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MC Project No. 16000699A

LEGOLAND Additional Noise Evaluation

Introduction

As a result of public comments and technical review comments from Carpenter Environmental on the DEIS, it was requested that an additional noise evaluation be prepared to address concerns regarding potential LEGOLAND project generated noise levels including the effect of such sources as rollercoaster noise. The evaluation was also expanded to address the potential noise implications associated with the modifications to the roadway improvements planned in association with the Project. This would include any effect on noise levels related to the NYS Route 17 Exit 125 relocation/reconstruction as described in the FEIS Traffic Study. The evaluation also provides further discussion and analysis of the area referenced as Echo Ridge (R8), as well as at other uses in the area including along Conklingtown Road such as the Wills Way Equestrian Facility.

Scope of Additional Evaluation

Additional sound level readings were conducted on April 10, 2017. The data collection procedures and analysis procedures used in the evaluation are the same as those outlined on page 3 of the DEIS original Noise Evaluation dated September 15, 2016. The purpose of these additional noise readings was to provide a simulation of conditions with a specific louder on-site noise source such as a rollercoaster and to also evaluate other receptors as they relate to the currently proposed LEGOLAND project.

The procedures followed in terms of measurements and data recorded followed those outlined in the original noise evaluation. Wind speeds during measurements were less than 7 mph and air temperatures ranged from the high 60's to low 80's during the measurements on this day. At the time of the measurements, the Goshen quarry was opened and operating and trees and other vegetation were representative of "leaf off" conditions since they had not grown yet. In the case of the specific source simulation, measurements were taken with and without the sound source functioning. Data collected by ABC Acoustics, Inc., at LEGOLAND Carlsbad, CA indicated that sound levels at approximately 100 feet from the "Dragon" rollercoaster" were between 57 and 58 dBA which would equate to sound levels in the low 60's at a 50 foot reference. It should also be noted that in performing the site source on/off conditions, the sound horn used for this simulation



had a significantly higher L_{eq} of 82 dBA and a L_{max} of 87 dBA at a 50 foot referenced distance. Measurements were taken at 50 feet from the noise source (sound horn) in order to document the observed levels in the immediate proximity of the sound source. Additional measurements were then conducted with the noise source functioning on-site and simultaneously taking readings at the various off-site receptors. Additional readings at the off-site receptors were then collected with the “sound source off” to identify any sound level changes specific to the on-site sound generation.

Results of Measurements and Analysis (Table N-1, 3R, and 3SR)

Table No. N-1 provides a summary of the observed sound level readings which were collected on multiple observations for each receptor and were collected with both with and without the on-site noise source on. The noise level readings indicated that with and without the on-site noise source at the receptors, there was no discernable difference in the levels observed at the off-site receptors. All levels were less than three decibels between the with and without a source operating. Also, as can be seen from the table, there were actually some instances at the more distant receptors from the source that the levels “without the noise source” were slightly higher than “with source on” conditions. This is due to other localized noise sources including existing traffic near those receptors. Thus, the background levels at these locations due to traffic noise and other localized sound levels produces ambient levels, which overall are not affected by the additional noise generated on-site. The distance separation and the effect of ground cover attenuates the sound levels such that levels at the off-site receptors will experience no significant change resulting from the proposed facility.

Additionally two other receptors were reviewed in terms of existing and future sound levels, these included Receptor R9 located in proximity to Wills Way (the Equestrian Center located on Conklingtown Road), and Receptor R10 along the rear property line adjacent to residences fronting on Wedgewood Drive. The analysis procedures utilized are the same as described in the DEIS Noise Impact Evaluation, dated September 15, 2016. Note that Receptor R2 had already evaluated conditions previously resulting from the site development, but Receptor R10, which is in close proximity to NYS Route 17 and the proposed relocated eastbound ramp was added. It should be noted that the full width acceleration lane of the new ramp is located in excess of 750 feet from the closest residential property line.

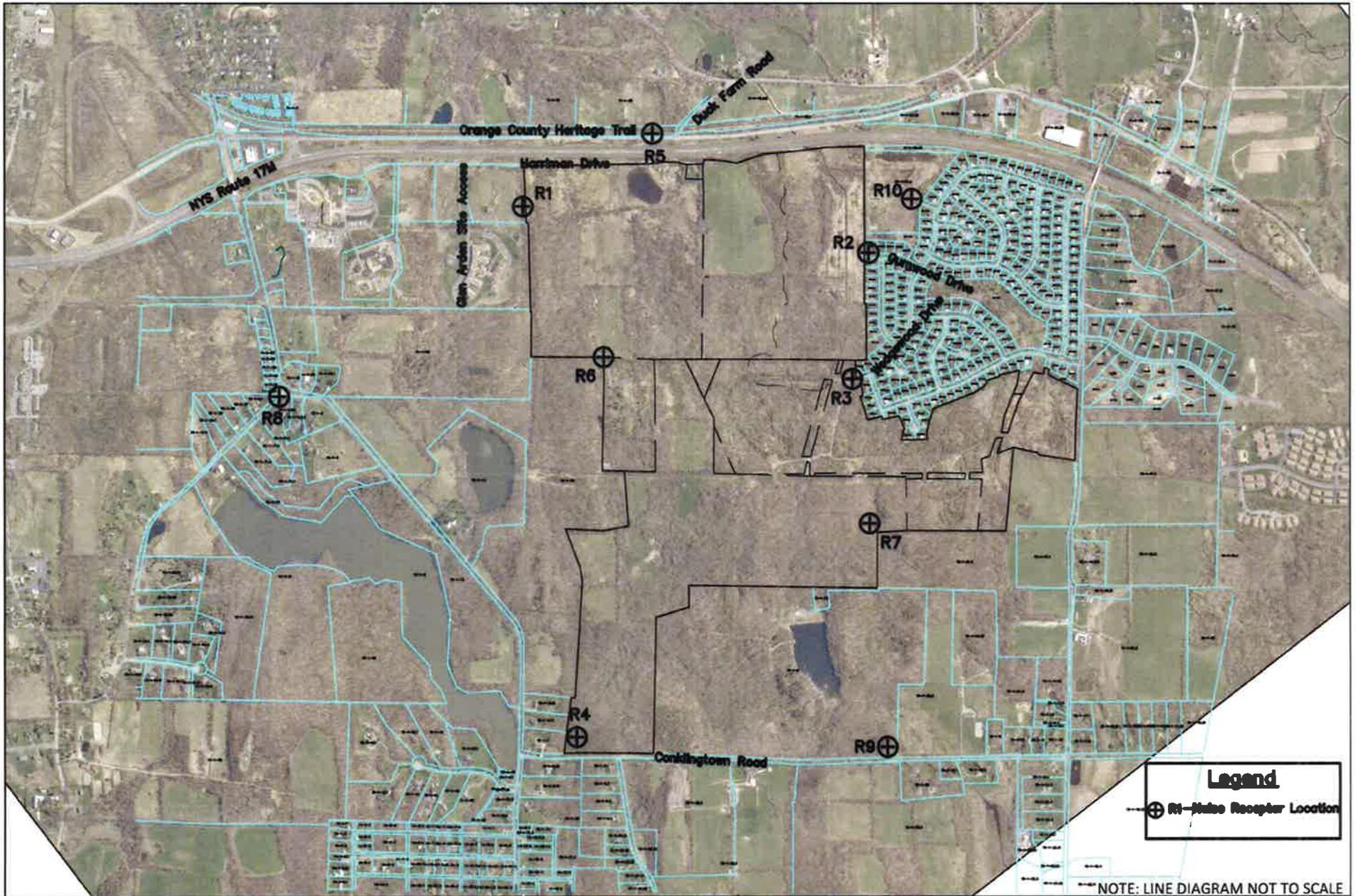
The analysis indicates that as summarized in Tables 3R and 3SR at Receptor R9 there will be no significant change in sound levels resulting from the LEGOLAND operation (less than 2 dBA). At Receptor R10 there will be some increase in sound levels resulting from the additional traffic on the on-ramp, however due to the significant traffic volumes that are present and those projected



along NYS Route 17, the increase in noise levels resulting from the LEGOLAND project and the Exit 125 ramp improvements, including new ramp, will result in Build sound level increases of 3 dBA or less when compared to the No-Build conditions at the offsite receptors.

Findings and Recommendations

As a result of this additional evaluation, we conclude that the addition of the LEGOLAND facility and the additional traffic generated, as well as effects of the planned roadway improvements and modifications, will not result in a significant increase in noise levels above ambient levels in the area. The primary noise source will continue to be NYS Route 17 for those receptors closer to the NYS Route 17 Corridor and for those more remote receptors, such as Receptor 8 (Echo Ridge area) and those along Conklingtown Road, the distance separation from the facility will provide attenuation to maintain levels consistent with the ambient levels occurring in those areas. It should also be noted that the measurements taken were taken with a “leaf off” conditions, i.e. vegetation without leaves. The resulting foliage would actually result in a further attenuation of any levels generated on the site. Lastly, the overall recommendations contained in the original noise evaluation still apply



Legend

⊕ Noise Receptor Location

NOTE: LINE DIAGRAM NOT TO SCALE



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**NOISE RECEPTOR LOCATIONS
 (Worksheet Locations)**



JOB NUMBER: 16000699A DATE: 8/12/16

FIGURE NUMBER: 1

Table R-1
Summary of Noise Receptor Locations

R1	Near the west site property line boundary just east of the Glen Arden Upper Parking Lot
R2	Near the east site property line boundary past the gate and turn on Gumwood Drive terminus
R3	Near the east site property line boundary in the vicinity of the Wedgewood Drive terminus
R4	On the south site property line boundary north of Conklingtown Road
R5	North of the site on Orange County Heritage Trail (approximately 150' west of Duck Farm Road)
R6	South of Harriman Drive on the site, at the western site boundary, southeast of Glen Arden
R7	Near the east site property line boundary south of Wedgewood Drive and Peachwood Lane (Paper Street)
R8	To the west of the site at Lower Reservoir Road intersection with South Street (Echo Ridge Area)
R9	In proximity to Wills Way Equestrian Center located on Conklingtown Road
R10	Adjacent to the rear property line of residences fronting on Wedgewood Drive

Table N-1
Summary of Measured L_{eq} 's

	Without Onsite Noise Source	With Onsite Noise Source
Receptor #1	56.5	56.6
Receptor #2	48.8	49.0
Receptor #3	46.6	46.9
Receptor #4	57.0	56.8
Receptor #5	62.2	62.1
Receptor #6	61.5	64.3
Receptor #7	46.9	45.9
Receptor #8	60.9	61.6
Receptor #9	52.9	53.9

Notes:

Measurements collected on April 10, 2017. Levels represent sound level readings at individual receptor locations with and without an L_{eq} level of 81.7 dBA at 50' reference distance.

Table No. 3R
 Summary of Existing and Projected Noise Levels (Leq-dBA)
Weekday Conditions

Receptor Location	Time of Day	Existing	DEIS Plan		FEIS Plan		FEIS Plan Change from No Build to Build
			No Build	Build	No Build	Build	
1	AM	54.6	54.6	56.4	55.9	57.8	1.9
	PM	56.1	56.1	57.6	57.5	59.8	2.3
2	AM	46.5	46.5	47.1	47.9	50.3	2.4
	PM	48.8	48.8	49.0	50.2	51.5	1.3
3	AM	51.6	51.7	52.4	53.0	53.3	0.3
	PM	51.8	51.8	52.2	53.2	53.5	0.3
4	AM	43.7	43.7	44.7	44.7	45.9	1.2
	PM	58.0	58.0	58.6	58.6	59.5	0.9
5	AM	62.3	62.3	62.9	63.7	65.0	1.3
	PM	62.9	62.9	63.8	64.3	65.6	1.3
6	AM	49.6	49.6	50.6	50.9	54.9	4.0
	PM	62.8	62.8	63.1	63.2	65.2	2.0
7	AM	51.1	51.1	51.8	51.8	53.0	1.2
	PM	50.9	50.9	51.5	52.3	53.6	1.3
8	AM	55.6	55.6	55.9	57.0	59.9	2.9
	PM	60.4	60.4	60.8	61.8	63.8	2.0
9	AM	52.5	--	--	53.7	56.0	2.3
	PM	52.2	--	--	53.6	54.9	1.3
10	AM	55.9	--	--	57.3	57.8	0.5
	PM	58.3	--	--	59.7	60.1	0.4

Notes:

- 1) See Figure No. 1 for Noise Receptor locations.
- 2) Existing Noise Level Measurements were collected on August 11 and August 23, 2016 and supplemented on April 10, 2017.
- 3) Receptors 9 and 10 represent new receptors, which were not evaluated in the DEIS.

Table No. 3-SR
 Summary of Existing and Projected Noise Levels (Leq-dBA)
Saturday Conditions

Receptor Location	Time of Day	Existing	DEIS Plan		FEIS Plan		FEIS Plan Change from No Build to Build
			No Build	Build	No Build	Build	
1	AM	55.3	56.9	58.3	56.2	58.3	2.1
	PM	55.5	57.7	58.2	56.5	58.6	2.1
2	AM	47.2	47.9	52.9	48.2	50.2	2.0
	PM	48.2	48.7	54.7	49.2	51.3	2.1
3	AM	57.3	57.9	59.1	58.2	60.1	1.9
	PM	48.6	49.1	52.5	49.6	52.5	2.9
4	AM	55.4	55.6	56.4	56.1	57.3	1.2
	PM	57.8	58.0	59.2	58.7	60.3	1.6
5	AM	62.1	63.5	64.2	63.0	64.2	1.2
	PM	61.7	62.9	63.8	62.7	63.8	1.1
6	AM	47.9	48.6	54.6	48.8	54.4	5.6
	PM	48.3	48.9	55.7	49.3	55.7	6.4
7	AM	42.1	43.1	46.7	43.1	46.7	3.6
	PM	43.6	44.4	46.8	44.6	46.8	2.2
8	AM	55.6	55.8	56.7	56.5	58.2	1.7
	PM	59.1	59.5	59.8	60.1	61.4	1.3
9	AM	52.5	--	--	53.4	55.1	1.7
	PM	52.2	--	--	53.1	54.8	1.7
10	AM	53.0	--	--	53.9	54.8	0.9
	PM	57.7	--	--	58.6	60.2	1.6

Notes:

- 1) See Figure No. 1 for Noise Receptor locations.
- 2) Existing Noise Level Measurements were collected on August 13, 2016 and September 3, 2016.
- 3) Receptors 9 and 10 represent new receptors, which were not evaluated in the DEIS.