



Noise Compatibility Report

2017 1st Quarter

May 4, 2017

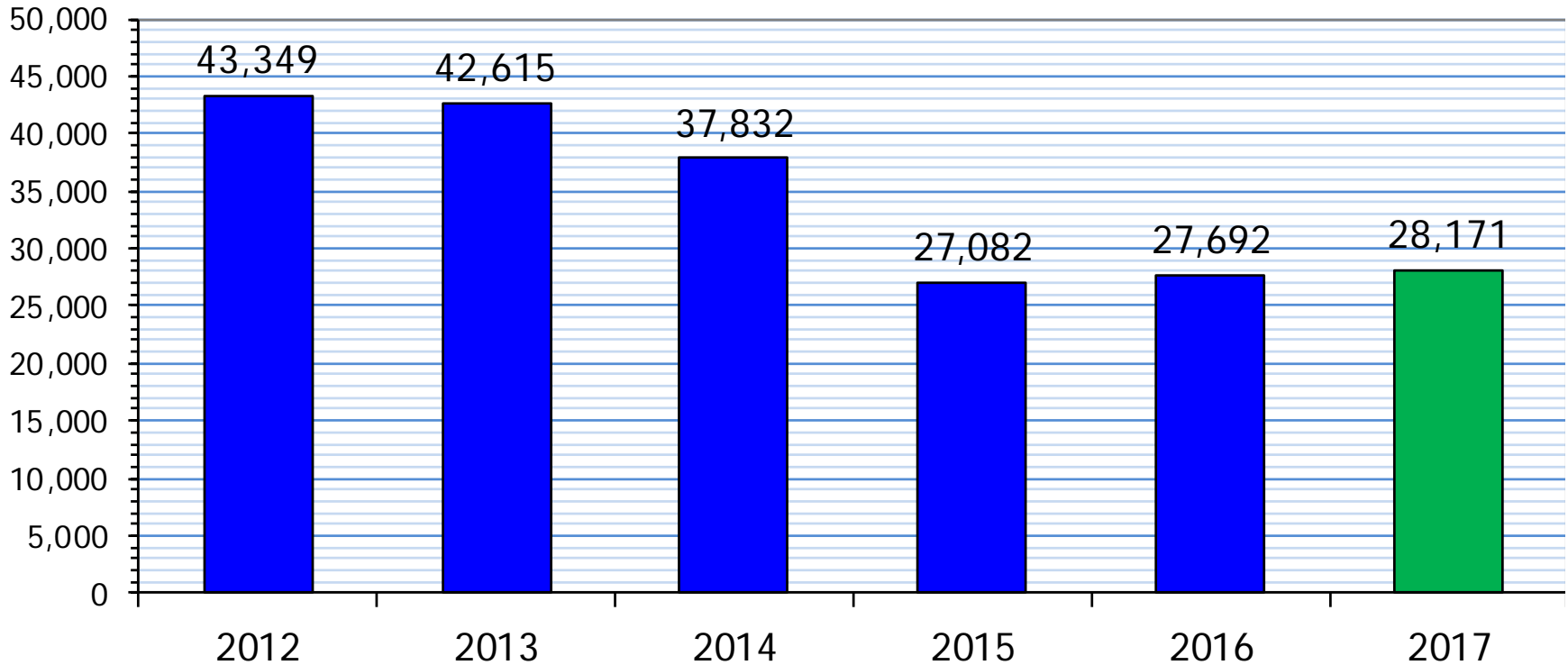
Disclaimer



- Adherence to approved noise abatement measures is voluntary and subject to change based on weather, efficiency, and safety.
- The contents of this report are for informational purposes only. The information cannot be used for enforcement of any Noise Abatement Measure.

Aircraft Operations

Cleveland 1st Qtr. Operations 2012 - 2017



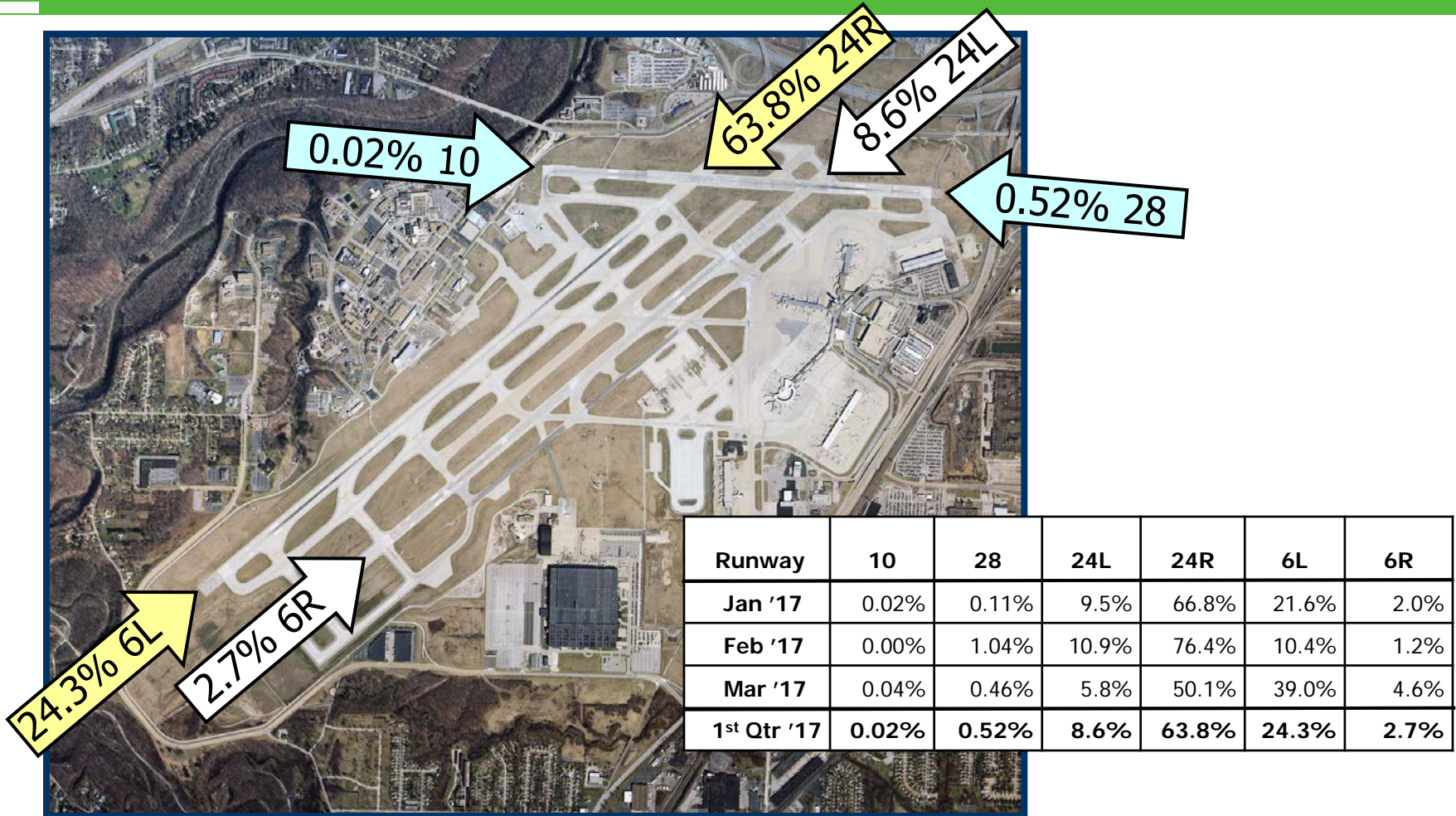
There were 28,171 landings and takeoffs in the 1st Qtr. 2017; this is 1.73% above the 1st Qtr. 2016.

Landings & Takeoffs

	1 st Qtr., 2017		1 st Qtr., 2016	
Commercial				
-Stage 2 with hush kit	28	0.10%	24	0.09%
-Heavy (excl. all B757s)	300	1.06%	402	1.45%
-MD80 series	1,098	3.90%	1,298	4.69%
-Other Stage 3	16,827	59.73%	15,699	56.69%
-Regional Jet	6,450	22.90%	6,064	21.90%
-Turboprop	619	2.20%	1,304	4.71%
Air Taxi	708	2.51%	742	2.68%
General Aviation	2,122	7.53%	2,096	7.57%
Military	19	0.07%	63	0.23%
Total	28,171	100.00%	27,692	100.00%

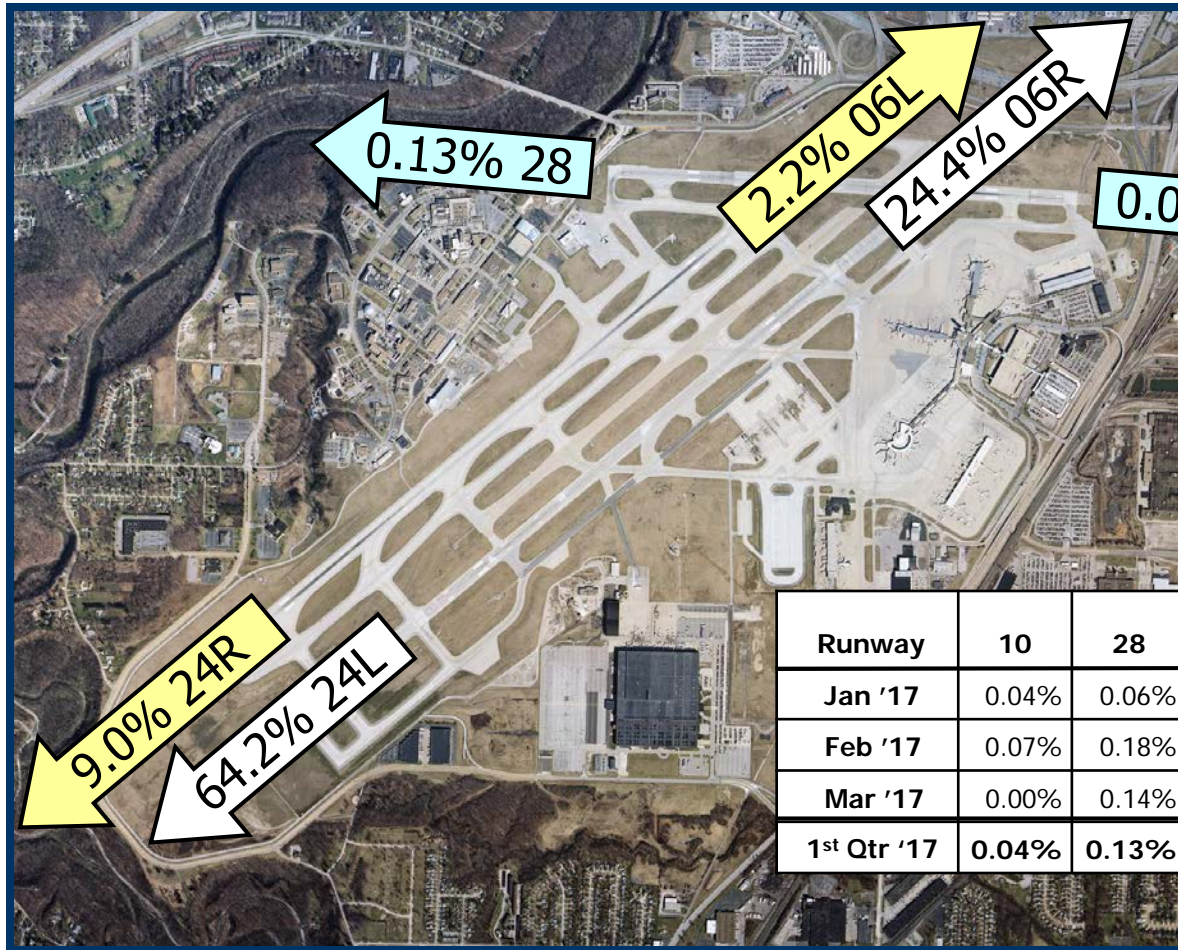
All aircraft above are Stage 3 certified with the exception of some Military. A hush kit reduces noise enough to meet Stage 3 levels, but well short of the noise level typical of aircraft originally manufactured as Stage 3.

Runway Use: 1st Qtr, 2017 Arrivals



Totals may be less than 100%, as helicopter operations do not use runways.

Runway Use: 1st Qtr, 2017 Departures



Runway	10	28	24L	24R	6L	6R
Jan '17	0.04%	0.06%	64.1%	11.4%	1.9%	22.5%
Feb '17	0.07%	0.18%	77.4%	12.4%	0.5%	9.4%
Mar '17	0.00%	0.14%	52.9%	4.0%	4.1%	38.9%
1st Qtr '17	0.04%	0.13%	64.2%	9.0%	2.2%	24.4%

Departure Headings, 1st Qtr: Day-time

Day-Time Jet Departures are from 6:00 a.m. to 11:00 p.m.

A voluntary measure of the Noise Compatibility Program calls for jets departing between 6:00 a.m. and 11:00 p.m. from Runways 6L and 6R to take magnetic headings between 360° and 35° when turning left and between 65° and 95° when turning right until the jet is either 5 mi. away from the airport or has gained an altitude of 5,000 ft. above Mean Sea Level (MSL).

Another voluntary measure of the Noise Compatibility Program calls for jets departing between 6:00 a.m. and 11:00 p.m. from Runways 24L and 24R to take magnetic headings between 190° and 220° when turning left and between 250° and 280° when turning right until the jet is either 5 mi. away from the airport or has gained an altitude of 5,000 ft. MSL.

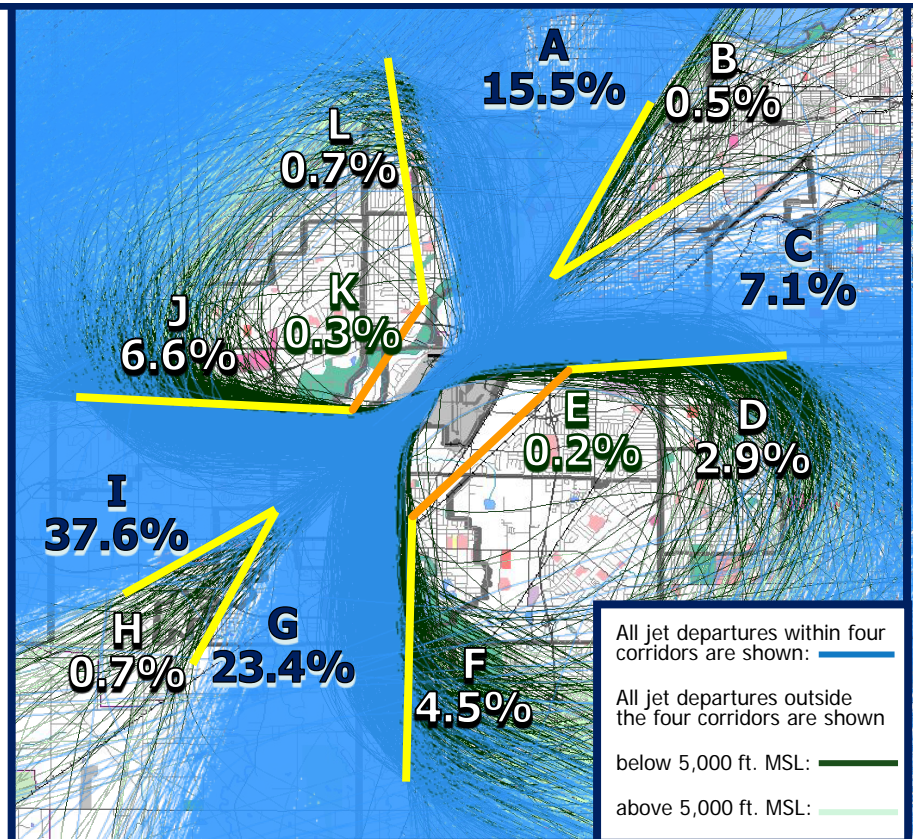
83.6% within corridors

- A. **15.5%**: north corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- C. **7.1%**: east corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- G. **23.4%**: south corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- I. **37.6%**: west corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL

16.4% outside corridors

- B. **0.5%**: flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the north and east corridors
- D. **2.9%**: flights crossing the south boundary below 5,000 ft. MSL
- E. **0.2%**: flights turning south before entering the corridor
- F. **4.5%**: flights crossing the east boundary below 5,000 ft. MSL
- H. **0.7%**: flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the west and south corridors
- J. **6.6%**: flights crossing the north boundary below 5,000 ft. MSL
- K. **0.3%**: flights turning north before entering the corridor
- L. **0.7%**: flights crossing the west boundary below 5,000 ft. MSL

(Percentages do not include Rwy 10/28 departures)



Departure Headings, 1st Qtr : Late Night

Late Night Jet Departures are from 11:00 p.m. to 6:00 a.m.

A voluntary measure of the Noise Compatibility Program calls for jets departing between 11:00 p.m. and 6:00 a.m. from Runways 6L and 6R to take headings of roughly 095° to 100° until reaching an altitude of 5,000 ft. MSL.

Another voluntary measure of the Noise Compatibility Program calls for jets departing between 11:00 p.m. and 6:00 a.m. from Runways 24L and 24R to take headings between 200° and 220° until reaching an altitude of 5,000 ft. MSL.

64.1% within corridors

- A. 20.5%: 095 corridor, including flights crossing the 095 corridor boundaries above 5,000 ft. MSL
- F. 43.6%: 200 corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL

35.9% outside corridors

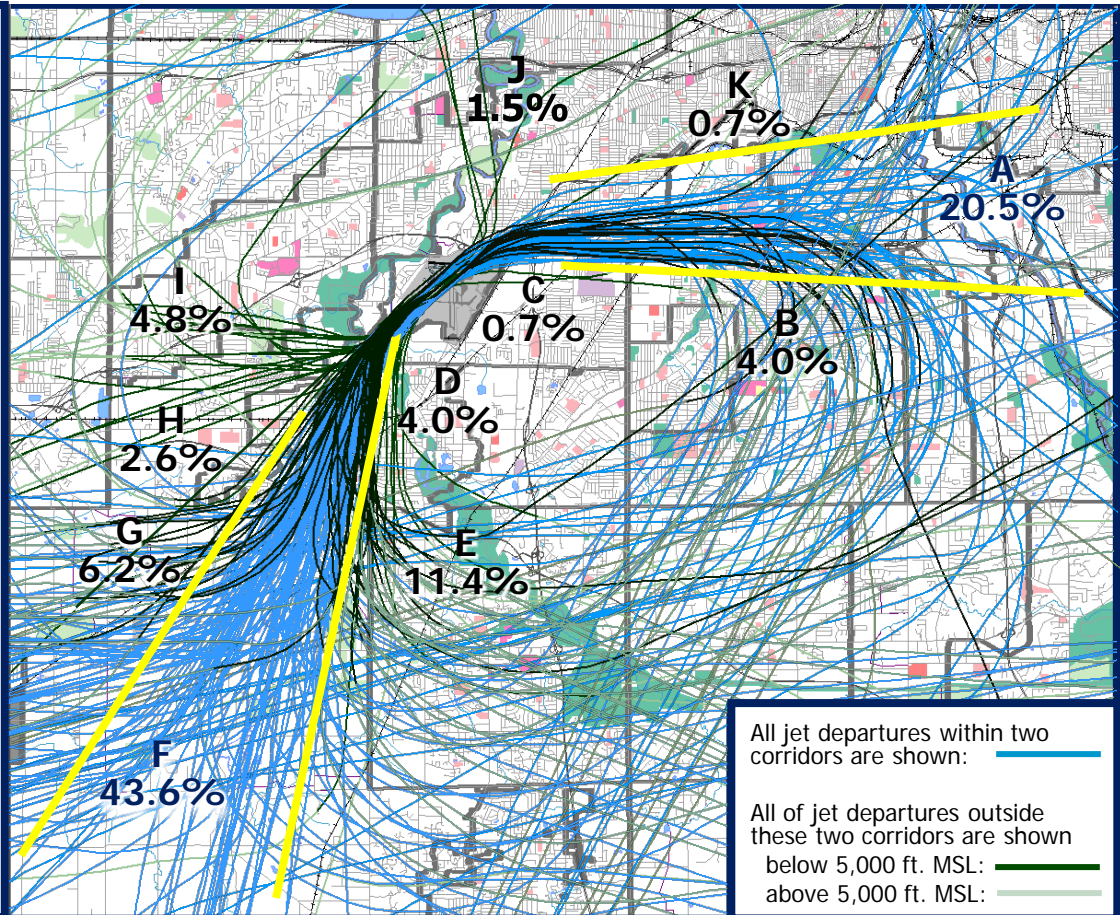
- B. 4.0%: flights crossing the south boundary below 5,000 ft. MSL
- C. 0.7%: flights turning right before entering the 095 corridor
- D. 4.0%: flights departing south without entering the 200 corridor
- E. 11.4%: flights crossing the east boundary below 5,000 ft. MSL
- G. 6.2%: flights crossing the west boundary below 5,000 ft. MSL
- H. 2.6%: flights departing southwest without entering the corridor
- I. 4.8%: flights departing west without entering the corridor
- J. 1.5%: flights departing north, not east with the 095 corridor
- K. 0.7%: flights crossing the north boundary below 5,000 ft. MSL

(There were no Rwy 10 or Rwy 28 jet departures between 11:00 p.m. and 6:00 a.m. during the quarter.)

The percentage of departures on each runway from 11:00 p.m. to 6:00 a.m. during the quarter were as follows:

Rwy	10	28	24L	24R	6L	6R
For jets:	0.7%	0.0%	67.4%	4.8%	4.4%	22.7%
For all aircraft:	0.7%	0.0%	66.6%	5.6%	4.3%	23.0%

83.8% of Jet Departures from Rwy 6L/6R were on the preferred Rwy, 6R.



All jet departures within two corridors are shown: ——

All of jet departures outside these two corridors are shown
below 5,000 ft. MSL: ——
above 5,000 ft. MSL: ——

Arrival Headings, 1st Qtr : Night-time

Night-time Arrivals are from 10:00 p.m. to 6:59 a.m. 1st Qtr., 2017

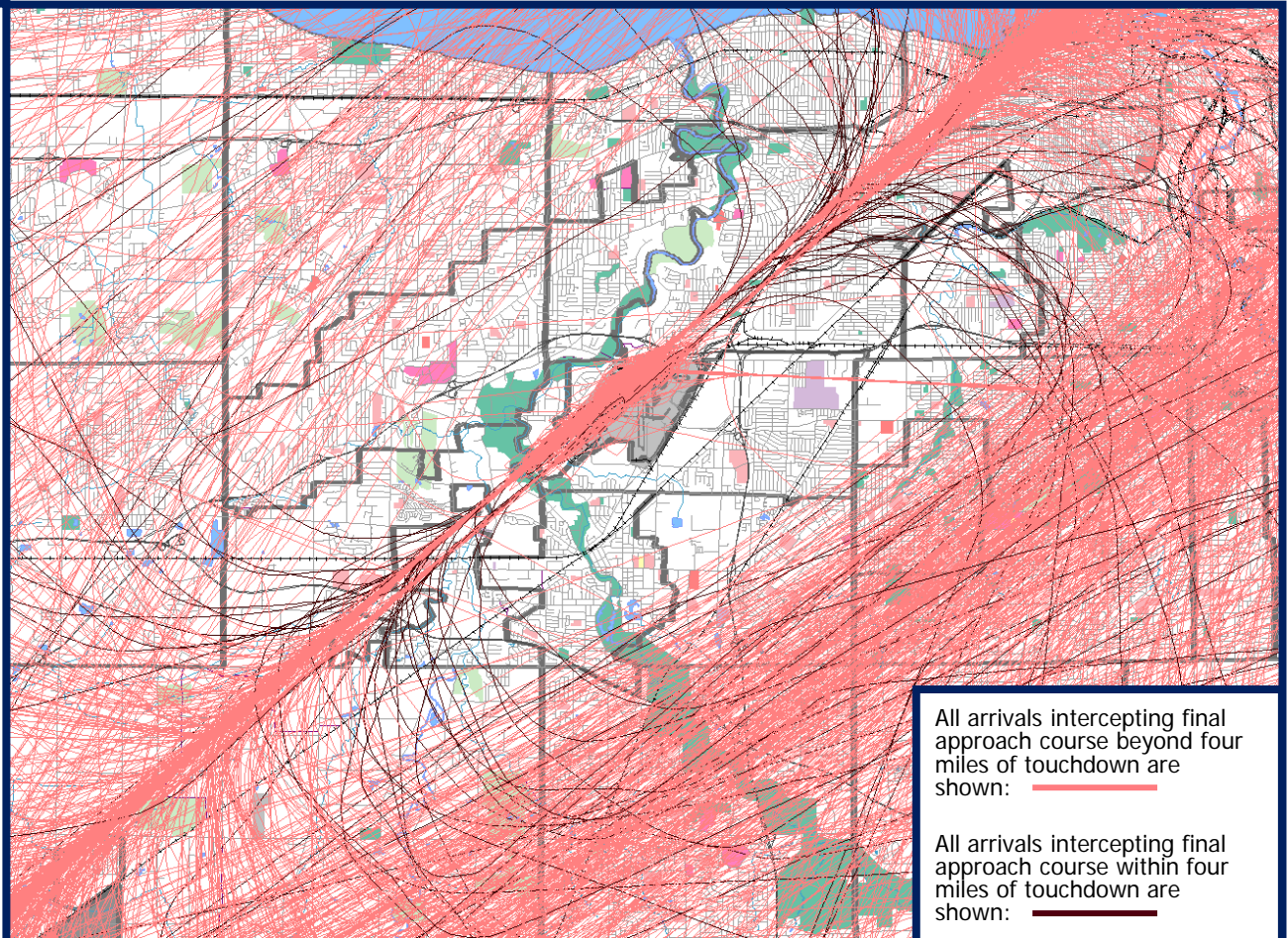
A voluntary measure of the Noise Compatibility Program calls for all aircraft arriving between 10:00 p.m. and 6:59 a.m., wind and weather permitting, to intercept final approach course no closer than four miles before touchdown.


96.5% beyond four miles and 3.5% within four miles


There is no comparable NCP measure regarding day-time arrivals.

Runway use by all arriving aircraft from 10:00 p.m. to 6:59 a.m. during the quarter was as follows:

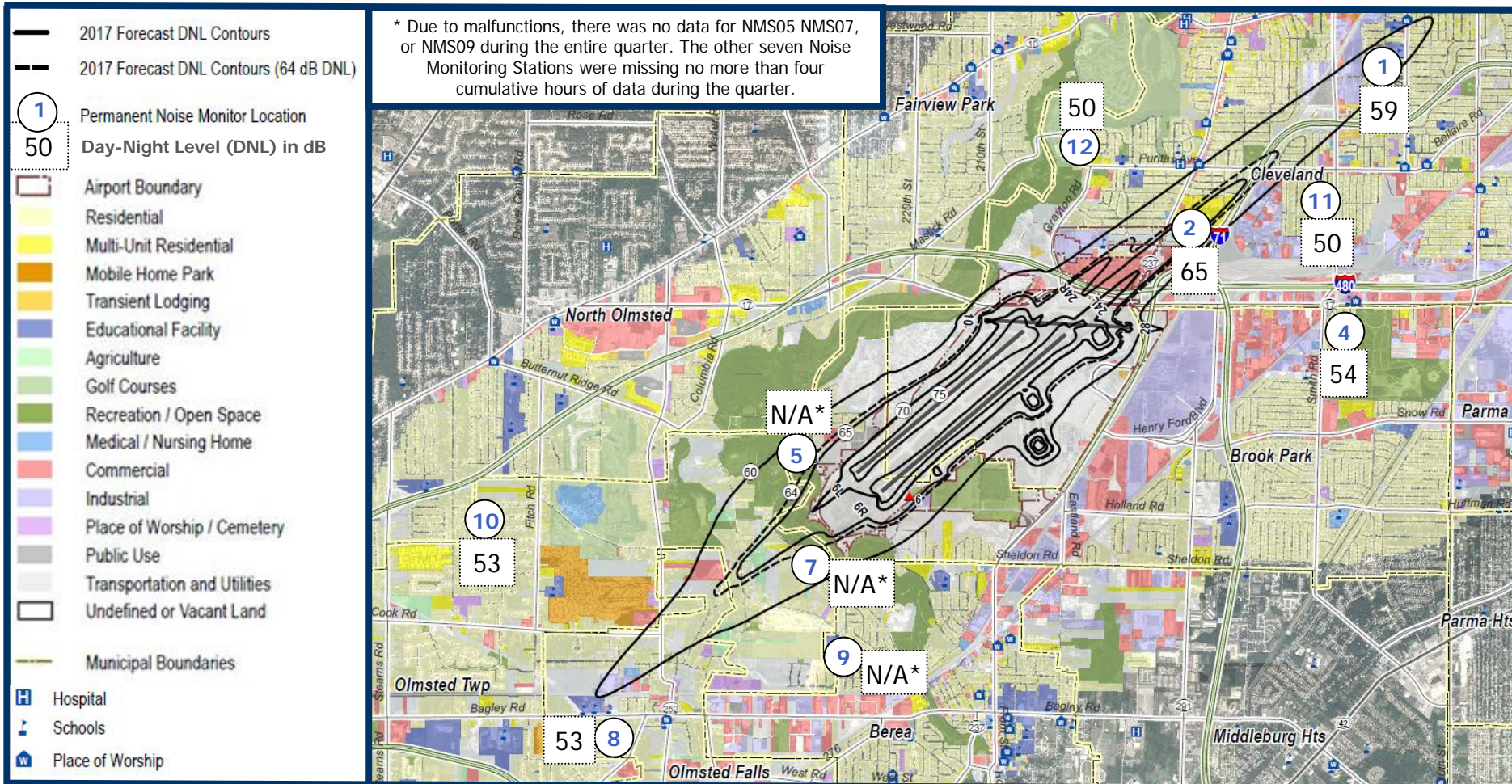
Rwy	Percentage of Arrivals	
	Jets	All Aircraft
10	0.0%	0.0%
28	0.7%	0.7%
24L	8.5%	8.5%
24R	60.7%	60.8%
6L	27.2%	26.9%
6R	3.0%	3.1%
Total	100.0%	100.0%



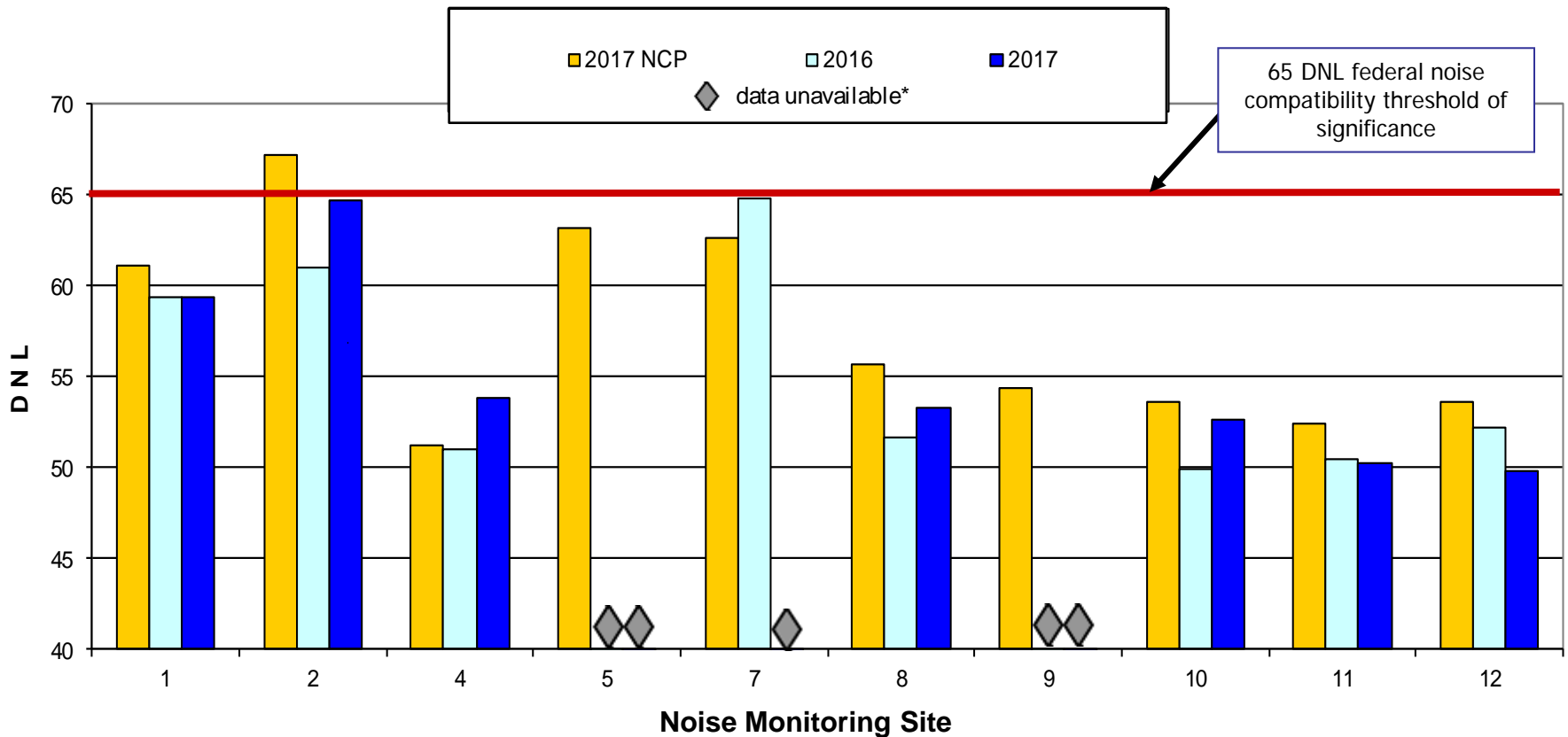
All arrivals intercepting final approach course beyond four miles of touchdown are shown: 

All arrivals intercepting final approach course within four miles of touchdown are shown: 

Aircraft Noise: DNL by Noise Monitoring Site



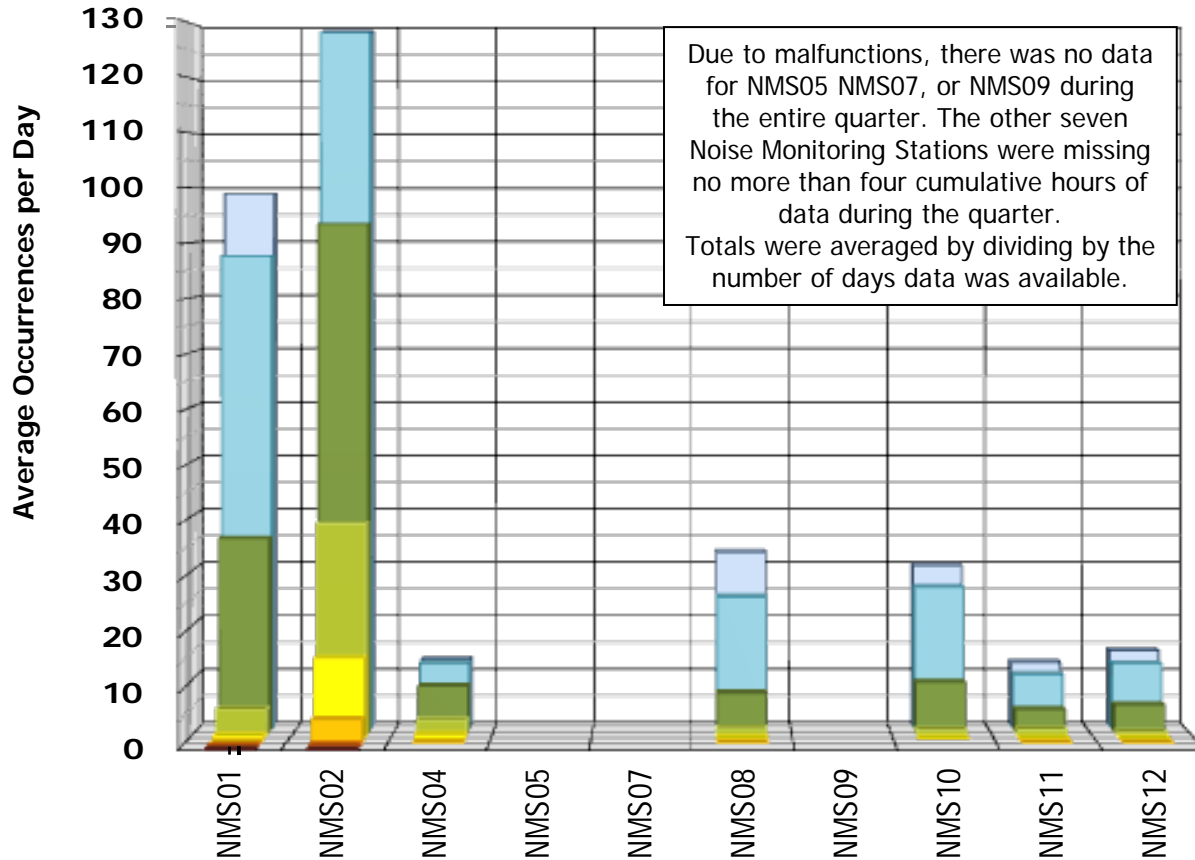
DNL: 1st Qtr, 2017 vs. 1st Qtr, 2016



*Due to malfunctions, there was no data for NMS05, NMS07, or NMS09 during the 1st quarter of 2017. The other seven Noise Monitoring Stations were missing no more than four cumulative hours of data during the 1st quarter of 2017. No data was available for NMS05 or NMS09 during the 1st quarter of 2016.

Average Daily Number of Aircraft Noise Occurrences by Decibel Level

1st Qtr. Noise Event Lmax* Distribution



5-Decibel Intervals

- > 65 dB
- > 70 dB
- > 75 dB
- > 80 dB
- > 85 dB
- > 90 dB
- > 95 dB
- > 100 dB

*Lmax is the highest individual decibel level to occur during the flyover.

Top Three Lmaxs at Each NMS



Three highest aircraft decibel levels at each Noise Monitoring Site during the 1st Qtr., 2017, p. 1

NMS	Lmax (dB)	Aircraft	Operation	Time and date	Sound Exposure Level (dB) ¹	Duration (sec)
NMS01	100.7	Military	Arrival on Rwy 24R	3/24/17 2:44 PM	106.6	41.0
NMS01	99.2	Military	Arrival on Rwy 24R	3/24/17 2:32 PM	107.1	62.0
NMS01	91.4	Military	Arrival on Rwy 24R	2/19/17 5:41 PM	99.2	26.5
NMS02	103.5	Military	Arrival on Rwy 24R	3/24/17 2:45 PM	108.8	61.5
NMS02	103.3	Military	Arrival on Rwy 24L	2/28/17 6:11 AM	107.2	34.5
NMS02	101.0	Military	Arrival on Rwy 24R	3/24/17 2:33 PM	105.9	26.5
NMS04	94.3	MD-88	Departure off Rwy 6R	1/13/17 5:55 PM	101.0	33.5
NMS04	93.1	MD-88	Departure off Rwy 6R	2/8/17 3:18 PM	99.4	32.5
NMS04 ²	92.8	MD-88	Departure off Rwy 6R	1/13/17 3:25 PM	99.7	39.0

¹ Sound Exposure Level is a measure that takes into account all noise over the entire duration of an event.

² Due to equipment malfunctions, no data is available for NMS05 or NMS07 within the 1st Quarter of 2017.

Top Three Lmaxs at Each NMS

Three highest aircraft decibel levels at each Noise Monitoring Site during the 1 st Qtr., 2017, p. 2						
NMS	Lmax (dB)	Aircraft	Operation	Time and date	Sound Exposure Level (dB) ¹	Duration (sec)
NMS08	90.7	MD-83	Departure off Rwy 24L	3/24/17 5:15 PM	96.2	31.0
NMS08	88.6	MD-88	Departure off Rwy 24L	3/2/17 11:11 AM	95.8	37.5
NMS08 ²	88.3	Military	Departure off Rwy 24R	2/18/17 1:42 PM	99.2	61.5
NMS10	89.4	B737-900	Departure off Rwy 24L	2/7/17 7:54 AM	93.1	31.5
NMS10	88.4	MD-83	Departure off Rwy 24L	2/7/17 7:52 AM	96.2	40.5
NMS10	87.3	MD-82	Departure off Rwy 24L	3/1/17 7:54 AM	96.1	36.5
NMS11	92.3	MD-88	Departure off Rwy 6R	3/25/17 11:40 AM	98.9	27.0
NMS11	91.2	MD-88	Departure off Rwy 6R	3/3/17 1:17 PM	97.1	27.5
NMS11	88.5	MD-88	Departure off Rwy 6R	2/20/17 11:01 AM	95.6	34.0
NMS12	93.2	Military	Departure off Rwy 6R	2/20/17 11:15 AM	98.0	43.0
NMS12	89.0	MD-83	Departure off Rwy 6L	3/27/17 8:33 PM	95.6	25.5
NMS12	87.9	MD-82	Departure off Rwy 6L	3/12/17 6:59 PM	94.6	28.0

¹ Sound Exposure Level is a measure that takes into account all noise over the entire duration of an event.

² Due to equipment malfunctions, no data is available for NMS09 within the 1st Quarter of 2017.

Noise Complaints



City	Jan	Feb	Mar	1 st Q '17 Calls	%	1 st Q '16 Calls	%	1 st Q '17 Callers	%	1 st Q '16 Callers	%
Bay Village	0	0	1	1	3.6%	0	0.0%	1	5.9%	0	0.0%
Berea	0	2	4	6	21.4%	0	0.0%	4	23.5%	0	0.0%
Brook Park	0	1	1	2	7.1%	1	12.5%	2	11.8%	1	20.0%
Cleveland	2	0	9	11	39.3%	2	25.0%	5	29.4%	1	20.0%
Fairview Park	0	2	0	2	7.1%	3	37.5%	1	5.9%	1	20.0%
Olmsted Falls	0	1	0	1	3.6%	1	12.5%	1	5.9%	1	20.0%
Rocky River	2	0	2	4	14.3%	1	12.5%	2	11.8%	1	20.0%
Westlake	0	0	1	1	3.6%	0	0.0%	1	5.9%	0	0.0%
Totals	4	6	18	28	100.0%	8	100.0%	17	100.0%	5	100.0%





Totals may not add to 100.0%, due to rounding.

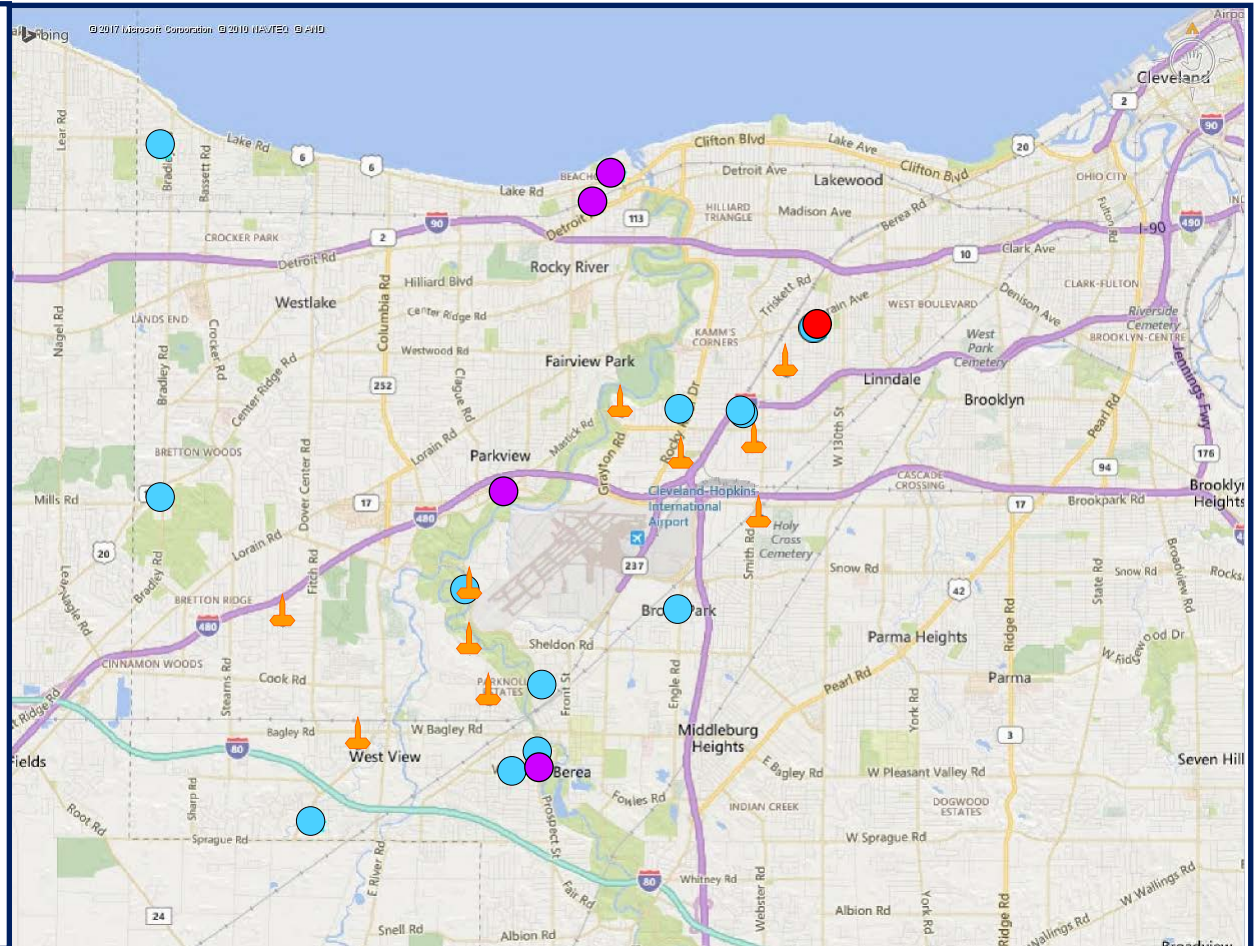
Noise Hotline – (216) 898-5220

1st Quarter Complaint Map

LEGEND

Complaints per household

-  1 complaint
-  2 to 5 complaints
-  6 or more complaints
-  Noise Monitoring Station



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