



Title:	Figure:
Mine Site Operations Receiver Locations	4.10-4

Table 4.10-12**Summary of True North Operational Noise Levels¹**

Receiver Notation	Location Description ²	Dist to Site in feet ³	Project noise levels ⁴		
			Max	Avg	Min
R1	Lot 2 on Wildcat Creek Way, just west of the Elliott Hwy., in the Olnes subdivision	15,589	39.5	32.2	29.5
R2	Lot 1 on Eli Avenue at the south end of Simpson Way, in the Olnes subdivision	6,737	47.6	41.5	39.1
R3	Southern most lot on the Old Elliott Hwy at the turn leading to Luneberg Road	10,690	43.1	36.4	33.8
R4	Lot 12 on Treasure St, east of the Elliott Hwy., in the Olnes subdivision	16,224	39.1	31.8	29.0
R5	Lot 8 on Luneberg Rd., in the Olnes subdivision, closest residential use to the site	5,503	49.6	43.7	41.5
R6	Lot 12 on Olnes Loop Rd. in the Olnes subdivision	7,510	46.6	40.3	37.9
R7	Lot 14 on Luneberg Rd., the northern most lot in the Olnes subdivision	7,560	46.5	40.2	37.8
R8	Lot 5 in the Haystack Ridge Subdivision (TL-1) on Haystack Drive, 4,300 feet south of the Cogan Drive "Y" intersection	18,827	37.6	30.1	27.3
R9	Lot 10 on Leuthold Dr., just south of the Haystack Dr./ Leuthold Dr. intersection	19,209	37.4	29.9	27.1
R10	Lot 7 in the Haystack Extension GI-2, on Leuthold Dr., northern most site in the analysis	19,901	37.1	29.5	26.7
R11	Pedro Dome Road - at the end of the roadway at the communication tower (for reference)	14,359	32.2	31.2	31.1
R12	Lot 2 on the northwest corner of Ridge Run Rd., northwest of Pedro Dome Rd.	17,663	30.3	29.3	25.3
R13	Lot 16, at the northwest corner of Rock Run Rd. west of the Steese Hwy	18,447	29.9	28.9	24.8
R14	On Skiland Rd., west of the SKILAND Resort near the residential land use.	22,747	27.9	26.8	22.7
R15	Along the Steese Hwy., north of Cleary Summit approximately 2 miles	12,140	33.7	32.7	28.9

Noise levels from True North operations as projected at representative receiver locations

Location and lot information obtained from CAD drawings provided by the City of Fairbanks

Distances were measured on CAD drawings provided by the City of Fairbanks.

Noise levels given are for project related noise only, and were calculated for 3 different scenarios previously described. All scenarios assume no shielding or additional mitigation.

4.10.14 OLNES RESIDENTIAL SUBDIVISIONS NOISE LEVELS

There were seven receiver locations in the Olnes area. Distances from the proposed True North Mine site to the Olnes Subdivision ranged from approximately 5500 feet to over 16000 feet. The seven receivers represent residences located in Wanda's Acres, the Olnes East Subdivision and the Olnes West Subdivision. The sites, numbered R1 through R7 are shown on Figure 4.10-4.

R1: Site R1 is at Lot 2 on Wildcat Way, approximately 750 feet east of the Elliott Highway. The site is west – southwest of the mining operation approximately 15,600 feet and is not projected to have noise impacts under any of the noise level calculation scenarios. Average noise levels with operation or the True North Mine are expected to increase by less than 1.6 dBA under any of the noise calculation scenarios. Under normal conditions, operation of the mine is not expected to be audible at this site, or the other nearby surrounding homes. Table 4.10-13 provides a summary of the noise levels and noise level increases for each calculation scenario.

**Table 4.10-13
Receiver R1 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	50	40	50.1	40.7	0.1	0.7
Scenario 2	50	40	50.0	40.4	0.0	0.4
Scenario 3	53	43	53.2	44.6	0.2	1.6

See "Operational Noise Levels" for details on the calculation scenarios.

Existing conditions projected from monitoring locations M5 and M2 with 3 dBA added during periods of maximum sound transmission

R2: Site R2 is located at Lot 1 in the southern end of the Olnes East Subdivision on Eli Avenue east of Simpson Way. The site is directly west of the True North Project site approximately 6,700feet. Under normal operational conditions, future noise levels are projected to increase by approximately 4 dBA during daytime hours and 7 dBA during

the nighttime. Increases during scenario 2 conditions are 2.6 dBA during daytime and 5.6 during the night. Under this scenario, which is projected to occur less than 10 percent of the time, noise level increases of up to 10 dBA can be expected during the nighttime with increase of 6 dBA during the daytime. No impacts are projected in the vicinity of this location because the future noise levels are not projected to exceed 50 dBA under any of the scenarios. Table 4.10-14 provides a summary of the noise levels and noise level increases for each calculation scenario.

**Table 4.10-14
Receiver R2 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	40	35	43.8	42.4	3.8	7.4
Scenario 2	40	35	42.6	40.6	2.6	5.6
Scenario 3	43	38	48.9	44.6	5.9	10.1

See "Operational Noise Levels" for details on the calculation scenarios.
Existing conditions projected from monitoring location M5 with 3 dBA added during periods of maximum sound transmission

R3: Site R3 is also located in Olmes East. The Site is one of the southernmost along the Old Elliott Hwy., just before the connection to Luneberg Rd. This site is west of the mining site approximately 10,600-feet, and is projected to have noise level increases of 0.3 to 1.2 dBA during daytime hours, and 1.4 to 4.2 during the nighttime. Maximum future noise levels during the daytime are projected at 49.2 dBA Leq. No impacts are projected at this location or other nearby surrounding homes. Table 4.10-15 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-15**Receiver R3 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night ⁷	Day	Night	Day	Night
Scenario 1	45	38	45.6	40.3	0.6	2.3
Scenario 2	45	38	45.3	39.4	0.3	1.4
Scenario 3	48	41	49.2	45.2	1.2	4.2

See "Operational Noise Levels" for details on the calculation scenarios.

Existing conditions projected from monitoring locations M5 and M2 with 3 dBA added during periods of maximum sound transmission

R4: Site R4 is in the Olnes west subdivision near lot 12 on the west side of Treasure Street. The site is approximately 16,200-feet west of the project location. No impacts are projected at this receiver or other homes in Olnes west due to the large distance to the project. Table 4.10-16 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-16**Receiver R4 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	45	38	45.2	38.9	0.2	0.9
Scenario 2	45	38	45.1	38.5	0.1	0.5
Scenario 3	48	41	48.5	43.1	0.5	2.1

See "Operational Noise Levels" for details on the calculation scenarios.

Existing conditions projected from monitoring locations M5 and M2 with 3 dBA added during periods of maximum sound transmission

R5: Site R5 is in the Olnes east Subdivision and is one of the closest residential lots to the project site at an estimated distance of 5,500 feet. The site is east of Luneberg Rd. near the Luneberg Rd. – Simpson Way intersection, at lot 8. Under scenario 3 there is a slight potential for noise impact during both daytime and nighttime hours. Daytime noise levels of 50.5 dBA and increases of over 10 dBA during the nighttime could potentially occur under ideal conditions. Table 4.10-17 provides a summary of the noise levels and noise level increases for each calculation scenario.

**Table 4.10-17
Receiver R5 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	40	35	45.3	44.3	5.3	9.3
Scenario 2	40	35	43.8	42.4	3.8	7.4
Scenario 3	43	38	50.5	49.9	7.5	11.9

See "Operational Noise Levels" for details on the calculation scenarios.
Existing conditions projected from monitoring location M5 with 3 dBA added during periods of maximum sound transmission

R6: Site R6 is at lot 12 on Olnes Loop Rd. in the Olnes subdivision. The site is over 17,000-feet from the mine site and no noise level impacts are projected. Noise Levels are projected to range from 40 to 48 dBA, with increases of 2 to 9 dBA Leq. Table 4.10-18 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-18**Receiver R6 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	40	35	43.1	41.4	3.1	6.4
Scenario 2	40	35	42.1	39.7	2.1	4.7
Scenario 3	43	38	48.2	47.1	5.2	9.1

See "Operational Noise Levels" for details on the calculation scenarios.

Existing conditions projected from monitoring location M5 with 3 dBA added during periods of maximum sound transmission

R7: Site R7 is lot 14 on Luneberg Rd., the northern-most lot in the Olnes subdivision. The site is approximately 7,560 feet from the mine site, and is projected to have daytime noise levels of 42 to 48 dBA Leq, and nighttime levels of 39 to 47 dBA Leq. Noise levels are expected to increase by 2 to 6 dBA under normal conditions, with maximum increases of 9 dBA under scenario 3. Table 4.10-19 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-19**Receiver R7 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	40	35	43.1	41.3	3.1	6.3
Scenario 2	40	35	42.0	39.6	2.0	4.6
Scenario 3	43	38	48.1	47.1	5.1	9.1

See "Operational Noise Levels" for details on the calculation scenarios.

Existing conditions projected from monitoring location M5 with 3 dBA added during periods of maximum sound transmission

4.10.15 HAYSTACK RESIDENTIAL SUBDIVISION NOISE LEVELS

R8: Site R8 is in the Haystack Ridge subdivision, lot 5 on Haystack Drive, 4,300 feet south of the Cogan Drive "Y" intersection. The site is approximately 18,800 feet west of the project location. No impacts are projected at this receiver or other homes in the general vicinity due to the large distance to the project. Table 4.10-20 provides a summary of the noise levels and noise level increases for each calculation scenario.

**Table 4.10-20
Receiver R8 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	40	35	40.4	36.2	0.4	1.2
Scenario 2	40	35	40.2	35.7	0.2	0.7
Scenario 3	43	38	44.1	40.8	1.1	2.8

See "Operational Noise Levels" for details on the calculation scenarios.
Existing conditions projected from monitoring location M6 with 3 dBA added during periods of maximum sound transmission

R9: Site R9 is in the Haystack Ridge subdivision, lot 10 on Leuthold Drive, just south of the Haystack Dr. – Leuthold Dr. intersection. The site is approximately 19,200-feet west of the project location. No impacts are projected at this receiver or other homes in the general vicinity due to the large distance from the project. Table 4.10-21 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-21**Receiver R9 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	40	35	40.4	36.2	0.4	1.2
Scenario 2	40	35	40.2	35.7	0.2	0.7
Scenario 3	43	38	44.1	40.7	1.1	2.7

See "Operational Noise Levels" for details on the calculation scenarios.

Existing conditions projected from monitoring location M6 with 3 dBA added during periods of maximum sound transmission

R10: Site R10 is also in the Haystack Ridge subdivision. R10 is at Lot 7 in the northern most extension of the development. The site is approximately 19,900feet west of the project location¹. No impacts are projected at this receiver or other homes in the general vicinity due to the large distance to the project. Table 4.10-22 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-22**Receiver R10 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	40	35	40.4	36.1	0.4	1.1
Scenario 2	40	35	40.2	35.6	0.2	0.6
Scenario 3	43	38	44.0	40.6	1.0	2.6

See "Operational Noise Levels" for details on the calculation scenarios.

Existing conditions projected from monitoring location M6 with 3 dBA added during periods of maximum sound transmission

4.10.16 PEDRO DOME AND CLEARY SUMMIT RESIDENTIAL SUBDIVISIONS NOISE LEVELS

R11: Site R11 is on Pedro Dome Road - at the end of the roadway at the communication tower. This site was calculated as a reference site only, and therefore

no impacts are projected. Table 4.10-23 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-23						
Receiver R11 Noise Level Calculation Results						
Calculation Scenario¹	Existing²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	46	40	46.1	40.5	0.1	0.5
Scenario 2	46	40	46.1	40.5	0.1	0.5
Scenario 3	49	43	49.1	43.5	0.1	0.5

See "Operational Noise Levels" for details on the calculation scenarios.
Existing conditions projected from monitoring location M3 with 3 dBA added during periods of maximum sound transmission

R12: Site R12 is Lot 2 on the northwest corner of Ridge Run Rd., northwest of Pedro Dome Rd. No impacts are projected due to the 17,600 foot distance and topography between True North and this site. Table 4.10-24 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-24**Receiver R12 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	46	40	46.1	40.4	0.1	0.4
Scenario 2	46	40	46.0	40.1	0.0	0.1
Scenario 3	49	43	49.1	43.3	0.1	0.3

See "Operational Noise Levels" for details on the calculation scenarios.

Existing conditions projected from monitoring location M3 with 3 dBA added during periods of maximum sound transmission

R13: Site R13 is Lot 16, at the northwest corner of Rock Run Rd. west of the Steese Hwy. Again, no impacts are projected due to the 18,400foot distance and topography between True North and this site. Table 4.10-25 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-25**Receiver R13 Noise Level Calculation Results**

Calculation Scenario ¹	Existing ²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	46	40	46.1	40.3	0.1	0.3
Scenario 2	46	40	46.0	40.1	0.0	0.1
Scenario 3	49	43	49.1	43.3	0.1	0.3

See "Operational Noise Levels" for details on the calculation scenarios.

Existing conditions projected from monitoring location M3 with 3 dBA added during periods of maximum sound transmission

R14: Site 14 is on Skiland Rd., west of the Skiland Resort near the residential land use. At a distance of over 22,000 feet, True North operations are not expected to be audible. Table 4.10-26 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-26						
Receiver R14 Noise Level Calculation Results						
Calculation Scenario¹	Existing²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	50	45	50.0	45.1	0.0	0.1
Scenario 2	50	45	50.0	45.0	0.0	0.0
Scenario 3	53	48	53.0	48.1	0.0	0.1

See "Operational Noise Levels" for details on the calculation scenarios.
Existing conditions projected from monitoring location M4 with 3 dBA added during periods of maximum sound transmission

R15: Site R15 is along the Steese Hwy., north of Cleary Summit approximately 2 miles. The distance to True North is approximately 12,100feet and this site was examined for reference. Table 4.10-27 provides a summary of the noise levels and noise level increases for each calculation scenario.

Table 4.10-27						
Receiver R15 Noise Level Calculation Results						
Calculation Scenario¹	Existing²		Future		Change	
	Day	Night	Day	Night	Day	Night
Scenario 1	50	45	50.1	45.2	0.1	0.2
Scenario 2	50	45	50.0	45.1	0.0	0.1
Scenario 3	53	48	53.1	48.2	0.1	0.2

See "Operational Noise Levels" for details on the calculation scenarios.
Existing conditions projected from monitoring locations M3 and M4 with 3 dBA added during periods of maximum sound transmission

4.10.17 TRAFFIC ANALYSIS

The following sections contain the results of the traffic noise analysis for each of the areas in the project area.

For the purpose of discussing potential traffic noise levels and performing an impact analysis, the same three areas were used: Olnes, Haystack, and Pedro Dome/Cleary Summit.

Olnes Area Noise Traffic Noise Levels

The operational noise level calculations included noise related to idling and moving haul and ore trucks in and around the mining operation. The proposed haul routes would not have any trucks moving through or near the Olnes area. No significant traffic related noise impacts are projected for this area.

Haystack Area Traffic Noise Levels

The operational noise level calculations include noise related to idling and moving haul and ore trucks in and around the mining operations. None of the proposed haul routes would be anywhere near the Haystack development. No significant traffic related noise impacts are projected for this area.

Cleary Summit and Skiland Residential Area Traffic Noise Levels

Because of the close proximity of the proposed haul route to residents in these areas, a detailed noise analysis was performed. Normally, a traffic noise analysis is performed for the peak-traffic noise hour, which is usually between 4 pm and 6 pm for most well traveled roadways. However, traffic flow on the Steese Highway and other nearby arterial roads, such as Fairbanks Creek Road, does not have a clearly defined peak-traffic hour. The level of traffic through this area varies with time of year, workload levels at Fort Knox, and other intangibles that make it difficult to perform the analysis for a single hour during the day. Furthermore, selecting a single hour may not accurately define the impact that the proposed access haul route might have on surrounding residents. Therefore, after careful review of traffic flow information obtained from the ADOT/PF, it was determined that the analysis should be performed for two nominal

periods, one representing the average daytime traffic flow and noise levels and another representing the nighttime traffic flow and noise levels.

In addition to the two selected daily analysis periods, the analysis would also be performed under three different climatic seasons, as shown in Table 4.10-9. As a result, there are calculations for average daytime and nighttime hours under climatic conditions for each of the three defined seasons and climatic conditions. Using these methods, the access haul route noise analysis covers the wide range of varying climatic and seasonal traffic conditions found in the project area.

As previously described, input to the traffic noise prediction model includes the number of passenger vehicles, medium trucks, and heavy trucks in addition to the estimated or measured travel speeds, topographical information for the roadway and receiver locations, ground cover between roadway and receiver, temperature and humidity. Traffic data for the Steese Highway was obtained from the ADOT/PF with additional traffic data for vehicles serving Fort Knox and the proposed True North haul route to and from Fort Knox.

Noise level calculations were performed using existing and future traffic volumes for each of the climatic conditions. Table 4.10-28 shows average daily traffic volumes information used in the analysis. Fairbanks Creek Road traffic assumed the worst case that every employee drives his/her own vehicle every shift. Information on the ground cover, temperature and humidity used for each of the individual climatic conditions is shown in Table 4.10-9. Existing conditions calculated traffic noise levels compared favorably with the noise level measurements given in Table 3.15-1.

Table 4.10-28**Summary of Existing and Future Average Daily Traffic Volumes¹**

Roadway	Existing Traffic Volumes ²			Future Traffic Volumes ³		
	Winter	Fall/Spring	Summer	Winter	Fall/Spring	Summer
Steese Highway	1007	1219	1504	1007	1219	1504
Fairbanks Creek Rd.	534	534	534	24	30	36
Haul Route	-- ⁴	-- ⁴	-- ⁴	574	574	574

Traffic volumes from the Alaska Department of Transportation and FGMl

Current traffic level with all Fort Knox traffic using Fairbanks Creek Road (assumes the worst case that every employee drives his/her own vehicle every shift)

Future project traffic volumes with the majority of Fort Knox traffic using the new haul route and traffic along Fairbanks becoming primarily local access with limited Fort Knox traffic

Haul route currently not constructed, and therefore has no traffic volumes

The seven long-term noise monitoring locations described as M7 through M13 (Fig. 3.15-2 and Table 3.15-1), plus an additional 5 locations, were selected for receiver locations in the traffic noise model. Six of the receivers are located throughout the Cleary Summit Subdivision Residential area, and five residential and one commercial receiver are located in the Skiland Subdivision residential area. The receiver locations, numbered T1 through T12, are shown on Figure 4.10-5 with a summary of projected existing traffic noise levels given in Table 4.10-29, and future traffic noise levels with the proposed haul route in Table 4.10-30.

Figure 4.10-5 Access haul route receiver locations

Table 4.10-29**Summary of Existing Traffic Noise Levels¹**

Receiver Notation	Location Description ²	Dist to Haul Route in ft ³	Existing Noise Levels ⁴		
			Winter	Fall/Spring	Summer
T1	Lot 2 at the west end of Ridge Run	1160	30 – 31	28 – 33	32 - 37
T2	Lot 2 at the west end of Pedro Dome Rd.	680	34 – 37	32 – 38	35 – 40
T3	Tom Walyer residence on Ridge Run located ½ way up the road on the south side	1070	33 – 35	31 – 37	34 - 40
T4	Lot 7 on Pedro Dome Rd., approx 1100 ft from the Steese	925	37 – 39	35 – 41	37 - 43
T5	Brent LeValley residence on Ridge Run, located approx 1300 ft from the Steese Hwy	1430	35 – 36	33 – 37	35 – 40
T6	Lot 9 on Ridge Run, first lot, approx 450 ft to the Steese	1310	41 – 42	39 – 43	41 - 45
T7	Lot 5, between Skiland Rd. and Fairbanks Creek Rd.	1250	35 – 36	34 – 35	35 – 36
T8	Mt Aurora Fairbanks Creek Bed & Breakfast located just east of Fairbanks Creek Rd.	1000	39 – 40	39 – 40	39 – 40
T9	Cleary Summit Bed & Breakfast located east and up the hill from receiver T8	1315	35 – 36	34 – 35	35 - 36
T10	Lance Parrish Residence located at the top of the hill, west of the Skiland Lodge	1640	32 – 33	30 – 33	33 – 34
T11	Mike Goulding Residence located east of Fairbanks Creek Rd. along the south side of the hill	1600	32 – 33	30 – 33	33 – 34
T12	Skiland Resort, near the chair lift – commercial land use	2200	26 – 28	23 – 27	29 - 30

¹Detailed traffic noise levels for each receiver location are given in Tables 6-31 to 6-42.

²Location and lot information obtained from CAD drawings provided by the City of Fairbanks. T1 – T6 are located in Cleary Summit Subdivision and T7 – T12 are located in the Skiland Subdivision

³Distances were measured on CAD drawings provided by FGMI.

⁴Range of projected traffic noise levels by season at representative receiver locations with proposed haul route. Values are rounded accordingly with detailed results presented in tables that follow.

Table 4.10-30**Summary of Future Traffic Noise Levels with proposed Haul Route1**

Receiver Notation	Location Description ²	Dist to Haul Route in feet ³	Projected Future Noise Levels ⁴		
			Winter	Fall/Spring	Summer
T1	Lot 2 at the west end of Ridge Run	1160	38 – 40	37 – 38	37 – 38
T2	Lot 2 at the west end of Pedro Dome Rd.	680	43 – 44	41 – 43	43 – 44
T3	Tom Walyer residence on Ridge Run located ½ way up the road on the south side	1070	42 – 43	40 – 42	42 – 43
T4	Lot 7 on Pedro Dome Rd., approx 1100 ft from the Steese	925	40	39 – 41	41 – 43
T5	Brent LeValley residence on Ridge Run, located approx 1300 ft from the Steese Hwy	1430	38 – 39	36 – 39	39 – 40
T6	Lot 9 on Ridge Run, first lot, approx 450 ft to the Steese	1310	40 – 41	39 – 41	41 – 43
T7	Lot 5, between Skiland Rd. and Fairbanks Creek Rd.	1250	38 – 40	37 – 38	38 – 39
T8	Mt Aurora Fairbanks Creek Bed & Breakfast located just east of Fairbanks Creek Rd.	1000	41 – 42	39 – 41	40 – 41
T9	Cleary Summit Bed & Breakfast located east and up the hill from receiver T8	1315	39 – 41	38 – 40	39 – 40
T10	Lance Parrish Residence located at the top of the hill, west of the Skiland Lodge	1640	38 – 41	38 – 39	39
T11	Mike Goulding Residence located east of Fairbanks Creek Rd. along the south side of the hill	1600	38 – 40	37 – 38	38
T12	Skiland Resort, near the chair lift – commercial land use	2200	32 – 35	31 – 33	34

Detailed traffic noise levels for each receiver location are given in Tables 6-31 to 6-42.

Location and lot information obtained from CAD drawings provided by the City of Fairbanks. T1 – T6 are located in Cleary Summit Subdivision and T7 – T12 are located in the Skiland Subdivision. Distances were measured on CAD drawings provided by FGMI.

Range of projected traffic noise levels by season at representative receiver locations with proposed haul route. Values are rounded accordingly with detailed results presented in tables that follow.

The following text and tables contain detailed information on the noise level calculations performed at each receiver location T1 through T12. For each receiver location noise levels were projected for nominal daytime and nighttime traffic volumes. Additionally, the noise level projections were made for each of the three climatic conditions as described in Table 4.10-9.

T 1: Receiver T1 is the western-most lot in the Cleary Summit Residential Subdivision. Traffic related noise levels are projected to increase between 6.6 and 9.5 dBA during winter months, with the highest increases occurring when temperatures fall below –20 degrees. Fall and spring noise levels have projected increases of 4.7 to 8.5 dBA, and summer noise level increases are projected to be between 1.7 and 6.9 dBA Leq. Table 4.10-31 provides the details on the traffic noise level projections. Even though increases during the colder winter months are projected to reach 9.5 dBA Leq, this noise level increase would only occur when temperatures reach extremes, does not exceed the 10 dBA criteria and therefore is not considered a significant noise impact.

**Table 4.10-31
Traffic Noise Levels at Receiver T 1¹**

Season ²	Time of Day ³	Projected Future Noise Levels ⁴		
		Existing	Future	Change
Winter	Daytime	31.2	37.8	6.6
	Nighttime	30.5	40.0	9.5
Fall/Spring	Daytime	33.3	38.0	4.7
	Nighttime	28.1	36.6	8.5
Summer	Daytime	37.0	38.7	1.7
	Nighttime	31.7	38.6	6.9

NOTE: Noise levels listed in **BOLD** exceed the established criteria
 Projected traffic noise levels form TNM
 See table 6-9 for details on the season splits and input data associated with each season
 Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
 Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project

T2: Receiver T2 is also located in the Cleary Summit Subdivision. The lot is located along Pedro Dome Road, and is the last identified lot on the southwestern end of the

subdivision. Potential traffic noise level increases during the nighttime winter and fall/spring seasons are projected at 9.7 to 9.9 dBA L_{eq} . The noise from the ore trucks crossing the Steese Highway was determined as the primary noise source at this location. Increases during other times of the year are projected to be between 2.9 and 8.2 dBA, with the highest increase occurring during nighttime hours. As with receiver T1, the highest traffic noise level increase would only occur when temperatures reach extremes and no exceedance of the criteria was identified. Table 4.10-32 provides the details on the traffic noise level projections.

Table 4.10-32
Traffic Noise Levels at Receiver T 2¹

Season ²	Time of Day ³	Projected Future Noise Levels ⁴		
		Existing	Future	Change
Winter	Daytime	36.9	42.9	6.0
	Nighttime	33.9	43.8	9.9
Fall/Spring	Daytime	38.0	42.9	4.9
	Nighttime	31.8	41.5	9.7
Summer	Daytime	40.8	43.7	2.9
	Nighttime	34.7	42.9	8.2

NOTE: Noise levels listed in **BOLD** exceed the established criteria
 Projected traffic noise levels from TNM
 See table 6-9 for details on the season splits and input data associated with each season
 Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
 Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project

T3: Receiver T3 is the Tom Walyer residence located in the Cleary Summit subdivision along Ridge Run. Future traffic noise levels of 31.2 to 43.9 dBA L_{eq} are projected to result in noise level increases of 3.2 to 9.0 dBA under the build alternative. As with T1 and T2, the highest traffic noise level increases occur during the colder winter nighttime hours. No significant traffic noise impacts were identified at this receiver location. Table 4.10-33 provides the details on the traffic noise level projections.

Table 4.10-33
Traffic Noise Levels at Receiver T 3¹

Season ²	Time of Day ³	Projected Future Noise Levels ⁴		
		Existing	Future	Change
Winter	Daytime	35.4	42.1	6.7
	Nighttime	33.4	42.4	9.0
Fall/Spring	Daytime	36.7	42.2	5.5
	Nighttime	31.2	40.1	8.9
Summer	Daytime	39.7	42.9	3.2
	Nighttime	34.2	41.7	7.5

NOTE: Noise levels listed in **BOLD** exceed the established criteria
 Projected traffic noise levels from TNM
 See table 6-9 for details on the season splits and input data associated with each season
 Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
 Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project

T4: Receiver T4 is located near the center of the Cleary Summit Subdivision, just up the hill from the Steese Highway along Pedro Dome Road. Maximum traffic noise level increases of 4.6 dBA are projected during the coldest winter months. During the summertime, when traffic volumes on the Steese Highway are at their highest, there is the potential for a slight (-0.1) decrease in noise levels as a significant number of vehicles are projected to use the new haul road to access Fort Knox mine rather than continuing up the Steese highway to Fairbanks Creek Road. No significant traffic noise impacts related to the haul route are projected at this location. Table 4.10-34 provides the details on the traffic noise level projections.

Table 4.10-34
Traffic Noise Levels at Receiver T 4¹

Season ²	Time of Day ³	Projected Future Noise Levels ⁴		
		Existing	Future	Change
Winter	Daytime	39.6	41.0	1.4
	Nighttime	36.6	41.2	4.6
Fall/Spring	Daytime	40.6	41.3	0.7
	Nighttime	34.8	38.9	4.1
Summer	Daytime	42.9	42.8	-0.1
	Nighttime	37.1	40.8	3.7

NOTE: Noise levels listed in **BOLD** exceed the established criteria
 Projected traffic noise levels form TNM
 See table 6-9 for details on the season splits and input data associated with each season
 Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
 Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project.

T5: Receiver T5 is the Brent LeValley residence, located approximately 1000 feet up Ridge Run from the Steese Highway in the Cleary Summit Residential Subdivision. Maximum traffic noise levels are projected during the winter months when the noise from the ore trucks has the least atmospheric reduction. Traffic noise levels are projected to range from 36.2 to 40.0 dBA with increases over existing conditions of 0.1 to 4.1 dBA L_{eq} . No significant traffic noise impacts were identified at this location. Table 4.10-35 provides the details on the traffic noise level projections.

Table 4.10-35

Traffic Noise Levels at Receiver T 5¹

Season ²	Time of Day ³	Projected Future Noise Levels ⁴		
		Existing	Future	Change
Winter	Daytime	35.7	38.3	2.6
	Nighttime	34.9	39.0	4.1
Fall/Spring	Daytime	36.8	38.7	1.9
	Nighttime	32.5	36.2	3.7
Summer	Daytime	39.9	40.0	0.1
	Nighttime	35.3	38.6	3.3

NOTE: Noise levels listed in **BOLD** exceed the established criteria

1. Projected traffic noise levels form TNM
2. See table 6-9 for details on the season splits and input data associated with each season
3. Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
4. Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project.

T6: Receiver T6 is the eastern most residential lot in the Cleary Summit Subdivision. Traffic noise levels at this location are projected to remain within 2 dBA of the current levels, with the potential for traffic noise reductions due to a reduction of traffic

accessing Fort Knox from Fairbanks Creek Road. No significant traffic noise impacts were identified at this location. Table 4.10-36 provides the details on the traffic noise level projections.

Table 4.10-36
Traffic Noise Levels at Receiver T 6¹

Season ²	Time of Day ³	Projected Future Noise Levels ⁴		
		Existing	Future	Change
Winter	Daytime	42.0	40.3	-1.7
	Nighttime	40.5	40.6	0.1
Fall/Spring	Daytime	42.7	40.9	-1.8
	Nighttime	39.1	38.9	-0.2
Summer	Daytime	44.9	42.7	-2.2
	Nighttime	40.5	40.6	0.1

NOTE: Noise levels listed in **BOLD** exceed the established criteria

1. Projected traffic noise levels form TNM
2. See table 6-9 for details on the season splits and input data associated with each season
3. Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
4. Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project

T7: Receiver T7 is one of the northern lots located in the Skiland Residential Subdivision. The lot is located to the east and up the hill from the Fairbanks Creek Road. Future traffic noise levels of 36.5 to 40.0 dBA are projected to result in noise level increases of 2.1 to 4.2 dBA Leq. No significant traffic noise impacts are projected and Table 4.10-37 provides the details on the traffic noise level projections.

Table 4.10-37				
Traffic Noise Levels at Receiver T 7¹				
Season²	Time of Day³	Projected Future Noise Levels⁴		
		Existing	Future	Change
Winter	Daytime	35.1	37.9	2.8
	Nighttime	35.8	40.0	4.2
Fall/Spring	Daytime	35.2	38.2	3.0
	Nighttime	33.7	36.5	2.8
Summer	Daytime	36.3	38.4	2.1
	Nighttime	35.6	38.5	2.9

NOTE: Noise levels listed in **BOLD** exceed the established criteria

1. Projected traffic noise levels from TNM
2. See table 6-9 for details on the season splits and input data associated with each season
3. Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
4. Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project

T8: Receiver T8 is the Mt. Aurora Fairbanks Creek Bed & Breakfast, located up the hill from the Fairbanks Creek Road. Minimal traffic noise level increases are projected at this location due to the lower elevation and higher existing noise from traffic noise along Fairbanks Creek Road. Future traffic noise levels of 39.2 to 42.2 dBA are projected to result in increases of only 0.2 to 2.0 dBA Leq. No significant traffic noise impacts are projected and Table 4.10-38 provides the details on the traffic noise level projections.

Table 4.10-38
Traffic Noise Levels at Receiver T 8¹

Season ²	Time of Day ³	Projected Future Noise Levels ⁴		
		Existing	Future	Change
Winter	Daytime	39.7	40.8	1.1
	Nighttime	40.2	42.2	2.0
Fall/Spring	Daytime	39.7	40.8	1.1
	Nighttime	39.0	39.2	0.2
Summer	Daytime	40.0	40.6	0.6
	Nighttime	39.8	40.8	1.0

NOTE: Noise levels listed in **BOLD** exceed the established criteria

1. Projected traffic noise levels from TNM
2. See table 6-9 for details on the season splits and input data associated with each season
3. Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
4. Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project

T9: Receiver T9 is the Cleary Summit Bed and Breakfast. The mixed use resident is located behind, and up the hill from receiver T8. Traffic noise level increases of 3.4 to 5.6 are projected due to a reduction in shielding from the proposed haul route and reduced existing noise levels. Future traffic noise levels at this location are projected to be between 38.2 to 41.4 dBA Leq. No significant traffic noise impacts are projected and Table 4.10-39 provides the details on the traffic noise level projections.

Table 4.10-39
Traffic Noise Levels at Receiver T 9¹

Season ²	Time of Day ³	Projected Future Noise Levels ⁴		
		Existing	Future	Change
Winter	Daytime	34.9	39.3	4.4
	Nighttime	35.8	41.4	5.6
Fall/Spring	Daytime	35.3	39.6	4.3
	Nighttime	33.6	38.2	4.6
Summer	Daytime	36.1	39.5	3.4
	Nighttime	35.4	39.8	4.4

NOTE: Noise levels listed in **BOLD** exceed the established criteria

1. Projected traffic noise levels from TNM
2. See table 6-9 for details on the season splits and input data associated with each season
3. Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
4. Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project

T10: Receiver T10 is the Lance Parrish resident located on top of the hill in the Skiland Residential Subdivision. Because the residence is located on the northern end of the hill and has clear line of sight to the Steese Highway, noise from the proposed haul route is projected to result in noise level increases of 5.6 to 8.0 dBA. Future traffic noise levels are projected to be between 37.7 to 40.8 dBA L_{eq} . No significant traffic noise impacts are projected and Table **4.10-40** provides the details on the traffic noise level projections.

4.10-40				
Traffic Noise Levels at Receiver T 10¹				
Season²	Time of Day³	Projected Future Noise Levels⁴		
		Existing	Future	Change
Winter	Daytime	31.9	38.4	6.5
	Nighttime	32.8	40.8	8.0
Fall/Spring	Daytime	33.4	39.0	5.6
	Nighttime	30.0	37.7	7.7
Summer	Daytime	34.3	38.9	4.6
	Nighttime	32.5	39.2	6.7

NOTE: Noise levels listed in **BOLD** exceed the established criteria

1. Projected traffic noise levels form TNM
2. See table 6-9 for details on the season splits and input data associated with each season
3. Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
4. Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project

T11: Receiver T11 is the Mike Goulding residence, also located on the top of the hill in the Skiland Residential Subdivision. The residence is located along the southern end of the hill and has a clear view of portions of the proposed haul route. Future traffic noise levels at this location are projected to range between 30.3 to 40.1 dBA with noise level increases of 4.1 to 7.2 dBA. No significant traffic noise impacts are projected and Table 4.10-41 provides the details on the traffic noise level projections.

Table 4.10-41
Traffic Noise Levels at Receiver T 11¹

Season ²	Time of Day ³	Projected Future Noise Levels ⁴		
		Existing	Future	Change
Winter	Daytime	31.9	37.8	5.9
	Nighttime	32.9	40.1	7.2
Fall/Spring	Daytime	32.8	38.2	5.4
	Nighttime	30.3	36.7	6.4
Summer	Daytime	33.9	38.0	4.1
	Nighttime	32.7	38.3	5.6

NOTE: Noise levels listed in **BOLD** exceed the established criteria

1. Projected traffic noise levels from TNM
2. See table 6-9 for details on the season splits and input data associated with each season
3. Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
4. Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project

T12: Receiver T12 is the Skiland Ski Lodge. The lodge is considered a commercial land use. Noise levels are projected to increase by 3.7 to 7.7 dBA L_{eq} with future noise levels of 30.9 to 35.2 dBA. Actual noise level increases at this location would be considerably less during those times when the ski resort is in operation due to added noise levels from the operation of the chair lift and increased local traffic. No significant traffic noise impacts are projected and Table 4.10-42 provides the details on the traffic noise level projections.

Table 4.10-42

Traffic Noise Levels at Receiver T 12¹

Season ²	Time of Day ³	Projected Future Noise Levels ⁴		
		Existing	Future	Change
Winter	Daytime	26.4	32.1	5.7
	Nighttime	27.6	35.2	7.6
Fall/Spring	Daytime	26.9	33.0	6.1
	Nighttime	23.2	30.9	7.7
Summer	Daytime	29.9	33.6	3.7
	Nighttime	27.9	33.6	5.7

NOTE: Noise levels listed in **BOLD** exceed the established criteria

1. Projected traffic noise levels from TNM
2. See table 6-9 for details on the season splits and input data associated with each season
3. Daytime is 7 am to 10 pm and nighttime is 10 pm to 7 am
4. Projected traffic noise levels for existing and future traffic volumes and the increase in noise levels with the project

4.10.18 CUMULATIVE NOISE ANALYSIS

In addition to calculating noise levels separately from mine operations and from ore hauling, additional consideration was given to the future cumulative noise levels of both

activities, where applicable. The following described the results of the cumulative noise analysis. There would be no significant cumulative noise impacts

Olnes Residential Subdivisions Traffic Noise Levels

The operational noise level calculations include noise related to idling and moving haul and ore trucks in and around the mine operations, and therefore the cumulative noise levels and noise impacts for the Olnes area would be the same as those in Tables 4.10-11 through 4.10-17.

Haystack Residential Subdivision Traffic Noise Levels

The operational noise level calculations include noise related to idling and moving haul and ore trucks in and around the mine operations, and therefore the cumulative noise levels and noise impacts for the Haystack area would be the same as those in Tables 4.10-18 through 4.10-20.

Cleary Summit and Skiland Residential Subdivisions Traffic Noise Levels

Because of the distance and shielding between the mining location and the sensitive receivers near the Cleary Summit and Skiland residential subdivisions, cumulative noise levels related to the project would be mainly by trucks using the access haul route to Fort Knox. No traffic Significant noise impacts were identified. No significant cumulative noise impacts are projected in these subdivisions from development of True North.

4.10.19 SUMMARY DISCUSSION

In discussing noise and noise impacts it is easy to become immersed in the technical aspects of sound and to lose sight of what the dry figures actually represent. To understand what the tables mean in the real world it is important to put these numbers into perspectives that can be understood by the layman. With respect to existing baseline noise levels at the 12 receiver locations at the Cleary Summit and Skiland subdivisions (Table 4.10-29), and the predicted noise levels at the same locations (Table 4.10-30), a summary discussion is in order.

As shown in Table 4.10-29, existing noise levels on Cleary Summit are quiet. For all seasons, most measurements in dBA range from the low to high 30s with one receptor

near the Steese Highway in the low to mid-40s. As shown in Table 4.10-2 that lists typical noise sources, the large majority of these existing sound levels equate to something between somewhat louder than a “quiet library” or “soft whisper” to something approaching a “quiet living room” or “bird calls” at the exterior wall of the residences.

The predicted future noise levels at these same 12 receptor sites, shown in Table 4.10-30, indicate generally that increases in noise due to operation of the access haul road would raise to levels between the high 30s and low 40s. As shown in Table 4.10-2, those sound levels equate to something between somewhat quieter than a “quiet living room” or “bird calls” to something louder than a “quiet living room” or “bird calls” at the exterior wall of the residences. Certainly, the predicted noise levels don’t begin to approach 50 dBA which the table lists as equivalent to “light auto traffic” at a distance of 100 ft that has a subjective impression of “quiet.”

The Federal Housing Administration (FHA) and HUD have established a criterion of 45 dBA as the maximum allowable level for the inside of bedrooms in new home construction. Thus, the increased noise levels from access haul road traffic at the exterior of Cleary Summit residences generally would be less than the FHA and HUD standard for the interiors of bedrooms in those residences. And, because the average residence has noise reductions of 22 to 35 dBA, there definitely would be no significant noise impacts to the interior of these residences.

With respect to individuals on the outside deck of a residence, the average noise level of two people having a conversation at a distance of 3 feet is between 60 and 65 dBA. Normally, if one noise level is more than 10 dBA below another, the quieter noise level is not noticeable. Therefore, if several people were on a deck during nighttime hours, having a normal conversation, their voices would be significantly louder than the trucks on the access haul road.

All this does not mean that on occasion the ore trucks would not be clearly audible. It does mean, however, that even with the existing low background noise levels in the Cleary Summit area the projected noise levels due to ore truck traffic are not significant when *interior* noise levels are well below the FHA and HUD bedroom standards, and the

exterior noise levels are not high enough to cause disruption in a normal conversation at 3 feet.

4.10.20 NOISE MITIGATION MEASURES

As discussed above in Section 4.10.5, minimal noise impacts were predicted for the nearest receiver to the True North Mine site under noise projection scenario 3. Due to the conservative methods used in the calculations, it is unlikely that noise levels over 50 dBA L_{eq} would be experienced from mine operations at this location. As part of its proposed project, FGMI would implement mitigation that would help to insure that noise levels remain as low as possible, thus reducing the chance for an impact at the receiver closest to the mine site, R5. Noise mitigation measures may be found in Section 2.3.21 (Mitigation).

Also, no significant noise impacts are predicted at residences in the Cleary summit area from operation of the access haul road. To minimize such effects, however, the specific ore hauling mitigation measures found in Section 2.3.21 (Mitigation) will be implemented.

4.11 SOCIOECONOMICS

Because the True North project area is defined as the area of potential direct impacts, limiting a discussion of socioeconomic impacts strictly to the project area would not present a fair picture of the true impacts as it does for most other resources. Although workers technically do earn their incomes within the project area, because of secondary impacts and multiplier effects that accrue outside the project area, any meaningful discussion of socioeconomic effects must include effects on the greater Fairbanks area. Therefore, in this section socioeconomic effects are discussed within the contexts of the project area, and then separately for the greater Fairbanks area.

4.11.1 TRUE NORTH PROJECT AREA

In this section, socioeconomic impacts within the True North project area are discussed in the context of changes to assessed values, and effects on businesses and the MHLT. In this context, considering the past history of increased assessment values, the minimal effects expected on businesses such as aurora viewing because of the many mitigation measures that would be taken, and the economic benefit to the MHLT, there would be no significant negative socioeconomic impacts within the True North project area. Indeed, effects on the MHLT would be positive.

Assessed Valuations -- As discussed in Section 3.16.6 (Economic Activity in the True North Study Area), overall assessed land values in the Cleary Summit and Skiland subdivisions have increased steadily during the past ten years. For both subdivisions, the major increase in assessed values occurred during the five-year period from 1994 to 1999. These were an annual average of 4.96 percent for the Cleary Summit Subdivision, and 4.65 percent for the Skiland Subdivision. This period coincided with the construction and operation of the Fort Knox Mine. While assessed values depend on several factors, a reasonable interpretation would be that the Fort Knox project has not significantly affected land values in these two subdivisions. A reasonable presumption also could be made that operation of the True North project also would not significantly affect future assessed values, especially considering that it would remove approximately 348 vehicle trips from Fairbanks Creek Road immediately in front of the Skiland Subdivision (Hage & Associates, 2000).