UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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November 15, 2022

Ref: 8ORA-N

Nicholas Glidden, District Ranger
Dixie National Forest
Pine Valley District
196 E. Tabernacle
Saint George, Utah 84770

Dear District Ranger Glidden:

The U.S. Environmental Protection Agency Region 8 has reviewed the U.S. Department of Agriculture Forest Service Environmental Assessment (EA) for the Pine Valley Wildlife Habitat and Ecological Resiliency Improvement Project (Project) in the Pine Valley Ranger District of the Dixie National Forest (Forest). In accordance with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA), we are providing comments. These comments convey important questions or concerns that we recommend addressing during the NEPA process.

In November 2019 the Forest conducted scoping for the Project and proposed a Categorical Exclusion (CatEx) to cover 320,000 acres of treatments. EPA submitted a comment letter dated December 10, 2019, identifying a number of topics the Forest should consider in its environmental analysis for the CatEx. In response to public scoping comments, the Forest decided to conduct an EA for the Project and reduce the project treatment area. In the EA, the Forest is proposing to use a combination of mechanical treatments, revegetation treatments, hand treatments, prescribed fire, and herbicide application to treat 181,576 acres over 15-20 years in Iron and Washington Counties, Utah. According to the EA, the purposes of the Project are to (1) improve and/or maintain wildlife habitat; (2) improve and/or maintain stand conditions in mature and old growth pinyon-juniper woodland stands; (3) improve and/or maintain hydric and deciduous vegetation types associated with riparian areas; (4) restore ecosystem composition and/or structure to reduce the risks of uncharacteristic wildfire effects; and (5) reduce further proliferation of non-native annual grasses and invasive riparian woody species.

EPA's review of the information provided in the EA identified one overarching concern. It appears the Forest is implementing a programmatic (vs. site-specific) approach and analysis that would authorize multiple vegetation management projects without requiring future, site-specific project NEPA analyses. Given the lack of site-specific information and analysis, and potential for significant water quality, air quality and ecological impacts, it is unclear how the EA and Finding of No Significant Impact (FONSI) will ensure significant impacts will be avoided for this project. We recommend the Forest develop this as a programmatic NEPA document that commits to tiered, site-specific NEPA analyses that provide opportunities for public involvement and comment on individual treatment projects.

We appreciate the opportunity to provide recommendations for this NEPA planning document and enclosed are our detailed comments for your consideration. These comments are intended to facilitate the

decision-making process. If we may provide further explanation of our comments, please contact me at (303) 312-6155, or Shannon Snyder of my staff at (303) 312-6335 or snyder.shannon@epa.gov.

Sincerely,

MELISSA MCCOY

Digitally signed by MELISSA MCCOY
Date: 2022.11.15 17:25:56 -07'00'

Melissa W. McCoy, Ph.D.
Manager, NEPA Branch
Office of the Regional Administrator

Enclosure

To determine the need for the Project, the Forest relied upon The Nature Conservancy's Landscape Conservation Forecasting (LCF) process and the resulting September 2014 report for the Pine Valley Ranger District. The LCF process uses satellite imagery, remote sensing, predictive ecological models, and cost-benefit assessments to predict future ecological integrity of the planning area under different management scenarios. The LCF report found that many of the districts ecological systems were in fair to poor condition, and without management actions, would result in a moderately to highly departed landscape in 25 years (p. 4). In response to the report's findings, the EA proposes a number of mechanical treatments, depending on the bio-physical setting, including mastication machinery (including excavators, skid steer, and wheeled tractors/loaders), chain harrow, dixie harrow, carpet harrow, forestry equipment (feller bunchers, etc.), mechanical mowers, shredders, and chippers. The EA states these mechanical treatments will be generally deployed only on slopes less than 30% but the decision on which treatment to use will be dependent on specific bio-physical setting. The Forest also proposes seeding, hand treatments, prescribed fire, and herbicide applications. In addition to the terrestrial treatments, the EA also includes 2,376 acres of riparian area treatments. A number of these treatments have the potential to significantly impact water and air resources, among other potential impacts. The following recommendations address some of our concerns with the proposal.

Site Specificity and Programmatic NEPA

According to the available information in the EA (p. 5), the Forest appears to be using a condition-based management approach for the Pine Valley Project. The EA states the following:

> "Landscape planning allows for proposed treatments to be aligned, after the decision has been made, with the conditions on the ground at the time of implementation. Landscape scale project planning has a distinct advantage for this project, where managers and IDT members can again consider invasive weeds, drought and other conditions directly prior to implementation design through the seven-step resiliency analysis process. This allows managers to choose among several implementation areas, to select appropriate treatments in the right place at the right time. The best available science would further inform sequencing of treatments throughout the project area."

In line with this statement, the EA does not contain the actual locations of the individual treatment area projects, what types of treatments will be performed, the timeframes for those treatments, the specific localized impacts of those treatments, and the specific mitigation measures needed to avoid significant impacts for each project. Instead, the Forest proposes to use an implementation matrix, 7-step process/checklist, design features and best management practices (BMPs) to manage each individual treatment area project. Based upon available information it appears that individual treatment project design and impact assessment will occur post-FONSI, years after the public comment period on this EA, and outside of the NEPA process. This lack of specificity does not provide for meaningful public participation or full understanding of the potential impacts and mechanisms for avoiding them, both important for well-informed decision-making. NEPA requires a "hard look" at potential environmental impacts of a proposed action and public disclosure of those impacts prior to implementation.

The EA states that "within the project area, there is widespread departure, across a somewhat homogenous set of vegetation types" (p. 5). The LCF report describes a total of 22 ecological systems, or

bio-physical settings, including the twelve that were brought forward in this analysis to inform implementation of the proposed action. Given this heterogeneity of the landscape, the impacts associated with the proposed action will vary based on site-specific conditions, including but not limited to vegetation community composition, soil-types, slopes, proximity to residences, proximity to aquatic resources, proximity to Class I airsheds, 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 Pine Valley landscape. Based on these and other variables, there are a wide range of management actions and design features that *may* apply. Based on this information in the EA, we were unable to evaluate the likelihood that significant effects will be avoided for the EA and FONSI.

The EA states that the condition-based management approach to project planning "was chosen to allow for a response commensurate with the need for action, so that the widespread vegetative departure could be addressed at a landscape scale" (p. 5). It also states that "the Pine Valley project supports a management approach that allows for responding to dynamic environmental and site conditions that may have changed between the decision and the implementation" (p. 5). The Council on Environmental Quality (CEQ) NEPA regulations anticipated the need for a deft approach to an ever-changing landscape. Those regulations allow for a programmatic NEPA analysis to define the overall landscape-scale strategy and sideboards of the program, and for quicker and more efficient site-specific project analyses tiered to it. A programmatic analysis followed by tiered site-specific NEPA analyses would be consistent with CEQ's regulations and would be expected to speed the consideration and implementation of individual treatments while providing the "hard look" and required opportunity for public review and input under NEPA. Also, the long-term nature of the project (15-20 years) is a major cause of the concern that conditions, and therefore impacts of individual projects, could change with time, especially as the climate continues to change. Our recommendation is for the Forest to develop this as a programmatic NEPA document that commits to carrying out site-specific analyses in tiered NEPA documents, ensuring that those impacts are evaluated, disclosed, and informed by public engagement.

Hydrology and Soils

General Comment

The proposed mechanical treatments include chain harrowing. We recommend against the use of chaining to remove pinyon-juniper because it increases sedimentation and has the potential to destroy beneficial vegetation such as sagebrush, grasses, and forbs. This can impact aquatic resources and promote opportunistic weed and invasive species growth, which can increase wildfire potential and severity.

Impaired Waterbodies

A majority of watersheds in the project area are impaired, but the Hydrology and Soils Specialist Report (Report) does not include information about these impairments. The Report only mentions the waterbodies that have a Total Maximum Daily Load and that no further impairment is expected from project activities as project design features and BMPs will protect the water quality (p. 12). It notes special attention is given to areas with impaired streams and additional precautions are taken when necessary. There are waterbodies in the project area that are impaired for aquatic life, recreation and agriculture uses and for parameters that include temperature, dissolved oxygen, *E. coli*, nitrogen, phosphorus, boron, total dissolved solids, and pH. The *Dixie National Forest Biennial Monitoring Evaluation Report* (2017-2018) states water temperature monitoring showed that many streams monitored continuously for water temperature exceeded the maximum temperature required for the 3A beneficial use

designations. One of the potential environmental impacts of project activities may stem from changes in water temperature associated with sedimentation or channel widening. Other potential impacts include vegetation loss, accelerated soil loss, bank erosion, soil compaction, increased surface storm flow, and reduced stream base flows from decreased infiltration to groundwater. In addition to these drivers, the monitoring report states that climate change is predicted to result in higher future stream temperatures across many streams in the Forest. Based on the Forest's experience with the proposed types of project activities in the analysis area, we recommend the NEPA document include an assessment of the proposed action's potential impacts and benefits to aquatic resources that may stem from the drivers listed above, including impacts to water quality, stream and wetland processes, and fish populations and habitat. We recommend the Forest: (a) analyze potential impacts to impaired waterbodies within and/or downstream of the project area, and (b) coordinate with Utah Department of Environmental Quality if there are identified potential impacts to impaired waterbodies. It will be important to ensure this project will avoid causing or contributing to the exceedance of water quality standards (WQS) as such impacts are prohibited and would be considered a "significant" impact under NEPA.

Wetlands, Springs and Riparian Areas

The Report states "it is impractical to list or map all springs, streams, wetlands, etc. within the project area and that design features and BMPs are all in at least part designed to protect wetland and riparian areas from unintended impacts and are successful in protecting water resources" (p.12). However, the EA states the responsible official has determined the proposal complies with Executive Order (EO) 11990 – Protection of Wetlands (May 24, 1977) and the proposed action will not destroy, degrade, or result in the loss of any wetlands within the project area. The EA does not substantiate how design features and BMPs will protect wetland and riparian areas across a varied landscape with multiple resource considerations and concerns. We recommend the NEPA document discuss how it will comply with EO 11990 and substantiate how project design features and best management practices will prevent significant impacts to wetland and riparian resources, especially considering that the National BMP Monitoring Report and the *Dixie National Forest Biennial Monitoring Evaluation Report* (2017-2018) indicated BMPs are often failing some aspect of compliance and effectiveness (see also *Inspection and Enforcement of Design Features* further below in this letter). We also recommend the Forest prepare tiered site-specific NEPA documents for each treatment area prior to project implementation that provide inventories and maps of existing surface waters, including wetlands that are protected under EO 11990, and any available information on acreages and channel lengths, habitat types, values, conditions, and functions of these waters. This should resolve the impracticability issue the Forest raised in the EA while providing meaningful public participation, and therefore, well-informed decision-making.

Biological Soils

The Report acknowledges there are bio-crusts in the project area and that all actions which require the use of equipment have the potential to cause extensive damage to soils. It also discusses the ecological importance of bio-crust but does not contain further information about the prevalence of this resource across the project area (except for one previous project area that was mapped and disturbed by those project activities). It's uncertain based on the available information if this area is representative of the entire Pine Valley EA project area as the discussion was not supported by data or analysis. The EA says that in the process of assessing local conditions in the 7-step process, biocrust presence and mitigation or avoidance will be addressed. It also states it is unlikely that *extensive* damage to bio-crust will occur in any given area but does not demonstrate how or why that is the case, or what level of damage could occur and whether such level could have significant effects. We recommend the NEPA document describe

unavoidable impacts to biological soil crusts as irreversible commitments of the resource. Given the ecological importance of bio-crusts, we recommend the Forest prepare tiered site-specific NEPA documents for each treatment area prior to project implementation that map these irreplaceable soils and select management practices that would avoid biological soils as they can take up to 250 years to regenerate depending on the species composition. This would provide meaningful public participation, and therefore, well-informed decision-making.

Direct and Indirect Effects

For the direct and indirect effects analysis in the Report (p. 8), Table 4 describes the general effects of each of the proposed treatment types (e.g., mastication, chain and carpet harrow, seeding treatments, hand treatments and herbicide treatments). Then Table 5 lists the corresponding mitigation measures that address the potential impacts of each one of the treatment methods. It also notes the design features and BMPs are designed to mitigate and/or protect the soil resources from harmful impacts, and while some impacts are expected, detrimental impacts will be avoided or reduced to acceptable levels. There is no further substantiation and analysis of how, or to what extent, these measures will avoid significant impacts to soils and hydrology in every treatment area, nor may that be practical at a programmatic level. This is particularly concerning because the National BMP Monitoring Report and the *Dixie National Forest Biennial Monitoring Evaluation Report* (2017-2018) indicated BMPs are often failing some aspect of compliance and effectiveness (See *Inspection and Enforcement of Design Features* further below in this letter). Therefore, we recommend the NEPA document demonstrate in its analysis how the design features and BMPs will prevent significant impacts to hydrological and soil resources. If this is not practical at a programmatic level, we recommend the Forest commit to tiered site-specific NEPA for each treatment area that discloses this information and provides meaningful public participation, and therefore, well-informed decision-making. Additionally, the EA indicates mastication machinery, chippers and shredders will be allowed in riparian areas (within 100 feet of each side of stream channel). Due to the potential hydrological and soil impacts of this mechanical treatment and machinery, we recommend the Forest prohibit this treatment in the riparian treatment area.

Cumulative Impacts

The approach for the hydrology and soils cumulative impact analysis relied on a study conducted by Jeffrey J. Steuer, *A generalized watershed disturbance-invertebrate relation applicable in a range of environmental settings across the continental United States* (2010),[1] for determining how many acres of disturbance per watershed is acceptable for the project. The study states the following:

> "Watershed percent imperviousness, a commonly understood urban metric was used as the basis for a generalized watershed disturbance metric that, when applied in conjunction with weighted percent agriculture and percent grassland, predicted stream biotic conditions based on Ephemeroptera, Plecoptera, and Trichoptera (EPT) richness across a wide range of environmental settings. A threshold was identified (disturbance values <15) that defined a region of increased EPT richness change" (Steuer 2010).

The study concluded that overall EPT richness declined with increasing watershed imperviousness. We note this study was conducted in large urban-metropolitan areas. We also note it does not appear the study assumed the impacts of imperviousness were equivalent to vegetation removal treatments like those

[1] *See* https://pubs.er.usgs.gov/publication/70160818

proposed in the EA, rather vegetation prevalence is a function of the weighted percentages of agriculture and grassland. Based on this study, the analysis in the EA used a 15% disturbance threshold per watershed to determine if the impacts from the proposed action are acceptable. The analysis does not demonstrate how the approach in Steuer is applicable to the project activities and appropriate for determining that a 15% disturbance threshold for all watersheds will prevent significant impacts to hydrology, soils, sedimentation, and overall watershed conditions. We note the metric in Steuer included impacts associated with agricultural use, and it is unclear whether the analysis in the EA included agricultural/grazing-related disturbance in the overall watershed disturbance calculations. Additionally, the Report does not substantiate how the 15% threshold will provide sufficient habitat conditions necessary for viable species populations. The Report also does not substantiate that a 15% disturbance threshold is sufficient for protecting already impaired waterbodies and preventing violations to WQS and therefore significant impacts. We recommend addressing these questions and concerns in the NEPA document.

The Report explains how the Forest calculated what percent of each watershed will be impacted if all acres are treated under this Project. This percent watershed disturbance included impacts from fires and other projects recently completed, acres planned in the next few years, and how many acres are still available to treat in each watershed (pp. 14-16, Tables 6 and 7). It is unclear if the Dixie NF Prescribed Fire Landscape Resiliency Project has been included in these calculations since it is in the proposal stage and is another condition-based management project where the exact location, timing, duration and magnitude of site-specific treatment areas are unknown. This forest-wide project proposes to treat 1.8 million acres across the Forest (up to 52,000 acres across the Forest annually). In the NEPA document please address if the Prescribed Fire Landscape Resiliency Project has been included in these calculations, and if it has, how the Forest determined how many acres per watershed will be treated under the Prescribed Fire Project when the Forest will not know that information until implementation. If these acres have not been included in the calculations, please discuss in the NEPA document what process the Forest will undertake to determine how many acres are available to treat in the Pine Valley watersheds during project implementation to stay under the 15% disturbance threshold. We recommend tiered site-specific NEPA for each site-specific treatment area that discloses the percent disturbance per watershed and provides meaningful public participation, and therefore, well-informed decision-making.

The calculations for determining how many acres are available for treatment per watershed included how many acres have been disturbed by fire and the Report states that, in relation to fires, the "most significant runoff/sedimentation events occur within the first 2 – 3 years, [and] most have largely returned to normal after 5 years (Cerda 1998 and Altmann 2013). After five years, fire acres within a watershed will assumed to have returned to near pre-fire conditions" (p. 14). The Report then provides an example of how it calculated the percent disturbance for Grass Valley watershed (p. 14). It states fire acres drop off after 5 years, meaning those acres are subtracted from the disturbance calculation after 5 years. Climate change can impact the ability of the landscape, vegetation, and soils to return to normal. Precipitation patterns and drought could prevent the landscape from recovering in 5 years. Please describe in the NEPA document whether the Forest has confirmed recovery of fire areas that were subtracted from the calculated disturbance area, and how the Forest plans to monitor the recovery of the landscape after fires and treatments and how this will be taken into account during project implementation to stay under the 15% disturbance threshold.

The Report states "Some watersheds are proposing to treat more than 15% of the watershed without other impact considered." It is unclear what is meant by this statement. In the NEPA document, please clarify what is meant by this statement and how no significant impact will be ensured if the 15% threshold is exceeded.

Air Quality

The air quality section of the EA does not discuss the baseline air quality conditions, nor the different sources of air pollutants or emissions associated with the project activities. For instance, it does not mention emissions, including GHG emissions, associated with heavy equipment use and vehicle/truck trips. Examples of potential air emissions associated with the proposed project activities include air pollutants from conducting the planned burns (broadcast, pile burning, etc.), gasoline and diesel emissions from equipment used in the planned activities, emissions from idling equipment, and emissions from vehicles traveling on paved and unpaved roads, including re-entrained dust. To better understand project effects, the EPA recommends the NEPA document describe the management activities and where possible provide timelines for implementation. This will be the basis of the information that will inform the level of emission generating activity and potential air quality impact. We recommend including maps to identify areas where management activities will be focused in relation to existing Forest features and resources. We also recommend the estimating the amount of material to be combusted and the method of combustion (pile burning, backing fire, etc.), the types of emissions generating equipment needed, and number of truck trips associated with thinning and logging operations. Emission factors may then be used to estimate emissions from planned activities. Based on this information, we recommend an emission inventory be prepared that could inform a discussion of the pollutants generated from project activities. The preparation of annual emission estimates will inform long-term and potential long-range implications of the proposal that may not be captured by the prescribed fire planning process that will be followed as project activities are implemented. Once the Forest has an emissions inventory, please discuss in the NEPA document the direct, indirect, and cumulative impacts associated with the proposed action to air quality. We recommend the document evaluate whether project activities could affect air quality and what measures are needed to prevent significant impacts.

The design features for fuels/fire management include direction that "prescribed fire plans will be developed that are based on the best available science, project objectives and site-specific fuel types and geography. Implementation of prescribed fires will be in accordance with these plans" (p. 13). It does not appear there are any other design features related to air quality impacts. We support prescribed fire design criteria and monitoring requirements including: (1) incorporation of the Interagency Prescribed Fire Planning and Implementation Procedures Guide (May 2022) into the site-specific burn plans designed for each prescribed burn conducted under this project, and (2) public notification of pending burns. We recommend the Forest implement public notification procedures for each planned burn to reach remote areas that may not have access to newspapers or the internet. Disadvantaged communities can lack computer and internet resources and can be difficult to notify. If there are residents or communities with environmental justice concerns who could be impacted by smoke during burn actions, we recommend providing in-person, door-to-door notification. It may be necessary to include written notice in other languages where applicable. Effective notification is important to ensure that sensitive individuals with compromised respiratory or pulmonary systems can avoid exposure to smoke. We also recommend the Forest consult with the Utah Division of Air Quality for any coordination necessary related to burns, modeling, mitigation, or other measures required under State regulations or the State Implementation Plan

to address Clean Air Act requirements.

Climate Change

The EA does not contain a climate change impact analysis, rather it states the responsible official has determined the proposal complies with EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,* and EO 14008, *Tackling the Climate Crisis at Home and Abroad* (p. 63). An excerpt from the EA is provided for context:

> "In compliance with these Executive Orders signed by President Biden in 2021 and 2022 and under direction given by USDA WO in 2009, analysis utilizing relevant research, agency guidance, climate model scenarios and other information applicable to climate change was considered and is incorporated by reference in this analysis (Halofsky et al. 2018). This proposed project affects a relatively small amount of forest land and carbon on the Dixie National Forest and might temporarily contribute an extremely small quantity of GHG emissions relative to national and global emissions. This proposed action will not convert forest land to other non-forest uses, thus allowing any carbon initially emitted from the proposed action to have a temporary influence on atmospheric GHG concentrations, because carbon will be removed from the atmosphere over time as the forest regrows. Furthermore, the proposed project will transfer carbon in the harvested wood to the product sector, where it may be stored for up to several decades and substitute for more emission intensive materials or fuels. This proposed action is consistent with internationally recognized climate change adaptation and mitigation practices. A complete and quantitative assessment of forest carbon stocks and the factors that influence carbon trends (management activities, disturbances, and environmental factors) for the Dixie National NF is available in the project record (USDA 2020). This carbon assessment contains additional supporting information and references supporting this analysis."

In the EA's description of the proposed action, it does not mention commercial treatments, however the above excerpt states "the proposed project will transfer carbon in the harvested wood to the product sector, where it may be stored for up to several decades and substitute for more emission intensive materials or fuels." Please disclose whether there will be commercial treatments as part of this Project, and if there are, include this activity in the impacts analysis.

It is uncertain if "USDA WO in 2009" in this excerpt is referring to the 2009 U.S. Department of Agriculture reference, *Climate Change Considerations in Project Level NEPA Analysis*. If it is, this document is 13 years old and CEQ has also issued more recent guidance regarding the consideration of GHG emissions and climate change in NEPA analyses, *Final Guidance for Federal Departments and Agencies on the Consideration of Greenhouse Gas (GHG) Emissions and the Effects of Climate Change in NEPA Reviews* (August 1, 2016). We recommend utilizing more recent resources on the impacts of climate change, including the Fourth National Climate Assessment,[2] EPA's Climate Change Indicators,[3] and the Fifth Assessment Report of the Intergovernmental Panel on Climate Change,[4] to analyze and discuss the direct, indirect and cumulative climate-related impacts associated with the proposed action. We also recommend the Forest use the CEQ guidance in its analysis of the GHG emissions and climate

[2] https://nca2018.globalchange.gov/
[3] https://www.epa.gov/climate-indicators
[4] https://archive.ipcc.ch/report/ar5/syr/

impacts, including the ways in which climate change may exacerbate environmental effects and health impacts associated with the proposed action. This guidance provides a reasonable approach for analysis of GHG emissions, opportunities to reduce those emissions, analysis of climate impacts on the planning area, and climate change adaptation strategies. The NEPA.gov website[5] includes a non-exhaustive list of GHG accounting tools available to agencies.

In the above excerpt it states the "analysis utilizing relevant research, agency guidance, climate model scenarios and other information applicable to climate change was considered and is incorporated by reference in this analysis (Halofsky et al. 2018)." Rather than solely incorporating an analysis by reference, we recommend the NEPA document summarize how Halofsky et al. 2018 applies to the project area and the proposed action.

Additionally, the EA referenced 2020 Dixie NF Forest Carbon Assessment but carried out no further project-specific analysis. In an open letter to Congress, over 100 climate and forest scientists warned "logging in U.S. forests emits 723 million tons of uncounted CO_2 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 CO_2 emissions from U.S. coal burning, and annual emissions from the building sector. Logging conducted as commercial "thinning," under the rubric of fire management, emits about three times more CO_2 than wildfire alone."[6] We recommend the Forest relate the Dixie NF's quantitative assessment of forest carbon stocks referenced in the excerpt above to proposed action, or conduct a quantitative project-level carbon storage and sequestration analysis for the Project for inclusion in the NEPA document. This analysis should consider the direct and indirect GHG emissions associated with the proposed action, including emissions associated with burning, heavy equipment use, truck trips, and reasonably foreseeable downstream GHG emissions.

EPA recommends the NEPA document include a discussion of reasonably foreseeable climate change impacts in the planning area—such as changes in precipitation patterns, hydrology, vegetation distribution in respective watersheds, and temperature. This could help inform the development of measures to improve the resilience of the Forest's resources. Climate considerations in the NEPA document should include how the shifting baseline of climate may need to be considered with regard to the resilience of the forest as affected by each of the future treatments, the potential to influence the significance of impacts in various resource areas over time, and its impact on the effectiveness of design features and BMPs. This is consistent with the 2020 NEPA regulations as updated by the NEPA Phase 1 Final Rule (April 2022). We recommend utilizing this evaluation to develop the design features, monitoring, and mitigation to protect Forest resources.

Consistent with EO 14008, *Tackling the Climate Crisis at Home and Abroad* (January 27, 2021), we recommend the Forest include management actions to provide for diverse, healthy ecosystems that are resilient to climate stressors; require effective mitigation and encourage voluntary mitigation to offset the adverse impacts of projects or actions; reduce greenhouse gas emissions from authorized activities to the lowest practical levels; identify and protect areas of potential climate refugia; reduce barriers to plant migration; use pollinator-friendly plant species in restoration and revegetation projects; and consider

[5] https://ceq.doe.gov/guidance/ceq_guidance_nepa-ghg.html
[6] *See* https://johnmuirproject.org/wp-content/uploads/2021/11/ScientistLetterOpposingLoggingProvisionsInBBB_BIF4Nov21.pdf

project design (e.g., road construction) to mitigate potential structural impacts associated with extreme weather events. We also recommend discussing actions to improve the Forest's ability to adapt to changing environmental conditions, such as selecting resilient native species for replanting. This should anticipate the effects rising temperatures may have on soil moisture levels, seeds/seedlings growth, the vulnerability of specific species under projected climate conditions in the short and longer term, and any anticipated shift of forest species to more suitable range elevations.

Old Growth

One of the purposes in the EA includes improving and/or maintaining stand conditions in mature and old growth pinyon-juniper woodland stands. It is unclear in the EA if managing for these stand conditions includes removing old growth/mature pinyon-juniper. We recommend the Forest disclose in the NEPA document if any treatments will take place in old growth stands of pinyon-juniper, spruce, or other species, and whether any old growth harvest will take place under this project. If so, we also recommend the NEPA document evaluate the impacts of removal of old growth and include a map outlining areas that potentially have old growth and/or mature/old-forest characteristics.

Inspection and Enforcement of Design Features

The Draft EA does not include information about inspection and enforcement of design features and best management practices. If the effects described in this EA are wholly dependent upon adhering to the design features and BMPs, there is a potential for significant impacts if these measures aren't implemented or implemented properly. In the most recent National BMP Monitoring Report Summary (2015) about one third of the road BMPs were found to be properly implemented.[7] The 2015 Report also rated the relative effectiveness of each BMP, and approximately half of the road BMPs were rated marginally effective or not effective. Furthermore, according to the *Dixie National Forest Biennial Monitoring Evaluation Report* (2017-2018),[8] timber harvest ground-based skidding and harvesting activities are impacting groundwater dependent ecosystems undesirably. It also notes ground-based skidding, harvesting, and mechanical site treatments (without skidding) are failing some aspect of BMP compliance and effectiveness 83%, 60%, and 33% of the time, respectively. We note the effectiveness of Project design features and the 2012 National BMPs will also be impacted by climate change. We recommend the NEPA document outline a design feature and BMP monitoring and inspection plan for the proposed action, including timeframes for corrective action (see also the *Mitigation and Monitoring* section below). We also recommend discussing the process that will be applied if monitoring budgets fall short of the need for this project. Typically, lack of monitoring would automatically trigger a more conservative treatment area and/or set of mitigation measures.

Mitigation and Monitoring

With respect to mitigation identified in the NEPA document that will be applied to proposed activities, we recommend including what entity will be executing the mitigation, inspection schedules, documentation procedures, and accountability processes. With these considerations in mind, we recommend the NEPA document include the following information for each mitigation measure:

[7] *See* https://www.fs.usda.gov/biology/resources/pubs/watershed/FS-1070BMP_MonitoringSummaryReport2015_reduced.pdf
[8] *See* https://www.fs.usda.gov/detailfull/dixie/home/?cid=FSEPRD730754&width=full

- A description of the required mitigation and its expected effectiveness.
- Designation of the entity responsible for implementing the mitigation.
- Identification of how the Forest would ensure that the mitigation would be monitored to ensure timely and correct implementation as well as timely maintenance.
- Identification of funding sources.

If adaptive management practices will be utilized, we recommend the NEPA document include the following information:

- A defined monitoring plan.
- Specific environmental thresholds which would trigger action.
- Management alternatives and mitigation measures that would be implemented should a threshold be exceeded, and timeframes for corrective action.
- An evaluation procedure for determining the effectiveness of the implemented mitigation and further measures to take in cases of ineffectiveness.
- A description of the mechanisms for the public disclosure of monitoring data, its analysis, and related management decisions.