July 30, 2026

VIA E-MAIL ONLY TO
storedahlcomments@co.skamania.wa.us

David Waymire, SEPA Responsible Official
Joshua Neblock, Lead Land Use Planner
Skamania Cnty. Dep't of Community Development
PO Box 1009
Stevenson, WA 98648

Re: Comments on J.L. Storedahl & Sons Skamania Quarry Draft Environmental Impact Statement—Skamania County File No. SEP-21-15

Dear Mr. Waymire and Mr. Neblock:

We represent 500 Trucks, a coalition of neighbors who reside on Mabee Mines Road in unincorporated Skamania County, and who are likely to be significantly and detrimentally impacted by noise, traffic, and other significant adverse environmental impacts caused by the proposed 274-acre "Skamania Quarry" by J.L. Storedahl & Sons on Skamania County Parcel Nos. 02-06-00-0-0-400-00 and 02-06-00-0-0-4100-00. On behalf of 500 Trucks and its members—including Cyndi Soliz, Richard Mahar, Christopher Brong, and Steve Klett—please accept the following comments on the Draft Environmental Impact Statement ("DEIS") issued for the proposed Skamania Quarry on April 1, 2026.

This comment letter is accompanied by two expert reports—one from The Greenbusch Group and one by V-Naught Traffic Solutions—addressing noise, transportation, and related public safety impacts. Those reports are attached to this letter as Attachments A and B, respectively. As discussed below and in the accompanying reports, the DEIS for the proposed Skamania Quarry fails to take a hard look at the proposal's adverse environmental impacts. Notwithstanding that failure, the proposal is likely to result in significant adverse noise and traffic safety impacts that are not consistent with the County's adopted Comprehensive Plan and West End Community Comprehensive Subarea Plan. Accordingly, the County should deny the proposal under its SEPA substantive authority as authorized by RCW 43.21C.060, WAC 197-11-660, and Section 16.04.020 of the Skamania County Code ("SCC").

A. The DEIS fails to take a hard look at the Skamania Quarry's adverse environmental impacts. Notwithstanding that failure, the quarry's impacts are likely to be significant and greatly detrimental to the surrounding community.

As the County is aware, SEPA is an environmental full-disclosure law. *Norway Hill Pres. & Prot. Ass'n v. King County Council,* 87 Wn.2d 267, 272, 552 P.2d 674 (1976). It requires state and local agencies to assess potential impacts of their decisions, and if those impacts are likely to be "significant," to undertake a thorough environmental study known as an Environmental Impact

Statement, or "EIS." *See* RCW 43.21C.030; WAC 197-11-400 to -440. Here, through the issuance of a Determination of Significance on December 8, 2021, the County has already determined that the proposed Skamania County is likely to result in significant adverse impacts to the surrounding environment. Thus, under SEPA, the County is now responsible for producing an EIS that takes a "hard look" at the proposal's adverse impacts.

To meet that standard, the DEIS "must indicate that the [County] has taken a searching, realistic look at the potential hazards and, with reasoned thought and analysis, candidly and methodically addressed those concerns." *Conservation Nw.*, *supra,* 2016 WL 3453666 at *31 (quoting *Found. on Econ. Trends v. Weinberger*, 610 F. Supp. at 841). The DEIS must be "'rational and well-documented.'" *Columbia Riverkeeper v. Port of Vancouver*. 188 Wn.2d 80, 92 (2017) (quoting 24 Wash. Practice: Environmental Law and Practice § 17.1, at 192). It must be "'fully informed and well-considered.'" *Ctr. for Sustainable Economy, Legacy Forest Def. Coal. v. Dep't of Nat. Resources*, 36. Wn. App. 722, 741 (2026) (quoting *Wild Fish Conservancy v. Wash. Dep't of Fish & Wildlife*, 198 Wn.2d 846, 872 (2022)). The DEIS must reflect a "'thoughtful decision-making process'" that "'conscientiously and systematically consider[s] environmental values and consequences." *Wild Fish Conservancy*, 198 Wn.2d at 873 (quoting *ASARCO*, 92 Wn.2d at 700 and Richard L. Settle, The Washington State Environmental Policy Act: A Legal and Policy Analysis § 3.01[2] at 3–4 (2021)).

The DEIS does not meet this standard. It has not taken the requisite "hard look" at the Skamania Quarry's adverse environmental impacts. Yet, it is equally clear that the quarry's adverse impacts are likely to be significant and will be greatly detrimental to the surrounding environment and West End Community.

1. The DEIS fails to take a hard look at adverse noise and sound impacts, which are likely to be significant and greatly detrimental to the surrounding community.

The attached report by The Greenbusch Group—Attachment A to this letter—assesses the adequacy of the DEIS in its assessment of noise impacts. The Greenbush Report identifies many deficiencies in the DEIS such that it clearly fails to take the requisite "hard look" at such impacts. The Greenbusch Report also indicates that the quarry's noise impacts are likely to be significant and highly impactful to the surrounding West End Community.

For example, the DEIS concludes that significant noise impacts are avoidable through mitigation, relying on a supplemental Noise Report for its findings. DEIS at 3.3-31. But that conclusion is not tenable given that the Noise Report does not comprehensively evaluate the full scope of proposed operations. As Greenbusch notes, many of the ancillary activities associated with mine operations were not included in the noise model, noise impacts from off-site construction were not included, and nighttime sound levels were only evaluated at two locations. *See* Att. A at 4. With such an incomplete assessment of potential noise impacts, the DEIS's conclusion that all noise impacts can be mitigated to the level of non-significance is not credible and does not meet the "hard look" requirement under SEPA.

Next, the DEIS only analyzed hourly average (*i.e.,* "L_{eq}") sound levels when assessing compliance with the Department of Ecology's environmental noise limits at Chapter 173-60 of the Washington Administrative Code, thereby entirely failing to evaluate the time-based exceedance limits codified at WAC 173-60-040(2)(c), and which are typically measured with L_{08}, L_{02}, and L_{max} statistical metrics. Att. A at 3, 6. A sound evaluation using the L_{max} metric, for example, would have revealed that approximately ten properties outside the proposed mine perimeter are likely to experience daytime exceedances of the absolute maximum noise limits set by the Department of Ecology, and 14 properties are likely to experience nighttime exceedances. *Id.* at 8. Because these metrics were not modeled in the DEIS Noise Report, compliance with WAC noise limits—which are calculated specifically to avoid noise levels that are detrimental to "health, safety and welfare of the people"[1]—cannot be adequately assessed. *Id.* at 6. In this way, too, the DEIS fails to take the requisite "hard look" at noise impacts.

The Greenbusch Report also explains that the overall sound level increases identified in the DEIS Noise Report were projected based on the *loudest* measured sound levels as they exist today, artificially minimizing the reported increase by masking greater exceedances from more representative ambient conditions. *Id.* at 8. A more accurate assessment of projected noise increases would reveal that the overall existing daytime sound level under Alternative 1 could increase by up to 34 decibels ("dBA"). *Id.* at 10. Without mitigation, sound levels could increase by up to 24 decibels during the day and 31 decibels during nighttime hours under Alternative 2. With the inclusion of a mitigation noise berm, sound levels are still likely to increase by 20 decibels during the daytime and 22 decibels at night. *Id.* Perhaps most importantly, even after accounting for proposed mitigation measures, both alternatives are likely to result in significant exceedances of the Department of Ecology's environmental health noise limits at WAC 173-60-040. *Id*. at 11.

The Greenbusch Report also calculated haul truck pass-by noise using its own model and predicts that, under DEIS Alternative 1, "sound levels from haul trucks [would] exceed the daytime and nighttime WAC sound limits at all evaluation locations." *Id.* at 11 (Table 6). And under Alternative 2, even with the proposed "mitigation berm," noise from haul trucks would exceed WAC limits at multiple locations. Att. A at 11 (Table 7). It also appears that the Noise Report systematically underestimates the level of noise generated by components of the proposed Skamania County—by as much as two decibels for loaders, 11 decibels for rock drills, and six decibels for dump trucks. *Id*. at 4–5.

Not only are haul truck sound levels likely to exceed WAC standards based on public health, safety, and welfare, but such frequent, repetitive noise caused by hundreds of new truck trips per day would likely constitute a "public disturbance noise" under the Skamania County Code.

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[1] *See* RCW 70A.20.010 (formerly codified at RCW 70.107.010 as part of Washington's Noise Control Act of 1974 and referenced at WAC 173-60-010) (providing that the Department of Ecology's noise limits established pursuant to that statute, and now codified at Chapter 173-60 WAC, are intended to protect the "health, safety and welfare of the people, the value of property, and the quality of the environment").

In part, a public disturbance noise is defined by the Skamania County Code to include any "frequent, repetitive or continuous sounds in connection with the . . . operation . . . of any motor vehicle . . . so as to unreasonably disturb or interfere with the peace, comfort and repose of owners or possessors of neighboring real property." SCC 8.22.050(C). This definition would clearly include noise from quarry-related haul trucks operating on the surrounding road network. And the DEIS itself acknowledges that truck noise and traffic may be so great that surrounding residents may be forced to leave the area permanently, and that surrounding residential areas may cease to exist. *See* DEIS at 3.4-20 (acknowledging that "the proposed project could exert pressure for land uses in the site vicinity and along the haul route to convert to uses less sensitive to the noise and traffic from mining and truck traffic (e.g., *over the long-term, residential and recreational land uses could change to uses such as pastureland if residents are not able to tolerate the increased activity levels associated with the project*)") (emphasis added).

Although SCC 8.22.070 exempts non-residential motor vehicle sounds from many provisions of the County's noise ordinance (for example, from civil and criminal prosecution under SCC 8.22.090), importantly, motor vehicles are *not* exempted from the definition of "public disturbance noise" at SCC 8.22.050. *See* SCC 8.22.070 ("The following vehicles and situations shall be exempt from the provisions of this chapter, *except Section 8.22.050*"); *see also* Att. A at 2 (discussing the County's limited exemption at SCC 8.22.070). Here, because the proposal would result in hundreds of new truck trips per day—approximately 250 new round trips per day, or one trip every 70 seconds—the continuous sound of engines, braking, and associated noises will undoubtedly interfere with the peace, comfort, and repose of surrounding residential areas, thus constituting a prohibited "public disturbance noise" under the plain language of the Skamania County Code. This, in turn, is clearly a significant adverse impact under SEPA. *See, e.g.,* WAC 197-11-330(3)(e)(iii) (explaining that a proposal may, to significant degree, "[c]onflict with local, state, or federal laws or requirements for the protection of the environment"). That quarry operations will result in "public disturbance noises" is further evidenced by that fact that, under all build alternatives, the project is likely to exceed the Department of Ecology's environmental noise limits at WAC chapter 173-60. *See* Att. A at 11 (Table 6).

Finally, the only required mitigation measure listed in the DEIS is a noise berm that will purportedly reduce sound levels to the WAC limits. For Alternative 1, the DEIS states that "the mitigation measures, to the extent feasible, would take the form of constructing noise berms along Kellett Road, on properties outside the lease boundaries." DEIS at 3.3-16. But there is no discussion on the feasibility of constructing the berm, the anticipated noise reduction, or any demonstration that mitigated sound levels will actually comply with Ecology's noise limits. Nor does the berm proposed under Alternative 2 demonstrate that significant adverse noise impacts will be reduced to a non-significant level. When Greenbush modeled the berm, it specifically found that it will *not* succeed in bringing the project into compliance with applicable WAC limits. Att. A at 11 (Table 6).

In the end, the DEIS does not take the requisite "hard look" at future noise impacts. Notwithstanding that failure, the proposed Skamania Quarry is, in fact, likely to result in

significant adverse noise impacts. Even with the DEIS's proposed mitigation measures, the quarry is likely to exceed environmental noise limits established by the Department of Ecology specifically to protect public health, safety, and welfare. And it is likely to result in public disturbance noises under the plain language of the Skamania County Code, thereby failing to "minimize" the surrounding community's exposure to "the physiological and psychological dangers of excessive noise," as the code requires. SCC 8.22.020.

2. The DEIS fails to take a hard look at adverse traffic and transportation-safety impacts, which are likely to be significant and greatly detrimental to the surrounding community.

The attached report by V-Naught Traffic Solutions—Attachment B to this letter—assesses the adequacy of the DEIS as it relates to traffic, transportation, and public safety impacts associated with the proposed haul route. Like the Greenbusch Report, the V-Naught Report identifies many deficiencies in the DEIS such that it clearly fails to take the requisite "hard look" at traffic and transportation impacts. The V-Naught Report also concludes that the quarry is likely to result in significant adverse transportation-related impacts that will be highly detrimental and dangerous for the surrounding community.

The Transportation Impact Study ("TIS") relied upon in the DEIS reveals that the proposed Skamania Quarry would create significant adverse impacts that are not adequately mitigable. First, the project will result in a truly massive increase in heavy truck traffic on the surrounding road network. These trucks, some of which will also have trailers, are expected to measure up to 75 feet in length and weight approximately 80,000 pounds when full. Att. B at 2. An estimated addition of 500 heavy truck trips per day (250 round trips) would result in approximately one new truck trip every 70 seconds during operating hours. Peak-hour truck traffic would increase from approximately 2 to 7 trucks per hour to 50 to 60 trucks per hour—7 to 20 times the amount of existing traffic. *Id.* at 3. This would fundamentally alter roadway user expectations and create additional delay and safety impacts. *Id*.

To access the project site, all haul trucks and other vehicles associated with the operation will travel to the proposed quarry via SR-14, a narrow, winding, two-lane state highway that runs parallel to the Columbia River. Trucks will turn onto Salmon Falls Road, which is a smaller, narrow and winding road that very quickly steepens up a hill towards the project site. Within a couple yards of the SR-14 and Salmon Falls Road intersection is a pedestrian crossing for the Cape Horn Trail, a popular destination for pedestrians and bicyclists.

As the V-Naught Report explains, the TIS's assumptions regarding roadway grades and stopping sight distance fail to acknowledge the potential significant adverse safety impacts posed by a heavy truck traveling from the quarry site to SR-14 with failed brakes. *Id.* at 3–4. Heavy trucks descending approximately 1,760 feet in elevation from the project site to the SR-14 intersection would experience substantial brake demands and the TIS fails to account for brake wear, overheating, adverse weather, and vehicle maintenance issues. *Id.* at 4, 7. Moreover, the grades approaching the Cape Horn Trail crossing near the quarry site are closer to 9.6% to 10.4%, not 6%

as erroneously reported in the TIS, thereby dramatically decreasing a heavily-laden haul truck's ability to stop in time to avoid pedestrian conflicts and greatly increasing the potential for faulty braking. This poses a substantial risk to other motor vehicles and pedestrians at the Cape Horn trail crossing. *Id.* at 3. Due to the curvature of the road, there also is not sufficient stopping site distance for even a properly operating haul truck to stop in time when descending the hill to avoid pedestrians in the crossing, especially in inclement weather. *Id*. at 7. This is an incredibly dangerous situation and, even if the probability of any one pedestrian or road user being injured is low, given the magnitude of potential harm, this risk is clearly a "significant" adverse impact under SEPA. *See* WAC 197-11-794 (explaining that when determining significance, "[t]he severity of an impact should be weighed along with the likelihood of its occurrence. An impact may be significant if its chance of occurrence is not great, but the resulting environmental impact would be severe if it occurred").

The increase in heavy traffic along the narrow and winding truck haul route poses significant and adverse impacts to the safety of other users along that route, especially because it is one of the only routes available for walking and bicycling along that corridor. *Id.* at 4. The corridor is already rated "4" on the Level of Traffic Stress ("LTS") standard used by the Washington Department of Transportation ("WSDOT"), the highest stress category possible on that scale, and additional truck traffic would only increase risk to pedestrians and bicyclists. Because there is no alternative route, such an impact cannot be meaningfully mitigated and is significant. *Id.*

In particular, the safety risks at the Salmon Falls Road/SR-14 intersection are significantly understated in the TIS. Sight distance at that intersection is not adequate for haul trucks to avoid causing unsafe conditions for drivers. *Id.* at 6 (noting that the sight distance for a turning truck from Salmon Falls Road onto SR-14 westbound is 800 feet, and during the 46 seconds it takes for a single truck to turn and increase its speed to 40 mph, a westbound driver traveling the 50-mph speed limit could travel approximately 3,400 feet). There is also a high probability that the southbound queue of traffic on Salmon Falls Road approaching SR-14 could spill into the pedestrian crossing, reducing visibility between drivers and pedestrians and creating additional safety hazards. *Id.* at 8.

In the end, 500 new heavy truck trips per day, especially in light of deficiencies of the existing road network, will undoubtedly result in significant adverse safety impacts for pedestrians, bicyclists, and motorists alike. *Id.* at 5. The only mitigation measure proposed by the TIS is to provide flashing pedestrian beacons at the Cape Horn Trail crosswalk. *Id.* at 8. But that is inadequate because the underlying safety analysis is flawed, pedestrian beacons will not actually physically stop trucks that are barreling down the road (potentially after losing their brakes), and the massively increased truck traffic would still create significant safety risks at the Cape Horn Trail crossing. As traffic engineer Mark Haines from V-Naught Traffic Solutions concludes, "[b]ased on the information presented within the Transportation Impact Study, . . . the proposed quarry development creates several significant adverse impacts to the local roadway system and its users that *cannot realistically be mitigated to nonsignificant levels*." *Id*. at 9 (emphasis added).

B. The County should exercise its SEPA substantive authority to deny the proposed Skamania Quary. The proposed quarry would clearly undermine public health, safety, and welfare, and would conflict with the County's West End Community Comprehensive Subarea Plan.

In light of the significant adverse noise and transportation impacts discussed above, we would urge the County to deny the proposed Skamania Quarry project using its "SEPA substantive authority" as expressly authorized by RCW 43.21C.060, WAC 197-11-660, and SCC 16.04.020.

Like its federal counterpart the National Environmental Policy Act, SEPA is a procedural statute, requiring detailed analysis, evaluation, and disclosure of adverse environmental impacts. But SEPA is also substantive and provides Skamania County with direct authority to impose mitigation conditions or even deny a proposal entirely due to its adverse environmental impacts. This authority is granted by SEPA itself, at RCW 43.21C.060, and by the state SEPA code adopted and administered by the Washington Department of Ecology at WAC 197-11-060. This "substantive" authority to condition or deny a project directly under SEPA is "supplementary" to the County's other statutory and regulatory authorities, meaning the County has independent legal authority to do so under SEPA alone. *See* RCW 43.21C.060 (providing that the authority to condition or deny a project under SEPA is "supplementary to those set forth in existing authorizations of all branches of government of this state, including state agencies, municipal and public corporations, and counties").

To invoke its SEPA substantive authority, the state SEPA code imposes three basic requirements. First, to impose mitigation conditions, the project under review must be determined to result in so-called "adverse" environmental impacts—meaning the impacts must be detrimental to the environment, though no particular quantum of environmental impact is required. *See* WAC 197-11-660(1)(b). Second, to deny a project under SEPA, adverse impacts must be "significant"—*i.e.,* "more than moderate"[2]—and those impacts must not be capable of being reduced to non-significant levels through the imposition of reasonable mitigation measures. *Id*. at (1)(f)(i–ii). Third, any condition or denial under SEPA must be "based on policies, plans, rules, or regulations formally designated" by Skamania County "as a basis forth exercise of substantive SEPA authority." *Id*. at (1)(a).

Pursuant to RCW 43.21C.060 and WAC 197-11-660, Skamania County has adopted SEPA substantive policies at Section 16.04.020 of the Skamania County Code, and those policies give the County wide latitude to impose mitigation conditions—or even deny a project—based on a wide array of impacts. For example, Skamania County may impose mitigation conditions or deny a project when its impacts would undermine the County's duty to act "as trustee of the environment for succeeding generations," or undermine the County's goal to "[a]ssure for all people of Skamania County safe, healthful, productive, and aesthetically and culturally pleasing surroundings." SCC 16.04.020.D.1.a–b. A project may be conditioned or denied when it would

[2] *See* WAC 197-11-794 (defining "significant" to mean "a reasonable likelihood of more than a moderate adverse impact on environmental quality").

lead to environmental "degradation, risk to health or safety, or other undesirable and unintended consequences." SCC 16.04.020.D.1.c. A project may be conditioned or denied when it would interfere with "high standards of living and a wide sharing of life's amenities." SCC 16.04.020.D.1.f. A project may be conditioned or denied if it would undermine "diversity and variety of individual choice." SCC 16.04.020.D.1.e. Finally, under the Skamania County Code, a project may be conditioned or denied when it would undermine "the policies in the Skamania County comprehensive plan" including "adopted subarea plans." SCC 16.04.020.D.3. Skamania County adopted these SEPA substantive policies with the express recognition that "each person has a fundamental and inalienable right to a healthful environment" and that each person, in turn, "has a responsibility to contribute to the preservation and enhancement of the environment." SCC 16.04.020.D.2.

Here, the DEIS itself—and the accompanying reports from The Greenbusch Group and V-Naught Traffic Solutions—indicate that the proposed Skamania Quarry is likely to result in significant adverse impacts that cannot reasonably be mitigated relating to noise, traffic, and public safety. Collectively, the impacts discussed above—and more extensively in the attached reports from The Greenbusch Group and V-Naught Traffic Solutions—clearly implicate the County's general SEPA substantive authority policies. The noise and traffic safety impacts discussed in those reports clearly *would* undermine the County's goal to "[a]ssure for all people of Skamania County safe, healthful, productive, and aesthetically and culturally pleasing surroundings." They clearly *would* result in a "degradation" of the environment and a "risk to health or safety, or other undesirable and unintended consequences." They *would* substantially reduce the surrounding community's "high standards of living." And they would, in fact, undermine the "inalienable right" of each person who lives or recreates in the affected area "to a healthful environment." The County therefore has—and should exercise in this case—the right to deny the proposed Skamania Quarry under SEPA.

In turn, not only do the anticipated impacts conflict with the County's general SEPA substantive policies, they would also conflict directly with the County's vision for the surrounding community as articulated in the County's West End Community Comprehensive Subarea Plan ("WECCSP"), which is itself a part of the broader Comprehensive Plan.

The County's West End Subarea Plan was adopted by the Board of County Commissioners in February of 2007 to guide land use decisions in a manner that reflects the values and long-term vision of the West End residential community. As the plan explains, its purpose is "to promote conservancy by ensuring abundant natural spaces, preserving peace and quiet, protecting and maintaining air and water quality, and sustaining native flora and fauna." WECCSP at 5. The subarea plan lays out a comprehensive vision for the West End. It's primary land use goal—titled "General Goal 1. Primary Land Use"—provides the "basis" for the plan, which the plan itself reports has been "accepted by the West End Community *and Skamania County*." *Id*. (emphasis added). The Plan's central General Goal 1 provides:

> *Land developments within the West End Community shall be of a nature that promotes and enhances the rural and natural character of the community*. This goal is premised upon the idea that certain qualities or values, which are viewed as "rural" by members of the West End community, should be preserved and enhanced. Those values include privacy; mixed residential, agricultural and forestry land uses; ***peace and quiet; lack of heavy traffic***; clean air; clean water; wildlife and fish habitat; open spaces; recreational opportunities; and the least amount of governmental regulation consistent with preserving those and other values protected in the community subarea plan.

WECCSP at 5 (first emphasis in original; second emphasis added). This text could not be clearer that the Community's overarching goal for the West End Community—shared by the County itself—is that land developments should be of a nature that both promotes "and enhances" the existing rural and natural character of the area, including the preservation of "peace and quiet," and the avoidance of "heavy traffic."

This goal is not cited or discussed in the DEIS, in violation of WAC 197-11-444(2)(b)(i), which requires a detailed assessment of each proposal's "[r]elationship to existing land use plans." Nevertheless, it is difficult to imagine a project more diametrically opposed to its accomplishment than the proposed Skamania Quarry, which, as discussed above, is likely not only to result in significant adverse noise and traffic impacts, but impacts that would (a) exceed applicable noise limits set by the Washington Department of Ecology for public health, safety, and welfare; (b) violate the County's own public disturbance noise ordinance intended to protect the public from the physiological and psychological dangers of excessive noise; and (c) public safety risks endangering pedestrians, bicyclists, and motorists on the surrounding road network. None of these impacts are consistent with the vision for the West End Community as articulated in the County's adopted subarea plan. Even the DEIS acknowledges that surrounding residents may ultimately have to leave the area because these impacts are intolerable. Under SCC 16.04.020.D.3, this is yet another reason why the proposed Skamania Quarry should be denied using the County's SEPA substantive authority. Indeed, failure to do so would be an abuse of discretion given the clear dangers posed by this project and their conflicts with the plan.

D. The DEIS fails to analyze whether the project will meet the requirements for conditional use under SCC 21.16.080.

In making a threshold determination, the SEPA responsible official is required to consider whether a proposal will "[c]onflict with local, state, or federal laws or requirements for the protection of the environment." WAC 197-11-330(3)(e)(iii). Conditional use permits are issued for the protection of the environment, reviewed and approved by a local hearing examiner to determine whether the proposed use is compatible with permitted or existing uses in a specific area. *See* SCC 21.16.080; *see also* RCW 36.70.020(7) (explaining that a conditional use is one that can only be approved after "imposing such performance standards as will make the use compatible with other permitted uses in the same vicinity and zone"). As such, the SEPA responsible official should, in the DEIS, analyze whether the proposed Skamania Quarry—inclusive of all of its various elements

and impacts—is consistent with the requirements for a conditional use permit under SCC 21.16.080.

Here, the DEIS purports to contain an analysis of the project's compliance with Skamania County's conditional use permit criteria, but many of those criteria require an actual comparative analysis—both quantitative and qualitative—between the proposal and other permitted uses in the area specifically to determine if the quarry project will have greater or lesser impacts than those other permitted uses. *See* SCC 21.16.080.A.1.a–c. This is nowhere stated in the DEIS' evaluation. No such comparative analysis is provided. The DEIS should explicitly include such an analysis that discloses the facts and bases behind its conclusions.

Finally, the last conditional use permit requirement is that the proposal "[n]ot be in conflict with the goals and policies expressed in the current version of the county's comprehensive plan." SCC 21.16.080.f. As discussed above, the proposal clearly is not consistent because it directly conflicts with the first, overarching land use goal of the West End Community Comprehensive Subarea Plan, including the Community's (and the County's) stated goal to preserve "peace and quiet" and to avoid "heavy traffic."

E. Conclusion

For the reasons above, the DEIS is deficient and does not meet the procedural requirements of SEPA. Nevertheless, the proposed Skamania Quarry is likely to result in significant adverse impacts that are likely to be highly impactful and dangerous to the West End Community, and which are in clear conflict with the County's West End Community Comprehensive Subarea Plan. As such, the proposal should be denied.

Respectfully submitted,

TELEGIN LAW PLLC

Bryan Telegin, WSBA No. 46686
Abigail McCeney, WSBA No. 63974
Counsel for 500 Trucks

ATTACHMENTS

A. Greenbusch Group Report (July 29, 2026) & Resumes of Justin Morgan, INCE, and Adam C. Jenkins, PE, INCE Bd. Cert., CTS-D

B. V-Naught Traffic Solutions Report (July 30, 2026) & Resume of Mark Haines, PE, PTOE

cc: Client

Brian Nichols, District 1 Commissioner
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Robert Farris, District 2 Commissioner
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ATTACHMENT A

The Greenbusch Group, Inc.

THE GREENBUSCH GROUP, INC.

Memorandum

DATE: *July 29, 2026*

TO: *Cyndi Soliz*

FROM: *Justin Morgan, INCE*
Adam C. Jenkins, PE, INCE Bd. Cert., CTS-D

RE: *Skamania Quarry **Draft** Environmental Impact Statement – Noise Critique*

INTRODUCTION

The intent of this document is to summarize findings from a review of the Noise Report prepared by Coffman Engineers dated November 2023 (DEIS Noise Report) that was included in Appendix E of the Skamania Quarry Draft Environment Impact Statement (DEIS).

SUMMARY OF FINDINGS

The findings of our review of the DEIS Noise Report are summarized below and are organized by section numbers of the DEIS Noise Report.

2. Project Site and Surrounding Land Uses

1. Although the DEIS Noise Report identifies the closest residential use properties and mentions that other properties to the north, east, and west are unoccupied forest land, sound limits are applicable at these properties and are not included in the analysis. Sound limits apply at all property boundaries with different owners than the quarry parcels.

2. Figure 2-1 does not identify analysis locations as stated in the first paragraph of the section.

3. Sound Level Descriptors and Criteria

3.1 Sound Level Descriptors

1. States that L_{max} is seldom used to assess noise impact, except in cases where brief high-level sound is causing an impact such as sleep disturbance. As will be discussed in our comments on Section 3.2, L_{max} should have been included in the analysis.

3.2 Skamania County Noise Regulations

1. Skamania County Code (SCC) section. Section 8.22 is incorrectly referenced, it is titled “Public Noise Regulations”, not “Noise Regulations.”

2. SCC 8.22.050 identifies noises that constitute an unlawful public disturbance. Under SCC 8.22.050.C, “the creation of frequent, repetitive or continuous sounds in connection with the starting, operation, repair, rebuilding or testing of any motor vehicle, motorcycle, off-highway vehicle, or internal combustion engine,

within a residential area, so as to unreasonably disturb or interfere with the peace, comfort and repose of owners or possessors of neighboring real property; provided, that this subsection shall not apply to the operation of lawn mowers, garden tools, chain saws, other power equipment used for building repair or ground maintenance, and approved forest product harvesting/processing between the hours of seven a.m. and 10 p.m." shall be considered a public disturbance.

SCC 8.22.070 lists exemptions from the provisions of SCC 8.22. However, SCC 8.22.070 specifically states that these exemptions do not apply to Section 8.22.050. Therefore, although SCC 8.22.070.F exempts "sounds created by motor vehicles regulated by Chapter 173-62 WAC" these sounds may still constitute a public disturbance under SCC 8.22.050.

3. An oversimplified discussion of the relation between the SCC and the Washington Administrative Code (WAC) is used. Although we take no exception with the use of WAC sound limits for analysis purposes.

4. Table 3-1 in the DEIS Noise Report correctly shows sound limits for sound sources in Class C properties received at Class A properties. However, sound limits also apply at other nearby properties, not just at Class A properties. Based on information discussed in Section 2 Project Site and Surrounding Land Uses in the DEIS Noise Report, there are other nearby properties that are identified as unoccupied forest land. Even if these properties are unoccupied, sound limits still apply, WAC does not exempt unoccupied land and in fact requires consideration of potential future uses when assigning EDNA classifications.

5. Table 3-1 states that limits in the table are for "continuous" sound sources. "Continuous" is not included in the language found in the WAC.

6. The DEIS Noise Report correctly lists the short-term exceedances permitted by the WAC as listed below.

   a) 5 dBA for 15 minutes

   b) 10 dBA for 5 minutes

   c) 15 dBA for 1.5 minutes

The DEIS Noise Report incorrectly states that these short-term exceedances represent an hourly limit for L_{max} that cannot be exceeded for more than 1.5 minutes per hour. The L_{max} limit identified as 75 dBA in the DEIS Noise Report can never be exceeded.

Although not defined in the WAC, it is common industry practice to convert these allowable exceedances into percentile sound levels (L_n). These L_n sound levels represent sound levels that are exceeded n% of the time. Standard industry practice is to represent the baseline code limits identified in the WAC as L_{25}. The resulting sound limits for the project at Class A properties are shown below.

Table 1. WAC Sound Limits, dBA

Descriptor	Maximum Duration	Resulting Daytime Sound Limit at Class A Properties
L_{25} (baseline code limit)	-	60
L_{08} (code +5 dB)	15 minutes	65
L_{02} (code +10 dB)	5 minutes	70
L_{max} (code +15 dB)	1.5 minutes	75

Predicted sound levels reported in the DEIS Noise Report are hourly L_{eq} sound levels which represent the average sound level over an hour. This differs from the hourly L_{25} which represents the sound level that is exceeded 25% of an hour, consistent with WAC requirements.

As discussed in later sections, the analysis performed for the DEIS was not conducted in a manner to allow predicted sound levels to be compared to the sound limits regulated under the WAC.

3.3 Federal Highway Administration (FHWA) and Washington State Department of Transportation (WSDOT) Criteria

1. DEIS Noise Report states that the WSDOT criteria are applied to residential receivers at locations at the same setback as the residences. This is incorrect, WSDOT criteria included in the 2020 Traffic Noise Policy and Procedures document issued in March 2020 (WSDOT Noise Policy), which was in effect when the DEIS Noise Report was prepared, are applied to areas of "frequent human outdoor use," which can include areas closer than the setback of residences.

2. We agree that the project is not bound to all steps required for a WSDOT traffic noise analysis. Under the WSDOT Noise Policy, only projects that require approval from the Federal Highway Administration are required to complete a noise analysis in accordance with the procedures found in the WSDOT Noise Policy. However, the DEIS Noise Report elected not to validate the results of the traffic noise model, which casts any results provided for traffic noise into doubt because the accuracy of the model has not been established. Furthermore, sound level measurements made at locations MC, MD, ME, and MF were performed to quantify sound levels from existing traffic conditions. These measurements would typically be performed for a WSDOT noise analysis to verify the accuracy of the noise model and existing typical traffic conditions predicted using that calibrated model using representative traffic flow, which was not done for this project.

4. Existing Sound Levels

4.2 Sound Measurements

1. Sound levels were measured at Location MA for 24 hours. The duration of this measurement may not be sufficient to capture variations in sound levels that occur across multiple days.

2. Data was collected for 15 minutes at Locations MC, MD, ME, and MF. These levels are later used in a comparison with predicted sound levels. The duration of these measurements was insufficient to capture variations in sound levels and should not be compared with predicted sound levels.

3. As discussed in previous sections, WAC sound limits are usually interpreted as L_{25}, L_{08}, L_{02}, and L_{max} metrics. The only measured levels applicable to the project sound limits that are included in the DEIS Noise Report are for L_{max}. L_{eq} can often be used as a substitute for L_{25}, however this was not discussed in the report.

4. The overall sound levels reported in Table 4-2 are calculated using energy averages, which is inappropriate to use when reporting overall hourly L_{eq} sound levels. Hours with elevated levels skew the overall hourly sound level if the energy average is used. A more appropriate representation of an overall hourly sound level would be to use the median of measured hourly sound levels.

5. The DEIS Noise Report correctly states that the measured L_{eq} sound levels shown in Table 4-3 are below the FHWA Noise Abatement Criterion of 67 dBA. However, the WSDOT Noise Policy interprets "approaching" to mean sound levels of 66 dBA or greater constitute a noise impact.

6. Sound levels reported at Location MF included trailers traveling to a motocross race taking place in Washougal. The constitutes an abnormal traffic mix and may result in elevated sound levels being reported in Table 4-3.

7. Location MB included noise from construction. This may have increased measured sound levels and elevated sound levels reported in Table 4-3.

5. Proposed Operations and Sound Emissions

5.1 Proposed Operations

1. This section states that the description of operations was based on mining plans and cross sections prepared by NV|5 in February 2023, and truck traffic information was based on the Skamania Quarry Transportation Impact Study prepared by DKS in August 2023. Given that these were prepared 3 years ago, this information could be out of date.

2. DEIS Noise Report notes that ancillary activities to the operation of the mine would include stockpiling and equipment maintenance. However, these activities are not included in the noise model (see notes on Section 6.4).

3. Proposed hours of operation are listed as 7 a.m. to 4:30 p.m. with nighttime operations occurring during times of high demand or during emergencies. Nighttime sound levels were only measured at two locations (MA and MB), which provides a limited data set to compare to predicted nighttime sound levels. It is unclear what would constitute and "emergency" or "high demand" conditions. If any nighttime operations would be allowed, they must be analyzed.

5.2 Project Construction

1. Section 5.2 of the DEIS Noise Report identifies three primary construction activities that would occur including logging and clearing, topsoil removal and stockpiling, construction of off-site road improvements and new on-site infrastructure, including a small office, scale shack, and scales.

Although many of these activities are exempt under the SCC 8.22.070.D, this exemption only applies to building or maintaining public roadways, or construction of on-site structures between 7 a.m. and 10 p.m. Improvements to the private road are not noted in the DEIS Noise Report, however, given that off-site road improvements are identified in the report, it seems likely that these improvements would also be needed. Construction on private roadways is not exempt from the SCC and was not included in the DEIS Noise Report.

5.3 Equipment Sound Emissions

1. Sound levels listed in Table 5-1 of the DEIS Noise Report are based on the "Coffman Engineers, Inc. (Coffman) acoustical database", sources of these sound levels are not provided and are lower than those listed in the Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual issued in September 2018 (FTA Manual), which provides reference sound levels for common construction equipment. Typical industry practice when project-specific sound level data are not available is to use reference sound levels from an established dataset, such as those used by the FTA or Federal Highway Administration, before referencing previous, non-project specific measurements. Furthermore, the sound data in Table 5-1 does not identify where or how the data was obtained. In the case of dump trucks, the DEIS Noise Report does not list the make or model of the dump truck, its operating conditions, or information about the surface the vehicle was traveling on. Therefore, it cannot be established whether the sound data for the equipment used in the DEIS Noise Report is comparable with the equipment that would be used by the Skamania Quarry.

A comparison of sound levels shown in Table 5-1 of the DEIS Noise Report and sound levels provided in the FTA Manual is provided below.

Table 2. Comparison of Construction Equipment Sound Levels, dBA

Equipment	DEIS Noise Report	FTA Manual	Difference in Sound Levels
Loader	78	80	+2
Dump Truck	78	84[2]	+6
Screen	83	No listed	-
Crusher	82 or 84[1]	No listed	-
Rock Drill	84	95	+11

1. Table 5-1 in the DEIS Noise Report includes two crushers with different sound levels but does not identify which was used in the analysis.
2. Based on "Truck" shown in the FTA Manual Table 7-1.

As shown in the table above, sound levels listed in the FTA Manual are up to 11 dB louder than those used in the noise analysis.

Of particular concern are the sound levels used for the dump trucks, which are 6 dB quieter than those shown in the FTA Manual. This is noteworthy because haul trucks are the primary noise concern for the project and predicted sound levels listed in Section 8.1 of the DEIS Noise Report are close to, or at WAC sound limits.

6. Calculated Sound Levels from On-Site Activities

6.1 Methodology for Sound Modeling

1. The following issues were identified in Table 6-1

a) Heights and locations of equipment included in the noise model are not provided. This made it impossible to evaluate whether this equipment was modeled correctly, or to evaluate whether the equipment is positioned at representative locations.

b) Based on the sound levels shown in Table 5-1 of the DEIS Noise Report, the noise model does not account for different sound levels between unloaded and loaded trucks, or whether these trucks are traveling uphill or braking downhill.

c) It is unclear if the model assumes the private roadway will be paved, smooth, free of potholes, or if the road is unpaved or uneven. The surface of the roadway can influence sound levels created by the haul trucks due to noise from vehicle suspension, tailgates, etc.

6.2 Sound Analysis Locations

1. Sound levels were predicted at four discrete locations (AL1, AL2, AL3, and AL7). Although these locations appear to represent the closest noise-sensitive properties, sound levels were not predicted at nearby uninhabited properties, including Columbia River Gorge National Scenic Area (02060000250000), which is directly adjacent to the project's east property boundary.

2. Although the four evaluation locations do not match the locations described in Table 6-2, it is assumed that the locations in the figure are intended to represent the approximate analysis locations.

3. WAC sound level limits apply anywhere on receiving properties. Because sound levels were only predicted at one location per property, it cannot be established whether the analysis location represents the loudest sound level on the property, which is not always the closest point of the property line to the sound source. Full sound level contour maps are customary to show that an appropriate single analysis location can be used to represent the entire property.

6.3 Calculated Sound Levels

1. Predicted sound levels in Table 6-3 only include L_{eq} sound levels, which is insufficient based on the discussion regarding Section 3.2 of the DEIS Noise Report, which finds that to compare predicted sound levels with code limits, sound levels should be predicted for L_{25}, L_{08}, L_{02}, and L_{max}.

In some cases, predicting L_{25}, L_{08}, and L_{02} directly may not be possible, such as cases when there are many pieces of equipment operating simultaneously and sound emissions from each piece of equipment vary with time. In these cases, predicted L_{eq} sound levels can often be used to approximate L_{25} sound levels, but no such rationale is presented. Although L_{08} and L_{02} are not predicted, the primary concern is that L_{max} was not predicted from on-site operations.

2. Predicted sound levels in Table 6-3 show predicted sound levels over the nighttime code limit under Variants 03 and 04.

3. Use of the ambient sound levels measured at location ME to compare with predicted sound levels is not valid since Location ME is not close to AL3 and sound levels measured at ME were not made over a full hour.

6.4 Evaluation

1. The statement in the first paragraph of Section 6.4, "as shown in Table 6-3, calculated L_{eq} sound levels from proposed mining and processing activities at the Skamania Quarry meet State of Washington daytime noise limits at all analysis locations under both EIS alternative." This statement is incorrect because L_{eq} is not used un the WAC sound limits and L_{max} sound levels were not predicted. Therefore, compliance with the WAC limits cannot be assessed.

2. The comparison of predicted sound levels with existing sound levels discussed in Section 6.4 is misleading. The DEIS Noise Report compares predicted sound levels with the loudest existing daytime hourly L_{eq} that was measured at each of the measurement locations, which minimizes these increases.

For example, the DEIS Noise Report states that sound levels at AL1 under EIS Alternative 1 would increase by up to 12 dBA, this is based on the loudest existing daytime hourly L_{eq} sound level. Using the "overall" daytime hourly L_{eq}, sound levels would increase by 15 dBA and would increase by 23 dBA if the quietest existing daytime sound level were used. As previously discussed, the "overall" sound levels can be skewed by a single loud event. If the median hourly L_{eq} were used, there could be an increase of more than 15 dBA. However, this was insufficient information included in the DEIS Noise Report for the median hourly L_{eq} to be calculated and used in this critique.

Section 6.4 also states "the 12-dBA sound level increase would be considered substantial and would be considered a noise impact according to WSDOT criteria." Although WSDOT criteria are not directly applicable to this project, the DEIS Noise Report states a 12 dBA increase would be considered a noise impact, then the greater increases based on the "overall" existing sound levels should be considered a greater impact.

Although the DEIS mentions noise impacts based on sound level increases using WSDOT criteria, it primarily focuses on impacts resulting from sound levels exceeding WAC sound limits. However, noise impacts from mining operations can also result from increases to existing sound levels. Guidelines for assessing noise impacts to communities are provided in the Environmental Protection Agency (EPA) Region X document entitled "Environmental Impact Statement Guidelines" published in 1973. This document discusses the expected community response to increases in noise from an introduced noise source. These responses are described as follows:

- Up to a 5 dB increase – few complaints if gradual increase
- 5 to 10 dB increase – more complaints, especially during sleeping hours
- Over 10 dB increase – substantial number of complaints

Based on the EPA Region X guidelines and an expected increase of more than 10 dB, noise produced by the Skamania Quarry would result in a substantial number of noise complaints from the community. Additionally, the character of the noise produced by the project should have also been evaluated, including whether the types of noise produced will be total, impulsive, transient, or periodic that may result in increased community response or qualify as a nuisance under SCC 8.22.

3. Similar to the discussion above, the statement "under EIS Alternative 2, L_{eq} sound levels from proposed on-site operations and transportation would be in the range of or lower than existing measured sound levels at all Analysis Locations" is only applicable if the loudest existing daytime hourly L_{eq} is used to compare with predicted sound levels. If the "overall" existing daytime L_{eq} reported in the DEIS Noise Report were used, predicted sound levels would be up to 6 dBA louder than existing sound levels and if the quietest existing daytime L_{eq} were used, predicted sound levels would be up to 13 dBA higher.

4. Predicted sound levels shown in Table 6-3 only include on-site activities and haul trucks traveling between the permit and lease boundary of the site and do not include sounds from haul trucks traveling on the private roads between the lease boundary and public roadways. Although these predicted levels are included in later sections of the DEIS Noise Report, the predicted sound levels should include contributions from all activities occurring on the site and between the site and public roadways.

5. Section 6.4 states that sound levels from the beginning of mining are indicative of worst-case sound levels that could be expected during on-site construction, which includes clearing, grading, top-soil removal, and construction of infrastructure. However, these activities do not appear to be modeled, and it is unclear how the analysis arrived at this conclusion.

7. Noise Mitigation Measures for On-Site Activities

1. Noise attenuation provided by a 50-foot-wide vegetative buffer is negligible and it is unclear how this was incorporated into the results provided in Section 6.3.

2. The statement that on-site activities under EIS Alternative 2 would be in the range of existing measured sound levels at all analysis locations is misleading. This is only true if the loudest existing daytime hourly L_{eq} is used for comparison with predicted sound levels.

3. The DEIS Noise Report states that if Alternative 1 is selected that additional noise mitigation, such as a noise berm, would be recommended to reduce sound levels from haul trucks on Kellett Road at AL1. However, the DEIS Noise Report does not include a discussion on the effectiveness of the berm or identify the specific location of the berm.

8. Project-Related Traffic Noise Off-Site

8.1 Truck Traffic on Private Roads

1. The DEIS Noise Report states that the WAC "noise limits apply at analysis locations anywhere on the receiving properties. The receiving point is taken at the property line closest to the noise source for a worst-case analysis." This is true at properties adjacent to the haul route, however it may not be for properties farther from the haul routes. It is unclear how the specific locations included in the analysis were verified as being the loudest locations on the properties.

2. Analysis does not include unoccupied properties. Although sound limits are lowest at residential use properties, WAC sound limits are applicable at all properties, not just occupied ones.

3. Modeling haul trucks on private roads using line sources in CadnaA is appropriate. However, line sources in CadnaA do not include changes to sound levels from grade changes or braking, which can change the sound emissions from haul trucks.

4. Predicted sound levels should include the combined sound levels from on-site operations and haul trucks traveling on private roads. The sound levels predicted in this section only include sounds from haul trucks.

5. Table 8-3 includes predicted sound levels from Alternative 2 with the inclusion of a noise berm. The berm under Alternative 2 would be 12 feet tall and 1,160 feet long and be located on the south side of McClosky Creek Road. It is unclear whether this berm could be constructed without encroaching on private property. The DEIS Noise Report states that the berm can reduce sound levels to within codified noise limits. However, as shown in Table 8-3, this berm reduces sound levels to exactly the daytime limit. Nighttime sound levels would remain over code limits. Furthermore, this mitigated sound level does not include contributions from on-site operations.

6. Noise-specific mitigation measures are discussed for Alternative 1. The DEIS Noise Report states "the mitigation measures, to the extent feasible, would take the form of constructing noise berms along Kellett Road, on properties outside the lease boundaries." There is no discussion on the feasibility of constructing the noise berm, the anticipated noise reduction provided by the berm, or a demonstration that mitigated sound levels would comply with the WAC sound limits.

7. Although L_{max} sound levels are not discussed in the DEIS Noise Report, based on the 78 dBA sound level at 50 feet produced by a dump truck shown in Table 5-1 (which our review takes issue with), the permissible daytime L_{max} sound level of 75 dBA would be exceeded at all properties within 70 feet of the haul route and the nighttime L_{max} sound limit of 65 dBA would be exceeded at properties within 220 feet. Based on these distances from the haul route under Alternative 1, there would be approximately 10 properties that could experience daytime L_{max} exceedances and 14 properties that may experience nighttime L_{max} exceedances.

8. The DEIS Noise Report notes increases to existing sound levels, but these increases are based on the loudest measured sound levels, which minimizes these increases.

As was noted in Section 5.1, nighttime operations could occur during times of high demand or in response to emergencies. However, the DEIS Noise Report did not include a discussion of increases to existing nighttime sound levels from haul trucks on private roads. Our assessment of increases to existing sound levels from Alternative 1 based on the "overall" and range of measured daytime and nighttime sound levels included in the DEIS is shown in the table below.

Table 3. Increases to Existing Sound Levels under Alternative 1, dBA

Time of Day	Analysis Location	Existing Sound Level, min-max (overall[1])	Predicted Sound Level	Increase to Existing Sound Levels		
				Max	Min	Overall
Daytime	AL1P1	28-39 (35)	69	41	30	**34**
	AL2P	28-39 (35)	58	30	19	**23**
	T4P1	(38)[2]	67	-	-	**29**
	T5P	34-51 (45)	65	31	14	**20**
	T6P1	-	71	-	-	**-**
Nighttime	AL1P1	27-44 (37)	69	42	25	**32**
	AL2P	27-44 (37)	58	31	14	**21**
	T4P1	-	67	-	-	**-**
	T5P	22-44 (38)	65	43	21	**27**
	T6P1	-	71	-	-	**-**

1. Overall sound levels are the levels reported in the DEIS Noise Report, which are energy averages.
2. Sound levels measured for 15 minutes but used as hourly sound level. No range of sound levels was provided.

Increases to existing sound levels under Alternative 2, both with and without the noise berm, were also assessed and are summarized in Table 4 and Table 5 below.

Table 4. Increases to Existing Sound Levels under Alternative 2 (No Mitigation), dBA

Time of Day	Analysis Location	Existing Sound Level, min-max (overall[1])	Predicted Sound Level	Increase to Existing Sound Levels		
				Max	Min	Overall
Daytime	AL1P2	28-39 (35)	35	7	-	**0**
	AL2P	28-39 (35)	30	2	-	**-**
	T4P2	(38)[2]	60	-	-	**22**
	T5P	34-51 (45)	69	35	18	**24**
	T5R	34-51 (45)	62	28	11	**17**
	T6P2	-	51	-	-	**-**
Nighttime	AL1P2	27-44 (37)	35	8	-	**-**
	AL2P	27-44 (37)	30	3	-	**-**
	T4P2	-	60	-	-	**-**
	T5P	22-44 (38)	69	47	25	**31**
	T5R	22-44 (38)	62	40	18	**24**
	T6P2	-	51	-	-	**-**

1. Overall sound levels are the levels reported in the DEIS Noise Report, which are energy averages.
2. Sound levels measured for 15 minutes but used as hourly sound level. No range of sound levels was provided.

Table 5. Increases to Existing Sound Levels under Alternative 2 (With Mitigation), dBA

Time of Day	Analysis Location	Existing Sound Level, min-max (overall[1])	Predicted Sound Level	Increase to Existing Sound Levels		
				Max	Min	Overall
Daytime	AL1P2	28-39 (35)	35	7	-	**0**
	AL2P	28-39 (35)	30	2	-	**-**
	T4P2	(38)[2]	58	-	-	**20**
	T5P	34-51 (45)	60	26	9	**15**
	T5R	34-51 (45)	57	23	6	**12**
	T6P2	-	51	-	-	**-**
Nighttime	AL1P2	27-44 (37)	35	8	-	**-**
	AL2P	27-44 (37)	30	3	-	**-**
	T4P2	-	58	-	-	**-**
	T5P	22-44 (38)	60	38	16	**22**
	T5R	22-44 (38)	57	35	13	**19**
	T6P2	-	51	-	-	**-**

1. Overall sound levels are the levels reported in the DEIS Noise Report, which are energy averages.
2. Sound levels measured for 15 minutes but used as hourly sound level. No range of sound levels was provided.

Existing sound levels could increase by up to 34 dBA under Alternative 1 based on the "overall" existing daytime sound level reported in the DEIS Noise Report. Without mitigation sound levels could increase by up to 24 dBA during the day and 31 dBA during nighttime hours under Alternative 2. With the inclusion of the noise berm, sound levels could increase by 20 dBA during the daytime and 22 dBA during nighttime hours.

9. Table 8-2 and Table 8-3 do not include predicted L_{25}, L_{08}, L_{02}, or L_{max} sound levels. Unlike the sound levels from on-site operations discussed in Section 6.3, L_{25}, L_{08}, and L_{02} sound levels can be estimated from the haul route but are not included in the DEIS Noise Report.

Because these noise metrics were not included in the DEIS Noise Report, Greenbusch created a noise model of the site, using CadnaA (the same software used by Coffman) and the sound data for dump trucks shown in Table 5-1 of the DEIS Noise Report. As discussed in Section 5.3, the sound levels for dump trucks used in this evaluation may be underestimated. Sound levels were calculated at similar locations reported as the DEIS Noise Report. The resulting sound levels from Alternatives 1 and 2 are shown in Tables 6 and 7, respectively. Sound levels from Alternative 2 shown in Table 7 do not include the noise berm to allow sound levels to be compared with the predicted unmitigated sound levels reported in Table 8-3 for the DEIS Noise Report. Sound levels were also predicted with the inclusion of the berm described in Section 8.2 of the DEIS Noise Report and the resulting sound levels are shown in Table 8. The DEIS Noise Report notes that the berm is 12 feet above the road at the west end of the berm and decreases to 8 feet at the east end of the berm. For modeling purposes, Greenbusch assumed the berm height decreases to 8 feet approximately 660 feet away from the western end of the berm. Bolded values indicate sound levels exceeding WAC limits. Sound levels were not predicted with the noise berm for Alternative 2, with many locations exceeding WAC limits during the day and night.

Table 6. Predicted Haul Truck Passby Levels from Alternative 1, dBA

Noise Metric	WAC Limit (day/night)	Predicted Sound Level (day/night)				
		AL1P1	AL2P	T4P1	T5P	T6P1
L_{25}	60/50	**74/74**	**64/64**	**76/76**	**68/68**	**73/73**
L_{08}	65/55	**82/82**	65/**65**	**84/84**	**75/75**	**80/80**
L_{02}	70/60	**84/84**	65/**65**	**87/87**	**79/79**	**84/84**
L_{max}	75/65	**85/85**	65/65	**87/87**	**80/80**	**84/84**
Complies with WAC Limits (day/night)		**No/No**	**No/No**	**No/No**	**No/No**	**No/No**

Table 7. Predicted Haul Truck Passby Levels from Alternative 2, dBA

Noise Metric	WAC Limit (day/night)	Predicted Sound Level (day/night)				
		AL1P2	AL2P	T4P2	T5P	T6P2
L_{25}	60/50	39/39	33/33	**65/65**	**68/68**	54/**54**
L_{08}	65/55	39/39	34/34	**66/66**	**79/79**	60/**60**
L_{02}	70/60	39/39	34/34	66/**66**	**81/81**	61/**61**
L_{max}	75/65	39/39	34/34	66/**66**	**81/81**	62/62
Complies with WAC Limits (day/night)		Yes/Yes	Yes/Yes	**No/No**	**No/No**	Yes/**No**

Table 8. Predicted Haul Truck Passby Levels from Alternative 2 with Berm, dBA

Noise Metric	WAC Limit (day/night)	Predicted Sound Level (day/night)				
		AL1P2	AL2P	T4P2	T5P	T6P2
L_{25}	60/50	39/39	33/33	**64/64**	**63/63**	55/**55**[1]
L_{08}	65/55	39/39	34/34	65/**65**	**70/70**	60/**60**
L_{02}	70/60	39/39	34/34	65/**65**	**73/73**	61/**61**
L_{max}	75/65	39/39	34/34	65/65	73/**73**	62/62
Complies with WAC Limits (day/night)		Yes/Yes	Yes/Yes	**No/No**	**No/No**	Yes/**No**

1. Predicted L25 sound levels with the berm are less than 1 dB louder than without the berm.

As shown in Table 6, predicted sound levels from haul trucks exceed the daytime and nighttime WAC sound limits at all evaluation locations.

Predicted sound levels under Alternative 2 without the berm, shown in Table 7, exceed the daytime WAC sound limits at T4P2 and T5P. The nighttime WAC sound limits are expected to be exceeded at locations T4P2, T5P, and T6P2.

Sound levels under Alternative 2 with the berm, shown in Table 8, exceed daytime WAC sound limits at T4P2 and T5P and nighttime WAC sound limits are exceeded at T4P2, T5P, and T6P2.

8.2 Truck Traffic on Public McCloskey Creek Road

1. Use of WSDOT noise criteria to assess impacts from traffic on public roadways is not technically required because the project is not seeking FHWA funding. However, use of the WSDOT criteria regarding increases over existing conditions is an appropriate method for assessing noise effects.

2. The public portion of McCloskey Creek Road between Kellett Road and Mabee Mines Road is unpaved. Vehicles traveling on gravel roads are expected to produce more noise than paved roads and it is unclear if this DEIS Noise Report included additional noise from trucks traveling on gravel roadways.

3. Section 8.2 states that WSDOT criteria apply at the residential setback from roads and not at property lines. WSDOT criteria is applicable at outdoor areas with frequent outdoor use, which could include front yards or other areas closer to the roadway than residential setbacks.

4. DEIS Noise Report correctly identifies impacts resulting from over a 10 dBA increase to noise levels from existing traffic conditions.

5. Traffic noise analysis under WSDOT guidelines requires the use of the Traffic Noise Model (TNM) to evaluate sound emissions from vehicles. However, the DEIS Noise Report uses CadnaA in the evaluation of vehicle traffic on public portions of McCloskey Creek Road.

6. The DEIS Noise Report does not assess compliance with the public disturbance provisions of SCC 8.22.050.C, which prohibits the creation of frequent, repetitive or continuous sounds from vehicles within residential areas. As shown in Table 8-5 and discussed in Section 8.3 of the DEIS Noise Report, up to 100 vehicles would access the site during the peak hour. These trucks would travel on both McCloskey Creek Road, Mabee Mines Road, and Salmon Falls Road. Assuming these trucks are evenly spaced, this results in a truck passing by residences every 36 seconds, which constitutes a public disturbance under SCC 8.22.050.C.

8.3 Truck Traffic on Mabee Mines and Salmon Falls Roads

1. This section notes that general hours of operation would be from 7 a.m. to 4:30 p.m. and that employees traveling in personal vehicles would arrive at the site around 6:30 a.m. to prepare for the 7 a.m. start. It is also noted that employees traveling in dump trucks would arrive around 7 a.m. Any vehicle traveling off of public roadways prior to 7 a.m. are subject to nighttime sound limits. Dump trucks are expected to arrive at the site around 7 a.m., which implies they would be traveling on the 1.5 miles of privately owned roads prior to 7 a.m. Employee vehicles traveling to the site are also subject to the sound limits, but were not included in the noise analysis conducted for noise on private roads (Section 8.1).

Additionally, the DEIS Noise Report notes that peak hour trips would be occurring between 7 a.m. and 8 a.m. and that 50 trucks would be used during this time. Although not explicitly stated, based on information presented in Table 8-2, Table 8-3, Table 8-5, and in earlier portions of Section 8.3 it is believed there would be 50 inbound and 50 outbound trucks between 7 a.m. and 8 a.m. Although these morning trips would occur during daytime hours, based on information previously discussed in the DEIS Noise Report, trucks would be arriving at the site around 7 a.m. and would therefore be traveling on private roadways before 7 a.m. and subject to nighttime sound limits.

2. Only three locations were included in the noise analysis for traffic traveling on Mabee Mines Road and Salmon Falls Road. However, there are several other properties located adjacent to these roadways which were not evaluated. This is inconsistent with WSDOT guidelines, which require noise to be evaluated at all receptors. Furthermore, evaluating sound levels at three locations is insufficient to determine whether these locations represent the loudest sound levels.

3. The evaluation of these roadways was conducted using TNM instead of CadnaA. Although this is the software required for use under WSDOT Traffic Policy, it is unclear why it was not used for other portions of the roadways, the TNM analysis module in CadnaA could have been a more appropriate method. Additionally, unless custom sound levels were entered into TNM, standard noise emission levels from vehicles would be used by TNM, which likely differ from those used in the other roadway evaluations which used CadnaA.

4. The noise analysis for these roadways used traffic volumes from the afternoon peak hour of 5 p.m. to 6 p.m. This time was selected because it includes the highest percent increase in truck volumes over existing conditions. Although this may be the greatest percent increase in truck volumes over existing conditions, the hour with the highest peak traffic volumes should have been used as this may result in the highest sound levels at nearby properties.

5. Although non-truck traffic is discussed and was included in the noise analysis on these roadways, it was not explicitly stated that non-truck traffic volumes resulting from the project would double on these roadways.

6. Table 8-7 lists the number of vehicles anticipated to use Mabee Mines Road, Salmon Falls Road between Canyon Creek and Mabee Mines Road, and Salmon Falls Road between Canyon Creek and SR-14. This table shows an increase of up to 51 trucks (5,100% increase) and 50 non-trucks (363% increase) per hour between the Year 2025 No Action Alternative and the Year 2025 with Project Alternative. This increase in traffic volumes satisfies the requirements for a public disturbance under SCC 8.22.050.C.

7. Table 8-8 does not identify location T3 as a noise impact resulting from a 10 dB increase to sound levels, however sound levels at this location increase by 10 dB as shown in the table. The FHWA Noise Abatement Criterion shown in Table 8-8 should be 66 dBA instead of 67 dBA.

8.4 Project Construction Noise Off Site

1. The DEIS Noise Report states that noticeable increases over existing sound levels could occur as construction of roadway improvements on Kellett Road or McCloskey Creek Road approaches residences. The document also states that noise from construction is exempt under WAC. However, construction on private roads is not identified as being exempt under SCC.

THE GREENBUSCH GROUP, INC.

Justin B. Morgan INCE | lead noise & vibration consultant

role: lead noise & vibration consultant / project manager

Justin's background is in applied mathematics, studying ecological and biological systems and population dynamics using mathematical models. This skill is invaluable in developing statistical trends of data sets and for creating the models used to assess environmental noise. This includes the reality grounded 3-D computer models used to evaluate complex acoustical environments.

Justin is integrally involved in the firm's hydroacoustic work, having conceptualized, designed and built the instrumentation used in hydroacoustic projects. He also customized the software used by the firm to analyze data collected from hydroacoustic monitoring.

EMPLOYMENT HISTORY

The Greenbusch Group, Inc.
2011 – present

Years Experience: 15

EDUCATION

BS, Applied Computational & Mathematical Sciences, University of Washington

Minors: Mathematics; Applied Mathematics, focused on Life Sciences

PROFESSIONAL REGISTRATION

INCE Member #14937

ASSOCIATIONS

Institute of Noise Control Engineers (INCE)

Northwest Association of Environmental Professionals (NWAEP)

AWARD

2026 INCE-USA Nancy Timmerman Members' Choice Award

PRESENTATIONS

"*In-Water Noise & Pile Driving*," Washington Public Ports Association, Seattle, WA, March 2015 (co-presenter)

SAME STEM Science Fair, Washington MS, Seattle Public Schools, June 2018 (co-presenter)

Ballard High School STEM Engineering Classes, Career Development Forum; April 2019 (co-presenter)

RELEVANT EXPERIENCE

- Yacolt Mountain Quarry Expansion Conditional Use Permit; Clark County, WA
- Cumberland Creek Pit Mine; Skagit County, WA
- Mountain Loop Mine Noise Assessment Critique; Granite Falls, WA
- Rockport Crush Plant Noise Study; Skagit County, WA
- Skagit Aggregates Pettit Wash Plant Feasibility Study; Skagit County, WA
- Washougal Pit SEPA Appeal; Washougal, WA
- Lakeside Industries Asphalt Noise Critique; Maple Valley, WA
- Skagway Ore Peninsula Redevelopment Project; Skagway, AK (2026 INCE-USA Nancy Timmerman Members' Choice Award)
- Colman Dock Pier 52 Renovation; Seattle, WA
- Elliott Bay Seawall Replacement Project; Seattle, WA
- BNSF Padilla Bay Bridge 71 Maintenance Project; Anacortes, WA
- BNSF Bridge 24.8 Replacement; Camas, WA
- Lakehaven WWTP Genset Replacement,
- Lakota & Redondo, Des Moines Federal Way, WA (review) Alki CSO Treatment Plant & 63rd Ave Pump Station; King County, WA
- Cougar Mountain Pump Station #3 Rehabilitation; Bellevue, WA
- Kitsap Pump Stations; Kitsap County, WA
- Columbia Boulevard WWTP Improvements; Portland, OR
- Highline Water District; Pump Station #8; Tukwila, WA

THE GREENBUSCH GROUP, INC.

Adam C. Jenkins PE, INCE Bd. Cert., CTS-D | Vice President – Acoustical

role: principal-in-charge (Audio/Video Engineering)

Adam Jenkins leads the firm's Acoustical department at Greenbusch, including the Acoustical Design, Audio/Video (A/V) Engineering, and Environmental Noise & Vibration practice groups. He is extensively experienced as an acoustical designer for building projects, noise & vibration consulting for environmental projects, and equally proficient as an A/V engineer.

Adam and Acoustical Design staff will be involved collaboratively with the design team in understanding, evaluating, assessing, and ensuring integration of acoustical performance with the aesthetic design of the architecture. This often includes: 1) Developing specifications for materials; 2) Input into the physical layout; and 3) Defining acoustical tolerance and mitigation for mechanical system noise and vibration internal and external to the building.

EMPLOYMENT HISTORY

The Greenbusch Group, Inc.
2006 – present

Years Experience: 19

EDUCATION

MEng, Acoustics, Pennsylvania State University, 2016

BS, Electrical Engineering & Physics, Seattle Pacific University, 2004

PROFESSIONAL REGISTRATION

Professional Engineer:

Acoustics & Electrical:
OR (84419PE); ID (P-19478)
Electrical: WA (56062); AK (164000); CA (25650)

INCE Board Certified Member #11556

AVIXA CTS-D Certification

ASSOCIATIONS

Acoustical Society of America

ASTM International, E33 Committee Member, E33.09 Subcommittee Chair

Institute of Noise Control Engineering (INCE)

National Association of Environmental Professionals (NWAEP)

National Council of Acoustical Consultants (NCAC), Board Member

Association for Learning Environments (A4LE)

RELEVANT EXPERIENCE

- Yacolt Mountain Quarry Expansion Conditional Use Permit; Clark County, WA
- Cumberland Creek Pit Mine; Skagit County, WA
- Happy Valley Basalt Mine Conditional Use Permit; Sequim, WA
- Mountain Loop Mine Noise Assessment Critique; Granite Falls, WA
- Rockport Crush Plant Noise Study; Skagit County, WA
- Skagit Aggregates Pettit Wash Plant Feasibility Study; Skagit County, WA
- Washougal Pit SEPA Appeal; Washougal, WA
- Lakeside Industries Asphalt Noise Critique; Maple Valley, WA
- North City Pump Station; Shoreline, WA
- Magnolia Pump Station #22; Seattle, WA
- Spokane Street Pump Station Improvements; Seattle, WA
- Magnolia CSO; King County DNR; Seattle, WA
- Lakehaven WWTP Genset Replacement; Federal Way, WA
- Highline Water District; Pump Station #8; Tukwila, WA
- Soos Creek Lift Station 11B; King County, WA
- Lighthouse Point Water Reclamation Facility; Blaine, WA
- Denny Way Regulator and Lakeland Hills Pump Station; King County, WA
- Fanno Force Main Replacement – Multnomah Section; Portland, OR
- Columbia Boulevard WWTP Process & Non-Process Buildings; Portland, OR
- North Transfer Station (LEED Gold); Seattle, WA
- South County Recycling & Transfer Station Site Selection (Proj #1) & Final Design (Proj #2); Algona, WA

ATTACHMENT B

V-Naught Traffic Solutions, LLC

Technical Review

Transportation Impact Study

Skamania Quarry

Prepared by
Mark Haines, P.E., PTOE
Traffic Engineer

July 26th, 2026

V-Naught Traffic Solutions, LLC
Planning | Operations | Design | Engineering

Executive Summary

This report presents a technical review of the Transportation Impact Study (TIS) in support of the Skamania Quarry Environmental Impact Statement (EIS). The review evaluates whether the technical analyses, assumptions, and conclusions presented in the TIS are adequately supported by the documented evidence contained within the study.

The review focuses on three transportation topics that are central to the proposed project:

- Existing roadway characteristics and infrastructure along the proposed haul route;
- Projected heavy vehicle traffic associated with quarry operations;
- Transportation safety considerations at the Cape Horn Trail crossing near State Route 14.

The TIS contains an inventory of existing roadway conditions and applies established transportation engineering methodologies to evaluate future operations. This review examines the relationship between the documented evidence and the conclusions presented in the TIS. The following report describes the substantive deficiencies in the traffic impact study report.

Types of Vehicles

The chief vehicle type used for quarry operations will be either single trucks carrying rock or trucks with an attached trailer. Based on the measurements of other trucks and trailers for the purpose of quarry operations, the truck with trailer could measure up to 75 feet in length. The total maximum Gross Vehicle Weight of this setup would be 80,000 pounds. With an empty weight up to 35,000 pounds.

The combined length and weight of the vehicles using the operations route will contribute to the required increase in safe stopping distance in the event of a roadway hazard. This will be discussed further in a future section.

Potential Haul Routes

The DEIS describes potential haul route options for access to and from the quarry site. However, the DEIS quickly narrows the haul routes to use Salmon Falls Drive and SR-14 based on a basic analysis of roadway classification, standard lane width, total haul distance and number of residences nearby. However, the analysis does not take into account a major bridge along SR-14 near the City of Camas. The bridge is over 60 years old, narrow in width, and has a history of crashes. Introducing heavy truck traffic to the bridge deck would decrease its life span and may lead to additional safety impacts that have not been described in the DEIS.

Additionally, while the routes that were removed from the analysis in this section of the DEIS would not be considered for future analysis, it does still identify possible routes for the quarry to use. In the case of inclement weather, construction, or other detours, its possible quarry operations may use these other routes as temporary route detours which may cause significant impacts to the residences and local roadway system that should be evaluated further.

Noise Pollution

The DEIS reports on noise pollution from noise modeling. The results of the model show that sound levels from truck traffic on the private haul route under Alternative 1 would exceed State of Washington daytime noise limits. Additionally, the DEIS reports that overall sound levels during daytime hours would exceed existing measured sound levels by up to 30 dBA, which is a considerable sound-level increase and would represent a significant noise impact. The DEIS continues to report on noise mitigation strategies, but also acknowledges that the existing roadway structure and the surrounding geographical limits do not allow for noise berms, or other noise mitigating strategies. Finally, the noise from trucks is expected to be continuous during each work day based on the projected heavy truck volumes accessing the quarry site. Therefore, the noise pollution caused by the proposed development represents a significant unavoidable adverse impact.

Roadway Classification

Based on the analysis submitted in the DEIS, the TIS performed by DKS Associates provided information about the classification of Salmon Falls Road. The TIS lists the classification of Salmon Falls Road as a Major Collector between State Route 14 and Ryan Tavellie Road-Canyon Creek Road. It further clarifies that Salmon Falls Road changes to a minor collector between Ryan Tavelli Road-Canyon Creek Road and Washougal River Road. Additionally, the TIS states that all other roads in the study area including Mabee Mines Road, McCloskey Creek Road, and Kellett Road are classified as Access roads.

However, under Title 12 of the Skamania County Code, Table 12.01.030 describes Annual Daily Traffic (ADT) values that help define the classification of each roadway. The increase in volumes associated with the Quarry proposal, therefore, should lead to a change in the classification of the roadways along the route used for quarry operations based on their new use and ADT. Title 12 provides minimum and desired roadway pavement widths and widths of roadbed based on the classification of the roadway. Based on the increase in traffic volume along the quarry operations route, the classification of the roadways, and subsequently their design standards, should be assumed to change and, therefore, are not be adequately constructed in their existing state based on the future use of the route.

The TIS describes the roadway as narrow and winding with no existing shoulders. The existing roadway design is described as meeting minimum county lane width standards with no, or substandard, shoulders. These conditions are described later in the TIS as providing adequate pavement conditions for the build alternative 1 which fully contradicts previous sections of the TIS.

The existing roadway classification and design seems to work adequately for the current use. However, with the addition of significant heavy truck traffic as proposed by the applicant, the existing roadway infrastructure is found to be inadequate for such use case. Additionally, the right of way and geographical limits of the area significantly reduce the ability for the roadway to be improved to meet the proposed use case. Without additional roadway width and a reduction in grade, the proposed route and heavy truck traffic presents significant adverse safety impacts to the region that cannot be mitigated.

Roadway Volumes and comparison

The TIS assumed an additional 250 daily roundtrip movements associated with the quarry operations based on the volumes of trucks using a similarly sized quarry. This equates to 250 trips to the quarry site and 250 trips away from the quarry site. The TIS defines the quarry workday to be between 7:00am and 4:30pm. Based on the assumed workday hours and 250 roundtrip movements, the calculated simple average time between trucks using the route would be approximately 70 seconds. However, during peak hours, there is likely to be additional truck platooning which would increase the number of trucks in any given minute to more than one during the work day.

Based on the volumes provided in the TIS, and from Quality Counts, the number of trucks currently using the proposed route range from 2 to 7 truck trips during the peak hour (the highest volume traffic hour in any given day). With the introduction of truck traffic related to the quarry operations, that number of truck trips in the peak hour would increase between 7 and 20 times to 50 to 60 truck trips during a single hour.

This increase in truck traffic is a significant change to the roadway user expectations and experience and may lead to additional delays and safety impacts which will be discussed later. Additionally, this volume of traffic increase is unprecedented for this type of roadway system and it presents a number of significant issues related to safety, comfort, maintenance, and noise pollution.

Speed and Grade

The TIS defines a 6% downgrade on Salmon Falls Road and an 85th percentile speed of 43 mph. However, upon further inspection, the downgrade on Salmon Falls Road as it approaches the crossing of the Cape Horn Trail averages approximately 9.6% and increases to an approximately 10.4% downgrade within 750 feet of the pedestrian crossing - see figure 1. Additionally, the speed data was collected north of Canyon Creek Road on a relatively flat section of Salmon Falls Road. There, the southbound approach to the intersection of Salmon Falls Road and Canyon Creek Rd was measured with an 85th percentile speed of 44mph - one mile per hour faster than is used in the TIS. Combined with the downgrade south of Canyon Creek Road, the 85th percentile speed should be assumed to be higher than the measured 44mph.

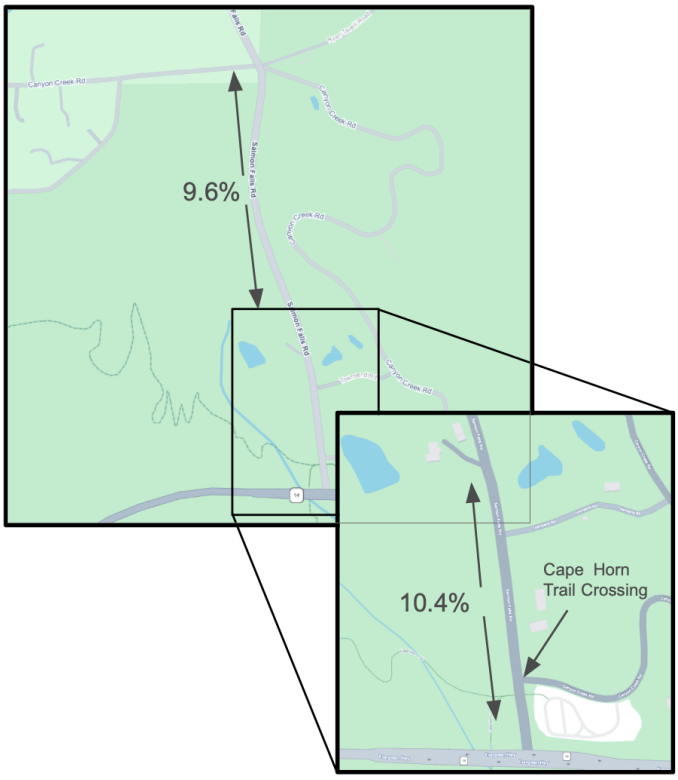

Figure 1:Map of Salmon Falls Road Roadway Grade

The industry accepted standard for calculating (SSD) is through the use of the Policy on Geometric Design of Highways and Streets (otherwise known as the "Green Book") produced by the American Association of State Highway and Transportation Officials (AASHTO). The green book provides a formula (see figure 2) that describes two of the major pieces of stopping sight distance:

1) Brake Reaction Time

2) Braking Distance

$$SSD = 1.47Vt + \frac{V^2}{30\left[\frac{a}{32.2} \pm \frac{G}{100}\right]} = 3.675V + \frac{V^2}{30(0.34782 \pm \frac{G}{100})}$$

Figure 2: AASHTO Stopping Sight Distance Formula

The TIS defined the stopping sight distance (SSD) of a heavy vehicle heading southbound along Salmon Falls Road as 270 feet. However, taking into account the downgrade slope and the 85th percentile speed, the stopping sight distance calculates to approximately 331 feet. This does not take into account adverse weather conditions, vehicle maintenance schedules, etc which will be discussed later.

Quarry operations vehicles will be descending approximately 1,760 feet over the course of the route between the quarry and SR-14 along narrow, winding roadways. While the TIS uses AASHTO standards and the speed limit to provide stopping sight distance estimates, it fails to take into consideration any wear and heat on the brakes as the trucks descend from the quarry. As a fully loaded double unit sem-truck approaches SR-14, it would be at the bottom of a long and steep downgrade from the quarry site. At the very end of the downgrade, the trucks would approach a pedestrian crossing at Cape Horn Trail and a t-type intersection at SR-14. With a reduction in brake effectiveness combined with a higher speed and steep grade, there would be significant adverse safety impacts of failed brakes on a heavy truck traveling from the quarry site to SR-14, not just to vulnerable users, but to the operator of the trucks and any other user of the roadway system including drivers along SR-14.

Typically, this type of brake failure may be reduced by using air compression brakes, or engine braking. However, just south of Canyon Creek Road and Salmon Falls Road, there is a posted sign under the regulatory speed limit 35 sign that states “unmuffled compression brakes prohibited”. This sign and its use is supported by Title 10.12.030 of the Skamania County Code. Even with muffled engine braking, the noise pollution that would be caused by the increased truck traffic would have a significant adverse impact on the area and its residents as described earlier.

Safety and Environment

The TIS discusses the safety features associated with the trucks including reflective tape and safety lighting, but does not indicate that the trucks will have real safety measures including antilock brakes (ABS), advanced warning systems for cross traffic, and pedestrian warning systems onboard each truck. ABS specifically has been shown to provide additional safety benefits for the surrounding roadway users by reducing the stopping sight distance necessary for each truck as they approach a hazard.

The roadways along the quarry operations route are narrow and winding. They are also some of the only roadways along which a resident or recreationalist may walk or bike. The safety assessment in the TIS does not go far enough to provide adequate evidence that, should a person walk or bike along the affected route, the increase in heavy vehicle traffic along the roadway would not result in a significant adverse safety impact. The TIS defines the roadways as narrow and winding and fails to mention that residents may be crossing the streets to their mailbox, waiting for the school bus, or using the roadway by bicycle to access the Cape Horn Trail. Because of the enormous size difference between the quarry truck traffic and a human body, there is a significant and adverse impact to the safety of vulnerable users along the quarry route with the considerable increase in heavy truck traffic using the narrow winding roadways.

The State of Washington Department of Transportation (WSDOT) provides a Level of Traffic Stress (LTS) standard that is recognized statewide. Under the existing conditions, the TIS defines the LTS for pedestrians and bicyclists as a level 4. Level 4 is the highest level of stress and indicates that the roadway is used only by highly confident people, or those with no choice. Level 4 further indicates that the roadway has high traffic volumes, high traffic speeds, and no, or very narrow, walking or bicycling facilities that are not separated from vehicle lanes. In this case, the LTS level 4 indicates that people walking or biking have no other choice but to use the narrow, winding route along which quarry operations vehicles would also travel. There is no higher level on the LTS standard and any additional traffic volumes, including heavy trucks, would have a significant adverse impact to the roadway users.

The TIS states that potential conflicts with other users on the area roadways will not create significant impacts due to the low volume of vulnerable users using the roadway system along the quarry operations route. However, the TIS does not recognize the significant adverse impact of a collision between a heavy truck and any vulnerable user accessing the only roadway system available to people walking or biking. Additionally, SEPA defines this type of collision in no uncertain terms: "The severity of an impact should be weighed along with the likelihood of its occurrence. An impact may be significant if its chance of occurrence is not great, but the resulting environmental impact would be severe if it occurred." The probability of any one individual person being harmed by a collision may not be great, but, in the case of a collision between a heavy gravel truck and a person using the roadway, the resulting impact would be severe and would likely result in an incapacitating injury or fatality. Depending on the driver training, the weather, and the condition of the truck, a truck of this size could cause incapacitating injuries or death to more than one person and could cause considerable property damage to the surrounding area. The TIS did not specifically study these types of events, and due to the high safety risk, this warrants a detailed evaluation under SEPA.

The TIS indicates that no mitigation is required for the sight distance at the intersection of Salmon Falls Road and Canyon Creek Road. However, the AASHTO intersection sight distance (ISD) is not met for drivers traveling east along Canyon Creek Road who intend to turn north along Salmon Falls Road - see figure 3. This condition is not recognized or mitigated by the TIS and could lead to adverse safety impacts with the introduction of the significantly increased heavy truck traffic.

U.S. Customary			
Design Speed (mph)	Stopping Sight Distance (ft)	Intersection Sight Distance for Passenger Cars	
		Calculated (ft)	Design (ft)
15	80	165.4	170
20	115	220.5	225
25	155	275.6	280
30	200	330.8	335
35	250	385.9	390
40	305	441.0	445
45	360	496.1	500
50	425	551.3	555
55	495	606.4	610
60	570	661.5	665
65	645	716.6	720
70	730	771.8	775
75	820	826.9	830
80	910	882.0	885

Figure 3: AASHTO Intersection Sight Distance - Left Turn from Stop

Under the Environmental Impacts for Alternative 1, the TIS claims there will be "none". However, with 500 new heavy vehicle trips, there will be significant adverse impact of an increase in brake dust, oil spills, gravel droppings, emissions, noise pollution, and dust from the gravel portions of the route. Skamania County Code 10.12.060 specifically prohibits gravel or other materials to be "...tracked or otherwise deposited onto any county road in such quantities that…decrease the tractive properties of roadway surface." The number of heavy trucks using the quarry operations route would undoubtedly drop gravel along the roadway system creating an avoidable adverse impact to the safety and basic use for all other users of the system.

The TIS discusses the sight distance and gap analyses performed at the intersection of Salmon Falls Road and SR-14. A gap analysis uses speed and traffic volumes to model turning maneuvers onto busier streets such as SR-14 without introducing significant delay or safety impacts. However, the TIS does not provide proof of the gap analysis and

instead relies on a calculated average of one vehicle every 14 seconds based on the vehicle volumes that were collected during a single day. This does not adequately prove the lack of any significant adverse impacts to traffic along SR-14 at Salmon Falls Road due to the increased traffic load on the roadway system. Additionally, the TIS does not describe any safety impacts that could be caused by truck traffic along SR-14 or Salmon Falls Road related to the gap analysis.

The TIS describes field data that was collected for a single truck and a double unit semi-truck traveling southbound on Salmon Falls Road and entering SR-14 westbound. The data collection appeared to use a stop watch and a video feed to calculate the amount of time it took for the single and double unit trucks to reach operating speeds along SR-14. Typical practice for a gap analysis is to use the posted speed limit or 85th percentile speed, whichever is greater. The TIS relies on the warning signage speed of 40 mph instead of the regulatory speed limit of 50 mph, or a measured 85th percentile speed which would likely be greater than 50 mph, in its gap analysis. Additionally, drivers approaching the conflict point would not be presented with the warning sign speed suggestion until approximately 1,650 feet west of the conflict point. This conflict point presents a significant adverse impact to drivers using SR-14 as well as a potential safety impact for both vehicle operators. The approach of the analysis included in the TIS is not industry practice and provides a favorable outcome for the proposed development while ignoring any potential safety impacts or major delays caused during peak hour traffic periods and by using a lower assumed speed at the conflict point. Of note, in other analyses within the same TIS, the calculations used a lower posted regulatory speed instead of the measured 85th percentile speed which, again, produces an artificially favorable outcome for the proposed development.

The approximate sight distance for a turning truck from Salmon Falls Road onto SR-14 westbound is 800 feet. The TIS states that it takes 46 seconds for a single truck to turn, then increase its speed to 40 mph. Meanwhile, a westbound driver traveling at the speed limit of 50 mph could travel approximately 3400 feet in that amount of time. The sight distance, therefore, is not long enough for a truck driver to make their maneuver from Salmon Falls Road onto SR-14 westbound without causing a significant adverse impact to westbound drivers along SR-14.

The TIS further states that it would take the driver of a double unit semi-truck 49 seconds to make the same maneuver. In that time, the TIS states that the driver could only reach 30 mph before reaching the first curve of a three-curve roadway section approximately 1700 feet west of Salmon Falls Road. The driver of the double unit semi-truck is said to reach 40 mph (10 mph under the posted speed limit) west of the three-curve section of SR-14 106 seconds after its initial maneuver from Salmon Falls Road. Additionally, it takes less than 10 seconds for a passenger vehicle to reduce its speed from the posted regulatory speed of 50 mph to the warning speed of 40 mph. This type of maneuver can be completed between the posted warning speed sign and the curve to which the sign relates. Although the TIS suggests that three westbound drivers would be impacted by the double unit semi-truck, this does not take into account peak hour traffic flows or multiple trucks entering SR-14 in succession. This represents an even greater impact to westbound drivers along SR-14 and would likely cause unsafe interactions between the two vehicles.

This type of analysis should use a data driven approach with actual peak hour traffic volumes rather than relying on calculated average vehicle traffic and gap spacing. Additionally, the analyses should use a consistent approach to operational and geometric limitations related to the development. Furthermore, this type of analysis should include a safety component to discuss the drastic reduction in speeds required to ensure safe movements for traffic near the entering trucks. This type of interaction is critical and a safety analysis should include the trucks leaving Salmon Falls Road, entering SR-14, and how it affects roadway other users such as motorcyclists. The TIS focused on delay and capacity in this section and minimizes the safety implications of the gap analysis. Any future safety analysis should go further to discuss the interaction between heavy trucks on SR-14 and a fully loaded gravel truck entering their path from Salmon Falls Road. Therefore, the findings in the TIS fall short of providing evidence that the truck movements from Salmon Falls Road to SR-14 can occur without causing significant unavoidable adverse impacts.

Traffic Analysis

The TIS reports on many of the scenarios listed within the document by providing documents associated with the traffic analysis component of the TIS. These traffic analyses were performed using a traffic modeling and simulation program called Synchro with SimTraffic, respectively. There are several reports provided at the end of the TIS related to each scenario. It appears, however, that the provided documents do not always line up with the scenarios being discussed. And, in fact, several items in each scenario have been adjusted either in error or to change the outcome of each model.

To provide a true apples-to-apples comparison, each traffic scenario should be modeled with identical settings except where necessary to change based on the scenario. Additionally, if there was an assumed change, it should be listed clearly in order to identify any impacts from such change. In the case of the reports provided, several items that are critical to the information output from each model were missing or otherwise in error including:

- Peak hour factors
- Heavy vehicle traffic volume percentages
- Proper traffic control and intersection design
- Conflicting pedestrian traffic, especially near SR-14
- Lane storage lengths and designations
- Vehicle volume assumptions between scenarios
- Roadway width
- Lane width
- Roadway grade

These metrics were changed in ways that provided benefit to the outcome of each model and to the proposed development itself by showing a lower level of potential delays associated with the increase in heavy truck traffic. Additionally, the provided reports do not define the necessary information for the "build" scenarios. For instance, the queuing and blocking report is only provided for the "non-build" Alternative 3 scenario and not for the "build" Alternatives 1 or 2. Further modeling should be completed as part of a deeper analysis of the traffic impacts of the development.

The simulation using SimTraffic was used with only a 10 minute interval. Although WSDOT does not prescribe a specific traffic simulation technique, the Oregon Department of Transportation (ODOT) provides an industry leading document[1] for such a case. It is typical practice to follow the ODOT document by using a 10-minute traffic seeding interval, 15-minute PHF interval, and 45-minutes Anti-PHF interval along with the additional information provided by the ODOT document.

The TIS only reported on the traffic model and did not report a thorough analysis using the SimTraffic tool to simulate the actual modeled behavior. In this instance, it would be crucial to understand the full impact of the additional heavy vehicle traffic volume on the roadway system, especially near the pedestrian crossing at Cape Horn Trail and the intersections of Salmon Falls and Canyon Creek and Salmon Falls and SR-14.

Finally, the 2047 analysis provided by the TIS showed a substandard delay at Salmon Falls Road and SR-14 caused by the additional traffic related to the development of the quarry. The TIS did not mention the adverse impact of such delay to the roadway system and its users, especially at the intersection of Salmon Falls Road and SR-14, nor did it discuss any mitigation measures for such an impact.

[1] ODOT Traffic Simulation Models: https://www.oregon.gov/odot/Planning/Documents/APMv2_Ch15.pdf

Stopping Sight Distance and Grade

Drivers approaching the Cape Horn Trail Crossing from the north reach a downgrade in the roadway along Salmon Falls Road. The TIS describes the downgrade as approximately 6%. However, the downgrade between the intersections of Salmon Falls Road at Canyon Creek Road and SR-14 averages 9.6% with the downgrade increasing to 10.4% within 750 feet of the crossing at Cape Horn Trail and SR-14. Additionally, the TIS relies on the posted speed limit for Salmon Falls Road instead of the measured 85th percentile speed. It is typical to use the 85th percentile speed, if available, for SSD calculations. The TIS measured the 85th percentile speed north of Canyon Creek Road on Salmon Falls Road to be 44mph in the southbound direction, 9 mph over the posted speed limit. This location of Salmon Falls Road is relatively flat. With the inclusion of the downgrade near the approach to the Cape Horn Trail Crossing, it is reasonable to assume that the 85th percentile speed closer to the pedestrian crossing would be greater than 44 mph. The TIS should have collected speed data near the pedestrian crossing.

Additionally, the section in AASHTO related to stopping sight distance provides pre-populated SSD charts for ease of use. Those charts include no grade change and 3%, 6%, and 9% downgrades. In this case, those charts could not be used because the charts only list pre-populated SSDs for up to a 9% downgrade, which is indicative of how steep the downhill slope is for this movement. Instead, the provided information was used to calculate the SSD for this context - see figure 2. While the TIS reports stopping sight distance to be 270 feet for the approach to the pedestrian crossing, the calculated SSD based on the downgrade and 85th percentile speed is found to be 331 feet.

In AASHTO, these values represent SSD for a much smaller and lighter vehicle, such as a sedan, SUV, or passenger truck, and not a fully loaded gravel double unit semi-truck. Although some literature provides context relating the stopping distance of a passenger vehicle to a large truck because the eye height is much higher for a truck operator, this TIS does not discuss the significant difference in stopping distance between a passenger vehicle and the type of heavy trucks expected to use this route.

The TIS does not take into account inclement weather as part of any analysis provided. The Columbia River Gorge experiences approximately 160 to 190 days of measurable precipitation per year, especially in the fall, winter, and spring seasons. During winter months, the Gorge experiences a dozen or more days of snow and ice. For additional context, research related to truck stopping distances during inclement weather was reviewed. The research compares truck braking distances on wet pavement to the AASHTO criteria for passenger cars[2].

Based on the eye height of a truck driver, there appears to be clear sight lines from as far north as 750 feet to the pedestrian crossing. With wet pavement and slow driver response, the calculated stopping distance for a large truck based on the downgrade and the 85th percentile speed of 44 mph was found to be up to 764 feet - see figure 4. This value still does not take into account the effectiveness of the brakes on these large vehicles after their long descent from the quarry to SR-14.

These values represent a conservative approach to stopping distances, but also lay out the potential risk involved in the high volume of truck traffic using Salmon Falls Road as it approaches the Cape Horn Trail crossing and SR-14. These stopping distance values also do not directly account for wear on brakes, tires, suspension or drastic changes in weather or driver attention. Additionally, as stated previously, the quarry trucks would travel downhill for the entire route from the quarry to SR-14 with an approximate 1760 feet of downhill grade without aid from unmuffled compression brakes. By the end of the downhill grade, the trucks will be approaching a pedestrian crossing and a t-type intersection at a major highway. Taking into account the number of trucks traveling this route daily, the safety risk of significant adverse impacts for this type of operation is high.

[2] Truck Safety Considerations for Geometric Design and Traffic Operations: https://nacto.org/wp-content/uploads/truck_safety_considerations_for_geometric_design_and_traffic_operations_donnell.pdf

Design Speed (mph)	85th Percentile Speed (mph)	AASHTO Criteria for Passenger Cars (ft)	Braking Distances for Trucks (ft)		
			Worst-performance Driver	Best-performance Driver	Anti-lock Brake System
30		233	376	275	236
35		296	499	358	310
40		366	639	452	393
—>	44	430	***764***	534	461
50		526	950	658	564

Figure 4: Truck Braking Distance on Wet Pavement at 10.4% Downgrade

Analysis and Safety

As a mitigation measure, the TIS encourages the applicant to work with the County to provide flashing beacons to warn drivers of a crossing pedestrian. However, the analysis was completed using outdated or erroneous information. One tool that can be used to describe the pedestrian crossing treatments (i.e. crosswalk, beacon, signal, etc) for a specific crossing is the National Cooperative Highway Research Program (NCHRP) Report 562[3]. As part of the research, NCHRP developed a worksheet that provides guidelines for pedestrian crossing treatments. The worksheet uses information such as roadway speed, crossing distance, and pedestrian volumes, and pedestrian walking speeds to prescribe a potential pedestrian crossing treatment such as a marked crosswalk, yellow flashing beacons, or a full traffic signal.

In the TIS analysis, the posted speed limit for Salmon Falls Road was used instead of the higher 85th percentile speed. The number of crossing pedestrians was incorrectly stated. The total number of vehicles using the roadway was also erroneous based on the information provided in the TIS. Additionally, the surrounding area population should be assumed to have fewer than 10,000 people, which increases the safety need based on a lower expected volume of interactions. Additionally, the crossing distance should be assumed to be longer, and the actual pedestrian speeds should have been measured. The TIS failed to adequately complete the NCRHP 562 worksheet. Upon completion of the worksheet, the recommended pedestrian crossing treatment under existing conditions requires an active or enhanced treatment which typically includes items like enhanced signage and/or an active beacon. Furthermore, while the enhancement of the existing crossing would be an improvement, enhanced signage and warning beacons would not physically alter the pathway of a heavy truck as it approaches pedestrians using the crossing. Additionally, the signage would require maintenance that may not occur with enough frequency to maintain their effectiveness and beacons often fail in an active position, which may lead to drivers choosing to ignore the warning beacon altogether. With the introduction of a large increase in heavy truck traffic, there would be significant adverse safety impacts on the existing pedestrian crossing that could not be easily mitigated.

The TIS reports that queueing from southbound traffic approaching SR-14 would not block the existing pedestrian crossing at Cape Horn Trail and are described as occupying approximately 100 feet of the available 125 feet of space between SR-14 and the existing pedestrian crossing. The TIS does not provide evidence that this analysis was completed and only provides evidence that Alternative 3 was analyzed in Appendix C. Additionally, the analysis shown in Appendix C shows a 95th percentile queue length for the SB movement toward SR-14 of 58 feet, while the table in context shows a reduced 95th percentile queue length of 50 feet. The TIS should provide evidence that the analysis was completed for all traffic scenarios under the “build” alternatives 1 and 2.

[3] NCHRP Report 562: Improving Pedestrian Safety at Unsignalized Crossings
https://nacto.org/wp-content/uploads/NCHRP-562-Improving-Pedestrian-Safety-at-Unsignalized-Crossings.pdf

The Synchro and SimTraffic traffic model analysis uses space and time to provide average queue lengths at various percentiles. However, the analysis does not use measured queue lengths and these computer software programs are known to often average the length to be shorter than practicable. Additionally, the analysis can underestimate the queue length because it fails to adequately provide peak hour demand queueing.

By reviewing other quarries in the area, a double unit semi-truck was measured to be up to 75 feet in length. The total storage length for the southbound approach to SR-14 along Salmon Falls Road was measured to be between 125 and 150 feet. The TIS did not provide evidence that a queue analysis was completed for the build alternatives and did not describe the possibility of the adverse impact of two or more quarry trucks mixed with other traffic approaching SR-14 in the southbound direction during peak hours.

There is a high probability that the southbound queue on Salmon Falls Road approaching SR-14 could extend into the pedestrian crossing at Cape Horn Trail. The queue spill back could further reduce sight lines between drivers and pedestrians and/or the warning signage and beacons recommended. Additionally, any blockage of the marked pedestrian crossing could cause pedestrians to take alternative routes to cross Salmon Falls Road that have not been studied as part of these analyses. The reduction in sight lines caused by any queue spill back of the heavy trucks using Salmon Falls Road would cause adverse safety impacts to the crossing pedestrians.

Conclusion

The Transportation Impact Study concludes that the proposed quarry development would not result in significant adverse transportation impacts and that the existing transportation system is capable of accommodating the projected increase in quarry-related traffic. After reviewing the analyses, assumptions, and supporting documentation presented in the TIS, this technical peer review concludes that several of those conclusions are not adequately supported by the evidence contained within the study.

Throughout the report, the TIS documents existing roadway conditions that include constrained geometry, narrow or substandard shoulders, steep grades, limited stopping sight distance, Level 4 pedestrian and bicycle stress, and a multimodal recreational corridor. At the same time, the study projects approximately 250 truck round trips (500 heavy vehicle movements) per average weekday, with up to 50 truck round trips during the peak hour. Despite documenting these conditions, the TIS concludes that transportation impacts remain insignificant in several key areas. This review finds that the analyses presented do not demonstrate how those conclusions were reached.

Several analyses rely on assumptions that are not consistently applied throughout the study. In multiple locations, the TIS uses assumptions that reduce projected operational impacts, including reliance on regulatory speed limits where measured operating speeds are available, simplified gap analyses, and incomplete documentation of traffic simulation outputs. In other instances, supporting analyses referenced in the report are either not provided or do not correspond to the build scenarios being evaluated. As a result, important conclusions regarding roadway operations, queueing, and safety cannot be independently verified using the information presented in the TIS.

The greatest concern identified in this review is the treatment of transportation safety. The TIS acknowledges existing roadway constraints and identifies a transportation corridor that already operates under high levels of pedestrian and bicycle stress. However, the report concludes that the substantial increase in heavy vehicle traffic would not create significant adverse impacts without providing sufficient technical analysis demonstrating how those conclusions were reached. Similarly, analyses related to stopping sight distance, gap acceptance analysis, pedestrian crossing treatments, queue spillback, and multimodal interactions either rely on assumptions that warrant further justification or do not fully evaluate the operational conditions expected under the proposed build alternatives.

Based on the information presented within the Transportation Impact Study, this review concludes that the proposed quarry development creates several significant adverse impacts to the local roadway system and its users that cannot realistically be mitigated to nonsignificant levels.

Mark Haines, PE, PTOE

Education

- **BS, Civil Engineering**
  Portland State University
  (2013)

Registrations

Professional Engineer
- OR #85152PE

Professional Traffic Operations Engineer
- #5517

Organizations

- **Oregon Section Social Chair** (2019-2021)
- **Oregon Section Past President** (2018- 2019)
- **Oregon Section President** (2017-2018)
- **Oregon Section Vice President** (2016-2017)
- **Oregon Section Secretary/Treasurer** (2015-2016)
- **PSU Student Chapter** (2009-2013)

Awards & Recognitions

- **ITE Western District - Outstanding Technical Paper Award** (2023)
- **ITE International Transportation Achievement Award - TSMO** (2023)
- **ITE Oregon Section Transportation Project of the Year Award** (2022)

Mark Haines is a Principal Engineer with V-Naught Traffic Solutions, LLC. He has a wide array of expertise in traffic related studies, design and construction practices, and operations. Mark specializes in reviewing traffic related studies. Additionally, he works with a talented team of engineers to drive innovation of traffic signal systems focused on people movement whether by foot, bike, or transit. Mark has experience as a traffic engineering consultant and a public employee providing unique solutions to complex challenges using limited resources. He earned his Bachelor of Science in Civil Engineering from Portland State University. Mark is a registered professional engineer and professional traffic operations engineer.

PROFESSIONAL EXPERIENCE

Mark has been one of the principal engineers at V-Naught Traffic Solutions since 2016. He has been the lead engineer involved in reviewing parking and sight distance studies, providing traffic control plans for major construction and special events, and developing parking studies for development projects. Mark specializes in using local and national traffic engineering policies and practices to perform his work including the Manual on Uniform Traffic Control Devices, Highway Capacity Manual, AASHTO Green Book, ITE Trip Generation Manual, and Parking Generation Manual.

Mark began his career in Civil Engineering as a volunteer in the Traffic Signals, Street Lighting and ITS group at the City of Portland while attending college. He has worked in every traffic group at PBOT, engaging in work ranging from installing single stop signs to creating and deploying full temporary traffic control plans for the Portland Marathon to developing civil, signing, striping, and signal plans for the Better Naito Forever project and designing and implementing the first cloud-based Transit Signal Priority system within the City of Portland. Mark now helps guide other engineers through his role as the subject matter expert in his role as ITS Engineer II. He works as a project manager for highly technical projects and as a regional resource for traffic signal operations.

Institute of Transportation Engineers (ITE)

Mark has been involved with ITE for over 15 years. He started during his tenure at Portland State University. He dedicated his time to the four-year rotation leading the Oregon ITE Board. During that time, he was deeply involved in running the Section and planning events including 2018 ITE QUAD Conference, 2022 International Conference, and the annual Oregon ITE Bill Kloos Traffic Bowl. Mark developed a robust student outreach program including a new funding model for student activities specifically developing under-represented students.

Mark Haines, PE, PTOE

Selected Projects

Parking Studies – Oregon

Mark managed the review of parking demand and generation for several residential developments in the Portland Oregon region, including the N Salem St, NE Ainsworth St, and NE 7th Ave parking studies. Using the latest tools and practices, Mark provided data on the existing parking supply, classification, demand, and occupancy. The projects utilized the parking generation manual and local policies to provide a basis for sound decision making around the potential parking demand after the completion of each residential development. Overall, the parking demand for each development was clearly identified and successfully mitigated by each development.

Traffic Studies – Oregon and Washington

Mark reviewed several traffic studies created by local consultant firms describing the traffic impacts of major developments, including the Athy Creek Middle School relocation in West Linn, OR and the new gas station in Vancouver, WA. Mark was in charge of reviewing the traffic impact studies, and associated traffic demand models, to provide comments and critiques for the projects. Publications such as the Highway Capacity Manual, ITE Trip Generation Manual, and the Manual on Uniform Traffic Control Devices, in concert with local policies, provided the basis of the analysis. Mark provided technical memos that described the inadequacies of the traffic demand models and traffic impact assumptions. Overall, the traffic impacts required additional study resulting in additional traffic impact mitigation by each development.

Sight Distance Studies - Oregon

Mark has been the lead engineer developing sight distance studies for several clients in the State of Oregon including near SE 142nd Ave in Clackamas and SW 180th Ave in Beaverton. The studies include using the local policies around speed limits and development access locations as well as the American Association of State Highway and Transportation Officials (AASHTO): Policy on Geometric Design of Highways and Streets (Green Book) to find and report on the appropriate sight distance requirements for the development access points.