

**BASELINE NOISE SURVEY
FOR
THE PROPOSED WABUSH 3 MINE SITE
LABRADOR CITY, NEWFOUNDLAND AND LABRADOR**

Submitted to:

Iron Ore Company of Canada
2 Avalon Drive
Labrador City, NL
Canada A2V 2Y6

Submitted by:

AMEC Environment & Infrastructure
A Division of AMEC Americas Limited
133 Crosbie Road, PO Box 13216
St. John's, Newfoundland and Labrador
Canada A1B 4AB

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TABLE OF CONTENTS

	PAGE
1.0 BACKGROUND	1
2.0 REGULATORY CONTEXT	1
2.1 MODEL NOISE CONTROL BY-LAW DOCUMENT	2
3.0 BASELINE NOISE	5
4.0 REFERENCES	12

LIST OF TABLES

Table 1.1: Sound Levels and Common Sources	1
Table 2.1: Zones to Include Under “Residential Area” in Noise By-Law.....	3
Table 2.2: Zones to Include Under “Quiet Zone” in Noise By-Law	3
Table 2.3: Codes for Prohibited Periods of Time	3
Table 2.4: Prohibitions by Time and Place	4
Table 2.5: Summary of Zones and Maximum Sound Levels.....	5
Table 3.1: Summary of Noise Monitoring Program Results	6
Table 3.2: Summary of Noise Monitoring Program Observations	8

LIST OF FIGURES

Figure 3.1: IOC Noise Monitoring Locations.....	11
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1.0 BACKGROUND

The proposed Wabush 3 open pit mine site is located in a remote rural area and there were very few sources of noise in this area at the time of this assessment. It is situated to the south of and adjacent to the operating Luce Mine and to the west of and adjacent to the Smokey Mountain ski hill. The southern edge of the proposed Wabush 3 pit is approximately three km to the north of Highway 500 and Tanya Lake in the Town of Labrador City. The area to the west of the proposed Wabush 3 Mine is forested. The proposed mine site is located to the west and south of the existing IOC operations. During the assessment there were some distant noise sources to the east of the mine site, with the largest contributors to the area being airplane traffic, highway traffic, IOC train horns and recreational vehicle traffic, such as all-terrain vehicles (ATVs).

The context for noise assessment may be assisted by an understanding of typical noise levels for a variety of scenarios/activities. These are described in Table 1.1

Table 1.1: Sound Levels and Common Sources

Sound Level (decibels) (dBA)	Common Occurrence	Comments
0	Does not normally occur	Completely silent
10	Pages of a book turning	Barely audible
20	Rustling Leaves	very quiet, pleasant
30	Whispering	Quiet, undisturbed sleep
40	Quiet living room	Possible to sleep comfortably
50	Average home (daytime)	Possibly interferes with speech
60	Normal conversation	Can disturb reading, etc.
70	Noisy restaurant Loud Singing	Annoying, possible hearing damage with continuous exposure.
80	Busy intersection Food Blender	Above 85 dBA, hearing damage for exposure over 8 hours.
90	Home shop tools Air compressor	Very annoying, should be using hearing protection.
100	Pneumatic tools	Very hard to understand speech.
110	Rock concert	Hearing damage for short exposure
120	Jet taking off (60 m away)	Threshold of pain

Source: Government of Newfoundland and Labrador Department of Environment and Labour, 1997

2.0 REGULATORY CONTEXT

There are no regulations in Newfoundland and Labrador regarding noise emissions. However, in response to municipalities throughout Newfoundland and Labrador adopting different Noise by-Laws; in 1997 the Province prepared the document *Model Noise Control By-Laws* to provide uniformity and guidance on handling noise related problems (NLDEL, 1997).

Very few, if any, of the municipalities have adopted the use of the *Model Noise Control By-Laws* guidance document even though it has been finalized and available for use for over ten years. Due to the lack of support for the document, guidelines typically used by other municipal and provincial regulatory agencies were reviewed and noise guidelines for the Province of Nova Scotia are included and used for comparison in the following section. The Province of Nova

Scotia uses the following guidelines for acceptable equivalent continuous sound levels (Leq) (NSDOE, 1989):

- Leq of 65 dBA between 0700 to 1900 hours;
- Leq of 60 dBA between 1900 to 2300 hours; and
- Leq of 55 dBA between 2300 to 0700 hours.

Leq is the equivalent continuous sound level, and represents the average sound level over the period of measurement. When a noise varies over time, the Leq is the equivalent continuous sound which would contain the same sound energy as the time varying noise. Leq is measured using dBA values. The 'A' frequency weighting network is the most widely used, and is used to represent the response of the human ear to loudness. Measurements made with this frequency weighting will be displayed as dBA.

Labrador City does have Municipal Noise Abatement By-Laws (Municipalities Newfoundland and Labrador, 2010) which were adopted in 1995 and predate the *Model Noise Control By-Laws*. Under these by-laws there are a number of activities that are prohibited unless permission is given by the Town Council. Some of these prohibited activities include discharging firearms, firecrackers, or fireworks; using a noise making device to solicit business or attract attention; using a motor vehicle horn or other horn any more than is reasonably necessary; operating a motor vehicle without a muffler used to prevent noise; squealing tires of a motor vehicle; operating a motor vehicle, snowmobile, motorcycle, stereo or other mechanical or electronic equipment in such a condition as to disturb the peace and quiet of a neighborhood.

The by-laws do not prohibit activities such as the sounding of a bell, horn, siren or other signal device on a vehicle, motorcycle, bicycle, etc. when it is required by law; sounding of a siren or horn on any vehicle of the Police or Fire Department or any ambulance or emergency vehicle when answering a call; the ringing of church bells; the sounding of railway horns and signals; and the sounding of industrial whistles.

Guidance for noise assessment is provided by Health Canada in their document *Useful Information for Environmental Assessments, Section 6 – Noise* (Health Canada, 2012). Health Canada does not have noise guidelines or enforceable noise thresholds or standards. Responsible authorities or proponents of projects are encouraged to consult with provincial and municipal authorities to determine which standards or regulations exist for the location of the proposed project, as differences may exist in their respective approaches to limiting noise impacts.

2.1 MODEL NOISE CONTROL BY-LAW DOCUMENT

The *Model Noise Control By-Law* guidance document provides both quantitative and qualitative by-law models to control noise. The document manages noise issues by taking into account municipal zoning, time of the day (i.e., night versus day) and types of activities that are considered acceptable in each zone. The general zones that have been selected to regulate noise are residential and quiet. The types of activities limited in each of the general zones and the maximum allowable sound levels indicated are chosen to reflect the level of noise or sound that will allow effective use of properties within specified zones, while allowing those on adjacent

or abutting properties to relax, communicate, sleep or conduct business without the interference caused by unwanted sound (Newfoundland and Labrador Department of Environment and Labour, 1997).

The *Model Noise Control By-Law* guidance document recommends the following zones, listed in Table 2.1, be included in the “residential area” category of the noise by-law.

Table 2.1: Zones to Include Under “Residential Area” in Noise By-Law

Zones		
Residential Low Density	Seasonal Residences	*Rural
Residential Medium Density	Institutions – correctional	*Conservation
Residential High Density	*Commercial Residential	*Recreational Assembly
Residential Infilling	*Educational	*Recreational Open Space

Source: Government of Newfoundland and Labrador Department of Environment and Labour, 1997

* These zones can benefit from reduced noise levels, and should be included when possible

“Quiet zones” are defined as areas in which people of ill health are receiving care. Table 2.2 lists the zones that fall under the “quiet zone” category.

Table 2.2: Zones to Include Under “Quiet Zone” in Noise By-Law

Zones		
Institutional - Medical	* Recreational Open Space	* Residential – Low Density

Source: Government of Newfoundland and Labrador Department of Environment and Labour, 1997

* These zones can benefit from reduced noise levels, and should be included when possible

Table 2.3 provides a list of time periods in which certain noise producing activities are limited in residential and quiet zones.

Table 2.3: Codes for Prohibited Periods of Time

Code	Prohibited Periods of Time *
A	23:00 on day to 07:00 next day (09:00 Sundays)
B	19:00 on day to 07:00 next day (09:00 Sundays)
C	17:00 on day to 07:00 next day (09:00 Sundays)
D	All day Sundays and statutory Holidays
E	19:00 on day to 07:00 next day

Source: Government of Newfoundland and Labrador Department of Environment and Labour, 1997

*Where the Municipality deems necessary, special references to Sundays may be omitted.

Under the *Model Noise Control By-Law* guidance document, certain activities are prohibited during certain periods if they are audible at a sensitive receptor. Table 2.4 provides a summary of these activities.

Table 2.4: Prohibitions by Time and Place

Prohibited Activity		Quiet Zone	Residential
1.	The detonation of fireworks or explosive devices not used in construction	At all times	At all times
2.	The discharge of firearms	At all times	At all times
3.	The operation of a combustion engine which (i) is, or (ii) is used in, or (iii) is intended for use in, a toy or a model or replica of any device, which model or replica has no function other than amusement and which is not a conveyance	At all times	At all times
4.	The operation of any electronic device or group of connected electronic devices incorporating one or more loudspeakers or other electro-mechanical transducers, and intended for the production, reproduction or amplification of sound.	At all times	C
5.	The operation of an auditory signaling device, including but not limited to, the ringing of bells or gongs and the blowing of horns or sirens or whistles, or the production reproduction or amplification of any similar sound by electronic means except where required or authorized by law or in accordance with good safety practices	At all times	D and E
6.	The operation of any motorized conveyance other than on a highway or other place intended for its operation	At all times	B
7.	The venting, release or pressure relief of air, steam or other gaseous material, products or compounds from any autoclave, boiler, pressure vessel, pipe, valve, machine, device or system except where required or authorized by law or in accordance with good safety practices	At all times	A
8.	Persistent barking, calling or whining or other similar persistent noise making by any domestic pet or any other animal kept or used for any purpose other than agriculture	At all times	A
9.	The operation of a commercial car wash with air drying equipment	At all times	D and E
10.	Yelling, shouting, hooting, whistling, or singing	At all times	A
11.	The operation of a power-assisted hand glider or parafoil	At all times	D and E
12.	The operation of any item of snow-making equipment	At all times	E
13.	All selling or advertising by shouting or out cry or amplified sound	At all times	D and E
14.	Loading, unloading, delivering, packing, unpacking, or otherwise handling any containers, products, materials, or refuse, whatsoever, unless necessary for the maintenance of essential services or the moving of private household effects	D and E	D and E
15.	The operation of any equipment in connection with construction	D and E	D and E
16.	The operation or use of any tool for domestic purposes other than snow removal	C	B
17.	The operation of solid waste bulk lift or refuse compacting equipment whether mobile or stationary	C	B
18.	The operation of a commercial car wash of a type other than mentioned in item 9	C	A

Source: Government of Newfoundland and Labrador Department of Environment and Labour, 1997

The *Model Noise Control By-Law* guidance document also defines the maximum sound levels (dBA) that are allowed at a property line for defined periods (Table 2.5) within an area of a municipality.

Table 2.5: Summary of Zones and Maximum Sound Levels

Zone	Limiting Time	Maximum dBA/day	Maximum dBA/night
Institutions – Medical	A	47	43
Residential – (Low and Medium Density)	B	50	45
Residential – (High Density and Infilling)	C	53	50
Educational	C	53	50
Institutions – Correctional	C	53	50
Seasonal Residences	B	55	50
Recreational Open Space	D	55	45
Mixed Development	B	57	50
Commercial – Residential	C	57	50
Commercial – (General, Highway)	C	60	53
Shopping Centre	C	60	53
Industrial – Light	C	65	57
Recreational Assembly	D	65	55
Rural	B	65	55
Agriculture / Forestry	B	65	57
Conservation	B	65	55
Central Business District	C	65	57
Industrial – (Hazardous, General)	C	68	60
Solid Waste / Scrap Dealers	C	68	57
Mineral Workings	C	68	57
Transportation	C	68	57

Source: Government of Newfoundland and Labrador Department of Environment and Labour, 1997

3.0 BASELINE NOISE

Baseline noise monitoring was performed at nine locations between August 3rd and 8th, 2012. Noise monitoring was performed using Quest 2900 Type 2 noise level meters and monitoring was performed as per the Canadian Standards Association (CSA) Procedure for Performing a Survey of Sound Due to Industrial, Institutional, or Commercial Activities (CSA Z107.53-M1982). As per the CSA procedure the following tasks were adhered to:

- Calibration checks were performed at the beginning of each day using a sound level calibrator with an accuracy of +/- 0.5 dB.
- A windscreen that conforms to the standard was used at all times.
- The noise level meter was located no closer than 1 m from any structure.
- The noise level microphone was located at a height of 1.2 m above ground surface.
- The noise level meter was set on slow response and an 'A' weighting network was used.
- No more than one person other than the observer reading the sound level meter was allowed within 5 m of the microphone.

As per Nova Scotia Department of Environment guidance, in order to ensure that representative samples were collected, a minimum of two continuous representative hours of data were collected in one time period. In addition, as per Health Canada guidance, monitoring was performed for a 24 hour period at two locations, Location 6 - Beverly Lake and Location 8 - Church.

The noise monitoring locations were chosen based on the Health Canada guidance document *Useful Information for Environmental Assessments, Section 6 – Noise*. Information on each location is provided:

- Location 1 – New Hospital/North Atlantic College is located 100 m to the north of the Labrador Highway and is the closest sensitive receptor to the proposed Wabush 3 project, within three km of the center of the open pit.
- Location 2 – Trailer Park is located to the west of Labrador City and is within four km of the center of the proposed Wabush 3 open pit.
- Location 3 – Menihek School is located in a residential area on the southern end of Labrador City.
- Location 4 – Vanier Street is located in a residential area on the northern edge of Labrador City. The Labrador Mall is located 100 m to the west and Route 500 Trans Labrador Highway is located 100 m to the north.
- Location 5 – Wabush 3 is located in a remote wooded area at the edge of the proposed Wabush 3 open pit. It is the closest noise monitoring location to the proposed Wabush 3 project, within one km of the center of the open pit.
- Location 6- Beverly Lake is located in a wooded area near Beverly Lake which has the Route 500 Trans Labrador Highway located 100 m to the south; the IOC concentrator and pelletizing plants are located approximately two km to the east; and the center of Labrador City is located approximately one km to the south.
- Location 7 – IOC Camp is located on the southern end of the IOC property; the IOC concentrator and pelletizing plants are located approximately one km to the north; and the center of Labrador City is located approximately one km to the west.
- Location 8 – Church is in a commercial area located in the center of Labrador City.
- Location 9 – Tanya Lake is a recreational area located 500 m to the south of Route 500 Trans Labrador Highway and within four km of the center of the open pit.

Figure 3.1 provides a plan view of the noise monitoring locations. The results are reported as Leq (equivalent sound level) and are presented in Table 3.1. The table also includes guidelines from both the Newfoundland and Labrador *Model Noise By-Law* guidance document and the general guidelines that municipal and provincial agencies use across Canada, as provided in the Nova Scotia guidelines.

Table 3.1: Summary of Noise Monitoring Program Results

Location	Description	Date/Time	Leq (dBA)			Guidelines Typically Adopted by Regulatory Agencies (dBA) ⁽²⁾
			Measured Results	N.L. Guidelines ⁽¹⁾	Max. dBA (Day)	
Location 1 New Hospital/North Atlantic College	Institutional - Medical	Aug 3, 2012/17:03-19:03	61.4	47		65
		Aug 3, 2012/19:17-21:17	60.6	47		60
		Aug 8, 2012/04:31-06:31	55.6		43	55
Location 2 Trailer Court	Residential – (Low and Medium Density)	Aug 6, 2012/09:37-11:37	36.1	53		65
		Aug 6, 2012/20:40-22:40	45.3	53		60

Location	Description	Date/Time	Leq (dBA)			
			Measured Results	N.L. Guidelines ⁽¹⁾		Guidelines Typically Adopted by Regulatory Agencies (dBA) ⁽²⁾
				Max. dBA (Day)	Min. dBA (Night)	
		Aug 6, 2012/23:01-01:01 ⁽³⁾	36.1		50	55
Location 3 Menihek School	Educational	Aug 4, 2012/14:14-16:14	58.9	53		65
		Aug 8, 2012/19:26-21:26	61.8	53		60
		Aug 6, 2012/02:34-04:34	39.0		50	55
Location 4 Vanier Street	Residential (Low and Medium density)	Aug 5, 2012/10:54-12:54	50.8	50		65
		Aug 7, 2012/20:19-22:19	49.6	50		60
		Aug 4, 2012/04:57-06:57	42.6		45	55
Location 5 Wabush 3	Agricultural - Forestry	Aug 4, 2012/08:00-10:00	63.6	65		65
		Aug 4, 2012/19:28-21:28	34.6	65		60
		Aug 5, 2012/00:01-02:01	47.4		57	55
Location 6 Beverly Lake	Agricultural - Forestry	Aug 7, 23:16 – Aug 8, 23:16	51.2	65	57	55 to 65
Location 7 IOC Camp	Residential – High Density and Infilling	Aug 5, 2012/13:47-15:47	65.9	53		65
		Aug 7, 2012/20:33-22:33	58.8	53		60
		Aug 4, 2012/23:02-01:02	55.1		50	55
Location 8 Church	Commercial - Residential	Aug 9, 08:00 – Aug 10, 08:00	52.2	57	50	55 to 65
Location 9 Tanya Lake	Recreational – Open Space	Aug 5, 2012/14:00-16:00	49.3	55		65
		Aug 7, 2012/20:55-22:55	46.0	55		60
		Aug 4, 2012/02:15-04:15	53.4		45	55

Note (1) Source: Newfoundland Department of Environment and Labour, 1997

(2) Source is Nova Scotia Department of Environment, Guideline for Environmental Noise and Measurement and Assessment, 1989.

(3) Measurement was obtained over a 1 hour period.

(4) Exceedances to guidelines typically adopted by regulatory agencies are bolded.

A comparison of Newfoundland and Labrador Model Noise Control By-Laws guidelines with measured results determined that the guidelines were exceeded at more than half of the monitoring time.

A comparison of the measured noise levels with guidelines (daytime: 65 dBA; evening: 60 dBA; and nighttime 55 dBA) typically adopted by regulatory agencies determined that exceedances occurred on four occasions: twice at Location 7 - IOC Camp for the day time and night time

guidelines; and twice at Location 1 - New Hospital/North Atlantic College for the evening and night time guidelines.

The observations for each monitoring period are presented in Table 2.7

Table 3.2: Summary of Noise Monitoring Program Observations

Location	Monitoring Times	Weather Conditions	Observations – Noise Sources
Location 1 New Hospital/North Atlantic College	Aug 3, 2012/ 17:03-19:03	Mostly cloudy, Moderate wind, 10.7 °C.	-ongoing construction at the new hospital location; -college ventilation system operating; -loud motorcycles on the highway; -moderate vehicle traffic on highway; and -dump trucks engine braking on the highway.
	Aug 3, 2012/ 19:17-21:17	Mostly cloudy, moderate wind, 9.5 °C.	-light to moderate vehicle traffic on the highway; -truck entered college parking lot; -fireworks set off near the lake located to the east; -numerous transport truck engine braking on highway; -loud music coming from passing vehicles.
	Aug 8, 2012/ 04:31-06:31	Mainly clear, light wind, 11 °C.	-very little traffic on the TLH from 04:31 to 05:00; -light traffic from 05:00 to 06:31; - IOC mill train horn audible in the distance.
Location 2 Trailer Court	Aug 6, 2012/ 09:37-11:37	Sunny, moderate wind, 16.6 °C.	-carpenters working on building a home located approximately 50 m away; -truck backup beepers on the home building site; -loud music from car passing on the road; -light vehicle traffic; -turbo propeller airplane in the distance; -lawn mower in the distance; and -dogs barking.
	Aug 6, 2012/ 20:40-22:40	Mostly cloudy, moderate wind, 14.2 °C.	-light street traffic.
	Aug 6, 2012/ 23:01-01:01	Rain showers, moderate wind, 13.2 °C.	-quiet.
Location 3 Menihek School	Aug 4, 2012/ 14:14-16:14	Mostly cloudy, light wind, 16.4 °C.	-off road 4-wheeler and dirt bike pass 5 m from unit; -lawn mower operating across street; -bush plane flying at a low level; -truck backup beeper across the street; -light street traffic including loud motorcycles; and -people walking and having conversations on sidewalk;
	Aug 8, 2012/ 19:26-21:26	Mainly Cloudy, light wind, 19.1 °C.	-light to moderate street traffic; and -some motorcycle traffic;
	Aug 6, 2012/ 02:34-04:34	Rain, calm, 17.3 °C.	-light to moderate street traffic.
Location 4 Vanier Street	Aug 5, 2012/ 10:54-12:54	Sunny, moderate wind, 15.7 °C.	-moderate traffic along the TLH and Vanier Street; -helicopter lands near the monitoring location; -IOC Mine train is moderately audible; and -shopping mall area busy especially at Tim

Location	Monitoring Times	Weather Conditions	Observations – Noise Sources
	Aug 7, 2012/ 20:19-22:19	Rain Showers, light wind, 14.2 °C.	Horton's drive through. -moderate traffic on the street.
	Aug 4, 2012/ 04:57-06:57	Mostly cloudy, light wind, 9.9 °C.	-quiet
	Aug 4, 2012/ 08:00-10:00	Sunny, mainly clear, moderate wind, 12.2 °C.	-quiet --barely audible IOC mill train horn in the distance.
Location 5 Wabush 3	Aug 4, 2012/ 19:28-21:28	Mostly cloudy, light wind, 17.5 °C.	-very quiet; -wildlife making sounds; -some motorcycles in the distance; and -barely audible IOC mill train horn in the distance.
	Aug 5, 2012/ 00:01-02:01	Clear, calm, 9.3 °C.	-very quiet.
	Aug 7, 23:16 – Aug 8, 23:16	Cloudy with light winds; periods of showers during the 24 hour monitoring period (12:00 to 15:00 hrs); temperature ranged from 11 to 19.1 °C.	-highway traffic ranging from light to heavy on highway over the 24 hour monitoring period; -at one point an umbrella was placed over the noise meter; -cars parked near Beverly Lake; people walk the hill to Smokey Ski Hill; -dirt bikes pass by; -jack hammer is audible in distance; -wildlife in area can be heard (loons, ravens, etc.); -truck in the area backs up and spins tires; -steady aircraft traffic from the Wabush Airport; and -IOC mill train horn barely audible in the distance.
Location 7 IOC Camp	Aug 5, 2012/ 13:47-15:47	Mostly cloudy, moderate wind, 24.9 °C.	-ongoing activity in the mill yard adjacent to the IOC Camp with backup beepers on loaders and geotechnical drilling; -transport trucks moving in adjacent parking lot; -IOC mill train horn blowing; and -IOC employees having conversations.
	Aug 7, 2012/ 20:33-22:33	Scattered clouds, light winds, 14 °C.	-IOC employees having conversations; and -light traffic on the Camp property.
	Aug 4, 2012/ 23:02-01:02	Clear, light wind, 10.2 °C.	-train near camp moving box cars; -train horn blowing; and -employees at camp having conversations.
Location 8 Church	Aug 9, 08:00 – Aug 10, 08:00	Mostly cloudy, light to moderate wind; Temperature ranged from 5.1 to 10.5 °C.	-traffic driving through nearby parking lot; -road crew working on nearby road; -taxi driver stops 3 m from noise meter; -squeaky swings from playground; -children playing throughout the day and evening in the nearby playground; -truck backup beepers in distance; -dirt bikes pass by; -lawn mowed in front of the church; -some rain and thunder over a couple of hours; -garbage thrown in dumpster 5 m from noise meter; -heavy traffic on street during the day; -church bells ring; -sirens; -all terrain vehicles pass by;

Location	Monitoring Times	Weather Conditions	Observations – Noise Sources
Location 9 Tanya Lake	Aug 5, 2012/ 14:00-16:00	Mostly cloudy, moderate wind, 24.9 °C.	<ul style="list-style-type: none"> -dumpster truck parks in parking lot but does not take the dumpster. -barely audible IOC mill train horn; -loud motorcycles on the highway (noise from one motorcycle results in the instrument reading increasing from 42 dBA to 60 dBA); -vehicle traffic pull into lake parking area; -all terrain vehicle in the distance; -turbo propeller airplane in distance; -large diesel truck spins tires in the lake parking lot; -construction noise from the hospital; -families arrive at a beach; baby crying; teenagers playing.
	Aug 7, 2012/ 20:55-22:55	Overcast with showers, calm, 11.4 °C.	<ul style="list-style-type: none"> -traffic conditions light on TLH; -cars with loud exhaust spins its tires; and -vehicle traffic around Tanya Lake.
	Aug 4, 2012/ 02:15-04:15	Light rain, light wind, 11.5 °C.	<ul style="list-style-type: none"> -very little traffic on the TLH; and -light rain.

In general, the sources that contributed to noise levels at the monitoring locations around and in the community included the following: street traffic including loud motorcycles, air traffic, lawn mowers, people walking on sidewalks and having conversations, construction activities, and off road vehicles (ATVs and dirtbikes). In some instances, the horn from the IOC train could be heard in the distance.

As previously mentioned, noise guidelines were exceeded for the evening and night time events for the Location 1 - New Hospital/North Atlantic College. A review of the noise sources present at the time of monitoring indicated that noise from highway traffic on the Trans Labrador Highway had the most impact at this location. Noise guidelines were exceeded at the Location 7 - IOC Camp for the daytime and night time events. Noise sources present at the time of these events included the train horn blowing and employees having conversations. Noise was also present from the neighboring mill yard for the day time event.

Sources contributing noise at the monitoring location (Location 5 – Wabush 3) for the proposed quarry site were minimal and consisted of wildlife, motorcycles in the distance, and the IOC train horn in the distance.

It should be noted that under the Labrador City Municipal Noise Abatement Regulation By-law, the sounding of railway horns and signals and industrial whistles are not prohibited.

Figure 3.1: IOC Noise Monitoring Locations



4.0 REFERENCES

1. Department of Environment and Labour, Government of Newfoundland and Labrador, 1997. Model Noise Control By-laws.
2. Health Canada's Useful Information for Environmental Assessments, Section 6 – Noise, 2012.
3. Municipalities Newfoundland and Labrador. Our People, Our Place, Our Potential Website. 2010. <http://www.municipalitiesnl.com/>
4. Nova Scotia Department of Environment, Guideline for Environmental Noise Measurement and Assessment, 1989.