

# Memorandum

**To:** Janna Switzer, Xavier Lu Dac

**From:** Jennifer Skilnick

**Date:** April 20, 2022

**Re:** Traffic Volumes

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## Executive Summary

With the development of any new Project, positive and negative impacts will be felt within communities in the surrounding area. One key concern for communities of interest around the Wheeler River Project (the Project) is the impact of traffic on northern Saskatchewan highways. The purpose of this memo is to determine the percent increase in average daily traffic and truck daily traffic on roads leading to the Project site.

Data for this report was largely supplied by Saskatchewan Ministry of Highways and Infrastructure (MHI), although not all segments of road were available from them. For the section of highway north of Key Lake, data from the Millennium Environmental Impact Statement (EIS) was used as it was determined to be most accurate for the purpose of this study. Highway segments were chosen based on MHI data and those highways facing the biggest impact from traffic volume increases.

Denison Mines Corp. (Denison) was able to provide an accurate estimate of truck traffic travelling to the Project site during construction and operation phases of the Project life. After looking at Truck Annual Average Daily Traffic (TAADT) and Annual Average Daily Traffic (AADT), we were able to use these estimates to establish expected traffic increases due to the Project on highways of interest. Results show that increases to traffic will be most significant on Highway 914, south of Key Lake, with impacts becoming negligible as you travel further south. On this segment of Highway 914 we could see truck traffic increase up to 51% per day through the operation phase. More southern highway segments fall within a 20% to 30% daily increase. Based on the information presented within the memo, the impacts from the Wheeler River Project related to traffic will be relatively minor.

## Traffic Study

Highway 914 north, between Key Lake mill and McArthur River uranium mine, is a private road operated by Cameco. Consequently, traffic data for this section of highway is relatively unmonitored and unavailable from the MHI. In early 2022, Cameco announced that both Key Lake and McArthur River will be coming back online by the end of the year. Operations at these locations ceased in 2018 due to prolonged market weakness. For the Millennium Environmental Impact Statement (EIS) in 2012, a traffic study was completed on the unmonitored section of Highway 914 between Key Lake and McArthur River when both operations were in production. Due to the changes recently announced by Cameco, data from the Millennium EIS will be the greatest resource to give us a clear understanding of traffic volumes on Highway 914 during operation of both the Key Lake mill and McArthur River uranium mine.

Table 1: Description of highway segments near the Wheeler River Uranium Project.

Segment	Highway	From	To
1	Access Road	Wheeler River Project Camp	Highway 914
2	Highway 914	Wheeler River Project Access	Key Lake Gatehouse
3	A	Highway 914	Key Lake Gatehouse
	B	Highway 914	Gordon Lake Access
	C	Highway 914	Snake Rapids Bridge
4	Highway 914	Pinehouse Lake Access	Highway 165
5	A	Highway 165	Highway 914
	B	Highway 165	Highway 918
6	A	Highway 165	Highway 910
	B	Highway 165	Highway 910

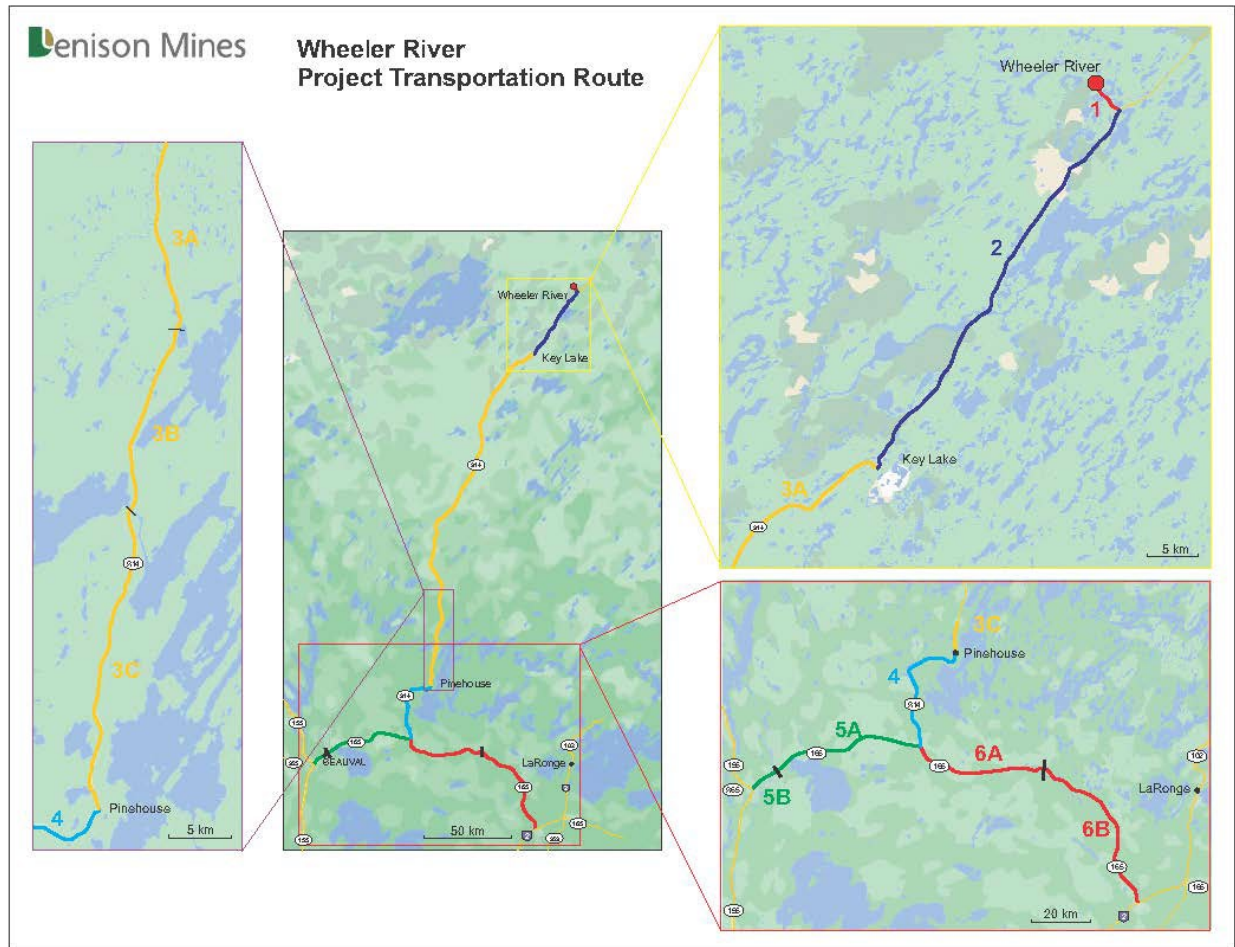


Figure 1: Highway segments affected by Wheeler River Project traffic.

Truck Annual Average Daily Traffic (TAADT) and Annual Average Daily Traffic (AADT) data has been received from the MHI for 2011 through 2019 and is shown in tables 2 and 3. AADT is a count of all vehicles travelling on the highway, including TAADT.

Table 2: Truck Annual Average Daily Traffic (TAADT) data received from the MHI on northern Saskatchewan highways affected by the Wheeler River Project. Refer to Table 1 for segment details.

Segment	TAADT 2011	TAADT 2012	TAADT 2013	TAADT 2014	TAADT 2015	TAADT 2016	TAADT 2017	TAADT 2018	TAADT 2019	TAADT AVG 2011-2019
1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2 <sup>1</sup>	58 <sup>2</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3A	35	35	35	35	35	35	35	35	35	35
3B	35	35	35	35	35	35	35	35	35	35
3C	40	40	40	40	40	35	35	35	35	38
4	65	65	65	65	65	50	50	50	50	58
5A	35	40	40	40	40	35	35	35	35	37
5B	50	65	65	65	65	60	60	60	60	61
6A	25	30	30	30	30	30	30	25	25	28
6B	30	30	30	40	40	40	40	45	45	38

<sup>1</sup>TAADT is unavailable for this section of highway beyond 2010 (Cameco, 2012).

<sup>2</sup>Data is the 2010 TAADT used in the Millennium EIS (Cameco, 2012) for this segment of highway.

Table 3: Annual Average Daily Traffic (AADT) data received from MHI on northern Saskatchewan highways affected by the Wheeler River Project. Refer to Table 1 for segment details.

Segment	AADT 2011	AADT 2012	AADT 2013	AADT 2014	AADT 2015	AADT 2016	AADT 2017	AADT 2018	AADT 2019	AADT AVG 2011-2019
1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2 <sup>1</sup>	60 <sup>2</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3A	50	50	50	50	45	45	45	45	45	47
3B	50	50	50	50	45	45	45	45	45	47
3C	90	90	90	90	90	90	90	90	90	90
4	170	170	230	230	230	230	230	190	190	208
5A	300	270	300	300	240	240	240	180	180	250
5B	740	780	810	810	960	960	960	780	780	842
6A	120	120	130	130	130	130	130	70	90	117
6B	220	220	230	230	230	230	230	210	190	221

<sup>1</sup>AADT is unavailable for this section of highway beyond 2010 (Cameco, 2012).

<sup>2</sup>This data is the 2010 AADT total used in the Millennium EIS (Cameco, 2012) for this segment of highway.

As shown on tables 2 and 3, there is no data for the Wheeler River Project access road and limited data available for Highway 914 north of Key Lake. The AADT and TAADT data reflects a decrease in vehicle and truck traffic occurring alongside the move from operations to care and maintenance for Key Lake and McArthur River. Due to Cameco's recent announcement on the reopening of Key Lake and McArthur River, 2017 traffic data will be most accurate in reflecting the operating volumes of these locations as they had ceased operation in 2018. Data for the section of Highway 914 north of Key Lake was pulled from the Millennium Environmental Impact Statement – Main Body (Cameco, 2012). This data is the most recent that is publicly available. In Table 4 the percent of truck traffic along the highway segments under study can be seen.

Table 4: The percentage of daily traffic that is trucks travelling along northern Saskatchewan highways affected by the Project.

Segment	Highway	2017 TAADT	2017 AADT	% of total traffic that is trucks
1	Access Road	n/a	n/a	n/a
2 <sup>1</sup>	914	58	60	97
3A	914	35	45	78
3B	914	35	45	78
3C	914	35	90	39
4	914	50	230	22
5A	165	35	240	15
5B	165	60	960	6

6A	165	30	130	23
6B	165	40	230	17

<sup>1</sup> TAADT and AADT values from the Millennium EIS are used to accurately reflect traffic on this section of highway (Cameco, 2012).

As the Wheeler River Project progresses into construction and operation, estimates on truckloads are available in Table 5 below. These trucks include estimates of wellfield mobilization, wellfield material deliveries, construction equipment deliveries, food and fuel/propane deliveries anticipated through both construction and operation phases of the Project.

Table 5: The anticipated volume of vehicles to the Wheeler River Project during construction (year 1 and 2) and operation (year 3 through 18). These volumes assume travel to site and return occur on the same day.

Phase	TAADT expected increase	AADT expected increase
Construction	14	54
Operation	18	18

Currently, it is assumed that 50% of trucks will be travelling along Highway 165 originating west of Beauval, and 50% of trucks will be originating in Saskatoon or other southern locations and travelling the eastern portion of Highway 165.

Table 6: Expected increased in TAADT during the Project construction phase (year 1 and 2).

Segment	Highway	2017 TAADT	2017 AADT	TAADT Increase	% Truck Increase	Overall % Increase in Traffic
1	Access Road	n/a	n/a	14	n/a	n/a
2	914	58	60	14	24%	23%
3A	914	35	45	14	41%	31%
3B	914	35	45	14	41%	31%
3C	914	35	90	14	41%	16%
4	914	50	230	14	28%	6%
5A	165	35	240	7	20%	3%
5B	165	60	960	7	12%	0.7%
6A	165	30	130	7	23%	5%
6B	165	40	230	7	18%	3%

Table 7: Expected increased in TAADT during the Project operation phase (year 3 to 18).

Segment	Highway	2017 TAADT	2017 AADT	TAADT Increase	% Truck Increase	Overall % Increase in Traffic
1	Access Road	n/a	n/a	18	n/a	n/a
2	914	58	60	18	31%	30%
3A	914	35	45	18	51%	40%
3B	914	35	45	18	51%	40%
3C	914	35	90	18	51%	20%
4	914	50	230	18	36%	8%
5A	165	35	240	9	26%	4%
5B	165	60	960	9	15%	0.9%
6A	165	30	130	9	30%	7%
6B	165	40	230	9	23%	4%

## Conclusion

As expected, the Project will have the highest impact on Highway 914. Land users north of the Key Lake gatehouse would expect to see an increase in traffic of 23% to 30%. On Highway 914 between Key Lake

and Pinehouse, road users would expect to see an overall increase in traffic of 16% to 40% over the life of the mine. Trucks travelling this section of highway will increase from 35 to 53 at peak operational times. The Northern Community of Beauval will see truck increases of up to 26% during the life of the mine.

Based on the data presented within this memo, impacts from truck traffic to the Wheeler River Project Site will be relatively minor.

#### References

Cameco Corporation. 2012. Millennium Project Environmental Impact Statement: Main Document.

Clifton (Clifton Associates Ltd.). 2011. Millennium Traffic Study, Proposed Millennium Mine Site, Saskatchewan – Revised. File S1716.8 April 19, 2011.