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APPEAL TO THE REGIONAL FORESTER OF THE UNITED STATES
FOREST SERVICE REGION 6

APPELLANT'S NOTICE OF APPEAL, REQUESTED RELIEF, AND
STATEMENT OF REASONS

Dated this October 18, 2012

NOTICE OF APPEAL

To: Regional Forester
Appeal Deciding Officer
USDA Forest Service
PO Box 3623
Portland, OR 97208
Email: *appeals-pacificnorthwest-regional-office@fs.fed.us*

RE: Jazz Timber Sale Appeal

In accordance with 36 CFR 215, Bark hereby appeals the Environmental Assessment ("EA") and Decision Notice ("DN" or "Decision") for the Jazz Timber Sale.

Decision Document: Jazz Thinning Decision Notice and Finding of No Significant Impact

Date Decision published: Sept. 6, 2012

Responsible Official: Chris Worth, Forest Supervisor, Mt. Hood National Forest ("MHNF")

Appeal Period End Date: October 22, 2012

Description of the Project: This project would log approximately 2,000 acres of recovering forests, including re-construction of 12 miles of decommissioned roads, and building .4 miles of new road.

Location: Collawash Watershed, Clackamas River Ranger District, Mt. Hood National Forest

Appellant's Interests:
Bark has a specific interest in this decision, which we have expressed through providing comments during scoping, and on the Preliminary Assessment, as well as leading public hikes, clocking well over 600 hours in the timber sale area, and engaging extensively in public education about the timber sale.

Bark is a non-profit organization based in Portland, Oregon and has worked to protect the MHNF since 1999. Staff, members, volunteers, supporters, and board members of Bark live in the communities surrounding the MHNF and use and enjoy the Forest extensively for recreation, drinking water, hunting, fishing, general aesthetic enjoyment, family gatherings, viewing flora and fauna, gathering forest products, and other purposes.

Specifically, Bark members regularly visit many of the affected area for hiking, camping, relaxing, bird watching, mushroom harvesting, photography, and family gatherings. The value of the activities engaged in by Bark members and staff will be damaged by the implementation of this project.

Request for Stay
Although an automatic stay is in effect for this decision as per 36 CFR §215.10(b), we formally request a stay of all action on this project, and that the Forest Service not enter into any contractual agreements with private companies to implement any portion of this sale.

Requested Relief
In recognition that this project has not followed the prescribed agency process, fails to meet the Northwest Forest Plan and Mt. Hood Forest Plan, and faces overwhelming public opposition, Bark requests that the Forest Service withdraw the decision and prepare adequate NEPA documentation for a project that will actually lead to the short and long term restoration of the Collawash Watershed.

Bark submits this appeal for the following reasons:

1) **Forest Service made an "irreparable and irretrievable commitment of resources" prior to a final decision**

CEQ regulations require that "until an agency issues a [R]ecord of [D]ecision . . . no action concerning the proposal shall be taken which would: (1) [h]ave an adverse environmental impact; or (2) [l]imit the choice of reasonable alternatives." 40 CFR. § 1506.1(a). In addition, the regulations clearly prohibit such predeterminative action, stating that "[a]gencies shall not commit resources prejudicing selection of alternatives before making a final decision." 40 C.F.R. § 1502.2(f).

Courts have generally agreed on the "trigger point" for predetermination, holding that an agency has violated NEPA when it made an irreversible and irretrievable commitment of resources to an outcome prior to making its final decision. *See Forest Guardians v. United States Fish & Wildlife Serv.*, 611 F.3d 692, 714 (10th Cir. 2010), *Conner v. Burford*, 848 F.2d 1441, 1446 (1988). This irreversible commitment of resources "seriously imped[es] the degree to which [an agency's] planning and

decisions could reflect environmental values." *Metcalf v. Daley*, 214 F.3d 1135, 1143 (9th Cir. Wash. 2000)

While most NEPA pre-determination cases involve the agency entering into agreements for contracts before the completion of NEPA documents and final decision, when evaluating irreversible, or irreparable, harm in the context of granting injunctions, many courts have found that logging itself generally constitutes irreparable harm. *Earth Island Institute v. United States Forest Service*, 351 F.3d 1291 (9th Cir. 2003). The "cutting of trees alone often constitutes irreparable injury." *Friends of the Earth v. United States Forest Service*, 95 F. Supp. 2d 206, 208 (D. Vt. 2000). Indeed, "once trees are removed from the landscape, they cannot be replaced." *Sierra Club v. Eubanks*, 335 F. Supp. 2d 1070, 1083 (E. D. Ca. 2004).

In light of such a clear prohibition on pre-emptive action, Bark is astonished that not only has the Forest Service made an irreversible and irretrievable commitment of resources prior to making its final decision, it tried to cover this up in the EA. I'm referring, of course, to the Forest Service prematurely logging Forest Service Road 6311.130.

FSR 6311.130 had been naturally recovering for years, and was included for decommissioning in the 2007 Clackamas Restoration Projects EA. On a site visit in July, Bark staff found that the gate to the road had *already* been removed, and all of the vegetation that has regrown in the past 20-30 years was logged. *See Attachment B, Photos 4 & 5*. We immediately brought this to the attention of the Clackamas Stewardship Partners and Forest Service. When the Environmental Assessment ("EA") was released, a month and a half later, it failed to acknowledge this action. Rather, it stated that "the current proposal is to open the existing alignment as a temporary road. It would be opened by performing brushing and blading and would be used to haul logs . . ." *EA at 24*. Note the future tense used, despite the Forest Service knowing the action had already occurred.

This dishonesty casts a pallor on the entire rest of the EA and project, and is a clear instance of the Forest Service making an irreversible and irretrievable commitment of resources prior to making its final decision. Not only are years of recovery lost, this action bars the Forest Service from selecting an alternative – such as No Action, or Bark's suggested alternatives – that would not reopen decommissioned roads. This is a clear violation of NEPA, and demands that the Forest Service work with the public to craft an adequate remedy to both restore the damaged area, and the broken trust that such illegal actions inevitably cause.

2) Best Management Practices

Use of Best Management Practices traces its origins to the Clean Water Act as an approach to minimize impacts from nonpoint sources of water pollution. As defined by the CWA: *Best Management Practices (BMPs),* are methods, measures or practices selected by an agency to help minimize its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. 40 CFR §130.2(m).

It appears that the Forest Service has gradually expanded the use of "Best Management Practices" beyond limiting nonpoint water pollution, and now uses the term to refer generally to mitigation measures and/or project design that minimizes environmental impact. While expanding the definition of BMPs, the Forest Service has also lost focus of the very explicit Forest Plan guidelines for describing, implementing and monitoring BMPs. The Jazz EA fails to follow these guidelines, and Bark requests that the EA be withdrawn and reconfigured to meet the BMP requirements.

a. Failure to Follow MHFP direction on BMPs

In Bark's comments on the Preliminary Assessment ("PA"), we acknowledged that there have been systematic failures in the Forest Service that result in Best Management Practices ("BMPs") and other mitigation measures not being implemented, and/or monitored. Bark requested that the Forest Service create a more robust approach to tracking implementation of BMPs and monitoring for their effectiveness. Not only has the Forest Service failed to do so, it appears that it continues to ignore its own Forest Plan in regards the description, implementation and monitoring of BMPs.

Appendix H of the Mt. Hood Forest Plan discusses the reason for, and format of, BMPs in detail. It notes that, "BMPs are incorporated into the design of the alternatives to avoid or minimize potential adverse water quality problems. . . Appropriate BMPS are selected for each project by the interdisciplinary team . . .The selected BMPs, an estimate of their effectiveness, and a plan for monitoring them is included in the project EA or EIS." *RMP at H-3*.

The Forest Plan further instructs that each BMP should consist of Title, Objectives, Explanations, Implementation and Responsibility, Ability to Implement, Effectiveness and Monitoring. *RMP at App. H-5*. Instead of following the very specific direction of the Forest Plan for describing the BMPs, and including such necessary information as implementation & responsibility, ability to implement, and effectiveness, the Jazz EA merely lists BMPs very generally.

Of special note is the Forest Plan's commitment to monitoring the implementation and effectiveness of the BMPs. "When the resource activity begins, timber sale administrators, engineering representatives, resource specialists, and others, ensure that the BMPs are implemented according to plan. . . BMP monitoring is done before, during and after resource activity implementation. This monitoring answers the question: Did we do what we said we were going to do?" *RMP at App. H-3*.

This sets up the Forest Service to "Evaluate and Adjust" the BMPs – validation monitoring. The section concerning Implementation of the Forest Plan makes very clear that monitoring and evaluation is an important part of implementing the Forest Plan and adaptive management. The Forest Plan instructs the Forest Service to an Annual BMP Report that tracks implementation and effectiveness of BMPs. *See LRMP at Five-11, 12*. To the best of Bark's knowledge, this does not occur.

Bark understands that the Forest Service operates with a different budget now than it did in 1990, and that this affects its management choices. However, this does not mean that the Forest Service can pick and choose the parts of the Forest Plan that it

wishes to comply with. Too often, Mt. Hood Forest staff has continued to plan timber sale after timber sale, without doing the evaluation or monitoring required to answer the basic question "Did we do what we said we were going to do?"

b. Monitoring shows BMPs are not consistently implemented or effective

Moreover, when compliance with the BMP was monitored, either by the Forest Service or Bark, the results demonstrate that, in fact, the answer to the question above is far too often, "No".

Time and again in the Jazz EA and Decision Notice (DN) the Forest Service lists the adverse environmental impacts of the timber sale, but concludes that they will not harm the environment "because of the BMPs".

For example, in the Jazz EA, the Forest Service acknowledges the highly erosive nature of the soils, the overcompacted pre-existing condition, and the likelihood this this sale would contribute to more degraded soils. It then goes on to conclude that "Best Management Practices and the design criteria would result in little effect to erosion . . . because sufficient ground cover would be applied or retained." *EA at 109*. As noted above, the Forest Service currently lacks a rigorous monitoring program to ensure that BMPs are implemented and effective. However, the limited monitoring done by the FS soils scientist in January 2012 found that BMPs to protect soil and limit erosion were not always implemented as anticipated.[1]

She surveyed four timber sale units, and found that in three of them, BMPs that limit soil disturbance and erosion were incompletely implemented:
Rotor, unit 5: Landing not fully seeded and mulched, closure to area not effective resulting in area being used for target shooting and garbage dumping;
Swag, unit 24: Detrimental soil conditions existed before this entry and this entry added to it; bare ground on skid trails with slopes over 20% was not mulched; sheet erosion noted;
Swag unit 23: Processor operating on slopes greater than 40% and not on a mat of slash as prescribed in the EA; detrimental soil conditions existed before this entry; greater number of skid trails created than needed.

It is important to note the Forest Service only surveyed two units (Swag 23 & 24) for compliance with ground-based yarding BMPs, and in both of these found that the BMPs were not followed, and that detrimental soil impacts occurred. This information does not provide strong support for the Forest Service's current contention that the BMPs will mitigate all adverse soil impacts on these highly compacted and erosive earthflow soils.

The Jazz EA and DN make similar claims regarding the projects impacts on water, wildlife, soil productivity, invasive species, etc.[2] All boil down to the assertion that the project will not have significant environmental impacts because of the BMPs. Yet, the

[1] These BMP survey sheets are attached, to become part of the Decision Record.

[2] See, eg. "Implementation will incorporate BMPs, which will protect and maintain water quality conditions" *DN at 13*.

Forest Service offers no assurance that these BMPs will be implemented, or will be effective at minimizing or mitigating the known environmental impacts.

In addition to the Forest Service's own monitoring, this summer Bark volunteers did extensive surveys of thirteen units of recently thinned timber sales in the Clackamas River Ranger District.[3] While Bark is still analyzing the statistical data gathered, our initial review of the information gathered points to numerous instances where the BMPs were not implemented, were not effective at preventing environmental damage, and/or the timber company violated the terms of its contract.

For example, 53% of units surveyed had non-decommissioned landings with signs of erosion; 69% of units had incorrect or incomplete leave tree markings that did not comply with the contract requirements; 23% of units had marked leave trees that had been cut; and 85% of units had invasive species present.

These findings point to both the inability of the Forest Service timber sale administrators to ensure BMPs and timber contract specifications are fully complied with, and the insufficiencies of BMPs in preventing environmental harm.

c. Cannot base a FONSI on unreliable BMPs

In instances such as this, where the Jazz DN relies on "Best Management Practices and design criteria" to make its Finding of No Significant Impact (see DN at 12), the mitigation measures must be assured to occur and must "completely compensate for any possible adverse environmental impacts." *Cabinet Mountains Wilderness/Scotchman's Peak Grizzly Bears v. Peterson,* 685 F.2d 678, 682 (D.C. Cir. 1982). If the effectiveness of such mitigation is not assured, then the Forest Service cannot sign a FONSI and must prepare an EIS. *Foundation for North American Wild Sheep v. U.S. Dep't of Agric.*, 681 F.2d 1172, 1178 (1982). In *Northwest Indian Cemetery Protective Assn. v. Peterson*, the court determined that NEPA requires agencies to "analyze the mitigation measures in detail [and] explain how effective the measures would be . . . A mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA." 764 F.2d 581 (9th Cir. 1985).

The courts have held that the USFS is obligated to detail in an EA the mitigation measures that it relied on to obtain a FONSI. *Robertson v. Methow Valley Citizen's Council*, 490 U.S. 332, 353 (1989); *Carmel-By-the-Sea v. United States Dep't of Transp.*, 123 F.3d 1142, 1154 (9th Cir. 1997) (holding that "mitigation must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated"). The Ninth Circuit has explained that "a mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA." *Northwest Indian Cemetery Protective Ass'n. v. Peterson*, 795 F.2d 688, 697 (9th Cir. 1986), *rev'd on other grounds*, 485 U.S. 439 (1988); *see also Neighbors of Cuddy Mountain v. United States Forest Serv.*, 137 F.3d 1372 (9th Cir. 1998).

The "mitigated FONSI" is only upheld when the mitigation measures significantly compensate for a proposed action's adverse environmental impacts. *Friends of*

[3] Sale units include: Boya units 5, 6; Day unit 46; Roman units 32, 35; Slip units 1, 3; Swag units 6, 23, 24, 28; Wolf units 21, 27.

Endangered Species, Inc. v. Jantzen, 760 F.2d 976, 987 (9th Cir. 1985). The court will not accept conclusory statements that mitigation measures are effective: the agency must be able to support its conclusions with information in the administrative record. *Sierra Club v. Peterson*, 717 F.2d 1409 (D.C. Cir. 1985). In particular, the agency must also "disclose the history of success and failure of similar projects." *Sierra Club v. Morton*, 510 F.2d 813, 824 (5th Cir. 1975).

Not only is the Forest Service unable to assure that the BMPs will, in fact, be followed and/or mitigate the adverse impacts, many recent studies point to a contrary finding. In the context of road construction BMPs, there is reliable data indicating that BMPs do not consistently reduce the adverse effects of roads on aquatic resources to ecologically negligible levels, especially within the context of currently pervasive watershed and aquatic degradation (Ziemer and Lisle, 1993; Espinosa et al., 1997; USFS and USBLM, 1997; Beschta et al., 2004; GLEC, 2008). The nationwide assessment of BMP effectiveness commissioned by the USEPA performed by the Great Lakes Environmental Center (GLEC) specifically noted that BMPs aimed at reducing road impacts are not 100% effective, and, in particular, that efforts to prevent road drainage to streams have considerable potential for failure, especially in the Pacific Northwest (GLEC, 2008).

However, the EA does not provide any discussion of the known limited effectiveness of road BMPs. In its report, GLEC found that in the Pacific Northwest, "conventional BMPs for road construction may not be sufficient to prevent adverse effects on stream channels and fish habitat." (GLEC, 2008). Activities implemented with somewhat effective BMPs still often contribute to negative cumulative effects on aquatic systems (Ziemer et al., 1993; Rhodes et al., 1994; Espinosa et al. 1997; Beschta et al., 2004; GLEC, 2008). Espinosa et al. (1997) documented that aquatic habitats were severely damaged by roads and logging in several watersheds despite BMP application, and that blind reliance on BMPs in lieu of limiting or avoiding activities that cause aquatic damage serves to increase aquatic damage.

Not only is the effectiveness of the included BMPs unsupported, the Rhodes Comment[4] details how the Jazz Timber Sale fails to include the most effective BMPs, which are:

- avoidance of implementing damaging logging, landing, and road activities in high hazard, sensitive, or degraded areas, such as stream crossings, RR, and unstable terrain, such as earthflows; and
- full protection of an adequate width of riparian areas to prevent or reduce the transmission of upslope impacts to streams. *Att. A at 40.*

The management practice of avoiding high impact activities in sensitive terrain has long been recognized to be far more effective than attempting to reduce such impacts via other BMPs with limited effectiveness. Avoidance of sensitive areas is critical, because as GLEC (2008) noted with respect to road impacts, "in some cases, however, control of the problem may not be feasible: location 'trumps' management practice." It has long been recognized that *full* protection of the area of vegetation within 200 to

[4] Bark herein incorporates the attached comments of expert hydrologist Jon Rhodes, who offers his comments to explain how the EA failed to reasonably assess the Jazz Timber Sale's effects consistency with the NFP ACS and ACSOs the many ways that EA failed to properly analyze and disclose the environmental impacts of the Jazz Sale. This Comment is referred to as the "Rhodes Comment" and "Attachment A".

>300 ft of the edge of *all* stream types is one of the most important and effective ways to limit the impacts from upslope logging-related disturbances, as numerous independent scientific assessments have repeatedly concluded. However, despite this information, the EA fails to incorporate these effective BMPs or design an alternative that would avoid such adverse environmental impacts. *Att. A at 40.*

3) Inadequate Range of Alternatives

Of the 2,052 acres in the Jazz Timber Sale area, there are several overlapping land allocations: 734 acres are in Riparian Reserves; 726 ac. in Late Successional Reserves; 1,068 ac. in Earthflow; 74 ac. in Wild & Scenic Rivers, 1,800 ac. in Special Emphasis Watershed; and only 9 ac. in Timber Emphasis. *EA at 12*.

These land allocations have the following management directions:

Riparian Reserve: Management must maintain or restore the existing condition, and not prevent attainment of Aquatic Conservation Strategy (ACS) Objectives. *NFP ROD at B-10*. Timber harvest can occur only if needed to attain ACS objectives. *Id. at C-32.*

Late Successional Reserve: Management objective is to "protect and enhance conditions of late-successional and old-growth forest ecosystems." *NFP ROD at C-9.*

Special Emphasis Watershed: Primary goal is to "maintain or improve watershed, riparian and aquatic habitat conditions and water quality." Secondary goal is to "maintain a healthy forest condition through a variety of timber management practices." *LRMP at 4-246*.

Earthflow: Maintain hydrologic and physical balances to prevent reactivation or acceleration of large, slow moving earthflows. *LRMP at 4-261*.

Timber Emphasis: Provide lumber, wood fiber and other forest products on a fully regulated basis, based on the capability and suitability of the land. *LRMP at 4-289.*

Given that these land allocations focus almost exclusively on protecting and improving the conditions of water, soil stability and late-successional habitat, it was unreasonable for the Forest Service not to consider alternative actions that have fewer adverse impacts on these resource values.

Exploring alternative actions is not simply a trivial NEPA process requirement – indeed, the Council on Environmental Quality (CEQ), which promulgated the regulations implementing NEPA, characterizes the discussion of alternatives as "the heart of the environmental impact statement." 40 C.F.R. § 1502.14. The purpose of NEPA"s alternatives requirement is to "sharply defin[e] the issues and provid[e] a clear basis for choice among options by the decisionmaker and the public." *Id.* All reasonable alternatives must receive a "rigorous exploration and objective evaluation…, particularly those that might enhance environmental quality or avoid some or all of the adverse environmental effects." *Id.* § 1500.8(a)(4).

Recent CEQ regulations have clarified that for projects with no unresolved conflicts concerning alternative uses of available resources, the EA need only analyze the

proposed action and no action and proceed without consideration of additional alternatives. 36 CFR § 220.7(b)(2)(i). However, the Forest Service cannot simply will this condition to be true, by dismissing concerns raised about the project as not being "substantive unresolved resource impacts," as it appears they have done in the Jazz EA. *EA at 44*.

Following the CEQ clarification, the Ninth Circuit thoroughly addressed the question of quantity of alternatives in *Native Ecosystems Council v. U.S. Forest Serv.,* 428 F.3d 1233 (9th Cir. 2005). The court found that NEPA and its implementing regulations require the following with respect to the number of alternatives that must be considered by an agency: 1) the agency must consider "appropriate" alternatives to recommended courses of action; 2) a NEPA document must "rigorously explore and objectively evaluate all reasonable alternatives" and must explain why it has eliminated an alternative from detailed study; 3) the agency must consider a "no action" alternative; and 4) the agency must designate a "preferred" alternative. *NEC* at 1246.

So long as "all reasonable alternatives" have been considered and an appropriate explanation is provided as to why an alternative was eliminated, the regulatory requirement is satisfied. In short, the regulation does not impose a numerical floor on alternatives to be considered. *NEC* at 1245-1246. *NEC* boils down alternatives analysis to the question: is there a reasonable alternative that exists and was not adequately dealt with?

A recent case very similar to the Jazz Timber Sale applied this question and found that the Forest Service had indeed failed to consider a "reasonable alternative." See *Envtl. Prot. Info. Ctr. v. United States Forest Serv.*, 234 Fed. Appx. 440, 442-443 (9th Cir. 2007) ("EPIC").

In this case, which involved a commercial thinning project in the Shasta-Trinity National Forest, EPIC proposed an action alternative during the public comment period that would not remove trees greater than twelve inches in diameter, would not involve a commercial timber sale, and would not result in any road construction or reconstruction. The Forest Service rejected EPIC's proposal at this preliminary stage of the decision-making process, stating briefly that EPIC's proposal was "not consistent with Purpose & Need."

The Ninth Circuit found Forest Service's response unpersuasive. It held that the Forest Service did not adequately consider reasonable alternative courses of action because it defined the objectives of the project so narrowly that the proposed project was the only alternative that would serve those objectives.

The Court found that the Forest Service improperly narrowed the range of possible agency action to commercial logging projects, which precluded the agency from considering alternatives that might better serve the goals of the Northwest Forest Plan by striking a closer balance between timber and environmental interests. The Court concluded that the Forest Service violated NEPA by defining the goals of its project so narrowly that only a commercial timber sale would serve those goals. *EPIC*, 234 Fed. Appx. at 444.

Similarly, in Bark's scoping comments, and again in comments on the PA, we made clear that there are several unresolved conflicts concerning alternative uses of resources in the Collawash Watershed. In the PA comments, we raised the question of scientific uncertainty surrounding the impacts of commercial thinning, noting that a team of six scientists recently considered large scale thinning and identified many concerns about the practice. They found that *e*ven when confined to previously harvested stands, thinning treatments must be evaluated carefully and implemented in such a way as to avoid negative impacts. (Carroll, 2009). Ground based methods and associated machine piling, burning of activity fuels, construction and increased use of roads and landings can increase soil erosion, compact soils, and elevate surface runoff. (Carroll, 2009).

Concluding that no evidence exists to support the contention that an extensive thinning program will hasten restoration of historic patterns of forest heterogeneity on a landscape scale, they recommended that thinning treatments be applied cautiously and only where ecologically warranted, not be considered a cure-all for forests degraded by fire exclusion or other human activities. (Carroll, 2009). This directly contravenes the Forest Service's assertions that commercial thinning is needed for forest restoration, and points to a very clear disagreement concerning the use of resources in the project area.

Because of these unresolved conflicts, in its comments, Bark proposed specific alternative actions, including a project(s) that had one or all of the following changes: no commercial logging in Riparian Reserves and Late Successional Reserves; no ground-based yarding in High-risk Earthflow areas; and/or no timber sale units that require rebuilding previously decommissioned roads.

Rather than substantively engaging with Bark's request to fully analyze these alternatives, the Forest Service summarily dismissed them as "not meeting the purpose and need for the project" because they would decrease the amount of acreage available for commercial logging. *See EA at 46-47.*

However, Bark's proposed alternatives decrease the amount of commercial logging by protecting the most ecologically sensitive areas of the forest and avoiding adverse impacts. In the context of land allocations that specifically focus on protecting water quality, soil stability and wildlife habitat, these are reasonable alternatives that would have allowed the Forest Service to move forward with some commercial logging to meet the purpose and need *without* having to exempt itself from multiple Forest Plan standards and compromising resource values.

Instead, like the Forest Service in EPIC, the Mt. Hood Forest Service insists that the only way to meet the purpose and need is to have a 2,000 commercial timber sale, with all the accompanying adverse environmental impacts – that are primarily caused by the infrastructure (roads, skid trails, skyline yarding corridors, etc) needed to remove commercial products from the forest. There are two major flaws with this argument.

The first is that it is not at all clear that the no-action alternative, or a smaller action alternative, would not also meet the first two facets of the purpose and need: 1) to increase health and growth of stands; and 2) create greater variability of vertical and

horizontal stand structure. *EA at 17-18.* The Forest Service does a strange thing in its comparisons of the action and no action alternative which obscures this point: it analyzes the action alternative as if time exists, but the no action alternative as if time doesn't. For example, the EA finds that "the no-action alternative would maintain the current conditions and would result in plantations that are overstocked with relatively uniform trees with low levels of diversity." *EA at 79.* This fails to recognize that the forest changes over time, even without human interference, and the "no action" forest would experience increased tree mortality, which would open gaps, create more structural diversity, lead to the introduction of other species, etc, all of which achieve the purpose and need. Indeed, the EA forgot what the PA acknowledged: "[w]ith no action, at 200 years of age these stands would function in a similar fashion to a treated stand but may have a larger amount of snags and down wood." *PA at 104.*

The second major flaw is that it is reasonable to believe that a timber sale with a smaller environmental footprint could still meet all three aspects of the purpose and need, without compromising the resource values in this Special Emphasis watershed. Yet, the Forest Service never explains why an 1160 acre project (the amount of acreage remaining if the Forest Service did not re-open decommissioned roads) is too small to meet the purpose and need. It simply dismisses Bark's proposed alternative with no reasoned analysis. By failing to consider all reasonable alternatives, and/or providing an appropriate explanation as to why an alternative was eliminated, the Forest Service fails to meet its requirements under NEPA.

4) Failure to Take a Hard Look at Environmental Consequences

NEPA creates procedural requirements for federal actions "(1) to ensure the agency will have detailed information on significant environmental impacts when it makes its decisions; and (2) to guarantee that this information will be available to a larger audience." *Inland Empire Pub. Lands Council v. U.S. Forest Serv.*, 88 F.3d 754, 758 (9th Cir. 1996). The NEPA process is intended to help public officials make decisions that are based on understanding the environmental consequences, and take actions that protect, restore, and enhance the environment. 40 C.F.R. § 1500.1(c). Additionally, the purpose of NEPA is to require disclosure of relevant environmental considerations that were given a 'hard look' by the agency, and thereby to permit informed public comment on proposed action and any choices or alternatives that might be pursued with less environmental harm. *Lands Council v. Powell*, 395 F.3d 1019, 1027 (9th Cir. 2005).

In order to ensure this level of detailed analysis, an Environmental Assessment must provide sufficient information for determining whether to prepare an environmental impact statement or a finding of no significant impact. 40 C.F.R. § 1508.9(a). The information presented in the EA must be of "high quality," and include "accurate scientific analysis." 40 C.F.R. 1500.1(b). The agency must adequately explain its decision not to prepare an EIS by supplying a "convincing statement of reasons why potential effects are insignificant." *Steamboaters v. Fed. Energy Regulatory Com*, 759 F.2d 1382, 1393 (9th Cir. 1985). The statement of reasons is crucial to determining whether the agency took a hard look at the potential environmental impacts of the project. *Oregon Natural Desert Ass'n v. Singleton*, 47 F. Supp. 2d 1182, 1193 (9th Cir. 1998).

To comply with NEPA's "hard look" mandate, courts have held that agencies are obligated to maintain a current inventory of resources so that an adequate baseline exists to evaluate the environmental impacts of a proposed action. *Ctr. for Biol. Diversity v. Bureau of Land Mgmt.*, 422 F.Supp.2d 1115, 1163 (N.D. Cal. 2006); *see also Or. Natural Desert Ass'n v. Rasmussen,* 451 F.Supp.2d. 1202, 1212-13 (D. Or. 2006). The environmental baseline is an integral part of an EA, because it is against this information that environmental impacts are measured and evaluated; therefore, it is critical that the baseline be accurate and complete. *Am. Rivers v. Fed. Energy Regulatory Comm'n*, 201 F.3d 1186, 1195 & n. 15 (9th Cir. 2000); *Ctr. for Biol. Diversity*, 422 F.Supp.2d at 1163.

As detailed below, and supported by the Rhodes Comment, the Jazz EA failed to take a "hard look" at several relevant environmental factors, by either failing to provide complete (or unsupportable) information and conclusions and/or by failing to evaluate the impacts altogether. Additionally the EA did not provide accurate baseline information for a number of affected resources, which inhibits the Forest Service, and public, from determining the extent of environmental impact from the Jazz Timber Sale.

a. Soil Productivity

Soil conditions strongly influence long-term forest productivity, the composition and condition of vegetation, rates of vegetative recovery after disturbance, sediment flux, and the quantity, timing, and quality of water produced by watersheds, which, in turn, affect aquatic populations and habitats (Beschta et al., 2004). Because soil conditions strongly influence future forest vegetation conditions, soils profoundly affect the functionality of forest vegetation with respect to ecosystem processes.

The Decision Notice approves exceptions to the Forest Plan's soil protection standards, stating that the project is consistent with Forest Plan objectives for long-term soil productivity and earthflow stability. *DN at 15.* For a variety of reasons detailed below, this is an unsupportable conclusion based on both the information provided in the EA, and available information that the Forest Service should have considered in its analysis.

i) Soil Compaction

A. Ground Based Yarding

The majority of observable ground disturbances in the Jazz sale area are heavily compacted old skid trails, landings and temporary roads from the logging 40-60 years ago. *PA at 95.* All ground based units still show signs of skid trail compaction, without substantial recovery – even on gentle slopes. *Id.* The soil remains detrimentally compacted far in excess of Forest Plan standards. Yet, despite the heavy compaction already present on these unstable and degraded soils, the Jazz timber sale would increase compaction across the landscape in excess of Forest Plan standards.

In particular, in B-8 Earthflows the Forest Plan states that soil compaction should not exceed 8%, and that ground-based yarding should not occur. (LRMP B8-40, B8-36). In the Jazz sale area, detrimental soil conditions already exceeds the allowable range, with compaction from 9-30%. The Jazz sale as planned – assuming every BMP were

followed – would still increase compaction by 2-6% because of ground-based yarding, *which is not supposed to occur in earthflow areas!*

The Forest Service proposes to exempt the Jazz Timber Sale from these Forest Plan standards.

The Forest Plan identifies "should" standards as required, though it allows for case by case exceptions to the standard. *LRMP at 4-45*. In the current instance, the Forest Service seems to be making a practice of exempting all sales in the area from these important standards. For example, other recent timber sales in the area have been similarly exempted from the standards, including 2007 Thin, Rethin, and Collawash. The 2007 Thin EA and the Rethin EA use the *exact same* boilerplate language for the exemptions. *See Jazz EA at 115; 2007 Thin EA at 131; Rethin EA at 88.* This clearly shows that the Forest Service is not making a thorough site-specific determination for each project that exempting the timber sale from the standards will sufficiently protect the soil stability and productivity in Earthflow areas. Bark is very concerned that the Forest Service will continue to exempt itself from Forest Plan standards in each and every timber sale, which leads to cumulative impacts across the watershed which the Forest Service has not adequately disclosed or analyzed.

Especially concerning is that the "cumulative effects" analysis for soil productivity has as its boundaries "the plantation units that are proposed for thinning". *EA at 105*. There is no way that this small of an analysis area can capture the impact of increasing soil compaction, in excess of Forest Plan standards, in project after project in the Collawash watershed. It also improperly characterized the intent of cumulative effects analysis – suggesting that decreased soil productivity in Jazz would have little to no affect to soil productivity elsewhere. *EA at 106*. A proper cumulative effects analysis would have asked "in the context of the other past, present and reasonably foreseeable projects in the Collawash watershed, what are the impacts of decreasing soil productivity at the Jazz Timber sale?"

Despite all these known direct and cumulative impacts, the EA and DN rely on application of BMPs to mitigate the impact of ground-based yarding on Earthflows. *EA at 115.* However, the Forest Service has never conclusively shown that the BMPs are sufficient to protect the soil resources, nor that they will – in fact – be followed.

A thorough review of the Jazz BMPs, in comparison to other recent sales in the area, shows that many of the Jazz BMPs are even less protective of the soil resources. In particular, the limitations on slope for ground based logging are much more permissive. Jazz BMP C4 says that the use of ground based yarding and felling equipment is prohibited on slopes exceeding 35%, within riparian reserves. *EA at 35.* Outside of Riparian Reserves, however, the BMPs state that "some ground-based logging is proposed for slopes **greater** than 35%". *EA at 36*. This is actually backsliding from previous BMPs, such as Rethin BMP 6.1: Ground based tractors, skidders, or mechanical harvesters would not be used on slopes greater than 35% [throughout the entire sale]". *Rethin EA at 16*.

Why are the Jazz BMPs less restrictive, especially in an area that is **more** geologically unstable than any of the previous timber sale areas?

In addition, as detailed in the above section on BMPs, the Forest Service currently lacks a rigorous monitoring program to ensure that BMPs are implemented and effective. Of the few sales that have been monitored, of specific interest is the Forest Service's findings for the Swag Timber Sale. In Swag unit 24, like many units of Jazz, detrimental soil conditions existed before the commercial thin. The Forest Service BMP monitoring found that ground-based logging was done on slopes greater than 40% and not on a mat of slash as prescribed by the BMPs, and that the timber company created a greater number of skid trails than needed.

Bark raised these concerns in the PA comments, and the Forest Service did not adequately respond to show how the direct and cumulative impacts to soil resources would not be significant. A "cut & paste" exemption from Forest Plan standards, on a baseline of already heavily compacted soils, in an area of high risk earthflows, with less protective BMPs, that may not be followed . . . does not give Bark much confidence that the impacts to soil productivity will indeed be insignificant.

B. Landings

Another source of increased soil compaction, with a corresponding decrease in productivity comes from timber landings. The EA's failure to assess and divulge the total number, area, and location of landings that will be re-used, reconstructed, and constructed under the Jazz Timber Sale is a significant defect for many reasons, as discussed extensively in the Rhodes Comment. See *Att. A at 9-10.*

Landings have impacts on vegetation, soils, and erosion similar to roads in their persistence and severity (Karr et al., 2004), as USFS cumulative effects models also indicate (Menning et al., 1996). Landings essentially "zero-out" soil productivity in an irretrievable manner, although this is not disclosed in the EA. As noted in Karr et al. (2004), "[c]onstruction and reconstruction of roads and landings damage soils, destroy or alter vegetation, and accelerate the runoff and erosion harmful to aquatic systems."

The failure to assess and divulge the magnitude of the loss of soil productivity due to landings is a significant defect because of the amount of landings needed for the Jazz Timber Sale. Although the EA does not make known the number and area of landings needed for the Jazz Timber Sale, it is likely to be significant. Typically at least one landing is needed per logging unit and there are 154 logging units under the Jazz Timber Sale (EA, App. A). Therefore, it is likely that at least 154 landings will be re-used, reconstructed, or constructed under the Jazz Timber Sale.[5] *Att. A at 10.* Analyses of numerous thinning projects indicate that area of landings typically comprises 1-2% of the area logged. Using the median value in this range (1.5%), it is likely that the area of landings in the Jazz Timber Sale will be about 30.8 acres, much of which will be either constructed or significantly reconstructed. Therefore, is likely that this level of landings will have soil impacts that are akin to the reconstruction and construction of about 12.7 miles of road with mean width of 20 feet, which has extremely significant impacts to soil and water, yet was undisclosed in the EA. *Att. A at 11.*

[5] While not disclosed in the EA, the NMFS Letter of Concurrence notes that there will be approximately 20 new landings built for the Jazz sale.

This negates the Decision Notice's assertion that soil productivity will maintained because landings will be decommissioned. *DN at 15.* First, even if actively decommissioned, the long term adverse impact to soil productivity is unavoidable, and irretrievable, and second, it is not at all certain that such decommissioning will, in fact, occur. In Bark's recent survey of similar timber sales, we found that 53% of sale units had landings that were not decommissioned, and displayed signs of erosion. Thus, the EA and DN fail to take a hard look at the total adverse impacts of landings on long term soil productivity in the Jazz Timber Sale area.

ii) Large Woody Debris

The EA provides no reasonable estimate of the amount of large woody debris (LWD) that will be lost due to the Jazz Timber Sale, although the Jazz Timber Sale will clearly remove large amounts of trees on 2,053 acres within the Collawash watershed. While not disclosed in the EA, the National Marine Fisheries Service Letter of Concurrence ("LOC") indicates that the Jazz Timber Sale will remove about 182 trees per acre logged. *LOC at 4.* This equates to the removal of 373,646 trees from the ecosystem. As detailed extensively in the Rhodes Comment, the loss of large woody debris ("LWD") from the ecosystem is significant due to the persistence and magnitude of the LWD removed, and the importance of LWD to a variety of critical ecosystem functions, including soil productivity, aquatic conditions and the functionality of Riparian Reserves ("RR") and Late Successional Reserves ("LSR"). *App. A at 4-6.*

LWD provides important sources of organic matter and nutrients in soils, which are vital to the long-term maintenance and protection of soil productivity (USFS and USBLM, 1997a; Beschta et al., 2004; Karr et al., 2004). But, despite these acknowledgements of the well-known importance of LWD, associated nutrients and organic matter to soil productivity and the persistent impacts of its loss within the Jazz Timber Sale area due to past logging, the EA fails to assess the magnitude and effect of the loss of LWD and organic matter and this effect soils because of the Jazz Timber Sale. Instead, it only assesses the Jazz Timber Sale effects on organic matter by assessing the amount of area where the soil organic layer is removed under the Jazz Timber Sale (*EA at 112*), which in no way addresses the effects of tree removal and reduced tree mortality on LWD and resulting effects on soil functions and productivity. Therefore, the EA's assessment does not assess the well-known persistent effects of tree-removal and reduced tree mortality on long-term soil productivity under the Jazz Timber Sale.

The EA's failure to properly analyze and disclose the Jazz Timber Sale's effects on LWD and organic matter is a severe defect because soil and soil productivity are fundamental aspects of forested ecosystems that influence the composition and condition of vegetation, rates of vegetative recovery after disturbance, sediment flux, and the quantity, timing, and quality of water produced by watersheds, which, in turn, affect aquatic populations and habitats (Beschta et al., 2004). Loss of these present and future sources of soil productivity retard the Forest Service's ability to meet the LSR and ACS objectives. See *Att. A at 4.* The EA fails to disclose these impacts, and therefore fails to take a hard look at a relevant factor influencing the long term environmental impact of the sale.

iii) Mycorrhizal Fungi

While some of the adverse impacts of soil compaction were disclosed in the EA, the Forest Service completely failed to analyze an extremely important environmental impact of the sale – namely the effect of increased compaction on mycorrhizal fungi.

As discussed extensively in Bark's comments (see PA comments at 29-30), soil compaction reduces long-term soil productivity by adversely affecting mycorrhizal fungi. Mycorrhizal fungi are essential for tree survival and productivity. These fungi mainly reside in surface layers of soil and organic matter and provide numerous benefits to their host plants, including: enhancing the uptake of essential nutrients and water; protecting against pathogens; binding soil particles to create favorable soil structure; and facilitating below-ground nutrient transfer among plants. (Wiensczyk, 2002). These miniscule fungi can determine the structure and dynamics of plant communities, and are major players of below ground plant interactions.

Logging and yarding impact the forest floor on a variety of levels. They decrease available organic matter, such as fallen trees, that can be colonized by mycorrhizae and utilized for their water-retention properties. Logging-related activities also compact soils, especially in places like the Collawash, with easily compacted volcanic ash soils. Soil compaction degrades soil structure and restricts movement of oxygen and water through the soil, which prevent plants from forming feeder roots most closely associated with mycorrhizae colonization. Ground-based timber harvesting equipment compacts the soil limiting the movement of oxygen and water through the soil and destroying soil structure.

Removal of LWD adds to the adverse impacts of soil compaction. In heavily compacted areas, the number of ectomycorrhizal root tips was greatest in areas of highly decomposed woody debris. Id. Additionally, wood debris from current or future fallen snags act as an inoculum for mycorrhizal species and also as a water retention site in the soil (Amaranthus et al 1996). In fact, exporting organic matter out of the forest only limits the ability of mycorrhizae to respond to soil compaction as woody soil debris act as a refuge for certain species.

A relevant study found that ectomycorrhizal root tips were reduced over 60% in areas of high compaction by tractor yarding, coupled with organic material removal, and that effects of soil compaction on forest ectomycorrhizal networks can last up to 45 years. (Amaranthus, et. al 1996). This means that the soil in the Jazz Timber Sale area might be just on the cusp of recovery, and that this action will set it back for another 40 years.

The Forest Service completely failed to disclose and analyze these impacts when it discussed soil productivity and exempted itself from the soil compaction regulations. In fact, rather than addressing Bark's comments and adding analysis of impacts to mycorrhizal networks into the EA, the Forest Service simply dismissed this concern – stating in the Response to Comments that "Design criteria minimize impact to micorrhizal fungi", citing EA sections 1.4.9, 3.6.2, and 3.14.1. *RC at 26.*

Upon review of these cited sections, none of them address the impact of soil compaction in excess of Forest Plan standards to the mychorrizal fungi that may be finally re-establishing in the Jazz project area. Section 1.4.9 is the list of BMPs.

Section 3.6.2 is a list of the three measures used to assess impact to soil: erosion, soil disturbance and organic matter. Section 3.14.1 is the introduction to the section on invasive plants. Bark does not believe that the Forest Service either fully responded to our comment, or took a hard look at the impacts of the sale to mycorrhizal fungi, which may significantly influence future soil productivity.

b. Erosion

In the EA, the Forest Service acknowledges the highly erosive nature of the soils, the overcompacted pre-existing condition, and the likelihood this this sale would contribute to more degraded soils. It then goes on to conclude that "Best Management Practices and the design criteria would result in little effect to erosion . . . because sufficient ground cover would be applied or retained." *EA at 109*. However, based on all the information in the EA, and the relevant factors that the Forest Service failed to consider, it is clear that the Forest Service cannot support this conclusion.

The EA acknowledges that soil erosion *would* increase with the proposed action because bare soil would be exposed during implementation. *EA at 108*. It continues to share that: "Ground based yarding systems result in greater amount of ground exposure than skyline or helicopter systems, and as the slopes approach 40% the potential for erosion increases"; "A total of 111 acres would have potential increased erosion as a result of thinning activities"; and "Disturbed areas, especially where slopes are greater than 25%, would be potential chronic sources of sediment until they are revegetated successfully." *EA at 109*. As Bark noted in our PA comments, these are all very disturbing (if unquantified) acknowledgements of impact, and lead to many more questions: How long will it take to revegetate successfully? What amount of erosion will occur during the time lag? What is the impact of this erosion on an unstable landscape? The EA did not answer any of these questions. By not accounting for the inevitable time lag between project implementation and soil revegetation when it concludes that there will be "little effect to erosion" from the project, the EA does not capture the true impacts from soil erosion.

The EA also admits that skyline yarding on steep slopes with highly erosive soils (units 30, 34, 44, 80 and 82) have the potential to become "chronic sources of erosion and sediment" unless water is diverted to the side. *EA at 109*. What is the Forest Service doing to ensure that such waterbarring not only occurs but is successful at diverting water over the revegetation period?

The Forest Service cannot simply rely on untested BMPs to mitigate all adverse environmental impacts from increased erosion. This is especially true when, as noted above, the BMPs controlling soil and slope often use the word "generally" and "may", as in "downhill skidding would <u>generally</u> be on slopes less than 35%" (*EA at 35*), "mechanical harvesting would <u>generally</u> operate on slopes less than 40%" (*EA at 36*), "mulch <u>may</u> be used on slopes greater than 20%" (*EA at 36*). The inclusion of these wiggle words (which do not appear in the BMPs of similar previous sales) make the BMPs even less reliable and enforceable.[6] It is clear that the Jazz Timber Sale is going to result in increased erosion in the unstable and erosive Collawash Watershed. The Forest Service must make a more realistic analysis of the extent and impact of this

[6] In fact, the insertion of "generally" and "may" essentially negate the "Best" part of the BMPs, and turn them into SMPs, or "Suggested Management Practices".

erosion, rather than dismissing all concerns by relying on unapplied, or unenforceable, BMPs.

c. Invasive Species

Large Bull Thistle infestation, in landings and skid trails of the Slip Timber sale, one year after logging

Both the Jazz PA and EA acknowledge generally that: "invasive plants can reduce biological diversity, displace native plant communities, decrease and degrade wildlife habitat, alter fire regimes, change hydrology, disrupt mycorrhizal associations, alter nutrient dynamics, and increase soil erosion" but fail to apply any of these adverse impacts to the Jazz sale area. *EA at 161*.

The EA tacitly acknowledges the problem by stating that the risk for spread of invasive plants and noxious weeds is high. *EA at 161*. Rather than explaining why the risk is "high" and what this means for the affected environment, for assessing both the direct and cumulative effects the EA simply relies on the design criteria proven to be ineffective in other similar sales: "design criteria would minimize likelihood that invasive plants would spread." *EA at 163*. This is echoed in the DN: "Design criteria are included to prevent spread and establishment of invasive plants." *DN at 14*.

However, in its comments Bark noted that similar deign criteria has been applied to many other thinning projects in the Clackamas watershed and they have not been successful at curbing the spread of invasive species. *PA comments at 24*. As noted above, Bark volunteers have recently monitored post-logging units for compliance with BMPs. All the sales monitored have similar, if not more restrictive, BMPs as the proposed Jazz Timber sale in regards to invasive species management. Of the units surveyed – within two years of logging, 85% had presence of invasive species, especially prevalent in the landings and skid trails. Clearly, the BMPs did not work in similar projects to curb the spread of invasive species, and the Forest Service has

given no assurance that this instance would be any different. This does not meet the "hard look" standard.

Despite our requests, neither the EA nor the Response to Comments explained why BMPs that have been unsuccessful in other sales would be successful in Jazz at preventing the known negative impacts of increased invasive species presence. The Forest Service cannot rely on mitigation measures known not to work to support a finding of no significant impact in regards to the spread of invasive species.

d. Water Quality

i) Lack of Baseline Conditions

The EA clearly notes that disclosing existing conditions are key to assessing cumulative effects analysis:

> "In order to understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects." *EA at 52*.

However, the EA completely fails to divulge the existing condition of a host of watershed attributes that will affected by the Jazz Timber Sale and affect compliance with Aquatic Conservation Strategy Objectives (ACSO). For instance, NMFS (1996) notes that all of the following affect ACSO compliance:

- Water Quality / Temperature
- Water Quality/Sediment./Turbidity.
- Water Quality/Chemical Concentration/Nutrients
- Physical Barriers
- Substrate
- Large Woody Debris
- Pool Frequency
- Pool Quality
- Off-Channel Habitat
- Refugia
- Width/Depth Ratio
- Streambank Condition
- Floodplain Connectivity.
- Change in Peak/Base Flow
- Increase in Drainage Network
- Road Density & Location
- Watershed Conditions/Riparian Reserves

As discussed extensively below, the Jazz Timber Sale is likely to affect almost all of these conditions via affects on flows, sediment delivery, water temperature, RR, and LWD. However, the EA does not divulge the existing condition of any of these attributes except water temperature. This does not provide enough information to

either make a supportable determination of impact, or determine compliance with the ACSOs. *Att. A at 17-18.*

ii) Temperature

The EA's assertions that the increased water temperatures caused by stream shade removal under the Jazz Timber Sale would not be significant is specious and without a sound basis. As described in the Rhodes comment, a sound determination of the significance of water temperature effects requires all the following steps: 1) Determine a scientifically-sound threshold of significance for the change in water temperature; 2) Develop a thorough quantitative estimate of the level of change in water temperature caused by the loss of stream shade under the Jazz Timber Sale; 3) Compare the sound estimate of total change in water temperature to the threshold of significance. Notably, the EA's assessment of water temperature impacts from the Jazz Timber Sale's removal of stream shade lacks all three of these steps, and is, therefore, unsound. *Att. A at 20*.

There will be approximately 70 fifteen-foot wide skyline corridors logged for the Jazz Timber Sale – 48 over perennial and 22 over intermittent streams. The Jazz sale will also construct 12 stream crossings for haul roads within the Jazz Timber Sale area. The EA failed to make any useful examination of the short and long term impacts to water temperature from the removal of riparian shade from these actions.

Although undisclosed in the EA, road runoff that is delivered to streams at stream crossings and other points that are hydrologically connected to streams elevates stream temperatures during summer runoff events (National Research Council (NRC), 2008). This is because runoff occurs in response to even small precipitation events and this runoff is heated by warm road surfaces during summer. Notably, this thermal pollution from roads occurs when streams are already warm due to seasonal effects, elevating the adverse impacts on salmonids (Meehan, 1991; Rhodes et al., 1994; McCullough, 1999). Although undisclosed in the EA, examinations of the effects of road density and density of stream crossings in multiple watersheds have verified that stream temperatures tend to increase with increasing density of roads and stream crossings (Nelitz et al., 2005). This is likely due to the combined impacts of roads and road crossings on water temperatures, including shade loss, subsurface flow disruption, channel widening, and warmed runoff contributions.

Additionally, the negative effects on water temperature from vegetation removal are persistent. In the absence of soil damage, about 25-40 years are needed for the full recovery of stream shade after vegetation removal (Rhodes et al., 1994). However, the soil damage caused by roads and landings significantly retards the regrowth of vegetation due to their severe reductions in soil productivity, increasing the persistence of impacts on water temperatures and associated ACSOs. *Att. A at 21*. By completely ignoring these long-term sources of water temperature elevation, the EA fails to take a hard look at the impacts of the Jazz Timber Sale on water temperatures.

iii) Sediment

The EA also does not include any quantitative assessment of the Jazz Timber Sale's effects on erosion from road (re)construction compared to leaving roads in their current recovering state. Therefore, the EA provides no rational basis for its

assertions that the Jazz Timber Sale will have insignificant and transient impacts on erosion and sediment delivery to streams. Available information on these impacts strongly countermands the EA's assertions in this regard. Road construction is by far the greatest contributor of sediment to aquatic habitats of any management activity (Meehan 1991, Robichaud et al. 2010). Even temporary road construction can cause resource damage including erosion and sedimentation, exotic species spread and disruption of wildlife (Trombulak and Frissell 2000). Unpaved roads and stream crossings are the major source of erosion from forest lands contributing up to 90% of the total sediment production from forestry operations.

The Rhodes Comment undertakes a thorough analysis, estimating erosion and sediment delivery due to road reconstruction in Jazz that shows corresponding increases in sediment delivery to streams will be significant and easily detectable.[7] This is consistent with available scientific information that strongly indicates that construction and reconstruction of temporary roads will greatly and persistently elevate sediment delivery to the stream system within the Jazz Timber Sale area. *Att. A at 29.*

Although it is not adequately disclosed in the EA, in addition to construction and reconstruction impacts, elevated road use for log haul will also greatly elevate erosion and sediment delivery on unpaved roads. Research on logging roads has consistently documented that roads used by more than four logging trucks per day generated more than seven times the sediment generated from roads with less use and more than 100 times the sediment from abandoned roads (Reid et al., 1981). The USFS's own summary of scientific information on roads (Gucinski et al., 2001) concluded that "rates of sediment delivery from unpaved roads are . . . closely correlated to traffic volume." Even with a road surface of crushed rock aggregate, which is often used with the intent to reduce sediment production on road surfaces, Foltz (1996) documented that elevated truck traffic increased sediment production by 2 to 25 times that on unused roads in western Oregon. Foltz (1996) noted that since the processes are the same across regions, a similar range of increases was likely. Primary mechanisms for increased erosion and sediment production from road use are the production of highly mobile fine sediment on road surfaces, road prism damage, disruption of gravel or aggregate surfaces, and rutting. *Att. A at 29.*

As with constructed and reconstructed roads, the highly elevated sediment production from roads used for haul is delivered to streams at stream crossings and other points of connectivity between streams and roads, such as gullies and relief drainage features that dump elevated road runoff laden with sediment to areas in relatively close proximity (e.g., less than 300 feet) to streams. Notably, the EA fails to disclose the total miles of unpaved roads that will be used by haul, the number of stream crossings, and the level of hydrologic connectivity between these roads. However, the LOC indicates that at least 61 miles of unpaved roads will be used for haul under the Jazz Timber Sale. *LOC at 6.* The Jazz Timber Sale maps (EA, App A), indicate that about 90 stream crossings will be affected by elevated road erosion and subsequent sediment delivery to the stream systems at these crossings caused by log haul. Using the MHNF's (2011, p. 57) estimate that about 500 feet of graveled roads act as

[7] Numerous studies have detected far smaller increases in erosion and sediment delivery due to logging and road activities.

extensions of the stream network at crossings, delivering elevated runoff laden with sediment at these junctures, the 90 crossings by haul roads will deliver sediment elevated by log haul directly to streams from about 8.5 miles of road. This impact of log hauling at stream crossings, alone, will greatly elevate sediment delivery to the stream system, contrary to the EA's baseless assertions that sediment delivery from the Jazz Timber Sale will not be significant. *Att. A at 30.*

The EA states that there no native surface roads that have hydrologic connections to streams. However, paved and rocked roads also contribute to sediment from hauling and in its comments, Bark identified several places on the landscape where there is a hydrologic connection between roads and streams that contribute to elevated sediment levels. Specifically:
a) On 6310, between units 48 and 44 an inboard ditch dumps right into the headwaters of Paste Creek;
b) An inboard ditch along 6340 dumps into a small seasonal stream about 100 yards up 6340 from the 63 juncture only a ¼ mile from the Collawash;
c) On 6310 just south of unit 52 there is an inboard ditch running north and dumping into headwaters of Peat Creek;
d) On 6380, just north of the 6380-120 juncture, an inboard ditch dumps directly into a creek.

The EA also fails to provide any estimate of the additional sediment generated by the construction and reconstruction of landings, particularly those near streams. Although not divulged in the EA, the LOC indicates that at least 20 new landings will be constructed. As previously discussed, many more landings will need to be reconstructed. The EA's failure to estimate erosion from landing activities is significant because on a per unit basis, landings typically generate as much sediment as roads (Menning et al., 1997; Beschta et al., 2004). Landings also have considerable potential to deliver sediment to streams. In their study of sediment travel distance from forest management activities, Ketcheson and Megahan (1996) found that the longest travel distance of sediment originated from a landing. Furthermore, the assumption that future decommissioning will offset the negative impacts of road and landing construction and use is unsound since road construction has immediate negative impacts and benefits of obliteration accrue slowly. (Beschta, 2004). Therefore, the EA's failure to properly assess and make known erosion and sediment delivery impacts from landing & road activities is highly significant and renders the EA's assessment of sediment impacts inadequate. *Att. A at 32*.

iv) Cumulative Impacts

The EA's failure to properly assess these impacts of landings and road activities is exacerbated by the EA's failure to assess the cumulative magnitude of all of the impacts of the Jazz Timber Sale on sediment delivery, especially in the context of all the other federal and private timber sales being logged in the area. Instead, the EA only provides qualitative and unsupported judgments about the effects of individual activities, such as road construction and log haul, without ever assessing the overall, combined magnitude of all of the impacts of the Jazz Timber Sale on sediment delivery to streams, including all logging and yarding, landing, and road activities. This is a major defect, because it has long been known that streams, water quality, and fish habitats are cumulatively affected by the total magnitude of sediment generated by all

actions that generate additional sediment to stream systems (USFS et al., 1993; USFS and USBLM, 1997a; b; GLEC, 2008).

These cumulative impacts of road re-opening and log haul on sediment delivery are extremely significant. USFS et al. (1993) notes that the impacts of roads can change " . . .streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition" in ways that "can have significant biological consequences that affect virtually all components of stream ecosystems . . ." and can have unavoidable effects on streams, "…no matter how well they are located, designed or maintained." It is well-documented that increases in sediment delivery increase fine sediment levels in streams, reducing the survival and production of salmonids (Meehan, 1991; USFS et al., 1993). Elevated sediment delivery also degrades pool volume and quality (Lisle and Hilton, 1992; McIntosh et al., 2000). USFS et al. (1993) noted that elevated sediment delivery has been one of the primary causes of the loss of pool volume and frequency in streams within the aegis of the NFP. *Att. A at 32-33.*

Available information, including that from the USFS, amply indicates that upstream impacts of the Jazz Timber Sale on sediment delivery have cumulatively significant impacts on downstream fish habitats. This, in turn, indicates that the EA has failed to properly assess the total sediment impacts on water quality, occupied fish habitats, and related ACSOs because the EA failed to properly assess the cumulative impacts of sediment throughout the stream network. For these reasons, the EA's dismissal of the cumulative impacts of the Jazz Timber Sale on smaller streams that are well upstream of occupied fish habitats renders the EA's conclusory assessment of the Jazz Timber Sales impacts on LFH, water quality, and sediment-related ACSOs as unsound and misleading. *Att. A at 36.*

The EA also fails to properly describe the duration of the elevated erosion and sediment delivery under Project and incorporate it into an adequate analysis of the cumulative impacts on erosion and sediment delivery. Road reconstruction and construction increases erosion and sediment delivery for many years, even if some of the constructed roads are decommissioned and/or subsoiled subsequent to construction (Potyondy et al., 1991; Menning et al., 1996; Beschta et al., 2004; Foltz et al., 2007). However, the EA fails to divulge or account for these persistent increases in erosion and sediment delivery.[8] As noted above, road decommissioning's beneficial effects on erosion and runoff accrue slowly (Beschta et al., 2004) and decommissioning can even cause additional increases in erosion and sediment delivery in the shorter term. Landings also erode at greatly elevated levels for more than a decade, even if landings are decommissioned subsequent to use, as the USFS's own models of cumulative effects indicate (Menning et al., 1996). However, the EA fails to properly assess, divulge, and incorporate the duration of elevated erosion from reconstructed and constructed landings and roads into estimates of the total impact of the Jazz Timber Sale on erosion and sediment delivery. *Att. A at 35.*

[8] The primary causes of elevated erosion on landings and roads are the severe reductions in infiltration rates and cover by vegetation. Studies have repeatedly documented that the subsoiling proposed under the Jazz Timber Sale does not rapidly or completely restore infiltration rates or forest floor vegetation, even many years after roads have been subsoiled or "ripped," as documented by USFS research (Foltz et al., 2007), although the EA fails to consider this or incorporate it into its analysis.

e. Impacts of Road Building, not adequately analyzed because masked as "re-building"

Wildland roads can significantly impact the hydrology, geomorphology, and ecology of many national forests. Roads alter hillslope hydrology by reducing soil infiltration, concentrating water through road drainage structures, and converting subsurface flow to surface flow (Gucinski et al. 2001; Luce 2002). Overland flow can cause geomorphic changes including chronic erosion (Swift 1988), development of gullies connecting road drainage features directly to the stream network and increased risk of landslides (Montgomery 1994; Wemple et al. 1996), all of which degrade aquatic habitat.

Terrestrial wildlife is also greatly influenced by road density. Roads impact wildlife in a variety of ways including direct mortality from vehicle collisions; increased poaching, over-hunting, and over-trapping facilitated by access; reduced numbers of snags and down logs; increased negative edge effects; facilitated or hindered movement depending on species; and chronic negative interactions with humans (Wisdom et al. 2000).

The Forest Service recognized the importance of removing roads from the Collawash Watershed in its recent Increment 2 Road-decommissioning project. The Increment 2 Preliminary Assessment acknowledged that "until a road is removed and natural drainage patterns are restored, the road will likely continue to affect the routing of water through watersheds. *Inc. 2 PA at 33*. And that, [t]he sediment contribution to streams from roads is often much greater than that from all other road management activities combined, including log skidding and yarding." *Inc. 2 PA at 34*.

Now, rather than continuing to restore the watershed by decommissioning roads, the Jazz Timber Sale will re-build 12 miles of decommissioned roads at a cost of over $250,000. In no way can rebuilding these roads be construed as restoration, as it will have the double effect of both loosing the recovery that has already begun to occur on these roads, and creating new sources of sediment, increased temperature, and habitat fragmentation for years to come.

i) Re-opening roads retards recovery of the Collawash watershed

One of Bark's biggest concerns about the Jazz Timber Sale is that the re-construction of 12 miles of roads will set back the recovery of the Collawash watershed by at least a decade. As regards wildlife, after ten years of non-use and vegetation recovery, an area begins to assume roadless like qualities and character. This, of course, builds slowly, and as it does, the "decay" of behavioral and ecological avoidance also begins slowly. This can occur at an individual level, at a generation level, and at a population level. After 50 years, an area may be close to pre-impact habitat effectiveness even though there may well be some behavioral phenotypes that may have suffered depletion or alteration during the initial period of high impact.

As regards water quality, it is extremely well-documented that road construction vastly elevates erosion for many years (Potyondy et al., 1991; USFS, 1993; Rhodes et al., 1994; USFS and USBLM, 1997a; b; Beschta et al., 2004), particularly in the first two years when the construction causes more than a 200 fold increase in erosion relative to areas in a natural condition. *Att. A at 24*. Specifically, major reconstruction of

unused roads can increase erosion for several years and potentially reverse reductions in sediment yields that occurred with non-use. (Potyondy et al. 1991).

The Forest Service acts as though rebuilding these roads has no significant impact because the roads once existed on the landscape. Although in different stages of recovery, every single road segment will be degraded in hydrologic function, and will lose the years of the recovery it has had. For some roads, like the road into Unit 70, decommissioning – which included being ripped significantly at 3 separate stream crossings – was done just two years ago. It would be immensely wasteful to reopen this road because almost none of the habitat benefit from the investment has been realized. Other decommissioned roads are already starting to recontour to the landscape and would have to be cut though to use – with impacts akin to building a new road bed. These include the road segments into units 64, 66, 74, 58, and 118.

Of particular note is the "existing alignment" into Section 18, which the EA says was "never decommissioned" but which, in fact, has fully recovered as Bark has told the Forest Service many times. *See Att. B, Pictures 1-3*. Due to the level of full recovery on the alignment proposed as Road U18PR, reopening the alignment will entail the same impacts as construction of a new road, which are not disclosed in the EA. *See Att. A at 23-24*. This construction will cause immediate, large, and enduring increases in erosion and sediment delivery to streams, although this is not made known in the EA. Not only does the EA fail to capture the true impacts of building the road in Unit 18, it misleadingly acts as if the forest will be left in *better* condition after the Jazz Timber Sale, by stating that it was "never actually actively decommissioned" but after the project, it would be decommissioned after use. *EA at 22.* While this may seem like an improved condition on paper, in reality, the Forest Service will be building a new road through a lovely stand of remnant old-growth, which will leave a scar on the landscape for the next 30 years to come. This is not restoration, or even mitigation. This is simply an undisclosed, long-term, adverse impact.

ii) Long timelag before roads are again hydrologically recovered

For the purposes of the Jazz Timber Sale, the term "decommission" is used to describe the type of closure that is standard practice not for temporary roads. After use, roads are bermed at the entrance, water barred, decompacted and roughened as needed and debris placed at the entrance. *EA at 22.*

This is very different than the commonly accepted definition of road decommissioning in scientific literature, where it is defined as the physical treatment of a roadbed with a variety of methods to restore the integrity of associated hillslopes and flood plains and their related processes and properties. (Switalski et al. 2004). The most common forms of road decommissioning include ripping the roadbed, restoring stream crossings, and fully recontouring the hillside. It is important to differentiate between the scientific studies evaluating the effectiveness of road decommissioning in restoring hydrologic functions, and the Forest Service's more minimal treatments, which are more akin to road closure, than decommissioning.

As noted above, after the roads are reconstructed, it will take years to decades to reach the same degree of recovery as they are currently, provided that roads are effectively closed or decommissioned after the Jazz Timber Sale which is not assured.

When NMFS assessed the Jazz Timber Sale, it estimated that "…approximately 21% of the roads may not be decommissioned after project completion" based on the MHNF's decommissioning track record within the Jazz Timber Sale area. *LOC at 25*. This does not provide much assurance that the Forest Service will, in fact, follow-through with the minimal decommissioning it plans for.

Even if the "temporary" are decommissioned, the reconstruction will irretrievably eliminate existing recovery on unused roads and vastly setback future recovery on these alignments, resulting in long-term elevation of sediment delivery to streams under the Jazz Timber Sale. *Att. A at 26.* The damage to soil productivity on reconstructed and re-opened roads will persistently retard the re-establishment and regrowth vegetation and trees on road alignments, as can be seen on many of unused roads in the Jazz Timber Sale area, even after years of non-use. The EA itself recognizes that after the project, "road recovery would take approximately 30 years". *EA at 102*.

Available scientific information indicates that the Jazz Timber Sale's road activities, including reconstruction of closed and abandoned roads, will persistently elevate erosion and sediment delivery, for in several ways. Reconstructed roads cause elevated erosion and sediment for many years after decommissioning (Beschta et al., 2004). The USFS Region 5 method for estimating cumulative watershed effects indicates that even 10 years after road decommissioning, a mile of decommissioned road is equivalent to 0.2 miles of new road in terms of adverse cumulative effects (Menning et al., 1996). After 50 years, a mile of obliterated road has still has impacts equivalent to 0.1 mile of new road (Menning et al., 1996). Thus, it is apparent that decommissioning does not instantaneously eliminate the persistent impacts of roads on erosion and sediment delivery.

The recovery of soils and vegetation that has occurred on many abandoned roads and currently closed roads has accrued in the absence of use over many years to, in some cases, several decades. Reconstruction of these roads will eliminate this recovery. *Att. A at 25.*

5) Failure to meet Aquatic Conservation Strategy Objectives

The conclusion of the Decision Notice that "Key indicators for water quality, habitat, flow, channel condition, and watershed condition will be *maintained or enhanced"* (*DN at 14*) is not supported by the scant information presented in the EA, nor does it take into consideration a number of relevant factors that, in fact, show that the Jazz Timber sale will retard attainment of several key Aquatic Conservation Strategy Objectives. Taking into account both the information presented in the EA, and the expert opinion presented in the Rhodes Comment, it is clear that the Jazz Timber sale will degrade water quality and is out of compliance with the ACSOs.

Complying with the AS objectives means that an agency must manage the riparian-dependent resources to maintain the existing condition or implement actions to restore the conditions. *NFP at B-10*. Commercial logging in Riparian Reserves is allowed *only* when necessary to "acquire the desired vegetation characteristics needed to attain ACS objectives." *NFP at C-33*.

The Forest Service has failed to establish the need for commercial thinning to attain ACSOs – aside from stating that the riparian vegetation is "overstocked" with relatively uniform trees with low levels of diversity. Bark's extensive experience on the ground in the project area leads us to believe that this is a drastic oversimplification of the riparian areas, which include many spacious, diverse, well-functioning stands. Even if the Forest Service's generalization were true, this still doesn't support the need to log in Riparian Reserves, as the Forest Service never shows why the logging and road building of the Jazz sale is **needed** to attain ACSOs. Instead, as detailed below, there are several ACSOs that the project area currently does not meet that would be exacerbated by the Jazz Timber Sale, such as the Collawash's tendency for flash flooding, elevated sediment production and summer low flows.

Similar to its reliance on the BMPs, the Forest Service relies on the "no-cut" buffers to mitigate project impacts to water quality. This is misplaced. Although not disclosed in the EA, the Rhodes Comment details several scientific assessments including those of the USFS, have noted the need for far wider stream protection widths than those afforded under the Jazz Timber Sale are necessary to protect streams from the adverse impacts of logging, landings, and roads. USFS et al. (1993), USFS and USBLM (1995a; b) indicate that a protected area with a width of at least about 300 feet from each side of a stream is needed to protect aquatic resources from the impacts of upslope disturbance, although this is not disclosed in the EA. *Att A. at 36.* Because of their importance and sensitivity, smaller non-perennial and headwater streams need to receive as much *or more* protection than larger streams if aquatic resources are to be protected. Scientific information amply indicates that there is a high degree of certainty that the lack of adequate riparian protection under the Jazz Timber Sale and its logging, landing, and road activities in RR will appreciably degrade RR functionality and several ACSOs in conflict with the direction in the NFP, contrary to the cursory statements in the EA regarding the adequacy of the Jazz Timber Sale's no cut buffers. *Att. A at 37*.

In addition, the Jazz Timber Sale's no-cut buffers are inadequate to eliminate the impacts of road activities within Riparian Reserves because roads and skyline yarding corridors pierce these buffers. A no-cut buffer does not exist between roads and streams at stream crossings. Therefore, a no-cut buffer has no significant effect on mitigating the persistent impacts caused by roads activities at and near stream crossings, including the impacts on sediment delivery, runoff, LWD, stream shading, and water temperatures. *Att. A at 38.*

As detailed below, the Jazz Timber Sale is not only not needed to attain ACSOs, it will actually prevent maintaining and enhancing the following ACSOs.

ACSO #3: Physical Integrity. Jazz EA states that this ACSO is met "through design criteria and the protection provided by Riparian Reserves". It asserts that Design criteria would minimize erosion, that density thinning would restore diverse healthy riparian areas, that *new* roads would not cross streams and that the project would provide a sufficient quantity of shade and large woody debris. *EA at 81.* This is not supported by the information in the EA and the other relevant factors that Bark has raised through comments and this appeal.

In addition to all the information presented in section 3.d. above, the removal of LWD prevents attainment of this ACSO. Although undisclosed in the EA, the LOC states that the logging in RR would reduce LWD recruitment to streams by 15% to 75%. *LOC at 22.* The removal of LWD and reductions in tree mortality due to logging in RR causes significant and irretrievable losses in soil productivity in RR areas logged under the Jazz Timber Sale. Although this is not adequately assessed and discussed in the EA, this persistent loss of soil productivity degrades RR functionality and typically results in retarded plant growth. This is a significant impact because attaining this ACSO is affected by vegetation conditions within RR. *Att. A at 8.* This downed wood is important to the RR function of detaining sediment from both natural and management-induced upslope disturbances and thereby limiting increases in sediment supply to streams from such disturbances (Rhodes et al., 1994), as the USFS has acknowledged (USFS et al., 1993; USFS and USBLM, 1997a; b). Therefore, the EA fails to reasonably assess and divulge the impact of LWD loss on this important RR function which strongly affects attainment of ACSOs #3.

ACSO #4: Water Quality. EA acknowledges that temperature and sediment are affected by construction of roads and riparian logging, but asserts that the watershed condition is gradually improving as roads are decommissioned and riparian vegetation grows and provides shade. It also asserts that stream protection buffers will maintain stream temperature and filter out sediment. *EA at 81.* Again, this is an unsupportable conclusion.

The Jazz Timber Sale will plainly elevate water temperatures in affected streams by removing shade over streams. The EA indicates that stream shade will be removed in 70 skyline corridors across streams. These corridors will be up to 15 feet wide, and will reduce shade on both sides of streams within the corridors. Because the EA is devoid of any required limit on the amount of stream shade removed for these corridors, stream shade may be completely eliminated within the corridors over a total stream length of up to 720 feet. This will inexorably elevate summer water temperatures because it is extremely well-established that the removal of shade over streams elevates summer water temperatures. *Att. A at 19.*

While the EA asserts there would be insignificant impacts on stream temperatures from shade removal, it does so in the absence of assessing the impact of actual shade loss on water temperatures. Such an assessment has long been eminently tractable (Theurer et al., 1984; 1985; Rhodes et al., 1994; Bartholow, 2000). Therefore, the EA cannot support its contention that it will meet ACSO #4. *Att. A at 19.*

ACSO #5: Sediment.
As noted extensively above, road construction and use contribute more sediment to a watershed than any other activity, and BMPs do not sufficiently mitigate these impacts which extend over time. See Rhodes Comment, noting that re-use and reconstruction elevate soil impacts, irretrievably reverse all soil recovery that has accrued during the period of non-use, and persistently degrade *all* soil functions, new landing construction causes immediate, persistent, and especially severe losses of soil productivity and losses of soil functions. *Att. A at 11.*

While the EA recognizes that road construction has increased the amount of sediment in the watershed, it asserts that the project design criteria, including wet weather haul

restrictions, equipment slope restrictions, and erosion control methods would ensure that the Jazz sale met ACSO #5, and that no *new* roads would cross streams. *EA at 81*. It does not, however, discuss or acknowledge the sediment created by the re-opened stream crossings.

The enduring increases in erosion and runoff from road activities will contribute to persistent, significant increases in delivery of sediments to streams. At least nine stream crossings will be reconstructed and subject to the re-opening of roads. Hydrological connectivity is typically high at stream crossings, where little can be done to effectively reduce runoff and sediment delivery from roads to streams (Kattlemann, 1996), as the USFS has repeatedly conceded. For instance, the Plumas National Forest Travel Management FEIS (2010) noted: "Road/stream crossings are significant sources of sedimentation on [Forest Service] lands. Even well-drained roads and trails will likely deliver some amount of surface-generated sediment to stream channels at crossings." Therefore, it is clear that the re-opening of roads under the Jazz Timber Sale will vastly elevate sediment delivery to streams these nine crossings, contrary to the statements in the EA and DN.

Because the EA did not provide adequate and supportable analysis of the project's impacts to sediment, the Rhodes Comment includes a table analyzing the amount of sediment generated from the sale, in comparison to the no action alternative. *See Att. A at 28.* This indicates that, on average, over five years, the Jazz Timber Sale is likely to cause erosion and sediment delivery four times greater than that likely to accrue from leaving these 12 miles of abandoned, decommissioned or closed roads in their existing state. It also indicates that the elevation in erosion and sediment delivery from the construction and re-opening of these roads is even greater over the first three years after these road activities. The erosion from the roads and consequent sediment delivery over the first three years after the Jazz Timber Sale would be almost six times that from the roads in their current partially recovered and vegetated state. *Att. A at 28.*

Again, despite Forest Service assertions to the contrary, BMPs do not eliminate the adverse impacts of roads on sediment delivery. For instance, BMPs cannot eliminate sediment delivery from roads to streams at stream crossings (Kattlemann et al., 1996; Beschta et al., 2004; Rhodes and Baker, 2008). Megahan et al. (1992) and USFS and USBLM (1997c) noted that it is not possible to log areas without increasing erosion and sediment delivery, regardless of BMPs involved or care in implementation, especially when roads are involved. Based on review of available data, MacDonald and Ritland (1989) concluded that roads typically double suspended sediment yield even with state-of-the-art construction and erosion control and that suspended sediment contributions from surface erosion, alone, from roads in the absence of mass failure, are typically in the range of 5 to 20 percent above background and remain at elevated levels for as long as roads are in use. Notably, this would, in many cases including the Jazz Timber Sale, prevent attainment of ACSO #5. *Att. A at 39.*

ACSO #6: In-stream flows. This ACSO requires the Forest Service to "Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected."

The Jazz EA recognizes that the project area is prone to rain on snow events, and that road construction and regeneration harvest have caused some drainages to exceed recovery standards. It suggests that the trend is toward full recovery as plantations continue to grow, and that the instream flow regime – including magnitude of peak flows – would be maintained. *EA at 82*.

Although undisclosed in the EA, watersheds in the temporary snow zone (TSZ) that have had 15 to 19% of the area logged have detectable peakflow increases. *Att. A at 41.* The Jazz EA indicates that several smaller watersheds within the Jazz Timber Sale area have more than 15% of their watershed area in a logged over condition that has not completely hydrologically recovered from previous logging, including the watersheds of Dutch, Lower Nohorn, Farm, and Skin. *EA at 89*. Therefore, the EA fails to disclose that the USFS's own assessment indicates peakflows will already been elevated in these watersheds. Thus, existing conditions within the Jazz Timber Sale in these watersheds already do not comply with ACSO #6.

This is a critical defect because the Jazz Timber Sale will incrementally exacerbate existing conditions in these drainages by significantly removing forest canopy via logging, landing, and road activities, all which contribute to additional elevation of peakflows. *Att. A at 41.* Instead of continuing that "trend toward full recovery", this sale will actually sent the recovery back many years by decreasing canopy cover across the landscape.

The EA also fails to reasonably support compliance with ACSO # 6 in other ways. The EA includes no assessment of the existing hydrologic connectivity between roads and the stream system. This is a key defect. As Grant et al. (2008, p. 39) noted regarding peakflow impact assessment: "Determining where the proposed treatment falls within this range requires an assessment of the intrinsic basin condition and intensity of proposed management action…For example, the **existing and proposed road network should be evaluated with respect to its degree of connectivity with the stream network**…" (emphasis added)

The EA also completely ignored available scientific information which indicates that logging, landing, and road activities also alter the timing (frequency) of peakflows (Alila et al., 2009). This is a significant defect because this alteration in peakflow timing affects compliance with ACSO #6.

These defects have ecological significance. Although it is not made known in the EA, peakflow elevation by logging and roads is an important concern because even minor changes in peakflow magnitude and frequency can have major effects on salmonids by triggering significant changes in channel erosion and sediment transport (Dunne et al., 2001). *Att. A at 42.*

6) Failure to meet LSR objectives

Because the objective of Late-Successional Reserves is to protect and enhance conditions of late-successional and old-growth forest ecosystems, *NFP C-9*, the Jazz Timber Sale must be looked at through that lens: is this logging and road building needed to protect and enhance the forest? Bark feels that the only supportable answer to this question is "no".

In Bark's PA comments, we noted that one of the most unique features about the LSR units is the diverse understory, which speaks against the need to thin –especially for restoration goals. In many of the units, particularly those that are in, adjacent to or near to mature stands of native forest, the trees have maintained considerable distance and have facilitated new growth without choking out other plant species. There are Douglas fir and cedar saplings growing amongst Oregon grape, vine maple, rhododendron, willow and red alder. For example, in Unit 2, a very small unit, there is a rapid transition of plant communities. At its highest point we found chinquapin and rhododendron and at its base, the community changes to skunk cabbage and Veratrum. This particular unit contains many of the common plants associated with low elevations and displays no need for active management.

In its Response to Comments, the Forest Service did not substantively engage with this site specific information – merely repeated that LSR units do not meet the desired forest condition. *RC at 20.*

The RC did acknowledge that it had made a mistake in the PA as to amount of Late Successional Habitat in the Collowash LSR – the current amount is 67%. RC at 19. While appreciating this clarification, the Forest Service did not address the second aspect of Bark's comment: that there is only 4% of the LSR in mid-seral condition, so why is it necessary to actively manage that 4% and incur the negative environmental tradeoffs, from logging, road & landing building, increased edge effect to the adjacent old growth and decreased snags & down woody debris?

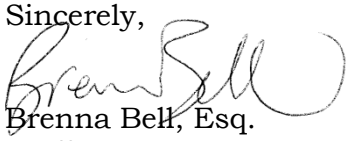
This question is even more import, as all of the LSR units in Jazz are adjacent to rare remaining old growth forests, many of which are newly designated wilderness. Units 70, 74, 76, 82 and 78 are all next to the Bull of the Woods Wilderness expansion. Even when edge is conservatively defined based on a 60 m zone, a high proportion of existing old-growth stands are largely edge habitat and would be subject to indirect effects of thinning of adjacent stands. (Carroll, et.al., 2009).

In addition, the Rhodes Comment estimates that it is likely that logging in about 726 acres of LSR would result in the reconstruction or construction of about 10.9 acres of landings in LSR, which would have an area and impacts equivalent to the reconstruction or construction of more than 4.5 miles of road with a mean width of 20 feet in LSR. This is a highly significant level of landing area in LSR due to severe and irretrievable impacts of landings on soil productivity, soil hydrology, vegetation, and their conflicts with LSR objectives. *Att. A at 11.* The Forest Service has not actively shown how this action will protect and enhance late-successional and old-growth forest ecosystems, and Bark again strongly suggests that the Forest Service develop an alternative that does not include commercial logging and road building in the Late Successional Reserves.

In conclusion, Bark believes that the Jazz Timber Sale is a commercially-driven timber sale, thinly masquerading as forest restoration, which fails to follow several important substantive and procedural environmental laws and mistakenly relies on unreliable BMPs. This is the wrong direction for the Forest Service to be going in the

management of the public's lands and water. This decision is in error, both legally and practically, and should be withdrawn until such time as the Forest Service can comply with all necessary regulations, take into account the will and interest of the public, and make a decision that truly will support meaningful restoration on Mt. Hood National Forest.

Sincerely,



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