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First name: Brandt

Last name: Mannchen

Organization: Lone Star Chapter of the Sierra Club

Title: Forest Management Issue Chair

Comments: Dear Juanita Garcia and Michael Boren,

On behalf of the Lone Star Chapter and Houston Regional Group of the Sierra Club (Sierra Club) I object vociferously to the 6-day scoping period for this proposed U.S. Forest Service (FS) Oil/Gas Leasing EIS.

Ten years have passed since the NFGT Forest Supervisor agreed to conduct this EIS due to questions about various natural resources issues in the NFGT. With that agreement was the implicit promise to keep the Sierra Club updated on the status of the proposal and process.

This hasn't been done. The Sierra Club for the past 10 years and particularly since 2018 has contacted the NFGT periodically to determine the progress the FS was making on this EIS. For the last year or so the Sierra Club has contacted the NFGT, via Ms. Garcia, either every month or every other month, to find out about this progress.

The FS failed to notify the Sierra Club about this Federal Register notice even though it knew that the Sierra Club has collaborated with the FS and tracked this proposal for 10 years. This isn't good public service and certainly doesn't reflect good National Environmental Policy Act (NEPA) legal and spirit procedure.

The FS appears to take the position that it doesn't want the public to know about or participate, input, review, comment, and collaborate on this EIS. That is shameful, shouldn't be tolerated, and is inappropriate. This lack of accountability and care doesn't reflect well on the NFGT, U.S. Forest Service, and the U.S. Department of Agriculture.

It's my understanding from reading the Federal Register that past 2019 scoping comments "will be considered in development of the EIS." The Sierra Club includes additional issues based found in past letters sent prior to and after 2019 to the FS about the effects of oil/gas development and the climate change it causes, like its human health effects due to excess heat.

I have also included some of the past scoping comments (2018 and 2019) because they contain relevant issues that are still important and must be considered in the EIS.

Attachment: LSCSC Initial Input for Climate Change Resilient Habitat Plan for Forest Plan 2016 (1)

Attachment: NFGT Oil Gas EIS Issues Comments 2018

Attachment: NFGT Oil Gas EIS Issues Comments II 2018

Attachment: NFGT and Oil and Gas Leasing EIS Scoping 2019

Attachment: NFGT and Oil and Gas Leasing EIS Scoping II 2019

Attachment: NFGT Heat Climate Change Letter 2023

The Sierra Club requests that the FS and USDA notify it when the draft EIS is ready for public comment and provide to the public at least 45 days to comment on this important, complicated, and potentially voluminous document. Note that my address is now: 4300 Dunlavy St., Apt. 3114, Houston, Texas 77006.

The Sierra Club appreciates this opportunity to comment. Thank you.

Brandt Mannchen

Forest Management Issue Chair

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ATTACHMENT: LSCSC INITIAL INPUT FOR CLIMATE CHANGE RESILIENT HABITAT PLAN FOR FOREST PLAN 2016

February 2, 2017

Mr. Robert Potts

Natural Resources and Planning Team Leader

National Forests and Grasslands in Texas

2221 North Raguet

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Dear Rob,

Below is initial input by the Lone Star Chapter of the Sierra Club (Sierra Club) for the U.S. Forest Service (FS) regarding climate change and its role in the National Forests and Grasslands (NFGT) Forest Plan revision process.

National Forest Lands Resilient Habitat Plan

One of the ways that the Sierra Club wants the FS to address climate change on a landscape scale is to include in National Environmental Policy Act (NEPA) documents, management plans, site-specific proposals, other on-the-ground actions and activities, and similar actions a "Resilient Habitat Plan" (RHP). A RHP would result in specific actions that the FS takes to reduce or ameliorate climate change on landscape habitats.

The FS must focus on climate change, which is due in most part to the release of carbon dioxide (CO₂) and methane (CH₄) air pollutants via human activities. Climate change is an air pollution problem that is changing local ecosystems across the landscape and also alters the global environment. Climate change makes it more difficult for plants and animals to adapt successfully to changed ecosystems across the landscape. Therefore the FS must address questions like:

1. How will the NFGT be affected by precipitation and temperature caused by anthropogenic climate change?
2. What can be done to create more resilient and resistant habitats and ecosystems in the NFGT?
3. What can the FS do to reduce CO₂, CH₄, and other climate change pollutants within the NFGT?
4. What can be done to assist plants and animals so they can adapt to climate change in the NFGT?

The RHP assesses the biological and ecological elements in the NFGT for the effects that climate change has had and will have on them. The RHP also assists plants, animals, and ecosystems in adapting to climate change and monitors those changes and mitigation measure effectiveness. The RHP is based on:

1. Protection of existing functioning ecosystems in NFGT.
2. Reduction of human stressors on the ecosystems in NFGT.
3. Restoration of natural functioning ecological processes in NFGT.
4. Use of natural recovery in NFGT, in most instances.
5. Acquisition of buffers and corridors to expand and ensure connectivity of ecosystems in the NFGT.
6. Intervention to manipulate (manage) ecosystems in NFGT where necessary.
7. Reduction of direct and indirect climate change pollution from the NFGT and activities that result from the Forest Plan implementation.

The Sierra Club requests that the FS to prepare and implement a RHP for the NFGT with regard to the proposed Forest Plan revision, NEPA documents, management plans, site-specific proposals, and other on-the-ground actions and activities, and similar actions.

Other Factors to Take Into Account During the NFGT Forest Plan With Regard to Climate Change

In addition to the RHP, the FS should, at a minimum, address climate change in the following ways:

- 1) Plan for Climate Change and Use the Best Scientific Information

Planning for climate change and the use of the best scientific information includes preparation of climate

vulnerability assessments (CVA). CVA's determine which species, habitats, and or ecosystems will be most affected by climate change. CVA's include the interactions between existing human stressors (for example, invasive species, logging, roads, etc.) with climate change impacts. This assists the FS in its determination of which focal species, ecological processes, or other natural resources should be prioritized for monitoring and management to ensure their future health.

The FS must cooperate and take advantage of the Landscape Conservation Cooperatives (LCC) for the NFGT area when preparing CVA's, which include the Gulf Coastal Plains and Ozarks LCC and the Gulf Coast Prairie LCC. The FS must ensure that it has a firm grasp on the best and most recent scientific data via a literature compilation of key research and coordination with researchers about the present state-of-the-science.

2) Protect and Connect Wildlands and Habitats

This involves many of the elements of the RHP, like protection of core areas (high quality lands with maximum size); corridor areas (linkages between core areas) with input from state wildlife agencies and non-governmental conservation organizations and land trusts; buffer areas and other important lands and habitats (lands contiguous to core and corridor areas and habitat identified as critical to selected species) which include riparian areas and for wetlands, at a minimum, National Wetlands Inventory wetlands, critical habitat adjacent to core and corridor areas that will buffer and protect these areas, and rare and sensitive species habitats; coordination across boundaries with other large landscape conservation plans, initiatives, and public and private protected lands including LCC, Partners in Flight Bird Conservation Plans, National Fish Habitat Action Plan, North American Waterfowl Management Plan, Texas Parks and Wildlife Department Land and Water Resources Conservation and Recreation Plan, U.S. Fish and Wildlife Service National Wildlife Refuge Comprehensive Conservation Plans, and land trust and other agency lands.

3) Promote the Ability of Forests and Soils to Store Carbon

The FS must acknowledge and view as important the carbon that is stored in old growth and mature forests and forest soils that are undisturbed by human activities. The biota of forest soils must be protected and monitored for climate change effects and improvements in condition.

4) Restore Degraded Habitats

Restoration of degraded habitats includes re-establishing riparian vegetation and habitats, prairie recovery, restoration of wetlands, decommissioning roads/trails, improvement of road/trail network drainage, removal of invasive species, etc.

5) Reduce Management Activities and Other Factors that Put Additional Stress on Fish, Water, Wildlife, and Wildlands

This includes the reduction of many current non-climate stressors like road networks and numbers of roads, oil/gas drilling/development, commercial logging, off-highway vehicle damage and trails, grazing, fragmentation of habitat, invasive species, and toxic chemical use (pesticides and herbicides).

6) Active Management Including New and or Currently Less Common Approaches May be Needed But Should be Tested and Monitored Outside of Core Protected Wildlands

Human actions have created a cascade of ecosystem changes. We have a limited ability, knowledge, and understanding of how to address these issues. If new or less common approaches are to be used they must have a foundation in independent peer-review science, they must be tested, not in large-scale or sweeping ways, but in smaller areas, they must be extensively monitored to determine if they do what we think they do, and they

must not be used on wilderness areas and other less disturbed lands (for example, scenic areas) which are the most intact and least disturbed areas and thus their ecosystems are most likely to function best and successfully adapt to climate change. These areas are the controls or baseline that must be used to determine if our other actions succeed.

7) Use Natural Systems to Safeguard Communities From Climate Change

The natural areas that exist and are in the best condition are the ones that have been least disturbed. Humans tend to turn to expensive and complicated engineering solutions, like engineered streambank stabilization or massive logging. It is best to allow natural lands to restore areas with the smallest level of human intrusion as possible. This allows natural ecological processes to function as they were meant to. Restoration by Nature or human hands takes time. We must not be in a hurry and use time of restoration as an excuse or justification for more intrusive solutions.

8) What is Acceptable Intervention in Protected Areas

Acceptable intervention in protected areas depends on specific designation of the protected area and the laws that apply to it. If the protected area is wilderness then little intervention is legally allowed. The Wilderness Act of 1964 remains the law of the land. We cannot change what we do in wilderness because of climate change. Unless the U.S. Congress changes the law, trammeling should not be encouraged. The Wilderness Act should not be changed.

Other protected designations like national parks, preserves, monuments, wildlife refuges, forests, military lands, and Bureau of Land Management (BLM) lands are governed differently, if they are not wilderness, and some additional intervention may be appropriate. The Sierra Club is concerned that intervention will in fact be more of the same human stressors that have been applied by us and already cause ecosystem process problems or problems for individual species or groups of species. Therefore most human stressors cannot be looked upon, in general, as good strategies for climate change adaptation and resilient habitats as presently implemented.

9) Cooperation With Public and Private Landscapes

The FS must work with private landowners and land trusts next to the NFGT. Economic incentives are helpful in protection of environmental benefits. The FS must be much more aggressive in its contact and work with adjacent and nearby private landowners and land trusts. The FS must get the word out about how private lands that abut up against federal lands provide protection and stability to that landowner and reduce potential land use conflicts. The FS also needs an aggressive public land acquisition program.

10) Appropriate Conservation Goals for Climate Change

Acquire as much land as possible. That land must connect with other protected lands, both public and private (a massive expansion of the use of the Land and Water Conservation Fund is appropriate), must buffer those lands, fatten corridors, include lands with what we know today as sensitive areas and species (we cannot predict well what will be needed in 100 years). The FS must ramp up right now massively land acquisition which will save millions in the future because the land can be acquired now at lower prices and is not built upon. This is the calm before the development storm that will continue its march. We need to take advantage and not miss this opportunity. We also need to massively reduce human stressors on the landscape.

11) "Nature" in the Face of Rapid Anthropogenic Change

Nature remains the same with regard to geological change and hydrological operation. Most ecological processes continue to function despite us. Even fire suppression programs cannot contain all fires. It is true that

our fire suppression limits the good the natural ecological process of fire does by limiting the acreage. We are going to have to adapt to Nature (climate change) or we will not survive.

12) What is "Wild" if Intervention Prevents Extinction

With regard to climate change, many extinctions are not preventable in the future just like today we are not able to prevent many extinctions. Attempting to domesticate Nature any more than we already have is not a good proposition. The more we allow Nature to call the shots the quicker we get to ecosystem equilibrium, whatever that may be (in many cases we won't like it), and the quicker we can help that ecosystem stabilize. Human stressor removal and land acquisition are the keys. Massive interventions can destroy the "Wild" in Nature.

13) What is Native or Alien When Habitats Move or are Transformed

This is a key question. We have not addressed non-native invasive species well and we still allow non-native species into the United States. We need to give ecosystems time to change and show us how they are going to evolve instead of attempting to turn back the clock and make ecosystems what they were yesterday or are today. Humans are not good at leaving Nature alone and allowing it to express what it wants on the landscape. We are manipulators and fiddlers and make things worse unless we learn patience. Let native species migrate where they will (assist them where we can) which is what they have done for millions of years in past climate change periods.

14) How Much Ecological Engineering is Acceptable

Little ecological engineering is acceptable. But this begs the question of how do you define ecological engineering. The basic principle is to work with Nature and not against it.

15) Is Genetic Selection Appropriate in Preserves (to perpetuate species there)

Human must allow natural selection to function and not decide what we think are the best genetic traits. We know what traits please us but not what traits please other species or what traits will allow for the best adaptation to climate change.

16) Is Genetic Engineering Ever Appropriate (to fill otherwise vacant ecological niches)

No. Genetic engineering is not appropriate to fill vacant ecological niches. Those niches will be filled but Nature will decide when and how. Our lack of knowledge about ecosystems and their complexity and our hubris endangers our ability to substitute for what Nature wants. We don't listen well, we have poor historical memory, and we pretend the changes we want are really the changes that other species want. We don't know this.

17) Forest Health and Climate Change

"According to the Intergovernmental Panel on Climate Change, forest management can be used to mitigate climate change, by maintaining stand-level carbon density through reduction of forest degradation, planting, site preparation, and other management practices (Nabuurs et. al. 2007) ... Cumulatively, improving forest health and reducing fuel loadings are considered sustainable forest management strategies that provide long-term benefits that mitigate climate change (Nabuurs et. al. 2007)."

The FS should define what "forest health" is with respect to climate change. The FS must provide data about what it does to mitigate climate change. The data is needed for public review, comment, and understanding. The FS should document how its present management provides long-term benefits that mitigate climate change. The FS must show its carbon budget and calculations for the NFGT.

To allow more storage of carbon in the NFGT trees must be allowed to grow. Only via photosynthesis can trees convert CO₂ to biomass. Older trees store huge amounts of carbon in their trunks and in the soil. Logging stops photosynthesis and initiates decay processes that result in the emission of CO₂. The FS should ensure that the NFGT becomes more of a carbon sink rather than a carbon source.

To protect the NFGT from climate change the FS must maintain biodiversity for all things that live in the NFGT; protect the most intact native forest, grassland, and aquatic ecosystems; provide places where species can migrate or find refuge by buffers, and expand protected areas and provide connectivity so that the entire landscape allows for the dispersal of native species; protect streams/wetlands with large riparian buffers; reduce disturbance of vegetation and soils; reduce road densities; and retain abundant snags/coarse woody debris.

Logging releases a lot of CO₂ and methane (CH₄) to the atmosphere and accelerates the rate of decomposition of wood by increasing sunlight, temperature, and surface area of woody material so microbial decomposition increases. Slash is often burned which results in more CO₂ emissions. Logging also increases wind damage via the creation of exposed edges and more space via thin logging; logging increases wildfire hazards by making the stand hotter, dryer, and windier; logging brings the most flammable small fuels from the forest canopy to the forest floor and creates more dense stands of small more flammable trees; logging also increases the number of roads which increases the risk of human-caused fire ignitions.

Specific management actions that the FS could implement which would reduce climate change gases include the conservation of existing large stores of carbon such as old forests and roadless areas; allow young forests to grow longer and extend harvest rotations; retain more trees, live and dead, during harvest operations; avoid high severity fire by prescribed burning and removal of small trees or other fine fuels; and protect large trees and soil both before, during, and after fires.

18) Scale of Climate Change Emissions From the NFGT

In the past, the FS has responded to NFGT projects with statements like, "I have considered the effect of this project on climate change, as well as the effect of climate change on this project. Any resulting greenhouse gas emission would not be measurable on a global scale." The "global scale" is not appropriate for the NFGT Forest Plan revision or for site specific projects. If the FS uses the "global scale" during the NFGT Forest Plan revision rather than the "NFGT scale" the FS will in essence exempt itself from ever having to reduce climate change gases. This is because NFGT Forest Plan climate change gases are not ever large enough to be significant in generation of climate change gases on a "global scale". For instance, using the "global scale" as the criteria, an 800 megawatt coal-fired power plant would not be significant either.

The FS should honestly provide an analysis of climate change gases that are directly and indirectly due to the NFGT Forest Plan revision and implementation and discuss what mitigation measures could be implemented, what their cost and practicability are, and which will be implemented to reduce climate change gas reduction. The NEPA requires that adequate analysis be done and the public must have this information so that it can review, comment on, and understand all environmental impacts of the NFGT Forest Plan revision.

19) Catastrophic Wildfire

In, "The Myth of Catastrophic Wildfire: A New Ecological Paradigm of Forest Health", Chad Hanson, John Muir Project Technical Report 1, John Muir Project of Earth Island Institute, catastrophic wildfire is discussed. Although this report focuses on the Western United States, similar statements about catastrophic wildfire are made in Texas, the Sierra Club refers the FS to the following pages of that report where this issue is thoroughly described and the comments are self-evident to inform the NFGT Forest Plan revision about catastrophic wildfire:

a. Page 2, "In this new "forest ecology" paradigm, scientists have come to understand that high-intensity fires, or "stand-transforming fires", occurred natural in most western U.S. conifer forests historically, and we have far less fire now than we did prior to fire suppression policies [hellip] dead trees, especially large dead trees, or "snags",. Are not only the most ecologically valuable habitat features in the forest, but are also far too scare, due to fire suppression and logging conducted under the guise of fuels reduction and forest health."

b. Page 2, "[hellip] most current fires are predominantly low-intensity and moderate-intensity, and the relatively scare high-intensity areas support the highest levels of native plant and wildlife biodiversity of any forest type in the western United States."

c. Page 2, "[hellip] these high-intensity patches are actually natural ecological treasures [hellip] fire creates ecologically-vital "snag forest habitat", which is rich with large snags, large downed logs, dense pockets of natural conifer regeneration, patches of native shrub habitat, or "montane chaparral", and large live tress."

d. Page 3, "in snag forest habitat, countless species of flying insects are attracted to the wealth of flowering shrubs which propagate after stand-transforming fire - bees, dragonflies, butterflies, and flying beetles. Many colorful species of birds [hellip] nest and forage in snag forest habitat to feed upon the flying insects [hellip] The woodpeckers make new nest holes each year, leaving the old ones to be used as nests by various species of songbirds [hellip] bat species root in old woodpecker cavities [hellip]"

e. Page 3, "Snag forest habitat [hellip] is the most rare, endangered, and ecologically important forest habitat in western U.S. forests and the stand-transforming fires that create this habitat are not damaging the forest ecosystem. Rather, they are advancing ecological restoration. There is nothing "catastrophic" about wildland fire in these forests, especially where stand-transforming fire effects occur, creating snag forest habitat."

f. Page 4, "[hellip] the only effective way to protect homes from fire is to reduce the combustibility of the home itself, by using fire-resistant roofing and siding and installing simple items like guards for rain gutters (which prevents dry needs and leaves from accumulating), as well as by creating "defensible space" through the thinning of brush and small tress within 100 feet of individual homes."

g. Page 6, "[hellip] most "thinning" projects allow removal of many of the larger trees in order to make the projects economically attractive to logging companies, and to generate revenue for the public land management agencies [hellip] The removal of larger, mature trees in thinning operations tends to increase, not decrease fire intensity by: a) removing large, fire-resistant trees; b) creating many tons of logging "slash" debris - highly combustible branches and twigs from felled trees; c) reducing the cooling shade of the forest canopy, creating hotter, drier conditions on the forest floor; d) accelerating the growth of combustible brush by reducing the mature trees that create the forest canopy, thereby increasing sun exposure; and e) increasing mid-flame wind speeds (winds created by fire) by removing some of the nature trees and reducing the buffering effect they have on the winds associated with fires."

h. Page 12, "[hellip] as the time period since the last fire increases, forests become more mature, and develop higher forest canopy cover. This reduces the amount of pyrogenic (combustible) shrubs, which need more sunlight, reducing overall high-intensity fire occurrence [hellip] It also reduces the amount of sunlight reaching the forest floor and understory. In such conditions, surface fuels stay moister during the fire season, due to the cooling shade of the forest canopy, and, due to reduced sunlight, forest stands begin to self-thin small trees and lower branches of large trees."

i. Page 14, "Our results have several implications. First, they suggest that the decline of natural forests, which is often observed in the long-term absence of catastrophic disturbance (including wildland fires), may arise through increasing limitation by (phosphorus) and reduced performance of the decomposer subsystem [hellip] Second, the results show that the maximal biomass phase (and associated rates of ecosystem processes) attained after

primary or secondary succession cannot be maintained in the long-term absence of major disturbances."

j. Page 20, "Given the overall deficit of large snags, and the serious adverse consequences of this for myriad wildlife species, natural events that create additional snags should be welcomed, not viewed as a problem to be avoided."

k. Page 21, "A recent study found that carbon sequestration would be maximized by ending all logging on U.S. public lands nationwide (Depro et al. 2008) In the continental United States, CO₂ emissions from wildland fire are only about 5% of the amount resulting from human fossil fuel consumption, carbon sequestration from growth is about 25 times larger than carbon emissions from fire (Wiedinmyer and Neff 2007), and emissions from fire are offset by post-fire growth and carbon uptake."

l. Page 22, "It should also be noted that nearly half of the carbon from thinned trees becomes surface fuel and is burned, and another quarter is lost as mill residue, which is often burned as fuel (Ingerson 2007). Ultimately only a minor portion of trees that are logged become wood products, and this carbon is not stored in this form for long, as softwood lumber has a half-life of less than 40 years (Smith et. al. 2005), and is obviously not assimilated back into the forest ecosystem."

m. Page 24, "Though timber interests have promoted increased logging by describing current forests as "overstocked", the scientific data indicates that, due to past logging, as well as exclusion of wildland fire, forests of today have much less biomass than historic forests (Bouldin 1999), Fellows and Goulden 2008)."

20) The Forest Service Should Avoid "Before and After" Carbon Accounting

For NEPA purposes, the FS should compare the amount of carbon, with and without the NFGT Forest Plan revision. An established baseline must be set and change over time in CO₂ levels monitored with and without the Forest Plan revision.

21) The Forest Service Should Not Over Estimate the Value of Wood Products Substitution

Current estimates with regard to the benefits of substitution of wood materials for other materials (like steel or concrete) have been done using assumptions that are not reasonable. For instance, substitution benefits lie in the future and may take more than 100 years to off-set logging in forests. Such in the future benefits should be discounted because they may not occur. Analyses often begins with no existing forest (bare ground) which typically is not the case in the forest and does not take into account the loss of carbon due to logging. Wood is dominant in building material markets and it will be difficult to show that the market share of wood will increase relative to other materials (additionality of carbon credits). Wood substitution may only delay, not prevent the use of fossil fuels.

22) Protection of Forests and Older Trees Helps Retain Carbon

According to recent reports older and larger trees store increased levels of carbon. "Trees accelerate their growth as they get older and bigger, a global study has found. The findings, reported by an international team of 38 researchers in the journal Nature, overturn the assumption that old trees are less productive. It could have important implications for the way that forests are managed to absorb carbon from the atmosphere. "This finding contradicts the usual assumption that tree growth eventually declines as trees get older and bigger," said Nate Stephenson, the study's lead author and a forest ecologist with the US Geological Survey (USGS). "It also means that big, old trees are better at absorbing carbon from the atmosphere than has been commonly assumed." [hellip] "Rapid growth in giant trees is the global norm, and can exceed 600kg per year in the largest individuals," say the authors. The study also shows old trees play a disproportionately important role in forest growth. Trees of 100cm in diameter in old-growth western US forests comprised just 6% of trees, yet contributed

33% of the annual forest mass growth." Vidal, John 2014. NEWS: Trees accelerate growth as they get older and bigger, study finds - Findings contradict assumption that old trees are less productive and could have important implications for carbon absorption" The Guardian, Jan 15, 2014.
<http://www.theguardian.com/environment/2014/jan/15/trees-grow-more-older-carbon> [citing Stephenson, N. L., A. J. Das, et al. 2014. Rate of tree carbon accumulation increases continuously with tree size. Nature | Letter (2014) doi:10.1038/nature12914

23) Woody Biomass is Not the Answer

Some reasons not to support forest woody biomass-to-energy projects in the NFGT include:

- a. These projects de-emphasize the use of prescribed or natural fire to maintain a healthy forest. Prescribed or natural fire creates a richly fertile ash that provides nutrients for forest vegetation.
- b. The downed logs, standing logs (snags), and other parts of trees provide organic material for soil and enhance soil biota activities.
- c. The downed logs, snags, and other parts of trees provide nutrients for soil and enhance soil biota activities.
- d. The downed logs, snags, and other parts of trees provide for moisture retention during dry times which reduces fire severity and protects organisms.
- f. The downed logs, snags, and other parts of trees provide shelter and food for vertebrate and invertebrate wildlife including cavities and dens.
- g. The downed logs, snags, and other parts of trees provide check dams to reduce erosion in the forest and reduce water quality concerns.
- h. Removing downed logs, snags, treetops, branches, and other parts of trees interferes with natural process functioning of decay and the restoration of soil richness and fertility.
- i. Downed logs, snags, treetops, branches, and other parts of trees are not waste but valuable ecological residuals that a healthy forest needs for proper functioning.
- j. Forest woody biomass-to-energy plants could encourage private landowners to liquidate trees that are presently considered to have little value, like hardwood trees.
- k. Treating downed logs, snags, treetops, branches, and other parts of trees as economic returns instead of as ecological residuals does not teach sustainable forestry or respect for forests. Forests are considered only as money-making propositions.

Forest woody biomass-to-energy projects in the NFGT can be considered as akin to the strip mining of forests. This is in the tradition of a long list of insults. Some of those insults in East Texas include:

- a. Cut down all the old growth trees and destroyed those ecosystems.
- b. Cut down the trees left over that were not considered as good as the best old growth trees.
- c. Cut down second growth trees.
- d. Stripped the forests of much of our valuable hardwood trees.

- e. Cut down third and fourth growth trees.
- f. Drilled enormous numbers of oil/gas wells, laid pipelines, and associated infrastructure like compressor stations and roads.
- g. In some places we strip mined for lignite.
- h. Stripped sand/gravel from our streams and uplands.
- i. Allowed tremendous amounts of sediment to enter our streams due to logging and other practices.
- j. Farmed to soil exhaustion forests after the trees were stripped off.
- k. Shot most of our big game and large predator species.
- l. Fertilized and herbicided present forests and allowed them to grow to an age about 1/10 that of their potential age (cut at 30 years of age with a potential to live to be 300 years old).
- m. Created incredible erosion and sedimentation in streams from abused land and the runoff from that land.

At some point this exploitation must stop. The NFGT are the best places to restore ecosystems and landscapes, show how such restoration can be accomplished, and demonstrate what the results are.

24) Climate Change is an Environmental Justice Issue

The FS is required by the NEPA and Executive Orders to consider the impacts on humans of actions like the NFGT Forest Plan revision with regard to climate change and fossil fuel exploitation. For example, Executive Order 12898, which states that each Federal agency shall make achieving environmental justice part of its mission and requires the avoidance of disproportionate adverse impacts to minority populations and low-income populations. The need for action in the NFGT Forest Plan revision to ensure that all populations participate and benefit is paramount and must be an integral part of the planning and implementation process.

The Sierra Club appreciates this opportunity to comment. Thank you.

Sincerely,

Brandt Mannchen

Forest Management Issue Chair

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NFGT OIL GAS EIS ISSUES COMMENTS 2018

February 15, 2018

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Ms. Theresa Mathis

Forest Planner

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Dear Rob and Theresa,

The Houston Regional Group and Lone Star Chapter of the Sierra Club (Sierra Club) are particularly interested in the Oil/Gas Leasing/Development of National Forests and Grasslands in Texas (NFGT) Environmental Impact Statement (Oil/Gas EIS) that the U.S. Forest Service (FS) will prepare in parallel with the NFGT Forest Plan revision.

It is our understanding that results from the Oil/Gas EIS will be folded into the NFGT Forest Plan revision. The Sierra Club has already provided some comments on climate change and oil/gas activities for the NFGT Forest Plan revision in our letters to the FS on April 25, 2016, February 2, 2017, and April 8, 2017. Below are some very preliminary comments about the Oil/Gas EIS. The Sierra Club will provide you with additional comments at another time.

The Oil/Gas EIS must address climate change environmental impacts due to current and future fossil fuel (oil/gas/coal) exploration, extraction, production, transportation, and creation of products (exploitation) on or off the NFGT, how climate change impacts will be analyzed, and how climate change will be mitigated on or off the NFGT.

The Sierra Club supports the protection of Special Management Areas (Wilderness Areas, Scenic Areas, etc.),

from current and future oil/gas exploitation, with maximum use of "no surface use" requirements in the Oil/Gas EIS.

In the Oil/Gas EIS, the Sierra Club supports preparation of an inventory of sensitive areas and the protection of these areas, along or near current and future pipelines and other oil/gas developments. This includes, but is not limited to, streams, rivers, seeps, springs, lakes, ponds, and other water related elements. This also includes wildlife habitats, mature, old-growth, and near old-growth forests, native prairies, Red-cockaded Woodpecker and other rare, threatened, endangered species, and species of concern and their habitats.

The Oil/Gas EIS must address reduction or elimination of fragmentation impacts on NFGT due to current and future oil/gas exploitation. Existing fragmentation impacts from oil/gas exploitation should be analyzed and presented so that a baseline of effects is created for present and future mitigation measure implementation.

In general, the Oil/Gas EIS must upgrade and make mitigation measures more stringent on the NFGT for current and future oil/gas exploitation.

The Oil/Gas EIS must comprehensively address environmental impacts of the hydraulic fracturing process on NFGT. This includes earthquakes and fault movements, hydrological impacts (springs, seeps, groundwater, water table, etc.), water quality impacts, water quantity impacts, infrastructure impacts, and other environmental impacts due to this process.

The Oil/Gas EIS must analyze the use of state-of-the-art technology to reduce oil/gas exploitation environmental impacts. An example of this state-of-the-art technology is the use of an automated drilling rig.

The Oil/Gas EIS must discuss current hydraulic fracturing technology and its environmental impacts, new hydraulic fracturing technology that is being developed and federally funded in the Permian Basin and its environmental impacts, and potential 20-year oil/gas technological advances and their environmental impacts on the NFGT.

The Oil/Gas EIS must clearly describe how the FS will handle private mineral rights oil/gas exploitation which takes place on about 1/3 of the lands in the NFGT. This analysis must include the cumulative environmental impacts caused by this type of oil/gas exploitation in addition to the federal leasing program's oil/gas exploitation environmental impacts. The FS must state clearly how it will address environmental impacts due to oil/gas exploitation of private mineral rights in relation to other oil/gas exploitation on the NFGT.

The Sierra Club requests that a no federal oil/gas leasing and exploitation alternative be analyzed and used as a reasonable alternative in the Oil/Gas EIS.

The Sierra Club requests that an all renewable energy sources alternative (wind, solar, and geothermal energy) be analyzed and used as a reasonable alternative in the Oil/Gas EIS.

The Sierra Club requests that a range of reasonable alternatives, which reduce current leasing and exploitation by, 10%, 20%, 30%, 50%, 60%, 70%, 80% or 90%, be comprehensively analyzed in the Oil/Gas EIS.

The Sierra Club appreciates this opportunity to provide some preliminary comments about the Oil/Gas EIS. Thank you.

Sincerely,

Brandt Mannchen

Forest Management Issue Chair

Lone Star Chapter of the Sierra Club

Chair, Forestry Subcommittee

Houston Regional Group of the Sierra Club

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NFGT OIL GAS EIS ISSUES COMMENTS II 2018

February 28, 2018

Mr. Robert Potts

Natural Resources and Planning Team Leader

National Forests and Grasslands in Texas

2221 North Raguet

Lufkin, Texas 75904

Ms. Theresa Mathis

Forest Planner

National Forests and Grasslands in Texas

2221 North Raguet

Lufkin, Texas 75904

Dear Rob and Theresa,

The Houston Regional Group and Lone Star Chapter of the Sierra Club (Sierra Club) appreciate the February 15, 2018 meeting that the U.S. Forest Service (FS) had with the Sierra Club and other organizations about the National Forests and Grasslands in Texas (NFGT) Oil/Gas Leasing Environmental Impact Statement (OGLEIS).

The Sierra Club provided the FS with preliminary comments on February 15, 2018. In this letter, the Sierra Club provides the FS with additional comments about the OGLEIS as we promised at the February 15, 2018 meeting.

The OGLEIS must support the protection of recreational facilities and trails in the NFGT. The Sam Houston National Forest (SHNF), for instance, has motorized trails, mountain bike trails, hiking trails (the 128-mile long Lone Star Hiking Trail - LSHT), special needs and educational trails, and soon to be equestrian trails. The Davy Crockett National Forest has the Four-C's Hiking Trail and equestrian trails. The Angelina and Sabine National Forests have the Trail Between the Lake Hiking Trail.

The Sierra Club supports a protective buffer between trails and any oil/gas exploitation activities. The Sierra Club also supports any other mitigation measures that protect trails' activities from visual and noise pollution caused by oil/gas exploitation. In the late 1990's or early 2000's, an oil/gas well was drilled and storage tanks placed on the LSHT. The LSHT was moved several hundred feet to make way for the well.

The OGLEIS must analyze the impacts that existing and future pipelines have on sensitive areas and vegetation and protect these areas. In the 2010's a pipeline that went through a baygall, was dug-up and tremendous compaction and rutting occurred. The water reliant and sensitive baygall plant community was impacted by this action.

In the mid-1990's, two oil/gas wells were put in the Winters Bayou Scenic Area. These actions fragmented and destroyed and damaged part of the floodplain forest in this scenic area. Although this was a private mineral rights well, this example demonstrates why "no surface use" requirements are needed for sensitive areas and vegetation and special use areas.

In the Oil/Gas EIS, the Sierra Club supports preparation of an inventory of sensitive areas and the protection of these areas, along or near current and future pipelines and other oil/gas developments. This includes, but is not limited to, streams, rivers, seeps, springs, lakes, ponds, and other water related elements. This also includes wildlife habitats, mature, old-growth, and near old-growth forests, native prairies, Red-cockaded Woodpecker and other rare, threatened, endangered species, and species of concern and their habitats.

The Oil/Gas EIS must address reduction or elimination of fragmentation impacts on NFGT due to current and future oil/gas exploitation. Existing fragmentation impacts from oil/gas exploitation should be analyzed and presented so that a baseline of effects is created for present and future mitigation measure implementation.

In general, the Oil/Gas EIS must upgrade and make mitigation measures more stringent on the NFGT for current and future oil/gas exploitation.

The Oil/Gas EIS must comprehensively address environmental impacts of the hydraulic fracturing process on NFGT. This includes earthquakes and fault movements, hydrological impacts (springs, seeps, groundwater, water table, etc.), water quality impacts, water quantity impacts, infrastructure impacts, and other environmental impacts due to this process.

The Oil/Gas EIS must analyze the use of state-of-the-art technology to reduce oil/gas exploitation environmental impacts. An example of this state-of-the-art technology is the use of an automated drilling rig.

The Oil/Gas EIS must discuss current hydraulic fracturing technology and its environmental impacts, new hydraulic fracturing technology that is being developed and federally funded in the Permian Basin and its environmental impacts, and potential 20-year oil/gas technological advances and their environmental impacts on the NFGT.

The Oil/Gas EIS must clearly describe how the FS will handle private mineral rights oil/gas exploitation which takes place on about 1/3 of the lands in the NFGT. This analysis must include the cumulative environmental impacts caused by this type of oil/gas exploitation in addition to the federal leasing program's oil/gas exploitation environmental impacts. The FS must state clearly how it will address environmental impacts due to oil/gas

exploitation of private mineral rights in relation to other oil/gas exploitation on the NFGT.

The Sierra Club requests that a no federal oil/gas leasing and exploitation alternative be analyzed and used as a reasonable alternative in the Oil/Gas EIS.

The Sierra Club requests that an all renewable energy sources alternative (wind, solar, and geothermal energy) be analyzed and used as a reasonable alternative in the Oil/Gas EIS.

The Sierra Club requests that a range of reasonable alternatives, which reduce current leasing and exploitation by, 10%, 20%, 30%, 50%, 60%, 70%, 80% or 90%, be comprehensively analyzed in the Oil/Gas EIS.

The Sierra Club appreciates this opportunity to provide some preliminary comments about the Oil/Gas EIS.
Thank you.

Sincerely,

Brandt Mannchen

Forest Management Issue Chair

Lone Star Chapter of the Sierra Club

Chair, Forestry Subcommittee

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NFGT AND OIL AND GAS LEASING EIS SCOPING 2019

October 9, 2019

Oil & Gas EIS Project

Mr. Robert Potts

Natural Resources and Planning Team Leader

National Forests and Grasslands in Texas

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Lufkin, Texas 75904

Dear Rob,

The Houston Regional Group and Lone Star Chapter of the Sierra Club (Sierra Club) provide these scoping comments for the U.S. Forest Service (FS) oil/gas leasing environmental impact statement (OGLEIS) under the National Environmental Policy Act (NEPA) for the National Forests and Grasslands in Texas (NFGT). The Sierra Club appreciates that the NFGT is preparing an OGLEIS.

Introduction

1) The Sierra Club will continue to participate in this process and requests to be updated on the status throughout the entire EIS process.

2) The Sierra Club requests that the FS list in the OGLEIS what handbooks, rules, regulations, laws, etc. that must be adhered to and followed during the OGLEIS process.

3) The Sierra Club requests that the FS provide it and the public an additional 60-days for public scoping comments.

4) The Sierra Club requests that when the comment period is finished that it be allowed to review the public comments that were submitted.

5) The FS should notify nearby landowners and citizens of the area about the OGLEIS and implement a comprehensive public participation program.

6) The Sierra Club has placed comments under different headings. The comments may be appropriate and apply under several different headings so the FS should understand that its analysis of the Sierra Club's comments should not assume a comment made under one heading only applies under that heading. One comment may also apply under another heading. If there is a question about a comment or what it applies to, the FS should ask the Sierra Club.

7) The FS should adopt and follow the "Jemez Principles for Democratic Organizing" for public participation and input which state:

1) Be Inclusive

2) Emphasis on Bottom-Up Organizing

3) Let People Speak for Themselves

4) Work together in Solidarity and Mutuality

5) Build Just Relationships Among Ourselves

6) Commitment to Self-Transformation.

Notice of Intent (NOI) Proposed Action Scoping Alternative

The FS, in the NOI, outlines its proposed action (essentially a scoping alternative) and lists stipulations in a

handout, Table 1. Draft Stipulations for Current Management and proposed Action and Acres in the Decision Area. The Sierra Club is concerned about this kind of process because:

1) In many respects, this type of process prejudges what the FS wants and discounts what public input will provide. It is natural that after having put so much work into a Proposed Action that the FS will feel compelled to support and defend it. In the eyes of the public the FS already has its mind made up.

2) This type of action inhibits collaboration. The Sierra Club told the FS it wanted to collaborate with it on this OGLEIS. But now the FS has already decided what the Proposed Action will be, what stipulations will be, what area they will cover, what will be covered under no surface occupancy (NSO, which is not explained and defined), controlled surface use (CSU, which is not explained and defined), and time limitation (TL, which is not explained and defined). Where is the public input before a Proposed Action and stipulations are prepared? This leads to a predetermined outcome in favor of what the FS wants and collaboration with the public.

3) The maps, "Nonattainment and Class 1 Areas", "Existing Stipulations", "Proposed Stipulations", "Existing Leases", and "Decision Area and Key Resources", for the Proposed Action are not easily available or readable. It will be difficult if not impossible for the Sierra Club to study and compare the maps, which have not been available for the entire scoping comment period, with Forest Maps, Stand Maps, rivers/streams locations, county boundaries, Compartment boundaries, Stand boundaries, and topographic boundaries during the comment period.

4) It is not possible right now, with or without maps the FS has provided, to easily discern where the stipulations are and which acres are covered in each Compartment and Stand that is or is not affected by each stipulation.

5) It is difficult to compare existing stipulations found in the 1996 Revised Land and Resource Management Plan (RLRMP), EIS, Appendix C, Part I, Minerals and Geology and Part II, Leasable Energy Minerals, and Forest Plan, and Appendix B, Mineral Operations Clauses and Attachments with the proposed stipulations because Table 1 lists stipulation numbers and or identifiers under current management that are not listed (in this manner) under the Appendices mentioned above. Therefore, it is confusing to the public which current stipulation is being compared to which proposed stipulation.

6) The FS provided a cover copy of the U.S. EPA's "Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States", from 2016. The essence of FS comments at the September 26, 2019 public meeting in Willis, Texas was that this report set-out the impacts of hydraulic fracturing. This is not correct. The report is 3 years old and based on information older than that. An up-to-date summary, synthesis, and synopsis is needed about what has been discovered about hydraulic fracturing since the 2016 EPA report.

The EPA report only deals with drinking water resources and not the many other natural resources in the NFGT. It is not, therefore, authoritative about environmental impacts of fracking. The FS has not provided any summary of the criticism about the EPA report after it came out so the public has some context about the validity and controversial nature of the report.

7) The FS continues to ignore habitat fragmentation as a concern for oil/gas exploitation. The Sierra Club raised this issue with the FS during the pre-scoping period yet not a word was stated about this problem and how the FS will address during the scoping NEPA process to date.

The Rocky Mountain Research Station, "Science You Can Use", summary that the FS handed out at the September 26, 2019 public meeting, covers some effects of oil/gas development on a national grassland and says specifically that, "Oil gas development also affects wildlife, mainly through habitat loss and fragmentation".

The Sierra Club has brought up the problem of habitat fragmentation many times with the FS on other projects with no success in getting the FS to take this issue seriously and conduct a fragmentation analysis of existing and potential future fragmentation. The Sierra Club has provided to the FS examples of books that cover fragmentation and how to mitigate fragmentation. Some of these books and documents are:

1. "Habitat Fragmentation and Landscape Change, An Ecological and Conservation Synthesis", David B. Lindenmayer and Joern Fisher, Island Press, 2006.
2. "Ecology of Fragmented Landscapes", Sharon K. Collinge, Johns Hopkins University Press, 2009.
3. "Conservation in Highly Fragmented Landscapes", edited by Mark W. Schwartz, Chapman and Hall, 1997.
4. "Corridor Ecology, The Science and Practice of Linking Landscapes for Biodiversity Conservation", Jodi A. Hilty, Williams Z. Lidicker Jr., and Adina M. Merenlender, Island Press, 2006.
5. "Wildlife Reserves and Corridors in the Urban environment, A Guide to ecological Landscape Planning and Resource Conservation, National Institute for Urban Wildlife, 1989.
6. "Preserving Communities and Corridors", Defenders of Wildlife, 1989.
7. "Conservation Buffers, Design Guidelines for Buffers, Corridors, and Greenways", U.S. Department of Agriculture, Forest Service, Southern Research Station, General Technical Report SRS-109, September 2008.

The FS should address these NOI Proposed Action problems and give the public more time to provide specific and detailed comments. The FS should specifically address current and potential future habitat fragmentation in the OGLEIS.

General and Natural Resource Comments

- 1) The Sierra Club appreciates that the FS has committed to no new leasing activity in the NFGT until the OGLEIS process is complete. The NFGT Forest Plan revision, which would replace or revise the 1996 RLRMP will not be restarted before the OGLEIS is complete. It is very important that the FS clearly explain how the OGLEIS will be implemented and integrated into the 1996 RLRMP and the new Forest Plan revision. The FS should tell the public what will be changed in the 1996 RLRMP and what will need to be changed or is required for the new Forest Plan revision when that process begins.
- 2) A reasonable foreseeable development scenario (RFDS) for oil/gas from the Bureau of Land Management (BLM), has been completed. The public has been provided this document. It is important for the public to review and comment on the accuracy and completeness of the RDS.

A list of current NFGT oil/gas stipulations are needed with documentation of how these stipulations will change, be eliminated, or have additional requirements added in the OGLEIS. The Sierra Club urges the FS not to do a rush job. Be comprehensive and do this right, with public input, feedback, review, comments, collaboration, and transparency. The existing environmental analysis for oil/gas leasing in the NFGT is out-of-date and inadequate which is why the OGLEIS process is needed. A comprehensive reanalysis of oil/gas exploitation is needed in the OGLEIS.

- 3) The OGLEIS should provide a map which shows all sub and surface faults on each national forest and grassland in the NFGT. The FS should discuss faults and their possible activation due to earthquakes and other activities conducted by oil/gas exploitation.

Attachment 1:

1. "Induced Earthquakes Raise Chances of Damaging Shaking in 2016", Jessica Fitzpatrick and Mark Peterson, U.S. Geological Survey, March 28, 2016.

4) The OGLEIS must address usable water quality and the possibility of subsidence, fault activation, and contamination of shallow water aquifers due to pipeline and other oil/gas exploitation. The FS must discuss groundwater, water tables, shallow and deep aquifers, seepage areas and springs and how they are affected by oil/gas exploitation on each national forest and grassland in the NFGT.

The OGLEIS must discuss how much is known about subsurface hydrology, where the seeps, springs, seepage flows and other sensitive water-based habitats are located, and what the impacts will be due to the seismic surveys, exploration, development, production, abandonment, and transportation. The public needs this information so it can review and comment on information about where seeps, springs, seepage flows and other sensitive water-based habitats are located and what impacts will occur due to the seismic surveys, exploration, development, production, abandonment, and transportation. An inventory is needed of these water related areas on each national forest and grassland in the NFGT.

Attachment 2:

1. "Sweet Bay - Swamp Tupelo - Red Maple (Baygall/Seepage) Forests, FT 68, on the East Side of SHNF (Sam Houston National Forest)", Brandt Mannchen, Houston Sierra Club, January 30, 2013.

2. "Summary Report of Botanical Survey of 28 Potential Forest Type (FT) 68 (Baygall/Seepage Stream Forests or Sweetbay Magnolia-Swamp Tupelo-Red Maple) in the Sam Houston National Forest (SHNF)", Peter Loos, September 2013.

5) The OGLEIS should discuss seismic activity and earthquakes and how they are affected by oil/gas exploitation on each national forest and grassland in the NFGT. Attachment 1

6) The OGLEIS should discuss pipelines and require that pipeline corridors are designated. The FS should talk about where these corridors will be located, how they will be operated, and their effects (like fragmentation) on each national forest and grassland in the NFGT.

7) Three specific situations from the past which reveal oil/gas impacts and that should be discussed in the OGLEIS include pipelines and sensitive areas, drilling in the Winters Bayou Scenic Area, and drilling in Compartments 95/96 that required that part of the Lone Star Hiking Trail be moved. Attachment 2

8) The OGLEIS should discuss the operation and maintenance impacts that pipelines and flowlines have on wetlands in each national forest and grassland in the NFGT.

An example of where this damage occurred is the pipeline in Compartment 115, Sam Houston National Forest (SHNF). This pipeline goes southwest from FM 2025 and crosses the East Fork of the San Jacinto River. Clearing of this pipeline right-to-way (ROW) in the East Fork of the San Jacinto River Floodplain has destroyed or severely damaged forested and scrub-shrub wetlands.

These wetlands are called, by the Society of American Foresters (SAF), Forest Type 104, Sweetbay-Swamp Tupelo-Redbay. These wetlands are called by the FS, Forest Type Code 68, Sweet Bay-Swamp Tupelo-Red Maple. These wetlands are called Acid Bog-Baygall plant communities by Geraldine Watson in "Big Thicket Plant Ecology, An Introduction", Third Edition, Pages 54 through 56, 2006, University of North Texas Press.

Because there are no requirements that the pipeline owner keep the portion of the pipeline that goes through this wetland type in native vegetation, the vegetation has been destroyed or damaged and the hydrology has been disrupted or interrupted via operation and maintenance actions or activities. The Sierra Club is unaware of any wetland mitigation that has been done due to this destruction and damage and no U.S. Army Corps of Engineers Section 404 permit that the FS or pipeline operator obtained.

The FS must provide mitigation measures in the OGLEIS for instances where important wetlands, which include baygalls and streamside plant communities, are destroyed, damaged, or disrupted by oil/gas exploitation. Wetlands, in the NFGT, should be areas where "no surface use occupancy" is allowed. The FS should conduct a wetland delineation on each national forest and grassland in the NFGT and provide the delineation to the public for review and comment about its' adequacy and comprehensiveness. Attachment 2

9) The FS has stated in the past, "If areas are restricted from full development there will be a loss in production and a loss in sustaining our country's need for energy resources and monies generated from that resource." The FS must not make excuses in the OGLEIS for oil/gas exploitation and the oil/gas industry. It is not the job of the FS to defend oil/gas exploitation. It is the job of the FS to manage and protect the NFGT and their natural resources for the public. The idea that oil/gas exploitation from the NFGT will somehow provide a lot of money or energy is not shown by the information the FS has provided to the public in the past. The OGLEIS should break out the money provided to counties, state, nation, and internationally from this oil/gas exploitation and show on a percentage basis what this resource is worth in comparison with oil/gas exploitation on private and other lands in Texas.

10) The FS has stated that counties need the 25% return on oil/gas rentals and royalties. The OGLEIS must provide information which documents such claims. The FS is not responsible for county budgets and how much money the NFGT provides these counties. Natural resources protection trumps making money in the NFGT.

11) The OGLEIS should explain and state how it will address oil/gas exploitation on private and public lands which affect each other in and adjacent to the NFGT. The FS must explain what are the solutions or strategies that will minimize negative impacts to both. The FS must be clear and transparent with the public about what it can or cannot do and will or will not do. That is the bottom line.

12) The FS has stated that "The biggest risk to geologic sustainability is a continued decline in budget and in the lack of staff to properly protect this resource. Geological hazards are difficult to mitigate with a shortage of staff and funding." This, along with over-leasing and noncompetitive bid leasing, are problems that the OGLEIS should discuss.

The FS has for many years insisted that personnel and budget matters cannot be discussed, or remedies advanced for oil/gas exploitation plans. However, the Sierra Club requests that the FS deal with this issue now. The FS must state how the OGLEIS is going to be implemented effectively if budget and staff continues to be cut and is insufficient to protect the natural resources the FS is entrusted with by the public on the NFGT. It is important for the FS not to hide this issue from the public. The FS must be transparent and definitive about how it will protect public lands on the NFGT. If it cannot do so, then the FS must say so and publicly let the public know this fact.

Attachment 3:

1. "Oil Leasing Hits Record Levels", James Osborne, Houston Chronicle, February 19, 2019.
2. "Stormy Map: America's Public Lands Giveaway", September 19, 2019.
3. "Backroom Deals, The Hidden World of Noncompetitive Oil and Gas Leasing", Kate Kelly, Jenny Rowland-

Shea, and Nicole Gentile, Center for American Progress, May 23, 2019.

13) The OGLEIS must comprehensively address environmental impacts of the hydraulic fracturing process on NFGT. This includes earthquakes and fault movements, hydrological impacts (springs, seeps, groundwater, water table, etc.), water quality impacts, water quantity impacts, infrastructure impacts, and other environmental impacts due to this process.

The OGLEIS must discuss current hydraulic fracturing technology and its environmental impacts, new hydraulic fracturing technology that is being developed and federally funded in the Permian Basin and its environmental impacts, and potential 20-year oil/gas exploitation technological advances and their environmental impacts on the NFGT. The Sierra Club opposes the hydraulic fracturing process (cradle to grave) because of the environmental damages that it causes. Attachments 1 and 2

14) The OGLEIS must clearly describe how the FS will handle private mineral rights oil/gas exploitation which takes place on about 1/3 of the lands in the NFGT. The OGLEIS analysis must include the cumulative environmental impacts caused by this type of oil/gas exploitation in addition to the federal leasing program's oil/gas exploitation environmental impacts. The FS must state clearly how it will address environmental impacts due to oil/gas exploitation of private mineral rights in relation to other oil/gas exploitation environmental impacts on the NFGT.

15) The OGLEIS must address the need for release/spill contingency plans in case emergency conditions occur.

16) Many wells have been drilled both in the NFGT and adjacent to it on private lands. Many pipelines, roads, logging operations, burning, and other actions have occurred in the past, present, and will occur in the reasonably foreseeable future in NFGT and adjacent to NFGT. The OGLEIS must assess all the cumulative impacts of these actions.

17) Noise is a direct impact due to the proposal that must be assessed, analyzed, and evaluated in the OGLEIS. The impact of noise on natural sounds, quiet, and wildlife and animal behavior must be assessed. The disturbance potential of noise on wildlife must be assessed and placed in the OGLEIS so that the public and decision-maker can review, comment on, and learn about this environmental impact.

Attachment 4:

1. "Proximity to unconventional shale gas infrastructure alters breeding bird abundance and distribution", Laura Farwell, Petro Wood, Donald Brown, and James Sheehan, The Condor Ornithological Applications, Volume XX, pp. 1-20, 2019.

2. "Shale gas development a mixed bag for songbirds", Dana Kobilinsky, The Wildlife Society, June 18, 2019.

3. "Bird numbers drop 3 billion since 1970", Joshua Rapp Learn, The Wildlife Society, September 20, 2019.

4. "State of the Birds: In Crisis but recovery is possible", David Frey, The Wildlife Society, September 24, 2019.

5. "State of the Birds 2019 United States of America", U.S. North American Bird Conservation Initiative, no date.

6. "Top Danger for Birds, Humans", James Gorman, New York Times, in Houston Chronicle, September 25, 2019.

18) The OGLEIS must assess the impacts that additional traffic will have on the NFGT and its visitors and or private property via air pollution, noise, and degradation and destruction of road surfaces by vehicles. This

environmental impact must be assessed in each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this.

19) The OGLEIS must assess the impacts of illegal use of all-terrain vehicles or other off-road vehicles (including poaching of wildlife) on public and private lands due to the use of roads or other routes to access areas where oil/gas exploitation will occur and in the OGLEIS. This environmental impact must be assessed on each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this.

20) The OGLEIS must assess the indirect, cumulative, and connected impacts that the produced water will have at the place where it will be discharged for cleaning. This environmental impact must be assessed in the OGLEIS on each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this.

21) The OGLEIS must assess how lights affect bats, insects, and other wildlife attracted to lights. This environmental impact must be assessed in the OGLEIS for each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this.

22) The OGLEIS must assess how displaced wildlife does not come back to degraded or destroyed habitat right away or at all. This would be a long-term impact of probably 20 years or more even if wells are dry. When habitat is lost, unless other habitat nearby is not at carrying capacity, wildlife displaced will die unless they kill or displace existing wildlife in suitable habitat. This environmental impact must be assessed in the OGLEIS for each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this.

23) The OGLEIS must assess how vegetation types do not come back right away when they are degraded or destroyed. This is a long-term impact of probably 20-60 years or more even if wells are dry. When vegetation types are lost there may be no recovery to the original vegetation. This environmental impact must be assessed in the OGLEIS for each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this.

24) The OGLEIS must address in the OGLEIS the enforcement authority it has and how willing it is to use that authority. The OGLEIS must address what illegal actions are expected and excused by the FS or will be prosecuted. This environmental impact must be assessed in the OGLEIS for each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this.

25) The OGLEIS must reveal all impacts from the wells, production facilities, flowlines, and pipelines, and any other associated actions or activities on riparian areas, floodplains, slope forest communities, prairies, and upland forest communities. These environmental impacts must be assessed in the OGLEIS for each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this NEPA required element. Each of the documents below spell out areas that should be protected by "no surface use".

Attachment 5:

1. "Interesting Forests on the East Side of Sam Houston National Forest", Brandt Mannchen, Houston Sierra Club, revised September 29, 2019.

2. "Interesting Forests on the West Side of Sam Houston National Forest", Brandt Mannchen, Houston Sierra Club, January 18, 2013.

3. Letter from Brandt Mannchen, Houston Regional Group and Lone Star Chapter of the Sierra Club to Warren Oja, Sam Houston National Forest, May 23, 2015, about potential names for prairies in SHNF.

4. "Five Special Management Area Proposals for Sam Houston National Forest for the National Forests and Grasslands Forest Plan Revision by the Lone Star Chapter of the Sierra Club, Brandt Mannchen, undated, 2017 or 2018.

26) The OGLEIS must reveal the impact on all roads and bridges that are used to access well sites, production facilities, flowlines, and pipelines, and any associated activities. This environmental impact must be assessed in the OGLEIS for each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this.

27) The OGLEIS must analyze, assess, and evaluate the impacts of oil/gas exploitation in the OGLEIS on solitude in the NFGT. This environmental impact must be assessed in the OGLEIS for each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this.

28) The OGLEIS must analyze, assess, and evaluate the impacts from oil/gas exploitation on non-motorized recreation. This environmental impact must be assessed in the OGLEIS for each national forest and grassland in the NFGT so the public and decision-maker can review, comment on, and learn about this.

29) The OGLEIS must discuss what monitoring of oil/gas facilities will be required and how often it will be done, and who will conduct the monitoring for each national forest and grassland in the NFGT. The FS should use qualified FS employees and require that inspections be unannounced.

30) The OGLEIS must be concerned about the possibility of a release, explosion, fire, spill, or other hazardous event from oil/gas exploitation and the impacts on private lands and the NFGT. The FS must analyze, assess, and evaluate the possibility of such events and then discuss the environmental impacts in the OGLEIS for each national forest and grassland in the NFGT so the public can review, comment on, and understand fully the all environmental impacts due to oil/gas drilling on private lands and the NFGT.

31) The Sierra Club requests that the OGLEIS ensure that all potential environmental impacts that oil/gas exploitation has on residential areas and recreational areas are analyzed and presented for each national forest and grassland in the NFGT.

32) The OGLEIS should require a discussion about maintenance standards for the monitoring and upkeep of flowlines. This will ensure that leaks or spills are prevented and damage is minimized. The OGLEIS should require that if any flowline or other equipment in the NFGT must be dug up due to concerns about damage or possible leaks or spills from this equipment, that before the action occurs the FS is alerted to the action, is fully informed about the nature of the action, has the opportunity to send a representative to the location to observe the action, and that ecological restoration will occur after the maintenance is complete.

33) The OGLEIS should discuss and analyze for each national forest and grassland in the NFGT the potential for starting a fire due to oil/gas exploitation during the current drought and what the potential environmental impacts would be.

34) The OGLEIS must discuss how it affects invasive species growth and spread and what will this mean ecologically and biologically. The OGLEIS must state what mitigation measures will be required to ensure that invasive plant species are not spread due to oil/gas exploitation for each national forest and grassland in the NFGT.

35) The OGLEIS must indicate for each national forest and grassland in the NFGT how rare or protected plants

will be spotted and avoided. There should be, at a minimum, a 100-foot buffer zone along all ephemeral, intermittent, and perennial streams. The public needs this information so it can review and comment on how rare or protected plants will be spotted and avoided. An inventory of these areas is needed.

36) The OGLEIS must discuss for each national forests and grassland in the NFGT what reclamation of impacts due to seismic surveys will occur in the mitigation plan. There should be a formal reclamation plan so that the public can review and comment on its adequacy. The public needs this information so it can review and comment on the reclamation plan.

37) The OGLEIS must require a pre-operational assessment of vegetation in units via mapping so that this information can be analyzed, assessed, and evaluated for each national forest and grassland in the NFGT to reduce or eliminate environmental impacts, avoid areas, and mitigate environmental damage. The public needs this information so it can review and comment on the pre-operational assessment of vegetation in units.

38) In the OGLEIS maps are needed for basins, provinces, plays, fields, formations, geologic structures, and other geologic features that apply to each national forest and grassland in the NFGT and the acres or areas/sites that each of these covers.

39) The OGLEIS must have the number of NFGT acres for each national forest and grassland that are covered by federal and or private minerals and maps that show these in relation to important areas or natural resources like riparian areas and floodplains (Management Area 4), protected river and stream corridors (Management area 8 b.), bottomland areas (Management Area 8 e.), wilderness areas (Management Area 7), scenic areas Management Area 8 c.), recreation areas (Management Area 9), trails of all types, Red-cockaded Woodpecker (RCW) clusters and foraging areas (present and for the recovery limits for each national forest, Management Area 2), Louisiana Pine Snake (Management Area 6 and other areas), Longleaf Ridge (Management Area 6), natural heritage sties (Management Area 8 d.), Region 8 sensitive species sties, Texas Parks and Wildlife Department sensitive species, wetlands, research natural area (Management Area 8 a.), lakes and shorelines (Management Area 5), Longleaf Pine Initiative areas, Shortleaf Pine Initiative areas, cultural heritage areas (Management Area 8 f.), Stephen F. Austin Experimental Forest (Management Area 11), old growth areas, etc., in the NFGT. Attachments 2 and 5

40) The OGLEIS must have all oil/gas fields labeled with "field class size" and an explanation of what this means in each national forest and grassland in the NFGT.

41) The OGLEIS must have a list and map which shows all current oil/gas exploitation facilities (pipelines, flow-lines, well pads, roads, flares, storage tanks, injection wells, compressors, electric lines, etc.) that are part of exploration, development, production, and plugging and abandonment in each national forest and grassland in the NFGT.

42) The OGLEIS must have the total number of current leases, their acres, and where they are located on maps in each national forest and grassland in the NFGT.

43) The OGLEIS must have a cumulative impact analysis and RFDS of all oil/gas exploitation actions/activities on federal surface rights with private minerals in each national forest and grassland in the NFGT; all oil/gas exploitation actions/activities on federal surface rights with federal minerals in each national forest and grassland in the NFGT; all oil/gas exploitation actions/activities on private or other lands within the congressional boundaries of each national forest and grassland in the NFGT; and all oil/gas exploitation actions/activities within five miles of the congressional boundaries of each national forest and grassland in the NFGT.

44) The OGLEIS must have the number, location, and a map of each shut-in, marginal, and stripper well on each national forest and grassland in the NFGT.

- 45) The OGLEIS must have the number, location, and map of each wildcat well in each national forest and grassland in the NFGT.
- 46) The OGLEIS must have the number, location, and a map of each in-fill and or step-out well within/adjacent to currently producing fields in each national forest and grassland in the NFGT.
- 47) The OGLEIS must have the number, location, map, and approximate time of all acres for each national forest and grassland in the NFGT that in the future will revert to the federal government.
- 48) The OGLEIS must have a map which shows all areas that may be subject to hydraulic fracturing on each national forest and grassland in the NFGT.
- 49) The OGLIES must have a list of the oil/gas current technologies that are used to seismic, exploration, develop, produce, abandon and restore, and transport oil/gas in each national forest and grassland in the NFGT and possible future technologies through 2050.
- 50) The OGLEIS must have the impacts that other forms of energy, particularly those that generate little or no climate change gasses, can have on oil/gas exploitation and in each national forest and grassland in the NFGT.
- 51) The OGLEIS must have the impacts that oil/gas exploitation has on climate change and the impacts that climate change has on the natural resources in each national forest and grassland in the NFGT.
- 52) The OGLEIS must have a narrative that summarizes new legislation (since 1996), regulatory actions, economic conditions, policy, etc., related to oil/gas exploitation (exploration, development, production, abandonment and restoration, transportation, and consumption) and how this affects each national forest and grassland in the NFGT.
- 53) The OGLEIS must have the total number of federal acres currently leased, their location, and a map for each national forest and grassland in the NFGT.
- 54) The OGLEIS must have the accuracy of the oil/gas exploitation predictions made for the 1996 RLRMP versus what the current status is on each national forest and grassland in the NFGT.
- 55) The OGLEIS must have a summary of problems, including violations of requirements, that oil/gas exploitation has created on each national forest and grassland in the NFGT and the current status of these problems.
- 56) The OGLEIS must discuss the ability of the NFGT to adequately, as required by the 1996 RMRMP and other laws/policy, conduct oversight (compliance and enforcement) and process applications for oil/gas exploitation actions/activities on each national forest and grassland.
- 57) The OGLEIS must have the average time it takes to explore, develop, produce, abandon and restore, and transport oil/gas in each national forest and grassland in the NFGT.
- 58) The OGLEIS must have the requirements that oil/gas exploitation must follow regarding noise and lighting in each national forest and grassland in the NFGT.
- 59) The OGLEIS must have the total acres, location, and a map of "eligible lands" in each national forest and grassland in the NFGT.
- 60) The Sierra Club agrees that use of existing rights-of-way (ROWs) are the best locations for pipelines.

61) The OGLEIS must address the need for safety and release control valves on both sides to prevent and or limit natural gas leaks in pipelines. Natural gas is essentially methane which is a greenhouse gas and must be controlled to reduce climate change.

62) The Sierra Club is against any proposal that includes dredging of streams or rivers for pipelines.

63) The Sierra Club favors capping underground portions of pipelines on both ends, leaving this underground portion of the pipeline in place, and filling it with water.

64) The OGLEIS must provide a detailed analysis on the effects that oil/gas exploitation has on wildlife. For instance, in the research article "Proximity to unconventional shale gas infrastructure alters breeding bird abundance and distribution", by Laura S. Farwell, Petra B. Wood, Donald J. Brown, and James Sheehan, *The Condor, Ornithological Applications*, Volume XX, 2019, pp. 1-20, states that the research looked at responses of 27 bird species within three habitat builds, forest interior, early successional, synanthropic and showed that "More than half of the species evaluated showed sensitivity to distance from unconventional shale gas infrastructure (e.g., well pads, access roads, pipelines). Five forest interior species occurred in greater abundances farther from shale gas development, whereas 3 forest interior gap specialists increased in abundance closer to shale gas. Early successional and synanthropic species, including the nest-parasitic Brown-headed Cowbird (*Molothrus ater*), generally occurred in greater abundances closer to shale gas infrastructure [hellip] Our results indicate that breeding passerine distributions and community composition are changing with forest disturbance driven by unconventional shale gas energy development." Attachment 4

65) The Sierra Club is opposed to "noncompetitive" oil/gas leasing. The OGLEIS must analyze the number of acres of NFGT that are leased under this program and tell the public about its implementation and environmental effects. Attachment 3

66) The FS must analyze future climate and how fire will interact with this future climate. The research article, "Future climate and fire interactions in the southeastern region of the United States, by Robert J Mitchell, et. al., *Forest Ecology and Management*, 2014, addresses this topic and says, in part:

"Though there is considerable uncertainty in climate projections for the southeastern U.S., climate change will likely impact both prescribed fire and wildfire. In this review we synthesize climate change-fire interactions, discuss the impacts of uncertainty in a human-dominated landscape, and illuminate how both climate change projections and their uncertainties might impact our ability to manage forests in the Southeast [hellip] This region has the greatest area burned by prescribed fire, the highest number of wildfires in the continental U.S. and contains globally significant hotspots of biodiversity, much of which is dependent on frequent fire. The use of prescribed fire as a management tool depends on a suite of weather and fuel conditions which are affected by climate [hellip] Over the next five decades [hellip] consistently predict air temperature to increase by 1.5-3.0 degrees C in the Southeast. Precipitation forecasts [hellip] predict an increase in precipitation variability. Increases in the likelihood of severe droughts may increase wildfire occurrence while simultaneously limiting the implementation of prescribed burning by restricting the number of days within current prescription guidelines. While the Southeast has among the highest potential for C storage and sequestration, a reduction in C sequestration capacity due to increasing disturbances such as drought, insect infestations, hurricanes and fire, is possible. The potential for long-term shifts in forest composition from climate-altered fire regimes if coupled with an increased potential for wildfire occurrence could reduce quality and quantity of water released from forests at times when demand for high quality water will intensify for human use. Furthermore, any reduction in prescribed burning is likely to result in decreased biological diversity [hellip] Lastly, more future area burned by wildfire rather than prescribed fire has the potential to negatively influence regional air quality. Mitigating the negative effects of climate change-fire interactions would require actively exploiting favorable seasonal and inter-annual climate windows.":

The OGLEIS must analyze and discuss how FS management is affected by increased climate change caused by oil/gas exploitation, the impacts this has on the NFGT, the impacts this has on the FS as an agency with certain management goals and budget, operations, and personnel goals, and what mitigation measures will be implemented to reduce these impacts.

Attachment 6:

1. "Future climate and fire interactions in the southeastern region of the United States", by Robert J Mitchell, et. al., Forest Ecology and Management, 2014.

67) The OGLEIS must analyze the mitigation measures the FS may use to combat the climate change air pollutants released by oil/gas exploitation. The document, "Forests, Wood and Climate, Forest Carbon, Protection and Stewardship, Sierra Club, 2019, relates that within context that "Logging causes the release of most of the carbons tore din trees through on-site decomposition of logging slash (branches, leaves, and needles) and root wads, as well as slash burning" and "less than a third of the original carbon in an individual tree is carried through to the end of the processing chain - the rest id downfall that rots and releases previously stored carbon into the atmosphere in the short term, or is burned in mills or "biomass" power plants as an energy sources (note that incinerating wood produces even more CO2 than burning coal, for equal energy produced). Carbon embodied in products also has a much shorter "like span" than if it is left in old-growth forests, ranging from a year for paper to decades for wood used in buildings [hellip] Increasing the extent, frequency or intensity of logging cannot lead to more forest carbon being stored [hellip] Wood use will contribute to combatting climate change only if we protect more forest and implement climate-friendlier forestry [hellip] Research indicates that forest carbon is maximized where there are the highest levels of forest protection and the least amount of logging, or no logging at all[hellip] Older forests store more carbon than younger forests [hellip] Forest management that is less intensive (e.g. smaller clear cuts, more live-tree retention, wider riparian buffers) results in less overall emissions of forest carbon [hellip] Sierra Club advocates for the creation of a Forest Carbon Trust that would identify and protect carbon-dense primary forests, as well as areas suitable for old growth restoration or afforestation [hellip] In the U.S., the Sierra Club advocates for ending commercial logging on federal public lands [hellip] a Forest Carbon Trust would facilitate a shift w=away from federal subsidies for logging carbon-rich, older forests, or logging of ecologically important "snag forest" habitat, to investment in needed watershed and forest protection [hellip] This campaign could also work in conjunction with efforts to eliminate fossil fuel extraction from federal public lands - a "keep it in the forest, keep it in the ground" approach [hellip] More logging occurs in U.S. forests than in any other nation in the world, making the U.S. the largest global problem in terms of carbon emissions from logging [hellip] Greenhouse gas emissions from the U.S. constitute about one-quarter of the global total, and much of this is the result of fossil fuel extraction from federal public lands [hellip] Increased forest protection globally could account for approximately half of the climate change mitigation needed to keep global temperature rise to 1.5 degrees Celsius or less".

Attachment 7:

1. "Forests, Wood and Climate, Forest Carbon, Protection and Stewardship", Sierra Club, 2019.

Best Management Practices and Stipulations

- 1) In the OGLEIS the FS must discuss best management practices (BMPs) for seismic surveys, exploration, development, abandon and restore, and transportation elements of oil/gas exploitation in each national forest and grassland in the NFGT.

The FS must document the best BMP use in the National Forest System, in other parts of the federal land management realm, in the 50 states, and in the private sector. If the FS is not going to adopt the most protective,

stringent, and best BMPs that are known today then it must state why it will not do so and what technical, economic, and environmental circumstances prevents it from adopting such BMPs.

The OGLEIS must analyze the use of state-of-the-art technology to reduce oil/gas exploitation environmental impacts. An example of this state-of-the-art technology is the use of automated drilling rigs.

2) Piney Creek and its tributaries in Davy Crockett National Forest (DCNF) should be protected so the integrity of riparian areas on these streams is maintained and soil is not eroded and deposited as sediment in these streams. The Texas Conservation Alliance (TCA) has submitted to the FS a proposed special management area (SMA) on Piney Creek. The area within this proposal should be protected from oil/gas exploitation with "no surface use occupancy" implemented. The Sierra Club supports the proposed Piney Creek SMA.

SMAs that the Sierra Club and TCA have proposed to the FS are an important issue that must be addressed. SMAs that the Sierra Club has proposed to the FS include Henry Lake/Double Lake Branches, East Fork of the San Jacinto River, Winters Bayou Scenic Area Additions, Nebletts Creek, and Blackland Prairies/Savannahs. The Sierra Club supports all SMAs that the TCA has proposed to the FS. The Sierra Club supports the protection of SMAs (Wilderness Areas, Scenic Areas, etc.), from current and future oil/gas exploitation, with the maximum use of "no surface use occupancy" requirements and no oil/gas leasing in the OGLEIS.

In the OGLEIS the Sierra Club supports preparation of an inventory of sensitive areas and the protection of these areas that are found along or near current and future pipelines and other oil/gas exploitation facilities. This includes, but is not limited to, streams, rivers, seeps, springs, lakes, ponds, and other water related elements. This also includes wildlife habitats, mature, old-growth, and near old-growth forests (mature), native prairies, Red-cockaded Woodpecker (RCW), Louisiana Pine Snake, and other rare, threatened, endangered species, and species of concern and their habitats. These are areas where "no surface use occupancy" or no oil/gas leasing must be implemented. Attachments 2 and 5

3) One mitigation measure that should be required is notification and provision of alternative routes for traffic and access for landowners to their private property when oil/gas exploitation interrupts local road use.

4) The OGLEIS must address long-term (lifetime) corrosion protection and must include state-of-the-art cathodic protection and wrapped pipe requirements to ensure that the integrity of pipelines is maintained and enhanced.

5) The OGLEIS must support the protection of recreational facilities and trails in the NFGT. The Sam Houston National Forest (SHNF) has motorized trails (multi-use trails), mountain bike trails, hiking trails (the 128-mile long Lone Star Hiking Trail - LSHT), special needs and educational trails, and soon to be equestrian trails. The Davy Crockett National Forest has the Four-C's Hiking Trail and equestrian trails. The Angelina and Sabine National Forests have the Sawmill Hiking Trail (Boykin Springs to Old Aldridge) and Trail Between the Lakes Hiking Trail.

The Sierra Club supports a protective buffer between all trails and any oil/gas exploitation. The Sierra Club supports other mitigation measures that protect trail activities from visual, light, and noise pollution caused by oil/gas exploitation. In the late 1990's or early 2000's, an oil/gas well was drilled and storage tanks placed on the LSHT. The LSHT was moved several hundred feet to make way for the well. This should not be allowed.

6) The OGLEIS should discuss seismic surveys and mitigation measures for these actions. Cable only seismic surveys are preferable and cause less damage because no shot holes are drilled, no explosive charges are detonated, and no off-road vehicle use is permitted.

7) For the OGLEIS, the Sierra Club supports a comprehensive mitigation plan for seismic surveys which includes a list of tree, shrub, vine, grass, herbaceous, and other plant species that will be avoided during the cutting of lines. An example of a plant species that should be avoided during 3D or other seismic surveys is the American

Basswood. The American Basswood has become less common in East Texas and deserves protection from seismic surveys. The public needs this information so it can review and comment on the comprehensive mitigation plan and plant species avoidance list.

8) For seismic surveys, the Sierra Club recommends that no vehicles be allowed and that all equipment be packed in by horse, mule, human power, or non-motorized wheeled vehicles. Vehicles compact and erode soils; create unacceptable noise which impacts solitude, quiet, and the enjoyment of natural sounds; disturbs wildlife; and wounds or kills vegetation.

9) For seismic surveys, the Sierra Club is opposed to allowing ruts 8 inches deep. The Sierra Club supports a limit of less than 4 inches for ruts/compression to reduce compaction and surface hydrology alteration to a minimum. Then these ruts/compressions must be raked to reduce their impacts and aid in restoration of micro-topography. Impacts include compaction, interruption of natural hydrological patterns, and degradation of wetland vegetation. If care is not taken and mitigation is not required rutting could result in considerable alteration to natural hydrologic regimes. FS must require that all ruts 4 inches deep or greater be raked and the surface returned to normal height. In addition, FS must protect all ephemeral, intermittent, and perennial streams with a 100-foot buffer. The public needs this information so it can review and comment on proposed vehicle use.

10) For seismic surveys, wetlands and slope forests must be avoided so that unacceptable damage will not occur due to the seismic surveys.

11) A seismic survey mitigation plan must contain a requirement that blocks access to all seismic paths once the survey has been completed in the area so that illegal ATV or other off-road vehicle access and use is deterred.

Reasonable Foreseeable Development Scenario (RFDS) for Oil/Gas Activities

1) Page 1, Introduction, it is peculiar that the FS does not say anything about climate change and how it may affect the RFDS. By 2037, the end timeline that the FS uses, there should be a prediction, projection, or estimate of where we stand with regard to climate change particularly since the FS supports oil/gas exploitation. There should be a method that shows the public where it will be if the FS is allowed to lease oil/gas.

It would be appropriate for the FS to state the condition of the NFGT ecosystems in 2037 because of increased climate change due to the FS policy to increase oil/gas exploitation and the increased oil/gas exploitation. This increased damage should be added to the negative environmental impacts that will be caused by its actions right now.

The Sierra Club is very disappointed with the RFDS. The maps are very difficult to read or use. They do not show in a readable and reasonable scale all the detail needed specifically, for each national forest or grassland, to show which acres, compartments, or parts of compartments, and stands are in private oil/gas mineral rights, are in federal mineral rights, show federal mineral rights that are leased now, show federal mineral rights and when they will go back (revert) to the U.S., show all the pipelines, compressors, roads, flares, storage tank batteries, all the oil/gas exploitation infrastructure that is used today and that will be added by 2037. This information is not shown in any readable and analyzable format. This is not acceptable.

For instance, in Sam Houston National Forest (SHNF), Figure 11. Oil and Refined Product Pipelines and Infrastructure in and around the National Forests and Grassland in Texas, there are five pipelines shown. On my SHNF, Forest Map, I count 11 pipelines. I believe that this may be an undercount if you take into account pipelines that are in the road rights-of-way.

There is no map that shows how many flowlines are in SHNF and their locations. The density of oil/gas exploitation infrastructure is much greater than stated because roads are not just the new $\frac{1}{2}$ mile or

whatever length is constructed to a new well pad or other type of oil/gas infrastructure, roads used include all the roads that exist in SHNF that are used by oil/gas trucks and other vehicles to conduct oil/gas exploitation. This includes 100's of miles of road which oil/gas traffic uses and which are damaged, degraded, or worn-down by this traffic. The RFDS is silent about these impacts and how much they will increase in the next 19 years, from 2018 to 2037. Since the 1996 RLRMP that currently exists is 23 years old the FS should extend the timeframe for the RFDS to 23 years, not 19, so that a realistic and possibly worst-case scenario is analyzed and modeled.

The RFDS ignores natural gas liquids, like butane, propane, ethane, and others (see Table 7. Estimate ultimate recoveries for oil, gas, and produced water from horizontal and vertical wells) that will be produced (no estimate of their total production is provided in the RFDS), and how they will create ozone smog precursors, toxic air pollutants, and are used in plastics manufacturing by petrochemical plants which results in additional air pollution, climate change pollution, ocean pollution, and even drinking water pollution where plastic fragments have been found in the bottled water that people drink. These are cumulative impacts that must be analyzed and quantified for the RFDS and OGLEIS. A "cradle to grave" analysis is required to fully document in the RFDS and the OGLEIS what the air pollutant impacts will be, climate change air pollutant impacts, and other air, water, and land pollution that may occur.

The RFDS uses a 1.5-mile boundary outside the NFGT proclaimed boundaries. However, the BLM/FS never state why that is adequate for this analysis. The Sierra Club believes that at least a 5-mile boundary outside the NFGT proclaimed boundaries is needed to take into account any associated oil, gas, groundwater, produced water, and other connected fluids that can flow and move and thus transport water pollution (and air pollution) or water across the boundaries of the NFGT as well as truck and pipeline transport.

The RFDS is silent about how much additional seismic exploration will be done and the impacts that this will have. The same is true for pipelines, flowlines, and truck transportation of oil, natural gas, and natural gas liquids.

Use by the BLM/FS of the 2004 "Interagency Reference Guide: Reasonable Foreseeable Development scenarios and Cumulative Effects Analysis" is inappropriate because this document was published before hydraulic fracturing was the major source of oil/gas exploitation that it is today. The RFDS does not discuss the length of time "fracking" fields and individual wells last with relation to when the production begins to slow, how much is reduced over a period of time, and how much additional produced water is produced over that same period of time. The BLM/FS RFDS is not "a reasonable projection of the most likely anticipated oil and gas activity" and probably underestimates the number of activities that will occur and their environmental impacts.

The baseline scenario assumption that "assumes all potentially productive areas within the assessed areas can be open under standard lease terms and conditions, except those areas designated as closed to leasing by law, regulation, or executive order" is incorrect. The BLM/FS does not address, as the Sierra Club mentions above, all the "no surface occupancy" areas that must be protected from oil/gas exploitation.

The FS fails to discuss the interaction of the exploitation of private oil/gas mineral rights and the option of reducing the negative synergistic interaction between federal and private mineral rights by a mitigation measure that would buy private mineral rights. The BLM/FS does not state how many acres under which wilderness areas are "state and fee minerals" which could be developed. In the late 1990's and early 2000's a mineral rights holder was negotiating with the Angelina National Forest for possible surface entry into Upland Island Wilderness Area.

The FS must address the entire oil/gas exploitation situation with this OGLEIS so the public understands what is at stake, what can be done, and how private and federal oil/gas mineral rights are associated, interact, and synergistic with each other. Only then, can the 1996 RLRMP be amended with complete exposure and transparency of these issues.

2) Page 3, Assumptions and Findings, the BLM/FS state that "we assume that future activity will consist primarily

of horizontal drilling". The BLM/FS should discuss why this is so. Horizontal drilling of oil/gas resources (hydraulic fracturing) tends drain areas faster. Such areas have significant drop-off in barrel production than vertical drilling. This has various impacts and effects on not just environmental conditions but economic and social conditions. The BLM/FS should discuss those conditions and what they are projected to be in the next 19 years.

The BLM/FS does not present oil/gas production in ways that people can understand. For instance, for oil and produced water, instead of using barrels (42 gallons each), the BLM/FS should use gallons since people can relate and visualize a gallon much better than a barrel. The BLM/FS analysis does not provide a "spatial scale" for how many acres will have roads, pipelines, flowlines, compressors, flares, well pads, etc. in relation to ecosystem and habitat fragmentation and what these effects are. At least two important reptiles, Timber Rattlesnakes and Louisiana Pine Snakes (also listed on the federal Endangered Species Act, ESA), are affected by fragmentation and so is the federally endangered RCW. Other wildlife and vegetation species are affected by fragmentation like Shortleaf Pine and smaller invertebrates and vertebrates. The BLM/FS must address fragmentation so that the public has a clear picture of existing fragmentation and how much oil/gas exploitation adds to this in the next 19 years.

The BLM/FS fails to address all roads used by oil/gas exploitation and only lists those new roads that will be constructed. Existing roads are damaged by oil/gas exploitation too and must be labeled as oil/gas infrastructure. Otherwise, oil/gas exploitation could not occur because the operators could not access the potential well and other oil/gas infrastructure sites unless there are private roads, county roads, state highways, farm-to-market roads, U.S. Highways, and Interstate Highways.

3) Page 4, Historical Activity, the BLM/FS refers to 700 abandoned wells. BLM/FS does not state how many of these wells are uncapped or how many are estimated to have not been found that have not been capped or have been capped improperly. A recent news article ("Report: Cleanup of abandoned wells like to be costly", Matthew Brown, Houston Chronicle, September 20, 2019, Attachment 10) documented that this is a continuing problem and this analysis should include this information. Information is also needed on stripper wells and other wells which produce very little oil/gas but which bring up a tremendous quantity of produced water to be disposed of.

4) Page 5, Recent Drilling Activity, the BLM/FS state that "densely clustered vertical drilling has occurred". The FS should discuss this and the impacts this dense clustering of vertical wells has had on Sabine and Sam Houston National Forests.

The BLM/FS must define and discuss what pre-production status, start, at total depth, and treated wells are and define and discuss what non-productive status, pilot, service, observation, suspended, and temporarily abandoned wells are. The Sierra Club supports making the NFGT a "no injection well area".

5) Page 5, Oil and Gas Production, the BLM/FS ignores what the estimate is for these different types of wells (above) in the 1996 RLRMP and EIS and how it compares to what happened. This would give the public insight into how accurate predictions are for oil/gas exploitation activities like drilling.

6) Page 6, Oil and Gas Prices, the BLM/FS uses 2017 price projections when we are in 2019 and data is available to be up-to-date through 2018 and early 2019. The BLM/FS must define what "reasonably well" means when it talks about how the Regional Analysis Area correlates with the rise and fall of natural gas prices. What criteria is used to determine that these natural gas prices are defined "reasonably well"? This is a non-quantitative analysis when it should be a quantitative analysis.

Figure 9, shares a problem with the rest of this RFDS report. When the Sierra Club prints of a copy of the RFDS, part of the data in Figure 9, from 2015 on, does not print out because the format is larger than 8.5 x 11 inches. The Sierra Club cannot see all the graph data due to this. The BLM/FS should print new maps and send them to the Sierra Club and the public so that all data can be easily seen and reviewed.

7) Page 5, Pipelines and Facilities, the BLM/FS refers to "current and future pipeline capacity and demand" as being "beyond the scope of this report". This should not be. This information should be in this report. The BLM/FS has included inaccurate data about the number of pipelines in SHNF. Figure 11, shows five pipelines. On the SHNF, Forest Map, the Sierra Club counts at least 11 pipelines. This may be an undercount if pipelines that are in road rights-of-way are counted. The BLM/FS provides no map that shows how many flowlines are in SHNF and where they are located.

8) Page 7, Production Formations - East Texas Forests, the BLM/FS relies upon hydrocarbon potential and the geological setting of East Texas that is 23 to 24 years old. The latest information should be used in this OGLEIS.

9) Page 8, Producing Formation - Lyndon B. Johnson National Grassland, the BLM/FS fails to state how many wells of various types are on this national grassland. The public should have this information for its review and comment.

10) Page 8, Occurrence Potential Ratings, the BLM/FS state that this analysis "does not account for economic factors or historical development trends". This is not good. An accurate analysis is needed which looks not just at "geologic likelihood" but also other factors. This analysis is incomplete and gives a distorted picture of oil/gas exploitation over the next 19 years.

The BLM/FS refers to "assessment units" within the Local Analysis Area. The public should be provided with information about what these "assessment units" are, how they are determined, and a map which shows where they are located so that information can be reviewed and analyzed.

11) Page 8, Oil and Gas, the BLM/FS does not provide a figure for the federal surface acres only, within each national forest and grassland in the NFGT, for this analysis and assessment. The public needs this information so that it can review and comment on the potential impacts on the federal surface specifically, which is where most damage with occur that relates to the NFGT.

12) Pages 8 and 9, Coalbed Methane, the Sierra Club is very concerned about the possibility of development of coalbed methane. The BLM/FS gives no information about this natural resource, methods of extraction, and says there is a "high potential for occurrence" but then dismisses the possibility of development by saying, "We predict no to minimal coalbed methane development over the planning period" What "minimal coalbed methane development" is and how it is defined is not stated. This is an arbitrary and capricious statement and decision.

We have seen how an entire outlook can change when technology changes as occurred from fracking. Before, shales were thought to not be exploitable. Such technology in the next 19 years for coalbed methane might occur. The Sierra Club opposes coalbed methane exploitation and requests that the BLM/FS not allow any exploitation of this climate change gas on the NFGT.

13) Page 9, Oil and Gas, the criteria which were used to determine what development potential classification (very high, high, medium, and low) is for each acre of federal surface land that falls into projected wells/100 square miles (greater than 100, 26-100, 4-25, and less than 4) is not provided so the public does not know how the BLM/FS determined this classification and whether the estimates are reasonable and not arbitrary and capricious.

The Sierra Club cannot tell from the analysis how many acres are within each national forest or grassland in the NFGT. The Sierra Club cannot tell how many acres in each national forest and grassland in the NFGT are covered by stipulations applied for each natural resource that will be protected.

The Sierra Club believes that having 4 to 25 wells /100 square miles for SHNF, which is about 163,000 acres, for

instance, means that from 10 wells to 64 wells will be drilled in SHNF alone in the next 19 years. This does not include existing private wells within the Local Analysis Area, the 1.5 mile addition outside the NFGT boundaries, and wells with private subsurface minerals with federal surface.

This figure is misleading because if about one-third of federal surface in SHNF is private subsurface, then the number of wells will increase on the rest of the federal surface that does not have private subsurface and will create denser oil/gas exploitation infrastructure which should have been analyzed. It would make better analysis sense to look at existing concentrations of oil/gas exploitation (infrastructure) in SHNF, for instance, and use this as a guide for fragmentation of federal surface acres and worst-case analysis of primary, secondary, connected, and cumulative environmental impacts.

14) Page 10, Future Drilling and Oil and Gas Production Projections, the Sierra Club is concerned the BLM/FS may make the same mistakes it did when predicting oil/gas exploitation in the 1996 RLRMP. The FS does not mention the predictions made in the 1996 RLRMP and does not compare those predictions to present day oil/gas exploitation and determine the accuracy of the 1996 predictions. This is important since the BLM/FS is making predictions now with no apparent look at what was predicted 23 years ago, what occurred, and how such predictions can be made better because you learn why they over or underpredicted. An analysis that looks at past predictions and how they affect this RFDS is needed for the OGLEIS.

Page 14, the BLM/FS states, "with the exception of the northern part of Lake Sabine, little development has occurred or is expected to occur beneath the lakes and reservoirs in the East Texas Forests." If this statement is true (the Sierra Club has never heard of Lake Sabine), then the Sierra Club recommends that no drilling under any lake be allowed period.

The BLM/FS should discuss how long wells in certain fields last and how long fracking wells last versus vertical wells. The Sierra Club understands that fracking wells produce in a significant manner for the first few years and then production rate off rapidly to a much lower production rate.

15) Pages 15 and 16, Estimated Surface Disturbance, the Sierra Club believes that this estimate of projected surface disturbance is low and misleading. For fragmentation impacts, you look at all current surface disturbance and not just that for the predicted future. All parts of each national forest or grassland in the NFGT, where surface disturbance occurs due to oil/gas exploitation or that allows oil/gas exploitation to have access and occur, should be tabulated. This can be done so that future predicted surface disturbance can be compared and added to current surface disturbance that is caused by or has helped oil/gas exploitation. For a complete fragmentation analysis, you must add fragmentation due to other actions/activities in each national forest and grassland in the NFGT which currently exists so that the total effect can be shown and analyzed on wildlife, ecosystems, non-native invasive plant and animal spread, etc.

All oil/gas exploitation actions/activities should be included in surface disturbance calculations including existing and new predicted seismic testing paths, tank truck disturbances, pick-up truck disturbances, shot hole disturbances or other similar disturbances, all-terrain vehicle disturbances, logging of trees and trampling and destruction of vegetation, all roads used (public, private, and forest service) to access any oil/gas exploitation and infrastructure, well pads, flares, storage tank batteries, pipelines, flowlines, vertical separators, Christmas trees (well-head components), vertical heater treaters, free water knockout tanks, gun barrels (wash tanks), vapor recovery units, injection pumps, injection wells, emulsion treaters, circulation pump, compressor stations, gas meters, horizontal separators, gaging stations, power-lines, communication lines, lease automatic custody transfer units (LACT), well test systems, fail-safe devices, sensors, time clocks, alarm devices, dehydrators, water wells, water withdrawal systems, etc.

16) Page 16, Estimated Water Use for Hydraulic Fracturing, the BLM/FS gives "Annual estimates for water required for hydraulic fracturing throughout the 2018-2037 planning period". This is not all the water that is used

or extracted. There is produced water which may or may not be used for fracking. There should be a produced water estimate that is given alongside the estimate for how much water will be used to frack. Since the produced water must be disposed of properly and since it is contaminated with water pollutants it makes sense to document what its production will be and how it will be disposed of properly in how many injection wells and other disposal options.

The BLM/FS fail to discuss subsidence due to the withdrawal of liquids like oil, gas, and water due to oil/gas exploitation. This subsidence has occurred all along the Gulf Coast of Louisiana and Texas. Subsidence can cause flooding, activation of subsurface or surface faults, and other problems. This would be accounted for, in part, in the surface disturbance category. The BLM/FS does not include natural gas liquids like ethane, butane, and propane and the estimated production of these liquids.

BLM/FS refers to "fracturing vertical wells". The Sierra Club has not heard of this type of fracking. The fracking that we have read or heard about is horizontal fracking. The BLM/FS should discuss all types of fracking and how much future production estimates will be for each type of fracking along with conventional vertical wells drilled into traps or specific smaller reservoirs.

The BLM/FS presents data about the percentage of water used for fracking that is fresh or and or surface water. This data is from the Bureau of Economic Geology. The data is at least 8 years old and may be out-of-date since some water conservation measures for fracking have been developed and implemented, additional fracking of many areas has occurred, and fracking fields are becoming mature. The BLM/FS does not talk about how groundwater, surface water, and seepage water features are affected by oil/gas exploitation due to water use.

17) Page 17, Induced Seismicity, the BLM/FS fails to discuss that earthquakes can cause shifts in surface and subsurface faults. No map of the surface and subsurface faults exists in the RFDS and there is no discussion about this important topic. The BLM/FS uses data that is old by several years and does not reflect what is happening in Oklahoma or Texas today.

Oklahoma has taken some action about earthquakes, but Texas continues to lag behind in regulation of this frightening oil/gas exploitation impact. When BLM/FS says that "The RCC could implement a similar protocol if Texas begins to experience more damaging and or frequent earthquakes", this statement is misleading and disingenuous.

Cows could also fly in the future. The RRC has not wanted to address earthquakes in Texas and has done very little. The use of 2015 earthquake data for Oklahoma and not newer 2016, 2017, and 2018 data does not show what the trend is for earthquakes and whether what has been done will work over a long period of time.

The idea that "Risk associated with earthquakes in north and east Texas is low" is an absurd statement. The oil/gas industry and RRC use to say that earthquakes could not happen but now they have. Now BLM/FS states that risk is low. Oklahoma said this too before it had earthquakes that caused damage and frightened citizens. Do we have to have "dead bodies in the street" for the BLM/FS to acknowledge a problem and state what they will do about it? How about requiring that if there are any earthquakes that the well will be shut down. That would certainly act as a deterrent. But BLM/FS does not discuss what they will do if this happens. That is bad management and non-existent public collaboration.

The BLM/FS does not report what happened for the past 3 years with regard to hydraulic fracturing-induced earthquakes in the U.S. and does not address what has happened in other countries.

The BLM/FS says underground "injection of waste fluids for the purpose of permanent isolation", which is a false statement. Permanent means "forever". The BLM/FS cannot guarantee "forever" contamination protection from produced water and fracking fluids for groundwater. There is no such thing as "permanent isolation" and BLM/FS

is telling the public something that is not true. This is how agencies lose public support and trust.

18) Page 18, Summary, the BLM/FS claims that it has done things it has not. The BLM/FS claims it has "estimated the number of wells that could be drilled during the period, as well as the disturbance associated with projected and existing wells over the life of the plan". As the Sierra Club comments point out total disturbance caused by oil/gas exploitation has been underestimated.

BLM/FS has failed to discuss, define, and show how it arrived at its assertion that it "may be reasonably assumed to be drilled" etc. and "maximum potential surface disturbance". The BLM/FS have failed to conduct an adequate, correct, and appropriate analysis for the RFDS. The BLM/FS does not state where the water will come from to allow increased fracking for the next 19 years. The BLM/FS does not say what methods it will use to reduce water quantity impacts.

19) Figure 17, Comparison of historical 20-year drilling totals, etc., the comparisons are not clearly labeled for where they came from. These comparisons overlap with no explanation why a period of 1973 to 1992 overlaps with a period of 1978-1997; a period of 1978 to 1997 overlaps with a period of 1983-2002; a period of 1983 to 2002 overlaps with a period of 1988-2007; a period of 1993 to 2012 overlaps with a period of 1998 to 2017, and the new projected drilling total (for 2018 to 2037, but which the BLM/FS published in 2019) is 19 and not 20 years.

The BLM/FS fails discuss the 1996 RLRMP projections and what was learned about why those estimates were not correct. The BLM/FS has not shown how it has made the new projections more accurate.

Potential Forest Plan Changes

1) Currently, in the 1996 RLRMP and EIS, there are several appendices that address oil/gas exploitation. These appendices include in the EIS, Appendix C, Part I, Minerals and Geology and Part II, Leasable Energy Minerals, and 1996 RLRMP, Appendix B, Mineral Operations Clauses and Attachments.

The FS should update these documents, keep the same format, which is easy to read and clear, and provide these updated appendices as part of the draft OGLEIS. This is needed because the 1996 RLRMP will be amended with new or changed stipulations and because the 1996 RLRMP information is 23 to 26 years old and needs to be updated. These updated appendices will give a complete outlook on oil/gas exploitation in the NFGT. Some updates, not all, that are needed for these appendices include:

1. Page 33, Forest Plan EIS, Appendix C, Standard Lease Terms and Conditions, Section 6, Conduct of Operations, remove "to the extent consistent with". Page 34, change "lessee shall immediately contact lessor" to "lessee shall notify the lessor within 30 minutes or less".

2. Page 34, Forest Plan EIS, Appendix C, Standard Lease Terms and Conditions, Section 12, Delivery of Premises, remove "within a reasonable period of time" and change to "no later than 6 months".

3. Page 34, Forest Plan EIS, Appendix C, Standard Lease Terms and Conditions, Leasing Process, provide a list of "special needs, beyond the scope of existing stipulations" where the FS has developed "additional local stipulations to fit the situation" for each national forest and grassland in the NFGT.

4. Page 35, Forest Plan EIS, Appendix C, Leasing Process, change the "primary term" for competitive and non-competitive leases from 10 years to 5 years. Eliminate "non-competitive" leases. This encourages return of leases that will not be exploited.

5. Page 35, Forest Plan EIS, Appendix C, Lease Rights, require that private mineral rights on federal lands can

be moved at least 200 meters off the site to reduce environmental impacts.

6. Page 35, Forest Plan EIS, Appendix C, Waivers, Exceptions or Modifications, remove "substantially modifies the terms of the lease, etc." and replace with "modifies the terms of the lease, etc.".

7. Page 36, Forest Plan EIS, Appendix C, Geophysical Exploration Application, require a public notice and 30-day comment period. Remove "A bond may be required" and replace with "A bond will be required".

8. Page 36, Forest Plan EIS, Appendix C, Geophysical Exploration, ensure that even when "topography is relatively flat and open" that vibroseis trucks are restricted to "existing roads and trails" to reduce environmental damage (compaction, erosion, sedimentation, vegetation damage, etc.). No hiking or other trails should be used for vibroseis trucks.

9. Page 37, Forest Plan EIS, Appendix C, Exploration - Drilling, the estimate of "An average of 0.1 miles of new road built" is an underestimate of the damage that vehicles do to roads because repetitive use of heavy vehicles on roads that already exist result in damage to these roads and these vehicles travel a longer in distance than 0.1 mile to get off the NFGT.

10. Outlaw the use of reserve pits in the NFGT so that only enclosed reserve tanks are used and natural resources damage is reduced.

11. Define and discuss what well plugging, abandonment, and well site reclamation is.

12. Provide the Memorandum of Understanding between the BLM and FS for the exploitation of oil/gas resources and explain how it works.

13. Define what "material non-compliance" is and provide a summary of these incidents for each national forest and grassland in the NFGT

14. Page 47, Forest Plan EIS, Appendix C, Controlled Surface Use Stipulation #1A, add "ephemeral streams" and protect them in addition to intermittent and perennial streams.

15. Page 52, Forest Plan EIS, Appendix C, Notice to Lessee #3A, the terminology used is mixed, since both "cluster" and "colony" are used when talking about RCW. The terminology should be consistent. Only "cluster" should be used since the word "colony" is no longer used to describe RCW home sites.

16. Pages 1 through 3, Forest Plan Appendix B, Clauses Pertaining to Surface Use Plan of Operations (SUPO) or for Mineral Operations Permits, Mineral Operations Clauses & Attachments, on 2., define "immediately notify" so there is some minimum time by which the permittee must notify the FS that there is a change of address or ownership.

Under 5., define what "significant harm" is. The Sierra Club believes that the word "significant" should be removed and the threshold would be either whether the discharge creates harm or that "no discharge" will be permitted. The Sierra Club prefers a "no discharge" requirement.

Under 5., remove "if accidentally discharged" so that any facility will be "located so as to prevent any spillage into waters [hellip]", and remove "significant" so the threshold is either whether the discharge creates harm or that "no discharge" will be permitted. The Sierra Club prefers a "no discharge" requirement.

Under 6., remove "as far as possible" to strengthen this requirement to protect "scenic aesthetic values" during construction, operation, and maintenance.

Under 9., remove "whenever requested by the Forest Officer" so that the FS can cross federal land and access the oil/gas activities whenever it wants to since the FS is the steward and manager of federal land.

Under 10., remove "other than ordinary wear and tear" since this is hard to prove and provide a standard to document. The permittee must repair "all damage to National Forest roads and trails". The permittee should not, except in very limited and permitted circumstances by the FS, ever be on any national forest trails. The Sierra Club wants the Lone Star Hiking Trail, Trail Between the Lakes, Four C's Trail, Boykins Spring/Old Aldridge/Sawmill Hiking Trail, and all other trails (equestrian, motorized, and mountain bike) protected from oil/gas exploitation.

Under 11., place "System" after "National Forest".

Under 13., remove "may" and "unacceptable" and replace with "will" so the requirement is mandatory and that any resource damage expected, is covered and the permittee must protect against the damage.

17. Pages 3 through 5, Page 34, Forest Plan EIS, Appendix C, Standard Lease Terms and Conditions, Section 12, Delivery of Premises, Attachment #1, Resource Protection Plan for Oil or Gas Drilling, Production, and Storage Sites, Mineral Operations Clauses & Attachments, under 2., any additional surface disturbance must be covered by a NEPA decision open to public review and comment. The FS must include this statement in this appendix.

Under 4., the Sierra Club does not approve of burning brush, slash, timber, or any other wood by a permittee. Any woody material, excess to a commercial timber sale, should be lopped, chipped, or in some other way reduced in size and scattered in the adjacent forest where it will be burned via prescribed fire.

Under 5., the topsoil should not only be set aside, but protected with a "cover" so that it does not erode.

Under 6., the Sierra Club opposes to use of mud pits for any purpose. The state-of-the-art and best management practice is to use enclosed storage tanks to hold mud, produced water, cuttings, and any waste created by drilling. State that no mud pits will be used and that enclosed storage tanks are required.

Under 7., remove the word "guidelines" which gives the impression that these stipulations are not required but suggested. Use the phrase "Follow these sanitation requirements:".

Under 7., a., remove "as necessary" since proper disposal of litter and garbage is always necessary.

Under 7., c., after the word "portable" put the word "toilets" to ensure that the permittee and public know that the FS is talking about.

Under 8., remove "as needed" and add "repair". It is not clear what the FS means when it says, "Also revegetate those disturbed areas which will not sustain traffic". What is the point the FS is trying to make here? Clear up the language so it is very evident what the FS wants.

Under 8., b., remove "which exceed three percent gradient".

Under 8., d., remove "which cannot be shaped to a 3:1 gradient or less". Require the use erosion control blankets all the times.

Under 8., e., remove "firmly" and add a 70% coverage requirement.

Under 9., add after "will coordinate" the following "with the FS about the" and remove "with the Forest Officer". Remove "Should be made" and say "will be made" to ensure that the permittee cannot not change what has been permitted without FS approval.

Under 10., a., remove "recommends" and use "requires" in the second paragraph. Eliminate the third and fourth paragraphs and do not allow any mud pits but only enclosed storage tanks. Add a separate paragraph which requires that in two growing seasons there will be 70% coverage.

Under 10., b., remove "This will be done" and "unless directed by the Forest Officer."

Under 11., end the first sentence at "and appurtenances" and remove "unless you have approval from the BLM not to remove them". Then remove "and" place an "and" before gravel and an "and" between surfacing and "recontour".

Under 12., remove "associated" and require documentation that off national forest water use is impossible for the permittee to accomplish.

Under 13., remove "in the event that" and start the sentence with "After". Remove "operator" and use "permittee" to stay consistent.

Under 14., remove "related" since the word is redundant.

18. Pages 5 through 6, Page 34, Forest Plan EIS, Appendix C, Standard Lease Terms and Conditions, Section 12, Delivery of Premises, Attachment #2, Road and Pad Management Mineral Operations Clauses & Attachments, under 2., remove "surfacing" in the second sentence.

Under 4., remove "may be left and" and replace with "may be maintained".

Under 5., remove "if the District Ranger wants the road closed" and "or his authorized representative".

Under 5., 1., put a comma after "materials", remove "and", and remove "remove".

Under 6., remove "Inquiry will be made to the" and replace with "The permittee shall get permission from the" and remove "pre" from "pre-existing roads" and replace with "any".

19. Pages 6 through 9, Page 34, Forest Plan EIS, Appendix C, Standard Lease Terms and Conditions, Section 12, Delivery of Premises, Attachment #3, Restoration of Disturbed Areas, Mineral Operations Clauses & Attachments, in the first paragraph, first sentence, remove "is exposed" and add "exists." In the second sentence, remove "recommended and commonly used" and "this".

In the second paragraph, first sentence, remove "areas where" and "has been disturbed, and "ordinary". Add "disturbed" before "soil".

In the second paragraph, remove the second sentence entirely and begin the third sentence with "Seeding areas include".

In the fourth sentence, remove "the" and say, "at rates found in number 8 of this attachment". In the last sentence remove "Those" and start the sentence with "Other" and remove "from" and add "for" and after "seeded" remove "to" and add "with" and remove "in item" and replace with "found in number 8 of this attachment".

Under 1., Stockpile Soil, add a requirement for a protective cover for topsoil. Add how many inches, at a

minimum, of the topsoil will be saved. The Sierra Club recommends at least 12 inches.

Under 2., Waterbars/Terraces, "add "on" between "occupancy" and "restoration", remove "will require" and change "to" to "will" and remove "instruct" and add "tell the permittee".

Under 4., Seedbed Preparation, remove "any needed" and "till the surface to produce" and add "until" and add "has been laid" after "loose soil,". Add how many inches, at a minimum of topsoil will be saved. The Sierra Club recommends at least 12 inches.

Under 5., third paragraph, add "the site" between drag-harrow and "lightly". In the fourth paragraph, remove "if necessary" and add "until successful cover is established" and remove the rest of the sentence.

Under 6., Mulching, remove "will be necessary" and replace with "is required". In the second sentence, begin with "Areas". Last sentence, first paragraph, remove "on cut or fill slopes which cannot be shaped to a 3:1 gradient or less.".

Under 7., remove "instructed" and add "required".

Under 8., rephrase sentence to say, "It is cheaper to plant more seed than to replant."

In the last sentence, remove "following" and add "using".

Under Recommendations on National Forests, emphasize the "Yearlong" native grass/legume mix. Reword to say, "Green Spangletop, at the rate of 4.0 lbs., may be used instead of perennials".

Under 9., second and third sentences, remove "related".

Under 10., insert "site or area" between "successful" and "restoration".

20. Pages 9 through 10, Page 34, Forest Plan EIS, Appendix C, Standard Lease Terms and Conditions, Section 12, Delivery of Premises, Attachment #4, Reporting, Mineral Operations Clauses & Attachments, under 1., insert "the" between "testing and permittee" and remove "copies" and replace with "or copy" and remove "form" and replace with "report".

Under 2., add at the end of the sentence "within seven days of completion."

Under 3., remove "to the well" and at the end of the sentence add "within seven days of completion."

Under 4., second sentence, remove "amount of" and add the number of gallons and number of vehicles that are part of "water disposal traffic".

21. Pages 10 through 12, Page 34, Forest Plan EIS, Appendix C, Standard Lease Terms and Conditions, Section 12, Delivery of Premises, Attachment #5, Standards for Oil and Gas Production Facilities on NFGT Lands, Mineral Operations Clauses & Attachments, under 1., use 2 times the volume of the largest tank for extra protection from spills and rainfall.

Under 2., use one foot and not six inches to add more height to ensure that water will not contact storage tanks.

Under 3., third sentence, remove "does not become beaten down" and replace with "is not worn". In the fourth sentence, remove "should" and replace with "will". In the fifth sentence, remove "it is recommended that" and replace with "The sides and top of all dikes will be covered". In the seventh sentence, remove "also" and reword

to say, "This will help solve vegetation growth and fire hazards.; spraying [hellip]". In the last sentence, remove "the" and say, "in any tank."

Under 4., reword to say, "will not be drained onto or off site."

Under 6., reword to say, "Only so much of the site is needed for production, adjacent work areas, and access roads. The remaining authorized site will be restored according to Attachment #3. Guy wires left onsite will be well-marked."

Under 7., reword the first sentence to say, "A fence will be installed to exclude foot traffic". In the third sentence, reword to say, "Its specific location will be approved by the Forest Officer before installation."

Under 8., first two sentences, reword to say, "Equipment will be kept well maintained, neatly arranged, painted, and present an orderly appearance."

Under 9., in the second paragraph, reword to say, "Only pesticides registered by the U.S. EPA for the specific purpose planned will be considered for use on National Forest System lands. Label instructions will be followed for the application of pesticides and the disposal of excess materials and containers."

Under 10., reword to say, "As required by on-site conditions, soil erosion measures will be implemented."

Under 11., remove "only upon" and insert "with".

Under 12., reword to say, "Signs which restrict public access will be approved by the District Ranger. All signs will be removed at the conclusion of operations."

Under 13., reword the second sentence to say, "When a spill occurs the permittee shall take immediate containment and cleanup action and notify the Forest Officer at the earliest possible time but no later than two hours after the spill is discovered."

Under 15., reword to say, "All non-essential production equipment will be removed from the national forest or grassland within 30 days."

22. Pages 12 through 13, Page 34, Forest Plan EIS, Appendix C, Standard Lease Terms and Conditions, Section 12, Delivery of Premises, Attachment #6, Fire Protection Plan, Mineral Operations Clauses & Attachments, under 1., reword to say, "The permittee will comply with Texas State Fire Laws."

Under 2., reword to say, "The permittee and his/her employees will take all reasonable action to prevent and suppress forest fires."

Under 3., reword to say, "The permittee will pay for the cost of forest fire suppression and damages to the Government caused by fires that result from actions of the permittee, operator, or his/her employees."

Under 4. and 5., remove these requirements. The permittee should have no authority to burn material on any national forest or grassland. Ban this action.

Under 6., reword to say, "The permittee will notify the District Ranger about any fire that is discovered. The permittee will take immediate action to suppress the fire."

Under 7., the FS should ban flaring on the NFGT.

Under 8., reword to say, "Mow vegetation within 50 feet of all production equipment to reduce fire danger each month, from April to October."

2) The 1996 RLRMP has Forest-wide Standards and Guidelines (S&G's) and several Management Areas (MA). Below are listed some of the Management Area S&G's that may need to be reviewed and revised for the OGLEIS.

1. Forest-wide Standards and Guidelines, Facilities, Pages 61 and 62, FW -051, 52, 53, 54, 55, 56, 57, and 59 and Minerals, pages 70 through 72, FW-101 through 125.
2. MA-1, Upland Forests Ecosystems, Facilities, page 90, MA-1-11, 12, 15, and 16 and Minerals, page 92, MA-1-35.
3. MA-2, Red-cockaded Woodpecker Emphasis, Facilities, pages 103 and 104, MA-2-11, 12, and 16.
4. MA-3, Grassland Ecosystems, Facilities, page 139, MA-3-21 and Minerals, page 140, MA-3-41, 42, and 43.
5. MA-4, Streamside Management Zones, Facilities, Pages 154 and 155, MA-4-22, 23, 24, 25, 26, and 27 and Minerals, pages 156 and 157, MA-4-61, 62, and 63.
6. MA-5, Major Aquatic Ecosystems, Minerals, page 165, MA-5-31 and 32.
7. MA-6, Longleaf Ridge Special Area, Facilities, pages 175 and 176, MA-6-11, 12, 15, 16, and 17.
8. MA-7, Wilderness, Minerals, pages 186 and 187, MA-7-81, 82, 83, and 84.
9. MA-8a, Research Natural Areas, Facilities, page 194, MA-8a-21 and Minerals, page 196, MA-8a-61, 62, 63.
10. MA-8b, Protected River and Stream Corridors, Facilities, pages 208 and 209, MA-8b-21 and 22 and Minerals, page 210, MA-8b-61, 62, 63.
11. MA-8c, Scenic Areas, Facilities, page 213 and 214, MA-8c-21 and Minerals, page 215, MA-8c-61, 62, 63 and page 222, MA-8c-B2.
12. MA-8d, Natural Heritage Areas, Facilities, page 234, MA-8d-21 and Minerals, page 236, MA-8d-61, 62, and 63.
13. MA-8e, Special Bottomland Areas, Minerals, pages 242 and 243, MA-8e-51, 52, and 53.
14. MA-8f, Cultural Heritage Areas, Facilities, page 251, MA-8f-21 and 22 and Minerals, page 252, MA-8f-61, 62, 63, and 64.
15. MA-9a, Developed Recreation Sites, Facilities, page 265, MA-9a-31, 32, and 33 and Minerals, pages 265 and 266, MA-9a-71, 72, and 73.
16. MA-9b, Minimally Developed Recreation Sites, Minerals, page 273, MA-9b-71, 72, and 73.
17. MA-10a, Administrative Use Sites, Minerals, page 278, MA-10a-31, 32, and 33.
18. MA-10b, Special Use Permit Sites, Minerals, pages 284 and 285, MA-10b-51, 52, and 53.

19. MA-11, SFA Experimental Forest, Lands and Minerals, page 288, MA-11-12, 13, and 14.

2) There are various sources of BMP information and citations for further information and the authorization to use it. The Sierra Club submits for consideration and use the following in Attachment 8.

Attachment 8:

1. "Appendix E: Standards and Best Management Practices for Shale Oil and Gas Development", Shale Gas Roundtable, pp. 116 through 128, undated but on or after 2012.

Important additional sources of information are in this document. Some suggestions mentioned include limitations on flaring, use of green completion technology, reduced engine emissions, storage tank emissions controls, maximization of water recycling, ground water protection plan development, closed loop drilling, well casing design, groundwater monitoring, waste water disposal, impoundment integrity, and reduced toxicity fracturing fluid.

Other BMPs should address best in class contractor performance, secure community consent, reduce surface footprint. Reduce and disclose all toxic chemicals. Prevent contamination from waste water, prevent contamination from solid waste and sludge residues, manage risk transparently, pre-drill water supply surveys, response to stray gas incidents, water pipelines, inactive status and well plugging, reports required of oil/gas operators, underground gas storage, guidelines for preparedness, prevention, and contingency plan for oil/gas development pollution prevent practices, erosion and sediment pollution control, and disclose fines, penalties, and litigation.

Suggestions for categories for BMPs include: air quality and emissions, aquatic and riparian values, community, cultural/historic, grazing and agriculture, human health and safety, land surface disturbance, noise, oils (conservation, pollution, reclamation), vegetation, visual aesthetics, water quality and pollution, water quantity and rights, wildlife, and other.

2. "Onshore Petroleum and Natural Gas Operations on Federal and Tribal Lands in the United States, Analysis of Emissions and Abatement Opportunities", ICF International, September 16, 2015. Important additional sources of information are in this document that should be considered and used.

Recommends that methane and natural gas air pollution be estimated by state, segment (production, gathering, processing, transmission, and storage), and by source (valves, compressors, flaring, etc.). Refers to estimates for reduction options and cost efficiency. Recommends an estimate on the value of gas lost during to venting, flaring, and fugitives. The Sierra Club supports use of an estimation procedure and method which applies to all air pollutants (in addition to natural gas and methane but not limited to, particulates, SO₂ and other sulfur compounds, nitrogen oxides, volatile organic compounds, toxic compounds, carbon monoxide, carbon dioxide, ozone, and other air pollutants) emitted or caused by oil/gas exploitation.

3. "Environmental Management in Oil and Gas Exploration and Production, An Overview of Issues and Management Approaches", The E&P Forum, United National Environmental Program, 1997. Important additional sources of information are in this document that should be considered and used.

Refers to potential emergencies like spillage of fuel, oil, gas, chemicals, and hazardous materials, oil/gas well blowout, explosions, fires, unplanned plant upset and shutdown events, natural disasters, and war and sabotage (terrorism). Refers to training, monitoring, audits, and many other operational practices and procedures.

4. "Reducing Onshore Natural Gas and Oil Exploration and Production Impacts Using a Broad-Based Stakeholder Approach: Fina Project Status", ALL Consulting and Interstate Oil and Gas Compact Commission

(IOGCC), 2008. Important additional sources of information are in this document that should be considered and used.

Refers to a handbook of oil/gas practices, prevention and minimization of air pollutants, Barnett Shale field reconnaissance, and Joaguin, Texas, East Texas oil/gas field wetlands case study.

5. "Environmental, Health, and Safety Guidelines for Offshore Oil and Gas Development", World Bank Group, June 5, 2015. Important additional sources of information are in this document that should be considered and used.

Provides a good summary of oil/gas development environmental, health, and safety guidelines although the focus is on offshore.

6. "Federal Laws", Intermountain Oil and Gas BMP Project, University of Colorado at Boulder, undated. Important additional sources of information are in this document that should be considered and used.

Provides a good summary of federal oil/gas laws, regulations, and policy guidance.

7. "Best Management Practices for Oil and Gas Well Site Construction", Ohio Department of Natural Resources, Division of Oil and Gas, June 2013 revised. Important additional sources of information are in this document that should be considered and used.

Provides important planning considerations and practices for well sites including topography, soil type, vegetation erosion and sedimentation, access roads, water bars, broad based dips, pipe culverts for access roads, access road entrance, surface drains, filter strips, and sediment barriers.

Environmental Justice

1) The FS must not present environmental justice as an issue that will be handled in a few paragraphs. This is not acceptable for the poor, working poor, working class, lower middle class, and minority residents of Texas and the United States who deal with environmental justice issues every day.

For instance, climate change affects environmental justice communities in a harsher manner since heat waves, intense rainfall, storms, and other climate change effects hurt those who live in substandard housing or in areas where the effects of climate change are more pronounced, like floodplains. The oil/gas exploitation proposed by the OGLEIS makes the lives of environmental justice communities far more precarious and pushes people's lives far closer to the edge of survival than people who can afford to adapt or move away from some of the effects of climate change.

The FS must not ignore environmental justice communities. The FS must not use scales, like East Texas, different geographical parts of East Texas, entire counties, and entire cities or areas, that are so large that they dilute where environmental justice communities are and the very real issues that exist in each of these communities.

The FS must provide a list of environmental justice communities within the NFGT project area. These communities can be determined by use of socioeconomic information and data at the zip code, sub-zip code, census tract or block, and sub-census tract or block levels.

The FS must contact environmental justice communities, residents, advocates (Dr. Robert Bullard, Texas Southern University), and organizations that work on environmental justice issues and request their input about a list of environmental justice communities and issues (like community cohesion).

The FS must not ignore the requirement in National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations to provide a rigorous analysis and comparison between alternatives for environmental justice. The FS must provide statistical information about socioeconomic measures and integrate this into a discussion and analysis of specific environmental justice communities and issues.

Each environmental justice community is different. Each environmental justice community should be looked at in a site-specific manner when determining what mitigation measures are appropriate. Environmental justice is not something that is done to a community. Environmental Justice is something that a community is, claims, and makes decisions about. Mitigation measures for environmental justice communities and residents should include:

1. Buyouts to remove environmental justice communities and residents from harm.
2. Payment of moving costs.
3. Strategies to keep environmental justice communities together when they must move.
4. Assistance in finding and moving into better, low-cost, replacement, housing.
5. Follow-up monitoring on people who move to ensure they get restarted.
6. Provide jobs for environmental justice community residents via ecosystem restoration work.
7. Fixing structures and heating/cooling units.
8. A process where environmental justice communities are engaged in decisions about their communities and issues.

2) The FS has stated in the past that the Mining and Minerals Policy Act sets policy to "foster and encourage private enterprise in the development of economically sound and stable industries, and in an orderly and economic development of domestic resources to help assure satisfaction of industrial, security and environment needs". Energy and mineral resource extraction and exploitation do not meet environmental needs. Oil/gas exploitation destroys and or degrades the land, water, wildlife, wilderness, recreation, grazing, air and other resources that each national forest and grassland in the NFGT provides to the public.

3) The need for a focus on environmental justice is emphasized in an Op-Ed, by Dr. Robert Bullard, the father of environmental justice, "Democrats must address environmental racism", Houston Chronicle, September 10, 2019, that is included with these comments.

Attachment 9:

1. "Democrats must address environmental racism", Robert D. Bullard, Houston Chronicle, September 10, 2019.

Climate Change and Air Quality

1) The Sierra Club agrees with FS policy that until a new OGLEIS is approved that federal minerals should be drained from private lands and not from the NFGT. The Sierra Club finds it unacceptable that the FS has ignored climate change in its discussion of fossil fuel exploitation on the NFGT when this exploitation is the reason that climate change has occurred.

2) The FS should require implementation of a mitigation program to reduce climate change air pollution so both

direct and indirect (transport, refining, and creation of petrochemical production and products based upon fossil fuels) air pollution from fossil fuels removed from the NFGT is covered. Climate change affects all other natural resources, public lands, and uses of the NFGT in a negative way and makes it harder for the FS to manage and protect these lands in the public interest and as a public trust.

3) The FS must initiate interagency meetings with TCEQ, EPA, and other agencies so that all can review and agree about the air quality analysis (there is a National Interagency MOU, memorandum of understanding) that deals with the air quality and climate change analysis.

A better way to define air quality/climate change emissions analysis is needed. The FS must conduct a real inclusive analysis on all air quality, climate change, and other issues for this OGLEIS rather than leaving that to specific drilling projects.

The OGLEIS must address climate change environmental impacts due to current and future fossil fuel (oil/gas/coal) exploration, extraction, production, abandonment and restoration, transportation, and creation of products (exploitation) on or off the NFGT, how climate change impacts will be analyzed, and how climate change will be mitigated on or off each national forest and grassland in the NFGT.

4) The OGLEIS must address climate change environmental impacts due to current and future fossil fuel (oil/gas/coal) exploration, extraction, production, abandonment and restoration, transportation, and creation of products (exploitation) on or off the NFGT, how climate change impacts will be analyzed, and how climate change will be mitigated on or off each national forest and grassland in the NFGT.

Louisiana Pine Snake recovery is a special issue that must be dealt with especially since these snakes are affected by fragmentation. Timber Rattlesnakes (Canebrake Rattlesnakes) are also affected by fragmentation from roads and pipelines and their protection must be addressed.

5) The Sierra Club requests that an all renewable energy sources alternative (wind, solar, and geothermal energy) be analyzed and used as a reasonable alternative in the OGLEIS.

6) The Sierra Club requests that a range of reasonable alternatives, which reduce current leasing and exploitation by, 10%, 20%, 30%, 50%, 60%, 70%, 80% or 90%, be comprehensively analyzed in the OGLEIS.

7) The FS has stated that it has some responsibility for flaring as does the Texas Railroad Commission (RRC). For example, SHNF is designated as a special area by the RRC. The FS should request an exemption from flaring from the RRC so that flaring is not allowed. The FS should require, to the best of its ability, that no flaring will be allowed in each national forest and grassland in the NFGT.

8) The OGLEIS must analyze, assess, and evaluate the impacts on air quality. The TCEQ conducted air monitoring of oil/gas wells in the Barnett Shale area in North Central Texas near the Dallas/Fort Worth area. The air monitoring by TCEQ found more air emissions, including toxic air emissions, are being emitted from oil/gas wells than previously thought.

9) The FS must discuss and propose methane rules for all existing and future oil/gas development that will require significant improvement to reduce air emissions in general, and methane emissions particularly. Such rules are common sense and regulate methane by covering all oil and gas facilities, new and existing, that lease federal mineral rights and even requiring leak detection and repair programs. The oil/gas industry wastes huge amounts of climate-harming methane gas, by venting it into our atmosphere, or burning it off (commonly referred to as "flaring") at drilling sites on our public lands.

10) This proposal is predicated on development of oil/gas and does not help "environmental needs". It will "foster

private development to the satisfaction of industry and avoids regulatory actions needed for energy production, economic growth, and job creation. The OGLEIS is for private development and exploitation of public natural resources on public lands for the profit and benefit of polluting companies who by their actions kill or injure citizens via conventional air pollution, climate change air pollution, degradation and destruction of infrastructure (roads, traffic accidents, etc.), lands, landscapes, water, wildlife, and ecosystems that are owned by the public.

The oil/gas industry needs to be encumbered, constrained, and prevented from abusing public lands and the natural environment. The oil/gas industry must not be molycoddled and its hand must not be held since it is one of the most politically and financially powerful industries on Earth. The oil/gas industry creates some of the largest amounts of air, water, and land pollution in the World. It must be regulated closely, strictly, and comprehensively to ensure it does not further damage public natural resources on public lands.

Since development of oil/gas ensures more climate change, more sea level rise, more intense rainfalls and storms, more greenhouse gas air pollution via direct release of methane and carbon dioxide, more indirect release of carbon dioxide greenhouse air pollution via burning of oil and natural gas and the use of other liquid, gas, and solid carbon compounds or turning these into organic chemicals, and volatile organic compound air pollution which helps form ozone and smog, the OGLEIS does not meet "environmental needs".

The Sierra Club does not support lightening industry's economic and regulatory burdens while subsidizing their exploitation of public natural resources, leaving the public with more air, water, and land pollution, less wildlife, and degraded or destroyed ecosystems, land, and landscapes. The Sierra Club does not support any effort to "expedite energy-related projects by streamlining internal processes related to environmental review and permitting".

The Sierra Club does not support any OGLEIS which results in less NEPA analysis, less time for public review and comment, and less time for public collaboration, participation, and input. The FS must show how much reduced budgets, personnel, monies, and experience have affected OGLEIS and any oil/gas regulations, timeliness of their implementation, and monitoring, auditing, and compliance with regulations.

The Sierra Club does not support streamlining of regulations, reduction of burdens on the agency and applicants, simplified internal processing so that agency leasing reviews and Surface Use Plans of Operation portions of applications can be processed more efficiently. The FS must require public input for SUPOs and other permitting elements and discuss how this will be maintained, increased, and made better by the OGLEIS.

The Sierra Club expects that the FS states will honor its environmental stewardship responsibilities and maintain robust public participation and collaboration and that this OGLEIS will explain clearly how this will be done. The FS must not "streamline" analytical and procedural requirements that affect public review, comment, participation, collaboration, consensus, and input and must document how it will create and maintain a "robust public participation" program.

The Sierra Club does not support waivers, exceptions, and modifications to plans of operation, permits, associated documents, and plans or that allow less stringent environmental protection, less monitoring, reporting, inspections, and environmental compliance. All the above areas can only work via a rigorous public review, comment, participation, collaboration, cooperative, and input program with procedures built-in so that people can have a say about what energy sources they want on public lands.

The Sierra Club does not support a FS environmental protection program that is supposed to protect the public and public lands and resources from the impacts of oil/gas exploitation but defaults to BLM regulations. The BLM is not known as a particularly aggressive protector of the environment. The FS has a different history, reputation, and experience with public lands that must be respected and protected. The BLM does not have all the answers.

The Sierra Club supports an OGLEIS. An OGLEIS is needed because potentially environmentally sensitive areas, organisms, and public lands and resource require more protection and analysis than an environmental assessment (EA) provides. NEPA requires an EIS and the FS must obey the law. This is a programmatic proposal that will affect all NFGT acres.

The Sierra Club supports information that shows, for each national forest or grassland in the NFGT, the number of acres and where federally owned mineral rights are located and the number of acres and where privately-owned oil/gas rights are located. This proposal must include how privately-owned oil/gas minerals will be affected and treated by these regulations. There should be FS standards throughout the NFGT that apply to public land surface resources and state how they are affected by privately-owned oil/gas minerals and how they will be protected.

The Sierra Club supports the discussion of climate change and fossil fuel extraction and exploitation on public lands for the OGLEIS. It is the extraction and exploitation of public oil/gas that is one reason climate change occurs. The FS should require in the OGLEIS that the implementation of a mitigation program to reduce climate change air pollution so both direct and indirect (transport, refining, and creation of petrochemical production based upon fossil fuels) air pollution from fossil fuels removed from the NFGT is covered. Climate change affects all other natural resources, public lands, and uses of the NFGT in a negative way and makes it harder for the FS to manage and protect these lands in the public interest and as a public trust. The Sierra Club supports an aggressive methane leak detection program and mitigation of all climate change gas releases, due to direct and indirect release.

The Sierra Club supports an analysis of private lands that are outside, but adjacent to, the NFGT. The FS should analyze how it will address the affect that private and public lands have on each other. The FS must explain what are the solutions, strategies, and regulations that will minimize negative impacts on both.

The Sierra Club supports regulation of all environmental impacts of the hydraulic fracturing process. This includes earthquakes and fault movements, hydrological impacts (springs, seeps, groundwater, water table, etc.), water quality impacts, water quantity impacts, infrastructure impacts, fragmentation, isolation, habitat destruction, and degradation impacts, and other environmental impacts due to this process.

The Sierra Club supports protection from oil/gas exploitation for wilderness areas, roadless areas, and other less disturbed lands (for example, scenic areas) which are the most intact and least disturbed areas. Their ecosystems are most likely to function best and successfully adapt to climate change. These areas are the controls or baselines that must be used to determine if mitigation and management actions succeed.

11) One of the ways that the Sierra Club wants the FS to address climate change on a landscape scale is to include in the OGLEIS, 1996 RKRMP amendment, other NEPA documents, management plans, site-specific proposals, other on-the-ground actions and activities, and similar actions a "Resilient Habitat Plan" (RHP). A RHP would result in specific actions that the FS takes to reduce or ameliorate climate change on landscape habitats. This would be part of a mitigation plan to reduce the impacts of climate change.

The RHP assesses the biological and ecological elements in the NFGT for the effects that climate change has had and will have on them. The RHP also assists plants, animals, and ecosystems in adapting to climate change and monitors those changes and mitigation measure effectiveness. The RHP is based on:

1. Protection of existing functioning ecosystems in each national forest and grassland in the NFGT.
2. Reduction of human stressors on the ecosystems in each national forest and grassland in the NFGT.
3. Restoration of natural functioning ecological processes in each national forest and grassland in the NFGT.

4. Use of natural recovery in each national forest and grassland in the NFGT, in most instances.
5. Acquisition of buffers and corridors to expand and ensure connectivity of ecosystems in each national forest and grassland in the NFGT.
6. Intervention to manipulate (manage) ecosystems in each national forest and grassland in the NFGT where necessary.
7. Reduction of direct and indirect climate change pollution from each national forest and grassland in the NFGT and activities that result from the 1996 RLRMP implementation.

The Sierra Club requests that the FS to prepare and implement a RHP for each national forest and grassland in the NFGT with regard to the proposed OGLEIS, 1996 RLRMP amendment, NEPA documents, management plans, site-specific proposals, and other on-the-ground actions and activities, and similar actions.

12) The need for Texas, NFGT, and the Houston Area to lead the way to reduce climate change is emphasized by Bett Perlman and Andy Steinhubl, "Houston must lead fight for climate change", Houston Chronicle, July 8, 2019, that is included with these comments.

13) The magnitude of shale oil/gas development and oil/gas development in general and therefore the need to regulate and or eliminate it and or its environmental impacts is emphasized by Jordan Blum, "Deep water and shale: Not so different anymore", Houston Chronicle, July 8, 2019 and "Exxon leads the pack in Texas", Sergio Chapa, Houston Chronicle, July 8, 2019.

14) The magnitude of denial, ignorance, and willfulness of oil/gas companies and the government to seriously address climate change, which makes NFGT action to reduce climate change that much more important and immediate, is emphasized by Kevin Crowley, "With clean energy decades away, Exxon eyes oil/gas deals", Houston Chronicle, September 5, 2019; "Permian methane emissions, flaring hit record", by Jordan Blum, Houston Chronicle, September 5, 2019; "EPA set to roll back methane regulations", James Osborne, Houston Chronicle, August 30, 2019; and "Flaring at oil wells is sure sign of wasted natural gas". Op-Ed by Bill White, Houston Chronicle, August 22, 2019.

15) There is a "moral hazard" that results from the NFGT not addressing climate change seriously via the OGLEIS. From the Sierra Club perspective, historically, climate change air pollution in the U.S. and our consumption of natural resources and energy have been the driving force and largest cause of climate change.

The Sierra Club is concerned that the FS will use investments in adaptation, carbon dioxide removal (CDR), and geoengineering as an excuse to avoid reduction of climate change air pollutants and the activities that cause these, like oil/gas exploitation. Reduction in climate change air pollutants is complementary and compulsory to adaptation, CDR, direct air capture, and geoengineering and other strategies like response, preparedness, resilience, and recovery.

There is a lack of prevention and cure while the focus is often on small, temporary actions. The OGLEIS must address these issues and not leave them for another time or another decision. Although this is important for all of us it is even more important for environmental justice communities that already suffer from the severe impacts due to oil/gas development and ensuing climate change.

16) The OGLEIS should clearly describe how it will remove carbon dioxide, methane, and other climate change air pollutants from the NFGT. Healthy soils, restoration of wetlands, restoration of climate resilient ecosystems, protection of public health is needed in the OGLEIS so that climate change effects, like sea level rise, more rain

storms, more intense rain storms, more storms and hurricanes, more intense storms and hurricanes, will be reduced.

17) The FS should, at a minimum, address climate change in the following ways in the OGLEIS:

1. Plan for Climate Change and Use the Best Scientific Information

Planning for climate change and the use of the best scientific information includes preparation of climate vulnerability assessments (CVA). CVA's determine which species, habitats, and or ecosystems will be most affected by climate change. CVA's include the interactions between existing human stressors (for example, invasive species, logging, roads, etc.) with climate change impacts. This assists the FS in its determination of which focal species, ecological processes, or other natural resources should be prioritized for monitoring and management to ensure their future health.

The FS must cooperate and take advantage of the Landscape Conservation Cooperatives (LCC) for the NFGT area when preparing CVA's, which include the Gulf Coastal Plains and Ozarks LCC and the Gulf Coast Prairie LCC. The FS must ensure that it has a firm grasp on the best and most recent scientific data via a literature compilation of key research and coordination with researchers about the present state-of-the-science.

2. Protect and Connect Wildlands and Habitats

This involves many of the elements of the RHP, like protection of core areas (high quality lands with maximum size); corridor areas (linkages between core areas) with input from state wildlife agencies and non-governmental conservation organizations and land trusts; buffer areas and other important lands and habitats (lands contiguous to core and corridor areas and habitat identified as critical to selected species) which include riparian areas and for wetlands, at a minimum, National Wetlands Inventory wetlands, critical habitat adjacent to core and corridor areas that will buffer and protect these areas, and rare and sensitive species habitats; coordination across boundaries with other large landscape conservation plans, initiatives, and public and private protected lands including LCC, Partners in Flight Bird Conservation Plans, National Fish Habitat Action Plan, North American Waterfowl Management Plan, Texas Parks and Wildlife Department Land and Water Resources Conservation and Recreation Plan, U.S. Fish and Wildlife Service National Wildlife Refuge Comprehensive Conservation Plans, and land trust and other agency lands.

3. Promote the Ability of Forests and Soils to Store Carbon

The FS must acknowledge and view as important the carbon that is stored in old growth and mature forests and forest soils that are undisturbed by human activities. The biota of forest soils must be protected and monitored for climate change effects and improvements in condition.

4. Restore Degraded Habitats

Restoration of degraded habitats includes re-establishing riparian vegetation and habitats, prairie recovery, restoration of wetlands, decommissioning roads/trails, improvement of road/trail network drainage, removal of invasive species, etc.

5. Reduce Management Activities and Other Factors that Put Additional Stress on Fish, Water, Wildlife, and Wildlands

This includes the reduction of many current non-climate stressors like road networks and numbers of roads, oil/gas drilling/development, commercial logging, off-highway vehicle damage and trails, grazing, fragmentation of habitat, invasive species, and toxic chemical use (pesticides and herbicides).

6. Active Management Including New and or Currently Less Common Approaches May be Needed But Should be Tested and Monitored Outside of Core Protected Wildlands

Human actions have created a cascade of ecosystem changes. We have a limited ability, knowledge, and understanding of how to address these issues. If new or less common approaches are to be used they must have a foundation in independent peer-review science, they must be tested, not in large-scale or sweeping ways, but in smaller areas, they must be extensively monitored to determine if they do what we think they do, and they must not be used on wilderness areas and other less disturbed lands (for example, scenic areas) which are the most intact and least disturbed areas and thus their ecosystems are most likely to function best and successfully adapt to climate change. These areas are the controls or baseline that must be used to determine if our other actions succeed.

7. Use Natural Systems to Safeguard Communities From Climate Change

The natural areas that exist and are in the best condition are the ones that have been least disturbed. Humans tend to turn to expensive and complicated engineering solutions, like engineered streambank stabilization or massive logging. It is best to allow natural lands to restore areas with the smallest level of human intrusion as possible. This allows natural ecological processes to function as they were meant to. Restoration by Nature or human hands takes time. We must not be in a hurry and use time of restoration as an excuse or justification for more intrusive solutions.

8. What is Acceptable Intervention in Protected Areas

Acceptable intervention in protected areas depends on specific designation of the protected area and the laws that apply to it. If the protected area is wilderness then little intervention is legally allowed. The Wilderness Act of 1964 remains the law of the land. We cannot change what we do in wilderness because of climate change. Unless the U.S. Congress changes the law, trammeling should not be encouraged. The Wilderness Act should not be changed.

Other protected designations like national parks, preserves, monuments, wildlife refuges, forests, military lands, and Bureau of Land Management (BLM) lands are governed differently, if they are not wilderness, and some additional intervention may be appropriate. The Sierra Club is concerned that intervention will in fact be more of the same human stressors that have been applied by us and already cause ecosystem process problems or problems for individual species or groups of species. Most human stressors cannot be looked upon, in general, as good strategies for climate change adaptation and resilient habitats as presently implemented.

9. Cooperation With Public and Private Landscapes

The FS must work with private landowners and land trusts next to the NFGT. Economic incentives are helpful in protection of environmental benefits. The FS must be much more aggressive in its contact and work with adjacent and nearby private landowners and land trusts. The FS must get the word out about how private lands that abut up against federal lands provide protection and stability to that landowner and reduce potential land use conflicts. The FS also needs an aggressive public land acquisition program.

10. Appropriate Conservation Goals for Climate Change

Acquire as much land as possible. That land must connect with other protected lands, both public and private (a massive expansion of the use of the Land and Water Conservation Fund is appropriate), must buffer those lands, fatten corridors, include lands with what we know today as sensitive areas and species (we cannot predict well what will be needed in 100 years). The FS must ramp up right now massively land acquisition which will save

millions in the future because the land can be acquired now at lower prices and is not built upon. This is the calm before the development storm that will continue its march. We need to take advantage and not miss this opportunity. We also need to massively reduce human stressors on the landscape.

11. "Nature" in the Face of Rapid Anthropogenic Change

Nature remains the same with regard to geological change and hydrological operation. Most ecological processes continue to function despite us. Even fire suppression programs cannot contain all fires. It is true that our fire suppression limits the good the natural ecological process of fire does by limiting the acreage. We are going to have to adapt to Nature (climate change) or we will not survive.

12. What is "Wild" if Intervention Prevents Extinction

For climate change, many extinctions are not preventable in the future just like today we are not able to prevent many extinctions. Attempting to domesticate Nature any more than we already have is not a good proposition. The more we allow Nature to call the shots the quicker we get to ecosystem equilibrium, whatever that may be (in many cases we won't like it), and the quicker we can help that ecosystem stabilize. Human stressor removal and land acquisition are the keys. Massive interventions can destroy the "Wild" in Nature.

13. What is Native or Alien When Habitats Move or are Transformed

This is a key question. We have not addressed non-native invasive species well and we still allow non-native species into the United States. We need to give ecosystems time to change and show us how they are going to evolve instead of attempting to turn back the clock and make ecosystems what they were yesterday or are today. Humans are not good at leaving Nature alone and allowing it to express what it wants on the landscape. We are manipulators and fiddlers and make things worse unless we learn patience. Let native species migrate where they will (assist them where we can) which is what they have done for millions of years in past climate change periods.

14. How Much Ecological Engineering is Acceptable

Little ecological engineering is acceptable. But this begs the question of how ecological engineering defined. The basic principle is to work with Nature and not against it.

15. Is Genetic Selection Appropriate in Preserves (to perpetuate species there)

Human must allow natural selection to function and not decide what we think are the best genetic traits. We know what traits please us but not what traits please other species or what traits will allow for the best adaptation to climate change.

16. Is Genetic Engineering Ever Appropriate (to fill otherwise vacant ecological niches)

No. Genetic engineering is not appropriate to fill vacant ecological niches. Those niches will be filled but Nature will decide when and how. Our lack of knowledge about ecosystems and their complexity and our hubris endangers our ability to substitute for what Nature wants. We don't listen well, we have poor historical memory, and we pretend the changes we want are really the changes that other species want. We don't know this.

17. Forest Health and Climate Change

"According to the Intergovernmental Panel on Climate Change, forest management can be used to mitigate climate change, by maintaining stand-level carbon density through reduction of forest degradation, planting, site

preparation, and other management practices (Nabuurs et. al. 2007) ... Cumulatively, improving forest health and reducing fuel loadings are considered sustainable forest management strategies that provide long-term benefits that mitigate climate change (Nabuurs et. al. 2007)."

The FS should define what "forest health" is with respect to climate change. The FS must provide data about what it does to mitigate climate change. The data is needed for public review, comment, and understanding. The FS should document how its present management provides long-term benefits that mitigate climate change. The FS must show its carbon budget and calculations for the NFGT.

To allow more storage of carbon in the NFGT trees must be allowed to grow. Only via photosynthesis can trees convert CO₂ to biomass. Older trees store huge amounts of carbon in their trunks and in the soil. Logging stops photosynthesis and initiates decay processes that result in the emission of CO₂. The FS should ensure that the NFGT becomes more of a carbon sink rather than a carbon source.

To protect the NFGT from climate change the FS must maintain biodiversity for all things that live in the NFGT; protect the most intact native forest, grassland, and aquatic ecosystems; provide places where species can migrate or find refuge by buffers, and expand protected areas and provide connectivity so that the entire landscape allows for the dispersal of native species; protect streams/wetlands with large riparian buffers; reduce disturbance of vegetation and soils; reduce road densities; and retain abundant snags/coarse woody debris.

Logging releases a lot of CO₂ and methane (CH₄) to the atmosphere and accelerates the rate of decomposition of wood by increasing sunlight, temperature, and surface area of woody material so microbial decomposition increases. Slash is often burned which results in more CO₂ emissions. Logging also increases wind damage via the creation of exposed edges and more space via thin logging; logging increases wildfire hazards by making the stand hotter, dryer, and windier; logging brings the most flammable small fuels from the forest canopy to the forest floor and creates more dense stands of small more flammable trees; logging also increases the number of roads which increases the risk of human-caused fire ignitions.

Specific management actions that the FS could implement which would reduce climate change gases include the conservation of existing large stores of carbon such as old forests and roadless areas; allow young forests to grow longer and extend harvest rotations; retain more trees, live and dead, during harvest operations; avoid high severity fire by prescribed burning and removal of small trees or other fine fuels; and protect large trees and soil both before, during, and after fires.

18. Scale of Climate Change Emissions From the NFGT

In the past, the FS has responded to NFGT projects with statements like, "I have considered the effect of this project on climate change, as well as the effect of climate change on this project. Any resulting greenhouse gas emission would not be measurable on a global scale." The "global scale" is not appropriate for the OGLEIS or for site specific projects. If the FS uses the "global scale" during the OGLEIS rather than the "NFGT scale" the FS will exempt itself from having to reduce climate change gases. This is because NFGT climate change gases are not ever large enough to be significant in generation of climate change gases on a "global scale". For instance, using the "global scale" as the criteria, an 800-megawatt coal-fired power plant would not be significant either.

The FS should honestly provide an analysis of climate change gases that are directly and indirectly due to the OGLEIS and other oil/gas exploitation on the NFGT and nearby and implementation and discuss what mitigation measures could be implemented, what their cost and practicability are, and which will be implemented to reduce climate change gas reduction. The NEPA requires that an adequate analysis be done and the public must have this information so that it can review, comment on, and understand all environmental impacts of the OGLEIS.

19. Catastrophic Wildfire

In, "The Myth of Catastrophic Wildfire: A New Ecological Paradigm of Forest Health", Chad Hanson, John Muir Project Technical Report 1, John Muir Project of Earth Island Institute, catastrophic wildfire is discussed.

Although this report focuses on the Western United States, similar statements about catastrophic wildfire can be made for Texas, the Sierra Club refers the FS to the following pages of that report where this issue is thoroughly described and the comments are self-evident to inform the OGLEIS NFGT about catastrophic wildfire:

a. Page 2, "In this new "forest ecology" paradigm, scientists have come to understand that high-intensity fires, or "stand-transforming fires", occurred natural in most western U.S. conifer forests historically, and we have far less fire now than we did prior to fire suppression policies [hellip] dead trees, especially large dead trees, or "snags",. Are not only the most ecologically valuable habitat features in the forest, but are also far too scare, due to fire suppression and logging conducted under the guise of fuels reduction and forest health."

b. Page 2, "[hellip] most current fires are predominantly low-intensity and moderate-intensity, and the relatively scare high-intensity areas support the highest levels of native plant and wildlife biodiversity of any forest type in the western United States."

c. Page 2, "[hellip] these high-intensity patches are actually natural ecological treasures [hellip] fire creates ecologically-vital "snag forest habitat", which is rich with large snags, large downed logs, dense pockets of natural conifer regeneration, patches of native shrub habitat, or "montane chaparral", and large live tress."

d. Page 3, "in snag forest habitat, countless species of flying insects are attracted to the wealth of flowering shrubs which propagate after stand-transforming fire - bees, dragonflies, butterflies, and flying beetles. Many colorful species of birds [hellip] nest and forage in snag forest habitat to feed upon the flying insects [hellip] The woodpeckers make new nest holes each year, leaving the old ones to be used as nests by various species of songbirds [hellip] bat species root in old woodpecker cavities [hellip]"

e. Page 3, "Snag forest habitat [hellip] is the most rare, endangered, and ecologically important forest habitat in western U.S. forests and the stand-transforming fires that create this habitat are not damaging the forest ecosystem. Rather, they are advancing ecological restoration. There is nothing "catastrophic" about wildland fire in these forests, especially where stand-transforming fire effects occur, creating snag forest habitat."

f. Page 4, "[hellip] the only effective way to protect homes from fire is to reduce the combustibility of the home itself, by using fire-resistant roofing and siding and installing simple items like guards for rain gutters (which prevents dry needs and leaves from accumulating), as well as by creating "defensible space" through the thinning of brush and small tress within 100 feet of individual homes."

g. Page 6, "[hellip] most "thinning" projects allow removal of many of the larger trees in order to make the projects economically attractive to logging companies, and to generate revenue for the public land management agencies [hellip] The removal of larger, mature trees in thinning operations tends to increase, not decrease fire intensity by: a) removing large, fire-resistant trees; b) creating many tons of logging "slash" debris - highly combustible branches and twigs from felled trees; c) reducing the cooling shade of the forest canopy, creating hotter, drier conditions on the forest floor; d) accelerating the growth of combustible brush by reducing the mature trees that create the forest canopy, thereby increasing sun exposure; and e) increasing mid-flame wind speeds (winds created by fire) by removing some of the nature trees and reducing the buffering effect they have on the winds associated with fires."

h. Page 12, "[hellip] as the time period since the last fire increases, forests become more mature, and develop higher forest canopy cover. This reduces the amount of pyrogenic (combustible) shrubs, which need more sunlight, reducing overall high-intensity fire occurrence [hellip] It also reduces the amount of sunlight reaching the forest floor and understory. In such conditions, surface fuels stay moister during the fire season, due to the

cooling shade of the forest canopy, and, due to reduced sunlight, forest stands begin to self-thin small trees and lower branches of large trees."

i. Page 14, "Our results have several implications. First, they suggest that the decline of natural forests, which is often observed in the long-term absence of catastrophic disturbance (including wildland fires), may arise through increasing limitation by (phosphorus) and reduced performance of the decomposer subsystem [hellip] Second, the results show that the maximal biomass phase (and associated rates of ecosystem processes) attained after primary or secondary succession cannot be maintained in the long-term absence of major disturbances."

j. Page 20, "Given the overall deficit of large snags, and the serious adverse consequences of this for myriad wildlife species, natural events that create additional snags should be welcomed, not viewed as a problem to be avoided."

k. Page 21, "A recent study found that carbon sequestration would be maximized by ending all logging on U.S. public lands nationwide (Depp et al. 2008) In the continental United States, CO₂ emissions from wildland fire are only about 5% of the amount resulting from human fossil fuel consumption, carbon sequestration from growth is about 25 times larger than carbon emissions from fire (Wiedinmyer and Neff 2007), and emissions from fire are offset by post-fire growth and carbon uptake."

l. Page 22, "It should also be noted that nearly half of the carbon from thinned trees becomes surface fuel and is burned, and another quarter is lost as mill residue, which is often burned as fuel (Ingerson 2007). Ultimately only a minor portion of trees that are logged become wood products, and this carbon is not stored in this form for long, as softwood lumber has a half-life of less than 40 years (Smith et. al. 2005), and is obviously not assimilated back into the forest ecosystem."

m. Page 24, "Though timber interests have promoted increased logging by describing current forests as "overstocked", the scientific data indicates that, due to past logging, as well as exclusion of wildland fire, forests of today have much less biomass than historic forests (Bouldin 1999), Fellows and Goulden 2008)."

20. The Forest Service Should Avoid "Before and After" Carbon Accounting

For NEPA purposes, the FS should compare the amount of carbon, with and without the OGLEIS NFGT. An established baseline must be set and change over time in CO₂ levels monitored with and without the OGLEIS.

21. The Forest Service Should Not Overestimate the Value of Wood Products Substitution

Current estimates about the benefits of substitution of wood materials for other materials (like steel or concrete) have been done using assumptions that are not reasonable. For instance, substitution benefits lie in the future and may take more than 100 years to off-set logging in forests. Such in the future benefits should be discounted because they may not occur. Analyses often begins with no existing forest (bare ground) which typically is not the case in the forest and does not consider the loss of carbon due to logging. Wood is dominant in building material markets and it will be difficult to show that the market share of wood will increase relative to other materials (additionality of carbon credits). Wood substitution may only delay, not prevent the use of fossil fuels.

22. Protection of Forests and Older Trees Helps Retain Carbon

According to recent reports older and larger trees store increased levels of carbon. "Trees accelerate their growth as they get older and bigger, a global study has found. The findings, reported by an international team of 38 researchers in the journal Nature, overturn the assumption that old trees are less productive. It could have important implications for the way that forests are managed to absorb carbon from the atmosphere. "This finding contradicts the usual assumption that tree growth eventually declines as trees get older and bigger," said Nate

Stephenson, the study's lead author and a forest ecologist with the US Geological Survey (USGS). "It also means that big, old trees are better at absorbing carbon from the atmosphere than has been commonly assumed." [hellip] "Rapid growth in giant trees is the global norm, and can exceed 600kg per year in the largest individuals," say the authors. The study also shows old trees play a disproportionately important role in forest growth. Trees of 100cm in diameter in old-growth western US forests comprised just 6% of trees, yet contributed 33% of the annual forest mass growth." Vidal, John 2014. NEWS: Trees accelerate growth as they get older and bigger, study finds - Findings contradict assumption that old trees are less productive and could have important implications for carbon absorption" The Guardian, Jan 15, 2014.

<http://www.theguardian.com/environment/2014/jan/15/trees-grow-more-older-carbon> [citing Stephenson, N. L., A. J. Das, et al. 2014. Rate of tree carbon accumulation increases continuously with tree size. *Nature | Letter* (2014) doi:10.1038/nature12914

23. Woody Biomass is Not the Answer

Some reasons not to support forest woody biomass-to-energy projects in the NFGT include:

- a. These projects de-emphasize the use of prescribed or natural fire to maintain a healthy forest. Prescribed or natural fire creates a richly fertile ash that provides nutrients for forest vegetation.
- b. The downed logs, standing logs (snags), and other parts of trees provide organic material for soil and enhance soil biota activities.
- c. The downed logs, snags, and other parts of trees provide nutrients for soil and enhance soil biota activities.
- d. The downed logs, snags, and other parts of trees provide for moisture retention during dry times which reduces fire severity and protects organisms.
- f. The downed logs, snags, and other parts of trees provide shelter and food for vertebrate and invertebrate wildlife including cavities and dens.
- g. The downed logs, snags, and other parts of trees provide check dams to reduce erosion in the forest and reduce water quality concerns.
- h. Removing downed logs, snags, treetops, branches, and other parts of trees interferes with natural process functioning of decay and the restoration of soil richness and fertility.
- i. Downed logs, snags, treetops, branches, and other parts of trees are not waste but valuable ecological residuals that a healthy forest needs for proper functioning.
- j. Forest woody biomass-to-energy plants could encourage private landowners to liquidate trees that are presently considered to have little value, like hardwood trees.
- k. Treating downed logs, snags, treetops, branches, and other parts of trees as economic returns instead of as ecological residuals does not teach sustainable forestry or respect for forests. Forests are considered only as money-making propositions.

Forest woody biomass-to-energy projects in the NFGT can be considered as akin to the strip mining of forests. This is in the tradition of a long list of insults. Some of those insults in East Texas include:

- a. Cut down all the old growth trees and destroyed those ecosystems.

- b. Cut down the trees left over that were not considered as good as the best old growth trees.
- c. Cut down second growth trees.
- d. Stripped the forests of much of our valuable hardwood trees.
- e. Cut down third and fourth growth trees.
- f. Drilled enormous numbers of oil/gas wells, laid pipelines, and associated infrastructure like compressor stations and roads.
- g. In some places we strip mined for lignite.
- h. Stripped sand/gravel from our streams and uplands.
- i. Allowed tremendous amounts of sediment to enter our streams due to logging and other practices.
- j. Farmed to soil exhaustion forests after the trees were stripped off.
- k. Shot most of our big game and large predator species.
- l. Fertilized and herbicided present forests and allowed them to grow to an age about 1/10 that of their potential age (cut at 30 years of age with a potential to live to be 300 years old).
- m. Created incredible erosion and sedimentation in streams from abused land and the runoff from that land.

At some point this exploitation must stop. The NFGT are the best places to restore ecosystems and landscapes, show how such restoration can be accomplished, and demonstrate what the results are.

24. Climate Change is an Environmental Justice Issue

The FS is required by the NEPA and Executive Orders to consider the impacts on humans of actions, like the NFGT OGLEIS, on climate change and fossil fuel exploitation. For example, Executive Order 12898, states that each Federal agency shall make the achievement of environmental justice part of its mission and requires the avoidance of disproportionate adverse impacts to minority populations and low-income populations. The need for action in the OGLEIS to ensure that all populations participate and benefit is paramount and must be an integral part of the planning and implementation process.

Attachment 10:

1. "Houston must lead fight for climate change, Brett Perlman and Andy Steinhubl, Houston Chronicle, July 8, 2019.
2. "Flaring at oil wells is sure sign of wasted natural gas", Bill White, Houston Chronicle, August 22, 2019.
3. "Permian methane emissions, flaring hit record", Jordan Blum, Houston Chronicle, September 5, 2019.
4. "EPA set to roll back methane regulations", James Osborne, Houston Chronicle, August 30, 2019.
5. "With clean energy decades away, Exxon eyes oil/gas deals, Kevin Crowley, Houston Chronicle, September 5, 2019.

6. "Exxon leads the pack in Texas", Sergio Chapa, Houston Chronicle, July 8, 2019.
7. "Deep water and shale: Not so different anymore", Jordan Blum, Houston Chronicle, July 8, 2019.
8. "Report: Cleanup of abandoned wells like to be costly", Matthew brown, Houston Chronicle, September 20, 2019.
9. "Oil rig jobs may fall to tech, Jordan Blum, Houston Chronicle, December 22, 2016.

Some NEPA Concerns

1) The OGLEIS must conduct an alternative analysis on "all reasonable alternatives" as required by the President's Council on Environmental Quality's (CEQ) NEPA rules. In Section 1502.14(a) of these rules CEQ states, "Rigorously explore and objectively evaluate all reasonable alternatives". Such an "all reasonable alternatives" analysis would include an alternative for buying the mineral rights for all or part of the NFGT OGLEIS area.

Such an alternative is a "reasonable" alternative and is required to be assessed under the NEPA and the CEQ regulations that implement NEPA. The FS must provide an analysis in the OGLEIS that seriously contemplates buying out mineral rights under the NFGT or parts of the NFGT.

2) The Sierra Club is very concerned about cumulative impacts. The FS must address cumulative impacts in the OGLEIS in the following manner:

At minimum, an adequate cumulative effects analysis must:

1. Identify the past, present, and reasonably foreseeable actions of the OGLEIS that affect each particular aspect of the affected environment
2. Must provide quantitative information regarding past changes in habitat quality and quantity, water quality, resource values, and other aspects of the affected environment that are likely to be altered by OGLEIS direct or indirect actions
3. Must estimate incremental changes in these conditions that will result from OGLEIS direct or indirect actions in combination with actions of other parties, including synergistic effects
4. Must identify any critical thresholds of environmental concern that may be exceeded by OGLEIS direct or indirect actions in combination with actions of other parties
5. Must identify specific mitigation measures that will be implemented to reduce or eliminate effects

The NEPA and the CEQ require that analysis, assessment, and evaluation of cumulative impacts be conducted. Please see CEQ Chapters 1502.16, 1508.7, 1508.8, and 1508.27 which are binding on all federal agencies to implement.

Please see the CEQ's January 1997 document, "Considering Cumulative Effects Under the National Environmental Policy Act." The FS has an affirmative duty, a statutory duty, and a regulatory duty to carry out cumulative impact assessment.

The FS must not short-circuit effects analysis by suggesting there are no significant effects. The FS should use

the CEQ's "Considering Cumulative Effects Under the National Environmental Policy Act" to conduct a cumulative impacts assessment. Some of the especially important quotes from the CEQ document include:

a. On page v, "Only by reevaluating and modifying alternatives in light of the projected cumulative effects can adverse consequences be effectively avoided or minimized. Considering cumulative effects is also essential to developing appropriate mitigation and monitoring its effectiveness."

b. On page v, "By evaluating resource impact zones and the life cycle of effects rather than projects, the analyst can properly bound the cumulative effects analysis. Scoping can also facilitate the interagency cooperation needed to identify agency plans and other actions whose effects might overlap those of the proposed action."

c. On page vi, "When the analyst describes the affected environment, he or she is setting the environmental baseline and thresholds of environmental change that are important for analyzing cumulative effects. Recently developed indicators of ecological integrity (e.g., index of biotic integrity for fish) and landscape conditions (e.g., fragmentation of habitat patches) can be used as benchmarks of accumulated change over time [hellip] GIS technologies provide improved means to analyze historical change in indicators of the condition of resources, ecosystems, and human communities, as well as the relevant stress factors."

d. On page vi, "Most often, the historical context surrounding the resource is critical to developing these baselines and thresholds and to supporting both imminent and future decision-making."

e. On page vi "[hellip] the consequences of human activities will vary from those that were predicted and mitigated [hellip] therefore, monitoring the accuracy of predictions and the success of mitigation measures is critical."

f. On page vi, "Special methods are also available to address the unique aspects of cumulative effects, including carrying capacity analysis, ecosystem analysis, economic impacts analysis, and social impact analysis."

g. On page vii, Table E-1, "CEA Principles [hellip] Cumulative effects analysis [hellip] Address additive, countervailing, and synergistic effects [hellip] Look beyond the life of the action."

h. On page 1, "The range of actions that must be considered includes not only the projects proposal but all connected and similar actions that could contribute to cumulative effects."

i. On page 3, "The purpose of cumulative effects analysis, therefore is to ensure that federal decisions consider the full range of consequences of actions [hellip] If cumulative effects become apparent as agency programs are being planned or as larger strategies and policies are developed then potential cumulative effects should be analyzed at that times."

j. On page 3, Cumulative effects analysis necessarily involves assumptions and uncertainties, but useful information can be put on the decision-making table now [hellip] Important research and monitoring programs can be identified that will improve analyses in the future, but their absence should not be used as a reason for not analyzing cumulative effects to the extent possible now [hellip] adaptive management provisions for flexible project implementation can be incorporated into the selected alternative."

k. On page 4, "The Federal Highway Administration and state transportation agencies frequently make decisions on highway projects that may not have significant direct environmental effects, but that may induce indirect and cumulative effects by permitting other development activities that have significant effects on air and water resources at a regional or national scale. The highway and other development activities can reasonably be foreseen as "connected actions."

l. On page 7, "Increasingly, decision makers are recognizing the importance of looking at their projects in the context of other development in the community or region (i.e., of analyzing the cumulative effects) [hellip] Without a definitive threshold, the NEPA practitioner should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant [hellip] Cumulative effects results from spatial (geographic) and temporal (time) crowding of environmental perturbations. The effects of human activities will accumulate when a second perturbation occurs at a site before the ecosystem can fully rebound from the effect of the first perturbation."

m. On page 8, Table 1-2, lists 8 principles of cumulative effects analysis. A summary of these principles includes:

1. Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions.
2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken no matter who has taken the actions.
3. Cumulative effects needs to be analyzed in terms of than specific resource, ecosystem, and human community being affected.
4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.
5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.
6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.
7. Cumulative effects may last for many years beyond the life of the action that caused the effects.
8. Each affected resource, ecosystem, and human community must be analyzed in term of its capacity to accommodate additional effects, based on its own time and space parameters.

n. On page 19, "The first step in identifying future actions is to investigate the plans of the proponent agency and other agencies in the area. Commonly, analysts only include those plans for actions which are funded or for which other NEPA analysis is being prepared. This approach does not meet the letter or intent of CEQ's regulations [hellip] The analyst should develop guidelines as to what constitutes "reasonably foreseeable future actions" based on planning process within each agency [hellip] In many cases, local government planning agencies can provide useful information on the likely future development of the region, such as master plans. Local zoning requirements, water supply plans, economic development plans, and various permitting records will help in identifying reasonably foreseeable private actions [hellip] These plans can be considered in the analysis, but it is important to indicate in the NEPA analysis whether these plans were presented by the private party responsible for originating the action. Whenever speculative projections of future development are used, the analyst should provide an explicit description of the assumptions involved [hellip] NEPA litigation [hellip] has made it clear that "reasonable forecasting" is implicit in NEPA and that it is the responsibility of federal agencies to predict the environmental effects of proposed actions before they are fully known.

o. On page 23, "Characterizing the affected environment in a NEPA analysis that addresses cumulative effects requires special attention to defining baseline conditions. These baseline conditions provide the context for evaluating environmental consequences and should include historical cumulative effects to the extent feasible.

p. On page 29, "Lastly, trends analysis of change in the extent and magnitude of stresses in critical for projecting

the future cumulative effects.

q. On page 29, "Government regulations and administrative standards [hellip] often influence developmental activity and the resultant cumulative stress on resources, ecosystems, and human communities.

r. On page 31, "Cumulative effects occur through the accumulation of effects over varying periods of time. For this reason, an understanding of the historical context of effects is critical to assessing the direct, indirect, and cumulative effects of proposed actions. Trends data can be used [hellip] to establish the baseline for the affected environment more accurately (i.e., by incorporating variation over time) [hellip] to evaluate the significance of effects relative to historical degradation (i.e., by helping to estimate how close the resource is to a threshold of degradation) [hellip] to predict the effects of the actions (i.e., by using the model of cause and effects established by past actions)."

s. On pages 38-40, "Using information gathered to describe the affected environment, the factors that affect resources (i.e., the causes in the cause-and-effect relationships) can be identified and a conceptual model of cause and effect developed [hellip] The cause-and-effect model can aid in the identification of past, present, and future actions that should be considered in the analysis [hellip] The cause-and effect relationships for each resource are used to determine the magnitude of the cumulative effect resulting from all actions included in the analysis [hellip] one of the most useful approaches for determining the likely response of the resource [hellip] to environmental change is to evaluate the historical effects of activities similar to those under consideration.

t. On page 41, "The analyst's primary goal is to determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative effects of other past, present, and future actions [hellip] The critical element in this conceptual model is defining an appropriate baseline or threshold condition of the resource.

u. On page 43, "Situations can arise where an incremental effect that exceeds the threshold of concern for cumulative effects results, not from the proposed action, but the reasonably foreseeable but still uncertain future actions.

v. On page 45, "The significance of effects should be determined based on context and intensity [hellip] Intensity refers to the severity of effect [hellip] As discussed above, the magnitude of an effect reflects relative size or amount of an effect. Geographic extent considers how widespread the effect might be. Duration and frequency refers to whether the effect is a one-time event, intermittent, or chronic.

w. On page 45, "Determinations of significance [hellip] are the focus of analysis because they lead to additional (more costly) analysis or to inclusion of additional mitigation (or a detailed justification for not implementing mitigation) [hellip] the project proponent should avoid, minimize, or mitigate adverse effects by modifying alternatives [hellip] in most cases, however, avoidance or minimization are more effective than remediating unwanted effects."

y. On page 51, "different resource effects that cumulatively affect interconnected systems must be addressed in combination."

The FS must utilize the CEQ document to the maximum extent possible so that a full and legal cumulative impacts assessment is conducted. But there is no specific quantitative cumulative impact assessment for any past, present, and reasonably future foreseeable action in the EA's that FS has prepared to date. The Draft OGLEIS must assess, analyze, and evaluate cumulative impacts on a quantitative basis.

3) For an OGLEIS, dictionary usage of words or phrases will not suffice to provide the public with a clear picture of what the intensity, significance, and context of environmental impacts. A qualitative assessment, analysis, and

evaluation of environmental impacts is not sufficient to deal with the clearly articulated CEQ requirements in Section 1502.14, that the OGLEIS "should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision-maker and the public".

Quantitative assessment, analysis, and evaluation are necessary to ensure that alternatives and environmental impacts are clearly defined and shown in the OGLEIS. As stated in the CEQ NEPA implementing regulations, Section 1500.1(b), Purpose, "NEPA procedures must insure that environmental information is available to public officials and citizens [hellip] The information must be of high quality. Accurate scientific analysis [hellip] are essential to implementing NEPA".

As stated in Section 1501.2(b), "Identify environmental effects and values in adequate detail so they can be compared to economic and technical analyses."

As stated in Section 1502.8, "which will be based upon the analysis and supporting data from the natural and social sciences and the environmental design arts."

As stated in Section 1502.18(b), about the Appendix, "Normally consist of material which substantiates any analysis fundamental to the impact statement".

As stated in Section 1502.24, "Agencies shall insure the professional integrity, of the discussions and analyses [hellip] They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement."

The analyses in the OGLEIS must not be primarily based on "best professional judgment" which is simply what a group of people think is important based on their experiences and training. This level of assessment, analyses, and evaluation for environmental impacts and alternatives is an insufficient base for the OGLEIS.

The FS must define what "best professional judgment" means so that the public can review, comment on, and understand what it is. The qualitative description of phrases used to describe environmental impacts or the protectiveness of an alternative does not provide the public with the degree of comparison required by the CEQ.

The use of "best professional judgment" is not a substitute when quantitative information is available to show what impacts are or could be. This is a concern that the Sierra Club has when the FS develops and uses its methodology for assessing impacts. Methodology must not primarily be based on "best professional judgment". The interaction of methodology for assessing impacts and what is required in Section 1502.22 of the CEQ's NEPA implementing regulations must be discussed completely in the OGLEIS.

Section 1502.22, requires that when evaluating reasonably foreseeable significant adverse effects on the human environment in an EIS that incomplete or unavailable information be plainly stated as lacking in the EIS. This section also requires that if the costs of obtaining this information are "not exorbitant" then the agency must include the information in the EIS. Finally, this section also requires that if the information cannot be obtained due to exorbitant costs that the agency must state the information is incomplete or unavailable; state the relevance of this information to evaluating the significant adverse impacts; summarize the credible scientific evidence; and then provide the agency's evaluation of impacts based upon theoretical approaches or research methods generally accepted in the scientific community."

In the case of the use of "best professional judgment" as the theoretical approach or research method that is generally accepted in the scientific community that the FS uses to assess the environmental impacts of oil/gas activities it must give a thorough discussion of the use of this evaluation method in place of using quantitative data for the impact issue that is being discussed.

The FS cannot substitute "best professional judgment" for gathering existing quantitative data that it does have or gathering quantitative data that does not cost an exorbitant amount to collect for the OGLEIS. The Sierra Club opposes the use of "best professional judgment" in lieu of using existing or not exorbitantly costly acquired quantitative data.

The Sierra Club requests that the FS clarify and detail clearly the comparative differences between each alternative and define clearly what the words or phrases used mean. The environmental impact that this policy choice causes must be assessed in the OGLEIS so the public and decision-maker can review, comment on, and learn about this NEPA required element.

Must quantitatively analyze the impacts that will occur to natural resource issues in the OGLEIS. The undefined words that NPS uses in its definitions of negligible, minor, moderate, and major, have in the past included undefined words like "slight", "local", "small", "localized", "relatively local", "likely succeed", "readily measurable", "substantial consequences", "regional scale", "barely detectable", "slight but detectable", "readily apparent", "severely adverse", "substantially complete", "simple and successful", "substantially reduced", and "success would not be guaranteed". These undefined words render the "thresholds of change of the intensity of an impact" useless for public review, comment, and understanding of just how damaging NPS approved actions will be on natural resource issues.

The Sierra Club appreciates this opportunity to provide some preliminary comments about the OGLEIS. Thank you.

Sincerely,

Brandt Mannchen

Forest Management Issue Chair

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NFGT AND OIL AND GAS LEASING SCOPING II 2019

November 13, 2019

Oil & Gas EIS Project

Mr. Robert Potts

Natural Resources and Planning Team Leader

National Forests and Grasslands in Texas

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Dear Rob,

The Houston Regional Group and Lone Star Chapter of the Sierra Club (Sierra Club) provide these additional scoping comments for the U.S. Forest Service (FS) oil/gas leasing environmental impact statement (OGLEIS) under the National Environmental Policy Act (NEPA) for the National Forests and Grasslands in Texas (NFGT). The Sierra Club appreciates that the NFGT is preparing an OGLEIS.

The Sierra Club appreciates that the FS provided additional scoping time for the public. The FS should provide additional comment time to the public and not just because its website was not working correctly to receive public comments. Gifford Pinchot, the first FS Chief, said that the FS must keep certain things in mind about the public:

1. A public official is there to serve the public and not run them.
2. Public support of acts affecting public rights is absolutely required.
3. It is more trouble to consult the public than to ignore them, but that is what you are hired for.
4. Find out in advance what the public will stand for. If it is right and they won't stand for it, postpone action and educate them.
5. Get rid of an attitude of personal arrogance or pride of attainment or superior knowledge.
6. Don't try any sly, or foxy politics. A forester is not a politician.

The FS and U.S. Department of Agriculture (USDA) has these and other Pinchot maxims on its Grey Towers National Historic Site website (March 2016). The FS should keep these maxims in mind and implement them when it comes to public review, comment, participation, input, and collaboration. The FS, for the OGLEIS, must provide legal public review, comment, participation, input, and collaboration. It is not adequate to say, "we did the minimum", we put a notice in the Federal Register (which the Sierra Club has not been sent) and several newspapers. The NEPA is a process which requires that the public be heavily involved in any "major federal actions significantly affecting the quality of the human environment".

According the Council on Environmental Quality's (CEQ) NEPA implementing regulations, the public is very important:

1. Section 1500.1 Purpose (b), "NEPA procedures must insure that environmental information is available to public officials and citizens [hellip] Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA."

2. Section 1500.2 Policy (b), "Federal agencies shall to the fullest extent possible: [hellip] Implement procedures to make the NEPA process more useful to decisionmakers and the public

3. Section 1500.2 Policy (d), "Encourage and facilitate public involvement in decisions which affect the quality of the human environment".

4. Section 1500.6 Agency authority, "Each agency shall interpret the provisions of the act as a supplement to its existing authority and as a mandate to view traditional policies and missions in the light of the Act's national environmental objectives [hellip] The phrase "to the fullest extent possible" in section 102 means that each agency of the federal government shall comply with that section unless existing law applicable to the agency's operations expressly prohibits or makes compliance impossible."

5. Section 1501.2 Apply NEPA early in the process (d)(2), "The federal agency consults early with appropriate [hellip] interested private persons and organizations when its own involvement is reasonably foreseeable."

6. Section 1501.4 Whether to prepare an environmental impact statement(e)(1), "The agency shall make the finding of no significant impact available to the affected public as specified in Section 1506.6."

7. Section 1501.4 Whether to prepare an environmental impact statement(e)(2), "In certain limited circumstances [hellip] the agency shall make the finding of no significant impact available for public review [hellip] for 30 days before the agency makes its final determination".

8. Section 1501.5 Lead agencies (d), "Any federal agency, or any state or local agency or private person substantially affected by the absence of lead agency designation, may make a written request to the potential lead agencies that a lead agency be designated."

9. Section 1501.7 Scoping, "There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action."

10. Section 1501.7 Scoping (a)(1), "Invite the participation of [hellip] and other interested persons (including those who might not be in accord with the action on environmental grounds)".

11. Section 1501.7 Scoping (a)(5), "Indicate any public environmental assessments and other environmental impact statements which are being or will be prepared that are related to but are not part of the scope of the impact statement under consideration."

12. Section 1501.7 Scoping (b)(4), "Hold an early scoping meeting or meetings".

13. Section 1501.8 Time limits (b)(1)(iv), "Degree of public need for the proposed action, including the consequences of delay".

14. Section 1501.8 Time limits (b)(1)(v), "Number of persons and agencies affected."

15. Section 1501.8 Time limits (b)(2)(iv), "Review of any comments on the draft environmental impact statement form the public and agencies."

16. Section 1501.8 Time limits (b)(2)(vi), "Review of any comments on the final environmental impact statement."

17. Section 1501.8 Time limits (c), "State or local agencies or members of the public may request a federal agency to set time limits."

18. Section 1502.1 Purpose, "The primary purpose of an environmental impact statement is to serve as an action-forcing device to insure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the federal government [hellip] shall inform decisionmakers and the public of the reasonable alternatives".
19. Section 1502.8 Writing, "Environmental impact statements shall be written in plain language [hellip] so that decisionmakers and the public can readily understand them."
20. Section 1502.9 Draft, final, and supplemental statements (b), "[hellip] The agency shall discuss at appropriate points in the final statement any responsible opposing view which was not adequately discussed in the draft statement and shall indicate the agency's response to the issues raised."
21. Section 1502.12 Summary, "Each environmental impact statement shall contain a summary .. (including issues raised by agencies and the public)".
22. Section 1502.13 Alternatives including the proposed action, "This section is the heart of the environmental impact statement [hellip] in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmakers and the public".
23. Section 1502.19 Circulation of the environmental impact statement, (c), "Agencies shall circulate the entire draft and final environmental impact statements [hellip] except that the entire statement shall be furnished to: [hellip] Any person, organizations, or agency requesting the entire environmental impact statement."
24. Section 1502.19 Circulation of the environmental impact statement, (d), "In the case of a final environmental impact statement any person, organizations, or agency which submitted substantive comments on the draft. If the agency circulates the summary and thereafter receives a timely request for the entire statement and for additional time to comment, the time for that requester only shall be extended by at least 15 days beyond the minimum period."
25. Section 1502.21 Incorporation by reference, "Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action [hellip] No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment".
26. Section 1503.1 Inviting comments, (a)(4), "After preparing a draft environmental impact statement and before preparing a final environmental impact statement the agency shall [hellip] Request comments from the public, affirmatively soliciting comments from those persons or organizations who may be interested or affected."
27. Section 1503.1 Inviting comments, (b), "An agency may request comments on a final environmental impact statement [hellip] in any case other agencies or persons may make comments before the final decision unless a different time is provided under Section 1506.10."
28. Section 1503.3 Specificity of comments, (a), "Comments on an environmental impact statement or on a proposed shall be as specific as possible and may address either the adequacy of the statement or the merits of the alternatives discussed or both."
29. Section 1503.4 Response to comments, (a) and (5), "An agency preparing a final environmental impact statement shall assess and consider comments both individually and collectively [hellip] Explain why the comments do not warrant further agency response".
30. Section 1503.4 Response to comments, (b), "All substantive comments received [hellip] should be attached

to the final statement whether or not the comment is thought to merit individual discussion by the agency in the text of the statement."

31. Section 1504.3 Procedure for referrals and response, (e), "Interested persons [hellip] may deliver their view in writing to the Council."

32. Section 1503.4 Procedures for referrals and response, (f)(3), "Hold public meetings or hearings to obtain additional views and information."

33. Section 1505.1 Agency decision-making procedures, (c), "Requiring that relevant environment documents, comments, and response be part of the record in formal rulemaking or adjudicatory proceedings."

34. Section 1505.1 Agency decision-making procedures, (e), "Requiring that the alternatives considered by the decision -maker [hellip] If another decision document accompanies the relevant environmental documents to the decision-maker, agencies are encouraged to make available to the public before the decision made any part of that document that related to the comparison of alternatives."

35. Section 1505.2 Record of decision in cases requiring environmental impact statements, "At the time of its decision [hellip] if appropriate, its recommendation to congress each agency shall prepare a concise public record of decision."

36. Section 1505.3 Implementing the decision, (d), "Upon request, make available to the public the results of relevant monitoring."

37. Section 1506.6 Public Involvement, (a), "Agencies shall: Make diligent efforts to involve the public in preparing and implementing their NEPA procedures."

38. Section 1506.6 Public Involvement, (b)(1), (2), and (3), "Provide public notice of NEPA-related hearings, public meetings, and the availability of environmental documents so as to inform those persons and agencies who may be interested or affected [hellip] In all cases the agency shall mail notice to those who have requested it on an individual action [hellip] In the case of an action with effects of national concern notice shall include publication in the Federal Register and notice by mail to national organizations reasonably expect to be interested in the matter and may include listing in the 102 Monitor. An agency engaged in rule-making may provide notice by mail to national organizations who have requested that notice regularly be provided. Agencies shall maintain a list of such organizations [hellip] In the case of an action with effect primarily of local concern the notice may include: (i) through (ix)".

39. Section 1506.6 Public Involvement, (c)(2), "Hold or sponsor public hearings or public meetings [hellip]. If a draft environmental impact statement is to be considered at the public hearing, the agency should make the statement available to the public at least 15 days in advance."

40. Section 1506.6 Public Involvement, (d), "Solicit appropriate information from the public."

41. Section 1506.6 Public Involvement, (e), "Explain in it procedures where interested persons can get information or status reports".

42. Section 1506.6 Public Involvement, (f), "Make environmental impact statements the comments received, and any underlying documents available to the public [hellip] Materials to be made available to the public shall be provided to the public without charge to the extent practicable, or at a fee which is not more than the actual costs of reproducing copies required to be sent to other federal agencies, including the Council."

43. Section 1506.8 Proposals for legislation, (a), "The NEPA process for proposals for legislation [hellip] may be transmitted to Congress up to 30 days later in order to allow time for completion of an accurate statement which can serve as the basis for public and Congressional debate".

44. Section 1506.10 Timing of agency action, (b)(2), "No decision on the proposed action shall be made [hellip] some agencies have a formal established appeal process which allows other agencies or the public to take appeals on a decision and make their views known, after publication of the final environmental impact statement

45. Section 1506.10 Timing of agency action, (c), "However [hellip] agencies shall allow not less than 45 days for comments on draft statements."

46. Section 1507.3 Agency procedures, (c), "Agency procedures may include specific criteria for providing limited exceptions to the provisions [hellip] which address classified proposals may be safeguarded and restricted from public dissemination [hellip] These documents may be organized so that classified portions can be included as annexes, in order that the unclassified portions can be made available to the public."

47. Section 1508.9 Environmental assessment, (a), "Means a concise public document".

48. Section 1508.22 Notice of Intent, "Notice of intent means a notice that an environmental impact statement will be prepare and considered".

These provisions of CEQs NEPA implementing regulations either refer to the public specifically or to a process that requires public participation. The FS should understand and utilize the requirement for public participation as much as possible in this OGLEIS.

It is very important that the FS understand that its push to lease federal oil/gas minerals will make management of the NFGT more difficult and will ultimately cost the public more money, personnel, and effort to manage these things the FS has in short supply.

For instance, road washouts or damages in the NFGT have been on the rise at least since 2015 due more intense rainfalls that are becoming more frequent due to climate change. It has been reported by the Tribune News Service, David Fleshler, Houston Chronicle, July 1, 2019, "In hurricanes, a new top killer is emerging", that "About 75 percent of the 162 fatalities in hurricanes and other tropical cyclones striking the United States from 2016 to 2018 were caused by rain-induced flooding, with most victims drowning in or near their vehicles, according to the National Hurricane Center." So not only will more intense rainfalls from climate change due in part from oil/gas exploitation on the NFGT cause more infrastructure damage on the NFGT but they could result in more injuries or deaths due to rainfall flooding.

Further, if the climate change is as severe as the Intergovernmental Panel on Climate Change (IPCC) and others say, the present forest ecosystems and other ecosystems in the NFGT will be damaged, degraded, and perhaps destroyed, not over 1,000s of years as would occur with evolution, but over one or two hundred years due to human-caused climate change via carbon dioxide (CO₂) and methane air pollutants that build-up in the atmosphere.

Economically, shale oil/gas is not the panacea that it has been touted to be. In the articles enclosed, 1., 2., 3., 4., 5., 12. 14., and 15., this vulnerability to "boom and bust" cycles is spelled out. In addition, shale oil/gas has a quick production peak which then tails off just as quickly and then remains at a low level for many years. This "peakiness" of production means that the economic value of shale oil/gas will be less to people who work in the field, buy supplies, or rely on money to be circulated within the local economy.

The impacts of climate change due to oil/gas exploitation and fracking have become more evident and are more serious than first thought. Articles 6., 7., 8., 9. 10., 13., 18., 19., and 20. document this problem. Even damages due to increased frequency and or intensity of hurricanes and tropical storms on the coast are due, in part, to the oil/gas exploitation that the NFGT currently allows and wants to allow more of in the future with this OGLEIS.

Enclosed articles 5., 11., 16., and 17., show that there are alternatives that can be used instead of oil/gas exploitation. The FS does not have to allow oil/gas exploitation especially since it has already allowed 1,000's of wells to be drilled in and near the NFGT, both on federal and private minerals, and thus has made a good faith effort to develop those natural resources.

1. Chesapeake Energy's warning could bode a shale bust", Rachel Adams-Heard, David Wethe, and Kriti Gupta.
2. "Equinor plans to sell Eagle Ford holdings", Jordan Blum, Houston Chronicle, November 9, 2019.
3. "Texas economy rises, falls with oil", Erin Douglas, Houston Chronicle, November 9, 2019.
4. "Report: U.S. shale growth will plateau in 21", Jordan Blum, Houston Chronicle, November 7, 2019.
5. "Solar, wind, batteries threaten natural gas", Chris Tomlinson, Houston Chronicle, November 3, 2019.
6. "Arctic Impacts" and "Rising Seas", Earthweek, Houston Chronicle, Earth Environment Service, November 3, 2019.
7. "Fracking pioneer's charity challenges industry dogma", James Osborne, Houston Chronicle, November 3, 2019.
8. "Climate crisis: 11,000 scientists warn of untold suffering", Damian Carpington, The Guardian, November 2, 2019.
9. "Weather Whiplash", The Interview - Katherine Hayhoe, Megan Kimble, The Texas Observer, November/December 2019.
10. "Three times more people at risk from yearly coastal flooding than previously thought", Komail Kantamaneni, The Conservation, October 30, 2019.
11. "Offshore windfarms can provide more electricity than the world needs", Jillian Ambrose, The Guardian, October 25, 2019.
12. "New innovations touted to give shale oil a boost", Jordan Blum, Houston Chronicle, October 24, 2019.
13. "UT-led study links quakes, fracking - Previous research had blamed tremors on disposal wells", Sergio Chapa, Houston Chronicle, October 16, 2019.
14. "Shale in seventh inning of oil game - State faces painful shift as industry appears to slow", Jordan Blum Houston Chronicle, October 16, 2019.
15. "Reporter's Notebook: The beginning of the end for Texas energy, economy?", Erin Douglas, Houston Chronicle, October 11, 2019.
16. "Wild Carbon: A synthesis of recent findings", Cark G. Anderson, Northeast Wilderness Trust, Wild Works,

Volume 1, 2019.

17. "Wild Carbon, A synthesis of recent findings", Mark G. Anderson, from Northeast Wilderness Trust, Wild Work Volume 1, as published in Rewilding Earth, 2019.

18. "New elevation data triple estimates of global vulnerability to sea-level rise and coastal flooding", Scott A Kulp and Benjamin H. Strauss, Nature Communications 10, Article number: 4844 (2019).

19. "Abrupt shifts in Arctic climate projected", McGill University, October 30, 2019.

20. "End to fracking in UK called an election ploy", Associated Press, Houston Chronicle, November 3, 2019.

The public will be worse off in the short and long-term due to oil/gas exploitation rather than no leasing because of damage to public natural resources and local financial conditions. The Sierra Club has been told that law requires that oil/gas exploitation be done. However, the law also requires that the FS operate sustainably and not degrade or destroy the natural resources that the FS holds in trust for the public. That is its highest responsibility.

The FS Motto is: Caring for the land and serving people. The FS Mission is: To sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations.

According to the FS, "At the heart of our agency's mission is our purpose[mdash]the ultimate answer to why we do what we do. Everything we do[mdash]across our broad and diverse agency[mdash]is intended to help sustain forests and grasslands for present and future generations. Why? Because our stewardship work supports nature in sustaining life. This is the purpose that drives our agency's mission and motivates our work across the agency. It's been there from our agency's very beginning, and it still drives us."

"To advance our mission and serve our purpose, we balance the short and long-term needs of people and nature by[mdash]

1. Working in collaboration with communities and our partners;
2. Providing access to resources and experiences that promote economic, ecological, and social vitality; and
3. Connecting people to the land and one another.
4. Delivering world-class science, technology and land management."

"This is our value: what the Forest Service uniquely has to offer. FS Values: As employees of the Forest Service, we believe in[mdash]

1. Service. To each other. To the American people. To the planet.
2. Interdependence. Of all things. People and nature. Communities and colleagues. The past, present, and future.
3. Conservation. Protection when necessary. Preservation when appropriate. Restoration, when needed, and wise management for multiple use and enjoyment always.
4. Diversity. People and cultures. Perspectives and ideas. Experiences and ecosystems.
5. Safety. In every way: physical, psychological, and social."

The FS cannot uphold its Motto, Mission, Purpose, and Values if it leases oil/gas minerals on the NFGT because this causes climate change which degrades the very natural resources it is supposed to manage sustainably in trust for the public and endangers its employees. The FS cannot serve two masters at once, particularly if one master decimates the other master, the foundation of life on our planet, and the good fortune of the American People. For these and other reasons, the FS should embrace the "no leasing alternative".

The Sierra Club appreciates this opportunity to provide these additional initial scoping comments about the OGLEIS. Thank you.

Sincerely,

Brandt Mannchen

Forest Management Issue Chair

Lone Star Chapter of the Sierra Club

Chair, Forestry Subcommittee

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NFGT HEATH CLIMATE CHANGE LETTER 2023

June 29, 2023

Mr. Kimpton Cooper,

Mr. Jason Roesner

Mr. Logan Gallant

Mr. Jimmy Tyree

Mr. Rob Potts

Dear National Forests and Grasslands in Texas,

On behalf of the Houston Regional Group and Lone Star Chapter of the Sierra Club (Sierra Club) I am sending you three articles about climate change and the effects it has on people via [ldquo]heat[rdquo]. The three articles are:

1. [ldquo]How hot is too hot for the human body? Our lab found heat + humidity gets dangerous faster than many people realize[rdquo], W. Larry Kenney, Daniel Vecellio, Rachel Cottle, and S. Tony Wolf, Houston Chronicle, June 20, 2023.

This article is from Penn State University researchers and provides the results of their recent work on how heat, made worse by climate change, affects the body.

2. [ldquo]Current heatwave across US south made five times more likely by climate crisis[rdquo], Oliver Millman, The Guardian, June 27, 2023.

This article talks about the [ldquo]heat dome[rdquo] that is stalled across Texas, Louisiana, and Mexico and how climate change has exacerbated the [ldquo]heat[rdquo] from it, which can be fatal to people.

3. [ldquo]At least 13 deaths in state blamed on heat[rdquo], Marie Elizabeth Oliver, Stacey Cato, and Livia Albeck-Ripka, Houston Chronicle, June 29, 2023.

This article reports that the current [ldquo]heat dome[rdquo] has caused at least 13 deaths so far.

The reason the Sierra Club sends you these articles is that we are concerned about the health and well-being of people in the National Forests and Grasslands in Texas (NFGT). We are concerned about those who recreate (hike, bike, motorized recreate, horseback ride, etc.), those who work in the NFGT (timber cutters, oil/gas workers, etc.), and U.S. Forest Service (FS) staff and employees who work outdoors (timber cruisers, District Rangers, biologists, botanists, etc.).

The Sierra Club urges the FS to prepare a plan to address this issue since climate change will make this problem worse and cause it to last longer each year.

The Sierra Club encourages the FS to place on its websites, in a very large font, a warning about high temperatures, what to do to avoid problems, and suggest, that people shouldn[rsquo]t be out during certain times of the day and when certain high temperatures occur so that their health is protected.

The Sierra Club also encourages the FS to tell each person that it meets at its offices and out in-the-field about this problem. The FS should encourage people to protect themselves or not be out in the heat during certain times. A flyer could be prepared and placed at all kiosks and similar places and handed out wherever FS employees meet people.

If the Sierra Club can do anything to help, please let me know. Thanks for listening and please stay safe and cool.

Sincerely,

Brandt Mannchen

Forest Management Issue Chair

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