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Comments: February 15, 2022Susan Eickhoff, Forest SupervisorAshley National Forest355 North Vernal Ave.Vernal, UT 84078Subject: Comments: Ashley National Forest Plan DEIS ReviewThe Utah Native Plant Society is pleased to provide the following comments on the Ashley National Forest Plant Draft Environmental Impact Statement (DEIS). The Utah Native Plant Society (UNPS) is dedicated to the appreciation, preservation, conservation and responsible use of the native plant and plant communities found in the state of Utah and the Intermountain West.Our review focused our review on DEIS content related to native plants, their protection, and the roles they play in ecosystems on the Ashley National Forest. Our comments are not only related to rare plant species such as Federally Listed Threatened and Endangered (T&E) species and Species of Conservation Concern (SCC), but also to native plants in general as they relate to species composition, community structure, ecosystem resilience, and the wide array of ecosystem services they provide.We are especially concerned about the lack of analysis of the potential effects of each alternative on T&E and SCC plants. We expected to find a section within the DEIS dedicated to botanical resources of the forest that described not only the affected environment, as you do in Appendix C, but also the environmental consequences associated with the alternatives. If there is an effects analysis, we did not find one clearly focused on each of the plant species at risk. With the expertise that is on your forest, we know that you can do a much better job of discussing, describing, and analyzing the role that the revised forest plan can play in the protection of rare plant species under your direction. And adding a section to the body of the DEIS at least summarizing the Affected Environment and Environmental Consequences to plants at risk would be tremendously helpful for those evaluating the different alternatives.A significant concern is the apparent lack of connection to the Forest Service's Native Plant Materials Policy (Forest Service Manual 2070) and Native Plant Materials Policy, A Strategic Framework (September 2012) , in addition to the Interagency National Seed Strategy , which has the following introduction (emphasis added by UNPS):This Strategy recognizes the importance of healthy native plant communities as an essential foundation for ecosystem integrity and diversity. Healthy native plant communities create habitat for animals; provide ecosystem services that sustain people, their communities, and their economies; and have intrinsic and irreplaceable biotic value that will become increasingly important in the future.https://www.fs.fed.us/wildflowers/Native_Plant_Materials/documents/FSM_2070.pdfNative Plant Materials Policy, A Strategic Frameworkhttps://www.fs.fed.us/wildflowers/Native_Plant_Materials/developing/index.shtml.As the Utah Native Plant Society, we encourage you to step back and look at your DEIS from the perspective of the importance of using locally adapted, genetically appropriate native plant materials in the management and restoration of the wide range of ecosystem services provided by the landscapes that you manage. We feel you must go beyond doing things how they have been done in the past, such as planting non-native grass monocultures, such as crested wheatgrass, to avoid existing and potential impacts from cheatgrass. The forest should review and embrace current research on restoring ecosystems using the ever-increasing availability of native plant materials to improve not only resistance to invasion, but to also restore ecosystem resilience as well as the tremendous array of ecosystem services provided by the landscapes you manage.Beyond using native plant materials that are currently available, the forest should also become a source for increasing demand for the development and production of a greater number of species of native plant materials that are more than native by scientific name. For example, bluebunch wheatgrass occurs naturally from Alaska to Mexico and from the Great Plains almost to the west coast. As has been done with trees commonly used in reforestation over many decades, appropriate seed transfer zones are being determined for a much wider range of plant species. Using locally adapted, genetically appropriate native plant materials for the maintenance and restoration of lands you manage will have longer-term benefits as far as ability to germinate and survive, as well as naturally adapt to changing climates. We encourage you work the National Seed Strategy into how you approach your entire Forest Plan Revision process. In taking on this challenging effort, let this be a driver in everything you do and the desired future conditions you embrace.While we have spent some time going through the DEIS and have expressed our

thoughts, we would like to work with the Ashley National Forest to provide guidance for future generations of employees as well as the various publics that benefit from the lands that you manage. The forest occupies magnificent landscapes from the south unit to the peaks of the Uinta Mountains and beyond. We have tremendous respect for your staff because of the personnel you have that have helped in the publication of A Utah Flora as well as the Uinta Basin Flora. We know that you have a tremendous connection to the native plant materials that occur and either currently occupy or historically dominated your landscapes. We know of no other forest that has the data that you have on hand to support the management decisions you have made and will make in the future. We do feel, however, that you have neglected to adequately include the information necessary for anyone, lay person, manager, or scientist to effectively address the pros and cons of each of the alternatives. We feel stronger guidance is necessary and will benefit the land, people, and the animals that depend on the resources you manage.Following are comments on specific details in the DEIS. We have tried to identify chapter, page, and paragraph for which our comments are focused. We look forward to working with you throughout the planning process and beyond.Sincerely,Catherine KingPresident, Utah Native Plant SocietyEnclosure

DEIS and Forest Plan Comments by Utah Native Plant SocietyNote: Italicized text is, in general, from the DEIS; our recommendations are preceded by [ldquo]Comment[rdquo]Chapter 1. Purpose of and Need for ActionComment: 36 CFR [sect] 219.9 Diversity of plant and animal communities provides specific direction that the revised forest plan adopt [ldquo][hellip] a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area[rdquo]. Comment: This direction could more-clearly be addressed throughout the DEIS and in the forest plan. How will the forest address the maintenance of the diversity of native plant and animal communities that occur within its boundaries? We feel the revised forest plan must better connect to the Forest Service[rsquo]s Native Plant Materials Policy (Forest Service Manual 2070) and Native Plant Materials Policy, A Strategic Framework (September 2012) , as well as the Interagency National Seed Strategy . [FOOTNOTE: 1 https://www.fs.fed.us/wildflowers/Native_Plant_Materials/documents/FSM_2070.pdf][FOOTNOTE: 2 Ltr73_2022-02-15 Ashley National Forest Plan DEIS Review][FOOTNOTE: 3 https://www.fs.fed.us/wildflowers/Native_Plant_Materials/developing/index.shtml.]Also from the 2012 Planning Rule:Compliance with the ecosystem requirements of paragraph (a) of this section is intended to provide the ecological conditions to both maintain the diversity of plant and animal communities and support the persistence of most native species in the plan area. Compliance with the requirements of paragraph (b) of this section is intended to provide for additional ecological conditions not otherwise provided by compliance with paragraph (a) of this section for individual species as set forth in paragraph (b) of this section. A plan developed or revised under this part must provide for the diversity of plant and animal communities, within Forest Service authority and consistent with the inherent capability of the plan area, as follows: (a) Ecosystem plan components. (1) Ecosystem integrity. As required by [sect]219.8(a), the plan must include plan components, including standards or guidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area, including plan components to maintain or restore their structure, function, composition, and connectivity. (2) Ecosystem diversity. The plan must include plan components, including standards or guidelines, to maintain or restore the diversity of ecosystems and habitat types throughout the plan area. In doing so, the plan must include plan components to maintain or restore: (i) Key characteristics associated with terrestrial and aquatic ecosystem types; (ii) Rare aquatic and terrestrial plant and animal communities; and (iii) The diversity of native tree species similar to that existing in the plan area. Comment: Again, we feel there could be stronger ties made to this direction in the 2012 Planning Rule throughout the DEIS through clearly identified connections to the the Forest Service[rsquo]s Native Plant Materials Policy, the Native Plant Materials Policy, A Strategic Framework (September 2012), as well as the Interagency National Seed Strategy. The Strategic Framework provides some tremendous guidance including that related to Policy Implementation, the national forests[rsquo] roles in identifying a core group of [ldquo]workhorse species[rdquo], and helping to foster a sustainable native plant industry. We highly recommend that you not only embrace what is written in the Strategic Framework, but that you incorporate the direction into your forest plan and make this a basis for how you guide the use of native plant materials for all management activities and restoration efforts you take on in the future. A few of the

paragraphs from this document are included below:AS A FIRST STEP IN POLICY IMPLEMENTATION, vegetation management units should conduct an assessment to determine present and future need for native plant materials, including species, quantities, and timelines for supply and application. Units should prioritize development of adequate quantities of seed for [ldquo]workhorse[rdquo] species appropriate to specific ecosystems within their administrative boundaries.Each region, national forest, and national grassland should identify a core group of [ldquo]workhorse species[rdquo] within important plant community and ecological characteristics. These should be the first species cultivated for seed sources, seed release, and establishment practices.THE STRATEGIC FRAMEWORK IS DEPENDENT ON the continued availability of native plant materials as, without an adequate supply of native plant materials, the goal of increasing the use of native plant materials cannot be realized. To begin with, The Forest Service needs a sustainable and cost-effective supply of native plant materials[mdash]principally seeds[mdash]through collection projects in the wild and through cultivation. The Forest Service must foster a sustainable native plant materials industry that involves agency nurseries, nongovernmental organization (NGO) partners, and private industry sectors through innovative business models and production agreements.ACCUMULATION OF TECHNICAL KNOWLEDGE WILL INCREASE revegetation skills in the use of native plant materials. Native plant materials will be matched to existing site conditions while recognizing and managing factors that limit germination and establishment. In addition, management will consider both pre- and post-establishment requirements for successful establishment of self-sustaining native plant communities.Chapter 2. Alternatives, Including the Proposed ActionSignificant IssuesVegetation Management, Timber Harvest, and Sustainable Ecosystems, Page 11Comment: We feel that it is difficult to discuss Vegetation Management and especially Sustainable Ecosystems without discussing the importance of protecting the plant species at risk as well as the roles that native plant species play in providing and maintaining them. Ecosystems function best when they can provide the full array of services they are capable of when native species are present at the appropriate levels. The loss of native plants to invasive species is common throughout the West and, along with the loss, comes a loss or significant reduction in the ecosystem services they provide. We feel this issue needs to be better addressed throughout the EIS and forest plan.Elements Common to Alternatives B, C, and D, Page 13-14Comment: We feel here that each of the Alternatives should include the importance of native plant materials. Chapter 3. Affected Environment and Environmental ConsequencesDEIS Chapter 3, Ecological Sustainability and Diversity of Plant and Animal Communities, Pages 30-177Chapter 3, Page 30Comment: An introduction paragraph as to what is included in this section would be helpful. DEIS, Chapter 3, Air Quality, Page 31Comment: The last sentence of paragraph 4 on page 31, perhaps, would best be placed into the beginning of this section as an introductory sentence.The 2012 Planning Rule required the Forest Service to assess sensitive air quality areas and emissions affecting these areas, and to use critical loads of air pollutant deposition as a way to track ecological conditions and trends of resources that are affected by air quality. Forest plans must include plan components to maintain or restore air quality.DEIS Chapter 3, Soils, Description of Affected Environment, Soil Erosion and Slope, Page 44, Paragraph 6.Comment: You state that [ldquo]System roads, logging roads, skid trails, and recreation trails are chronic sources of erosion.[rdquo] Because this is the Affected Environment section, how many miles and/or acres of the forest are currently covered by each of these categories? The analysis of each of the alternatives could be quantified by miles and/or acres added or removed under each alternative. DEIS Chapter 3 Page 45Common sources of compaction are from the use of vehicles, recreation equipment, and machinery used in timber management and construction. Comment: In addition, livestock use, especially on wet meadow and other riparian soils can cause significant soil compaction and streambank damage. DEIS Chapter 3 Page 46Soil burn severity is divided into three classes depending on the post-fire conditions of the vegetation, ground cover and litter, the depth and color of ash, remaining roots in the surface soil, and the soil structure and water repellency (Parsons et al. 2010).Comment: Please include a description of the three classes of soil burn severity and the estimated extent on the Ashley National Forest.DEIS Chapter 3, Description of Affected Environment, Soil Erosion and SlopePage 49, Paragraph 3Comment: Suggested edits in red. We realize this is in the Soil Erosion and Slope section, but this simple addition keeps the context clear. Also, the term [ldquo]forest[rdquo] can be construed as the Ashley National Forest or simply as forest lands on the national forest. Effects from Livestock Grazing Management Impacts from livestock grazing on [RED LANGUAGE STARTS] soils of [RED LANGUAGE ENDS] the forests [RED LANGUAGE STARTS] and rangelands [RED LANGUAGE ENDS] are usually

concentrated in relative microsites, including areas of trailing; at water crossing points, water sources, holding corrals, and bedding sites; and around salt blocks. These sites have impacts of soil displacement, loss of vegetation, and soil compaction. Impacts on soils can also add to surface erosion due to the increase in bare soil and soil compaction. These impacts decrease the soil condition. Over the life of the plan, livestock grazing management that results in improvements to land health conditions would maintain the soil condition; however, if an area is overgrazed, the soil condition could decrease, and soil erosion could occur.Environmental Consequences for Soils Common to All AlternativesComment: You describe the factors that affect soil conditions, but you never describe the conditions on the forest. For example: a) Acres currently impacted by dispersed recreationb) Acres currently impacted by off-road vehicle activityc) Acres currently impacted by roadsd) Etc.Bottom line: What are the current conditions on the forest?Environmental Consequences for Soils [mdash]Alternative AComment: What are the projected acres to be impacted under current management direction from recreation, Fire and Fuels Management, Designated Areas, Timber Harvest, Livestock Grazing, Energy and Minerals?Environmental Consequences for Soils [mdash]Alternative BComment: What are the projected acres to be impacted under Alternative B management direction? Does this Alternative provide new guidance for the protection of soil resources?Environmental Consequences for Soils [mdash]Alternative CComment: What are the projected acres to be impacted under Alternative C management direction? Does this Alternative provide new guidance for the protection of soil resources?Environmental Consequences for Soils [mdash]Alternative DComment: What are the projected acres to be impacted under Alternative D management direction? Does this Alternative provide new guidance for the protection of soil resources?DEIS Chapter 3 Page 60In some locations of the Ashley National Forest, channel, floodplain, and sediment dynamics have been altered since European settlement. Human-made stressors on stream dynamics and hydrology include dams and diversions, herbivory [RED LANGUAGE STARTS] streambank damage and soil compaction? [RED LANGUAGE ENDS] from livestock and wild ungulates, fire suppression, roads, and motorized recreation.Comment: See wording added in red.DEIS Chapter 3 Page 63Comment: Under this section, can you describe the amount of salt cedar that has invaded the national forest riparian areas? You mention it on the top of Page 3-68, but don[rsquo]t describe how bad of an issue it is on the forest.DEIS Chapter 3 Page 64, Paragraph 2Comment: see suggested addition in RED. Herbaceous-dominated ecosystems are typically dominated by a mix of grasses [RED LANGUAGE STARTS] and grass-like species[hellip] [RED LANGUAGE ENDS]DEIS Chapter 3 Pages 84-121: Terrestrial VegetationDescription of Affected EnvironmentDEIS Chapter 3 Page 88 Alpine, Paragraph 3, Influences of Drivers and Stressors Comment: You state that Potential stressors include browsing by wild ungulates, pocket gopher activity, and sheep grazing in a few areas, yet Figures 2-18 and 2-19 (Appendix A) indicate that large percentages of the High Uintas Wilderness Area, which includes most, if not all, the alpine ecosystems on the forest are currently in and proposed to remain grazing allotments. In 1970 Mont E. Lewis wrote Alpine Rangelands of the Uinta Mountains, Ashley and Wasatch National Forests. You have no reference to this document, yet Lewis described the impact that sheep grazing had had on the alpine ecosystems of the Uinta Mountains. To us, this indicates that livestock grazing should be considered a stressor of these alpine ecosystems. [FOOTNOTE: 4 Lewis, M. (1970) Alpine Rangelands of the Uinta Mountains, Ashley and Wasatch National Forests. Region 4 Forest Service. Ogden, UT. https://app.box.com/s/mdf4yl6ss5glbip50kd6hh4fayczi4qr]In addition, why is climate change not included here? Most climate change publications indicate that Climate Change is one of the most significant stressors of alpine ecosystems. Vulnerability of Alpine ecosystems was rated as Very High to climate change in Climate Change Vulnerability and Adaptation in the Intermountain Region (Table 7.2 page 189 and described in detail on page 205 of Halofsky et al 2018, part 1); this was because of their high sensitivity and low adaptability to climate change stressors. The Uinta Mountains have some of the most important and contiguous alpine ecosystems in Utah and are some of the most vulnerable ecosystems in the Intermountain Region. This needs to be acknowledged in this description.[FOOTNOTE: Halofsky, Jessica E.; Peterson, David L.; Ho, Joanne J.; Little, Natalie, J.; Joyce, Linda A., eds. 2018. Climate change vulnerability and adaptation in the Intermountain Region. Gen. Tech. Rep. RMRS-GTR-375. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Part 1. pp. 1[ndash]224]DEIS Chapter 3 Page 89-92, Coniferous ForestComment: It might be easier to follow if each of the five forest types were described in more complete manner under distinct headings rather than combined in the way they are (i.e. each with their own discussion of Influences of Drivers and Stressors and Comparison of

Natural Range of Variation and Current Conditions. In addition, a consistent approach to the inclusion of a discussion of the potential threats from climate change with reference to Halofsky et al 2018, part 1 would be helpful. DEIS Chapter 3 Page 93, Aspen, Influences of Drivers and StressorsParagraph 3: Prescribed fire in persistent and seral aspen are expected to either occur at current rates or possibly increase during the next plan period. Wildfire occurrence is strongly related to environmental and climatic conditions. [RED LANGUAGE STARTS] If [RED LANGUAGE ENDS] the climate continues to warm, fire frequency is predicted to increase. Comment: There[rsquo]s not much [RED LANGUAGE STARTS] IF [RED LANGUAGE ENDS] left in climates continuing to warm, is there? You use this statement in other places in the DEIS and because the national and international climate change assessments all point to continued warming, we think a firmer statement is in order. We suggest you replace the word [ldquo]If[rdquo] with the word [ldquo]As[rdquo]. [RED LANGUAGE STARTS] As [RED LANGUAGE ENDS] the climate continues to warm, fire frequency is predicted to increase.Paragraph 4:Comment: Can you explain why livestock grazing is expected to [ldquo]minimally affect seral aspen communities[rdquo]? Is this because these communities have already been altered and further change is unlikely? Or is this because you believe that seral aspen forests have been converted to conifer-dominated forests? Do you have information that supports the idea that existing understory plant species have not been changed with historical grazing? This is very unusual if it is true. Aspen communities throughout their distribution are highly desirable by both sheep and cattle and where they are included in allotments, most have already been altered; many to a tremendous degree. We know that your forest has completed many microplot assessments of current conditions, so some discussion of that would be helpful to explain your statements.DEIS Chapter 3 Pages 94-97, Sagebrush Comment: In this section, you tend to write in generalities about the different sagebrush cover types. For example, on Page 95, 2nd full paragraph, you make statements like:Since the 1940s, thousands of acres of mountain big sagebrush have been plowed and seeded into introduced grasses, sprayed with herbicide, and treated with prescribed fire (Forest Service 2017e). You don[rsquo]t, however, describe how many acres of each of the sagebrush types described in the document are still dominated by introduced grasses. It would be helpful to know what portion of your sagebrush landscapes fall into that category. We do get the odd sense that you consider these altered communities as being better than those that are dominated by native understory species (see highlight and bold text in comment below regarding language used on page 95, 4th full paragraph). We don[rsquo]t have a clear idea about what the real current conditions are.Then on Page 95, 4th full paragraph you say the following: Many communities of mountain big sagebrush[hellip] are currently in satisfactory condition in regard to plant species composition, species richness, shrub cover, and total ground cover[hellip] What does many mean? We don[rsquo]t get a sense of the true occurrence of mountain big sagebrush communities in [ldquo]satisfactory condition[rdquo]. Do you have an assessment of how many acres of each sagebrush species and variety (Wyoming big sagebrush, mountain big sagebrush, black sagebrush) have been converted to non-native grasses? What species have been seeded? Crested wheatgrass? Intermediate wheatgrass? Smooth brome? Others? A quantification of these conditions would give us a clearer understanding of the current status of sagebrush communities on the forest.Page 95, 4th full paragraph: You go on to state the following in this same paragraph: Annual invasive plants degrade sagebrush communities by changing plant composition and structure, lowering species richness, and narrowing fire frequency. Long-term monitoring shows that cheatgrass is present and increasing in mountain big sagebrush communities with native herbaceous understories, especially following fire and severe drought. In contrast, communities where seeded nonnative grasses dominate herbaceous cover, cheatgrass is absent or has minor presence, with no indication of spread or increase. These communities typically have satisfactory plant composition, species richness, and total ground cover. Historical seeding treatments of these shrublands with nonnative grasses have demonstrated high resilience to invasive annuals.Because the highlighted sentences above seem to rate non-native grasses seeded in an area as preferable to native understories, we don[rsquo]t have a clear understanding about what you mean by [ldquo]satisfactory condition[rdquo], especially regarding species composition and species richness. We hear you say that these seeded non-native communities are highly resilient to invasive annuals, but we question your apparent definition of [ldquo]satisfactory condition[rdquo]. Relative to a monoculture of cheatgrass, perhaps [ldquo]condition[rdquo] is better because cheatgrass burns more frequently and tends to keep native ecosystems from being capable of reestablishing. But how is an area dominated by crested wheatgrass, for example, better than a monoculture of cheatgrass from a

species composition and species richness perspective? Crested wheatgrass and other non-native grass species, especially rhizomatous species such as smooth brome, may be successful at keeping cheatgrass from invading and reducing fire frequency, but they also keep sagebrush and native grasses and forbs from reestablishing. We feel that if reducing fire frequency is your goal, that needs to be clearly stated. If maximizing livestock forage is your goal, that should clearly be stated. However, if you are trying to restore properly functioning ecosystems, (ecosystems that provide habitat for a variety of species, from pollinators to herbivores to habitat for a variety of species) non-native grasses do not allow you to meet that desired condition. Comment: The Forest Service is committed to using native plant species in their restoration efforts. In 2008 the agency established its Native Plant Materials Policy (Forest Service Manual 2070) and on the agency[rsquo]s Celebrating Wildflowers web page, there is a link to the 2015 interagency National Seed Strategy. We also provide a link below through the BLM[rsquo]s web page.A long-term goal on national forest lands should be to restore native grass and forb species to landscapes to improve biodiversity and move toward properly functioning conditions. Native plants not only provide forage for the many herbivores that occur on national forest lands, but they also provide nectar, pollen, and seeds that serve as food for native butterflies, insects, and a wide variety of pollinators, as well as for birds including greater sage grouse. As far back as 1998, forest service researchers recognized the value of and the need for the agency to address its use of native plant materials on the lands they manage: https://journals.uair.arizona.edu/index.php/jrm/article/download/9366/8978.Much research has been conducted over the past few decades on locally adapted native grasses and forbs that improve the biodiversity and resilience of disturbed landscapes. The USDA Forest Service publication, Restoring Western Ranges and Wildlands is a tremendous source of information. In their own words:This work, in three volumes , provides background on philosophy, processes, plant materials selection, site preparation, and seed and seeding equipment for revegetating disturbed rangelands, emphasizing use of native species. The 29 chapters include guidelines for planning, conducting, and managing, and contain a compilation of rangeland revegetation research conducted over the last several decades to aid practitioners in reestablishing healthy communities and curbing the spread of invasive species. Volume 1 contains the first 17 chapters plus the index.[FOOTNOTE: Monsen, Stephen B.; Stevens, Richard; Shaw, Nancy L. 2004. Restoring Western Ranges and Wildlands, vols. 1-3. Gen. Tech. Rep. RMRS-GTR-136. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Available at: https://www.fs.usda.gov/treesearch/pubs/7377;https://www.fs.usda.gov/treesearch/pubs/7378;https://www.fs.usda.gov/treesearch/pubs/7379]Following are just a few of the numerous publications available providing some of the most up-to-date information regarding the importance and use of genetically appropriate native plant materials in ecosystem restoration. National Seed Strategy for Rehabilitation and Restorationhttps://www.blm.gov/sites/blm.gov/files/docs/2021-08/Progress%20Report%2026Jul21.pdfMitchell, A.B.; Litt, A.R.; Smith, F.S. 2021. Using locally adapted seeds to restore native plants and arthropods after plant invasion and drought. Rangeland ecology & management. 77:30-38https://bioone.org/journals/rangeland-ecology-and-management/volume-77/issue-1/j.rama.2021.03.003/Using-Locally-Adapted-Seeds-to-Restore-Native-Plants-and-Arthropods/10.1016/j.rama.2021.03.003.shortDorner, L. 2002. An introduction to using native plants in restoration projects. For Plant Conservation Alliance. 66 p.https://www.fs.fed.us/wildflowers/Native_Plant_Materials/documents/intronatplant.pdfHufford, K.M., R.D. Mealor. 2014. Successful restoration of severely disturbed lands: Native plants and adapted seeds for reclamation. Univ. Wyoming Extension. Pub. B-1256.https://www.uwyo.edu/wrrc/_files/docs/b1256_native%20plants%20and%20seeds%20june30.pdfJohnson, R; Stritch, L; Olwell, P; Lambert, S; Horning, M. E.; Cronn, R. 2010. What are the best seed sources for ecosystem restoration on BLM and USFS lands? Native Plants. 11(2): 117-131.https://www.fs.usda.gov/treesearch/pubs/37836US Forest Service Native Plant Policy and I-90 connectivity restorationhttps://botanicgardens.uw.edu/wp-content/uploads/sites/7/2020/03/Lau_WABotanicalSymposium_2020.03.04.pdfUSDA Forest Service Native Plant Materials Web Page:https://www.fs.fed.us/wildflowers/Native_Plant_Materials/index.shtmlDEIS Chapter 3 Page 95, Sagebrush, Last paragraph, continued on Page 96Comment: When you state that [f]or the most part, these communities are in satisfactory condition in terms of plant composition, species richness, total ground cover, and shrub cover, are you assuming that this is because of the introduction of non-native grasses seeded in the area?

Again, as noted above, plant composition and species richness where non-native grasses are introduced are not close to that which historically occurred on these landscapes. We understand that historically the fire return interval for Wyoming big sagebrush was between 50 and 100 years, so has that perhaps continued to be the case on your landscapes? Do they remain relatively undisturbed with native species dominating the understory? Or have they also been plowed, sprayed, and seeded with non-native grass species?DEIS Chapter 3 Pages 96-97, Influences of Drivers and StressorsUnder this heading you barely address livestock grazing as a driver or stressor in sagebrush communities (2nd full paragraph on page 97). Livestock grazing throughout the West has historically been a tremendous stressor on these ecosystems, often significantly altering species composition, structure, and resistance and resilience to disturbance. And, while numbers of livestock that graze any particular landscape today may be far fewer than occurred at one time, the historic impacts are still in existence today. Condon and Pike (2018) describe how livestock grazing can ultimately reduce the ability of those areas to resist the invasion of cheatgrass, especially following fire. [FOOTNOTE: 7 Condon, L.A., Pyke, D.A. Fire and Grazing Influence Site Resistance to Bromus tectorum Through Their Effects on Shrub, Bunchgrass and Biocrust Communities in the Great Basin (USA). Ecosystems 21, 1416[ndash]1431 (2018). https://doi.org/10.1007/s10021-018-0230-8]DEIS Chapter 3 Pages 97-98, Pinyon and Juniper WoodlandComment: You make the assumption that all pinyon and juniper woodlands that occur on the forest are [ldquo]persistent[rdquo], and thus have a very long fire return interval (2-6 centuries). Do you not have any mountain big sagebrush communities that have been replaced by pinyon-juniper woodlands, which has occurred throughout the West (Miller and Tausch 2001)? The Frames Resource Catalog explains that a large portion of the current-day Pinyon-Juniper has arisen as a result of fire suppression within the mountain big sagebrush biophysical setting, which historically had fire return intervals of 12-25 years. You do not include any discussion of these non-persistent pinyon-juniper woodlands, so are we to assume that none exist? We wonder if the acres currently dominated by cheatgrass were, in fact, historically dominated by mountain big sagebrush rather than pinyon-juniper. [FOOTNOTE: 8 Miller, Richard F.; Tausch, Robin J. 2001. The role of fire in juniper and pinyon woodlands: a descriptive analysis. Proceedings of the Invasive Species Workshop: The Role of Fire in the Control and Spread of Invasive Species. Fire Conference 2000: the First National Congress on Fire Ecology, Prevention, and Management. Miscellaneous Publication No. 11. 2000. Tallahassee, FL: Tall Timbers Research Station. pp. 15-30.]DEIS Chapter 3 Pages 99-101, Rare and Unique Habitat TypesComment: On page 100 under Calcareous or rich fens you state the following. We would like to see the language in red added: Potential stressors on this fen type include increased recreation use of the area, trampling due to livestock grazing, and avalanche disturbance. Long-term monitoring indicates that the fen has been in satisfactory condition, with stable trends, for at least the past 20 years (Forest Service 2017e). During this time, plant species composition has remained constant, and repeat photography indicates no change in community structure and size of the area. Based on these findings, the South Fork Rock Creek fen is considered to be trending toward its natural range of variation. [LANGUAGE IN RED STARTS] However, because of the rarity of these ecosystems, and because of how little we understand about the potential effects of climate change on these unique areas, the forest will continue to monitor these areas very closely. Management activities will be avoided in these areas. [LANGUAGE IN RED ENDS]Comment: On page 100 under Peatlands or fens found in glacial canyons you state the following. We would like to see the language in red added: Long-term monitoring indicates that the habitat is in satisfactory condition, with stable trends (Forest Service 2017e). No change in plant species composition or structure has been detected over 20 years. These fens are considered to be within their natural range of variation, except the fen in Whiterocks Canyon. Due to a road that crosses the fen, it is considered to be slightly departed from its natural range of variation. [LANGUAGE IN RED STARTS] Because of the rarity of these ecosystems, and because of how little we understand about the potential effects of climate change on these unique areas, the forest will continue to monitor these areas very closely. Management activities will be avoided in these areas. [LANGUAGE IN RED ENDS]Comment: On page 101 under Peatland or fen with limestone influence you state the following. We would like to see the language in red added: Long-term monitoring indicates that the habitat is in satisfactory condition, with stable trends (Forest Service 2017e). No change in plant species composition or structure has been detected over several decades. These fens are considered to be within their natural range of variation. [LANGUAGE IN RED STARTS] However, because of the rarity of these ecosystems, and because of how little we understand about the potential effects of climate change on these unique areas, the forest will

continue to monitor these areas very closely. Management activities will be avoided in these areas. [LANGUAGE IN RED ENDS]DEIS Chapter 3 Pages 101-103, Climate-Related EffectsComment: This section is, as far as we can see, what was written in Halofsky et al. (2018a) on pages iii-v. Chapters 6 and 7 of this document describes in much more detail the intricacies of the effects of climate change on the forested and non-forested ecosystems of the region. This information might be more appropriately included in detail under the description of Influences of Drivers and Stressors for each cover type included in the DEIS. DEIS Chapter 3Carbon Storage and SequestrationChapter 3, Page 132, Carbon Storage and Sequestration - IntroductionComment: We suggest you add a paragraph at the end of the Introduction that indicates the values of non-forested ecosystems in carbon storage and sequestration. Research has been conducted on the value of restoring cheatgrass landscapes with those dominated by native plant communities and we feel it would be important to describe the importance of restoring cheatgrass-invaded ecosystems in the forest plan.[FOOTNOTE: 9 Austreng, A. C., Olin, P. H., Hummer, A., Pierce, J. L., deGraaff, M., and Benner, S. G., [ldquo]Carbon Sequestration in Semi-arid Ecosystems: Potential Benefits of Sagebrush Restoration[rdquo], vol. 2011, 2011.]DEIS Chapter 3 Pages 143-177: Terrestrial and Aquatic Wildlife and PlantsChapter 3, Page 151: At-Risk SpeciesComment: This section very poorly addresses T&E and SCC plant species. It simply references Appendix C and includes little other discussion regarding these at-risk species. On page 155 are the following references to at-risk plant species: Vegetation and fuels treatments could have short-term impacts on nontarget vegetation, including at-risk plant species.The use of tools to carry out vegetation treatments would also disturb local areas and may injure or kill at-risk plant species and less mobile wildlife species.Yet there is no reference as to which species might be most susceptible to these impacts. And on page 156 are the following mentions:[Recreation] may also facilitate the spread of nonnative plants, which may alter vegetation communities by replacing native species, including at-risk plant species.Trampling from such recreation as hiking, mountain biking, and OHV use could injure or kill at-risk plant species and less mobile wildlife species.And finally, on page 160 with reference to livestock:Additionally, cattle trampling at-risk plants and less mobile wildlife species would cause injury or mortality (Dettenmaier et al. 2017).In addition, overgrazing in riparian zones can negatively affect vegetation vigor, community structure, and species composition, which would reduce the quality of habitat for riparian-dependent at-risk plant species, such as Ute ladies[rsquo]-tresses. This last sentence is the only place we could find that actually addresses potential impacts to any specific plant species at risk from any activity. We find this unacceptable. We know of threats to individual T&E and SCC plants that occur on the forest and, while these may be briefly assessed in Appendix C, we feel these should be more clearly described within the text of the DEIS [ndash] at the very least include a table that shows the species, landtype associations, and threats followed by an analysis of alternatives and their effects.Appendix C [ndash] At Risk SpeciesWe suggest that you add some language to the effect that the goal of the forest is to protect and restore necessary habitat for all at-risk species regardless of their status as T&E or SCC. In other words, if at some time in the future you find species other than those currently on one or the other of these lists that through rarity and/or threat meet the definition of species at risk, they will be managed as such. In that way, information need only be added to your files to add new species to your list of species rather than prolonged NEPA and forest plan amendment having to be completed. Adaptive management, so to speak.Appendix E [ndash] Forest PlanPage Appendix E-7Terrestrial and Aquatic Ecosystems The diverse ecosystems of the Ashley National Forest are a key component to supporting and maintaining its social and economic values. Functioning and resilient terrestrial and aquatic ecosystems contribute to healthy forests and rangelands, abundant fish and wildlife, healthy watersheds and abundant water supplies, beautiful landscapes, and a variety of other ecosystem services.Suggested rewrite:Terrestrial and Aquatic Ecosystems The diverse ecosystems of the Ashley National Forest are a key component to supporting and maintaining its [RED LANGUAGE STARTS] environmental, [RED LANGUAGE ENDS]social and economic values. [RED LANGUAGE STARTS] Healthy [RED LANGUAGE ENDS] terrestrial and aquatic ecosystems contribute to [RED LANGUAGE STARTS] functioning and resilient [RED LANGUAGE ENDS] forests and rangelands [RED LANGUAGE STARTS] and watersheds, which lead to [RED LANGUAGE ENDS] abundant fish and wildlife, and abundant water supplies, beautiful landscapes, and a variety of other ecosystem services. Functioning and resilient[hellip]Page Appendix E-33Comment: Following is what you have written in Appendix E regarding carbon storage and sequestration. We suggest a rewrite below that emphasizes the role that all ecosystems can play in carbon storage and sequestration.Carbon Storage and Sequestration The carbon that is

stored in terrestrial ecosystems is present in living vegetation, soils, and dead organic matter, including wood and litter. Terrestrial ecosystems contain nearly three times the amount of carbon as the atmosphere, with forested areas storing higher levels of carbon than non-forested areas. Carbon sequestration captures and stores atmospheric carbon dioxide into other forms by such processes as photosynthesis. Desired Condition (FW-DC-CS) 01 Carbon stocks are maintained by promoting forest stand health and the regeneration of forest stands, and by retaining the net acreage of forested communities.Suggested Rewrite:Carbon Storage and Sequestration The carbon that is stored in terrestrial ecosystems is present in living vegetation, soils, and dead organic matter, including wood and litter. Terrestrial ecosystems contain nearly three times the amount of carbon as the atmosphere.[RED LANGUAGE STARTS] All plants absorb carbon dioxide from the atmosphere through photosynthesis and store carbon above ground in stems, branches, and herbaceous materials, as well as below ground in roots and transfer to soils through decomposition. While [RED LANGUAGE ENDS] forested areas [RED LANGUAGE STARTS] generally store [RED LANGUAGE ENDS] higher levels of carbon than non-forested areas, [RED LANGUAGE STARTS] all ecosystems contribute to carbon sequestration and their contributions toward carbon storage will be considered in all management activities on the Ashley National Forest. [RED LANGUAGE ENDS]Desired Condition (FW-DC-CS) 01 Carbon stocks are maintained by promoting [RED LANGUAGE STARTS] healthy and resilient non-forest and [RED LANGUAGE ENDS] forest [RED LANGUAGE STARTS] ecosystems. [RED LANGUAGE ENDS] Regeneration of forest stands and retaining the net acreage of forested communities, [RED LANGUAGE STARTS] as well as the restoration and maintenance of healthy non-forest ecosystems is the focus of all management actions taken place on the forest.02 The use of prescribed fire, while temporarily reducing carbon storage on the forest, is used to ultimately improve the ability of landscapes to sequester carbon as a result of treatment. [RED LANGUAGE ENDS] Comment: There are numerous publications supporting the focus on all plant ecosystems and not only on forested types. We feel that carbon sequestration and storage capabilities of all terrestrial and aquatic ecosystems need to be addressed in the forest plan. Hold all ecosystems accountable for their potential contribution to these critical processes.Recommended References: Zhu, Zhiliang, and Reed, B.C., eds., 2012, Baseline and projected future carbon storage and greenhouse-gas fluxes in ecosystems of the Western United States: U.S. Geological Survey Professional Paper 1797, 192 p. (Also available at https://pubs.usgs.gov/pp/1797/.)Emily J. Fusco, Benjamin M. Rau, Michael Falkowski, Steven Filippelli, Bethany A. Bradley. 2019. Accounting for aboveground carbon storage in shrubland and woodland ecosystems in the Great Basin. Ecosphere. (Available at https://esajournals.onlinelibrary.wiley.com/doi/pdf/10.1002/ecs2.2821 and https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.2821)

DEIS and Forest Plan Comments by Utah Native Plant SocietyNote: Italicized text is, in general, from the DEIS; our recommendations are preceded by [ldquo]Comment[rdquo]Chapter 1. Purpose of and Need for ActionComment: 36 CFR [sect] 219.9 Diversity of plant and animal communities provides specific direction that the revised forest plan adopt [ldquo][hellip] a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area[rdquo]. Comment: This direction could more-clearly be addressed throughout the DEIS and in the forest plan. How will the forest address the maintenance of the diversity of native plant and animal communities that occur within its boundaries? We feel the revised forest plan must better connect to the Forest Service[rsquo]s Native Plant Materials Policy (Forest Service Manual 2070) and Native Plant Materials Policy, A Strategic Framework (September 2012) , as well as the Interagency National Seed Strategy . [FOOTNOTE: 1 https://www.fs.fed.us/wildflowers/Native_Plant_Materials/documents/FSM_2070.pdf][FOOTNOTE: 2 Ltr73_2022-02-15 Ashley National Forest Plan DEIS Review][FOOTNOTE: 3 https://www.fs.fed.us/wildflowers/Native_Plant_Materials/developing/index.shtml.]Also from the 2012 Planning Rule:Compliance with the ecosystem requirements of paragraph (a) of this section is intended to provide the ecological conditions to both maintain the diversity of plant and animal communities and support the persistence of most native species in the plan area. Compliance with the requirements of paragraph (b) of this section is intended to provide for additional ecological conditions not otherwise provided by compliance with paragraph (a) of this section for individual species as set forth in paragraph (b) of this section. A plan developed or revised under this part must provide for the diversity of plant and animal communities, within Forest Service authority and

consistent with the inherent capability of the plan area, as follows: (a) Ecosystem plan components. (1) Ecosystem integrity. As required by [sect]219.8(a), the plan must include plan components, including standards or guidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area, including plan components to maintain or restore their structure, function, composition, and connectivity. (2) Ecosystem diversity. The plan must include plan components, including standards or guidelines, to maintain or restore the diversity of ecosystems and habitat types throughout the plan area. In doing so, the plan must include plan components to maintain or restore: (i) Key characteristics associated with terrestrial and aquatic ecosystem types; (ii) Rare aquatic and terrestrial plant and animal communities; and (iii) The diversity of native tree species similar to that existing in the plan area. Comment: Again, we feel there could be stronger ties made to this direction in the 2012 Planning Rule throughout the DEIS through clearly identified connections to the the Forest Service[rsquo]s Native Plant Materials Policy, the Native Plant Materials Policy, A Strategic Framework (September 2012), as well as the Interagency National Seed Strategy. The Strategic Framework provides some tremendous guidance including that related to Policy Implementation, the national forests[rsquo] roles in identifying a core group of [ldquo]workhorse species[rdquo], and helping to foster a sustainable native plant industry. We highly recommend that you not only embrace what is written in the Strategic Framework, but that you incorporate the direction into your forest plan and make this a basis for how you guide the use of native plant materials for all management activities and restoration efforts you take on in the future. A few of the paragraphs from this document are included below:AS A FIRST STEP IN POLICY IMPLEMENTATION, vegetation management units should conduct an assessment to determine present and future need for native plant materials, including species, quantities, and timelines for supply and application. Units should prioritize development of adequate quantities of seed for [ldquo]workhorse[rdquo] species appropriate to specific ecosystems within their administrative boundaries.Each region, national forest, and national grassland should identify a core group of [ldquo]workhorse species[rdquo] within important plant community and ecological characteristics. These should be the first species cultivated for seed sources, seed release, and establishment practices.THE STRATEGIC FRAMEWORK IS DEPENDENT ON the continued availability of native plant materials as, without an adequate supply of native plant materials, the goal of increasing the use of native plant materials cannot be realized. To begin with, The Forest Service needs a sustainable and cost-effective supply of native plant materials[mdash]principally seeds[mdash]through collection projects in the wild and through cultivation. The Forest Service must foster a sustainable native plant materials industry that involves agency nurseries, nongovernmental organization (NGO) partners, and private industry sectors through innovative business models and production agreements.ACCUMULATION OF TECHNICAL KNOWLEDGE WILL INCREASE revegetation skills in the use of native plant materials. Native plant materials will be matched to existing site conditions while recognizing and managing factors that limit germination and establishment. In addition, management will consider both pre- and post-establishment requirements for successful establishment of self-sustaining native plant communities.Chapter 2. Alternatives, Including the Proposed ActionSignificant IssuesVegetation Management, Timber Harvest, and Sustainable Ecosystems, Page 11Comment: We feel that it is difficult to discuss Vegetation Management and especially Sustainable Ecosystems without discussing the importance of protecting the plant species at risk as well as the roles that native plant species play in providing and maintaining them. Ecosystems function best when they can provide the full array of services they are capable of when native species are present at the appropriate levels. The loss of native plants to invasive species is common throughout the West and, along with the loss, comes a loss or significant reduction in the ecosystem services they provide. We feel this issue needs to be better addressed throughout the EIS and forest plan.Elements Common to Alternatives B, C, and D, Page 13-14Comment: We feel here that each of the Alternatives should include the importance of native plant materials. Chapter 3. Affected Environment and Environmental ConsequencesDEIS Chapter 3, Ecological Sustainability and Diversity of Plant and Animal Communities, Pages 30-177Chapter 3, Page 30Comment: An introduction paragraph as to what is included in this section would be helpful. DEIS, Chapter 3, Air Quality, Page 31Comment: The last sentence of paragraph 4 on page 31, perhaps, would best be placed into the beginning of this section as an introductory sentence.The 2012 Planning Rule required the Forest Service to assess sensitive air quality areas and emissions affecting these areas, and to use critical loads of air pollutant deposition as a way to track ecological conditions and trends of resources that are affected by air quality. Forest plans must include plan components to maintain or restore air

quality.DEIS Chapter 3, Soils, Description of Affected Environment, Soil Erosion and Slope, Page 44, Paragraph 6.Comment: You state that [ldquo]System roads, logging roads, skid trails, and recreation trails are chronic sources of erosion.[rdquo] Because this is the Affected Environment section, how many miles and/or acres of the forest are currently covered by each of these categories? The analysis of each of the alternatives could be quantified by miles and/or acres added or removed under each alternative. DEIS Chapter 3 Page 45Common sources of compaction are from the use of vehicles, recreation equipment, and machinery used in timber management and construction. Comment: In addition, livestock use, especially on wet meadow and other riparian soils can cause significant soil compaction and streambank damage. DEIS Chapter 3 Page 46Soil burn severity is divided into three classes depending on the post-fire conditions of the vegetation, ground cover and litter, the depth and color of ash, remaining roots in the surface soil, and the soil structure and water repellency (Parsons et al. 2010).Comment: Please include a description of the three classes of soil burn severity and the estimated extent on the Ashley National Forest.DEIS Chapter 3, Description of Affected Environment, Soil Erosion and SlopePage 49, Paragraph 3Comment: Suggested edits in red. We realize this is in the Soil Erosion and Slope section, but this simple addition keeps the context clear. Also, the term [ldquo]forest[rdquo] can be construed as the Ashley National Forest or simply as forest lands on the national forest. Effects from Livestock Grazing Management Impacts from livestock grazing on [RED LANGUAGE STARTS] soils of [RED LANGUAGE ENDS] the forests [RED LANGUAGE STARTS] and rangelands [RED LANGUAGE ENDS] are usually concentrated in relative microsites, including areas of trailing; at water crossing points, water sources, holding corrals, and bedding sites; and around salt blocks. These sites have impacts of soil displacement, loss of vegetation, and soil compaction. Impacts on soils can also add to surface erosion due to the increase in bare soil and soil compaction. These impacts decrease the soil condition. Over the life of the plan, livestock grazing management that results in improvements to land health conditions would maintain the soil condition; however, if an area is overgrazed, the soil condition could decrease, and soil erosion could occur.Environmental Consequences for Soils Common to All AlternativesComment: You describe the factors that affect soil conditions, but you never describe the conditions on the forest. For example: a) Acres currently impacted by dispersed recreationb) Acres currently impacted by off-road vehicle activityc) Acres currently impacted by roadsd) Etc.Bottom line: What are the current conditions on the forest?Environmental Consequences for Soils [mdash]Alternative AComment: What are the projected acres to be impacted under current management direction from recreation, Fire and Fuels Management, Designated Areas, Timber Harvest, Livestock Grazing, Energy and Minerals?Environmental Consequences for Soils [mdash]Alternative BComment: What are the projected acres to be impacted under Alternative B management direction? Does this Alternative provide new guidance for the protection of soil resources?Environmental Consequences for Soils [mdash]Alternative CComment: What are the projected acres to be impacted under Alternative C management direction? Does this Alternative provide new guidance for the protection of soil resources?Environmental Consequences for Soils [mdash]Alternative DComment: What are the projected acres to be impacted under Alternative D management direction? Does this Alternative provide new guidance for the protection of soil resources?DEIS Chapter 3 Page 60In some locations of the Ashley National Forest, channel, floodplain, and sediment dynamics have been altered since European settlement. Human-made stressors on stream dynamics and hydrology include dams and diversions, herbivory [RED LANGUAGE STARTS] streambank damage and soil compaction? [RED LANGUAGE ENDS] from livestock and wild ungulates, fire suppression, roads, and motorized recreation.Comment: See wording added in red.DEIS Chapter 3 Page 63Comment: Under this section, can you describe the amount of salt cedar that has invaded the national forest riparian areas? You mention it on the top of Page 3-68, but don[rsquo]t describe how bad of an issue it is on the forest.DEIS Chapter 3 Page 64, Paragraph 2Comment: see suggested addition in RED. Herbaceous-dominated ecosystems are typically dominated by a mix of grasses [RED LANGUAGE STARTS] and grass-like species[hellip] [RED LANGUAGE ENDS]DEIS Chapter 3 Pages 84-121: Terrestrial VegetationDescription of Affected EnvironmentDEIS Chapter 3 Page 88 Alpine, Paragraph 3, Influences of Drivers and Stressors Comment: You state that Potential stressors include browsing by wild ungulates, pocket gopher activity, and sheep grazing in a few areas, yet Figures 2-18 and 2-19 (Appendix A) indicate that large percentages of the High Uintas Wilderness Area, which includes most, if not all, the alpine ecosystems on the forest are currently in and proposed to remain grazing allotments. In 1970 Mont E. Lewis wrote Alpine Rangelands of the Uinta Mountains, Ashley and Wasatch National Forests. You have no reference

to this document, yet Lewis described the impact that sheep grazing had had on the alpine ecosystems of the Uinta Mountains. To us, this indicates that livestock grazing should be considered a stressor of these alpine ecosystems. [FOOTNOTE: 4 Lewis, M. (1970) Alpine Rangelands of the Uinta Mountains, Ashley and Wasatch National Forests. Region 4 Forest Service. Ogden, UT. https://app.box.com/s/mdf4yl6ss5glbip50kd6hh4fayczi4qr]In addition, why is climate change not included here? Most climate change publications indicate that Climate Change is one of the most significant stressors of alpine ecosystems. Vulnerability of Alpine ecosystems was rated as Very High to climate change in Climate Change Vulnerability and Adaptation in the Intermountain Region (Table 7.2 page 189 and described in detail on page 205 of Halofsky et al 2018, part 1); this was because of their high sensitivity and low adaptability to climate change stressors. The Uinta Mountains have some of the most important and contiguous alpine ecosystems in Utah and are some of the most vulnerable ecosystems in the Intermountain Region. This needs to be acknowledged in this description.[FOOTNOTE: Halofsky, Jessica E.; Peterson, David L.; Ho, Joanne J.; Little, Natalie, J.; Joyce, Linda A., eds. 2018. Climate change vulnerability and adaptation in the Intermountain Region. Gen. Tech. Rep. RMRS-GTR-375. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Part 1. pp. 1[ndash]224]DEIS Chapter 3 Page 89-92, Coniferous ForestComment: It might be easier to follow if each of the five forest types were described in more complete manner under distinct headings rather than combined in the way they are (i.e. each with their own discussion of Influences of Drivers and Stressors and Comparison of Natural Range of Variation and Current Conditions. In addition, a consistent approach to the inclusion of a discussion of the potential threats from climate change with reference to Halofsky et al 2018, part 1 would be helpful. DEIS Chapter 3 Page 93, Aspen, Influences of Drivers and StressorsParagraph 3: Prescribed fire in persistent and seral aspen are expected to either occur at current rates or possibly increase during the next plan period. Wildfire occurrence is strongly related to environmental and climatic conditions. [RED LANGUAGE STARTS] If [RED LANGUAGE ENDS] the climate continues to warm, fire frequency is predicted to increase. Comment: There[rsquo]s not much [RED LANGUAGE STARTS] IF [RED LANGUAGE ENDS] left in climates continuing to warm, is there? You use this statement in other places in the DEIS and because the national and international climate change assessments all point to continued warming, we think a firmer statement is in order. We suggest you replace the word [ldquo]If[rdquo] with the word [ldquo]As[rdquo]. [RED LANGUAGE STARTS] As [RED LANGUAGE ENDS] the climate continues to warm, fire frequency is predicted to increase.Paragraph 4:Comment: Can you explain why livestock grazing is expected to [ldquo]minimally affect seral aspen communities[rdquo]? Is this because these communities have already been altered and further change is unlikely? Or is this because you believe that seral aspen forests have been converted to conifer-dominated forests? Do you have information that supports the idea that existing understory plant species have not been changed with historical grazing? This is very unusual if it is true. Aspen communities throughout their distribution are highly desirable by both sheep and cattle and where they are included in allotments, most have already been altered; many to a tremendous degree. We know that your forest has completed many microplot assessments of current conditions, so some discussion of that would be helpful to explain your statements.DEIS Chapter 3 Pages 94-97, Sagebrush Comment: In this section, you tend to write in generalities about the different sagebrush cover types. For example, on Page 95, 2nd full paragraph, you make statements like:Since the 1940s, thousands of acres of mountain big sagebrush have been plowed and seeded into introduced grasses, sprayed with herbicide, and treated with prescribed fire (Forest Service 2017e). You don[rsquo]t, however, describe how many acres of each of the sagebrush types described in the document are still dominated by introduced grasses. It would be helpful to know what portion of your sagebrush landscapes fall into that category. We do get the odd sense that you consider these altered communities as being better than those that are dominated by native understory species (see highlight and bold text in comment below regarding language used on page 95, 4th full paragraph). We don[rsquo]t have a clear idea about what the real current conditions are.Then on Page 95, 4th full paragraph you say the following: Many communities of mountain big sagebrush[hellip] are currently in satisfactory condition in regard to plant species composition, species richness, shrub cover, and total ground cover[hellip] What does many mean? We don[rsquo]t get a sense of the true occurrence of mountain big sagebrush communities in [ldquo]satisfactory condition[rdquo]. Do you have an assessment of how many acres of each sagebrush species and variety (Wyoming big sagebrush, mountain big sagebrush, black sagebrush) have been converted to non-native grasses? What species have been seeded?

Crested wheatgrass? Intermediate wheatgrass? Smooth brome? Others? A quantification of these conditions would give us a clearer understanding of the current status of sagebrush communities on the forest.Page 95, 4th full paragraph: You go on to state the following in this same paragraph: Annual invasive plants degrade sagebrush communities by changing plant composition and structure, lowering species richness, and narrowing fire frequency. Long-term monitoring shows that cheatgrass is present and increasing in mountain big sagebrush communities with native herbaceous understories, especially following fire and severe drought. In contrast, communities where seeded nonnative grasses dominate herbaceous cover, cheatgrass is absent or has minor presence, with no indication of spread or increase. These communities typically have satisfactory plant composition, species richness, and total ground cover. Historical seeding treatments of these shrublands with nonnative grasses have demonstrated high resilience to invasive annuals.Because the highlighted sentences above seem to rate non-native grasses seeded in an area as preferable to native understories, we don[rsquo]t have a clear understanding about what you mean by [ldquo]satisfactory condition[rdquo], especially regarding species composition and species richness. We hear you say that these seeded non-native communities are highly resilient to invasive annuals, but we question your apparent definition of [ldquo]satisfactory condition[rdquo]. Relative to a monoculture of cheatgrass, perhaps [ldquo]condition[rdquo] is better because cheatgrass burns more frequently and tends to keep native ecosystems from being capable of reestablishing. But how is an area dominated by crested wheatgrass, for example, better than a monoculture of cheatgrass from a species composition and species richness perspective? Crested wheatgrass and other non-native grass species, especially rhizomatous species such as smooth brome, may be successful at keeping cheatgrass from invading and reducing fire frequency, but they also keep sagebrush and native grasses and forbs from reestablishing. We feel that if reducing fire frequency is your goal, that needs to be clearly stated. If maximizing livestock forage is your goal, that should clearly be stated. However, if you are trying to restore properly functioning ecosystems, (ecosystems that provide habitat for a variety of species, from pollinators to herbivores to habitat for a variety of species) non-native grasses do not allow you to meet that desired condition. Comment: The Forest Service is committed to using native plant species in their restoration efforts. In 2008 the agency established its Native Plant Materials Policy (Forest Service Manual 2070) and on the agency[rsquo]s Celebrating Wildflowers web page, there is a link to the 2015 interagency National Seed Strategy. We also provide a link below through the BLM[rsquo]s web page.A long-term goal on national forest lands should be to restore native grass and forb species to landscapes to improve biodiversity and move toward properly functioning conditions. Native plants not only provide forage for the many herbivores that occur on national forest lands, but they also provide nectar, pollen, and seeds that serve as food for native butterflies, insects, and a wide variety of pollinators, as well as for birds including greater sage grouse. As far back as 1998, forest service researchers recognized the value of and the need for the agency to address its use of native plant materials on the lands they manage: https://journals.uair.arizona.edu/index.php/jrm/article/download/9366/8978.Much research has been conducted over the past few decades on locally adapted native grasses and forbs that improve the biodiversity and resilience of disturbed landscapes. The USDA Forest Service publication, Restoring Western Ranges and Wildlands is a tremendous source of information. In their own words:This work, in three volumes , provides background on philosophy, processes, plant materials selection, site preparation, and seed and seeding equipment for revegetating disturbed rangelands, emphasizing use of native species. The 29 chapters include guidelines for planning, conducting, and managing, and contain a compilation of rangeland revegetation research conducted over the last several decades to aid practitioners in reestablishing healthy communities and curbing the spread of invasive species. Volume 1 contains the first 17 chapters plus the index.[FOOTNOTE: Monsen, Stephen B.; Stevens, Richard; Shaw, Nancy L. 2004. Restoring Western Ranges and Wildlands, vols. 1-3. Gen. Tech. Rep. RMRS-GTR-136. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Available at: https://www.fs.usda.gov/treesearch/pubs/7377;https://www.fs.usda.gov/treesearch/pubs/7378;https://www.fs.usda.gov/treesearch/pubs/7379]Following are just a few of the numerous publications available providing some of the most up-to-date information regarding the importance and use of genetically appropriate native plant materials in ecosystem restoration. National Seed Strategy for Rehabilitation and Restorationhttps://www.blm.gov/sites/blm.gov/files/docs/2021-08/Progress%20Report%2026Jul21.pdfMitchell, A.B.; Litt, A.R.; Smith, F.S. 2021. Using locally adapted seeds to restore native plants and arthropods after plant

invasion and drought. Rangeland ecology & management. 77:30-38https://bioone.org/journals/rangeland-ecology-and-management/volume-77/issue-1/j.rama.2021.03.003/Using-Locally-Adapted-Seeds-to-Restore-Native-Plants-and-Arthropods/10.1016/j.rama.2021.03.003.shortDorner, L. 2002. An introduction to using native plants in restoration projects. For Plant Conservation Alliance. 66 p.https://www.fs.fed.us/wildflowers/Native_Plant_Materials/documents/intronatplant.pdfHufford, K.M., R.D. Mealor. 2014. Successful restoration of severely disturbed lands: Native plants and adapted seeds for reclamation. Univ. Wyoming Extension. Pub. B-1256.https://www.uwyo.edu/wrrc/_files/docs/b1256_native%20plants%20and%20seeds%20june30.pdfJohnson, R; Stritch, L; Olwell, P; Lambert, S; Horning, M. E.; Cronn, R. 2010. What are the best seed sources for ecosystem restoration on BLM and USFS lands? Native Plants. 11(2): 117-131.https://www.fs.usda.gov/treesearch/pubs/37836US Forest Service Native Plant Policy and I-90 connectivity restorationhttps://botanicgardens.uw.edu/wp-content/uploads/sites/7/2020/03/Lau_WABotanicalSymposium_2020.03.04.pdfUSDA Forest Service Native Plant Materials Web Page:https://www.fs.fed.us/wildflowers/Native_Plant_Materials/index.shtmlDEIS Chapter 3 Page 95, Sagebrush, Last paragraph, continued on Page 96Comment: When you state that [f]or the most part, these communities are in satisfactory condition in terms of plant composition, species richness, total ground cover, and shrub cover, are you assuming that this is because of the introduction of non-native grasses seeded in the area? Again, as noted above, plant composition and species richness where non-native grasses are introduced are not close to that which historically occurred on these landscapes. We understand that historically the fire return interval for Wyoming big sagebrush was between 50 and 100 years, so has that perhaps continued to be the case on your landscapes? Do they remain relatively undisturbed with native species dominating the understory? Or have they also been plowed, sprayed, and seeded with non-native grass species?DEIS Chapter 3 Pages 96-97, Influences of Drivers and StressorsUnder this heading you barely address livestock grazing as a driver or stressor in sagebrush communities (2nd full paragraph on page 97). Livestock grazing throughout the West has historically been a tremendous stressor on these ecosystems, often significantly altering species composition, structure, and resistance and resilience to disturbance. And, while numbers of livestock that graze any particular landscape today may be far fewer than occurred at one time, the historic impacts are still in existence today. Condon and Pike (2018) describe how livestock grazing can ultimately reduce the ability of those areas to resist the invasion of cheatgrass, especially following fire. [FOOTNOTE: 7 Condon, L.A., Pyke, D.A. Fire and Grazing Influence Site Resistance to Bromus tectorum Through Their Effects on Shrub, Bunchgrass and Biocrust Communities in the Great Basin (USA). Ecosystems 21, 1416[ndash]1431 (2018). https://doi.org/10.1007/s10021-018-0230-8]DEIS Chapter 3 Pages 97-98, Pinyon and Juniper WoodlandComment: You make the assumption that all pinyon and juniper woodlands that occur on the forest are [ldquo]persistent[rdquo], and thus have a very long fire return interval (2-6 centuries). Do you not have any mountain big sagebrush communities that have been replaced by pinyon-juniper woodlands, which has occurred throughout the West (Miller and Tausch 2001)? The Frames Resource Catalog explains that a large portion of the current-day Pinyon-Juniper has arisen as a result of fire suppression within the mountain big sagebrush biophysical setting, which historically had fire return intervals of 12-25 years. You do not include any discussion of these non-persistent pinyon-juniper woodlands, so are we to assume that none exist? We wonder if the acres currently dominated by cheatgrass were, in fact, historically dominated by mountain big sagebrush rather than pinyon-juniper. [FOOTNOTE: 8 Miller, Richard F.; Tausch, Robin J. 2001. The role of fire in juniper and pinyon woodlands: a descriptive analysis. Proceedings of the Invasive Species Workshop: The Role of Fire in the Control and Spread of Invasive Species. Fire Conference 2000: the First National Congress on Fire Ecology, Prevention, and Management. Miscellaneous Publication No. 11. 2000. Tallahassee, FL: Tall Timbers Research Station. pp. 15-30.]DEIS Chapter 3 Pages 99-101, Rare and Unique Habitat TypesComment: On page 100 under Calcareous or rich fens you state the following. We would like to see the language in red added: Potential stressors on this fen type include increased recreation use of the area, trampling due to livestock grazing, and avalanche disturbance. Long-term monitoring indicates that the fen has been in satisfactory condition, with stable trends, for at least the past 20 years (Forest Service 2017e). During this time, plant species composition has remained constant, and repeat photography indicates no change in community structure and size of the area. Based on these findings, the South Fork Rock Creek fen is considered to be trending toward its natural range of

variation. [LANGUAGE IN RED STARTS] However, because of the rarity of these ecosystems, and because of how little we understand about the potential effects of climate change on these unique areas, the forest will continue to monitor these areas very closely. Management activities will be avoided in these areas. [LANGUAGE IN RED ENDS]Comment: On page 100 under Peatlands or fens found in glacial canyons you state the following. We would like to see the language in red added: Long-term monitoring indicates that the habitat is in satisfactory condition, with stable trends (Forest Service 2017e). No change in plant species composition or structure has been detected over 20 years. These fens are considered to be within their natural range of variation, except the fen in Whiterocks Canyon. Due to a road that crosses the fen, it is considered to be slightly departed from its natural range of variation. [LANGUAGE IN RED STARTS] Because of the rarity of these ecosystems, and because of how little we understand about the potential effects of climate change on these unique areas, the forest will continue to monitor these areas very closely. Management activities will be avoided in these areas. [LANGUAGE IN RED ENDS]Comment: On page 101 under Peatland or fen with limestone influence you state the following. We would like to see the language in red added: Long-term monitoring indicates that the habitat is in satisfactory condition, with stable trends (Forest Service 2017e). No change in plant species composition or structure has been detected over several decades. These fens are considered to be within their natural range of variation. [LANGUAGE IN RED STARTS] However, because of the rarity of these ecosystems, and because of how little we understand about the potential effects of climate change on these unique areas, the forest will continue to monitor these areas very closely. Management activities will be avoided in these areas. [LANGUAGE IN RED ENDS]DEIS Chapter 3 Pages 101-103, Climate-Related EffectsComment: This section is, as far as we can see, what was written in Halofsky et al. (2018a) on pages iii-v. Chapters 6 and 7 of this document describes in much more detail the intricacies of the effects of climate change on the forested and non-forested ecosystems of the region. This information might be more appropriately included in detail under the description of Influences of Drivers and Stressors for each cover type included in the DEIS. DEIS Chapter 3Carbon Storage and SequestrationChapter 3, Page 132, Carbon Storage and Sequestration - IntroductionComment: We suggest you add a paragraph at the end of the Introduction that indicates the values of non-forested ecosystems in carbon storage and sequestration. Research has been conducted on the value of restoring cheatgrass landscapes with those dominated by native plant communities and we feel it would be important to describe the importance of restoring cheatgrass-invaded ecosystems in the forest plan.[FOOTNOTE: 9 Austreng, A. C., Olin, P. H., Hummer, A., Pierce, J. L., deGraaff, M., and Benner, S. G., [ldquo]Carbon Sequestration in Semi-arid Ecosystems: Potential Benefits of Sagebrush Restoration[rdquo], vol. 2011, 2011.]DEIS Chapter 3 Pages 143-177: Terrestrial and Aquatic Wildlife and PlantsChapter 3, Page 151: At-Risk SpeciesComment: This section very poorly addresses T&E and SCC plant species. It simply references Appendix C and includes little other discussion regarding these at-risk species. On page 155 are the following references to at-risk plant species: Vegetation and fuels treatments could have short-term impacts on nontarget vegetation, including at-risk plant species.The use of tools to carry out vegetation treatments would also disturb local areas and may injure or kill at-risk plant species and less mobile wildlife species.Yet there is no reference as to which species might be most susceptible to these impacts. And on page 156 are the following mentions:[Recreation] may also facilitate the spread of nonnative plants, which may alter vegetation communities by replacing native species, including at-risk plant species.Trampling from such recreation as hiking, mountain biking, and OHV use could injure or kill at-risk plant species and less mobile wildlife species.And finally, on page 160 with reference to livestock:Additionally, cattle trampling at-risk plants and less mobile wildlife species would cause injury or mortality (Dettenmaier et al. 2017).In addition, overgrazing in riparian zones can negatively affect vegetation vigor, community structure, and species composition, which would reduce the quality of habitat for riparian-dependent at-risk plant species, such as Ute ladies[rsquo]-tresses. This last sentence is the only place we could find that actually addresses potential impacts to any specific plant species at risk from any activity. We find this unacceptable. We know of threats to individual T&E and SCC plants that occur on the forest and, while these may be briefly assessed in Appendix C, we feel these should be more clearly described within the text of the DEIS [ndash] at the very least include a table that shows the species, landtype associations, and threats followed by an analysis of alternatives and their effects.Appendix C [ndash] At Risk SpeciesWe suggest that you add some language to the effect that the goal of the forest is to protect and restore necessary habitat for all at-risk species regardless of their status as T&E or SCC. In other words, if at some time in the future you find species other than those currently on one

or the other of these lists that through rarity and/or threat meet the definition of species at risk, they will be managed as such. In that way, information need only be added to your files to add new species to your list of species rather than prolonged NEPA and forest plan amendment having to be completed. Adaptive management, so to speak.Appendix E [ndash] Forest PlanPage Appendix E-7Terrestrial and Aquatic Ecosystems The diverse ecosystems of the Ashley National Forest are a key component to supporting and maintaining its social and economic values. Functioning and resilient terrestrial and aquatic ecosystems contribute to healthy forests and rangelands, abundant fish and wildlife, healthy watersheds and abundant water supplies, beautiful landscapes, and a variety of other ecosystem services.Suggested rewrite:Terrestrial and Aquatic Ecosystems The diverse ecosystems of the Ashley National Forest are a key component to supporting and maintaining its [RED LANGUAGE STARTS] environmental, [RED LANGUAGE ENDS]social and economic values. [RED LANGUAGE STARTS] Healthy [RED LANGUAGE ENDS] terrestrial and aquatic ecosystems contribute to [RED LANGUAGE STARTS] functioning and resilient [RED LANGUAGE ENDS] forests and rangelands [RED LANGUAGE STARTS] and watersheds, which lead to [RED LANGUAGE ENDS] abundant fish and wildlife, and abundant water supplies, beautiful landscapes, and a variety of other ecosystem services. Functioning and resilient[hellip]Page Appendix E-33Comment: Following is what you have written in Appendix E regarding carbon storage and sequestration. We suggest a rewrite below that emphasizes the role that all ecosystems can play in carbon storage and sequestration.Carbon Storage and Sequestration The carbon that is stored in terrestrial ecosystems is present in living vegetation, soils, and dead organic matter, including wood and litter. Terrestrial ecosystems contain nearly three times the amount of carbon as the atmosphere, with forested areas storing higher levels of carbon than non-forested areas. Carbon sequestration captures and stores atmospheric carbon dioxide into other forms by such processes as photosynthesis. Desired Condition (FW-DC-CS) 01 Carbon stocks are maintained by promoting forest stand health and the regeneration of forest stands, and by retaining the net acreage of forested communities.Suggested Rewrite:Carbon Storage and Sequestration The carbon that is stored in terrestrial ecosystems is present in living vegetation, soils, and dead organic matter, including wood and litter. Terrestrial ecosystems contain nearly three times the amount of carbon as the atmosphere.[RED LANGUAGE STARTS] All plants absorb carbon dioxide from the atmosphere through photosynthesis and store carbon above ground in stems, branches, and herbaceous materials, as well as below ground in roots and transfer to soils through decomposition. While [RED LANGUAGE ENDS] forested areas [RED LANGUAGE STARTS] generally store [RED LANGUAGE ENDS] higher levels of carbon than non-forested areas, [RED LANGUAGE STARTS] all ecosystems contribute to carbon sequestration and their contributions toward carbon storage will be considered in all management activities on the Ashley National Forest. [RED LANGUAGE ENDS]Desired Condition (FW-DC-CS) 01 Carbon stocks are maintained by promoting [RED LANGUAGE STARTS] healthy and resilient non-forest and [RED LANGUAGE ENDS] forest [RED LANGUAGE STARTS] ecosystems. [RED LANGUAGE ENDS] Regeneration of forest stands and retaining the net acreage of forested communities, [RED LANGUAGE STARTS] as well as the restoration and maintenance of healthy non-forest ecosystems is the focus of all management actions taken place on the forest.02 The use of prescribed fire, while temporarily reducing carbon storage on the forest, is used to ultimately improve the ability of landscapes to sequester carbon as a result of treatment. [RED LANGUAGE ENDS] Comment: There are numerous publications supporting the focus on all plant ecosystems and not only on forested types. We feel that carbon sequestration and storage capabilities of all terrestrial and aquatic ecosystems need to be addressed in the forest plan. Hold all ecosystems accountable for their potential contribution to these critical processes.Recommended References: Zhu, Zhiliang, and Reed, B.C., eds., 2012, Baseline and projected future carbon storage and greenhouse-gas fluxes in ecosystems of the Western United States: U.S. Geological Survey Professional Paper 1797, 192 p. (Also available at https://pubs.usgs.gov/pp/1797/.)Emily J. Fusco, Benjamin M. Rau, Michael Falkowski, Steven Filippelli, Bethany A. Bradley. 2019. Accounting for aboveground carbon storage in shrubland and woodland ecosystems in the Great Basin. Ecosphere. (Available at https://esajournals.onlinelibrary.wiley.com/doi/pdf/10.1002/ecs2.2821 and https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.2821)