

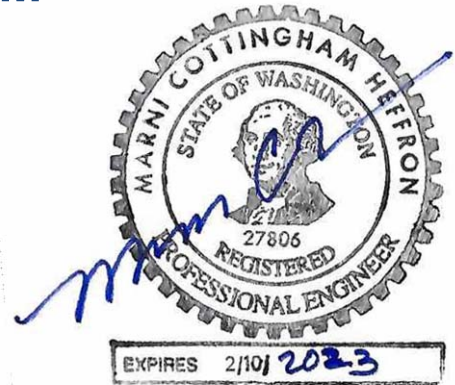
TECHNICAL MEMORANDUM

Project: Snoqualmie 5-Mile Pit Expansion

Subject: Traffic Impact Assessment

Date: June 8, 2021

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Principal, Heffron Transportation, Inc.



Hos Bros Construction, Inc. has proposed to expand its existing reclamation pit that accepts clean excavate/soil from various construction projects throughout the region, and also supplies pit-run gravel mined from the site. This site, known as the Snoqualmie 5-Mile Pit, has been in operation since 1998, and Heffron Transportation prepared previous transportation analyses for the pit in 2004 and 2011. King County has requested a new transportation analysis to support the expansion permit.¹ The analysis scope was coordinated with King County Traffic review staff.² This memorandum presents information about current operations and traffic volumes at the 5-Mile Pit, compares those to trip levels previously described in the 2011 analysis, and assesses the potential off-site traffic operations based on other recent transportation studies in the site vicinity.

1. Current and Planned Mine Operations

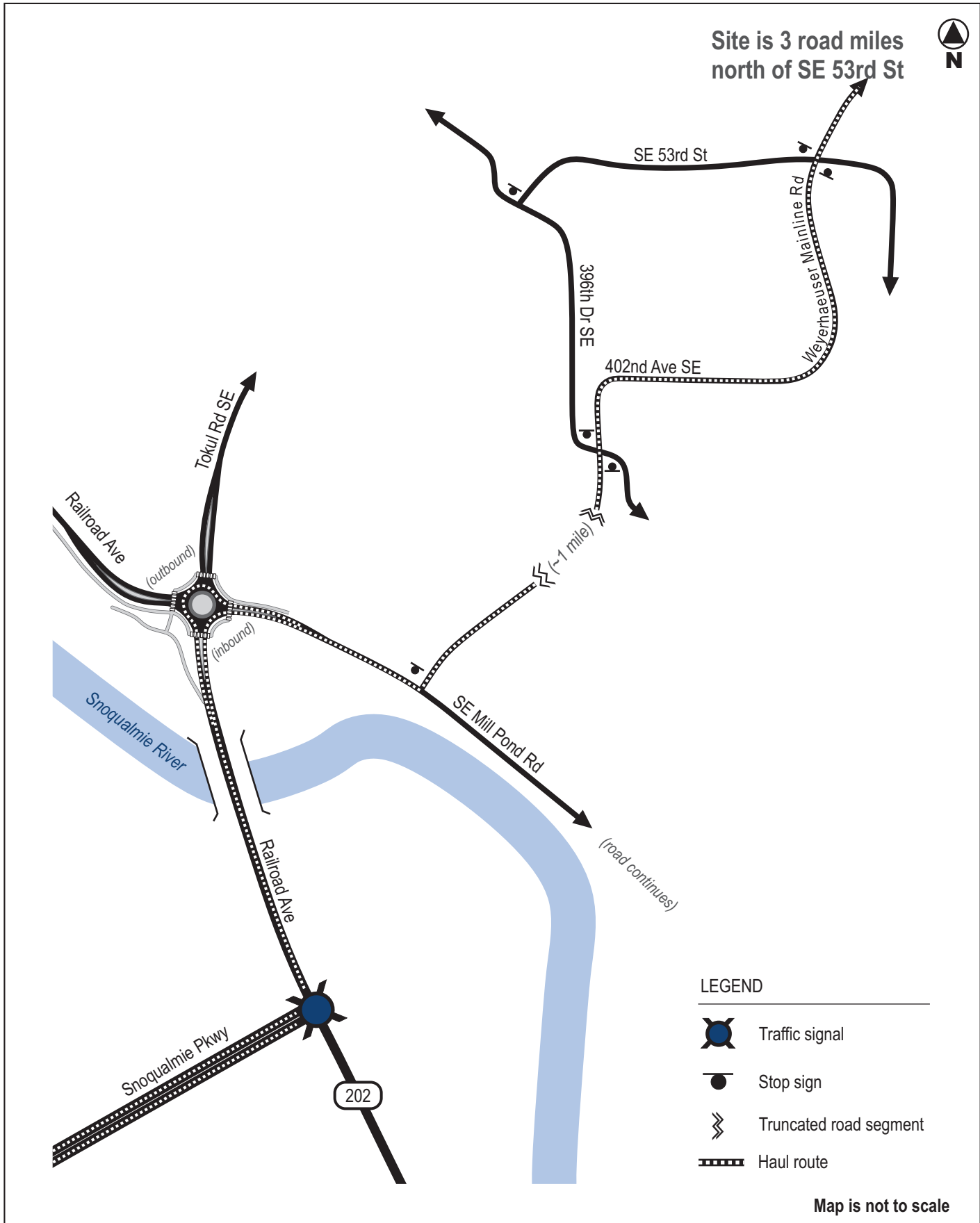
The 5-Mile Pit is so named because it is located approximately 5 miles northeast of the City of Snoqualmie. It is accessed via State Route (SR) 202 via Weyerhaeuser Mainline Road and Mill Pond Road, as shown on Figure 1

The site has operated as a gravel mine and backfill pit since 1998. It has received clean excavation tailings from large construction projects, including tunnel borings from several Sound Transit projects as well as the new SR 99 tunnel through downtown Seattle. It also exports pit-run gravel that is mined from the site. The Pit seeks to expand in order to continue accommodating excavation backfill for other regional projects in the future. The expansion area is not expected to change the quantity of material the site received on an annual basis compared to current and historic operations.

The site is currently permitted to operate between 7:00 A.M. and 7:00 P.M. Although the Pit applied to extend its hours in 2011, the extended hours were never approved or executed. The currently-approved operating hours would remain in effect with the pit expansion.

¹ PREA20-0076 – Snoqualmie 5-Mile Gravel Pit Expansion, Pre-Application Meeting Notes, March 16, 2021.

² Phone conversation with Robert Eichelsdoerfer, King County, March 25, 2021.



SNOQUALMIE 5-MILE PIT RECLAMATION SITE

Figure 1
Site Vicinity and Haul Route



2. Existing Mine-Generated Traffic Volumes

Predicted by 2011 Transportation Assessment

Trip generation for the 5-Mile Pit was estimated in 2011 for the *Snoqualmie 5-Mile Reclamation Site Transportation Assessment*.³ Trip generation for that report was based on two days of truck counts performed on Weyerhaeuser Mainline Road in January 2011. Table 1 below summarizes the trip generation estimate from 2011.

Table 1. Trip Generation Estimate from 2011 Transportation Assessment

Trip Type	Vehicle Type	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Typical Day								
Heavy Truck Trips ^a	Heavy Trucks	250	5	5	10	1	4	5
Employee Trips ^b	Automobile	30	1	1	2	0	5	5
Total		280	6	6	12	1	9	10

Source: Snoqualmie 5-Mile Reclamation Site Transportation Assessment, Heffron Transportation, Inc., April 21, 2011.

a. Based on truck data compiled for Thursday, January 20, 2011, which was confirmed by Hos Bros to reflect a typical "high activity" day.

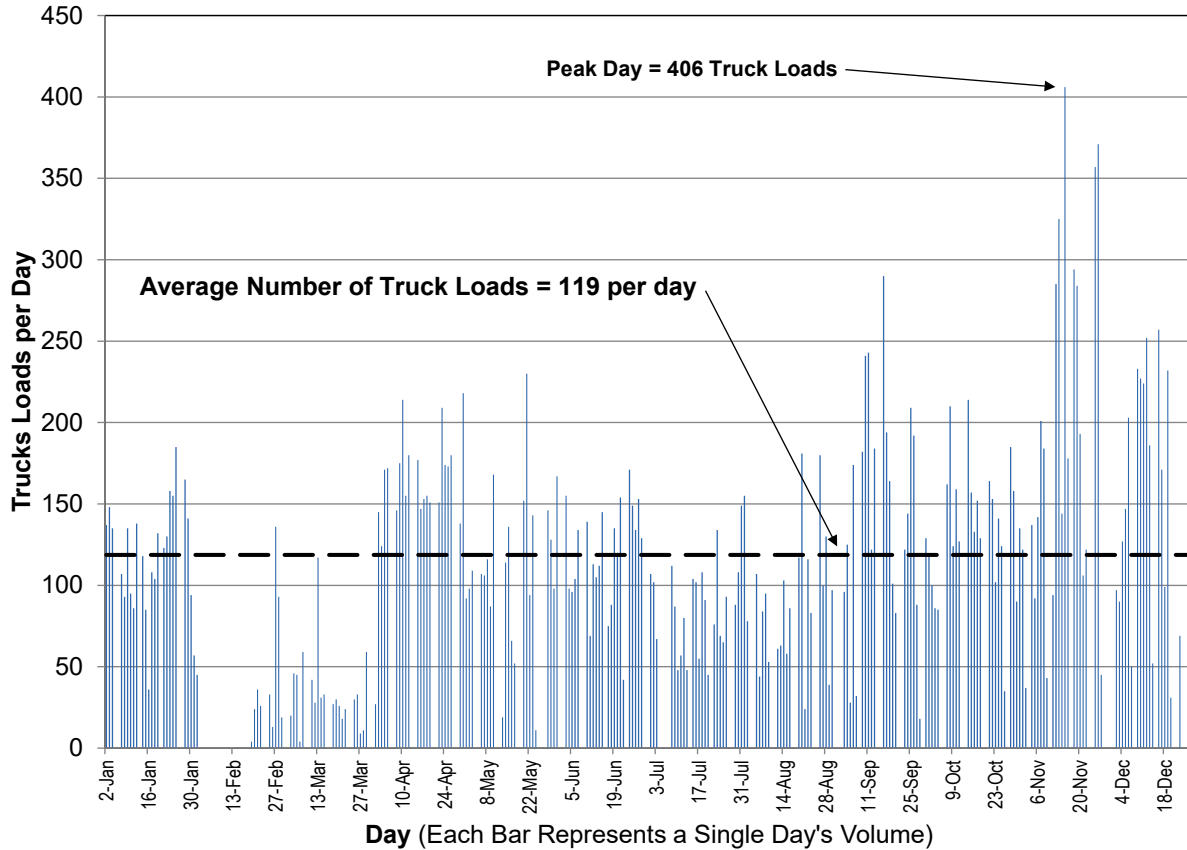
b. Based on an estimate maximum of 5 employees at the site making 20 total trips for commuting and lunch, and an additional 10 trips for service, delivery, and other purposes.

Actual Truck Trips – Year 2019

The 5-Mile Pit accepts clean excavate/soils from other construction projects (inbound loads) and also exports pit-run gravel, mined from the site (outbound loads). All loads are tracked by Hos Bros. One full year of truck load data was obtained from Hos Bros to show seasonal fluctuations and determine the average daily truck trips. Year 2019 data were requested to reflect a condition not affected by the COVID-19 pandemic, which did temporarily shut down many major construction projects while COVID safety protocols were enacted. Figure 2 below shows each day's total truck loads (inbound plus outbound).

³ Heffron Transportation, Inc, April 21, 2021.

Figure 2. Daily Truck Loads – Actual for Year 2019



Source: Hos Bros Data compiled by Heffron Transportation, Inc., April 2021.

As noted in the chart, the Pit had little to no traffic in early February 2019. This was due to a winter storm that buried parts of East King County in more than two feet of snow. February is typically a low-volume month anyway, and temporary shut downs in a facility are often made up with increased activity in following days or weeks, so that event is not expected to affect the annual average traffic to the Pit. In November, the Pit received a spike in truck volume associated with a stretch of bad weather that closed other sites in the area due to excess runoff and poor haul road conditions. That type of spike is a rare condition. Overall, the Pit generated an average of 119 truckloads per day, which accounts for the rare November volume spike.

The 5-Mile Pit is unusual in that it both receives and discharges material. At most quarries or pits, one truck load generates two truck trips: an empty truck arrives and a full truck departs. However, the data from Hos Bros shows that some of the trucks that bring a load to the 5-Mile Pit also carry a load out of the pit. These trips, referred to herein as “double turns,” were derived by matching unique truck identification numbers in each day’s activity log of inbound and outbound loads. In 2019, approximately 12% of truck loads were double-turns. Table 2 shows the total annual truck loads for all of 2019, and the number of double turns.

Table 2. 5-Mile Pit 2019 Actual Truck Loads

	Inbound Load	Outbound Load	Total (In + Out)	Double Turns ^b	% Double Turns
Total Truck Loads in 2019 ^a	28,134	6,144	34,278	4,240	12.4%

Source: Heffron Transportation, Inc. April 19, 2021.

a. Based on truck data compiled for 2019 from Hos Bros.

b. Determined by matching unique truck identification numbers that hauled truck loads to and from 5-Mile Pit on the same day.

The data described above were used to derive the average daily truck trips generated by the 5-Mile Pit. The Pit was open during 288 working days in 2019, which included some weekend days. The average day traffic for various types of truck moves is summarized in Table 2. As shown in Table 32, the 5-Mile Pit generated an average of 210 truck trips per day (105 inbound and 105 outbound) in 2019, which reflects pre-COVID conditions. This is about 15% lower than the daily truck trips evaluated in the prior traffic analysis for the site. The new 2019 dataset had no detail about time of arrival, so it was not possible to determine the peak hour trips. The 2011 analysis determined that the site would generate 12 AM peak hour trips and 10 PM peak hour trips, which accounted for both truck trips and employee trips (see Table 1 above).

Table 3. 5-Mile Pit - 2019 Actual Truck Volumes

Trip Type	Daily Truck Trips		
	Inbound	Outbound	Total
Imported Soil	83 (full trucks)	83 (empty trucks)	166
Pit-Run Gravel	7 (empty trucks)	7 (full trucks)	14
Double Turns	15 (full trucks)	15 (full trucks)	30
Total	105	105	210

a. Derived by Heffron Transportation, Inc. from full year of data from Hos Bros Construction, Inc. for 2019. There were 288 working days that year.

Future Traffic with Expansion

The 5-Mile Pit expansion would allow for continued pit operations that are similar to those already permitted. The market area and travel patterns are expected to remain the same. The peak hour trip estimates from the prior 2011 analysis (12 AM peak hour trips and 10 PM peak hour trips) are reasonable based on the current data.

Logging would be required in the 20-acre expansion area. The timber in this area is 38 years old and is expected to have 12,000 to 15,000 board feet per acre. Given the average truck capacity of 4,000 to 5,000 board feet per truck load, the logged area could generate 48 to 60 truckloads.⁴ This would be performed over several weeks, and is expected to generate fewer than 10 truckloads per day for that short-term early work. Logging is not expected to generate peak hour traffic.

⁴ Estimates provided by Weyerhaeuser Company, e-mail from Brian Ostrom, March 30, 2021.

3. Off-Site Traffic Assessment

Roadway Network

Extensive improvements to SR 202 have occurred since the 5-Mile Pit was last assessed in 2011. A new roundabout was created in 2016 at the Railroad Avenue (SR 202) / Tokul Road SE / SE Stearns Road (SE Mill Pond Road) intersection. This roundabout replaced two intersections at SR 202: at Tokul Road SE and at SE Mill Pond Road. To create this roundabout, a section of SR 202 was re-aligned to the northwest, a new section of Tokul Road SE was constructed, and a section of SE Stearns Road (SE Mill Pond Road) was also re-aligned.

Traffic Volumes and Operations

Extensive traffic operations analysis was performed for vicinity highways and intersections in the recent *Snoqualmie Mill PCI Plan Draft Environmental Impact Statement*.⁵ Traffic volumes used for the operations analysis for that report were collected in 2018 and 2020 (likely prior to the COVID-19 pandemic influence since the report was published in April 2020 and the Washington State stay at home order was implemented in March 2020). Two of the main intersections along the 5-Mile Pit haul route are included in that report: SR 202 / Snoqualmie Parkway (traffic signal control), and the SR 202 / Tokul Road SE / SE Stearns Road (SE Mill Pond Road) roundabout. The report presents existing and estimated future traffic volumes and related traffic operations analysis without and with the proposed Snoqualmie Mill PCI Plan. The report discloses different phases and years of development. To reflect the worst-case representation, the 2032 full build condition (with the Snoqualmie Mill project) is referenced below. It is noted that the 5-Mile Pit traffic described above (12 AM peak hour trips and 10 PM peak hour trips) were assumed to be part of the background conditions considered in the Snoqualmie Mill analysis.

The intersection volume counts and future estimated volumes include traffic associated with the 5-Mile Pit at these intersections and are provided in Table 4. The 5-Mile Pit trips represent less than 1.3% of the existing traffic volumes through the subject intersections, and less than 0.6 % of the forecast future traffic with the Snoqualmie Mill project.

⁵ City of Snoqualmie, April 2020.

Table 4. Peak Hours - Total Entering Volumes (TEV)¹ – Existing and 2032 Conditions

Peak Hour / Intersections	Existing	2032 No Action ²	2032 Mill PCI Buildout ³	5-Mile Pit Trips ⁴
AM Peak Hour				
SR 202 / Snoqualmie Pkwy ⁵	1,350	1,450	2,175	12
SR 202 / Tokul Rd SE / SE Stearns Rd ⁶	950	1,045	2,040	12
PM Peak Hour				
SR 202 / Snoqualmie Pkwy	1,540	1,665	2,545	8
SR 202 / Tokul Rd SE / SE Stearns Rd	1,040	1,115	2,360	10

Source: Snoqualmie Mill PCI Plan Draft EIS, Transportation, TENW, April 2020. Data summarized by: Heffron Transportation, Inc. April 2021.

1. TEV = Total entering volume.
2. No Action condition assumes further growth in traffic plus funded transportation improvements. It does not include any traffic from the Snoqualmie Mill project.
3. With Full Build of proposed Snoqualmie Mill PCI Plan.
4. 5-Mile Pit trips based on 2019 count data from Hos Bros. Included in estimates shown for Existing, 2032 NA, and 2032 Mill PCI Buildout.
5. Signalized intersection.
6. Roundabout intersection.

Levels of service for the near-site intersections had been determined for the Snoqualmie Mill project. The results presented in that report are summarized in Table 5. As shown, the two intersections closest to the site currently operate at LOS B or better, which reflects good operating conditions. These conditions are expected to remain through the year 2032 with the City’s 2020-2025 Transportation Improvement Plan (TIP) projects completed and without the Snoqualmie Mill project. The Mill project is expected to degrade two intersections to LOS E: the SR 202 / Snoqualmie Pkwy intersection during the AM peak hour and the SR 202 / Tokul Road SE / SE Stearns Road intersection during the PM peak hour. The DEIS documents potential improvement needs beyond those planned by the City, including additional widening of SR 202.

As noted above, the 5-Mile Pit traffic reflects a very small percentage of the traffic at these two intersections, and the intersections would operate at good levels of service without the Snoqualmie Mill project. Improvements at these intersections would only be needed if the Snoqualmie Mill project is constructed. Therefore, the 5-Mile Pit is not expected to adversely affect traffic operations in the site vicinity.

Table 5. Volume and Operations Summary – Existing and 2032 Conditions

Peak Hour / Intersections	Existing		2032 No Action		2032 With Snoq Mill PCI	
	LOS ¹	Delay ²	LOS	LOS	LOS	Delay
AM Peak Hour						
SR 202 / Snoqualmie Pkwy ³	B	13.7	B	14.0	E	59.2
SR 202 / Tokul Rd SE / SE Stearns Rd ⁴	A	7.0	A	6.4	A	6.3
PM Peak Hour						
SR 202 / Snoqualmie Pkwy	B	11.6	B	11.8	C	23.1
SR 202 / Tokul Rd SE / SE Stearns Rd	A	6.5	A	6.0	E	58.6

Source: Snoqualmie Mill PCI Plan Draft EIS, Transportation, TENW, April 2020 and Appendix F: Transportation.

<https://www.ci.snoqualmie.wa.us/DocumentCenter/View/30865/Mill-Draft-EIS-2020-04-23-PDF>.

Data summarized by: Heffron Transportation, Inc. April 2021.

1. LOS = Level of service.
2. Average seconds of delay per vehicle.
3. Signalized intersection.
4. Roundabout intersection.

Traffic Safety

Collision data for the study area intersections were obtained from WSDOT for the period between January 1, 2016 and the most recent records available as of April 22, 2021 (5.3 years). The data were examined to determine if there are any unusual traffic safety conditions that could impact or be impacted by the proposed project. Table 1 below summarizes the collision data for three study area intersections.

There were 13 total collisions reported during the study period; all of which occurred at the junction of Snoqualmie Parkway with Railroad Avenue (State Route 202). None of the collisions resulted in fatalities or serious injuries.

Two of the reported collisions involved tractor-trailers. One occurred when the left-turning tractor-trailer struck a light pole and then a stopped vehicle. “Operating defective equipment” was listed as a contributing circumstance. The second tractor-trailer involved collision occurred when a right-turning tractor-trailer overturned; there were no other vehicles involved. “Operating defective equipment” and “exceeding reasonable safe speed” were listed as contributing circumstances.

Overall, these data do not indicate any unusual traffic safety conditions.

Table 6. Collision Summary (January 1, 2016 through April 22, 2021)

Intersection	Rear-End	Side-Swipe	Left Turn	Right Angle	Ped / Cycle	Other	Total for 5.3 Years	Average/Year
Snoqualmie Pkwy / Railroad Ave (SR 202)	4	0	3	1	1	4	13	2.4
Railroad Ave/ Mill Pond Road/Tokul Road (Roundabout) ^b	0	0	0	0	0	0	0	0.0
SE 53 rd St / Weyerhaeuser Mainline Rd	0	0	0	0	0	0	0	0.0

Source: Washington State Department of Transportation, April 22, 2021.

- a. 'Other' collisions included two vehicles that struck objects off the roadway, one over-turned right-turning vehicle, and one right shoulder collision involving one moving vehicle and one stopped vehicle.
- b. WSDOT data showed roundabout as four separate intersections (one for each leg of the roundabout). There were no collisions at any of these intersections.

4. Summary

The 5-Mile Pit current generates an average of 210 truck trips per day, which is about 15% less than had been evaluated in the 2011 Traffic Analysis for the site.

The 5-Mile Pit expansion would allow for continued pit operations that are similar to those already permitted. The market area and travel patterns are expected to remain the same. The peak hour trip estimates from the prior 2011 analysis (12 AM peak hour trips and 10 PM peak hour trips) are reasonable based on the current data.

Logging would be required in the 20-acre expansion area, and is expected to generate fewer than 10 logging truck loads per day over a short duration. Logging is not expected to generate peak hour traffic.

Recent traffic analysis performed for the *Snoqualmie Mill PCI Plan Draft Environmental Impact Statement* show that near-site intersections currently operate at good levels of service, and would continue to operate at those levels of service in the future before the Snoqualmie Mill project is built. The 5-Mile Pit traffic is assumed as part of those existing and future conditions, and represents a very small percentage of the peak hour traffic stream.

Collision data from WSDOT do not indicate any unusual safety issues in the site vicinity. 5-Mile Pit traffic already exists and the Pit expansion is not expected to adversely affect safety.

Based on this analysis, the 5-Mile Pit expansion is not expected to adversely affect traffic operations or safety in the site vicinity. No transportation mitigation should be required for the expansion.

MCH/mmb

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