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Environmental Noise Control Study - Stationary Noise Component

Proposed Residential Development
Spring Valley Trails
3252 Navan Road - Ottawa

Prepared For

Claridge Homes (Gladstone)

June 1, 2021

Report: PG5224-2

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Appendices

1.0 Introduction

Paterson Group (Paterson) was commissioned by Claridge Homes (Gladstone) to conduct a Stationary Noise Review for the proposed Spring Valley Trails Phase 5 and 6 residential development to be located at 3252 Navan Road, in the City of Ottawa. It should be noted that Paterson's report was solely prepared to review the stationary noise source, which is identified as the adjacent property (Waste recycling and disposal operation at BFI Navan Facility).

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes acoustical recommendations pertaining to the design and construction of the subject development as they are understood at the time of writing this report.

This study has been conducted according to City of Ottawa document - Engineering Noise Control Guidelines (ENCG), dated January 2016, and the Ontario Ministry of the Environment Guideline NPC-300.

2.0 Background

It is understood that the proposed development will consist of single houses and townhouses. The single houses and townhouses will have outdoor living areas. Local roadways, residential driveways and landscaped areas are anticipated for the proposed development.

3.0 Methodology and Noise Assessment Criteria

Stationary Noise

Stationary noise sources include sources or facilities that are fixed or mobile and can cause a combination of sound and vibration levels emitted beyond the property line. These sources may include commercial air conditioner units, generators and fans. Facilities that may contribute to stationary noise may include car washes, snow disposal sites, transit stations and manufacturing facilities. In this situation, the stationary noise source consists of an existing solid waste disposal facility.

The impact of stationary noise sources are directly related to the location of the subject site within the urban environment. The proposed development can be classified as Class 2 by provincial guidelines and outlined in the ENGC, meaning "a suburban areas of the City outside of the busy core where the urban hum is evident but within the urban boundary."

Table 1 - Guidelines for Stationary Noise - Class 2

Time of Day	Outdoor Point of Reception	Pane of Window
7:00-19:00	50	50
19:00-23:00	45	50
23:00-7:00	-	45

1. Standards taken from Table 3.2a; Guidelines for Stationary Noise - Steady and Varying Sound

If the sound level limits are exceeded the following Warning Clause may be referenced:

Table 2 - Warning Clauses for Sound Level Exceedances

Warning Clause	Description
Warning Clause Type E	"Purchasers/tenants are advised that due to the proximity of the adjacent industry (facility) (utility), noise from the industry (facility) (utility) may at times be audible."

2. Clauses taken from section C8 Warning Clauses; Environmental Noise Guidelines - NPC-300

4.0 Analysis

The stationary noise source consisting of the BFI Navan Facility was identified within the 500 m radius from the proposed development. It is understood that the western edge of the BFI Navan Facility property is located approximately 120 metres from the eastern edge of the proposed residential development, and an additional 100 metres wide area is occupied by a compacted earth berm between the western toe of the landfill footprint and the BFI Navan Facility western property boundary, such that the proposed residential development is separated from the limit of waste placement by approximately 220 metres. It is also understood that the earth berm has a height that rises from about 17 metres at its south end to 12 metres towards its north end relative to the ground surface elevation on the adjacent subject property. It is further understood that the BFI Navan Facility will have an estimated 10 years of operational period beyond 2012 based on the currently approved capacity. Based on an agreement made during the Environmental Assessment process, the solid waste disposal facility will close upon reaching the currently approved capacity. Therefore, this stationary noise source is considered temporary and all analysis and recommendations made with respect to this stationary noise source can be removed from all deeds of sale once the solid waste disposal facility is closed.

The noise sources were modeled as the worst case indicator. The equipment utilized in the analysis is representative of the equipment that is used for solid waste disposal. The equipment consists of two excavators, three loaders, a vibratory compactor, three trucks, and three truck routes into and out of the existing BFI Navan Facility. A break down of the frequency's and sound levels of this equipment is included in Appendix 1.

The existing solid waste disposal facility is the only stationary noise source located within the 500 m proximity of the proposed development. The analysis was completed with specialized noise software: Predictor-Lima Version 2021.1. Twenty-six (26) reception points were selected within the 400 m proximity radius for our analysis. The reception points were selected at 1.5 m and 4.5 m elevations, so that both pane of glass at the first level and the second level of the proposed houses and outdoor living areas could be interpolated. The results of these reception points are included in Appendix 1.

5.0 Discussion

Results of the analysis can be found in Appendix 1. Reception points were analyzed at 1.5 m and 4.5 m elevations.

Proposed Residential Development

An analysis was completed for the proposed residential development, taking into consideration the lot layouts and approximate dwelling alignment. An initial analysis was performed utilizing the existing berm at the landfill with no sound mitigation measures. This analysis resulted in a maximum value of 52.0 dBA, which slightly exceeds the 50 dBA limit.

As per the Environmental Noise Guidelines prepared by the City of Ottawa, the following chart outlines the procedures to follow for exceedances to the stationary noise levels.

Table 3 - Noise Control Measures for New Development in Proximity to Stationary Noise Sources

Primary Mitigation Measure in order of Preference	Proposed Mitigation Measure
Insertion of noise insensitive land uses between the source and sensitive receptor	A 120 metres noise insensitive land is inserted between proposed development and the BFI Navan Facility
Orientation of buildings to provide quiet zones in rear yards, interior spaces and amenity areas	Side walls and rear yards are exposed to the stationary noise source.
construction techniques, enhanced construction quality	Exceedances for outdoor living areas - standard construction techniques are considered acceptable for the proposed dwellings.
earth berms	An earth berm has been constructed surrounding the western edge of BFI Navan Facility
acoustic barriers	Acoustic barriers are not required for noise mitigation

An analysis was completed utilizing an acoustic (noise) barrier at the rear property line of the dwellings closest to the landfill. The resultant noise levels were similar to those previously analyzed.

The anticipated noise levels, while slightly exceeding the 50 dBA limit, are considered acceptable with a Warning Clause provided.

6.0 Conclusion

The anticipated noise level at proposed residential development is considered acceptable while the BFI Navan Facility is in operation. Therefore, additional noise mitigation measures will not be required. However, Block 33, 34, 35 should have a provision to include the use of a central air conditioner, to ensure that windows will not need to be opened.

Due to the proximity of the BFI Navan Facility, a Warning Clause should be on the deed of sale of the units within the proposed residential development. Suggested wording is as follows:

> Purchasers/land owners are advised that there is a licensed solid waste disposal facility less than 500 metres away and that, from time to time, they may experience noise, dust and/or vibration as a result of the ongoing operations.

7.0 Statement of Limitations

The recommendations made in this report are in accordance with our present understanding of the project. Our recommendations should be reviewed when the project drawings and specifications are complete.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than the Claridge Homes (Gladstone) or their agent(s) is not authorized without review by this firm for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.

Stephanie A. Boisvenue, P.Eng. David J. Gilbert, P.Eng.

Report Distribution:

- ❑ Claridge Homes (e-mail copy)
- ❑ Paterson Group (1 copy)

APPENDIX 1

FIGURE 1 - MODEL OF PROPOSED RESIDENTIAL DEVELOPMENT

FIGURE 1 - MODEL OF PROPOSED RESIDENTIAL DEVELOPMENT - WITH BARRIER

FIGURE 2 - INITIAL ANALYSIS (TABLE OF RESULT)

FIGURE 2 - INITIAL ANALYSIS (TABLE OF RESULT) - WITH BARRIER

FIGURE 3 - INITIAL ANALYSIS (CONTOUR RESULT)

FIGURE 3 - INITIAL ANALYSIS (CONTOUR RESULT) - WITH BARRIER

ITEM PROPERTIES

Figure 1 - Model of Proposed Residential Development

Industrial noise - LimA - ISO 9613.1/2, [version of Area - Model - Spring Valley Trails] , Predictor V2021.1 Licensed to Paterson Group Inc. , Canada

Paterson Group Inc. , Canada

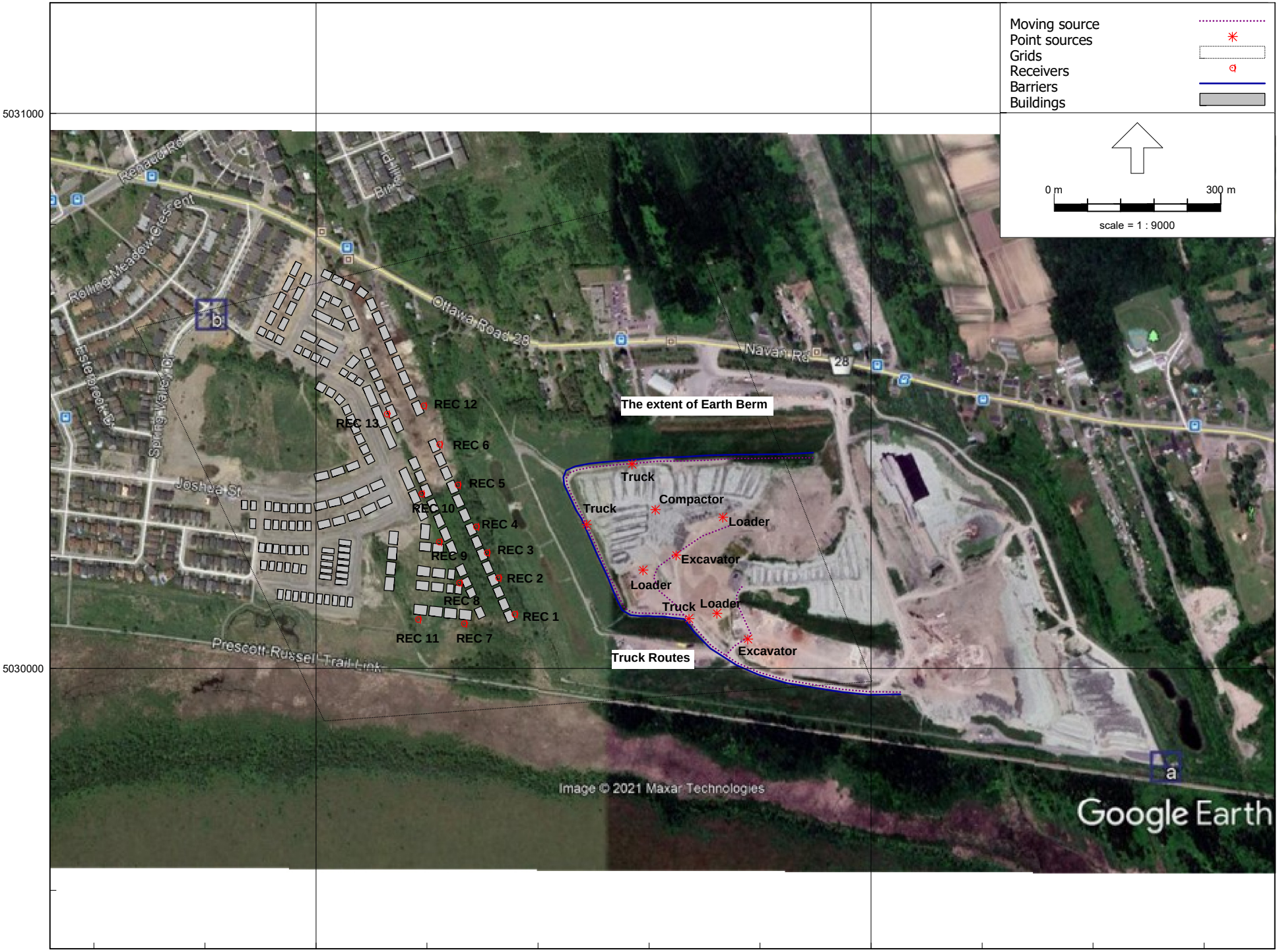

Figure 1 - Model of Proposed Residential Development

Paterson Group Inc. , Canada

Industrial noise - LimA - ISO 9613.1/2, [version of Area - Model - Spring Valley Trails] , Predictor V2021.1 Licensed to Paterson Group Inc. , Canada

Report: Table of Results
Model: Model - Spring Valley Trails
LAeq: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Description	X	Y	Height	Day	Evening	Night
Rec 1_A	REC 1	18460357.79	5030097.83	1.50	51.8	--	--
Rec 1_B	REC 1	18460357.79	5030097.83	4.50	52.0	--	--
Rec 10_A	REC 10	18460189.85	5030315.01	1.50	33.1	--	--
Rec 10_B	REC 10	18460189.85	5030315.01	4.50	38.4	--	--
Rec 11_A	REC 11	18460184.10	5030088.37	1.50	37.4	--	--
Rec 11_B	REC 11	18460184.10	5030088.37	4.50	41.0	--	--
Rec 12_A	REC 12	18460193.70	5030473.38	1.50	47.2	--	--
Rec 12_B	REC 12	18460193.70	5030473.38	4.50	47.3	--	--
Rec 2_A	REC 2	18460328.57	5030163.39	1.50	51.1	--	--
Rec 2_B	REC 2	18460328.57	5030163.39	4.50	51.5	--	--
Rec 3_A	REC 3	18460307.88	5030208.74	1.50	50.8	--	--
Rec 3_B	REC 3	18460307.88	5030208.74	4.50	51.2	--	--
Rec 4_A	REC 4	18460288.69	5030255.61	1.50	50.9	--	--
Rec 4_B	REC 4	18460288.69	5030255.61	4.50	51.3	--	--
Rec 5_A	REC 5	18460255.44	5030330.91	1.50	49.4	--	--
Rec 5_B	REC 5	18460255.44	5030330.91	4.50	49.7	--	--
Rec 6_A	REC 6	18460222.28	5030403.75	1.50	48.9	--	--
Rec 6_B	REC 6	18460222.28	5030403.75	4.50	49.0	--	--
Rec 7_A	REC 7	18460266.73	5030080.76	1.50	39.8	--	--
Rec 7_B	REC 7	18460266.73	5030080.76	4.50	43.2	--	--
Rec 8_A	REC 8	18460257.98	5030154.36	1.50	35.2	--	--
Rec 8_B	REC 8	18460257.98	5030154.36	4.50	41.1	--	--
Rec 9_A	REC 9	18460221.42	5030228.09	1.50	39.0	--	--
Rec 9_B	REC 9	18460221.42	5030228.09	4.50	44.7	--	--
rec13_A	REC 13	18460127.57	5030458.77	1.50	31.9	--	--
rec13_B	REC 13	18460127.57	5030458.77	4.50	37.7	--	--

All shown dB values are A-weighted

Report: Table of Results
Model: Model - Spring Valley Trails
LAeq: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Description	X	Y	Height	Day	Evening	Night
Rec 1_A	REC 1	18460357.79	5030097.83	1.50	51.8	--	--
Rec 1_B	REC 1	18460357.79	5030097.83	4.50	52.0	--	--
Rec 10_A	REC 10	18460189.85	5030315.01	1.50	33.1	--	--
Rec 10_B	REC 10	18460189.85	5030315.01	4.50	38.4	--	--
Rec 11_A	REC 11	18460184.10	5030088.37	1.50	37.4	--	--
Rec 11_B	REC 11	18460184.10	5030088.37	4.50	41.0	--	--
Rec 12_A	REC 12	18460193.70	5030473.38	1.50	47.2	--	--
Rec 12_B	REC 12	18460193.70	5030473.38	4.50	47.3	--	--
Rec 2_A	REC 2	18460328.57	5030163.39	1.50	51.1	--	--
Rec 2_B	REC 2	18460328.57	5030163.39	4.50	51.5	--	--
Rec 3_A	REC 3	18460307.88	5030208.74	1.50	50.8	--	--
Rec 3_B	REC 3	18460307.88	5030208.74	4.50	51.2	--	--
Rec 4_A	REC 4	18460288.69	5030255.61	1.50	50.9	--	--
Rec 4_B	REC 4	18460288.69	5030255.61	4.50	51.3	--	--
Rec 5_A	REC 5	18460255.44	5030330.91	1.50	49.4	--	--
Rec 5_B	REC 5	18460255.44	5030330.91	4.50	49.7	--	--
Rec 6_A	REC 6	18460222.28	5030403.75	1.50	48.9	--	--
Rec 6_B	REC 6	18460222.28	5030403.75	4.50	49.0	--	--
Rec 7_A	REC 7	18460266.73	5030080.76	1.50	39.8	--	--
Rec 7_B	REC 7	18460266.73	5030080.76	4.50	43.2	--	--
Rec 8_A	REC 8	18460257.98	5030154.36	1.50	35.2	--	--
Rec 8_B	REC 8	18460257.98	5030154.36	4.50	41.1	--	--
Rec 9_A	REC 9	18460221.42	5030228.09	1.50	39.0	--	--
Rec 9_B	REC 9	18460221.42	5030228.09	4.50	44.7	--	--
rec13_A	REC 13	18460127.57	5030458.77	1.50	31.9	--	--
rec13_B	REC 13	18460127.57	5030458.77	4.50	37.7	--	--

All shown dB values are A-weighted

Figure 3 - Initial Analysis (Contour Results)

Industrial noise - LimA - ISO 9613.1/2, [version of Area - Model - Spring Valley Trails] , Predictor V2021.1 Licensed to Paterson Group Inc. , Canada

Paterson Group Inc. , Canada

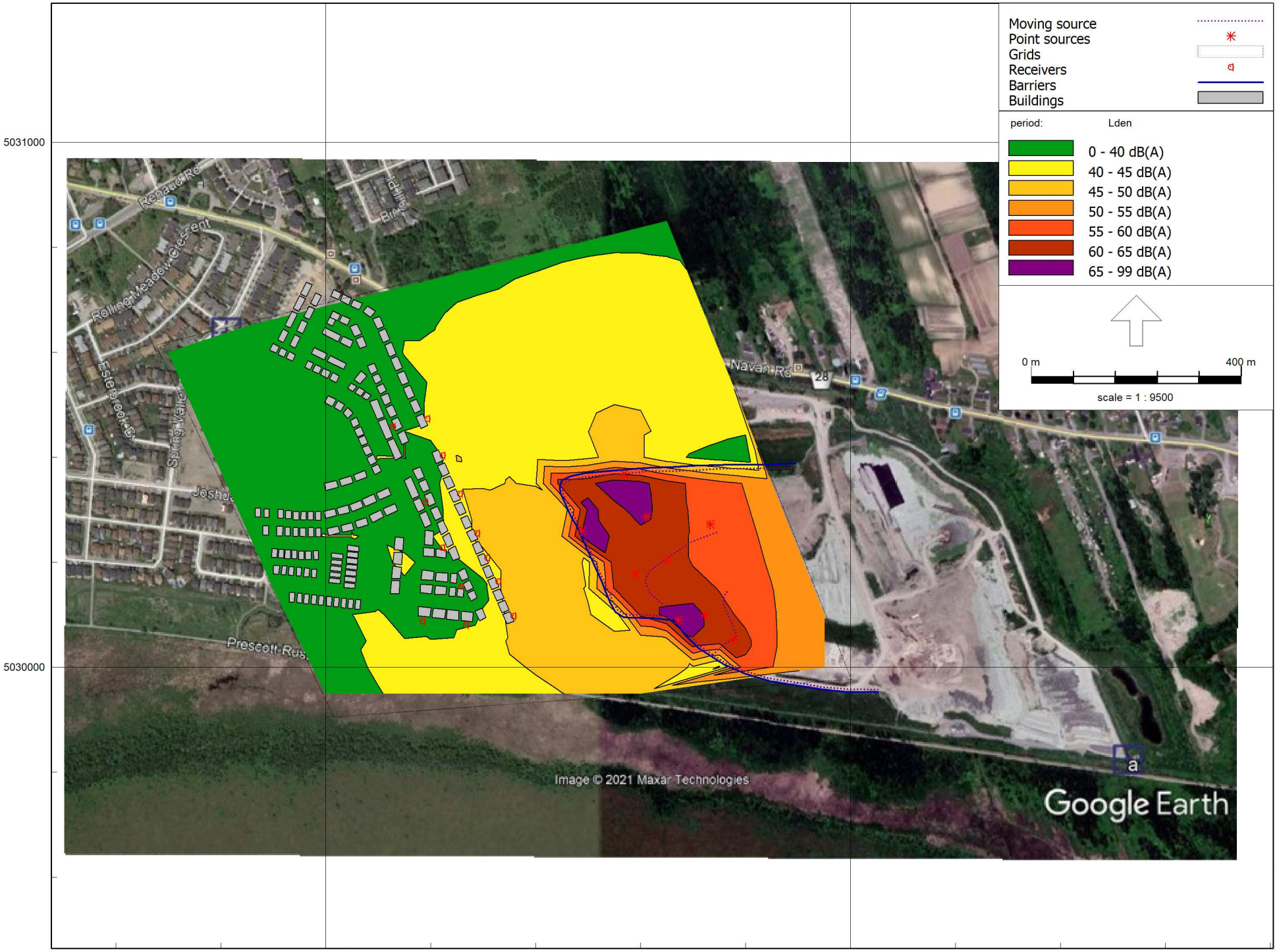

Figure 3 - Initial Analysis (Contour Results)

Industrial noise - LimA - ISO 9613.1/2, [version of Area - Model - Spring Valley Trails] , Predictor V2021.1 Licensed to Paterson Group Inc. , Canada

Paterson Group Inc. , Canada

Item Properties
Initial Analysis

Model: Model - Spring Valley Trails
version of Area - Area
Group: (main group)
Listing of: Point sources, for method Industrial noise - LimA - ISO 9613.1/2

Desc.	No building	No ind.site	Lw 63	Lw 125	Lw 250	Lw 500	Lw 1k	Lw 2k	Lw 4k	Lw 8k
Loader	No	No	75.80	77.90	83.40	88.80	91.00	89.20	88.00	76.90
Compactor	No	No	82.80	87.90	91.40	97.80	100.00	101.20	97.00	89.90
Truck	No	No	95.80	87.90	96.40	99.80	104.00	102.20	97.00	89.90
Truck	No	No	95.80	87.90	96.40	99.80	104.00	102.20	97.00	89.90
Truck	No	No	95.80	87.90	96.40	99.80	104.00	102.20	97.00	89.90
Excavator	No	No	74.80	84.90	88.40	94.80	95.00	93.20	87.00	77.90
Loader	No	No	75.80	77.90	83.40	88.80	91.00	89.20	88.00	76.90
Excavator	No	No	74.80	84.90	88.40	94.80	95.00	93.20	87.00	77.90
Loader	No	No	75.80	77.90	83.40	88.80	91.00	89.20	88.00	76.90