



Noise Compatibility Report

2017 3rd Quarter

Dec 31, 2017

Disclaimer

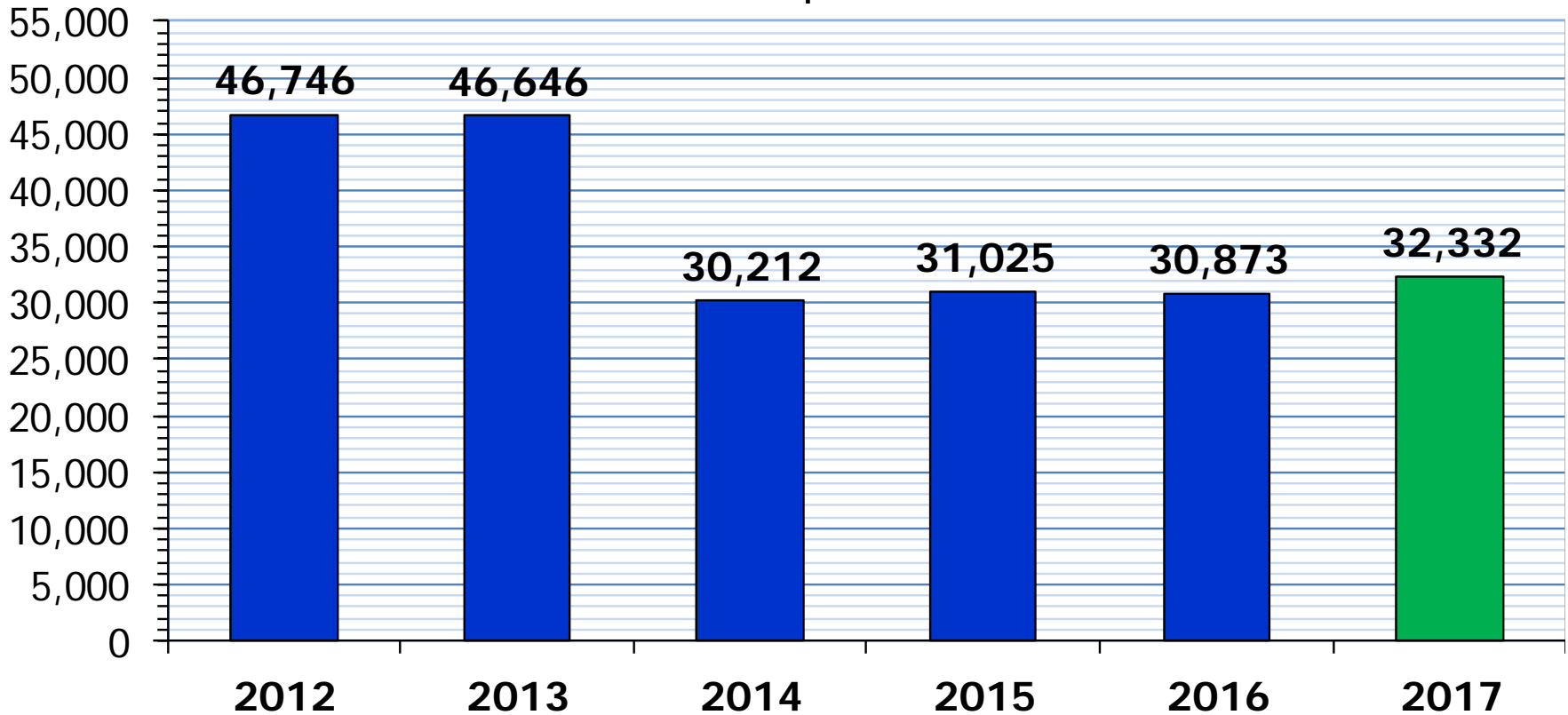


- Adherence to approved noise abatement measures is voluntary and subject to change based on weather, efficiency, and safety.
- The contents of this report are for informational purposes only. The information cannot be used for enforcement of any Noise Abatement Measure.

Aircraft Operations



Cleveland 3rd Quarter Operations 2012 - 2017



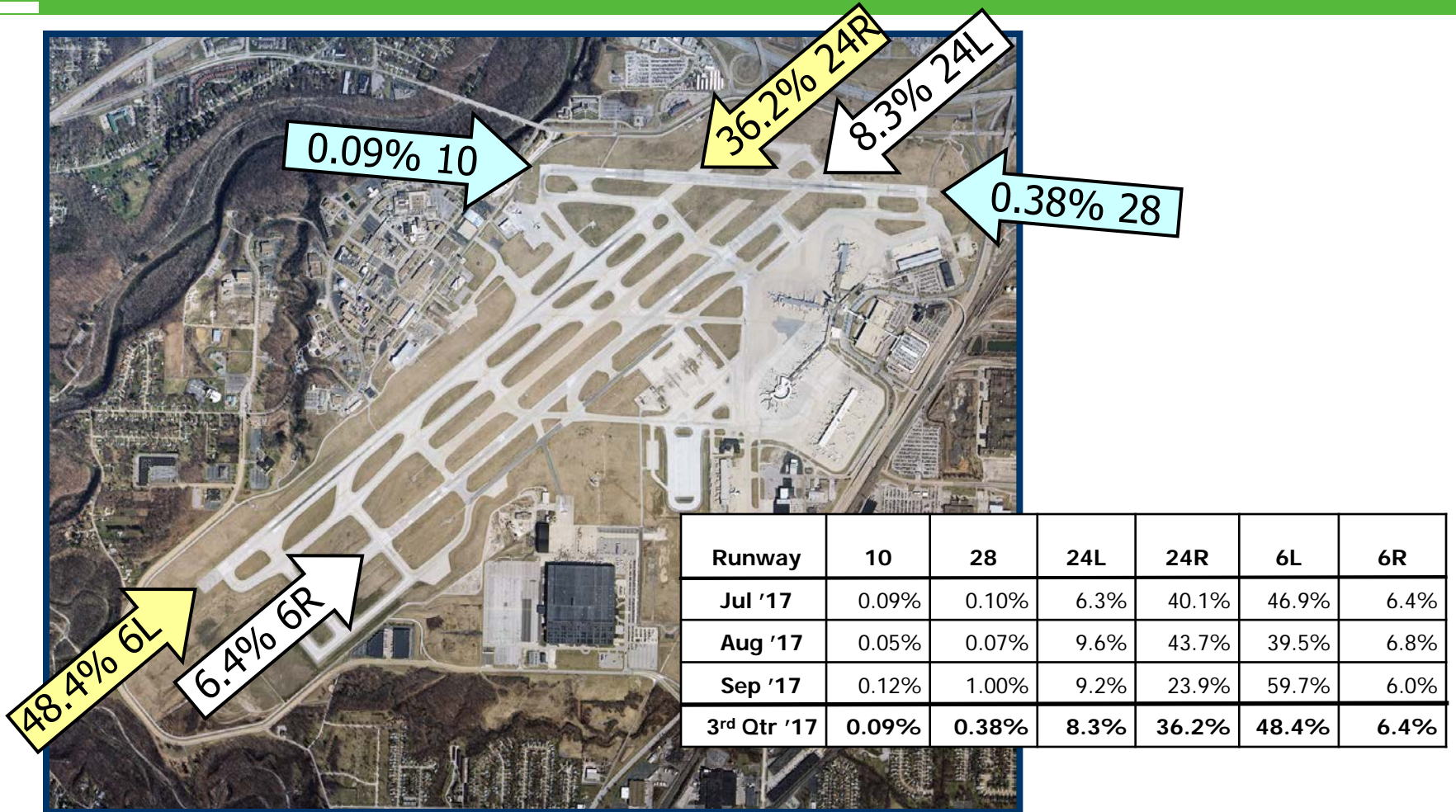
There were 32,332 landings and takeoffs in the 3rd Qtr. 2017; this is 4.7% above the 3rd Qtr. 2016.

Landings & Takeoffs

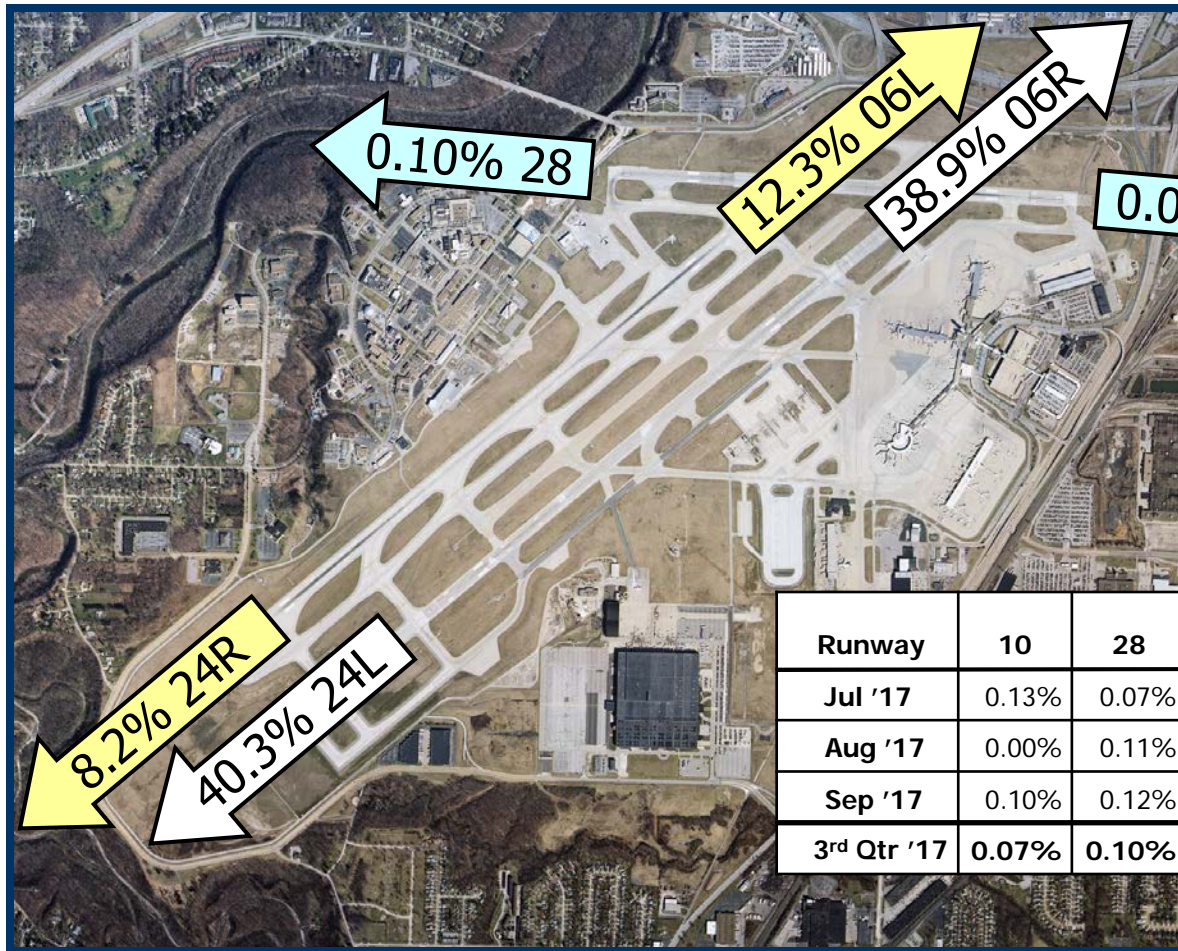
	3 rd Qtr., 2017		3 rd Qtr., 2016	
Commercial				
-Stage 2 with hush kit	0	0.00%	14	0.05%
-Heavy (incl. all B757s)	381	1.18%	453	1.47%
-MD80 series	958	2.96%	1,542	4.99%
-Other Stage 3	20,210	62.51%	18,326	59.36%
-Regional Jet	6,647	20.56%	6,726	21.79%
-Turboprop	1,763	5.45%	674	2.18%
Air Taxi	324	1.00%	652	2.11%
General Aviation	1,970	6.09%	2,405	7.79%
Military	79	0.24%	81	0.26%
Total	32,332	100.00%	30,873	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: 3rd Qtr, 2017 Arrivals



Runway Use: 3rd Qtr, 2017 Departures



Runway	10	28	24L	24R	6L	6R
Jul '17	0.13%	0.07%	45.9%	3.0%	6.1%	44.7%
Aug '17	0.00%	0.11%	45.6%	12.9%	9.6%	31.6%
Sep '17	0.10%	0.12%	28.4%	8.8%	21.9%	40.5%
3rd Qtr '17	0.07%	0.10%	40.3%	8.2%	12.3%	38.9%

Departure Headings, 3rd 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.

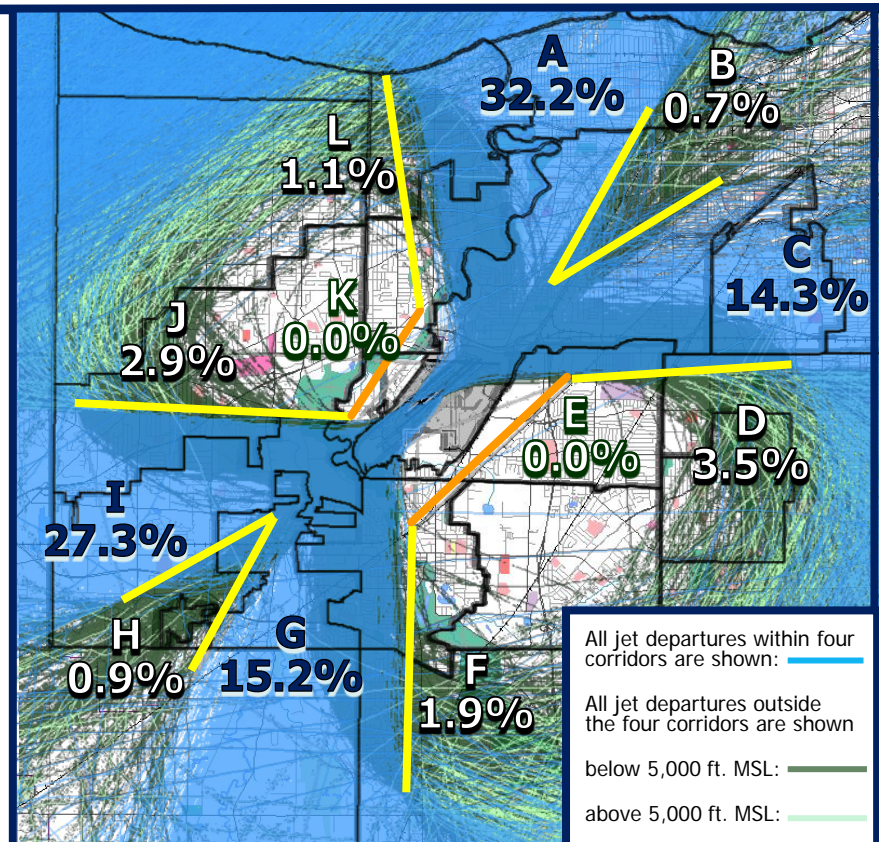
89.0% within corridors

- A. **32.2%**: north corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- C. **14.3%**: east corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- G. **15.2%**: south corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- I. **27.3%**: west corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL

11.0% outside corridors

- B. **0.7%**: flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the north and east corridors
- D. **3.5%**: flights crossing the south boundary below 5,000 ft. MSL
- E. **0.0%**: flights turning south before entering the corridor
- F. **1.9%**: flights crossing the east boundary below 5,000 ft. MSL
- H. **0.9%**: flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the west and south corridors
- J. **2.9%**: flights crossing the north boundary below 5,000 ft. MSL
- K. **0.0%**: flights turning north before entering the corridor
- L. **1.1%**: flights crossing the west boundary below 5,000 ft. MSL

(Percentages do not include Rwy 10/28 departures)



Departure Headings, 3rd 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.

68.5% within corridors

- A. 35.9%: 095 corridor, including flights crossing the 095 corridor boundaries above 5,000 ft. MSL
- F. 32.5%: 200 corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL

31.5% outside corridors

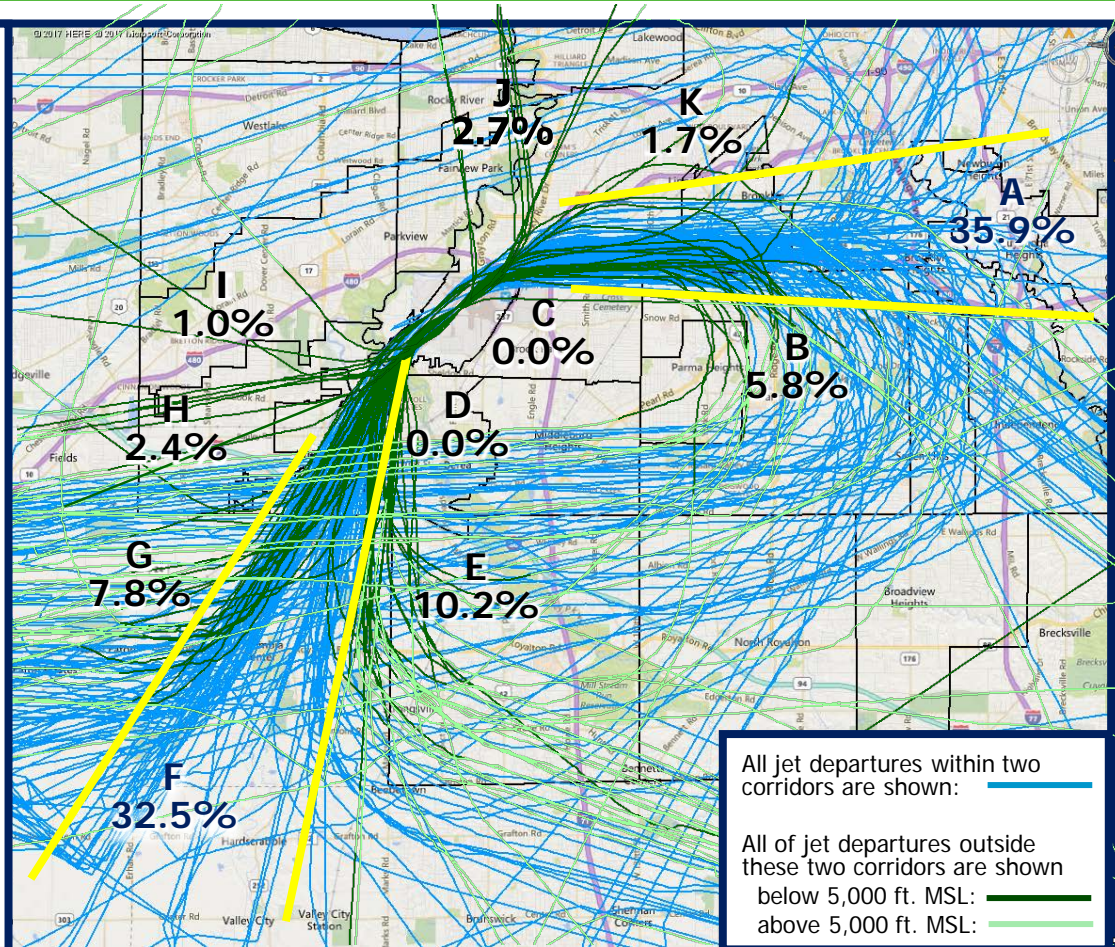
- B. 5.8%: flights crossing the south boundary below 5,000 ft. MSL
- C. 0.0%: flights turning right before entering the 095 corridor
- D. 0.0%: flights departing south without entering the 200 corridor
- E. 10.2%: flights crossing the east boundary below 5,000 ft. MSL
- G. 7.8%: flights crossing the west boundary below 5,000 ft. MSL
- H. 2.4%: flights departing southwest without entering the corridor
- I. 1.0%: flights departing west without entering the corridor
- J. 2.7%: flights departing north, not east with the 095 corridor
- K. 1.7%: flights crossing the north boundary below 5,000 ft. MSL

(There were was one Rwy 10 and no 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:	0.5%	0.0%	42.9%	7.6%	5.2%	43.9%
For all aircraft:	0.4%	0.0%	42.1%	7.7%	5.4%	44.3%

89.4% of Jet Departures from Rwy 6L/6R were on the preferred Rwy, 6R.



Arrival Headings, 3rd Qtr : Night-time

Night-time Arrivals are from 10:00 p.m. to 6:59 a.m. 3rd 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.

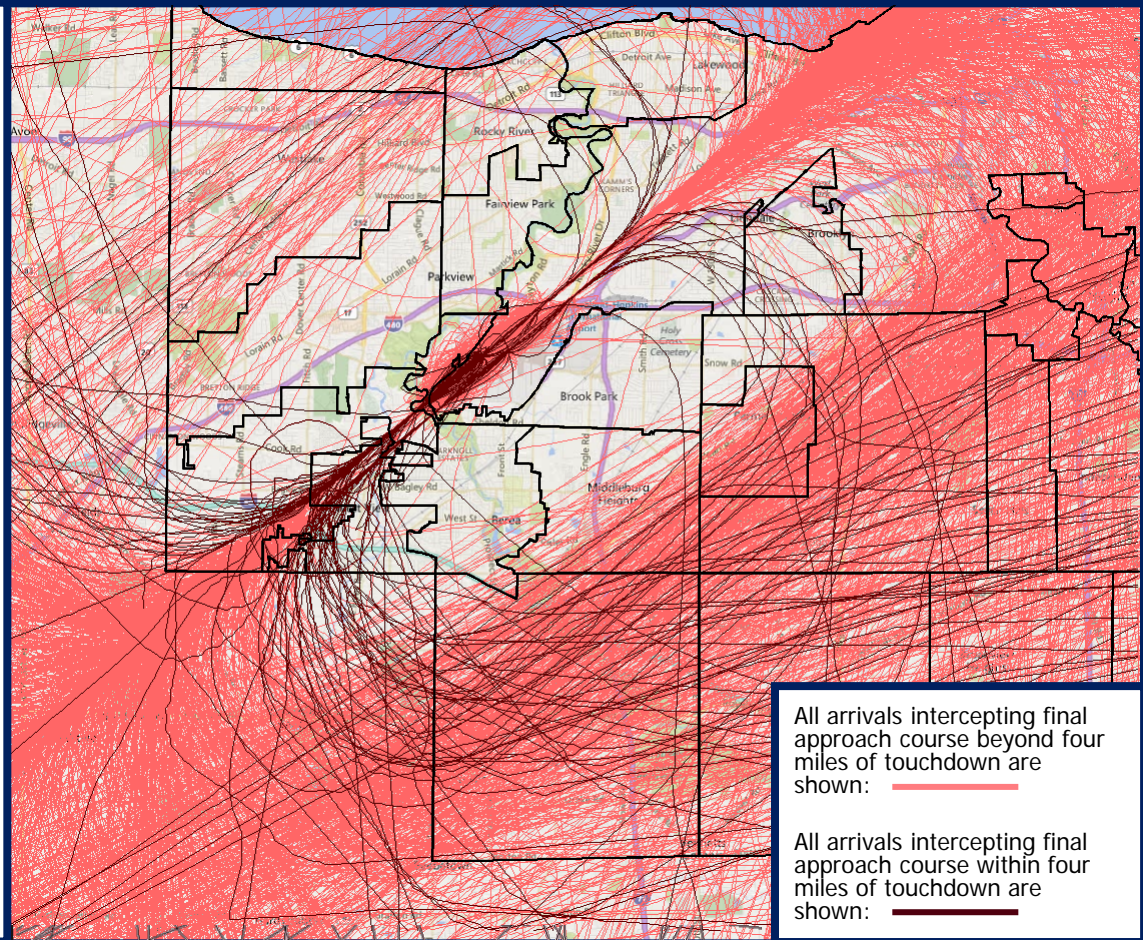
96.0% beyond four miles and 4.0% within four miles

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%	< 0.1%
28	0.0%	0.0%
24L	5.6%	5.7%
24R	36.3%	36.1%
6L	52.9%	52.8%
6R	5.1%	5.2%
Helicopter	0.0%	0.1%
Total	100.0%	100.0%

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



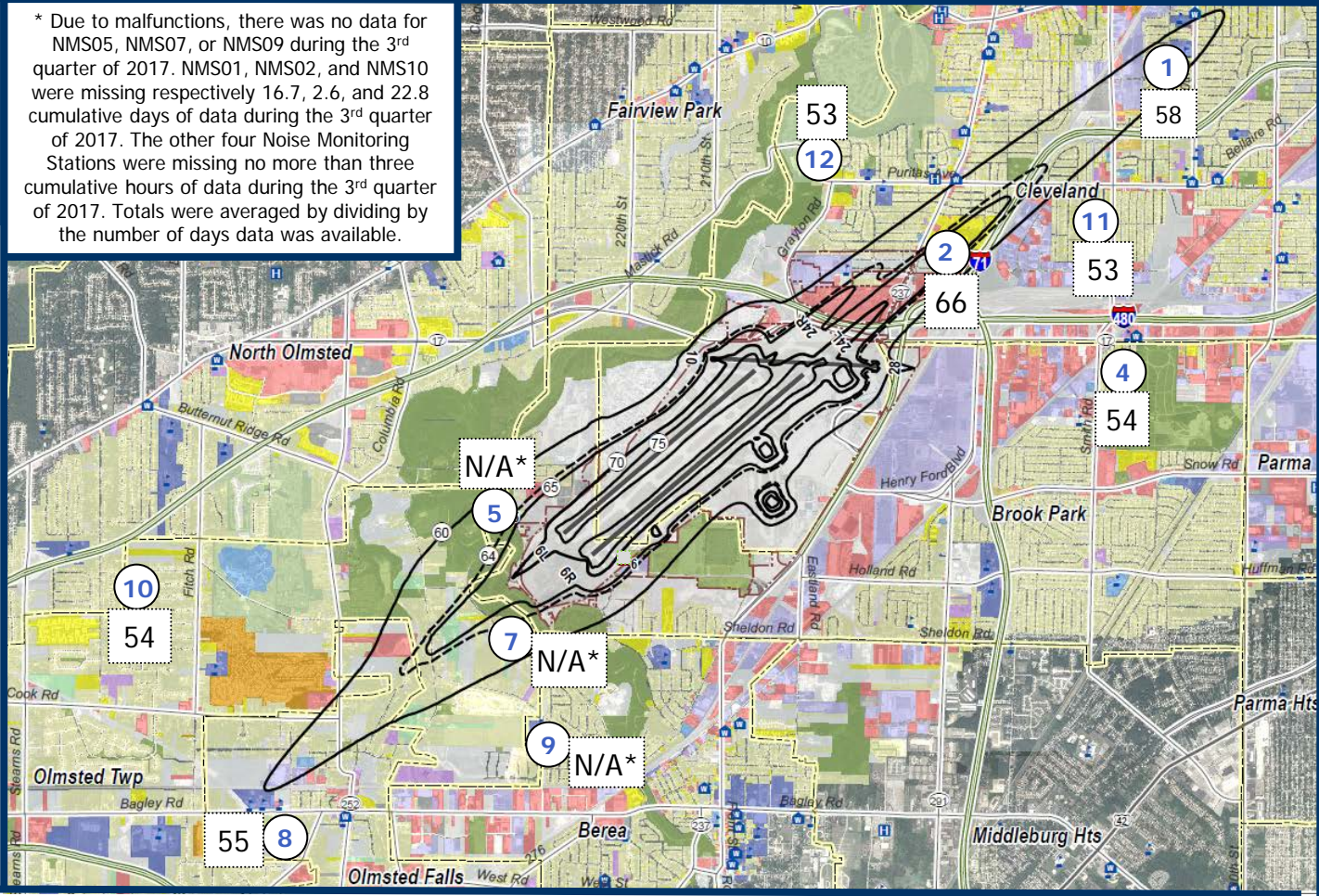
All arrivals intercepting final approach course beyond four miles of touchdown are shown: —

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

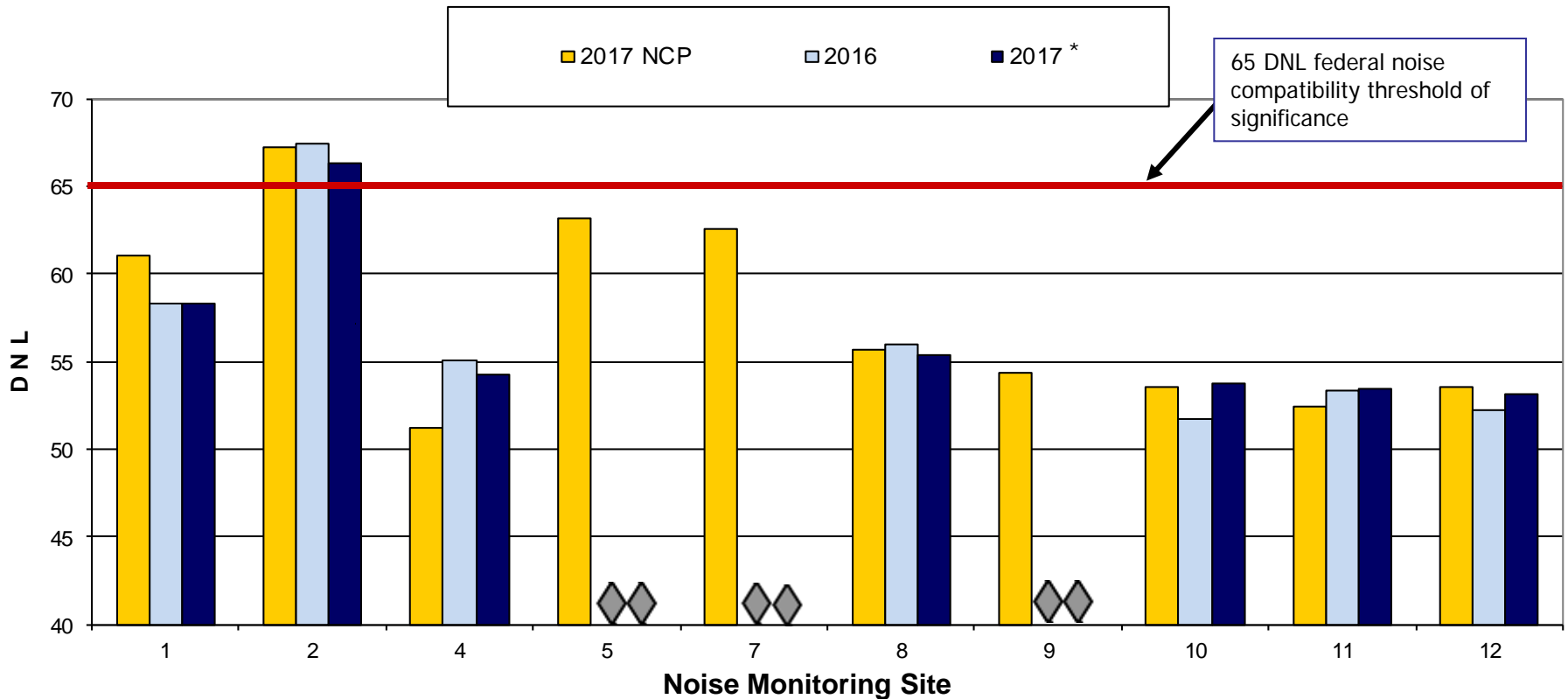
Aircraft Noise: DNL by Noise Monitoring Site

-  2017 Forecast DNL Contours
-  2017 Forecast DNL Contours (64 dB DNL)
-  Permanent Noise Monitor Location
-  Day-Night Level (DNL) in dB
-  Airport Boundary
-  Residential
-  Multi-Unit Residential
-  Mobile Home Park
-  Transient Lodging
-  Educational Facility
-  Agriculture
-  Golf Courses
-  Recreation / Open Space
-  Medical / Nursing Home
-  Commercial
-  Industrial
-  Place of Worship / Cemetery
-  Public Use
-  Transportation and Utilities
-  Undefined or Vacant Land
-  Municipal Boundaries
-  Hospital
-  Schools
-  Place of Worship

* Due to malfunctions, there was no data for NMS05, NMS07, or NMS09 during the 3rd quarter of 2017. NMS01, NMS02, and NMS10 were missing respectively 16.7, 2.6, and 22.8 cumulative days of data during the 3rd quarter of 2017. The other four Noise Monitoring Stations were missing no more than three cumulative hours of data during the 3rd quarter of 2017. Totals were averaged by dividing by the number of days data was available.



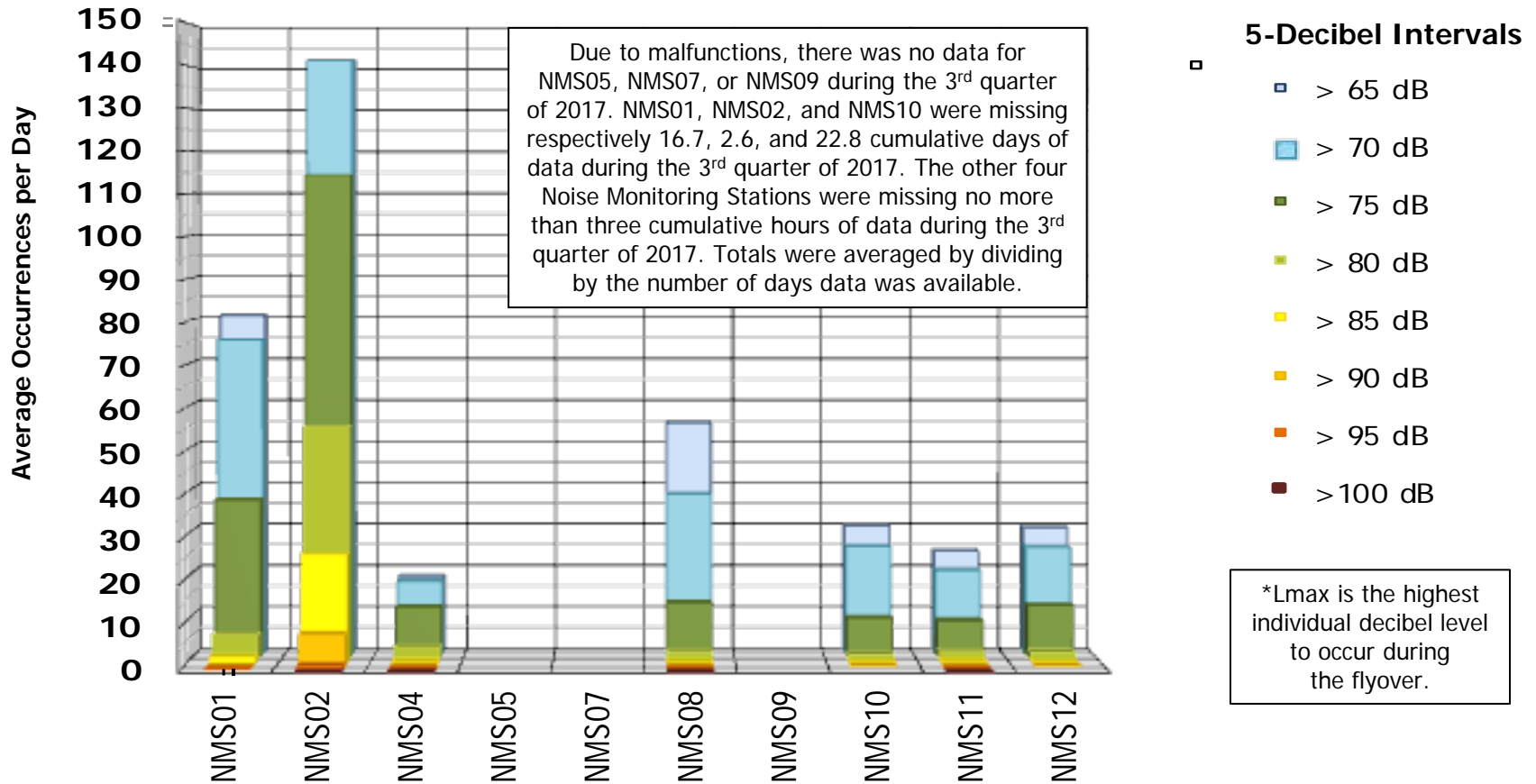
DNL: 3rd Qtr, 2017 vs. 3rd Qtr, 2016



* Due to malfunctions, there was no data for NMS05, NMS07, or NMS09 during the 3rd quarter of 2017. NMS01, NMS02, and NMS10 were missing respectively 16.7, 2.6, and 22.8 cumulative days of data during the 3rd quarter of 2017. The other four Noise Monitoring Stations were missing no more than three cumulative hours of data during the 3rd quarter of 2017. Totals were averaged by dividing by the number of days data was available.

Average Daily Number of Aircraft Noise Occurrences by Decibel Level

3rd Qtr. Noise Event Lmax* Distribution



*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 3rd Qtr., 2017, p. 1

NMS	Lmax (dB)	Aircraft	Operation	Time and date	Sound Exposure Level (dB) ¹	Duration (sec)
NMS01	96.2	Military	Overflight	9/4/17 4:03 PM	98.8	14.0
NMS01	95.5	Military	Arrival on Rwy24R	9/3/17 4:01 PM	99.0	17.5
NMS01	90.6	Airbus 300-60	Arrival on Rwy 24L	8/9/17 5:59 AM	97.5	31.0
NMS02	105.2	Military	Departure off Rwy 6R	9/1/17 2:12 PM	112.0	65.5
NMS02	104.7	Military	Departure off Rwy 6R	9/1/17 10:31 AM	110.4	26.0
NMS02	101.5	MD-83	Departure off Rwy 6R	7/15/17 3:40 PM	105.7	24.5
NMS04	101.2	Military	Departure off Rwy 6R	9/2/17 3:29 PM	109.1	55.5
NMS04	101.1	Military	Departure off Rwy 6R	9/1/17 2:12 PM	109.8	55.5
NMS04 ²	91.6	MD-83	Departure off Rwy 6R	7/8/17 12:24 PM	98.1	35.5

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 3rd Quarter of 2017.

Top Three Lmaxs at Each NMS

Three highest aircraft decibel levels at each Noise Monitoring Site during the 3 rd Qtr., 2017, p. 2						
NMS	Lmax (dB)	Aircraft	Operation	Time and date	Sound Exposure Level (dB) ¹	Duration (sec)
NMS08	104.4	Military	Departure off Rwy 24L	9/3/17 3:24 PM	110.5	49.5
NMS08	99.6	Military	Arrival on Rwy 6R	8/31/17 3:24 PM	103.4	17.0
NMS08 ²	96.1	B737-700	Departure off Rwy 24L	7/26/17 5:41 PM	97.0	17.5
NMS10	90.3	MD-88	Departure off Rwy 24L	7/2/17 6:37 AM	96.1	28.5
NMS10	88.7	MD-88	Departure off Rwy 24R	8/11/17 6:35 AM	92.9	29.5
NMS10	88.0	MD-88	Departure off Rwy 24L	7/12/17 5:24 PM	93.4	25.5
NMS11	105.0	Military	Departure off Rwy 6R	9/2/17 3:29 PM	106.9	58.5
NMS11	101.0	Military	Departure off Rwy 6R	9/1/17 2:12 PM	108.5	63.0
NMS11	92.0	MD-88	Departure off Rwy 6R	8/14/17 8:38 AM	98.1	30.0
NMS12	93.9	Military	Departure off Rwy 6R	9/1/17 10:31 AM	97.1	22.0
NMS12	92.1	Military	Overflight	9/2/17 4:00 PM	94.5	17.0
NMS12	91.2	Military	Departure off Rwy 24R	9/2/17 4:03 PM	95.1	17.5

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 3rd Quarter of 2017.

Noise Complaints



City	Jul	Aug	Sep	3 rd Q '17 Calls	%	3 rd Q '16 Calls	%	3 rd Q '17 Callers	%	3 rd Q '16 Callers	%
Berea	0	1	0	1	1.1%	18	30.0%	1	2.8%	1	6.7%
Brecksville	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Brook Park	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Cleveland	7	1	3	11	11.7%	16	26.7%	5	13.9%	2	13.3%
Columbia Stn.	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Fairview Park	0	8	3	11	11.7%	3	5.0%	9	25.0%	3	20.0%
Olmsted Falls	6	5	22	33	35.1%	2	3.3%	8	22.2%	2	13.3%
Olmsted Twp.	0	3	1	4	4.3%	10	16.7%	4	11.1%	1	6.7%
Painesville	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Parma	0	0	0	0	0.0%	1	1.7%	0	0.0%	1	6.7%
Rocky River	13	9	11	33	35.1%	9	15.0%	8	22.2%	4	26.7%
Strongsville	0	0	0	0	0.0%	1	1.7%	0	0.0%	1	6.7%
Unknown	0	1	0	1	1.1%	0	0.0%	1	2.8%	0	0.0%
Totals	26	28	40	94	100.0%	60	100.0%	36	100.0%	15	100.0%

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

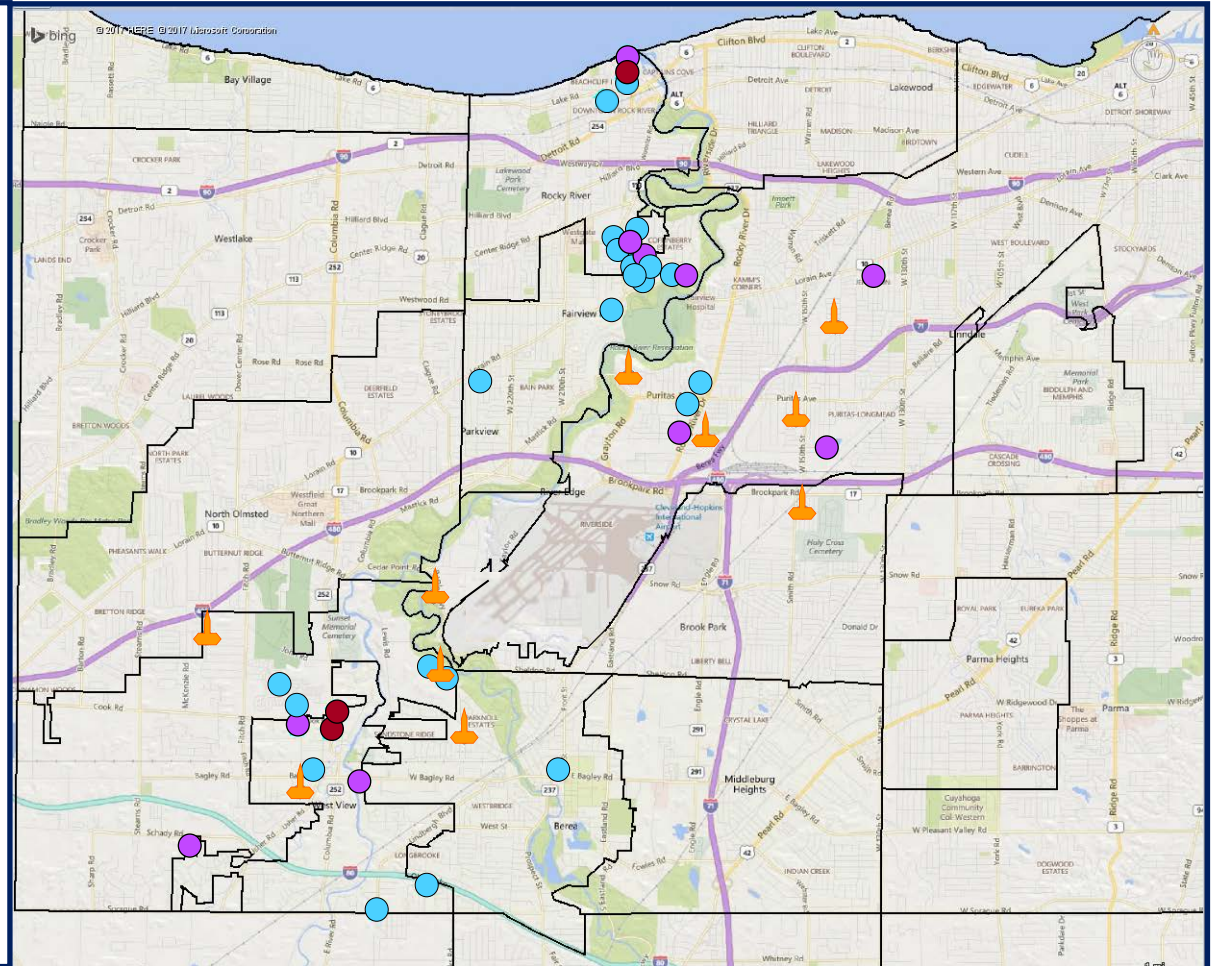
Noise Hotline – (216) 898-5220

3rd Quarter Complaint Map

LEGEND

Complaints per household

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



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