Appendix L

Summary of Comments on 2010 DEIS

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Comment Summary: 1

Subject Area: Access

Issue: Access to Forestlands

Commenter is concerned with access to forestlands.

Comment Summary: 2

Subject Area: Adaptive Management

Issue: Old Growth Commission

The Old Growth Commission (Commission), which was established in 1988, recommended the creation of the Olympic Experimental State Forest (OESF) to learn how to optimize and integrate ecological and commodity values by applying non-traditional silvicultural practices, testing new concepts, measuring outputs, and revising forest practices. Commenter feels that a shortage of contributions from professional silviculturalists to the 2010 Draft Environmental Impact Statement (DEIS) calls its ability to meet the recommendations of the Commission into question.

Comment Summary: 3

Subject Area: Adaptive Management

Issue: Process

The commenter points out that adaptive management is a process whereby monitoring of well-defined resource impact questions lead to changes in management. The OESF is subject to a series of explicit adaptive management requirements regarding riparian resources and Endangered Species Act-listed species. The single most important management change to address is the location and quantity of allowed timber harvests and the impacts to those resources identified during monitoring. While the 2010 DEIS acknowledges that adaptive management of forest practices at the landscape scale, such as the OESF, has not been successful, the 2010 DEIS does not change the current management direction to address these issues, nor does it evaluate the impacts to timber and non-timber resources likely to occur over time as a result. The 2010 DEIS must include an analysis of the impacts of a failed adaptive management process, as well as an alternative that displays the costs and results if the process were to be made successful. Some believe a new alternative could correct these deficiencies.

Comment Summary: 4

Subject Area: Adaptive Management

Issue: Lack of Specifications

The 2010 DEIS fails to list the specific uncertainties to be addressed under the adaptive management program for the OESF.

Comment Summary: 5

Subject Area: Adaptive Management

Issue: Studies

Commenter notes that Washington Department of Natural Resources (DNR) has conducted many studies in the 13 years since entering into the 1997 *Habitat Conservation Plan*, yet almost none are cited in the adaptive management discussion. For example, reference is made to two 2001 monitoring plans, but "neither has been finalized, officially adopted or implemented in full by the department." This leaves the process open-ended and ill-defined. Adaptive management has no triggers or requirements for review or changes in policy or practice. There is no scientific structure or technical reviews. It can be based on the views of individual foresters. There is no requirement to review practices or act on the results of any monitoring or study results. The commenter points out that such practices cannot be considered adaptive management. The 2010 DEIS does reference "decisions for adaptive management changes" and includes "changes in land management practices" in the list of "DNR decisions" that may result from adaptive management (Appendix B, p. 17, Figure B-2). However, no specifics are listed or discussed, no time tables are set out, and no benchmarks are established to trigger review of management practices. There is no "closing of the loop." While the 2010 DEIS mentioned adaptive management and devoted an entire appendix to it, nowhere is there a clear, explicit linkage between the alternatives, the proposed harvests, and monitoring and/or experimentation. DNR needs to not only identify the challenges but to clearly articulate a process for explicitly addressing these challenges.

Comment Summary: 6

Subject Area: Adaptive Management

Issue: Science

A commenter notes that the 2010 DEIS appears to discuss the need for scientifically valid monitoring. However, no reference is made to the scientific literature spelling out exactly how this goal is to be achieved. One commenter researched the definition of experimental and said it is the action of trying anything; it is a practical test, and a trial to find out what happens. The commenter is hoping that trials would occur even if it means an occasional undesirable outcome.

Comment Summary: 7

Subject Area: Adaptive Management

Issue: Sustainable Harvest Level

Since the single most important land management decision on the OESF is the location and quantity of timber harvesting, the 2010 DEIS must establish and evaluate a process and schedule needed to obtain any "necessary changes" in the sustainable harvest level from the Board of Natural Resources.

Comment Summary: 8

Subject Area: Adaptive Management

Issue: Environmental Impacts

Commenter feels the discussion of future adaptive management in the 2010 DEIS is incomplete, and as such, carries the implication that future adaptive management is unlikely to occur. The potential adverse environmental impacts resulting from a lack of adaptive management must be analyzed and included in the Final EIS (FEIS).

Comment Summary: 9

Subject Area: Adaptive Management

Issue: Experimental State Forest

Commenter proposed the creation of an advisory board, with broad participation, to review and assess management activities occurring in riparian management zones.

Comment Summary: 10

Subject Area: Adaptive Management

Issue: Riparian Areas

Commenters proposed the use of a desired future condition as a target for management activities within riparian areas. Such an approach would be consistent with DNR's commitment to adaptive management, and would recognize that given parameters may change as more information becomes available.

How would the forest practice review process change if, through monitoring, proposed activities were shown to result in a failure to achieve desired future conditions targets? How does each alternative address such a scenario?

Comment Summary: 11

Subject Area: Alternatives

Issue: Range of Alternatives

Page 16 of the 2010 DEIS says that "DNR has three measurable objectives for the management of state trust lands in the OESF as a working forest: (1) to protect, maintain, and aid natural restoration of riparian systems on DNR-managed lands in the OESF by maintaining and increasing the recruitment potential for large woody debris and shade associated with riparian systems and avoiding detectable changes in levels of peak flow; (2) to attain and maintain within each landscape 20 percent potential Old Forest Habitat and 40 percent potential Young Forest Habitat and Better in support of the conservation of the northern spotted owl, marbled murrelet, and other wildlife species; and (3) to generate trust revenue through the sale of timber. The current sustainable harvest level approved by the Board of Natural Resources for the OESF planning unit is to sell approximately 576 million board feet of timber over a decade, which is projected to generate about $144 million in gross revenue."

Commenters claim that these three objectives are unreasonably narrow. For example, the first measurable objective seems to ignore the over-riding objective, which is clear and cool water. The 2010 DEIS says that DNR's objective is to develop landscape strategies; however, isn't DNR's overall objective to manage the OESF, as all trust lands, with undivided loyalty to the trusts to achieve the goals of trust revenue, quality commodity production, and enhanced environmental goods?

Commenters ask if these objectives address the experimental nature of the OESF.

Commenters state that overly-narrow objectives limit the range of alternatives, and that the 2010 DEIS is inadequate because a range of alternatives was not developed and studied. The 2010 DEIS only examines the proposed action and the "no action" alternative. The State Environmental Policy Act (SEPA) mandates that an EIS examine alternatives to the proposed action (RCW 43.21C.030). The term "alternatives" is plural, not singular, thus requiring more than a single alternative to the proposal (WAC 197-11-440(5)(a)). Also, WAC 197-11-440 (5)(b)(ii) mandates that the "no action" alternative be evaluated and compared to other alternatives. The SEPA rules say the proposal should be described in ways that encourage considering and comparing alternatives (WAC 197-11-060(3)(a)(iii)).

Commenters state that the 2010 DEIS failed to include a reasonable alternative that could feasibly attain or approximate a proposal's objectives, but at a lower environmental cost or decreased level of environmental degradation; such alternatives were not included in the alternatives that were evaluated. The judge's ruling in *Washington Environmental Coalition (WEC) vs. Sutherland* (2006) was due to a lack of any alternative with lower timber harvest and reduced impacts.

Commenters point out that alternatives should comply with federal and state laws, the Endangered Species Act, DNR's 1997 *Habitat Conservation Plan*, and the sustainable harvest calculation for the 2010 DEIS to encourage other alternatives.

In addition, commenters state that the two alternatives that were analyzed were similar and represented no real choice of alternatives.

Commenters say that a new alternative (provided by the commenters for review and analysis) would reduce the impact from DNR's commercial timber harvesting practices and would more closely follow DNR's 1997 *Habitat Conservation Plan.* The new alternative submitted sets specific buffer widths (interior and exterior buffers) on all stream types.

Commenters also state that the No Action Alternative, as presented in the 2010 DEIS, does not accurately reflect the status quo or the conditions that would result from "no action." Commenter says that the No Action Alternative is misleading because it does not reflect an alternative in which no activities occur. The No Action Alternative projects a harvest level of 750 million board feet (MMBF) per decade, a significant increase over the current level of 576 MMBF allowed through the sustainable harvest process and approved by the Board of Natural Resources. In light of this discrepancy, there is no baseline of current management with which to compare the Landscape Alternative. As required under both the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA), a no action alternative must accurately reflect current practices. Commenters feel the 2010 DEIS should be rewritten to include an alternative that more accurately reflects no action.

Comment Summary: 12

Subject Area: Alternatives

Issue: Preferred Alternative (Selection)

Commenter asks if one of the alternatives is a preferred alternative and is DNR going to choose one alternative at the end of the process? Commenters would like to know who the decision maker is. What is the decision process for the environmental analysis and the economic analysis? When will these decisions be made and in what order? There seems to be multiple steps involved in this process that are not clearly articulated in the 2010 DEIS.

Comment Summary: 13

Subject Area: Alternatives

Issue: Impacts

Commenters question if the alternatives could lead to deforestation on half of an entire watershed, which would result in larger amounts of road sediment washing into streams and threatened species facing additional habitat pressure? The options that were analyzed in the 2010 DEIS represent industrial forestry practices that result in short rotations, even-age harvests and conversion of natural forests to simplified ecosystems. Both alternatives will further degrade our forests, as the 2010 DEIS acknowledges in the executive summary on page 10. Commenters would like the 2010 DEIS to recognize the environmental services that forests provide. Is there a way for DNR to select a different pathway when potential adverse impacts are identified? If a different pathway is selected how would that change the harvest level? The 2010 DEIS should evaluate cutting schemes that include no-cut areas, long rotations, and selective harvesting.

Comment Summary: 14

Subject Area: Alternatives

Issue: Revenue

Commenter is hoping that DNR will be creative in the management of the selected alternative because jobs are needed on the peninsula.

Comment Summary: 15

Subject Area: Alternatives

Issue: Landscape

Commenters claim that insufficient detail was provided in the description of the Landscape Alternative to determine what management activities are being proposed, such as the size of either interior-core or exterior buffers. While the modeling results in Appendix F suggest that much of the riparian conservation objectives will be at least partially met, it appears that either the wind buffers will be the primary buffers implemented or that limited exterior buffering will be applied. The Landscape Alternative does not appear to meet the riparian conservation objectives outlined in the 1997 *Habitat Conservation Plan* or the

minimum standards set forth in the incidental take permit. The goal of the OESF is to integrate production and conservation across the landscape; yet, this alternative has an 80 percent logging increase in the first decade and increases riparian impacts on 97 percent of Type 3 watersheds. The Landscape Alternative continues DNR's current industrial logging practices, with added emphasis on commercial thinning, which will accelerate damage to forested state trust lands; watersheds, riparian, and stream channel conditions; water quality; fish; soils; and wildlife, including northern spotted owls and marbled murrelets.

Comment Summary: 16

Subject Area: Alternatives

Issue: No Action Scenarios-Modeling

The methodology used to model the No Action Alternative does not follow the guidelines set forth in the twelve-step watershed assessment procedure. Instead, the 2010 DEIS uses four alternative harvest scenarios (A, B, C, and D) to simulate the assessment. However, this methodology does not incorporate current site-specific stream or habitat conditions, and leads to non-site specific scale management decisions. No detailed description is provided on how impacts are calculated or averaged across the Type 3 sub-basin for the purposes of selecting a harvest scenario. The riparian conservation strategy in the 1997 *Habitat Conservation Plan* says that buffers will be modified at the site scale; therefore that is the scale at which potential impacts should be evaluated.

It is unclear how the use of the four scenarios in the No Action Alternative meet the commitments contained in the 1997 *Habitat Conservation Plan* for average interior core buffers of 150-160 feet on Type 1 through Type 3 waters and 100 feet on Type 4 streams with exterior buffers where needed. Furthermore, the incidental take permit says that the riparian protections on Type 1 through Type 4 streams represent the minimum level of riparian conservation that DNR is committed to implement.

Comment Summary: 17

Subject Area: Alternatives

Issue: 2010 DEIS is Lacking Complete Information

The 2010 DEIS is lacking complete and accurate information that would assist in its comprehension. The information in the EIS must be complete and accurate to allow the decision maker and public to make a fully informed evaluation of the alternatives available (Natural Resources Defense Council v. U.S. Forest Service, 421 F .3d 797, 813 [9th Cir. 2005]).

Comment Summary: 18

Subject Area: Alternatives

Issue: Readability

The description of the Landscape Alternative on page 50 is nearly impossible to decipher. According to the 2010 DEIS, the primary difference between the two alternatives is that the twelve-step watershed assessment process is incorporated into a decision-making framework, in this case, a forest estate model,

and is used to guide the scheduling of management activities. What does this mean? It goes on to state that the Landscape Alternative represents a formal process of integrating a set of riparian assessment criteria and indicators within a forest estate model to recommend Type 3 watershed riparian conservation strategies across the OESF, rather than doing an independent assessment of Type 3 watersheds as in the No Action Alternative. Again what does this mean? Are you taking results from one model (twelve-step) and putting the results into another? What is the result? Is a guide to scheduling management activities another phrase for timber sales? It would be nice to see a summary that is about 20 pages that referenced the other 297 pages because the document is hard to read.

Comment Summary: 19

Subject Area: Alternatives

Issue: Violation of Law

Commenter says that the Landscape Alternative appears to violate DNR's mandate to comply with the Endangered Species Act, DNR's 1997 *Habitat Conservation Plan*, and the Clean Water Act. The 2010 DEIS fails to comply with the trust mandate by failing to analyze the relationship of proposed timber harvest levels with non-timber resources; the sustainability of the timber harvest is not evaluated (Ch. 79.10 RCW). Legal obligations to trust beneficiaries should be included.

Comment Summary: 20

Subject Area: Climate Change

Issue: Inadequate Analysis

The analysis of the effects of climate change is lacking, despite scientific information projecting an increase in forest stressors such as disease, insects, and fires. Commenter says that forests managed under short harvest rotations, such as those proposed in the 2010 DEIS, will be vulnerable to climate change pressure. DNR should focus on creating healthy forests, resilient to disease and drought, and be able to respond to changes in the local climate. Another commenter was asking who was using the OESF to conduct studies on climate change?

Comment Summary: 21

Subject Area: Climate Change

Issue: Climate Models

Commenter submitted hand-drawn data from NOAA showing a regional temperature decline over the past two decades, with an accelerating temperature decline in the last few years. Commenter says the data is indicative of the inability of climate models to predict long-term climate patterns. The commenter points out that weather and climate are two distinctly different phenomena and should be presented separately.

Comment Summary: 22

Subject Area: Cumulative Effects

Issue: Presentation of Data

Commenter feels that the 2010 DEIS does not present either the cumulative harvest or disturbance in numbers. The commenter suggests that information be presented in tabular, numerical form as well. Tables that summarize the harvest in board feet and disturbance in acres should have appeared in the executive summary or at the beginning of Chapter 2. It would be helpful to present detail on the level of harvest by watershed administrative unit and landscape. Commenter also wanted to see tables for variable retention harvest and variable density thinning by alternative. Others suggest having a condensed analysis section.

Comment Summary: 23

Subject Area: Economic Concerns

Issue: Economic Feasibility

An increase in jobs in the community, just from the timber volume figure alone, could range between 180 and 340 positions. DNR should produce additional analysis of the economic feasibility of implementing either of these alternatives. DNR's plan for the OESF must address social infrastructure and the downstream impacts of trust land management. This is more than a planning exercise; it is a plan for a region's economic future and it should be presented that way. Commenter says that one-third of the timber to local mills comes from state trust lands. The 2010 DEIS on pages 64 through 65 raised serious questions about the financial feasibility of both alternatives.

Comment Summary: 24

Subject Area: Economic Concerns

Issue: Undivided Loyalty

The economic analysis on page 17 is insufficient to understand whether or not the duty of undivided loyalty between Forest Board Transfer lands and Federal Trust Lands has been met. Commenters would like DNR to show how the beneficiaries fare over the first decade. The beneficiaries are expecting 20 million board feet from the Forest Board Transfer lands here in the OESF, and the commenter would like to know whether or not that will happen. The economic analysis needs to show the volume and value by trust and decade to ensure DNR has met its duty of prudent management. Charts 2-3 and 2-4 on page 61 claim that thinning harvests will not be financially feasible, so our concern is that the trust beneficiaries will base their revenue expectations on an overly optimistic harvest levels that may not be real. How will the plan reduce economic benefits to the trusts? These trust lands provide hospital services and road repair and support a social infrastructure in rural parts of Washington that desperately need the money. The federal forests are designed to be a late successional reserve and we don't want the same type of reserves for DNR-managed lands. Everything DNR does should be for the benefit of the people you serve.

Comment Summary: 25

Subject Area: Economic Concerns

Issue: Feasibility

The OESF is not a university research forest; it is a working commercial forest.

Comment Summary: 26

Subject Area: Economic Concerns

Issue: National Park Expansion

Commenter questions how a proposed expansion of the Olympic National Park will affect the management of state trust lands. The proposal being circulated is asking DNR to give up 44,000 acres of state trust lands. How will these be replaced? Can they be replaced? How will this impact timber and revenue production? What impacts will this have on the local community? DNR should evaluate the park expansion.

Comment Summary: 27

Subject Area: Fish

Issue: Analysis Methods

While the section on fish in the 2010 DEIS provides a discussion of large woody debris, water quantity, fine sediment, and water temperature, no real attempt is made to discuss how differences between the alternatives equate to changes in fish abundance or fish habitat, nor is any discussion provided of the relationship between fish and the protection afforded by water quality standards.

Comment Summary: 28

Subject Area: Fish

Issue: Proposed Harvest within Important Fish Habitat

Several commenters expressed concern over harvest impacts in watersheds containing important fish habitat. The Hoko, Clallam, and Ozette Lake watershed administrative units were cited. Commenters also discussed projected harvests along the Hoko River, the Charley Creek watershed, Umbrella Creek, Olson's Beach, and Siwash Creek. Commenters point out that the determination of probable significant adverse environmental impacts, coupled with harvest of half of the entire watershed in some cases, will harm some of the more critical and vulnerable streams.

All salmon species in the Hoko watershed administrative unit are listed as depressed or critical. The Hoko River is home to the last viable population of fall Chinook salmon along the Strait of Juan de Fuca, west of the Elwah River. Pink salmon and spring Chinook salmon runs have been extirpated, the fall run is in decline, and management in extensive private forest holdings within the Hoko River watershed have severely damaged the aquatic ecosystem. Proposed actions described in the 2010 DEIS would result in further degradation. The commenter concluded that the Landscape Alternative plans to clearcut harvest

over 200 acres (19 percent) of interior-core buffer and 1,134 acres of exterior buffer (100 percent of analyzed acreage). The commenter indicated that the Hoko has the highest combined risk of all watershed administrative units with respect to soil erosion, compaction, and displacement, as well as the highest likelihood of sediment delivery, yet fails to recognize that such ecological hot spots are critical to the survival of vulnerable species such as salmon and steelhead trout. The commenter is concerned that more or larger peak flow events on the Hoko River could potentially eliminate Chinook spawning in Water Resource Inventory Area 19, and the location of projected adverse effects to riparian function is not clear with respect to coho rearing habitat.

Charley Creek has very high coho salmon spawning density and is well known among fish biologists as one of the most productive salmon spawning streams on the Olympic Peninsula. Commenters concluded that there is a disproportionate amount of clearcut harvest in the riparian zone within the Type 3 watersheds comprising the Charley Creek watershed (Type 3 watersheds 138, 139, 150, 157, and 158) under the Landscape Alternative. Under the Landscape Alternative, nearly 70 percent of all exterior buffer acres proposed for clearcutting in the Clallam watershed administrative unit are within the Charley Creek watershed. Within Type 3 watershed 138, the commenter indicates that the Landscape Alternative proposes clearcut harvest of 21 percent of the 14.5 acres of interior-core buffer within the 100 to 150 foot zone along the mainstem of Charley Creek. Of the 117 acres of exterior buffer within this Type 3 watershed, the Landscape Alternative proposes 93 acres of clearcut harvest during the life of the forest land plan. In addition, the total buffer width is less than the exterior buffer of 150 feet.

Lake Ozette sockeye salmon are listed as threatened under the Endangered Species Act. Umbrella Creek and Olson's Beach, within the Lake Ozette watershed administrative unit, are considered key sockeye habitat. Siwash Creek is the closest tributary with significant sediment inputs into the lake, and is very close to one of the last two remaining sockeye spawning aggregations. The Lake Ozette Sockeye Recovery plan classifies this area as priority 1 and 2 habitat (National Marine Fisheries Service [NMFS] 2009). The Landscape Alternative proposes clearcut harvest of 9 percent of the interior-core buffer and 60 percent of the exterior buffer in these key Type 3 watersheds (174, 192, and 354). Within Type 3 watershed 192 (lower Siwash Creek), the Landscape Alternative proposes to clearcut 22 percent of the interior-core buffer and 121 percent of the exterior buffer.

Comment Summary: 29

Subject Area: Fish

Issue: Incidental Take Permit

The proposed level of timber harvest does not appear to meet the requirements established in the incidental take permit. The permit (NMFS 1999) defines the riparian conservation strategy as a riparian management zone consisting of an inner riparian buffer and an outer wind buffer where needed. The principal function of the inner riparian buffer (interior-core buffer) is defined as protection of salmonid habitat and the principal function of the exterior buffer as protection of the inner riparian buffer. All fish bearing streams (Type 1 through Type 3) are to receive a conservatively managed inner riparian buffer equal in width (measured horizontally from the 100-year floodplain) to a site potential tree height (derived from 100- year site-index curves) or 100 feet, whichever is greater. The permit suggests this will result in average inner riparian buffer width of between 150 and 160 feet. Type 4 streams will receive a

100-foot inner riparian buffer. The permit says that little commercial timber harvest would occur within the 25 to 100 foot zone, and slightly more tree removal could occur outside of 100 feet, which implies no commercial clearcut harvesting within the inner riparian buffer. The permit further says that the above riparian protections represent the minimum level.

Comment Summary: 30

Subject Area: Fish

Issue: Incomplete Data on Fish Status

The 2010 DEIS does not use the best available science to evaluate the current status of fish stocks across the OESF and does not represent the consensus opinion of fisheries scientists on the Olympic Peninsula. This section of the 2010 DEIS should be re-written.

For example, Table 3-60 depicts the status of Lake Ozette sockeye salmon as unknown based on Washington Department of Fish and Wildlife (WDFW) Salmonid Stock Inventory. However, numerous others have concluded the status was either critical or depressed (Nehlson et al. 1991; McHenry et al. 1996; Gustafson et al. 1997; Good et al. 2003; Haggerty et al. 2009). On March 25, 1999, NMFS listed Lake Ozette sockeye salmon as threatened under the Endangered Species Act (64 FR 14528). The threatened status under the Endangered Species Act was reaffirmed in 2005 (70 FR 37160).

Nor does the 2010 DEIS include either the Pysht or Sekiu river Chinook stocks, both of which are considered critical in other assessments (NOPLE 2004). The 2010 DEIS includes four Water Resource Inventory Area (WRIA) 19 coho stocks within the OESF and all are listed as healthy. The NOPLE (2004) analysis identified a total of eight WRIA 19 coho stocks and determined that seven were depressed and one was critical. The NOPLE (2004) analysis included seven steelhead stocks, five of which were classified as depressed and two of which were classified as healthy. The NOPLE (2004) analysis identified a total of eight WRIA 19 chum stocks and determined that two were depressed and six were critical.

Comment Summary: 31

Subject Area: Fish

Issue: Fish Habitat Models

Intrinsic potential habitat models have been developed for some salmon species on the Olympic Peninsula. These models could be very useful in targeting areas across the landscape where improvement in riparian condition, such as large woody debris and riparian shade, could have the greatest impact on in-stream habitat. These models could also be used to highlight other, less sensitive areas where harvest levels could be increased. It does not appear that such models were incorporated in the analysis.

Comment Summary: 32

Subject Area: Fish

Issue: Lack of Citations or Analysis

Commenter says that no citations or analysis are provided to substantiate statements made in the 2010 DEIS that in general, freshwater environments in the OESF have been less affected by humans than elsewhere in the Pacific Northwest.

Comment Summary: 33

Subject Area: Fish

Issue: Level of Significant Impacts

A total of 14 and 19 Type 3 watersheds were projected to experience probable significant adverse environmental impacts under the No Action and Landscape Alternatives, respectively. Comments dispute the conclusions that this level of impact is negligible, impairment is short term, and that long-term riparian health will improve under both alternatives. Commenters mention that neither alternative projects short-term improvements to riparian condition, which represents an unacceptable loss of ecological function for already depressed salmonids stocks.

Comment Summary: 34

Subject Area: Fish

Issue: Scale of Analysis

Commenters question the validity of the method used to assess impacts to fish and fish habitat. The method relies on the stream channel assessment, which inappropriately aggregates reach-level stream channel sensitivity ratings to the Type 3 watershed scale. Commenters discuss important salmon habitat in the Charley Creek watershed (Type 3 watershed 138), which is rated low (1.49) for fine sediment when the sensitivity rating is aggregated to the Type 3 watershed scale, despite the fact that the principal fish habitat is low gradient and unconfined. In contrast, a reach-level channel assessment would have determined that all input sensitivities were high for this 1.38 mile reach of this Type 2 stream.

Comment Summary: 35

Subject Area: Fish

Issue: Lack of Bull Trout Analysis

Several commenters expressed concern over the lack of analysis of the potential impacts of either alternative on bull trout, despite a projected increase in riparian harvest. Bull trout were listed by the United Says Fish and Wildlife Service (USFWS) in 1999 as a threatened species throughout their range in the United Says, yet the 2010 DEIS makes no mention of bull trout being listed as a threatened species, nor does it refer to a conservation strategy for the species as it does for other species listed under the Endangered Species Act, such as the northern spotted owl and marbled murrelet. Comments question why bull trout conservation was not included as a major strategy of the OESF forest land plan. Bull trout are

found in streams throughout the OESF, including Cedar, Mosquito, Goodman, Matheny, and Kalaloch Creeks and the Hoh, Calawah, and Queets rivers.

In anticipation of a then-pending 1999 listing of bull trout as a threatened species throughout their range in Washington, the USFWS in 1998 reinitiated the biological opinion and conference opinion on DNR's 1997 *Habitat Conservation Plan* to include an analysis of potential impacts to bull trout from activities covered under the plan. The biological opinion describes specific protections for bull trout required in the OESF on pages 4 and 5. These protections do not appear to be included in the 2010 DEIS.

While the 2010 DEIS concludes that nearly every Type 3 watershed is projected to experience detectable impacts to at least one indicator of riparian function under the Landscape Alternative, and to a lesser degree under the No Action Alternative, it fails to analyze these impacts with respect to bull trout.

Comment Summary: 36

Subject Area: Fish

Issue: Sediment Impacts to Bull Trout

Commenters expressed concern over effects to bull trout from the following:

- Road-related sediment delivery to streams;
- Changes in riparian shade levels;
- Changes in riparian microclimate; and
- Harvest-related changes in large down wood recruitment potential.

Commenters cited several references regarding the sensitivity of bull trout to fine sediment and changes in stream temperature due to reduced shade. Commenters also described the dependency of bull trout on complex forms of cover including large woody debris, undercut banks, boulders, and pools.

Commenters noted a lack of quantitative criteria for harvest in the riparian zone with which to assess the potential effects of management activities on bull trout.

Due to the specific habitat requirements of bull trout which limits their distribution within a watershed, commenters were concerned that bull trout may be at greater risk of extinction than other salmonids occupying the same watershed, citing the following important habitat components:

- Water temperature,
- Cover,
- Channel form and stability,
- Valley form,
- Spawning and rearing substrate, and
- Migratory corridors.

Comment Summary: 37

Subject Area: Forest Conditions

Issue: Age Classes

Commenters are encouraged that modeling suggests both alternatives will achieve the stand structure outcomes as described in the 1997 *Habitat Conservation Plan* (Table IV.14), However, detailed information showing the age class distribution by watershed administrative unit was not included. Also, the plan does not recognize that these outcomes are required.

Comment Summary: 38

Subject Area: Forest Conditions

Issue: Complex Forests

The commenter says that the 1997 *Habitat Conservation Plan* requires 60 to 70 percent complex forest at year 100. The commenter says that the Landscape Alternative projects only 41 percent complex forest, and that on page 9 of the 2010 DEIS, structurally complex forests are projected to increase by 60 percent in 100 years. Many of these lands that see an increase in structurally complex forest are deferred from harvest. It appears that neither alternative meets the 1997 *Habitat Conservation Plan* goal for complex forests in 2100 (Table IV.14).

Comment Summary: 39

Subject Area: Forest Conditions

Issue: Modeling

Commenter says the Landscape Alternative does not appear to incorporate many available tools, data, and information that could improve the ecological basis for an unzoned forest landscape approach. Any landscape approach to forest management should, to the greatest extent possible, strive to mimic natural disturbance regimes and natural levels of variability in forest structure and development. Models such as the Vegetation Dynamics Development Tool (VDDT, ESSA Technologies) that can assist with incorporating forest attributes into management planning are now available.

The forest vegetation simulator model is problematic for projecting forest conditions following variable density thinning and much of the proposed harvest under both alternatives is to occur through this type of thinning. The forest vegetation simulator is not currently able to reliably forecast stand development following variable density thinning (Gould and Harrington 2009). It is unclear if or how this may impact projections of forest stand conditions for either alternative. Even with all of the uncertainly there is no description of validation monitoring that has occurred or is planned for the models.

Comment Summary: 40

Subject Area: Forest Conditions

Issue: Old Growth

Commenter says that some old-growth trees should be thinned in the Mt. Townsend and Buck Horn Wilderness area because the trees are dying (rotting on the stump). Commenter would like the United Says Forest Service (USFS) to expand/extend the road right up to the Olympic National Park boundary so the white fir/hemlock can be thinned and sent to mills in the local area creating local jobs. Commenter feels that some areas should be harvested and replanted while other areas should be left untouched, which can be done with proper forest management.

Comment Summary: 41

Subject Area: Impact Analysis

Issue: Agency Action

The 2010 DEIS fails to define the agency action and to clearly define DNR's objectives.

Comment Summary: 42

Subject Area: Impact Analysis

Issue: Readability

Commenters say that some charts and graphs were confusing for the non-technical person. DNR should devise a clearer way to display the data. The document is dense and complex and conclusions were difficult to discern. Others found the 2010 DEIS vague, contradictory, and in some cases misleading. Decision points need to be highlighted or placed in a separate chapter where conclusions are obvious. DNR should highlight the conclusion for the non-technical reader and develop a special section devoted to conclusions with references to the specific parts of the analysis which they are derived. SEPA mandates that an EIS be readable so a reader understands the most significant and vital information concerning a proposed action without requiring other information sources. The project purpose section of the 2010 DEIS is difficult to comprehend for both general and savvier members of the public. Chart 3-54 is a good example of unnecessary complexity, what does this say? Is the 1997 *Habitat Conservation Plan* violated? Are fish, wildlife, or water impacted?

How do "management activities" differ from "management strategies"? How do "management activities" and "management strategies" differ from "management regimes"? How do the "stated objectives" differ from the "measurable objectives"? The commenter believes that DNR's main purpose for the Draft OESF forest land plan is to establish the specific timber harvest policies that will be applied in the riparian zones. While the impacts of the proposed action make this purpose apparent, nowhere does the 2010 DEIS clearly state this "management objective."

Unfortunately, critical sections, including the "Project Purpose" section of the 2010 DEIS, are difficult to read for both technical and non-technical reviewers. What are "management activities"? Is this another word for logging? If so, why doesn't the 2010 DEIS state that DNR's purpose is to allow logging of the

OESF? Instead it relies upon the term “management activity” or an industry-defined “silviculture” (footnote 2, page 23) that itself only refers to “growing and tending forest crops.” It is critical that both technical and non-technical reviewers clearly understand the most significant and vital information concerning the proposed action, alternatives, and impacts without turning to other documents (WAC 197-11-425[1]).

Comment Summary: 43

Subject Area: Impact Analysis

Issue: Thresholds

Commenter feels that landscape planning is a good concept, but requires good baseline data to inform future management. DNR needs to update its site-specific landscape-level analysis program to identify the current condition of watersheds and forest stands and to tailor future harvest plans and road construction to restore impacted habitats to good condition.

Comment Summary: 44

Subject Area: Impact Analysis

Issue: Fact Sheet

Commenters would like the fact sheet to include a statement of the “nature of the proposal” and “nature or type of final agency action” and the date that the agency expects to take the action (WAC 197-11-440 (2)(a), (i)). What is the proposal? What is the agency action? When is the agency expecting to take action? Adopting an FEIS is not an action. An EIS is a document that is prepared in order for agencies and citizens to understand the environmental impacts of a particular action. An EIS is not, therefore, a stand-alone document (WAC 197-11-400 [1[,[2]). The fact sheet in the 2010 DEIS fails to clearly and concisely identify either the proposal or the proposal’s objectives.

Comment Summary: 45

Subject Area: Impact Analysis

Issue: Clean Water Act

The Clean Water Act’s anti-degradation policy prohibits new actions that degrade water quality in currently high quality waters. According to Table 3-47, the Landscape Alternative will significantly increase riparian impacts to Type 3 waters, including a tripling of probable significant impacts to shade and a ten-fold increase in probable significant impacts to riparian microclimates. It appears, therefore, that implementation of the Landscape Alternative may violate this law.

Comment Summary: 46

Subject Area: Impact Analysis

Issue: Deferred Lands

How much land will be deferred? It is unclear which lands will be managed? A map that shows the planning area, managed land base, or lands with no management would be helpful. How many of these lands have constraints?

As the 2010 DEIS is written, it appears to allow cutting on every acre. Will the beneficiaries be compensated for lost revenue as a result of deferred harvest? Commenters would like this statement explained: "harvest volumes will be curtailed." If so, what would this cost the trust beneficiaries? Will the OESF structurally complex forests be deferred from harvest? Please produce a chart that shows the acres to be managed, those to be off base, and the acres that may see limited management. Commenters would like DNR to show the expected volumes annually for the first 10 years and then by decade out to 100 years. How much volume is available for harvest today and how much will there be in 100 years after the volumes were removed during that 100 years?

Comment Summary: 47

Subject Area: Impact Analysis

Issue: Harvested Areas

The 2010 DEIS fails to protect public resources by applying sustainable practices; it also fails to identify and value forest ecosystems or recognize the legitimate interests of future generations.

Comment Summary: 48

Subject Area: Impact Analysis

Issue: Harvest Rotations

DNR should switch from short-rotation industrial forestry (cutting when trees reach 30 to 60 years old) to a more ecosystem friendly, long-rotation forestry. The short rotation forestry that DNR is proposing to adopt was developed by the forest industry to maximize profits over the short term, which is inappropriate for management of public resources. We must allow forests to mature and move harvest rotations out past 160 years.

Comment Summary: 49

Subject Area: Impact Analysis

Issue: Missing information

The information in the EIS must be "complete and accurate" and allow the decision maker and the public to make a fully informed evaluation of the proposed alternatives. On pages 57-58, the 2010 DEIS says that modeling errors may result in an apparent failure to meet 1997 *Habitat Conservation Plan* targets for northern spotted owl habitat. Similarly, on page 193 the 2010 DEIS acknowledges that "due to omission

errors and the current lack in the extent of DNR's hydrographic dataset, the analysis [sediment delivery] may not be accurate." There is also a reference to an error in the dataset that was used on page 57 through 59, does that error in land acres also create an error in volume outputs?

It is unacceptable for an agency to release a 2010 DEIS that knowingly contains false, inaccurate, or incomplete information, and will likely confuse the reader and lead one to the wrong conclusion. In the regularly scheduled June 10, 2010 and July 8, 2010, meetings with the "settlement partners" identified in *Washington Environmental Council (WEC) v. Sutherland*, King County Superior Court Case No. 04-2-264671-8SEA, DNR explicitly confirmed missing analyses from the 2010 DEIS that "will be included in the FEIS." Indeed, the 2010 DEIS acknowledges that additional analysis is needed on at least the following topics: (1) road costs (p. 63); (2) road needs for thinning (p. 64); (3) marbled murrelet strategies under the science team report (p. 65-66); (4) water quality (p.210); (5) northern spotted owl models (p. 247); and carbon sequestration (p. 269). The 2010 DEIS also (6) fails to disclose or analyze management proposals or their impacts for all Type 5 waters, which are 62% of the whole stream network (p. 125). Also, (7) the Settlement Agreement for *Washington Environmental Council vs. Sutherland* (Section II.A) explicitly requires a demonstration project on biodiversity pathways, but none is mentioned in the 2010 DEIS.

Commenter believes that the combination of known inaccuracies and known missing information renders the entire 2010 DEIS suspect and mandates preparation of a new 2010 DEIS with "complete and accurate" information.

Comment Summary: 50

Subject Area: Impact Analysis

Issue: Modeling

The forest estate model used for the Landscape Alternative is internal to DNR, not available for peer review, and appears to still be under modifications.

Comment Summary: 51

Subject Area: Impact Analysis

Issue: Narrow Objectives

The commenter says that the three "measurable objectives" identified on page 22 of the 2010 DEIS are unreasonably narrow and, as a consequence, bias the formation of alternatives. Measurement objective 1 (increasing recruitment for large woody debris and shade) appears to be driven by the requirement to protect water quality. Limiting the objective to two narrow prescriptions ignores the over-riding objective – clean and cool water. Measurement objective 2 (attain and maintain 20/40 percent old/young and better forest) says that the objective is to support the conservation of the northern spotted owl and marbled murrelet. Again, limiting the objective to a single narrow prescription ignores the over-riding objective. Measurement objective 3 (sell approximately 576 million board feet over a decade) is an overly narrow objective. The 2010 DEIS says DNR's objectives are to develop landscape strategies, however isn't

DNR's overall objective to manage the OESF, as all trust lands, with undivided loyalty to the trusts to achieve the goals of trust revenue, quality commodity production and enhanced environmental goods?

Comment Summary: 52

Subject Area: Impact Analysis

Issue: Predictability

Commenter points out that the 2010 DEIS must assess the potential impacts to riparian conditions and their indicators resulting from unpredictable, but likely, events such as abnormally high stream flows, fires, inner gorge failures, global warming, and the unauthorized removal of trees or downed wood.

Comment Summary: 53

Subject Area: Impact Analysis

Issue: Adaptive Management

Adaptive management and mitigation measures should be discussed for any unexpected outcomes.

Comment Summary: 54

Subject Area: Impact Analysis

Issue: Wind

The 1921 windstorm had an extraordinary impact on parts of the OESF which still affects management today; this should be mentioned.

Comment Summary: 55

Subject Area: Implementation

Issue: Harvest Level

Commenter suggests that habitat designations and stand-level inventories be field verified as much as possible. Utilizing correct information will benefit both the trusts and the purchaser as data will be more realistic for planning. Forecasting fictional harvest volumes will only damage DNR.

Comment Summary: 56

Subject Area: Marbled Murrelet

Issue: Impacts

There is potentially a greater impact to marbled murrelets under the Landscape Alternative due to higher harvest levels. Until the marbled murrelet population stabilizes there should be no increased short-term impacts by increased harvest levels. Increasing harvest levels will add short-term pressure to marbled

murrelets. The commenter believes DNR has been harvesting in marbled murrelet buffers and approving private sales in murrelet areas.

Comment Summary: 57

Subject Area: Marbled Murrelet

Issue: Disturbance

The additional impacts to marbled murrelets as a result of habitat loss in the next 100 years from disturbance and climate change were not discussed.

Comment Summary: 58

Subject Area: Marbled Murrelet

Issue: Take

How do the alternatives compare with the level of take authorized by DNR's 1997 *Habitat Conservation Plan* incidental take permit?

Comment Summary: 59

Subject Area: Marbled Murrelet

Issue: Long Term Conservation Strategy

Commenters say that the long-term Marbled Murrelet Conservation Strategy should be completed before the OESF plan by implementing the Marbled Murrelet Science Team report (Raphael and others 2008). Areas identified as potential habitat should be deferred from timber harvest during this process. The 2010 DEIS should be re-written to include an analysis of the long term Marbled Murrelet Conservation Strategy reflecting the science team report (Raphael and others 2008). The commenter says that the long term strategy should be included in the analysis of the EIS or it will result in an updated, Revised Draft EIS or addendum to the OESF forest land plan and EIS analysis. A commenter questions what would trigger an addendum or update to take place, and which parts would have to be done to meet that requirement?

Comment Summary: 60

Subject Area: Marbled Murrelet

Issue: Recommendations

Did either alternative in the 2010 DEIS follow the recommendations or analysis assumptions of the Marbled Murrelet Science Team (Raphael and others 2008) that "DNR achieve pole-size or better structure over 100 percent of the area with a 328-foot (100-meter) buffer around designated occupied or older forest sites"? As described in Raphael and others (2008), intact buffers around occupied sites are needed to "maintain the stand structure in the condition that provides high-quality nesting habitat for marbled murrelets (McShane and others 2004), reduce potential for blowdown (Jaross and Read 2006),

maintain microclimates within the occupied stand (Chen and others 1993, 1995, Kremsater and Bunnell 1999, McShane and others 2004), and reduce the impacts of hard edges, which have been linked to increased nest predation (Nelson and others 2002)."

Comment Summary: 61

Subject Area: Marbled Murrelet

Issue: Habitat Mapping

The commenter suggests an accurate estimate of marbled murrelet habitat within the OESF should be included in the 2010 DEIS, along with maps and a clarification of proposed DNR management for these areas.

Comment Summary: 62

Subject Area: Marbled Murrelet

Issue: Population Distribution

The commenter says that the decline in marbled murrelet populations was not part of the analysis and no analysis was provided to suggest that marbled murrelet populations will persist in the OESF in 100 years under either alternative.

Comment Summary: 63

Subject Area: Marbled Murrelet

Issue: Analysis

The commenter expected the 2010 DEIS to contain a landscape analysis of all marbled murrelet areas including management direction for marbled murrelets accounting for actions taking place on private lands.

Comment Summary: 64

Subject Area: Marbled Murrelet

Issue: Buffers

The 2010 DEIS should include buffers on marbled murrelet habitat wide enough to protect the integrity of the existing habitat and allow habitat expansion should the marbled murrelet population recover in the future.

Comment Summary: 65

Subject Area: Marbled Murrelet

Issue: Harvest

Areas close to marine waters containing marbled murrelet habitat should be removed from the harvest calculation. The OESF forest land plan must protect marbled murrelets from any further pressure.

Comment Summary: 66

Subject Area: Marbled Murrelet

Issue: Habitat Estimates

Two different marbled murrelet habitat estimates are presented in the 2010 DEIS (page 257, page 259). Additional estimates can be found in Minkova 2009 (Appendix I), DNR (Appendix II), one of which was developed as part of the 2008 science report, and none of which were analyzed in the 2010 DEIS. The commenter says that the 2010 DEIS should explain which estimate is used for each alternative and explain why it was chosen over other estimates. The commenter further says that accurate estimates of the current amount of marbled murrelet habitat in the OESF is critical for assessing the environmental impacts of the alternatives over time.

Comment Summary: 67

Subject Area: Marbled Murrelet

Issue: Marbled Murrelet Habitat

The last remaining old growth forest in Water Resource Inventory Area (WRIA) 19 is along the Clallam River and is marbled murrelet habitat.

Comment Summary: 68

Subject Area: Marbled Murrelet

Issue: Research and Monitoring

The marbled murrelet carrying capacity index and potential marbled murrelet habitat, two of the indicators used in the 2010 DEIS to assess impacts, are based on a series of assumptions that should be evaluated through the OESF research program.

Comment Summary: 69

Subject Area: Marbled Murrelet

Issue: Long Term Strategy

The commenter points out that the best available science was not used to develop the alternatives or to analyze impacts to marbled murrelets. Recommendations of the Marbled Murrelet Science Team (Raphael and others 2008) were not incorporated into the 2010 DEIS. The Landscape Alternative does not

include updated data on the location of occupied sites and fails to consider or analyze the marbled murrelet management strategy. All harvest in Marbled Murrelet Management Areas containing potential habitat is not deferred as recommended. There is concern by the commenter that the 55 percent increase in clear-cuts proposed in the 2010 DEIS without knowing which land is needed to be conserved for the long-term Marbled Murrelet Conservation Strategy could provide a risk that potential marbled murrelet habitat could be harvested.

Comment Summary: 70

Subject Area: Marbled Murrelet

Issue: Adaptive Management

Commenter feels the lack of implementation of the long-term Marbled Murrelet Conservation Strategy is a failure of adaptive management in the OESF.

Comment Summary: 71

Subject Area: Marbled Murrelet

Issue: Active Management

Commenter questions if active management is ongoing with multiple entries causing disturbance in the enhanced habitat, or if it is a one-time operation?

Comment Summary: 72

Subject Area: Marbled Murrelet

Issue: Carrying Capacity

Commenter asks why the 2010 DEIS did not include the discount factor for edge effect when calculating the marbled murrelet carrying capacity index when the negative effects of edge are cited? The commenter mentions that the amount of potential marbled murrelet habitat is overestimated without this discount factor, thus the probable adverse impacts of the alternatives on marbled murrelet populations.

Comment Summary: 73

Subject Area: Marbled Murrelet

Issue: Global Warming

The commenter feels that global warming in the Pacific Northwest will cause one of the highest tree mortality rates in the nation with the trajectory to double in the next 17 years (van Mantgem and others 2009). A high tree mortality rate will confound the results of any model that does not include it as a parameter. Forest models under any alternative for long-term forest management must take climate change into account, beyond an estimate of the level of carbon sequestration.

Comment Summary: 74

Subject Area: Marbled Murrelet

Issue: Habitat Estimates

Commenter would like to know the difference between the number of "reclassified" habitat acres (approximately 54,450 acres) and the number of acres of the analysis indicator of structurally complex forest (approximately 31,578 acres). Additionally the commenter would like to know the difference in habitat estimates presented in Minkova 2009.

	Marbled murrelet 1997 *Habitat Conservation Plan* policy (interim conservation strategy)	**Woodstock model (Phase 3b) (OESF forest estate model)**
DNR-managed Lands	270,343 acres	270,302 acres
Non-habitat	192,358 acres	216,124 acres
Habitat	77,985 acres	54,178 acres

Minkova (2009) described a fifth estimate of murrelet habitat (marbled murrelet planning – a dataset developed as part of the science report (Raphael and others 2008) to illustrate the recommended approach for the long-term Marbled Murrelet Conservation Strategy) but did not present the acreage value. The commenter feels that the OESF 2010 DEIS should have described which estimate is being used for each alternative and explain why it was chosen over the other estimates.

Comment Summary: 75

Subject Area: Marbled Murrelet

Issue: Habitat Take

Under the marbled murrelet interim conservation strategy (DNR 1997), five percent of "marginal" occupied habitat was to be released for harvest. How much of this habitat has already been harvested and how many murrelets have already been taken? How many are authorized to be taken from this point forward?

Comment Summary: 76

Subject Area: Marbled Murrelet

Issue: Harvesting

Neither alternative effectively protects and restores marbled murrelet habitat. Both alternatives propose disturbance to forest habitat immediately surrounding occupied murrelet sites, with the Landscape Alternative having a much larger impact than the No Action Alternative. Given the high sensitivity of murrelets to edges and the murrelets' continuing population decline, it should be imperative that no significant disturbance (for example, large openings) occur near occupied sites. As the 2010 DEIS is currently written, it is difficult to determine what type of silviculture, variable retention harvest or

variable density thinning, is proposed next to these sites. It is possible that variable density thinning could improve Young Forest Habitat in the long term in the area surrounding the sites, provided it is done carefully and avoids the nesting season, but variable retention harvest should be avoided. More clarity is needed on what will be done in these areas.

Comment Summary: 77

Subject Area: Marbled Murrelet

Issue: Sitka Spruce Zone

Development of high quality nesting habitat in low-elevation Sitka spruce forest type on the Olympic Peninsula, especially on DNR land, is critical for the long-term recovery of marbled murrelets. A core recommendation of the 2008 science team report (Raphael and others 2008) was to maintain and develop large blocks (39,000 acres) of Old Forest Habitat in the Dickodochtedar, Goodman Creek, and Kalaloch landscape planning units. Neither alternative addressed this recommendation.

Comment Summary: 78

Subject Area: Marbled Murrelet

Issue: 1997 *Habitat Conservation Plan* Alternatives

The commenter says that Alternative C for the 1997 *Habitat Conservation Plan* should have been chosen for marbled murrelet management.

Comment Summary: 79

Subject Area: Marbled Murrelet

Issue: Incomplete Information

The commenter feels that the 2010 DEIS is based on inaccurate and incomplete information, including incomplete information on marbled murrelets.

Comment Summary: 80

Subject Area: Marbled Murrelet

Issue: Interior Habitat

Though the implementation of other conservation strategies (for example, northern spotted owl and riparian), the increase in structurally complex forest and the corresponding increase in carrying capacity on forested state trust lands in the OESF is expected to aid in the conservation of murrelet populations on the Olympic Peninsula as a whole. The commenter says that riparian buffers 150-300 feet wide per side will not provide interior habitat for murrelets, especially where the interior and exterior zones are thinned or clearcut. Raphael and others (2008) delineated murrelet interior habitat (core area) as a 328-foot (100 m) interior buffer of the stands of interest. The commenter believes it is unlikely riparian buffers will

satisfy murrelets' habitat requirements unless they are at least 328 feet wide and left largely or wholly intact.

Comment Summary: 81

Subject Area: Marbled Murrelet

Issue: Long Term Strategy Based On 2010 DEIS Analysis

The commenter believes that the long-term Marbled Murrelet Conservation Strategy will be based on the impact analysis from the 2010 DEIS, specifically on the impacts to "Marbled Murrelet Sensitive Areas" defined as 100 meters around occupied sites. The commenter believes this could permanently eliminate analysis of Marbled Murrelet Management Areas and buffers on other Old Forest Habitat.

Comment Summary: 82

Subject Area: Marbled Murrelet

Issue: Natural Disturbance

All "natural" disturbances discussed are to a considerable degree related to human activities, some more than others. Windthrow can result from clearcut harvest of adjoining acreage on ridges exposed to high winds. Landslides can be caused by logging on unstable slopes. The OESF forest land plan should explicitly address these concerns in marbled murrelet habitat.

Comment Summary: 83

Subject Area: Marbled Murrelet

Issue: Fire Suppression

The commenter wonders what DNR's policy is in regard to letting wildfires burn when no humans or human features are in danger, and is marbled murrelet habitat protected if it is not identified for harvest?

Comment Summary: 84

Subject Area: Marbled Murrelet

Issue: Natural Disturbance

The commenter wonders which pests and diseases might affect marbled murrelet nesting habitat and are there any plans for suppression of such pests or diseases?

Comment Summary: 85

Subject Area: Marbled Murrelet

Issue: Ocean Effects on Population Trends

Ocean temperature, more frequent El Niño Southern Oscillation events, and declining ocean pH will make nutrition more difficult for marbled murrelets. The USFWS recognized habitat loss as the major

factor causing the decline of marbled murrelet populations. The commenter mentions that terrestrial activities should not add to these other stressors.

Comment Summary: 86

Subject Area: Marbled Murrelet

Issue: Population Trends

Demographic models have predicted a 3 to 7 percent annual decline in marbled murrelet populations across Washington, Oregon, and California. How has the marbled murrelet population changed in the OESF since 1997 (increased, stable, or decreased)?

Comment Summary: 87

Subject Area: Marbled Murrelet

Issue: Potential Habitat

The No Action Alternative yields 4,216 more acres of potential marbled murrelet habitat than the Landscape Alternative after the tenth decade. The commenter wonders, how many marbled murrelet territories does that represent?

Comment Summary: 88

Subject Area: Marbled Murrelet

Issue: Habitat Indicators

Raphael and others (2008) used forest stand development stages as a surrogate for nesting habitat, classifying a subset of the Competitive Exclusion stage and the more complex, older stages—Biomass Accumulation and Structurally Complex—as "potential marbled murrelet habitat." However, a narrower definition was used in the 2010 DEIS analysis, wherein only Structurally Complex forests were considered an indicator of potential marbled murrelet habitat.

The commenter wonders why a narrower definition of potential marbled murrelet habitat was used instead of the broader definition recommended by Raphael and others (2008)? The commenter would like clarification if the forests in the Biomass Accumulation stage not used by murrelets may be released for harvest?

Comment Summary: 89

Subject Area: Marbled Murrelet

Issue: Research and Monitoring

The 2010 DEIS (p. 28) says that since adoption of the 1997 *Habitat Conservation Plan*, numerous research and monitoring projects have been conducted in the OESF, the majority related to marbled murrelets, including several trials to test silviculture techniques to accelerate habitat restoration. The commenter requests citation of these projects and a description of how the results were incorporated into

the 2010 DEIS alternatives. If these results were not incorporated, the commenter requests an explanation of why.

Comment Summary: 90

Subject Area: Marbled Murrelet

Issue: Road Impacts

The commenter feels that road building under either alternative would fragment marbled murrelet habitat and provide for the introduction of invasive species, including forest pests and diseases, and avian predation of future marbled murrelet nest sites over the long term. The commenter requests that road impacts be considered in the choice of alternatives and not limit the effects to just water quality and riparian habitat.

Comment Summary: 91

Subject Area: Marbled Murrelet

Issue: Harvest in Sensitive Areas

The definition of thinning in the 2010 DEIS included regeneration harvests with at least 50 percent tree retention and at least 40 percent basal area retention by area. The commenter says that these prescriptions will result in further loss and fragmentation of marbled murrelet habitat rather than accelerate stand development towards more structurally complex forests.

Comment Summary: 92

Subject Area: Marbled Murrelet

Issue: Sensitive Areas

The commenter wonders why the term “marbled murrelet sensitive area” was used to describe the 100 meters around marbled murrelet sites rather than language used in Raphael and others 2008. The total harvest in marbled murrelet sensitive areas under the Landscape Alternative is more than double than under the No Action alternative, harvesting a total of 2,008 acres (408 acres of variable retention harvest plus 1,600 acres of thinning) in the buffers on occupied sites in the first decade. The commenter says that although the difference is largely variable density thinning, the Landscape Alternative would have the greatest adverse impact on marbled murrelets.

Comment Summary: 93

Subject Area: Marbled Murrelet

Issue: Forest Conditions

The structurally complex forest requirement of 20 percent should be met as quickly as possible to help marbled murrelets not to become extinct.

Comment Summary: 94

Subject Area: Northern Spotted Owl

Issue: Land Base

The 2010 DEIS acknowledges that the northern spotted owl may no longer be present in much of the habitat under discussion. Lands that have no expectation of harboring an endangered species should be examined for suitability to return to full production. The settlement agreement (*WEC vs. Sutherland*) and current sustained yield expire in 2014. The commenter says that the owls' status in this area should be reviewed and suitable recommendations made by 2014.

Comment Summary: 95

Subject Area: Northern Spotted Owl

Issue: Readability

The northern spotted owl section is well written and straightforward.

Comment Summary: 96

Subject Area: Northern Spotted Owl

Issue: Habitat Configuration

Commenter feels that the objective "Attain and maintain….20 percent Old Forest and 40 percent Young Forest and Better Habitat in support of the northern spotted owl, marbled murrelet …" is not ecologically meaningful because it does not recognize the other key habitat need of the species: contiguous blocks of old forest habitat with few edges. A target that defines the size of areas (blocks) of Old Forest Habitat and future habitat on the landscape should be included in addition to a percentage of forest type.

Comment Summary: 97

Subject Area: Northern Spotted Owl

Issue: Forest Conditions

Neither alternative is compatible with northern spotted owl conservation objectives as described in DNR's 1997 *Habitat Conservation Plan*. While forest structural complexity is projected to increase under both alternatives, neither is projected to achieve the expectation of 60 to 70 percent of the OESF in a structurally complex condition as stated in DNR's 1997 *Habitat Conservation Plan*, nor is it anticipated that DNR management would result in adequate amounts of habitat to provide for multi-species conservation across the landscape realized.

The 2010 DEIS anticipates that the OESF landscape will have only 41 and 56 percent of structurally complex forest by 2100 under the Landscape and No Action alternatives, respectively. By creating less structurally complex habitat than anticipated under the 1997 *Habitat Conservation Plan*, it is likely that both alternatives will appreciably reduce the probability for survival and recovery of the Olympic Peninsula northern spotted owl sub-population and foreclose options for ecosystem support provided by

older forests. It is not clear how this reduction in suitable habitat around nest sites, or elsewhere in the OESF, contributes to spotted owl conservation.

Comment Summary: 98

Subject Area: Northern Spotted Owl

Issue: Fragmentation

The commenter notes that the distribution of habitat including patch size, patch isolation, connectivity, and edge contrast—which are key to spotted owl survival and recovery—was not analyzed in the 2010 DEIS. The commenter goes on to describe that the 1997 *Habitat Conservation Plan* recognizes that the spatial pattern of northern spotted owl habitat is key to meeting northern spotted owl conservation objectives in the 1997 *Habitat Conservation Plan* (p. IV.87); the requirement for landscape plans (p. IV.91); and interior forest (p. IV.99). The commenter also mentions that the composition and pattern of forested landscapes will determine their capacity as northern spotted owl habitat described in the 1997 *Habitat Conservation Plan* (p. IV.102). The commenter points out that large blocks of habitat that support multiple pairs of owls are more likely to provide for long-term survival and recovery than isolated blocks of habitat supporting only a few individual owls, especially on the Olympic Peninsula where northern spotted owl territories are larger in size. The commenter feels that there is a failure to provide information on the distribution of northern spotted owl habitat to ensure sufficient interior forest conditions, maintain habitat connectivity between owl nest sites, limit high contrast edge effects, and demonstrate that the distribution of northern spotted owl habitat is sufficient to maintain and restore the Olympic subpopulation of owls over time.

Comment Summary: 99

Subject Area: Northern Spotted Owl

Issue: Harvesting in Owl Circles

The commenter believes that the OESF forest land plan proposes to harvest over 1,000 acres of structural habitat within nest sites (2010 DEIS, Table H-1, Harvest Activities (by Acres) in all Status 1 Owl Circles for the Entire OESF [2010-2020, Woodstock Model]) in the first decade. Commenter points out that these northern spotted owl nest sites are the most likely to be re-occupied by recovering northern spotted owl populations (2010 DEIS, p. 252).

Comment Summary: 100

Subject Area: Northern Spotted Owl

Issue: 1997 Habitat Conservation Plan

The commenter feels that the OESF forest land plan fails to meet the requirements of the 1997 *Habitat Conservation Plan* objectives for northern spotted owl management in the OESF (1997 *Habitat Conservation Plan*, p. IV.86 through IV.87). The commenter also feels that the OESF forest land plan is incompatible with the 1997 *Habitat Conservation Plan*.

Comment Summary: 101

Subject Area: Northern Spotted Owl

Issue: Conservation Strategy

The commenter cites published literature (Holthausen and others 1994, Burrnham and others 1994, USFWS 2004, Gremel 2008, USFWS 2008, and Pierce and others 2005) as evidence of errors in the key assumptions that form the conservation strategy for northern spotted owls in the OESF, as described in DNR's 1997 *Habitat Conservation Plan*. Implementing the conservation strategy will further impact owls; these impacts were not disclosed in the 2010 DEIS.

Comment Summary: 102

Subject Area: Northern Spotted Owl

Issue: Incomplete Analysis

The commenter notes that DNR has not completed key analysis that is necessary for determining whether the 1997 *Habitat Conservation Plan* objectives will be achieved, including analysis of life history requirements or viability of northern spotted owl territories (2010 DEIS, p. 243). Lacking these analyses, the 2010 DEIS fails to disclose potential impacts to northern spotted owls that would result in implementing either alternative.

Comment Summary: 103

Subject Area: Northern Spotted Owl

Issue: Marbled Murrelets

The commenter points out that the alternatives proposed in the 2010 DEIS increase the impacts to marbled murrelets beyond the current management practices and exceed allowances in the 1997 *Habitat Conservation Plan* (when using the 1997 *Habitat Conservation Plan* inventory) for northern spotted owls.

Comment Summary: 104

Subject Area: Northern Spotted Owl

Issue: Habitat Loss

The commenter says that the OESF forest land plan will likely appreciably reduce chances of survival and recovery of the northern spotted owl sub-population on the Olympic peninsula and foreclose options for ecosystem recovery provided by older forests.

Comment Summary: 105

Subject Area: Northern Spotted Owl

Issue: Habitat Thresholds

As described in the 2010 DEIS, one of three measurable objectives that both alternatives must meet is "…to attain and maintain within each landscape 20 percent potential Old Forest Habitat and 40 percent potential Young Forest Habitat in support of the conservation of the northern spotted owl, marbled murrelet, and other wildlife species." How were these habitat targets established? How was the best available science used? Please provide citations.

Comment Summary: 106

Subject Area: Northern Spotted Owl

Issue: Roads Stress

Referring to the impacts of roads, the commenter would like to know the observed behavioral effects of elevated corticosterone levels of male northern spotted owls, if any are known.

Comment Summary: 107

Subject Area: Northern Spotted Owl

Issue: Validation Monitoring

No scientific evidence is provided in the 2010 DEIS to support the assumption that northern spotted owls will utilize stands that are actively managed to create structurally complex forests. Nor is there any proposal to test or verify that owls will use habitat created for dispersal, foraging, roosting, or nesting purposes or that landscapes with such habitat will support occupancy by successfully reproducing spotted owls. The impacts of failing to provide habitat that supports successfully reproducing owls are not disclosed in the 2010 DEIS.

Comment Summary: 108

Subject Area: Policy and Procedures

Issue: Riparian Forest Buffers

Some commenters feel that incorporating policies and procedures recommended by knowledgeable and experienced members of the public is a good idea. The guidance laid out in the 1997 *Habitat Conservation Plan* is being interpreted by DNR and the implementation of interior buffer to protect unstable slopes is defined by WAC 222-16-050. The commenter says that the 1997 *Habitat Conservation Plan* only requires that all potentially unstable slopes be protected within the interior buffers, not that only unstable slopes are protected within interior core buffers.

Comment Summary: 109

Subject Area: Other

Issue: SEPA

What action takes place after the completion of the FEIS? Under WAC 197-11-448 (4), commenters would like a comprehensive plan that includes the FEIS and economic analysis.

Comment Summary: 110

Subject Area: Other

Issue: Comments not ready

WSDFW has not had time to review the 2010 DEIS but plans to submit comments as soon as possible in the hopes that DNR will consider their comments.

Comment Summary: 111

Subject Area: Other

Issue: DNR's Mission

The commenter feels that DNR's mission is to conserve and protect the land and to maintain healthy habitat for salmon, marbled murrelet, and other species. How is this accomplished with more timber harvesting?

Comment Summary: 112

Subject Area: Other

Issue: Economic Analysis

Commenter points out that the financial analysis presented in Table ES-2 is inadequate. DNR must perform a detailed financial analysis prior to the selection of an alternative. Commitments made by DNR representatives during project scoping to include an economic analysis are unfulfilled. Commenters requested decadal summaries of harvest volume and value by trust type within each landscape planning unit.

Comment Summary: 113

Subject Area: Other

Issue: Financial and Silvicultural Analysis

Commenters point out that DNR should perform both a silvicultural and economic analyses to determine variable density thinning suitability and possible modifications and options.

Commenters requested financial and silvicultural analyses of the level of variable density thinning proposed under both alternatives, including a discussion of recent market trends. Commenters say that variable density thinning is a relatively new treatment, unproven in stands subject to substantial wind

events, and additional analysis is needed to determine if such treatments are ready for operational use on state trust lands. Possible modifications and additional options need to be presented.

Comment Summary: 114

Subject Area: Other

Issue: Litigation

Commenters believe that a lawsuit negating the 2010 DEIS would not benefit the resources, trust beneficiaries, or timber purchasers.

Comment Summary: 115

Subject Area: Other

Issue: Forest Land Plan

Commenters request a forest land plan, and point out that one has been promised for the past 20 years. The plan should be stand alone, follow the chosen alternative, and not constitute an unmitigated hazard to the environment as discussed under SEPA. Is the FEIS the plan? Will there be a plan as a result of this process? A plan is needed which balances the requirements of producing a sustainable source of revenue for the trust beneficiaries and yet protects habitat for fish and wildlife. The plan should include a description of the unzoned forest and address the requirements of the Skamania decision, treaty obligations, the 1997 *Habitat Conservation Plan*, Forest and Fish agreement, OESF settlement, 2006 *Policy for Sustainable Forests*, and other related laws and policies. A management plan must go beyond a DEIS studying environmental impacts and their mitigation. A detailed operational plan is needed to start a serious public discussion of how to achieve the 20-year old vision for the OESF. Some commenters have concerns about how the plan will be prepared. The 2010 DEIS does not meet the definition of a plan as outlined when the OESF was created or as discussed when the 1997 *Habitat Conservation Plan* was written. The plan must follow the 2010 DEIS with a decision by the Board of Natural Resources while also having a full public review under SEPA. The plan should include a list of contributors that includes stakeholders; if nothing else at least in an appendix.

Comment Summary: 116

Subject Area: Other

Issue: Science

DNR should use good science.

Comment Summary: 117

Subject Area: Other

Issue: Settlement Agreement

Are the settlement agreement restrictions contained in *Washington Environmental Council* vs. *Sutherland* designed to continue past 2014?

Comment Summary: 118

Subject Area: Other

Issue: Trust Mandate

The trust history and mandate should be discussed in the beginning of Chapter 1 because it influences the choice of alternatives. Some commenters believe that DNR is being overly cautious and not managing these trust lands in the best interest of the trusts beneficiaries or for the intended experimental forestry techniques discussed in the 1997 *Habitat Conservation Plan*.

Comment Summary: 119

Subject Area: Other

Issue: Mills

The mills to process wood on the Olympic Peninsula have been upgraded and they depend on a steady supply of timber from state trust lands to keep jobs in this community. Commenters would like to know if an increase in the harvest volume ensures a steady supply of raw material available to bid on in the future.

Comment Summary: 120

Subject Area: Other

Issue: Missing Page Numbers

The electronic version of the 2010 DEIS had no page numbers so commenters were unable to reference a page number when providing comments. The printed version is the only version with page numbers and was only available from the SEPA center in Olympia, or by requesting a copy by mail. The commenter says this is a flaw in the public review process.

Comment Summary: 121

Subject Area: Research & Monitoring

Issue: OESF Intent

The commenter says the intent of the OESF was to provide a platform for testing new ideas for maximizing trust revenue while protecting the environment. Page 27 of the 2010 DEIS says that the completion of the research is pending. The 2010 DEIS needed to put more emphasis on achieving a higher frequency of projects that meet the original goals of the OESF. DNR should support additional

research and demonstration projects where different resource production and transportation options can be evaluated.

Comment Summary: 122

Subject Area: Research & Monitoring

Issue: Compliance Monitoring

The commenter believes that compliance monitoring of DNR's 1997 *Habitat Conservation Plan* is a vital function, and must be based on measurable standards and conducted on a regular basis. Current compliance monitoring fails on both accounts. DNR's implementation of interior-core buffers is now based on site-specific judgments of the field forester; no numeric or other measurable standards are used. It is therefore impossible to determine compliance with the 1997 *Habitat Conservation Plan*. No compliance monitoring has been conducted since 2007 due to budgetary constraints. Furthermore, current compliance monitoring merely measures contract compliance, not compliance with the 1997 *Habitat Conservation Plan*.

Comment Summary: 123

Subject Area: Research & Monitoring

Issue: Implementation

Under current implementation of DNR's 1997 *Habitat Conservation Plan*, riparian buffer protections are being incorrectly applied in the OESF. A 2004 Implementation Monitoring Report (DNR 2005) reported a total lack of exterior wind buffers and a 2007 Implementation Monitoring Report (DNR 2008) cited personal communications with Christiansen and Vaughn stating "when the 1997 *Habitat Conservation Plan* was first implemented, OESF managers typically applied a single multi-purpose buffer to streams."

Comment Summary: 124

Subject Area: Research & Monitoring

Issue: Demonstration Project

The *Washington Environmental Council vs. Sutherland* Settlement Agreement explicitly requires a demonstration project on biodiversity pathways, but none is mentioned in the 2010 DEIS. One of the outcomes of the 2006 Settlement Agreement was the expectation that DNR would utilize biodiversity pathways as a means to develop new and innovative silvicultural techniques. The commenter points out that innovation is lacking in this plan.

The 2006 Settlement Agreement called for a demonstration project "testing Dr. Andrew Carey's biodiversity pathways treatment principles, which are replicated in several areas and demonstrate the application of different scales of openings, scale of variation and overstory retention on forest management units at a stand level. The demonstration projects will be established with a peer reviewed scientific design intended to replicate the same two or three variations on the same types of stands. These demonstration projects will be developed and implemented as part of the OESF Sustainable Harvest

Implementation Planning (SHIP) during the term of this Agreement." (*Washington Environmental Council vs. Sutherland*, II.A).

Comment Summary: 125

Subject Area: Research & Monitoring

Issue: Experimentation

The commenter questions why the OESF plan is based on current harvesting practices and excludes experimentation. The commenter saw no linkage between individual harvests and OESF experimentation, study or monitoring as envisioned in the 1997 *Habitat Conservation Plan.* The commenter questions the linkage between the forest land plan, monitoring plan, and adaptive management.

Comment Summary: 126

Subject Area: Research & Monitoring

Issue: Funding

The 2010 DEIS says that negative impacts will not be mitigated but monitored as part of a long-term strategy. However, DNR has recently lost funding and personnel in budget cuts. How will DNR conduct this monitoring? Commenters believe there is neither funding nor a direct provision for experimental silviculture, despite the requirement in the Settlement Agreement. Commenters state that the failure by DNR to ensure adequate funding for the implementation of the 1997 *Habitat Conservation Plan* is grounds for suspension or partial suspension of the plan.

Comment Summary: 127

Subject Area: Riparian

Issue: Riparian Harvest Impacts

Commenters expressed concern that both the No Action and Landscape Alternatives damage riparian and aquatic habitat. Forest management activities, especially when conducted in riparian areas, adversely affect stream habitats by altering recruitment of large woody debris, erosion and sediment rates, runoff patterns, the magnitude of peak and low flows, water temperature, and water yield. Both the No Action and the Landscape Alternatives propose an increase in harvest from the current level of 57 million board feet per year, largely achieved through differences in application of the riparian conservation strategy.

The OESF has been badly degraded by over-harvest and inadequate buffers to protect streams and wetlands. It is inappropriate to increase the level of harvest without a better understanding of riparian function. Instead, there is a need for increased harvest restrictions in vulnerable areas and for increased riparian buffers to protect fish and wildlife habitat.

Commenters believe that timber harvest is not a strategy for the restoration or conservation of riparian or aquatic ecosystems, and cite requirements in the 1997 *Habitat Conservation Plan* that all conservation,

research, and management strategies be designed in concert to achieve an integrated management approach.

Comment Summary: 128

Subject Area: Riparian

Issue: Exclusion of Type 5 Waters

Commenter believes that the analysis of riparian function presented in the 2010 DEIS is incomplete, as it excludes Type 5 waters, which comprise an estimated 62 percent of DNR-managed waters in the OESF. Impacts to Type 5 waters, such as increased temperature and modifications of sediment input and large woody debris transport, can continue downstream. The failure to assess impacts to Type 5 waters most likely results in an underestimate of impacts to the riparian network. Commenters feel that the 2010 DEIS provides one level of protection to fish-bearing waters and another to non-fish-bearing waters, which is contrary to guidance from the United Says Environmental Protection Agency (USEPA) which outlines the need for the protection of all aquatic species (USEPA 1994).

The 2010 DEIS relies upon assumptions in the 1997 *Habitat Conservation Plan* for the protection of Type 5 waters under the umbrella of other existing protection measures, such as that for unstable slopes or for Type 5 waters that occupy stable ground but have identifiable channels with evidence of water discharge or material transport. However, hypotheses concerning the extent of Type 5 waters that would be protected are unsubstantiated. Commenter points out that no data to support the hypothesis is presented, nor has any supporting data been collected.

Commenters say that Type 5 streams are not currently protected to the extent described in the 1997 *Habitat Conservation Plan*. A review of harvest activities in the OESF for fiscal years 2005 through 2007 found that less than 33 percent of all Type 5 streams included a defined riparian buffer, and that the average width was less than 30 feet. No methods were provided in the forest practices applications for determining which Type 5 streams had identifiable channels, nor was a rationale documented for determining the riparian zone width necessary to protect the stream. No wind buffers were applied to any of the Type 5 streams, which is contrary to the assumption in the 1997 *Habitat Conservation Plan* that wind buffers would average 50 feet along Type 5 waters. The total average buffer width was less than 60 percent of the expected average exterior buffer width. No documentation was provided in the forest practices applications to support the stream typing of these waters.

Commenter points out that language in the 2010 DEIS is not clear as to what “protection” means, nor has a process-based strategy or guidelines been developed for the protection of Type 5 waters that occupy stable ground but have identifiable channels with evidence of water discharge or material transport.

Comment Summary: 129

Subject Area: Riparian

Issue: Riparian Buffer Configuration

Several commenters requested clarification of the configuration of riparian buffers, the method used to determine their width, and the size of the no harvest area. Neither alternative prescribes the use of

expected average width interior-core riparian buffers, as described in the 1997 *Habitat Conservation Plan*, nor was an analysis provided of the impacts of not using such buffers.

Commenters point out that analysis of riparian function presented in the 2010 DEIS does not explicitly differentiate between interior-core and exterior buffers in the modeling process. As described in DNR's 1997 *Habitat Conservation Plan*, interior-core buffers are intended to protect and aid in the natural restoration of riparian processes and functions. Exterior buffers serve a different function, to protect the integrity of interior core buffers from damaging winds. This distinction is not expressed in the analysis.

Comment Summary: 130

Subject Area: Riparian

Issue: Efficacy of Riparian Buffers

Commenters questioned a principle working hypothesis for the OESF riparian conservation strategy, which is that because mass-wasting and windthrow exert the greatest short- and long-term influences on restoring habitat complexity, buffers that are designed to minimize these effects will be sufficient to protect other key physical and biological functions of riparian systems. Commenters also questioned the starting assumption in the 2010 DEIS which is based on this hypothesis: that additional interior-core buffers, beyond those already deferred from timber harvest and not adversely impacted by wind, are not necessary to restore habitat complexity. Commenters says that this assumption may not meet any of the 1997 *Habitat Conservation Plan* riparian conservation strategy objectives. Under a strict application of the hypothesis, hundreds of fish-bearing stream segments in the OESF that contain no mass-wasting hazard zones would not receive an interior-core buffer.

Comment Summary: 131

Subject Area: Riparian

Issue: Inadequate Riparian Buffers

A review of 87 timber sales conducted in the OESF between November 2004 and June 2010 was provided as evidence of inadequate riparian buffers under current implementation of the 1997 *Habitat Conservation Plan* (OFCO 2007). Interior-core buffers averaging 0 to 20 feet were applied, which do not meet the requirements of the 1997 *Habitat Conservation Plan* or the Incidental Take Permit. Commenters feel that exterior wind buffers were not properly applied, nor were exterior wind buffers applied prior to a 2005 compliance review. Subsequent total buffer width was unchanged; the buffers were merely relabeled in order to appear compliant with the 1997 *Habitat Conservation Plan*. Buffers widths were dramatically less than the expected average width described in the 1997 *Habitat Conservation Plan*, and thinning harvest prescriptions extended to either the last row of trees or the harvest edge.

Commenters point out that DNR is required to provide accurate and complete mapping of all waters prior to approving forest practice permits, and currently fails to enforce or comply with the physical criteria for determining Type 4 and 5 waters as outlined in the 1997 *Habitat Conservation Plan*. As a result, adequate riparian buffer protection has not been provided.

Comment Summary: 132

Subject Area: Riparian

Issue: Extensive Riparian Buffers

Commenter says that under the No Action Alternative, the majority of the OESF is managed under scenario C or D (84 percent by area). Since these scenarios incorporate extensive riparian buffers, very little of the OESF could be considered unzoned, which is contrary to the twelve-step process.

Comment Summary: 133

Subject Area: Riparian

Issue: Riparian Inventory

Commenter asks, does DNR have a riparian inventory, and if so, was it conducted using ground sampling or remote sensing?

Comment Summary: 134

Subject Area: Riparian

Issue: Projected Level of Detectable Impacts

Commenters expressed concern over the level of detectable impacts predicted under the No Action and Landscape Alternative. The conclusions presented in the 2010 DEIS that nearly every Type 3 watershed is predicted to experience detectable impacts to at least one indicator of riparian function under the Landscape Alternative (97 percent), and to a lesser degree, under the No Action Alternative (77 percent), appear to guarantee adverse impacts under either alternative. In light of the level of detectable impacts, comments questioned why only two alternatives were considered, and how this level of impact could be considered negligible.

Commenters feel that the projected impact levels are in conflict with 1997 *Habitat Conservation Plan* requirements and riparian conservation strategy objectives. Namely, that the OESF shall be managed to maintain and aid restoration of the composition, structure, and function of aquatic, riparian, and associated wetland systems which support aquatic species, populations, and communities; maintain and aid restoration of the physical integrity of stream channels and floodplains; maintain and aid restoration of water quantity, quality, and timing with which these stream systems evolved; maintain and aid restoration of the sediment regime in which these systems evolved; and develop, use, and distribute information about aquatic, riparian, and associated wetland-ecosystem processes and on their maintenance and restoration in commercial forests.

Comment Summary: 135

Subject Area: Riparian

Issue: Frequency of Riparian Harvest

Commenter points out that there is no indication of the frequency of riparian harvest. Multiple entry harvests during a rotation are contrary to 1997 *Habitat Conservation Plan* requirements that exterior buffers within a landscape planning unit will not be harvested a second time until the conservation objectives of the riparian strategy are met in that landscape planning unit (1997 *Habitat Conservation Plan* p. IV.117). Multiple harvest entries in riparian zones could adversely affect the attainment of desired future conditions, alter the timing and quality of large woody debris input, and impact water quality.

Comment Summary: 136

Subject Area: Riparian

Issue: Ownership Criterion

Commenter expressed concern that no evidence was provided to support the restriction of the analysis of riparian function to Type 3 watersheds in which DNR manages more than 20 percent of the land base. Commenter believes that the extent of DNR management, as a percent of the watershed area, may not be an accurate reflection of the extent of the riparian network under DNR management. DNR may manage less than 20 percent of the watershed, but more than 20 percent of the stream length. The impact analysis therefore arbitrarily excludes portions of the riparian network where significant impacts could conceivably occur.

Comment Summary: 137

Subject Area: Riparian

Issue: Aggregation of Riparian Indicators

Commenters expressed concern over the method of aggregating riparian indicators in order to draw conclusions about probable significant adverse environmental impacts. A suite of riparian indicators were evaluated and their respective projected impacts were averaged first across all time periods and then together. Commenters questioned the validity of this methodology, and expressed that a simple averaging of indicators tends to improperly minimize impacts and reflects neither the actual range of impacts nor their frequency. Short-term, large-magnitude impacts are masked using this methodology.

Commenters also expressed concern over the methods used to assess adverse environmental impacts. Several riparian indicators (large woody debris recruitment, leaf and needle litter recruitment, microclimate, and windthrow) were measured against current conditions; others were measured against a minimum threshold (stream shade) or maximum threshold (peak flow). Several comments believe that simply maintaining current conditions is inconsistent with the 1997 *Habitat Conservation Plan* objectives of maintaining or aiding restoration of riparian function. Riparian areas may currently be in a degraded condition, and therefore unsuitable for use as a benchmark for measuring impacts. Other commenters suggested the use of regulatory thresholds, or an examination of unharvested riparian areas as a basis for establishing reference conditions.

Commenters feel that measurable objectives used to evaluate the alternatives are weak in terms of their ability to indicate ecologically meaningful change. Maintaining and increasing the recruitment potential for large woody debris and shade associated with riparian systems is definitely desirable. However, current levels are so much lower than historic levels (especially for large woody debris) that an increase alone will not be ecologically meaningful. Significant increases are necessary to restore ecological function, which is the intent of the provision in the first place. Commenters expressed that it would be helpful to define future targets toward which increases can be assessed. An example would be to use NOAA's "Stream Habitat Objectives for Properly Functioning Conditions" of more than 80 pieces per mile greater than 24 inches in diameter and more than 50 feet in length. These could be used as interim targets until the science needed to define specific long-term targets is acquired.

Commenters believe that the thresholds chosen for "potential adverse environmental impacts" and "probable significant adverse environmental impacts" to riparian function were not adequately discussed or substantiated. A threshold of 10 percent of the theoretical maximum impact level was used in the riparian analysis to determine whether projected impacts were significant. It was unclear why this particular level was chosen or how it relates to in-stream conditions. No data was provided to validate the conclusion that collectively, the level of impact is negligible since relatively few Type 3 watersheds were projected to experience probable significant adverse environmental impacts to more than one or two indicators of riparian function at a time.

Comment Summary: 138

Subject Area: Riparian

Issue: Incomplete or Inaccurate Mapping of the Stream Network

Commenters expressed concern that the extent of the riparian network as mapped is inadequate. The discussion of variations in mapped headwater stream density is misleading and misrepresents the known distribution of stream channels across the OESF.

Commenters say that current maps of the stream network lack the resolution necessary to accurately depict the extent and location of headwater (Type 4 and 5) streams. The foundation of the analysis of riparian function presented in the 2010 DEIS rests on the assumption that the type and location of stream channels are known. Inaccuracies in current maps of the stream network have implications for timber sale and harvest unit layout, and until current maps are replaced, any analysis related to the potential impacts to aquatic resources in headwater streams is invalid.

Commenters point out that current stream maps mistype many Type 4 waters as Type 5 waters. Many, if not most, of the Type 5 waters located on state trust lands (including the OESF) meet the physical criteria for Type 4 waters. Studies of perennial flowing non-fish bearing waters (Type Np) in eastern and western Washington indicated the extent of these waters is dramatically underestimated (Palmquist 2005, Pleus and Goodman 2003). The majority of the channels identified in the studies were greater than two feet wide nearly all the way to the perennial initiation point, and in many cases to the channel head.

Since the width of the required riparian buffer is based on stream type, inaccurate stream typing has broad implications for the adequacy of habitat conservation measures. Type 4 and 5 waters should be upgraded in order to address inadequacies in typing and extent as shown on current maps of the stream network.

The 10-meter digital elevation model (DEM) lacks the resolution to accurately depict the extent and location of headwater (Type 4 and 5) streams. Current maps of the stream network, as derived from the 10-meter DEM, are inadequate.

Commenters say that DNR's current stream maps were largely generated and updated from a Cooperative Monitoring Evaluation and Research (CMER) study that attempted to model the extent of fish habitat. Comments expressed concern over CMER's methods used to calculate channel gradient, one of four variables used in their fish habitat model, and by extension, call the suitability of current maps of the stream network into question. Channel gradient was calculated using a 10-meter digital elevation model (DEM). However, a 10-meter DEM is unable to detect subtle changes in topography often encountered in the Puget Sound lowlands and the foothills surrounding the Olympic Mountains and was considered too coarse and inaccurate for the Washington Forest Practices Board to adopt as rule under the 2006 *Final EIS for the Proposed Issuance of Multiple Species Incidental Take Permits or 4(d) Rules for the Washington State Forest Practices Habitat Conservation Plan.*

Commenters supported efforts to develop updated maps of the stream network using improved data and analysis techniques, such as hydrological models incorporating high-resolution, remotely-sensed data of the ground surface (LiDAR – light detection and ranging). DNR was encouraged to update stream maps across all forest lands covered under the 1997 *Habitat Conservation Plan* using LiDAR. Additional comments suggested the development of a synthetic stream layer using basin area and gradient to define stream types for modeling purposes. Such a model would also be useful in modeling the location of Type 2 streams, few of which are mapped although many streams meet the physical criteria.

Comment Summary: 139

Subject Area: Riparian

Issue: Discrepancies in the Estimation of the Extent of Type 5 Waters

Commenter says that a summary of stream miles by water type on DNR-managed lands provided in the 2010 DEIS shows that Type 5 waters comprise 1,720 out 2,777 total miles of mapped streams (62 percent). An unpublished, working draft of the document, released under a public disclosure request, estimated that Type 5 waters constitute about 40 percent of the actual stream miles on the OESF. The 2010 DEIS does not describe what changes were made to the DNR's stream layer to account for the discrepancy between these estimates.

Comment Summary: 140

Subject Area: Riparian

Issue: Wetlands

Commenter says that a more complete discussion of wetland functions, values, biological integrity, and current protection measures is merited. Wetlands play a greater ecological role than their areal extent on the landscape might lead one to believe. Small wetlands are especially vulnerable, and if untyped, are incorrectly thought to have no connection to fish-bearing waters.

Comment Summary: 141

Subject Area: Riparian

Issue: Discussion and Analysis of Riparian Indicators

A suite of indicators was used to assess riparian function within Type 3 watersheds. Commenter says that while each was discussed in general terms, no discussion was provided of their importance to aquatic or listed species. Each parameter was examined as an end to itself, not as an indicator of the health of the aquatic community.

Moreover, analysis of these indicators indicates that many Type 3 watersheds are currently impaired. However, each indicator was analyzed individually and an assessment of the overall, current watershed health based on all the indicators was not conducted.

Comment Summary: 142

Subject Area: Riparian

Issue: Experimentation

Commenters supported silvicultural experimentation within the OESF and expressed concern that extensive deferral of harvest, in riparian areas for example, would limit experimentation.

Comment Summary: 143

Subject Area: Riparian

Issue: Estimation of Bankfull Width

An equation for predicting bankfull width as a function of contributing basin area was presented in Appendix C, page 63. Commenter points out that neither the method used to develop the equation, nor the source of the data or the statistical significance of the relationship was described. A review of the quality of this equation is not possible without additional information.

The equation predicts bankfull width will exceed two feet for a two acre contributing basin. This equation suggests current maps of the stream network grossly underestimate the length of Type 4 streams. Commenter also noted that the applicable water typing system is based on ordinary high water, not bankfull width.

Comment Summary: 144

Subject Area: Riparian

Issue: Location and Type of Riparian Harvest

Commenter says that the location and distribution of different types of silvicultural management systems is unclear. The alternatives propose to use different levels of variable retention harvest (VRH) and variable density thinning (VDT) to meet management objectives. The differences in silvicultural intent and application between VRH and VDT have implications for short and long-term development of forest and in-stream habitat. Commenter feels that is difficult to discern exactly how much VRH is proposed

within riparian forests relative to VDT and how the two systems are distributed within watersheds and across the landscape over time.

Comment Summary: 145

Subject Area: Riparian

Issue: Large Woody Debris Input from Upslope Sources

Several commenters stressed the importance of landslides and debris flows as mechanisms for delivering wood from hillslopes and headwater streams to downstream, fish-bearing waters. Due to its steep terrain, structurally weak parent material, and abundant rainfall, the OESF is predisposed to such processes. Commenters point out that these contributions were not included in the analysis of riparian function.

Comment Summary: 146

Subject Area: Riparian

Issue: In-stream Assessment of Large Woody Debris

Commenter says that current riparian conditions form the baseline for management activities to aid natural restoration of riparian systems on DNR-managed lands in the OESF by maintaining and increasing the recruitment potential for large woody debris. However, the 2010 DEIS does not describe how DNR conducted a field-based assessment of the current condition of in-stream large woody debris or what criteria were used. Managing the riparian area using a model of large woody debris recruitment with little knowledge of baseline conditions does not account for the dynamic nature of the aquatic ecosystem. Commenter believes that without an adequate understanding of current in-stream conditions, a projection of future conditions is not possible.

Comment Summary: 147

Subject Area: Riparian

Issue: Methodology for Assessing Large Woody Debris Recruitment

Commenter says that the methods used to characterize riparian vegetation by size and species classes, as derived from the Watershed Analysis Manual, are insufficient for modeling differences in large woody debris recruitment through time.

Comment Summary: 148

Subject Area: Riparian

Issue: Large Woody Debris Recruitment Processes

Commenter expressed concern that there is no discussion of large woody debris recruitment processes and sources, such as mortality, windthrow, bank erosion, or mass wasting.

Comment Summary: 149

Subject Area: Riparian

Issue: Large Woody Debris Area of Analysis

Several commenters were concerned about limiting the analysis of large woody debris recruitment to the area within 100 feet of a stream, and questioned the methodology of the studies upon which this source distance was based. They feel the studies did not account for episodic input of large woody debris from disturbance events such as landslides, debris flows, and fire; nor were stream reaches influenced by upslope sources examined. Results from studies showing woody debris input from greater distances were not incorporated. Commenters feel that the assumption that all wood comes from within 100 feet of the channel is incorrect, and the potential effectiveness of plans and policies based on it are questionable. Riparian tree species such as Sitka spruce typically reach heights of 225 to 250 feet at maturity, and in some cases may reach heights in excess of 300 feet.

Commenters feel that the analysis does not fully account for large woody debris recruitment, does not ensure the maintenance of existing potential, may perpetuate the degraded or poor condition of many stream and river ecosystems in the OESF, and does not support the stated objective to aid the natural restoration of riparian systems.

Comment Summary: 150

Subject Area: Riparian

Issue: Riparian Harvest Impacts to Large Woody Debris Recruitment

Comments questioned the conclusion that the general trend in the potential for large woody debris is positive over time under both alternatives, indicating an increase in the potential for large woody debris input. They believe that harvest in the riparian area is contrary to this conclusion. At the least, harvest should be restricted to thinning from below. According to the analysis presented, channel sensitivity across the OESF is highest for large woody debris input. This sensitivity rating, coupled with the current low potential for the recruitment of large conifers in many riparian stands, underscores the importance of increasing the retention of large conifers in the riparian area along all stream types, regardless of stream gradient.

Commenters point out that removal of trees from the riparian area results in a reduction of large woody debris in the stream channel. They feel that the OESF objective of maintaining and increasing the recruitment potential for large, woody debris associated with riparian systems will be compromised if the large trees that create key pieces of wood in debris jams are not left in the riparian areas of all streams (Type 1 through 5). Downed wood in riparian areas that does not enter the stream channel can function to impede movement of finer sediments into streams and thus prevent adverse effects to fish and their habitat.

Comment Summary: 151

Subject Area: Riparian

Issue: Large Woody Debris Scale of Analysis

Commenter points out that a single large woody debris recruitment potential score was assigned to the entire riparian area within each Type 3 watershed by calculating an area-weighted sum of stand-level scores. Commenter says that this method does not account for site-specific impacts or impacts at a scale important to the riparian biota.

Comment Summary: 152

Subject Area: Riparian

Issue: Large Woody Debris Recruitment Targets

DNR's 1997 *Habitat Conservation Plan* concluded that a 150 foot buffer will provide 90 percent of the natural level of in-stream large woody debris for Type 1 and 2 streams. Commenter says that this implies a target of 90 percent of natural large woody debris for these stream types, since the expected average width of the interior core buffer is 150 feet.

Comment Summary: 153

Subject Area: Riparian

Issue: Leaf and Needle Litter Recruitment Area of Analysis

The commenter is concerned that the analysis of leaf and needle litter recruitment inappropriately excludes areas which contribute nutrient input. The selection of the source distance used in the analysis is attributed to a recommendation from the 1993 Forest Ecosystem Management Assessment Team report (FEMAT 1993). However, the 2010 DEIS incorrectly equates FEMAT's use of one-half tree height with 75 feet. The site potential tree height for the OESF is not 150 feet. Commenter feels that an analysis of only the first 75 feet from the channel margin is inconsistent with the working hypothesis of the 1997 *Habitat Conservation Plan*, that sufficient forest-generated nutrients will be supplied from the area of interior-core buffers (100 to 150 feet, depending on stream type) to maintain nutrient delivery to streams.

Commenter believes that the analysis of leaf and needle litter recruitment does not incorporate nutrient delivery and routing from Type 5 streams, which make up the majority of the stream network. This is inconsistent with the 1997 *Habitat Conservation Plan* objectives of protecting, maintaining, and aiding the natural restoration of riparian systems on DNR-managed lands in the OESF.

Comment Summary: 154

Subject Area: Riparian

Issue: Microclimatic Recovery and Stand Development

Commenter points out that the analysis of riparian microclimate assumes that impacts occur only during the Ecosystem Initiation Stage of stand development. More complex stages are assumed to have properly functioning microclimate. Commenter feels that this assumption is unsubstantiated.

Comment Summary: 155

Subject Area: Riparian

Issue: Attributes of Microclimatic Recovery

The analysis of riparian microclimate incorrectly equates shade recovery with microclimatic recovery. The riparian microclimate includes a suite of climatic attributes, such as patterns of shortwave radiation, shade, vertical and horizontal air temperature gradients, soil moisture and temperature, air movement, and wind speed. Several authors are either incorrectly or selectively cited (Moore and other 2005) or misrepresented (Brown and Krygier 1970; Harris 1977; Harr and Fredriksen 1988).

Comment Summary: 156

Subject Area: Riparian

Issue: Rate of Shade Recovery

The commenter is concerned that the analysis of riparian microclimate does not account for differing rates of shade recovery in various vegetation zones. Recovery is slower in the higher elevation Pacific silver fir zone, for example, than in the lower Coast Range western hemlock zone or the Cascade Mountains western hemlock zone. Commenter believes that the analysis selectively and improperly cites rates of shade recovery for lower elevation vegetation zones. Shade recovery is not restored in all forest types within 10 years as implied in the 2010 DEIS. In addition, shade recovery depends not only on vegetation growth, but on stream width. Narrow streams should recover more rapidly than wider streams.

Comment Summary: 157

Subject Area: Riparian

Issue: Shade Scale of Analysis

Commenter points out that stand-level shade values were averaged at the Type 3 watershed scale. Commenter feels that this is an inappropriate method for determining shade impacts and compliance with water quality standards. Temperature impacts can occur at the stream reach scale, which is also the scale used for 303(d) listing.

Comment Summary: 158

Subject Area: Riparian

Issue: Shade Targets

Commenter believes that statements provided in the 2010 DEIS about the amount of adequate shade are subjective and without context. The analysis of riparian shade includes few details on how the modeling was conducted. Neither the specifications for adequate shade nor their relationship to the 1997 *Habitat Conservation Plan* are clear.

Commenter points out that referenced shade targets in WAC 222-30-040 are not part of the 1997 *Habitat Conservation Plan* and therefore do not apply, nor have they been validated to comply with Washington

state water quality standards. The forest estate model projections for riparian shade utilize shade targets which are based upon elevation and outdated Washington state water quality standards. These water quality standards are no longer applicable, which is especially important to consider in areas where temperature sensitive species, such as bull trout, are present.

Comment Summary: 159

Subject Area: Riparian

Issue: Shade Area of Analysis

Commenter points out that the analysis of riparian shade examines areas within 75 feet of Type 1 through 4 waters. Commenter feels that the rationale provided for determining this distance does not appear to be consistent with the 1997 *Habitat Conservation Plan,* in which interior-core buffers of 100 to 150 feet were expected to be sufficient to provide 80 to 100 percent of stream shade.

Comment Summary: 160

Subject Area: Riparian

Issue: Shade and Temperature Sensitivity

Commenter says that certain streams, including many smaller streams, are especially sensitive to removal of riparian shade, which may result in increased temperatures in downstream waters. New tools such as NetMap (Benda and others 2007) are available to identify temperature sensitive streams and could be used to ensure appropriate shade levels are maintained. The Landscape Alternative appears to treat all streams as equally sensitive.

Comment Summary: 161

Subject Area: Riparian

Issue: Projected Level of Impacts to Stream Shade

Comments expressed concern over the number of Type 3 watersheds with a projected potential adverse environmental impact to stream shade, as shown in Chart 3-44 (page 154). The Landscape Alternatives shows an order of magnitude increase in the number of Type 3 watersheds with an observed potential adverse environmental impact to stream shade compared to the No Action Alternative in the sixth decade. Commenter says that it is unclear how this is consistent with 1997 *Habitat Conservation Plan* conservation objectives.

Comment Summary: 162

Subject Area: Riparian

Issue: Methodology Used to Assess Windthrow

Commenters expressed several concerns over the methodology used to assess windthrow impacts to riparian function:

(1) The modeling approach does not account for severe, but normally occurring, windstorms.

(2) Only the first 25 meters from a forest opening were examined, which does not account for all normally occurring windthrow. A review of a recent timber sale, showing extensive post-harvest windthrow in excess of 25 meters from the forest edge, was provided as evidence of the inadequacy of this distance threshold.

(3) The model was neither calibrated nor validated for the OESF.

(4) Windthrow of deferred habitat was not considered which might result in significant differences between predicted versus resulting stand and habitat conditions.

(5) The timing and quality of large woody debris inputs provided by windthrow in more open canopy will be altered by harvest entry. The analysis of windthrow impacts should not be limited to regeneration harvests alone.

Comment Summary: 163

Subject Area: Riparian

Issue: Windthrow Effects on Riparian Function

Commenters feel that the effects of windthrow on each indicator of riparian function need to be considered, especially large woody debris recruitment potential, sediment control, and stream bank stability. Windthrow-related edge effects to riparian indicators would be expected, such as changes in riparian overstory, species composition, size, and density which all affect large woody debris recruitment potential.

Commenters expressed concern over the characterization of windthrow as beneficial to long-term large woody debris recruitment, and points out that large woody debris recruitment potential is adversely impacted by windthrow.

Comment Summary: 164

Subject Area: Riparian

Issue: Windthrow Modeling Constraint

Commenters expressed concern over the lack of an explicit modeling rule (constraint) for windthrow potential in the forest estate model and questioned the assumption, stated in Table 2-4 of the 2010 DEIS, that by constraining large woody debris recruitment potential and riparian shade potential, the risk of windthrow is addressed.

Comment Summary: 165

Subject Area: Riparian

Issue: Misleading or Incorrect Presentation of Windthrow Impacts

Commenters feel that the presentation of the windthrow impacts is misleading, and that the comparison of the extent of windthrow under the Landscape versus the No Action Alternative is incorrect. A review of Chart 3-50 shows approximately 4,470 acres of windthrow under the Landscape Alternative and 370 acres under the No Action Alternative when summed across all time periods. This indicates a level of windthrow 12 to 13 times higher under the Landscape Alternative, not five to six times, as reported in the 2010 DEIS.

The 2010 DEIS describes the net potential impact to the percent of the riparian area affected by windthrow as at or near 0.5 percent for the No Action Alternative and less than three percent for the Landscape Alternative. However, a review of Charts 3-50 and 3-52 indicates that 19 percent of the riparian area analyzed is projected to be affected by windthrow under the Landscape Alternative. Commenter says that this translates to over 450 miles of stream adjacent riparian habitat, a level of impact which is inconsistent with 1997 *Habitat Conservation Plan* riparian conservation objectives.

Commenter feels that the method used to determine windthrow impacts is incorrect. As the model constrains windthrow to within 25 meters of the forest edge, the projected windthrow should be reported as a percent of this area, not of the entire riparian area. Moreover, commenter believes that the analysis fails to report which portion of the riparian buffer (interior-core or exterior wind buffer) is impacted.

Comment Summary: 166

Subject Area: Riparian

Issue: Large Woody Debris Recruitment Potential

Commenter asks, what is large woody debris recruitment potential? Is it a measure of restored potential?

Comment Summary: 167

Subject Area: Riparian

Issue: Habitat Restoration

Commenters believe that neither the No Action nor the Landscape Alternative could be considered a habitat plan. Instead, commenters believe that both alternatives are harvest management plans that will result in near-term aquatic impairment and will not help in the restoration or conservation of aquatic function or salmon. Commenter says that no predictions of near-term recovery are made for any stream in the OESF and no specifics are provided as how to achieve long-term improvement in riparian and in-stream habitat. Commenters expressed a desire for a forest land plan that follows a timeline for restoration of habitat more conducive to salmon recovery and survival.

Comment Summary: 168

Subject Area: Riparian

Issue: Interpretation of Results

Commenters question the conclusion that the overall adverse impacts are less under the Landscape Alternative, saying that this conclusion is contrary to several charts presented elsewhere in the document (charts 3-36, 3-39, 3-44, 3-48, 3-52, 3-53, and 3-57). Commenters requested clarification on the interpretation of Charts 3-56 (Net Potential Impact to Peak Flow above the Ten Percent Detection Limit, by Alternative) and 3-57 (Number of Type 3 Watersheds with a Potential Adverse Environmental Impact to Peak Flow above the Ten Percent Detection Limit), which appears contradictory.

Comment Summary: 169

Subject Area: Roads

Issue: Costs

Commenters questioned whether the costs for road construction and maintenance were included in the financial analysis summarized in the 2010 DEIS, Table ES-2, and how these costs would affect net revenue. Since the 2010 DEIS says that "significant financial investments are needed" to bring roads up to forest practice standards, commenter feels that the financial analysis is incomplete without inclusion of these costs.

Comment Summary: 170

Subject Area: Roads

Issue: 1997 *Habitat Conservation Plan* Objectives

The commenter says that the 2010 DEIS does not address the comprehensive road maintenance plans described in the 1997 *Habitat Conservation Plan*, specifically objectives 5 and 6, and does not analyze the projected need for roads over the long term and then use that information to minimize the total road density in each watershed. The commenter cites a specific road density (2.5 miles per square mile) as optimum per the 1997 *Habitat Conservation Plan* (which cites Cederholm and Reid 1987), and provides analysis showing that current road densities are higher than this level and that the amount of new road construction exceeded levels of abandonment and decommissioning between October 2004 and July 2010. The commenter says that bringing roads up to forest practices standards is not meeting the higher standards for state trust lands (1997 *Habitat Conservation Plan* standards) because it does not meet 1997 *Habitat Conservation Plan* comprehensive road maintenance plan objectives 5 and 6.

Comment Summary: 171

Subject Area: Soil

Issue: Data Error

Commenter points out that there appears to be a number of errors in the 2010 DEIS regarding the measurement of background sediment rates displayed in Chart 3-74 (p. 204). The analysis of background

erosion rates against which the projected road erosion sediment delivery is evaluated is not presented. Currently, the background erosion rate is high and needs to be recalculated. The 2010 DEIS stated that the background sediment delivery is two orders of magnitude greater than that delivered by roads. Commenter would like accurate background sediment delivery rates.

Commenter believes that excess delivery of sediment is the greatest threat to water quality and has increased in recent years due to storm events. Commenter feels that, because both alternatives are projected to double the delivery of road-related sediment to streams, DNR should be looking for opportunities to reduce the size of the road system. In addition, commenter says that, as currently written and modeled, the 2010 DEIS depicts an increasing trend of road related sedimentation (see Charts 3-73 and 3-74). It is unclear how increasing road-related surface erosion from current levels complies with either DNR's 1997 *Habitat Conservation Plan* or the Forest Practices *Habitat Conservation Plan* (DNR 2005). Commenter points out that the incidental take permit (NMFS 1999) clearly says, "The extent of take associated with road impacts is difficult to quantify but is expected to gradually lessen in severity and frequency as older roads are upgraded and new roads are better constructed and maintained."

Commenter also points out that the soils section is missing descriptions of the methods used to develop background and road use sediment delivery potential and only includes a conclusion. The estimates included in Chart 3-66 do not include road use, which the commenter feels is misleading because DNR describes all sub-watersheds as having a low delivery potential for road use when it was not modeled. Commenter would like this section to be rewritten.

Comment Summary: 172

Subject Area: Soil

Issue: Cooperative Monitoring, Evaluation, and Research Committee (CMER) standards

Commenter points out that each sub-watershed was assigned a qualitative rating based on sediment delivery from the existing road network (without traffic) relative to CMER standards, but that it is unclear what CMER threshold is being referred to on p. 201 of the 2010 DEIS. CMER standards specify ten tons of sediment per stream mile, per year within each sub-watershed as the maximum amount of sediment that may be delivered to a stream without causing a probable significant adverse environmental impact to water quality, stream morphology, and fish populations. However, this conclusion is not cited. Commenter notes that the "old road" performance target for tons per year per mile varies depending on zone. In western Washington, there are two separate zones for performance targets: the Coastal Zone and the West of Crest zone. Therefore, if these performance targets were to be used, they would be different for different parts of the OESF. Furthermore, commenter says that citing a CMER work plan as the "target" also seems inappropriate and the work plan being cited is no longer available at the website for review.

Commenter says the 2010 DEIS acknowledges that numerous sub-watersheds have the potential to exceed CMER standards for road sediment delivery, and that a number of Type 3 watersheds have projected road sediment impacts that exceed the "high" delivery class of 10 tons per stream mile per year. The 2010 DEIS says that the road related sediment inputs are projected to double under both alternatives

and Chart 3-7 shows both the No Action and Landscape alternatives contributing more than 10^4 tons per stream mile per year.

Comment Summary: 173

Subject Area: Soil

Issue: Model and methods for determining background sediment levels

Commenter says that it is unclear, based on the written description in the main body of the 2010 DEIS and Appendix C, what basic erosion rates were used in the Washington Road Surface Erosion Model (WARSEM). If DNR is going to compare road versus background rates, then the "basic erosion rate" within the WARSEM needs to be adjusted or calibrated from the default. Commenter points out that the text on page 68 of Appendix C is also confusing; it says, "During active haul, roads were assumed to be maintained to new road standards and monitored for water quality. Therefore the delivery estimates from the WARSEM model were constrained to less than 10 tons per stream mile within each sub-watershed (CMER 2010)." The 2010 DEIS (page 201) says, "Using the Washington Road Surface Erosion Model, sediment delivery potential was assessed in each sub-watershed resulting from log truck traffic associated with DNR timber removal." Commenter feels this approach is inappropriate since it does not account for all log truck traffic on DNR-managed lands. In addition, the modeling description included in Appendix C does not provide sufficient information to determine whether the actual or a modeled road network was used in the surface erosion model. For example, Appendix C of the 2010 DEIS says, "Unless otherwise known, the default ditch length was 200 feet," implying that at least a portion of the road network was synthesized. Commenter feels that these conclusions are misleading and need to be clarified in the document.

Comment Summary: 174

Subject Area: Soil

Issue: Root Strength Loss

Commenter feels that the assessment of potentially unstable slopes beyond watershed analysis level one is noticeably lacking in the proposed analysis. Commenter asks, why are landslide hazards/risk not explicitly considered in the assessment of potential environmental impacts? The soils impact assessment section glosses over the problem of shallow landsliding and the role of post-harvest changes in root reinforcement on slope stability in steep forested terrain. This is of particular concern in that "up to 50 percent of the acres within a single Type 3 watershed could be harvested in a single decade." Commenter feels that it is not credible to argue that the potential for large portions of individual watersheds to be simultaneously in a state of low root strength would not create a significant potential for adverse impacts to these watersheds. Commenter asks, how can a document intended to address the landscape scale effects of a forest plan not address the role of root strength loss following timber harvest?

Comment Summary: 175

Subject Area: Soil

Issue: Sediment Delivery

The 2010 DEIS (page 203) says, “While the total road and traffic sediment inputs in a number of Type 3 watersheds exceed the ‘high’ delivery class threshold of ten tons per stream mile per year, the rate of sediment input is relatively low compared to the background levels.” Commenter feels that these conclusions are misleading and recommends re-modeling and re-writing the entire soils section for sediment delivery from roads.

Also, commenter says that using only tons per stream mile ignores the other two performance targets. None of these performance targets have been validated as to whether they comply with state water quality standards.

Comment Summary: 176

Subject Area: Soil

Issue: Erosion Rates

Franklin and Dyrness (1973) include a generalized vegetation map of Oregon and Washington. The commenter says that this map was digitized by DNR at the 1:2,000,000 scale during the emergency stream typing era for Type N streams. Commenter feels it is unclear whether this map has applicability to defining performance targets for the OESF. The commenter did a quick GIS exercise and found that 46,600 acres fell outside of the spruce zone.

The commenter also reviewed the previous background erosion work conducted by DNR (Jaross 2009a, 2009b) and compared the estimated background erosion rates by watershed administrative unit depicted in Slide 17 (Jaross 2009b) to the proportion of the watershed administrative unit contained within the mapped spruce zone (DNR 2001). The average background erosion rates for watershed administrative units entirely contained within the spruce zone were only 55 percent of the rates for watershed administrative units with a portion of their area outside of the spruce zone. The highest background rate occurred in the watershed administrative unit with the least amount of area within the spruce zone.

Comment Summary: 177

Subject Area: Soil

Issue: Risk of Sediment Delivery

Commenter asks, if DNR does not know the spatial distribution of the channel network, how can DNR accurately perform the calculation? How does this compare to stream density?

Comment Summary: 178

Subject Area: Soil

Issue: Scale of Analysis

The 2010 DEIS assesses the risk of erosion, compaction, and displacement, plus the risk of sediment delivery. The commenter points out that the scale is the Type 3 watershed level and it appears that sediment effects, given the nature of sediment transport in streams, are underestimated because Type 5 streams are ignored. Almost 30 percent of the watersheds have a high sediment delivery potential. Table

3-55 on page 194 reports on a different measure but gives a similar result stating 30 percent of the assessed acres have a high sediment delivery potential. This is without assessing the sediment delivery potential of 62 percent of the stream miles (Type 5 watersheds). Commenter feels that effects assessed in this section are likely underestimated.

Comment Summary: 179

Subject Area: Stream Channel Assessment

Issue: Linkage to Channel Geomorphic Units and Incorporation of In-stream Conditions

Commenter points out that the stream channel assessment, based on remotely-sensed data on confinement and gradient classes, is insufficient for ranking stream channel condition as described in Table ES-1 (page 7). Multiple stream types with different sensitivities can occur within and between gradient and confinement classes. Sensitivities are directly linked to channel geomorphic units, not gradient and confinement. Commenter says that identification of the differences in channel processes and sensitivities is one of the major goals of the channel assessment component of a watershed analysis. Commenter believes that the channel analyst must interpret the dominant channel- and habitat-forming processes, and determine the stream segment's sensitivity to each input variable. Commenter says that a generic sensitivity analysis based solely on gradient and confinement provides no direct linkage between the inputs and these processes at the site or stream segment level. Moreover, an assessment based strictly on gradient and confinement completely disregards fish habitat-forming processes, another key goal of any channel assessment.

In addition, commenter points out that no information about in-stream conditions is actually integrated into the assessment. Although the use of gradient and confinement classes does offer a solid foundation for such analyses, the lack of any field-verification of in-stream large woody debris abundance is problematic, especially considering the acknowledgement in the 2010 DEIS that "deficiencies in large woody debris in key stream segments are responsible for the greatest limitations to salmonid habitat potential across state trust lands in the OESF" (page 220). Management actions conducted under the Landscape Alternative are acknowledged to lead to declining large woody debris abundance in some Type 3 watersheds; yet, these potential adverse impacts, along with all other potential impacts, are apparently considered negligible. Commenter wonders how this is justified.

Comment Summary: 180

Subject Area: Stream Channel Assessment

Issue: Discrepancies with or Failure to Incorporate Other Published Information and Sensitivities to Large Woody Debris

Commenter says that the 2010 DEIS cited numerous watershed analyses as a basis for the development of ratings of stream channel sensitivity to various geomorphic inputs (large woody debris, fine sediment, coarse sediment, peak flow). However, the channel sensitivity ratings presented in the 2010 DEIS are inconsistent with the cited watershed analyses. Coho (1995) and Jackson (1996) contain no direct channel sensitivity ratings that can be directly integrated into the 2010 DEIS.

Commenter points out that the Sekiu Coastal Watershed Analysis is incorrectly cited as Lautz (2001); the channel assessment for this watershed was conducted by Perkins (2001). The sensitivity ratings contained in Perkins (2001) and Sasich and Dieu (1995) are substantially different than those presented in the 2010 DEIS for many of the channel gradient and confinement classes. Of particular importance are the channel sensitivity ratings for high gradient streams (greater than 20 percent slope). The 2010 DEIS assigned a low sensitivity rating to all confinement classes for all geomorphic inputs. However, Sasich and Dieu assigned a moderate sensitivity rating for high peak flow events if bank erosion and hillslope undercutting could occur, and a moderate sensitivity rating for large woody debris input in areas where it was performing a structural function.

Commenter says that the 2010 DEIS failed to incorporate data or analysis of current channel conditions available from numerous sources (Currence 2001, Cederholm and Scarlett 1997, De Cillis 2002, Haggerty 2004a, Haggerty 2004b, Haggerty and others 2009, Kennard 1999, Martin 1995, McHenry and others 1994, McHenry 1999, McHenry 2002). Several of these sources include comparative channel sensitivity ratings (high, moderate, low) which are substantially different than those in the 2010 DEIS.

Of particular importance is the difference in sensitivity to large woody debris input for low (less than 2 percent) and high (greater than 20 percent) gradient channels. The 2010 DEIS assigned a low sensitivity to unconfined streams of less than 1 percent gradient. No similar rating is found in the cited or un-cited assessments.

Also of concern is the low sensitivity rating for large woody debris input assigned to high gradient channels, whereas all other cited or un-cited assessments assigned either a moderate or, conditionally, a low rating. Commenter says that this rating neither reflects nor measures the critically important role that large woody debris plays in these streams. Although the effect of large woody debris on channel-forming processes is less in high gradient streams than in low gradient streams, it is nonetheless extremely important to the biological integrity of the aquatic community, primarily organisms that rely upon the functions of sediment storage, pool formation, and refuge provided by large woody debris. Large woody debris recruited to higher gradient streams is also an important source of large woody debris in lower gradient streams. Steeper, more highly dissected watersheds will likely have a greater proportion of wood coming from upslope areas than those with lower gradients.

Commenters also point out a seeming contradiction in the 2010 DEIS between what was stated, and what was presented for the sensitivities of low and high gradient streams to large woody debris.

Comment Summary: 181

Subject Area: Stream Channel Assessment

Issue: Scale of Analysis-Ranking Concerns

Commenter believes that aggregating reach-level stream channel sensitivity ratings to the Type 3 watershed scale is inappropriate, and that channel sensitivities should be broadly assigned at the geomorphic unit level, and then adjusted to the stream reach level. Furthermore, the commenter believes the methodology presented in the 2010 DEIS is flawed in that the low sensitivity rating assigned to high gradient channels (greater than 8 percent slope) unduly biases the watershed sensitivity rating. Watersheds with the greatest proportion of steep headwater channels are rated as the least sensitive.

However, steep headwater channels, presumably draining potentially unstable slopes, tend to deliver disturbance-driven sediment loads rapidly to downstream channels, which may contain sensitive fish-bearing channels. Watersheds with the greatest proportion of headwater channels should therefore have the highest potential for adverse impacts to downstream channels. Instead, by averaging headwater and downstream channels, a low sensitivity rating is assigned. Commenter believes that steep headwater channels are incorrectly portrayed as contributing to watershed resilience, when in fact they serve to effectively pass the risk of disturbance to downstream channels.

Comment Summary: 182

Subject Area: Sustainable Harvest Level

Issue: OESF Harvest Level

Per the 2010 DEIS, the current annual disturbance level is roughly 900 acres per year. Commenter says the proposed 5,000 acres per year is over a 500 percent increase in the average disturbance level per year. In decade ten, the Landscape Alternative is close to a 1,000 percent increase. Commenter points out that both the No Action and Landscape alternatives predict around 1,400 acres per year of variable retention harvest. Commenter believes that, in practice, variable retention harvest has been a clear-cut with 8 to 10 trees per acre remaining. Commenter is concerned that a 1,400 acre clear-cut harvest level above the existing 900 acre harvest level is at least a 55 percent increase in clear-cuts. This increase in harvest is without deducting thinning acreage from the overall 900 acre harvest level. Commenters also expressed concern that additional harvests would occur in sensitive riparian areas.

Comment Summary: 183

Subject Area: Twelve-Step Watershed Assessment Process

Issue: Explanation of Process

The commenter requests an explanation of why the 1997 *HABITAT CONSERVATION PLAN* calls for a twelve-step analysis process, DNR procedures call for a six-step process, and the 2010 DEIS used a four-step process. In addition, commenter feels that fish use, stream channel conditions, and windthrow potential are not sufficiently analyzed.

Comment Summary: 184

Subject Area: Water Quality

Issue: Harvest Levels

Commenters believe that the Landscape Alternative poses a higher likelihood of potential impacts for both the inner and outer riparian zones in all time frames for the next 100 years. Commenters feel that the 2010 DEIS lacks specific management changes in response to ongoing water quality impacts from forest practices. DNR forest management objectives are revenue generation and habitat conservation; commenters ask, why does this statement ignore the protection of water quality? The 2010 DEIS says that "DNR complies with water quality standards" but there is no evidence that this is the case. Rather, forest practice prescriptions advocated by DNR both in this plan and in past plans (for example, the Forest Practices *Habitat Conservation Plan* (DNR 2005) simply do not protect all waters.

Comment Summary: 185

Subject Area: Water Quality

Issue: Clean Water Act

Commenter believes that the 2010 DEIS's failure to consider Type 5 waters as protected waters of the state, coupled with the failure of similar efforts to sufficiently protect Type 5 waters, means that neither alternative likely complies with the Clean Water Act. Commenters say that the Landscape Alternative will mean significantly higher harvest levels in riparian zones (inner and outer) and wetlands (Table 3-11, page 92). Commenter also believes that implementation of the Landscape Alternative means that Clean Water Act standards are not likely to be met. Commenter points out that approximately 10 percent of wetland acreage will be harvested in the first decade, which represents approximately an order of magnitude increase over current levels. Harvest in riparian zones (inner and outer) varies from three times greater to eight times greater in the first decade, where approximately three percent of the riparian inner zone and approximately 18 percent of the riparian outer zone will be harvested. Commenters say that a major effort to gather data to evaluate Washington's forest practices with respect to Clean Water Act requirements has been unsuccessful thus far (Ecology 2008) and it does not appear that serious efforts have been made to ensure that forest practices comply with the anti-degradation policy in particular (Hersh 2009). The commenter believes the No-Action Alternative is likely to result in far fewer impacts.

Commenter points out that the 2010 DEIS focuses on temperature, turbidity, and sediment, which falls into a common but incorrect formula regarding compliance with water quality standards, which is that the route to compliance means compliance with numeric water quality criteria only. Compliance with water quality standards requires more than avoiding violations of numeric water quality criteria. The purpose of water quality standards are to protect uses and the anti-degradation policy (WAC 173-201A-010 (1)). Commenter feels it to be highly unlikely that either alternative presented in the 2010 DEIS complies with Washington's water quality standards, as the level of protection provided is similar at best.

Comment Summary: 186

Subject Area: Wildlife

Issue: Forest Ecology

The commenter says that the treatment of forest and canopy ecology was not adequate. The commenter also says that the connection between ecological niches was lacking.

Comment Summary: 187

Subject Area: Wildlife

Issue: Climate Change

The commenter says that the 2010 DEIS should map key species and their current and future habitat (climate change environment migration paths).

Comment Summary: 188

Subject Area: Wildlife

Issue: Food Supply

The commenter is concerned about food supplies for wildlife. The commenter says that bird species, amphibians, and other species are vanishing at an alarming rate.

Comment Summary: 189

Subject Area: Wildlife

Issue: Harvest Impacts

The commenter says that variable density thinning will introduce noxious species, destroy wetlands, and diminish habitat.

Comment Summary: 190

Subject Area: Outside Scope

Issue: Recognition

The commenter points out that recognition was given to Bob Dick for his years of service by the Mayor of Forks. Recognition was also given to the team that produced the 2010 DEIS under extreme pressure in a short amount of time.

Comment Summary: 191

Subject Area: Outside Scope

Issue: Biomass

The commenter noted there is nothing about new markets or new users related to biomass initiatives that could result in green power, habitat enhancements, and revenue to the beneficiaries. The commenter says that the current biomass initiative by the Commissioner of Public Lands may need to be strengthened by the State legislature. Future biomass energy scenarios should be considered in an operational plan. It is vital to future biomass projects to have commodities from private and state timber lands. Commenter believes that a more detailed study and analysis of the production and transportation costs is needed before large investments are made.

Comment Summary: 192

Subject Area: Outside Scope

Issue: Retrospective Analysis of the Trust Lands Habitat Conservation Plan Interim Type 5 Conservation Strategy

Several commenters cited an earlier, unpublished DNR study, the *Retrospective Analysis of the Trust Lands Habitat Conservation Plan Interim Type 5 Conservation Strategy*, which was used in the development of a Headwaters Conservation Strategy for a subset of DNR-managed state trust lands in western Washington. The study was conducted to examine the implementation of interim protection measures along Type 5 waters. Commenters expressed concern over study objectives, methods, selection of streams, and the validity and relevance of the results and point out that the lack of field-verification of

stream typing during the study precludes an accurate interpretation of results and renders the study useless for adaptive management purposes. Commenters pointed out that, without field verification of stream typing, it is not possible to discern whether monitoring data would apply to Type 4 or Type 5 streams. Water typing must be validated first, as per existing rules, before related research and monitoring can take place.

Comment Summary: 193

Subject Area: Outside scope

Issue: Proposed Headwaters Conservation Strategy

Several commenters referenced a January 29, 2009 informational briefing held by DNR staff with the Forest and Fish Conservation Caucus to discuss a proposed Headwaters Conservation Strategy and one of its antecedent studies, the *Retrospective Analysis of the Trust Lands Habitat Conservation Plan Interim Type 5 Conservation Strategy*. The caucus submitted written comments on March 3, 2009 and DNR responded to those comments on January 11, 2010.

DNR's response to the received comments was critical of a study by Palmquist (2005), which had been cited as evidence that Type N channels less than two feet wide are uncommon in western Washington and therefore, many streams identified as Type 5 waters meet the physical criteria for Type 4 waters. The commenters point out that DNR did not adequately address the comments and question DNR's caution against the use of specific stream channel widths from Palmquist (2005) for regulatory compliance interpretations, noting that the study in question was sufficient for the Washington Forest Practices Board to change water typing rules under WAC 222-16-031.

Additional commenters noted a lack of data supporting DNR's statement that channel width may change over time as a result of natural processes and disturbance, thereby precluding a comparison of determinations of stream type conducted years apart. Commenters believe that such a statement would only be substantiated through the use of a before-after-control-impact (BACI) study design.

Comment Summary: 194

Subject Area: Outside scope

Issue: Data Request

Several commenters referenced requests for channel-width data from DNR field-verification of stream typing during timber sale layout, compliance monitoring, and an earlier, unpublished DNR study, the *Retrospective Analysis of the Trust Lands Habitat Conservation Plan Interim Type 5 Conservation Strategy*.