Data Submitted (UTC 11): 3/26/2024 11:57:00 PM
First name: Richard
Last name: Artley
Organization:
Title:
Comments:
Dear Ranger Bushnell and selected specialists who should know better,

Please accept these comments on your Larabee Hat Vegetation Project and consider the wise quotes below. If you really consider them this proposed timber sale would be dropped immediately.

"It is horrifying that we have to fight our own government to save the environment."
Ansel Adams

"We must protect the forests for our children, grandchildren and children yet to be born. We must protect the forests for those who can't speak for themselves such as the birds, animals, fish and trees."
Chief Edward Moody

"God has cared for these trees, saved them from drought, disease, avalanches, and a thousand tempests and floods. But he cannot save them from fools.
John Muir

"The Eyes of the Future are looking back at us and they are praying for us to see beyond our own time."
Terry Tempest Williams

What are the chances that so many clueless USFS employees could end up on a single Ranger District?

Comment Requirements
Project NameLarabee Hat Vegetation Project
Responsible Official and TitleKathy Bushnell, District Ranger
District & Forest where it will be implementedHelena Ranger District, Helena National Forest
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Ranger Bushnell, I ask you and your IDT members to have the courage to read the science conclusions in Opposing Views Attachment #1, #4 and #25. Also please look at the photos in Photos Attachment #14.

Logging Old Growth?

At page 4 of the Larabee Hat Vegetation Project Overview document you say:

"Old growth surveys would be completed in treatment units before implementation. Treatment in old growth would comply with the Forest Plan (FW-VEGF-GDL-04)"

Intelligent USFS line-officers do not violate a Presidential Executive Order.

On December 19, 2023 the Biden administration announced a proposed nationwide forest plan amendment to advance protections for the last remaining old-growth trees in U.S. national forests.

President Joe Biden said "these trees are critical components of the nation's fight against the climate and extinction crises." The proposal would add new restrictions on logging and is a step toward fulfilling the promise of the president's April 2022 executive order # 14072, which directs the departments of Agriculture and the Interior to address threats to mature and old-growth forests on federal lands as a natural climate solution and

develop policies to conserve them.

Who are you people?

All Roads that will Never be used again
must be Obliterated.

At page 1C of the Larabee Hat Vegetation Project Overview document you give your definition of road obliteration:

"Road Obliteration: Obliteration shall consist of recontouring road prism including all cut and fill slopes to natural ground contour."

At page 4 of the Larabee Hat Vegetation Project Overview document you say:

"All new temporary roads would be obliterated, and existing templates would be stabilized after project completion."

Obliteration is the most effective way to close a road that will never be used again without adverse effects to aquatic resources. There is no reason not to obliterate temp roads that use existing templates. Saving these templates for future use is irresponsible. An obliterated road has no road prism.

People Riding 4-Wheelers and Motorcycles
are not Road Locators.

At page 9 of the Larabee Hat Vegetation Project Overview document you say:

"Where an unauthorized exiting road prism or a motorized trail exists on the ground, the route would be improved to a minimum standard needed to provide access for harvesting equipment and log trucks, while minimizing impacts to resources. These roads would be returned to their existing condition prior to hauling, after harvest activities are complete."

Competent USFS land managers know what to do right after an unauthorized, user-created road is discovered. They must be removed from the landscape completely (obliterate) and pile rocks and logs after they have been hydrologically stabilized so they won't be reconstructed. How many years have your unauthorized roads existed? How many tons of sediment enter the streams each year because of you?

Restore the Forest

At page 2 you say:

"One of the primary purposes of the Larabee Hat Vegetation Project is to restore the forest."

Either you people don't know the definition of "restore" or you have never walked through a cutting unit after it had been logged.

Ranger Bushnell, please provide a meaningful response to each of my 42 comments below in the Response to Comments section in the pending final NEPA document. I will remind you of 40 CFR § 1503.4

I hope the IDT members understand the experts quoted below are describing how commercial timber sales (like Larabee Hat) will inflict massive damage to the resources in and downstream from the sale area. This will not be

"short term" damage the USFS so often uses to justify such abuse.

Quote below is from Logging without Limits isn't a Solution to Wildfires
By Timothy Ingalsbee Ph.D.
Published in the Portland Oregonian, August 6, 2002
http://www.klamathforestalliance.org/Documents/loggingwithoutlimits.html

Quote:

"Since the 'New Perspectives' program of the early 1990s, the agency has tried to dodge public opposition to commercial logging by using various euphemisms, such as this gem from the Siskiyou National Forest: Clearcuts are called 'minimum green tree retention units.' Accordingly, Forest Service managers have believed that if they simply refer to logging as 'thinning,' or add the phrases 'fuels reduction' or 'forest restoration' to the title of their timber sale plans, then the public will accept these projects at face value, and business-as-usual commercial logging can proceed. In the face of multiple scandals and widespread public skepticism of the Forest Service's credibility, it seems that only Congress is buying the agency's labeling scheme."

Comment #1: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Ingalsbee say "the agency has tried to dodge public opposition to commercial logging by using various euphemisms." If you think he didn't say this please tell the public why.

Quote below is from Getting it Right: Environmentalism for the 21st Century
By Patrick Moore Ph.D.
Published online by Berkely Rausser, College of Natural Resources, October 01, 1999
https://nature.berkeley.edu/events/2017/06/getting-it-right-environmentalism-21st-century

Quote:

"This gives rise to the obvious concern that if the trees are cut down the habitats or homes will be lost and the species that live in them will die. Indeed, in 1996 the World Wildlife Fund, at a media conference in Geneva, announced that 50,000 species are going extinct each year due to human activity. And the main cause of these 50,000 extinctions, they said, is commercial logging. The story was carried around the world by Associated Press and other media and hundreds of millions of people came to believe that forestry is the main cause of species extinction."

Comment #2 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Moore say "50,000 species are going extinct each year due to human activity. And the main cause of these 50,000 extinctions, they said, is commercial logging.

Quote below is from Are Wildfire Mitigation and Restoration of Historic Forest Structure Compatible? A Spatial Modeling Assessment
By Rutherford V. Platt Ph.D., Thomas T. Veblen Ph.D., and Rosemary L. Sherriff
Published Online: by the by Association of American Geographers. Sep. 8, 2006
http://www.ingentaconnect.com/content/routledg/anna/2006/00000096/00000003/art00001

Quote:

Is Fuels Reduction Logging Effective? - "We question the validity of thinning as a means both to reduce the threat of wildfire and to restore historic forest structure in the absence of site-specific data collection on past and present landscape conditions."

Comment #3 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would these 3 experts say "We question the validity of thinning as a means both to reduce the threat of wildfire and to restore historic forest structure in the absence of site-specific data collection on past and present landscape conditions?"

Quote below is from Fanning the Flames! The U.S. Forest Service: A Fire-Dependent Bureaucracy
By Timothy Ingalsbee Ph.D.
Published in the Missoula Independent. Vol. 14 No. 24, June 2003
http://www.klamathforestalliance.org/Documents/fanningtheflames.html

Quote:

"In the face of growing public scrutiny and criticism of the agency's logging policies and practices, the Forest Service and their enablers in Congress have learned to mask timber sales as so-called 'fuels reduction' and 'forest restoration' projects. Yet, the net effect of these logging projects is to actually increase fire risks and fuel hazards."

"Decades of encouraging private logging companies to take the biggest, oldest, most fire-resistant trees from public lands, while leaving behind a volatile fuel load of small trees, brush, weeds, stumps and slash has vastly increased the flammability of forestlands."

"In addition to post-fire salvage logging, the Forest Service and timber industry advocates in Congress have been pushing pre-fire timber sales, often falsely billed as hazardous fuels reduction or 'thinning' projects, to lower the risk or hazard of future wildfires. In too many cases, these so-called thinning projects are logging thick-diameter fire-resistant overstory trees instead of or in addition to cutting thin-sized fire-susceptible understory trees. The resulting logging slash and the increased solar and wind exposure can paradoxically increase the fuel hazards and fire risks."

Comment #4 : Ranger Bushnell why would Dr. Ingalsbee say logging "increases fire risks and fuel hazards" if as you say logging and road construction will restore the forest?

Quote below is from Soil and Root Damage in Forestry, 200 pages
By Iwan Wasterlund, Ph.D.
Published by Elsevier, 26 August 2020
https://www.readonbooks.net/pdf/soil-and-root-damage-in-forestry/

Quote:

"Agroforestry has significantly impacted our forests, but an often-overlooked issue is the effect of harvesting on soils and root systems. Soil and Root Damage in Forestry explains how soil and roots might be damaged through logging activities or silvicultural activities, how resulting root diseases impact the root and soil systems, and the impacts of chemical applications on the soil and root system. This book goes beyond the 'why' to also provide methods to reduce the impacts of machines on soils and offers solutions to minimize the impacts of machines on soils. Soil and Root Damage in Forestry serves as a valuable resource not only for those already working in soil science and forest ecology, but also provides insights for advanced students seeking an entrance to the "hidden half" of the planet. Combines damages to soil and roots in one volume for the first time Includes calculations related to soil strength providing soil scientists and ecologists with methods to estimate root damage Provides suggestions on how to reduce the impact of harvesting on soil and root systems."

Comment #5 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Wasterlund say "soil and roots might be damaged through logging activities or silvicultural activities."

Quote below is from How and How Much, Do Harvesting Activities Affect Forest Soil, Regeneration and Stands?
By Rodolfo Picchio Ph.D., Piotr S. Mederski Ph.D. and Farzam Tavankar Ph.D.
Published in Current Forestry Reports volume 6, pages 115-128 (2020)
https://link.springer.com/article/10.1007/s40725-020-00113-8

Quote:

"There are a large number of publications tackling forest harvesting, but most of them do not give a comprehensive framework and they mainly focus on one or very few aspects of forest damage. In order to improve general knowledge of the impact of forest operations, it was proposed that the scope of recent findings should be examined and a compilation of the available results from different regions should be presented in one paper."

"The physical, chemical and biological properties of the forest soil change as a result of harvesting operations, and this is commonly referred to as soil disturbance [4, 16,17,18,19]. Chemical and biological changes occur in the soil after physical modification. Therefore, changes in the physical properties of the soil are the most prominent indicator of soil disturbance following the use of logging equipment [4, 20]. Detrimental soil disturbance associated with ground-based extraction often includes compaction, rutting, lateral soil displacement, topsoil mixing and the formation of puddles."

Comment #6 : Ranger Bushnell, if as you say logging and road construction will restore forest why would Dr. Picchio, Dr. Mederski and Dr. Tavankar say " ground-based extraction often includes compaction, rutting, lateral soil displacement, topsoil mixing and the formation of puddles?"

Quote below is from Are Wildfire Mitigation and Restoration of Historic Forest Structure Compatible? A Spatial Modeling Assessment"
By Rutherford V. Platt Ph.D., Thomas T. Veblen Ph.D., and Rosemary L. Sherriff
Published Online: by the by Association of American Geographers. Sep. 1, 2006
http://www.ingentaconnect.com/content/routledg/anna/2006/00000096/00000003/art00001

Quote:

"We question the validity of thinning as a means both to reduce the threat of wildfire and to restore historic forest structure in the absence of site-specific data collection on past and present landscape conditions."

Comment #7: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Platt, Dr. Veblen and Ms. Sherriff say "We question the validity of thinning as a means both to reduce the threat of wildfire and to restore historic forest structure?"

Quote below from The Politics of Forest Fires -- The Abuse of Other People's Hard Times.
By Thomas Power Ph.D., August 15, 2000
Thomas Michael Power is the Professor and Chairman of the Economics Department, University of Montana
http://www.forwolves.org/ralph/tompower.htm

Quote:

"The fires, timber industry spokespersons claim, are the result of restrictions on commercial logging on public lands. If all of these lands had been logged, they assert, the fires would not be burning. It is the federal government and the environmentalists who have caused the fires that now threaten us. As one timber industry advocate baldly said, "I never saw a clearcut burn."

Nothing could be further from the truth. Of course clearcuts burn. When long, hot summers dry out the grasses, brush, and logging wastes, they can flare explosively. When they grow thick with closely packed young trees, they present exactly the fire danger we are wrestling with now. The logging roads provide human access that is the source of the vast majority of forest fires.

If roading and logging eliminated the threat of wildfire, most of the fires that threaten us now would not be burning. Look at where these fires are: They are largely burning on the forest-urban interface in areas adjacent to intense human activity. In Western Montana, for instance, the fires are burning in the forests adjacent to some of the rapidly growing residential areas in the nation, the Bitterroot, Helena, and Clark Fork Valleys. These are not roadless areas that have never been logged. Quite the contrary, they are areas that were roaded and logged in the past. Those roads often have then provided access for the human activity that now dominates these areas, including the home building, residential settlement of the last two decades, and recreational activity. The trees now burning are usually second growth that followed past logging."

Comment #8 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Power say "The trees now burning are usually second growth that followed past logging?

Quote below from Excerpt from a letter to Chief Dale Bosworth and 5 members of congress, 2002
By Emily B. Roberson Ph.D., Senior Policy Analyst, California Native Plant Society
https://www.biologicaldiversity.org/campaigns/protecting_native_plants/pdfs/Fire-letter-CNPS-8-02.pdf

Quote:

"It is well established that logging and roadbuilding often increase both fuel loading and fire risk. For example, the Sierra Nevada Ecosystem Project (SNEP) Science Team (1996) concluded that "timber harvest…. has increased fire severity more than any other recent human activity" in the Sierra Nevada. Timber harvest may increase fire hazard by drying of microclimate associated with canopy opening and with roads, by increases in fuel loading by generation of activity fuels, by increases in ignition sources associated with machinery and roads, by changes in species composition due to opening of stands, by the spread of highly flammable non native weeds, insects and disease, and by decreases in forest health associated with damage to soil and residual trees (DellaSala and Frost, 2001; Graham et al., 2001; Weatherspoon et al., 1992; SNEP Science Team, 1996). Indeed a recent literature review reported that some studies have found a positive correlation between the occurrence of past logging and present fire hazard in some forest types in the Interior Columbia Basin (DellaSala and Frost, 2001)."

Comment #9 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Robertson say "Timber harvest may increase fire hazard?"

Quote below from Logging in disguise: How forest thinning is making wildfires worse
By Chad Hanson, Ph.D.
Published by Grist Magazine, Aug 24, 2021
https://grist.org/fix/forest-thinning-logging-makes-wildfires-worse/

Quote:

"Fire has always been a concern for communities like Greenville in the northern Sierra Nevada mountains. And, for decades, the U.S. Forest Service and the timber industry told the townspeople that logging tens of thousands of acres - under the guise of "thinning" - would create "fuel breaks" to slow or even stop wildfires and prevent flames from reaching Main Street."

"Last week, the Caldor Fire swept through a large area that had been recently logged in Eldorado National Forest in the central Sierra Nevada, under the rubric of commercial thinning. It destroyed the town of Grizzly Flats.

The forests with the most logging, of both live and dead trees, typically burn in the hottest fires, especially when extreme fire weather interacts with heavily logged landscapes."

Comment #10 : Supervisor Ranger Bushnell Fletcher, you say logging and road construction will restore the forest, why would Dr. Hanson say logging did not stop the Caldor Fire?"

Quote below from The exceptional value of intact forest ecosystems
By James E. M. Watson Ph.D.
Published by Nature Ecology & Evolution volume 2, pages 599-610, February 26, 2018
https://www.nature.com/articles/s41559-018-0490-x

Quote:

"As the terrestrial human footprint continues to expand, the amount of native forest that is free from significant damaging human activities is in precipitous decline. There is emerging evidence that the remaining intact forest supports an exceptional confluence of globally significant environmental values relative to degraded forests, including imperilled biodiversity, carbon sequestration and storage, water provision, indigenous culture and the maintenance of human health. Here we argue that maintaining and, where possible, restoring the integrity of dwindling intact forests is an urgent priority for current global efforts to halt the ongoing biodiversity crisis, slow rapid climate change and achieve sustainability goals. Retaining the integrity of intact forest ecosystems should be a central component of proactive global and national environmental strategies, alongside current efforts aimed at halting deforestation and promoting reforestation."

Comment #11: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Watson say Retaining the integrity of intact forest ecosystems should be a central component of proactive global and national environmental strategies, alongside current efforts aimed at halting deforestation and promoting reforestation?"

Quote below from Logging in disguise: How forest thinning is making wildfires worse
By Chad T. Hanson, Ph.D.
Published by Grist, Aug 24, 2021
https://grist.org/fix/forest-thinning-logging-makes-wildfires-worse/

Quote:

"The U.S. Forest Service clears trees from public lands in the name of fire prevention, but it doesn't work. There are better strategies to protect communities, but don't expect to hear about them from the logging industry."

Comment #12 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Hanson say "The U.S. Forest Service clears trees from public lands in the name of fire prevention, but it doesn't work?"

Quote below from Dead trees aren't a wildfire threat, but overlogging them will ruin our forest ecosystems
By Chad Hanson, Ph.D., research ecologist
Published in the LA Times, June 27, 2016
http://www.latimes.com/opinion/op-ed/la-oe-hanson-dead-trees-fires-vilsack-20160627-snap-story.html

Quote:

"Trees larger than just a few inches in diameter are not consumed in fires - only the outer bark layer and the needles actually burn up - so the great majority of the dead trees in the forest do not significantly influence fire behavior, even if they are dry. Besides, once trees die, the combustible oils in the needles quickly begin to dissipate and the needles fall, making it more - not less - difficult for flames to spread through the forest canopy."

"Secretary Vilsack is well aware of this research, but it does not fit with his political and economic objectives. On June 22, he argued that large-scale "tree die-offs" put "property and lives at risk," and urged Congress to act. Specifically, he recommended passage of a bill backed by the timber industry that would fund a large expansion of the federal wildland fire suppression program, and increase commercial logging on federal public lands - all in the name of removing supposedly dangerous dead trees."

Comment #13 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Hanson say "Trees larger than just a few inches in diameter are not consumed in fires - only the outer bark layer and the needles actually burn up - so the great majority of the dead trees in the forest do not significantly influence fire behavior, even if they are dry?"

Quote below from Do insect outbreaks reduce the severity of subsequent forest fires?
By Garrett W Meigs Ph.D., Harold S J Zald Ph.D., John L Campbell Ph.D., William S Keeton, Ph.D., and Robert E Kennedy Ph.D.
Published in Environmental Research Letters, Volume 11, Number 4, April 21, 2016
https://iopscience.iop.org/article/10.1088/1748-9326/11/4/045008/meta

Quote:

"Contrary to common assumptions of positive feedbacks, recent forest insect outbreaks actually dampen subsequent burn severity at multiple time lags across the US Pacific Northwest. Indeed, by altering forest structure and composition from forest stand to regional scales (Raffa et al 2008, Flower et al 2014, Meigs et al 2015b), these native insects contribute to landscape-scale heterogeneity, potentially enhancing forest resistance and resilience to wildfire. Because insect outbreaks do not necessarily increase the severity of subsequent wildfires, we suggest a precautionary approach when designing and implementing forest management policies aimed at reducing wildfire hazard in insect-altered forests."

Comment #14: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Meigs, Dr. Zald, Dr. Campbell Dr. Keeton and Dr. Kennedy say "because insect outbreaks do not necessarily increase the severity of subsequent wildfires, we suggest a precautionary approach when designing and implementing forest management policies aimed at reducing wildfire hazard in insect-altered forests?"

Quote below from Using wildfires as an excuse to plunder forests
By Chad Hanson, Ph.D.
Published by Idaho State Journal, September 16, 2018
https://www.idahostatejournal.com/opinion/columns/using-wildfires-as-an-excuse-to-plunder-forests/article_6d34ccb1-8c5e-58be-8cb7-88b7fd67d0cd.html

Quote:

"The danger from wildfires is real, but cutting down more trees is not the solution. By far the most effective way to prevent damage is to focus on basic fire-safety measures for at-risk houses.

These include installing fire-resistant roofing, ember-proof exterior vents and guards to prevent wind-borne embers from igniting dry leaves and pine needles in rain gutters and creating "defensible space" by reducing

combustible grasses, shrubs and small trees within 100 feet of homes. Research shows these steps can have a major impact on whether houses survive wildfires."

"On the contrary, increased logging can make fires burn more intensely. Logging, including many projects deceptively promoted as forest "thinning," removes fire-resistant trees, reduces the cooling shade of the forest canopy and leaves behind highly combustible twigs and branches."

Comment #15 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Hanson say increased logging can make fires burn more intensely. Logging, including many projects deceptively promoted as forest "thinning," removes fire-resistant trees, reduces the cooling shade of the forest canopy and leaves behind highly combustible twigs and branches?"

Quote below is from A Report to the President in Response to the Wildfires of 2000.
By Lyle Laverty USDA Forest Service and Tim Hartzell U.S. Department of the Interior, September 8, 2000
https://www.doi.gov/sites/doi.gov/files/migrated/pmb/owf/upload/2000-Report-to-the-President.pdf

Note the quote below is authored by a USFS scientist.

Quote:

"Most of the trees that should be removed to reduce accumulated fuels are small in diameter and have little or no commercial value."

"Mechanically removing fuels (through commercial timber harvesting and other means) can also have adverse effects on wildlife habitat and water quality in many areas. Officials told GAO that, because of these effects, a large-scale expansion of commercial timber harvesting alone for removing materials would not be feasible. However, because the Forest Service relies on the timber program for funding many of its activities (including reducing fuels) it has often used this program to address the wildfire problem. The difficulty with such an approach, however, is that the lands with commercially valuable timber are often not those with the greatest wildfire hazards."

Comment #16: Ranger Bushnell, if as you say logging and road construction will restore the forest why would USDA Forest Service employee Lyle Laverty say "Mechanically removing fuels (through commercial timber harvesting and other means) can also have adverse effects on water quality in many areas"?

Quote below is from Salvage Logging and its Ecological Consequences (246 pages)
By professor David B. Lindenmayer Ph.D., professor Phillip J. Burton Ph.D., and Professor Jerry Franklin Ph.D.
Published by Island Press, July 2012
https://islandpress.org/books/salvag Consequencese-logging-and-its-ecological-consequences

Quote:

"Salvage logging-removing trees from a forested area in the wake of a catastrophic event such as a wildfire or hurricane-is highly controversial. Policymakers and those with an economic interest in harvesting trees typically argue that damaged areas should be logged so as to avoid "wasting" resources, while many forest ecologists contend that removing trees following a disturbance is harmful to a variety of forest species and can interfere with the natural process of ecosystem recovery."

Comment #17: Ranger Bushnell, if as you say logging and road construction will restore the forest why would professor Lindenmayer, professor Burton and Professor Franklin say salvage logging is "harmful to a variety of forest species and can interfere with the natural process of ecosystem recovery?"

Quote below is from: Diversion Potential at Road-Stream Crossings
By professor Furniss, Michael J. Ph.D. Michael Love Ph.D. and Sam A. Flanagan Ph.D
USDA Forest Service. 9777 1814-SDTDC. December 1997
https://www.fs.usda.gov/t-d/pubs/html/wr_p/97771814/97771814.htm#:~:text=regardless%20of%20capacity.-

Note the quote below is authored by a USFS scientist.

Quotes:

"Rarely can roads be designed and built that have no negative impacts on streams. Roads modify natural drainage patterns and can increase hillslope erosion and downstream sedimentation. Sediments from road failures at stream crossings are deposited directly into stream habitats and can have both on-site and off-site effects. These include alterations of the channel pattern or morphology, increased bank erosion and changes in channel width, substrate composition, and stability of slopes adjacent to the channels."

"All of these changes result in important biological consequences that can affect the entire stream ecosystem. One specific example involves anadromous salmonids, such as salmon and steelhead, that have complex life histories and require suitable stream habitat to support both juvenile and adult life stages."

"A healthy fishery requires access to suitable habitat that provides food, shelter, spawning gravel, suitable water quality, and access for upstream and downstream migration. Road-stream crossing failures have direct impacts on all of these components."

Comment #18: Ranger Bushnell, if as you say logging and road construction will restore the forest why would professor Furniss, professor Love and Dr. Flanagan say "Rarely can roads be designed and built that have no negative impacts on streams. Roads modify natural drainage patterns and can increase hillslope erosion and downstream sedimentation.?"

Quote below is from: Minimizing the impacts of the forest road system."
By Johnny M. Grace III Ph.D. 2003 Research Engineer Forest Operations Research, Southern Research Station USDA Forest Service
In: Proceedings of the conference 34 international erosion control association; ISSN 1092-2806 2003 International Erosion Control Association: 301-310.
http://www.srs.fs.usda.gov/pubs/ja/ja_grace011.pdf

Note the quote below is authored by a USFS scientist.

Quote:

"Roads and skid trails have been identified as a major contributor to increased turbidity of water draining logging areas resulting in increases from 4 to 93 parts per million (Hoover, 1952). Forest roads have been found to have erosion rates from one to three orders of magnitude greater than similar undisturbed areas (Megahan, 1974) and perhaps account for as much as 90 percent of all forest erosion (Megahan, 1972). Forest roads can also cause soil erosion and stream sedimentation, which adversely impact on the nation's water quality (Authur et al., 1998).

Comment #19: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Grace III (a USFS employee) say: "Forest roads have been found to have erosion rates from one to three orders of magnitude greater than similar undisturbed areas?"

Quote below is from: "Road Development, Housing Growth, and Landscape Fragmentation In Northern

Wisconsin: 1937-1999"
By Hawbaker, Todd J. Ph.D., Volker C. Radeloff Ph.D., Murray K. Clayton Ph.D., Roger B. Hammer Ph.D., and Charlotte E. Gonzalez-Abraham Ph.D.
Published in Ecological Applications: Vol. 16, No. 3, pp. 1222-1237.
https://esajournals.onlinelibrary.wiley.com/doi/full/10.1890/1051-0761%282006%29016%5B1222%3ARDHGAL%5D2.0.CO%3B2#accessDenialLayout

Quote:

"Roads remove habitat, alter adjacent areas, and interrupt and redirect ecological flows. They subdivide wildlife populations, foster invasive species spread, change the hydrologic network, and increase human use of adjacent areas." (abstract)

Comment #20: Ranger Bushnell, if as you say logging and road construction will restore the forest then why would Dr. Hawbaker, Dr. Volker, Dr. Clayton, Dr. Hammer, and Dr. Gonzalez-Abraham say " Roads remove habitat, alter adjacent areas, and interrupt and redirect ecological flows. They subdivide wildlife populations, foster invasive species spread, change the hydrologic network, and increase human use of adjacent areas"?

Quote below is from: Restoring Forest Roads
By Kimberly Lowe Ph.D.
A Northern Arizona University Ecological Restoration Institute publication
Working Paper 12. June, 2005.
http://openknowledge.nau.edu/id/eprint/1305/7/Lowe_2005_ERIWorkingPaper12_RestoringForestRoads.pdf

Quote:

"Physical disturbances caused by road construction and vehicle use create ideal conditions for colonization by invasive exotic plant species. The use of roads by vehicles, machinery, or humans often aids the spread of exotic plant seeds. Once established, they can have long-term impacts on surrounding ecosystems and can be difficult to remove."

"Roads are known to cause habitat fragmentation. Many create ecological 'edges' with different plant species, light levels, and hiding cover, all of which may alter animal survival, reproductive success, and movement patterns. The introduction of exotic plants can disrupt the availability of native vegetation used by wildlife for food and shelter (Trombulak and Frissell 1999)."

"Forest roads often develop a water-repellent soil layer caused by lack of vegetative cover and changes in soil composition. This can substantially influence how runoff is processed. Erosion, the formation of water channels beside the road, and increased sediment loads in nearby streams are common results of this process (Baker 2003)."

"Because they provide easier access to many forest tracts, forest roads often allow more human-caused fires to be ignited."

Comment #21: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Lowe say "Because forest roads provide easier access to many forest tracts, forest roads often allow more human-caused fires to be ignited?"

Quote below is from: Hydrological processes and pathways affected by forest roads: what do we still need to learn?
By Luce, Charles H. Ph.D., USFS Rocky Mountain Research Station

Hydrologic Processes: 16, 2901-2904, September 27, 2002
http://www.fs.fed.us/rm/boise/teams/soils/Publications/Luce%202002%20HP.pdf

Note the quote below is authored by a USFS scientist.

Quotes:

"Almost everywhere people live and work they build and use unimproved roads, and wherever the roads go, a range of environmental issues follows."

"Among the environmental effects of unimproved roads, those on water quality and aquatic ecology are some of the most critical. Increased chronic sedimentation, in particular, can dramatically change the food web in affected streams and lakes."

"The nearly impervious nature of road surfaces (or treads) makes them unique within forested environments and causes runoff generation even in mild rainfall events, leading to chronic fine sediment contributions."

"If we look at the issue of what we need to learn or the research priorities for forest road hydrology, I would argue that the areas of cutslope hydrology and effectiveness of restoration efforts are perhaps most critical."

"At a few sites in the mountains of Idaho and Oregon a substantial portion of the road runoff (80-95%) came from subsurface flow intercepted by the cutslope (Burroughs et al., 1972; Megahan, 1972; Wemple, 1998)."

Comment #22: Ranger Bushnell, if as you say logging and road construction will restore the forest why would USDA Forest Service employee Charles Luce say "Among the environmental effects of unimproved roads, those on water quality and aquatic ecology are some of the most critical. Increased chronic sedimentation, in particular, can dramatically change the food web in affected streams and lakes?"

Quote below is from: Sediment Plume Development from Forest Roads: How are they related to Filter Strip Recommendations?
By J. McFero Grace III, Research Engineer, US Forest Service, G.W. Andrews Forestry Sciences Lab
An ASAE/CSAE Meeting Presentation, Paper Number: 045015, August 1-4, 2004.
http://www.srs.fs.usda.gov/pubs/ja/ja_grace017.pdf

Note the quote below is authored by a USFS scientist.

Quote:

"Research has shown that roads can have adverse impacts on the water quality on the forest landscape (Authur et al. 1998; Binkley and Brown 1993; Megahan et al. 1991). The forest road system has been identified by previous research as the major source of soil erosion on forestlands (Anderson et. al 1976; Patric 1976; Swift 1984; Van Lear et al. 1997). Furthermore, roads are cited as the dominant source of sediment that reaches stream channels (Packer 1967; Trimble and Sartz 1957; Haupt 1959)."

Comment #23: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Mr. Grace and Mr. Andrews (both USFS employees) say "roads are cited as the dominant source of sediment that reaches stream channels?"

Quote below is from:Predicting Road Surface Erosion from Forest Roads in Washington State
By Walter F. Megahan, Ph.D.
from a presentation presented at the 2003 Geological Society of America meeting.

http://gsa.confex.com/gsa/2003AM/finalprogram/abstract_67686.htm

Quote:

"Erosion from forest roads can be a large source of sediment in watersheds managed for timber production."

Comment #24: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Megahan say "Erosion from forest roads can be a large source of sediment in watersheds managed for timber production?"

Quote below is from:Statements at a Press Conference with Senator Robert Torricelli, April 28, 1998
By David Montgomery Ph.D., about S. 977 and HR 1376), the Act to Save America's Forests
Dr. Montgomery is an Associate Professor for the Department of Geological Sciences at the University of Washington.
http://www.saveamericasforests.org/news/ScientistsStatement.htm

Quote:

"Today, addressing the adverse impacts of forest roads is consistently identified as one of the highest watershed restoration priorities in U.S. forests-in many forested watersheds in the western United States there is a greater road density than stream density. It is simply irrational to spend millions of dollars subsidizing further forest road construction when we are simultaneously spending millions of dollars to offset detrimental effects associated with similar actions in the past."

Comment #25: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Montgomery say "It is simply irrational to spend millions of dollars subsidizing further forest road construction when we are simultaneously spending millions of dollars to offset detrimental effects associated with similar actions in the past?" Only those with PH.D.s should suggest Dr. Montgomery is wrong.

Quote below is from: Statements at a Press Conference with Senator Robert Torricelli, April 28, 1998
By Seth Reice Ph.D., about S. 977 and HR 1376), the Act to Save America's Forests
Dr. Reice is Associate Professor of Biology in the Department of Biology and Curriculum in Ecology, University of North Carolina
http://www.saveamericasforests.org/news/ScientistsStatement.htm

quote:

"Clearcutting, along with the vast network of logging roads, result in sedimentation and soil erosion into our national forest's rivers and streams. Sedimentation degrades the water quality, impairs the habitat for fish and macroinvertebrates, and limits the ecosystem functions and services of streams.

The Act to Save America's forests bans clearcutting, restores damaged areas by allowing regeneration of native species, and reduces road building by prohibiting further road construction in core areas of biodiversity. These are necessary steps, to prevent further erosion and will help rehabilitate our forests our streams, and protect our wildlife.

Comment #26: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Reice say "banning clearcutting will prevent further erosion and will help rehabilitate our forests our streams, and protect our wildlife?"

Quote below is from: Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities By

Christopher A. Frissell Ph.D. and Stephen Trombulak Ph.D.
Published by Conservation Biology, December 2001
https://conbio.onlinelibrary.wiley.com/doi/full/10.1046/j.1523-1739.2000.99084.x

Quote:

"We reviewed the scientific literature on the ecological effects of roads and found support for the general conclusion that they are associated with negative effects on biotic integrity in both terrestrial and aquatic ecosystems."

"Not all species and ecosystems are equally affected by roads, but overall the presence of roads is highly correlated with changes in species composition, population sizes, and hydrologic and geomorphic processes that shape aquatic and riparian systems."

Comment #27: Ranger Bushnell, if as you say logging and road construction will restore the forest why would these 2 experts say the ecological effects of roads are associated with negative effects on biotic integrity in both terrestrial and aquatic ecosystems?"

Quote below is from: Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities
By Stephen C. Trombulak Ph.D. and Christopher A. Frissell Ph.D.
Published in Conservation Biology, Volume 14, No. 1, Pages 18-30, December 2001
https://conbio.onlinelibrary.wiley.com/doi/full/10.1046/j.1523-1739.2000.99084.x

excerpt:

"Roads are a widespread and increasing feature of most landscapes. We reviewed the scientific literature on the ecological effects of roads and found support for the general conclusion that they are associated with negative effects on biotic integrity in both terrestrial and aquatic ecosystems. Roads of all kinds have seven general effects: mortality from road construction, mortality from collision with vehicles, modification of animal behavior, alteration of the physical environment, alteration of the chemical environment, spread of exotics, and increased use of areas by humans. Road construction kills sessile and slow-moving organisms, injures organisms adjacent to a road, and alters physical conditions beneath a road. Vehicle collisions affect the demography of many species, both vertebrates and invertebrates; mitigation measures to reduce roadkill have been only partly successful. Roads alter animal behavior by causing changes in home ranges, movement, reproductive success, escape response, and physiological state. Roads change soil density, temperature, soil water content, light levels, dust, surface waters, patterns of runoff, and sedimentation, as well as adding heavy metals (especially lead), salts, organic molecules, ozone, and nutrients to roadside environments. Roads promote the dispersal of exotic species by altering habitats, stressing native species, and providing movement corridors. Roads also promote increased hunting, fishing, passive harassment of animals, and landscape modifications. Not all species and ecosystems are equally affected by roads, but overall the presence of roads is highly correlated with changes in species composition, population sizes, and hydrologic and geomorphic processes that shape aquatic and riparian systems. More experimental research is needed to complement post-hoc correlative studies. Our review underscores the importance to conservation of avoiding construction of new roads in roadless or sparsely roaded areas and of removal or restoration of existing roads to benefit both terrestrial and aquatic biota."

Comment #28 : Ranger Bushnell, if as you say logging and road construction will restore the forest why Dr. Trombulak and Dr. Frissell say roads are"harmful to a variety of forest species and can interfere with the natural process of ecosystem recovery"?

Quote below is from: Sediment Production from Forest Road Surfaces
By Reid, L. M. Ph.D. and T. Dunne

Published by WATER RESOURCES RESEARCH, VOL. 20, NO. 11, PAGES 1753-1761, NOVEMBER 1984
https://www.fs.fed.us/psw/publications/reid/psw_1984_reid001.pdf

Quote:

"Erosion on roads is an important source of fine-grained sediment in streams draining logged basins of the Pacific Northwest. Runoff rates and sediment concentrations from 10 road segments subject to a variety of traffic levels were monitored to produce sediment rating curves and unit hydrographs for different use levels and types of surfaces. These relationships are combined with a continuous rainfall record to calculate mean annual sediment yields from road segments of each use level. A heavily used road segment in the field area contributes 130 times as much sediment as an abandoned road. A paved road segment, along which cut slopes and ditches are the only sources of sediment, yields less than 1% as much sediment as a heavily used road with a gravel surface."

Comment #29 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Reid say salvage logging A heavily used road segment in the field area contributes 130 times as much sediment as an abandoned road"?

Quote below is from: Sediment Plume Development from Forest Roads: How are they related to Filter Strip Recommendations?
By J. McFero Grace III, Research Engineer, US Forest Service, G.W. Andrews Forestry Sciences Lab
An ASAE/CSAE Meeting Presentation, Paper Number: 045015, August 1-4, 2004.
http://www.srs.fs.usda.gov/pubs/ja/ja_grace017.pdf

Note the quote below is authored by a USFS scientist.

Quote:

"Research has shown that roads can have adverse impacts on the water quality on the forest landscape (Authur et al. 1998; Binkley and Brown 1993; Megahan et al. 1991). The forest road system has been identified by previous research as the major source of soil erosion on forestlands (Anderson et. al 1976; Patric 1976; Swift 1984; Van Lear et al. 1997). Furthermore, roads are cited as the dominant source of sediment that reaches stream channels (Packer 1967; Trimble and Sartz 1957; Haupt 1959)."

Comment #30: Ranger Bushnell, if as you say logging and road construction WILL restore the forest why would Mr. Grace say logging is "harmful to a variety of forest species and can interfere with the natural process of ecosystem recovery"?

Quote below is from: Cumulative effects of roads and logging on landscape structure in the San Juan Mountains, Colorado (USA)
By Kevin McGarigal Ph.D., William H. Romme Ph.D., Michele Crist Ph.D.and Ed Roworth Ph.D.
Published in Landscape Ecology, Volume 16, Number 4 / May, 2001
https://www.umass.edu/landeco/pubs/mcgarigal.et.al.2001.pdf

Quote:

"Overall, roads had a greater impact on landscape structure than logging in our study area. Indeed, the 3-fold increase in road density between 1950-1993 accounted for most of the changes in landscape configuration associated with mean patch size, edge density, and core area."

Comment #31: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr.

McGarigal, Dr. Romme, Dr. Crist and Dr. Roworth say "roads had a greater impact on landscape structure than logging in our study area?"

Quote below is from: Simplified Forest Management to Achieve Watershed and Forest Health: A Critique.
By Franklin, Jerry Ph.D., David Perry Ph.D., Reed Noss Ph.D., David Montgomery Ph.D. and Christopher Frissell Ph.D.
A National Wildlife Federation publication sponsored by the Bullitt Foundation, 2000
https://www.irmforestry.com/downloads/pdf1.pdf

Quotes:

"Logging roads have a profound effect on forest ecosystems - increasing erosion and stream sedimentation, serving as vectors for diseases and invasive species, and fragmenting habitat.

Silvicultural science has long suffered from a myopic focus on the dynamics of regeneration, tree and stand growth, with much less attention to the logging and transportation systems necessary to implement its prescriptions. The forest stand structural models scrutinized in this report are no exception. Several of these approaches emphasize management of the entire forested landscape through silvicultural operations. To access every stand across the landscape, extensive road systems would need to be built and maintained. These roads, in turn, would introduce a broad suite of environmental impacts to aquatic and terrestrial ecosystems." (pg 28)

Comment #32: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Franklin, Dr. Perry, Dr. Noss, Dr. Montgomery and Dr. Frissell say "Logging roads have a profound effect on forest ecosystems - increasing erosion and stream sedimentation, serving as vectors for diseases and invasive species, and fragmenting habitat.?"

Quote below is from: Forest Roads: A Synthesis of Scientific Information
By Gucinski, Hermann Ph.D., Michael J. Furniss, Robert R. Ziemer Ph.D.
and Martha H. Brookes, Editors. 2001
USDA Forest Service, General Technical Report PNW-GTR-509, 2001
http://www.fs.fed.us/pnw/pubs/gtr509.pdf

Note the quote below is authored by a USFS scientist.

Quotes:

"Roads have well-documented, short- and long-term effects on the environment that have become highly controversial, because of the value society now places on unroaded wildlands and because of wilderness conflicts with resource extraction."

"(Road) consequences include adverse effects on hydrology and geomorphic features (such as debris slides and sedimentation), habitat fragmentation, predation, road kill, invasion by exotic species, dispersal of pathogens, degraded water quality and chemical contamination, degraded aquatic habitat, use conflicts, destructive human actions (for example, trash dumping, illegal hunting, fires), lost solitude, depressed local economies, loss of soil productivity, and decline in biodiversity."

Comment #33: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Gucinski, Mr. Furniss, Dr. Ziemer and Ms. Brookes say "Road consequences include adverse effects on hydrology and geomorphic features (such as debris slides and sedimentation), habitat fragmentation, predation, road kill, invasion by exotic species, dispersal of pathogens, degraded water quality and chemical contamination, degraded aquatic habitat, use conflicts, destructive human actions, lost solitude, depressed local economies, loss

of soil productivity, and decline in biodiversity."

Quote below is from: Forest Fragmentation and Roads
Published by Eastern Forest Environmental Threat Assessment Center
U.S. Forest Service - Southern Research Station, February, 2023
http://www.forestthreats.org/publications/su-srs-018/fragmentation

Note the quote below is authored by a USFS scientist.

Quote:

"Fragmentation caused by roads is of special interest because the effects of roads extend tens to hundreds of yards from the roads themselves, altering habitats and water drainage patterns, disrupting wildlife movement, introducing exotic plant species, and increasing noise levels. The land development that follows roads out into rural areas usually leads to more roads, an expansion process that only ends at natural or legislated barriers."

Comment #34: Ranger Bushnell, if as you say logging and road construction will restore the forest why would the U.S. Forest Service - Southern Research Station employees say "Fragmentation caused by roads is of special interest because the effects of roads extend tens to hundreds of yards from the roads themselves, altering habitats and water drainage patterns, disrupting wildlife movement, introducing exotic plant species, and increasing noise levels?

Quote below is from: Watershed's Response to Logging and Roads: South Fork of Caspar Creek, California, 1967-1976
By Raymond M. Rice Ph.D., Forest B. Tilley and Patricia A. Datzman.
USDA Forest Service, Research Paper PSW-146, 1979
http://www.fs.fed.us/psw/publications/rice/Rice79.pdf

Quote:

"Disturbances from roadbuilding and logging changed the sediment/discharge relationship of the South Fork from one which was supply dependent to one which was stream power dependent, resulting in substantial increases in suspended sediment discharges."

"Road construction and logging appear to have resulted in increases in average turbidity levels (as inferred from suspended sediment increases) above those permitted by Regional Water Quality Regulations."

Comment #35: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Rice, Mr. Tilley and Ms. Datzman say "Road construction and logging appear to have resulted in increases in average turbidity levels above those permitted by Regional Water Quality Regulations?"

Quote below is from: Forest Road Erosion, Sediment Transport and Model Validation in the Southern Appalachians
By Mark S. Riedel Ph.D. and James M. Vose Ph.D.
USDA Forest Service, Southern Research Station, Coweeta Hydrologic Laboratory
Presented at the Second Federal Interagency Hydrologic
Modeling Conference, July 28 - August 1, 2002.
http://www.srs.fs.usda.gov/pubs/ja/ja_riedel002.pdf

Quote:

"Sediment eroded from gravel roads can be a major component of the sediment budget in streams in this region (Van Lear, et al, 1995)."

Comment #36: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Riedel and Dr. Vose (both USFS employees) say "Sediment eroded from gravel roads can be a major component of the sediment budget in streams in this region?"

Quote below is from: Predicting Road Surface Erosion from Forest Roads in Washington State
By Walter F. Megahan, Ph.D.
from a presentation presented at the 2003 Geological Society of America meeting.
http://gsa.confex.com/gsa/2003AM/finalprogram/abstract_67686.htm

Quote:

"Erosion from forest roads can be a large source of sediment in watersheds managed for timber production."

Comment #37: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Megahan say ""Erosion from forest roads can be a large source of sediment in watersheds managed for timber production."

Quote below is from: Statements at a Press Conference with Senator Robert Torricelli, April 28, 1998
By David Montgomery Ph.D., about S. 977 and HR 1376), the Act to Save America's Forests
Dr. Montgomery is an Associate Professor for the Department of Geological Sciences at the University of Washington.
http://www.saveamericasforests.org/news/ScientistsStatement.htm

Quote:

"Today, addressing the adverse impacts of forest roads is consistently identified as one of the highest watershed restoration priorities in U.S. forests-in many forested watersheds in the western United States there is a greater road density than stream density. It is simply irrational to spend millions of dollars subsidizing further forest road construction when we are simultaneously spending millions of dollars to offset detrimental effects associated with similar actions in the past."

Comment #38: Ranger Bushnell, if as you say logging and road construction will restores the forest why would professor Montgomery say "It is simply irrational to spend millions of dollars subsidizing further forest road construction when we are simultaneously spending millions of dollars to offset detrimental effects associated with similar actions in the past?"

Quote below is from: Statements at a Press Conference with Senator Robert Torricelli, April 28, 1998
By Seth Reice Ph.D., about S. 977 and HR 1376), the Act to Save America's Forests
Dr. Reice is Associate Professor of Biology in the Department of Biology and Curriculum in Ecology, University of North Carolina
http://www.saveamericasforests.org/news/ScientistsStatement.htm

Quote:

"Clearcutting, along with the vast network of logging roads, result in sedimentation and soil erosion into our national forest's rivers and streams. Sedimentation degrades the water quality, impairs the habitat for fish and macroinvertebrates, and limits the ecosystem functions and services of streams.

The Act to Save America's forests bans clearcutting, restores damaged areas by allowing regeneration of native species, and reduces road building by prohibiting further road construction in core areas of biodiversity. These are necessary steps, to prevent further erosion and will help rehabilitate our forests our streams, and protect our wildlife.

Comment #39 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Reice say Clearcutting, along with the vast network of logging roads, result in sedimentation and soil erosion into our national forest's rivers and streams?"

Quote below is from: Hydrological processes and pathways affected by forest roads: what do we still need to learn?
By Luce, Charles H. Ph.D., USFS Rocky Mountain Research Station
Hydrologic Processes: 16, 2901-2904, September 27, 2002
http://www.fs.fed.us/rm/boise/teams/soils/Publications/Luce%202002%20HP.pdf

Note the quote below is authored by a USFS scientist.

Quote:

"Almost everywhere people live and work they build and use unimproved roads, and wherever the roads go, a range of environmental issues follows."

"Among the environmental effects of unimproved roads, those on water quality and aquatic ecology are some of the most critical. Increased chronic sedimentation, in particular, can dramatically change the food web in affected streams and lakes."

"The nearly impervious nature of road surfaces (or treads) makes them unique within forested environments and causes runoff generation even in mild rainfall events, leading to chronic fine sediment contributions."

"If we look at the issue of what we need to learn or the research priorities for forest road hydrology, I would argue that the areas of cutslope hydrology and effectiveness of restoration efforts are perhaps most critical."

"At a few sites in the mountains of Idaho and Oregon a substantial portion of the road runoff (80-95%) came from subsurface flow intercepted by the cutslope (Burroughs et al., 1972; Megahan, 1972; Wemple, 1998)."

Comment #40 : Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Luce say "the environmental effects of unimproved roads, those on water quality and aquatic ecology are some of the most critical."

Quote below is from: Erosion on logging roads in northwestern California: How much is avoidable?
By John McCashion and Raymond Rice Ph.D.
Journal of Forestry, January 1983
http://www.fs.fed.us/psw/rsl/projects/water/McCashion.pdf

Quote:

"A study was made on 344 miles of logging roads in northwestern California to assess sources of erosion and the extent to which road-related erosion is avoidable. At most, about 24 percent of the erosion measured on the logging roads could have been prevented by conventional engineering methods. The remaining 76 percent was caused by site conditions and choice of alignment. On 30,300 acres of commercial timberland, an estimated 40 percent of the total erosion associated with management of the area was found to have been derived from the

road system."

Comment #41: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Rice and Mr. McCashion say "an estimated 40 percent of the total erosion associated with management of the area was found to have been derived from the road system?"

Quote below is from: Road Development, Housing Growth, and Landscape Fragmentation In Northern Wisconsin: 1937-1999
By Hawbaker, Todd J. Ph.D., Volker C. Radeloff Ph.D., Murray K. Clayton Ph.D., Roger B. Hammer Ph.D., and Charlotte E. Gonzalez-Abraham Ph.D.
Published in Ecological Applications: Vol. 16, No. 3, pp. 1222-1237.
https://esajournals.onlinelibrary.wiley.com/doi/full/10.1890/1051-0761%282006%29016%5B1222%3ARDHGAL%5D2.0.CO%3B2#accessDenialLayout

Quote:

"Roads remove habitat, alter adjacent areas, and interrupt and redirect ecological flows. They subdivide wildlife populations, foster invasive species spread, change the hydrologic network, and increase human use of adjacent areas." (abstract)

Comment #42: Ranger Bushnell, if as you say logging and road construction will restore the forest why would Dr. Rice and Mr. McCashion say "an estimated 40 percent of the total erosion associated with management of the area was found to have been derived from the road system?"