NOOKSACK TRIBE OF INDIANS
1855
NATURAL RESOURCES

# Nooksack Indian Tribe
## Natural and Cultural Resources Department

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March 15, 2021

Greta Smith, District Ranger
Mount Baker Ranger District, Mount Baker-Snoqualmie National Forest
810 State Route 20
Sedro-Woolley, WA 98284-1263

**Re: Nooksack Vegetation Management Project**

Dear Ms. Smith,

We would like to thank the Forest Service for working with the Nooksack Indian Tribe as we endeavor to protect and restore our treaty-protected natural and cultural resources. We appreciate having annual project coordination meetings with Forest Service staff, so that we can be informed about the variety of projects in the Nooksack River watershed that affect the Tribe's traditional area. We look forward to maintaining a productive relationship with the Forest as an important Federal Trustee of tribal treaty rights and co-manager of our natural and cultural resources. However, we would like to underscore the importance of formal, meaningful consultation on activities affecting tribal treaty rights and believe there is considerable room for improvement.

We began discussing the Nooksack Vegetation Management Project with the former District Ranger, Erin Uloth, at our annual project coordination meetings in early 2017. During that meeting, we provided substantive comments on the sensitivity of our Treaty Resources, offered to share environmental data on the areas for proposed management activities, and suggested ways of conducting a fair and objective NEPA analysis. Unfortunately, we have not been kept up-to-date as the project has evolved and the Forest developed alternatives for the Environmental Assessment. We received no response to our comments on the Public Scoping process and have not been engaged in a formal consultation process on how this project affects tribal treaty rights.

We have been generally supportive of the idea of some forest management to improve wildlife habitat and generate income to improve forest roads and fund habitat restoration projects. During the scoping period, we raised several issues that needed to be addressed in the Environmental Review of the project before we could support a preferred alternative. While the EA touched on many of these issues, the Best Available Science to justify the alternatives was lacking. We have provided a technical addendum to this letter with detailed comments on the alternatives. Given the lack of follow-through in tribal consultation through the scoping phase to the current EA, we cannot continue to support this project without more information and analysis about the specific impacts to treaty resources. We look forward to the opportunity to discuss these comments through formal consultation.

Thank you,

George Swanaset, Jr.
Cultural and Natural Resources Director

Greta Smith, Mt. Baker District Ranger
Mt. Baker Ranger District, Mt. Baker-Snoqualmie National Forest
810 State Route 20
Sedro-Woolley, WA 98284

***Re: Nooksack Vegetation Management Project***

Dear District Ranger Smith,

On behalf of the Nooksack Indian Tribe, we respectfully submit these technical comments on the Environmental Assessment for the Nooksack Vegetation Management Project. During the Scoping phase for this project, the Nooksack Tribe expressed support for forest management to improve wildlife habitat and generate income to improve forest roads and fund habitat restoration projects as long as it was clear that the project would be adequately protecting our Treaty Resources. The USDA has a trust responsibility to protect these resources. Unfortunately, the detail needed to be able to assess the potential impacts of the proposal on Tribal Treaty Resources is lacking in the Environmental Assessment (EA).

It is critical that the proposal is consistent with the WRIA 1 Salmon Recovery Plan and meets Federal water quality regulations. We are concerned that the Forest is deferring the ESA consultation on the impacts to early chinook salmon, steelhead and bull trout until after the alternatives have been evaluated, with the assumption that subsequent ESA review will address any potential effects and that therefore there is no significant impact. The NF/MF early chinook population heavily uses the project area, particularly the North Fork Nooksack reach between Horseshoe Bend and Wells Creek and the alluvial fan of Canyon Creek. The project area contains the core of the ESA-listed Nooksack bulltrout population, which has the highest water quality and habitat requirements of the salmonids present in the watershed. Habitat degradation is the root cause of the decline of all three of these species and further habitat degradation due to land use is counter to recovery and de-listing (WRIA 1 Salmon Recovery Board 2005).

We also see a general lack of consistency with the Memorandum of Agreement between the USDA Forest Service, Region 6 and the Washington Department of Ecology to meet Federal and State water quality laws. Lastly, the project should be consistent with regional and local climate change adaptation plans. Recent assessments of the status and trends of chinook habitat in the Nooksack Watershed shows that land use is continuing to degrade habitat conditions in the watershed (Northwest Indian Fish Commission 2020, Maudlin 2021). This proposal is a significant change from the existing Northwest Forest Plan, yet a comparison to the existing management scenario was not completed, making it very difficult to evaluate how the proposed alternatives would effect Treaty resources.

It is clear from reading the EA, that the product was rushed and lacks a strong basis in the abundant literature on the effects of forest practices on natural and cultural resources. While we don’t expect an exhaustive analysis, we do expect the EA to address both the context and intensity of the expected impacts on tribal cultural and natural resources. We will focus these comments on the issues that we previously identified in the Scoping phase of the NEPA process that we feel received insufficient analysis in the EA for the project:

- Effects of timber harvest on water quality and instream habitat.
- Effects of timber harvest on stream flow.
- Slope stability
- Road construction and maintenance
- Climate change
- Administrative procedures

**Effects of timber harvest on water quality and instream habitat**
We are very concerned about the lack of detail provided on the extent and intensity of the thinning of the riparian reserve areas. Riparian reserves are specifically designated portions of the watershed most tightly coupled with streams and rivers that provide the ecological functions and processes necessary to create and maintain habitat for aquatic and riparian-dependent organisms over time, as well as habitat connectivity within and between watersheds (FEMAT 1993). The proposed thinning and gap cutting appears focused on meeting the stand characteristics and habitat values for terrestrial species and connectivity, but lacks a focus on maintaining water quality and habitat for the aquatic organisms associated with the riparian zone. Under the Northwest Forest Plan, the precautionary principle was invoked and managers are required to demonstrate that changes in management, like those proposed in this EA, would not compromise the established riparian management goals.

The literature on the impacts of riparian thinning on habitat and water quality is limited, but indicate that the degree of thinning and gap cutting can have persistent negative impacts on streams. The EA cites removing conifers to allow hardwoods and brush to provide shade. These are shorter-lived species that cannot provide many of the riparian functions, such as large wood, needed for streams. The treatment needs to look at the variety of riparian functions described in the NW Forest Plan and ensure that these are not impaired. Riparian thinning can decrease shade and lead to an increase in water temperature (Roon 2021). Assessment of the current Washington Forest Practices Rules for stream buffering has shown significant and persistent impacts to temperature from management of non-fish bearing streams (McIntyre et al 2017). Temperature monitoring across forest lands in the Nooksack Watershed has shown the nearly every stream draining forest lands, including USFS lands, exceed the water quality standard (Nooksack Indian Tribe Natural Resources (NNR) 2018). Canyon Creek, where the majority of the timber harvest is proposed, does not meet the use-based water temperature standards adopted by the Department of Ecology in 2009 (Washington Department of Ecology (WDOE) 2006, NNR 2012). Monitoring of other tributaries in the project area (Deadhorse, Glacier, Boyd, and Thompson creeks) showed continued water quality exceedances for temperature (NNR 2014, NNR 2018).

Width of protective buffers – the EA states: “The North Fork Nooksack project would have no cut buffers of 100/30/15 feet to protect riparian vegetation and stream temperature” and “Water temperatures would not be directly affected by this project because shade producing vegetation would not be cut on streams and sediment delivery is not anticipated to influence channel geomorphology." This claim cannot be substantiated. EPA's South Fork Nooksack River Climate Change Pilot Research Project Qualitative Assessment demonstrated that current prescribed protective buffers do not provide effective temperature buffering against continued climate change. Buffer widths as assumed in this EA do not take this into consideration.

"Minimum no cut distances of 100 feet to all fish-bearing streams and 30 feet from all non-fish bearing perennial streams and wet areas/seeps and 15 feet from all non-fish bearing intermittent streams as measured from the stream bank or back from the top of the slope break whichever is greater." The assumption that non-fish bearing streams need less heat loading protective buffers cannot be factually substantiated. It is just as important to fully buffer non-fish bearing streams as the same heat loading physics occur regardless of fish status. Any additional heat loading of a non-fish bearing stream due to smaller buffers would be translocated downstream to fish bearing streams adding to the cumulative impact of past, present, and reasonably future actions on stream temperature on fish bearing streams.

In some cases, thinning altered habitat and water quality enough to affect associated aquatic populations (Olson and Burton 2014). As with any timber harvest, the changes will lead to ecological winners and losers (Spies et al. 2013). For example, assessing how the changes in standing dead wood through time in the riparian zone due to thinning effects riparian-dependent species and wood recruitment was not considered in the EA (Pollock and Beechie 2014). In the EA, the intensity of the thinning and the estimated areas of openings are not consistently described, but 30% retention is cited as an optimum standard. Since the impacts of riparian thinning requires a sites-specific approach, it is difficult to determine how these proposed alternatives would affect water quality and habitat in the Nooksack Watershed. If the project is pursued, then it will be important for the forest to develop a monitoring and adaptive management plan for the project to ensure that the benefits are being realized and there are no negative impacts to habitat or water quality.

The no harvest buffers cited as mitigating measures for intermittent (15') and perennial (30') streams are noted as being supported in the literature without any citations. These buffer widths are counter the research that underpins the Northwest Forest Plan (FEMAT 1993) and recent assessments of riparian buffer widths relative to habitat and water quality functions (Sweeney and Groom 2014). While the original buffer width of two Site Potential Trees Heights was considered an interim measure to represent "de minimis" risk, much of the literature supports buffer widths based on the site potential tree height. For example, state forest practices rules relies on site potential tree height to define the riparian zone, with management allowed in the outer zones of the riparian area (Washington Administrative Code (WAC) 222). Recently, the Washington State Governor acknowledged the importance of site potential riparian buffers when meeting with Treaty Tribes as a part of the Centennial Accord. The WRIA 1 Salmon Recovery Plan and Habitat Strategy prescribes site potential buffers for streams that include a consideration of the channel migration zone (WRIA Salmon Recovery Board 2005). We strongly recommend that management of the riparian reserve area retain a site potential tree height buffer on the channel to maintain the habitat functions described in the Northwest Forest Plan (FEMAT 1993).

The proposed buffering of fish-bearing streams presented in the EA does not mention including an erosion hazard area into the buffering, which could allow rapidly migrating channels like the North Fork Nooksack and Glacier Creek to quickly erode the relatively narrow buffer areas. Identifying the channel migration potential is a key first step in identifying where to apply the stream buffer (Olson et al 2014). This is also consistent with how riparian buffers are delineated under Washington State Forest Practices Rules, which uses expected migration over 140 years (riparian forest age for Desired Future Conditions) to delineate the erosion hazard area (Forest Practices Board 2004). Riparian buffering for this proposal needs to include a channel migration assessment for larger channels and should not be measured from the top of the bank as proposed in the EA.

Basing the buffer width on the fish distribution and periodicity of flow is a similar approach to the state forest practices rules (WAC 222), although the EA uses documented presence to assess the potential impact of the alternatives on fish indicator species, rather than a physical characteristics of fish habitat. Given the poor status of many of our salmonid stocks and the presence of artificial barriers, the state rules include a definition of fish habitat based on stream gradient (<20%) and width (>2’) to define areas that are fish habitat and includes “potentially recoverable” habitat. It is critical that any assessment of the impacts of the proposal include an assessment of the impact on fish habitat, not just the known distribution of indicators species, which likely greatly underestimates the length of habitat. Using periodicity of streamflow to define the required buffer width has also been a challenge. The EA does not define what an intermittent stream is or how it can be distinguished in the field. Studies of the initiation of perennial flow associated with state forest practices have shown that perennial flow is driven by groundwater emergence and is generally associated with the head of the channel. In 75% of the more than 200 sites, the length of seasonal flow was less than 30 m of channel length (Pleus et al. 2003). Without an estimate of the extent of different channel types and the extent of fish habitat, it is impossible to assess the level of impact of the alternatives on aquatic resources and water quality. We do not support management within the recommended site potential buffer, but if the Forest proceeds with an approach based on stream typing then it is important to adopt a definition of physical habitat criteria to define fish habitat and define the distinction between intermittent and perennial streams.

**Effects of timber harvest on streamflow**

Desired conditions described for both Late Successional and Matrix management areas do not include objectives for watershed health and watershed processes related to a more natural hydrograph in regard to reduced winter peak flows and increased summer low flows. The EA does not include relevant contemporary scientific research and literature on the impact of timber harvest on streamflow.

Excerpts from Morgan and Krosby (2020) (text prepared by O. Grah 2020):

> Streamflow is a function of climate, topography, geology, soils, and vegetation cover of the watershed. Since the late 1800s, the effect of watershed vegetation cover on streamflow has

been intensively investigated (Burt et al. 2015). Studies have shown that forest harvest influences streamflow timing and magnitude. The removal of forest cover over portions of a watershed has been shown to increase annual water yield from a watershed, which may be beneficial to water supply, particularly if there is a storage reservoir to capture and hold water for release during dry periods. However, the effect of vegetation manipulation on the timing of runoff is not as well studied.

In the Pacific Northwest, streamflow is lowest between August and September, when most snow has melted, there is little rainfall, and temperatures are the highest. These summer low flow periods coincide with greatest demand for out-of-stream water uses (e.g., agriculture, industrial, commercial, residential, etc.) and instream uses (e.g., riparian maintenance, fish habitat, fish survival, etc.).

Recent research has highlighted the influence of forest harvest on late-summer streamflow. Perry and Jones (2016), Burt et al. (2015), and more recently Segura et al. (2020) found that streams flowing from watersheds covered by young (< 60 years old) regenerating stands had up to a 50% reduction in late summer flows compared to adjacent watersheds covered by mature, old growth stands dominated by Douglas-fir on the western slope of the central Cascades and Coast Range of Oregon. Furthermore, reductions in late summer streamflow caused by forest harvest were found to persist for up to 50 years without evidence of recovery to pre-harvest flows. This difference in streamflow was attributed to differences in transpiration rates of young regenerating forests compared to older mature and old growth stands. Younger regenerating trees have higher transpiration rates than mature and older stands. This interpretation is based on research completed by Moore et. al. (2004), which found that such transpiration rates can be three times greater in young regenerating stands compared to mature and old growth stands.

Applying these research findings to the Nooksack River watershed suggests that the extensive forest harvest could result in a substantial reduction in late summer streamflow. Because the cited research was conducted on the west slope of the Oregon Cascades, it is uncertain if the same influences of forest harvest on late summer streamflow in the Nooksack River watershed occur. The Tribe has recently initiated a research project to test the hypothesis that stand age and forest harvest have an influence on late summer streamflow in the Nooksack River watershed. Combining this reduction in streamflow with the observed and projected impacts of climate change could result in substantial cumulative impacts on streamflow's. Modifying forest practices in the watershed to preserve and protect old growth and mature stands and extend the harvest rotation age from the current practice of 35- 40 years to 80 years or longer could be a voluntary climate adaptation strategy that addresses the impact of declining summer and early fall streamflow.

Under sediment delivery, no direct reference to altered hydrograph due to the either proposed action alternatives and there is no scientific basis for conclusion: "There is little potential for the proposed action alternative to adversely affect the geomorphic, hydrologic, or riparian characteristics and aquatic habitats in affected watersheds. This is due to the limitations imposed on operations within Riparian Reserves, No-Cut Stream Buffers, and use of activity-specific BMP's."

Under stream temperature, the statement "As discussed above, sediment production from the project is anticipated to be within the natural variabiltiy (sic) of the North Fork Nooksack project and would not cause changes to channel geomorphology. Thus, any sediment delivery as a result of this project is not anticipated to have any effect on temperature through geomorphic influences." This assumes there would be no alteration of the hydrograph due to the proposed action, which there is no discussion addressing this issue. The project could cause reduced summer low flows, which would functionally increase temperature loading. The EA assumes that the only mechanism of temperature changes is related to sediment dynamics, which does not consider changes to the hydrograph.

The proposed actions and the EA do not consider contemporary relevant studies and literature on the use of gap cuts to facilitate snow accumulation and late season melt as a means to offset current water supply deficiencies and to offset the impacts of future climate change on the NFNR. This is a deficiency in the EA.

**Slope stability**

The EA addresses slope stability, but bases the analysis on the planning-level work in the 1970 Soil Resource Inventory (Synder and Wade 1970). While this report was intended for planning level assessment for timber harvest, it is inadequate to identify areas of potential slope instability. The EA states that the project "is generally limited to areas assessed as moderate to good natural stability and low to moderately increased mass wasting due to human activity", but the underlying data used to identify these areas is not at the appropriate scale and was not designed for shallow landslide susceptibility mapping**.** It is critical for the forest to adopt a system of landform mapping that identifies areas of potential hazard, similar to the approach taken in the state forest practices rules. Those rules use Rule-Identified Landforms based on slope characteristics (gradient, slope form) that have been shown through decades of landslide inventory work across the state to be more commonly associated with slope failures. With the projected increasing precipitation from climate change, it is possible that these landforms will be more susceptible to failure in the future (Knapp 2018, Brayfield 2013).

A raster-based model of landslide hazard (SLPSTAB) was developed in the mid-1990s that broadly captures these features and is freely available for the project area (Shaw and Johnson 1995). Using these tools, inner gorges and bedrock hollows can be readily identified as high hazard features and compared to the proposed harvest areas. With recent lidar data available for the project area, high resolution hazard screening can be done efficiently and accurately. The Washington Geologic Survey and others have developed hazard screening tools that can be used to identify hazardous landforms for environmental planning (i.e. Burns et al. 2012). These tools are widely available and represent the best available science for landslide hazard identification. While research shows that the landforms adopted by the state do not capture all of the landforms commonly associated with shallow landslides (Stewart et al. 2013), we have seen evidence that the unstable slopes rules have likely led to a decrease in shallow landslides through time (Powell et al. 2010, Veldhuisen 2018).

The EA mentions several deep-seated landslides in the Canyon Creek drainage and identifies two as known active deep-seated landslides. Deep-seated landslide mapping for the proposal area was completed in 2020 and mapped 70 deep-seated landslides just within the Canyon Creek drainage (Mickelson et al. 2020). Potential harvest units in other portions of the project area are also underlain by deep-seated landslides. These areas are likely at a higher risk of shallow slope failures, as is mentioned in the EA, but there is also the potential for reactivation of dormant landslides from forest management due to changes hydrology or driving and resisting forces (Miller 2016, Miller 2017). While the EA cites the importance of rooting strength for slope stability, this is not the case for deep-seated failures, which have shear zones well below the rooting depth. It is likely true that thinning maintains more of the live root structure and results in less groundwater recharge than a clear cut (which is also proposed under Alternative 1), the effect is likely related to density of the thinning and the soil properties. Deep-seated landslides require careful assessment by qualified experts to determine their activity level and how changes in groundwater recharge associated with timber harvest and loading and undercutting of the slope associated with road construction can affect stability.

The general conclusion of the EA that vegetation management activities “would likely cause a short-term increase in surface erosion and mass wasting” and “may cause a short-term increase in the incidence of debris dams and breach floods in Canyon Creek” is counter to Clean Water Act requirements. Sediment delivery from management is unacceptable. Salmon recovery partners and flood managers have spent more than $6.5 million mitigating the impacts of past slope instability in the Canyon Creek watershed by acquiring properties at risk from debris floods and building logjams to enhance habitat and a levee to protect remaining homes and the Mount Baker Highway. This has historically been a core area for ESA-listed chinook spawning and channel instability related to landslides and debris floods has been a key limitation to use.

**Road construction and maintenance**

The EA does not address the actual impacts of the project on the existing road system, but rather defers road improvement and maintenance to the implementation the Nooksack Access and Travel Management (ATM) Plan (USFS 2016). That plan was completed several years ago and there has been no progress implementing the prescriptions. It cannot be assumed that the Legacy Roads program will be sufficient to address the impacts of timber haul on the existing roads and the economics of thinning likely will not generate enough income to fully implement the plan. Roads that will be used as a part of this project will need to be brought up to a standard prior to harvest, including Best Management Practices such as road surfacing, road drainage, and adequate culvert sizing, all of which are critical to reducing surface erosion during timber haul (Dubé et al. 2010). Without any progress on implementing the ATM, the road improvement work needs to be tied to the alternatives and the potential impacts of haul and road development analyzed.

Surface erosion from forest roads relates to a variety of factors, including the underlying geology, road surface material, road gradient and proximity to streams. The EA relies on changes in road density as an indicator of the impacts of roads on aquatic resources. A statewide study of road maintenance found that there are likely locations with higher hydrologic connectivity or sediment input that are driving sediment delivery rather than the overall road length in the watershed (Dubé et al. 2010). That study also found that many of the roads surveyed showed a decrease in sediment inputs as they are brought up to standard as a part of the Road Maintenance and Abandonment Planning (RMAP) effort. The RMAP program has also been cited as a key reason for the reduced the number of road failures observed in the last decade (Powell et al. 2010, Veldhuisen 2018). This further supports the need to bring roads up to a similar standard as that used under the state Forest Practices Rules before using them for haul, as Region 6 committed to do (and has not done) in 2000 (USFS-WDOE 2000). The forest should further consider the expected increase in peak flow from climate change when assessing road drainage (Wilhere et al. 2016).

**Climate change**

There is no reference to watershed-specific climate change impacts, vulnerability, and/or adaptation strategies developed by the Nooksack Indian Tribe through collaboration with Natural Systems Design (Dickerson-Lange et al., 2017), WWU (Murphy 2015), UW, and CIG. The Nooksack Indian Tribe has conducted substantive DHSVM hydrology modeling to forecast the likely impact of future climate change on the hydrology of the North Fork Nooksack River, yet the EA makes no reference to that work. As such, the Forest did not take all relevant information into account in the preparation of this EA. However, good background references were cited, but not to the specific work in the North Fork Nooksack watershed. This work was brought to Forest Service's attention at the 2017 meeting. Further, Forest Service staff participated in our climate change project and the CIG-lead climate change vulnerability assessment and adaptation planning projects, yet there is no reference to this work.

**Administrative procedures**

It appears that this EA was prepared in haste and a technical edit was not accomplished given the confusing format and numerous miss-spellings and formatting errors. It also appears that due to compressed timeframe for the analysis there was a lack of consultation with state and local agencies, such as WA Depts. Of Ecology and DNR and Whatcom County. Even though the proposed action is likely exempt from regulatory programs implemented by these agencies, they still can provide important resource protection information to the EA process.

A "No Action" alternative not addressed as required by NEPA, even for EA's. Unless it is a categorial Exclusion, NEPA analyses shall "include the alternative of no action" (40 CFR 1502.14). No Action for this proposed action should consider both continue-the-activity-without-modification (continue) and discontinue-the-ongoing-activity (discontinue) versions of the no-action alternative should be analyzed. The Nooksack Indian Tribe believes the Forest did not implement effective consultation. We met with the Forest in 2017 prior to initiating scoping. We offered to provide assistance in their technical analyses by sharing data, analyses, and reports relevant to the proposed actions as well as periodic informal meetings to get status updates. We had several follow-up meetings that included a discussion of the project, but there was no attempt by the Forest to involve the tribe or to coordinate on the analysis.

In conclusion, the EA has done a poor job of analyzing the potential impact to Treaty Resources. There is no comparison to the current management scenario (a No Action Alternative), so it is difficult to assess the potential impacts of either proposed Alternative. In many places the conclusions are contradictory, such as citing a likely increase in mass wasting to channels in the Soils section and reduction in mass wasting in the Fisheries section. The EA also does a poor job of describing the uncertainty in the potential outcomes of the projects, rather glossing over potential negative impacts and relying on general statements about the benefits of the project. The EA also relies on the implementation of existing unfunded projects, like the Nooksack ATM, or future ESA consultation to mitigate many of the expected impacts of the project. It is just not clear in the EA why the agency thinks the impacts will not be significant.

In meetings between the Nooksack Natural and Cultural Resources Department and staff with the Mount Baker District, we expressed general support for the idea of more active forest management along with the need for a thorough assessment of the potential impacts to treaty resources. We asked during our annual meetings and in the Scoping phase for the Forest Service to work with us on a process that will allow meaningful tribal review of individual harvest units, but that has yet to occur. We also asked that the forest identify salmon recovery actions and specific road improvements that could be implemented as projects as a part of the plan, but those were also not included. Several projects that were presented in the Scoping phase that could have benefited treaty resources were dropped from the project. We recommended the Forest pursue Stewardship Contracting authorities as a means to retain revenue on the forest and target these priority actions, but have not heard if the forest plans to pursue that approach. This EA just does not meet our expectation and we look forward to working further with the Forest to develop a plan that meets the goals for forest management while ensuring protection of tribal Treaty rights.

Respectfully,

Michael Maudlin, Forest and Fish Specialist

Oliver Grah, Water Resources Manager

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