United States Department of Agriculture | Forest Service | Alaska Region | P.O. Box 21628 Juneau, AK 99802-1628

File Code: 1570 Date: SEP 27 2013

Subject: Big Thorne Record of Decision and Final Environmental Impact Statement

To: Appeal Deciding Officer

This is my recommendation, as Appeal Reviewing Officer, on the action you should take, as Appeal Deciding Officer, on the pending appeals of the Big Thorne Project Record of Decision (ROD) and Final Environmental Impact Statement (EIS). The following appeals were filed under 36 CFR 215:

No. 13-10-00-0002, filed by Dick Artley;

No. 13-10-00-0003, filed by Rebecca Knight;

No. 13-10-00-0004, filed by Larry Edwards on behalf of several conservation organizations;

No. 13-10-00-0005, filed by Buck Lindekugel on behalf of the Southeast Alaska Conservation Council (SEACC);

No. 13-10-00-0006, filed by Tom Waldo on behalf of several conservation organizations;

No. 13-10-00-0007, filed by Austin Williams on behalf of Trout Unlimited; and

No. 13-10-00-0008, filed by Jim Adams on behalf of Audubon Alaska.

The decision being appealed is the decision by the Tongass Forest Supervisor, Forrest Cole, to authorize the sale of timber and the construction of roads on Prince of Wales Island within the Thorne Bay Ranger District of the Tongass National Forest in Southeast Alaska. The Selected Alternative, Alternative 3 with modifications, authorizes the following activities:

1) harvest of approximately 6,186 acres (about 148.9 million board feet (MMBF) of timber);
2) thinning of about 2,299 acres of young growth;
3) construction of about 10 miles of new National Forest System (NFS) roads and 36 miles of temporary roads;
4) reconstruction of about 36.6 miles of existing NFS road; and
5) development of about 32 acres of rock quarries for road construction and reconstruction.

Background

A Notice of Intent (NOI) to prepare an EIS for the Big Thorne project was published in the Federal Register on February 11, 2011. The Draft EIS (DEIS) was released for public comment on October 26, 2012, and on June 28, 2013, the Tongass Forest Supervisor signed the ROD for the project.

My review of the appeals was conducted pursuant to 36 CFR 215.19. The appeal and project records have been carefully reviewed in my consideration of the objections raised by the Appellants and their requested relief. The Thorne Bay Ranger District prepared the enclosed indices of the documentation supporting the decision, which are keyed to specific issues raised by the Appellants. My recommendation hereby incorporates the entire administrative record for the project.

The Appellants list many interrelated issues in their appeals of the Big Thorne project. Although I may not have listed each specific issue, I have considered all of the issues raised in the appeals and believe that they are adequately addressed in the following discussions.

Dick Artley appeal, #13-10-00-0002

There is no documentation in the record that Dick Artley submitted comments on the Big Thorne DEIS during the 45-day comment period; therefore, I recommended that you dismiss his appeal pursuant to 36 CFR 215.16(a)(6). Mr. Artley's appeal was dismissed on September 5, 2013.

Rebecca Knight appeal, #13-10-00-0003

Issue 1. Whether the Forest Service provided a copy of the Big Thorne Final EIS and ROD in a timely manner.

Appellant asserts that she submitted comments on the DEIS for the project, but was not included on the mailing list to receive a copy of the FEIS and ROD. Appellant further asserts that she was not offered an immediate DVD version of the documents, and that even though she requested them "ASAP" she did not receive the electronic version of the documents until July 27, 2013, over 3 weeks into the appeal period, and has yet to receive the hard copy versions she requested. Appellant believes that the Forest Service violated the regulations at 36 CFR 215.7(a) by failing to promptly mail her the ROD for the project, and that this prevented her from exercising her right to determine whether the FEIS and ROD addressed her concerns and her right to decide whether to appeal the substantive provisions of the project.

Discussion

Forest Service regulations at 36 CFR 215.7(a) state that "[t]he Responsible Official shall promptly mail the Record of Decision...to those who requested the decision document and those who submitted substantive comments during the comment period."

A review of the project record indicates that Appellant provided comments on the Big Thorne DEIS in a letter dated December 10, 2012 [Project Record Document (PR) #736_2241]. The letter in the project record is annotated, so it is clear that the Forest Service received and reviewed it, and the FEIS [Appendix B, p. B-3] lists Appellant as an individual who submitted comments on the DEIS. Since Appellant provided comments during the comment period, her name should have appeared on all subsequent mailing lists. However, the mailing list for the FEIS and ROD [PR #736_2196], identified as the "master mailing list" (dated May 17, 2013), does not include the Appellant as an individual who would have received either an electronic or

hard copy of the documents. As a result, Appellant was not mailed the documents until she specifically requested them, nor did she receive individual notice that the Forest Supervisor had issued a decision.

The FEIS and ROD were posted on the Tongass National Forest web page on July 1, 2013, and were available for public review. On July 2, 2013, a corrected legal notice for the decision [PR #736_2268] was published in the newspaper of record, the Ketchikan Daily News, and the 45-day appeal period (ending August 16, 2013) was based on that date of publication. Appellant requested (in emails to Frank Roberts dated July 22, 2013) a hard copy of the FEIS and ROD, and, if a "DVD" was available, that it be sent in advance of the hard copy. Appellant indicates that she received the DVD copy on July 27, 2013, but has never received a hard copy of the documents. She further states that she requested a hard copy of the documents for reasons associated with the difficulty of an in-depth examination of the electronic version on her home computer, thereby preventing a meaningful examination of the project.

Although Appellant should have been on the mailing list to receive a hard copy of the FEIS and ROD, Appellant was promptly mailed a DVD copy of the documents when she requested that it be sent in advance of the hard copy. She received the DVD copy 5 days after requesting it. This left about 20 days for her to review the documents and to assess whether her comments had been considered and whether the documents were responsive to those comments. It appears that Appellant was able to examine the substance of the documents sufficiently enough to state in her appeal that the "agency specifically responded to my substantive comments in relation to the incidence of Acid Rock Drainage."

The FEIS and ROD were timely posted on the Tongass web page for public review. As required, legal notice of the decision was published in the newspaper of record, providing the public notice of the decision. It is unfortunate that the Forest did not include Appellant on the project mailing list and she did not receive immediate notice when the decision was issued. However, given the circumstances here, I consider this to be a harmless error because it does not appear to have prevented Appellant from receiving the documents in the electronic format in a timely manner once she requested them. Although her time period for review of the documents was truncated, her statements indicate she had sufficient time to assess whether her comments were considered. Finally, Appellant was able to file a timely appeal on this procedural matter, which supports the notion that she had the opportunity to identify substantive issues in her appeal as well.

Cascadia Wildlands, et al. appeal, #13-10-00-0004 (Larry Edwards)

Issue 1. Whether the purpose and need for the Big Thorne project is reasonable.

Appellants assert that the purpose and need is unreasonably narrow and focused solely on providing timber to Viking Lumber Company (VLC). Appellants further assert that this focus on providing a large-scale timber supply to VLC violates Tongass Forest Plan and national direction that requires the Forest Service to provide for fair competition when designing timber sales, and that the Forest Service failed to respond to comments on this issue. Appellants also assert that the purpose and need tiers to an invalid market demand analysis, that it failed to include other objectives and USDA Strategic Plan goals that would address existing habitat degradation in the

project area, and that the underlying statement of need for the project is unreasonable and does not accurately represent natural resource employment in Southeast Alaska. Appellants believe that these flaws in the purpose and need arbitrarily restricted the range of alternatives and precluded consideration of reasonable alternatives.

Discussion

The CEQ regulations implementing NEPA require agencies to "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" [40 CFR 1502.13]. The Big Thorne EIS stated that the purpose and need for the project is:

> to contribute to a long-term supply of economic timber for the timber industry on Prince of Wales Island and on the Tongass National Forest in general (including both large and small operators) in a manner that is consistent with the multiple-use goals and objectives of the Tongass Land and Resource Management Plan (Forest Plan).

[EIS, p. 1-4]. The underlying need, as explained in Chapter 1 and Appendix A of the Big Thorne EIS, is that the timber industry requires a reliable, economic, and long-term supply of sawtimber to remain a viable part of commerce and an employer in Southeast Alaska [EIS, pp. 1-5, B-58]. There is also the need to seek to provide a supply of timber from the Tongass that meets market demand, which is also explained in Chapter 1 and in Appendix A. Specifically, Appendix A states the following:

> This project contributes to the timber sale program planning objective of providing an orderly flow of timber from planning through harvest to meet timber supply requirements.
>
> This project meets all laws and regulations governing the removal of timber from [NFS] lands, including Forest Service policies as described in Forest Service manuals and handbooks, and the Forest Plan and Record of Decision. Based on current year and anticipated future timber demand and the timber supply provisions of the Tongass Timber Reform Act [TTRA], the Big Thorne [project] is needed at this time to meet timber sale needs identified on the approved multiple-year timber sale plan.

[EIS, p. A-2]. Appendix A also provides the rationale for why the Big Thorne project area was considered to meet these goals. The reasons why the project area was considered include:

- The project area offers economic timber that could contribute to local demand.
- The project area includes a well-developed road system that provides access to many of the proposed timber harvest units and may be used to transport harvested logs.
- A substantial infrastructure of existing sawmills is located in or near the project area, connected by the road system. This includes the largest remaining sawmill in Southeast Alaska, VLC.

- The project area is on the Prince of Wales Island road system, includes the City of Thorne Bay, and is near Coffman Cove, Naukati Bay, Craig, Klawock, and other cities, which would help support direct and indirect employment through the supply of personnel, goods and services.
- The Big Thorne project area contains sufficient acres of suitable and available forest land to make this timber harvest proposal reasonable. Areas with available timber need to be considered for harvest in order to seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand from such forest, and (2) meets the market demand from such forest for each planning cycle, pursuant to Section 101 of TTRA.
- The Big Thorne project could use the existing and currently permitted Marine Access Facilities (MAFs) at Thorne Bay and Coffman Cove.
- The proposed harvest units are within development land use designations (LUD) as allocated by the Forest Plan. An exception is some young growth thinning in an Old Growth Habitat LUD, which is being done to improve habitat.
- Effects on subsistence resources from timber harvest are projected to have few differences based on the sequence in which areas are harvested. Harvesting other areas with available timber on the Tongass National Forest is expected to have similar potential effects on resources, including subsistence resources, because of widespread distribution of subsistence use and other factors. Harvest within other areas is foreseeable under the Forest Plan.

The Response to Comments section of the EIS [Appendix B, pp. B-57 to B-58] responds to concerns expressed on the purpose and need for the project. As stated in the EIS, the Big Thorne project is a timber sale project, and the proposed action and alternatives were designed to respond to the goals and objectives of the Plan for the timber resource. While the Big Thorne project is consistent with the overall goals of the Forest Plan "to mov[e] the project area towards the desired future condition for all resources," there is no requirement in the CEQ regulations [40 CFR 1500-1508] or in NEPA itself [42 U.S.C. 4321, et seq.] to design a purpose and need for a project to specifically include wildlife, subsistence, recreation and other resource uses. The Forest Service is required to consider the effects of the project on the human environment (including the resources of the project area and the relationship of people to those resources) [see, for example, 40 CFR 1502.16]. The Big Thorne EIS does this in the Environment and Effects section [Chapter 3].

With regard to Appellants' assertions that the Forest Service failed to provide for fair competition when designing the Big Thorne project and that the Forest Service failed to respond to comments on this issue, all timber sales offered from the Big Thorne project are planned to be offered for competitive bid [EIS, p. B-106]. There is nothing in the record that suggests the Forest Service has reserved this project area solely for VLC. While VLC may bid on and ultimately be awarded the timber sale(s) or stewardship project(s) authorized through the Big Thorne ROD, there is no reason to assume that they will be the only bidder on every offering, and, if there are multiple bidders, nothing that guarantees they will be the successful bidder.

The EIS acknowledges that VLC is the only medium-sized sawmill operating in Southeast Alaska, but also states that Alcan Forest Products "is a purchaser of large timber sales on the Tongass".[p. B-105]. The EIS also discusses the potential smaller sale bidders from Prince of Wales Island and other communities [pp. 3-20 to 3-22]. The competitive bidding section of Appendix A discusses who would possibly bid on this sale, and references FSH 2409.18, which, in part, directs managers to "[d]evelop a mix of sale sizes to meet local industry and resource needs." The EIS responded to public comments on this very issue on pages B-105 to B-106.

With regard to Appellants' assertion that the purpose and need tiers to an invalid market demand analysis, see my response to Issue 8, below, for a discussion of the market demand analyses completed for the Forest Plan. The Big Thorne EIS is a project-level analysis, and the project is just one component of the total Tongass timber program. The timber supply and demand issues tier to the Forest Plan, which the Big Thorne EIS follows. The demand analyses underlying this project-level EIS are based on the best science available, and have been extensively peer reviewed.

With regard to Strategic Plan Goals, both the Forest Service Strategic Plan for FY 2007-2012 and the USDA Strategic Plan for 2010-2015 are broad vision statements that encompass the entire nation's resources managed by the Forest Service and the Department of Agriculture. The fact that both plans have multiple objectives, including some that may seem at odds with one another, is a reflection of the diverse needs for these lands. There is no mandate to manage each acre of the national forests for multiple uses. This is demonstrated by the Forest Service's Strategic Plan, which states:

> United States population growth and expanding urban centers have created a greater demand for *goods, services, and amenities* from the Nation's private and public forests and grasslands. Given such changes, this section addresses core principles and issues central to delivering the Forest Service's mission.

[p. 3, emphasis added]. The USDA Strategic Plan [p. 14] states:

> These lands generate economic value by supporting the vital agriculture and forestry sectors, attracting tourism and recreation visitors, sustaining green jobs, and producing ecosystem services, food, fiber, timber and non-timber products, and energy.

Each one of these Plans' goals is not intended to be viewed singularly, but taken as a whole.

At a forest level such as the Tongass, the applicable Forest Plan allocates NFS lands into various LUDs that have different resource emphases and management prescriptions. Within these LUD designations, there are protections built in through the Plan's standards and guidelines for managing wildlife, recreation, fisheries, etc.

In the case of the Big Thorne project, although there are 7 different types of LUDs in the project area, the majority of the project area is allocated to the Timber Production, Modified Landscape, and Scenic Viewshed LUDs [Big Thorne EIS, p. 1-17]. The goals for these lands are to "maintain and promote wood production" (Timber Production LUD), "provide for a sustained

yield of timber" (Modified Landscape and Scenic Viewshed LUDs), and "seek to provide a supply of timber... that meets annual and planning cycle market demand" (all 3 LUDs) [Forest Plan, pp. 3-101, 3-109, 3-116]. Within each of these LUDs, "suitable timber lands are available for timber harvest" [Id]. The purpose and need for the Big Thorne project, and the activities proposed in response to that purpose and need, are appropriate for these LUDs [Forest Plan, pp. 3-101 to 3-121].

See also my response to Issue 2, below, regarding the range of alternatives considered for the Big Thorne project.

In my opinion, the purpose and need for the Big Thorne project is adequately described, is appropriately tiered to the goals and objectives of the Tongass Forest Plan, and is reasonable given the goals and objectives of the Plan, the management prescriptions for the LUDs within the project area, and the seek to meet market demand provisions of TTRA.

Issue 2. Whether the range of alternatives considered for the project is reasonable.

Appellants assert that none of the alternatives respond to watershed, fisheries and wildlife concerns, although these were identified as significant issues in the EIS. Appellants also assert that all of the action alternatives are based on flawed market demand analyses, and that the range of alternatives included too many large volume alternatives and improperly excluded lower volume alternatives. Appellants further assert that the alternatives are not consistent with the range of alternatives suggested in the NOI scoping notice for the project.

Discussion

The CEQ regulations implementing NEPA at 40 CFR 1502.14(a) state that an analysis should "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." CEQ also addressed the subject of alternatives in its "40 Most Asked Questions." Question 1b notes that "[w]hat constitutes a reasonable range of alternatives depends on the nature of the proposal and the facts in each case."

The National Forest Management Act (NFMA) requires forest land and resource management plans to "provide for multiple use and sustained yield of the products and services" obtained from the NFS [16 U.S.C. § 1604(e)(1)]. Multiple use management is a deceptively simple term that describes the enormously complicated task of striking a balance among the many competing uses to which land can be put, including timber, watershed, wildlife, fish, and recreation. This "balance" was achieved through the allocation of Tongass forest lands to various LUDs (along with the standards and guidelines and management prescriptions for those LUDs) and with the forest-wide standards and guidelines that provide additional protection by resource. The Forest Plan ROD includes a discussion on balancing "the multiple uses and resources of the Forest," and identifies how different resources such as fisheries, recreation and tourism, timber demand, etc. were considered in striking that balance [see 2008 Forest Plan ROD, pp. 15-18].

As discussed above, the Big Thorne project is a timber sale project and was designed to meet the goals and objectives of the Forest Plan with regard to the timber resource. The Big Thorne EIS describes the process the interdisciplinary team (IDT) followed in developing the alternatives considered for the project, stating "[t]he [IDT] considered the significant issues and identified various alternatives to the proposed action to provide a reasonable range of options for meeting the purpose and need of this project" [EIS, p. 2-5]. The alternatives were also designed to be consistent with applicable forest-wide standards and guidelines [Id.]. The Big Thorne EIS discusses the potential effects of the project on the other resources of the project area, including those highlighted by Appellants [Chapter 3], but the alternatives were specifically designed to meet the purpose and need for the project.

The NOI for the Big Thorne project stated that "[t]he proposed action would harvest timber from approximately 5,800 acres" and that "[p]reliminary analysis shows that an estimated 100 million board feet of sawtimber and utility wood could be made available to industry for harvest" [PR #736_0006]. The proposed action described in the DEIS (Alternative 2) included the harvest of 122.9 MMBF (including sawtimber and utility volume) from 4,944 acres. The DEIS also included alternatives that had total volumes of 188.9 MMBF (Alternative 3), 93.4 MMBF (Alternative 4), and 133.1 MMBF (Alternative 5). The volume of old growth harvest - which has historically been the main point of Appellants' interest - ranges from 68.7 MMBF (Alternative 4) to 150 MMBF (Alternative 3), with other old growth volumes at 103.9 MMBF (Alternative 5) and 106.6 MMBF (Alternative 2) [DEIS, p. 2-15].

These volume numbers were further modified in the FEIS based on additional field verification, analysis, and public comment. The total volumes range from 84.4 MMBF (Alternative 4) to 175.7 MMBF (Alternative 3). Old growth harvest ranged from 62.6 MMBF (Alternative 4) to 139.8 MMBF (Alternative 3) [FEIS, p. 2-21]. Other considerations in the development of alternatives included designing Alternative 4 to minimize effects on watershed and aquatic habitat and designing Alternative 5, which had the fewest stream crossings [PR #736_2237].

Appellants requested "development of reasonable, smaller volume alternatives that avoid new road construction and consist *solely* of small and microsales" (emphasis added). While Appellants' comments on the DEIS raised this issue [December 10, 2012], they did not indicate a specific volume(s) to be considered that would meet the purpose and need. As explained in the EIS, the project was designed to contribute to a long-term supply of timber that benefitted both large and small operators as the timber industry transitions to young growth [EIS, pp. 1-4 to 1-5]. The rationale for why alternatives were eliminated from detailed study is discussed in the EIS [pp. 2-18 through 2-20], with further information in the Response to Comments [pp. B-58 through B-61]. Specifically, the EIS [p. 2-20] states:

> Additionally, an alternative solely designed to provide timber for small sales was determined not to be consistent with the project's purpose and need to contribute to a long-term supply of economic timber for the timber industry on Prince of Wales Island and on the Tongass National Forest in general (including both large and small operators).

Appendix B provides the same discussion, and adds that "the same is true for a 'no roads' alternative" [p. B-60].

While there is nothing precluding small sales under any of the action alternatives, focusing an alternative solely on providing timber for small sales would not be consistent with the project's purpose and need. The same is true for a "no roads" alternative. In my opinion, the range of alternatives for the Big Thorne project, given the purpose and need, is reasonable, and the EIS adequately discusses why other alternatives did not merit detailed consideration.

Issue 3. Whether the Big Thorne EIS adequately considered other issues and concerns that are relevant to the project.

Appellants assert that the EIS failed to adequately analyze the site-specific economic and environmental effects of the project, including long-term and cumulative effects, and failed to include all pertinent information that was or should have been part of the decision-making process. Specifically, Appellants assert that the EIS failed to consider and disclose whether the timber volume and duration of the project provide VLC a competitive advantage over small sale purchasers, and that it failed to disclose the substantial differences in bid values between small sales and the sales purchased by VLC. Appellants also assert that the EIS failed to address the extent to which the project would liquidate the Tongass National Forest's inventory of marketable cedar for export as raw logs, precluding future opportunities for small, local mills to produce value-added products. Finally, Appellants assert that the EIS failed to analyze or consider the implications of the Sealaska legislation, and failed to evaluate the effects of the project on climate change and the effects of climate change on project area resources.

Discussion

With regard to Appellants' assertions about local economic benefits, the EIS [p. 3-17] states:

> The Big Thorne project is intended to provide enough economic timber to the timber industry to allow for a variety of timber harvest contract sizes and withstand fluctuating market conditions, to the extent possible. This long-term stable and economic timber supply is intended to support local operators and encourage investment in the wood products industry as it begins to transition to young growth harvesting and restoration activities.

The EIS summarizes the current mill infrastructure and the operators who may bid on future sales arising from the project area [pp. 3-19 through 3-22]. The EIS does not suggest that VLC will be the sole bidder on sales from the project area, or that the Forest Service has reserved this project area solely for VLC. Rather, the Big Thorne EIS discusses numerous mills and communities on Prince of Wales Island and in Southeast Alaska that might benefit from the sale, including VLC and the town of Craig, Icy Straits Lumber and Milling Company in Hoonah, and small sawmills and communities on Prince of Wales Island [pp. 3-21 to 3-22]. The Big Thorne project will result in timber sales that will be available to multiple purchasers, and the project has the potential to benefit multiple communities in Southeast Alaska.

The total volume "cleared" through the Big Thorne ROD is not planned to be offered at one time under a single contract. Additional volume will be available to small, local mills in value comparison units (VCUs) 575, 578, 579, 584, 586, and 598. In these VCUs, volume has been

set aside for future small offerings that would be metered out over time. Within the VCUs listed above are stands with cedar, and this volume will be made available to local manufacturers, including those who specialize in value-added products.

Both Alaska yellow and western red cedar are often processed domestically. Even under large sales, cedar logs are often processed locally (by VLC) or are resold to small local manufacturers. Current regional policies offer incentives for larger companies (VLC, Alcan) to sell cedar logs to local small businesses. With western red cedar, policy requires timber purchasers to obtain price quotes from Alaska manufacturers (for comparison to appraised domestic selling values and manufacturing costs) prior to submitting an application for out-of-state export. Policy further requires that purchasers obtain price quotes from the Puget Sound area prior to export to foreign markets. With regard to Alaska yellow cedar, regional contract provisions offer the incentive of a rebate to manufacturers who process the timber locally.

There are a number of cedar product manufacturers located in the Goose Creek area of POW who interact with each other and with VLC to purchase/sell logs for various business interests and manufacturing needs. On any given contract offering, it is up to the purchaser to decide what markets to sell into. Regional policy specifically provides options for potential purchasers to evaluate existing market conditions while making those decisions.

Also notable here is that a 10-year contract term is anticipated with the initial planned offering from the Big Thorne project area. A portion of the volume included in that long-term contract would be harvested each year, providing an even flow of timber to supply market needs, including volume that will be processed locally or sold to small, local manufacturers through the buy/sell network that exists between businesses on POW. This will likely include a portion of the cedar volume.

With regard to bid value differences between small sales and larger timber sales, small sales are often designed and offered at standard rates when such a practice is determined to be efficient relative to the size and overall value of the offering and a sale-specific appraisal is not required by policy. Standard rates reflect average comparisons between smaller sales, as well as average annual bid values. Many such small sales are located on the road system and involve fairly straight-forward logging systems. Therefore, their value/cost comparisons do not compare well to larger, more complicated timber sale offerings. Also notable is the fact that small sales are sometimes designed around higher valued species and products. As a result, competitive bidding for small sales often results in higher prices on average (per unit of measure) than do larger sales that include a wider mix of species and log grades and generally more complicated packaging. Every timber sale can't be a high value small sale, and comparing bid prices between these small special offers and larger timber sales does not yield useful information for the Responsible Official.

With regard to whether the Forest Service has considered the potential effects of the proposed Sealaska legislation, the CEQ regulations at 40 CFR 1508.7 define cumulative impact as the impact on the environment which results from the incremental impact of the action when added to past, present, and "reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."

As noted in the Big Thorne EIS [p.3-10], the Forest Service did consider the implications of the proposed Sealaska legislation to the extent it could, given the uncertainty of the bill passing or what form any final legislation might take. Previous versions of this bill, first introduced in 2007, have been very controversial and the current bill has not passed, despite a tremendous amount of debate and changes to the proposed legislation. Even though the timber harvest that may occur if the bill did pass was not considered reasonably foreseeable for those reasons, the Wildlife and Subsistence Resource Report prepared for the project includes an analysis of a separate cumulative effects scenario for deer, marten, and black bear at the Wildlife Analysis Area (WAA) scale (WAA 1318 is the only project area WAA with Sealaska parcels) and for wolves at the biogeographic province scale, which goes well beyond the project area boundaries [PR #736_0419]. The EIS acknowledges that under this scenario, the Forest Plan old growth reserve system may be affected [EIS, p. 3-11]. The EIS indicates that the Big Thorne area is not among the NFS lands that would be conveyed under the current bill, which means there is no overlap in watersheds between the areas proposed for conveyance in the bill and the project area - a criteria for cumulative effects consideration [FSH 1909.15, Section 15.3].

As for the cumulative effects of the proposed legislation on the regional economy, it is too speculative to determine what those effects might be. In addition, legislation affecting the whole Forest is best addressed at Forest level. If Sealaska legislation is enacted, the Forest Service will need to assess its effects on many aspects of the Forest Plan to determine if an amendment is necessary to address those effects.

In sum, there is no hard line to determine whether an action should be considered reasonably foreseeable. In this case, the Responsible Official believed that actions that might occur as a result of the proposed Sealaska legislation were not reasonably foreseeable, not only because of the changing nature of the legislation, but also because there is the distinct possibility of Congress not acting on it. Despite that, he elected to conduct an analysis to address the potential cumulative effects on come wildlife species. In my opinion, the Responsible Official's position is reasonable and there is no violation of NEPA with regard to this issue.

With regard to Appellants' assertions that the EIS did not adequately consider climate change, regulations and guidance related to these assertions comes from several areas. For example, the CEQ regulations implementing NEPA state that "[EISs] shall be analytic rather than encyclopedic" [40 CFR 1502.2(a)], and that "[a]gencies are encouraged to tier their [EISs] to elimimate repetitive discussions of the same issue and to focus on the actual issues ripe for decision at each level of the environmental review" [40 CFR 1502.20]. The CEQ regulations at 40 CFR 1502.22 also provide guidance to agencies in dealing with incomplete or unavailable information:

> When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an [EIS] and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.
>
> (a) If the incomplete information... is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the [EIS].

> (b) If the information... cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the [EIS]: (1) A statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant...; and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community... .

CEQ's definition of "cumulative impact" at 40 CFR 1508.7 is also relevant to Appellants' assertions. CEQ defines "cumulative impact" as follows:

> "Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The Forest Service's "Climate Change Considerations in Project Level NEPA Analysis" (2009) provides guidance on how to address climate change in project-level NEPA documents. This document is available to the public on the Forest Service website at http://www.fs.fed.us/emc/nepa/climate_change/includes/cc_nepa_guidance.pdf.

In accordance with 40 CFR 1502.20, the Big Thorne EIS tiers to the 2008 Tongass Forest Plan Amendment FEIS and ROD, which included substantial analysis and discussion of numerous potential effects of climate change on the resources of the Tongass, and also the potential effects of the alternatives considered in the Forest Plan FEIS on climate change. The Big Thorne EIS discusses the analyses conducted for the Forest Plan, lists multiple pages where climate change was discussed in the Forest Plan FEIS, and summarizes the analyses and conclusions of that FEIS [EIS, pp. 3-333 to 3-336]. The EIS also responds to public comments related to climate change [Appendix B, pp. B-24 to B-27].

The references submitted by Appellants contribute to the expanding knowledge base about carbon sequestration. These studies, along with other documents Appellants cite and additional documents in the Big Thorne and Forest Plan records, do make it clear that there is much uncertainty about carbon flow and related land management practices. However valid the research is, the findings do not contradict the information in the Forest Plan that the Big Thorne EIS tiers to, or provide reasons to deviate from the course established in the Plan.

The 2009 "Climate Change Considerations in Project Level NEPA Analysis" acknowledges climate change is occurring, but states it is "...not possible to determine the cumulative impact... nor is it expected that such disclosure would provide a practical or meaningful effects analysis for project decisions" [p. 6]. In addition, "[a] qualitative cumulative effects discussion could incorporate a summary of local, regional, or national climate change effects" [Id.]. In the case of the Tongass National Forest, the Forest Plan provides this more localized discussion.

The task of understanding all the confounding factors that influence climate change and how carbon is sequestered is daunting and contains substantial uncertainty. However, as stated in the 2008 ROD for the Forest Plan, "...the information on climate change is not essential to a reasoned choice among the alternatives displayed in the FEIS" [2008 ROD, p. 50; see also Big Thorne EIS, p. 3-334]. That continues to hold true today, both for the Forest Plan and for the Big Thorne project.

The Tongass is managing its timber and other resources in a manner that accounts for climate change by "protect[ing] 91 percent of the existing productive old growth" [2008 Forest Plan ROD, p. 21]. This will provide a resilient ecosystem for plants and animals in the face of uncertain climate change [Forest Plan FEIS, p. 3-296].

In its most recent report, the International Panel on Climate Change (IPCC) concluded "[i]n the long term, sustainable forest management strategy aimed at maintaining or increasing carbon stocks, while producing an annual yield of timber, fiber, or energy from forests, will generate the largest sustained mitigation benefit" [IPCC 2007]. There is nothing to indicate that the Big Thorne project area, and the Tongass as a whole, are being managed in a manner contrary to the IPCCs findings.

The analysis of the potential effects associated with climate change completed for the Big Thorne project is consistent with national direction, appropriately tiers to the Forest Plan, and is commensurate with the context and intensity of the project. Both the Forest Plan FEIS and the Big Thorne EIS disclose the uncertainty surrounding the effects of and on climate change, but conclude that "the information on climate change is not essential to a reasoned choice among the alternatives" and "the best course of action is continued management of the Tongass for resiliency in the face of uncertain, but anticipated, change" [Big Thorne EIS, p. 3-333]. I agree, and believe that the Big Thorne EIS adequately considers and discloses information regarding climate change in compliance with NEPA.

Issue 4. Whether the Forest Service complied with NEPA, NFMA, the Administrative Procedures Act (APA), and the Federal Advisory Committee Act (FACA) in developing the Big Thorne project.

Appellants assert that the Forest Service violated NEPA by pre-determining the scale, location, and duration of the Big Thorne project. Specifically, Appellants assert that a violation of NEPA, NFMA, and the APA occurred through former Undersecretary Mark Rey's September 2008 directive "to develop a work plan and proposed budget necessary to offer four ten-year timber sales," which was stated in his decision declining to conduct a discretionary review of the Chief's decision on the appeals of the 2008 Tongass Forest Plan Amendment ROD. Additionally, Appellants assert that the use of the Tongass Futures Roundtable (TFR) group to determine where the four projects should be located violated NEPA, NFMA, and FACA. Finally, Appellants assert that the project record was incomplete and unavailable when the ROD was signed and the appeal period started, in violation of NEPA and the APA.

Discussion

On September 17, 2008, the former Undersecretary for Natural Resources and Environment, Mark Rey, issued a letter to the former Chief of the Forest Service, Abigail Kimbell, informing her that he had decided not to conduct a discretionary review of her decision on the appeals of the 2008 Tongass Forest Plan, but that he was "provid[ing] additional direction to the Forest Service to assist in plan implementation" [PR #736_1606]. Mr. Rey's letter identified 5 areas in which he believed the Forest Service should conduct additional assessments to address concerns regarding the continued existence of a sustainable forest products industry in Southeast Alaska as an essential component of the region's economy. Specific to Appellants' concern, one area related to a "Fully Integrated Forest Products Industry" and included the following direction:

> I am also directing the Forest to develop a work plan and proposed budget necessary to offer four ten-year timber sales, each with an average volume of 15-20 MMBF per year. These longer sales... are the best way to provide sufficient assurances to support the necessary investment in new and upgraded manufacturing facilities.

Appellants assert that Mr. Rey's "Directive" was unlawful because it isn't consistent with the 36 CFR 217 regulations. According to Appellants, these regulations provide two options: remand or modify the decision. Mr. Rey declined to conduct a discretionary review, but did provide direction which did not require that the Forest Plan decision be remanded or modified. There is nothing in the regulations that precludes providing a letter of direction, and it is important to note what the letter specifically directed the Forest to do. Mr. Rey's letter covered five areas for the Forest to address during plan *"implementation"* [emphasis added]. This letter contains words such as "assess" and "develop work plans," and directed the Forest Service to do those actions to better determine if the 2008 Forest Plan "would require subsequent plan amendment." While Mr. Rey expressed concerns about the forest products industry in Southeast Alaska, he apparently did not believe that the Tongass Forest Plan needed to be remanded or modified at that time.

Appellants also assert that the Big Thorne EIS and ROD are inconsistent with direction in the 2008 Forest Plan ROD, which they believe "explicitly referred to a three-year period for completion of timber sales" [referring to page 68 of the ROD]. Appellants' interpretation of the Forest Plan ROD is incorrect. The ROD refers to existing timber sale contracts, and states that these contracts "will generally be completed within three years." This statement was made in the context of allowing 1997 Forest Plan standards and guidelines to remain in effect for existing timber sale contracts rather than requiring that they be modified to conform to the new standards and guidelines in the 2008 Forest Plan [2008 Forest Plan ROD, p. 68]. There is nothing in the Tongass Forest Plan that prohibits sales with a duration of over three years.

In response to Appellants' assertions regarding the TFR and compliance with FACA, information from CEQ's "Collaboration in NEPA: A Handbook for NEPA Practitioners" provides guidance in relation to FACA:

> In general, FACA applies to collaborative efforts when *all* of the following criteria are met (emphasis added):
>
> 1. A Federal agency establishes the group (that is, organizes or forms it) or utilizes an outside group by exerting "actual management or control" over the group;
> 2. The group includes one or more individuals who are not full-time or permanent part-time federal employees or elected officials of state, tribal, or local government or their designated employees with authority to speak on their behalf; and
> 3. The product of the collaboration is group or collective advice to the Federal agency. (Note that the advice is not required to be consensus advice for FACA to apply.)

[Handbook, p. 91]. The Handbook goes on to state:

> One of the non-federal entities involved or interested in a NEPA process can take the lead in organizing and setting up a collaborative group. This could be a trusted stakeholder group or an independent, impartial organization or convening group. FACA only applies to federal agencies. If a Tribe, State, county, or local agency or public interest group puts a collaborative group together, controls membership, sets the agenda, funds the work of the group, and sets up meetings, the Federal agency can participate without violating FACA, providing the federal members do not manage or control the group.

[Handbook, p. 93]. "Actual management or control" is subject to interpretation, but this is often meant to include such actions as determining who the participants are, setting the meeting agenda, facilitating the meeting, sending out invitations to the meeting, hosting meetings in Forest Service offices, and funding the committee.

In support of their assertion that the Forest Service violated FACA, Appellants state that the Forest Service "developed the TFR concept," "sought financing," "participated in meetings," and "used public facilities to host the TFR." Developing a concept for a group to provide input for Forest Service management activities is not the same as creating a group and actively managing it. If the Tongass National Forest used its appropriated funds to pay for committee member travel, rent meeting space, pay for the facilitator, etc., then it is possible FACA would be violated. However, there is no evidence that indicates any of those actions occurred.

Appellants expressed particular concern about the role of the National Forest Foundation (NFF). NFF's role in the TFR was in line with the non-profit's charter, which states that the purposes of the Foundation are to:

> 1. encourage, accept, and administer private gifts of money, and of real and personal property for the benefit of, or in connection with, the activities and services of the Forest Service of the Department of Agriculture;
> 2. undertake and conduct activities that further the purposes for which units of the National Forest System are established and are administered and that are consistent with approved forest plans; and

3. undertake, conduct and encourage educational, technical and other assistance, and other activities that support the multiple use, research, cooperative forestry and other programs administered by the Forest Service.

[http://www.nationalforests.org/explore/charter].

Forest Service officials did attend TFR meetings and used staff time to develop and present information to the TFR. However, the Forest Service is one of many participants on the TFR and it is only logical that a group established to "discuss how to incorporate economic, cultural, and ecological values in public policy throughout the region" [NFF website, Tongass Futures Roundtable, pp. 1-2] would rely, in part, on information provided by the Forest Service. There is nothing in FACA that prevents participation or providing information. Notes from the TFR Revised Charter (Adopted February 22, 2007) highlight a few keys points as they relate to "management and control," stating that "[t]he Nature Conservancy (TNC) and the [NFF] serve as primary staff for the Roundtable" [TFR Revised Charter, p. 3]. The Charter goes on to state that:

- reasonable notice will be given of the time and place of Roundtable meetings" [p. 3];
- [a]s a general rule, Roundtable meetings and Work Group meetings will be open to the public. Invited individuals, including specialists, may participate in Roundtable or Work Group meetings as needed and appropriate [p. 3];
- Public Participation in Meetings. Members of the public are encouraged to attend meetings of the Roundtable. The Roundtable gladly accepts written presentations and exhibits. Opportunity for oral comment will also be provided [p. 4];
- All Roundtable meetings will be open to the news media [p. 4];
- The Roundtable shall not be responsible for pay, allowance, or benefits by reason of a member's service on the Roundtable [p. 5];
- Members of the Roundtable are responsible for their travel and expenses, though in extraordinary cases these expenses may be reimbursed [p. 5].

In addition, the Charter indicates that the facilitator was a private contractor hired with non-Forest Service funds. According to the NFF website, "[p]rivate foundation grants have paid for the meeting space, facilitator expenses, and food for each of the meetings" [see NFF website at www.nationalforests.org, November 2007, p. 3].

Meeting location is another measure that is often part of the determination of "management and control." While I could not determine the specific location of each meeting in a given town, there is evidence to suggest that many meetings were held at non-Forest Service locations. Some of the non-Forest Service meeting locations include:

- October 3, 2007, mapping committee at Tlingit Haida Central Office in Juneau;
- October 2-3, 2008, Yakutat – Alaska Native Brotherhood office;
- February 23-24, 2010 working group meeting at Juneau's Centennial Hall;

- February 25-26, 2010 at Temple Sukkat Shalom;
- May 17-18, 2011, Hydaburg - no Forest Service office in town.

From all indications, the Forest Service was an active participant in the TFR but did not manage or control its functions.

In response to Appellants' assertions that the Big Thorne EIS did not respond to their comments on this issue, the CEQs regulations at 40 CFR 1503.4 state:

> An agency preparing a final environmental impact statement shall assess and consider comments both individually and collectively, and shall respond by one or more of the means listed below, stating its response in the final statement. Possible responses are to:
>
> (1) Modify alternatives including the proposed action.
>
> (2) Develop and evaluate alternatives not previously given serious consideration by the agency.
>
> (3) Supplement, improve, or modify its analyses.
>
> (4) Make factual corrections.
>
> (5) Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response."

Appellants assert that "[t]he FEIS violated NEPA by failing entirely to respond to our DEIS comments outlining this serious procedural problem." My review of the record indicates that the Appellants' DEIS comments regarding FACA were not addressed in the EIS Response to Comments section or elsewhere in the project record, and no explanation was given as to why they were not addressed as required by the regulations.

Based on the discussion above, Forest Service actions in relation to the TFR did not rise to the level of "actual management or control" and I do not believe there is a FACA violation. There is nothing in the record indicating that the Forest Service established and utilized the advice of the TFR to direct the location, duration, or scale of the Big Thorne project. While it is unfortunate that the Forest Supervisor did not provide this rationale and respond to Appellants' DEIS comments on this issue, I consider this harmless because it does not appear that the comments related to the TFR and FACA have any validity. In addition, FACA issues are not a matter of environmental concern.

In response to Appellants' assertion that the Responsible Official is biased in favor of perpetuating VLC's timber operation, I find no merit in this assertion. The Big Thorne project is a timber sale project, and the proposed action and alternatives were designed to respond to the goals and objectives of the Forest Plan for the timber resource. The Forest Service is required to

consider the effects of the project on the human environment, and the Big Thorne EIS does this in the Environment and Effects section [Chapter 3]. Moreover, the selection of the timber operator for any sale offered under this project will be determined through a competitive bidding process.

In response to Appellants' assertions that the project record was not available when the ROD was signed, see my response to Issue 19, below. It is unfortunate that the project record was not available on the date the ROD was signed and the legal notice of decision was published. However, based on my review of the record, I find no violation of law or regulation resulting from the delay in making the complete project record available to the public.

Issue 5. Whether the public investment analysis in the EIS is adequate.

Appellants assert that the public investment analysis was inadequate, inaccurate, and misleading, stating that the EIS failed to disclose actual public investment expenditures and excluded numerous significant timber program costs. Appellants further assert that the cost-benefit analysis was insufficient, that the costs associated with the Selected Alternative were not disclosed, and that the public investment costs that were disclosed are inaccurate and misleading. Appellants also assert that the EIS should have disclosed the public costs of logging road construction, reconstruction, and maintenance in its public investment analysis, and that other overhead costs should have been included. Appellants further assert that the EIS failed to account for the significant public cost of mitigating and ameliorating habitat damage caused by the project, and that the Forest Service failed to respond to Appellants' comments and requests for the Forest Service to take a hard look at Thorne Bay District costs, contract costs, and other specific appropriations relating to the Big Thorne project.

Discussion

The Forest Service Handbook (FSH) directs the agency to assess public investment in projects over a three year period [FSH 2409.18, Chapter 32]. Administrative costs include direct expenditures on NEPA, sale preparation, sale administration, and engineering support [Id.]. In December of 2012, Robert Vermillion, Regional Timber Program Manager, analyzed the administrative costs of the timber program on the Tongass National Forest for fiscal years 2010, 2011 and 2012, and developed estimates intended for use during the NEPA process to analyze the Forest Service costs (public investment) of alternatives considered for each timber sale project [PR #736_1594].

Vermillion stated:

> Past estimates of Tongass timber sale program costs have tracked individual projects as they move through each stage of the multi-year project planning and implementation process, such as NEPA analysis, Sale Preparation, Contract Administration, and Engineering Support. In contrast, this analysis is based on a "snapshot" review of fiscal years (2010, 2011, and 2012), to obtain an average. A review of work plans developed for the NFTM budget line item was completed for each of the past three fiscal years. Although each project incurs cost during the entire multi-year planning process, a snap-shot of costs is representative of average costs for producing a thousand board feet

> (MBF) of timber. In any given year a number of timber sale projects are progressing through each stage of the planning and implementation process. These stages include NEPA, Sale Preparation, Sale Administration, and Engineering Support to the timber program (which can occur at any stage of the overall process and funded by CMRD budget line item).
>
> Estimating timber sale program costs requires judgment regarding which activities are directly associated with producing timber sales, and which are not. This analysis excluded costs of: SO program management, operations support, gate 1 activities (pre-NEPA), facilities maintenance, training, travel not related to producing timber outputs, and generic supply costs.

This careful analysis of public investment costs excluded costs associated with other activities that cannot be directly attributed to timber sale planning. A more general analysis of budget codes will include many other activities, such as wildlife habitat improvement, which cannot be attributed to a specific timber sale project. Appellants try to attribute all funds in certain accounting codes for the management of NFS lands on the Tongass to timber sales. This is not an accurate accounting for how the funds are spent. The funds in the timber accounting code for the Tongass are used for many purposes, including forest and project planning, silviculture activities, monitoring, and many other purposes that cannot be attributed directly to timber sales. In addition, funds in wildlife, fisheries, and vegetation management accounting codes are spent in many ways that are not tied to timber sales. The estimated Forest Service financial costs outlined in Table TSE-14 in the Big Thorne EIS [p. 3-37] is a reasonable estimate of the costs that can be directly attributed to this project.

With regard to Appellants' assertion that the cost-benefit analysis of the project was insufficient, the Forest Service Manual [FSM] 1970.6 states, in part, that "the responsible line officer determines the scope, appropriate level, and complexity of economic and social analysis needed." The Big Thorne project was proposed to respond to the goals and objectives identified by the Forest Plan for the timber resource and to help move the project area towards the desired future condition identified in the Plan for the lands within several LUDs in the project area, the primary ones being the Timber Production, Modified Landscape, and Scenic Viewshed LUDs.

The Big Thorne EIS discusses the timber economics of the project [pp. 3-17 to 3-43], including the estimated logging costs associated with old growth harvest for every alternative [p. 3-25], estimated logging costs for young growth [p. 3-27], and estimated road costs [pp. 3-29 to 3-30]. These costs are disclosed in detail. The EIS also discusses the fact that these estimates represent only a snapshot in time, and that they may change at the time of sale and are useful primarily for comparing alternatives [p. 3-18]. The financial analysis spreadsheet tool – residual value (FASTR) model is a tool for financial analysis and alternative comparison at the EIS level; it does not yield a timber sale appraisal. When actual timber sales are sold from a project area, the appraisal is based on the current appraisal bulletin, current cost information, and a profit and risk allowance to determine stumpage values at the time of offering.

The EIS also discusses the potential effects of the project on other resources, including (but not limited to) project area Old Growth Reserves (OGRs), wildlife and subsistence resources, aquatics and fisheries, and recreation [see Chapter 3 of the EIS]. As discussed below in response to Issue 6, there is nothing in law or regulation that requires the Forest Service to describe these effects in monetary terms at the project level.

As discussed above, the estimated road costs for the Big Thorne alternatives are displayed in the EIS [pp. 3-29 to 3-30]. These estimates are based on data on the cost of various types of road construction. The actual cost of roads in the project area will be determined by the sale layout and design specific to each offering.

With regard to Appellants' assertion that the Big Thorne EIS violated NEPA by failing to disclose the costs associated with repairing/mitigating resource damage caused by implementation of the project, Appellants' concerns regarding the extent of "resource damage" and the costs associated with repairing/mitigating this "damage" are unfounded. As stated in the Big Thorne EIS [Appendix B, pp. B-15 and B-16]:

> The Draft and Final EIS acknowledge that the Big Thorne Project may adversely affect fish habitat by potentially increasing stream flows, increasing sediment delivery, altering riparian vegetation, disturbing channel integrity and blocking upstream movement at road crossings. However, it also determines that the action alternatives would result in minor effects or moderate effects (depending on the subwatersheds) on water quality and habitat due to the implementation of Forest Plan Standards and Guidelines.
>
> It is anticipated that the valuable fisheries in the project area will not be measurably affected.

The standards and guidelines in the Forest Plan were developed to protect water quality, fisheries values, and wildlife habitat. They will be implemented in this project, and there is no reason that these standards and guidelines will not be effective in minimizing the effects of the project.

Issue 6. Whether the Forest adequately considered the environmental costs of the project.

Appellants assert that the EIS's economic analysis section should have included non-timber-related economics and the number of jobs supported by forested habitat in the project area, including recreation, tourism, hunting, fishing, and subsistence, and that the EIS failed to account for the tangible economic and ecological benefits of the no-action alternative. Specifically, Appellants assert that the EIS misrepresented the project's effects on fisheries as "minor" and "short term," that it failed to consider the value of productive watersheds within the project area, and that it failed to consider the effects of the project on the recreation economy.

Discussion

Appellants assert that the economic analysis conducted for the Big Thorne EIS is inadequate because the Forest Service failed to quantify the non-market values and costs associated with the project. It is important to note here that Appellants appear to confuse financial efficiency analyses, which are required for every timber sale project, with economic efficiency analyses,

which are not required at the project level [see, for example, FSH 2409.18, 13]. Financial efficiency analyses compare the estimated Forest Service direct expenditures with the estimated financial revenues of proposed timber sales [see pp. 3-17 to 3-43 of the Big Thorne EIS for a discussion of the timber sale costs and revenues associated with the Big Thorne project alternatives]. Appellants appear to suggest that NFMA and NEPA require a quantitative monetary analysis of all costs and benefits for all timber sale projects. These laws do not require the agency to quantify, in monetary terms, all of the costs and benefits associated with non-market impacts, and in fact, under most planning and project conditions, all costs and benefits cannot be monetarily valued.

While the Forest Service is not required to quantify the non-market benefits and costs associated with every timber sale, it is required to "insure that unquantified environmental amenities and values [are] given appropriate consideration in decisionmaking along with economic and technical considerations" [42 USC 4332(2)(B)]. The Big Thorne EIS analyzed the potential effects of the project on "unquantified environmental amenities and values," such as project area OGRs, wildlife and subsistence resources, aquatics and fisheries, and recreation, and the analyses of the potential effects on these non-market values are reasonable and consistent with NFMA, NEPA, and FSM and FSH guidance regarding social and economic analyses.

Issue 7. Whether the Big Thorne EIS adequately considered and disclosed the effects of the Alaska Region's export policy.

Appellants assert that the Region's export policy violates the Organic Administration Act, Forest Service regulations on timber export, and Tongass Forest Plan standards and guidelines. Appellants also assert that the EIS failed to adequately analyze the effects of the export policy on local manufacturing employment, and that the EIS included a misleading range of employment figures in violation of NEPA. Appellants further assert that the EIS failed to consider how the export policy reduces local manufacturing capacity, failed to assess the value disparity between the Tongass export program and timber processed by local mills, and failed to address how large scale projects with a high percentage of export will affect the remaining small mill operators and their ability to obtain timber in the long term and how it provides for fair competition within the Southeast Alaska timber industry.

Discussion

Forest Service regulations at 36 CFR 223.201 state:

> Unprocessed timber from [NFS] lands in Alaska may not be exported from the United States or shipped to other States without prior approval of the Regional Forester. This requirement is necessary to ensure the development and continued existence of adequate wood processing capacity in Alaska for the sustained utilization of timber from the National Forests which are geographically isolated from other processing facilities. In determining whether consent will be given for the export of timber, consideration will be given to, among other things, whether such export will:

(a) Permit more complete utilization on areas being logged primarily for local manufacture,

(b) Prevent loss or serious deterioration of logs unsalable locally because of an unforeseen loss of market,

(c) Permit the salvage of timber damaged by wind, insects, fire or other catastrophe,

(d) Bring into use a minor species of little importance to local industrial development, or

(e) Provide material required to meet urgent and unusual needs of the Nation.

In a letter dated February 20, 2013 [PR #736_1593], the Regional Forester stated:

> It is my responsibility to review the Limited Export Policy on an annual basis to determine if the policy should be adjusted. The policy was established in 2007 in an effort to boost appraised values, provide purchasers economic sale opportunities, and provide additional processing options for Purchasers of timber from National Forest lands in Alaska.
>
> Since 2007 the R10 Limited Export Policy has continued with modifications that have provided additional options for Purchasers. Although slight improvements occurred nationally in 2012, challenges continue for Purchasers seeking domestic markets for Alaska timber.
>
> In a continuing effort to encourage and support domestic processing, in 2012 I agreed to review requests to allow increased export of western hemlock and Sitka spruce from sales where an approved export permit was already in place in exchange for Purchasers providing an equivalent amount of Alaska yellow-cedar to small business operators who would process the timber locally. I will continue to consider such requests this year on a case-by-case basis.
>
> I would also like to remind timber managers that the current residual value appraisal allows a higher percentage of volume to be appraised for domestic processing when indicated advertised values are very positive for a planned sale offering. I would encourage consideration for appraising domestic when a perceived opportunity exists; for example, sales with greater quantities of large diameter hemlock and spruce volume may be profitable for processing locally (i.e. > 20" for hemlock and > 18" for spruce).
>
> The R10 Limited Export Policy will otherwise remain unchanged for calendar year 2013.

In compliance with 36 CFR 223.201, the Regional Forester has approved timber exports to other states and to foreign markets under consideration of "other things," namely, limited domestic market opportunities. The Regional Forester reviews the policy annually, examining the policy and its consequences.

Sales are appraised based, in part, on the limited shipment policy. Local purchasers can choose whether or not to ship whole logs to other markets. Sawmills in Southeast Alaska are like any other business, in that they will balance the need to retain a workforce with cash flow needs and continue to employ workers as long as they can stay in business. An increase in shipment of whole logs to other markets may decrease local employment in lumber manufacturing in the

short run, but it will help to retain employment in sawmilling both in the short and in the long run by helping keep local businesses viable. Shipping also retains or possibly creates employment in other sectors, such as stevedoring. Logging employment is not affected by whether the harvested logs are manufactured locally or not.

Allowing local purchasers to ship some material from timber sales to other markets provides more options for the few remaining locally owned sawmills in Southeast Alaska, such as VLC, Icy Straits Lumber and Milling Company, and small mills on Mitkof, Wrangell, and Prince of Wales Islands, to remain in business.
The indicated bid values in Table TSE-12 [Big Thorne EIS, p. 3-35] are based on the export policy and the expectation that 50 percent of Sitka spruce and western hemlock sawlogs and all of the Alaska yellow-cedar sawlogs will be exported. As stated in footnote 2 of Table TSE-13 [p. 3-36], young growth was appraised at 100 percent export because Southeast Alaska has not yet established a feasible market for sawn young growth. This resulted in a positive value for all alternatives except Alternative 4. Road construction and reconstruction costs are covered by the timber revenue under all scenarios except Alternative 4.

The Alaska Region limited export policy is allowed under Federal law and regulation, and the policy and its effects are reviewed annually. This policy creates opportunities to increase indicated advertised values so that not only do sales have the potential to appraise positive when actually offered, but the costs of roads and transportation can be covered by the value of the timber.

The sawmilling and export manufacturing, logging, and transportation and other services employment estimates explained in the Big Thorne EIS [pp. 3-35 and 3-36] are calculated using harvested and manufactured timber volumes and employment numbers from 2007 through 2010. This averaged proportion of employment to volume would not change significantly unless there were significant changes in sawmill configurations or operations in the case of the sawmilling multiplier, or significant changes in how logging is done in Southeast Alaska in the case of the logging multiplier. Transportation and other services employment takes into account towing, independent trucking, stevedoring, scaling, quality control, and marketing employment that results from timber harvest on NFS lands. These numbers are intended to be used to compare alternatives and give a rough estimate of the range of possible employment that could result from full implementation of the project. The employment numbers in the Big Thorne EIS are reasonable estimates of how many annualized jobs could be generated by timber sales in the Big Thorne project area, and are useful for comparing the alternatives.

Appellants state that the EIS displays a maximum 348 sawmill jobs generated by 154.8 MMBF of sawlogs, while the ROD also indicates a maximum 348 sawmill jobs generated by less volume (131.4 MMBF of sawlogs) [EIS, p. 3-36; ROD, p. 36]. This is true, and is in error. The Selected Alternative includes approximately 23 MMBF less sawlog volume, and the correct range of sawmill jobs for the Selected Alternative should be 154-290 sawmill jobs [PR #736_2965].

Appellants also state that the Big Thorne project uses the wrong sawmill multiplier by adding in indirect and induced jobs, which they state is contrary to the findings of Region 10's own economists. This is not true. The footnotes in Table TSE-13 in the EIS and Table ROD-9 in the ROD both cite Alexander (2012) [PR #736_1540]; the employment coefficients include only direct employment.

Issue 8. Whether the Big Thorne EIS relies on accurate market demand scenarios.

Appellants assert that the Tongass Forest Plan market demand scenarios and the Morse methodology have consistently overestimated real demand for over a decade and are based on outdated, unsupported assumptions that ignore actual pricing and cost trends. Appellants further assert that the Forest Service has failed to recognize a persistent, long-term decline in installed and operable mill capacity and mill utilization rates, and that the EIS failed to disclose flaws with the Tongass market demand models, including long-term inaccuracy of the projections, their reliance on untested assumptions, and the exclusion of relevant factors such as global market prices. Appellants also assert that the EIS failed to explain the specific factors considered in setting projected offer levels, the data relied on to justify elements of the methodology, and information on whether the Forest Service has followed agency guidance for updating the information used in the methodology.

Discussion

The forest-wide market demand analyses completed for the 2008 Tongass Forest Plan are outside the scope of the Big Thorne project EIS. However, I will briefly address Appellants' criticisms of these demand analyses. The planning cycle market demand analysis for the 2008 Forest Plan was completed in "Timber products output and timber harvests in Alaska: projections for 2005-25" [Brackley, et al. 2006, PR #736_1628] and further described in "Timber products output and timber harvests in Alaska: an addendum" [Brackley and Haynes 2008, PR #736_1629]. The interaction between planning cycle demand and annual demand calculations is described in Appendix G to the 2008 Forest Plan EIS [all pages]. The Forest Service is aware of opposing views, and has responded in Brackley and Haynes (2008) [all pages] and in Appendix G [all pages] and Appendix H [pp. H-26 to H-36] of the Forest Plan EIS. The Big Thorne EIS is a project-level analysis, and the project is just one component of the total Tongass timber program. The timber supply and demand issues tier to the Forest Plan, which the Big Thorne EIS follows. The demand analyses underlying this project-level EIS are based on the best science available, and have been extensively peer reviewed.

Brooks and Haynes (1997), "Timber products output and timber harvests in Alaska: projections for 1997-2010," warned against equating timber demand with actual harvest:

> As with our previous projections, the volume of projected National Forest harvest is neither the volume likely to be harvested nor, necessarily, the volume that ought to be offered for sale. It is the volume of National Forest timber harvest that is consistent with projected consumption of Alaska products... we do not intend to imply that 'gaps' will be created by levels of National Forest harvest that differ from our projections.

[PR #736_2181]. In deciding how much timber to offer for sale in any given year, the agency uses the Morse methodology [Morse 2000, PR #736_2182]. Appellants assert that this methodology has failed to yield accurate demand estimates. As discussed in detail below, I disagree with Appellants.

As stated in Morse 2000, "[s]eeking to meet the market demand for timber under [current] conditions requires a great deal of professional judgment" [PR #736_2182, p. i]. This statement is as true today as it was when the methodology was first developed. The Morse methodology has the advantage of being self-correcting in that when actual harvest falls below demand projections, offerings for future years are reduced. It also adjusts for changes in mill capacity due to openings and permanent closures of facilities.
Morse stated that the effect of underestimating timber demand is much more serious than overestimating demand. When the agency underestimates timber demand, mills can close for lack of adequate timber supply. Conversely, if the agency prepares more timber than is demanded, the excess timber will not be sold and no environmental effects will occur. Timber demand on the Tongass has always been volatile, and can differ significantly from actual harvest in any given year or series of years.

Brackley and Haynes (2008) state that the Morse model is an inventory adjustment system "that describes the annual sales programs as a function of both the long-term demand trend and goals the forest has for maintaining the uncut volume under contract. It is the portfolio of sales that contains the uncut volume under contract that mills draw timber from for processing" [PR #736_1629, p. 24].

The monitoring criteria in Morse (2000) are very detailed, comprehensive, and are widely applicable in most cases to a variety of markets and situations. The Forest Service periodically reviews the monitoring criteria with Pacific Northwest Research Station (PNW) scientists to assure they remain timely, and these reviews will continue. Information that allows the public to assess the monitoring criteria are released in a variety of ways, through cut and sold reports, ANILCA reports, annual Southeast Alaska sawmill assessments, and through various other reports published on the Alaska Region website in the Forest Management tabs at http://www.fs.usda.gov/detail/r10/landmanagement/resourcemanagement/?cid=fsbdev2_038785.

Alaskan wood products markets are closely tied to North America and the Pacific Rim, and have been deeply affected by tight credit and low cost margin issues. However, rapid development of wood-biomass energy could open up new markets for small and lower quality wood. Domestic housing starts are once again on the rise, and domestic lumber prices are recovering. As wood products markets improve, remaining wood manufacturing facilities will be well situated to take advantage of rebounding demand for lumber. Long-term demand for Alaska wood products is expected to increase.

In my opinion, the market demand analyses for the Tongass Forest Plan reflect the best available science, and the Forest Service's reliance on these analyses and the Morse methodology in determining how much timber should be offered from the Tongass is reasonable.

Issue 9. Whether the EIS and ROD included an adequate justification for the amount of clearcutting and the size of clearcuts included in the Selected Alternative.

Appellants assert that the EIS failed take a hard look at and disclose the direct and cumulative effects of clearcutting on wildlife and other forest resources, and that the justification for the amount of clearcutting in the Selected Alternative relied solely on economic concerns and failed to consider other forest resources. Appellants further assert that the EIS did not disclose the risks associated with windthrow both within and outside units, including the risk that the "legacy structure" used as a buffer between units will not endure in the long run because of windthrow and the windthrow risks associated with climate change. Appellants also assert that dwarf mistletoe is not a forest health issue and that the Forest Service simply uses it as an excuse to clearcut. Appellants further assert that the assumptions about regeneration used in the EIS are flawed and fail to support the clearcutting prescriptions. Finally, Appellants assert that the EIS failed to disclose that multiple adjoining clearcuts or clearcut units artificially separated by legacy structure will create openings in excess of 100 acres, and that it failed to evaluate the effects of these large openings on wildlife, fish habitat, and watersheds and failed to implement the few forest structure retention requirements that the Forest Plan requires for wildlife.

Discussion

Section 6(g)(3)(F)(i) of NFMA requires that the Forest Service:

> Insure that clearcutting, seed tree cutting, shelterwood cutting, and other cuts designed to regenerate an even-aged stand of timber will be used as a cutting method on [NFS] lands only where - for clearcutting, it is determined to be the optimum method, and for other such cuts it is determined to be appropriate, to meet the objectives and requirements of the relevant land management plan.

Agency directives in FSM 2410, Section 2410.3, R10 Supplement 2400-2002-1, state:

> The following provides Regional policy and direction for planning the management of timber resource within the Alaska Region. The policy addresses: (1) appropriate harvest cutting methods; (2) forest type standards; (3) maximum size of created openings; (4) dispersal, and size variation of tree openings created by even-aged management; (5) the state vegetation must reach before a cut-over area is no longer considered an opening; (6) management intensities; (7) utilization standards; (8) sale administration; (9) project monitoring; and (10) competitive bidding and small business sales.

Detailed direction is given for each of the factors listed in this FSM Supplement. Specifically notable here is the direction for factors 1-5, which provides additional direction on appropriate cutting method(s), forest type, maximum size, dispersal and size variation of created openings, and the state vegetation must reach before a cut-over area is no longer considered an opening.

Chapter 3 of the Big Thorne EIS discloses the potential effects of the clearcut harvest included in the action alternatives on the resources of the project area, and Appendix B provides additional detailed discussion in response to comments received on the amount of clearcutting included in the action alternatives and the size and location of proposed clearcut harvest units [pp. B-72 to B-79]. In regards to one unit that was identified as 103 acres in the DEIS (Unit 71), the response clarifies that exceptions to the 100 acre size limit are sometimes allowed to meet management goals [Id., p. B-74; see also PR #736_2233, Timber and Silviculture Resource Report, p. 30]. However, the response goes on to indicate that changes to the unit as a result of refined stream mapping reduced the size of the unit to below 100 acres [Id.; see also EIS, p. 3-421].

Information on the number of potential openings is available in various documents in the project record. Appendix A of the Timber and Silviculture Resource Report [PR #736_2233, pp. 61-66] provides a list of the total unit pool. Volumes III, IV, and V of the DEIS (available on CD) contain the unit cards for all units within the unit pool, and Appendix B of the DEIS provided an introduction (explanation) of the unit cards. Appendix 1 of the ROD contains the unit cards for the units in the Selected Alternative, along with accompanying maps. The ROD map and alternative maps display the units for the Selected as well as the other alternatives, and display the location of all units in proximity to other units and past harvest units. The unit cards provide additional information on buffered areas between harvest units.

Factor 4 of the FSM Supplement referenced above provides detailed direction pertaining to the dispersal and size variation of openings. That direction requires consideration of a host of items including wildlife and fisheries habitat needs, relationship to other openings, topography, and windthrow risk. Factor 5 addresses the state vegetation must reach before a cut-over area is no longer considered an opening, and includes minimum stocking levels and height. With respect to height, the cumulative effects discussion in the Big Thorne EIS Timber and Vegetation section [p. 3-345] discloses that not all previously harvest areas contain trees tall enough to meet the requirements for no longer being considered an opening. In these areas, the previous unit acreage was added to any adjacent planned harvest unit acreage to ensure that the resulting opening did not exceed the NFMA maximum opening size. The cumulative effects section of the Timber and Silviculture Resource Report [PR #736_2233, p. 51] notes that [in addition to this mitigating design] these stands are growing and may achieve the height adequacy requirements by the time of implementation. With respect to stocking levels, FSH 2409.17 (R10 Silvicultural Practices Handbook) contains stocking level requirements. The Timber and Vegetation section of the EIS [p. 3-421] discusses the expected regeneration following the harvest proposed in the project area, which is expected to be abundant.

Appellants assert that dwarf mistletoe is not a disease and that the Forest Service simply uses it as an excuse to clearcut. I disagree. Dwarf mistletoe is a disease that is harmful to trees, reducing growth, causing deformity, and affecting the health of individual trees and forested stands, and it was appropriate for the Forest Supervisor to consider it in determining whether clearcutting was appropriate. The Timber and Silviculture Resource Report discusses the damaging effects of dwarf mistletoe in detail [PR #736_2233, pp. 11-12]. The Forest Plan EIS discloses the circumstances where even-aged systems are appropriate on the Tongass [p.3-328], noting that clearcutting has traditionally been used in the hemlock-spruce forests of Southeast Alaska to reduce mistletoe infection by eliminating infected trees from the overstory. The Forest

Plan includes standards and guidelines for even-aged systems that incorporate the analysis completed during development of the Plan and the regulations and policy cited above [pp. 4-71 to 4-72]. An effect of partial cutting (uneven-aged treatments) is for the disease to remain in the stand and infect new (regenerated) stands with the same diseases and decays present in the stands before harvest [PR #736_2233, p. 46].

The ROD [p. 47] includes the Forest Supervisor's determination that clearcutting is the optimal harvest method where it is planned to be used, stating "[c]learcutting... is used in this project to preclude or minimize the occurrence of potentially adverse impacts such as to remove or reduce mistletoe infections, logging damage, or other factors affecting forest health."

In my opinion, this determination is reasonable based on the direction discussed above, and the Forest Supervisor's decision to use clearcutting in the units for which it is prescribed is consistent with NFMA and the Forest Plan.

Appellants also assert that the EIS did not disclose the risks associated with windthrow, including the risk to the "legacy structure" and the windthrow risk associated with climate change. The policy direction refereuced above for determining the appropriate harvest method for a given forest type and the dispersal and size variation of openings includes consideration of windthrow risk. Chapter 3 of the EIS (Timber and Vegetation section) states that windthrow hazard (the presence of tree and stand attributes determining windthrow potential) is one of the criteria used in selecting the appropriate silvicultural system for each unit [EIS, p. 3-419]. That section of the EIS continues with a discussion of the Reasonable Assurance of Windfirmness (RAW) buffers that will be located within Riparian Management Areas (RMAs). As stated in the EIS, the IDT will determine the location of appropriate RAW buffers during unit layout, as identified in the unit cards [Id., see also Appendix 1 of the ROD]. The EIS discusses the design and placement of RAW buffers in relation to legacy structure, noting that adjustment of legacy structure location could occur during implementation to best address multiple objectives (including the reduction of windthrow potential during field layout) [pp. 3-420 to 3-422]. Windthrow, RAW buffers, and the use of legacy forest structure are also discussed in the Design Criteria and Mitigation Common to all Action Alternatives section of the EIS [p. 2-14]. In addition to buffers along streams, some units include visual buffers for screening, which will also be reviewed for RAW buffers. The Timber and Silviculture Resource Report [PR #736_2233, p. 29] emphasizes that even though the IDT was confident that partial cut areas would continue to meet the requirements for legacy structure, only uncut areas were used to better meet the intent of the Forest Plan. This strategy will also make them more windfirm.

The EIS [p. 3-432] discloses that exposed stand edges (outside of units) would have increased risk of windthrow in the first few years after harvest. This potential is usually concentrated within the first 30-60 feet of the boundary. Above 2-3 acres, opening size does not appear to have a significant effect on the amount of windthrow. The potential cumulative effects with respect to windthrow are discussed in the EIS [p. 3-433]. Also notable here is the justification for clearcutting as the optimal method of harvesting, because, among other things, it minimizes the risk of post-harvest windthrow.

With respect to the potential for windthrow risk associated with climate change, the section on climate change in the EIS notes the general uncertainty regarding the effects of climate change on the resources of the Tongass. The forest will continue monitoring the potential effects of climate change through existing Forest Plan monitoring programs as the science develops.

With regard to whether the Forest Plan legacy standards and guidelines have been appropriately applied in the Selected Alternative, see my response to Issue 10, below.

In my opinion, the EIS, ROD, and project record include adequate consideration of and justification for clearcutting and the size of clearcuts, including the discussion of forest health issues such as mistletoe and the need to consider and mitigate the risks of windthrow. The EIS considered and disclosed the effects of clearcut harvest on other forest resources. Therefore, the Forest Supervisor's determination that clearcutting is the optimal method of harvest is reasonable and complies with NFMA, direction in FSM 2400-2002-1, and the Forest Plan.

Issue 10. Whether the Forest Plan legacy standards and guidelines are adequate, and whether they were appropriately applied to the Big Thorne project.

Appellants assert that the Forest Plan legacy standards and guidelines are inadequate and unlawful, and that the Big Thorne EIS failed to disclose responsible scientific opinion opposing their use on Prince of Wales Island. Appellants further assert that the EIS should not have relied on the legacy standards and guidelines to provide adequate connectivity, foraging, and nesting habitat in the project area's heavily altered landscape. Finally, Appellants assert that the EIS and ROD unlawfully used the legacy standards and guidelines to circumvent NFMA's 100-acre opening size limit and failed to meet the objectives of the standards and guidelines.

Discussion

With regard to the adequacy of the Forest Plan legacy standards and guidelines, the Forest Plan ROD [p. 15] states:

> This decision relies heavily on the sound scientific foundation developed in the 1997 Tongass Forest Plan, especially the fish and riparian standards and guidelines and the comprehensive wildlife conservation strategy prepared through an interagency collaborative process. All key components of this conservation strategy have been incorporated in the amended Forest Plan. This strategy has been developed through careful analysis and integration of the best scientific information available on this subject, and will minimize fragmentation of old growth habitat on the Forest.

The Big Thorne EIS states that the project implements the legacy standards and guidelines [p. B-78; see also Forest Plan, p. 4-90]. These standards and guidelines are based on the forest-wide conservation assessments, which incorporated multi-agency and scientific panel support in their development. In response to comments on the DEIS related to this issue, the Big Thorne EIS discussed the rationale for the legacy standards and guidelines as explained in the ROD for the 2008 Forest Plan [Id.; see also Forest Plan ROD, p. 23].

The Forest Service is aware of opposing views on the adequacy of the legacy standards and guidelines, and has disclosed these in the EIS [see, for example, response to concerns on the flying squirrel, pp. B-161 to B-164]. In addition, each resource section references current available science, with considerable citations of ongoing research and personal conversations with topic and species experts. The EIS also acknowledged that "[a]nnual Forest Plan Monitoring Reports track the implementation of the Legacy Standard and Guidelines; however, there has not been a thorough evaluation of the effectiveness of the Legacy Forest Structure Standard and Guideline" [EIS, p. B-151].

The Big Thorne EIS tiers to the viability assessments for goshawks, marten, wolves, other terrestrial mammals (well-distributed mammals and endemic mammals), and marbled murrelets, and the analysis of cumulative effects conducted at the forest scale for the 2008 Forest Plan EIS. These analyses fully considered the levels of past and likely future harvest and associated development on NFS and non-NFS lands, accounting for projects such as Big Thorne. The Forest Plan EIS concluded that full implementation of the Forest Plan (in 100+ years) is expected to have a moderate to very high likelihood of maintaining habitat that supports viable and well-distributed populations of wildlife [Forest Plan EIS, p. 2-57; see also PR #736_0419, Big Thorne Wildlife and Subsistence Resource Report, p. 9].

The legacy standards and guidelines are not expected to meet full habitat capability for connectivity, foraging, and nesting habitat on their own. For example, the reserve tree/cavity nesting habitat standard and guideline [WILD1.V.A, Forest Plan, p. 4-90] was developed to leave snag and reserve trees within units and beyond buffers and other exclusions in VCUs where the legacy standards and guidelines do not apply. The landscape connectivity standard and guideline [WILD1.VI.A, Forest Plan, p. 4-91] directs projects to maintain landscape connectivity by maintaining corridors of old growth forest among large and medium OGRs and other non-development LUDs at the landscape scale. These standards and guidelines and the Forest Plan conservation strategy were developed, in part, based on the consideration of potential effects greater than current and recent program achievements, and were designed to ensure sufficient habitat components in both development and non-development LUDs.

To analyze connectivity and suitability for the Big Thorne project, productive old growth (POG) per VCU was one unit of measure [PR #736_0419, Wildlife and Subsistence Resource Report, Tables 5, 6, 17-21], and road density was another [Id., Tables 11, 13, 30, 32, 34, 36]. The Report acknowledges that some units have been affected more than others. The Report includes continued discussion on the current science regarding the standards and guidelines and related effects on habitat effectiveness, including the effects on MIS such as wolves [pp. 35-39], Sitka black-tailed deer [p. 32], marten [pp. 39-40], black bear [pp. 41-42], and others. The EIS and project record fully acknowledge the past effects on wildlife habitat and connectivity.

With regard to whether the Forest used the legacy standards and guidelines to circumvent NFMA's 100-acre clearcut size limit, the Forest recognized this concern and describes the objectives and implementation criteria applied to the project. There are no proposed openings in the Big Thorne project that exceed 100 acres. While Unit 71 included 103 acres at the time of the DEIS, the planned unit size was reduced due to refined stream mapping and is now less than 100 acres [EIS, p. 3-421].

The unit cards in the ROD [Appendix 1] fully disclose the legacy retention in the harvest units [Big Thorne ROD, Appendix 1]. The record indicates that the legacy standards and guidelines have been used in some units to meet NFMA's requirements to avoid openings in excess of 100 acres. Breaking large treatment units into smaller sections divided by untreated areas is designed to meet the direction provided by the legacy standards and guidelines that retention areas fall within treated areas. The intent of leaving legacy forest structure is to provide structure within the opening [Forest Plan, p. 4-90, WILD1.IV.C]. Recent harvest areas are considered openings until or unless they contain trees 5 feet tall or greater [Big Thorne EIS, p. 3-435].

Although the Big Thorne project complies with NFMA standards for not placing new openings adjacent to existing openings and not exceeding 100 acres and appears to meet the legacy standard to "provide structure within the opening," I do have concerns as to whether it meets the intent of the legacy standards and guidelines and the conservation strategy to protect important areas and provide old growth forest habitat connectivity [Forest Plan EIS, Appendix D].

The intent of the legacy standards and guidelines, as stated in the Forest Plan ROD, was to ensure a diversity of forest structure (old trees, snags, closed canopy cover) sufficient to maintain connectivity and habitat conditions for goshawk and their prey, as well as to provide suitable foraging and dispersal habitat for marten, reducing adverse effects on species habitat by retaining important forest structure where it is most needed, in those higher-risk VCUs. The Forest Plan ROD stated that this would "provide beneficial effects to more species in more areas across the Tongass" [2008 ROD, p. 22]. Currently in the Big Thorne project, some planned units are next to large blocks of previously harvested units less than 20 years old. For example, the unit cards indicate that Unit 127 (87.1 acres) is next to a previously harvested clearcut that is less than 15 years old. While the young growth in that previously treated unit may be taller than 5 feet, it does not currently provide old growth structure or habitat connectivity. Unit 71 (91.5 acres), mentioned above, is immediately adjacent to three young growth units 25 years old or less.

See my recommendation in response to Issue 16, below. While not directly related to the deer and wolf concerns expressed in that response, habitat connectivity is an important consideration for all wildlife species. Therefore, as part of his review of the new information regarding deer and wolves and whether changes to project design are needed, I recommend that the Forest Supervisor review the placement of legacy structure within each unit and ensure that adequate old growth forest habitat connectivity is maintained consistent with the intent of the legacy standards and guidelines. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this information.

Issue 11. Whether the EIS adequately analyzed the effects of the project on Alaska yellow and western red cedar.

Appellants assert that the EIS failed to adequately address past and present cedar highgrading. They also assert that the EIS did not adequately address yellow cedar decline and climate change and how the cumulative effects of logging relate to this decline. Appellants also assert that the

assumptions made about cedar regeneration are misleading, and that they needed to consider the Forest Service's own regeneration data and updated scientific research and should have disclosed that regeneration efforts are experimental and uncertain.

Discussion

The Forest responded to these same assertions that the EIS failed to adequately address past and present cedar highgrading, yellow cedar decline, and climate change in the Response to Comments located in Appendix B of the EIS. This response indicates that yellow cedar decline was a particularly important consideration for the project, stating that the Forest Service considered yellow cedar and decline as potential alternative-driving issues [p. B-85]. The EIS also discusses the consideration of an alternative that would avoid the harvest of healthy yellow cedar stands [pp. 2-19 and 2-20]. The EIS, however, goes on to discuss that yellow cedar is common in the project area, particularly so on non-development lands and other lands where no timber harvest would occur, and that the total land area where no activity would occur far exceeds the lands proposed for harvest. Because of this and the protections that would already be provided by the Forest Plan, the IDT determined that it was not necessary to consider an alternative that avoided healthy cedar stands. Appendix B provides further discussion on yellow cedar decline and climate change, also noting the inherent Forest Plan strategy for maintaining healthy viable vegetation types, communities, and populations encompassing the cedar species.

The section on climate change in the EIS [pp. 3-333 to 3-336] discusses ongoing research and scientific recommendations for yellow cedar management, referencing and/or incorporating a number of research publications that address yellow cedar condition, decline, and conservation strategies [see, for example, Hennon, et al. 2008, PR # 736_1226; USDA Forest Service Reports, Health Conditions in Alaska 2004-2011, PR #736_1212 to 736_1220; and Hennon et al. 2012, PR #736_1915].

Appellants assert that disproportionate amounts of cedar have been removed, and that the analysis failed to incorporate research identifying serious concerns about the cumulative effects of continued removals of stands with a significant cedar component in the project area. The current literature does not condemn or explicitly support the harvest of cedar species, and research does not demonstrate any cumulative effects between past, present, or future logging and cedar decline. When conducting the analysis, determining issues, and developing alternatives (including giving consideration for a cedar-avoidance alternative), the Forest considered the available land base in the Big Thorne project area and the amount of area suitable for timber harvest, as well as non-development lands and other lands where no timber harvest would occur. As discussed above, these areas provide conservation areas for cedar and include much more land area than the area proposed for harvest.

Section 6(g)(2)(3)(B) of NFMA requires land management plans to achieve goals which:

> Provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives, and within the multiple-use objectives of a land management plan adopted pursuant to this section, provide, where appropriate, to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the plan.

The Timber and Silviculture Resource Report [PR #736_2233, pp. 16 and 17] and the Big Thorne EIS [pp. 3-417 and 3-418] discuss yellow cedar decline in detail, referencing the ongoing effort to develop a conservation strategy for yellow cedar in Southeast Alaska. Contrary to Appellants' assertions, important components of the developing strategy and current research have been taken into consideration in development of the project. The analysis compares and evaluates the balance between areas where cedar mortality has occurred and is most severe, and areas where it continues to thrive on a landscape scale as well as within the project area. At the site level, the EIS notes that areas with extensive decline are typically within lower productivity forest lands on slopes less than 25 percent. These areas have low site indices, poor soils, and low timber volume, making the majority unsuitable for timber production.

Silviculture prescriptions provide guidance through the entire life of the stand, and key considerations have been carried forward into prescription development. While evaluating a host of other management considerations including windthrow risk, the even-aged option provides an opportunity to locate and carry out treatments on well drained, cooler sites with abundant regeneration and options for supplemental planting of yellow cedar where the species is expected to be resistant to decline.

While development of a cedar conservation strategy is ongoing, the literature suggests that management actions such as planting and thinning can occur immediately to promote yellow cedar [PR #736_1915]. Another key strategy component will be to favor cedar species with follow-up treatments throughout the life of the stand. Future pre-commercial thinning treatments in regenerated stands will promote cedar species, helping them to compete better with other faster growing species. This will also be part of the strategy in managing existing young growth stands. Young growth treatments proposed in the Big Thorne project are expected to maintain or improve representation of both cedar species [EIS, p. 3-434]. Uneven- aged treatments offer the opportunity to retain intermediate-sized cedar with good vigor and advanced regeneration of cedar species [EIS, p. 341]. Where larger openings are created with uneven-aged treatments, opportunities for influencing regeneration composition with cedar species will be considered.

Despite the information regarding cedar regeneration discussed above and in the project record, Appellants assert that adequate regeneration is questionable. The Forest addressed this issue in the Response to Comments [EIS, Appendix B, pp. B-87 to B-88]. This response indicates that additional information regarding cedar regeneration was added to the Direct and Indirect Effects discussion in the Timber and Vegetation, Regeneration and Species Composition section of the EIS [p. 3-431] and in the Timber and Silviculture Resource Report [PR #736_2233].

Appellants imply that there is inconsistency in species composition numbers between existing old growth within the project area [EIS, p. 3-414] and existing young growth [PR #736_2233, Timber and Silviculture Resource Report, p. 24; see also EIS, p. 431]. Specifically, Appellants point to the young growth stand data included in the Resource Report that they believe shows cedar composition has declined by half. Cedar species composition in pre-harvest old growth units should not be considered a target species composition for future regenerated units since this composition represents an average of all units, some of which will have higher or lower amounts of cedar present in the overstory. It is important to note that the NFMA regulations do not specify that harvest units be regenerated with the exact species compositions that existed prior to harvest. Regardless, what Appellants omit from their discussion is information the Report includes regarding the comparison data, which indicates that the young growth is an average of mixed stands, some of which have not been thinned (and therefore, no opportunity to implement strategies for prioritizing cedar species for retention during thinning treatments). The footnoted portion of the data table for young growth also indicates that the treatments on the stands that have been thinned occurred prior to implementation of the more recent strategy for prioritizing cedar species for retention [PR #736_2233, Timber and Silviculture Resource Report, p. 25]. Thinning is exactly the kind of active management that the literature suggests will effectively favor and expand yellow cedar's realized niche [PR #736_1915, Hennon et al. 2012].

With regard to Appellants' concerns as to whether cedar will be adequately regenerated in the project area, NFMA regulations provide broad direction that forested lands shall be maintained in appropriate forest cover with species of trees, degree of stocking, rate of growth and conditions of stands designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans [16 U.S.C. 1604 (d) (1)]. Agency directives in FSM 2470, Section 2472.02, mirror the law by stating that reforestation objectives shall "maintain all forest lands within the [NFS] in appropriate forest cover. FSM 2470, Section 2472.05 defines appropriate forest cover as "vegetation composed of plant communities, which would occur naturally on similar sites depending upon the stage of plant succession."

The Forest Plan provides standards and guidelines for silvicultural examination and prescription [pp. 4-70 and 4-71]. Key standards and guidelines related to regeneration are:

> F. Include an appropriate species mix for regeneration in the silvicultural prescriptions prepared during the environmental analysis. The "appropriate species" is based on the potential of the site as indicated by plant associations and adjacent stand conditions.
>
> G. Evaluate the natural reproduction potential and existing reproduction as part of the silvicultural analysis and prescription. Where possible, harvest prescriptions should consider leaving advance regeneration to meet reforestation needs and stand objectives.
>
> H. Consider regenerating and maintaining a mix of dominant overstory tree species where appropriate, for the site to provide for the diversity of future stands and to augment the future availability of forested habitats used by other species (wildlife and plants). Common, but less represented Forest-wide overstory species include yellow cedar and western red cedar.

It has long been recognized that yellow cedar does not prolifically regenerate. The reproductive capacity of yellow cedar is considered to be low, but some seed is produced every year. Highest germination rates are achieved on bare mineral soil in open environments. Even with this low reproductive capacity, information on young growth and regenerated stands provided in the Timber and Silviculture Resource Report [PR #736_2233] demonstrates that both cedar species are naturally regenerating. Applying conservation strategies, including going forward with future management in treated stands (pre-commercial thinning), will help achieve a mix of species similar to that which occurs naturally in old growth stands.

In my opinion, the analysis of the effects of the project on cedar species, including yellow cedar decline and climate change, is adequate and consistent with applicable law, regulation, policy, and Forest Plan direction.

Issue 12. Whether the EIS adequately disclosed the effects of highgrading and concentrating timber sales on Prince of Wales Island.

Appellants assert that the Big Thorne EIS should have addressed the Ninth Circuit Court's concerns about the disproportionate harvest of high volume old growth, especially since the majority of the Tongass National Forest's timber program is on Prince of Wales Island, and that the Timber and Vegetation section of the EIS failed to adequately disclose the effects of past, present, and reasonably foreseeable highgrading at appropriate scales and considering all landownerships.

Discussion

Appellants' assertions that the Tongass National Forest explicitly planned to focus the entirety of its timber sale program on Prince of Wales Island are unfounded. While the Big Thorne project is proposed on Prince of Wales and the Island has historically included significant program focus, the Tongass timber sale program includes both current and proposed sales in other areas of the forest, including, but not limited to, the following sales/proposed sales:

Sale/Proposed Sale	Location
Wrangell Island Project (in planning)	Wrangell Island
Saddle Lakes Project (in planning)	Revillagigedo Island
Kosciusko Young Growth Project (in planning)	Kosciusko Island
Midway Timber Sale (under contract)	Chichagof Island
Frenchie Timber Sale (under contract)	Zarembo Island
Tonka Timber Sale (under contract)	Kupreanof Island

The Response to Comments in Appendix B of the EIS [p. 96] clarifies the rationale behind the location and selection of timber sale proposals, which take into account such factors as historical information, location of processing facilities, economic feasibility requirements, and changes that have occurred over time. The EIS discusses the Forest Plan modeling and analysis of suitable and available timber, and acknowledges that the further north the suitable timber is located, the lower the value, which makes it less likely that the Forest Service would be able to offer a positive sale [EIS, p. B-96].

Timber sale proposals continue to occur across the forest, including areas north of Prince of Wales, given a host of feasibility considerations and the needs of the program. Appendix A provides the rationale for why the Big Thorne project area was considered for timber harvest at this time:

- The project area offers economic timber that could contribute to local demand.
- The project area includes a well-developed road system that provides access to many of the proposed timber harvest units and may be used to transport harvested logs.
- A substantial infrastructure of existing sawmills is located in or near the project area, connected by the road system. This includes the largest remaining sawmill in Southeast Alaska, VLC.
- The project area is on the Prince of Wales Island road system, includes the City of Thorne Bay, and is near Coffman Cove, Naukati Bay, Craig, Klawock, and other cities, which would help support direct and indirect employment through the supply of personnel, goods and services.
- The Big Thorne project area contains sufficient acres of suitable and available forest land to make this timber harvest proposal reasonable. Areas with available timber need to be considered for harvest in order to seek to provide a supply of timber from the Tongass which (1) meets the annual market demand, and (2) meets the market demand from such forest for each planning cycle, pursuant to Section 101 of TTRA.
- The Big Thorne project could use the existing and currently permitted MAFs at Thorne Bay and Coffman Cove.
- The proposed harvest units are within development [LUDs] as allocated by the Forest Plan. An exception is some young growth thinning in the Old Growth Habitat LUD which is being done to improve habitat.

Some of the challenges to balancing timber sale program offerings on the Tongass are the location of existing infrastructure, the cost of accessing potential project areas, and appropriation legislation that prohibits offering timber sales that do not appraise positive.

With regard to Appellants' assertions on highgrading, the Biodiversity section of the 2008 Forest Plan FEIS [pp. 3-127 to 3-218] describes in detail the total amount of past old growth harvest on NFS and non-NFS lands, and the amount within each of the 23 biogeographic provinces that make up Southeast Alaska. In addition to the total amount of POG harvest, the amount of high volume and large tree old growth harvest, the amount of harvest on karst terrain, and other descriptors are provided and discussed. Based on the size-density model, potential old growth is defined and delineated into seven stand types based on tree size, tree density, volume class, hydric soils class, and soils [Forest Plan EIS, p. 3-140]. This stratification was developed for its usefulness in describing important forest elements, including forest structure, ecosystem diversity, and wildlife habitat. For modeling and yield estimation purposes, old growth was derived from a generalization of the size density model into three volume strata (high, medium, and low).

NFMA did not create a concrete, precise standard for measuring or analyzing diversity. The 2008 Forest Plan FEIS describes a useful stratification system for old growth forests to help quantify and qualify past, present, and future actions that may alter old growth in terms of forest structure, ecosystem diversity, and wildlife habitat.

In the Response to Comments, the EIS discusses the amount of "large tree" POG in the project area, and the amount that was proposed for harvest under the alternatives [p. B-99]. There are currently 22,116 acres of "large tree" POG in the project area [p. 3-141]. Alternative 3 included the harvest of about 9 percent of this "large tree" POG, and Alternatives 2, 4, and 5 included the harvest of about 6 percent [Id.]. Chapter 3 of the EIS discusses the effects of this harvest on project area resources. The Selected Alternative includes the harvest of about 7 percent of the existing "large tree" POG [ROD, p. 37].

With regard to Appellants' assertions that the EIS should have addressed the Ninth Circuit Court's concerns about the disproportionate harvest of high volume old growth, the Forest Service responded to the Court's concerns by developing a catalogue of past harvest by land ownership within each biogeographic province, including acreage and decade of harvest. Methodologies for quantifying the amounts and types of past harvest and for projecting future harvests on all land ownerships were also developed [Forest Plan ROD, p. 45]. As discussed above, the Biodiversity section of the 2008 Forest Plan EIS includes an extensive discussion on the amount of old growth harvested on the Tongass.

The Big Thorne EIS considers the available land base in the project area and its suitability for timber harvest, taking into account those lands that are unsuitable [EIS, p. 3-412; Appendix A, pp. A-15 to A-16]. While they are not suitable for harvest under the Forest Plan, some areas are still productive forest lands and therefore provide various levels of conservation benefits. The 2001 Roadless Area Conservation Rule is now in effect on the Tongass and provides additional acreage of POG that will be preserved from future timber management. In addition, there are over 2,000 acres of young growth stands included in the unit pool for this project, and proposed commercial thinning treatments in these stands respond to the objective of improving habitat quality in closed canopy stands and accelerating development of old growth stand conditions.

The analysis of the effects of harvesting old growth habitat in the Wildlife and Subsistence use sections of the EIS does address the disproportionate harvesting of POG that occurred in the early years of commercial timber harvest on the Tongass. The discussion notes the use of Forest Plan legacy structure standards and guidelines to ensure that sufficient residual trees remain where concentrated harvest has occurred in the past in order to provide the full range of matrix functions. The Timber and Silviculture Resource Report [PR #736_2233, p. 29] includes a list of proposed harvest units by silvicultural system for each of the alternatives. For the Selected Alternative, over 1,000 acres will be harvested with an uneven-aged system. As noted in the ROD [p. 5], the implementation of uneven-aged prescriptions will maintain more biodiversity and more old growth characteristics across the landscape. Additional modifications included in the Selected Alternative will also serve to improve old growth habitat, including dropping units and reassigning acres to maintain POG in VCUs 5830, 5850, 5790 [ROD, p.8].

In the time period since the cumulative effects analysis completed for the 2008 Forest Plan, there has been one additional large timber sale project completed and implemented on Prince of Wales (the Logjam EIS). The Big Thorne EIS considered the potential cumulative effects of that project, in addition to other activities that have affected and may affect resources within and adjacent to the project area, including those on non-NFS lands (State lands, and all private lands such as those owned by Alaska Native corporations). This is clarified in the Response to Comments [p. B-148 of the EIS].

This is a complex issue broader than the scope of this analysis and affected by a number of issues beyond the project level. The 2008 Forest Plan EIS completed an in-depth analysis of the cumulative effects of past, present, and reasonably foreseeable future timber harvest, including "large tree" POG harvest. Appendix A of the Big Thorne EIS describes why the project area was considered for harvest at this time, and in my opinion, the analysis conducted for this project adequately addresses the effects of that timber harvest and is consistent with applicable law, regulation, policy, and Forest Plan direction.

Issue 13. Whether the EIS adequately analyzed alternatives to and the feasibility of stewardship contracting for the Big Thorne project.

Appellants assert that the Big Thorne project does not fit within the primary objectives of the legislation that authorizes stewardship contracting, and that the EIS failed to evaluate alternatives to the use of stewardship contracting. Appellants further assert that the EIS failed to analyze the costs and benefits of stewardship contracting, and that there are serious questions regarding the economic efficiency of this program.

Discussion

Section 323 of Public Law 108-7 granted the Forest Service authority until September 30, 2013 to enter into stewardship contracting projects for up to 10 years with public or private entities, by contract or agreement, "to perform services to achieve land management goals... that meet local and rural community needs." The legislation provided a list of land management goals that could be achieved through stewardship contracts, stating:

> The land management goals of a project... may include, among other things –
>
> (1) Road and trail maintenance or obliteration to maintain water quality;
>
> (2) Soil productivity, habitat for wildlife and fisheries, or other resource values;
>
> (3) Setting of prescribed fires...;
>
> (4) Removing vegetation or other activities to promote healthy forest stands... or achieve other land management objectives;
>
> (5) Watershed restoration and maintenance;
>
> (6) Restoration and maintenance of wildlife and fish habitat; and
>
> (7) Control of noxious and exotic weeds and reestablishing native plant species.

FSH 2409.19, Chapter 60, provides policy and direction for stewardship contracting, and states that the "determination whether or not to use stewardship contracting as a tool ultimately lies with the line officer" [FSH 2409.19, 61.2].

The public law and Forest Service policy referenced above establish the authorities for the Forest Service to enter into stewardship contracts, and describe how stewardship contracts are intended to be used. Some of the key components allowed by that legislation relevant to the Big Thorne project are: 1) ability to perform services for accomplishing land management objectives; 2) ability to trade goods for services; and 3) ability to retain receipts in excess of service costs and use them to fund additional service activities. Three additional key components provided by policy direction in FSH 2409.19 at 60.2, 60.3, and 61.1, respectively, are: 1) stewardship contracts are an implementation tool; 2) multiple NEPA documents may be used for a single stewardship contracting project; and 3) the Regional Forester must approve the use of stewardship contracting authority to implement projects.

Appellants assert that the Big Thorne EIS failed to analyze stewardship contracting feasibility or alternatives to stewardship contracting. There is no requirement within the legislation or policy direction to analyze stewardship feasibility. Stewardship contracting is an implementation tool, and the decision to use that tool resides with the line officer. The EIS does consider stewardship contracting as a potential means for implementing activities associated with the proposal. The EIS provides a list of potential stewardship activities [p. 1-19], and the project record includes a summary of comments received during the scoping period for the project that were related to collaboration and stewardship [PR #736_0059].

The Regional Forester approved the use of stewardship authority for the Big Thorne project in July 2013 [PR #736_2909], shortly after the final EIS was completed. This approval was based on a review of the project proposal, submitted by the Forest Supervisor, to use certain stewardship authorities during implementation of the project. The proposal provided information on how NEPA requirements had been or would be satisfied for activities that would be included in the stewardship contract.

Appendix B of the EIS provides a detailed response to a number of comments received on stewardship contracting, authorities provided by the legislation, agency directives/policy, and potential application to the Big Thorne project [pp. B-61 to B-63]. These responses discuss whether old growth harvest is consistent with stewardship contracting authority [p. B-62]. The timber harvest proposed for the project is designed to meet land management objectives identified in the Forest Plan and will, regardless of the type of contract used to implement the project, generate a value for the goods (timber) offered for sale. The value of these goods may, under a stewardship contract scenario, be exchanged for desired service work within the project area under the same contract. FSH 2409.19, Section 61.4 provides direction on estimating value and cost. If the value of the goods (timber), determined by Forest Service appraisal and subsequent bids, exceeds the cost of services in the contract, then the excess receipts may be retained on the forest and used on additional, approved stewardship contracts. The process for prioritizing and allocating residual receipts that may be generated from implementation of approved stewardship projects is detailed in Section 67 of the Handbook.

In my opinion, the Big Thorne project is consistent with established authority and policy with regard to stewardship contracting, and the use of the Big Thorne project to provide the "goods" to be exchanged for services within the project area is appropriate under these authorities.

Issue 14. Whether the EIS adequately analyzed the direct, indirect, and cumulative effects of logging and road construction on the watersheds of the project area.

Appellants raise numerous issues relating to the effects of the project on watersheds within the project area, as enumerated in Issues 14a through 14m below. As many of Appellants' assertions relate to potential cumulative effects on watersheds and fisheries within the project area, it is important to identify what is required in a cumulative effects analysis, and then consider the analyses that were completed for the project and whether they meet these requirements.

The Forest Service NEPA regulations identify four necessary parts of a cumulative effects analysis [36 CFR 220.4(f)]. The regulations (summarized here) state that the analysis begins with consideration of the (1) direct and indirect effects on the environment that are expected or likely to result from the alternative proposals for agency action. Agencies then look for (2) present effects of past actions that are, in the judgment of the agency, relevant and useful because they have a significant cause-and-effect relationship with the direct and indirect effects of the proposal for agency action and its alternatives. The agency assesses the extent that (3) the effects of the proposal for agency action or its alternatives will add to, modify, or mitigate those effects. The final analysis documents an agency assessment of the (4) cumulative effects of the actions considered (including past, present, and reasonable foreseeable future actions) on the affected environment. With respect to past actions, the agency must determine what information regarding past actions is useful and relevant to the required analysis of cumulative effects.

To determine if the Big Thorne EIS is consistent with these regulations, it is first necessary to assess whether the direct and indirect effects of the project on watersheds and aquatic habitat were evaluated. Then we assess whether there are effects occurring from past actions that are relevant, and whether there are reasonably foreseeable future actions that, when combined with the effects of the proposed action, contribute to cumulative effects on the watersheds and aquatic environment in the project area. The discussions in response to the following sub-issues provide that assessment.

Issue 14a. Whether the EIS used high quality information or addressed gaps in data related to the project's effects on watersheds and fisheries.

Appellants assert that the road data used for the Big Thorne analyses is inadequate and unreliable. Specifically, Appellants assert that the EIS relied on old road condition surveys and unreliable road condition datasets, that the EIS analysis was conducted without the benefit of on-the-ground knowledge, and that the data for decommissioned and stored roads was especially bad. Appellants believe that this is a fatal flaw in the EIS, and that the shortcomings of the data were not disclosed in the EIS or even in the resource reports.

Appellants also assert that the lack of baseline data on streamflow, sediment, habitat features, and other aquatic parameters hampered the ability of the EIS to adequately consider the effects of the project on watersheds, and that the Forest Service should have gathered that data.

Appellants further assert that because reliable stream surveys were not conducted, the data on stream classification and the presence of fish is unreliable, and that the EIS fails to disclose this and that it is a problem for BMP implementation. Appellants also assert that habitat condition assessments were not completed for all of the watersheds in the project area, and that those that were completed indicate that the watersheds are not properly functioning.

Discussion

The Transportation Resources Report [PR #736_2236] and the Watershed Resources Report [PR #736_2237] prepared for the project include assessments of the current condition of the transportation system and watershed resources in the project area, and an analysis of the potential effects of implementing the proposed action and the alternatives on these resources. The information from these Reports is summarized and discussed in Chapter 3 of the Big Thorne EIS [see pp. 3-257 to 3-311; see also pp. 3-337 to 3-370]. These reports, along with the EIS, describe the data used in the analysis. This information included field surveys, road condition surveys, GIS information, monitoring results, national databases, and scientific literature [EIS, p. 3-258; PR #736_2237, p. 2 -3; PR #736_2236, p. 1]. As stated in these documents, field surveys were conducted as recently as 2012.

Road condition surveys in the project area were primarily completed between 1998 and 2002, although portions of the road condition surveys are updated annually [EIS, p. 3-272]. These surveys include data relevant to the effects of road and stream crossings on fisheries, and this data is updated as new information becomes available. Additional field data on proposed new road layout was gathered in 2010 and 2011, and is included on the road cards (for system roads) and the unit cards (for temporary roads) [PR #736_2236].

Field reconnaissance surveys were conducted in the project area between 2009 and 2012, and the results of these surveys included mapping of Class I, II, III, and IV streams, updates to the stream layer, and detailed records of erosion features, windthrow, and other relevant observations. The EIS acknowledged that Class IV streams cannot be reliably mapped without extensive field reconnaissance. Although proposed units were thoroughly reviewed in the field and all proposed roads will be reviewed for possible stream crossings prior to project implementation, some Class IV streams will not be designated until project implementation and may never be mapped. Because these streams, by definition, have insufficient flow or sediment transport capacity to directly influence downstream water quality or fish habitat capability [Tongass Forest Plan, p. 4-10], a complete GIS inventory of Class IV streams is not necessary and would not alter the alternative comparisons. Therefore, there is no reason to assume it would alter the Forest Supervisor's decision. Class IV streams located during project implementation will be protected by applicable BMPs [PR #736_2225, p. 10].

The EIS summarizes the stream channel process groups, habitat complexity including large woody debris (LWD), the effects of past riparian harvest on stream habitat, and the Proper Functioning Condition (PFC) and Tier II survey results that mention the presence/absence of LWD [pp. 3-275 to 3-277]. The Watershed Resource Report [PR #736_2237] identifies which

watersheds [p. 2] and subwatersheds [p. 27] included riparian PFC assessments, and identifies the results of the PFC surveys [p. 27]. These surveys assess LWD and other features of stream habitat to determine if a watershed/subwatershed is "properly functioning" or "functioning at risk" [Id., see also EIS, pp. 3-275 to 3-277].

In addition to these discussions, the project area unit and road cards [ROD, Appendix 1 and 2; see also PR #736_2242] represent a complete, current, and reliable road data set as it relates to project-specific resource concerns. The road cards describe site-specific resources concerns, and how those concerns may be mitigated or avoided in the design of each unit and road segment. Road cards are edited, updated, and amended as new information is acquired, which enhances the robustness and reliability of the data, and resource concerns and mitigation measures may be further refined during final unit layout, when resource specialists have another opportunity to refine their unit and road card recommendations.

The potential effects of the proposed harvest and road construction on project area watersheds are discussed in the EIS [pp. 3-257 through 3-311]. The EIS [p. 3-278] states:

> Our ability to actually detect significant changes in streamflow, sediment, habitat features, or other aquatic parameters in response to the Big Thorne Project is extremely limited due to the lack of baseline data and the natural range of variability of these parameters in response to climate and other factors. Nonetheless, we have sufficient information for these watersheds and subwatersheds to proceed with a credible comparison of the magnitude and extent of likely effects across alternatives.

Since some baseline data was not available for all project area watersheds, other information was used as a "surrogate" for the data that was not available. This surrogate information includes the use of thresholds for hydrologic recovery (20 percent harvest in a watershed during a 30-year period), total acres of road to represent potential increased sediment, and stream crossings as an indicator for changed stream habitat [EIS, p. 3-257]. The EIS explains that these surrogate measures are based on scientific literature such as Bosch and Hewlett's (1982) hydrologic recovery threshold [EIS, p. 3-264]. Harvest and road indicator thresholds are used for analysis purposes only and are not prescribed by the Forest Plan. The potential cumulative effects on project area watersheds are also discussed in the EIS [pp. 3-301 through 3-311].

In addition to the discussion in Chapter 3, the EIS Response to Comments addresses specific comments regarding cumulative watershed effects and the potential effects of road construction and timber harvest on streamflow, water quality, and turbidity, and acknowledges the limited water quality information [Appendix B, pp. B-41 through B-51].

In my opinion, the data used for the analyses is adequate, and the EIS adequately discloses the gaps that do exist in the data and uses reasonable surrogates to analyze the potential effects of the project on the project area watersheds.

Issue 14b. Whether watershed/subwatershed delineations were adequately explained in the EIS and whether analyses were conducted at the appropriate scales.

Appellants assert that the EIS did not analyze watershed effects at ecologically meaningful scales, that it failed to justify the use of the scales it used and failed to discuss how differences in these scales might mask effects, and that it used comparisons between watersheds that are irrelevant and misleading.

Discussion

Both the EIS and Watershed Resource Report [PR #736_2237] explain the scales used in the analysis. The Watershed Resource Report includes a discussion on watersheds and subwatersheds. However, there is some minor confusion. The Report [p. 2] initially states:

> At the watershed scale, the USDA Natural Resources Conservation Service (NRCS) Watershed Boundary Dataset (WBD) was used to analyze project effects on the 6th level (12 digit Hydrologic Unit Code (HUC)) watersheds (USDA NRCS WBD 2009). The USDA Forest Service uses the 6th level to rank watershed conditions through the watershed condition classification (WCC) (USDA Forest Service 2011a), and is in the process of transitioning to this dataset for future analyses.

In this case, the 6th level or 12 digit HUC is referred to as a watershed. The Report [p. 2] then goes on to state:

> At the subwatershed scale, the USDA Forest Service 5th, 6th, and 7th level subwatershed boundaries were modified based on the USDA Forest Service (2004a) and Prussian and Bair (2006) assessments, and used to analyze project effects at this scale. These subwatershed scales have been used in the past by the USDA Forest Service (2004a and 2006a, Prussian and Bair 2006) and the Nature Conservancy (TNC 2007) to perform watershed assessments, analyze project effects, and identify restoration opportunities.

Here, the Report uses the Forest Service 5th, 6th, and 7th level boundaries to refer to subwatersheds, and indicates that these subwatersheds were used to analyze project effects. It is not clear if the Forest Service 5th and 6th level boundaries are the same as the NRCS WBD. The Report also further explains that not all watersheds were delineated to a finer subwatershed scale, and that for those watersheds not further delineated, the analysis was conducted at the watershed scale [Id., p. 2 and Table 3, p. 10]. What is clear is that some watersheds (6th level) were further delineated to a subwatershed level (Forest Service 7th level). Where the subwatershed delineations were already in place, the effects analysis was completed at this subwatershed scale. Where these subwatershed delineations did not exist, the effects analysis was completed at the watershed scale (6th level).

The EIS describes the use of watersheds and subwatersheds in the Cumulative Watershed Effects section [pp. 3-257 and 3-258]. To effectively analyze the direct, indirect, and cumulative effects of harvest and road construction on watersheds and subwatersheds in the project area, and to

utilize available assessments at finer subwatershed scales, the analysis of project effects and alternative comparisons were conducted at both watershed and subwatershed scales. Even though analyses were conducted at both the watershed and subwatershed scales, project effects and alternative comparisons are reported at the subwatershed scale. When effects resulting from project actions were found at the watershed scale, those results are provided as well [p. 3-258]. The Fisheries section in the EIS also discusses the watershed scale issue [p. 3-337].

Appellants assert that the analysis was conducted at inappropriate scales, especially when considering sediment and peak flows. Appellants, through the Rhodes Declaration, assert that effects need to be considered at scales generally less than 10,000 acres, and that 6 of the subwatersheds analyzed exceed the 10,000 acres. Appellants confuse watersheds with subwatersheds and incorrectly identify only 13 subwatersheds as being analyzed. The EIS clearly states that there are 48 subwatersheds within the project area, and that 37 of these subwatersheds have had some level of ground disturbing activity [p. 2-359]. As Appellants correctly state, generally, effects are more pronounced at smaller watershed scales. The EIS also clearly states that harvest and road indicator thresholds are used for analysis purposes only and are not prescribed by the Forest Plan [p. 3-258]. The EIS identifies those subwatersheds that will have cumulative harvest and roads effects greater than 20 percent of the subwatershed area under each alternative [EIS, p. 3-295, Table WTR-9].

The Forest Plan standards and guidelines for Soil and Water indicate that cumulative effects should be evaluated at the watershed scale during project planning and analysis [Forest Plan, SW3.II.B, p. 4-66] and watershed is defined in the glossary [Id., p. 7-47] as:

> The area that contributes water to a drainage or stream. Portion of the forest in which all surface water drains to a common point. Watersheds can range from tens of acres that drain a single small intermittent stream to many thousands of acres for a stream that drains hundreds of connected intermittent and perennial streams.

The Big Thorne EIS [p. 4-34] also defines watershed as:

> The entire region drained by a waterway, or into a lake or reservoir. More specifically, a watershed is an area of land above a given point on a stream that contributes water to the stream flow at that point.

Appellants assert that the EIS only makes comparisons between watersheds. This is not the case. Throughout the EIS, the potential effects of the project are discussed by watershed and subwatershed. The tables included in the EIS list the subwatersheds and display the acres affected by the alternatives, past effects due to harvest, and expected or projected effects by alternative [EIS, p. 3-265, Table WTR-3]. The analysis of direct, indirect, and cumulative effects does not include any discussion on which subwatershed would be more or less impacted compared to any other subwatershed. However, the EIS does describe which watersheds and subwatersheds approach and exceed surrogate thresholds, and the general effects of implementing the project.

In my opinion, the watershed and subwatershed delineations are adequately explained in the EIS, and the analyses were conducted at the appropriate scales.

Issue 14c. Whether the EIS considered road-stream connectivity.

Appellants assert that one of the most important factors in assessing direct, indirect and cumulative effects on watersheds and fisheries is the degree of road-stream connectivity, and that the EIS failed to consider this factor in its analysis. Appellants assert that this is an important factor in stream flow, sedimentation, and stream temperatures, that road-stream connectivity appears to be extensive in the project area, and that listing stream crossings failed to account for the fact that roads are hydrologically connected to streams at points other than stream crossings and failed to consider the number of existing or proposed crossings of Class IV streams.

Discussion

The EIS and project record clearly indicate that the effects of timber harvest and increased road densities on project area watersheds are an important factor of the project. The EIS [pp. 1-12 to 1-14] identifies four significant issues, with Issue 4 being Cumulative Watershed Effects. Specifically, the EIS [p. 3-257] defines the issue as:

> The proposed action combined with past timber harvest would increase the percentage of each watershed area covered by timber harvest and would increase road densities in each watershed, potentially resulting in higher rates of sedimentation and/or other effects on aquatic habitats.

Contrary to Appellants' assertions, the EIS does not ignore road-stream connectivity. As discussed above in response to Issue 14a, the potential effects on project area watersheds are discussed in the EIS [pp. 3-257 through 3-311]. This discussion acknowledges that some data was not available, and identifies the surrogates that were used instead to measure the potential effects of the project on watershed resources [p. 3-278]. The EIS explains that these surrogate measures are based on scientific literature such as Bosch and Hewlett's (1982) hydrologic recovery threshold [EIS, p. 3-264]. The EIS also discusses the potential cumulative watershed effects [pp. 3-301 through 3-311]. These discussions explicitly disclose that road ditches extend the stream network, and that recovery may not be until road decommissioning, stating:

> Road ditches integrate with and extend the stream network, thereby increasing sediment transport efficiency to streams (Montgomery 1994; Wemple et al. 1996). Road effects on streamflow, sediment, and turbidity may not recover until flow paths are reclaimed during road decommissioning. Roads can modify drainage density by extending the stream channel network by linking roads to stream channels through hydrologic flow paths. This frequently happens when roadside ditches collect hill-slope non-stream surface and subsurface flows and drain them directly into a stream, or reroute headwater streams into a roadside ditch for a distance before draining them into a different stream system.

[EIS, p. 3-284]. The EIS includes a fairly thorough discussion of how roads may affect streamflow, sediment, and turbidity. In fact, the EIS [p. 3-269] states that:

> [R]oads have been found to contribute more sediment to streams than any other land management activity (Reid and Dunn 1984; Gucinski et al. 2001; Gomi et al. 2005) and pose the greatest potential risk to watershed resources and fish habitat (Furniss et al. 1991; Luce and Wemple 2001).

In addition, the ROD acknowledges that "[c]umulative effects of past and proposed harvest and existing and proposed roads in the Big Thorne project area may increase sedimentation and impact aquatic habitat" [ROD, p. 36].

Sediment is introduced into streams by channel erosion, roads, landslides and debris-flows, and rain splash on bare soils. The amount of sediment delivered to streams is influenced by road construction, road drainage, road use frequency, number of road-stream crossings, subwatershed road density, and management actions in forested drainages [EIS, p. 3-269]. Studies in Southeast Alaska have correlated higher rates of road erosion with heavy traffic and poor-quality rock surfacing [p. 3-270].

In addition to the discussion in Chapter 3, the EIS Response to Comments addresses specific comments regarding cumulative watershed effects and the potential effects of road construction and timber harvest on streamflow, water quality, and turbidity, and acknowledges the limited water quality information [Appendix B, pp. B-41 through B-51].

As discussed above in response to Issue 14a, all proposed roads will be further reviewed for additional stream crossings prior to project implementation, and any streams located during project implementation will be protected by applicable BMPs [PR #736_2225, p. 10].

In my opinion, the effects of "road-stream connectivity" on stream flow, sedimentation, and stream temperatures are adequately considered and disclosed in the EIS and project record.

Issue I4d. Whether the EIS adequately considered the presence and effect of roads in close proximity to streams, riparian areas, and wetlands.

Appellants assert that the EIS only considers the total amount of road in the project area, without regard to whether the roads are near streams or in riparian areas or wetlands, and that this information should have been considered because it is a significant factor in stream temperatures, LWD recruitment, sediment delivery, wildlife connectivity functions, blowdown, and other effects on aquatic habitat.

Discussion

As discussed above, the Forest acknowledged that the effects of timber harvest and increased road densities was an important factor to consider in the EIS, and Cumulative Watershed Effects was identified as a significant issue for the project.

See my response to Issue 14c for a discussion as to whether the EIS adequately considered "road-stream connectivity." In my opinion, the analyses in the EIS and project record adequately considered the potential effects of roads in close proximity to streams, riparian areas, and wetlands.

With regard to the project's effects on wetlands, management activities on NFS lands are required to comply with the Forest Plan and Federal and State laws. Relevant standards and guidelines and regulations intended to protect wetlands include the Tongass Forest Plan, Executive Order 11990 (Protection of Wetlands), and the CWA. Approximately 55 percent of the project area (127,386 acres) is covered by wetlands. Due to the extent of wetlands in the project area and because forested wetlands are managed for their timber resources, complete avoidance of wetlands during road planning and construction is not feasible. Where a wetland cannot be avoided, the effects are minimized through the use of appropriate BMPs. BMP 12.5 provides guidance for wetland information, evaluation, and protection. The wetland types and extent in the Big Thorne project area were estimated based on the Tongass Wetland Mapping layer and were field verified in about 85 percent of the old growth units within the project area. The young growth units were reviewed and selected units were field verified; additional field review for these units will be conducted upon implementation. Wetlands were classified according to the Tongass Wetland Classification System, and additional, detailed information regarding the regulatory framework, methodology, and analysis of wetlands in the project area is located in the Soil and Wetland Resource Report [PR #736_0937; see also EIS, p. 3-356].

The EIS discusses the potential effects of the project on wetlands [pp. 3-356 through 3-370]. The majority of wetlands in the project area are undisturbed and intact. However, because 55 percent of the project area is covered by wetlands, total avoidance of wetlands is not practicable. Past actions that have affected project area wetlands include the harvest of forested wetlands and road construction through wetlands. Previously logged forested wetlands are in the process of regenerating, and support young forests. Past road construction in wetlands is considered a permanent wetland impact.

The EIS indicates that roads occupy a total 1,113 acres of wetlands in the project area [EIS, p. 3-359]. Based on research regarding the effects of road construction on adjacent wetlands in Southeast Alaska, the effects on wetland hydrology and vegetation adjacent to these roads are expected to be limited to a few meters off the road. Table WET-1 displays the existing acreage and miles of wetlands impacted by roads [p. 3-360]. The Tongass National Forest has conducted implementation and effectiveness monitoring of the wetland BMPs. This monitoring was conducted in 2006, 2008, and 2011. In 2011, new road construction and roads constructed more than 30 years ago were reviewed. The most recent 2011 monitoring assessment concluded that wetlands were avoided to the extent practicable while meeting project goals and objectives, and that the effects on wetlands have been minimized [p. 3-358]. The 2011 monitoring assessment indicated a high rate of implementation of the 15 Federal baseline provisions, and the 2006 and 2008 monitoring efforts showed similar results [p. 3-359].

Approximately 40 percent of existing roads in the project area are in wetlands, and 55 percent of the project area is classified as wetland. Thus, I can conclude that past road construction activity has avoided wetlands where practicable, because the proportion of roads in wetlands is lower than the proportion of roads in the project area [p. 3-360].

The EIS identifies key indicators for measuring project effects on wetlands [p. 3-360]. These indicators include:

- acres of wetland altered by road construction;
- acres of harvest on forested wetlands; and
- cumulative acres of wetland habitat harvested and removed from productivity by roads.

The effects of the Big Thorne project on wetlands will be minimized through the site specific application of Forest Plan standards and guidelines as well as BMPs. Due to the preponderance of wetlands and the interspersed nature of wetlands with uplands in the project area, complete avoidance of wetlands by proposed road construction activities is not practicable. Most proposed roads would be constructed on forested wetlands and uplands. The effects of the alternatives on wetlands are described in the EIS [pp. 3-361 through 3-367], including cumulative wetland effects by alternative [pp. 3-367 through 3-370]. In addition to the analysis in the EIS, the Response to Comments addresses specific comments regarding the effects of the project on wetlands [EIS, Appendix B, pp. B-130 through B-133].

With regard to riparian areas, the PFC surveys discussed above in response to Issue 14a are qualitative assessments of the hydrology, vegetation, and erosion/deposition characteristics of streams and riparian areas. The information collected during these surveys includes channel stability, LWD and other pool-forming features, riparian conditions, and geomorphological functions. PFC assessments were conducted for the North Big Salt Lake (commonly referred to as "Steelhead"), Sal Creek, Gravelly Creek, and Falls Creek subwatersheds. In addition, PFC surveys were conducted for the Eagle Creek and North Thorne River watersheds [EIS, p. 3-258]. The Watershed Resource Report [PR #736_2237] contains information on these PFC assessments at the watershed scale.

The effects of the project on riparian areas as they relate to temperature and stream habitat are described in the Cumulative Watershed Effects section of the EIS [pp. 3-273 through 3-277]. They are also discussed in the Fisheries section of the EIS [pp. 3-336 through 3-355] and in the Fisheries Resource Report [PR #736_2225], especially as they relate to fisheries habitat. As discussed in the EIS, an evaluation of stream temperature data from both harvested and un-harvested watersheds on POW indicated no predictive relationship between harvest and high stream temperatures [EIS, p. 3-276].

In my opinion, the effects of the project on streams, wetlands, and riparian areas are adequately considered and disclosed in the EIS and project record.

Issue 14e. Whether the EIS adequately addressed road maintenance issues.

Appellants assert that the Forest failed to follow FSM 7732.11 in the development of road maintenance plans for the Big Thorne project area and Prince of Wales Island, and that the EIS and resource reports failed to quantify the amount of deferred maintenance in the project area. They assert that the EIS failed to take a hard look at the condition and quality of roads that are to be reconstructed, and that this data is an important part of the existing condition in terms of watershed, fisheries, transportation, and economic effects and should have been incorporated into

the EIS and ROD. Appellants further assert that monitoring data has shown that departure from full BMP implementation is a problem on road storage projects, and that the EIS failed to adequately consider and disclose the likelihood of future road maintenance problems and shortfalls. Appellants also assert that the EIS did not consider the "opportunity costs" associated with and the direct effects of placing new timber harvest units on old roads that are in need of restoration, and that the EIS failed to consider the true timeframes associated with reconstructed and stored roads and incorrectly labeled the effects associated with these roads as "short term."

Discussion

FSM 7732.11 states that the Forest Service shall "[d]evelop annual road maintenance plans for all NFS roads based on [resource management objectives (RMOs)], travel analysis and expected traffic." The FSM also describes the factors that annual road maintenance plans should encompass, consider, prioritize, and respond to. The EIS and the Transportation Resource Report [PR #736_2236] discuss the RMOs, travel analyses, and expected traffic for the roads in the project area. The POW 2010-2013 annual road maintenance plans are in the project record [PR #736_2168, 736_2169, 736_2170, and 736_2171]. There is no reason to believe that these plans were not developed in accordance with FSM 7732.11. The annual road maintenance plans are part of the overall NFS Road Operation and Maintenance Management System, and are developed considering all NFS roads on the entire forest, not just in one specific unit or project area. Therefore, whether or not the annual maintenance plans were developed in accordance with FSM 7732.11 is somewhat outside the scope of the Big Thorne EIS.

It is unclear which resource report Appellants refer to in their assertion that the Forest failed to quantify the amount of deferred maintenance in the project area; however, the Response to Comments [pp. B-120 and B-121] discuss the road maintenance backlog in the project area and quantifies the outstanding maintenance items for the project area as $408,000.

Appellants assert that the EIS failed to take a hard look at the existing condition of the roads. I disagree. The EIS [p. 3-285] discusses the existing condition of roads in affected watersheds. This discussion discloses the Watershed Improvement Tracking (WIT) surveys that were conducted on existing stored roads that were not drivable, and specifically states that a "[l]ack of road maintenance presents a chronic sediment problem in the Big Thorne project area" [Id., p. 3-286]. The EIS did take a "hard look" at the existing conditions of the roads in the project area, and the ROD [p. 30] indicates that the Forest Supervisor considered the cumulative effects of these roads, stating:

> Cumulative effects of past and proposed harvest and existing and proposed roads in the Big Thorne project area may increase sedimentation and impact aquatic habitat. Past, present and future road construction, road maintenance, and road crossing construction all generate a level of disturbance and contribute sediment to project area streams.

Appellants believe that future long term monitoring and maintenance are required for the roads associated with the project, and that there is no such thing as a "self-maintaining" state for road decommissioning and storage. The EIS [p. 3-438] describes the different maintenance levels and refers to the possibility of a "little" maintenance in its statement that "ML 1 roads are left to a self-maintaining condition that requires little or no maintenance." In the Response to Comments,

the EIS [Appendix B, p. B-124] refers to FSH 5409.17 Chapter 60, to define road storage as "the process/action of closing a road to vehicle traffic and placing it in a condition that requires minimum maintenance to protect the environment and preserve the facility for future use."

Monitoring is a separate activity from maintenance, and the EIS describes it as a "required" activity to evaluate the effectiveness of the measures implemented to minimize effects and determine if they need to be revised [pp. 2-17 to 2-18]. The EIS explains that monitoring provides useful information for developing improved or additional treatments in the future, and the Response to Comments [pp. B-116 to B-128] discusses road maintenance and monitoring.

Appellants also question whether the effects of reconstructed and stored roads were incorrectly labeled as short term. The EIS [pp. 3-277 and 3-278] identifies the descriptors used to describe how measurable an effect would be, and these descriptors ranged from "Negligible" (lasting less than a day) to "Major" (lasting for years). "Minor" effects were expected to last "less than a week," and "Moderate" effects could "last more than a week" [Id.]. The EIS discusses exceptions to these descriptors, since they were not a perfect fit for all effects [Id.]. Table WTR-11 [p. 3-299] displays the expected direct, indirect, and cumulative effects by alternative in affected subwatersheds. This table indicates that the projected effects were expected to be "Minor" or "Moderate." The bottom line is that all water quality effects were expected to be temporary and localized [p. 3-278]. The EIS further states that "[m]aintaining the productivity of the land is a complex, long-term objective. All alternatives protect the long-term productivity of the project area through the use of specific standards and guidelines, mitigation measures, and BMPs" [p. 3-529].

In my opinion, the Big Thorne EIS and project record adequately disclose the existing condition and quality of the roads in the project area, and indicate that this information was considered in the analysis of the potential direct, indirect, and cumulative effects of the project. The deferred maintenance in the project area was also clearly quantified.

Issue 14f. Whether the ROD is consistent with Section 404 of the Clean Water Act (CWA).

Appellants assert that forest roads require a Section 404 permit because the record indicates that BMPs are not being followed during construction and long-term maintenance of the roads, specifically with regard to fish passage criteria and temporary fills. Appellants assert that the fish passage information relied on in the EIS is not reliable, that the EIS understates the extent of the problem and has misleading and incorrect information about the removal of red culverts in the project area, and that the cumulative effects on fish passage have not been adequately considered. Appellants further assert that the EIS did not acknowledge the Corps of Engineers scoping comments on the project, which indicate that the BMPs require the removal of all temporary fill in wetlands if the Forest Service wants to use the silvicultural exemption. Finally, Appellants assert that the EIS's responses to comments related to these issues are incorrect and/or misleading.

Discussion

The Clean Water Act (CWA) of 1972 [Public Law 92-500] as amended in 1977 [Public Law 95-217] and 1987 [Public Law 100-4] is designed to protect and improve the quality of water resources and maintain their beneficial uses. Section 404 of the Act regulates the discharge of dredged and fill material into waters of the United States, including wetlands. The discharge of dredge or fill material resulting from the construction of forest roads is exempt from the Section 404 permitting requirements, provided that they are constructed and maintained in accordance with baseline provisions [at 33 CFR 323.4(a)] to assure that the flow and circulation patterns and the chemical and biological characteristics of the waters are not impaired [Section 404(f)(a)(E) of the CWA].

The EIS and project record clearly disclose the overall framework of the CWA, the National Nonpoint Source Policy, the Forest Service Nonpoint Strategy, the USDA Nonpoint Source Water Quality Policy, and the BMPs developed and implemented by the Forest Service to achieve Alaska Water Quality Standards. The CWA will be followed at all times during project implementation, and there are multiple references to the steps that will be taken to ensure CWA compliance.

The ROD discusses the CWA in detail, and acknowledges that forest roads qualify for the silvicultural exemption "only if they are constructed and maintained in a accordance with Baseline Provisions to assure that flow and circulation patterns and chemical and biological characteristics of the waters are not impaired..." [ROD, p. 45]. In addition, the ROD explicitly states that "[a]ll necessary [CWA] permits will be obtained before project implementation" [Id.].

Contrary to Appellants' assertion that a "huge percentage of roads are out of compliance with CWA BMPs," the EIS [p. 3-269] states:

> Forest-wide BMP implementation monitoring has consistently reported a high level of compliance (USDA Forest Service 2012d). BMP implementation monitoring will continue to occur annually on a representative basis across the forest as part of Forest Plan monitoring and is likely to occur in the Big Thorne project area. In addition, a range of Forest Plan monitoring measures will occur at the forest level and may or may not take place in the Big Thorne project area.
>
> BMP implementation and effectiveness monitoring occurred at recent timber harvest sites on Prince of Wales Island and in most cases, BMPs were found to be implemented appropriately (USDA Forest Service 2011e).

As stated in the EIS [pp. 2-17 to 2-18], BMP monitoring is a "required" activity to evaluate the effectiveness of measures implemented and to determine if they need to be revised. The EIS further explains that monitoring provides useful information for developing improved or additional treatments in the future.

Appellants assert that there is a lack of recent and reliable information on red culverts. As clearly disclosed in the EIS, there were 155 red culverts in the project area at the start of the planning process for the Big Thorne project [EIS, p. 3-350]. The EIS indicates that a few of these culverts have been or will be removed and/or replaced prior to implementation of the

project [Id.], and indicates that 13 red culverts in the project area are programmed and/or under contract for removal at this time [EIS, p. 3-351]. Table FISH-7 in the EIS [Id.] quantifies the "changes in red culvert status by alternative." This table indicates how many red culverts are on existing, open roads that are planned for storage; how many are on roads that will be reconstructed and then stored after project completion; and how many are roads that will remain open. This table also displays the "planned culvert status," and defines what each status level means. As discussed in the EIS, the timing of the removal/replacement of red culverts in the project area will depend on future funding for this work [Id.]. The EIS also acknowledges that those red culverts that are not replaced or removed will continue to impede fish migration at certain flows and life stages until they are replaced or removed [pp. 3-349 to 3-350]. The Fisheries Resource Report [PR #736_2225] refers to the project files for detailed locations of the red culverts in the project area.

The Fisheries Report states that by following the standards and guidelines in the Forest Plan and BMPs, the effects of the Big Thorne project on Essential Fish Habitat will be minimized [p. 89]. Various reasons for this conclusion are provided, including:

> Temporary roads would be decommissioned after timber harvest is complete. Prior fish passage structures on newly constructed temporary roads would be removed in all alternatives. Any impassable existing culverts (i.e. red pipes) on constructed and reconstructed roads that are stored or decommissioned through this project would be removed as part of storage/decommissioning activities.

Appellants further assert that there is no forest-wide prioritization for fixing red culverts. The EIS [p. 3-350] states that "[a] table has been added to the Big Thorne project record that is being used to aid in prioritizing culvert remediation of red pipes on specific, alternative reconstructed roads for early removal or storage within 1 to 5 years after project completion."

Appellants also assert that "many (most) of the drainage structures will not be removed" and therefore are not temporary fills. Contrary to this assertion, the EIS [p. 3-444] states that "[a]ll temporary roads would be decommissioned after timber harvest. This involves removing culverts and bridges, restoring natural drainage patterns and allowing the roadway to revegetate." Further, the EIS [p. 3-441] describes the Travel Management Designations as follows:

> Storage – Each drainage structure is evaluated to determine the appropriate storage strategy. Drainage structures may be removed or bypassed with waterbars to restore natural drainage patterns. Additional water bars or rolling dips may be added to control runoff. Seed and fertilize disturbed soils. This is intended to be the primary maintenance strategy applied on intermittent use roads during their closure cycle. ML 1, closure and basic custodial maintenance, is assigned. This level of maintenance is synonymous with Alaska Forest Resources Practices Act designation of inactive roads.
>
> Decommission – This takes the road out of the National Forest Road System. Decommissioning roads involves restoring roads to a more natural state. Activities used to decommission a road may include, but are not limited to, the following: reestablishing former drainage patterns, stabilizing slopes, restoring vegetation, blocking the entrance to

> the road, installing water bars, removing culverts, reestablishing drainage-ways, removing unstable fills, pulling back road shoulders, or other methods designed to meet the specific conditions associated with the unneeded road. This level of maintenance is synonymous with Alaska Forest Resources Practices Act designation of closed roads.

Appellants assert that the ROD's statement indicating "98.6 percentage of BMP compliance" is misleading because it did not consider red culverts, removal of temporary fills, or other CWA BMPs specifically. The statement in the ROD that Appellant refers to is on B-40 of Appendix B, and is based on the 2012 Draft Annual Monitoring & Evaluation Report - Soil and Water [PR #736_2189, p. 22], which states:

> Table shows that BMPs are applied 1955 times on the units harvested and roads constructed, reconstructed and stored over the past 5 years. Calculations show an estimate of BMPs fully implemented on Tongass 98.6 percent of the time that the BMPs are applicable on units and roads from FY2008- 2012. This calculation was based upon the number of departures reported on roads and units from the total number of roads and units monitored over the past 5 years.

Page 1 of the Draft Report describes the background and process used to ensure the standards and guidelines are implemented as BMPs:

> Objectives: Attain Alaska Region (R-10) Soil Quality Standards. Attain State of Alaska Water Quality Standards.
>
> Background: Implementation of Soil and Water standards and guidelines is necessary to maintain soil productivity and water quality. The Soil and Water standards and guidelines are implemented as Best Management Practices (BMPs) described in FSH 2509.22. Region 10 Soil Quality standards are documented in FSM 2554. Methods for effectiveness monitoring of Soil Quality standards are also referenced in FSM 2554. Soil conservation practices are practices used to ensure that ground-disturbing activities will meet the R-10 Soil Quality standards. Typical soil conservation practices include log suspension requirements in timber harvest units and the use of full-bench and end-haul road construction techniques on landslide-prone terrain. Implementation monitoring evaluates whether or not soil conservation practices were required and implemented. Effectiveness monitoring determines whether or not the soil conservation practice used kept the ground-disturbing activity within the R-10 Soil Quality standard.
>
> The State of Alaska Water Quality Standards set standards for chemical, physical, and biologic parameters of waters on National Forest System Lands. The Forest Service in Region 10 uses Best Management Practices and site-specific prescriptions to meet State of Alaska Water Quality Standards when implementing ground-disturbing activities on National Forest System lands.

The Draft Report was prepared to answer the question "are the soil and water conservation practices as described through the BMPs and site specific prescriptions implemented and effective in minimizing soil erosion and maintain the State Water Quality Standards?" In my opinion, they are.

The CWA Section 404 exemption for dredge and fill associated with forest roads and silvicultural activities remains valid. The EIS and project record demonstrate that the project complies with the CWA and all applicable permitting requirements, and there is no reason to believe that BMPs will not be successfully implemented or monitored.

Issue 14g. Whether the EIS adequately addressed the effects of increased road use and the effects of landings.

Appellants assert that the EIS did not consider the effects of sedimentation associated with the increased traffic and use of roads. Appellants also assert that the EIS did not indicate the number or location of landings and the effects these landings could have on watersheds and fisheries because of sedimentation and their effects on peak flows.

Discussion

The underlying concerns raised in this issue are very similar to those expressed in Issues 14c, 14d, and 14g; see my responses to those issues for additional information on the potential effects of the project roads on the watershed and fisheries resources in the project area.

Landings are defined as "[a] cleared area to which logs or trees are transported for loading onto trucks for transport to a mill or log transfer facility. Barges are sometimes used for landings in Southeast Alaska" [EIS, p. 4-22].

It is true that the EIS and specialist reports do not explicitly identify the number and location of landings in the watersheds or subwatersheds in the project area. Thus, there is no direct discussion on the potential effects of these landings on sediment or peak flows in watersheds or on fisheries habitat. However, because they are cleared areas, landings can be considered to have effects similar to roads or harvest units. They are usually located within the harvest unit, at the end of roads, or adjacent to roads. In some cases, the constructed road is used as a landing.

As with roads, landings must be constructed in accordance with applicable BMPs and State water quality regulations, and they have been monitored under the regional BMP evaluation program [PR #736_0792, Appendix B-3].

The EIS does indicate that roads and landings have been located to avoid slopes greater than 67 percent, unstable slopes, and slide-prone areas to the extent feasible [EIS, p. 3-326].

While the EIS did not specifically identify the number and location of landings associated with the project alternatives or directly discuss the potential effects of these landings, it is important to note that Appellants did not raise this as an issue in their comments on the DEIS. Regardless, the EIS does disclose the potential effects of the proposed roads and timber harvest for each alternative. While the landings associated with these roads and harvest units may add some incremental effects on project area watershed and fishery resources, I do not believe the overall effects would be significantly different, nor would the ranking of alternatives change. Therefore, there is no reason to believe that any additional discussion of the effects of landings would have changed the Forest Supervisor's decision.

Issue 14h. Whether the EIS considered the fishery value of the project area watersheds and subwatersheds.

Appellants assert that the EIS should have considered the importance of specific watersheds and subwatersheds for fisheries in its analysis of direct and cumulative watershed effects.

Discussion

The EIS discusses the stream classification system, which uses both the Stream Class (Aquatic Habitat Management Unit (AHMU)) and the Process Group/Channel Type, and states that they are the primary factors used in determining the potential production of fish on the Tongass, as well as the types of protection needed relative to forest management actions [pp. 3-337 to 3-338]. This discussion indicates that "[t]he Alaska Region stream value classification (stream class) is based on subsistence, recreational, and economic fish harvest considerations." The four stream classes (Class I, II, III, and IV) are then listed and explained. As stated in the EIS, "[s]tream classes provide a means to categorize stream channels based on their fish production values." This indicates that stream class is intended to be a measure of fish production, and as a result, a measure of "fisheries value" [p. 3-340].

The EIS also explains the rating system created by the Alaska Department of Fish and Game (ADF&G) to rank VCU's on the Tongass according to their relative resource value, including fisheries, and indicates that VCU's with the highest value would be managed to reduce risks to Fish and Wildlife. In the Big Thorne project area, 8 VCUs were rated as Primary Fish Producers. The Fisheries Resource Report provides further discussion, stating that the subwatersheds associated with highly ranked VCUs "are of high value for local communities' subsistence and commercial fisheries uses making them a high priority for protection of fish habitat" [PR #736_2225, p. 13].

Table FIS-5 [p. 3-345] displays the Known Anadromous and Resident Fish Species Presence by Subwatershed in the project area. The EIS acknowledges that the project may adversely affect fish habitat, but states "[i]t is anticipated that the valuable fisheries in the project area will not be measurably affected" [pp. B-15 to B-16].

The Fisheries Resource Report [PR #736_2225, p. 2] also acknowledges that the fish produced in the project area are important to the culture and lifestyle of area residents, and states that these fish "support local subsistence, sport, guided (both freshwater and saltwater), and commercial fisheries." Table 2 [p. 5] includes a short description of the channel process groups and the level of fish habitat productivity for each process group. The Report goes on to discuss the field inventory of streams within or adjacent to proposed timber harvest units to determine the stream characteristics and to group streams into process groups. Each process group was evaluated to determine the potential productivity of fish habitat (aquatic capability) [Id., p. 9]. The Report concludes that there will be minor effects on aquatic habitat, with short-term adverse effects to migratory, spawning, and rearing habitat for fish, but states that by following the standards and guidelines in the Forest Plan and applicable BMPs, these effects will be minimized [pp. 64-65].

The Big Thorne ROD [p. 43] states that "fish and wildlife habitat productivity will be maintained at the highest level possible for the Selected Alternative, consistent with the overall multiple-use goals and improved protection of the Forest Plan." The ROD also acknowledges the requirement to evaluate the effects of proposed activities on aquatic systems and recreational fisheries (pursuant to Executive Order (EO) 12,962) [ROD, p. 49], and includes the determination that recreational fishing opportunities will remain essentially the same as the current condition because fish habitats are protected through the implementation of BMP's and riparian buffers [ROD, p. 49].

The project record demonstrates that the Forest recognized the importance of the fisheries resources within the project area to aspects of the area ecology as well as the commercial and sport fishing industry and local subsistence communities. The value (importance) link to subwatersheds and even stream reaches is made through the channel type and stream class designations. In my opinion, the analyses in the EIS and project record adequately consider fisheries values and disclose the effects of the project on the watershed and fisheries resources and those values.

Issue 14i. Whether the EIS accurately characterized the effectiveness of BMPs.

Appellants assert that the Forest Service incorrectly relies on implementation of BMPs to minimize effects because not all BMPs are always implemented and that even when they are fully implemented, the effectiveness of the BMPs is not always monitored. Appellants further assert that BMPs do not eliminate effects, and that the Big Thorne project should have avoided the most sensitive areas, including streams, riparian areas, alluvial fans, and wetlands.

Discussion

As described in the Watershed Resource Report prepared for the project [PR #736_2237, p. 4]:

> The Clean Water Act (Sections 208 and 319) address nonpoint source pollution. Soil and water conservation Best Management Practices (BMPs) are recognized as the primary control mechanisms for nonpoint source pollution on National Forest System lands. The Forest Service must apply BMPs that are consistent with the Alaska Forest Resources and Practices Act and Regulations or AFRPA (Alaska Department of Natural Resources 2007) to achieve Alaska Water Quality Standards. Alaska's Nonpoint Source Pollution Control Strategy (Alaska Department of Environmental Conservation 2007) describes the site-specific application of BMPs, with a monitoring and feedback mechanism, as the approved strategy for controlling nonpoint source pollution. In 1997, the State of Alaska approved the BMPs in the Forest Service's Soil and Water Conservation Handbook (USDA Forest Service 2001) as consistent with the AFRPA. This Handbook is incorporated into the Forest Plan. This report (together with project unit and road cards) describes the site-specific application of BMPs for the Big Thorne Project.

The EIS [pp. 2-16 to 2-17] clearly states that BMPs do not eliminate effects:

> BMPs are methods, measures, or practices to prevent or reduce water pollution, including but not limited to structural and non-structural controls, operation and maintenance procedures, other requirements and scheduling and distribution of activities (Forest Service Handbook 2509.22, Region 10 Soil and Water Conservation Handbook (USDA Forest Service 2006a)). They are the result of extensive efforts between the Forest Service and the State of Alaska to identify practices that will ensure that timber harvest activities minimize soil erosion and protect aquatic habitat.

The EIS [p. 3-356] states that sensitive areas, especially wetlands, will be avoided where possible:

> However, higher-value and rare wetlands such as estuaries and tall sedge fens have been avoided. Where a wetland cannot be avoided, the impacts are to be minimized. [BMP] 12.5 provides guidance for wetland information, evaluation, and protection.

The BMPs to be applied to harvest units and roads are identified in the unit and road cards [see Appendix 1 and 2 of the ROD for the Selected Alternative unit and road cards].

The purpose of BMP monitoring is described as a "required" activity to evaluate the effectiveness of measures implemented and to determine if they need to be revised. The EIS explains that monitoring provides useful information for developing improved or additional treatments in the future [pp. 2-17 to 2-18].

Appellants assert that BMPs are not always fully implemented, and that when they are, the results are not monitored. The EIS states that annual BMP monitoring consistently reports a high level of compliance and that such monitoring will likely occur in the Big Thorne project area in the future:

> Forest-wide BMP implementation monitoring has consistently reported a high level of compliance (USDA Forest Service 2012d). BMP implementation monitoring will continue to occur annually on a representative basis across the forest as part of Forest Plan monitoring and is likely to occur in the Big Thorne project area.

[EIS 3-269]. The EIS discloses that there have been departures from implementation or effectiveness, and states these departures have been noted and that means to address these departures have been identified:

> Although successful implementation of BMPs occurred, there were a few departures related to erosion control associated with seeding along road construction and decommissioned segments, stabilization of excavated banks, and removal of temporary culverts to provide fish passage at varied stream flows. The team conducting the monitoring noted that action plans include clarifications on implementation of the BMPs in road storage and road decommissioning road contracts (USDA Forest Service 2011e).

[Id.]. In my opinion, the EIS and project record demonstrate that the project complies with the CWA and the Alaska Forest Resources and Practices Act, and there is no reason to believe that BMPs will not be successfully implemented or monitored.

Issue 14j. Whether the EIS adequately analyzed the effect of sedimentation.

Appellants assert that the 2.5 percent threshold applied by the EIS is invalid, that the EIS failed to consider the effect of sedimentation in Class IV streams, that the EIS misrepresents scientific studies of the relationship between sedimentation and watershed disturbance, and that the EIS failed to analyze the effect of sedimentation with regard to stream temperature.

Discussion

See my responses to Issues 14a through 14d. As stated in those responses, the EIS and project record demonstrate that the potential effects of the project on watershed and fishery resources have been considered, and the analyses in the EIS and resource reports used appropriate data and surrogates to predict those effects.

Issue 14k. Whether the EIS adequately analyzed the effects of the project on stream temperatures.

Appellants assert that the EIS conclusion that "stream temperature is not likely to be measurably effected by harvest activities" is unsupported, and that it failed to consider a number of important factors. Specifically, Appellants assert that "natural" high temperatures don't obviate the need to consider the effects, and that the Forest Service has no data on stream temperatures. Appellants also assert that the EIS failed to consider the effects of roads and landings near streams on stream temperatures, failed to evaluate cumulative effects in relation to LWD, stream widening, and stream habitat features, and failed to consider the cumulative effects associated with climate change.

Discussion

The concerns raised in this issue are similar to the concerns raised in Issues 14c, 14d, and 14j. See my responses to those issues for additional discussion.

The ROD recognizes that riparian harvest occurred in most of the affected project area subwatersheds prior to 1991, and that this harvest could have resulted in stream temperature increases during warm weather [ROD, p. 31]. It goes on to state that recovery of at least deciduous (alder) shade has likely occurred in these harvested riparian areas.

The EIS and various specialist reports discuss the potential effects of the alternatives, including the potential effect on stream temperatures. The Fisheries Resource Report specifically indicates that "[t]imber management activities can potentially affect fish habitat by altering the amount and timing of runoff, by altering sediment transport and deposition regimes..., and by altering stream temperature" [PR #736_2225, p. 11]. The Report discusses the general effects of logging

on stream temperature and riparian management areas [pp. 14 and 15], including the results of studies completed in Alaska as well as other areas. The Report indicates that on POW, fish kills have occurred in both harvested and un-harvested watersheds. However, very few fish kills have been documented in the watersheds of the project area.

Specific standards and guidelines, by stream process group, are associated with riparian management areas (RMAs). The objectives of the Forest Plan riparian standards and guidelines is to maintain riparian areas in mostly natural conditions for fish, other aquatic life, old growth and riparian-associated plant and wildlife species, water-related recreation, and to provide for ecosystem processes, including important aquatic and land interactions [Forest Plan, p. 4-50]. Specifically, objectives include maintaining natural stream bank and stream channel processes, maintaining natural and beneficial quantities of LWD, and protecting water quality by providing for the beneficial uses of riparian areas. This is accomplished through identifying and delineating RMAs for each project where ground disturbance will occur or resources will be extracted, and establishing no harvest area buffers along Class I, II, and III streams [Id.].

The Watershed Resource Report [PR #736_2237, pp. 32 through 34] contains a stream temperature discussion and an analysis of the potential effects of the Big Thorne project. In addition, the Report discloses that there is debate on the magnitude of cooling provided by riparian areas and the extent to which stream temperature returns to an unharvested temperature level after exiting a harvested area, but indicates that studies emphasize that riparian buffers assist in maintaining water temperatures [Id., p. 24].

The EIS includes a discussion on stream temperature effects [pp. 3-343 to 3-345]. In addition, Appendix B [pp. B-20 to B-22] contains the Forest Service Response to Comments regarding stream temperature. As stated in those discussions, the lack of a predictive relationship between harvest and elevated stream temperatures on POW, and implementation of riparian no-harvest buffers along Class I, II, and III streams for any current or future harvest, suggest that stream temperatures are not likely to be measurably affected by harvest activities.

With regard to Appellants' assertions relating to climate change, see my response to Issue 3, above. The EIS did consider the effects of climate change in the Big Thorne project area [pp. 3-333 through 3-336]. Models available for estimating climate change are designed to predict changes on a regional scale and are not detailed enough to predict changes to the Tongass National Forest, especially at the project scale. Existing models do not entirely agree on how global warming will affect Southeast Alaska. The variation and possibilities are discussed extensively in the 2008 Forest Plan EIS. In addition, the Big Thorne ROD [p. 14] addresses the effects of climate change on the project and the difficulties assessing those affects at the project scale, and states that the Tongass will continue to monitor for effects of climate change and any need for a different course of action.

In my opinion, the potential effects of the project on watershed and fishery resources, including the potential effects on stream temperatures, have been adequately considered and disclosed.

Issue 14l. Whether the EIS adequately analyzed the effects of the project on LWD.

Appellants assert that the lack of LWD is a serious and pervasive problem in almost all of the project area subwatersheds, and that the EIS failed to consider the effects of the project on LWD.

Discussion

The concerns expressed in this issue are similar to the concerns expressed in Issues 14c, 14d, 14j, and 14k. See my responses to those issues for further discussion.

The EIS includes many discussions demonstrating that the effects of the project on LWD, including past, present, and cumulative effects, have been considered. The EIS explains that the forest-wide standards and guidelines for RMAs will be followed so that LWD recruitment and spacing would remain. Because of this, the EIS concluded that the project would not have direct, indirect, or cumulative effects on this factor of fish habitat [p. 3-349]. Table WTR-5 lists the amount of past riparian harvest, prior to implementation of TTRA, in the subwatersheds affected by the Big Thorne project [p. 3-274]. The EIS goes on to summarize the stream channel process groups, habitat complexity from LWD, effects of past riparian harvest on stream habitat, and Proper Functioning Condition (PFC) and Tier II survey results that mention LWD presence/absence [pp. 3-275 through 3-277]. This discussion includes a summary of the information on the surveys and conditions of subwatersheds with past harvest, and states that these surveys are helpful for evaluating fish enhancement proposals, determining restoration needs, or studying habitat utilization by fish [p. 3-276].

The Fisheries and Watershed Resource Reports also provide information on and analysis of the effects of the project on LWD. Specifically, the Fisheries Resource Report [PR #736_2225, p. 12] describes the importance of LWD for the maintenance of good fish habitat, and describes that past timber harvest may have had an effect on LWD abundance. The Report lists six subwatersheds with a large number of stream channels dependent on LWD, and acknowledges that riparian harvest has occurred along LWD-dependent stream channels. The Report also discusses potential restoration activities in the Big Thorne project area, including thinning floodplain riparian areas to enhance future LWD recruitment and LWD placement in streams [pp. 17, 29-30]. The Fisheries Report goes on to describe the riparian buffers (at least 100 feet for fish streams) and states "[i]n Southeast Alaska streams, Murphy and Koski (1989) found that 40 percent of all LWD in streams originated within 3 feet of the stream bank and 99 percent of all LWD originated within 100 feet of the stream bank." The Report concludes by saying "overall, LWD recruitment and spacing would remain functionally intact therefore having no direct, indirect or cumulative effects on fish habitat" [pp. 35-36].

Page 48 of the ROD states that Forest Plan standards and guidelines and Section 103 of the TTRA require that no commercial timber harvest occur within 100 feet of any Class I stream or any Class II stream flowing directly into a Class I stream. These buffers will also maintain LWD in project area streams.

The Watershed Resource Report [PR #736_2237, pp. 2, 3, and 27-46] also describes and analyses the effect of the project alternatives on LWD. The Report describes a process to identify stewardship projects in the Big Thorne project area, and indicates that some of these projects will likely include activities that enhance LWD recruitment and place LWD in streams [p. 55].

The Tongass Forest Plan includes forest-wide riparian standards and guidelines, which include the objective of "maintain[ing] natural and beneficial quantities of large woody debris over the short and long term" [p. 4-50, Objective 4]. Appendix D to the Forest Plan, Riparian Buffer Standards and Guidelines Criteria [pp. D-1 through D-20], provides the criteria to be considered for each channel type, and indicates that some sites have an RMA that is based on the height of a site-potential tree (therefore greater than the 100-feet buffers discussed above).

The BMPs to be applied to the harvest units and roads are identified in the unit and road cards [see Appendix 1 and 2 of the ROD for the Selected Alternative unit and road cards].

In my opinion, the EIS and project record adequately consider and disclose the effects of the project on LWD, and the analyses explain how riparian no-harvest buffers and other BMPs will minimize these effects on stream habitat and LWD.

Issue 14m. Whether the Forest Service completed adequate consultation with the National Marine Fisheries Service (NMFS) under the Magnuson-Stevens Fisheries Act (MSFA).

Appellants assert that the Forest Service did not adequately consult with NMFS, and that the EIS does not reveal the concerns NMFS expressed with the project.

Discussion

Section 305(b)(2) of the MSFA requires each Federal agency to consult with the NMFS regarding all actions authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH). The consultation process the Alaska Region of the Forest Service and the Alaska Region of NMFS follow is outlined in the June 2007 "[MSFA] EFH Consultation Procedures."

According to these Procedures, the Forest Service first makes a determination as to whether the project may adversely affect EFH. If the Forest Service determines that a project may adversely affect EFH, it notifies NMFS and completes an EFH Assessment. Consultation officially begins when NMFS receives a copy of the Assessment, either as a separate document or within the EIS. Under the terms of the Procedures, NMFS should respond within the DEIS comment period as to whether it concurs with the conclusions in the EFH Assessment, and may offer conservation recommendations. If they do not respond, consultation officially ends and no further correspondence is necessary.

If they do respond and provide conservation recommendations, the Forest Service must respond within 30 days (and 10 days prior to decision on the action if the Forest Service response is inconsistent with NMFS conservation recommendations). NMFS may request a meeting with the Responsible Official to discuss the action and opportunities to resolve any disagreements. If issues cannot be resolved, NMFS may request a meeting with the Chief of the Forest Service.

The Procedures require that the EIS include a summary of how EFH may or may not be adversely affected, the EFH consultation that has occurred, and a statement that the EFH consultation requirements have been satisfied. The ROD should also summarize the results of the EFH consultation, and the entire process should be fully documented in the project record.

The EFH Assessment and consultation process is thoroughly documented in the EIS and project record. The DEIS and FEIS discuss the EFH Assessment in detail [DEIS, pp. 3-398 to 4-406; FEIS, pp. 3-352 to 3-354]. These discussions include the methods used to conduct the Assessment, the results of the Assessment, the determination that the project "may adversely affect EFH," and how the Forest Service will minimize effects on EFH. They also describe the consultation process. The Fisheries Resource Report [PR #736_2225, p. 62] contains additional discussion. Based on the Assessment and other analyses in the EIS and project record, the Forest Supervisor concluded:

> [T]he Big Thorne project may adversely affect EFH because fish streams are directly or indirectly affected by harvest and stream crossings. The Selected Alternative would result in minor effects on water quality and aquatic habitat. By following the standards and guidelines and BMPs in the Forest Plan, the effects on EFH will be minimized.

[ROD, p. 46]. The ROD also indicates that the DEIS was provided to NMFS to formally initiate the consultation process, and that NMFS did not submit comments. It is important to note that the consultation process ended when NMFS did not submit written comments to the Forest Service in response to the DEIS. If NMFS had concerns with the project, then it was required to submit those concerns to the Forest Service.

Appellants reference notes in the project record that document a phone conversation between Delilah Brigham, Forest Service, and Cindy Hartmann, NMFS, to confirm that NMFS received a copy of the DEIS and that they did not comment. This note does state that "Ms. Hartmann also wanted it recorded that that doesn't mean that NMFS didn't have concerns with the project, only that NMFS did not comment" [PR #736_0580]. Appellants imply that this means NMFS had specific concerns with the Big Thorne project, and that the EIS failed to disclose those concerns. I disagree. The notes are in the project record and were available to the public, but I do not think the Forest was required to "reveal" unspecified concerns in the text of the EIS.

The project record demonstrates two things regarding the EFH Assessment conducted for the project. The first is that the Forest took its obligations to assess the potential effects of the project on EFH seriously, and that the EFH Assessment was thorough and well documented. The second is that the Forest followed the agreed-upon process for consultation with the NMFS.

In my opinion, the Forest adequately considered the potential effects of the project on EFH, these potential effects on EFH and other aquatic resources were adequately disclosed throughout the planning process, and the EFH Assessment conducted for the project was adequate and satisfies the requirements of MSFA and NEPA, including the consultation process required by MSFA.

Issue 15. Whether the OGR modifications comply with NEPA and Appendix K of the Tongass Forest Plan.

Appellants assert that the Forest Service failed to provide notice during scoping that OGR modifications were being contemplated, that it failed to analyze the environmental effects of or provide an opportunity for public comment on the modified OGRs included in the Selected Alternative, and that it failed to provide the public with an analysis of how the modified OGRs in the Selected Alternative provide a "comparable achievement" of the Old Growth Habitat LUD standards and guidelines.

Appellants further assert that the Forest Service has not analyzed the effects of taking biologically preferred areas out of the OGR network and replacing them with acreage from inventoried roadless areas (IRAs), and that there is no evidence in the project record that the interdisciplinary team worked with the decision maker to develop alternative proposals, if necessary, to meet other Forest Plan objectives and to make sure the modified OGRs met the minimum criteria, as required by Appendix K of the Tongass Forest Plan. Appellants also assert that the Forest Service failed to analyze and disclose the site-specific effects on the acres that have been moved out of OGRs into development LUDs, particularly the effects on important deer winter habitat and wolves that may occur in the area. Finally, Appellants assert that the EIS and ROD fail to justify the reason for the modifications, citing Appendix K of the Forest Plan, which indicates that OGRs will only be modified "under limited circumstances" and provides four circumstances under which modifications may take place.

Discussion

Appellants assert that the Forest Service did not provide adequate public notice of and the opportunity to comment on the OGR modifications considered as part of the Big Thorne project. I disagree. The CEQ regulations implementing NEPA at 40 CFR 1501.7 provide guidance for scoping. Specific to Appellants' concerns about whether the NOI informed the public that the Forest Service was considering changes to the OGRs in the project area, the regulations [at 40 CFR 1501.7(c)] state:

> An agency shall revise the determinations made under paragraphs (a) and (b) of this section if substantial changes are made later in the proposed action, or if significant new circumstances or information arise which bear on the proposal or its impacts.

As noted in my response to Issue 2, above, the scoping process is a starting point for an environmental analysis. The proposed action described in the NOI for the Big Thorne project did not include any OGR modifications. This proposed action was carried forward in the DEIS and FEIS for the project. However, in response to public comments received during scoping, OGR

modifications were included as part of two alternatives considered in the DEIS and FEIS (Alternatives 3 and 4) [see FEIS, pp. 2-7 to 2-10] and became one of the significant issues identified for the project [Id., pp. 1-12 and 1-13].

Appellants assert that the OGR modifications only became one of the "significant issues" in the FEIS; this is not true. The Issues section of the DEIS specifically identifies OGR modifications as a significant issue considered for the Big Thorne project [p. 1-12]. It also explains the reason the Responsible Official was considering OGR modifications, the potential for effects on other resources, and the metrics that would be used to assess those effects [Id.]. The DEIS describes the current status of the OGRs in the project area [p. 1-16], and identifies the proposed OGR modifications included in Alternatives 3 and 4 [pp. 2-3 through 2-8]. It also includes an extensive discussion of the potential modifications to the OGRs and the potential effects of those modifications on key resources, by alternative [pp. 3-43 to 3-92]. It is clear that Appellants were afforded the opportunity to comment on the DEIS and the proposed OGR modifications [see comment letter dated December 10, 2012, PR #736_2241].

With regard to the changes made in the Selected Alternative, the Selected Alternative modified several OGRs by changing portions of them to development LUDs. In the cases where the Selected Alternative modified OGRs, the effects are less than those disclosed in the DEIS for Alternative 3, but more than those disclosed in Alternative 4. Appendix 3 to the ROD provides more specific information about how the existing OGRs were modified and why those changes were made. What I believe to be the more important OGR modifications in the Selected Alternative are as follows:

- The small OGR in VCU 5800 has a large block of land proposed to be modified under Alternative 3, and the effects of that proposed modification were discussed in the DEIS [pp. 3-63 through 3-66]. The effects of Alternative 4 (no modification of OGR – same as No Action) were also discussed in the DEIS [p. 3-71]. The Selected Alternative significantly reduces the amount of the OGR modified; therefore, the effects are less than those portrayed in the DEIS for Alternative 3 [Appendix 3, p. 8-9].

- The small OGR in the northern portion of VCU 5810 has a block of land modified across the entire northwestern boundary of the OGR. The effects of that modification were discussed in the DEIS [p. 3-69]. The Selected Alternative removed about half that proposed change; therefore, the effects are less than those portrayed in the DEIS for Alternative 3 [Appendix 3, p. 5-6].

- The small OGR in VCU 5850 has a block of land changed to a development LUD that extends south along a portion of the western border of the VCU. This is somewhat similar to the area displayed in Alternative 3 of the DEIS, except the Selected Alternative has a bit more acreage added to the west of the Sandy Beach Road but drops acreage continuing south along the OGR border. The DEIS discussed the effects of Alternative 3 on pages 3-67 and 3-76. The Selected Alternative does change the type of harvest in one unit from clearcut to partial cut. In this case, the LUD area modified is greater than discussed in Alternative 3, but one treatment unit has been dropped (Unit 435, ROD, p. 8), the harvest is restricted to the west of the Sandy Beach Road, and the effects of harvest will be less [Appendix 3, p. 8].

The CEQ regulations at 40 CFR 1503.1 address inviting public comments and state, "[a]fter preparing a draft environmental impact statement the agency shall...request comments from the public...". As noted above, the DEIS analyzed the effects of Alternatives 3 and 4 and the Selected Alternative was based on Alternative 3, but with lessened effects. I believe the changes made to the OGRs by the Selected Alternative stayed within the bounds of the analyses in the DEIS and the FEIS, and therefore these changes do not warrant additional analysis. Appellants provided comments on the DEIS in a letter dated December 10, 2012; these comments included comments on the proposed OGR modifications, so I believe they were given the appropriate opportunity to understand and comment on the proposed OGR modifications and their potential effects.

With regard to whether the EIS adequately analyzed the effects of the Selected Alternative and whether the Selected Alternative's OGR modifications comply with Appendix K of the Forest Plan, the criteria for changing the boundaries of OGRs at the project level are provided in Appendix K of the Forest Plan. Project level reviews of proposed OGR modifications include 2 steps. Step 1 is an interagency review, and the purpose of this review is to "identify the biologically preferred location for the OGR" [Forest Plan, Appendix K, p. K-2]. Step 2 is the decision process, which includes incorporating the interagency review team OGR recommendation in the NEPA process, considering the best biological location for the OGR while balancing other considerations, and developing alternative proposals, if necessary, to meet management objectives [Id.]. The DEIS, FEIS, ROD, and other information in the project record thoroughly document the process that was followed in modifying the OGRs in the Big Thorne project area.

The DEIS [pp. 3-43 to 3-92] provided an extensive discussion of the potential modifications to the small OGRs in the project area. The FEIS summarized this discussion on page S-7, with further discussion on page 1-12 and a more complete effects discussion on pages 3-44 through 3-95. The specific effects on each VCU (including VCU 5800) are displayed in Table OGR-2, including a comparison of the existing amount of Old Growth Habitat LUD acres and POG (including high volume and large tree POG) within each VCU with that projected to remain after modification and implementation of the alternatives [p. 3-55]. Tables A3-1 and A3-2 in Appendix 3 of the ROD display this information for the Selected Alternative.

The ROD summarizes the Selected Alternative's modifications to the OGRs by VCU [pp. 6-7], including a discussion on comparable achievement and the reasoning behind the determination [p. 13]:

> All proposed OGRs maintain areas of old growth forests by meeting, or exceeding, the Forest Plan standard and guideline requirement of being 16 percent of the Forest Land in the VCU and half of the 16 percent being POG acres. By meeting or exceeding the acre requirements the proposed OGRs also maintain the objectives of the Old growth habitat LUD by providing old growth forest habitats, in combination with other LUDs, to maintain viable populations of native and desired non-native fish and wildlife species and subspecies that may be closely associated with old growth forests; the proposed OGRs contribute to the habitat capability of fish and wildlife resources to support sustainable

> human subsistence and recreational uses by including habitats such as Class I fish streams, important deer winter range and low elevation POG areas especially along the beach and in estuaries... . The proposed OGRs also generally reduce the amount of road included in the OGR.

The ROD acknowledges that while the modified OGRs may meet or exceed the acre requirements, these modifications also reduce the amount of POG (including large tree POG and low elevation POG), interior forest acres, goshawk and marbled murrelet nesting habitat, and deer and marten winter habitat in some OGRs [ROD, Appendix 3, p. A3-2]. The ROD also states that three of the modified OGRs (VCUs 5800, 5810, and 5850) will not provide the same kind and quality physical conditions as the existing OGRs in these VCUs do. In these three modified OGRs, the primary concerns are elevational connectivity and the size of POG patches remaining [ROD, pp. 15-16].

For more information on the potential effects of the project (including the OGR modifications) on deer habitat and wolves, see my response to Issue 16, below.

With regard to whether the Forest analyzed the effects of taking "biologically preferred areas" out of the OGR network and replacing them with acreage from IRAs, the Inventoried Roadless Areas Resource Report [PR #736_1579, p. 25 and Table 9) indicates that 92,232 acres of the project area (about 44 percent) are within IRAs that are subject to the Roadless Area Conservation Rule. The EIS [p. 3-52, Table OGR-1] indicates that by placing OGRs within the IRA network, the overall number of acres protected in the project area only changes slightly, and the number of acres in OGRs actually increases. The reported overall net effect would be that the total acreage of the project area in the Old Growth Habitat LUD would increase by 1 percent, and the total acreage in development LUDs would decrease by less than 1 percent under Alternative 3. The changes under the Selected Alternative would be less than those reported for Alternative 3.

The ROD [pp. 15-20] summarizes the OGR modifications included in the Selected Alternative [pp. 16-18], as well as the potential effects of those modifications [pp. 15-20]. The document titled "ROD OGR Comparison" in the project record [PR #736_2206] displays the changes in both total and POG acres for each OGR.

Pursuant to Appendix K of the Forest Plan, proposed OGR boundary changes at the project level require an interagency team of Forest Service, U.S. Fish and Wildlife Service (FWS), and Alaska Department of Fish and Game (ADF&G) biologists to jointly evaluate the location and habitat composition of the OGRs by reviewing all large POG blocks within a VCU [see Forest Plan, Appendix K, pp. 1-2]. The Big Thorne ROD recognizes the contribution of this interagency review in the development of the proposed changes, stating that "[t]he 'Interagency Old Growth Reserve Review Big Thorne Project' document dated May 2013 documents the biologically preferred location for the OGRs as well as alternate locations" [ROD, p.15; PR #736_2191]. The interagency review team used both quantitative and qualitative information to develop consensus recommendations for biologically preferred and roadless area options for small OGR locations across the project area. The interagency IDT members signed this assessment, documenting their participation [Id., p. 44].

In my opinion, the modifications to the project area OGRs in the Selected Alternative were within the bounds of the analyses in the DEIS and the FEIS, including the analyses of the project's effects on deer and wolves, and the range of potential effects associated with these modifications are fully disclosed in the EIS and project record. Pursuant to Appendix K of the Forest Plan, an interagency review team contributed to the review of the existing OGRs and the proposed changes to those OGRs, developing a biologically preferred location for the OGRs, and the Forest Supervisor disclosed those recommendations. However, I am concerned about any OGRs that meet "comparable achievement" in terms of overall acreage but not in terms of habitat connectivity or POG values. These concerns are related to my findings on Issue 16, below. In light of new information that suggests effects on the POW deer and wolf populations may be higher than that anticipated in the Big Thorne EIS and project record, I believe a closer look at project design, including proposed OGR modifications, may be warranted. Therefore, I recommend that the Forest Supervisor engage the Interagency Wolf Task Force, the group initiated in October 2011, to evaluate this new information, re-evaluate the public concerns over the potential effect of the OGR modifications on deer and wolf populations, and make any necessary changes to the Big Thorne project. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this information and its effect on his decision.

Issue 16. Whether the Big Thorne project complies with Forest Plan standards and guidelines and NFMA in regards to deer, wolves, and hunters.

Appellants assert that the Forest Service has not adequately explained how the project complies with WILD XIV.A.2, the Forest Plan standard that applies to the Alexander Archipelago wolf, given that the expected deer habitat capability in all four Wildlife Analysis Areas (WAAs) of the project area and the North Central Prince of Wales biogeographic province as a whole are expected to fall below the 18 deer per square mile threshold expressed in the Forest Plan. They assert that the EIS does not disclose the significance of logging areas that are below that threshold, that the assumptions made in the EIS about nearby WAAs being able to support wolves are incorrect, and that the Forest Service has not offered any documentation that "local knowledge of habitat conditions, spatial location of habitat, and other factors" demonstrate that sufficient deer habitat will be provided to maintain wolf populations.

Appellants further assert that the Forest Service has not demonstrated compliance with WILD 1.II.B, which requires "an abundance and distribution of habitat necessary to maintain viable populations...," and that the Forest Service has failed to address recent scientific information documenting a severe reduction in both wolf and deer populations. Appellants assert that the Big Thorne project demonstrates that the 2008 Tongass Forest Plan is inadequate to maintain viable populations of wolves throughout the planning area, that the Forest Service failed to disclose the substantial controversy and dissenting scientific opinions as to whether the project and the Forest Plan insure the continued viability of the wolf, and that the EIS failed to disclose the site-specific effects on deer, wolves, and subsistence because of various shortcomings with the deer model and the failure of the EIS to include additional information.

Discussion

The regulations implementing NFMA under which the Tongass Forest Plan was revised and amended require the Forest Service to provide habitat in order to "maintain viable populations of existing native and desired non-native vertebrate species in the planning area" [36 CFR 219.9]. The "planning area" is defined as the Tongass National Forest [Forest Plan, p. 7-28]. These regulations define a viable population as "one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area." This viability requirement was incorporated into the Tongass Forest Plan [see Forest Plan, WILD1.II.B., p. 4-89], and the Forest Plan responds to this requirement through the old growth conservation strategy and standards and guidelines specific to wildlife species.

The Forest Plan includes standards and guidelines that specifically pertain to the Alexander Archipelago wolf [p. 4-95]. These include direction to:

> Provide, where possible, sufficient deer habitat capability to first maintain sustainable wolf populations, and then to consider meeting estimated human deer harvest demands. This is generally considered to equate to the habitat capability to support 18 deer per square mile (using habitat capability model outputs) in biogeographic provinces where deer are the primary prey of wolves.

Management protections for the Alexander Archipelago wolf are identified and discussed in the Big Thorne EIS and project record. The Wildlife and Subsistence Resource Report [PR #736_0419, p. 35] discusses the role of the wolf as a Management Indicator Species (MIS), in recognition of population viability concerns in some areas of the Tongass. The Report [pp. 35-39] goes on to summarize the current state of knowledge with regard to wolves and their direct dependence on prey abundance and availability. The Big Thorne EIS incorporates the Report [pp. 3-113 through 3-118 and 3-182 through 3-191] and explains the metrics used to assess the potential effects of the project on wolves and their prey, and why those metrics were used. This analysis is consistent with the 2011 "Direction for Project-level Deer, Wolf, and Subsistence Analysis," which was developed in cooperation with ADF&G personnel [PR #736_0339].

The Forest did not ignore the deer model results. Table WLD-24 [EIS, p. 3-178; see also ROD, Table ROD-7, p. 27] displays the potential effects of timber harvest on deer density at the biogeographic province scale. While the current habitat capability in the North Central Prince of Wales Biogeographic Province is currently estimated at 18 (17.95) deer per square mile (considering only NFS lands), it is expected to decline to 17.4 (17.36) deer per square mile by 2040 (at stem exclusion phase). Table WLD-26 [pp. 3-180 to 3-181] displays the "all lands" cumulative effects analysis conducted at the biogeographic province scale. This Table indicates that deer habitat capability is currently at 14.6 deer per square mile, decreasing to 14.4 deer per square mile under all action alternatives at project completion (a reduction of approximately 1 percent) and to 13.9 to 14.0 deer per square mile at stem exclusion (2040) for the action alternatives (a total reduction of 4 to 5 percent) [see also ROD, Table ROD-8, p. 28].

As stated in the Big Thorne EIS Response to Comments on this issue:

> Falling below 18 deer per square mile does not in itself imply viability concerns for wolves. The above standard and guideline was designed to maintain equilibrium populations of wolves and deer while also providing for a sustainable harvest of deer by humans (Person et al. 1996). To maintain viable wolf populations under the Forest Plan, the [viable populations (VPOP)] committee recommended that a deer density of at least five deer per square mile be maintained in areas where deer are their primary prey (Suring et al, 1993, p. 33). This is well below the standard and guideline of 18 deer per square mile. In addition, both the 1997 and 2008 Forest Plans disclose that deer density, as measured using habitat capability model outputs, in a number of WAAs may fall below the standard after full implementation of the Forest Plan... and that the deer density in many of these WAAs is naturally low because of poor deer habitat.

[EIS, Appendix B, p. 36]. The EIS [p. 3-180] summarizes the effects of timber harvest and related activities on wolves, acknowledging that:

> All action alternatives result in an additional reduction of deer habitat capability, contributing to similar effects associated with ongoing and future timber harvest on NFS and lands in other ownership. Collectively this has the potential to result in localized declines in the deer population, and thus the prey base for wolves.

The EIS also acknowledges that the reductions in habitat capability, in combination with periodic severe winters, may result in a local decline in the deer population, particularly given the recent declines observed on Prince of Wales Island [p. 3-175].

Appellants assert that the EIS's statement that nearby WAAs are able to support wolves is incorrect. The EIS displays deer habitat capability for WAAs 1315, 1318, 1319 and 1420, those WAAs directly affected by proposed activities, at multiple scales [Tables WLD-24 and WLD-26, pp. 3-178, 3-180 to 3-181]. Deer habitat capability runs were completed for an additional 17 WAAs; the results of these runs are in the project record. These analyses indicate that 8 WAAs in the biogeographic province (NFS land only) do currently support 18 deer per square mile, and all 8 will continue to support 18 deer per square mile at stem exclusion stage [PR #736_0358].

The EIS also took into consideration the proximity of the Honker Divide Large OGR (200,000+ acres) and the Karta Wilderness (about 40,000 acres), both adjacent to the project area [EIS, p. 3-114]. As stated in the Wildlife and Subsistence Resource report [p. 20]:

> The intent of the reserve system was to help ensure the maintenance of well-distributed viable populations of all old growth associated wildlife species across the Tongass, with focus on those species that are most sensitive to habitat loss and fragmentation. In general, the home range and dispersal capabilities of old growth associated species of concern were considered in determining the size, number and spacing of reserves.

Although the habitat capability of WAAs 1323 and 1332 was not discussed specifically in the EIS, the analysis of the habitat capability of these WAAs was incorporated at the biogeographic scale. The EIS [p. 3-176] concludes:

> The 2008 Forest Plan Final EIS (USDA Forest Service 2008c) predicts that with full implementation of the Forest Plan, WAAs 1315, 1318, 1319, and 1420 will retain 47, 75, 64, and 40 percent of the historic (1954) habitat capability in 100+ years, respectively, on NFS lands. Predictions including non-NFS lands would likely be lower (USDA Forest Service 2008c). Regardless of the alternative chosen for the Big Thorne Project, management activities would retain habitat capability (taking only NFS lands into account) above these predicted levels in all WAAs at project completion and at stem exclusion.

The project record emphasizes that the proximity of the Honker Divide Large OGR, the Karta Wilderness, and nearby WAAs with higher habitat capability in the vicinity of the Big Thorne project area will help assure the persistence of wolf packs that may serve as source populations (citing Person et al. 1996; Person and Logan 2012) [EIS, p. 3-188].

As stated in the EIS [p. 3-100]:

> The Big Thorne EIS tiers to the viability assessments for goshawks, marten, wolves, other terrestrial mammals (well-distributed mammals and endemic mammals), and marbled murrelets; and the analysis of cumulative effects at the Forest scale in the 2008 Forest Plan Final EIS (USDA Forest Service 2008c). These analyses fully considered the levels of past and likely future harvest and associated development on NFS and non-NFS lands, accounting for projects such as Big Thorne. The 2008 Final EIS concluded that full implementation of the Forest Plan (in 100+ years) is expected to have a moderate to very high likelihood of maintaining habitat that supports viable and well-distributed populations of wildlife (USDA Forest Service 2008c).

In response to Appellants' assertions that the Forest failed to address recent scientific information documenting a severe reduction in both wolf and deer populations, the EIS does disclose reductions in deer populations within the Big Thorne project vicinity, referencing multiple sources, including the conclusion that "[i]n light of the Pacific Decadal Oscillation, continued loss of deer winter habitat, and current observed over-browsing of deer winter range, ADF&G expects a reduction in deer carrying capacity over the next decade (Baichtal 2012)" [EIS, p. 3-110].

Appellants also assert that the EIS failed to disclose the site-specific effects on deer, wolves, and subsistence because of various shortcomings with the deer model. The 2011 "Direction for Project-level Deer, Wolf, and Subsistence Analysis" [PR #736_0339] clearly describes the intent and the limitations of the deer model. The deer model calculates a habitat suitability index (HSI) based on vegetation, elevation, aspect, and typical snowfall for an average winter and does not account for stochastic events. The Big Thorne EIS acknowledges the limitations of the deer model [p. 3-111], and discusses the effect that severe winters may have on deer [p. 3-112].

The Wildlife and Subsistence Resource Report includes specific discussions of the effects of the project on potentially affected subsistence communities [PR #736_0419, pp. 172-184], and the EIS [pp. 3- 244 to 3-253] includes extensive discussion of the potential effects of the project on subsistence. Any more specificity is an unrealistic expectation by the Appellants. There are a

wide range of site specific and landscape level effects that could influence deer density prior to, during, and after implementation of the Big Thorne project. The Big Thorne EIS analysis is based on.established methodologies for estimating the potential effects on wildlife and subsistence resources.

Many factors influence deer and wolf population viability and sustainability. Harvesting of deer and wolves is regulated by the Federal Subsistence Board and the State of Alaska Board of Game. Regulations promulgated by the Federal Subsistence Board supersede State regulations on all Federal lands, including lands identified for management as part of the Big Thorne project. The Tongass National Forest has responsibility for the management of wildlife habitats in support of population maintenance consistent with the Forest Plan and national multiple use objectives.

Issues similar to those raised by Dave Person in his August 2013 Statement (submitted as an attachment to this appeal) were acknowledged and considered prior to the Big Thorne decision. Person and Logan 2012 [PR #736_0299], though not an assessment of wolf viability or sustainability, recognized the threats to wolves on Prince of Wales and the potential high levels of wolf mortality that could result. They acknowledged the connection between roads and the access they provide and the legal and illegal harvest of wolves, and evaluated the potential effects of proposed road closures on resident wolves. Road closures and other road management actions are included as part of the Big Thorne decision [ROD, pp. 5-6].

The recent Person & Larson Spring 2013 Wolf Study Progress Report [PR #736_2940] estimated an 80 percent over-winter mortality rate of known wolves. This is a significant reduction to the known wolf population, at a level in excess of any formal projections and more reflective of the concerns expressed in Dr. Person's August 2013 Statement. Although this reported level of mortality raises concerns about population stability, this Report also discussed observations of previously unknown wolves within the project area, potentially indicating some level of wolf mobility and movement between WAAs as discussed within the Wildlife and Subsistence Resource Report [PR #736_0365, p. 36]. In addition to use of the area by previously unknown wolves, reproduction of at least 5 young was documented as well [PR# 736_2940].

With the exception of Dr. Person's August 2013 Statement, which was not signed and provided to the Forest Service until after the Big Thorne ROD was issued, all of these documents and many less recent documents were considered in the analysis of the potential effects of the project on wolves [EIS, pp. 3-110 through 3-118]. Although the most recent reports show a localized decline in known wolf numbers, there are also indications that wolves previously unknown to the study authors are now present in and around the project area [PR #736_2940].

Appellants assert that the Big Thorne project demonstrates that the 2008 Tongass Forest Plan is inadequate to maintain viable populations of wolves throughout the planning area. This conclusion is not supported by the record. At the biogeographic province scale, the cumulative effect of all alternatives would be the maintenance of approximately 13.9 to 14.1 deer per square mile 25 years after harvest (at stem exclusion). This indicates that regardless of the alternative selected, the ability of the larger area surrounding the project to maintain a sustainable wolf population would not change. The EIS did conclude that there are substantial areas (including project area WAAs) with lower quality habitat that, on their own, would not be able to support a

local population (i.e., population sinks). In these areas, local population persistence would continue to rely on dispersal of wolves from surrounding areas (source populations). However, these effects on habitat are within the range of effects disclosed in the 2008 Forest Plan EIS, to which the Big Thorne EIS tiers, and were considered in the Forest Plan ROD's determination that "the amended Forest Plan will provide fish and wildlife habitat to maintain viable populations of vertebrate species in the planning area" [Forest Plan ROD, p. 27; see also Big Thorne EIS, pp. 3-181 to 3-182]. Thus, they are consistent with the Forest Plan determinations regarding subsistence and viability [EIS, p. 3-190].

In addition, the State of Alaska's comments on the Big Thorne DEIS [PR #736_3163] indicate:

> Though there is a paucity of quantitative data with which to assess actual population levels, the ADFG believes that, while there may be vulnerabilities for wolves in select parts of Game Management Unit (GMU) 2... wolves are viable (i.e., not threatened with extinction) across their overall range in Southeast Alaska. Regulatory processes used by state and federal agencies and their associated boards provide mechanisms for modifying seasons, bag limits, and hunting/trapping methods and means for purposes of maintaining sustainable populations. Also, the ADFG has initiated research on Prince of Wales Island and will work with the Board of Game, Southeast Alaska Regional Advisory Council, Federal Subsistence Board, and the USFS to address any identified conservation concerns.

Appellants assert that the Forest failed to disclose the substantial controversy and dissenting scientific opinions as to whether the Big Thorne project and the Forest Plan insure the continued viability of the wolf. Public comments, including those of dissenting scientific opinion, are part of the project record and were considered in the final decision [ROD, p. 4]. In recognition of these comments from all sources, additional expert opinion was sought and Alternative 3 was modified in response to these comments and additional information. These changes and rationale are described in the ROD [pp. 5-7].

In my opinion, the Big Thorne EIS adequately analyzed the potential effects of the project on deer habitat and wolves based on the information available at the time. The analyses in the EIS and project record were conducted using established methodologies developed through interagency coordination and extensive peer review. The EIS and project record disclose the controversy and dissenting scientific opinion regarding the current status of wolves on Prince of Wales Island. The potential effects of the project, as displayed and discussed in the EIS, are within the range of affects disclosed in the Forest Plan EIS and were considered in the Forest Plan ROD's determination that sufficient habitat would remain to maintain viable populations of vertebrate species, including wolves, in the planning area.

However, recent reports, including the Person Statement provided by Appellants and referenced in the Alaska Wilderness League, et al. appeal, demonstrate a localized decline in wolf numbers, and incompletely understood processes including wolf immigration and direct mortality attributed to hunting and trapping create uncertainty regarding the sustainability of wolf populations that utilize the Big Thorne project area. Although I believe the Big Thorne project complies with Forest Plan standards and guidelines and NFMA in regards to management of deer and wolf habitat on NFS lands, the conclusions in Dr. Person's Statement suggest that

cumulative effects on the Prince of Wales deer and wolf populations (including both habitat effects and wolf harvest) may be higher than that anticipated in the Big Thorne EIS and project record. Therefore, a closer look at project design may be warranted. In order to ensure that a hard look has been given to this issue, I recommend that you direct the Forest Supervisor to engage the Interagency Wolf Task Force to evaluate this new information, re-evaluate the public concerns over the potential effect of the project on deer and wolf populations, and make any necessary changes to the Big Thorne project as a result of this review. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this new information and its effect on his decision.

Issue 17. Whether the Forest Service complied with the Alaska National Interest Lands Conservation Act (ANILCA) in its approval of the Big Thorne project.

Appellants assert that the Forest improperly elevated timber uses over subsistence uses instead of balancing equally valid public interests, and that the Forest has consistently overstated the market demand for timber, which has also wrongly inflated the need for timber projects and relegated subsistence uses to a lesser role. Appellants further assert that the Forest failed to accord adequate weight to the project's effects on subsistence, even though it admits that those effects are significant, and that it failed to make the required finding that the project is necessary.

Discussion

The potential effects of the Big Thorne project on wildlife and subsistence are discussed in Chapter 3 of the EIS [pp. 3-96 to 3-256]. Specific to subsistence, the EIS discusses the potential direct, indirect, and cumulative effects [pp. 3-240 to 3-256]. Based on the analysis in the EIS, the Forest Supervisor concluded that the Selected Alternative did not present a significant possibility of a significant restriction on the subsistence use of bear, furbearers, marine mammals, waterfowl, salmon, other finfish, shellfish, and other foods such as berries and roots [ROD, p. 42; see also EIS, p. 3-240]. The Forest Supervisor did conclude that there may be a significant possibility of a significant restriction on the subsistence use of deer for all of the action alternatives [ROD, p. 42].

The EIS displays the potential reductions in deer habitat capability and changes to deer winter range by WAA in the project area for each alternative, both for NFS lands only [EIS, pp. 3-166 to 3-167] and for all lands [pp. 3-168 to 3-169], and discusses these effects [pp. 3-170 to 3-175]. As stated in the EIS, deer winter habitat capability would be reduced under all alternatives, and these reductions in habitat capability, in combination with periodic severe winters, may result in a local decline in the deer population, particularly given recent declines observed on Prince of Wales Island, and could limit the number of deer available to wolves and hunters [p. 3-175]. The EIS acknowledges that hunter success can be expected to decline in areas where demand equates to 10 to 20 percent of habitat capability, and that it can be directly affected (through restrictions in seasons and bag limits) when demand exceeds 20 percent of deer habitat capability [p. 3-244]. Table WLD-38 in the EIS displays hunter demand (based on harvest data from 2005 to 2010) as a percent of habitat capability, and indicates that demand already exceeds 20 percent of habitat capability in WAA 1420, and will exceed 20 percent habitat capability under all alternatives (including no-action) in WAA 1315. The table also indicates that hunter demand will range from

12.3 percent of habitat capability to 12.8 percent in WAA 1318 [p. 3-245]. Based on this analysis, the EIS concludes that hunter success would be expected to decline in WAA 1318 and be directly or indirectly reduced through harvest restrictions or difficulty obtaining deer in WAAs 1315 and 1420 [p. 3-254].

In accordance with Section 810 of ANILCA, the Forest Supervisor reviewed the actions involved in the implementation of the Selected Alternative to determine whether they are necessary, consistent with sound management of public lands; whether the Selected Alternative involved the minimum amount of land necessary to accomplish the purposes of the Alternative; and whether reasonable steps will be taken to minimize adverse effects on subsistence uses and resources [ROD, pp. 42-43]. Appellants challenge this determination, pointing to their assertions relating to market demand and stating that the need for timber projects relegates subsistence to a lesser role.

Appellants' argument is similar to those raised in *Hoonah Indian Association v. Morrison,* 170 F.3rd 1223 (9th Cir. 1999). In *Morrison*, the 9th Circuit held that the word "necessary" does not have the effect of prohibiting timber sales that affect subsistence uses and are not required by law. A significant restriction of subsistence use might not be necessary to achieve compliance with law, yet necessary to conform to "sound management principles" for the "utilization" of public lands. The "utilization" to which "sound management principles" refers to is multiple, and includes outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness. The Big Thorne project is a timber sale project. The Forest Supervisor was required to consider the potential effects of the project on subsistence, but is not precluded from selecting an alternative that may cause a restriction of subsistence use if he determines that the actions involved are "necessary, consistent with sound management principles for the utilization of the public lands."

As discussed in the ROD and elsewhere in this recommendation (see, for example, my response to Issue 8), the Big Thorne project is a necessary component of the Tongass timber management program designed to implement the Forest Plan and to meet TTRA direction. The Forest Supervisor considered Forest Plan and TTRA direction, and well as other laws and direction relating to management activities on NFS lands, and concluded that the Selected Alternative "strikes a balance between meeting the resource needs of the public and protecting the forest resources" [ROD, p 43]. While this language isn't directly responsive to the findings required by ANILCA, it is under a subheading titled "Necessary and Consistent with Sound Management of Public Lands," and I believe the ROD and project record support such a finding. To make it clear that the Forest Service has determined that the actions involved in the Selected Alternative are "necessary, consistent with sound management principles for the utilization of public lands," I recommend that you expressly state this in your appeal decision.

In my opinion, the findings in the ROD are reasonable and consistent with applicable law and policy direction, and the project record supports a conclusion that the restriction of subsistence use is necessary.

Issue 18. Whether the EIS adequately analyzed the potential effects of the project on other wildlife species.

Appellants raise numerous issues relating to the effects of the project on other wildlife species within the project area, as enumerated in Issues 18a through 18d below.

Issue 18a. Whether the EIS adequately disclosed the effects of the project on goshawk and whether it ensures viability in compliance with NFMA.

Appellants assert that the EIS failed to take a hard look at the project's effects on goshawk, especially given the concerns raised in response to the DEIS and the body of science establishing that goshawk populations on Prince of Wales Island are particularly at risk. Appellants also assert that inadequate surveys for goshawks have been completed, and that the project relies on an invalid nest buffer standard and guideline and ignores the Fish and Wildlife Service's comments recommending increased nest buffers to provide for alternative nests, fledgling habitat, and adequate foraging habitat. Appellants further assert that the Forest Service failed to ensure the viability of the goshawk by failing to meet the Forest Plan's requirements in the modification of the OGRs within the project area and by relying on inadequate Forest Plan standards and guidelines regarding goshawks.

Discussion

As discussed above in response to Issue 16, the regulations implementing NFMA at 36 CFR 219.9 require national forests to provide habitat in order "to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." These regulations define a viable population "as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area." The planning area is defined as the Tongass National Forest [Forest Plan, p. 7-28].

The Big Thorne EIS tiers to the viability assessments for goshawks, marten, wolves, other terrestrial mammals (well-distributed mammals and endemic mammals), and marbled murrelets and the analysis of cumulative effects completed at the forest scale for the 2008 Forest Plan EIS. These analyses fully considered the levels of past and likely future harvest and associated development on NFS and non-NFS lands, accounting for projects such as Big Thorne. The 2008 Forest Plan ROD concluded that full implementation of the Forest Plan (in 100+ years) is expected to have a moderate to very high likelihood of maintaining habitat that supports viable and well-distributed populations of wildlife [see, for example, Forest Plan ROD, p. 27; Big Thorne Wildlife and Subsistence Resource Report, PR #736_0419, p. 9].

Many of Appellants' assertions were addressed in the Big Thorne EIS Response to Comments [Appendix B, pp. B-150 to B-152]. Management protections (including Forest Plan standards and guidelines) for the northern goshawk (including the Queen Charlotte goshawk subspecies) are identified and discussed in the project record. The Big Thorne Wildlife and Fish Biological Assessment and Biological Evaluation (BA/BE) discusses the Queen Charlotte goshawk as a Forest Service Sensitive Species, designated in recognition of population viability concerns in some areas of the Tongass [PR #736_0418, pp. 24-26].

The Forest, in support of the development of the 2008 Forest Plan, hosted a Conservation Strategy workshop to bring forth the most current research regarding forest wildlife species, including the goshawk [Forest Plan EIS, Volume II, pp. D-22 to D-25 and D-55 to D-58]. The Forest Plan standards and guidelines for proposed projects that affect goshawk habitat were based on this effort. These standards and guidelines require that the Forest conduct goshawk surveys, and they also require the protection of any nests found, including maintaining an area of not less than 100 acres of productive old growth forest (if it exists) with no commercial timber harvest permitted [Forest Plan, pp. 4-99 to 4-100]. Accordingly, goshawk surveys were conducted in 2010, 2011, 2012, and 2013 to determine the presence of nesting goshawks in the Big Thorne project area [BA/BE, PR #736_0418, pp. 5-6; see also survey records at 736_0369, 736_0376]. These surveys were conducted according to the "Tongass National Forest Project-level Goshawk Inventory Protocol," a modified Broadcast Acoustical Survey method adapted for implementation on the Tongass National Forest [Stangl 2009, PR# 736_0329].

The BA/BE provides information on the habitat requirements, assumptions, and life cycle needs of the Queen Charlotte goshawk [PR #736_0418]. It also includes a discussion of the rationale behind the measures used to predict the potential direct, indirect, and cumulative effects of the project on the Queen Charlotte goshawk by alternative and comparisons between alternatives [Id., pp. 44-52]. As stated in the BA/BE [pp. 48-49], the rationale for the "not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing" determination was based on the following factors:

- The mobility of the species and the currently low breeding density in the biogeographic province due to existing levels of timber harvest;
- The Tongass National Forest standards and guidelines for protecting active goshawk nests have been applied and would be applied if additional nests are documented within the project area.

In my opinion, the Big Thorne EIS and project record demonstrate that the potential effects of the project on goshawks were considered, and this analysis was completed in accordance with applicable Forest Plan standards and guidelines. The Big Thorne project tiers to the 2008 Tongass Forest Plan, which was designed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.

With regard to Appellants' assertions that the Forest failed to ensure goshawk viability because it failed to follow Forest Plan requirements in the modification of the OGRs in the project area, see my response to Issue 15, above, for a discussion of whether the ROD's OGR modifications comply with Appendix K of the Forest Plan. As stated in that response, the modifications to the OGRs were evaluated by an interagency team of biologists consistent with direction in Appendix K. This team developed a biologically preferred location for the OGRs, and the Forest Supervisor disclosed those recommendations. However, as discussed above in response to Issues 15 and 16, I am concerned about any OGRs that meet "comparable achievement" in terms of overall acreage but not in terms of habitat connectivity or POG values. In light of new information that suggests effects on the POW deer and wolf populations may be higher than that anticipated in the Big Thorne EIS and project record, I believe a closer look at project design, including proposed OGR modifications, may be warranted. I recommend that the Forest

Supervisor evaluate this new information, re-evaluate the public concerns over the potential effects of the project, and make any necessary changes to the Big Thorne project. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this information and its effects on his decision.

Issue 18b. Whether the EIS adequately disclosed the effects of the project on endemic species, in compliance with NEPA and NFMA.

Appellants assert that the EIS failed to adequately consider and disclose the effects of the project on small endemic mammals, stating that adequate surveys have not been conducted despite overwhelming scientific concerns about Prince of Wales endemics, and that the EIS does not demonstrate that the surveys that were conducted used a scientifically defensible methodology. Appellants specifically mention the northern flying squirrel, and assert that the EIS failed to adequately consider the project's direct and cumulative effects on the squirrel, that it instead relies on the outdated Forest Plan conservation strategy and does not incorporate the best available science or recent scientific information demonstrating that the conservation strategy is not adequate for the Prince of Wales flying squirrel. Appellants also assert that the Selected Alternative's modified OGRs will not provide a comparable achievement, further reducing the quantity and quality of productive old growth habitat and reducing the population of the squirrel to levels at which the species may cease to exist over the next 50-100 years.

Discussion

The Forest Plan standards and guidelines for endemic terrestrial mammals outline the objective of the plan "to maintain habitat to support viable populations and improve knowledge of habitat relationships of rare or endemic terrestrial mammals that may represent unique populations with restricted ranges" [Forest Plan, p. 4-97]. They state that the Forest is to:

> Use existing information on the distribution of endemic mammals to assess project level effects. If existing information is lacking, surveys for endemic mammals may be necessary prior to any project that proposes to substantially alter vegetative cover (e.g., road construction, timber harvest, etc.). Surveys are necessary only where information is not adequate to assess project-level effects.

[Id.]. The standards and guidelines provide additional guidance as to how this direction should be interpreted and implemented at the project level.

The Big Thorne EIS includes a short discussion regarding the efforts to obtain data on endemic species, specifying that small mammal trapping was conducted in association with the Island Surveys to Locate Endemic Species (ISLES) program [EIS, p. 3-99]. The ISLES program is a partnership between the Museum of Southwestern Biology at the University of New Mexico, the Tongass National Forest, and other Alaska agencies that focuses on evaluating the status of purported endemics on the Tongass National Forest. Results of recent ISLES surveys conducted in the vicinity of the Big Thorne project are cited and described in the discussion of endemic species in the Wildlife and Subsistence Resource Report [PR #736_0419, p. 7]. The viability of endemic mammals was given specific attention in the development of the Forest Plan, and the extensive analyses completed at that time contributed to the current standards and guidelines.

Prince of Wales Island has been identified as a hotspot for endemism, and it is also an area where intensive past timber harvest has occurred. This is discussed in the Wildlife and Subsistence Resource Report [PR #736_0419, p. 167]. The Report includes a detailed discussion of known research and data about the flying squirrel, the potential effects of the project on the existing population in the project area, and the measures taken to minimize the effects on the population. The Report also includes additional details regarding known data on other endemics found on Prince of Wales, including the Alexander Archipelago wolf, Prince of Wales flying squirrel, Haida Gwaii ermine, Keen's myotis, Insular dusky shrew, Alexander Archipelago black bear, and Prince of Wales spruce grouse, and discusses the potential effects of the project on these species [pp. 48-50]. The potential direct, indirect, and cumulative effects of the project on endemics under all alternatives were discussed in the Report, and are summarized in the Big Thorne EIS [PR #736_0419, pp. 168-170; EIS, pp. 3-126 to 3-127].

In my opinion, the Big Thorne EIS adequately analyzed the potential effects of the project on endemic species, and this analysis was completed in accordance with applicable Forest Plan direction.

With regard to the potential effects of the Selected Alternative's modified OGRs, see my response to Issue 15, above. As stated in that response, the modifications to the OGRs were evaluated by an interagency team of biologists consistent with direction in Appendix K. This team developed a biologically preferred location for the OGRs, and the Forest Supervisor disclosed those recommendations. However, as discussed above in response to Issues 15 and 16, I am concerned about any OGRs that meet "comparable achievement" in terms of overall acreage but not in terms of habitat connectivity or POG values. In light of new information that suggests effects on the POW deer and wolf populations may be higher than that anticipated in the Big Thorne EIS and project record, I believe a closer look at project design, including proposed OGR modifications and old growth habitat connectivity, may be warranted. I recommend that the Forest Supervisor evaluate this new information, re-evaluate the public concerns over the potential effects of the project, and make any necessary changes to the Big Thorne project. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this information and its effect on his decision.

Issue 18c. Whether the EIS adequately considered the effects of the project on marten.

Appellants assert that the EIS failed to explain why the marten deep snow habitat model (verses the interagency habitat capability model) was used for the project analysis, despite Appellants' and ADF&G's concerns that the model underestimates habitat losses. Appellants assert that one of the major flaws of the model is that it fails to consider the relationship between road density and high value marten habitat, and that the EIS failed to disclose road density at an appropriate scale and failed to provide an adequate assessment of the effects of increased road density on marten. Appellants further assert that there is no supporting science for the Forest Plan's legacy guidelines, and that the Forest Service did not provide an assessment of the value of additional retention in clearcut units, did not compare the 1997 and 2008 programmatic guidance for forest structure retention in the project area, and did not account for the need for trapping refugia and prey availability as they requested in their comments on the DEIS.

Discussion

Many of Appellants' assertions were addressed in the EIS Response to Comments [Appendix B, pp. B-153 to B-154], including the rational for the use of the marten deep snow habitat model as opposed to the interagency marten habitat capability model. The EIS discusses the effects of increased road density by alternative and the risks to marten associated with those increases [pp. 3-191 to 3-200]. The EIS displays both the open and total road density for project area WAAs at all elevations for NFS lands only (direct effects) [Table WLD-29 on p. 3-192] and for all lands (cumulative effects) [Table WLD-31 on p. 3-194]. In line with the recommendations from the conservation strategy workshop, no road density standard has been set to assess marten vulnerability. Rather, the amount of POG remaining and connectivity across the landscape at both the project area and the biogeographic province scales were considered in predicting what the effects of the project on marten may be.

The Wildlife and Subsistence Resource Report [PR #736_0419, pp. 138-145] provides more detail, including discussions regarding the relationship between road density and high value marten habitat and the importance of roadless refugia, such as that provided within OGRs and wilderness. The EIS [p. 3-93] notes that implementation of the Prince of Wales Island ATM, as well as the temporary nature of some project roads and the closure and storage of all project system roads within 1 to 5 years after completion of timber harvest activities, will help mitigate the effects of the project's (and existing) road density on marten populations.

In my opinion, the EIS adequately analyses the effects of the project on marten, and the scales and factors used for this analysis are appropriate.

With regard to Appellants' assertions about the Forest Plan legacy standards and guidelines, see my response to Issue 10, above. The intent of the legacy standards and guidelines, as stated in the Forest Plan ROD, was to ensure a diversity of forest structure (old trees, snags, closed canopy cover) to provide suitable foraging and dispersal habitat for marten and other species, reducing adverse effects of timber harvest on species habitat by retaining important forest structure where it is most needed, in those higher-risk VCUs.

The Big Thorne project appears to meet the legacy standards and guidelines to provide structure within planned openings. However, I have concerns as to whether it meets the intent of the legacy standards and guidelines and the conservation strategy to protect important areas and provide old growth forest habitat connectivity. While not directly related to the deer and wolf concerns expressed in my responses to Issues 15 and 16, old growth habitat connectivity is an important consideration for all wildlife species. Therefore, as part of his review of the new information regarding deer and wolves and whether changes to project design are needed, the Forest Supervisor should review the placement of legacy structure within each unit and ensure that adequate old growth forest habitat connectivity is maintained consistent with the intent of the legacy standards and guidelines and the conservation strategy. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this information and its effect on his decision.

Issue 18d. Whether the EIS adequately considered the effects of the project on black bear.

Appellants assert that the EIS's analysis of the effects on black bear simply measured these effects by cataloguing total productive old growth removals on a broad scale rather than measuring effects at a meaningful scale. They assert that the EIS failed to look specifically at the effects of the project on high value bear habitat (low elevation, old growth forest with abundant and productive salmon streams), and instead mistakenly assumed, without any supporting evidence, that riparian buffers on Class I streams would reduce effects on black bear habitat. Appellants also assert that the EIS did not discuss black bear use of and the project's effects on large tree old growth forest, and that it should have specifically measured baseline habitat capability and disclosed carrying capacity in the same way as it did for deer in order to take a hard look at project effects in light of ongoing and predictable intensive black bear harvest on Prince of Wales.

Discussion

The black bear is designated as a Tongass National Forest MIS because of its importance for hunting and for recreation and tourism [Forest Plan EIS, Table 3.10-1, pp. 3-224 and 3-233]. The Forest Plan EIS [p. 3-230] discusses habitat requirements for MIS, and Table 3.10-2 displays the "Relative Importance of Conifer Successional Stages as Habitats for Management Indicator Species." This table indicates that both low to medium volume POG stands are of moderate to high importance, supporting high densities of black bear.

The Forest Plan includes a standard and guideline for the management of young growth in support of habitat maintenance for black bear [WILD2.I, p. 4-97], and the EIS states that the commercial thinning included in Alternatives 3, 4, and 5 and the pre-commercial thinning of young growth stands on NFS lands under other restoration projects would improve habitat conditions for black bear [p. 3-201]. The EIS identifies the analysis area(s) considered in determining the potential effects on wildlife and subsistence species, as well as the methodology used to conduct these analyses [pp. 3-100 to 3-101]. The EIS includes discussions specific to black bear, and discloses the potential effects of the project, including reduction of POG, concluding that "preferred habitats for black bears would continue to be protected on NFS lands by beach, estuary and stream buffers, old growth reserves, and other non-development LUDs" [p. 3-206].

The Wildlife and Subsistence Resource Report [PR #736_0419, p. 10] discusses vegetation classification and the size-density model, and how large tree, old growth forest was used to determine the direct, indirect, and cumulative effects of the Big Thorne project. The Report includes additional discussion regarding existing old growth conditions, management guidance with regard to black bear, and the potential effects of the project [pp. 21-23].
In my opinion, the EIS adequately analyzes the potential effects of the project on black bear, and the EIS and project record demonstrate that appropriate factors and scales were used in this analysis.

Issue 19. Whether information about the project was reasonably available to the public.

Appellants assert that the form and content of the EIS did not really inform the decision or allow meaningful public review of the project, and that the project was fast-tracked at the expense of allowing reasoned analysis. Appellants further assert that the project record was not prepared until after the decision had been signed and after public notice had already been given, contrary to direction in FSH 1909.15, and that the hardcopies of the EIS Appellants requested weren't mailed until almost a month after the decision had been recorded. Appellants also assert that the use of a private sector contractor compounded these problems, as the analysis was prepared without the benefit of on-the-ground experience.

Discussion

Appellants make several assertions about the Big Thorne EIS, including that it was a "puzzle" and that essential supporting information and analysis was not in the EIS. My review of the EIS indicates that the content and format of the EIS are consistent with CEQ's regulations implementing NEPA at 40 CFR 1500 -1508, notably 40 CFR 1502.10 for format, and other direction provided in FSH 1909.15. The regulations at 40 CFR 1500.4 provide further direction for how agencies should "reduce excessive paperwork," stating that agencies shall prepare analytic rather than encyclopedic environmental impact statements [40 CFR 1500.4(b)]; discuss only briefly issues other than significant ones [1500.4(c)]; and emphasize the portions of the EIS that are useful to decision-makers and the public and reduce emphasis on background material [1500.4(f)]. The regulations at 40 CFR 1502.20 address tiering to other environmental documents (such as the 2008 Forest Plan) in order to "eliminate repetitive discussions" and to "focus on the actual issues ripe for decision." An EIS is intended to balance "bulk" with content, and to do so in a manner understandable to the public. It is appropriate that more detailed information remains in the project planning record. To do otherwise would potentially render the document so dense and indecipherable that Appellants would then claim that there is too much information in the analysis. Aside from Appellants not caring for the way the document is packaged, I believe the scope of the analysis is procedurally correct and that the information in the Big Thorne EIS is clearly presented by issue and resource.

Appellants also assert that the analysis was "fast-tracked" and that the use of private contractor limited "on the ground experience." The NOI for the Big Thorne EIS appeared in the Federal Register on February 11, 2011 [PR #736_0006], and the ROD was dated June 28, 2013. This indicates that it took approximately 2.4 years for the analysis to be completed - hardly a rushed document. The use of a private contractor did not prevent local Forest Service staff from providing on-the-ground information that was used in the analysis. For example, the EIS refers to pellet counts [p. 3-110], and the project record contains heritage surveys [PR #736_1577], goshawk surveys [PR #736_0369], and soil surveys [PR #736_0936] that indicate that at least some of the resource analyses included field work completed by local Forest Service staff. Appellants are correct in stating that the Tongass National Forest Supplement to FSH 1909.15 states that "[t]he project planning record will be completed prior to the signing of the decision document and will be available electronically" [FSH Supplement No. 1909.15-2009].

The ROD was signed on June 28, 2013. Legal notices of the decision were posted in the Ketchikan Daily News twice, once on July 1, 2013 and then a corrected version on July 2, 2013. Both versions of the legal notice provide information on where the electronic versions of the FEIS and ROD were available [PR #736_2267, 736_2268]. On July 3, 2013, the Forest sent an email to a lengthy list of people, including Appellants, informing them of the decision and providing a link to the electronic version of the FEIS and ROD. After receiving the email, Appellants asked for a copy of the project record. On Friday, July 5, 2013, the Forest placed a copy of the project record in the mail for one Appellant (Greenpeace). The Forest mailed a copy of the project record to the other Appellants on Monday, July 8, 2013. Appellants state that they did not receive the project record until after July 9, 2013, over a week after the ROD was signed and one week after the appeal period began. This appears to be true, given the dates the record was mailed to the Appellants.

While the Responsible Official should make every effort to comply with the Handbook guidance, there is no requirement in the regulations that the project record be made available to the public on the date the ROD is signed. It is regrettable that all of the information was not available on the same day as the ROD and FEIS. However, an electronic copy of the record was made available to Appellants in less than a week of their requests. I believe they had enough information to begin work on their appeal during the first week of the appeal period, and they received the remainder of the information with another five weeks left in the appeal period. As a result, Appellants had adequate time to review the decision and prepare their appeal.

It is unfortunate that the project record was not available on the date the ROD was signed and the legal notice of decision was published. However, based on my review of the record, I find no violation of law or regulation resulting from the delay in making the complete project record available to the public, or the manner in which the information on the potential effects of the project is organized and presented in the EIS.

SEACC appeal, #13-10-00-0005 (Buck Lindekugel)

Issue 1. Whether the purpose and need unreasonably narrowed the range of alternatives considered for the Big Thorne project.

Appellant asserts that the purpose and need for the Big Thorne project was altered between the NOI to prepare an EIS for the project and the Final EIS for the project, and that by making timber supply the predominant goal for the project and narrowing the purpose and need after the NOI, the Forest Service unreasonably narrowed the range of alternatives considered for the project. Appellant further asserts that the Forest manufactured the "need" for an integrated timber industry, and that the Forest's claim that such an industry would "further the goals of ecological, as well as economic, sustainability" is arbitrary because it runs counter to evidence before the agency of persistent, long-term trends in Tongass timber demand and the regional economy. Appellant also asserts that the Forest is required to balance competing multiple use objectives to maximize long-term net public benefits, and that these multiple-use goals must be considered at both the plan and project level under both NFMA and TTRA.

Discussion

See my response to Issue 1 of the Cascadia Wildlands, et al. appeal, above, for a discussion of the purpose and need for the Big Thorne project. The Big Thorne project is a timber sale project, and the purpose and need responds to the goals and objectives of the Plan for the timber resource and the need to provide a reliable, economic, and long-term timber supply based on those goals and objections. Contrary to Appellant's assertions, the purpose and need for the project was not "altered" or "narrowed" between the NOI for the project and the DEIS [compare NOI, PR #736_0006, to EIS, pp. 1-4 to 1-5].

There is no requirement in the CEQ regulations [40 CFR 1500-1508] or in NEPA itself [42 U.S.C. 4321, et seq.] to design a purpose and need for a project to specifically include wildlife, subsistence, recreation and other resource uses. The Forest Service is required to consider the effects of the project on the human environment, and the Big Thorne EIS does this in the Environment and Effects section [Chapter 3].

With regard to Appellant's assertion that the purpose and need tiers to an invalid market demand analysis, see my response to Issue 8 of the Cascadia Wildlands, et al. appeal, above, for a discussion of the market demand analyses completed for the Forest Plan. The Big Thorne EIS is a project-level analysis, and the project is just one component of the total Tongass timber program. The timber supply and demand issues tier to the Forest Plan, which the Big Thorne EIS follows. The demand analyses underlying this project-level EIS are based on the best science available, and have been extensively peer reviewed.

With regard to Appellant's assertions that the Forest Service is required to balance competing multiple uses objectives, this "balance" was achieved through the allocation of Tongass forest lands to various LUDs (along with the standards and guidelines and management prescriptions for those LUDs) and with the forest-wide standards and guidelines that provide additional protection by resource. The Forest Plan ROD includes a discussion on balancing "the multiple uses and resources of the Forest," and identifies how different resources such as fisheries, recreation and tourism, timber demand, etc. were considered in striking that balance [see, for example, 2008 Tongass Forest Plan ROD, pp. 15-18]. In the case of the Big Thorne project, although there are 7 different types of LUDs in the project area, the majority of the project area is allocated to the Timber Production, Modified Landscape, and Scenic Viewshed LUDs [Big Thorne EIS, p. 1-17]. The goals for these lands are to "maintain and promote wood production" (Timber Production LUD), "provide for a sustained yield of timber" (Modified Landscape and Scenic Viewshed LUDs), and "seek to provide a supply of timber... that meets annual and planning cycle market demand" (all 3 LUDs) [Forest Plan, pp. 3-101, 3-109, 3-116]. Within each of these LUDs, "suitable timber lands are available for timber harvest" [Id]. The purpose and need for the Big Thorne project, and the activities proposed in response to that purpose and need, are appropriate for these LUDs [Tongass Forest Plan, pp. 3-101 to 3-121].

In my opinion, the purpose and need for the Big Thorne project is adequately described, is appropriately tiered to the goals and objectives of the Tongass Forest Plan, and is reasonable given the goals and objectives of the Plan, the management prescriptions for the LUDs within the project area, and the seek to meet market demand provisions of TTRA

Issue 2. Whether the ROD includes the subsistence findings required by ANILCA.

Appellant asserts that the Big Thorne ROD does not comply with ANILCA because it does not include the finding that the restriction on subsistence uses of deer is "necessary, consistent with the sound management principles for the utilization of the public lands." Appellant challenges the findings that are in the ROD, stating they do not meet ANILCA's requirements because they do not consider TTRA's amendments to ANILCA and do not weigh other relevant factors influencing the effects of further logging in the project area on deer habitat and subsistence deer hunting, including the number, size and location of cutting units, the logging prescriptions selected for each unit, and whether the modifications to the biologically preferred locations of small OGRs in the project area provide comparable wildlife habitat and function.

Appellant also assert that the ROD's statement that the Selected Alternative strikes a "balance" is undermined by the record, which demonstrates that the Forest Supervisor never actually weighed the long-term effects of the Selected Alternative on subsistence and sport deer hunters verses the short-term benefits of a small timber sale, and that he did not compare the economic benefits for subsistence users that might occur if a lower volume of timber were offered to the economic consequences of such a reduction on the timber industry. Appellant further asserts that the ROD's statement that "fish and wildlife productivity will be maintained at the highest level possible for the Selected Alternative" is arbitrary because the modifications to the OGRs by the Selected Alternative will reduce the amount of deer winter habitat and low elevation POG in the reserve system, and that instead of responding to the State of Alaska and U.S. Fish and Wildlife Service's recommendations to drop numerous proposed cutting units because of their importance to travel corridors and winter range, the Forest added many of these units to the Selected Alternative or increased the volume of timber cut in the units.

Appellant states that the Forest Supervisor's decision to accept the effects on deer habitat and subsistence uses based on the "need to provide an economic timber offering that will contribute to the annual market demand for Tongass National Forest timber" is arbitrary because the methods used to estimate annual demand consistently overstate actual demand, the demand estimates present misleading information on the economic effects of the Big Thorne project and allow the Forest to give timber goals greater precedence over competing subsistence deer hunting goals, and the Forest Supervisor failed to consider the discrepancies between projected and actual cut levels when determining whether restrictions on subsistence resources and users are necessary.

Appellant also challenges the Forest Supervisor's finding that the Selected Alternative uses the "minimal amount of public lands necessary," stating that the Selected Alternative was not the only alternative that met the purpose and need for the project and the Forest should have considered modifications that could have improved the economics of the other alternatives, and Appellant challenges the Forest Supervisor's "reasonable steps to minimize" finding, stating that it is based on a clear error as to the applicable forest-wide standard and guideline.

Discussion

Many of Appellant's assertions regarding the Big Thorne subsistence evaluation repeat those raised in the Cascadia Wildlands, et al. appeal, discussed above. See my response to Issue 17 of that appeal for a discussion as to whether the subsistence evaluation and findings completed for the Big Thorne project are adequate. As stated in that response, I believe the subsistence findings in the ROD are reasonable and consistent with applicable law and policy direction, and the project record supports a conclusion that the significant restriction of subsistence use is necessary.

While the language in the ROD regarding whether the project is necessary, consistent with the sound management of public lands isn't directly responsive to the findings required by ANILCA, it is under a subheading titled "Necessary and Consistent with Sound Management of Public Lands," and I believe the ROD and project record support such a finding. To make it clear that the Forest Service has determined that the actions involved in the Selected Alternative are "necessary, consistent with sound management principles for the utilization of public lands," I recommend that you expressly state this in your appeal decision.

With regard to whether the Forest should have considered the economic benefits of subsistence resources, the potential effects of the project on subsistence resources are thoroughly described in Chapter 3 of the EIS [beginning on p. 3-98]. There is no requirement for an economic analysis of these effects, and such an analysis would not be possible. Many subsistence resources have not been quantified, nor have they been assigned economic values. Some of the value of subsistence resources lies in the importance people assign to culture, lifestyle, and other nonmonetary values. The economic analysis that is required for a project has been completed, and is clearly described in the EIS [pp. 3-17 through 3-43].

With regard to Appellant's assertions that the Forest Supervisor's decision is arbitrary because of his reliance on the Tongass Forest Plan market demand analyses, see my response to Issue 8 of the Cascadia Wildlands, et al. appeal, above. In my opinion, the market demand analyses completed for the Tongass Forest Plan are based on the best science available, and the Forest Supervisor's reliance on these analyses is reasonable.

Issue 3. Whether the Forest used realistic employment estimates for the Selected Alternative.

Appellant asserts that the job numbers discussed in the EIS are meaningless and do not explicitly account for the export of sawlogs. Appellant also asserts that the unreliability of timber volume estimates for the Selected Alternative, discussed in Issue 4 below, likely inflate the job estimates and result in misleading information regarding the economic benefits of the project.

Discussion

See my response to Issue 7 of the Cascadia Wildlands, et al. appeal, above, for a discussion of the job estimates displayed in the Big Thorne EIS and ROD. As stated in that response, the employment numbers displayed in the EIS are intended to be used to compare alternatives and give a rough estimate of the range of possible employment that could result from full implementation of the project. In my opinion, the employment numbers in the Big Thorne EIS are reasonable estimates of how many annualized jobs could be generated by timber sales in the Big Thorne project area, and are useful for comparing the alternatives.

As stated in my response to Issue 4, below, I believe the Forest adequately analyzed the likelihood of falldown in the project area, using the best information available. The Forest used appropriate methods and standards to make accurate projections of the volume and acres to be harvested, and the methods used for the analysis are consistent with regulations, policy, and Forest Plan guidelines. While the employment generated by the project may change if less volume is harvested from the project area, I do not believe it would change significantly, nor would it affect the relative ranking of the alternatives considered by the Forest Supervisor.

Issue 4. Whether the EIS adequately considered and disclosed the likelihood of falldown in the project area.

Appellant asserts that the EIS included incomplete and misleading economic information because the Forest Service did not adequately evaluate and disclose the potential environmental, social, and economic effects of any falldown that could occur in the project area, despite Appellant's request to treat this as a significant issue for the EIS. Appellant points to the falldown they believe occurred in the Logjam project area, and states that if this much falldown occurs in the Big Thorne project area, it could affect as many as 117 of the annualized jobs estimated for the Selected Alternative.

Discussion

The difference between planned volume and the actual timber volume offered for sale, or "falldown," can vary from project to project. The EIS provides a detailed response to comments on this issue, describing Forest Service efforts to make the best estimate of potential timber sale harvest volume and acreage [EIS, Appendix B, p. B-27 to B-28]. Planning estimates are just that, best estimates, and as stated in the response, actual numbers are not determined until projects are implemented on the ground.

When falldown does occur, it can be the result of additional resources being identified that require protection according to Forest Plan standards and guidelines. This often results in a reduction in the acreage harvested. It can also occur when units prove too costly to road or are otherwise uneconomical. The Appendix B Response to Comments notes that adjustments were made to Forest Plan modeling processes to address historical falldown at the programmatic level. During project planning, volume estimates are made with the best information available, often using stand inventory data (which typically is not measured with the sampling intensity/error

standards of the final timber cruise) or comparison project data. The certified actual cruise is also an estimate of volume, albeit sampled at an intensity level required to meet national standards. However, actual volume is not known until after a sale is completely harvested and products have been scaled.

Appellant asserts that volume estimates from the Logjam EIS (which authorized the Diesel and Slake timber sales) resulted in harvested volumes totaling 82 percent of the planned level. The Slake and Diesel timber sales constitute the primary volume offered and harvested under the Logjam EIS. However, there have been other small volume offerings under the Logjam EIS. At least 5 additional sales totaling over 3 MMBF were offered and sold subsequent to the Diesel and Slake timber sales. All were stewardship contracts emphasizing benefits for local communities and jobs. Also with respect to jobs and sustained timber supply, the Slake and Diesel sales were offered with 5-year contract terms, with consideration given for supplying markets and sustaining jobs over that time period. As with the Logjam EIS, the initial planned offering under the Big Thorne EIS will not represent the total volume authorize by the ROD.

In my opinion, the Forest adequately analyzed the likelihood of falldown in the project area, using the best information available. The Forest used appropriate methods and standards to make accurate projections of the volume and acres to be harvested, and the methods used in the analysis are consistent with regulations, policy, and Forest Plan guidelines.

Earthjustice, et al. appeal, #13-10-00-0006 A215 (Tom Waldo)

Issue 1. Whether the Tongass Forest Plan and the Big Thorne project are based on accurate market demand information.

Appellants assert that the reasons for scheduling the Big Thorne project are arbitrary and violate NEPA because the EIS exaggerates the demand for timber on the Tongass based on errors and unexamined assumptions. They assert that if the Tongass had not overestimated the demand for timber, it could have considered much lower volume alternatives or could have scheduled a much smaller sale, or no sale at all. In support of their assertions, they identify what they believe are three principle errors in Appendix A of the Big Thorne EIS: 1) time has demonstrated that the Forest Plan market demand study did not accurately predict timber demand and the Tongass cannot continue to ignore the substantial gap between the Forest Plan predictions and actual experience; 2) the Tongass arbitrarily picked the "expanded lumber" scenario, which was arbitrary because the reasons given are not supported or explained in the record; and 3) the Tongass should have used actual harvest numbers instead of the volume-offered goal in deriving the volume under contract goal.

Discussion

See my response to Issue 8 of the Cascadia Wildlands, et al. appeal, above, for a complete discussion of the market demand analyses completed for the Tongass Forest Plan and the Big Thorne project. In that response, I briefly addressed Appellants' criticisms of the demand analyses completed for the Forest Plan, and discussed how the Big Thorne project tiered to those

analyses. In my opinion, the demand analyses underlying this project-level EIS are based on the best science available and have been extensively peer reviewed, and the Forest's reliance on these analyses and the Morse methodology in determining how much timber should be offered from the Tongass is reasonable.

Issue 2. Whether the Forest Plan and Big Thorne EISs include accurate information about the cost of Tongass timber sales.

Appellants assert that the numbers on the economic cost of Tongass timber sales to taxpayers in the EIS are unsupported and false and represent less than 10 percent of costs as determined by a review of actual Forest Service budget expenditures. Appellants further assert that the Forest has not documented the costs and information it used to arrive at its calculations, nor has it identified what costs it believes were improperly excluded in the calculations provided by Joe Mehrkens. Appellants believe the failure to disclose the true public costs associated with the Big Thorne project are fundamental to the Forest Supervisor's decision on the project, and that the false and misleading information skews the analysis of whether the jobs created by the project are worth both the high costs to taxpayers and the extreme ecosystem risks the project poses.

Discussion

See my response to Issue 5 of the Cascadia Wildlands, et al. appeal, above, for a complete discussion of the public costs associated with the Big Thorne EIS. In my opinion, the estimated Forest Service financial costs outlined in Table TSE-14 in the Big Thorne EIS is a reasonable estimate of the costs that can be directly attributed to this project.

Issue 3. Whether the Forest Plan and the Big Thorne project meet the Forest Service's obligations with regard to the Alexander Archipelago wolf and the Sitka black-tailed deer.

Appellants assert that the wolf population on Prince of Wales Island, including the Big Thorne project area, has declined dramatically due to the loss of old growth deer habitat and the pressures of hunting and fishing, and that the population data in the EIS is outdated. They assert that the FWS and ADF&G, along with other parties who submitted comments, expressed concerns about wolf mortality and the fact that the Big Thorne project area is already well below the Forest Plan's standards and guidelines for deer habitat and road densities, yet the Forest targeted most of the last remaining high quality deer habitat in the project area, including winter deer habitat.

Appellants further assert that the Big Thorne project is inconsistent with NFMA, its implementing regulations, and the Forest Plan's requirements to ensure a viable, well-distributed population of wolves on the Tongass, and that the project also violates the Forest Plan's standards and guidelines that are specific to wolves, including the requirement to maintain at least 18 deer per square mile in biogeographic provinces where deer are the primary prey of wolves and the requirement for road densities "of 0.7 to 1.0 mile or less" in areas where road access and human-caused mortality has been determined to be a significant contributing factor to wolf mortality. Appellants assert that the Forest Supervisor's approval of the Big Thorne project will drive the area further out of compliance with these standards and guidelines, and that the

Forest has not offered any analysis based on field verification, local knowledge of habitat conditions, or any other biological considerations that support its decision to move forward with the project despite this non-compliance with the Forest Plan. Appellants further assert that if it is the Forest Service's position that the Big Thorne project meets the requirements of the Forest Plan, then the Forest Plan violates NFMA's requirement to ensure a viable, well-distributed population of wolves on the Tongass.

Appellants also assert that the Forest failed to adequately respond to comments from the FWS and ADF&G expressing their concerns that the Forest needed to minimize threats to deer habitat, stating that the Forest actually increased harvest in some areas these agencies recommended be excluded from the alternatives to prevent further declines in deer habitat capability, and that it failed to disclose these concerns in the Big Thorne EIS. Appellants further assert that the EIS grossly understates the reality of the situation for wolves in the Big Thorne project area and Prince of Wales Island, and the effects of the project on wolves and the consequences for the overall predator-prey relationship on the Island and the long-term viability of the wolf throughout the Tongass.

Discussion

See my response to Issue 16 of the Cascadia Wildlands, et al. appeal, above. As discussed in that response, I believe the Big Thorne EIS adequately analyzed the potential effects of the project on deer habitat and wolves. The analyses in the EIS and project record were conducted using established methodologies developed through interagency coordination and extensive peer review. The EIS and project record disclose the controversy and dissenting scientific opinion regarding the current status of wolves on Prince of Wales Island. The potential effects of the project, as displayed and discussed in the EIS, are within the range of affects disclosed in the Forest Plan EIS and were considered in the Forest Plan ROD's determination that sufficient habitat would remain to maintain viable populations of vertebrate species, including wolves, in the planning area.

However, recent reports, including the August 2013 Person Statement referenced by Appellants, demonstrate a localized decline in wolf numbers, and incompletely understood processes including wolf immigration and direct mortality attributed to hunting and trapping create uncertainty regarding the sustainability of wolf populations that utilize the Big Thorne project area. Although I believe the Big Thorne project complies with Forest Plan standards and guidelines and NFMA in regards to deer and wolves, the conclusions in Dr. Person's Statement suggest that cumulative effects on the Prince of Wales deer and wolf populations (including both habitat effects and wolf harvest) may be higher than that anticipated in the Big Thorne EIS and project record. Therefore, a closer look at project design may be warranted. In order to ensure that a hard look has been given to this issue, I recommend that you direct the Forest Supervisor to engage the Interagency Wolf Task Force to evaluate this new information, re-evaluate the public concerns over the potential effect of the project on deer and wolf populations, and make any necessary changes to the Big Thorne project as a result of this review. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this new information and its effect on his decision.

Issue 4. Whether the EIS adequately discloses the status of and risks to goshawks in the Big Thorne project area.

Appellants assert that the EIS failed to disclose the severity of the situation for goshawks on Prince of Wales Island, and the true magnitude of the risks posed to goshawks by continued old growth logging on the Island. Specifically, Appellants assert that a number of factors threaten the population viability of goshawks throughout Southeast Alaska, and that the Forest Service has not disclosed these factors, including 1) their association with higher volume old growth forest; 2) their larger foraging territories as a result of low prey abundance, natural habitat fragmentation, and past highgrading; and 3) the fact that Tongass goshawks are a small, isolated, and declining population. Appellants also assert that goshawks on the Island are more vulnerable than elsewhere on the Tongass because it lacks important prey species, aggressive logging has disproportionately affected it, and the loss of habitat has forced goshawks into larger home territories and lower nesting productivity. Appellants assert that the EIS did not adequately disclose these risks, and that it did not adequately analyze and disclose the ways in which the Selected Alternative would aggravate them or the effect that additional logging would have on goshawk habitat, nesting productivity, populations, and distribution.

Discussion

See my response to Issue 18a of the Cascadia Wildlands, et al. appeal, above. As stated in that response, the Big Thorne EIS and project record demonstrate that the potential effects of the project on goshawks were considered, and this analysis was completed in accordance with applicable Forest Plan standards and guidelines. The Big Thorne project tiers to the 2008 Tongass Forest Plan, which was designed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.

As stated above in response to Issue 3 and also in my response to Issue 16 of the Cascadia Wildlands, et al. appeal, I am concerned about new information that suggests that effects on the Prince of Wales deer and wolf populations may be higher than that anticipated in the Big Thorne EIS and project record. Because of this, I believe a closer look at project design may be warranted and I recommend that you direct the Forest Supervisor to engage the Interagency Wolf Task Force to evaluate this new information, re-evaluate the public concerns over the potential effect of the project, and make any necessary changes to the Big Thorne project as a result of this review. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this new information and its effect on his decision. While not directly related to the concerns Appellant expresses about goshawks, this review, by necessity, will need to include other habitat considerations, including placement of legacy structure within harvest units and the location of the OGRs within the project area, both of which do relate to goshawk habitat within the project area.

Issue 5. Whether the Forest Service violated NEPA when it failed to obtain missing information regarding goshawks and wolves.

Appellants assert that the EIS lacked critical information, and that the Forest Service failed to comply with NEPA to collect that information. Specifically, Appellants assert that the EIS lacks data, or any qualitative description of, the goshawk population in the project area, on Prince of

Wales Island, or in the region; that there is no information on population trends or the current viability of the subspecies; and that this information was essential to a choice among the alternatives. Appellants further assert that the EIS did not disclose that this information was not available and provided no information on its relevance to evaluating effects on goshawks. Appellants also assert that the Forest Service does not know the population of wolves in the project area, on Prince of Wales Island, or in the surrounding islands as a whole; therefore, the Forest Service does not have a baseline of the wolf population, making it impossible to assess the effects of the project on wolves or design alternatives to address wolf concerns.

Discussion

The analyses of the potential effects of the Big Thorne project on wolves and goshawks were conducted consistent with Forest Plan direction and established methodologies. With regard to the goshawk, the BA/BE [PR #736_0418, pp. 24-26] discusses the Queen Charlotte goshawk, which is a Forest Service Sensitive Species, designated in recognition of population viability concerns in some areas of the Tongass. The Forest, in support of the development of the 2008 Forest Plan, hosted an Interagency Conservation Strategy Review workshop to bring forth the most current research regarding forest wildlife species, including the goshawk [Forest Plan EIS, Volume II, pp. D-22 to D-25 and D-55 to D-58]. The Forest Plan standards and guidelines for proposed projects that affect goshawk habitat were based on this effort, and incorporated the best available scientific information. These standards and guidelines require that the Forest conduct inventories to determine the presence of nesting goshawks when planning projects that may affect goshawk habitat [Forest Plan, p.4-100]. Accordingly, goshawk surveys were conducted in 2010, 2011, 2012, and 2013 to determine the presence of nesting goshawks in the Big Thorne project area [BA/BE, PR #736_0418, pp. 5-6; see also survey records at PR #736_0369, 736_0376]. These surveys were conducted according to the "Tongass National Forest Project-level Goshawk Inventory Protocol," a modified Broadcast Acoustical Survey method adapted for implementation on the Tongass National Forest [Stangl 2009, PR# 736_0329].

The analysis of the potential effects of the project on wolves was also conducted consistent with Forest Plan direction. The Forest is required to utilize the best available scientific information. Given that, the Forest has partnered with ADF&G to gain additional wolf population information that will help inform management and project analyses [Person & Larson Spring 2013 Wolf Study Progress Report, PR #736_2940].

As demonstrated in earlier responses to the issues raised in these appeals, the Forest regularly seeks input from the FWS and ADF&G, the other agencies with wildlife population management responsibilities in Southeast Alaska, for additional information on population status and potential habitat management actions.

With regards to the potential effects of the project on goshawks and wolves, see my responses to Issues 18a and 16 of the Cascadia Wildlands, et al, appeal, above, for a discussion of the analyses completed in the EIS and project record for these species. These analyses clearly disclose the known information about goshawks and wolves in the project area, and the potential effects of the project on these species.

Issue 6. Whether the ROD ensures the viability of the Queen Charlotte goshawk.

Appellants assert that the Forest Service has not ensured the viability of goshawks because it has neither accurate population and trend information nor reliable habitat standards for goshawks on northern Prince of Wales Island or the Tongass National Forest as a whole. Appellants further assert that the Forest Plan conservation strategy was not designed for goshawks, and that the EIS's and BA/BE's reliance on the Forest Plan's legacy standards as a "mitigation factor" is unfounded because there is no scientific support for them that relates to habitat use by the goshawk. Because Appellants believe the Forest Service does not have accurate population and trend information or reliable habitat standards, they assert the agency has no way of knowing whether further loss of habitat would cause outright disappearance of goshawks from the project area and beyond, which could lead to local extirpation and lowering of the regional population with attendant loss of viability. They assert that neither outcome is consistent with the Forest Service's wildlife obligations under NFMA.

Discussion

As stated above in my response to Issue 18a of the Cascadia Wildlands, et al. appeal and Issue 4 of this appeal, the Big Thorne EIS and project record demonstrate that the potential effects of the project on goshawks were considered, and this analysis was completed in accordance with applicable Forest Plan standards and guidelines. The Big Thorne project tiers to the 2008 Tongass Forest Plan, which was designed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.

As discussed above in response to Issue 10 of the Cascadia Wildlands, et al. appeal, although the Big Thorne project appears to meet the legacy standard to "provide structure within the opening," I do have concerns as to whether it meets the intent of the legacy standards and guidelines and the conservation strategy to protect important areas and provide old growth forest habitat connectivity [Forest Plan EIS, Appendix D].

The intent of the legacy standard, as stated throughout the Forest Plan ROD, was to ensure a diversity of forest structure (old trees, snags, closed canopy cover) sufficient to maintain connectivity and habitat conditions for goshawk and their prey, as well as to provide suitable foraging and dispersal habitat for marten and other species, reducing adverse effects on species habitat by retaining important forest structure where it is most needed, in those higher-risk VCUs. Currently, some planned units are next to large blocks of previous harvest units less than 20 years old. While the young growth in those previously treated units may be taller than 5 feet, it does not currently provide old growth structure or habitat connectivity.

While not directly related to the deer and wolf concerns expressed elsewhere in this appeal (see, for example, my response to Issue 16 of the Cascadia Wildlands, et al. appeal), habitat connectivity is an important consideration for all wildlife species. Therefore, as part of his review of the new information regarding deer and wolves and whether changes to project design are needed, I recommend that the Forest Supervisor review the placement of legacy structure

within each unit and ensure that adequate old growth forest habitat connectivity is maintained consistent with the intent of the legacy standards and guidelines. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this information and its effect on his decision.

Issue 7. Whether the Forest Service should have considered lower volume alternatives that avoided key habitat and minimized road construction.

Appellants assert that the Forest Service only considered action alternatives that involved massive volume, long-term proposals in a portion of the Tongass that has already suffered the most damaging effects of logging, and that the Forest violated NEPA when it failed to consider smaller volume alternatives that could have minimized the loss of old growth habitat, reduced the construction of new roads, and avoided logging massive portions of Prince of Wales Island.

Discussion

See my response to Issue 2 of the Cascadia Wildlands, et al. appeal, above, for a complete discussion of the range of alternatives considered for the Big Thorne EIS. As stated in that response, there is nothing precluding small sales under any of the action alternatives, but focusing an alternative solely on providing timber for small sales would not be consistent with the project's purpose and need. The same is true for a "no roads" alternative. In my opinion, the range of alternatives for the Big Thorne project, given the purpose and need, is reasonable, and the EIS adequately discusses why other alternatives did not merit detailed consideration.

Issue 8. Whether the Forest Service complied with the Tongass Forest Plan in its modification of the OGRs within the Big Thorne project area.

Appellants assert that the ROD failed to adequately explain why the Forest Supervisor overrode the conclusions of the OGR Review Team regarding "comparable achievement" of old-growth LUD goals and objectives. They assert that the Forest Supervisor used unilateral decision-making authority to dictate the location of small OGRs, which arbitrarily sacrificed biological needs for timber and economic reasons, without providing adequate justification for why he believes the modified OGRs meet the criteria in Appendix K of the Forest Plan and provide "comparable achievement."

Discussion

See my response to Issue 15 of the Cascadia Wildlands, et al. appeal, above. As stated in that response, the modifications to the project area OGRs in the Selected Alternative were within the bounds of the analyses in the DEIS and the FEIS, including the analyses of the project's effects on deer and wolves, and the range of potential effects associated with these modifications are fully disclosed in the EIS and project record. Pursuant to Appendix K of the Forest Plan, an interagency review team contributed to the review of the existing OGRs and the proposed changes to those OGRs, developing a biologically preferred location for the OGRs, and the Forest Supervisor disclosed those recommendations.

I am concerned about any OGRs that meet "comparable achievement" in terms of overall acreage but not in terms of habitat connectivity or POG values. These concerns are related to my findings on Issue 16 of the Cascadia Wildlands, et al. appeal, above, and Issue 3 of this appeal. In light of new information that suggests effects on the POW deer and wolf populations may be higher than that anticipated in the Big Thorne EIS and project record, I believe a closer look at project design, including the proposed OGR modifications, may be warranted. Therefore, I recommend that the Forest Supervisor engage the Interagency Wolf Task Force to evaluate this new information, re-evaluate the public concerns over the potential effect of the project on deer and wolf populations, and make any necessary changes to the Big Thorne project. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this information and its effect on his decision.

Trout Unlimited appeal, #13-10-00-0007 (Austin Williams)

Issue 1. Whether the Big Thorne project complies with the purpose and need for the project.

Appellant asserts that the Big Thorne EIS and ROD ignored the true sources of employment in the region – fishing and tourism – and focused solely on timber, which is a comparatively minor component of the Southeast Alaska economy. Citing the stated goal of "provid[ing] a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska," Appellant asserts that the EIS and ROD failed to consider the economic effects that the project will have on the salmon fishing and tourism industries, as well as other industries that rely on Tongass resources, which he believes are the true economic drivers of the region, and that the ROD therefore failed to satisfy the project's purpose and need to provide a "diversity of opportunities for resource uses."

Discussion

See my responses to Issue 1 of the Cascadia Wildlands, et al. appeal and Issue 1 of the SEACC appeal, above, for discussions on whether the purpose and need for the Big Thorne project is reasonable. As stated in those responses, I believe the purpose and need is appropriately tiered to the goals and objectives of the Tongass Forest Plan and is reasonable given the goals and objectives of the Plan, the management prescriptions for the LUDs within the project area, and the seek to meet market demand provisions of TTRA.

See my response to Issue 6 of the Cascadia Wildlands, et al. appeal for a discussion of whether the Big Thorne EIS considered the environmental costs of the project. As stated in that response, the Forest Service is not required to quantify the non-market benefits and costs associated with every timber sale. It is required to "insure that unquantified environmental amenities and values [are] given appropriate consideration in decisionmaking along with economic and technical considerations" [42 USC 4332(2)(B)]. The Big Thorne EIS analyzed the potential effects of the project on "unquantified environmental amenities and values," such as project area OGRs, wildlife and subsistence resources, aquatics and fisheries, and recreation [see Chapter 3 of the EIS]. In my opinion, the analyses of the project's potential effects on these non-market values are reasonable and consistent with NFMA, NEPA, and Forest Service Manual and Handbook guidance regarding social and economic analyses.

The record indicates that the Forest Supervisor did consider the potential effects of the project on salmon fishing and tourism. In the "Reasons for the Decision" discussed in the ROD, the Forest Supervisor stated:

> I acknowledge that implementation of the Selected Alternative will result in localized, short-term increases in sediment delivery and subsequent turbidity in streams from road construction and maintenance activities. However, these will be short-term and within the guidelines of the State water quality standards. Implementation of Best Management Practices will assure that water quality and fish habitat will not be impaired.

[ROD, p. 11]. The Forest Supervisor also stated that the OGR modifications "maintain viable populations of native and desired non-native fish and wildlife species... contribute to habitat capability of fish... and support sustainable human subsistence and recreational uses by including habitats such as Class I fish streams" [p. 13].

The EIS discusses the potential effects of the project on fishing and tourism in several locations. It provides information on the total number of visitors who participate in nature-based tourism on Prince of Wales Island, based on a study completed in 2009 [pp. 3-453 and 3-454]. The EIS indicates that the majority of these visitors stay at lodges that have direct waterfront access and focus on saltwater fishing, and that they don't typically visit any of the recreation sites in the project area or use the road system [EIS, p. 3-454]. Black bear hunters also visit the Island, and more than 80 percent of guided hunts take place from boats along the shoreline with only one guide using the road system [Id.]. Big game outfitting and guiding is not allowed in most of the Big Thorne project area as a result of the Big Game EA's closure of the Island's central WAAs (1318 and 1319) [Id.]. The EIS does acknowledge that the existing road system provides access to visitors and locals for a variety of recreational activities [Id.]. Appendix B also addresses many of these same points, as well as acknowledging "a growing interest in recreation activities and passive touring/wildlife viewing" [EIS, pp. B-64 to B-65].

The EIS includes additional information on outfitter/guide use (mostly fishing activity) [p. 3-463], and discusses the potential direct, indirect, and cumulative effects of Alternative 3 (modified slightly in the ROD), stating [on p. 3-471]:

> This alternative would have short-term impacts, but is not expected to have long-term impacts on the ability of outfitter/guides to use currently permitted locations.
>
> Recreation use patterns in the project area are not expected to change greatly as a result of this alternative because the popular recreation sites in the project area would not experience long-term effects and access to hunting and fishing activities is likely to remain relatively constant.
>
> [T]his alternative is not expected to contribute to long-term changes to overall patterns of recreation use in the project area. Existing opportunities would continue to be available to those seeking remote and primitive recreation experiences, and those seeking access to fishing and hunting opportunities would continue to have those opportunities.

In my opinion, the potential effects of the project on salmon fishing and tourism were adequately addressed in the EIS and project record.

Issue 2. Whether the EIS and ROD adequately evaluated and disclosed the project's effects on fish and wildlife.

Appellant asserts that the EIS underestimated the direct and cumulative effects on watersheds within the project area, which threaten serious effects on local employment and subsistence users. Specifically, Appellant asserts that the surrogates the Forest Service used to measure stream flow, sedimentation, and changes in stream habitat are not sufficient without further analysis to accurately predict and assess all of the effects on watersheds or the true scale and scope of these effects. Appellant asserts that the surrogates used to measure sedimentation – amount of new road construction and number of stream crossings, and whether or not the road area exceeds 2.5 percent of the basin area – are particularly problematic because they are based on outdated studies, do not take into account fine sedimentation and watershed disturbance, many of the watersheds within the project area have experienced landslides or other events that increase sedimentation even though they are below the 2.5 percent threshold, and that increased sedimentation can occur from activities other than roads and stream crossings. Appellant also asserts that the reliance on stream buffers to "avoid direct impacts to stream habitat" is arbitrary because while they undoubtedly help minimize effects, they do not eliminate all effects entirely and the EIS has not adequately considered and disclosed those effects, in violation of NEPA.

Discussion

See my response to Issue 14 (including all sub-issues) of the Cascadia Wildlands, et al. appeal, above, for a complete discussion of the potential direct, indirect, and cumulative effects of the Big Thorne project on the watershed and fishery resources of the project area. In my opinion, the analyses completed for the EIS are adequate and consistent with law, regulation, and policy, and the EIS, ROD, and project record demonstrate that the Forest Supervisor recognized the importance of project area watersheds to local residents, recreating visitors, and subsistence users, and that he considered the effects of the project on watershed and fishery resources and these users in making his decision.

As stated in the ROD, the Forest Supervisor identified some roads to be stored "as soon as possible" to help minimize cumulative watershed effects [ROD, pp. 9-10]. There's no reason to believe that these efforts, combined with applicable BMPs and Forest Plan standards and guidelines, will not be effective in minimizing effects.

Issue 3. Whether the EIS and ROD relied on accurate market demand and other economic information.

Appellant asserts that the EIS and ROD violated NEPA because they are based on inaccurate and outdated economic analyses that greatly overestimate market demand, which misleads the public, erodes public trust and confidence, and elevates the timber harvest goal over competing environmental and recreational goals without justification sufficient to support the Forest's balancing of these goals. Specifically, Appellant asserts that the EIS and ROD violated NEPA because they are based on an outdated and inaccurate timber demand analyses, the Forest

arbitrarily chose to use an "expanded lumber scenario" despite economic indicators that demand is limited and is not expanding, and the Forest incorrectly calculated the goal for the amount of volume under contract. Appellant also asserts that the information in the EIS regarding the true costs of preparing and administering the Big Thorne project was incomplete and inaccurate and far underestimated the actual public costs of the project.

Discussion

See my response to Issue 8 of the Cascadia Wildlands, et al. appeal, above, for a complete discussion of the market demand analyses completed for the Tongass Forest Plan and the Big Thorne project. In that response, I briefly addressed Appellant's criticisms of the demand analyses completed for the Forest Plan and discussed how the Big Thorne project tiered to those analyses. In my opinion, the demand analyses underlying this project-level EIS are based on the best science available and have been extensively peer reviewed, and the Forest Service's reliance on these analyses and the Morse methodology in determining how much timber should be offered from the Tongass is reasonable.

See my response to Issue 5 of the Cascadia Wildlands, et al. appeal, above, for a complete discussion of the public costs associated with the Big Thorne EIS. In my opinion, the estimated Forest Service financial costs outlined in Table TSE-14 in the Big Thorne EIS is a reasonable estimate of the costs that can be directly attributed to this project.

Audubon Alaska appeal, #13-10-00-0008 (Jim Adams)

Issue I. Whether the EIS and ROD adequately considered the project's effects on wolves.

Appellant asserts that the latest data suggests that the cumulative effects of the project threaten to end the healthy functioning of the Prince of Wales ecosystem by reducing or even extirpating wolves on the Island. Specifically, Appellant points to recent information on the number of wolves on the Island, and states that this is a sharp reduction and a clear indicator that the Forest Plan conservation strategy is failing to protect the Prince of Wales wolf population. Appellant asserts that the illegal take of wolves is likely to increase, and that the project will increase the vulnerability of wolves to this hunting and trapping pressure. Appellant also asserts that the Big Thorne project will reduce the project area's already limited ability to provide sufficient habitat to sustain the deer population that wolves rely on. Because of these effects, Appellant asserts that it is reasonable to assume that the Prince of Wales wolf population is in significant danger of significant reductions or even extirpation, and that the Forest Service has failed to adequately consider and disclose this.

Discussion

See my response to Issue 16 of the Cascadia Wildlands, et al. appeal, above, for a complete discussion of the analyses completed to determine the potential effects of the project on wolves. As stated in that response, the Big Thorne EIS analyzed the potential effects of the project on deer habitat and wolves. The analyses in the EIS and project record were conducted using established methodologies developed through interagency coordination and extensive peer

review. The EIS and project record disclosed the controversy and dissenting scientific opinion regarding the current status of wolves on Prince of Wales Island. The potential effects of the project, as displayed and discussed in the EIS, are within the range of affects disclosed in the Forest Plan EIS and were considered in the Forest Plan ROD's determination that sufficient habitat would remain to maintain viable populations of vertebrate species, including wolves, in the planning area.

However, recent reports, including the August 2013 Person Statement provided by some Appellants, demonstrate a localized decline in wolf numbers, and incompletely understood processes including wolf immigration and direct mortality attributed to hunting and trapping create uncertainty regarding the sustainability of wolf populations that utilize the Big Thorne project area. Although I believe the Big Thorne project complies with Forest Plan standards and guidelines and NFMA in regards to deer and wolves, the conclusions in Dr. Person's Statement suggest that cumulative effects on the Prince of Wales deer and wolf populations (including both habitat effects and wolf harvest) may be higher than that anticipated in the Big Thorne EIS and project record. Therefore, a closer look at project design may be warranted. In order to ensure that a hard look has been given to this issue, I recommend that you direct the Forest Supervisor to engage the Interagency Wolf Task Force to evaluate this new information, re-evaluate the public concerns over the potential effect of the project on deer and wolf populations, and make any necessary changes to the Big Thorne project as a result of this review. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.I in his review and consideration of this new information and its effect on his decision.

Issue 2. Whether the EIS and ROD adequately considered the project's effects on goshawks.

Appellant asserts that the Big Thorne project will further degrade goshawk habitat in an already heavily impacted area of the Forest. Specifically, Appellant asserts that the project will increase the number of VCUs that are below the standards identified in the Conservation Assessment for Northern Goshawk in Southeast Alaska (no more than 33 percent of POG in a watershed in stands less than 100 years old, and 40-60 percent of mature or old forest for foraging and nesting). Appellant believes that these direct and cumulative effects are significant, and that the Forest Service has failed to confront and disclose the potential effects of further timber harvest on the goshawk population.

Discussion

See my response to Issue 18a of the Cascadia Wildlands, et al. appeal, above, for a complete discussion of this issue. As stated in that response, the Big Thorne EIS and project record demonstrate that the potential effects of the project on goshawks were considered, and this analysis was completed in accordance with applicable Forest Plan standards and guidelines. The Big Thorne project tiers to the 2008 Tongass Forest Plan, which was designed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.

As stated elsewhere in this appeal (see, for example, my response to Issue 16 of the Cascadia Wildlands, et al. appeal), I am concerned about new information that suggests that effects on the Prince of Wales deer and wolf populations may be higher than that anticipated in the Big Thorne EIS and project record. Because of this, I believe a closer look at project design may be

warranted, and I recommend that you direct the Forest Supervisor to engage the Interagency Wolf Task Force to evaluate this new information, re-evaluate the public concerns over the potential effect of the project on deer and wolf populations, and make any necessary changes to the Big Thorne project as a result of this review. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this new information and its effect on his decision. While not directly related to the concerns Appellant expresses about goshawks, this review, by necessity, will need to include other habitat considerations, including placement of legacy structure within harvest units and the location of the OGRs within the project area, both of which do relate to goshawk habitat.

Recommendation

In my opinion, the project record supports the Forest Supervisor's decision with regard to the issues raised in the appeals, given the information that was available at the time of his decision. Therefore, I recommend that you affirm the Forest Supervisor's decision.

Because of the new information expressed in the August 2103 Statement of Dr. Person, I do have some concerns with regard to the cumulative effects of the project on wolves, the proposed OGR modifications included in the Selected Alternative, and other habitat factors relating to old growth forest connectivity. Pursuant to 40 CFR 1502.9(c)(1)(ii), it is appropriate for the Forest Supervisor to consider whether this new information presents "significant new circumstances or information relevant to" cumulative effects on wolves (including both habitat effects and wolf harvest). Therefore, I recommend that you direct the Forest Supervisor to engage the Interagency Wolf Task Force to evaluate this new information, re-evaluate the public concerns over the potential effects of the project, including the proposed OGR modifications and other habitat connectivity factors such as legacy structure retention, in light of this new information, and make any necessary changes to the Big Thorne project as a result of this review. The Forest Supervisor should follow the procedures set forth in FSH 1909.15, Section 18.1 in his review and consideration of this new information and its effect on his decision.

Ruth M. Monahan

RUTH MONAHAN
Appeal Reviewing Officer

Enclosures