November 9, 2021

Jody Weil, MBSNF Forest Supervisor
810 State Route 20, Sedro-Woolley, WA 98284-1263

Re.: Conservation Northwest Objection to the North Fork Nooksack Vegetation Management Project Draft Decision

Dear Supervisor Weil,

Conservation Northwest submits the following objection to the U.S. Forest Service's Draft Decision Notice (DN) selecting Alternative 1 for the North Fork Nooksack Vegetation Management Project as analyzed in the Final Environmental Assessment (EA) with a Draft Decision Notice and Finding of No Significant Impact (FONSI). We believe the DN and FONSI were reached in error pursuant to the National Environmental Policy Act (NEPA), the Administrative Procedure Act (APA), the National Forest Management Act (NFMA), and the Northwest Forest Plan (NWFP), including the Aquatic Conservation Strategy (ACS).

As required, the objector's name, address, and telephone number are below.

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Project Name: North Fork Nooksack Vegetation Management Project
Responsible Official: Jody Weil, Forest Supervisor
Location: Mt. Baker Ranger District, Mt. Baker-Snoqualmie National Forest

Aspects of the Proposed Project Addressed in this Objection

1. We object to the harvest of trees >20" dbh in the LSR.
2. The project has not adequately identified unstable and potentially unstable slopes or planned adequate mitigation measures in these areas causing undisclosed potential impacts.
3. By not adequately identifying unstable and potentially unstable slopes, the project has not properly designated Riparian Reserves within the project area causing undisclosed potential impacts.
4. The project did not provide adequate response to substantive comments.

Conservation Northwest has a 30-year history of successfully leveraging funding and public support to protect, connect, and restore habitat and wildlife in the Pacific Northwest. We represent over 17,000 members and supporters dedicated to conservation and recovery action in our state. Our success is owed in large part to our practical allegiance to science and policy, and commitment to collaboratively work with managers, scientists, user groups, industry and other stakeholders to develop and implement durable restoration plans and projects; this includes our service on several forest collaborative groups across the state.

Our roots are based in the North Cascades where we have been advocating for healthy transboundary watersheds and forests since 1987. We support efforts on the Mt. Baker-Snoqualmie National Forest (MBSNF) to restore ecological resiliency, watershed function and habitat conditions for wildlife populations at landscape scales. We also recognize the value of tribal and public access for cultural and recreational opportunities. We care deeply about this landscape, its vast wilderness, connected habitat, and wildlife and human populations that it sustains. We submitted Draft EA comments on the North Fork Nooksack Vegetation Management Project in April of this year. Although some of our concerns were addressed in the Final EA, we still have concerns about the departure from a more integrated, restoration-focused approach in this watershed, as well as the increased potential for mass wasting events and their associated negative impacts to the watershed's extensive riparian and aquatic habitat.

Large-scale restoration plans are needed to improve forest health and resilience, especially amidst our quickly changing climate. Large-scale plans are best approached by integrating vegetation management projects, watershed restoration projects, Access and Travel Management projects, and Tribal and public partnerships, addressing forest and First Foods restoration, road removal, riparian and aquatic health, trailhead repair and other recreation needs simultaneously. We remain concerned that the District's decision to depart from the Nooksack Integrated Conservation and Enhancement Project (NICE) will not result in improved ecological outcomes for the MBSNF as required by the Northwest Forest Plan (NWFP). By moving to a scaled-down vegetation project, timber will simply be removed from the land more quickly without adequately addressing the full suite of restoration actions needed to genuinely improve the forest and aquatic ecosystem.

We want to emphasize that we recognize the need to thin forest plantations, and support of many of the activities in the project, and ecological restoration efforts in the North Fork Nooksack area.

We have provided four categories of concerns, supporting reasons, and corresponding suggested solutions. We intend to work collaboratively with the MBSNF to resolve our objection.

1. The take of trees >20" DBH in LSR

Alternative 1 allows for the removal of trees in LSR up to 26" dbh "as necessary" where trees >20" dbh "are abundant" to meet 35% SDI max. We understand that this is deemed necessary to reduce stand density to below the lower limit of competition mortality (60% SDI) for approximately 40 years post treatment, and more quickly achieve desired Northern Spotted Owl (NSO) and Marbled Murrelet (MAMU) habitat conditions (large tree size and structural complexity). SDI (stand density index) is typically used in commercial forestry decision making and we question if this is an appropriate unit of measurement regarding intended ecological outcomes. Our concerns with removing trees >20" dbh include:

1. **A departure from the REO 694 Memo** which states: "Where older trees or trees larger than 20-inches dbh are cut, they will be left in place to contribute toward meeting the overall CWD [course woody debris] objective." The argument for the take of these trees is that there are simply too many of them to be left on site "in terms of down wood requirements or operational safety" (Memo from REO to the Regional Interagency Executive Committee, April 12, 2021). We recommend limiting harvest to trees <20" dbh in the LSR and allowing competition to remove trees naturally and foster mortality that drives many ecological processes, thereby creating desired course woody debris (CWD) over time without concern for operational safety.
2. **A lack of clarity regarding what is considered "abundant."** Our own recognizance of some of the LSR VDT stands did not showcase an "abundant" number of trees >20" dbh, but rather dense stands of "dog-fir" where trees showed long slender trunks without much taper, typical of overstocked plantations. Nonetheless, we trust the silviculturist to recognize an "abundance" of trees >20" dbh. However, the notion of "abundance" must be quantified and tied to ecological objectives to convey a common understanding of how this "abundance" is measured. It would also improve trust and transparency regarding this prescription.
3. **The loss of too many large trees and their associated positive ecosystem effects.** Large mature trees take a long time to grow and are central to the architecture of the forest's mycorrhizal networks that connect the forest's plants, transferring water, carbon and nutrients, and establishing seedlings. These processes span multiple generations of trees, where large mature trees act as hubs (mother trees) for many younger trees (different aged cohorts) within the forest, maintaining functional continuity within the stand.[1] The loss of too many large mature trees in the LSR could impair self-regeneration and resilience following disturbance, including harvest, wind, or other forms of disturbance.

[1] Beile, K., D. Druall, S. Simard, S. Maxwell, A. Kretzer. 2010. *Architecture of the wood-wide web: Rhizopogon spp. genets link multiple Douglas-fir cohorts*. New Phytologist 185:2 pp. 543-553.

Requested Resolution

- Fire severity risk is low in western Cascade forests. To retain the mycorrhizal benefits that mature large trees provide, limit harvest to trees <20" dbh in the LSR and allow competition to remove trees naturally, thereby creating desired course woody debris (CWD) without concern for operational safety.
- Regarding LSR VDT harvest parameters, change "at time of planning" to "at time of implementation" so that during treatments, tress >80 years remain standing (Final EA pg. 11).

2. Slope Stability

Under Alternative 1, up to 852 acres of Variable Retention Harvest (VRH) is proposed within the Matrix lands of the Canyon Creek subwatershed; 226 acres on slopes >35%. Variable Density Thinning (VDT) is proposed for up to 525 acres in the Matrix with 0.5-3 acre gaps; 410 acres on slopes >35%. VDT is also proposed on up to 1,530 acres in LSR with 0.25 acre gaps; 1,004 on slopes >35%. With the rate of surface erosion being closely correlated to vegetative cover and the Canopy Cover potentially being reduced to 10% (Matrix) and 30% (LSR) (Silviculture Specialist Report p. 14)[2] and recovery taking upwards of 50 years (Wildlife Specialist Report p. 8), we are concerned about mass wasting risks and increased sedimentation to streams, particularly within 226 acres of the Canyon Creek subwatershed where VRH will be used on slopes >35%.

The Final EA references Snyder and Wade's[3] "simple large-scale assessment of natural stability in the 1970 Mt. Baker National Forest Soil Resource Inventory" and generally limited the project to "areas assessed as moderate to good natural stability and low to moderately increased expected mass wasting due to human activity… all proposed treatments on unstable and highly unstable areas… were removed from consideration" (Final EA p. 57-58). Any stands in soils prone to landslides would be "…field verified and confirmed by the hydrologist, geologist or soil scientists during unit layout, and unstable or potentially unstable areas would be buffered and removed from treatment" (Final EA p. 59). While we appreciate this planned due diligence, we note that the Canyon Creek Watershed Analysis (CCWA)[4] found that mass wasting events occurred within four soil resource inventory mapping units that were rated as stable or very stable by Snyder and Wade (CCWA p. 38). We are concerned that Matrix VRH treatments with up to 3-acre gaps, particularly on slopes >35%, will create an unacceptable risk for at least 8-12 years with an increase in "…debris dams and breach floods in Canyon Creek before root strength recovers in the soil" (Final EA p. 59).

According to Snyder and Wade, in Soil Area B, which comprises most of the project area, slopes that are >35% have a high surface erosion potential and the conservation of moisture in the soil is of paramount importance (Snyder and Wade p. 28). They suggest "narrow clearcuts or partial cuts" to protect against temperature extremes. Soil Area C is also represented within the project area (generally within the Matrix lands of Canyon Creek) and is rated as unstable (Snyder and Wade p.

[2] Roads already account for 2.3% of the canopy opening in Canyon Creek (CCWA pg. 95) and there are no plans to decommission non-temporary roads during this project.
[3] Snyder, R. and J. Wade. 1970. *Mt. Baker National Forest Soil Resource Inventory*. Pacific Northwest Region. https://ecoshare.info/uploads/soils/soil_resource_inventory/MtBakerSRI.pdf
[4] Busee, B. and J. Henderson. 1995. *Pilot Watershed Analysis for the Canyon Creek Watershed*. Mr. Baker-Snoqualmie National Forest. https://www.fs.usda.gov/nfs/11558/www/nepa/113769_FSPLT3_5323415.pdf

33). To prevent soil disturbance in Soil Areas B and C, skyline logging is generally recommended (Snyder and Wade p. 31, 41).

The Canyon Creek Watershed Analysis states that "mass wasting is expected to be the most significant soil erosion process in Canyon Creek" (p. 42) and that "a strong correlation exists between mass wasting events and management activities" (especially clear cuts) (p. 38). Analyzing the history of treatments and mass wasting events in the Canyon Creek subwatershed, the Canyon Creek Watershed Analysis identified areas (landforms) with the greatest frequency of mass wasting events on a per acre basis, and which areas are at high, moderate, and low risk for future mass wasting events (p. 36, 38, 42). Inside the project area, it appears treatments are proposed in all three areas with the greatest frequency of mass wasting events on a per acre basis (landform units 84, 82, and 90 – all Matrix stands). Additionally, it appears treatments are proposed within landform units 60, 81 and 83 which are identified as high mass wasting potential. Among the characteristics of landforms with high mass wasting potential are slopes >57% with a southerly aspect (p. 42). Within the project area, these two characteristics account for 132 acres of proposed treatment including 37 acres of VRH in Canyon Creek. The Canyon Creek Watershed Analysis authors conclude that "landform slope stability ratings need to be further evaluated, particularly in areas rated as high potential for mass wasting, with particular emphasis on the relationship between structural geology and other slope stability influencing characteristics and processes" (p. 206). The NWFP B-23 to B-30 outlines a pathway to determine debris flow susceptibility.

The Final EA indicates that no more than 15% of any individual subwatershed will receive treatment (p. 32) and that, regardless of treatment type, "all subwatersheds would fall below the minimum 15% threshold range at which flow increases become measurable. Vegetation reductions would be very low with values ranging from 0.5 to 3.1% in all but one subwatershed. The Canyon Creek subwatershed would have" 11.7% vegetation removal under Alternative 1 (p. 42). However, according to the Canyon Creek Watershed Analysis, the North Fork Nooksack drainage vegetation disturbance threshold is about 6% (p. 92) - about half of what the project is proposing in the Canyon Creek subwatershed.

Stream stability is poor in much of Canyon Creek with large portions at high risk for instability (CCWA p. 105); see also Appendix A. Several studies confer that 50% of sediment contribution to streams in the Canyon Creek subwatershed is associated with mass wasting events and only 10% of these occurrences are natural; the majority are associated with roads or clear cuts and occur as debris flows or debris slides (CCWA p. 41). It is difficult to reconcile how doubling the recommended threshold of vegetation removal/canopy disturbance in this subwatershed would ensure negligible effects on water quantity and normal-range stream flows as required by the Aquatic Conservation Strategy (NWFP B-11). Though not expected to move to "poor/impaired" condition post-treatment, Canyon Creek and Hedrik Creek-NF Nooksack River subwatersheds are currently in "fair/at risk" condition and will be further degraded for up to 5 years during timber contracts (Final EA p. 39). Furthermore, if "we expect to see higher frequency of flooding and high flow events in the project area" due to climate change effects and increased rain on snow events (Final EA p. 22, 43), should the project not reduce the amount of vegetation treatments/disturbance to accommodate these anticipated events?

Although negative sedimentation and temperature impacts to streams are expected to be alleviated by the timing, scale, and location of treatments, we remain concerned that, even with the proposed Project Design Criteria and Mitigation Measures (SWF1 – SWF41), VRH in the Matrix and VDT in Riparian Reserves will not maintain and/or incrementally help to restore aquatic conditions in order to meet Aquatic Conservation Strategy (ACS) objectives.[5] Specifically, will a 30 foot slope distance minimum no-cut buffer around unstable and potentially unstable areas be sufficient to prevent mass wasting (SWF5)? Is an 80% slope a realistic threshold for harvest in the Canyon Creek subwatershed where the majority of soils are known to be unstable and slopes >57% are prone to mass wasting events (SWF9)?

Finally, we question the long-term value of VRH created CES in the Matrix (see #2 under Lack of Response to Substantive Comments), and the prioritization of certain ungulates over the federally listed Northern Spotted Owl and Marbled Murrelet.

Requested Resolution

- Option 1 (preferred): Remove VRH treatments from slopes >35% (226 acres) and all geologically unstable areas, potentially unstable areas, and hydrologically connected areas. Instead, treat these Matrix areas with VDT. This leaves up to 502 acres with <35% slope for VRH treatment and the creation of CES. Avoid VRH in between road switchbacks (see Appendix B). Remove unit g5 from treatment (slope 88%).
    - Shifting Matrix VRH to VDT still achieves the targeted 35% SDI (Final EA p. 54) and can improve the longevity of quality CES through multiple thins that create small openings which are maintained at each cutting/rotation until fully regenerated at the end of rotation (Final EA p. 52).
- Option 2: On slopes >57%, shift from VRH or VDT to Stand Improvement. Not including unit g5 (which should be removed from the project), 35 acres on slopes >57% are already proposed for Stand Improvement; this would move 37 VRH acres and 167 VDT acres on slopes >57% to Stand Improvement. Avoid VRH in between road switchbacks (see Appendix B). Remove unit g5 from treatment (slope 88%).
- In the Matrix, measurably weigh the ecological benefits of VRH and CES against the ecological benefits of large tree retention and the exclusion of VRH. We understand that 35% SDI is achievable in the Matrix even with a VDT treatment (Final EA pg. 54).

3. Identifying Riparian Reserves

There are 1,590 acres proposed for treatment within Riparian Reserves which were identified using LiDAR derived hydrography (Hydrology Resource Effects Analysis p. 6). The Final EA Riparian Reserves differ markedly from those identified in the Canyon Creek Watershed Analysis which were interpreted from FEMAT (Forest Ecosystem Management Assessment Team) and the NWFP Record of Decision (CCWA p. 7).

A Watershed Analysis provides "…the foundation from which Riparian Reserves can be delineated" and "…will identify critical hillslope, riparian, and channel processes that must be evaluated in order to delineate Riparian Reserves that assure protection of riparian and aquatic functions" (NWFP B12,

[5] "Do not use mitigation or planned restoration as a substitute for preventing habitat degradation." NWFP C-37

B13). Watershed analyses consist of "…technically rigorous and defensible procedures designed to identify processes that are active within a watershed, how those processes are distributed in time and space, the current upland and riparian conditions of the watershed, and how all of these factors influence riparian habitat and other beneficial uses. The analysis is conducted by an interdisciplinary team consisting of geomorphologists, hydrologists, soil scientists, biologists and other specialists as needed" (NWFP B-21). In other words, LiDAR derived hydrography alone cannot adequately identify Riparian Reserves. The USFS Response to Substantive Comments appears to recognize this by noting that "[a]ll riparian reserves will be fitted on the ground to observed features; the data used in the environmental assessment analysis were approximations only" (p. 11). Without advanced identification of these areas to properly designate Riparian Reserves, we are unable to know the potential impacts of proposed treatments – a requirement of the NEPA process.

We appreciate that a literature-supported qualitative assessment is included in the Soils Specialist Report, and that specialist field assessments will occur in addition to the incorporation of LiDAR, soils, and geologic datasets. And while we trust that "highly unstable slopes" will be removed from the project (USFS Response to Substantive Comments p. 5), we are concerned that "non-highly" but still unstable or potentially unstable slopes may be harvested, with particular concern for VRH treatments on slopes >35% and the possibility of subsequent mass wasting events negatively impacting aquatics and human safety. [6]

The Canyon Creek Watershed Analysis suggests that Riparian Reserve boundaries need to be confirmed during project level analysis and that modifications to the Riparian Reserve boundaries could trigger a new watershed analysis (p. 208). There has been a great deal of change within the Canyon Creek subwatershed since the CCWA was written in 1995, including multi-million dollar investments to prevent catastrophic impacts from anticipated mass wasting events. We would very much support an update to the 1995 Canyon Creek Watershed Analysis and its designated Riparian Reserves – one that incorporates landscape changes, climate change, and new technologies in its assessment.

Requested Resolution

- To help determine debris flow susceptibility and more accurately identify unstable and potentially unstable slopes (and therefore designate Riparian Reserves), implement the slope stability analysis and stratification method outlined in the NWFP B-23 – B-30 across the subwatersheds within the project area. This will help determine what treatment types are safe and appropriate in specific locations.
- Prior to a Final Decision, complete a detailed site-specific analysis to provide the riparian information and designs needed for this project (e.g. road siting, timber sale layout) (NWFP B-23).

[6] Elsewhere in the Final EA and USFS Response to Substantive Comments the language is "no treatments will occur on unstable or potentially unstable slopes…" However, without advanced identification of these areas to properly designate Riparian Reserves, we are unable to know the potential impacts of proposed treatments – a requirement of the NEPA process.

4. Lack of Response to Substantive Comments
The USFS Response to Substantive Comments did not address the following outstanding questions in our Draft EA comment letter:

1. **Monitoring criteria that will be used prior to Tethered Logging operations.** Appreciable research on this method of logging and its effects on soil, especially in the Pacific Northwest, remains limited. While we appreciate that stands proposed for tethered-based harvest and yarding would be approved in consultation with the interdisciplinary team prior to operations and monitored, as noted in the Draft Project Design Criteria and Mitigation Measures (SWF18), the effectiveness of restricting tethered ground-based equipment to slopes <80% is unknown.
    a. **Requested Resolution:** Please provide details regarding the approved monitoring criteria that will be used prior to Tethered Logging operations.
2. **The ability of VRH to supply CES for a reasonable amount of time**. There is no measure of the density of post-harvest plantings, and the fact that the EA anticipates pre-commercial thinning within 10-15 years, indicates high density planting. If this were the case, we question whether VRH will be supplying quality CES for an extended period of time (approximately 30 years) as would be needed to accomplish desired CES ecological objectives.
    a. **Requested Resolution**: In the Matrix, measurably weigh the ecological benefits of VRH and CES against the ecological benefits of large tree retention and the exclusion of VRH. We understand that 35% SDI is achievable in the Matrix even with a VDT treatment (Final EA pg. 54). Reconsider the density of post-harvest plantings in order to increase the longevity of CES.
3. **Additional consideration for road decommissioning as intended in the Nooksack Access and Travel Management Plan.** While we appreciate the no net increase of roads in the project area, the fact that most system roads would remain the same and that no new road decommissioning will take place through this project is a missed opportunity. Money is available or coming for these types of projects.
    a. **Requested Resolution:** Modify the project to include the decommissioning and closure of ATM approved roads associated with this project (e.g. two spur roads off of USFS 3040). We will advocate for applying the anticipated infrastructure funding to accomplish this goal.

Conclusion
We appreciate your consideration of the information and concerns addressed in this objection. We are supportive of this project's intentions to thin plantations and create improved habitat conditions for a variety of wildlife. We want to be sure these actions (forest treatments) are consistent with the NWFP, produce net-gain ecological outcomes in the LSR, and avoid mass wasting events, particularly within the Matrix. We ask for open communication, collaboration and involvement and look forward to working towards resolution. We respectfully request to meet with the reviewing officer to discuss these concerns and suggested resolutions. Please do not hesitate to contact us with any questions.

Sincerely,

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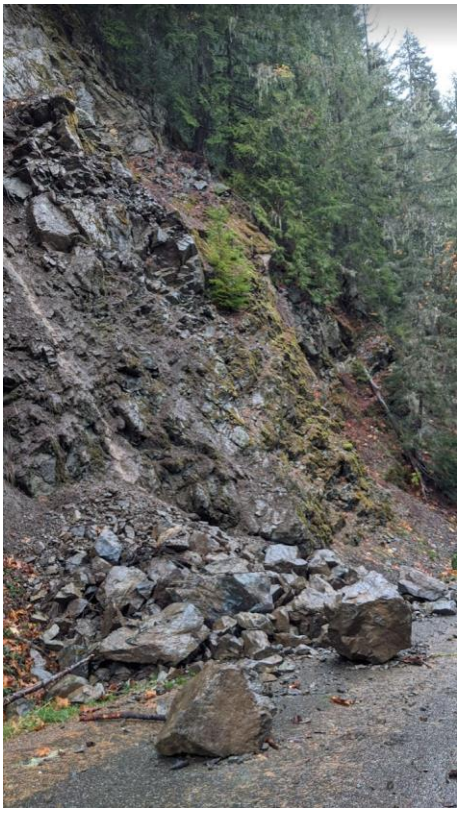
Cc: Dave Werntz, M.S., Science and Conservation Director

Appendix A – Recent Examples of Stream and Slope Instability within the Project Area

Fossil Creek running over FS road 3040, October 28, 2021
48°54'41.4"N 121°50'50.7"W

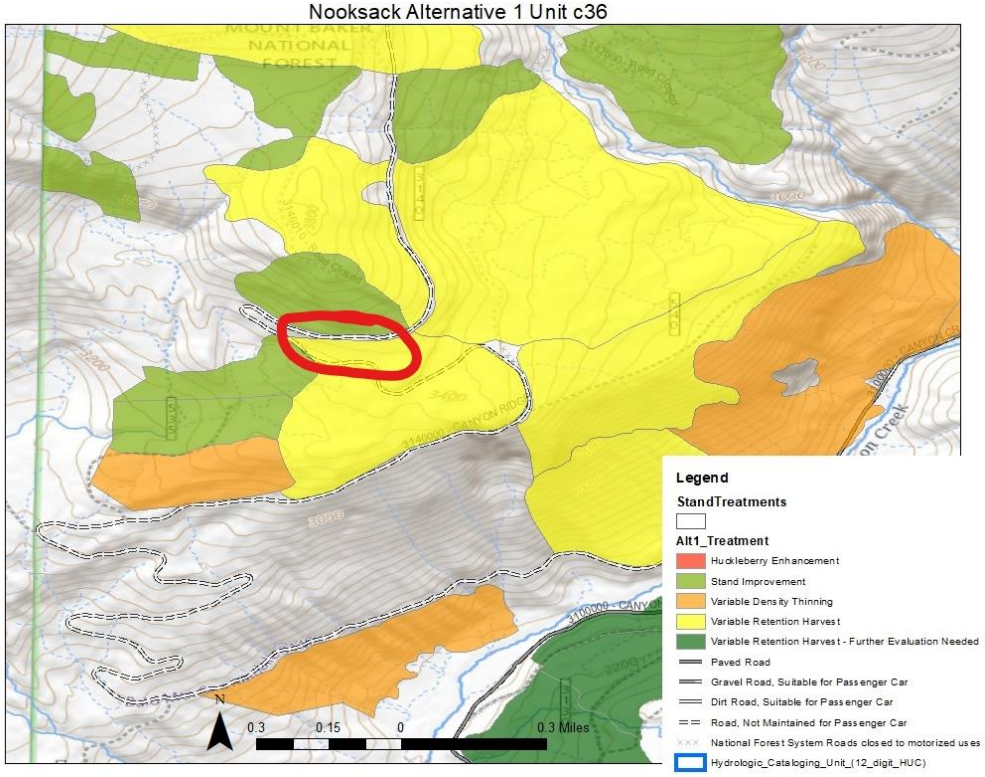
Unnamed Creek running over Glacier Creek Road, October 28, 2021
48°51'52.6"N 121°54'10.9"W

Debris Slide on Canyon Creek Road, October 28, 2021 (this slide was not there when I went up the mountain)
48°54'10.2"N 121°55'19.7"W



Appendix B – Avoid VRH in Road Switchbacks

Nooksack Alternative 1 Unit c36



Nooksack Alternative 1 Unit c115 c116 c136 c137