



Noise Compatibility Report

2016 3rd Quarter

Jan 13, 2017

Disclaimer

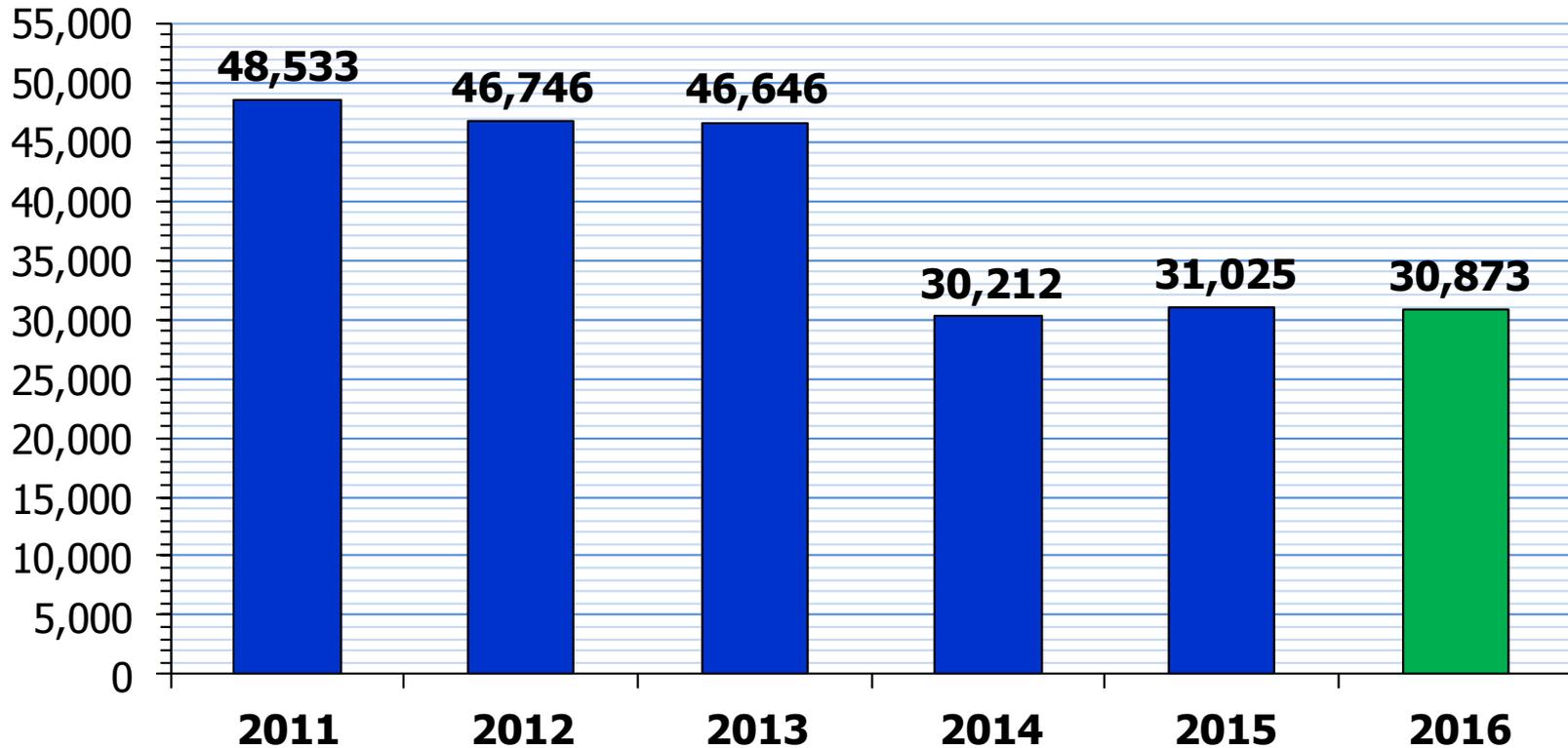


- Adherence to approved noise abatement measures is voluntary and subject to change based on weather, efficiency, and safety.
- The contents of this report are for informational purposes only. The information cannot be used for enforcement of any Noise Abatement Measure.

Aircraft Operations



Cleveland 3rd Qtr. Operations 2011 - 2016



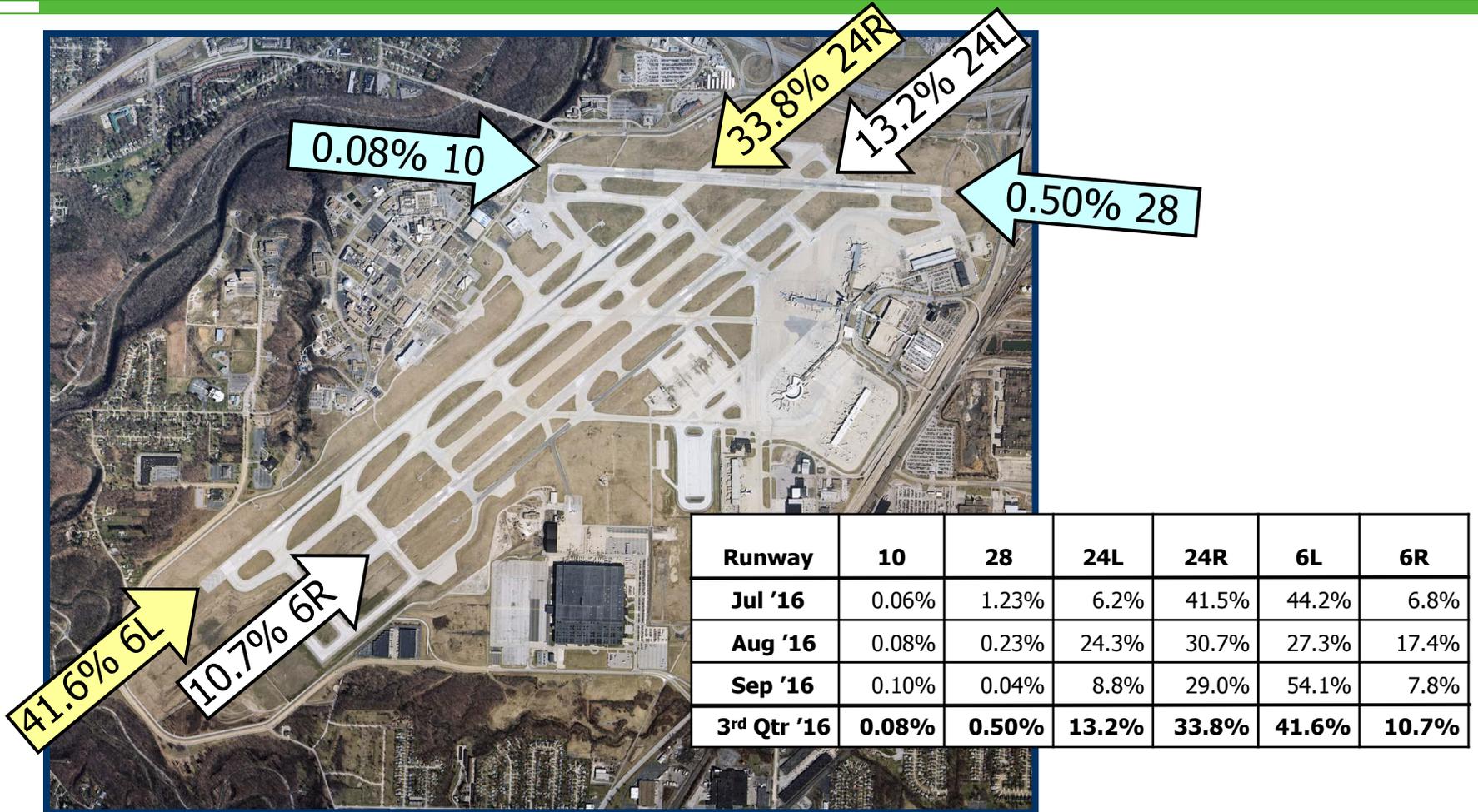
There were 30,873 landings and takeoffs in the 3rd Qtr. 2016; this is 0.5% below the 3rd Qtr. 2015.

Landings & Takeoffs

	3 rd Qtr., 2016		3 rd Qtr., 2015	
Commercial				
-Stage 2 with hush kit	14	0.05%	13	0.04%
-Heavy (incl. all B757s)	453	1.47%	545	1.76%
-MD80 series	1,542	4.99%	1,630	5.25%
-Other Stage 3	18,326	59.36%	18,031	58.12%
-Regional Jet	6,726	21.79%	5,991	19.31%
-Turboprop	674	2.18%	1,435	4.63%
Air Taxi	652	2.11%	750	2.42%
General Aviation	2,405	7.79%	2,551	8.22%
Military	81	0.26%	79	0.25%
Total	30,873	100.00%	31,025	100.00%

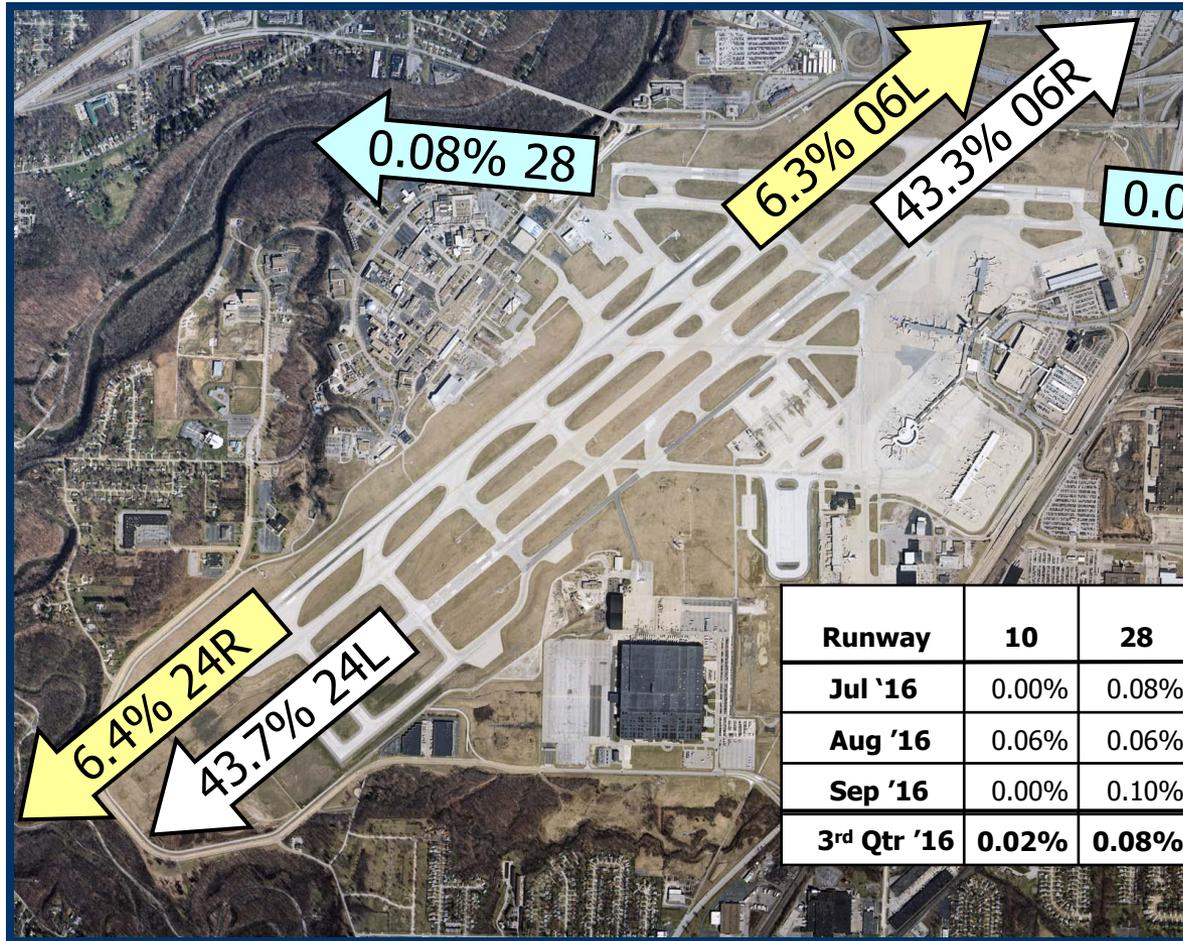
All aircraft above are Stage 3 certified with the exception of some Military and 0.04% of General Aviation (GA) aircraft. Stage 2 GA accordingly is less than 0.01% of the overall fleet. A hush kit reduces noise enough to meet Stage 3 levels, but well short of the noise level typical of aircraft originally manufactured as Stage 3.

Runway Use: 3rd Qtr, 2016 Arrivals



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

Runway Use: 3rd Qtr, 2016 Departures



Runway	10	28	24L	24R	6L	6R
Jul '16	0.00%	0.08%	44.4%	6.7%	3.7%	45.1%
Aug '16	0.06%	0.06%	53.7%	5.7%	3.4%	37.1%
Sep '16	0.00%	0.10%	32.3%	6.9%	12.2%	48.1%
3rd Qtr '16	0.02%	0.08%	43.7%	6.4%	6.3%	43.3%

Departure Headings, 3rd Qtr: Day-time

Jet Departures, 6:00 a.m. to 11:00 p.m. 3rd Qtr., 2016

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.

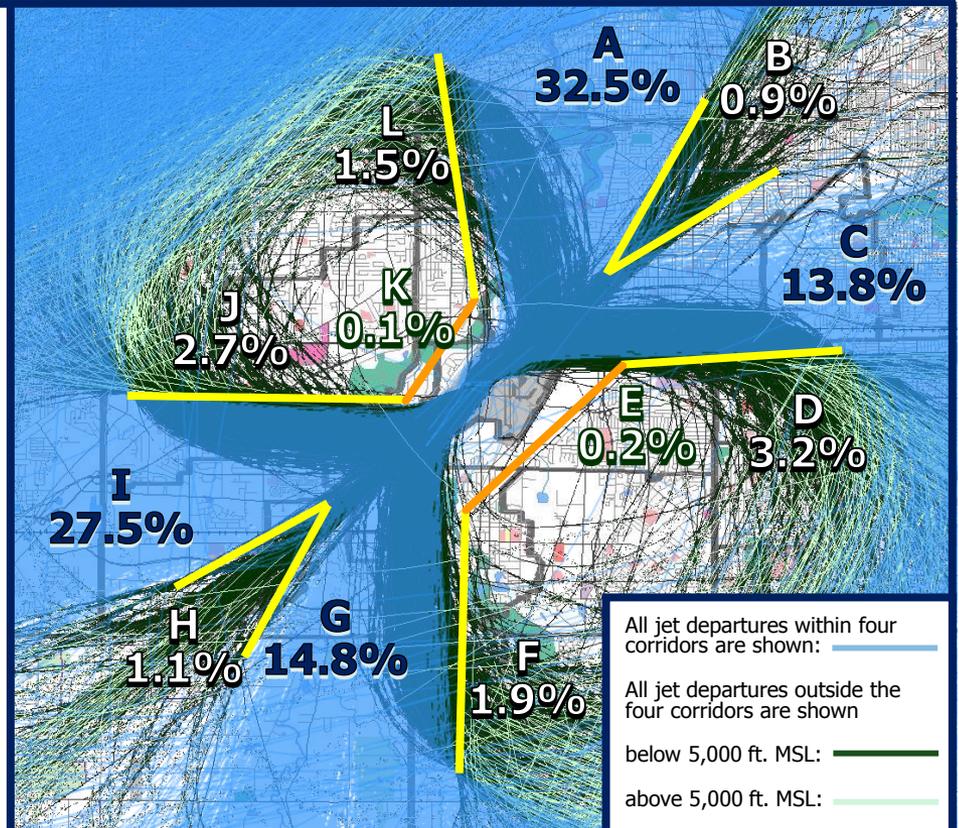
88.6% within corridors

- A. 32.5%:** north corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- C. 13.8%:** east corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- G. 14.8%:** south corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- I. 27.5%:** west corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL

11.4% outside corridors

- B. 0.9%:** flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the north and east corridors
- D. 3.2%:** flights crossing the south boundary below 5,000 ft. MSL
- E. 0.2%:** flights turning south before entering the corridor
- F. 1.9%:** flights crossing the east boundary below 5,000 ft. MSL
- H. 1.1%:** flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the west and south corridors
- J. 2.7%:** flights crossing the north boundary below 5,000 ft. MSL
- K. 0.1%:** flights turning north before entering the corridor
- L. 1.5%:** flights crossing the west boundary below 5,000 ft. MSL

(Percentages do not include Rwy 10/28 departures)



Departure Headings, 3rd Qtr : Night-time

Jet Departures, 11:00 p.m. to 6:00 a.m. 3rd Qtr., 2016

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.

58.2% within corridors

- A. 35.4%: 095 corridor, including flights crossing the 095 corridor boundaries above 5,000 ft. MSL
- F. 22.8%: 200 corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL

41.8% outside corridors

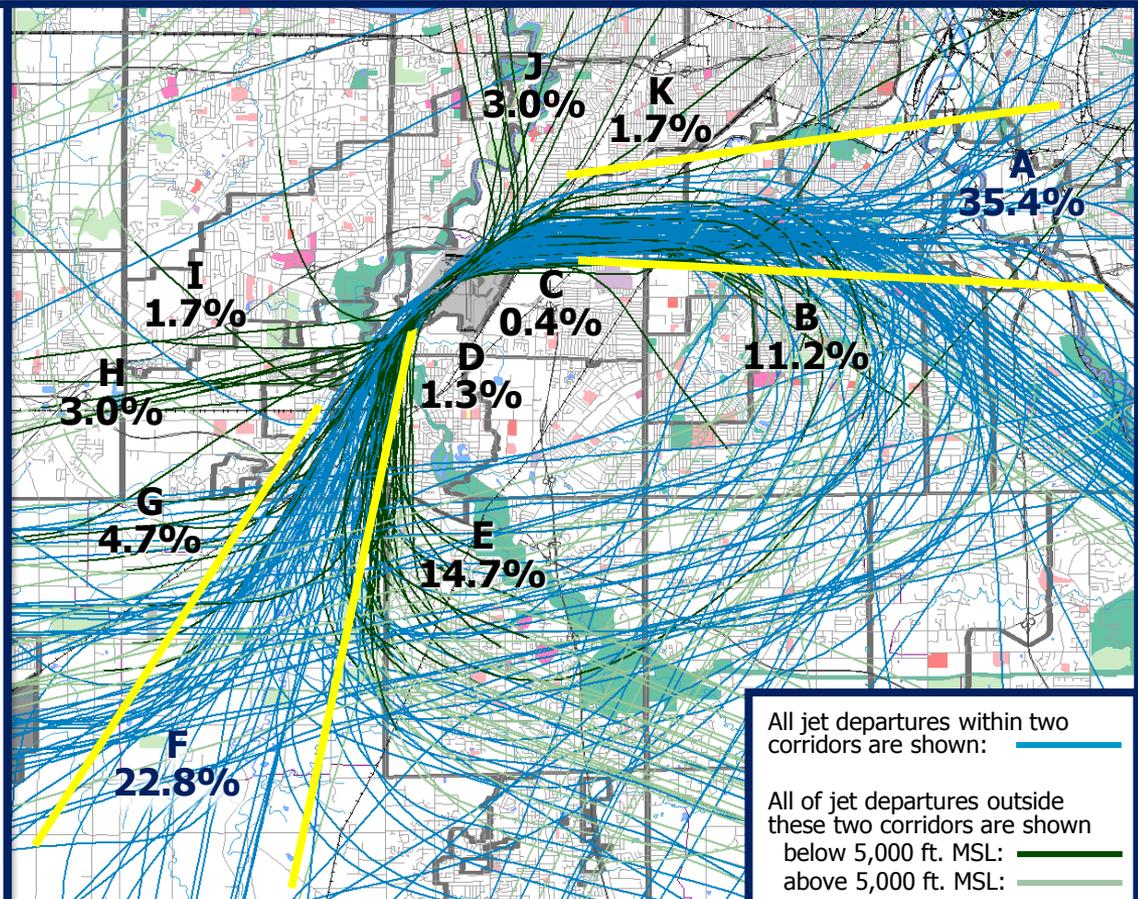
- B. 11.2%: flights crossing the south boundary below 5,000 ft. MSL
- C. 0.4%: flights turning south before entering the 095 corridor
- D. 1.3%: flights departing south without entering the 200 corridor
- E. 14.7%: flights crossing the east boundary below 5,000 ft. MSL
- G. 4.7%: flights crossing the west boundary below 5,000 ft. MSL
- H. 3.0%: flights departing southwest without entering the corridor
- I. 1.7%: flights departing west without entering the corridor
- J. 3.0%: flights departing north, not east with the 095 corridor
- K. 1.7%: 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:	0.0%	0.0%	42.6%	6.0%	3.4%	48.1%
For all aircraft:	0.0%	0.4%	42.0%	6.3%	3.3%	48.0%

93.4% of Jet Departures from Rwy 6L/6R were on the preferred Rwy, 6R.



Arrival Headings, 3rd Qtr : Night-time

Arrivals, 10:00 p.m. to 6:59 a.m. 3rd Qtr., 2016

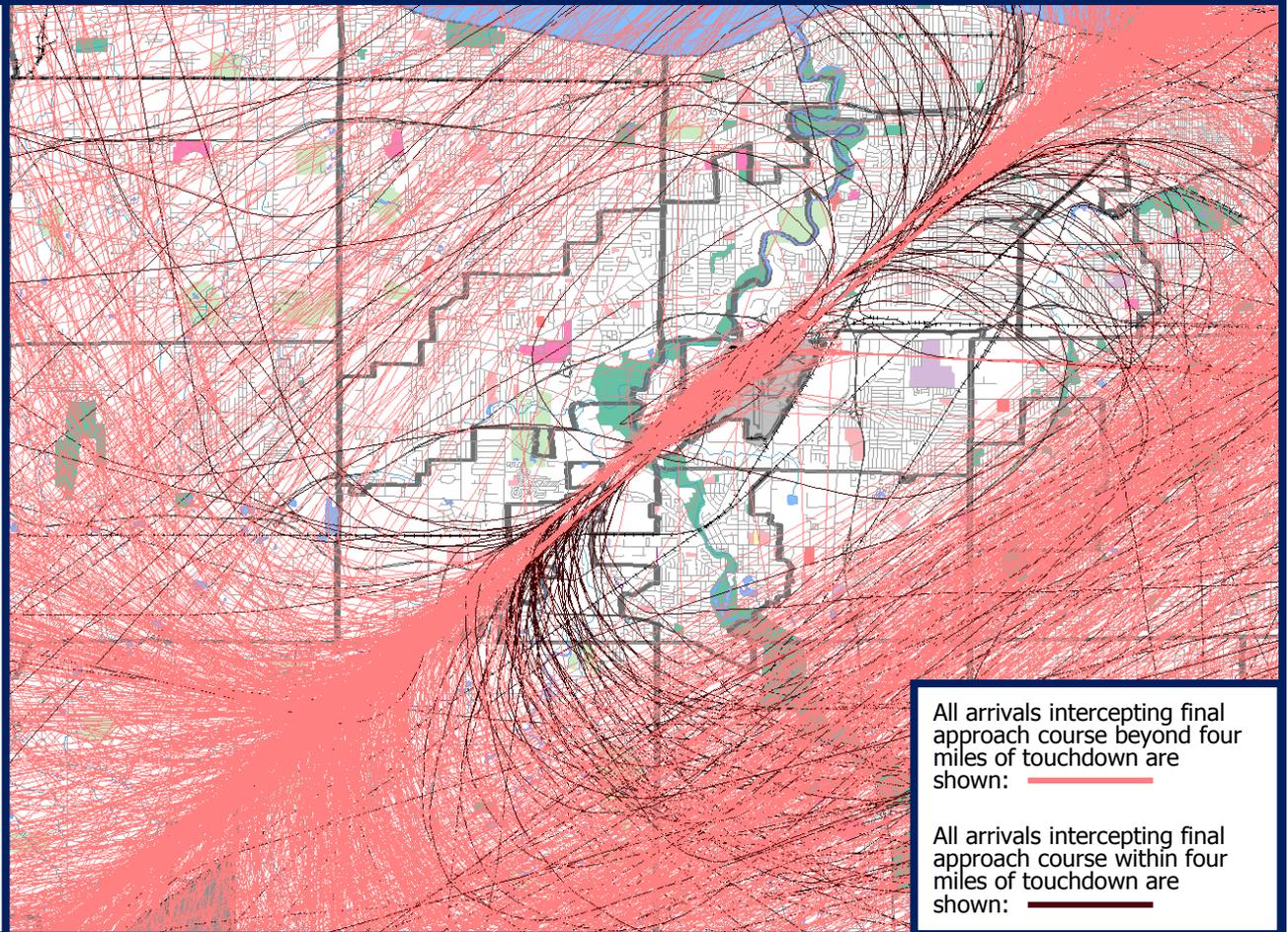
A voluntary measure of the Noise Compatibility Program calls for all aircraft arriving between 10:00 p.m. and 6:59 a.m., wind and weather permitting, to intercept final approach course no closer than four miles before touchdown.

**95.1% beyond four miles and
4.9% 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:

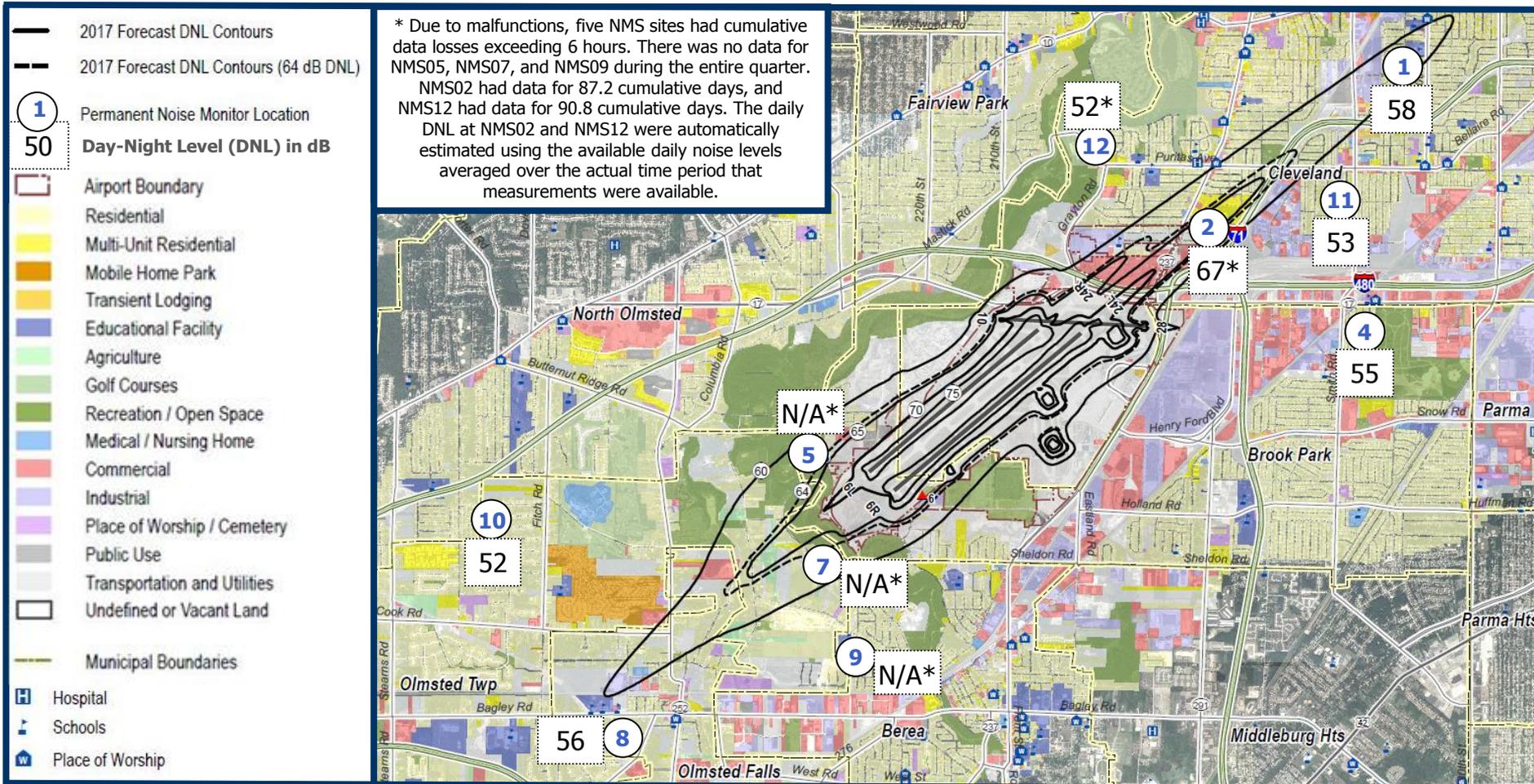
Rwy	Percentage of Arrivals	
	Jets	All Aircraft
10	0.0%	0.0%
28	0.7%	0.7%
24L	10.4%	10.5%
24R	31.8%	31.6%
6L	47.4%	47.3%
6R	9.7%	9.9%



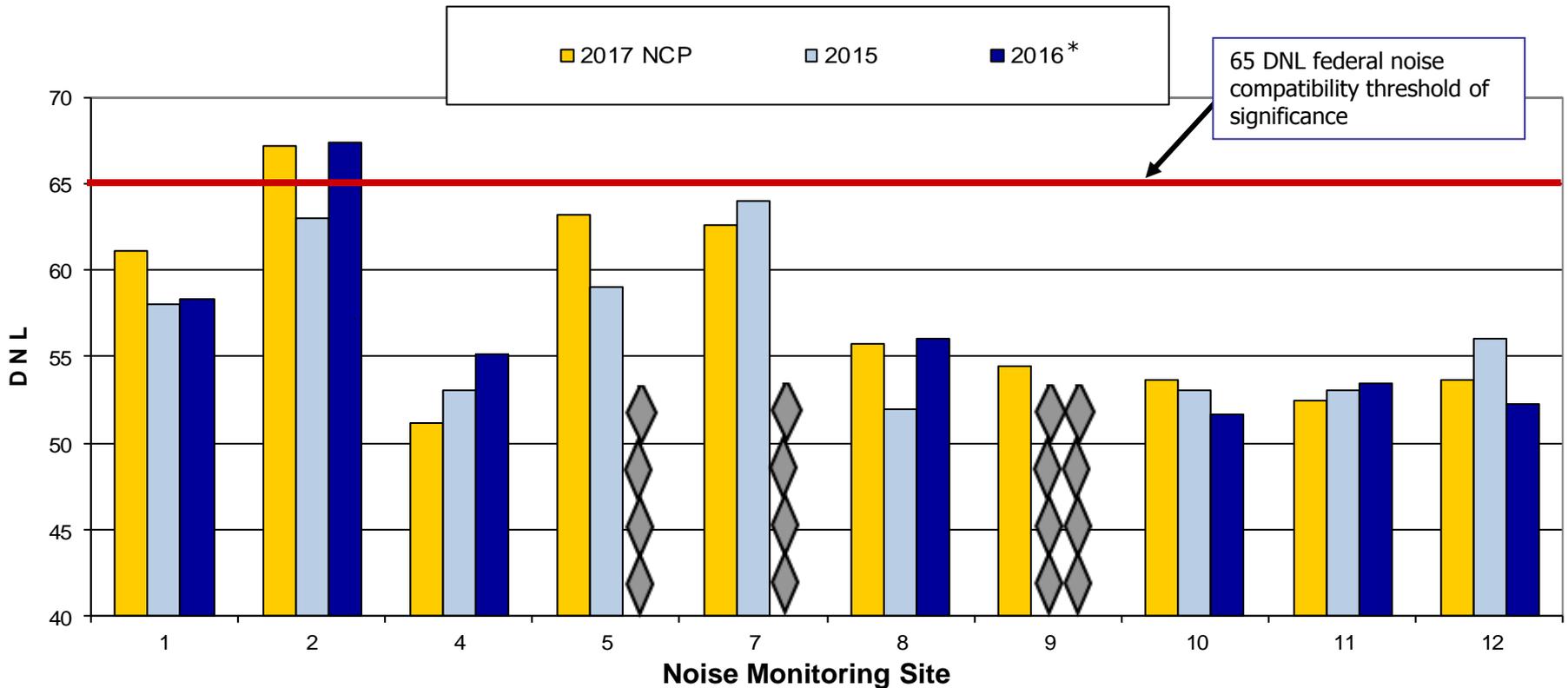
All arrivals intercepting final approach course beyond four miles of touchdown are shown: —————

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

Aircraft Noise: DNL by Noise Monitoring Site



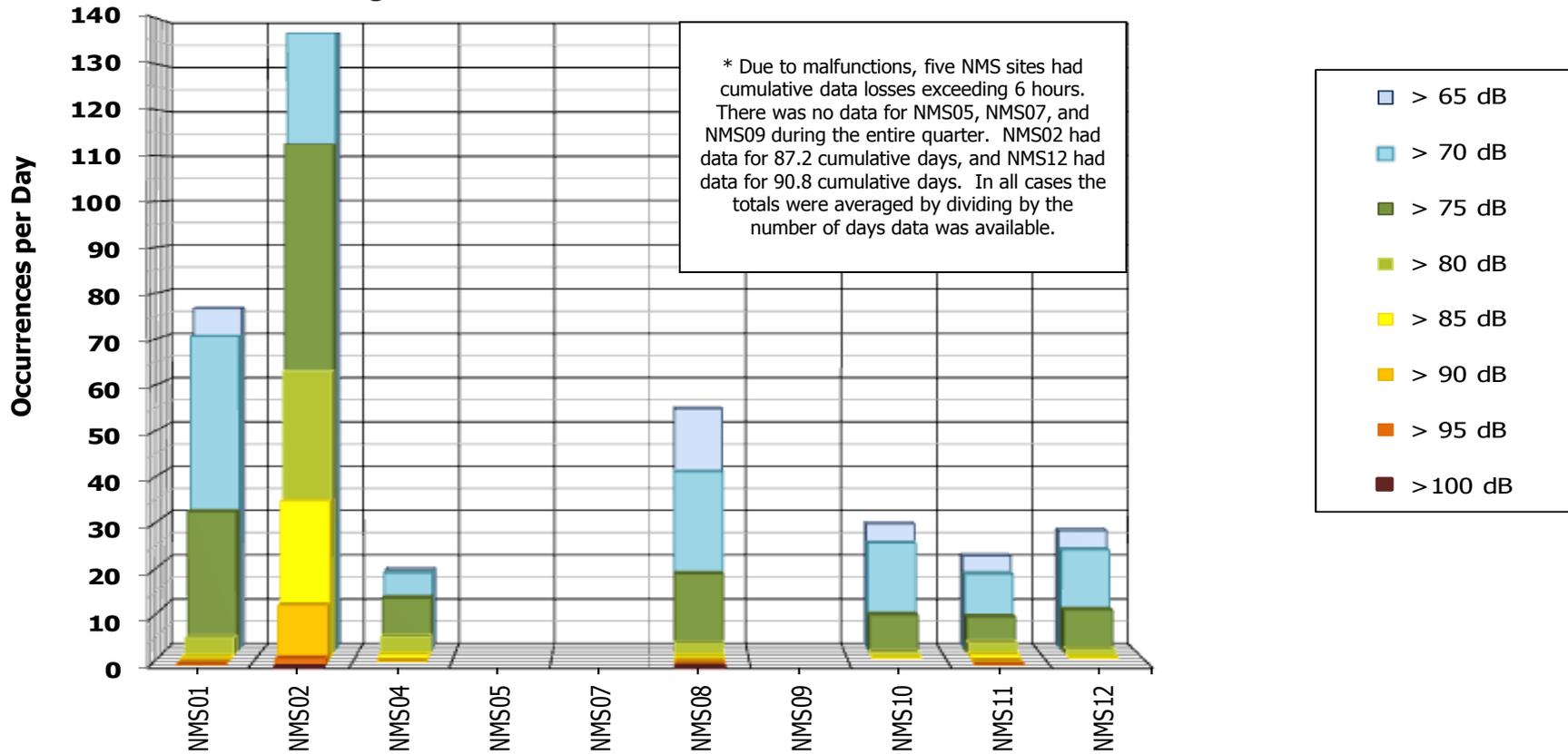
DNL: 3rd Qtr, 2016 vs. 3rd Qtr, 2015



* Due to malfunctions, five NMS sites had cumulative data losses exceeding 6 hours. There was no data for NMS05, NMS07, and NMS09 during the entire quarter. NMS02 had data for 87.2 cumulative days, and NMS12 had data for 90.8 cumulative days. The daily DNL at NMS02 and NMS12 were automatically estimated using the available daily noise levels averaged over the actual time period that measurements were available.

Average Daily Number of Aircraft Noise Occurrences Above Each 5 dB Increment

3rd Qtr. Noise Event Lmax Distribution



Top Three Lmaxs at Each NMS

Three highest aircraft decibel levels at each Noise Monitoring Site during the 3rd Qtr., 2016, p. 1

NMS	Lmax (dB)	Aircraft	Operation	Time and date	Sound Exposure Level (dB)¹	Duration (sec)
NMS01	99.6	Military Aircraft	Departure off Rwy 6R	9/2/16 11:13 AM	101.6	28.0
NMS01	91.1	Military Aircraft	Departure off Rwy 6R	9/3/16 1:18 PM	98.7	20.0
NMS01	88.6	Military Aircraft	Departure off Rwy 6R	9/5/16 1:12 PM	96.6	28.5
NMS02	107.5	Military Aircraft	Departure off Rwy 6R	9/5/16 1:12 PM	113.4	31.0
NMS02	107.2	Military Aircraft	Departure off Rwy 6R	9/4/16 1:17 PM	114.7	21.0
NMS02 ²	106.0	Military Aircraft	Departure off Rwy 6R	9/3/16 1:17 PM	112.3	31.5
NMS04	91.8	MD-88	Departure off Rwy 6R	7/16/16 7:53 AM	98.9	32.5
NMS04	90.6	MD-88	Departure off Rwy 6R	7/10/16 6:26 AM	97.9	27.5
NMS04 ³	90.5	MD-88	Departure off Rwy 6R	7/20/16 9:26 AM	97.8	32.0

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 NMS02 from September 11th to 15th.

³ Due to equipment malfunctions, no data is available for NMS05 or NMS07 within the 3rd Quarter of 2016.

Top Three Lmaxs at Each NMS

Three highest aircraft decibel levels at each Noise Monitoring Site during the 3rd Qtr., 2016, p. 2						
NMS	Lmax (dB)	Aircraft	Operation	Time and date	Sound Exposure Level (dB)¹	Duration (sec)
NMS08	102.0	Military Aircraft	Arrival on Rwy 6L	9/1/16 2:18 PM	106.9	42.0
NMS08	99.2	Military Aircraft	Arrival on Rwy 6L	9/1/16 2:30 PM	106.4	18.5
NMS08 ²	94.5	Unknown Aircraft	Arrival on Rwy 6L	7/27/16 6:13 PM	100.0	19.5
NMS10	89.5	B747-400	Departure off Rwy 24R	7/22/16 11:35 AM	95.9	25.0
NMS10	89.0	MD-88	Departure off Rwy 24L	7/22/16 2:21 PM	95.0	26.0
NMS10	89.0	Unknown Aircraft	Go Around on Rwy 6L	8/31/16 6:38 PM	95.5	37.5
NMS11	97.5	Military Aircraft	Departure off Rwy 6R	9/2/16 11:12 AM	103.4	31.0
NMS11	93.2	MD-88	Departure off Rwy 6R	8/22/16 12:39 PM	98.1	27.5
NMS11	92.5	Unknown Aircraft	Departure off Rwy 6L	9/19/16 11:02 AM	97.3	43.5
NMS12	89.3	MD-82	Departure off Rwy 6R	9/1/16 8:09 AM	95.0	25.5
NMS12	87.7	MD-83	Departure off Rwy 6L	9/29/16 7:24 PM	95.4	26.0
NMS12	86.8	Military Aircraft	Departure off Rwy 6L	9/5/16 1:10 PM	91.9	19.0

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 3rd Quarter of 2016.

Noise Complaints



City	Jul	Aug	Sep	3 rd Q '16 Calls	%	3 rd Q '15 Calls	%	3 rd Q '16 Callers	%	3 rd Q '15 Callers	%
Berea	0	17	1	18	30.0%	0	0.0%	1	6.7%	0	0.0%
Brook Park	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Cleveland	3	11	2	16	26.7%	11	23.9%	2	13.3%	7	26.9%
Columbia Station	0	0	0	0	0.0%	2	4.3%	0	0.0%	1	3.8%
Fairview Park	0	2	1	3	5.0%	4	8.7%	3	20.0%	4	15.4%
Lakewood	0	0	0	0	0.0%	1	2.2%	0	0.0%	1	3.8%
Olmsted Falls	1	1	0	2	3.3%	9	16.9%	2	13.3%	4	15.4%
Olmsted Twp.	5	3	2	10	16.7%	8	17.4%	1	6.7%	2	7.7%
Parma	1	0	0	1	1.7%	2	4.3%	1	6.7%	1	3.8%
Rocky River	3	0	6	9	15.0%	7	15.2%	4	26.7%	4	15.4%
Strongsville	0	0	1	1	1.7%	1	2.2%	1	6.7%	1	3.8%
Valley City	0	0	0	0	0.0%	1	2.2%	0	0.0%	1	3.8%
Totals	13	34	13	60	100.0%	46	100.0%	15	100.0%	26	100.0%

Noise Hotline – (216) 898-5220

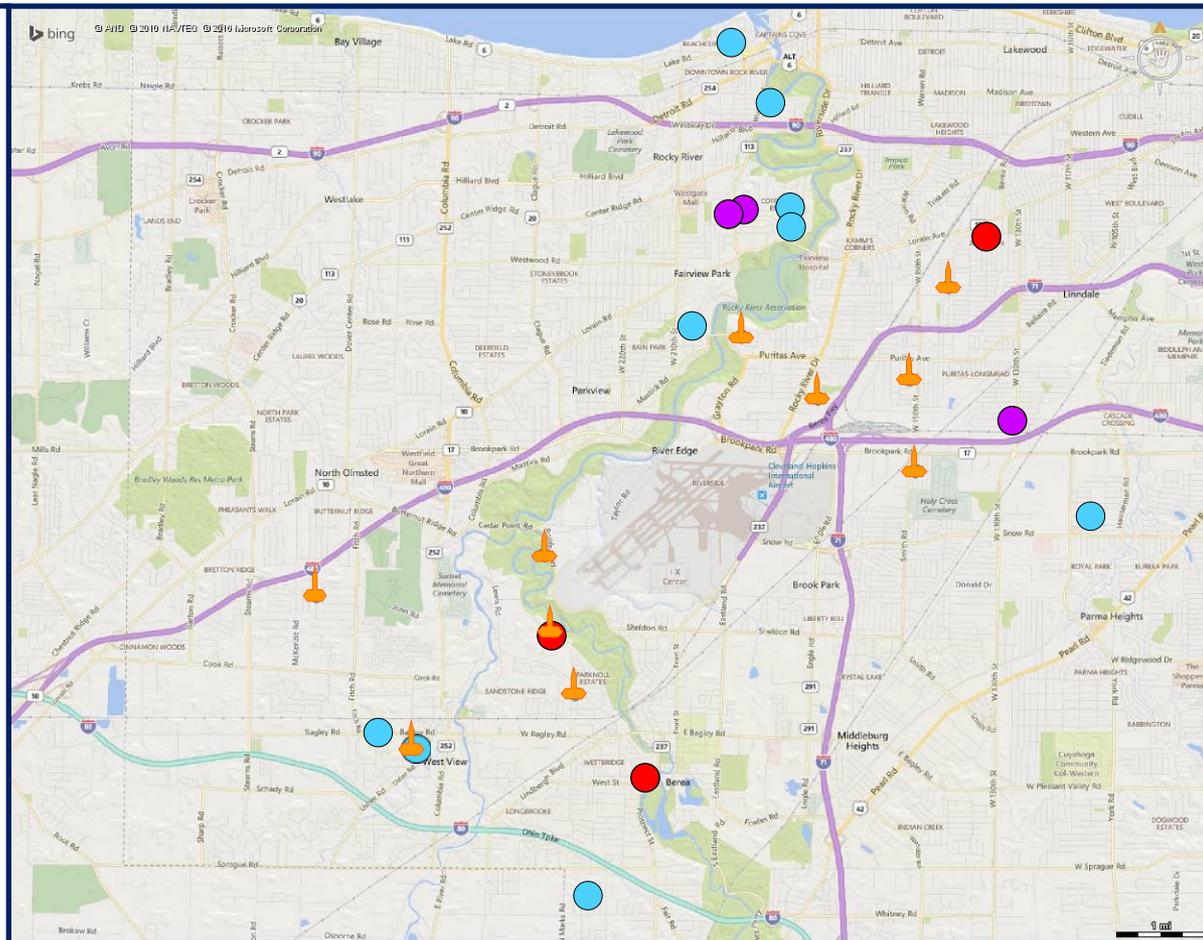
Totals may not add to 100.0%, due to rounding.

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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