPA), the BLM must prepare an "environmental impact statement [where the] proposed agency action . . . has a reasonably foreseeable significant effect on the quality of the human environment."[17] Under the newly

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[14] *Id.*
[15] *See* BLM National NEPA Register, SW Wyoming Carbon Dioxide Sequestration, "Maps," April 5, 2023, available at https://eplanning.blm.gov/public_projects/2023000/200549971/20076193/250082375/CO2Sequestration_SW_WY_20230405.pdf.
[16] Draft EA at 5.
[17] 42 U.S.C. § 4336(b)(1).

finalized NEPA implementing regulation, the significance of an agency action for the purposes of determining the level of environmental review requires the BLM to "examine both the context of the action and the intensity of the effect."[18] Of note, the rule expands on the meaning of "context and intensity" by stating:

> In assessing context and intensity, *agencies should consider the duration of the effect*. Agencies may also consider the extent to which an effect is adverse at some points in time and beneficial in others (for example, in assessing the significance of a habitat restoration action's effect on a species, an agency may consider both any short-term harm to the species during implementation of the action and any benefit to the same species once the action is complete). However, *agencies shall not offset an action's adverse effects with other beneficial effects to determine significance* (for example, an agency may not offset an action's adverse effect on one species with its beneficial effect on another species).[19]

Because the BLM has not provided enough information about the Moxa CO_2 Project to even make an educated guess about the "context and intensity" of the project's environmental effects, the Draft EA is severely deficient in providing interested parties any hope of understanding the project Moxa Carbon has proposed. Nonetheless, based on other permanent CO_2 sequestration projects proposed to the BLM, we can assume that this project would likely have a very long operational duration, followed by another half century of post-injection monitoring.[20] In addition, based on the cursory analysis[21] and maps provided,[22] not to mention the sheer scale of the acreage of underlying pore space this project proposes to occupy,[23] it is almost certain that the project will result in uniquely "intense" effects to surface resources. All of this points to the conclusion that an environmental assessment for this project is insufficient and the BLM should, upon receipt of a vastly more complete project application from Moxa Carbon, proceed to undertake a full EIS.

In addition, despite limited available information, Moxa Carbon's application suggests that a key source of the CO_2 that would be injected by this project will come from "planned ammonia production facilities,"[24] which media reports suggest involve currently unbuilt coal-to-ammonia processing plants to be constructed in relative proximity to the Moxa CO_2 Project.[25] In practice, this means the BLM, in its decision not to analyze the greenhouse gas effects of this project,[26] has ignored that this project may help justify the construction of new major point sources of CO_2 and other pollutants that are not currently in operation. At the same time, it may also be used to justify continued or expanded coal mining, which comes with its own pollution and emissions

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[18] 40 C.F.R. § 1501.3(d).
[19] *Id*. (emphasis added).
[20] *See* BLM, Draft Environmental Assessment, Snowy River CO2 Sequestration Project, DOI-BLM-MT-C020-2023-0070-EA at 39-40 (Feb. 2024).
[21] *See generally* Draft EA at 8-50.
[22] *See generally Id*. at Appendix 2.
[23] *Id*. at 1.
[24] *Id*. at 4.
[25] Pat Maio, "New Project Would Make Kemmerer Home To $2.5 Billion Coal-To-Ammonia Plant," Cowboy State Daily, Apr. 4, 2024, https://cowboystatedaily.com/2024/04/04/kemmerer-could-become-home-to-2-5-billion-coal-to-ammonia-plant/.
[26] *See* Draft EA, Appendix 1.

consequences. These are all "reasonably foreseeable" consequences—that the project proponent has directly mentioned—with significant impacts on the environment.

The BLM's inappropriate segmentation of this project's review also means that a whole suite of necessary environmental impact analyses are missing. Following a presumption that utilization of the pore space Moxa Carbon seeks to access will take many decades to fill with injected CO_2, the BLM should have significantly expanded its environmental analysis to address, at minimum, the following questions:

- What effect on surface level resources will changing intensities and types of use have over the next century?
- Will the necessity for long-term surface monitoring and regular human presence create additional, unanalyzed impacts on threatened and endangered species present within the project area?
- Based on established science and existing data, what environmental changes are likely to occur in the project area that may impact surface level resources and operations? For example, to what extent will changes expected due to climate change further exacerbate the expected environmental impacts of the project, necessitating new or different avoidance or mitigation measures?[27]
- What risks may be present in the environment that could increase the likelihood of accidental releases of CO_2 from project infrastructure, especially risks tied to changing environmental conditions (i.e., drought, flooding, higher temperatures, etc.) over the next century?

This type of analysis is wholly missing from the BLM's analysis of this project and would be best facilitated in an EIS.

Yet another vein of missing analysis is a hard look at current and historic surface and subsurface uses of the lands overlying this project's pore space. Of particular concern is the BLM's disclosure that there are "existing land use activities" that include "oil and gas production [and] mining."[28] Despite mentioning these current activities within the project area, the Draft EA is silent as to the location, timeframe, and extensiveness of these activities. This is a critical oversight, as the existence of operating oil and gas wells and mines as well as the possible existence of abandoned and/or orphaned oil and gas wells or mines could pose significant risks to the geologic integrity of the planned injection formation. More information and analysis of this risk is required. In an EIS, the BLM could address the following key questions and appropriately analyze the risks or effects that the information provided would reveal:

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[27] *See*, *e.g.*, U.S. Global Change Research Program, Fourth National Climate Assessment: Volume II, Impacts, Risks, and Adaptation in the United States (2018).

[28] Draft EA at 15. It is worth flagging to the prepares of this Draft EA, that the BLM's presentation of surface usage and ongoing activities are not consistent. In the project description, for example, the BLM states first that there are 143,972 acres of surface disturbance within the project area and that those disturbances include "grazing, oil and gas production, and recreation activities." Draft EA at 10. The Draft EA then states that there are only 43,972 acres of surface disturbance, but mentions the same sorts of disturbance types. Draft EA at 11. It is only deeper into the BLM's impacts analysis that "mining" is first mentioned as an activity taking place within the project area. Draft EA at 15.

- Are there operating oil and gas wells or operating mines located within or near the project area?
- Are there abandoned oil and gas wells or abandoned mines located within or near the project area?
- When were the abandoned oil and gas wells drilled and when were they abandoned?
- What was the depth of the abandoned oil and gas wells?
- What drilling and production techniques were used at the abandoned oil and gas wells (i.e., horizontal drilling, hydraulic fracturing ("fracking"), enhanced oil recovery, etc.)?
- Are there records of how the relevant oil and gas wells were abandoned and/or have surveys been completed to ensure the continued integrity of the plugged wells?
- What is the depth of mining operations past and present within the project area?
- Has the geological integrity of the pore space been surveyed or otherwise tested in the proximity of abandoned mines?

Finally, a risk particularly relevant given this project's size and operation is seismicity. As history has now clearly shown, as the boom in fracking has proceeded, areas that were previously seismically inactive have seen significant induced seismicity caused not by fracturing itself, but by liquid (wastewater) injection underground.[29] While this project does not involve fracking, it does involve high pressure injection of—presumably—very large volumes of supercritical (liquid) CO_2 per day.[30] Recent reporting from the Permian region and the Delaware Basin found that injection of wastewater there is leading to significant surface level deformation.[31] And, in a well-known example of one of the first projects to inject significant volumes of CO_2 for geologic storage, the In Salah project in Algeria deployed numerous monitoring strategies that showed both surface deformation and micro-seismic events attributable to the injection of CO_2.[32]

While we expect the Wyoming Department of Environmental Quality's UIC Class VI well permit review to look carefully at these issues,[33] the BLM's attempt to avoid consideration of them here is deeply problematic because of possible impacts to the subsurface and surface

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[29] U.S. Geological Survey, "FAQ, Natural Hazards: Oklahoma has had a surge of earthquakes since 2009. Are they due to fracking?", https://www.usgs.gov/faqs/oklahoma-has-had-a-surge-earthquakes-2009-are-they-due-fracking (last accessed July 23, 2024).

[30] As highlighted elsewhere, the Draft EA is silent as to the volume and rate of possible CO_2 injection, but we can infer from other projects considered by the BLM that the volumes and rates of injection will be significant. *See* BLM, Draft Environmental Assessment, Snowy River CO_2 Sequestration Project, DOI-BLM-MT-C020- 2023-0070-EA at 39-40 (Feb. 2024).

[31] Benoît Morenne and Andrew Mollica, "In America's Biggest Oil Field, the Ground Is Swelling and Buckling," Wall Street Journal, April 28, 2024, https://www.wsj.com/business/energy-oil/in-americas-biggest-oil-field-the-ground-is-swelling-and-buckling-9d66eb42.

[32] *See generally*, P.S. Ringrose, et al, "The In Salah CO_2 storage project: lessons learned and knowledge transfer," 37 Energy Procedia 6226-36 (2013), available at https://www.sciencedirect.com/science/article/pii/S1876610213007947.

[33] As noted within the Draft EA, the U.S. Environmental Protection Agency (EPA) has granted primacy to the State of Wyoming to permit and regulate underground injection control (UIC) Class VI storage wells for the purpose of permanent geologic sequestration of CO_2.

resources the BLM is tasked with managing. Thus, as with issues related to historic oil and gas and mining activity, we urge the BLM to undertake an appropriate level of environmental review in an EIS to answer the following questions:

- What effect would micro-seismic events have on the geologic integrity of the pore space to be occupied by this project?
- What effect or interaction could this project have with historic and ongoing subsurface activities like oil and gas production and mining in the event the project leads to micro-seismic or more significant induced seismicity?
- What effect would surface deformation have on sensitive species located within the project area, especially identified threatened or endangered species?
- What risks does increased seismicity pose to other surface and subsurface resources,
- especially drinking water and aquifer integrity?
- How can the BLM both ensure adequate safety monitoring of the project area while also working to reduce the effect of such monitoring on identified threatened or endangered species?

The questions raised here do not fully capture the range of analysis missing from the Draft EA but are meant to illustrate the types of analysis the BLM should have provided in a more robust EIS. We therefore urge the agency to take a harder look at this project and prepare an EIS that considers key geologic risks and effects that this project may present to the area.

IV. The Moxa CO_2 Project is being contemplated within a regulatory environment that has many gaps that should be filled before the BLM considers permitting a pore space ROW for a UIC Class VI CO_2 storage project.

a. Consideration of the Moxa CO_2 Project is being undertaken via a two-page instructional memorandum that the BLM appears to have not followed in the preparation of this Draft EA.

For the BLM's purposes, permitting of the Moxa CO_2 Project would be undertaken via the agency's general ROW regulations at 43 C.F.R. Part 2800. These regulations do not contain any specific provisions relating to CO_2 pipeline infrastructure or UIC Class VI wells; and, aside from provisions specifically tailored to wind and solar ROWs, they contain only generalized procedural guidelines for project application submission and processing.

In the absence of regulations applicable specifically to the Moxa CO_2 Project's unique operation, the BLM is relying on Instruction Memorandum (IM) 2022-041, published in 2022, to guide ROW permit decision-making.[34] This is wholly inadequate for a project of this size and presumed duration. Furthermore, aside from a single footnote at the beginning of the Draft EA,[35]

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[34] BLM, Instruction Memorandum 2022-41, National Policy for the Right-of-Way Authorizations necessary for Site Characterization, Capture, Transportation, Injection, and Permanent Geologic Sequestration of Carbon Dioxide in Connection with Carbon Sequestration Projects (June 8. 2022), available at https://www.blm.gov/policy/im-2022-041 (hereinafter Instruction Memorandum 2022-41).

[35] Draft EA at 4, footnote 1.

there is no indication that the Draft EA is being guided by the policy prescription detailed within IM 2022-041, as its parameters and directions are not referenced in the body of the Draft EA a single time. Compounding matters, the Draft EA appears to be in conflict with IM 2022-41, which includes direction to BLM offices that before a UIC Class VI application can be considered, extensive site characterizations must be carried out by the agency in the interest of determining a site's potential suitability. The IM states:

> The BLM should complete appropriate exploration and site characterization studies, including any mineral potential reports, and review any applicant-prepared characterization studies to determine surface and pore space ownership, geologic boundary limits, and formation impermeability before authorizing CO_2 sequestration. This initial work ensures that no physical connections exist between different formations identified for CO_2 sequestration. If needed, the BLM may issue short-term, non- renewable FLPMA Title V ROW authorizations for site testing and characterization studies related to a proposed CO_2 sequestration project.[36]

IM 2022-41 clearly envisions this work taking place prior to any full project review or permitting decision taking place. Instead, in Appendix 1, the BLM notes that geologic site characterization is an "issue[] considered but not carried forward for detailed analysis." The BLM also states that

> there still exists a concern that CO_2 may travel laterally or vertically into existing mine workings posing a safety risk to the underground miners. Consequently, a complete reservoir characterization, including but not limited to confining zone characteristics and faulting or fracturing are necessary to ensure the proposed CO_2 injection zone(s) are not breached.[37]

This "concern" cuts to the core of what Class VI well proponents must demonstrate in their project designs and applications: that they can prevent any leaks of CO_2 from their wells and that their wells will actually permanently store the CO_2 as promised. It is wholly inappropriate for the BLM, in an environmental assessment examining only the underground viability of the Moxa CO_2 Project, to not provide any site characterization data or information that could help stakeholders understand the viability of the area's geologic formation for safely and permanently receiving and storing injected CO_2.

Thus, we urge the BLM to demonstrate two things in future updates to its reviews of this project: First, stakeholders need the BLM to show its work regarding how it is complying with IM 2022-41 when it reviews project applications. Simply mentioning the IM's existence as a footnote is not sufficient. Second, given the complexity and scope required of this project, we urge the BLM to undertake the proper geologic site characterization in a full EIS.

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[36] Instruction Memorandum 2022-41 (emphasis added).
[37] Draft EA, Appendix 1.

b. Before proceeding with consideration of the Moxa CO_2 Project ROW application, the BLM should promulgate regulations specifically tailored to land and pore space management for UIC Class VI well projects.

Permanent geologic storage of CO_2 is an entirely new use of federal public lands. The BLM is now beginning to review applications without regulations specific to the siting and management of this type of long-lived infrastructure. Instead of moving ahead on a project-by-project basis, with considerable inconsistency, the BLM should get the environmental review and permitting process right by promulgating appropriate regulations for UIC Class VI well ROWs before moving projects like the Moxa CO_2 Project forward.

Regardless of the existence of general ROW regulations and IM 2022-41, we believe the absence of legally enforceable regulations for permanent geologic sequestration projects provide sufficient reason to pause permitting activity on this project at this juncture. Regulations would provide clarity and certainty to project proponents and the general public and allow these projects to be proposed, reviewed, and permitted in a standardized and rigorous process that appropriately recognizes their uniquely lengthy operation and occupation of surface and subsurface areas. Thus, we wish to draw the BLM's attention to various reasons it should consider promulgating such regulations immediately. In brief, we believe regulations should:

- Clarify the required geologic characteristics—and methods for their identification—for siting rights-of-way for permanent sequestration of CO_2. This should include direction on how sequestration projects avoid interference with BLM-managed mineral estate resources and clarification of site assessment requirements where projects propose redrilling wells previously used "for the extraction of leasable minerals."
- Outline enforceable protocols, such as rates of injection or authority to stop injection, for responding to possible CO_2 leaks or unexpected subsurface movement of the injected CO_2 plume.
- Outline surface and sub-surface monitoring expectations, including frequency, methods, and reporting requirements.
- Specify appropriate rental rates for surface occupancy and the surface acreage to which they will apply given that sequestration projects may alter access and use of federal public lands.
- Adopt an approach for determining the greenhouse gas benefits and/or impacts of a project, including all upstream emissions and any known potential chance of leakage, that is based on realistic projections of CO_2 storage utilization from a project-specific CO_2 supply analysis rather than a presumption of full usage within a given period.
- Ensure that adequate, clearly defined bonding rates are set to ensure the full cost of secure well closure and full site remediation are covered at the conclusion of CO_2 injection and post-injection monitoring.
- Adopt requirements, consistent with the agency's "interested public" doctrine, to ensure that the public is given ample opportunities to receive notice when such projects are proposed by prospective permittees, including at the exploration and site characterization stages of development.

Conclusion

Thank you for taking the points raised within this comment into consideration. As the BLM continues its review of this project—among the first of its kind contemplated on lands managed by the BLM—we urge the agency to pause review until new regulations for this new land use are in place. At a minimum, this project should be rejected from consideration until a complete project proposal has been assembled by Moxa Carbon Solutions, LLC. Upon receipt of a complete project proposal, we urge the BLM to then prepare a thorough and robust EIS, not an environmental assessment, to support stakeholder understanding and agency permitting of this project.

If you have any questions regarding our comments or would like any additional information, please contact Joshua Axelrod by email at jaxelrod@nrdc.org.

Sincerely,

Josh Axelrod
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