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Submitted via web portal: https://cara.fs2c.usda.gov/Public/CommentInput?Project=58396

Re: Comments on the South Otter Area Landscape Restoration and Resiliency Project Environmental Assessment

Ranger Hecker:

On behalf of the Center for Biological Diversity ("the Center"), thank you for the opportunity to submit these comments on the South Otter Area Landscape Restoration and Resiliency Project Environmental Assessment ("South Otter Project EA" or "EA").

The Center for Biological Diversity is a non-profit environmental organization with more than 81,000 members, and 1.7 million members and online activists nationwide who value wilderness, biodiversity, old growth forests, and the threatened and endangered species which occur on America's spectacular public lands and waters. Center members and supporters use and enjoy the Custer Gallatin National Forest, and the lands of the South Otter project area for recreation, photography, nature study, and spiritual renewal.

The Center for Biological Diversity believes that the welfare of human beings is deeply linked to nature — to the existence in our world of a vast diversity of wild animals and plants. Because diversity has intrinsic value, and because its loss impoverishes society, the Center works to secure a future for all species, great and small, hovering on the brink of extinction. The Center does so through science, law and creative media, with a focus on protecting the lands, forests, waters and climate that species need to survive.

The Center generally supports efforts to restore fire to its natural place on the landscape following decades of fire suppression. However, as described below, we have concerns about this project, particularly its failure to disclose impacts and involve the public meaningfully before decisions having site-specific impacts are made. We urge the Forest Service to, among other things:

- Disclose the site-specific impacts of the project by abandoning what remains, in effect, a condition based management approach;

- Disclose and quantify the project's climate pollution impacts;

- Acknowledge and address scientific studies that cast doubt on the assumptions behind and the impacts of the proposed action;

- Analyze a range of alternatives, including at least one action alternative besides the proposed action; and

- Prepare a full environmental impact statement given the potential for significant impacts and the controversy surrounding the studies used to support the proposed action.

I. THE SOUTH OTTER PROJECT EA VIOLATES NEPA BY FAILING TO DISCLOSE THE PROJECT'S SITE-SPECIFIC IMPACTS.

The South Otter Project EA purports to be a project-level analysis. The EA does not contemplate additional National Environmental Policy Act (NEPA) analysis once this analysis is complete. Thus, any NEPA document prepared for the project must include the detailed information and analysis that NEPA and the Council on Environmental Quality (CEQ) regulations require because there will be no further NEPA analysis for this large, landscape-scale analysis.[1]

A. NEPA Requires Agencies to Take a Hard Look at Site-Specific Impacts.

In enacting NEPA, Congress recognized the "profound impact" of human activities, including "resource exploitation," on the environment and declared a national policy "to create and maintain conditions under which man and nature can exist in productive harmony." 42 U.S.C. § 4331(a). The statute has two fundamental two goals: "(1) to ensure that the agency will have detailed information on significant environmental impacts when it makes decisions; and (2) to guarantee that this information will be available to a larger audience." *Envtl. Prot. Info. Ctr. v. Blackwell*, 389 F. Supp. 2d 1174, 1184 (N.D. Cal. 2004) (quoting *Neighbors of Cuddy Mt. v. Alexander*, 303 F.3d 1059, 1063 (9th Cir. 2002)); *see also Earth Island v. United States Forest Serv.*, 351 F.3d 1291, 1300 (9th Cir. 2003) ("NEPA requires that a federal agency 'consider

[1] The Forest Service fails to make clear which NEPA regulations govern this proposal. Although CEQ issued a final rulemaking in July 2020 fundamentally rewriting those regulations, the new rules apply only "to any NEPA process begun after September 14, 2020," or where the agency has chosen to "apply the regulations in this subchapter to ongoing activities." 40 C.F.R. § 1506.13 (2020). The South Otter Project NEPA process appears to have begun in September 2020, so the 1978 regulations may apply; the Custer Gallatin NF's Schedule of Proposed Actions listed in October 2020 EA listed South Otter as a "Developing Proposal" with "Est. Scoping Start 09/2020." *See* https://www.fs.usda.gov/sopa/components/reports/sopa-110111-2020-10.pdf (last viewed Nov. 25, 2022). The Forest Service appears to rely on *both* sets of regulations to the project. The draft Finding of No Significant Impact (FONSI) included in the EA cites the 2020 regulations concerning "the determination of significance established by the Council for Environmental Quality regulations (40 CFR 1501.3(b))," South Otter Project EA at 62, but cites the 1978 CEQ regulations for the definition of significance in terms of context and intensity, language removed from the 2020 regulations. *See id*. at 63, n.11 (citing the 1978 CEQ regulation's definition of significance, since repealed by the 2020 CEQ regulations). The Forest Service should eliminate the confusion about which regulations it intends to apply in any subsequently prepared NEPA document.

every significant aspect of the environmental impact of a proposed action ... [and] inform the public that it has indeed considered environmental concerns in its decision-making process.'").

"NEPA promotes its sweeping commitment to 'prevent or eliminate damage to the environment and biosphere' by focusing Government and public attention on the environmental effects of proposed agency action." *Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 371 (1989) (quoting 42 U.S.C. § 4321). Stated more directly, NEPA's "'action-forcing' procedures . . . require the [Forest Service] to take a 'hard look' at environmental consequences" *before* the agency approves an action. *Metcalf v. Daley*, 214 F.3d 1135, 1141 (9th Cir. 2000) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989)). "By so focusing agency attention, NEPA ensures that the agency will not act on incomplete information, only to regret its decision after it is too late to correct." To ensure that the agency has taken the required "hard look," courts hold that the agency must utilize "public comment and the best available scientific information." *Biodiversity Cons. Alliance v. Jiron*, 762 F.3d 1036, 1086 (10th Cir. 2014) (internal citation omitted).

In *Natural Resources Defense Council v. U.S. Forest Service*, for example, the Court faulted the Forest Service for providing empty disclosures that lacked any analysis, explaining the agency "d[id] not disclose the effect" of continued logging on the Tongass National Forest and "d[id] not give detail on whether or how to lessen the cumulative impact" of the logging. *Natural Res. Def. Council v. U.S. Forest Serv.,* 421 F.3d 797, 812 (9th Cir. 2005). The Court explained that "general statements about possible effects and some risk do not constitute a hard look, absent a justification regarding why more definitive information could not be provided." *Or. Natural Res. Council Fund v. Brong*, 492 F.3d 1120, 1134 (9th Cir. 2007) (citation omitted); *see also Or. Natural Res. Council Fund v. Goodman*, 505 F.3d 884, 892 (9th Cir. 2007) (holding the Forest Service's failure to discuss the importance of maintaining a biological corridor violated NEPA, explaining that "[m]erely disclosing the existence of a biological corridor is inadequate" and that the agency must "meaningfully substantiate [its] finding"). The court reasoned that the Forest Service also must provide the public "'the underlying environmental data' from which the Forest Service develop[ed] its opinions and arrive[d] at its decisions." *WildEarth Guardians v. Mont. Snowmobile Ass'n*, 790 F.3d 920, 925 (9th Cir. 2015). In the end, "vague and conclusory statements, without any supporting data, do not constitute a 'hard look' at the environmental consequences of the action as required by NEPA." *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 973 (9th Cir. 2006). "The agency must explain the conclusions it has drawn from its chosen methodology, and the reasons it considered the underlying evidence to be reliable." *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1075 (9th Cir. 2011) (citation and internal quotation marks omitted).

At the project level, as compared to a programmatic decision, the required level of analysis is stringent. *See, e.g., Friends of Yosemite Valley v. Norton*, 348 F.3d 789, 800-01 (9th Cir. 2003). At the "implementation stage," the NEPA review is more tailored and detailed because the Forest Service is confronting "individual site specific projects." *Forest Ecology Ctr., Inc. v. U.S. Forest Serv*., 192 F.3d 922, 923 n.2 (9th Cir. 1999). Indeed, federal courts have faulted the Forest Service for failing to provide site-specific information in a landscape level analysis:

> This paltry information does not allow the public to determine where the range for moose is located, whether the areas open to snowmobile use will affect that range,

> or whether the Forest Service considered alternatives that would avoid adverse impacts on moose and other big game wildlife. In other words, the EIS does not provide the information necessary to determine how specific land should be allocated to protect particular habitat important to the moose and other big game wildlife. Because the Forest Service did not make the relevant information available . . . the public was limited to two-dimensional advocacy—interested persons could argue only for the allocation of more or less land for snowmobile use, but not for the protection of particular areas. As a result, the Forest Service effectively stymied the public's ability to challenge agency action.

WildEarth Guardians v. Montana Snowmobile Ass'n, 790 F.3d 920, 927 (9th Cir. 2015).

When the Forest Service fails to conduct that site-specific analysis, the agency "does not allow the public to 'play a role in both the decision-making process and the implementation of that decision.'" *Id*. at 928 (quoting *Methow Valley Citizens Council*, 490 U.S. at 349. "Although the agency does have discretion to define the scope of its actions, . . . such discretion does not allow the agency to determine the specificity required by NEPA." *City of Tenakee Springs v. Block*, 778 F.2d 1402, 1407 (citing *California v. Block*, 690 F.2d 753, 765 (9th Cir. 1982)). In *State of Cal. v. Block*, for example, the decision concerned 62 million acres of National Forest land, and the Ninth Circuit still required an analysis of "[t]he site-specific impact of this decisive allocative decision." *California v. Block*, 690 F.2d 753, 763 (9th Cir. 1982). In short, NEPA's procedural safeguards are designed to guarantee that the public receives accurate *site-specific* information regarding the impacts of an agency's project-level decision *before* the agency approves the decision.

Analyzing and disclosing site-specific impacts is critical because where (and when and how) activities occur on a landscape strongly determines that nature of the impact. As the Tenth Circuit Court of Appeals has explained, the actual "location of development greatly influences the likelihood and extent of habitat preservation. Disturbances on the same total surface area may produce wildly different impacts on plants and wildlife depending on the amount of contiguous habitat between them." *New Mexico ex rel. Richardson*, 565 F.3d at 706. The Court used the example of "building a dirt road along the edge of an ecosystem" and "building a four-lane highway straight down the middle" to explain how those activities may have similar types of impacts, but the extent of those impacts – in particular on habitat disturbance – is different. *Id*. at 707. Indeed, "location, not merely total surface disturbance, affects habitat fragmentation," and therefore location data is critical to the site-specific analysis NEPA requires. *Id*. Merely disclosing the existence of particular geographic or biological features is inadequate—agencies must discuss their importance and substantiate their findings as to the impacts. *Or. Natural Res. Council Fund v. Goodman*, 505 F.3d 884, 892 (9th Cir. 2007).

Courts in the Ninth Circuit have taken a similar approach. For example, the U.S. District Court for the District of Alaska in 2019 issued a preliminary injunction in the case *Southeast Alaska Conservation Council v. U.S. Forest Service,* halting implementation of the Tongass National Forest's Prince of Wales Landscape Level Analysis Project. *Southeast Alaska Conservation Council v. U.S. Forest Serv.*, 413 F. Supp. 3d 973 (D. Ak. 2019). The court did so because the Forest Service's condition-based management approach, which failed to disclose the site-specific

impacts of that logging proposal, raised "serious questions" about whether that approach violated the National Environmental Policy Act (NEPA).

The district court explained the approach the Forest Service took in the Prince of Wales EIS:

> each alternative considered in the EIS "describe[d] the conditions being targeted for treatments and what conditions cannot be exceeded in an area, or place[d] limits on the intensity of specific activities such as timber harvest." But the EIS provides that "site-specific locations and methods will be determined during implementation based on defined conditions in the alternative selected in the . . . ROD . . . in conjunction with the . . . Implementation Plan . . . ." The Forest Service has termed this approach "condition-based analysis."

See id. at 976-77 (citations omitted). The Prince of Wales EIS made assumptions "in order to consider the 'maximum effects' of the Project." *Id*. at 977. It also identified larger areas within which smaller areas of logging would later be identified, and approved the construction of 164 miles of road, but "did not identify the specific sites where the harvest or road construction would occur." *Id*.

The Court found the Forest Service's approach contradicted federal appellate court precedent, including *City of Tenakee Springs v. Block*, 778 F.2d 1402 (9th Cir. 1995). In that case, the appellate court set aside the Forest Service's decision to authorize pre-roading in a watershed without specifically evaluating where and when on approximately 750,000 acres it intended to authorize logging to occur. The district court evaluating the Prince of Wales project found the Forest Service's approach was equivalent to the deficient analysis set aside in *City of Tenakee Springs.*

> Plaintiffs argue that the Project EIS is similarly deficient and that by engaging in condition-based analysis, the Forest Service impermissibly limited the specificity of its environmental review. The EIS identified which areas within the roughly 1.8-million-acre project area could potentially be harvested over the Project's 15-year period, but expressly left site-specific determinations for the future. For example, the selected alternative allows 23,269 acres of old-growth harvest, but does not specify where this will be located within the 48,140 acres of old growth identified as suitable for harvest in the project area. Similar to the EIS found inadequate in *City of Tenakee Springs*, the EIS here does not include a determination of when and where the 23,269 acres of old-growth harvest will occur. As a result, the EIS also does not provide specific information about the amount and location of actual road construction under each alternative, stating instead that "[t]he total road miles needed will be determined by the specific harvest units offered and the needed transportation network."

Id. at 982 (citations omitted). The district court concluded that plaintiffs in the case raised "serious questions" about whether the Prince of Wales EIS condition-based management approach violated NEPA because "the Project EIS does not identify individual harvest units; by only identifying broad areas within which harvest may occur, it does not fully explain to the public how or where actual timber activities will affect localized habitats." *Id*. at 983, 984.

On March 11, 2020, the Alaska district court issued its merits opinion on the Prince of Wales Project, reaffirming its September 2019 preliminary injunction decision and holding that the Forest Service's condition-based management approach violated NEPA. *Southeast Alaska Conservation Council v. United States Forest Serv*., 443 F. Supp. 3d 995 (D. Ak. 2020). The court explained that "NEPA requires that environmental analysis be specific enough to ensure informed decision-making and meaningful public participation. The Project EIS's omission of the actual location of proposed timber harvest and road construction within the Project Area falls short of that mandate." *Id*. at 1009 (citations omitted).

The district court also concluded that the Forest Service's "worst case analysis" was insufficient, explaining: "This approach, coupled with the lack of site-specific information in the Project EIS, detracts from a decisionmaker's or public participant's ability to conduct a meaningful comparison of the probable environmental impacts among the various alternatives." *Id*. at 1013. Consequently, the court concluded that

> By authorizing an integrated resource management plan but deferring siting decisions to the future with no additional NEPA review, the Project EIS violates NEPA. The Forest Service has not yet taken the requisite hard look at the environmental impact of site-specific timber sales on Prince of Wales over the next 15 years. The Forest Service's plan for condition-based analysis may very well streamline management of the Tongass ... however, it does not comply with the procedural requirements of NEPA, which are binding on the agency. NEPA favors coherent and comprehensive up-front environmental analysis to ensure ... that the agency will not act on incomplete information, only to regret its decision after it is too late to correct.

Id. at 1014-15 (internal citations and quotations omitted).[2] The Forest Service opted not to appeal, and has abandoned the commercial logging portions of the project.

The South Otter project is a project-level decision.[3] As a result, any NEPA analysis must include the detailed information and analysis that NEPA and the CEQ regulations require because the Forest Service admits there will be no further NEPA analysis beyond the Final EA. Failure to provide such site-specific data would preclude informed agency decision-making and informed public comment, in violation of NEPA.

[2] The Forest Service should not interpret the Alaska District's decision to somehow endorse the use of condition-based analyses for environmental assessments. Where the exercise of site-specific discretion is material to a project's environmental consequences, NEPA requires consideration of site-specific proposals and alternatives, regardless of whether the effects are "significant." 42 U.S.C. § 4332(2)(C), (E).

[3] While the South Otter Project EA envisions further site-specific data collection, monitoring, and project design after the decision is approved, it does not anticipate or describe any future NEPA analysis or any future public involvement consistent with that law.

B. The South Otter Project EA Fails to Disclose the Project's Site-Specific Direct and Indirect Effects.

Although NEPA requires that analysis disclose specific information about the when, where, and how of any agency action, so that the impacts and alternatives can be described and weighed, the South Otter Project EA fails to contain virtually any data or analysis. Instead, the Forest Service plans to postpone important components of site-specific project design and impacts analysis until *after* the NEPA process is complete. This upends NEPA's central purpose that agencies look *before* they leap, as the court explained in *Southeast Alaska Conservation Council*.

Here, the Forest Service proposes a landscape project of uncertain extent and duration. The EA estimates that the project will involve logging over 37,515 acres (nearly 60 square miles, almost the size of the District of Columbia), and prescribed burning over 184,150 acres. South Otter Project EA at 18. The project could result in the bulldozing of 168 miles of "temporary" road, and the reconstruction of an additional 31 miles of road, although the location of this road construction and reconstruction is nowhere disclosed. *Id*. Further, apparently an additional "153 miles of motorized trails are proposed for project access and these routes would receive maintenance activities of differing types," although this "would generally improve the condition of trail surface," effectively upgrading the road. *Id*. at 60.[4]

The EA fails to disclose with certainty the project's duration. The EA variously states that the project's impacts "were analyzed over the planning period (10-15 years)," South Otter Project EA at 22; that the project's impacts on jobs would occur over "the next eight to 10 years," *id*. at 13; and that the "[t]he proposed treatments … will be implemented … over the next 20 to 30 years." *Id*. at 51. Any subsequently prepared NEPA document must explain these discrepancies.[5] But assuming that this project will require 30 years to implement, it will outlive the recently adopted Custer Gallatin Forest Plan revision by 15 years.

The EA also fails to define the when, where, and how of logging, burning, and other treatments. The nature of the treatments themselves (and hence their impacts) are uncertain and would vary. One treatment type – commercial thinning – would remove 20% of the commercial-sized trees, or maybe twice that many. South Otter Project EA at 14. Logging would be by mechanical felling, or by hand. *Id*. Logging methods would include "intermediate harvest," or clearcutting ("regeneration harvest"), or near clearcuts ("shelterwood cutting"), though the EA doesn't clarify which method would be used where. *Id*. at 15. Such clearcuts could be up to 5 acres in size. South Otter Project EA, Appx. B (Marking Guide) at 2 ("Create new small openings of [up to] 5 acres"). "Ponderosa pine encroachment around or within woody draws may be targeted with harvest treatments," or, apparently, may not be. South Otter Project EA at 43.

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[4] We appreciate that "[t]he proposed action proposes no treatments within the Inventoried Roadless Areas and there are no undeveloped acres adjacent to" such areas that could be impacted. South Otter Project EA at 9.

[5] The Forest Service must disclose all of the project's reasonably foreseeable impacts, and cannot put an arbitrary deadline on its scope of analysis (e.g., 10-15 years) if the project may be implemented over a much longer period (25-30 years).

Slash materials resulting from non-commercial thinning "would be managed in a variety of ways from lop and scattered (where fuel concentrations are light), hand or machine piled for burning, to jackpot or broadcast burning, depending on the situation," though the EA does not clarify why the Forest Service might choose one method over another, despite the fact that the impacts of each such treatment vary. South Otter Project EA at 13. The EA describes six different types of areas where non-commercial thinning may occur, but fails to identify where any of these places are. "There may be some opportunity for treatments of this nature to utilize mechanized equipment," or there may not; it depends, though the EA doesn't say on what it depends. *Id*. at 14.

Where prescribed burning would be deployed is also ill-defined; it could be used "in conjunction with one of the above treatments, or as a standalone treatment anywhere within the project area where ground, surface, or ladder fuels could contribute to high intensity or crown fires." South Otter Project EA at 15. Prescribed burning could be used once or many times on the same area during the (undetermined) life of the project, "depending on conditions." *Id*. at 16 ("General prescribed burning or maintenance burning would be implemented at intervals of five-to-25 years, depending on conditions."); *id*. at 56 ("maintenance burning should be implemented in a 5-25 year cycle").

And during project implementation, the agency may determine "that changing some areas from one treatment to a commercial thin treatment or a non-commercial thinning would better meet the project objectives," although who and how that would be determined is not defined. South Otter Project EA at 13.

Baseline conditions within the project area, and the project's impacts, are also not well defined. For example, while roads are unlikely to be built through wetlands, the EA's design features do not prohibit that result, and admit that such wetlands destruction may occur. South Otter Project EA at 9 (alleging that such "rare" bulldozing may occur when "a temporary road needs to be routed through a wetland area"). The EA fails to contain much useful information at any scale other than the multi-hundred-thousand-acre scale of the entire project to allow the public to understand hoe the project may change the current environment, or how the project might be beneficial or damaging.

The EA's lack of specificity as to the where, when, and how of treatments (and thus disclosure of the project's impacts) is a feature of this project, and not a bug. The EA's Appendix C explains the process the agency will use to implement the project, and it makes clear project level actions will not be defined until after the NEPA process is complete, and a decision made.

The Forest Service cannot allege that its post-NEPA implementation process described in Appendix C can substitute for NEPA. While the Forest Service process for identifying specific treatments provides for a public "workshops and other public involvement techniques," South Otter Project EA, Appx. C at 2, that "involvement" is not well-defined, and will occur only *after* the NEPA process is complete.[6] This means that the agency need not respond to comments, need

[6] The Forest Service asserts that the agency will provide a "feedback period" to "give[] an opportunity for the public that may not be able to attend the workshops to provide their input on

not address the best available science, need not consider alternatives, and that the public will have no mechanism to hold the agency accountable if the agency ignores science and citizen input. While a post-hoc NEPA process might ensure that some information about logging, bulldozing, skidding and the like are available to officials and the public before a site-specific project proceeds, it fails to ensure that "environmental information is available to ... citizens *before decisions are made*," as the law requires. 40 C.F.R. § 1500.1(b) (1978) (emphasis added); *see also Methow Valley Citizens Council*, 490 U.S. at 349.

Tellingly, the Forest Service admits that it is only during this post hoc public involvement period that the public will be able to "provide their input on what, where and when activities are to be implemented before the activities are made final." South Otter Project EA, Appx. C at 4. The Forest Service will survey for site-specific conditions to identify "treatment layout, to identify need for mitigations, to identify areas that should be avoided or seek to minimize effects (e.g. cultural sites, sensitive wildlife areas, etc.), and to establish treatment-specific objectives and desired outcomes" only after the NEPA process is complete. *Id*., Appx. C at 5. Again, this is precisely the information that the Forest Service must disclose during the NEPA process, not after the decision is made.

The Forest Service explains its rationale for postponing site-specific analysis and project design until after the NEPA process is complete:

> The landscape-based management approach allows resources to use the most current site-specific information at the landscape scale. Considering the potential of elapsed time between the decision and implementation, outlining how treatments would occur across the landscape, would result in a more flexible, efficient, and effective approach to achieving desired outcomes.

South Otter Project EA at 1. This explanation lacks support and ignores CEQ and Forest Service regulations on at least two counts.

First, the EA ignores that NEPA already is a flexible tool that permits agencies to supplement NEPA documents to address changed circumstances. Since at least 1978, NEPA regulations have explicitly provided that flexibility by authorizing agencies to change a project and/or to account for changed conditions via the use of supplemental NEPA analysis. *See* 40 C.F.R. 1502.9(c)(1) (2020); 40 C.F.R. 1502.9(c) (1978). Forest Service guidance incorporates and expands on the agency's duties and authorities to address new information, change circumstances, and adjustments to a project's actions, including when the analysis is contained in an EA. Forest Service Handbook 1909.15, Ch. 18. If years pass between NEPA completion and project implementation, the agency has the flexibility to take new conditions into account and to modify the project accordingly following supplemental analysis.

Second, NEPA also provides for a "phased" approach, wherein the agency can prepare a programmatic analysis followed by more concise, site-specific NEPA analysis when site-specific treatments are identified. Forest Service regulations also explicitly provide for "adaptive

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what, where and when activities are to be implemented before the activities are made final," but fails to provide any detail about the length of that period. South Otter Project EA, Appx. C at 4.

management." *See* 36 C.F.R. §§ 220.3, 220.5(e)(2). *See also* 73 Fed. Reg. 43,084, 43,090 (July 24, 2008) (preamble to 2008 rule adopting adaptive management provisions, stating that "[w]hen proposing an action[,] the responsible official may identify possible adjustments that may be appropriate during project implementation. Those possible adjustments must be described and their effects analyzed in the EIS.").

The South Otter Project, with its emphasis on "landscape" planning could also be considered a programmatic NEPA document. An agency may prepare a "programmatic" NEPA document broadly analyzing the cumulative effects of a program of work or set of connected actions, to which subsequent site-specific analyses may "tier." *Ventling v. Bergland*, 479 F. Supp. 174, 179 (D.S.D. 1979), aff'd, 615 F.2d 1365 (8th Cir. 1979); *Earth First v. Block*, 569 F. Supp. 415 (D. Or. 1983) (holding that the Forest Service erred by relying on a programmatic EIS that was deemed insufficient by the Ninth Circuit to prepare a subsequent EIS for the same Wilderness Area). Well-designed programmatic analysis can increase the efficiency in agency decision-making by deferring site-specific decisions for which site-specific information would be time consuming to obtain. *See, e.g*., Memorandum from Michael Boots, Acting Director of Council on Env't Quality, to Heads of Fed. Dep'ts and Agencies, *Effective Use of Programmatic NEPA Reviews* (Dec. 18, 2014), available at https://obamawhitehouse.archives.gov/sites/default/files/docs/effective_use_of_programmatic_nepa_reviews_final_dec2014_searchable.pdf (last viewed Nov. 25, 2022). NEPA analysis works like a funnel, where the mouth is the full breadth of the agency's discretion and the spout is concrete, on-the-ground action. If an agency is starting from scratch every time, its site-specific analyses will be unwieldy and duplicative. Programmatic analysis, however, moves the agency partway down the funnel, putting sideboards on future actions and commensurately reducing the complexity of site-specific analysis.

This appears to be an apt description of the South Otter Project's approach. But the Forest Service cannot rely on a programmatic NEPA analysis to disclose site-specific impacts; *step-down NEPA is required to address site-specific impacts*. If the agency were to retool the South Otter Project EA as a programmatic analysis and commit to subsequent disclosure of site-specific actions and impacts, that might pass legal muster. We hope that the Forest Service considers such an approach.

The Environmental Protection Agency's comments on the EA succinctly summarize the implications of the Forest Service's failure to provide the site-specific data NEPA mandates:

> According to the available information in the EA, the Forest appears to be using a condition-based management approach for the South Otter project. The EA lacks site-specific evaluations of existing conditions, analyses of impacts, and mitigation measures. Instead, the Forest proposes to use best management practices, project design features, marking steps, and an implementation plan to identify and manage each individual treatment and logging area. Given this information, we were unable to evaluate the likelihood that significant effects will be avoided for the EA and FONSI. NEPA requires a "hard look" at potential environmental impacts of a proposed action and public disclosure of those impacts prior to implementation. The impacts associated with the proposed action will vary based on site-specific conditions, including: vegetation community

> composition, soil-types, slopes, proximity to residences, proximity to aquatic resources, proximity to Class I and Class II airsheds, road construction needs, road maintenance status, volume and type of material burned, equipment used, volume of truck traffic, sensitive species habitat, etc., and those site-specific conditions are varied across the South Otter landscape.
>
> Although conditions vary throughout the planning area, and so impacts would be expected to vary as well, the EA does not contain the actual locations of the timber sales and harvest units or where the temporary roads will be built and therefore it cannot disclose, analyze, or describe the localized impacts that can potentially occur. Individual treatment project design and impact assessment will occur post-FONSI, years or decades after the public comment period on this EA. This lack of site-specificity hampers informed decision-making and meaningful public participation on the individual treatment projects as part of the NEPA process, both important for understanding the potential for significant impacts and determining mechanisms for avoiding them.

Letter of L. McCoy, Manager, NEPA Branch, EPA Region 8 (Nov. 21, 2022) at 3, attached as Ex. 1. We agree. And a federal court will likely agree as well.

II. THE SOUTH OTTER PROJECT EA FAILS TO DISCLOSE THE PROJECT'S IMPACTS ON CLIMATE POLLUTION.

A. The Climate Crisis

The climate crisis is the overriding environmental issue of our time, threatening to drastically modify ecosystems, alter coastlines, worsen extreme weather events, degrade public health, and cause massive human displacement and suffering. Its impacts are already being felt in the United States, and recent studies confirm that time is running out to forestall the catastrophic damage that will result from 1.5 degrees Celsius of warming.[7] Studies have confirmed that climate change is accelerating, making the need to protect carbon stores even more urgent than it was just a few years ago.[8] Climate change is impacting Montana. A 2017 assessment found that temperatures in Montana had risen between 2.0-3.0°F (1.1-1.7°C), and concluded that:

> Montana is projected to continue to warm in all geographic locations, seasons, and under all emission scenarios throughout the 21st century. By mid-century, Montana temperatures are projected to increase by approximately 4.5-6.0°F (2.5-3.3°C) depending on the emission scenario. By the end-of-century, Montana temperatures are projected to increase 5.6-9.8°F (3.1-5.4°C) depending on the

[7] *See* IPCC, Summary for Policymakers, Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways (2018), attached as Ex. 2.

[8] *See, e.g.*, H. Fountain, Climate Change Is Accelerating, Bringing World 'Dangerously Close' to Irreversible Change, The New York Times (Dec. 4, 2019), attached as Ex. 3.

> emission scenario. These state-level changes are larger than the average changes projected globally and nationally.[9]

Information concerning climate change, especially guidance and policy from this administration reinforce the need for measuring, and acting to reduce, climate pollution.

B. President Biden Requires Prompt Action to Assess and Reduce Climate Pollution.

On the day he was inaugurated, President Biden committed to overturning the prior administration's failure to address, and its outright denial of, the climate emergency.

> It is, therefore, the policy of my Administration to listen to the science; to improve public health and protect our environment; to ensure access to clean air and water; to limit exposure to dangerous chemicals and pesticides; to hold polluters accountable, including those who disproportionately harm communities of color and low-income communities; *to reduce greenhouse gas emissions; to bolster resilience to the impacts of climate change*; to restore and expand our national treasures and monuments; and to prioritize both environmental justice and the creation of the well-paying union jobs necessary to deliver on these goals.
>
> To that end, this order directs *all executive departments and agencies* (agencies) to immediately review and, as appropriate and consistent with applicable law, take action to address the promulgation of Federal regulations and other actions during the last 4 years that conflict with these important national objectives, and *to immediately commence work to confront the climate crisis.*[10]

Days later, President Biden further committed to taking swift action to address the climate crisis. Per Executive Order 14,008, he has recognized that "[t]he United States and the world face a profound climate crisis. We have a narrow moment to pursue action at home and abroad in order to avoid the most catastrophic impacts of that crisis and to seize the opportunity that tackling climate change presents."[11] President Biden announced that under his administration,

> The Federal Government must drive *assessment, disclosure, and mitigation* of climate pollution and climate-related risks in every sector of our economy, marshaling the creativity, courage, and capital necessary to make our Nation resilient in the face of this threat. Together, we must combat the climate crisis

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[9] Whitlock C., Cross W., Maxwell B., Silverman N., Wade A.A. 2017. Executive Summary. Montana Climate Assessment. Bozeman and Missoula MT: Montana State University and University of Montana, Montana Institute on Ecosystems. doi:10.15788/m2ww8w. At pp. 8-9. Available at http://montanaclimate.org/sites/default/files/thumbnails/image/2017-Montana-Climate-Assessment-Executive-Summary-lr.pdf, and attached as Ex. 4.

[10] Executive Order 13,990, 86 Fed. Reg. 7037 (Jan. 20, 2021) at Sec. 1 (emphasis added), attached as Ex. 5.

[11] Executive Order 14,008, 86 Fed. Reg. 7619 (Jan. 27, 2021), attached as Ex. 6.

> with bold, progressive action that combines the full capacity of the Federal Government with efforts from every corner of our Nation, every level of government, and every sector of our economy.[12]

Addressing the need for the accurate assessment of climate costs, President Biden announced on day one that "[i]t is *essential* that agencies capture the full costs of greenhouse gas emissions as accurately as possible, including by taking global damages into account."[13] He noted that an effective way to undertake this essential task was to use the social cost of carbon to quantify and disclose the effects of additional climate pollution:

> The "social cost of carbon" (SCC), "social cost of nitrous oxide" (SCN), and "social cost of methane" (SCM) are estimates of the monetized damages associated with incremental increases in greenhouse gas emissions. They are intended to include changes in net agricultural productivity, human health, property damage from increased flood risk, and the value of ecosystem services. An accurate social cost is essential for agencies to accurately determine the social benefits of reducing greenhouse gas emissions when conducting cost-benefit analyses of regulatory *and other actions*.[14]

The President also re-established the Interagency Working Group on the Social Cost of Greenhouse Gases, and directed the Secretary of Agriculture to serve on it.[15] The President directed the Working Group to publish interim values for the social cost of greenhouse gases (including carbon) by February 19, 2021.[16] The Working Group that month set that price at $51/ton of CO2 equivalent at a 3% discount rate.[17] We note that the U.S. Department of Agriculture, the Forest Service's parent agency, is part of the Interagency Working Group and participated in, and endorsed, the update to the social cost of carbon.[18] Two U.S. courts of appeals have rejected challenges to the Interagency Working Group's social cost metric.[19]

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[12] *Id*. at 7622 (Sec. 201) (emphasis added).

[13] Executive Order 13,990 (Ex. 5), 86 Fed. Reg. at 7040, Sec. 5(a) (emphasis added).

[14] *Id*. (emphasis added).

[15] *Id*., Sec. 5(b).

[16] *Id*., Sec. 5(b)(ii)(A).

[17] Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990 (Feb. 2021), available at https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf (last viewed Nov. 25, 2022) and attached as Ex. 7.

[18] *Id*. at cover page, 14.

[19] *See Missouri v. Biden,* 2022 U.S. App. LEXIS 29324 (8th Cir. Oct. 21, 2022) (rejecting challenge to social cost of greenhouse gases metric because state plaintiffs lacked standing); *State of Louisiana v. Biden*, 2022 U.S. App. LEXIS 7589 (5th Cir. Mar. 16, 2022) (granting United States' request to stay the district court's preliminary injunction of federal agencies' use

C. NEPA Requires the Forest Service to Disclose the Climate Impacts of Proposed Actions.

The Forest Service must analyze the direct, indirect, and cumulative impacts of a proposed action. *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1176 (10th Cir. 1999); *see also* 40 C.F.R. § 1508.25(c) (1978) (when determining the scope of an EIS, agencies "shall consider" direct, indirect, and cumulative impacts). NEPA and NFMA require the Forest Service to use high quality, accurate, scientific information to assess the effects of a proposed action on the environment. *See* 40 C.F.R. § 1500.1(b) (1978); 36 C.F.R. § 219.3.

NEPA requires agencies to undertake meaningful consideration of greenhouse gas emissions (GHGs) and carbon sequestration (carbon storage). *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin*., 538 F.3d 1172, 1217 (9th Cir. 2008). As the Ninth Circuit has held, in the context of fuel economy standard rules:

> The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct. Any given rule setting a CAFE standard might have an "individually minor" effect on the environment, but these rules are "collectively significant actions taking place over a period of time."

Id., 538 F.3d at 1216 (quoting 40 C.F.R. § 1508.7 (1978)). *See also WildEarth Guardians v. BLM*, 870 F.3d 1222, 1237 (10th Cir. 2017) (failure to disclose climate impacts of various alternatives "defeated NEPA's purpose"). Courts have held that a "general discussion of the effects of global climate change" does not satisfy NEPA's hard-look requirement. *High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1189-90 (D. Colo. 2014).

Further, courts have ruled that federal agencies must consider indirect GHG emissions resulting from agency policy, regulatory, and fossil fuel leasing decisions. For example, agencies cannot ignore the indirect air quality and climate change impact of decisions that would open up access to coal reserves. *See Mid States Coal. For Progress v. Surface Transp. Bd*., 345 F.3d 520, 532, 550 (8th Cir. 2003); *High Country Conservation Advocates*, 52 F. Supp. 3d at 1197-98; *Montana Environmental Information Center v. U.S. Office of Surface Mining*, 274 F. Supp. 3d 1074 (D. Mont. 2017), *amended in part, adhered to in part*, 2017 WL 5047901 (D. Mont. 2017). A NEPA analysis that does not adequately consider the indirect effects of a proposed action, including climate emissions, violates NEPA. *Ctr. for Biological Diversity v. Bernhardt*, 982 F.3d 723, 2020 U.S. App. LEXIS 38033, *20 (9th Cir. 2020). The disclosure of merely the volume of GHG emissions is insufficient; agencies must also disclose the impacts of those emissions. *Utah Physicians For A Healthy Env't v. United States BLM*, 2021 U.S. Dist. LEXIS 57756 (D. Utah Mar. 24, 2021).

NEPA requires "reasonable forecasting," which includes the consideration of "reasonably foreseeable future actions … even if they are not specific proposals." *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1079 (9th Cir. 2011) (citation omitted). That an agency

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of the social cost of greenhouse gases pending appeal because the plaintiff states' lacked standing).

cannot "accurately" calculate the total emissions expected from full development is not a rational basis for cutting off its analysis. "Because speculation is ... implicit in NEPA," agencies may not "shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry." *Id*. (citations omitted). The D.C. Circuit has echoed this sentiment, rejecting the argument that it is "impossible to know exactly what quantity of greenhouse gases will be emitted" and concluding that "agencies may sometimes need to make educated assumptions about an uncertain future" in order to comply with NEPA's reasonable forecasting requirement. *Sierra Club v. Federal Energy Regulatory Commission*, 863 F.3d 1357, 1373-74 (D.C. Cir. 2017).

Nor can the Forest Service allege that it need not quantify the project's climate impacts by relying on NEPA regulations concerning "incomplete or unavailable information." Those NEPA provisions require the agency to identify the information as such, to "make clear that such information is lacking," and nonetheless include the information in the NEPA document if the overall costs of obtaining it are not "exorbitant" and the information is "essential to a reasoned choice among alternatives." The EA makes none of these required findings.

The 2016 final CEQ *Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Review* provides useful direction on the issue of federal agency review of greenhouse gas emissions as foreseeable direct and indirect effects of a proposed action.[20] The CEQ guidance provides clear direction for agencies to conduct a lifecycle greenhouse gas analysis that quantifies GHG emissions and storage because the modeling and tools to conduct this type of analysis are available:

> If the direct and indirect GHG emissions can be quantified based on available information, including reasonable projections and assumptions, agencies should consider and disclose the reasonably foreseeable direct and indirect emissions when analyzing the direct and indirect effects of the proposed action. Agencies should disclose the information and any assumptions used in the analysis and explain any uncertainties. To compare a project's estimated direct and indirect emissions with GHG emissions from the no-action alternative, agencies should draw on existing, timely, objective, and authoritative analyses, such as those by the Energy Information Administration, the Federal Energy Management Program, or Office of Fossil Energy of the Department of Energy. In the absence of such analyses, agencies should use other available information.[21]

The guidance further specifies that estimating GHG emissions is appropriate and necessary for actions including federal logging projects like the South Otter Project.

> In addressing biogenic GHG emissions, resource management agencies should include a comparison of estimated net GHG emissions and carbon stock changes

[20] Notice available at 81 Fed. Reg. 51,866 (Aug. 5, 2016); full guidance attached as Ex. 8, and available at https://ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa_final_ghg_guidance.pdf (last viewed Nov. 25, 2022).

[21] *Id*. at 16 (citations omitted).

> that are projected to occur with and without implementation of proposed land or resource management actions. This analysis should take into account the GHG emissions, carbon sequestration potential, and the changes in carbon stocks that are relevant to decision making in light of the proposed actions and timeframes under consideration.[22]

The guidance shows that CEQ expects that agencies will perform such analysis not only at a programmatic or plan level, but at the level of an individual project (such as an individual prescribed burn) as well.

> Biogenic GHG emissions and carbon stocks from some land or resource management activities, such as a prescribed burn of a forest or grassland conducted to limit loss of ecosystem function through wildfires or insect infestations, may result in short-term GHG emissions and loss of stored carbon, while in the longer term a restored, healthy ecosystem may provide long-term carbon sequestration. Therefore, the short- and long-term effects should be described in comparison to the no action alternative in the NEPA review.[23]

Although the Trump administration withdrew the 2016 CEQ guidance, President Biden on January 20, 2021 rescinded that Trump Executive Order, and directed CEQ to "review, revise, and update" its 2016 climate guidance.[24] On February 19, 2021, CEQ effectively reinstated the 2016 GHG guidance:

> CEQ will address in a separate notice its review of and any appropriate revisions and updates to the 2016 GHG Guidance. In the interim, agencies should consider all available tools and resources in assessing GHG emissions and climate change effects of their proposed actions, including, as appropriate and relevant, the 2016 GHG Guidance.[25]

Further, whatever the state of federal guidance, the underlying requirement from federal caselaw to consider climate change impacts under NEPA, including indirect and cumulative combustion impacts and loss of sequestration foreseeably resulting from commercial logging decisions, has not changed. *See S. Fork Band Council of W. Shoshone v. United States Dept. of Interior*, 588 F.3d 718, 725 (9th Cir. 2009); *Ctr. for Biological Diversity*, 538 F.3d at 1214-15; *Mid States Coalition for Progress*, 345 F.3d at 550; *WildEarth Guardians v. United States Office of Surface Mining, Reclamation & Enf't*, 104 F. Supp. 3d 1208, 1230 (D. Colo. 2015) (coal combustion was indirect effect of agency's approval of mining plan modifications that "increased the area of

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[22] *Id*. at 26 (citations omitted).

[23] *Id*. at 18.

[24] Executive Order 13,990 (Ex. 5), Sec. 7(e), 86 Fed. Reg. at 7042.

[25] Council on Environmental Quality, National Environmental Policy Act, Guidance on Consideration of Greenhouse Gas Emissions, 86 Fed. Reg. 10,252 (Feb. 19, 2021), attached as Ex. 9, and available at https://www.govinfo.gov/content/pkg/FR-2021-02-19/pdf/2021-03355.pdf (last viewed Nov. 25, 2022).

federal land on which mining has occurred" and "led to an increase in the amount of federal coal available for combustion."); *Diné Citizens Against Ruining Our Env't v. United States Office of Surface Mining Reclamation & Enf't*, 82 F. Supp. 3d 1201, 1213-1218 (D. Colo. 2015); *High Country Conservation Advocates*, 52 F. Supp. 3d at 1174; *Utah Physicians For A Healthy Env't*, 2021 U.S. Dist. LEXIS 57756.

The Interagency Social Cost of Carbon was developed specifically to provide agencies with a way to quantify and compare those impacts, and courts and agencies have regularly required this method to disclose the climate impacts of federal actions. *High Country Conservation Advocates*, 52 F. Supp. 3d at 1190-93 (finding Forest Service violated NEPA by failing to disclose the climate impacts via the social cost of carbon); *Wildearth Guardians v. Bernhardt*, 2021 U.S. Dist. LEXIS 20792, CV 17-80-BLG-SPW (D. Mont. Feb. 3, 2021) at *25-*31 (finding Office of Surface Mining violated NEPA by failing to disclose the climate impacts via the social cost of carbon).[26]

D. The Forest Service's Failure to Disclose and Quantify the South Otter Project's Climate Damage Violates NEPA.

The South Otter Project 2022 EA bases its two-sentence rejection of the need for analysis of the project's climate impacts on a five-page, undated "Forest Carbon Cycling Report" in the project record, and on the programmatic analysis on climate prepared for the 2020 Custer Gallatin Forest Plan Revision Final EIS.

None of these documents –the EA, the 2022 Forest Carbon Cycling Report, or the Plan Revision Final EIS – take the hard look at the South Otter Project's climate impacts that NEPA requires. None quantifies the South Otter Project's impacts on the loss of carbon storage or on increased pollution due to project implementation. All continue to rely on questionable science, or ignore contrary science. And all effectively deny the project's climate impacts. The Forest Service's climate analysis thus violates NEPA's hard look mandate.

1. The Forest Service fails to disclose and quantify the South Otter Project's impact on carbon storage.

a. South Otter Project logging will degrade carbon stores.

The South Otter project will have direct, indirect, and cumulative impacts on climate change because logging and burning forests will impact the ecosystem's ability to store carbon.

Science makes clear that the South Otter project will likely worsen climate emissions by removing trees that are currently fixing carbon, turning them into wood products (which results in a significant loss of that carbon fixed in wood), and leaving a landscape with no trees and (eventually) seedlings that fix far less carbon than mature forests for decades if not centuries.

[26] *See also* CEQ, 2016 NEPA Climate Guidance (Ex. 8) at 32-33 (noting the appropriateness of monetizing climate impacts).

The South Otter Project will remove some larger trees forest stands, via a variety of logging methods, including "regeneration," also known as clearcutting. The vegetation report supporting the EA explains: "Stands proposed for improvement cutting primarily fall within the medium size class (10-15") and will trend towards the large size class." J. Durkin, South Otter Landscape Restoration and Resiliency Project Effects Analysis (March 1, 2022) at 3 ("Vegetation Report"). The South Otter Project will involve more than 11,000 acres of timber stand improvement (AKA non-commercial thinning). Neither the EA nor the Vegetation Report explains whether timber stand improvement logging will involve the removal of mature trees more than 80-90 years old (a "hard look" violation), but it is likely that it will because it will log trees nearly 4 feet in circumference. Commercial thinning will occur on another 26,000+ acres, and will "remove[] 20-40 percent of the commercial size trees (nine inches or greater DBH for ponderosa pine)," South Otter Project EA at 14, which again seem certain to remove mature trees, as mature trees are larger and more commercially valuable.

Logging old and mature forests in particular worsens climate change by releasing significant amounts of carbon and by preventing such forests from continuing to sequester carbon. As the Forest Service has admitted regarding mature forests in Alaska, such forests "likely store considerably more carbon compared to younger forests in this area (within the individual trees themselves as well as within the organic soil layer found in mature forests)."[27] This is so because when a forest is cut down, the vast majority of the stored carbon in the forest is released over time as CO2, thereby converting forests from a sink to a "source" or "emitter."[28]

A 2012 review concluded that thinning forests to reduce fire severity likely would have negative impacts on the forests carbon stores, even assuming that a treated area would burn at lower severity than an untreated area. The report concludes:

> it appears unlikely that forest fuel-reduction treatments have the additional benefit of increasing terrestrial [carbon] storage simply by reducing future combustive losses and that, more often, treatment would result in a reduction in [carbon] stocks over space and time. Claims that fuel-reduction treatments reduce overall forest [carbon] emissions are generally not supported by first principles, modeling simulations, or empirical observations.[29]

A 2019 report found that protecting national forests in the American Northwest, including in Montana, would be an effective way to reduce the contribution of land management to climate pollution. The study concludes:

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[27] Forest Service, Tongass Land and Resource Management Plan, Final EIS (2016) at 3-14, excerpts attached as Ex. 10.

[28] *See, e.g.*, D. DellaSala, The Tongass Rainforest as Alaska's First Line of Climate Change Defense and Importance to the Paris Climate Change Agreements (2016) at 5, attached as Ex. 11.

[29] J.L. Campbell et al., Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Frontiers in Ecology and the Environment, 2012; 10(2): 83–90, doi:10.1890/110057 (published online 15 Dec. 2011), available at https://ir.library.oregonstate.edu/concern/articles/vd66w041v and attached as Ex. 12.

> If we are to avert our current trajectory toward massive global change, we need to make land stewardship a higher societal priority. Preserving temperate forests in the western United States that have medium to high potential carbon sequestration and low future climate vulnerability could account for approximately 8 yr of regional fossil fuel emissions, or 27–32% of the global mitigation potential previously identified for temperate and boreal forests, while also promoting ecosystem resilience and the maintenance of biodiversity.[30]

This study was funded in part by the USDA. While the coarse-scale map provided with the study indicates that there may be forest stands in the South Otter project area that are rated as "low" for preservation to mitigate climate change, even those forest may store significant amounts of carbon.[31]

Recent studies agree that maintaining forests rather than cutting them down can help reduce the impacts of climate change. "Stakeholders and policy makers need to recognize that the way to maximize carbon storage and sequestration is to grow intact forest ecosystems where possible."[32] One report concludes:

> Allowing forests to reach their biological potential for growth and sequestration, *maintaining large trees* (Lutz et al 2018), reforesting recently cut lands, and afforestation of suitable areas *will remove additional CO2 from the atmosphere*. Global vegetation stores of carbon are 50% of their potential including western forests because of harvest activities (Erb et al 2017). Clearly, western forests could do more to address climate change through carbon sequestration *if allowed to grow longer*.[33]

Further, a June 2020 literature review from leading experts on forest carbon storage reported:

> There is absolutely no evidence that thinning forests increases biomass stored (Zhou et al. 2013). *It takes decades to centuries for carbon to accumulate in forest vegetation and soils* (Sun et al. 2004, Hudiburg et al. 2009, Schlesinger 2018), and it takes decades to centuries for dead wood to decompose. We must preserve medium to high biomass (carbon-dense) forest not only because of their carbon

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[30] P. Buotte *et al*., *Carbon sequestration and biodiversity co-benefits of preserving forests in the western United States*, Ecological Applications, Article e02039 (Oct. 2019) at 8, available at https://esajournals.onlinelibrary.wiley.com/doi/pdf/10.1002/eap.2039 (last viewed Nov. 25, 2022), and attached as Ex. 13.

[31] Buotte, *Carbon sequestration and biodiversity co-benefits* (Ex. 13) at 4 (Figure 1); *id*. at 5 (Table 1).

[32] Moomaw, *et al*., Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good, Frontiers in Forests and Global Change (June 11, 2019) at 7 (emphasis added), attached as Ex. 14.

[33] T. Hudiburg *et al*., Meeting GHG reduction targets requires accounting for all forest sector emissions, Environ. Res. Lett. 14 (2019) (emphasis added), attached as Ex. 15.

> potential but also because they have the greatest biodiversity of forest species (Krankina et al. 2014, Buotte et al. 2019, 2020).[34]

Two experts in the field recently concluded:

> Recent projections show that to prevent the worst impacts of climate change, governments will have to increase their pledges to reduce carbon emissions by as much as 80%. We see the next 10 to 20 years as a critical window for climate action, and believe that *permanent protection for mature and old forests is the greatest opportunity for near-term climate benefits*.[35]

A recent letter to the President signed by dozens of scientists cited peer reviewed studies in support of the following conclusions:

> As hundreds of climate and forest scientists warned Congress last year, logging in U.S. forests emits 723 million tons of uncounted CO2 into our atmosphere each year—more than 10 times the amount emitted by wildfires and tree mortality from insects combined. Greenhouse gas emissions from logging in U.S. forests are now comparable to the annual CO2 emissions from U.S. coal burning, and annual emissions from the building sector. Most of the carbon in trees removed from forests through logging is emitted almost immediately, as branches and tree tops are burned at biomass energy facilities, and mill residues are burned at the sawmills, typically for energy production—emitting more CO2 than burning coal, for equal energy produced. Logging conducted as commercial "thinning," under the rubric of fire management, emits about three times more CO2 than wildfire alone.[36]

Further, to address the climate crisis, agencies cannot rely on the re-growth of cleared forests to make up for the carbon removed when mature forest is logged. One prominent researcher explains: "It takes at least 100 to 350+ years to restore carbon in forests degraded by logging (Law et al. 2018, Hudiburg et al. 2009). If we are to prevent the most serious consequences of

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[34] B. Law, et al., The Status of Science on Forest Carbon Management to Mitigate Climate Change (June 1, 2020), attached as Ex. 16.

[35] B. Law & W. Moomaw, Keeping trees in the ground where they are already growing is an effective low-tech way to slow climate change, *The Conversation* (Feb. 23, 2021) (emphasis added), attached as Ex. 17, and available at https://theconversation.com/keeping-trees-in-the-ground-where-they-are-already-growing-is-an-effective-low-tech-way-to-slow-climate-change-154618 (last viewed Nov. 25, 2022).

[36] B. Moomaw et al., Open Letter to President Biden and Members of Congress from Scientists: It is essential to Remove Climate-Harming Logging and Fossil Fuel Provisions from Reconciliation and Infrastructure Bills (Nov. 4, 2021) (citations omitted), attached as Ex. 18.

climate change, *we need to keep carbon in the forests because we don't have time to regain it once the forest is logged* (IPCC, 2018)."[37]

The importance of preserving mature forests in staving off the worst impacts of the climate crisis and the extinction crisis led President Biden on Earth Day in 2022 to issue Executive Order 14,072, "Strengthening the Nation's Forests, Communities, and Local Economies."[38] That order notes:

> Globally, forests represent some of the most biodiverse parts of our planet and play an irreplaceable role in reaching net-zero greenhouse gas emissions. Terrestrial carbon sinks absorb around 30 percent of the carbon dioxide emitted by human activities each year. Here at home, America's forests absorb more than 10 percent of annual United States economy-wide greenhouse gas emissions. *Conserving old-growth and mature forests on Federal lands* while supporting and advancing climate-smart forestry and sustainable forest products *is critical to protecting these and other ecosystem services provided by those forests*.[39]

The President directed the Forest Service to "within 1 year of the date of this order, define, identify, and complete an inventory of old-growth and mature forests on Federal lands," and after, that inventory is complete, to "analyze the threats to mature and old-growth forests on Federal lands," and to develop strategies "that address threats to mature and old-growth forests on Federal lands."[40]

Despite the President's directive that the Forest Service respond to the climate crisis by conserving, inventorying, and developing policies to address threats to mature forests, the South Otter Project area may remove mature forest. And despite the importance of responding to the climate crisis to protect forests and the wildlife that inhabit them, the Forest Service declines to quantify the project's climate impacts, makes invalid comparisons contrary to current guidance and caselaw, and provides excuses for why the impacts on carbon storage will be "negligible" or too difficult to determine.

The agency's failure to quantify the climate impacts of the project is arbitrary and capricious.

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[37] B. Law, *et al*., The Status of Science on Forest Carbon Management (Ex. 16) (emphasis added).

[38] E.O. 14,072, 81 Fed. Reg. 24851 (Apr. 27, 2022), available at https://www.govinfo.gov/content/pkg/FR-2022-04-27/pdf/2022-09138.pdf and attached as Ex. 19.

[39] E.O. 14,072, 81 Fed. Reg. at 24851 (emphasis added).

[40] E.O. 14,072, Sec. 2, 81 Fed. Reg. at 24852. We note that while the South Otter Project EA and supporting documents summarize and catalogue law and guidance directing management of the National Forests, including Executive Orders, the EA nowhere mentions Executive Order 14,072. The Forest Service must correct this oversight in any subsequently prepared NEPA document.

b. The Forest Service may not dismiss the impacts to carbon stores as "minimal" or "negligible."

The Forest Service's decision to not address the South Otter project's climate impacts, which effectively defers to the discussion of this issue in the Forest Plan revision's Final EIS, dismisses the impacts of management actions on the Custer Gallatin National Forest as "negligible," and compares them to total global and national emissions.

The EA dismisses the issue of climate impacts from detailed discussion on the grounds that the project will have "a negligible and inconsequential effect on carbon cycling." South Otter Project EA at 10.

The 2022 Forest Carbon Cycling report, which the EA references, states that the proposed action:

> will have a negligible and inconsequential effect on carbon sequestration or emissions. This is because the actions under all action alternative does not fall within, and are different from, any of the primary contributors of global greenhouse gas emissions; fossil fuel combustion, deforestation, and agriculture.[41]

The Forest Carbon Cycling Report also asserts:

> In general, management activities (such as timber harvest) would initially directly reduce carbon stocks on the forest, though minimally…. These short-term losses and emissions are small relative to both the total carbon stocks on the forest and national and global emissions.[42]

The Custer Gallatin Forest Plan Final EIS, upon which the EA also relies, similarly dismisses impacts of management action on climate as "minimal" and "negligible" by comparing those emission to global emissions.[43]

This approach distorts the project's climate impacts, using metrics tailored to make the impacts of logging on carbon storage look small by comparison. Virtually any individual project impacting the climate, except perhaps those on a national scale, will look small when compared to climate emissions from all U.S. forests. CEQ's 2016 NEPA climate guidance specifically

[41] Forest Carbon Cycling Report (no date) at 4. *See also id*. at 1 ("the South Otter project has a negligible and inconsequential effect on carbon cycling").

[42] Forest Carbon Cycling Report (no date) at 2-3.

[43] Custer Gallatin Plan Revision FEIS, Vol. 1 (Jan. 2022) at 311 (Plan "alternatives would have a *minimal* direct effect on carbon emissions and carbon stocks…. All plan alternatives are projected to contribute *negligibly* to overall greenhouse gas emissions." (emphasis added)); *id*. at 307-08 ("Even the maximum potential management levels described by the plan alternatives would have a *negligible* impact on national and global emissions and on forest carbon stocks" (emphasis added)).

recommended against using the type of comparison employed by the South Otter carbon report and the Custer Gallatin Forest Plan Final EIS:

> a statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA. Moreover, these comparisons are also not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself….[44]

The fundamental difficulty at the heart of climate change is that it is the product of thousands of different decisions, yet each one adds to and worsens a problem that threatens trillions of dollars in damage, will impair public health, and will disproportionately burden people of color and those with lower incomes, and worsen the biodiversity crisis, among other impacts. Carbon emitted or not stored today will warm the climate for centuries and have impacts far beyond those in Montana (or the U.S.).

The agency's decision declining to address the project's impacts because they are allegedly "negligible" in comparison to world's (or nation's) total climate warming emissions is thus not only misleading, it masks the fact that every additional bit of climate pollution, or elimination of carbon sequestration ability, makes the problem worse, and that every bit of sequestration and storage is critical to the solution. This approach is not only contrary to existing guidance, and Biden administration policy, as discussed above, it is contrary to federal court decisions. *Montana 350 v. Haaland*, 50 F.4th 1254, 1266 (9th Cir. amended Oct. 14, 2022) (setting aside agency's determination that a coal mine expansion would not have significant impacts in part because that determination relied "on the arbitrary and conclusory determination that the … project's emissions will be 'minor'" compared to global and domestic emissions); *WildEarth Guardians v. Zinke*, 2019 U.S. Dist. LEXIS 30357 (D. Mont. Feb. 11, 2019) at *25 (proposed findings) ("But by only comparing the estimated emissions to total U.S. emissions, OSM potentially diluted the adverse environmental effects of coal combustion at a local level. The Ninth Circuit has stated that when assessing the effects of an agency action, the appropriate analysis must include consideration of both broad scale and local impacts"); *Pac. Coast Fed. of Fisherman's Ass'ns v. Nat'l Marine Fisheries Serv.*, 265 F.3d 1028, 1036-37 (9th Cir. 2001); *Or. Nat. Res. Council Fund v. Brong*, 492 F.3d 1120, 1129-30 (9th Cir. 2007) (noting that averaging environmental effects based on a broad scope can lead to misleading results). The Forest Service must provide the public and the decision-maker with a sense of the relevant scale of the climate harm of the proposed action in comparison to the no action alternative so that the impacts may be compared.

Even if the logging permitted in the South Otter Project—when viewed in isolation—may only result in relatively minor climate impacts (whatever that means), NEPA expressly requires agencies to consider whether agency actions are "related to other actions with individually insignificant but cumulatively significant impacts." 40 C.F.R. § 1508.27(b)(7) (1978); *see also*

[44] CEQ, 2016 NEPA Climate Guidance (Ex. 8) at 11.

40 C.F.R. §. 1508.1(g)(3) ("cumulative effects can result from individually minor but collectively significant actions taking place over a period of time"). Thus, the Forest Service may not blithely dismiss and deny the climate impacts of the South Otter Project without considering the cumulative significance of the project when added to other past, present, and reasonably foreseeable logging projects and Forest Service timber sales in the state, region, and nation. 40 C.F.R. § 1508.7 (1978); *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41 (D.D.C. 2019) (holding that BLM erred by failing to consider the cumulative climate impacts of oil and gas leases together with "GHG emissions generated by past, present, and reasonably foreseeable BLM lease sales in the region and nation"). The Forest Service failed to address these cumulative effects, violating NEPA.

Despite the applicability of the 2016 CEQ NEPA Guidance, the Forest Plan Revision analysis of climate impacts relies in part on guidance entitled "Climate Change Considerations in Project Level NEPA Analysis" to avoid analyzing and disclosing the South Otter Project's climate change impacts.[45] The Climate Change Consideration guidance is the flawed product of the final week of the George W. Bush administration in January 2009, and it has long been overtaken by both federal case law and CEQ's 2016 guidance, now restored, both of which require robust project level NEPA analysis of project-level climate impacts. The Forest Service cannot continue to rely on this guidance document unless and until it can explain how the 2009 guidance comports with current CEQ guidance, caselaw, and directly contrary Biden administration policy.

The 2009 guidance is flawed and outdated in part because the Federal interagency social cost of carbon estimates were developed after the 2009 guidance, and contradict numerous statements that project-level impacts are too small to estimate, as has the case law setting aside agency (including Forest Service) decisions that failed to use that metric, or explain why it could not. Further, we understand that the Forest Service FVS tool now includes a "carbon extension" that permits users to "model the effects that management choices may have on carbon stocks."[46]

The Forest Service's dated, superseded 2009 guidance is inconsistent with Presidential direction on its face, and cannot support the Forest Service's failure to utilize the USDA-endorsed social cost of carbon estimates, to provide the public and decision makers information on the project's global scale, long-lasting, irreversible climate-related impacts. The Forest Service's position is also flatly inconsistent with the February 2021 policy to use "all available tools" before CEQ updates its guidance. Further, failing to undertake a robust analysis based on the outdated 2009 guidance borders on insubordination in light of the President's policy requiring a whole-government approach to tackling the climate crisis, including specific policy that "[t]he Federal Government must drive *assessment, disclosure,* and mitigation of climate pollution and climate-

[45] *See* Custer Gallatin Plan Revision FEIS, Vol. 1 (Jan. 2022) at 308, citing Forest Service, Climate Change Considerations in Project Level NEPA Analysis (Jan. 13, 2009), attached as Ex. 20, and available at https://www.fs.usda.gov/emc/nepa/climate_change/includes/cc_nepa_guidance.pdf (last viewed Nov. 25, 2022).

[46] *See* https://www.fs.usda.gov/ccrc/tool/forest-vegetation-simulator-fvs (last viewed Nov. 25, 2022).

related risks *in every sector* of our economy."[47] The Forest Service has a critically important role to play in both disclosing climate risks and in taking pro-active measures to limit and mitigate those risks. Here, it has failed to do either.

c. The Forest Service's assertions of the carbon benefits of logging contradict best available science.

The Forest Service bases its dismissal of the South Otter Project's climate impacts as "negligible" in part on the assumption that the approximately 220,000 CCF of wood removed for the project will store carbon for years, that wood products are beneficial because they result in fewer carbon impacts than other construction projects, and because over time, the forest will regrow. South Otter Project EA at 38 (220,000 CCF). Scientific studies, unaddressed by the Forest Service, undercut each of these assumptions. Failing to address such contrary science violates NEPA's "hard look" mandate.

The Forest Carbon Cycling Report states that logging vast mounts of timber will have beneficial carbon storage impacts by, among other things, "sequestering carbon after harvest in wood products." Forest Carbon Cycling Report at 3. The 2022 Forest Plan Revision FEIS (upon which the Forest Carbon Cycling Report relies) further alleges that "avoided fossil fuel emissions can be substantial where harvested wood products are used as a substitute for products that take more energy, and thus, more emissions to produce."[48]

The Forest Service also asserts in the Forest Plan Revision FEIS that if forest stands are at an increased risk of carbon loss through disturbances, such as wildfires and insect epidemics, then there may be a carbon benefit to removing those stands and losing the benefit of the carbon the trees presently store:

> Another factor to consider with approaches to maximize carbon storage in the forest system is if there is an increased risk of carbon loss through disturbances, such as wildfires and insect epidemics. This can undercut the goal of maximizing carbon storage on forests. In some cases, reducing forest carbon stocks and moving that carbon embodied in the wood into harvested wood products streams is a more effective way to reduce carbon in the atmosphere.[49]

The Forest Service makes similar assertions in the South Otter Project Forest Carbon Cycling Report, stating that the project will benefit carbon storage by "increasing abundance and distribution of large-diameter trees of fire-resistant species;" "lowering forest densities and forest fuel conditions;" and "minimizing severe disturbance by fire, insects and disease." Forest Carbon Cycling Report at 3. None of agency's assertions is well founded; all of them are contradicted by science that the agency has failed to acknowledge or rebut.

[47] Executive Order 14,008 (Ex. 6) (emphasis added).

[48] Custer Gallatin Plan Revision FEIS, Vol. 4 (Jan. 2022) at 20.

[49] Custer Gallatin Plan Revision FEIS, Vol. 4 (Jan. 2022) at 21.

First, contrary studies unaddressed by the Forest Service (an oversight that violates NEPA) demonstrate that significant volumes – in some cases a majority – of carbon stored in trees are *immediately* lost when trees are logged and milled, and the rest is likely to be returned to the atmosphere *sooner than would occur if the trees were left standing*, eliminating *any alleged benefits* from storing carbon in wood products.

> [H]arvesting carbon will increase the losses from the forest itself and to increase the overall forest sector carbon store, the lifespan of wood products carbon (including manufacturing losses) would have to exceed that of the forest. Under current practices this is unlikely to be the case. A substantial fraction (25%– 65%) of harvested carbon is lost to the atmosphere during manufacturing and construction depending on the product type and manufacturing method. The average lifespan of wood buildings is 80 years in the USA, which is determined as the time at which half the wood is no longer in use and either decomposes, burns or, to a lesser extent, is recycled. However, many forest trees have the potential to live hundreds of years ….[50]

Second, additional studies conclude that the extent to which carbon benefits can be realized from leaving forests standing depends on a variety of factors, virtually none of which the Forest Service evaluated in either the Forest Plan FEIS or the South Otter Project's Forest Carbon Cycling Report:

> The climate change mitigation benefit of keeping a forest as a carbon sink or to harvest it depends on several factors, including the inventory and age of standing timber, the growth rate of the forest, the dynamics of the carbon fluxes (including the threat of natural disturbance), the time frame being considered, and the context of carbon displacement factors used when wood products replace non-wood products.[51]

Peer-reviewed articles indicate that there is little substitution benefit of using wood compared to using other products (e.g., concrete for building), and that industry (and agency) talking points to

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[50] B. Law & M.E. Harmon, Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. *Carbon Management* (2011) 2(1), attached as Ex. 21, and available at https://www.researchgate.net/publication/235591616_Forest_sector_carbon_management_measurement_and_verification_and_discussion_of_policy_related_to_climate_change (last viewed Nov. 25, 2022).

[51] C. Howard *et al.,* Wood product carbon substitution benefits: a critical review of assumptions, *Carbon Balance & Management* (2021) 16:9, at 2, attached as Ex. 22, available at https://www.researchgate.net/publication/350511044_Wood_product_carbon_substitution_benefits_a_critical_review_of_assumptions (last viewed Nov. 25, 2022). We note that the Forest Cycling Carbon report is like a time-capsule; it cites only studies published before 2012 with the exception of a 2019 report support the Custer Gallatin Forest Plan revision.

the contrary vastly overestimate the carbon benefits of using wood.[52] Again, the Forest Service's failure to address contrary scientific conclusions violates NEPA.

Third, to address the climate crisis, agencies cannot rely on the re-growth of cleared forests to make up for the carbon removed when mature forest is logged. Yet the Forest Service does exactly that. *See* Forest Carbon Cycling Report at 1 ("Over the long-term, through one or more cycles of disturbance and regrowth, net carbon storage is often zero because re-growth of trees recovers the carbon lost in the disturbance and decomposition of vegetation killed by the disturbance"). Absent from the Forest Service's contention is any estimate for how long it will take to undo the carbon damage done by eliminating forests that are now efficiently storing carbon. As one prominent researcher explained:

> It takes at least 100 to 350+ years to restore carbon in forests degraded by logging (Law et al. 2018, Hudiburg et al. 2009). If we are to prevent the most serious consequences of climate change, *we need to keep carbon in the forests because we don't have time to regain it once the forest is logged* (IPCC, 2018)."[53]

The Forest Service ignores the timing aspect of the climate crisis and the fact that we must reduce climate pollution (and continue robust carbon storage) *now*, not decrease carbon storage and worsen emissions over the next century as the South Otter project would do.

Further, the Custer Gallatin Forest Plan Revisions Final EIS argues that certain destruction of carbon-storing forests now can be offset by the uncertain "increased risk of carbon loss through disturbances."[54] But *reducing risk does not store carbon*; mature forests do. The Forest Service appears to admit that the likelihood that logging to reduce risk of disturbance trades certain destruction of carbon stores in return for the "relatively rare" potential for climate benefit from forest protection:

> there is an inherent mismatch between placement of the treatments (which lower carbon stocks) and the (relatively rare) occurrence of wildfire on a given acre. This is only problematic or inconsistent with desired conditions if the objective is to maximize carbon stocks on every acre. Again, this is irrelevant because fuels treatments are done for many other reasons, but this does not preclude the

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[52] *See* M. Harmon, Have product substitution carbon benefits been overestimated? A sensitivity analysis of key assumptions, *Environmental Research Letters* (2019), attached as Ex. 23, and available at https://iopscience.iop.org/article/10.1088/1748-9326/ab1e95/pdf (last viewed Nov. 25, 2022) ("Substitution of wood for more fossil carbon intensive building materials has been projected to result in major climate mitigation benefits often exceeding those of the forests themselves. A reexamination of the fundamental assumptions underlying these projections indicates long-term mitigation benefits related to product substitution may have been overestimated 2- to 100-fold.").

[53] B. Law, *et al*., The Status of Science on Forest Carbon Management (Ex. 16) (emphasis added).

[54] Custer Gallatin Plan Revision FEIS, Vol. 4 (Jan. 2022) at 21.

> *possibility* that there *could be* a carbon benefit in some instances, even if *relatively rare*.[55]

The Forest Service fails to disclose in the South Otter Project EA or in documents upon which that EA relies that its proposal to reduce the risk of harm from severe wildfire is one such treatment where the alleged benefit to carbon stores of increasing "resilience" is unlikely to achieve any carbon benefit. The agency's failure to do so violated NEPA.

d. The Forest Service ignores science and guidance that it can and must quantify carbon storage impacts through life cycle analysis.

The Forest Service declines to quantify the project's impacts on climate stores or climate pollution not only because the impacts are so small, but also, apparently, because it would be difficult to do so. This assertion is meritless because agencies, including federal land management agencies, have indeed estimated the climate impacts of logging proposals. The Forest Service's failure to quantify the climate impacts, or to provide a range of potential impacts, violates NEPA's hard look mandate, and is contrary to federal caselaw requiring agencies to undertake reasonable forecasting in NEPA analysis.

The 2022 Forest Plan EIS (upon which the South Otter Project's climate analysis relies) alleges, among other things, that the fact of climate change makes it difficult to understand the proposal's climate impacts: "disturbance rates are projected to increase with climate change … making it challenging to use past trends to project the effects of disturbance and aging on forest carbon dynamics."[56] The Forest Service further asserts:

> Even more difficult is the ability to quantify potential carbon consequences of management alternatives in the future due to potential variability in future conditions and the stochastic nature of disturbances. The result of such uncertainty is often a very low signal-to-noise ratio: small differences in carbon impacts among management alternatives, coupled with high uncertainty in carbon stock estimates, make the detection of statistically meaningful differences among alternatives highly unlikely.[57]

But NEPA does not permit agencies to ignore impacts because understanding them may be "challenging" or "difficult." As noted above, "speculation is ... implicit in NEPA," and so agencies may not "shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry." *N. Plains Res. Council, Inc.*, 668 F.3d at 1079 (citations omitted).

The Forest Service's approach also violates NEPA because methods exist that would allow the agency to quantify climate impacts. For example, a 2018 study concludes that carbon storage impacts can be estimated, accounted for, and factored into a model that calculated the net amount

[55] Custer Gallatin Plan Revision FEIS, Vol. 4 (Jan. 2022) at 21 (emphasis added).

[56] Custer Gallatin Plan Revision FEIS, Vol. 1 (Jan. 2022) at 307.

[57] Custer Gallatin Plan Revision FEIS, Vol. 1 (Jan. 2022) at 308.

of carbon lost due to forest logging in Oregon over two five-year periods.[58] This is precisely the type of analysis the Forest Service should, and could, have undertaken for South Otter project EA.

Similarly, Dr. DellaSala's 2016 report addressed carbon stores from wood products and concluded that logging old-growth forest under the 2016 Tongass Forest Plan would result in net annual CO2 emissions totaling between 4.2 million tons and 4.4 million tons, depending on the time horizon chosen.[59] The Bureau of Land Management more than a decade ago completed an EIS for its Western Oregon Resource Management Plan in which that agency also predicted the net carbon emissions from its forest and other resource management programs.[60] Because agencies and academics have quantified and compared the carbon emissions of alternative logging proposals, NEPA requires the Forest Service to do so here.

The Forest Service failure to address or acknowledge that there are peer-reviewed scientific approaches to estimating net climate damage caused by logging forests is another independent NEPA violation. NEPA requires agencies to explain opposing viewpoints and their rationale for choosing one viewpoint over the other. 40 C.F.R. § 1502.9(b) (1978) (requiring agencies to disclose, discuss, and respond to "any responsible opposing view"). Courts will set aside a NEPA document where the agency fails to respond to scientific analysis that calls into question the agency's assumptions or conclusions. *See Ctr. for Biological Diversity v. U.S. Forest Serv*., 349 F.3d 1157, 1168 (9th Cir. 2003) (finding Forest Service's failure to disclose and respond to evidence and opinions challenging EIS's scientific assumptions violated NEPA); *Seattle Audubon Soc'y v. Moseley*, 798 F. Supp. 1473, 1482 (W.D. Wash. 1992) ("The agency's explanation is insufficient under NEPA – not because experts disagree, but because the FEIS lacks reasoned discussion of major scientific objections."), aff'd sub nom. *Seattle Audubon Soc'y v. Espy*, 998 F.2d 699, 704 (9th Cir. 1993) ("[i]t would not further NEPA's aims for environmental protection to allow the Forest Service to ignore reputable scientific criticisms that have surfaced").

The CEQ 2016 climate guidance, which CEQ in February 2021 urged agencies to rely on, contains explicit guidance on carbon storage, and notes:

> Quantification tools [to evaluate climate emissions or storage] *are widely available, and are already in broad use in the Federal and private sectors*, by state and local governments, and globally. Such quantification tools and methodologies have been developed to assist institutions, organizations, agencies,

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[58] *See* Law *et al*., *Land use strategies* (Ex. 23) at 3664 ("Our LCA [life-cycle assessment] showed that in 2001–2005, Oregon's net wood product emissions were 32.61 million tCO2e [tons of carbon dioxide equivalent in net GHG emissions] (Table S3), and 3.7- fold wildfire emissions in the period that included the record fire year (15) (Fig. 2). In 2011–2015, net wood product emissions were 34.45 million tCO2e and almost 10-fold fire emissions, mostly due to lower fire emissions.").

[59] DellaSala (Ex. 11) at 14.

[60] *See* Bureau of Land Management, Western Oregon Proposed RMP Final EIS (2009) at 165-181, excerpts attached as Ex. 24.

> and companies with different levels of technical sophistication, data availability, and GHG source profiles. When data inputs are reasonably available to support calculations, agencies should conduct GHG analysis and disclose quantitative estimates of GHG emissions in their NEPA reviews. These tools can provide estimates of GHG emissions, including emissions from fossil fuel combustion and *estimates of GHG emissions and carbon sequestration for many of the sources and sinks potentially affected by proposed resource management actions*.[61]

The guidance further specifies that estimating GHG emissions is appropriate and necessary for actions such as individual federal forest projects.[62]

The Forest Service nowhere explains why it is unable to address climate, carbon storage, and sequestration in a project covering 40,000 acres – which covers thousands of stands – but can do so at the Forest level, particularly here where the Forest Service proposes to entirely *remove all trees from an area of nearly 9 square miles*. Solely relying on the Forest Plan EIS again contradicts the 2016 CEQ climate guidance which assumes that land management agencies can and should address the climate effects of individual, site-specific projects.

For the South Otter Project, there is no valid, quantified analysis for the Forest Service to tier to or incorporate, although NEPA, caselaw and guidance require the agency to do just that.

e. The Forest Service carefully discloses the economic costs, and ignores the climate costs, which is arbitrary and capricious.

The Forest Service's failure to provide a quantitative assessment to enable a comparison of the South Otter Project's climate impacts when compared to the no action alternative also violates NEPA. The South Otter Project EA and the incorporated "Economic Effects Analysis" carefully quantify economic benefits of logging – a complex task – while declining to calculate the climate costs. The Economic Effects Analysis tallies the "Average Annual Employment and Labor Income Contributions from all Project Activities," and the project's present net value.[63] Yet the Forest Service fails not only to estimate the volume of climate emissions, it fails to weigh the economic benefits of the project against the costs of climate change, which can be estimated using the Interagency Working Group's global estimate of the social cost of carbon, as recommended by President Biden's Executive Orders. *See High Country Conservation Advocates*, 52 F. Supp. 3d at 1190-93.

Once an agency chooses to "trumpet" a set of benefits, it also has a duty to disclose the related costs. *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983). "There can be no hard look at costs and benefits unless all costs are disclosed." *Id*. The U.S. District Court for the District of Montana reinforced this requirement this year and last when it repeatedly set aside a federal agency NEPA analyses for failing to quantify the social costs of an agency action's climate pollution. In 2022, the Montana court found that a federal agency violated NEPA where it

[61] CEQ, 2016 NEPA Climate Guidance (Ex. 8) at 12 (emphasis added).

[62] *Id*. at 25.

[63] C. Sorenson, South Otter: Economic Effects Analysis (Oct. 20, 2022) at 3-4.

"quantified the benefits of the [federal action] without providing a balanced quantification of the costs," including and especially the climate-related costs. *Montana Env't Info. Ctr. v. Haaland*, 2022 U.S. Dist. LEXIS 128280, *22-23 (D. Mont. 2022). In the face of the agency's assertion that "there is a difference between discussing economic impacts and discussing economic benefits," the court held that "[t]his is distinction without difference where, as here, the economic benefits of the action were quantified while the costs were not." *Id*. Other decisions in Montana similarly conclude that where an agency discloses economic impacts, it must disclose climate costs as well. *See WildEarth Guardians v. Bernhardt*, 2021 U.S. Dist. LEXIS 20792 at *25-*32, 2021 WL 363955, CV 17-80-BLG-SPW (D. Mont. Feb. 3, 2021) (endorsing magistrate judge's determination that the Office of Surface Mining "failed to take a 'hard look' at the costs of greenhouse gas emissions and failed to reasonably justify its reasoning for not quantifying the costs of the mining plan when the Social Cost of Carbon Protocol ... was available to do just that"). A Utah district court in 2021 concluded that an agency's failure to quantify the climate impacts of a coal lease was arbitrary and capricious where project benefits had been tallied. *Utah Physicians For A Healthy Env't*, 2021 U.S. Dist. LEXIS 57756 at *16 (finding EIS violated NEPA in part because it contained "income, taxes, royalties, and related economic data" but "says nothing about the socioeconomic costs of GHGs—qualitatively or otherwise.").

As noted above, President Biden already directed that this administration (including the Forest Service) should apply an interim Interagency Working Groups' Social Cost of Carbon using a metric that includes global damage from climate-forcing pollution. Here, the Forest Service provides neither quantitative nor qualitative projections of the project's impacts on climate pollution, other than to erroneously dismiss them as negligible.

f. Conclusion

The Forest Service failure to comply with its duty to disclose the South Otter Project's impacts on climate change and carbon storage contradicts the Custer Gallatin National Forest's recognition that "carbon storage and associated climate regulation has been identified as a key ecosystem service provided by the Custer Gallatin."[64] If carbon storage is a "key ecosystem service," the National Forest should do more than merely wave away the South Otter Project's impacts on that ecosystem service. And under caselaw, agency guidance, and President Biden's directives, it must do more.

2. The Forest Service fails to disclose and quantify the carbon pollution of implementing the South Otter Project.

Logging and burning treatments, and the bulldozing of 168 miles of "temporary" road, and the reconstruction of an additional 31 miles of road, as well as "maintenance" on an additional 153 miles of road, for the 20-30 year life of the project will require the use of heavy equipment, almost certainly exclusively powered by fossil-fueled engines.[65] So will transporting up to 220,000 CCF of logs to mills, a task that will likely involve more than 50,000 loaded truck trips.

[64] Custer Gallatin Plan Revision FEIS, Vol. 1 (Jan. 2022) at 303.

[65] South Otter Project EA at 51 (20-30-year implementation); *id*. at 19 (road construction and reconstruction mileage).

This activity will result in greenhouse gas pollution that will worsen climate change for centuries, and that pollution will be over and above the pollution that would occur under the no action alternative. Milling and preparing wood products from raw logs, and transporting them to market, will also cause greenhouse gas pollution. Neither the EA, nor the Forest Carbon Cycling Report, nor any other document in the record acknowledges or attempts to disclose these impacts.

This contrasts to the approach taken elsewhere by the Forest Service and by other agencies, such as the Office of Surface Mining, which have disclosed in NEPA documents the estimated pollution from internal combustion engines necessary to mine, process, and ship coal to market.[66]

We do not endorse as sufficient either the OSM or Federal Coal Lease Modifications analyses. But they demonstrate that agencies (including the Forest Service) can and do attempt to disclose direct climate emissions from construction and transport activities. The Forest Service provides no reasonable basis for failing to do the same for the South Otter Project, and thus violates NEPA.

Federal courts have repeatedly concluded that federal agencies must take a "hard look" at foreseeable downstream impacts of a project, particularly where those impacts are part of the project's purpose. *See, e.g., Sierra Club v. FERC*, 867 F.3d 1357, 1372 (D.C. Cir. 2017) (holding that a federal agency violated NEPA by failing to take a hard look at the greenhouse gas emissions of burning gas that would be transported by the agency's approval of pipelines, where the burning of that gas was "not just reasonably foreseeable" but "the project's entire purpose"). Here, the Forest Service identifies as a project purpose the "need" to "[p]rovide wood products to contribute to employment and industry in local communities and help support the sustainable supply of timber from National Forest System lands." South Otter Project EA at 3. The Forest Service therefore must disclose the climate impacts of producing and shipping those timber products.[67]

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[66] *See, e.g.*, Office of Surface Mining & Bureau of Land Management, Environmental Assessment, Colowyo Coal Mine Collom Permit Expansion Area Project (Jan. 2016) at 4-15 – 4-18 (including table assessing "direct GHG emissions" from "drills," "dozers," "graders," "haul trucks," etc., for the proposed action), excerpts attached as Ex. 25; U.S. Forest Service, Supplemental Final Environmental Impact Statement, Federal Coal Lease Modifications COC-1362 & COC-67232 (Aug. 2017) at 102-113 (publishing tables estimating emissions of air pollutants, including greenhouse gases CO2 and CH4 (methane) for activities including road and well pad construction, heavy equipment use, and commuter vehicle trips for the no action and proposed action alternatives), excerpts attached as Ex. 26.

[67] On this point, we again agree with the Environmental Protection Agency: "We recommend the Forest conduct a quantitative project-level carbon storage and sequestration analysis for the South Otter project for inclusion in the NEPA documentation. This analysis should consider the direct and indirect GHG emissions associated with the proposed action, including logging truck trips and downstream GHG emissions associated with transportation and milling of timber." Letter of L. McCoy, EPA Region 8 (Ex. 1) at 7.

III. THE EA FAILS TO ADDRESS SCIENTIFIC STUDIES THAT UNDERMINE KEY ASSUMPTIONS UNDERPINNING THE ALLEGED NEED FOR, AND IMPACTS OF, THE ACTION.

Information contained in a NEPA analysis "must be of high quality. Accurate scientific analysis … [is] essential to implementing NEPA."[68] An agency's "[h]ard look" analysis should utilize "the best available scientific information."[69] NEPA also requires agencies to explain opposing viewpoints and their rationale for choosing one viewpoint over the other.[70] Courts will set aside a NEPA document where the agency fails to respond to scientific analysis that calls into question the agency's assumptions or conclusions.[71]

Here, the Forest Service's failure to address or acknowledge that there are peer-reviewed scientific studies concluding that the proposed logging treatments will be ineffective at best, and damaging at worst, violates NEPA.

The Forest Service assumes that hundreds of clearcuts of five acres or less and tens of thousands of acres of commercial and non-commercial thinning will improve the project area by, among other things "reduc[ing] fuel loads." South Otter Project EA at 3. The EA justifies this approach by alleging that the area is at risk of a beetle outbreak and at risk of a high-intensity and stand-replacement fire. *Id*. at 56.

The Forest Service fails to address or meaningfully engage numerous peer-reviewed studies that contradict the EA's assumptions and that question the effectiveness of the agency's prescriptions.

First, studies demonstrate that land managers have shown little ability to target treatments where fires later occur.[72] This means that any effort to "improve resilience" to fire may be wasted and

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[68] 40 C.F.R. § 1500.1(b) (1978).

[69] *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1171 (10th Cir. 1999).

[70] 40 C.F.R. § 1502.9(b) (1978) (requiring agencies to disclose, discuss, and respond to "any responsible opposing view").

[71] *See Ctr. for Biological Diversity v. U.S. Forest Serv*., 349 F.3d 1157, 1168 (9th Cir. 2003) (finding Forest Service's failure to disclose and respond to evidence and opinions challenging EIS's scientific assumptions violated NEPA); *Seattle Audubon Soc'y v. Moseley*, 798 F. Supp. 1473, 1482 (W.D. Wash. 1992) ("The agency's explanation is insufficient under NEPA – not because experts disagree, but because the FEIS lacks reasoned discussion of major scientific objections."), aff'd sub nom. *Seattle Audubon Soc'y v. Espy*, 998 F.2d 699, 704 (9th Cir. 1993) ("[i]t would not further NEPA's aims for environmental protection to allow the Forest Service to ignore reputable scientific criticisms that have surfaced").

[72] Barnett, K., S.A. Parks, C. Miller, H.T. Naughton. 2016. Beyond Fuel Treatment Effectiveness: Characterizing Interactions between Fire and Treatments in the US. *Forests,* 7, 237. Attached as Ex. 27.

unnecessary because fire is unlikely to occur in any given treated area. This undermines the project's purpose and need.

The Forest Service may allege that its treatments will nonetheless "increase forest resilience." But this ignores the fact that the alternative of no action may result in an equally protected forest if no fire or pest outbreak ever occurs where logging takes place, as is a likely scenario. The Forest Service's failure to recognize this fact is arbitrary and capricious.

Second, scientific studies demonstrate that thinning may do more harm than good, and may actually make treated stands more susceptible to pathogens. As one study concluded,

> While thinning has the potential to reduce tree stress, which can reduce susceptibility to insect attack, it also has the potential to bring about other conditions that can increase susceptibility. For example, thinning may injure surviving trees and their roots, which can provide entry points for pathogens and ultimately reduce tree resistance to other organisms (Hagle and Schmitz 1993; Paine and Baker 1993; Goyer et al. 1998). Although thinning can be effective in maintaining adequate growing space and resources, there is accumulating evidence to suggest that tree injury, soil compaction, and temporary stress due to changed environmental conditions caused by thinning *may increase susceptibility of trees to bark beetles and pathogens* (Hagle and Schmitz 1993).[73]

An evaluation of scientific data on thinning concluded that while some studies found thinning effective at limiting beetle outbreaks, other studies found the opposite. Further, because land managers often failed to report failures, the incidences of "successful" treatments was likely over-reported by comparison. The study found that there were few, if any, long-term studies that addressed beetle impacts to thinned forests before, during and after an outbreak:

> While we may not have a complete understanding of how thinning works, it is clear that this practice can have a significant effect on mountain pine beetle infestations. Several studies have reported striking differences in mortality to trees caused by beetles in thinned vs. un-thinned forests (reviewed in [120,121]). In contrast, only a small number of studies have reported failures. However, the disparity in numbers of successes and failures must be placed within a broader context. Many studies assessing the efficacy of thinning have been conducted under non-outbreak conditions. Their results do not reflect how stands perform during an outbreak. Additionally, failures are often not reported, dismissed as a result of poor management 'next door' or targeted for management without evaluation. This is unfortunate because thinned stands that fail may have particular characteristics that could inform a better understanding and application of this approach.

[73] Black, S. H., D. Kulakowski, B.R. Noon, and D. DellaSala. 2013. Do Bark Beetle Outbreaks Increase Wildfire Risks in the Central U.S. Rocky Mountains? Implications from Recent Research. Natural Areas Journal, 33(1): 59-65. Attached as Ex. 28. Emphasis added.

> Studies conducted during outbreaks indicate that thinning can fail to protect stands. In Colorado, thinning treatments in lodgepole pine implemented in response to the outbreak that began in the 90s often only slowed the spread. Klenner and Arsenault [122] reported high levels of mortality due to the mountain pine beetle across a wide range of stands densities in lodgepole pine in British Columbia during the same outbreak. They noted that silvicultural treatments were largely ineffective in reducing damage to the beetle. Preisler and Mitchell [123] found that once beetles invaded a thinned stand the probability of trees being killed there can be greater than in unthinned stands and that larger spacings between trees in thinned stands did not reduce the likelihood of more trees being attacked. Whitehead and Russo [107] reported on the performance of 'beetle-proofed' (stands thinned to an even spacing of about 4–5 m between mature trees) and un-thinned stands in five areas in western Canada during approximately the same time period. These treatments were successful in protecting stands when they were combined with intensive direct control measures (removal of infested trees) in the areas surrounding the thinned units, but failed if units were exposed to beetle pressure from the neighboring area—a situation most thinned stands experience during an outbreak.
>
> Unfortunately, long-term replicated studies monitoring beetle responses to thinned forests from non-outbreak to outbreak to post-outbreak phase are virtually non-existent. One large fully-replicated long-term study was initiated in 1999 under non-outbreak conditions and continues to track beetle activity [113]. In this study, mountain pine beetle was low in all treatments in the period leading up to the outbreak, but increased in some controls and burn treatment replicates as the outbreak developed. Although more trees were killed overall in control units during the outbreak, all controls still retained a greater number of residual mature trees than did thinned stands as they entered the post-outbreak phase [124].[74]

In sum, the scientific basis supporting thinning as a method for reducing the risk of, and damage to forests from, a beetle outbreak, is weak. And one of the few long-term studies to track stands before, during, and after a beetle epidemic found more trees were killed via thinning than were by the epidemic itself.

In weighing the project's costs and benefits, the Forest Service fails to acknowledge the scientific evidence that its proposed thinning treatments may be ineffective, or may result in fewer trees on the landscape even after an epidemic than would be left if the Forest Service does nothing. In part, this is because the Forest Service fails to fairly compare the impacts of the proposed action to the "no action" alternative. This failure to acknowledge contrary evidence violates NEPA, and, as discussed below, the existence of a scientific controversy supports the need for the agency to prepare an EIS rather than a mere EA.

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[74] Six, D.L., E. Biber, E. Long. 2014. Management for Mountain Pine Beetle Outbreak Suppression: Does Relevant Science Support Current Policy? *Forests*, 5. Attached as Ex. 29.

Third, thinning or clearcutting may result in destroying the very trees that are most resilient to beetle attack, and those with an ability to pass on that resilience to seedlings.

> For both whitebark and lodgepole pine, survivors and general population trees mostly segregated independently indicating a genetic basis for survivorship. Exceptions were a few general population trees that segregated with survivors in proportions roughly reflecting the proportion of survivors versus beetle-killed trees. Our results indicate that during outbreaks, beetle choice may result in strong selection for trees with greater resistance to attack. Our findings suggest that survivorship is genetically based and, thus, heritable. Therefore, retaining survivors after outbreaks to act as primary seed sources could act to promote adaptation.[75]

The best way to ensure future resilience to a beetle outbreak thus may be to allow the beetles to identify the most genetically fit survivors, who will then provide the seedstock for future survivors. Neither the South Otter Project EA nor the "Forest Vegetation Effects Analysis" addresses this study or acknowledges that logging may destroy the best hope for improved resilience, in violation of NEPA.

Fourth, published data shows a significant decline in the suitability of harvested forests that subsequently burn years later for the most fire-dependent bird species in mixed-conifer forests of the West.[76] In other words, an *unharvested* mature forest that burns is much more valuable to fire-dependent species than is a previously *harvested* forest that burns. The Forest Service does not address studies showing that the proposed action will degrade habitat for fire dependent species across the 37,500+ acres that would be logged under the project.

The Forest Service must disclose and address all of these scientific studies and their data that undermine the South Otter Project EA's assumptions and conclusions in order to take the hard look that NEPA requires.

IV. THE FOREST SERVICE ANALYSIS OF WATER QUALITY VIOLATES NEPA.

A. The Forest Service's Reliance on BMPs or Design Features Fails to Comply with NEPA.

The EA dismisses any analysis of the project's impacts on water quality, stating: "The water quality assessment (project record) found that the primary pollutant expected to be produced by project activities (sediment) would have no measurable effect on stream morphology, beneficial uses of surface water, aquatic organisms, or aquatic habitat. Due to effective project design

[75] Six, D.L., C. Vergobbi, and M. Cutter. 2018. Are Survivors Different? Genetic-Based Selection of Trees by Mountain Pine Beetle During a Climate Change-Driven Outbreak in a High-Elevation Pine Forest. Frontiers in Plant Science, Vol. 9, Article 993. Attached as Ex. 30.

[76] R. Hutto, The Ecological Importance of Severe Wildfires: Some Like It Hot, Ecological Applications, 18(8), 2008, pp. 1827–1834, attached as Ex. 31.

features (Appendix A) the proposed actions would be in compliance with Montana requirements for protection of 303(d) listed impaired water bodies." South Otter Project EA at 8.

The agency's assertion does not absolve its responsibilities under NEPA or other applicable laws such as the Clean Water Act. In other words, use of watershed design features does not automatically equate to minor effects, and the agency's analysis fails to consider or disclose the harmful environmental consequences of both improper implementation of its design features, as well as the potential lack of effectiveness in mitigating resource effects. That is particularly so here given that the project could result in the bulldozing of 168 miles of "temporary" road, reconstruction of an additional 31 miles of road, and the additional 153 miles of motorized trails that would be upgraded. Because the Forest Service fails to demonstrate a history of both proper implementation and effectiveness, it cannot assume that sediment yields cannot possibly have environmental impacts.

When considering how effective best management practices (BMPs) or design features are at controlling nonpoint pollution on roads, both the rate of implementation, and their effectiveness should both be considered. The Forest Service tracks the rate of implementation and the relative effectiveness of BMPs from in-house audits. This information is summarized in the National BMP Monitoring Summary Report with the most recent data being the fiscal years 2013-2014.[77] The rating categories for implementation are "fully implemented," "mostly implemented," "marginally implemented," "not implemented," and "no BMPs." "No BMPs" represents a failure to consider BMPs in the planning process. More than a hundred evaluations on roads were conducted in FY2014. Of these evaluations, only about one third of the road BMPs were found to be "fully implemented."[78]

The monitoring audit also rated the relative effectiveness of each BMP. The rating categories for effectiveness are "effective," "mostly effective," "marginally effective," and "not effective." "Effective" indicates no adverse impacts to water from projects or activities were evident. When treated roads were evaluated for effectiveness, almost half of the road BMPs were scored as either "marginally effective" or "not effective."[79]

Further, a technical report by the Forest Service entitled, "Effectiveness of Best Management Practices that Have Application to Forest Roads: A Literature Synthesis," summarized research and monitoring on the effectiveness of different BMP treatments for road construction, presence and use.[80] The report found that while several studies have concluded that some road BMPs are

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[77] Carlson, J. P. Edwards, T. Ellsworth, and M. Eberle. 2015. National best management practices monitoring summary report. Program Phase-In Period Fiscal Years 2013-2014. USDA Forest Service. Washington, D.C. Attached as Ex. 32.

[78] *Id.* at 12.

[79] *Id.* at 13.

[80] Edwards, P.J., F. Wood, and R. L. Quinlivan. 2016. Effectiveness of best management practices that have application to forest roads: a literature synthesis. General Technical Report NRS-163. Parsons, WV: U.S. Department of Agriculture, Forest Service, Northern Research Station. 171 p. Attached as Ex. 33.

effective at reducing delivery of sediment to streams, the degree of each treatment has not been rigorously evaluated. Few road BMPs have been evaluated under a variety of conditions, and much more research is needed to determine the site-specific suitability of different BMPs.[81] Edwards *et al*. (2016) cites several reasons why BMPs may not be as effective as commonly thought. Most watershed-scale studies are short-term and do not account for variation over time, sediment measurements taken at the mouth of a watershed do not account for in-channel sediment storage and lag times, and it is impossible to measure the impact of individual BMPs when taken at the watershed scale. When individual BMPs are examined, there is rarely broad-scale testing in different geologic, topographic, physiological, and climatic conditions. Further, Edwards *et al*. (2016) observe: "The similarity of forest road BMPs used in many different states' forestry BMP manuals and handbooks suggests a degree of confidence validation that may not be justified," because they rely on just a single study.[82] Therefore, ensuring BMP effectiveness would require matching the site conditions found in that single study, a factor land managers rarely consider.

We also note that many of the BMPs are vague or unenforceable and so unlikely to be 100% effective, if effective at all. For example, BMPs include:

- "transportation infrastructure should be designed to maintain natural hydrologic flow paths *to the extent practicable*," South Otter Project EA, Appx. A at 18 (emphasis added), a vague standard;

- "Care should be taken when plowing snow so as not to include road soil," *id*., vague and unenforceable;

- "Road and trail construction or reconstruction should utilize new technologies to enhance functionality, improve efficiency, reduce resource impacts and reduce costs," *id*., vague and impossible to understand what impacts it will have because the technologies are nowhere defined; and

- "Temporary roads would not enter RMZ's except where necessary," *id*., Appx. A, at 20, making it impossible to understand the number, location, or concentration of such entries into riparian management zones.

Climate change will further put into question the effectiveness of many road BMPs.[83] While the impacts of climate will vary from region to region, more extreme weather is expected across the country which will increase the frequency of flooding, soil erosion, stream channel erosion, and

[81] Edwards *et al.* 2016 (Ex. 33); *see also* Anderson, C.J.; Lockaby, B.G. 2011. Research gaps related to forest management and stream sediment in the United States. Environmental Management. 47: 303-313. Attached as Ex. 34.

[82] Edwards *et al.* 2016 (Ex. 33) at 133.

[83] *See* Edwards *et al.* 2016 (Ex. 33).

variability of streamflow.[84] BMPs designed to limit erosion and stream sediment for current weather conditions may not be effective in the future. Edwards *et al*. (2016) states, "[m]ore-intense events, more frequent events, and longer duration events that accompany climate change may demonstrate that BMPs perform even more poorly in these situations. Research is urgently needed to identify BMP weaknesses under extreme events so that refinements, modifications, and development of BMPs do not lag behind the need."[85]

Significant uncertainties persist about BMP or design feature effectiveness as a result of climate change, which compound the inconsistencies revealed by BMP evaluations and demonstrate that the Forest Service cannot simply rely on them to mitigate project-level activities. This is especially relevant where the Forest Service cites use of BMPs or design features, and assumes their success instead of fully analyzing potentially harmful environmental consequences from road design, construction, maintenance or use, in studies and/or programmatic and site-specific NEPA analyses. Moreso, the Forest Service must demonstrate how BMP effectiveness will be maintained in the long term, especially given the lack of adequate road maintenance capacity.

At a minimum, the Forest Service must adjust its analysis to account for the potential failure of its design features as it relates to sedimentation, and must run any modeling without assuming 100% effectiveness. In order to take the requisite hard look NEPA requires, the Forest Service should run the model without BMPs, and then effectiveness at 25%, 50%, 75% and 90% to fully capture the potential for sedimentation. The Forest Service should never assume a 100% effectiveness rate for BMPs or design features. Doing so violates the hard look NEPA requires.

V. THE FOREST SERVICE MUST ANALYZE A RANGE OF REASONABLE ALTERNATIVES.

A. NEPA Requires Agencies to Evaluate a Range of Reasonable Alternatives in EAs.

In taking the "hard look" at impacts that NEPA requires, an EA must "study, develop, and describe" reasonable alternatives to the proposed action.[86] The Tenth Circuit explains that this mandate extends to EAs as well as EISs. "A properly-drafted EA must include a discussion of appropriate alternatives to the proposed project."[87] This alternatives analysis "is at the heart of the NEPA process, and is 'operative even if the agency finds no significant environmental

[84] M.J. Furniss et al. (2013). Assessing the vulnerability of watersheds to climate change: Results of national forest watershed vulnerability pilot assessments. USDA PNW Research Station. General Technical Report PNW-GTR-884. Attached as Ex. 35.

[85] Edwards *et al*. (Ex. 33) at 136.

[86] 42 U.S.C. § 4332(2)(C) & (E); 40 C.F.R. § 1508.9(b) (an EA "[s]hall include brief discussions . . . of alternatives").

[87] *Davis v. Mineta*, 302 F.3d 1104, 1120 (10th Cir. 2002) (granting injunction where EA failed to consider reasonable alternatives).

impact.'"[88] Reasonable alternatives must be analyzed for an EA even where a FONSI is issued because "nonsignificant impact does not equal no impact. Thus, if an even less harmful alternative is feasible, it ought to be considered."[89] When an agency considers reasonable alternatives, it "ensures that it has considered all possible approaches to, and potential environmental impacts of, a particular project; as a result, NEPA ensures that the most intelligent, optimally beneficial decision will ultimately be made."[90]

In determining whether an alternative is "reasonable," and thus requires detailed analysis, courts look to two guideposts: "First, when considering agency actions taken pursuant to a statute, an alternative is reasonable only if it falls within the agency's statutory mandate. Second, reasonableness is judged with reference to an agency's objectives for a particular project."[91] Any alternative that is unreasonably excluded will invalidate the NEPA analysis. "The existence of a viable but unexamined alternative renders an alternatives analysis, and the EA which relies upon it, inadequate."[92] The agency's obligation to consider reasonable alternatives applies to citizen-proposed alternatives.[93]

Courts hold that an alternative may not be disregarded merely because it does not offer a complete solution to the problem.[94] Even if additional alternatives would not fully achieve the project's purpose and need, NEPA "does not permit the agency to eliminate from discussion or consideration a whole range of alternatives, merely because they would achieve only some of the purposes of a multipurpose project."[95] If a different action alternative "would only partly meet the goals of the project, this may allow the decision maker to conclude that meeting part of the

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[88] *Diné Citizens Against Ruining Our Env't v. Klein*, 747 F. Supp. 2d 1234, 1254 (D. Colo. 2010) (quoting *Greater Yellowstone Coal. v. Flowers*, 359 F.3d 1257, 1277 (10th Cir. 2004)). *See also W. Watersheds Project v. Abbey*, 719 F.3d 1035, 1050 (9th Cir. 2013) (in preparing EA, "an agency must still give full and meaningful consideration to *all* reasonable alternatives" (emphasis added) (internal quotation and citation omitted)); 40 C.F.R. § 1502.14 (describing alternatives analysis as the "heart of the environmental impact statement").

[89] *Ayers v. Espy*, 873 F. Supp. 455, 473 (D. Colo. 1994) (internal citation omitted).

[90] *Wilderness Soc'y v. Wisely*, 524 F. Supp. 2d 1285, 1309 (D. Colo. 2007) (quotations & citation omitted).

[91] *Diné Citizens Against Ruining Our Env't*, 747 F. Supp. 2d at 1255 (quoting *New Mexico ex rel. Richardson*, 565 F.3d at 709).

[92] *Id.* at 1256.

[93] *See Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin*., 538 F.3d 1172, 1217-19 (9th Cir. 2008) (finding EA deficient, in part, for failing to evaluate a specific proposal submitted by petitioner); *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1171 (10th Cir. 1999) (agency's "[h]ard look" analysis should utilize "*public comment* and the best available scientific information") (emphasis added).

[94] *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 836 (D.C. Cir. 1972).

[95] *Town of Matthews v. U.S. Dep't. of Transp.*, 527 F. Supp. 1055 (W.D. N.C. 1981).

goal with less environmental impact may be worth the tradeoff with a preferred alternative that has greater environmental impact."[96]

The courts also require that an agency adequately and explicitly explain in the EA any decision to eliminate an alternative from further study.[97]

B. The EA Fails to Analyze Any Action Alternatives Besides the Proposed Action.

The EA considers only one action alternative – the proposed action with 37,000 acres of logging over the next 20-30 years. We request that the Forest Service consider at least the following action alternatives, in addition to the proposed action:

- A "defined action" alternative. This alternative would require the Forest Service to identify the site-specific actions across the project area, specifically siting and designing all of the clearcuts and areas to be thinned. This would allow the public and the decision-maker to better understand the location and nature of the impacts, rather than wait for the project to be complete to understand the potential damage to the landscape. This would meet the project's purpose and need, and is distinct from the proposed action because it would allow for more precise disclosure of potential impacts, rather than relying in part on conjecture about the scale of impacts, as the South Otter Project EA does now.

- A "no temporary roads" alternative. Roads, even temporary ones, are the enemy of wildlife, soils, and water quality. The Forest Service should consider an alternative that would reduce impacts to all three values by requiring the agency to design a project that would focus treatments along existing roads, and would eliminate all use or construction of temporary roads, or one that would set a cap far below the current 168 miles of temporary road (say, 50 miles). Such an alternative would allow the Forest Service to achieve at least some of the project's aims in terms of timber removal and wildfire hazard reduction, while placing in sharp relief any "benefits" of temporary roads versus the threat they pose to other values. Such an alternative is distinct from the proposed action in terms of its design and impacts.

- A "mature forest protection" alternative. As noted, President Biden has directed the Forest Service to inventory and conserve old and mature forests. The South Otter project appears to involve the logging of mature trees. The Forest Service should consider whether it can implement an alternative that does as the President directs, and defines and conserves mature forests (lodgepole 80-90 years old and older).

The Forest Service should either analyze these reasonable alternatives in detail or provide a compelling explanation for why it need not do so. Further, this is just a sampling of alternatives. The proposed action, involving 37,515 acres of logging, up to 168 miles of road construction,

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[96] *North Buckhead Civic Ass'n v. Skinner*, 903 F.2d 1533, 1542 (11th Cir. 1990).

[97] *See Wilderness Soc'y*, 524 F. Supp. 2d at 1309 (holding EA for agency decision to offer oil and gas leases violated NEPA because it failed to discuss the reasons for eliminating a "no surface occupancy" alternative); *Ayers*, 873 F. Supp. at 468, 473.

and decades of activity. It is simply not believable that the proposed action is the *only* reasonable way to manage the landscape while still achieving at least some of the ends identified in the purpose and need statement. If the Forest Service concludes that the proposed action is the only way, then the agency has apparently set its purpose and need statement too narrowly, in violation of NEPA.

Further, we urge the Forest Service to consider an alternative with more stringent mitigation measures. For example, while roads are unlikely to be built through wetlands, the EA's design features do not prohibit that result, and admit that such wetlands destruction may occur. South Otter Project EA at 9 (alleging that such "rare" bulldozing may occur when "a temporary road needs to be routed through a wetland area"). If these incursions into wetlands will be "rare," the Forest Service could simply prohibit such actions with little impact on achieving the project's goals. The trade-off – certain protection for riparian area vs. a small amount of additional treatment – is one that the Forest Service should consider.

Similarly, the EA states that "[t]imber harvest and/or prescribed burning may occur in areas that contain aspen stands. However, equipment and temporary roads within aspen stands will be avoided, unless absolutely necessary for treatment activities," South Plateau Project EA at 42. We request that the Forest Service consider as a design feature that equipment and temporary roads shall be prohibited within aspen stands, period. Again, this might limit some treatments, but it would ensure greater protection for aspen.

VI. THE FOREST SERVICE MUST PREPARE AN EIS.

A. An Agency Must Prepare an EIS If There Are Questions as to Whether Impacts May Be Significant.

NEPA requires federal agencies to prepare a full environmental impact statement (EIS) before undertaking "major Federal actions significantly affecting the quality of the human environment."[98] The Ninth Circuit affirms this approach.

> We have held that an EIS must be prepared if 'substantial questions are raised as to whether a project ... may cause significant degradation to some human environmental factor.' To trigger this requirement a 'plaintiff need not show that significant effects will in fact occur,' [but instead] raising 'substantial questions whether a project may have a significant effect' is sufficient.[99]

[98] 42 U.S.C. § 4332(C).

[99] *Idaho Sporting Cong. v. Thomas*, 137 F.3d 1146, 1149-50 (9th Cir. 1998) (citations omitted) (emphasis original). *See also Ocean Advocates v. U.S. Army Corps of Eng'rs*, 402 F.3d 846, 864-65 (9th Cir. 2005) ("To trigger this [EIS] requirement a plaintiff need not show that significant effects will in fact occur, but raising substantial questions whether a project may have a significant effect is sufficient." (internal quotations, citations, and alterations omitted)).

Other circuits courts agree. "If the agency determines that its proposed action may 'significantly affect' the environment, the agency must prepare a detailed statement on the environmental impact of the proposed action in the form of an EIS."[100]

If an agency "decides not to prepare an EIS, 'it must put forth a convincing statement of reasons' that explains why the project will impact the environment no more than insignificantly. This account proves crucial to evaluating whether the [agency] took the requisite 'hard look.'"[101]

"Significance" under NEPA requires consideration of the action's context and intensity.[102] An agency must analyze the significance of the action in several contexts, including short- and long-term effects within the setting of the proposed action (including site-specific, local impacts).[103] Intensity refers to the severity of the impact and requires consideration of ten identified factors that may generally lead to a significance determination, including:

> (1) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas;
>
> (2) whether the action is likely to be highly controversial;
>
> (3) whether the effects on the environment are highly uncertain or involve unique or unknown risks;
>
> (4) whether the action may have cumulative significant impacts; and
>
> (5) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.[104]

With respect to the degree to which the environmental effects are likely to be highly controversial, the word "controversial" refers to situations where "'substantial dispute exists as to the size, nature, or effect of the major federal action.'"[105]

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[100] *Airport Neighbors Alliance v. U.S.,* 90 F.3d 426, 429 (10th Cir. 1996) (citation omitted) (emphasis added).

[101] *Ocean Advoc.*, 402 F.3d at 864.

[102] 40 C.F.R. § 1508.27 (1978).

[103] *Id.* § 1508.27(a) (1978).

[104] *Id.* § 1508.27(b)(3)-(5), (7), (9)-(10) (1978).

[105] *Town of Cave Creek v. FAA,* 325 F.3d 320, 331 (D.C. Cir. 2003) (quoting *North American Wild Sheep v. U.S. Department of Agriculture*, 681 F.2d 1172, 1182 (9th Cir. 1982)) (emphasis in original). *See also Middle Rio Grande Conservancy Dist. v. Norton*, 294 F.3d 1220, 1229 (10th Cir. 2002) (same); *Town of Superior v. U.S. Fish and Wildlife Serv.*, 913 F. Supp. 2d 1087, 1120 (D. Colo. 2012) (same).

B. Because the South Otter Project Is Likely to Have Significant Impacts, the Forest Service Should Prepare an EIS.

The South Otter Project meets numerous standards for "significance."

The size of the project alone – involving logging across more than 37,515 acres (the size of more than 28,000 football fields), and the removal of nearly 220,000 CCF) of commercial timber – is significant.

The scale of the project, by itself, is huge. The South Otter Project proposes to remove nearly 220,000 CCF of timber over an indeterminate period, perhaps 10, 20, or 30 years. A review of the Forest Service's annual "timber cut and sold" reports for the fiscal years 2013 through 2022 indicates that this volume is *more than 20% more than cut on the entire Custer Gallatin National Forest during the last 10 years.*[106]

Further, the project's scale, when considered cumulatively together with just one other project that the Custer Gallatin NF is currently reviewing, the South Plateau project – is breathtaking because the two together *will exceed the objective for timber production for the entire 15-year life of the newly-revised Forest Plan.*

The Forest Service estimates that the 162,000 CCF of timber removed from the South Plateau project will occur over an 8-10 year period, thus averaging at the low end 16,200 CCF per year over a decade.[107] The South Otter Project's economic analysis assumes that the project will remove 219,984 CCF of timber over that same 8-10 year period, or roughly 22,000 CCF per year.[108] Together, the two projects will result in about 382,000 CCF of timber, or 38.2 million cubic feet, over 8-10 years, or and low-end average of 3.8 million board feet per year. The 2022 Custer Gallatin Forest Plan states as its objective for production of "timber meeting product utilization standards for sale at an average projected timber sale quantity" is "2 million cubic feet … measured on a decadal basis," or 30 million cubic feet over the 15-year life of the plan.[109] The South Plateau project and the South Otter project *will far exceed the Forest Plan's 2 million cubic foot annual objective during the life of the projects, and in fact will exceed the 30 million cubic foot objective for the entire planning period*. Even if timber cut and sold for the South Otter Project is spread out over 30 years, the two projects together will exceed to the 2 million cubic feet per year objective. By any measure of output, the South Otter project is significant; it is even more so when considered in light of other reasonably foreseeable projects on the Forest.

The South Otter project's effects on the environment are also highly uncertain or involve unique or unknown risks. The South Otter Project EA is based on the critical assumption that logging

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[106] *See* Forest Products Cut and Sold from the National Forests and Grasslands, available at https://www.fs.usda.gov/forestmanagement/products/cut-sold/index.shtml (last viewed Nov. 25, 2022).

[107] C. Sorenson, South Plateau: Economic Effects Analysis (Nov. 11, 2020) at pdf page 4, 5, attached as Ex. 36.

[108] C. Sorenson, South Otter: Economic Effects Analysis (Sep. 20, 2022) at 4, 5.

[109] Custer Gallatin Forest Plan (2022) at 76, Objective FW-OBJ-TIM.

and burning now will improve the forest's "resilience" in comparison to doing nothing because it will forestall damaging impacts (e.g., from fire or bugs). But while logging will immediately degrade mature forests, wildlife habitat and other values, the threat such logging attempts to forestall may never occur.

Further, the project's impacts are highly uncertain because the Forest Service does not disclose, and has not yet identified, the location of up to 168 miles of temporary road, or the precise location or timing of clearcuts and other logging. The Forest Service cannot have it both ways: it cannot both conclude that this huge project will have no significant effects, while simultaneously declining to disclose the project's site-specific impacts.

C. The Proposed Action Is Highly Controversial Because the Science Upon Which It Is Based Is Questionable.

The effects of this project meet the definition of "highly controversial.[110] In this context, the term "controversial" refers to "cases where a substantial dispute exists as to the size, nature, or effect of the major Federal action rather than to the existence of opposition to a use."[111] Courts explain:

> A substantial dispute exists when "evidence, raised prior to the preparation of an EIS or FONSI, casts serious doubt upon the reasonableness of the agency's conclusions." *Nat'l Parks* [*& Conservation Ass'n v. Babbitt,* 241 F.3d 722, 736 (9th Cir. 2001)] (internal citation omitted). Such evidence generally challenges the scope of the scientific analysis, the methodology used, or the data presented by the agency. *See Blue Mountain* [*Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212-13 (9th Cir. 1998)] (citing the Forest Service's failure to consider the recommendations and data of an independent scientific report that ran contrary to the proposed action as evidence of controversy).[112]

Here, the Forest Service assumes that thinning and clearcutting will enhance landscape "resilience" to beetle outbreaks and lower fire risk to communities, despite contrary evidence and studies. *See supra*. There is thus a genuine controversy as to whether the project will meet the stated purpose and need, or will have the impacts predicted, given the scientific studies cited above that undercut, or refute, those conclusions. This is the type of "controversy" that courts find sufficient to require preparation of an EIS.[113]

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[110] 40 C.F.R. § 1508.27(b)(4) (1978).

[111] *Sierra Club v. United States Forest Serv*., 843 F.2d 1190, 1193 (9th Cir. 1988) (finding that where Sierra Club presented evidence from experts showing the EA's inadequacies and casting doubt on the agency's conclusions, "this is precisely the type of 'controversial' action for which an EIS must be prepared.").

[112] *Anglers of the Au Sable v. United States Forest Serv*., 565 F. Supp. 2d 812, 827-828 (E.D. Mich. 2008).

[113] *See id*.

D. If the Forest Service Fails to Correct Errors Identified by the Environmental Protection Agency, It Must Prepare an EIS.

Federal courts will set aside a NEPA analysis where the agency ignores and effectively declines to respond to comments from federal and state agencies raising concerns about significant impacts. In *Utahns for Better Transp. v. U.S. Dep't of Transp*., 305 F.3d 1152, 1179-80 (10th Cir. 2002), the Tenth Circuit found that a Department of Transportation ("DOT") EIS failed to properly account for impacts to wildlife where DOT did not address criticism from the U.S. Fish & Wildlife Service and a state wildlife agency questioning the DOT's assumptions. Similarly, in *Davis v. Mineta*, this Court reviewed an EA about which EPA disagreed with the Federal Highway Administration's analysis of growth-inducing impacts of a highway project. 302 F.3d 1104 (10th Cir. 2002). The Court wrote:

> While it is true that NEPA "requires agencies preparing environmental impact statements to consider and respond to the comments of other agencies, not to agree with them," it is also true that a reviewing court "may properly be skeptical as to whether an EIS's conclusions have a substantial basis in fact if the responsible agency has apparently ignored the conflicting views of other agencies having pertinent expertise."

Id. at 1123 (citations omitted). Based largely on EPA's criticism, the Court found the agency's EA arbitrary and capricious.

Other circuits have taken the same approach. The D.C. Circuit faced a similar situation in *Nat'l Parks Conservation Ass'n v. Semonite*, where "repeated criticism from many agencies who serve as stewards of the exact resources at issue, not to mention consultants and organizations with on-point expertise" led the court to conclude that a "controversy" existed sufficient to require an EIS, finding the action agency's FONSI arbitrary and capricious. 916 F.3d 1075, 1085 (D.C. Cir. 2019), modified as to remedy only and remanded by *Nat'l Parks Conservation Ass'n v. Semonite,* 925 F.3d 500 (D.C. Cir. 2019). Similarly, in *W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 492-93 (9th Cir. 2011), the Ninth Circuit held that the Bureau of Land Management ("BLM") "violated NEPA by failing to take a 'hard look' at the environmental consequences of the proposed [action]" where "BLM gave short shrift to a deluge of concerns from its own experts, FWS, the EPA, and state agencies … [because] BLM neither responded to their considered comments … nor made responsive changes to the proposed regulations." *Id*. at 493.

Here, EPA has raised numerous significant concerns regarding the South Otter Project EA, raising serious questions about the Forest Service's failure to disclose site-specific actions and impacts, its failure to disclose the project's climate impacts, and its failure to address the limitations of BMPs for water quality, among others. If the Forest Service fails to modify its EA to address the failings EPA identified, it would violate NEPA's hard look mandate, and demonstrate controversy significant enough to require preparation of an EIS. We urge the Forest Service to avoid this income by heeding EPA's counsel.

E. The EA Fails to Identify or Protect Mature Forests as Required by Executive Order 14,072.

The importance of preserving mature forests in staving off the worst impacts of the climate crisis and the extinction crisis led President Biden on Earth Day in 2022 to issue Executive Order 14,072, "Strengthening the Nation's Forests, Communities, and Local Economies." E.O. 14,072, 81 Fed. Reg. 24851 (Apr. 27, 2022), available at https://www.govinfo.gov/content/pkg/FR-2022-04-27/pdf/2022-09138.pdf (last viewed Nov. 25, 2022). That order notes:

> Globally, forests represent some of the most biodiverse parts of our planet and play an irreplaceable role in reaching net-zero greenhouse gas emissions. Terrestrial carbon sinks absorb around 30 percent of the carbon dioxide emitted by human activities each year. Here at home, America's forests absorb more than 10 percent of annual United States economy-wide greenhouse gas emissions. *Conserving old-growth and mature forests on Federal lands* while supporting and advancing climate-smart forestry and sustainable forest products *is critical to protecting these and other ecosystem services provided by those forests*.

E.O. 14,072, 81 Fed. Reg. at 24851 (emphasis added).

The President directed the Forest Service to "within 1 year of the date of this order, define, identify, and complete an inventory of old-growth and mature forests on Federal lands," and after, that inventory is complete, to "analyze the threats to mature and old-growth forests on Federal lands," and to develop strategies "that address threats to mature and old-growth forests on Federal lands." E.O. 14,072, Sec. 2, 81 Fed. Reg. at 24852.

The South Otter Project's "Marking Guide" indicates that the Forest Service will "[l]eave all old (> 150 years) trees," but indicates mature trees would likely be felled. South Otter Project EA, Appx. B at 2; *see also* South Otter Project EA at 14 ("Commercial thinning generally removes 20-40 percent of the commercial size trees (nine inches or greater DBH for ponderosa pine"); *id*. at 15 ("some large diameter trees would be removed" in some cases). "Commercial sized trees" are usually mature trees. "Stands proposed for improvement cutting primarily fall within the medium size class (10-15") and will trend towards the large size class," further indicating mature trees may be cut. *Id*. at 49.

The Executive Order directs the Forest Service to "[c]onserv[e] old-growth *and mature* forests." E.O. 14,072, 81 Fed. Reg. at 24851 (emphasis added). In any subsequently prepared NEPA document, the Forest Service must inventory both mature and old-growth trees and stands, and disclose the impacts of the project on mature trees and stands as well as old growth.

CONCLUSION

We appreciate your consideration of the information and concerns raised in our comments. We hope that the Forest Service will use these comments as an opportunity to engage with stakeholders to develop a project that is legally and ecologically sound.

Sincerely,

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TABLE OF EXHIBITS

Exhibit 14. Moomaw, *et al*., Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good, Frontiers in Forests and Global Change (June 11, 2019)

Exhibit 15. T. Hudiburg *et al*., Meeting GHG reduction targets requires accounting for all forest sector emissions, Environ. Res. Lett. 14 (2019)

Exhibit 16. B. Law, et al., The Status of Science on Forest Carbon Management to Mitigate Climate Change (June 1, 2020)

Exhibit 17. B. Law & W. Moomaw, Keeping trees in the ground where they are already growing is an effective low-tech way to slow climate change, *The Conversation* (Feb. 23, 2021)

Exhibit 18. B. Moomaw et al., Open Letter to President Biden and Members of Congress from Scientists: It is essential to Remove Climate-Harming Logging and Fossil Fuel Provisions from Reconciliation and Infrastructure Bills (Nov. 4, 2021)

Exhibit 19. E.O. 14,072, 81 Fed. Reg. 24851 (Apr. 27, 2022)

Exhibit 20. Forest Service, Climate Change Considerations in Project Level NEPA Analysis (Jan. 13, 2009)

Exhibit 21. B. Law & M.E. Harmon, Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. *Carbon Management* (2011) 2(1)

Exhibit 22. C. Howard *et al.,* Wood product carbon substitution benefits: a critical review of assumptions, *Carbon Balance & Management* (2021) 16:9

Exhibit 23. M. Harmon, Have product substitution carbon benefits been overestimated? A sensitivity analysis of key assumptions, *Environmental Research Letters* (2019)

Exhibit 24. Bureau of Land Management, Western Oregon Proposed RMP Final EIS (2009) (excerpts)

Exhibit 25. Office of Surface Mining & Bureau of Land Management, Environmental Assessment, Colowyo Coal Mine Collom Permit Expansion Area Project (Jan. 2016) (excerpts)

Exhibit 26. U.S. Forest Service, Supplemental Final Environmental Impact Statement, Federal Coal Lease Modifications COC-1362 & COC-67232 (Aug. 2017) (excerpts)

Exhibit 27. Barnett, K., S.A. Parks, C. Miller, H.T. Naughton. 2016. Beyond Fuel Treatment Effectiveness: Characterizing Interactions between Fire and Treatments in the US. *Forests,* 7, 237

Exhibit 28. Black, S. H., D. Kulakowski, B.R. Noon, and D. DellaSala. 2013. Do Bark Beetle Outbreaks Increase Wildfire Risks in the Central U.S. Rocky Mountains? Implications from Recent Research. Natural Areas Journal, 33(1): 59-65

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Exhibit 32. Carlson, J. P. Edwards, T. Ellsworth, and M. Eberle. 2015. National best management practices monitoring summary report. Program Phase-In Period Fiscal Years 2013-2014. USDA Forest Service. Washington, D.C.

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Exhibit 35. M.J. Furniss et al. (2013). Assessing the vulnerability of watersheds to climate change: Results of national forest watershed vulnerability pilot assessments. USDA PNW Research Station. General Technical Report PNW-GTR-884

Exhibit 36. C. Sorenson, South Plateau: Economic Effects Analysis (Nov. 11, 2020)