Airport Noise Monitoring

California Title 21 Noise Standards

August 7, 2019

Agenda

- Purpose of noise monitoring
- Location and number of noise monitors
- Noise monitor site selection
- Threshold noise level
- Reporting requirements
- Example – SFO Quarterly Noise Data
- Example – SFO Quarterly Noise Contours

Purpose of Noise Monitoring

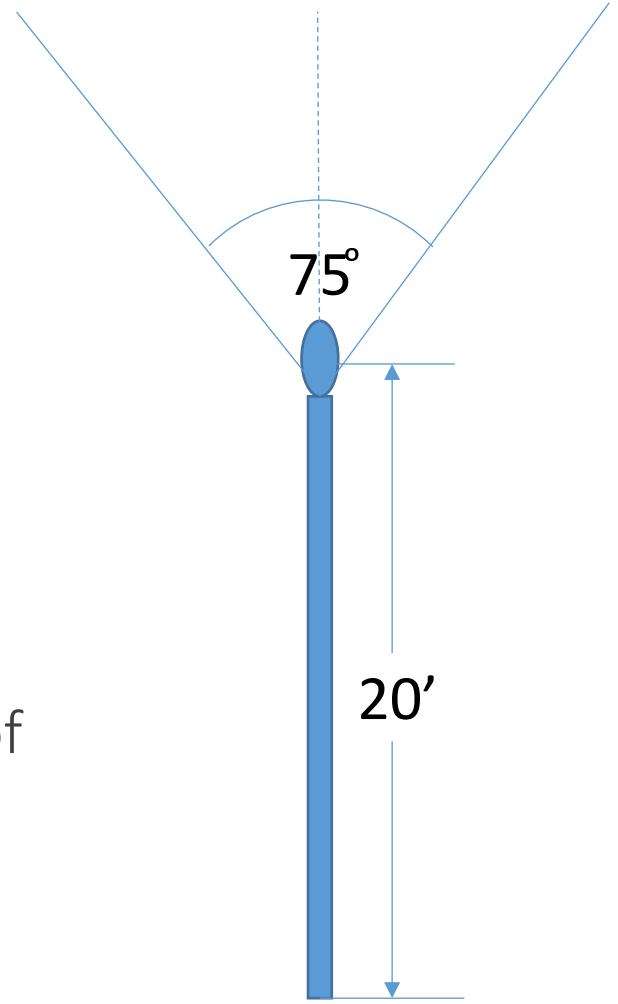
- To validate the noise impact boundary
  - Note the “noise impact boundary” is the 65 CNEL contour

Location and Number of Noise Monitors

- The locations shall be selected to facilitate locating the maximum extent (closure points) of the noise impact boundary
- The number of noise monitors varies by airport, but must be adequate to ensure the accuracy tolerance of ± 1.5 dB CNEL for location of the noise impact boundary in areas where land use is incompatible

Noise Monitor Site Selection

- CNEL from non-aircraft noise sources is less than 55 dB
- Within residential areas not immediately adjacent to:
  - Noisy industry
  - Freeway
  - Railroad track
- 20 feet above the ground level or at least 10 feet above neighboring roof tops, whichever is higher and has a clear line of sight to the path of the aircraft in flight
- No obstructions that can significantly influence the sound field from the aircraft within a conical space above the microphone
  - Conical space is defined by a vertical axis and by a half angle of 75 degrees from that axis



Threshold Noise Level

- Title 21 requires that a threshold noise level of 55 dB be utilized
- Waivers granted in cases where the airport proprietor can demonstrate the accuracy of the CNEL measurement of aircraft will remain within ± 1.5 dB
  - The State of California approved the SFO Noise Monitoring Plan, including waivers for threshold deviations, as part of the current noise and operations monitoring system acceptance
  - SFO will submit a new Noise Monitoring Plan for State approval, including threshold waivers as needed, during the installation of the new system

Reporting Requirements

- Moving forward SFO will submit quarterly noise reports to the Roundtable Technical Consultant for review and to the State of California for filing
- The Roundtable agenda will include a summary of the submitted quarterly noise report by the technical consultant on a regular basis
- The quarterly noise report will include:
  - Form DOA 617, dated 10/89
  - A map illustrating the location of the noise impact boundary and the measurement points
  - The annual noise impact area as obtained from the four preceding calendar quarters
    - An estimate of dwelling units
    - An estimate of the number of people residing therein
  - The daily CNEL measurements
  - Number of aircraft operations
  - Estimated number of operations by the highest noise level aircraft type

Example – SFO Quarterly Noise Data

SAN FRANCISCO INTERNATIONAL AIRPORT QUARTERLY NOISE REPORT

NAME	CITY	AREA	Quartly Measured Aircraft CNEL Noise Level				Annual CNEL
			2Q 2018	3Q 2018	4Q 2018	1Q 2019	A-1Q2019
R1	San Bruno	GAP CENTERLINE	73.2	73.4	73.3	73.0	73.2
R2	San Bruno	GAP SIDELINE S	55.4	55.4	**55.4**	55.4	55.4
R3	S San Francisco	SSTIK BRISBANE	55.4	53.0	54.1	55.0	54.5
R4	S San Francisco	GAP CENTERLINE	68.7	68.3	68.3	68.1	68.4
R5	San Bruno	GAP SIDELINE S	66.9	66.7	66.7	66.5	66.7
R6	S San Francisco	GAP CENTERLINE	66.1	64.6	64.8	65.3	65.2
R7	Brisbane	SSTIK BRISBANE	51.8	48.8	50.7	50.7	50.6
R8	Millbrae	DEPARTURE ROLL	62.2	61.7	67.2	66.3	65.0
R9	Millbrae	DEPARTURE ROLL	54.4	50.8	52.6	52.2	52.7
R10	Burlingame	DEPARTURE ROLL	56.6	50.4	50.8	54.1	53.7
R11	Burlingame	DEPARTURE ROLL	51.0	47.9	51.9	54.5	51.9
R12	Foster City	APPROACH 28	63.2	62.5	61.9	62.2	62.5
R13	Hillsborough	DISTANT SITES	41.5	29.3	38.1	40.7	39.2
R14	S San Francisco	GAP SIDELINE	61.5	60.0	60.1	60.9	60.7
R15	S San Francisco (Oyster)	SSTIK BRISBANE	59.0	58.9	58.7	58.4	58.7
R16	S San Francisco	GAP SIDELINE S	59.8	57.7	59.4	60.1	59.4
R17	S San Francisco	GAP SIDELINE N	59.6	56.9	59.1	60.1	59.1
R18	Daly City	GAP CENTERLINE	64.5	62.7	63.5	64.0	63.7

Example – SFO Quarterly Noise Contours

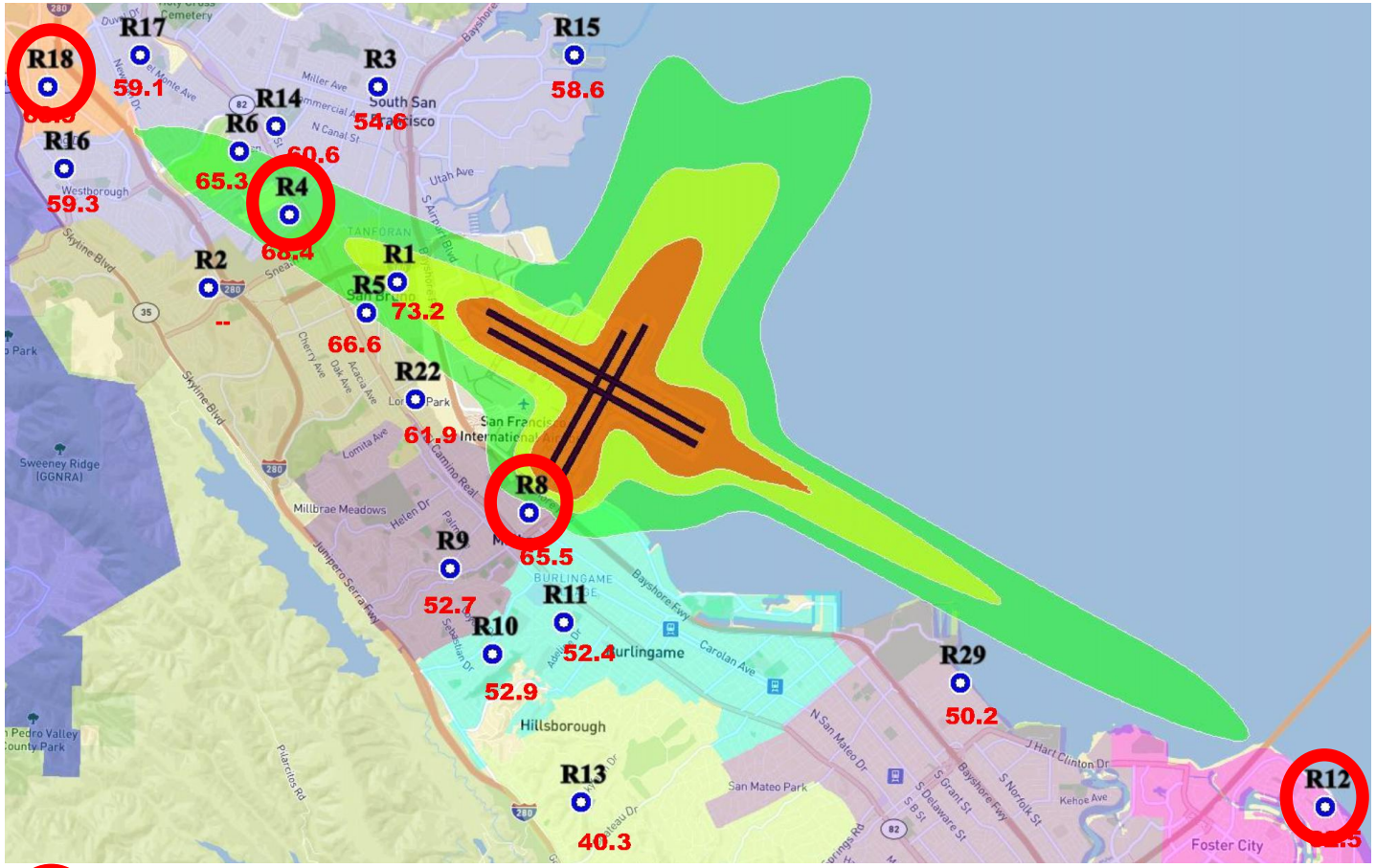
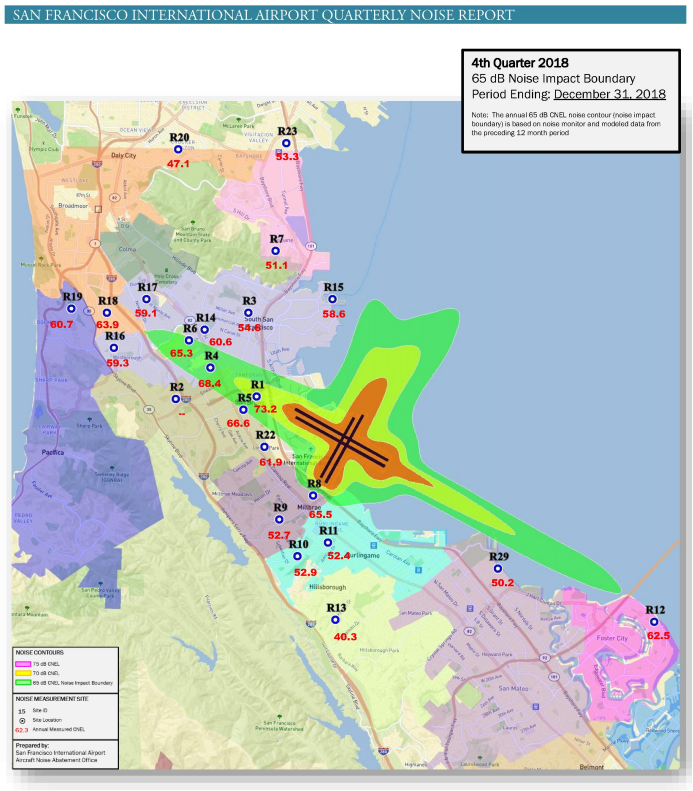


Figure 2
Quarterly Noise Contour (4th Quarter 2018)



Source: BridgeNet International 2019

Denotes sites that are minimally required to meet Title 21 requirements