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Michael J. Korn
Bureau of Land Management
Field Manager
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July 3, 2017
Dear Mike Korn:

Please accept these comments from Umpqua Watersheds, Inc. (UW) on the Revised Days Creek-South Umpqua Harvest Plan EA, **DOI-BLM-OR-R050-2014-0008-EA**.

Response to BLM's Claim That Perry-Jones is Largely Irrelevant To The Hydrological Considerations Of Its Revised Days-Creek-South Umpqua EA

INTRODUCTION

Both the peak flow section, in the original Days Creek-South Umpqua Harvest Plan EA, and the summer low flow section, titled How would regeneration harvest affect summer streamflow deficit? in the revised EA, selectively represent only a portion of the science. The science that is cited in the revised EA appears to have the effect of casting doubt on whether past harvest of primary forest and its associated impacts across all holdings (in combination with the ongoing, short rotation clear cut monoculture plantation paradigm, so much in evidence on the interspersed private timberlands in this analysis area along with its ancillary extractive activities) do not significantly affect hydrology. However, in our estimation, **there is no doubt about this in the scientific literature.**

UW understands that there are some unknowns about how thinning 50-yr-old stands affects summer

low flows. That and other related hydrological questions remain; issues which would doubtless benefit from continued scientific research using paired watershed experiments like those conducted for decades at the H.J. Andrews and South Umpqua Experimental Forests and cited in Perry-Jones. Areas of scientific uncertainty about the effect of forestry on summer low flows include, as noted in Perry and Jones (2017):

a) Limited experimental evidence for the effects of thinning on mature or old-growth stands (but see the effects of a 50% shelterwood cut in Coyote Creek WS1 vs. WS 4).

b) Limited experimental evidence for the effects of thinning on young stands (but see inadvertent thinning in Andrews WS 7 vs. WS 8).

c) Limited experimental evidence about how the size of thinned patches (individual trees vs. small patches) influences low flows (but see Coyote Creek WS2 vs. WS 4 and contrast with clearcut Coyote Creek WS 3 vs. WS 4 or with shelterwood Coyote Creek WS 1 vs. WS 4).

d) Unknown effects of managed or unmanaged stands older than 50 years on summer low flows.

These areas of uncertainty point to the value of implementing additional forestry treatments in the Coyote Creek Experimental Forest. (A topic, which we are informed, has been under discussion since those watersheds were re-instrumented in the late 1990s, and is likely, or ought to be, part of a future proposal from the USFS.)

In UW's estimation, the streamflow questions, especially low summer flows, raised by Perry-Jones can only be exacerbated by other, contextual conditions. Among these are the pasture irrigation practices so evident along that reach of the South Umpqua River that lies upstream from Canyonville and downstream from Days Creek, whereby irrigators apparently feel no compunction about shooting irrigation water high into the air, especially through afternoons when temperatures range between 80 and 100 or more degrees fahrenheit. While UW is aware that many, if not all, of these irrigators own long-standing water rights, that fact does not in any way diminish the potentially harmful impacts of inefficient and voluminous water withdrawals like these on the already degraded portion of the South Umpqua river system included in the Days-Creek-South Umpqua Harvest Plan EA, original or revised.

This must have been an especially damaging action during the recent drought years (one which UW brought to NMFS' attention in UW's comments on the Coho Recovery Plan). It continues today, as on many summer afternoons, even while the South Umpqua steadily drops. (Please recall that the South, unlike its Northern cousin, enjoys no enduring summer snow pack.) To be fair, one does observe the increased use of more water conserving irrigation methods in portions of the S. Umpqua drainage, but tellingly, not nearly enough along this stretch of river; a river reach not so far above those sections of the South Umpqua (usually from Canyonville down river for about three miles) closed to swimming etc., in past, non-drought summers, because of toxic algae blooms. (Again, please bear in mind the proximity of this river reach to the analysis area of the Days-Creek-South Umpqua Harvest Plan.)

This ongoing, outdated, environmentally damaging irrigation water withdrawal condition; coupled with the "Perry-Jones Effect" resulting from past extensive conversion of primary forest to plantation (including, as UW points out, across all ownerships); continual damaging hydrological and other environmental impacts from imposition of private land clear cuts/plantations within this analysis area; and increasing impacts from climate change create

what may rightfully be characterized as a perfect hydrological storm within this analysis area, as elsewhere. Surely, this “witches brew” of dire impacts to aquatic conservation/restoration ought to attract the attention of every individual, agency and organization involved in and concerned with the NEPA process, wherein uncertainties, such as those identified above, need to be clearly disclosed *and* assumed to be adverse. It should also be loudly ringing the proverbial Endangered Species Act alarm bell, a warning mechanism meant to summon consultation with the USFWS and NMFS, at the very least. (This last recommendation is discussed further on in these comments.)

A. Peak flows. The peak flow section of the revised EA (p 20-21) cites the literature selectively and inaccurately. This section relies on only two publications: Grant et al (2008) and Harr et al. (1975), whereas there are many other publications, including some more recent ones. (Please see links to studies, below.) From this dearth of references to relevant, up to date literature, UW is forced to conclude that the Revised Days Creek-South Umpqua Harvest Plan EA **does not reflect the state of the science on peak flow responses to forest harvest and roads.**

The Grant et al. 2008 study seems to have been misinterpreted. For example, the EA cites Grant et al. thus: “*The potential for peak flow effects varies for different stream types (Grant et al., 2008).*” Immediately following, in the same paragraph on page 20, the EA states: “*The 2008 Western Oregon Plan Revision Final Environmental Impact Statement (2008 FEIS, p. 758) indicates that high gradient cascade and step-pool streams, characteristic of nearly all of the streams in the analysis area, have little potential to affect peak flow enhancement.*” This last statement appears to UW to be an attempt to say that the Grant et al study supports that claim, when, in fact our reading indicates to us that **Grant et al (2008) affirm that forest harvest increases peak flows in small steep headwater channels.** UW also believes that it is incorrect to state “*There is little evidence that timber harvest activities can elevate peak flows in the rain or snow hydroregions (Grant et al, 2008).*” Instead, Grant et al (2008) stated that “watersheds located in the rain-dominated region are **less sensitive** to peak flow changes than those in the transient snow region.”

Contrary to the assertions made in the EA (p. 20-21), recent publications show that timber harvest is associated with increases in peak flows in both rain and rain-on-snow events (Perkins and Jones 2008, Jones and Perkins 2010). In UW's estimation and experience, it is misleading to divide a watershed into “rain” and “rain-on-snow” regions, because the area affected by rain vs. rain-on-snow events changes over time. Even a single watershed may experience rain, rain-on-snow, and snow peaks, with the boundaries of these regions shifting up and down in elevation. (Perkins and Jones 2008, Jones and Perkins 2010). We are informed that, in the past, scientists talked about rain, snow, and rain-on-snow zones as though they were fixed by elevation boundaries, which was, perhaps, a helpful way to think about forest management effects at the time. More recently it has become clear that these zones shift up and down from day to day during any given winter depending on air mass conditions. This is discussed in Jones and Perkins (2010) and Jennings and Jones (2015) but also acknowledged as a difficulty in modeling future flood risk. (See:

<http://onlinelibrary.wiley.com/doi/10.1029/2006WR005099/full>)

Some recent publications based on analysis of data (including from Coyote Creek) about peak flows, are provided below. The Harr et al (1975) and Grant et al (2008) studies have been updated by papers using longer records from the same watersheds Harr studied; see

Jones and Grant 1996, <https://andrewsforest.oregonstate.edu/publications/1529>

Wemple et al 1996, <https://andrewsforest.oregonstate.edu/publications/2314>

Jones 2000, <https://andrewsforest.oregonstate.edu/publications/2567>

Jones et al 2000, <https://andrewsforest.oregonstate.edu/publications/2634>

Wemple et al 2001, <https://andrewsforest.oregonstate.edu/publications/2731>

Wemple and Jones 2003, <https://andrewsforest.oregonstate.edu/publications/3170>

Perkins and Jones 2008, <https://andrewsforest.oregonstate.edu/publications/4276>

And Jones and Perkins 2010, <https://andrewsforest.oregonstate.edu/publications/3089>

B. Low flows (p. 22-24). Regarding the section on low flows, again, it appears to UW that the EA cites the literature selectively and misinterprets the literature. Three points:

1) Contrary to what is claimed for that study on pg. 22 of the EA, thus: “*Studies summarized by Moore and Wondzell (2005) indicate that low flows are more sensitive to transpiration from riparian vegetation than from vegetation in the rest of the catchment,*” Moore and Wondzell (2005) did not state that riparian vegetation alone, or even principally, affects ET, merely that riparian vegetation appears to have important effects on ET. (Interestingly, the studies that Moore and Wondzell (2005) cite in support of this assertion were from Eucalyptus watersheds in Australia, forests that are quite a bit farther from Coyote Creek than those in this analysis area.) For the record, Perry and Jones (2017) includes examples of patch-cut watersheds as well as clearcut watersheds (in Coyote Creek and the Andrews Forest), all of which experienced low summer flow deficits, even though these watersheds had very diverse riparian zones, **indicating that riparian zone vegetation does not control the overall streamflow response.**

2) The EA assumes that the summer streamflow deficit effect is limited to stands aged 15 to 50 years old, but this is counter to what is stated in Perry and Jones (2017). That paper showed that the summer low flow deficits peaked at a stand age of 50 years after harvest (which are the oldest post-harvest stands existing in paired watershed experiments that UW is aware of). Control watersheds were 150 to 500 years post-disturbance. Perry and Jones (2017) state that deficits increased as stands aged from 25 to 50 years (approximately). However, there is no indication, in that study, of a reduction in the low flow deficit in stands aged 50 years. In fact, there was no reduction in low flows in such stands. Hence it is reasonable to infer that stands older than 50 years also produce summer streamflow deficits. Thus, an analysis of the percent of land in the 15 to 50-yr age class in the harvest plan area (as described on p. 22 of the EA) underestimates the potential area affected by summer streamflow deficits. No indication is provided in Perry and Jones (2017) of the age of stands at which the summer streamflow deficit might disappear, relative to mature and old-growth forests (but it could be at least several decades beyond 50).

Further, and perhaps more confounding, the Table 1-2, on pp. 23 and 24 of the revised EA, appears to only take BLM lands into consideration. Is BLM saying that the interspersed private timberlands in this analysis area, many clear cut and/or in various early growth stage plantations, have no detectable bearing on the relevance of Perry-Jones to current or projected hydrological conditions on these watersheds? How can that possibly be? Please explain.

As a matter of fact, in its denial of the applicability of Perry and Jones to the Days Creek-South Umpqua EA, BLM does not discuss the hydrological and other impacts of the past massive extraction of primary forest on public and private lands at all. Nor does the agency consider the effects of repeated resource extraction, except in passing, represented by the on-going private land clear cut assault on watershed function, conducted under aegis of the OFPA, on those interspersed private timberlands. Although the Perry-Jones paper strongly supports the conclusion that the past conversion of primary old growth and mature forest is a prime cause of ensuing low summer flows in the treated streams, whose data it examined, excerpts from BLM's Days Creek-South Umpqua EA, such as the following, are about as far as BLM appears to be willing to go in acknowledging the impacts of adjoining and proximate private industrial clear cuts and heavily restocked monoculture plantations to hydrological and riparian functioning on these watersheds, overall, let alone upon the interspersed public forest lands managed, in trust, by the BLM:

- *“Based on past and present practices, it is expected that timber harvest would continue at current rates on private lands. As a result, older harvested areas would reach a point of hydrologic recovery as newer areas are harvested which maintains a constant level of watershed disturbance into the future. No measurable change in hydrologic response would be expected from the proposed action compared to current conditions.”*
- *And: “Timber harvest on non-Federal land would continue to occur in the analysis area, although BLM is not aware of any specific timber harvest location or schedule, it is assumed that timber harvest would remain consistent with current non-federal harvesting trends.”*
- *And: “**This analysis assumes no hydrologic recovery from past harvest analyzed in the 2008 FEIS**, that current level of harvest activity on private lands remains the same, and that all acres proposed for harvest in connection with this project would have less than 30 percent crown cover, post-implementation.”*
- *And: “Riparian areas of younger stands on private lands generally lack shade, a condition that is assumed to continue. The lack of shade increases the risk for solar heating which can have a host of potential effects on juvenile fish, including but not limited to thermo-regulation and respiration (reduced levels of dissolved oxygen). Fish would continue to be affected by roads that are not maintained, roads that have inadequate drainage, or roads that are unsurfaced which continue to deliver sediment to streams.”*

Again, while the above statements, made by BLM, *seem* to indicate that it has *noticed* the oft-times draconian activities "next door" in the checkerboard, BLM does not appear to acknowledge the deleterious impacts of these conditions on flow or on the overall environmental health of the adjoining and proximate public lands (Please see UW comments on the original Days Creek-South Umpqua Harvest Plan EA, pp. 20, 21.); nor to offer any credible, long or short term data on low summer flows across all ownerships, no less offering a modeled base line of what historic flows were before the mass conversion of primary forest to plantation or other stand initiation condition in this analysis area took place, on forestlands, public and private. Surely, this cannot, for example, be the “hard look” at such a critical, lynchpin issue as low summer flow that NEPA demands, not even close. As a practical matter, this amounts to no look at all.

In UW's studied view, this rejection/refutation of Perry and Jones (2017) by BLM amounts to not much more than opinion; opinion that is quite unsupported by the latest science, current low flow data, past records of same; or, in the absence of reliable past low flow records, of historic base line modeling, landscape wide. Considering the widespread and potentially dire consequences of persistent low summer flows to aquatic functioning, this is unacceptable. In short, not only is BLM's rejection of the wider applicability of Perry-Jones not at all well supported by the latest studies, in this EA it is completely unsupported by actual low flow data.

Please recall, as well, that the Days Creek-South Umpqua proposal lies not terribly far down river from the S. Umpqua Experimental Forest, and at a lower elevation; this latter a topographical relationship comparable in that respect to what Perry-Jones observed at Coyote Creek, as compared to the higher elevation sites at H.J. Andrews. In that case, the paired stream data acquired from lower elevation studies at Coyote Creek showed a more pronounced summer streamflow deficit effect, as compared to the higher elevation studies at H.J. Andrews.

In the revised EA, pg.22, we read: *“In order to have the effect across large basins as Perry and Jones (2017) suggest, the proportion of stands in the 15 to 50 year age classes would have to increase above current levels. Assuming that on private lands late successional forests have been converted to early and mid-seral forests and will continue to be intensively managed (Section 3.2), changes in the proportion of stands in the 15 to 50 year age classes would follow changes on BLM managed lands.”*

From this, in effect, the BLM appears to characterize, and to accept, the potential impacts of this revised Days-Creek-South Umpqua management proposal as being **adverse change from present condition**. That is, BLM seems to hold that projected departures, if any, from that presently impaired low summer flow condition are the only metric by which the potential environmental impacts of BLM's management actions are, and will be, assessed. However, Perry-Jones and simple, logical, common sense, as well as environmental integrity, indicate to the objective observer that the true impact of certain of BLM's proposed management actions on this watershed (e.g., the creation of still more relatively large openings on the public lands it manages, these openings in addition to existing and future large clear cuts/plantations on adjoining and proximate private forestlands in the analysis area) amounts to **the worsening and/or perpetuation of the present highly degraded, flow-depleted condition**. (Which, it stands to reason, might very well be a large part of why small-stream-reliant, cold water dependent species like coho salmon, although ESA listed, and the object of numerous riparian restoration efforts, are failing to recover to a truly reliable and sustainable degree; and why warm water species, such as bass, continue to colonize the South Umpqua, the Coquille and other area rivers.)

Therefore, UW sees no alternative except to state that a significant potential impact of this, and similar timber sales, **must be the prevention or retardation, by BLM (as well as by private industrial timberland owners), of the recovery of listed species and their requisite habitats**. And from this, UW is compelled to conclude that, (at the least) where low summer flows are concerned, the BLM is violating the Endangered Species Act. In this regard, UW is especially alarmed that, as stipulated by the ESA, the BLM has failed to consult with the USFWS and the NMFS concerning the strong possibility that this analysis area (as is likely true of similar heavily logged watersheds in Western Oregon) is, and has been, suffering from chronic low summer flows, much to the detriment of many if not all aquatic species. From this scientifically supported conclusion, UW finds itself compelled to state that, by any truly useful measure, these watersheds are not now, nor have they been effectively

protected in past decades; neither have streamflows, in general, been responsibly regulated, both parameters having been specifically and unambiguously included, of environmental necessity, in the language of the 1937 O&C Act that was debated and passed by the Congress and signed into law by the President of the United States, Franklin D. Roosevelt. (For an explanation of the how the historical record supports this view of these critical and proactive environmental aspects of the Act, please refer to the Historical Context section, pp. 2 to 6, of UW's original Days Creek-South Umpqua EA comments.)

3) The Revised EA also assumes that stands aged greater than 50 years will not produce a summer streamflow deficit even if they have been thinned. This is a misinterpretation of the findings from Perry and Jones (2017). **That study showed that stands aged 40 years or older that had been thinned continued to produce summer streamflow deficits, apparently because the additional growth of the remaining trees utilized the moisture made available by thinning.** Again, this indicates that post-thinning stands well in excess of 50 years may continue to produce summer streamflow deficits relative to mature and old-growth forests. However, admittedly, data is lacking on this question, and thinning experiments in paired watershed studies of sufficient duration (such as those described in Perry-Jones, at the H.J. Andrews and the South Umpqua Experimental Forests) could shed light on this question.

Particularly, in regard to summer flow deficits, Perry and Jones (as likewise in its finding that *peak flow increases are sustained for at least 50 years*) also flatly contradicts the unsubstantiated modeling assumptions of general hydrologic recovery that the BLM, the Forest Service, the timber industry et al. have used widely, and repeatedly, in cumulative hydrology effects analyses.

Although it remains very true that peak flow increases (**as well as the long standing problem of sedimentation resulting from timber extraction and its ancillary activities across all ownerships**) are important and have received much attention in the literature, and nearly all of the attention in NEPA documents, UW believes that peak flow is less significant, hydrologically speaking, than low flow depletion. UW takes this view simply because peak flow increases represent a relatively small increment of change over peak flows from mature forest watersheds, and are sustained over a much shorter seasonal period than low flow depletions, which can (and, as Perry-Jones reasonably implies, apparently do) persist from late spring through the summer and well into the autumn months.

Also, as discussed in UW's comments on the original Days-Creek-South Umpqua EA (Please see pg. 7, paragraph #4 of those comments.), low summer flows have especially dire aquatic implications for the various critical TMDL parameters monitored, to some extent, by the Oregon DEQ; several of which parameters in this analysis area, as we have also noted, are already 303d listed as being impaired by the DEQ.

As indicated above, several of the statements made by BLM concerning streamflow, in its Revised Days Creek-South Umpqua Harvest Plan EA, indicate to UW that hydrological science in the Revised EA remains limited, selective, and in some cases appears to be inaccurate. As a result, the decision maker(s) and the public may well continue to be misinformed about the intensity of adverse cumulative impacts of regeneration harvest with regard to peak and low flows. Therefore, it is UW's reluctant conclusion, precisely because portions of the streamflow/hydrology information in the EA/Revised EA are selective and/or based on conjecture and not on the best and most up to date available science, that the fundamental purpose of the National Environmental Policy Act (i.e., to accurately inform decision

makers and the concerned public) has been, in the process, prevented. In that vein, it was and is UW's informed opinion, and we respectfully state, that if science is used in an EA, revised or otherwise, care needs to be taken that it be interpreted accurately and completely and, at the very least, all significant implications of that research for ecological functioning, including low summer flows across given watersheds, regardless of ownership, must be fairly and completely assessed.

Thus, in light of the dire hydrological low summer flow condition highlighted by the Perry-Jones study, as well as the other contextual conditions cited above in these comments, we repeat the need for ESA consultation with USFWS and NMFS. Further, a true Environmental Impact Statement needs to be prepared so as to give these critical, even existential, issues the complete, in-depth scientific consideration their grave environmental implications demand.

Pacific Connector Gas Pipeline

While Umpqua Watersheds has primarily concerned itself, in these comments on the Revised EA, with hydrological impacts, we are also very concerned about the acquiescence of the BLM in amending its RMP to accommodate a foreign originated enterprise that will create undesirable environmental impacts on the public lands BLM manages in trust for all of the people of the United States. This concession made, in large part, in order to enhance the energy position of our nation's commercial (and, in some cases, its political and military) competitors.

This economic consideration coupled with the admitted impacts to NSO and other species, terrestrial and aquatic, imposed by creation of this right of way, is very much in opposition to the wider public interest. The creation of hundreds of miles of new permanent "edge" across many watersheds, including some managed by the BLM, in addition to the potential harmful disturbance to rivers and their tributaries made by this massive construction project, so unnecessary to the public good of the American people, is outrageous and should have been rejected out of hand. That it has not been, to date, is further evidence of the weak kneed protection of watersheds and regulation of streamflow, which has unfortunately characterized much of the management of lands public and private across these beleaguered watersheds in decades past, and, in some instances, down to this very day.

Sincerely,

Joseph Patrick Quinn
Conservation Chair,

Umpqua Watersheds, Inc.