

Acoustic Assessment Report - Funeral Services Facility



2020-09-28

Prepared for:
Dryden Community Funeral Home

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Version Control

Revision	Date	Revision Description	Prepared By:	Submitted To:
1.0	2020-09-28	Acoustic Assessment Report - Funeral Services Facility	Cambium Inc.	Dryden Community Funeral Home

Company Name

Dryden Community Funeral Home Ltd.

Company Address

Unit Number	Street Number 249	Street Name Grand Trunk Ave.	PO Box
City/Town Dryden	Province Ontario	Postal Code P8N 2X3	

Location of Facility

249 Grand Trunk Ave., Dryden, ON.

The attached Acoustic Assessment Report was prepared in accordance with the guidance in the ministry document "Information to be Submitted for Approval of Stationary Sources of Sound" (NPC-233) dated October 1995 and the minimum required information identified in the check-list on the reverse of this sheet has been submitted.

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	Required Information	Submitted	Explanation/Reference
1.0	Introduction (Project Background and Overview)	☒ Yes	
2.0	Facility Description		
	2.1 Operating hours of Facility and significant Noise Sources	☒ Yes	
	2.2 Site Plan identifying all significant Noise Sources	☒ Yes	
3.0	Noise Source Summary		
	3.1 Noise Source Summary Table	☒ Yes	
	3.2 Source noise emissions specifications	☒ Yes	
	3.3 Source power/capacity ratings	☒ Yes	
	3.4 Noise control equipment description and acoustical specifications	☒ Yes	
4.0	Point of Reception Noise Impact Calculations		
	4.1 Point of Reception Noise Impact Table	☒ Yes	
	4.2 Point(s) of Reception (POR) list and description	☒ Yes	
	4.3 Land-use Zoning Plan	☒ Yes	
	4.4 Scaled Area Location Plan	☒ Yes	
	4.5 Procedure used to assess noise impacts at each POR	☒ Yes	
	4.6 List of parameters/assumptions used in calculations	☒ Yes	
5.0	Acoustic Assessment Summary		
	5.1 Acoustic Assessment Summary Table	☒ Yes	
	5.2 Rationale for selecting applicable noise guideline limits	☒ Yes	
	5.3 Predictable Worst Case Impacts Operating Scenario	☒ Yes	
6.0	Conclusions		
	6.1 Statement of compliance with the selected noise performance limits	☒ Yes	
7.0	Appendices (Provide details such as)		
	Listing of Insignificant Noise Sources	☒ Yes	
	Manufacturer's Noise Specifications	☒ Yes	
	Calculations	☒ Yes	
	Instrumentation	☒ Yes	
	Meteorology during Sound Level Measurements	☒ Yes	
	Raw Data from Measurements	☒ Yes	
	Drawings (Facility / Equipment)	☒ Yes	



Executive Summary

The purpose in preparing this Acoustic Assessment Report is to support an application for Environmental Compliance Approval for Dryden Community Funeral Home who is proposing to install two new cremator units in their facility at 249 Grand Trunk Ave, Dryden, Ontario. The facility is located in an area zoned for highway commercial use. The main processes will include funeral services, cremation services, and cremation. The North American Industry Classification System (NAICS) codes that will best apply to this facility are 812210 – Funeral Homes, and 812220 – Cemeteries and Crematoria.

The Facility operates during daytime hours, seven days a week.

Notable noise sources at the facility will include; the two proposed cremator units in the cremator building each with one stack emission point, two cremator combustion air intakes on the building façade, one general air intake, one potentially open overhead door, one exhaust vent for the preparation room, and various heating, ventilation and air conditioning units associated with the funeral home/service building.

We collected sound level data for each of the noise producing units at the facility, through site measurements, obtaining manufacturer data, or reference site measurements we completed at similar sites. We used source sound levels as input to a predictive model to quantify the environmental sound emissions associated with the facility. Acoustic assessment criteria were established in accordance with the sound level limits in the Ministry of the Environment, Conservation and Parks (Ministry) guideline: *NPC-300, Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning* (NPC-300).

We identified seven locations as being representative of the sensitive Points of Reception in the vicinity of the facility. The receptors are best defined as Class 2 and Class 3 as per the Ministry publication NPC 300; this class designation is also supported by the zoning and nearby roadways including Grand Trunk Ave (the Trans-Canada Highway 17). We did not assess the Facility as a source of vibration.

Considering the defined assumptions and conditions, the results of our Acoustic Assessment indicate that the noise impacts from this Dryden Community Funeral Home Facility at the



identified points of reception, are less than the limits defined in the referenced and applicable Ministry publications.

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1.0 Introduction

Cambium Inc. (Cambium) has prepared this an Acoustic Assessment Report (AAR) for Dryden Community Funeral Home in support of an application for Environmental Compliance Approval (ECA) for their Funeral Home & Cemetery facility (the Facility) located at 249 Grand Trunk Ave, Dryden, Ontario (the Site). We prepared this report in accordance with the applicable Ministry of the Environment, Conservation, and Parks (Ministry) publications *NPC-233 – Information to be Submitted for Approval of Stationary Sources of Sound* (Ontario Ministry of the Environment, Conservation, and Parks, 2016) (NPC-233), and *NPC-300 – Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning* (Ontario Ministry of the Environment, Conservation, and Parks, 2013) (NPC-300).

This report is intended to support the Dryden Community Funeral Home plan to add cremation services to the existing facility. The purpose of the assessment is to evaluate the potential overall noise emissions of the Facility with respect to Ministry noise guidelines. The Facility is not a significant source of vibration and therefore no vibration assessment was completed.

A Scaled Area Location Plan showing the site with respect to the surrounding area is provided on Figure 1. A Site Plan, showing the Facility arrangement and source locations, is provided in Figure 2. The Land Use Zoning Plan is provided as Figure 3.

Noise sensitive Points of Reception (POR - as defined in the Ministry guidelines), were selected in all directions surrounding the Facility. For the purpose of this assessment, seven locations have been selected to represent the sensitive PORs, labeled as POR1 – POR7 on Figure 1. The closest POR is a planned rental development to be located approximately 40 m southeast of the Facility funeral home/service building.



2.0 Facility Description

Dryden Community Funeral Home operates a funeral services operation and is proposing to operate a cremation facility located at 249 Grand Trunk Ave, Dryden, in an area zoned as highway commercial. The Site is generally surrounded by commercial, rural, and residential zoning. The property is owned and operated exclusively by Dryden Community Funeral Home. The North American Industry Classification System (NAICS) codes that will best apply to this facility are 812210 – Funeral Homes, and 812220 – Cemeteries and Crematoria.

For a Site Plan of the Facility and the associated activities and infrastructure, refer to Figure 2.

Notable noise sources at the facility will include; the two proposed cremator units in the cremator building each with one stack emission point, two cremator combustion air intakes on the building façade, one general air intake, one potentially open overhead door, one exhaust vent for the preparation room, and various heating, ventilation and air conditioning units associated with the funeral home/service building.

The Facility operates during daytime hours (07:00 to 19:00), seven days a week.

We are not aware of any complaints associated with noise from the Site.



3.0 Noise Source Summary

We have taken every reasonable effort to ensure that the source numbering convention was consistent with the information submitted as part of the documentation provided in the ESDM Report. We have added an alphabetic suffix to the source identification codes in the case where one air pollution source consists of multiple noise sources. We also summarize the primary noise producing equipment described below in Table 1:

- CR01 - This source represents the noise emission point at the cremator stack. The cremator unit is proposed to be a CB Combustion and Manufacturing Ltd. model CU-150 cremator;
- CR01B - This source represents the noise emission point of the cremator room intake vent;
- CR02 - This source represents the noise emission point at the cremator stack. The cremator unit is proposed to be a CB Combustion and Manufacturing Ltd. model CU-200 cremator. Sound power assumed to be approximately equivalent to CR01;
- CR02B - This source represents the noise emission point of the cremator room intake vent;
- GD01 – This source represents the potential noise emission point of the open overhead door. Noise from indoor cremator units;
- AH01, AH02 – These sources represent the noise emission point of rooftop air handling units servicing the Site funeral home/service building. Manufacturer specified sound power for Carrier 48HCED.
- EF01 – This source represents the intake of a general ventilation fan servicing cremator area. Manufacturer specified sound power for Cook XPHD, 2100 CFM fan, used as representative.
- EF02 - This insignificant source represents the exhaust of a ventilation fan servicing the embalming and preparation room.



- UH01 - This insignificant source represents the exhaust of the unit heater servicing the garage area;
- TF01 - This insignificant source represents a ground mounted transformer unit.

As defined in NPC-300, general parking lot personal vehicle activity is not be considered a significant noise source. The site does not anticipate regular deliveries via large commercial trucks.

We show the locations of significant noise sources on Figure 2.



4.0 Point of Reception Summary

We visited Site on June 10, and 11, 2018. We identified seven PORs as being representative of the most sensitive PORs in the vicinity of the Facility, labelled as POR1 – POR7 on Figure 1. We chose the points of reception as representative of the worst case receptors in all cardinal directions within a 1000 m radius of the site. As per the Ministry noise guideline's definition, a "Point of Reception" means any location on a noise sensitive land use where noise from a stationary source is received. Noise sensitive land uses may have one or more points of reception. These points could include: outdoor locations, balconies or elevated terraces, campsites, buildings under construction, and vacant lots, but may not include commercial outdoor locations or inoperable windows. Note that the area around the Facility was assessed for noise sensitive vacant lots. For the purpose of this report, we must consider the points with "the predictable worst case noise impacts".

- POR1_A is a plane of window POR modelled at 4.5 meters, at a private residence located at 7 Skillen Crescent, east from the Site;
 - POR1_B is an outdoor living area POR at the same private residence, located at the property line in the direction of the Site;
- POR2_A is a plane of window POR modelled at 4.5 meters, at a private residence and daycare facility located at 23 Skillen Crescent, east from the Site;
 - POR2_B is an outdoor living area POR at the same residence located at the property line in the direction of the Site;
- POR3_A is a plane of window POR modelled at 4.5 meters, at a private residence located at 238 Grand Trunk Avenue, southwest from the Site;
 - POR3_B is an outdoor living area POR at the same private residence, located at the property line in the direction of the Site;
- POR4_A is a plane of window POR modelled at 4.5 meters, at a private residence located at 279 Grand Trunk Avenue, north from the Site;



- POR4_B is an outdoor living area POR at the same private residence, located at the property line in the direction of the Site;
- POR5_A is a potential plane of window POR modelled at 4.5 meters, on a vacant lot located at 275 Grand Trunk Avenue, north from the Site;
- POR6_A is a potential plane of window POR modelled at 4.5 meters, on a vacant lot located at 271 Grand Trunk Avenue, north from the Site;
- POR7_A is a potential plane of window POR modelled at 4.5 meters, near the center of a currently vacant lot located at 5 Skillen Crescent, southeast from the Site.
 - POR7_B is a planned plane of window POR modelled at 4.5 meters, at the second storey window of a planned rental housing development to be located on the currently vacant lot at 5 Skillen Crescent, southeast from the Site.
 - POR7_C is a planned outdoor living area POR modelled at 1.5 meters, at the property line of a planned rental housing development to be located on the currently vacant lot at 5 Skillen Crescent, southeast from the Site.

All the outdoor living area (OLA) PORs were also modelled at a height of 1.5 m. As the selected PORs generally account for receptors in all directions, compliance at the selected PORs will represent compliance at all sensitive PORs within the minimum setback distance for the site.



5.0 Assessment Criteria

The Facility is located within the developed area of Dryden, Ontario, near to commercial, rural, and residential areas. Grand Trunk Avenue, also known as Ontario Highway 17 (Trans-Canada Highway), is a regional arterial roadway. Other nearby industry; including auto servicing facilities directly to the north and south, and a large pulp mill farther to the south, contribute to the noise environment. A 20 minute background noise measurements taken at the facility showed a Leq as high as 70 dBA. A 5 minute background noise measurements taken near to the northwest property line of POR1 showed a Leq as high as 50 dBA. For both these measurements, traffic noise was observed as the dominant noise source.

Therefore, the site and most receptors are considered a Class 2 area as per NPC-300 (Ontario Ministry of the Environment, Conservation, and Parks, 2013). Some receptors located farther from the highway (POR1 and POR2) are considered Class 3. Where:

Class 1 is an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as "urban hum."

Class 2 is an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 areas. Sound levels characteristic of Class 1 during daytime (07:00 to 19:00 or to 23:00); and, low evening and night background sound level defined by natural environment and infrequent human activity.

Class 3 is a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as a small community, agricultural area, or wilderness area.

The Ministry exclusionary sound level limits for Class 2 and Class 3 areas are described below in A-weighted decibels (dBA).



Time Period Ministry Exclusionary Sound Level Limit

		Sound Level Limit – L_{eq} (dBA)		
		Day (07:00 – 19:00)	Evening (19:00- 23:00)	Night (23:00 – 07:00)
Class 2 Plane of Window Noise Sensitive Spaces	Steady L_{eq}	50	50	45
Class 2 Outdoor Points of Reception	Steady L_{eq}	50	45	-
Class 3 Plane of Window Noise Sensitive Spaces	Steady L_{eq}	45	40	40
Class 3 Outdoor Points of Reception	Steady L_{eq}	45	40	-

The sound level limit as received at a POR for stationary sources is the higher of either the Ministry Exclusionary Sound Level Limit (as described above) or the quietest one hour equivalent sound level (L_{eq}) for each of the time periods described in the table above. In this case Cambium has elected to use the exclusionary limits.

5.1 Road Traffic

During our site visit, we observed that background noise due to local roadway traffic was likely to be significant. Provincial highway traffic data published for 2016 by the Ontario Ministry of Transportation gives an Annual Average Daily Traffic (AADT) value of 7,000 for this section of highway 17. Recent development in the area suggests that traffic is likely to have increase since the 2016 data collection, but more recent data is not yet available. Using the 2016 traffic data and the Ministry's calculation method, *Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT)*, the following background noise levels can be used to support the receptor class designation and noise level limits.



Traffic Calculations Results Summary

Source	Min Hourly Traffic Volume ¹	Traffic Breakdown ²			Receptor	Notes	Leq (dBA)	Side Façade
		Min. Hourly Cars	Min. Hourly Med. Trucks	Min. Hourly Heavy Trucks				
Hwy 17 Day	354	311	25	18	25 m from highway	4.5 m Height, Front	59.88	56.88
Hwy 17 Evening	117	103	8	6	25 m from highway	4.5 m Height, Front	55.07	52.07
Hwy 17 Night ³	21	18	1	1	25 m from highway	4.5 m Height, Front	47.45	44.45
Hwy 17 Day	354	311	25	18	75 m from highway	4.5 m Height, Front	52.39	49.39
Hwy 17 Evening	117	103	8	6	75 m from highway	4.5 m Height, Front	47.58	44.58
Hwy 17 Night ³	21	18	1	1	75 m from highway	4.5 m Height, Front	39.95	36.95

1 - Hwy 17, AADT from Ontario MTO, Provincial Highways Traffic Volumes 2016. Hourly volume calculated from AADT using method described in Typical Hourly Traffic Distribution for Noise Modelling, Canadian Acoustics 2008 (lowest hour of time period used).

2 - Medium (7%) and heavy (5%) truck percentage taken from City of Ottawa, Environmental Noise Control Guidelines

3 - ORNAMENT contains a calculation lower limit of 40 vehicles. In order to calculate a representative evening traffic impact, number of vehicles was doubled then the resulting impact was logarithmically divided by 2.

We provide detailed ORNAMENT sources and calculation reports in Appendix C. These results support the Class 2 designation.

5.2 Rail Traffic

Similar to the above road traffic, as per NPC-300 rail traffic may be included in the determination of background sound levels in certain cases. The nearest rail line is located approximately one kilometre south of the site. Potential train noise impact calculations are unlikely to justify increases in exclusionary sound level limits, however, the proximity of the rail line adds support to the class designation of the site and receptors.



6.0 Impact Assessment

We performed the acoustic analysis at the PORs, which has incorporated the noise emission points as described in Section 3.0. Sound power levels for equipment were calculated from on-site pressure level measurements, from manufacture's specifications, or from previous Cambium measurements of similar equipment.

We summarize the corresponding sound power level calculations from each noise producing unit Appendix A. The worst case noise source sound power levels are also summarized in Table 1.

We summarize the predicted sound levels at the identified PORs due to each noise source in Table 2. The table also includes the distance from each source to the identified POR. The site plan and roof layout is provided in Figure 2. We further summarize the expected Facility noise impacts at the identified PORs in Table 3 (Acoustic Assessment Summary Table).

6.1 Noise Source Assessment

All noise sources were assessed as per Ministry guidance as outlined in the following sections.

6.1.1 Sound Power Level

The acoustic modelling software requires input data as a sound power level for each unit.

Where possible, we measured existing sources on site. Our collection of the noise data involved the measurement of octave band sound pressure using the following equipment:

- A Brüel and Kjær Type 2270 Hand-held Analyzer SLM with microphone.
- A Larson Davis CAL200 Calibrator

We measured individual noise levels at various points around each of the noise sources where possible and necessary. Our procedures on site generally followed NPC-103. We collected real-time measurements were collected in 1/3-octave bands over a wide frequency range using the frequency analysis software function of the SLM. We obtained a 1/3-octave band spectrum in order to qualify the systems, and assess potential tonality characteristics. We



completed all measurements following Ministry guidance for measurements including satisfactory weather conditions and pre-post calibrations.

For measurements of equipment that was not accessible onsite, the sound power level data was taken from Manufacturer's specifications or Cambium's Sound Power Level Library, which contains sound power levels for common equipment. In these cases, we calculated from sound pressure level measurements that have been previously collected by Cambium staff members from various facilities.

We describe the background information and necessary calculations in Appendix A.

6.1.2 Tonality Assessment

Some types of sound have a special quality which may tend to increase their audibility and potential disturbance or annoyance. For tonal sound, the MECP NPC-104 guideline stipulate that a penalty of five A-weighted decibels (dBA) is to be added to the measured sound level if the sound has a "pronounced audible tonal quality such as a whine, screech, buzz or hum".

Sources that have been identified to be tonal are indicated as such in Table 3, and if identified, a penalty of five dB has been added to the sources' sound power levels in the model.

6.1.3 Existing Noise Control Measures

There are no specific noise controls on site.

The building is included in the Predictor model as a screening barrier, and any significant changes to the building dimensions, or source locations would necessitate an updated noise report.

6.1.4 Variable Operations of Noise Sources

All sources have been modelled as operating continuously with the exception of the following:

- CR01A, CR01B, CR02A, CR02B – The cremator stacks and intakes are only potentially active during daytime and evening hours (07:00 – 19:00).



- GD01 – Noise from the garage door is only potentially active during daytime and evening hours (07:00 – 23:00).

6.2 Noise Impact Calculation Procedure

We performed the noise impact calculations using the Bruel and Kjaer *Predictor Type 7810 version V2020.0* (Predictor) environmental noise prediction and control software. The calculations completed by this software are based on established prediction methods accepted by the Ministry; mainly ISO 9613-2 *Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation* (International Organization for Standardization, December 1996). Predictor is an internationally marketed software package that offers calculation algorithms that comply with ISO 9613-2.

The Predictor software tool is a proprietary noise calculation package used to calculate, assess, predict, and display environmental noise. This software utilizes calculation algorithms and visualization of the predicted noise emissions, often referred to as acoustic mapping. The software calculates the resultant noise level and takes into account a range of factors affecting the propagation of sound including:

- Sources with direct line of site to receivers ignore barriers;
- Negative ground attenuation over barriers is not subtracted;
- The Facility layout, which includes the position and elevation of each building, major equipment and other façades in the propagation path;
- The natural topography and vegetation;
- The magnitude of the noise source in terms of octave band sound power;
- The distance between the source(s) and the POR(s);
- The presence of reflecting surfaces; and,
- The hardness of the ground between the source and the POR(s).



6.3 Calculation Assumptions

Typically, we have assessed the plane of window receptor at 1.5 meters upon the perimeter of the most exposed facade of the building, as required by the guidelines. This represents the plane of a first storey open exterior door or window of a room, which might expose a person to sound. If the residence is multi-storey, we modelled the plane of window receptor at 4.5 metres for secondary storey, or 7.5 metres for third storey, etc. We assessed outdoor living area receptors at a height of 1.5 metres.

We competed the model with a general ground factor assumption of one, which is fully absorptive. A ground region encompassing the site parking areas and the nearby road was applied with a ground factor of zero, or fully reflective, to account for the paved surfaces.

We modelled the terrain using elevations retrieved from Ontario Base Map sources. We did not consider forested areas so conservatively erased any attenuation provided by foliage.

We activated settings in Predictor, which ignore barrier effects if line of sight is not broken, and avoid overestimating barrier effects due to porous ground, in the case of a negative Agr value in Equation 12 of ISO 9613-2 calculation method. Typically, we assumed that noise emanates from the highest point of the equipment. Using maximum heights reduces the barrier effect that intervening obstacles would have if we modelled the sources with lower elevations. We incorporated all buildings on the Site into the model as mostly reflective. We did not consider other offsite sources of sound (i.e. traffic, etc.).

Due to our numerous conservative assumptions, the predicted noise impact at the PORs is likely to be greater than the actual noise impact.

6.4 Acoustic Assessment Summary

We summarize the model predicted sound pressure levels for each noise source in Table 2. We present the total Facility noise impact at each receptor in Table 3.

We provide the sound pressure level contour plot files, and the predicted sound levels at the receptors in Appendix B.



Qualifications and Limitations

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A site assessment is created using data and information collected during the investigation of a site and based on conditions encountered at the time and particular locations at which fieldwork is conducted. The information, sample results and data collected represent the conditions only at the specific times at which and at those specific locations from which the information, samples and data were obtained and the information, sample results and data may vary at other locations and times. To the extent that Cambium's work or report considers any locations or times other than those from which information, sample results and data was specifically received, the work or report is based on a reasonable extrapolation from such information, sample results and data but the actual conditions encountered may vary from those extrapolations.

Only conditions at the site and locations chosen for study by the client are evaluated; no adjacent or other properties are evaluated unless specifically requested by the client. Any physical or other aspects of the site chosen for study by the client, or any other matter not specifically addressed in a report prepared by Cambium, are beyond the scope of the work performed by Cambium and such matters have not been investigated or addressed.

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The client expressly agrees that Cambium employees shall have no personal liability to the client with respect to a claim, whether in contract, tort and/or other cause of action in law. Furthermore, the client agrees that it will bring no proceedings nor take any action in any court of law against Cambium employees in their personal capacity.



7.0 Conclusions

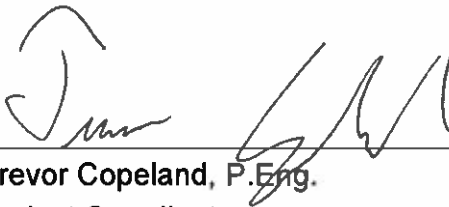
We have prepared this an Acoustic Assessment Report for Dryden Community Funeral Home in support of an application for ECA for their Funeral Home & Cemetery facility located at 249 Grand Trunk Ave, Dryden, Ontario.

The results of this report, under the defined conditions and assumptions, indicate that the predicted noise impact at the established PORs are less than the applicable criteria. This statement is accurate as of the date of this report, and based on the information provided to Cambium by Dryden Community Funeral Home at the time.

If you have questions or comments regarding this document, please do not hesitate to contact the authors at (705) 742-7900.

Respectfully submitted,

Cambium Inc.



Trevor Copeland, P.Eng.
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Trevor Ross, E.I.T.
Project Specialist

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Appended Figures

ACOUSTIC ASSESSMENT REPORT
DRYDEN COMMUNITY
FUNERAL HOME LTD.
249 Grand Trunk Ave.
Dryden, Ontario

LEGEND

- | | |
|---|--------------------------------|
|  | Point of Reception |
|  | Watercourse, Permanent |
|  | Watercourse, Intermittent |
|  | Major Road |
|  | Minor Road |
|  | Contour 5m Interval (Minor) |
|  | Water Area |
|  | Lot / Concession |
|  | Wooded Area |
|  | Hard Ground |
|  | Subject Property (approximate) |

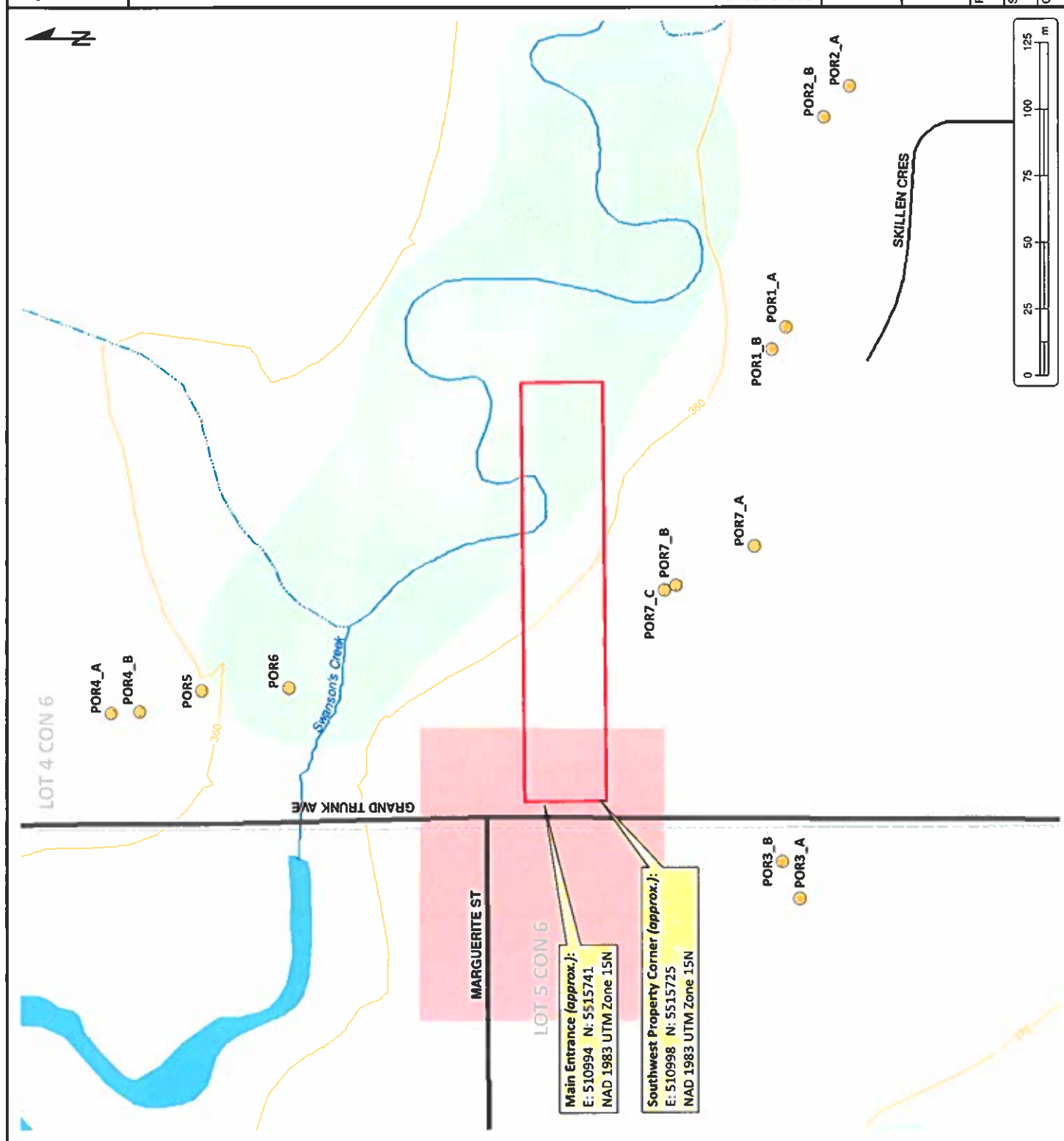
Notes:
Base map: Base map features are © Queen's Printer of Ontario, 2017 (this does not include the content of the map, which is provided by the Ministry of Natural Resources and Forestry of the Ontario Government).
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SITE LOCATION PLAN

Project No.:	8796-001	Date:	June 2019
Scale:	1:2,000	Rev.:	
Projection:	NAD 1983 UTM Zone 15N	Checked by:	TMC
Created by:	TLC	Figure:	1



ACOUSTIC ASSESSMENT REPORT
DRYDEN COMMUNITY
FUNERAL HOME LTD.
 249 Grand Trunk Ave.
 Dryden, Ontario

LEGEND

- Point Source
- Watercourse, Permanent
- Watercourse, Intermittent
- Major Road
- Contour 5m Interval (Minor)
- Water Area
- Lot / Concession
- Wooded Area
- Building
- Hard Ground
- Subject Property (approximate)

Notes:

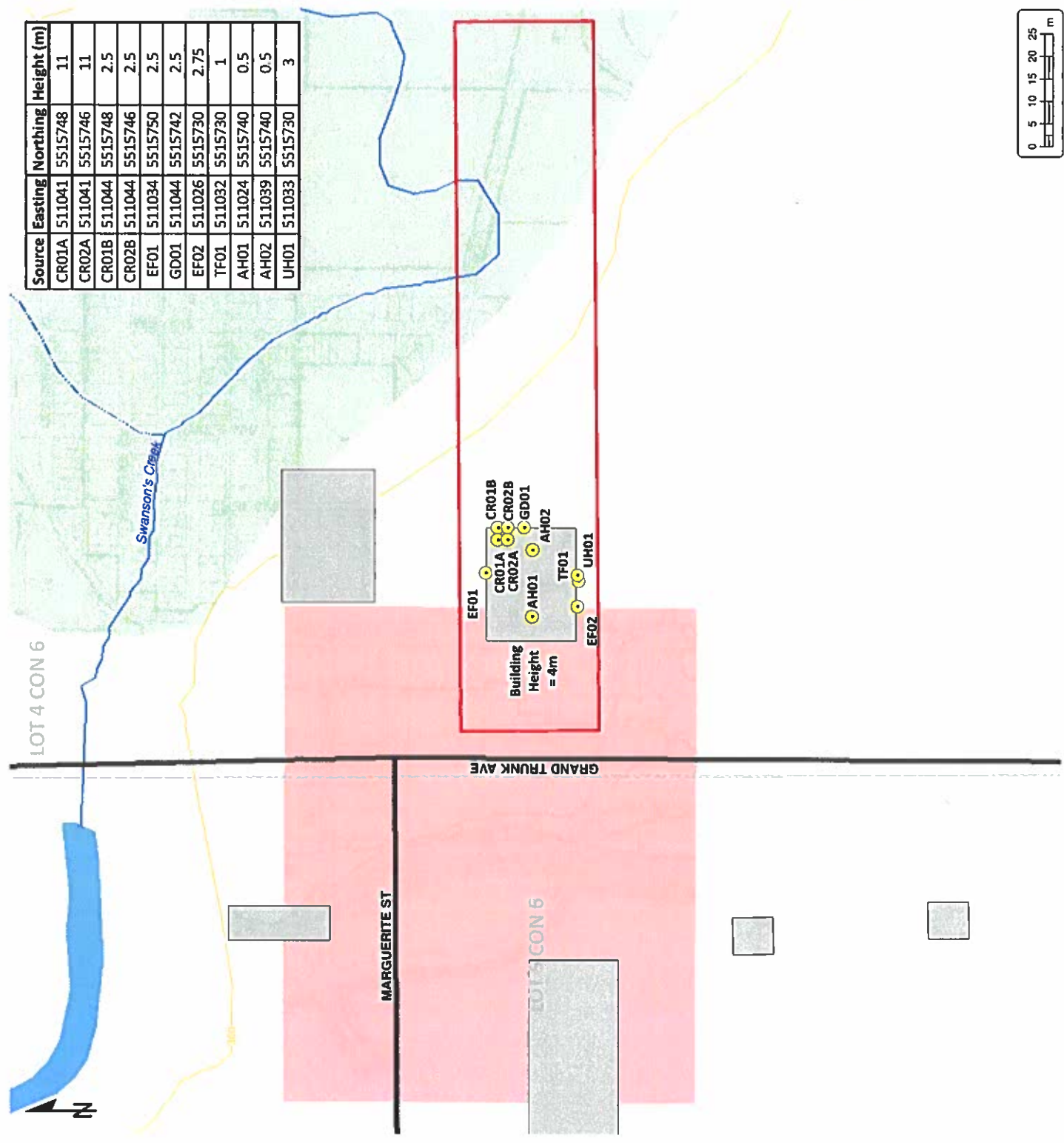
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- Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
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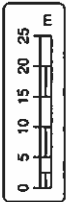
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SITE PLAN AND
ROOF LAYOUT

Project No.:	8796-001	Date:	June 2019
Scale:	1:1,200	Projection:	NAD 1983 UTM Zone 18N
Created by:	TLC	Checked by:	TMC
Figure:	2		



Source	Easting	Northing	Height (m)
CR01A	511041	5515748	11
CR02A	511041	5515746	11
CR01B	511044	5515748	2.5
CR02B	511044	5515746	2.5
EF01	511034	5515750	2.5
GD01	511044	5515742	2.5
EF02	511026	5515730	2.75
TF01	511032	5515730	1
AH01	511024	5515740	0.5
AH02	511039	5515740	0.5
UH01	511033	5515730	3



ACOUSTIC ASSESSMENT REPORT
DRYDEN COMMUNITY
FUNERAL HOME LTD.
 249 Grand Trunk Ave.
 Dryden, Ontario

LEGEND

Subject Property (approximate)

- Legend**
- CD DOWNTOWN COMMERCIAL
 - EX EXTRACTIVE INDUSTRIAL
 - CG GENERAL COMMERCIAL
 - HZ HAZARD
 - MZ HEAVY INDUSTRIAL
 - CH HIGHWAY COMMERCIAL - HOLDING
 - CH-H HIGHWAY COMMERCIAL - HOLDING
 - I INSTITUTIONAL
 - IRM INSTITUTIONAL RESIDENTIAL MULTIPLE
 - M1-H1 LIGHT INDUSTRIAL - HOLDING
 - M1 LIGHT INDUSTRIAL
 - CL LOCAL COMMERCIAL
 - M4 MILL INDUSTRIAL
 - OS OPEN SPACE
 - OS-1 OPEN SPACE - SITE SPECIFIC
 - RMH RESIDENTIAL MODULAR DWELLING
 - RM RESIDENTIAL MULTIPLE
 - R1 RESIDENTIAL TYPE 1
 - R1-H RESIDENTIAL TYPE 1 - HOLDING
 - R2 RESIDENTIAL TYPE 2
 - RU RURAL
 - RU-H RURAL - HOLDING
 - RR RURAL RESIDENTIAL
 - RS SHORELINE RESIDENTIAL
 - CTH TOURIST COMMERCIAL
 - MD WASTE DISPOSAL INDUSTRIAL
 - WMUH WATERFRONT MIXED USE - HOLDING

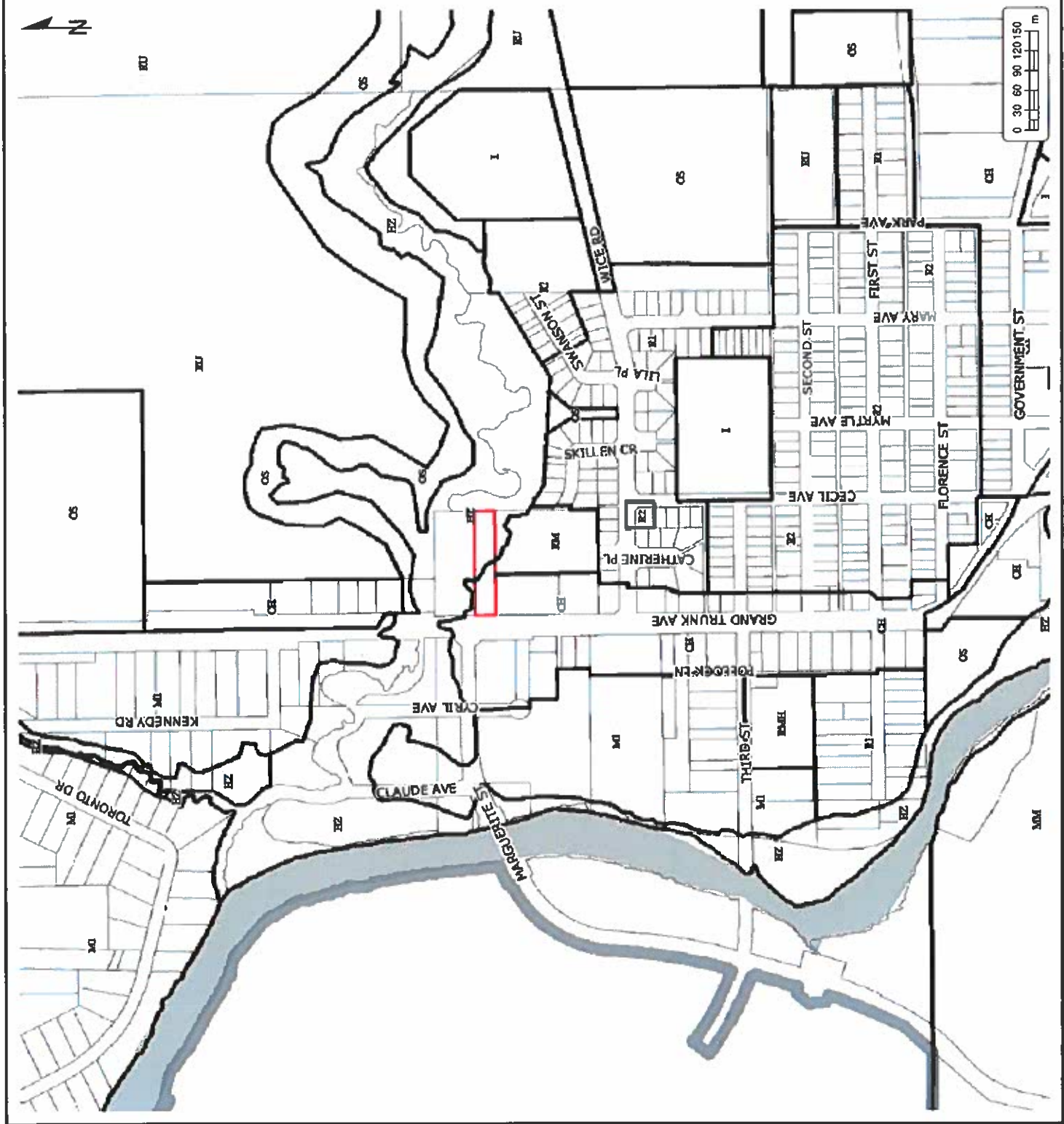
Notes:

- Zoning was obtained from the City of Dryden, Zoning Schedule A - 1 Dated June 8, 2012.
- All names are © Queen's Printer of Ontario, 2017 (the does not constitute an endorsement by the Ministry of Natural Resources and Forestry of the Ontario Government).
- The information is for general reference only and is not intended to be used for any other purpose.
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LAND USE ZONING
DESIGNATION PLAN

Project No.:	8796-001	Date:	June 2019
Scale:	1:8,000	Rev.:	
Projection:	NAD 1983 UTM Zone 18N	Created by:	TLC
Checked by:	TWC	Figure:	3





Appended Tables



Acoustic Assessment Report - Funeral Services Facility
Dryden Community Funeral Home
Ref. No.: 8796-001

Table 1 Noise Source Summary Table

Source ID	Description	A-Weighted Sound Power Level After Reduction								Total	Data Source	Equipment Location	Operating Times/Units/day, evening/night (%)	Noise Quality	Source Location	UTM Existing	UTM Noting	Height Above Rooftop or Ground
		53	125	250	500	1000	2000	4000	8000									
CR01A	Cremator Stack	79.3	80.7	82.6	78.0	82.1	78.3	74.4	73.1	88.6	Manufacturer's Specifications	Main building	100,100,-	SS	On Building	511041	5515748	11.0
CR02A	Cremator Stack	79.3	80.7	82.6	78.0	82.1	78.3	74.4	73.1	88.6	Manufacturer's Specifications	Main building	100,100,-	SS	On Building	511041	5515746	11.0
CR01B	Intake	56.3	65.4	64.8	66.1	67.5	66.5	65.3	58.1	74.0	Manufacturer's Specifications	Main building	100,100,-	SS	East Wall	511044	5515748	2.5
CR02B	Intake	56.3	65.4	64.8	66.1	67.5	66.5	65.3	58.1	74.0	Manufacturer's Specifications	Main building	100,100,-	SS	East Wall	511044	5515746	2.5
EF01	Ventilation Intake	50.0	68.0	74.0	79.0	77.0	72.0	68.0	61.0	82.7	Manufacturer's Specifications	Main building	100,100,100	SS	North Wall	511034	5515750	2.5
GD01	Garage Door	65.3	74.5	73.8	75.1	76.5	75.5	74.3	67.1	83.0	Manufacturer's Specifications	Main building	100,100,-	SS	East Wall	511044	5515742	2.5
EF02	Integ - Prep Room Exhaust	-	-	-	-	-	-	-	-	-	Onsite Observations	Main building	100,100,100	SS	South Wall	511028	5515730	2.8
TF01	Integ - Transformer	-	-	-	-	-	-	-	-	-	Onsite Observations	Main building	100,100,100	SS	South Ground	511032	5515730	1.0
AH01	Rooftop HVAC	56.6	64.1	68.1	73.5	74.7	71.6	66.1	58.1	78.0	Manufacturer's Specifications	Main building	100,100,100	SS	On Building	511024	5515740	0.5
AH02	Rooftop HVAC	56.6	64.1	68.1	73.5	74.7	71.6	66.1	58.1	78.0	Manufacturer's Specifications	Main building	100,100,100	SS	On Building	511039	5515740	0.5
UH01	Integ - Unit Heater Exhaust	-	-	-	-	-	-	-	-	-	Onsite Measurements	Main building	100,100,100	SS	South Wall	511033	5515730	3.0

¹ Noise Control Descriptions
Noise controls were not specifically selected in order to allow the design team flexibility in meeting the sound power level requirements.

² Noise Quality Descriptions
SS Steady State
T Total
I Include
OI Queue Steady/Impulsive



Table 2 Point of Reception Noise Impact - Steady State

Receptor ID	Receptor Coordinates			Predicted SPL (dBA)			Predictor Source ID	Source ID	PWL (dBA)	Time Correction [%]			Source/Receptor Distance (m)	
	X (m)	Y (m)	Ground Elevation	Height	Daytime	Evening				Nighttime	Day	Evening		Night
POR1_A	511177	5515657	360.97	4.5	32.62	-200	-200	165	CR01A	88.6	100.0	100.0	--	164
POR1_A	511177	5515657	360.97	4.5	32.63	-200	-200	182	CR02A	88.6	100.0	100.0	--	162
POR1_A	511177	5515657	360.97	4.5	19.14	-200	-200	183	CR01B	74.0	100.0	100.0	--	161
POR1_A	511177	5515657	360.97	4.5	19.22	-200	-200	184	CR02B	74.0	100.0	100.0	--	160
POR1_A	511177	5515657	360.97	4.5	10.73	10.73	10.73	190	EF01	82.7	100.0	100.0	100.0	171
POR1_A	511177	5515657	360.97	4.5	28.37	28.37	-200	235	GD01	83.0	100.0	100.0	--	158
POR1_A	511177	5515657	360.97	4.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	167
POR1_A	511177	5515657	360.97	4.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	162
POR1_A	511177	5515657	360.97	4.5	18.82	18.82	18.82	240	AH01	79.0	100.0	100.0	100.0	174
POR1_A	511177	5515657	360.97	4.5	19	19	19	241	AH02	79.0	100.0	100.0	100.0	161
POR1_A	511177	5515657	360.97	4.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	161
POR1_B	511168.6	5515662	360.78	1.5	32.28	-200	-200	165	CR01A	88.6	100.0	100.0	--	154
POR1_B	511168.6	5515662	360.78	1.5	32.35	-200	-200	182	CR02A	88.6	100.0	100.0	--	153
POR1_B	511168.6	5515662	360.78	1.5	19	-200	-200	183	CR01B	74.0	100.0	100.0	--	151
POR1_B	511168.6	5515662	360.78	1.5	19.08	-200	-200	184	CR02B	74.0	100.0	100.0	--	150
POR1_B	511168.6	5515662	360.78	1.5	10.12	10.12	10.12	190	EF01	82.7	100.0	100.0	100.0	161
POR1_B	511168.6	5515662	360.78	1.5	28.24	28.24	-200	235	GD01	83.0	100.0	100.0	--	148
POR1_B	511168.6	5515662	360.78	1.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	157
POR1_B	511168.6	5515662	360.78	1.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	152
POR1_B	511168.6	5515662	360.78	1.5	16.37	16.37	16.37	240	AH01	79.0	100.0	100.0	100.0	164
POR1_B	511168.6	5515662	360.78	1.5	19.34	19.34	19.34	241	AH02	79.0	100.0	100.0	100.0	151
POR1_B	511168.6	5515662	360.78	1.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	151
POR2_A	511267.5	5515633	361.97	4.5	28.58	-200	-200	165	CR01A	88.6	100.0	100.0	--	254
POR2_A	511267.5	5515633	361.97	4.5	28.54	-200	-200	182	CR02A	88.6	100.0	100.0	--	253
POR2_A	511268	5515633	362	4.5	14.77	-200	-200	183	CR01B	74.0	100.0	100.0	--	251
POR2_A	511268	5515633	362	4.5	14.81	-200	-200	184	CR02B	74.0	100.0	100.0	--	250
POR2_A	511268	5515633	362	4.5	9.6	9.6	9.6	190	EF01	82.7	100.0	100.0	100.0	262
POR2_A	511268	5515633	362	4.5	23.9	23.9	-200	235	GD01	83.0	100.0	100.0	--	249
POR2_A	511268	5515633	362	4.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	260
POR2_A	511268	5515633	362	4.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	255
POR2_A	511268	5515633	362	4.5	14.49	14.49	14.49	240	AH01	79.0	100.0	100.0	100.0	266
POR2_A	511268	5515633	362	4.5	14.44	14.44	14.44	241	AH02	79.0	100.0	100.0	100.0	252
POR2_A	511268	5515633	362	4.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	254
POR2_B	511256	5515643	362	1.5	28.14	-200	-200	165	CR01A	88.6	100.0	100.0	--	239
POR2_B	511256	5515643	362	1.5	28.17	-200	-200	182	CR02A	88.6	100.0	100.0	--	238
POR2_B	511256	5515643	362	1.5	14.52	-200	-200	183	CR01B	74.0	100.0	100.0	--	237
POR2_B	511256	5515643	362	1.5	14.56	-200	-200	184	CR02B	74.0	100.0	100.0	--	236
POR2_B	511256	5515643	362	1.5	7.28	7.28	7.28	190	EF01	82.7	100.0	100.0	100.0	247



Table 2 Point of Reception Noise Impact - Steady State

Receptor ID	Receptor Coordinates				Predicted SPL (dBA)			Predictor Source ID	Source ID	PWL (dBA)	Time Correction (%)			Source/Receptor Distance (m)
	X (m)	Y (m)	Ground Elevation	Height	Daytime	Evening	Nighttime				Day	Evening	Night	
POR2_B	511256	5515643	362	1.5	23.66	23.66	-200	235	GD01	83.0	100.0	100.0	--	234
POR2_B	511256	5515643	362	1.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	246
POR2_B	511256	5515643	362	1.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	240
POR2_B	511256	5515643	362	1.5	15.21	15.21	15.21	240	AH01	79.0	100.0	100.0	100.0	251
POR2_B	511256	5515643	362	1.5	14.69	14.69	14.69	241	AH02	79.0	100.0	100.0	100.0	238
POR2_B	511256	5515643	362	1.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	239
POR3_A	510962	5515652	366	4.5	35.85	-200	-200	165	CR01A	88.6	100.0	100.0	--	124
POR3_A	510962	5515652	366	4.5	35.94	-200	-200	182	CR02A	88.6	100.0	100.0	--	123
POR3_A	510962	5515652	366	4.5	7.11	-200	-200	183	CR01B	74.0	100.0	100.0	--	126
POR3_A	510962	5515652	366	4.5	7.37	-200	-200	184	CR02B	74.0	100.0	100.0	--	124
POR3_A	510962	5515652	365.68	4.5	14.66	14.66	14.66	190	EF01	82.7	100.0	100.0	100.0	122
POR3_A	510962	5515652	365.68	4.5	16.5	16.5	-200	235	GD01	83.0	100.0	100.0	--	122
POR3_A	510962	5515652	365.68	4.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	101
POR3_A	510962	5515652	365.68	4.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	105
POR3_A	510962	5515652	365.68	4.5	28.86	28.86	28.86	240	AH01	79.0	100.0	100.0	100.0	108
POR3_A	510962	5515652	365.68	4.5	22.66	22.66	22.66	241	AH02	79.0	100.0	100.0	100.0	117
POR3_A	510962	5515652	365.68	4.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	106
POR3_B	510976	5515658	364.88	1.5	35.56	-200	-200	165	CR01A	88.6	100.0	100.0	--	111
POR3_B	510976	5515658	364.88	1.5	35.69	-200	-200	182	CR02A	88.6	100.0	100.0	--	109
POR3_B	510976	5515658	364.88	1.5	7.83	-200	-200	183	CR01B	74.0	100.0	100.0	--	112
POR3_B	510976	5515658	364.88	1.5	8.12	-200	-200	184	CR02B	74.0	100.0	100.0	--	110
POR3_B	510976	5515658	364.88	1.5	14.78	14.78	14.78	190	EF01	82.7	100.0	100.0	100.0	109
POR3_B	510976	5515658	364.88	1.5	17.57	17.57	-200	235	GD01	83.0	100.0	100.0	--	108
POR3_B	510976	5515658	364.88	1.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	88
POR3_B	510976	5515658	364.88	1.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	91
POR3_B	510976	5515658	364.88	1.5	28.83	28.83	28.83	240	AH01	79.0	100.0	100.0	100.0	95
POR3_B	510976	5515658	364.88	1.5	23.91	23.91	23.91	241	AH02	79.0	100.0	100.0	100.0	103
POR3_B	510976	5515658	364.88	1.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	92
POR4_A	511032	5515912	360	4.5	32.5	-200	-200	165	CR01A	88.6	100.0	100.0	--	165
POR4_A	511032	5515912	360	4.5	32.39	-200	-200	182	CR02A	88.6	100.0	100.0	--	167
POR4_A	511032	5515912	360	4.5	2.5	-200	-200	183	CR01B	74.0	100.0	100.0	--	165
POR4_A	511032	5515912	360	4.5	3.09	-200	-200	184	CR02B	74.0	100.0	100.0	--	167
POR4_A	511032	5515912	360	4.5	20.43	20.43	20.43	190	EF01	82.7	100.0	100.0	100.0	162
POR4_A	511032	5515912	360	4.5	12.13	12.13	-200	235	GD01	83.0	100.0	100.0	--	171
POR4_A	511032	5515912	360	4.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	182
POR4_A	511032	5515912	360	4.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	182
POR4_A	511032	5515912	360	4.5	24.34	24.34	24.34	240	AH01	79.0	100.0	100.0	100.0	172
POR4_A	511032	5515912	360	4.5	15.98	15.98	15.98	241	AH02	79.0	100.0	100.0	100.0	172
POR4_A	511032	5515912	360	4.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	182

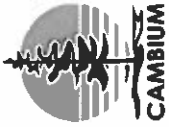


Table 2 Point of Reception Noise Impact - Steady State

Receptor ID	Receptor Coordinates			Height	Predicted SPL (dBA)			Predictor Source ID	Source ID	PWL (dBA)	Time Correction (%)			Source/Receptor Distance (m)
	X (m)	Y (m)	Ground Elevation		Daytime	Evening	Nighttime				Day	Evening	Night	
POR4_B	511032.6	5515901	360	1.5	32.19	-200	-200	165	CR01A	88.6	100.0	100.0	--	154
POR4_B	511032.6	5515901	360	1.5	32.06	-200	-200	182	CR02A	88.6	100.0	100.0	--	156
POR4_B	511032.6	5515901	360	1.5	2.86	-200	-200	183	CR01B	74.0	100.0	100.0	--	154
POR4_B	511032.6	5515901	360	1.5	3.35	-200	-200	184	CR02B	74.0	100.0	100.0	--	156
POR4_B	511032.6	5515901	360	1.5	18.56	18.56	18.56	190	EF01	82.7	100.0	100.0	100.0	151
POR4_B	511032.6	5515901	360	1.5	12.37	12.37	-200	235	GD01	83.0	100.0	100.0	--	160
POR4_B	511032.6	5515901	360	1.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	171
POR4_B	511032.6	5515901	360	1.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	172
POR4_B	511032.6	5515901	360	1.5	23.32	23.32	23.32	240	AH01	79.0	100.0	100.0	100.0	161
POR4_B	511032.6	5515901	360	1.5	13.77	13.77	13.77	241	AH02	79.0	100.0	100.0	100.0	161
POR4_B	511032.6	5515901	360	1.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	171
POR5_A	511040.3	5515878	360	4.5	34.67	-200	-200	165	CR01A	88.6	100.0	100.0	--	130
POR5_A	511040.3	5515878	360	4.5	34.62	-200	-200	182	CR02A	88.6	100.0	100.0	--	132
POR5_A	511040.3	5515878	360	4.5	10.96	-200	-200	183	CR01B	74.0	100.0	100.0	--	130
POR5_A	511040.3	5515878	360	4.5	11.01	-200	-200	184	CR02B	74.0	100.0	100.0	--	132
POR5_A	511040.3	5515878	360	4.5	21.82	21.82	21.82	190	EF01	82.7	100.0	100.0	100.0	127
POR5_A	511040.3	5515878	360	4.5	16.63	16.63	-200	235	GD01	83.0	100.0	100.0	--	136
POR5_A	511040.3	5515878	360	4.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	148
POR5_A	511040.3	5515878	360	4.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	148
POR5_A	511040.3	5515878	360	4.5	21.92	21.92	21.92	240	AH01	79.0	100.0	100.0	100.0	138
POR5_A	511040.3	5515878	360	4.5	17.61	17.61	17.61	241	AH02	79.0	100.0	100.0	100.0	138
POR5_A	511040.3	5515878	360	4.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	148
POR6_A	511041.3	5515845	360	4.5	37.33	-200	-200	165	CR01A	88.6	100.0	100.0	--	97
POR6_A	511041.3	5515845	360	4.5	37.14	-200	-200	182	CR02A	88.6	100.0	100.0	--	99
POR6_A	511041.3	5515845	360	4.5	12.81	-200	-200	183	CR01B	74.0	100.0	100.0	--	97
POR6_A	511041.3	5515845	360	4.5	12.77	-200	-200	184	CR02B	74.0	100.0	100.0	--	99
POR6_A	511041.3	5515845	360	4.5	23.61	23.61	23.61	190	EF01	82.7	100.0	100.0	100.0	95
POR6_A	511041.3	5515845	360	4.5	18.82	18.82	-200	235	GD01	83.0	100.0	100.0	--	103
POR6_A	511041.3	5515845	360	4.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	116
POR6_A	511041.3	5515845	360	4.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	115
POR6_A	511041.3	5515845	360	4.5	21.25	21.25	21.25	240	AH01	79.0	100.0	100.0	100.0	106
POR6_A	511041.3	5515845	360	4.5	18.72	18.72	18.72	241	AH02	79.0	100.0	100.0	100.0	105
POR6_A	511041.3	5515845	360	4.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	115
POR7_A	511094.6	5515669	362.08	4.5	37.51	-200	-200	165	CR01A	88.6	100.0	100.0	--	95
POR7_A	511094.6	5515669	362.08	4.5	37.68	-200	-200	182	CR02A	88.6	100.0	100.0	--	94
POR7_A	511094.6	5515669	362.08	4.5	24.84	-200	-200	183	CR01B	74.0	100.0	100.0	--	94
POR7_A	511094.6	5515669	362.08	4.5	24.99	-200	-200	184	CR02B	74.0	100.0	100.0	--	92
POR7_A	511094.6	5515669	362.08	4.5	23.37	23.37	23.37	190	EF01	82.7	100.0	100.0	100.0	102



Table 2 Point of Reception Noise Impact - Steady State

Receptor ID	Receptor Coordinates			Height	Predicted SPL (dBA)			Predictor Source ID	Source ID	PWL (dBA)	Time Correction (%)			Source/Receptor Distance (m)
	X (m)	Y (m)	Ground Elevation		Daytime	Evening	Nighttime				Day	Evening	Night	
POR7_A	511094.6	5515669	362.08	4.5	34.3	34.3	-200	235	GD01	83.0	100.0	100.0	--	89
POR7_A	511094.6	5515669	362.08	4.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	92
POR7_A	511094.6	5515669	362.08	4.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	87
POR7_A	511094.6	5515669	362.08	4.5	25.54	25.54	25.54	240	AH01	79.0	100.0	100.0	100.0	100
POR7_A	511094.6	5515669	362.08	4.5	25.68	25.68	25.68	241	AH02	79.0	100.0	100.0	100.0	90
POR7_A	511094.6	5515669	362.08	4.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	87
POR7_B	511080	5515699	361.86	4.5	41.46	-200	-200	165	CR01A	88.6	100.0	100.0	--	63
POR7_B	511080	5515699	361.86	4.5	41.69	-200	-200	182	CR02A	88.6	100.0	100.0	--	61
POR7_B	511080	5515699	361.86	4.5	28.86	-200	-200	183	CR01B	74.0	100.0	100.0	--	61
POR7_B	511080	5515699	361.86	4.5	29.11	-200	-200	184	CR02B	74.0	100.0	100.0	--	59
POR7_B	511080	5515699	361.86	4.5	26.11	26.11	26.11	190	EF01	82.7	100.0	100.0	100.0	69
POR7_B	511080	5515699	361.86	4.5	38.57	38.57	-200	235	GD01	83.0	100.0	100.0	--	56
POR7_B	511080	5515699	361.86	4.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	62
POR7_B	511080	5515699	361.86	4.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	57
POR7_B	511080	5515699	361.86	4.5	29.5	29.5	29.5	240	AH01	79.0	100.0	100.0	100.0	69
POR7_B	511080	5515699	361.86	4.5	30.1	30.1	30.1	241	AH02	79.0	100.0	100.0	100.0	58
POR7_B	511080	5515699	361.86	4.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	56
POR7_C	511078.3	5515704	361.81	1.5	41.36	-200	-200	165	CR01A	88.6	100.0	100.0	--	58
POR7_C	511078.3	5515704	361.81	1.5	41.62	-200	-200	182	CR02A	88.6	100.0	100.0	--	57
POR7_C	511078.3	5515704	361.81	1.5	29.06	-200	-200	183	CR01B	74.0	100.0	100.0	--	56
POR7_C	511078.3	5515704	361.81	1.5	29.33	-200	-200	184	CR02B	74.0	100.0	100.0	--	54
POR7_C	511078.3	5515704	361.81	1.5	25.6	25.6	25.6	190	EF01	82.7	100.0	100.0	100.0	65
POR7_C	511078.3	5515704	361.81	1.5	38.82	38.82	-200	235	GD01	83.0	100.0	100.0	--	51
POR7_C	511078.3	5515704	361.81	1.5	-200	-200	-200	238	EF02	-	100.0	100.0	100.0	58
POR7_C	511078.3	5515704	361.81	1.5	-200	-200	-200	239	TF01	-	100.0	100.0	100.0	53
POR7_C	511078.3	5515704	361.81	1.5	27.39	27.39	27.39	240	AH01	79.0	100.0	100.0	100.0	65
POR7_C	511078.3	5515704	361.81	1.5	30.45	30.45	30.45	241	AH02	79.0	100.0	100.0	100.0	54
POR7_C	511078.3	5515704	361.81	1.5	-200	-200	-200	243	UH01	-	100.0	100.0	100.0	52



Table 3 Acoustic Assessment Summary - Steady State

Point of Reception ID	Point of Reception Information				Noise Characteristic	Daytime (dBA)	Evening (dBA)	Nighttime (dBA)	Verified by Acoustic Audit (Yes or No)	Daytime Limit (dBA)	Evening Limit (dBA)	Nighttime Limit (dBA)	Compliant with Limit
	Description	UTM Easting	UTM Northing	Height POW	Height OLA								
POR1_A	7 Skillen Cr.	511177	5515657	4.5	-	36.7	29.3	22.2	N	45	40	40	Yes
POR1_B	OLA	511169	5515662	-	1.5	36.4	29.1	21.5	N	45	40	-	Yes
POR2_A	23 Skillen Cr.	511268	5515633	4.5	-	32.6	24.9	18.1	N	45	40	40	Yes
POR2_B	OLA	511256	5515643	-	1.5	32.2	24.8	18.3	N	45	40	-	Yes
POR3_A	240 Grand Trunk Ave.	510962	5515652	4.5	-	39.5	30.1	25.9	N	50	50	45	Yes
POR3_B	OLA	510976	5515658	-	1.5	39.3	30.4	30.2	N	50	45	-	Yes
POR4_A	279 Grand Trunk Ave.	511032	5515912	4.5	-	36.0	26.4	26.3	N	50	50	45	Yes
POR4_B	OLA	511033	5515901	-	1.5	35.6	25.2	24.9	N	50	45	-	Yes
POR5_A	Vacant Lot - 275 Grand Trunk Ave.	511040	5515878	4.5	-	37.9	26.1	25.6	N	50	50	45	Yes
POR6_A	Vacant Lot - 271 Grand Trunk Ave.	511041	5515845	4.5	-	40.5	27.1	26.4	N	50	50	45	Yes
POR7_A	Vacant Lot - RM - 5 Skillen Cr.	511095	5515669	4.5	-	42.0	35.6	29.8	N	50	50	45	Yes
POR7_B	Vacant Lot - RM - 5 Skillen Cr.	511080	5515699	4.5	-	46.0	39.8	33.7	N	50	50	45	Yes
POR7_C	OLA	511078	5515704	1.5	-	46.0	39.9	33.1	N	50	50	45	Yes



Appendix A

Noise Source Supporting Information and Calculations



Raw Measurement Data

Source ID	1/3rd Octave Centre Frequency (Hz), Sound Pressure Level (dB)																								
	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
CR01	32.3	43.4	35.7	40.7	48.6	43.8	45.7	45.7	55.2	51.1	52.9	55.7	54.2	56.2	54.8	55.7	54.7	50.9	51.2	47.1	46.4	42.1	38	35.1	
CR01B	34.1	41.4	43.1	43.0	42.1	41.5	44.3	46.2	39.8	39.7	39.1	39.8	42.4	44.5	43.7	41.7	39.2	37.7	36.7	35.9	34.9	35.2	34.6	34.2	
AH01	36.2	38.6	53.1	55.8	56.2	59.8	53.0	59.8	55.5	60.6	57.1	55.6	58.7	59.9	60.3	59.7	57.6	58.5	58.7	57.4	56.2	53.1	49.5	44.3	



Point Source Sound Power Level Calculations
 $L_{w,eq} = 10 \log(r^2 \cdot I) + 10 \log(Q)$
 $L_{p,direct} = 10 \log(100 \text{ pW/m}^2) + 10 \log(4\pi r^2 / Q) + 10 \log(0.001 \text{ W/m}^2)$
r is distance measurement was taken, Q is directivity index, I is sound power

Source ID	Source Description	Source Directionality	Orientation Condition	Horizontal Measurement Distance (m)	Source Height (m)	Total Measurement Distance (m)	Measurement Directionality (deg)	Source to Receiver Directionality Factor (dB)	Total Directionality Factor (dB)	Octave Band (Hz)										Total
										125	250	500	1000	2000	4000	8000				
CR01, CR02	Crematorium Stack	None	Normal	19.2	1.5	19.2	N/A	N/A	2	Measured SPL (dB(A))	45.43	47.01	48.31	44.30	48.30	44.43	40.10	39.40	34.31	54.31
										Calculated PML (dB(A))	79.24	80.67	82.36	77.25	82.25	78.25	74.30	73.10	68.17	88.17
										Measured SPL (dB(A))	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										Calculated PML (dB(A))	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EF01	Exhaust - From Crematorium's Specifications	None	Normal	-	-	-	N/A	N/A	-	Measured SPL (dB(A))	79.24	80.67	82.36	77.25	82.25	78.25	74.30	73.10	68.17	88.17
										Calculated PML (dB(A))	79.24	80.67	82.36	77.25	82.25	78.25	74.30	73.10	68.17	88.17
										Measured SPL (dB(A))	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										Calculated PML (dB(A))	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AH01	Crematorium HVAC	None	Normal	1	1.5	1	N/A	-	2	Measured SPL (dB(A))	45.43	47.01	48.31	44.30	48.30	44.43	40.10	39.40	34.31	54.31
										Calculated PML (dB(A))	79.24	80.67	82.36	77.25	82.25	78.25	74.30	73.10	68.17	88.17
										Measured SPL (dB(A))	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										Calculated PML (dB(A))	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Emitting Facade Sound Power Level Calculations

$$L_p = L_p + 10 \log(A)$$

$$L_p(\text{total}) = 10 \log(10(L_p(31\text{Hz})/10) + 10(L_p(63\text{Hz})/10) + \dots + 10(L_p(8k\text{Hz})/10))$$

A is area of emitting facade

Source ID	Description	Condition	Facade Area (m ²)	Total (Yes/No)	Octave Band (Hz)										Total
					63	125	250	500	1000	2000	4000	8000			
CR01B,CR02B	Crematorium Room Intake Louvre	Normal	2	No	Measured SPL (dBA)	53.30	62.43	61.78	63.04	64.45	63.44	62.29	55.07	70.97	
					Calculated Total PWL (dBA) ¹	56.31	65.44	64.79	66.05	67.46	66.45	65.30	58.08	73.98	
					PWL with Penalties (dBA)	56.31	65.44	64.79	66.05	67.46	66.45	65.30	58.08	73.98	
GD01	Garage Door	None	16	No	Measured SPL (dBA)	53.30	62.43	61.78	63.04	64.45	63.44	62.29	55.07	70.97	
					Calculated Total PWL (dBA) ¹	65.34	74.48	73.82	75.08	76.49	75.48	74.33	67.11	83.01	
					PWL with Penalties (dBA)	65.34	74.48	73.82	75.08	76.49	75.48	74.33	67.11	83.01	

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

HANDHELD ANALYZER

Manufactured by: **BRUEL & KJAER**
Model No: **2270**
Serial No: **2679353**
Calibration Recall No: **29604**

Submitted By:

Customer:

Company: **Cambium Inc.**
Address:

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. **2270** **BRUE**

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.
The information supplied relates to the calibrated item listed above.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCCL Z540-1, IEC Guide 25, ISO 9001:2015 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Calibration Date: **06-Feb-19**

Certificate No: **29604 -1**

QA Doc. #1051 Rev. 2.0 10/1/01

Certificate Page 1 of 1

Approved by:

James Zhu

Quality Manager
ISO/IEC 17025:2005

**West Caldwell
Calibration
Laboratories, Inc.**
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.



Calibration Lab. Cert. # 1533.01

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

MICROPHONE

Manufactured by: **BRUEL & KJAER**
Model No: **4189**
Serial No: **2695416**
Calibration Recall No: **29604**

Submitted By:

Customer:

Company: **Cambium Inc.**
Address:

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. **4189** **BRUE**

Upon receipt for Calibration, the instrument was found to be:

Within **(X)**

tolerance of the indicated specification. See attached Report of Calibration.
The information supplied relates to the calibrated item listed above.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2015 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

Calibration Date: **06-Feb-19**

James Zhu

Certificate No: **29604 -2**

Quality Manager
ISO/IEC 17025:2005

QA Doc. #1051 Rev. 2.0 10/1/01

Certificate Page 1 of 1

West Caldwell
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Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.



Calibration Lab. Cert. # 1533.01

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

PRECISION ACOUSTIC CALIBRATOR

Manufactured by: LARSON DAVIS
Model No: CAL200
Serial No: 15401
Calibration Recall No: 29604

Submitted By:

Customer:

Company: Cambium Inc.
Address:

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. CAL200 **LARS**

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.
The information supplied relates to the calibrated item listed above.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCCL Z540-1, IEC Guide 25, ISO 9001:2015 and ISO 17025.

Note: With this Certificate, Report of Calibration is Included.

Calibration Date: 06-Feb-19

Certificate No: 29604 -4

QA Doc. #1051 Rev. 2.0 10/1/01

Certificate Page 1 of 1

Approved by:

James Zhu

Quality Manager
ISO/IEC 17025:2005

**West Caldwell
Calibration
Laboratories, Inc.**
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.



Calibration Lab. Cert. # 1533.01



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Hourly Data Report for June 10, 2019

All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.

DRYDEN REGIONAL
ONTARIO
Current Station Operator: NAVCAN

Latitude: 49°49'39.000" N

Longitude: 92°44'39.000" W

Elevation: 412.70 m

Climate ID: 6032125

WMO ID: 71527

TC ID: YHD

	<u>Temp</u> °C ↕	<u>Dew Point Temp</u> °C ↕	<u>Rel Hum</u> % ↕	<u>Wind Dir</u> 10's deg	<u>Wind Spd</u> km/h ↕	<u>Visibility</u> km ↕	<u>Stn Press</u> kPa ↕	<u>Hmdx</u>	<u>Wind Chill</u>	<u>Weather</u>
TIME										
00:00	7.9	7.3	96	22	11	16.1	96.98			NA
01:00	8.0	7.2	94	24	11	16.1	96.96			NA
02:00	7.7	6.8	94	25	11	16.1	96.94			NA
03:00	7.5	6.3	92	24	11	16.1	96.93			NA
04:00	6.6	6.0	96	22	9	16.1	96.92			NA
05:00	7.6	7.1	97	22	9	16.1	96.94			NA
06:00	8.9	7.4	90	26	15	16.1	96.94			NA
07:00	9.9	7.5	85	28	11	16.1	96.94			NA
08:00	11.9	7.8	76	28	18	16.1	96.92			NA
09:00	13.5	6.3	62	29	21	16.1	96.92			NA
10:00	14.9	5.6	53	31	11	16.1	96.92			NA
11:00	14.7	4.9	52	32	15	16.1	96.93			NA
12:00	15.2	3.1	44	30	18	16.1	96.92			NA
13:00	16.0	3.5	43	30	15	16.1	96.91			NA
14:00	17.3	1.1	33	29	21	16.1	96.89			NA

	<u>Temp</u> °C 	<u>Dew Point Temp</u> °C 	<u>Rel Hum</u> % 	<u>Wind Dir</u> 10's deg	<u>Wind Spd</u> km/h 	<u>Visibility</u> km 	<u>Stn Press</u> kPa 	<u>Hmdx</u>	<u>Wind Chill</u>	<u>Weather</u>
15:00	16.2	0.3	34	28	24	16.1	96.91			NA
16:00	16.6	2.1	37	32	21	16.1	96.91			NA
17:00	16.3	1.9	38	33	17	16.1	96.89			NA
18:00	15.9	0.5	35	30	22	16.1	96.90			NA
19:00	14.8	1.5	40	32	8	16.1	96.91			NA
20:00	13.2	1.9	46	28	9	16.1	96.91			NA
21:00	11.7	1.4	49	27	8	16.1	96.94			NA
22:00	10.1	1.0	53	26	9	16.1	96.96			NA
23:00	9.3	1.4	58	24	11	16.1	96.91			NA

Legend

- E = Estimated
- M = Missing
- NA = Not Available

Date modified:

2019-03-21



COOK

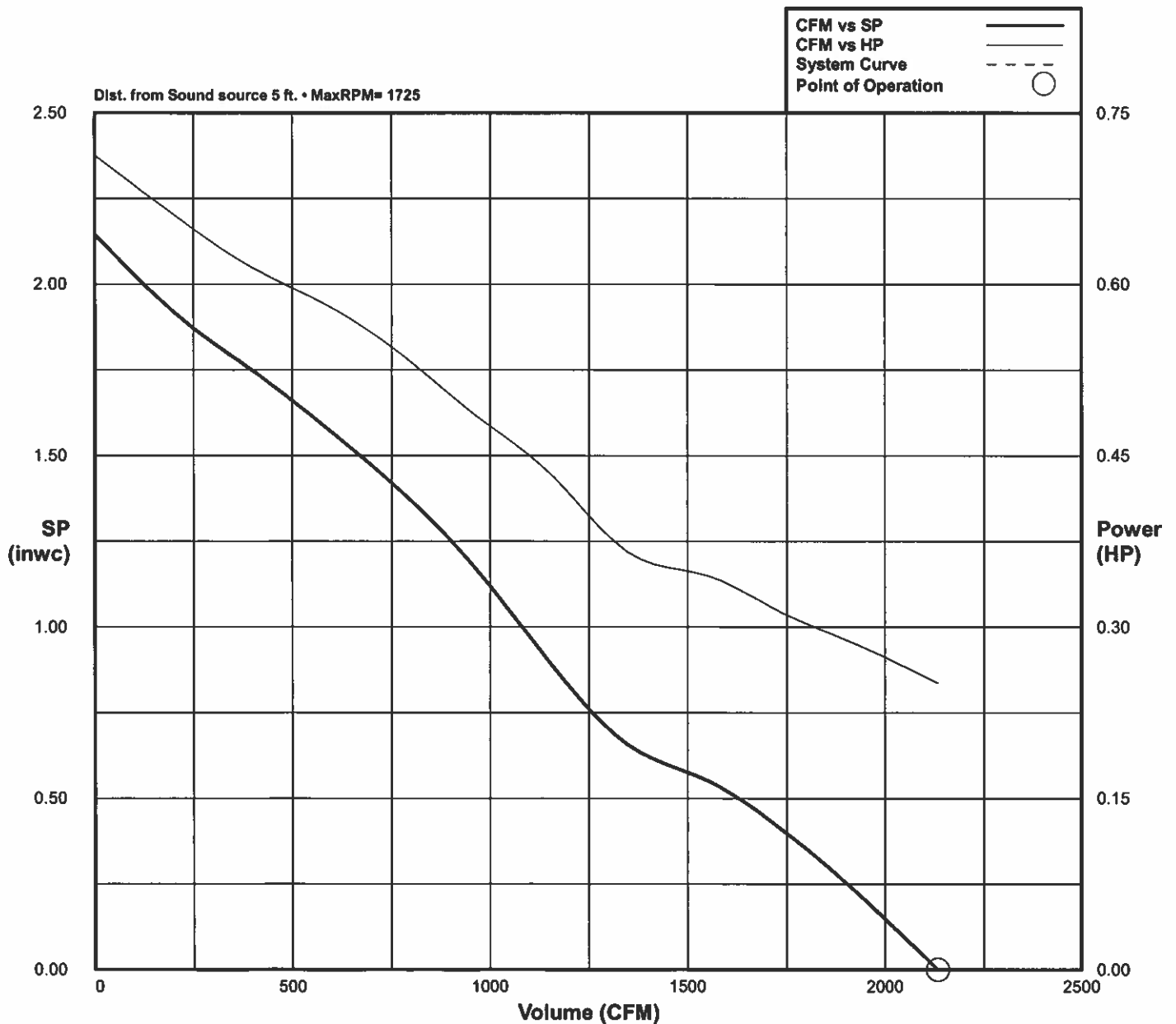
XPHD

Performance (Direct Drive)

Catalog Number	CFM	SP	Fan RPM	Power* HP	Motor HP	OVEL (mph)	TSPD (mph)	SE	TEMP (°F)	ELEV (Ft)
16XPH21D17	2134	0	1725	.25	.334	16.1	82	0%	70	0

Sound Data 8 Octave Bands 10⁻¹² Watts

1	2	3	4	5	6	7	8	LwA	dBA	SONES
76	84	83	82	77	71	67	62	83	71	18.9



Thermogenic Series Cremation Unit Model: CU-150

As measured:

File	Description	Length of Msmt	Sound Power Level (dBA)	Distance (m)	Leq (dBA)	L90 (dBA)	Overall 1/1 Sound Pressure Level (dBA)												
							8.0	16.0	31.5	63.0	125	250	500	1000	2000	4000	8000	16000	8.0
LxT 173	Outdoor Background	0:00:49.6	--	n/a	51.3	50.6	29.9	27.2	28.1	40.2	42.9	44.2	42.2	46.1	43.3	40.2	39.1	37.1	24.9
LxT 174	Outdoor Stack Measurement	0:01:08.1	--	19.2	54.6	53.8	29.9	27.2	32.9	45.6	47.0	48.9	44.3	48.4	44.6	40.7	39.4	37.2	24.9
LxT 175	Outdoor Stack Measurement	0:00:55.1	--	--	--	--	66.5	63.9	69.6	82.2	83.6	85.6	81.0	85.0	81.3	77.3	76.1	73.8	24.9
			91	19.2	54.3	53.7	29.9	27.2	32.0	45.2	46.8	49.3	43.8	47.0	44.1	41.3	39.8	37.2	
LxT 177	Outdoor Stack Measurement	0:01:03.1	--	--	--	--	66.5	63.9	68.7	81.8	83.5	86.0	80.5	83.6	80.8	78.0	76.5	73.9	24.9
			92	19.2	54.6	53.8	29.9	27.2	33.3	44.8	47.2	49.0	44.9	48.2	44.3	41.4	39.4	37.3	
LxT 179	Indoor Front (sides open)	0:01:03.9	--	2.4	--	--	66.5	63.9	69.9	81.5	83.8	85.7	81.5	84.9	81.0	78.0	76.1	73.9	24.9
			108	--	70.9	70.7	29.9	28.3	33.9	53.2	62.5	61.9	62.8	64.4	63.4	62.3	55.1	40.9	
LxT 180	Indoor Front (sides closed)	0:01:02.0	--	2.4	--	--	66.5	65.0	70.5	89.8	99.2	98.6	99.5	101.1	100.0	98.9	91.8	77.6	24.9
			105	--	68.6	68.4	29.9	27.2	34.0	53.6	59.8	62.1	59.6	62.2	60.3	58.7	51.7	39.2	

With background removed:

LxT 174	Outdoor Stack Measurement	0:01:08.1	--	19.2	51.9	--	--	--	31.2	44.1	44.8	47.1	40.1	44.4	38.9	30.8	27.4	18.2	4.5
LxT 175	Outdoor Stack Measurement	0:00:55.1	89	--	--	--	--	--	67.8	80.8	81.5	83.8	76.7	81.1	75.6	67.5	64.0	54.9	3.5
LxT 177	Outdoor Stack Measurement	0:01:03.1	--	19.2	51.4	--	--	--	29.8	43.5	44.6	47.7	38.8	39.4	36.8	34.9	31.6	19.8	2.5
			88	--	--	--	--	--	66.4	80.2	81.2	84.4	75.5	76.1	73.4	71.5	68.3	56.5	1.5
			--	19.2	51.9	--	--	--	31.7	42.9	45.2	47.2	41.4	44.0	37.7	35.1	27.7	22.8	1.0
			89	--	--	--	--	--	68.4	79.6	81.8	83.9	78.1	80.7	74.4	71.8	64.4	59.5	0.5

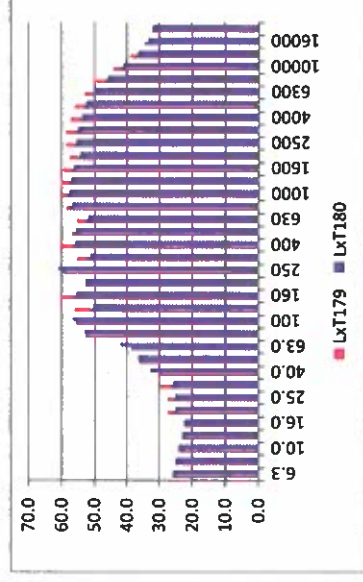
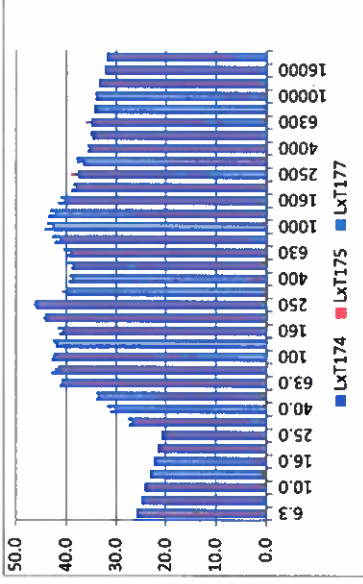
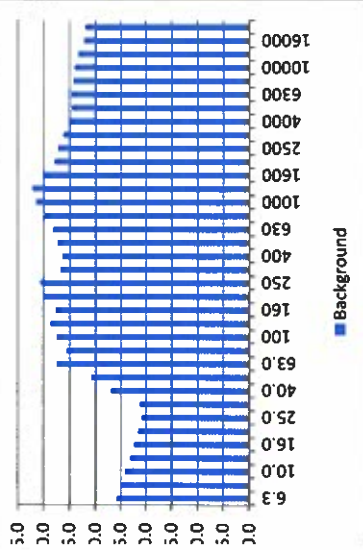
Average with background removed:

LxT 174- LxT177	Outdoor Stack Measurement	--	--	19.2	51.8	--	--	--	31.0	43.5	44.8	47.4	40.2	43.1	37.9	34.0	29.4	20.7	4.0
			88	--	--	--	--	--	67.6	80.2	81.5	84.0	76.9	79.8	74.5	70.7	66.0	57.4	3.0

Notes: Leq is the equivalent sound pressure level measured at a reference distance.
L90 is the sound pressure level value under which 90% of the measurements fall.

Overall 1/3 Sound Pressure Level (dBA)

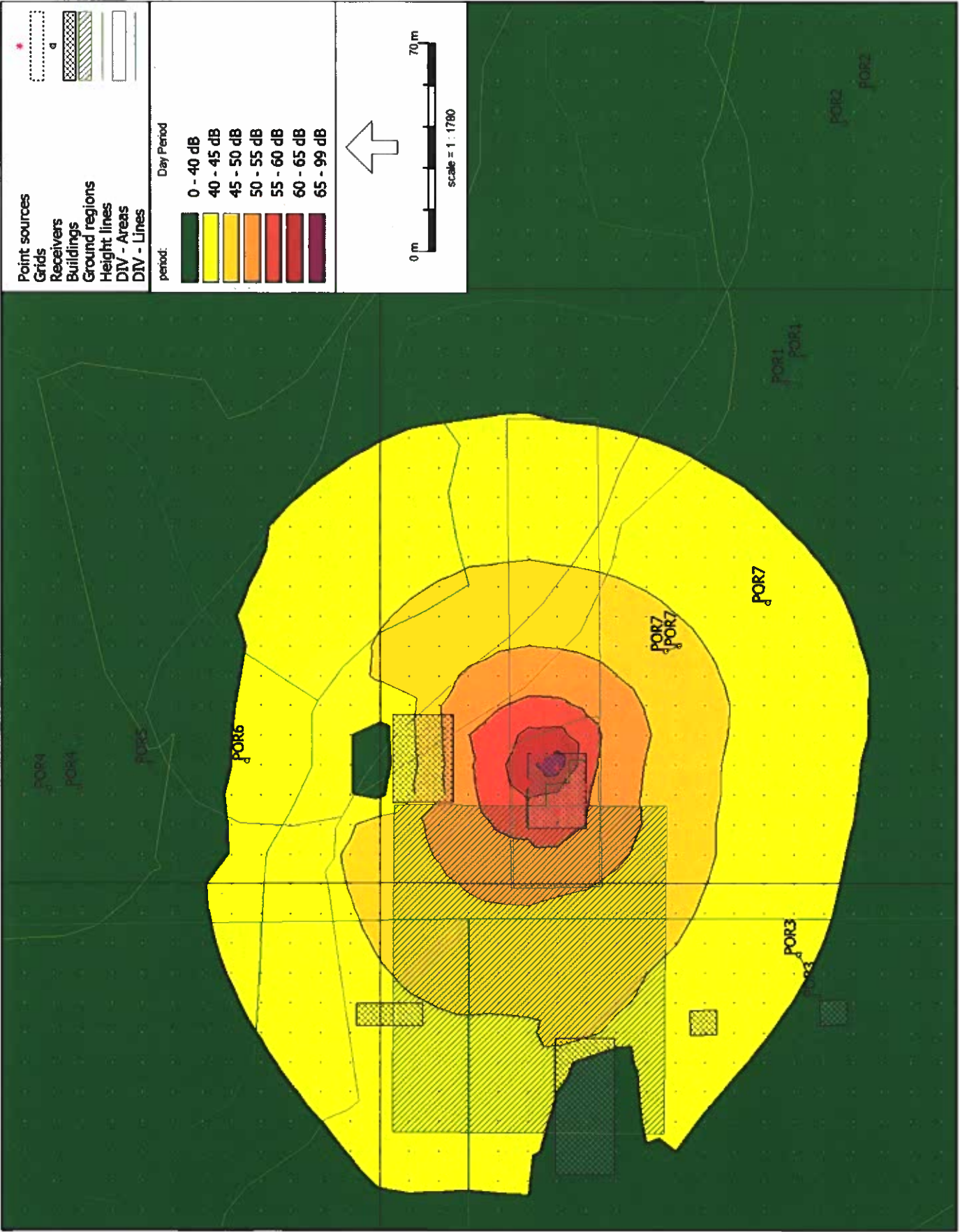
10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
24.3	23.2	22.4	21.6	20.9	21.3	27.0	30.9	37.5	35.7	37.5	38.8	37.8	40.2	40.6	36.8	36.5	37.5	38.3	40.1	41.6	42.2	39.9	37.9	37.2	36.3	35.2	34.6	34.7	34.4	34.1	33.4	32.3	32.0
24.3	23.2	22.4	21.6	20.9	27.5	31.3	34.1	41.4	43.1	43.0	42.1	41.5	44.3	46.2	39.8	39.7	39.1	39.8	42.4	44.5	43.7	41.7	39.2	37.7	36.7	35.9	34.9	35.2	34.6	34.2	33.5	32.3	32.0
24.3	23.2	22.4	21.6	20.9	26.8	30.3	33.7	41.1	42.4	42.9	42.3	40.8	44.7	46.5	40.9	39.0	38.9	39.4	41.4	42.8	42.4	40.5	38.1	39.1	38.1	35.6	35.3	36.3	34.6	34.2	33.5	32.3	32.0
24.3	23.2	22.4	21.6	20.9	27.6	31.8	34.1	41.0	41.7	42.6	42.8	41.8	44.3	46.4	40.0	39.5	40.0	40.8	43.0	43.9	43.4	41.3	38.8	37.8	38.1	35.9	35.3	35.2	34.6	34.3	33.6	32.4	32.0
24.3	23.2	22.4	27.4	27.4	29.9	29.6	36.2	38.6	53.1	55.8	56.2	59.8	53.0	59.8	55.5	60.6	57.1	55.6	58.7	59.9	60.3	59.7	57.6	58.5	58.7	57.4	56.2	53.1	49.5	44.3	38.9	34.4	32.0
24.3	23.2	22.4	25.0	25.1	25.8	32.7	36.5	42.1	53.3	56.9	50.7	55.8	53.1	61.0	51.6	56.0	55.9	52.2	57.1	57.9	57.2	56.4	54.5	55.6	55.1	53.8	52.7	49.8	46.0	41.2	36.6	33.4	32.0





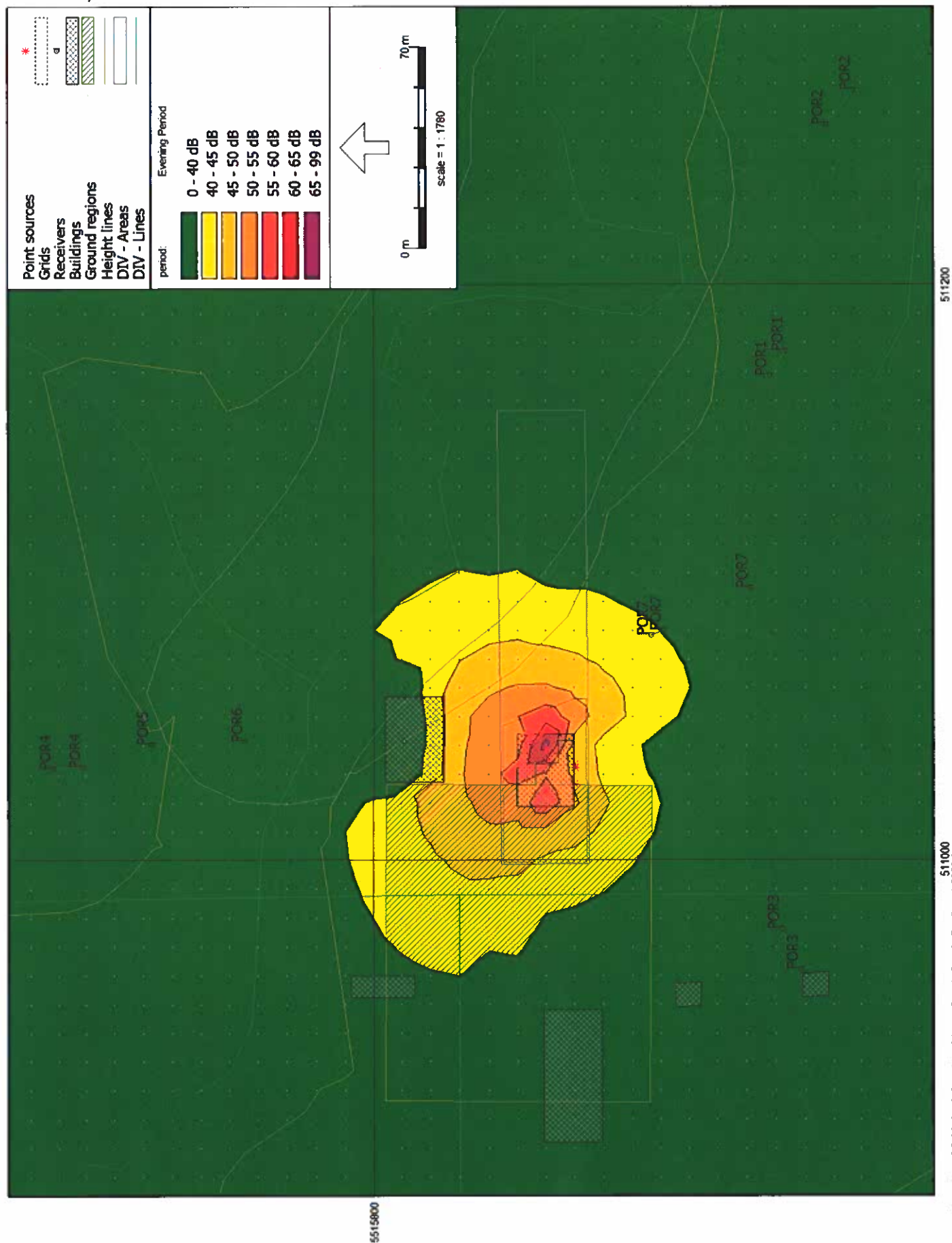
Appendix B

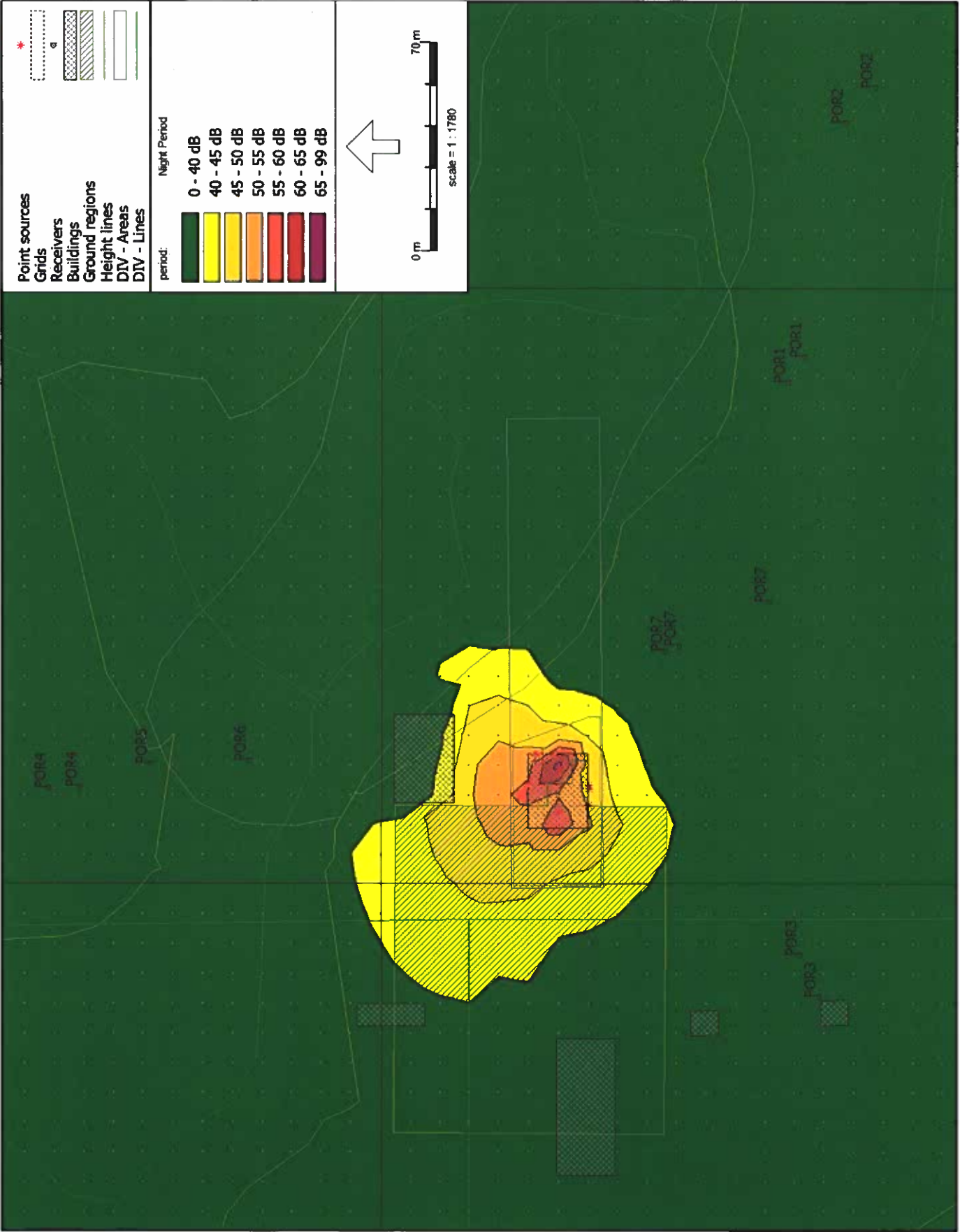
Impact Assessment Results



5515800

1 Oct 2020, 09:09





```

=====
Testfile opened: 9/29/20 2:34:10 PM
=====

>>> CALCULATION SPECIFICATION
=====
Version      : 3.20
Mapname      : Steady State
MethodID     : 513
Model bounds - Min : (508773.33, 5514414.02)
Model bounds - Max : (513468.61, 5518083.54)
Min. ground level : 0.00
CalcTestLevel : 7
Do Shape Export : No
Fetching radius : -1.00
ErrorMargin    : 0.00
Default ground factor : 1.00
Meteo correction : None
Max.barrier attenuation: According to ISO standard
Dmax1 / Dmax2 : 20.00 / 25.00
Full DTM      : Yes
Ground attenuation : Avoid overestimating barrier effect
Barrier attenuation : No barrier effect for direct sight
Dcalculation   : No
TemperatureK   : 283.15
Humidity       : 70.00
Pressure       : 101.33
GroundAttAlternative : No
SpeedOfSound   : 337.30
Alu            : 0.032 \ 0.122 \ 0.411 \ 1.043 \ 1.928 \ 3.658 \ 9.664 \ 32.770 \ 116.883
=====

----- Cross section for receiver POR7 (Id=10782) and source CR02A (Id=182) -----

```

ItemType	Id	Distance	X	Y	Hgrnd	Height	GrndFact	Cluster
Receiver	POR7	0.000	511078.26	5515703.64	361.81	1.50	1.00	
Heightline	meshline3829	27.613	511059.96	5515724.32	361.92	0.00	1.00	
Heightline	meshline4007	27.613	511059.96	5515724.32	361.92	0.00	1.00	
Heightline	meshline3828	29.500	511058.71	5515725.74	361.89	0.00	1.00	
Heightline	meshline3933	29.500	511058.71	5515725.74	361.89	0.00	1.00	
Heightline	meshline3915	30.439	511058.09	5515726.44	361.85	0.00	1.00	
Heightline	meshline3935	30.439	511058.09	5515726.44	361.85	0.00	1.00	
Heightline	meshline3917	33.626	511055.98	5515728.83	362.00	0.00	1.00	
Heightline	meshline3939	33.626	511055.98	5515728.83	362.00	0.00	1.00	
Heightline	meshline3940	35.133	511054.98	5515729.95	362.00	0.00	1.00	

Heightline meshline8237 35.133 511054.98 5515729.95 362.00 0.00 1.00 8
 Building BL_01 52.082 511043.75 5515742.65 362.00 4.00 1.00
 Pointsource CR02A 56.016 511041.14 5515745.59 362.00 11.00 1.00

 L(wr) -- 79.28 80.67 82.56 77.95 82.05 78.29 74.36 73.10
 G(rec) = 1.00; G(mid) = 1.00; G(src) = 1.00
 A(ground;rec) -1.50 -1.50 0.51 4.73 3.35 0.44 0.00 0.00
 A(ground;mid) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(ground;src) -1.50 -1.50 0.03 0.00 0.00 0.00 0.00 0.00
 A(ground;tot) -3.00 -3.00 0.53 4.73 3.35 0.44 0.00 0.00

Screening Vertical: no detour
 Screening Left: no detour
 Screening Right: no detour

A(barrier, v) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(barrier, l) -- -- -- -- -- -- -- --
 A(barrier, r) -- -- -- -- -- -- -- --
 A(barrier, tot) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

A(veg) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(sit) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(bld) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(air) 0.00 0.01 0.02 0.06 0.11 0.21 0.55 1.86
 A(geo) 46.09 46.09 46.09 46.09 46.09 46.09 46.09 46.09
 C(meteo) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

 L(p) -- 36.19 34.03 31.68 28.40 35.31 31.65 26.41 20.37 | 41.54

 Cross section for receiver POR7 (Id=10782) and source CR02A (Id=182)
 [Reflection in facade BL_02 (Id=167)]

ItemType	Id	Distance	X	Y	Hgrnd	Height	GrndFact	Cluster
Receiver	POR7	0.000	511078.26	5515703.64	361.81	1.50	1.00	
Heightline	meshline4005	27.041	511051.68	5515708.63	362.51	0.00	1.00	
Heightline	meshline4062	27.041	511051.68	5515708.63	362.51	0.00	1.00	
Ground	GR01	53.260	511025.92	5515713.46	0.00	0.00	0.00	
Heightline	meshline1590	80.486	510999.16	5515718.48	362.21	0.00	0.00	
Heightline	meshline4064	80.486	510999.16	5515718.48	362.21	0.00	0.00	
Heightline	meshline1591	87.183	510992.57	5515719.71	362.47	0.00	0.00	
Heightline	meshline1660	87.183	510992.57	5515719.71	362.47	0.00	0.00	
Heightline	meshline1392	90.383	510989.43	5515720.30	362.58	0.00	0.00	
Heightline	meshline1661	90.383	510989.43	5515720.30	362.58	0.00	0.00	
Building(R)	BL_02	132.686	510947.85	5515728.10	365.16	6.50	0.00	
Heightline	meshline1393	175.817	510990.24	5515736.05	361.75	0.00	0.00	
Heightline	meshline4118	175.817	510990.24	5515736.05	361.75	0.00	0.00	
Heightline	meshline4116	185.185	510999.45	5515737.78	362.00	0.00	0.00	

Heightline meshline8235 185.185 510999.45 5515737.78 362.00 0.00 0.00
 Building BL_01 204.821 511018.75 5515741.40 362.00 4.00 0.00
 Ground GR01 212.279 511026.08 5515742.77 0.00 0.00 1.00
 Heightline meshline8236 213.289 511027.07 5515742.96 362.00 0.00 1.00
 Heightline meshline8239 213.289 511027.07 5515742.96 362.00 0.00 1.00
 Pointsource CR02A 227.604 511041.14 5515745.59 362.00 11.00 1.00

L(wr) -- 79.28 80.67 82.56 77.95 82.05 78.29 74.36 73.10
 G(rec) = 1.00; G(src) = 1.00; G(src) = 0.30
 A(ground;rec) -1.50 -1.50 1.31 6.95 4.92 0.65 0.00 0.00
 A(ground;mid) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(ground;src) -1.50 -1.50 -1.04 -1.05 -1.05 -1.05 -1.05 -1.05
 A(ground;tot) -3.00 -3.00 0.27 5.90 3.87 -0.39 -1.05 -1.05

Screening Vertical: no detour
 Screening Left: no detour
 Screening Right: no detour

A(barrier, v) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(barrier, l) -- -- -- -- -- -- -- --
 A(barrier, r) -- -- -- -- -- -- -- --
 A(barrier, tot) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(veg) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(sit) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(bld) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 A(air) 0.01 0.03 0.09 0.24 0.44 0.83 2.20 7.47
 A(geo) 58.14 58.14 58.14 58.14 58.14 58.14 58.14 58.14
 A(refl) -- -- -- -- -- -- -- --
 C(meteo) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

L(p) -- -- -- -- 22.50 18.02 8.83 -11.59 | 23.96

Height	Source	Per	Laeq	32	63	125	250	500	1000	2000	4000	8000
1.50	CR02A	1	41.62	--	36.19	34.03	31.68	28.40	35.53	31.84	26.49	20.37
1.50	CR02A	2	--	--	--	--	--	--	--	--	--	--
1.50	CR02A	3	--	--	--	--	--	--	--	--	--	--
1.50	CR02A	4	--	--	--	--	--	--	--	--	--	--

Height	Source	Per	Laeq	32	63	125	250	500	1000	2000	4000	8000
1.50	CR02A	1	41.62	--	36.19	34.03	31.68	28.40	35.53	31.84	26.49	20.37
1.50	CR02A	2	--	--	--	--	--	--	--	--	--	--
1.50	CR02A	3	--	--	--	--	--	--	--	--	--	--
1.50	CR02A	4	--	--	--	--	--	--	--	--	--	--

```
-----  
0.0000;      298;  0.0000001; "TimerSet - overhead"  
0.0022;      1;   0.0021708; "TMeshLineList.AddLines"  
0.0021;     148;  0.0000142; "WriteTestString"  
-----
```

```
=====  
Testfile closed: 9/29/20 2:34:10 PM  
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Appendix C

ORNAMENT Data and Outputs



Ministry of
Transportation

Highway
Standards
Branch

Traffic
Office

Provincial Highways

Traffic Volumes

2016

King's Highways / Secondary Highways / Tertiary Roads

Ministry Contact:

Traffic Office (905)-704-2960

Abstract:

This annual publication contains averaged traffic volume information for each of the sections of highway under MTO jurisdiction for the year 2016 only.

Key Words:

Annual Average Daily Traffic volume (AADT)

Highway	Location Description From	Location Description To	Dist. (KM)	2016 AADT
17	GULLIVER RIVER BR	SEC HWY 599(N)	10.1	2,700
17	SEC HWY 599(N)	DAVY LAKE RD (S) - HUMPHRY RD (N) - IGNACE TWP	0.9	2,350
17	DAVY LAKE RD (S) - HUMPHRY RD (N) - IGNACE TWP	MAMEIGWESS LAKE RD (N) - BRADSHAW TWP	13.5	2,000
17	MAMEIGWESS LAKE RD (N) - BRADSHAW TWP	SEC HWY 603 (W) - SANDY PT RD-BORUPS COR(S)	44.1	2,850
17	SEC HWY 603 (W) - SANDY PT RD-BORUPS COR(S)	HWY 72 (N)	20.9	2,450
17	HWY 72 (N)	THUNDER LAKE RD	19.1	3,900
17	THUNDER LAKE RD	E JCT SEC HWY 601 (S) - RICE LAKE LOOP	3.7	5,950
17	E JCT SEC HWY 601 (S) - RICE LAKE LOOP	DRYDEN E LTS-TWP BDY - START OF NA	3.3	6,900
17	DRYDEN E LTS-TWP BDY - START OF NA	DRYDEN W LTS - END OF NA	4.7	
17	DRYDEN W LTS - END OF NA	SEC HWY 665 - RICHAN RD (N)	1.4	7,000
17	SEC HWY 665 - RICHAN RD (N)	SEC HWY 605 - ETON RUGBY RD (N)	11.2	5,450
17	SEC HWY 605 - ETON RUGBY RD (N)	SEC HWY 594 W JCT (S) - TO EAGLE RIVER	12.8	4,050
17	SEC HWY 594 W JCT (S) - TO EAGLE RIVER	HWY 105 - RED LAKE RD (N)	14.3	3,250
17	HWY 105 - RED LAKE RD (N)	SEC HWY 647 (N) - TO BLUE LAKE PROV PARK	2.0	2,400
17	SEC HWY 647 (N) - TO BLUE LAKE PROV PARK	HWY 71 (S) - LONGBOW COR(S) - KIRKUP TWP	72.3	3,200
17	HWY 71 (S) - LONGBOW COR(S) - KIRKUP TWP	E JCT HWY 17A - KENORA BY-PASS	4.0	3,950
17	E JCT HWY 17A - KENORA BY-PASS	0.03 KM N OF LONGBOW LK RD ICS (017 766)	0.2	1,150
17	0.03 KM N OF LONGBOW LK RD ICS (017 766)	TWP OF JAFFRAY-MELICK - START OF NA	4.8	1,550
17	TWP OF JAFFRAY-MELICK - START OF NA	FORMER TOWN OF KEEWATIN W LTS- END OF NA	19.6	
17	FORMER TOWN OF KEEWATIN W LTS- END OF NA	SEC HWY 641 - LACLU RD	2.9	3,250
17	SEC HWY 641 - LACLU RD	END OF EB RAMP MERGE LANE	0.8	2,950
17	END OF EB RAMP MERGE LANE	W JCT HWY 17A - KENORA BYPASS	0.6	1,400
17	W JCT HWY 17A - KENORA BYPASS	W JCT OF START OF EB RAMP LANE	1.2	3,150
17	W JCT OF START OF EB RAMP LANE	LINDSAY RD (S) - BOYS TWP	8.0	5,150
17	LINDSAY RD (S) - BOYS TWP	ONTARIO/MANITOBA PROV BDY - HWY END	29.5	4,650
17A	HWY 17 E JCT (S)	SEC HWY 671(N)-TO STRECKER RD&GRASSY NARROWS	8.0	2,550
17A	SEC HWY 671(N)-TO STRECKER RD&GRASSY NARROWS	EAST MELICK RD (N) - FORMER HWY 659	4.3	2,650
17A	EAST MELICK RD (N) - FORMER HWY 659	SEC HWY 658 - REDDITT RD (N)-TO OPP & MTO PAT	6.2	3,100
17A	SEC HWY 658 - REDDITT RD (N)-TO OPP & MTO PAT	WINNIPEG R BR (EAST BRANCH)	2.3	3,450
17A	WINNIPEG R BR (EAST BRANCH)	SEC HWY 596 (N)-TO MINAKI - DARLINGTON DR (S)	5.5	3,450
17A	SEC HWY 596 (N)-TO MINAKI - DARLINGTON DR (S)	HWY 641 & CPR OVERPASS	5.9	3,150
17A	HWY 641 & CPR OVERPASS	W JCT HWY 17 - HWY END	1.1	4,350
178	HWY 11/17 - NORTH BAY - START OF NA	NORTH BAY W LTS - END OF NA	5.2	
178	NORTH BAY W LTS - END OF NA	BAR RIVER RD - START OF HWY 17B	0.9	2,800
178	BAR RIVER RD - START OF HWY 17B	SEC HWY 638 - CHURCH ST- ECHO BAY (N&S)	4.8	2,200
178	SEC HWY 638 - CHURCH ST- ECHO BAY (N&S)	WEST JCT HWY 17/HWY 17B - END OF HWY	15.8	2,700
19	PORT BURWELL-LAKE ERIE - START OF NA	TILLSONBURG N LTS - END OF NA	31.1	
19	TILLSONBURG N LTS - END OF NA	OXFORD RD 18-MOUNT ELGIN RD(E)/MT ELGIN RD(W)	8.8	8,450
19	OXFORD RD 18-MOUNT ELGIN RD(E)/MT ELGIN RD(W)	0.4 KM N OF HWY 401 - END OF HWY	9.8	10,100
20	FALLS RD-NIAGARA FALLS - START OF NA	NIAGARA RD 70 TOWNLINE RD - END OF NA	8.8	

STAMSON 5.0 NORMAL REPORT 17AT25D
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT Date: 03-05-2019 11:50:31

Filename: Time Period: 1 hours
 Description: 17at25D

Road data, segment # 1:

 Car traffic volume : 311 veh/TimePeriod
 Medium truck volume : 25 veh/TimePeriod
 Heavy truck volume : 18 veh/TimePeriod
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1:

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 25.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

¶
 Results segment # 1:

Source height = 1.50 m

ROAD (0.00 + 59.88 + 0.00) = 59.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.66	0.00	-3.48	-1.30	0.00	0.00	0.00	59.88

Segment Leq : 59.88 dBA

Total Leq All Segments: 59.88 dBA

¶
 TOTAL Leq FROM ALL SOURCES: 59.88
 ¶

STAMSON 5.0 NORMAL REPORT 17AT25E
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT Date: 03-05-2019 11:51:16

Filename: 17at25D.te Time Period: 1 hours
 Description: 17at25E

Road data, segment # 1:

 Car traffic volume : 103 veh/TimePeriod
 Medium truck volume : 8 veh/TimePeriod
 Heavy truck volume : 6 veh/TimePeriod
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1:

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 25.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1:

 Source height = 1.50 m

ROAD (0.00 + 55.07 + 0.00) = 55.07 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

 -90 90 0.57 59.85 0.00 -3.48 -1.30 0.00 0.00 0.00 55.07

Segment Leq : 55.07 dBA

Total Leq All Segments: 55.07 dBA

TOTAL Leq FROM ALL SOURCES: 55.07

Filename: 17at25D.te Time Period: 1 hours
 Description: 17at25N2

Road data, segment # 1:

 Car traffic volume : 37 veh/TimePeriod
 Medium truck volume : 3 veh/TimePeriod
 Heavy truck volume : 2 veh/TimePeriod
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1:

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 25.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1:

Source height = 1.48 m

ROAD (0.00 + 50.46 + 0.00) = 50.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	55.24	0.00	-3.48	-1.30	0.00	0.00	0.00	50.46

Segment Leq : 50.46 dBA

Total Leq All Segments: 50.46 dBA

TOTAL Leq FROM ALL SOURCES: 50.46

STAMSON 5.0 NORMAL REPORT 17AT75D
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT Date: 03-05-2019 11:52:22

Filename: 17at25D.te Time Period: 1 hours
 Description: 17at75D

Road data, segment # 1:

 Car traffic volume : 311 veh/TimePeriod
 Medium truck volume : 25 veh/TimePeriod
 Heavy truck volume : 18 veh/TimePeriod
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1:

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 75.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1:

 Source height = 1.50 m

ROAD (0.00 + 52.39 + 0.00) = 52.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.66	0.00	-10.97	-1.30	0.00	0.00	0.00	52.39

Segment Leq : 52.39 dBA

Total Leq All Segments: 52.39 dBA

TOTAL Leq FROM ALL SOURCES: 52.39

STAMSON 5.0 NORMAL REPORT 17AT75E
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT Date: 03-05-2019 11:51:49

Filename: 17at25D.te Time Period: 1 hours
 Description: 17at75E

Road data, segment # 1:

 Car traffic volume : 103 veh/TimePeriod
 Medium truck volume : 8 veh/TimePeriod
 Heavy truck volume : 6 veh/TimePeriod
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1:

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 75.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1:

 Source height = 1.50 m

ROAD (0.00 + 47.58 + 0.00) = 47.58 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	59.85	0.00	-10.97	-1.30	0.00	0.00	0.00	47.58

Segment Leq : 47.58 dBA

Total Leq All Segments: 47.58 dBA

TOTAL Leq FROM ALL SOURCES: 47.58

STAMSON 5.0 NORMAL REPORT 17AT75N2
 Date: 03-05-2019 11:53:39
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 17at25D.te Time Period: 1 hours
 Description: 17at75N2

Road data, segment # 1:

 Car traffic volume : 37 veh/TimePeriod
 Medium truck volume : 3 veh/TimePeriod
 Heavy truck volume : 2 veh/TimePeriod
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1:

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 75.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1:

 Source height = 1.48 m

ROAD (0.00 + 42.96 + 0.00) = 42.96 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

 -90 90 0.57 55.24 0.00 -10.98 -1.30 0.00 0.00 0.00 42.96

Segment Leq : 42.96 dBA

Total Leq All Segments: 42.96 dBA

TOTAL Leq FROM ALL SOURCES: 42.96