

**Final
United States Marine Corps
F-35B West Coast Basing
Environmental Impact Statement (EIS)**

**Volume I
Chapters 1-12**



October 2010

4.3 Noise

This section describes the noise environment under baseline conditions and all five action alternatives at MCAS Miramar. It presents both noise contours and quantitative data on the acreage, populations, and housing units affected.

4.3.1 Affected Environment

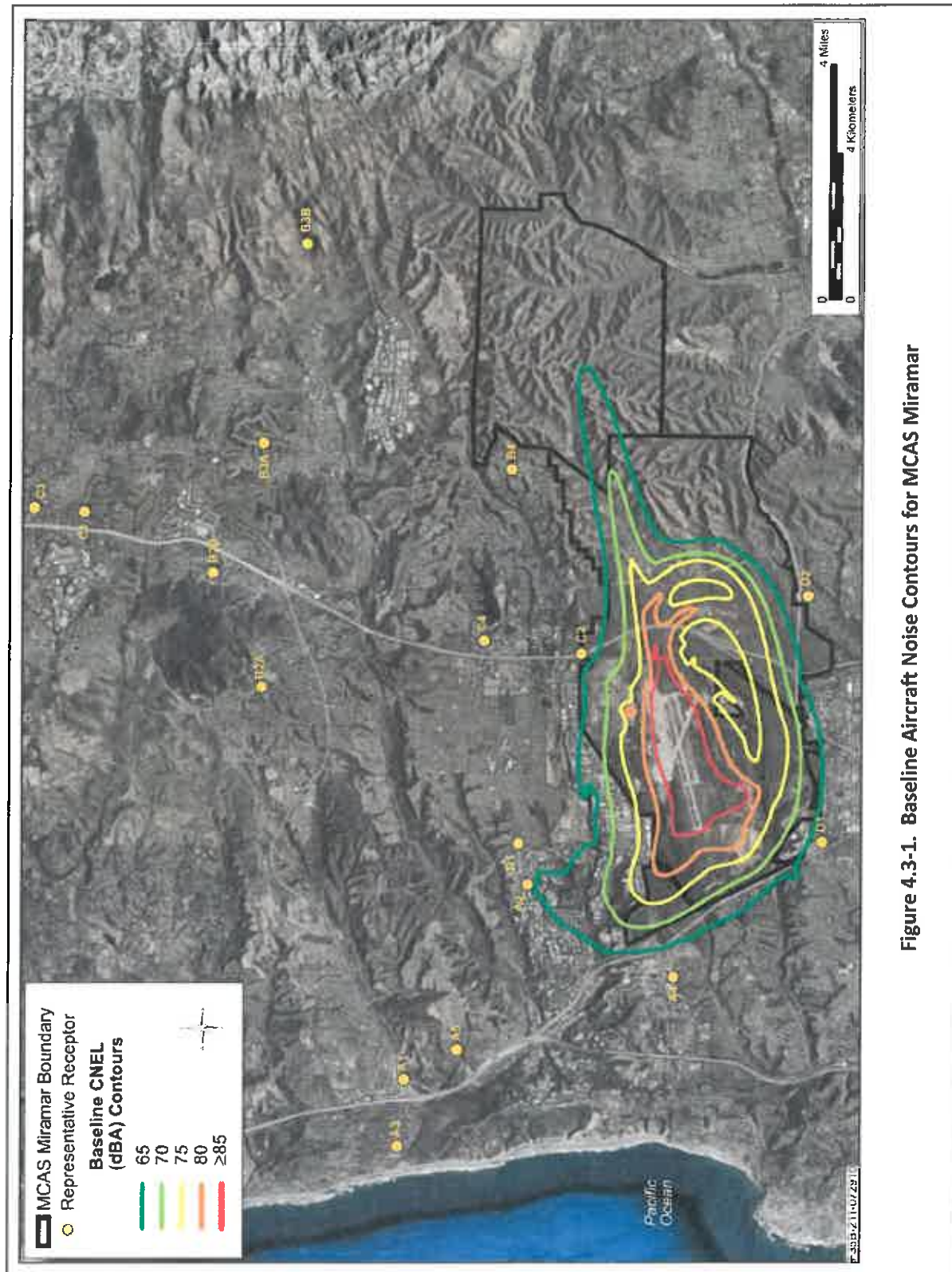
Aircraft Operations

The initial basis for MCAS Miramar noise modeling was the MV-22 Environmental Impact Statement (EIS) (DoN 2009a) which in turn was a minor update to the modeling performed for the MCAS Miramar Air Installations Compatible Use Zones (AICUZ) study (MCAS Miramar 2005). The Naval Aviation Simulation Model (NASMOD) study commissioned by the DoN (ATAC 2008) provided additional data. The AICUZ study provided based modeled flight and run-up operations for F/A-18, KC-130, CH-46E and CH-53E aircraft. The NASMOD study (with minor modifications) provided based flight operations for C-12 Huron and UC-35 aircraft and transient aircraft flight operations. Modifications to the NASMOD data primarily included balancing of arrivals and departures. Appendix C contains detail on major modeling parameters.

The baseline condition for MCAS Miramar considers approximately 122,000 flight operations annually (refer to Table 4.2-1). Nearly 90 percent of the total flight operations are by based aircraft. With approximately 67,000 annual aircraft flight operations, the 126 based F/A-18A/C/D aircraft comprise the majority of the operations. These include FCLP(C) operations by the F/A-18s. Military transient aircraft (refer to Table 4.2-1) comprise the remaining approximately 10 percent of the total flight operations dominated by rotary-wing touch-and-go operations. In concert with the AICUZ, modeled aircraft only include based F/A-18, KC-130, CH-46E and CH-53E aircraft. The contribution of the 13 percent of the total flight operations not modeled is negligible to the overall aircraft noise environment compared to the contribution of the modeled operations. Of the total modeled flight operations, Community Noise Equivalent Level (CNEL) evening and nighttime flight operations account for 16 and 6 percent, respectively.

Noise Exposure

Figure 4.3-1 shows the 65 to 85 dB CNEL contours, in 5 decibel (dB) increments, for the baseline conditions at MCAS Miramar. North of the air station in the Julian corridor, the 65 dB CNEL contour extends approximately 2 miles from the air station boundary. Elsewhere, the 65 dB CNEL contour is primarily contained within the air station boundary.



Based on these contours, Table 4.3-1 presents the noise exposure in terms of estimated off-station acreage, housing units, and population within each CNEL contour band. These estimates exclude MCAS Miramar and bodies of water. The 65 to 70 dB band includes 359 housing units and 973 people. There are no off-station population exposed to CNEL greater than or equal to 70 dB.

Table 4.3-1. Off-Station Aircraft Noise Exposure within Baseline Contours at MCAS Miramar			
Contour Band (CNEL, dB)¹	Acreage	Population²	Housing Units²
65 - 70	2,193	973	359
70 - 75	596	-	-
75 - 80	218	-	-
80 - 85	8	-	-
85+	-	-	-

Notes:

¹Exclusive of upper bound for all bands; excludes MCAS Miramar and bodies of water.

²Based on parcel count using San Diego County data.

Seventeen representative noise-sensitive receptor locations chosen by the Marine Corps (DoN 2009a) are relevant to this EIS for MCAS Miramar. These locations represent residential areas in the vicinity of the air station (Table 4.3-2).

Table 4.3-2. Estimated Aircraft CNEL for Representative Noise-Sensitive Receptors Under Baseline at MCAS Miramar			
Receptor Number	Primary Flight Corridor	Description (All Residential)	CNEL (dBA)
A1	Seawolf	Carmel Valley-Via Del Mar	48
A2	Julian/Seawolf	Mira Mesa-Steadman St.	65
A3	Seawolf	Caminito Del Rocio	53
A4	Seawolf	La Jolla Village Dr./Golden Haven	60
A5	Seawolf	Carmel Mountain Rd./El Camino Real	51
B1	Julian	Mira Mesa/Glendover Ln.	62
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	49
B2B		Rancho Penasquitos-Penasquitos Ct.	50
B3A		Poway-Arbolitos	<45
B3B		Poway-Quiet Valley Ln.	<45
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	50
C1	I-15	Paseo Bolero Dr.	47
C2		Pomerado and I-15 (near MCAS)	62
C3		Bernardo Center and Bajada	48
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	53
D1	FCLP(C)	Copley Park and Hickam Field Dr.	63
D2		Santo and Portobello Court	59

Table 4.3-2 lists the CNEL for 17 representative sensitive receptors around MCAS Miramar. All but one of the representative receptors have exposure less than 65 dB CNEL and two have exposure less than 45 dB CNEL. One site (Mira Mesa-Steadman Street) has a CNEL of 65 dB and is considered an existing incompatible land use per the federal guidelines (see Appendix E, Land Use).

Speech interference comprises another indicator of noise effects. Such interference is measured by the numbers of average daily indoor daytime and evening (7:00 a.m. to 10:00 p.m.) events per hour subject to indoor maximum sound levels of at least 50 dB for the representative receptors (Table 4.3-3). This measure also considers the effect of noise attenuation provided by buildings with the windows open or closed. For windows closed and open, the average number of speech interfering events across all receptors is 1 and 3 per hour, respectively.

Table 4.3-3. Indoor Speech Interference for the Representative Locations Near MCAS Miramar for Baseline				
Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Daily Indoor Daytime (7:00 a.m. to 7:00 p.m.) + Evening (7:00 p.m. to 10:00 p.m.) Events per Hour*	
			Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	-	1
A2	Julian/Seawolf	Mira Mesa-Steadman St.	2	4
A3	Seawolf	Caminito Del Rocio	1	2
A4	Seawolf	La Jolla Village Dr./Golden Haven	1	4
A5	Seawolf	Carmel Mountain Rd./El Camino Real	-	1
B1	Julian	Mira Mesa/Glendover Ln.	2	4
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	-	1
B2B		Rancho Penasquitos-Penasquitos Ct.	-	-
B3A		Poway-Arbolitos	-	-
B3B		Poway-Quiet Valley Ln.	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	-	2
C1	I-15	Paseo Bolero Dr.	-	-
C2		Pomerado and I-15 (near MCAS)	3	10
C3		Bernardo Center and Bajada	-	-
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	-	4
D1	FCLP(C)	Copley Park and Hickam Field Dr.	1	8
D2		Santo and Portobello Court	3	8

*With an indoor Maximum Sound Level of at least 50 dB; assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

As detailed in Appendix C, sleep disturbance also serves as a measure of noise condition. Table 4.3-4 lists the probabilities of indoor awakening from average daily nighttime (10:00 p.m. to 7:00 a.m.) events for the representative receptors with windows closed and open. For windows closed and open, percentage awakening ranges between 0 and 9 percent and 0 and 15 percent, respectively. The greatest percentage (15 percent) is along the I-15 corridor near Pomerado and MCAS Miramar.

Table 4.3-4. Indoor Sleep Disturbance for Residential Representative Noise-Sensitive Receptors for Baseline Condition at MCAS Miramar

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Nightly (10:00 p.m. to 7:00 a.m.) Probability of Awakening (%)*	
			Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	1%	3%
A2	Julian/ Seawolf	Mira Mesa-Steadman St.	6%	10%
A3	Seawolf	Caminito Del Rocio	1%	4%
A4	Seawolf	La Jolla Village Dr./Golden Haven	6%	10%
A5	Seawolf	Carmel Mountain Rd./El Camino Real	2%	4%
B1	Julian	Mira Mesa/Glendover Ln.	6%	11%
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	1%	2%
B2B		Rancho Penasquitos-Penasquitos Ct.	1%	2%
B3A		Poway-Arbolitos	-	1%
B3B		Poway-Quiet Valley Ln.	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	2%	4%
C1	I-15	Paseo Bolero Dr.	1%	1%
C2		Pomerado and I-15 (near MCAS)	9%	15%
C3		Bernardo Center and Bajada	1%	1%
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	3%	8%
D1	FCLP(C)	Copley Park and Hickam Field Dr.	8%	14%
D2		Santo and Portobello Court	7%	13%

*Assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

Analysis of potential hearing loss (PHL) considers people's long-term exposure to noise levels of 80 CNEL or greater. Effects are described in terms of dB of average Noise Induced Permanent Threshold Shift (NIPTS).

Noise due to construction and maintenance equipment, as well as general vehicle traffic is a common ongoing occurrence in the station environment. Trucks, as well as heavy equipment, are found in the station environment on a daily basis to support existing facility operations and infrastructure upgrades. While all of these sources contribute to the noise environment, their effects rarely extend beyond base boundaries, and aircraft noise dominates the environment.

Modeling Parameters

Prior to discussion of the potential impacts due to each alternative, the following provides the modeling parameters used to analyze impacts from the operational F-35B squadrons at MCAS Miramar.

- Detailed F-35B flight operations by type of operation and CNEL time periods were derived from data provided and approved by the Marine Corps (Olander 2009a), and is based on best available estimates of the training syllabus for this new aircraft.

- FCLP(L) flight operations would only be conducted at the proposed Auxiliary Landing Field (ALF) near MCAS Yuma instead of on-station. FCLP(C) and non-FCLP (TGO and GCA Box) pattern operations would be conducted at MCAS Miramar.
- F-35B runway/pad utilization was initially based on the F/A-18 runway utilization percentages and modified by Marine Corps (Schulte 2009, Takabayashi 2009, Raynor 2009) to primarily reflect 75 percent of the flight operations on Runway 24R and 25 percent on Runway 24L. Four pads were estimated—two each on or near Runway 24L and 24R near the ends and near their intersection with Runway 10/28. It is estimated that the F-35B would equally utilize each of the four proposed landing pads.
- The F-35B was assumed to utilize the same flight tracks as the F/A-18 but with additional tracks modeled to accommodate Runway 24L operations and operations unique to the F-35B such as arrivals with rolling vertical landings, arrivals with vertical landings, and the Overhead Break with Simulated Flame-Out arrivals (see Appendix C).
- F-35B flight profiles for representative modeled tracks and types of operations were approved by the Marine Corps (Olander 2009f, Marine Corps 2009c). Appendix C contains maps of representative modeled flight profiles for each type of flight operation. Flight track/profile utilization percentages are similar to percentages for the F/A-18 but with the following exceptions: a) 33 percent of the Julian departures were modeled as “holddowns” and 67 percent modeled as ‘unrestricted’ climbs (Olander 2009f) instead of 50/50 split from the F/A-18; b) all departures were split to short take-off (55 percent), conventional take-off with afterburner (22.5 percent) and conventional take-off without afterburner (22.5 percent) instead of 100 percent conventional take-offs with afterburner from the F/A-18 operations.
- The Marine Corps provided data on proposed F-35B maintenance run-ups (Cornelius 2009). These run-ups would be limited to in-frame low-power maintenance run-ups on the flightline and maintenance built-in test in-frame run-ups (high rpm, low thrust) also at the flightline. Most maintenance activity on F-35B engines would occur off-site at the engine manufacturer.
- Modeled weather conditions would be identical to the baseline condition.

Appendix C provides further modeling details.

4.3.2 Environmental Consequences

Alternative 1

Alternative 1 involves the basing of up to 6 operational squadrons (up to 162 pilots) of F-35B aircraft at MCAS Miramar. Proposed based F-35B flight operations would total approximately 46,000 annually, with less than 400 during the CNEL nighttime period (refer to Table 2-12, Section 2.3.3.4, and Appendix C). Nearly 84 percent of the based F-35B flight operations at the air station would consist of departures and arrivals and 16 percent would consist of closed-pattern operations in the vicinity of the

air station. Two percent of the departures and arrivals would be to/from the ALF near MCAS Yuma for FCLP(L) operations. Also, about 3,600 FCLP(C) operations would continue at MCAS Miramar. Considering the retirement of legacy aircraft, the total flight operations for MCAS Miramar would be approximately 101,000 annually.

Figure 4.3-2 shows the 65 to 85 dB CNEL contours, in 5 dB increments, for Alternative 1 at MCAS Miramar. The figure also includes baseline contours for comparison purposes. North of the air station in the Julian corridor, the 65 dB CNEL contour would extend approximately 2 miles from the air station boundary. Elsewhere, the 65 dB CNEL contour would primarily be contained within the air station boundary.

Table 4.3-5 shows the noise exposure in terms of estimated off-station acreage, housing units, and population within each CNEL contour band. These estimates exclude MCAS Miramar and bodies of water. The 65 to 75 dB band would include 102 housing units and 276 people. There would be no off-station housing units or people exposed to CNEL greater than or equal to 70. However, overall, Alternative 1 would decrease the area affected by noise. Population and housing units affected by CNEL greater than or equal to 65 dB would decrease by 697 people and 257 housing units (72 percent decrease).

Table 4.3-5. Off-Station Aircraft Noise Exposure Comparing Alternative 1 and Baseline at MCAS Miramar						
Contour Band (CNEL, dBA)¹	Alternative 1			Change from Baseline		
	<i>Acreage</i>	<i>Population²</i>	<i>Housing Units²</i>	<i>Acreage</i>	<i>Population²</i>	<i>Housing Units²</i>
65 - 70	1,891	276	102	-302	-697	-257
70 - 75	596	-	-	-	-	-
75 - 80	266	-	-	48	-	-
80 - 85	12	-	-	4	-	-
85+	-	-	-	-	-	-
Total	2,765	276	102	-250	-697	-257

Notes:

¹Exclusive of upper bound for all bands; excludes MCAS Miramar and bodies of water.

²Based on parcel counts using San Diego County data and 2.71 persons per household.

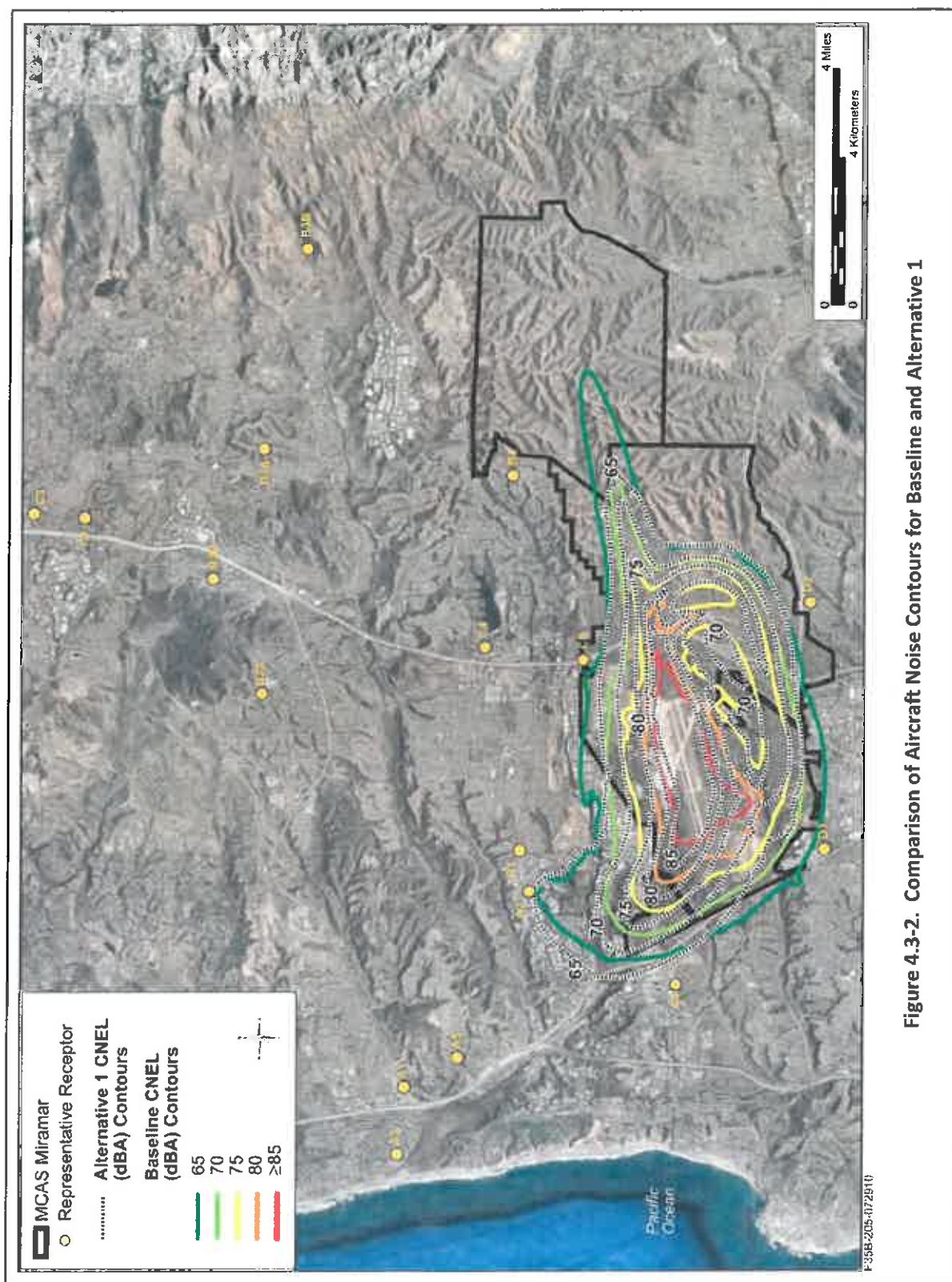


Figure 4.3-2. Comparison of Aircraft Noise Contours for Baseline and Alternative 1

Table 4.3-6 shows a comparison between Alternative 1 and baseline of CNEL for the 17 representative sensitive receptors. All but one of the representative receptors would have exposure less than 65 dB CNEL and two would have exposure less than 45 dB CNEL. One site in Mira Mesa (Steadman Street) would remain at CNEL of 65 dB which is considered incompatible land use per the AICUZ guidelines.

Table 4.3-6. Comparison of Aircraft CNEL for Representative Noise-Sensitive Receptors for Alternative 1 at MCAS Miramar				
Receptor Number	Primary Flight Corridor	Description (All Residential)	Baseline CNEL (dBA)	Alternative 1 CNEL (dBA)
A1	Seawolf	Carmel Valley-Via Del Mar	48	52
A2	Julian/Seawolf	Mira Mesa-Steadman St.	65	65
A3	Seawolf	Caminito Del Rocio	53	56
A4	Seawolf	La Jolla Village Dr./Golden Haven	60	61
A5	Seawolf	Carmel Mountain Rd./El Camino Real	51	54
B1	Julian	Mira Mesa/Glendover Ln.	62	63
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	49	52
B2B		Rancho Penasquitos-Penasquitos Ct.	50	51
B3A		Poway-Arbolitos	<45	<45
B3B		Poway-Quiet Valley Ln.	<45	<45
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	50	47
C1	I-15	Paseo Bolero Dr.	47	50
C2		Pomerado and I-15 (near MCAS)	62	60
C3		Bernardo Center and Bajada	48	52
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	53	52
D1	FCLP(C)	Copley Park and Hickam Field Dr.	63	57
D2		Santo and Portobello Court	59	58

Relative to the baseline, 7 of the 17 representative sites would experience an increase of at least 3 dB CNEL. The greatest increases would be 4 dB at three sites, one of each in the Seawolf corridor, GCA Box pattern, and I-15 corridor. The increase at the I-15 corridor site (Bernardo Center and Bajada) would be due to Julian departures turning east. A total of five receptors would experience decreased noise levels.

In terms of speech interference, Table 4.3-7 enumerates the numbers of average daily indoor daytime and evening (7:00 a.m. to 10:00 p.m.) events per hour which generally would have indoor maximum sound levels of at least 50 dB for the representative receptors with windows closed and open. For windows closed and open, the mean number of speech interfering events across all receptors would be 1 and 3 per hour, respectively, with an average increase of 1 or less event per hour relative to baseline.

Table 4.3-7. Indoor Speech Interference for the Representative Locations Near MCAS Miramar for Alternative 1

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Daily Indoor Daytime (7:00 a.m. to 7:00 p.m.) + Evening (7:00 p.m. to 10:00 p.m.) Events per Hour ¹			
			Windows Closed	Windows Open	Change from Baseline	
					Windows Closed	Windows Open ²
A1	Seawolf	Carmel Valley-Via Del Mar	1	4	1	3
A2	Julian/Seawolf	Mira Mesa-Steadman St.	4	4	2	-
A3	Seawolf	Caminito Del Rocio	2	2	1	-
A4	Seawolf	La Jolla Village Dr./Golden Haven	4	4	3	-
A5	Seawolf	Carmel Mountain Rd./El Camino Real	1	4	1	3
B1	Julian	Mira Mesa/Glendover Ln.	3	4	1	-
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	1	2	1	1
B2B		Rancho Penasquitos-Penasquitos Ct.	-	2	-	2
B3A		Poway-Arbolitos	-	-	-	-
B3B		Poway-Quiet Valley Ln.	-	-	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	-	1	-	1
C1	I-15	Paseo Bolero Dr.	-	2	-	2
C2		Pomerado and I-15 (near MCAS)	3	8	-	(2)
C3		Bernardo Center and Bajada	-	2	-	2
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	-	2	-	(2)
D1	FCLP(C)	Copley Park and Hickam Field Dr.	2	6	1	(2)
D2		Santo and Portobello Court	3	4	-	(4)

¹With an indoor Maximum Sound Level of at least 50 dB; assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

²(-) = Negative or reduction in effect

Table 4.3-8 lists the probabilities of indoor awakening from average daily nighttime (10:00 p.m. to 7:00 a.m.) events for the representative residential receptors with windows closed and open. For windows closed and open, percentage awakening would range between 0 and 3 percent and 0 and 6 percent, respectively. The greatest percentage (6 percent) would be near the air station in the I-15 corridor at Pomerado and in Mira Mesa at Glendover Lane. Relative to baseline, the probability of awakening would decrease by as much as 10 percent near the FCLP corridor (Copley Park and Hickam Field Drive) and increase as much as 1 percent (Seawolf corridor). Changes would be due to fewer overall nighttime operations by the F-35B than the legacy F/A-18 and increased single-event noise levels from the F-35B at higher power settings.

No on- or off-station PHL is anticipated for housing areas from Alternative 1 at MCAS Miramar. Individuals working in high noise exposure locations are subject to the occupational noise regulations in accordance with Occupational Safety and Health Administration (OSHA) and National Institute of

Occupational Safety and Health (NIOSH) regulations, and DoD and USMC programs. USMC guidance includes MCO 5100.8, *Marine Corps Occupational Safety and Health (OSH) Program Manual*, MCO 5100.29A, *Marine Corps Safety Program*, and MCO 6260.1E, *Marine Corps Hearing Conservation Program*. On-Base offices and housing are designed and modified in accordance with Unified Facilities Criteria (UFC) 3-450-01, Noise and Vibration Control.

Table 4.3-8. Indoor Sleep Disturbance for Residential Representative Noise-Sensitive Receptors at MCAS Miramar for Alternative 1

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Nightly (10:00 p.m. to 7:00 a.m.) Probability of Awakening (%)*			
			Windows Closed	Windows Open	Change from Baseline	
					Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	1%	4%	-	1%
A2	Julian/Seawolf	Mira Mesa-Steadman St.	3%	5%	-3%	-5%
A3	Seawolf	Caminito Del Rocio	2%	4%	1%	-
A4	Seawolf	La Jolla Village Dr./Golden Haven	2%	5%	-4%	-5%
A5	Seawolf	Carmel Mountain Rd./El Camino Real	2%	4%	-	-
B1	Julian	Mira Mesa/Glendover Ln.	2%	6%	-4%	-5%
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	1%	1%	-	-1%
B2B		Rancho Penasquitos-Penasquitos Ct.	1%	2%	-	-
B3A		Poway-Arbolitos	-	1%	-	-
B3B		Poway-Quiet Valley Ln.	-	-	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	1%	2%	-1%	-2%
C1	I-15	Paseo Bolero Dr.	1%	1%	-	-
C2		Pomerado and I-15 (near MCAS)	3%	6%	-6%	-9%
C3		Bernardo Center and Bajada	1%	1%	-	-
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	1%	3%	-2%	-5%
D1	FCLP(C)	Copley Park and Hickam Field Dr.	1%	4%	-7%	-10%
D2		Santo and Portobello Court	1%	5%	-6%	-8%

*Assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

Alternative 2

Alternative 2 involves the basing of up to 4 operational squadrons (up to 64 aircraft) of F-35B aircraft at MCAS Miramar. Proposed operations by based F-35B flight operations would total approximately 32,000 annually, with fewer than 300 occurring during environmental night (10:00 p.m. to 7:00 a.m.). Nearly 81 percent of the based F-35B flight operations at the air station would consist of departures and arrivals and 19 percent would consist of closed-pattern operations in the vicinity of the air station. Two percent of the departures and arrivals would be to or from the ALF near MCAS Yuma for FCLP(L)

operations. Considering the retirement of legacy aircraft, the total flight operations for MCAS Miramar would be nearly 87,000 annually.

Figure 4.3-3 shows the 65 to 85 dB CNEL contours, in 5 dB increments, for Alternative 2 at MCAS Miramar. The figure also includes baseline contours for comparison purposes. North of the air station in the Julian corridor, the 65 dB CNEL contour would extend approximately 1.5 miles from the air station boundary. Elsewhere, the 65 dB CNEL contour would primarily be contained within the air station boundary.

Table 4.3-9 shows the noise exposure in terms of estimated off-station acreage, housing units, and population within each CNEL contour band. These estimates exclude MCAS Miramar and bodies of water. The 65 to 75 dB band would not include any housing units or people. There would be no off-station housing units or people exposed to CNEL greater than or equal to 65 dB.

Table 4.3-9. Off-Station Aircraft Noise Exposure Comparing Alternative 2 and Baseline at MCAS Miramar						
Contour Band (CNEL, dBA)¹	Alternative 2			Change from Baseline		
	Acreage	Population²	Housing Units²	Acreage	Population²	Housing Units²
65 - 70	1,263	-	-	-930	-973	-359
70 - 75	457	-	-	-139	-	-
75 - 80	160	-	-	-58	-	-
80 - 85	-	-	-	-	-	-
85+	-	-	-	-	-	-
Total	1,880	-	-	-1,127	-973	-359

Notes:

¹Exclusive of upper bound for all bands; excludes MCAS Miramar and bodies of water.

²Based on parcel counts using San Diego County data and 2.71 persons per household.

Overall, Alternative 2 would decrease the population area affected by aircraft noise. Noise would decrease south of the air station. Population and housing units affected by CNEL greater than or equal to 65 dB would decrease by 973 people and 359 housing units (100 percent decrease).

Table 4.3-10 shows a comparison of CNEL for the representative sensitive receptors between Alternative 2 and baseline. All of the representative receptors would have exposure less than 65 dB CNEL and two would have exposure less than 45 dB CNEL. None of the sites would be considered an incompatible land use per the AICUZ guidelines.

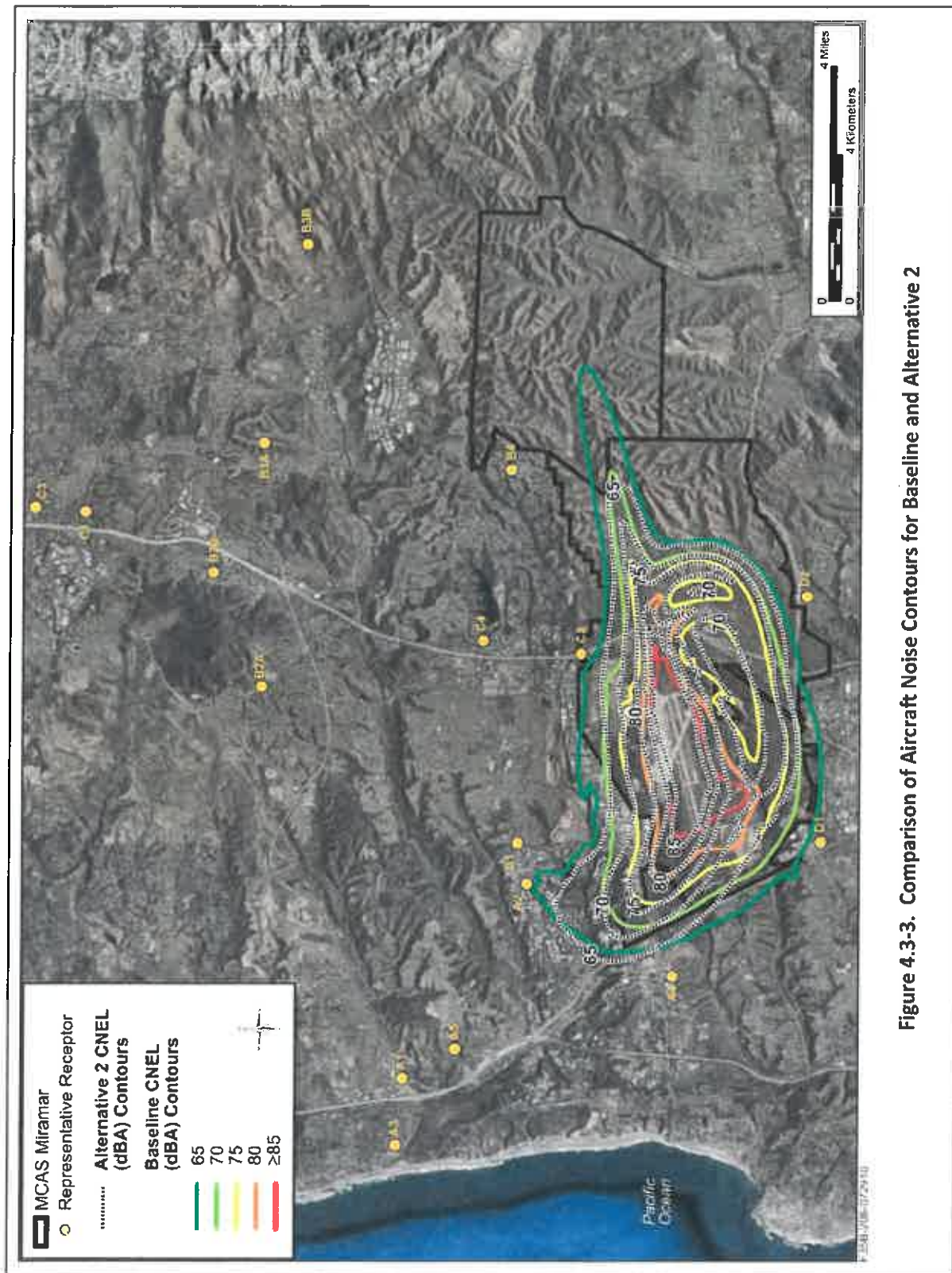


Figure 4.3-3. Comparison of Aircraft Noise Contours for Baseline and Alternative 2

Table 4.3-10. Comparison of Aircraft CNEL for Representative Noise-Sensitive Receptors for Alternative 2 at MCAS Miramar

Receptor Number	Primary Flight Corridor	Description (All Residential)	Baseline CNEL (dBA)	Alternative 2 CNEL (dBA)
A1	Seawolf	Carmel Valley-Via Del Mar	48	50
A2	Julian/Seawolf	Mira Mesa-Steadman St.	65	63
A3	Seawolf	Caminito Del Rocio	53	55
A4	Seawolf	La Jolla Village Dr./Golden Haven	60	59
A5	Seawolf	Carmel Mountain Rd./El Camino Real	51	53
B1	Julian	Mira Mesa/Glendover Ln.	62	61
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	49	50
B2B		Rancho Penasquitos-Penasquitos Ct.	50	51
B3A		Poway-Arbolitos	<45	<45
B3B		Poway-Quiet Valley Ln.	<45	<45
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	50	45
C1	I-15	Paseo Bolero Dr.	47	49
C2		Pomerado and I-15 (near MCAS)	62	59
C3		Bernardo Center and Bajada	48	51
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	53	51
D1	FCLP(C)	Copley Park and Hickam Field Dr.	63	56
D2		Santo and Portobello Court	59	57

Relative to the baseline, 7 of the 17 representative sites would experience an increase of 1 to 3 dB CNEL. The greatest increase would be 3 dB at site C3 and would be due to F-35B Julian departures turning east. A total of eight sites would experience decreased noise levels.

Table 4.3-11 lists the numbers of average daily indoor daytime and evening (7:00 a.m. to 10:00 p.m.) events per hour which would result in indoor maximum sound levels of at least 50 dB for the representative receptors with windows closed and open. For windows closed and open, the mean number of speech interfering events across all receptors would be 1 and 2 per hour, respectively, with an average decrease of 1 or less events per hour compared to baseline.

Table 4.3-11. Indoor Speech Interference for the Representative Locations Near MCAS Miramar for Alternative 2

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Daily Indoor Daytime (7:00 a.m. to 7:00 p.m.) + Evening (7:00 p.m. to 10:00 p.m.) Events per Hour ¹			
			Windows Closed	Windows Open	Change from Baseline ²	
					Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	1	2	1	1
A2	Julian/Seawolf	Mira Mesa-Steadman St.	2	3	1	(1)
A3	Seawolf	Caminito Del Rocio	1	1	-	(1)
A4	Seawolf	La Jolla Village Dr./Golden Haven	2	3	1	(1)
A5	Seawolf	Carmel Mountain Rd./El Camino Real	1	3	1	2
B1	Julian	Mira Mesa/Glendover Ln.	2	3	-	(1)
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	1	1	1	-
B2B		Rancho Penasquitos-Penasquitos Ct.	-	1	-	1
B3A		Poway-Arbolitos	-	-	-	-
B3B		Poway-Quiet Valley Ln.	-	-	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	-	-	-	(2)
C1	I-15	Paseo Bolero Dr.	-	1	-	1
C2		Pomerado and I-15 (near MCAS)	2	6	(1)	(4)
C3		Bernardo Center and Bajada	-	1	-	1
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	-	1	-	(3)
D1	FCLP(C)	Copley Park and Hickam Field Dr.	1	4	-	(4)
D2		Santo and Portobello Court	2	3	(1)	(5)

¹With an indoor Maximum Sound Level of at least 50 dB; assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

²() = Negative or reduction in effect

Table 4.3-12 lists the probabilities of indoor awakening from average daily nighttime (10:00 p.m. to 7:00 a.m.) events for the representative receptors with windows closed and open. For windows closed and open, percentage awakening would range between 0 and 2 percent and 0 and 6 percent, respectively. The greatest percentage (6 percent) would be near the air station in the I-15 corridor at Pomerado. Relative to baseline, percentage awakening would decrease as much as 11 percent. Changes would be due to fewer overall nighttime operations by the F-35B than the legacy F/A-18.

No on- or off-station PHL is anticipated for housing areas from Alternative 2 at MCAS Miramar.

Table 4.3-12. Indoor Sleep Disturbance for Residential Representative Noise-Sensitive Receptors at MCAS Miramar for Alternative 2

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Nightly (10:00 p.m. to 7:00 a.m.) Probability of Awakening (%)*			
			Windows Closed	Windows Open	Change from Baseline	
					Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	1%	3%	-	-
A2	Julian/ Seawolf	Mira Mesa-Steadman St.	2%	5%	-4%	-5%
A3	Seawolf	Caminito Del Rocio	1%	3%	-	1%
A4	Seawolf	La Jolla Village Dr./Golden Haven	2%	4%	-4%	-6%
A5	Seawolf	Carmel Mountain Rd./El Camino Real	2%	4%	-	-
B1	Julian	Mira Mesa/Glendover Ln.	1%	5%	-5%	-6%
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	-	1%	-1%	-1%
B2B		Rancho Penasquitos-Penasquitos Ct.	1%	1%	-	-1%
B3A		Poway-Arbolitos	-	1%	-	-
B3B		Poway-Quiet Valley Ln.	-	-	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	1%	2%	-1%	-2%
C1	I-15	Paseo Bolero Dr.	1%	1%	-	-
C2		Pomerado and I-15 (near MCAS)	2%	6%	-7%	-9%
C3		Bernardo Center and Bajada	1%	1%	-	-
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	1%	3%	-2%	-5%
D1	FCLP(C)	Copley Park and Hickam Field Dr.	1%	3%	-7%	-11%
D2		Santo and Portobello Court	1%	4%	-6%	-9%

*Assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

Alternative 3

Alternative 3 involves the basing of up to 7 operational squadrons and 1 OT&E squadron (up to 120 aircraft) at MCAS Miramar. Proposed based F-35B flight operations would total approximately 56,000 annually, with fewer than 500 during environmental night (10:00 p.m. to 7:00 a.m.). Nearly 85 percent of the based F-35B flight operations at the air station would consist of departures and arrivals and 15 percent would consist of closed-pattern operations in the vicinity of the air station. Two percent of the departures and arrivals would be to or from the ALF near MCAS Yuma for FCLP(L) operations. Considering the retirement of legacy aircraft, the total flight operations for MCAS Miramar would be nearly 111,000 annually.

Figure 4.3-4 shows the 65 to 85 dB CNEL contours, in 5 dB increments, for Alternative 3 at MCAS Miramar. The figure also includes baseline contours for comparison purposes. North of MCAS Miramar in the Julian corridor, the 65 dB CNEL contour would extend approximately 2 miles from the air station boundary. Elsewhere, the 65 dB CNEL contour would primarily be contained within the air station boundary.

Table 4.3-13 shows the noise exposure in terms of estimated off-station acreage, housing units, and population within each CNEL contour band. These estimates exclude MCAS Miramar and bodies of water. The 65 to 75 dB band would include 245 housing units and 664 people. There would be no off-station housing units or people exposed to noise levels greater than 70 dB.

However, overall, Alternative 3 would decrease the population area affected by aircraft noise. The greatest expansion relative to baseline would occur in the Seawolf and Julian corridors near the air station. Population and housing units affected by CNEL greater than or equal to 65 dB would decrease by 309 people and 114 housing units (32 percent decrease).

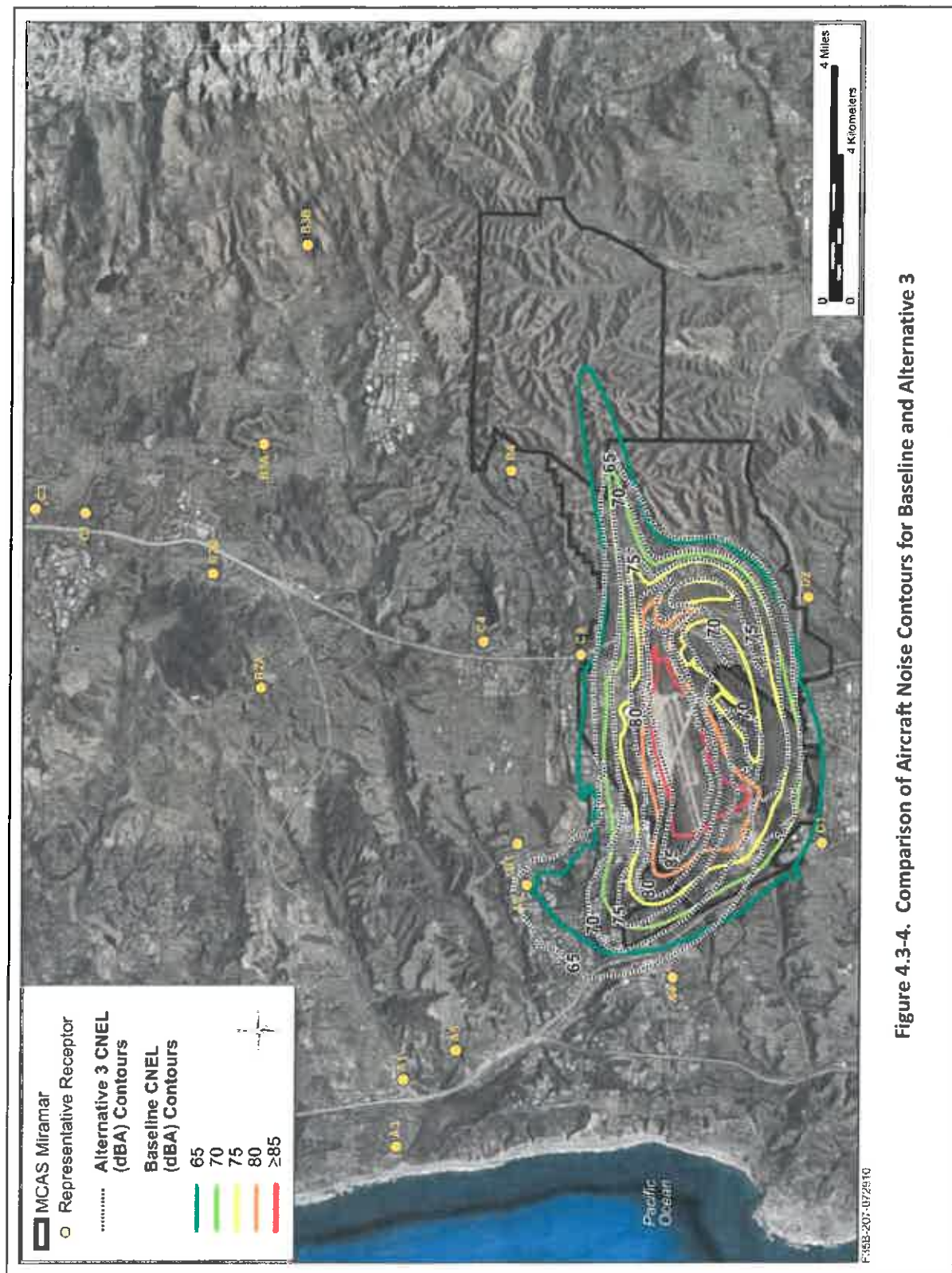
Table 4.3-13. Off-Station Aircraft Noise Exposure Comparing Alternative 3 and Baseline at MCAS Miramar						
Contour Band (CNEL, dBA)¹	Alternative 3			Change from Baseline		
	Acreage	Population²	Housing Units	Acreage	Population²	Housing Units
65 - 70	2,328	664	245	135	-309	-114
70 - 75	308	-	-	-288	-	-
75 - 80	37	-	-	-181	-	-
80 - 85	-	-	-	-8	-	-
85+	-	-	-	-	-	-
Total	2,673	664	245	-342	-309	-114

Notes:

¹Exclusive of upper bound for all bands; excludes MCAS Miramar and bodies of water.

²Based on parcel counts using San Diego County data and 2.71 persons per household.

Table 4.3-14 shows a comparison of CNEL for the representative sensitive receptors between Alternative 3 and baseline. All but one of the representative receptors would have exposure less than 65 dB CNEL and two would have exposure less than 45 dB CNEL. One site in Mira Mesa (Steadman Street) would have CNEL of 66 dB and would be considered an incompatible land use per the AICUZ guidelines.



**Table 4.3-14. Comparison of Aircraft CNEL for Representative Noise-Sensitive Receptors
for Alternative 3 at MCAS Miramar**

Receptor Number	Primary Flight Corridor	Description (All Residential)	Baseline CNEL (dBA)	Alternative 3 CNEL (dBA)
A1	Seawolf	Carmel Valley-Via Del Mar	48	53
A2	Julian/ Seawolf	Mira Mesa-Steadman St.	65	66
A3	Seawolf	Caminito Del Rocio	53	57
A4	Seawolf	La Jolla Village Dr./Golden Haven	60	62
A5	Seawolf	Carmel Mountain Rd./El Camino Real	51	55
B1	Julian	Mira Mesa/Glendover Ln.	62	64
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	49	53
B2B		Rancho Penasquitos-Penasquitos Ct.	50	51
B3A		Poway-Arbolitos	<45	<45
B3B		Poway-Quiet Valley Ln.	<45	<45
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	50	48
C1	I-15	Paseo Bolero Dr.	47	51
C2		Pomerado and I-15 (near MCAS)	62	60
C3		Bernardo Center and Bajada	48	52
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	53	52
D1	FCLP(C)	Copley Park and Hickam Field Dr.	63	58
D2		Santo and Portobello Court	59	59

Of the 17 receptors, 10 would be subject to increased noise levels ranging from 1 to 5 dB CNEL. The greatest increase would occur in the Seawolf Corridor. A total of four sites would experience decreases in noise levels.

Table 4.3-15 lists the numbers of average daily indoor daytime and evening (7:00 a.m. to 10:00 p.m.) events per hour which would result in indoor maximum sound levels of at least 50 dB for the representative receptors with windows closed and open. For windows closed and open, the mean number of speech interfering events across all receptors would be 1 and 2 per hours, respectively, with the average decrease of 1 or less events per hour compared to baseline.

Table 4.3-15. Indoor Speech Interference for the Representative Locations Near MCAS Miramar for Alternative 3

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Daily Indoor Daytime (7:00 a.m. to 7:00 p.m.) + Evening (7:00 p.m. to 10:00 p.m.) Events per Hour ¹			
			Windows Closed	Windows Open	Change from Baseline ²	
					Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	1	4	1	3
A2	Julian/Seawolf	Mira Mesa-Steadman St.	4	5	2	1
A3	Seawolf	Caminito Del Rocio	2	2	1	-
A4	Seawolf	La Jolla Village Dr./Golden Haven	4	5	3	1
A5	Seawolf	Carmel Mountain Rd./El Camino Real	1	5	1	4
B1	Julian	Mira Mesa/Glendover Ln.	4	5	2	1
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	1	2	1	1
B2B		Rancho Penasquitos-Penasquitos Ct.	-	2	-	2
B3A		Poway-Arbolitos	-	-	-	-
B3B		Poway-Quiet Valley Ln.	-	-	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	-	1	-	(1)
C1	I-15	Paseo Bolero Dr.	-	2	-	2
C2		Pomerado and I-15 (near MCAS)	3	9	-	(1)
C3		Bernardo Center and Bajada	-	2	-	2
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	-	2	-	(2)
D1	FCLP(C)	Copley Park and Hickam Field Dr.	2	7	1	(1)
D2		Santo and Portobello Court	3	5	-	(3)

¹With an indoor Maximum Sound Level of at least 50 dB; assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

²(-) = Negative or reduction in effect

Table 4.3-16 presents the probabilities of indoor awakening from average daily nighttime (10:00 p.m. to 7:00 a.m.) events for the representative receptors with windows closed and open. For windows closed and open, percentage awakening would range between 0 and 3 percent and 0 and 7 percent, respectively. The greatest percentage (7 percent) would be near the air station in the I-15 corridor at Pomerado. Compared to baseline conditions, the probability of awakening would decrease by as much as 10 percent (FCLP corridor) and increase as much as 1 percent (Seawolf corridor). Changes would be due to fewer overall nighttime operations by the F-35B than the legacy F/A-18 and increased single-event noise levels from the F-35B at higher power settings.

No on- or off-station PHL is anticipated for housing areas from Alternative 3 at MCAS Miramar.

Table 4.3-16. Indoor Sleep Disturbance for Residential Representative Noise-Sensitive Receptors at MCAS Miramar for Alternative 3

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Nightly (10:00 p.m. to 7:00 a.m.) Probability of Awakening (%)*			
			Windows Closed	Windows Open	Change from Baseline	
					Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	1%	4%	-	1%
A2	Julian/Seawolf	Mira Mesa-Steadman St.	3%	6%	-3%	-4%
A3	Seawolf	Caminito Del Rocio	2%	4%	1%	-
A4	Seawolf	La Jolla Village Dr./Golden Haven	2%	5%	-4%	-5%
A5	Seawolf	Carmel Mountain Rd./El Camino Real	2%	5%	-	1%
B1	Julian	Mira Mesa/Glendover Ln.	2%	6%	-4%	-5%
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	1%	1%	-	-1%
B2B		Rancho Penasquitos-Penasquitos Ct.	1%	2%	-	-
B3A		Poway-Arbolitos	-	1%	-	-
B3B		Poway-Quiet Valley Ln.	-	-	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	1%	3%	-1%	-1%
C1	I-15	Paseo Bolero Dr.	1%	1%	-	-
C2		Pomerado and I-15 (near MCAS)	3%	7%	-6%	-8%
C3		Bernardo Center and Bajada	1%	1%	-	-
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	1%	3%	-2%	-5%
D1	FCLP(C)	Copley Park and Hickam Field Dr.	2%	4%	-6%	-10%
D2		Santo and Portobello Court	1%	5%	-6%	-8%

*Assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

Alternative 4

Alternative 4 involves the basing of up to 1 operational and 1 OT&E squadron (up to 24 aircraft) at MCAS Miramar. Proposed based F-35B flight operations would total approximately 13,000 annually, with fewer than 100 during environmental night (10:00 p.m. to 7:00 a.m.). Nearly 66 percent of the based F-35B flight operations at the air station would consist of departures and arrivals and 34 percent would consist of closed-pattern operations in the vicinity of the air station. Two percent of the departures and arrivals would be to or from the ALF near MCAS Yuma for FCLP(L) operations. Considering the retirement of legacy aircraft, the total flight operations for MCAS Miramar would be nearly 68,000 annually.

Figure 4.3-5 shows the 65 to 85 dB CNEL contours, in 5 dB increments, for Alternative 4 at MCAS Miramar. The figure also includes baseline contours for comparison purposes. North of the air station in the Julian corridor, the 65 dB CNEL contour would extend about 1.5 miles from the MCAS Miramar boundary. Elsewhere, the 65 dB CNEL contour would primarily be contained within the air station boundary.

Table 4.3-17 shows the noise exposure in terms of estimated off-station acreage, housing units, and population within each CNEL contour band. These estimates exclude MCAS Miramar and bodies of water. The 65 to 75 dB band would not include any housing units or people. There would be no off-station housing units or people exposed to CNEL greater than or equal to 65 dB.

Table 4.3-17. Off-Station Aircraft Noise Exposure Comparing Alternative 4 and Baseline at MCAS Miramar						
Contour Band (CNEL, dBA)¹	Alternative 4			Change from Baseline		
	Acreage	Population²	Housing Units²	Acreage	Population²	Housing Units²
65 - 70	607	-	-	-1,586	-973	-359
70 - 75	193	-	-	-403	-	-
75 - 80	-	-	-	-218	-	-
80 - 85	-	-	-	-	-	-
85+	-	-	-	-	-	-

Notes:

¹Exclusive of upper bound for all bands; excludes MCAS Miramar and bodies of water.

²Based on parcel counts using San Diego County data and 2.71 persons per household.

Overall, Alternative 4 would decrease the population area affected by aircraft noise. The greatest contraction relative to baseline would occur in the Julian corridor. Noise would decrease south of the air station. Population and housing units affected by CNEL greater than or equal to 65 dB would decrease by 973 people and 359 housing units (100 percent decrease).

Table 4.3-18 shows a comparison of CNEL for the representative sensitive receptors between Alternative 4 and baseline. All of the representative receptors would have exposure less than 65 dB CNEL and three would have exposure less than 45 dB CNEL. None of the representative receptors would be considered an incompatible land use per the AICUZ guidelines.

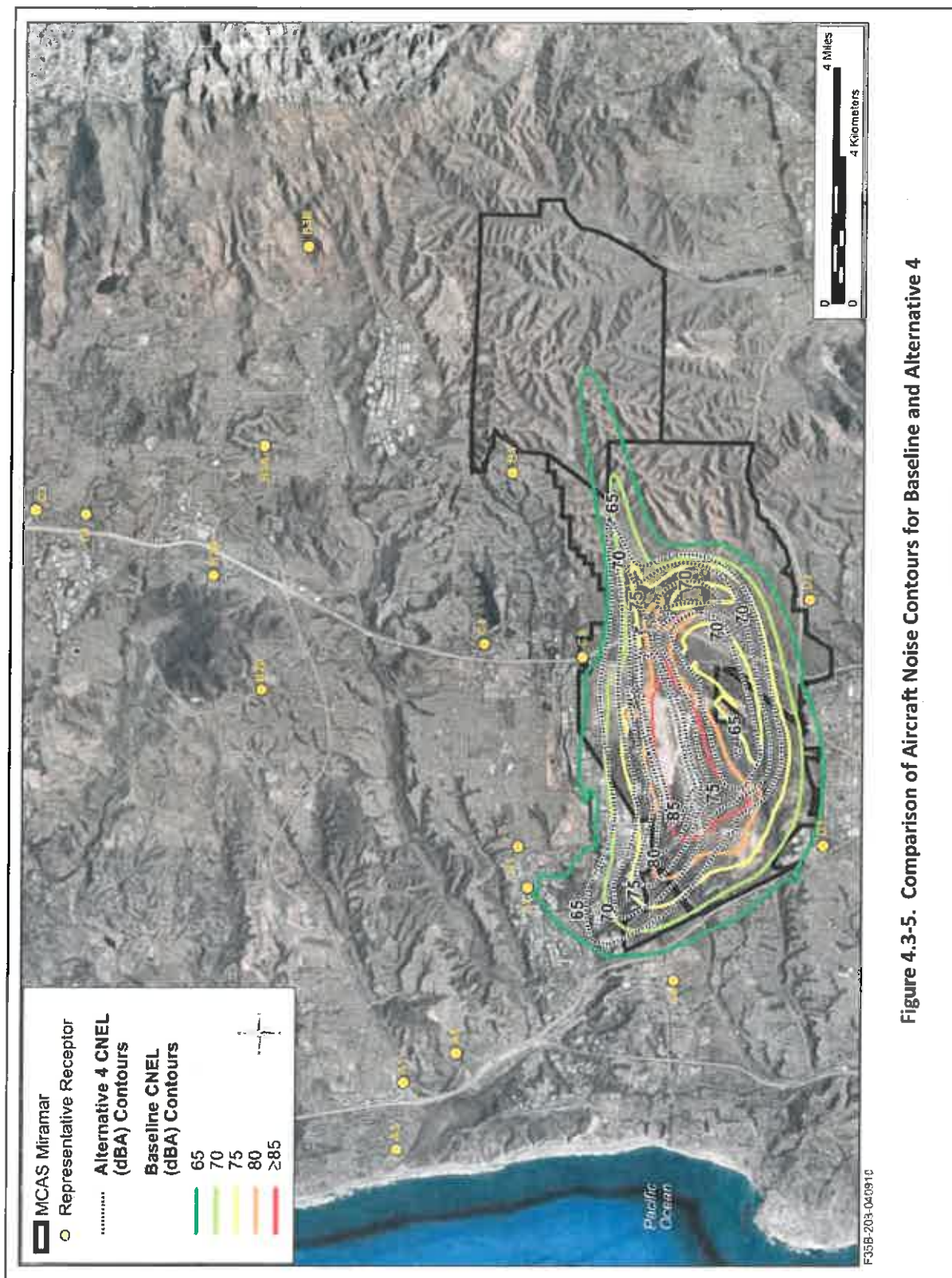


Table 4.3-18. Comparison of Aircraft CNEL for Representative Noise-Sensitive Receptors for Alternative 4 at MCAS Miramar

Receptor Number	Primary Flight Corridor	Description (All Residential)	Baseline CNEL (dBA)	Alternative 4 CNEL (dBA)
A1	Seawolf	Carmel Valley-Via Del Mar	48	47
A2	Julian/Seawolf	Mira Mesa-Steadman St.	65	59
A3	Seawolf	Caminito Del Rocio	53	51
A4	Seawolf	La Jolla Village Dr./Golden Haven	60	55
A5	Seawolf	Carmel Mountain Rd./El Camino Real	51	50
B1	Julian	Mira Mesa/Glendover Ln.	62	57
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	49	46
B2B		Rancho Penasquitos-Penasquitos Ct.	50	50
B3A		Poway-Arbolitos	<45	<45
B3B		Poway-Quiet Valley Ln.	<45	<45
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	50	<45
C1	I-15	Paseo Bolero Dr.	47	48
C2		Pomerado and I-15 (near MCAS)	62	56
C3		Bernardo Center and Bajada	48	49
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	53	50
D1	FCLP(C)	Copley Park and Hickam Field Dr.	63	52
D2		Santo and Portobello Court	59	54

Compared to baseline conditions, none of the 17 representative sites would experience an increase of more than 1 dB CNEL. In contrast, decreases in noise levels would affect a total of 13 receptors.

Table 4.3-19 details the average daily indoor daytime and evening (7:00 a.m. to 10:00 p.m.) events which would produce indoor maximum sound levels of at least 50 dB for the representative receptors with windows closed and open. For windows closed and open, the mean number of speech interfering events across all receptors would be 0 and 1 per hour, respectively, with an average decrease of 0 to 2 events per hour relative to baseline.

**Table 4.3-19. Indoor Speech Interference for the Representative Locations
Near MCAS Miramar for Alternative 4**

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Daily Indoor Daytime (7:00 a.m. to 7:00 p.m.) + Evening (7:00 p.m. to 10:00 p.m.) Events per Hour*			
			Windows Closed	Windows Open	Change from Baseline	
					Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	-	1	-	-
A2	Julian/Seawolf	Mira Mesa-Steadman St.	1	1	(1)	(3)
A3	Seawolf	Caminito Del Rocio	-	1	(1)	(1)
A4	Seawolf	La Jolla Village Dr./Golden Haven	1	1	-	(3)
A5	Seawolf	Carmel Mountain Rd./El Camino Real	-	1	-	-
B1	Julian	Mira Mesa/Glendover Ln.	1	1	(1)	(3)
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	-	-	-	(1)
B2B		Rancho Penasquitos-Penasquitos Ct.	-	1	-	1
B3A		Poway-Arbolitos	-	-	-	-
B3B		Poway-Quiet Valley Ln.	-	-	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	-	-	-	(2)
C1	I-15	Paseo Bolero Dr.	-	1	-	1
C2		Pomerado and I-15 (near MCAS)	1	3	(2)	(7)
C3		Bernardo Center and Bajada	-	1	-	1
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	-	1	-	(3)
D1	FCLP(C)	Copley Park and Hickam Field Dr.	-	2	(1)	(6)
D2		Santo and Portobello Court	1	1	(2)	(7)

*With an indoor Maximum Sound Level of at least 50 dB; assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

Table 4.3-20 presents the probabilities of indoor awakening from average daily nighttime (10:00 p.m. to 7:00 a.m.) events for the representative receptors with windows closed and open. For windows closed and open, percentage awakening would range between 0 and 2 percent and 0 and 5 percent, respectively. The greatest percentage (5 percent) would be near the air station in the I-15 corridor at Pomerado. Relative to baseline, percentage awakening would decrease by as much as 11 percent (FCLP corridor). Changes would be due to fewer overall nighttime operations by the F-35B than the legacy F/A-18.

No on- or off-station PHL is anticipated for housing areas from Alternative 4 at MCAS Miramar.

Table 4.3-20. Indoor Sleep Disturbance for Residential Representative Noise-Sensitive Receptors at MCAS Miramar for Alternative 4

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Nightly (10:00 p.m. to 7:00 a.m.) Probability of Awakening (%)*			
			Windows Closed	Windows Open	Change from Baseline	
					Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	1%	3%	-	-
A2	Julian/Seawolf	Mira Mesa-Steadman St.	2%	4%	-4%	-6%
A3	Seawolf	Caminito Del Rocio	1%	3%	-	1%
A4	Seawolf	La Jolla Village Dr./Golden Haven	1%	4%	-5%	-6%
A5	Seawolf	Carmel Mountain Rd./El Camino Real	2%	4%	-	-
B1	Julian	Mira Mesa/Glendover Ln.	1%	4%	-5%	-7%
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	-	1%	-1%	-1%
B2B		Rancho Penasquitos-Penasquitos Ct.	1%	1%	-	-1%
B3A		Poway-Arbolitos	-	1%	-	-
B3B		Poway-Quiet Valley Ln.	-	-	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	-	1%	-2%	-3%
C1	I-15	Paseo Bolero Dr.	1%	1%	-	-
C2		Pomerado and I-15 (near MCAS)	2%	5%	-7%	-10%
C3		Bernardo Center and Bajada	1%	1%	-	-
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	1%	2%	-2%	-6%
D1	FCLP(C)	Copley Park and Hickam Field Dr.	1%	3%	-7%	-11%
D2		Santo and Portobello Court	1%	4%	-6%	-9%

*Assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

Alternative 5

Alternative 5 involves the basing of up to 10 operational squadrons (160 aircraft) at MCAS Miramar. Proposed based F-35B flight operations would total approximately 74,000 annually, with fewer than 700 during environmental night (10:00 p.m. to 7:00 a.m.). Nearly 87 percent of the based F-35B flight operations at the air station would consist of departures and arrivals and 13 percent would consist of closed-pattern operations in the vicinity of the air station. Two percent of the departures and arrivals would be to or from the ALF near MCAS Yuma for FCLP(L) operations. Considering the retirement of legacy aircraft, the total flight operations for MCAS Miramar would be nearly 129,000 annually.

Figure 4.3-6 shows the 65 to 85 dB CNEL contours, in 5 dB increments, for Alternative 5 at MCAS Miramar. The figure also includes baseline contours for comparison purposes. North of the air station in the Julian corridor, the 65 dB CNEL contour would extend approximately 3 miles from the air station boundary. Elsewhere, the 65 dB CNEL contour would primarily be contained within the air station boundary. In the greatest areas of increase, the CNEL contours would be approximately 5 dB greater than baseline.

Table 4.3-21 shows the noise exposure in terms of estimated off-station acreage, housing units, and population within each CNEL contour band. These estimates exclude MCAS Miramar and bodies of water. The 65 to 75 dB band would include 794 housing units and 2,152 people. There would be no off-station housing units or people exposed to CNEL greater than or equal to 70 dB.

Table 4.3-21. Off-Station Aircraft Noise Exposure Comparing Alternative 5 and Baseline at MCAS Miramar						
Contour Band (CNEL, dBA)¹	Alternative 5			Change from Baseline		
	Acreage	Population²	Housing Units²	Acreage	Population²	Housing Units²
65 - 70	3,299	2,152	794	1,106	1,179	435
70 - 75	941	-	-	345	-	-
75 - 80	369	-	-	151	-	-
80 - 85	101	-	-	93	-	-
85+	-	-	-	-	-	-
Total	4,710	2,152	794	1,695	1,179	435

Notes:

¹Exclusive of upper bound for all bands; excludes MCAS Miramar and bodies of water.

²Based on parcel counts using San Diego County data and 2.71 persons per household.

Overall, Alternative 5 would increase the area affected by noise and shift higher noise levels outward. The greatest expansion relative to baseline conditions would occur in the Julian corridor. Although noise would decrease south of the air station, population and housing units affected by CNEL greater than or equal to 65 dB would increase by 1,179 people and 435 housing units (121 percent).

Table 4.3-22 shows a comparison of CNEL for the representative sensitive receptors between Alternative 5 and baseline. All but two of the representative receptors would have exposure less than 65 dB CNEL and two would have exposure less than 45 dB CNEL. Two sites in Mira Mesa, Steadman Street and Glendover Lane, would have CNELs of 67 dB and 65 dB, respectively, and would be considered incompatible land use per the AICUZ guidelines.

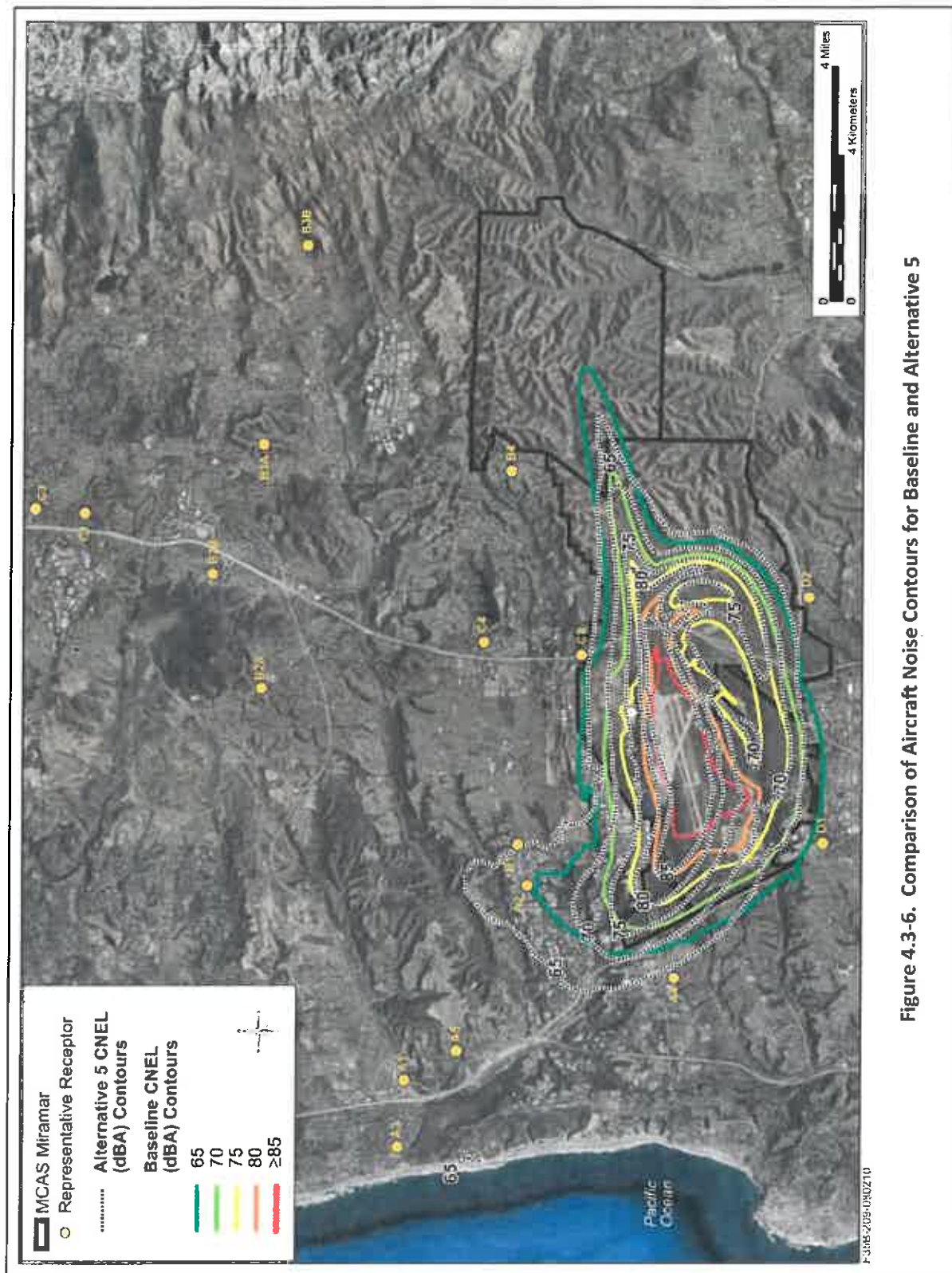


Table 4.3-22. Comparison of Aircraft CNEL for Representative Noise-Sensitive Receptors for Alternative 5 at MCAS Miramar

Receptor Number	Primary Flight Corridor	Description (All Residential)	Baseline CNEL (dBA)	Alternative 5 CNEL (dBA)
A1	Seawolf	Carmel Valley-Via Del Mar	48	54
A2	Julian/Seawolf	Mira Mesa-Steadman St.	65	67
A3	Seawolf	Caminito Del Rocio	53	59
A4	Seawolf	La Jolla Village Dr./Golden Haven	60	63
A5	Seawolf	Carmel Mountain Rd./El Camino Real	51	56
B1	Julian	Mira Mesa/Glendover Ln.	62	65
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	49	54
B2B		Rancho Penasquitos-Penasquitos Ct.	50	52
B3A		Poway-Arbolitos	<45	<45
B3B		Poway-Quiet Valley Ln.	<45	<45
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	50	49
C1	I-15	Paseo Bolero Dr.	47	52
C2		Pomerado and I-15 (near MCAS)	62	62
C3		Bernardo Center and Bajada	48	53
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	53	53
D1	FCLP(C)	Copley Park and Hickam Field Dr.	63	59
D2		Santo and Portobello Court	59	60

Relative to the baseline, 8 of the 17 representative receptors would experience an increase of at least 3 dB CNEL. The greatest increases would be 3 to 6 dB CNEL at 4 sites grouped in the Seawolf corridor and 3 to 5 dB CNEL at 5 other sites—1 in Mira Mesa (Glendover Lane), 2 grouped in the GCA Box corridor (Rancho Penasquitos/Oviedo Way and Poway/Arbolitos), and 2 grouped in the I-15 corridor. The increase in noise levels at the I-15 corridor sites would be due to F-35B Julian departures turning east. Only two sites would experience a decrease in noise levels.

Table 4.3-23 lists the numbers of average daily indoor daytime and evening (7:00 p.m. to 10:00 p.m.) events which would have indoor maximum sound levels of at least 50 dB for the representative receptors with windows closed and open. For windows closed and open, the mean number of speech interfering events across all receptors would be 2 and 5 per hour, respectively, with an average increase of 1 to 2 events per hour relative to baseline.

Table 4.3-23. Indoor Speech Interference for the Representative Locations Near MCAS Miramar for Alternative 5

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Daily Indoor Daytime (7:00 a.m. to 7:00 p.m.) + Evening (7:00 p.m. to 10:00 p.m.) Events per Hour ¹			
			Windows Closed	Windows Open	Change from Baseline ²	
					Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	1	6	1	5
A2	Julian/Seawolf	Mira Mesa-Steadman St.	6	7	4	3
A3	Seawolf	Caminito Del Rocio	3	3	2	1
A4	Seawolf	La Jolla Village Dr./Golden Haven	6	6	5	2
A5	Seawolf	Carmel Mountain Rd./El Camino Real	2	6	2	5
B1	Julian	Mira Mesa/Glendover Ln.	6	7	4	3
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	1	3	1	2
B2B		Rancho Penasquitos-Penasquitos Ct.	-	3	-	3
B3A		Poway-Arbolitos	-	-	-	-
B3B		Poway-Quiet Valley Ln.	-	-	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	-	1	-	(1)
C1	I-15	Paseo Bolero Dr.	-	2	-	2
C2		Pomerado and I-15 (near MCAS)	4	12	1	2
C3		Bernardo Center and Bajada	-	3	-	3
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	-	3	-	(1)
D1	FCLP(C)	Copley Park and Hickam Field Dr.	3	10	2	2
D2		Santo and Portobello Court	5	6	2	(2)

¹With an indoor Maximum Sound Level of at least 50 dB; assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

²(-) = Negative or reduction in effect

Table 4.3-24 presents the probabilities of indoor awakening from average daily nighttime (10:00 p.m. to 7:00 a.m.) events for the representative receptors with windows closed and open. For windows closed and open, percentage awakening would range between 0 and 4 percent and 0 and 8 percent, respectively. The greatest percentage (8 percent) would be near the air station in I-15 corridor at Pomerado. Relative to the baseline, percentage awakening would decrease by as much as 9 percent (FCLP corridor south of the air station) and increase as much as 1 percent (Seawolf corridor and I-15 corridor) due to Julian departures. Changes would be due to fewer overall nighttime operations by the F-35B than the legacy F/A-18 and increased single-event noise levels from the F-35B at higher power settings.

No on- or off-station PHL is anticipated for housing areas from Alternative 5 at MCAS Miramar.

Table 4.3-24. Indoor Sleep Disturbance for Residential Representative Noise-Sensitive Receptors at MCAS Miramar for Alternative 5

Receptor ID	Primary Flight Corridor	Description (All Residential)	Average Nightly (10:00 p.m. to 7:00 a.m.) Probability of Awakening (%)*			
			Windows Closed	Windows Open	Change from Baseline	
					Windows Closed	Windows Open
A1	Seawolf	Carmel Valley-Via Del Mar	2%	4%	1%	1%
A2	Julian/Seawolf	Mira Mesa-Steadman St.	3%	7%	-3%	-3%
A3	Seawolf	Caminito Del Rocio	2%	5%	1%	1%
A4	Seawolf	La Jolla Village Dr./Golden Haven	3%	6%	-3%	-4%
A5	Seawolf	Carmel Mountain Rd./El Camino Real	3%	5%	1%	1%
B1	Julian	Mira Mesa/Glendover Ln.	2%	7%	-4%	-4%
B2A	GCA Box Pattern	Rancho Penasquitos-Oviedo Way	1%	2%	-	-
B2B		Rancho Penasquitos-Penasquitos Ct.	1%	2%	-	-
B3A		Poway-Arbolitos	-	1%	-	-
B3B		Poway-Quiet Valley Ln.	-	-	-	-
B4	Runway 24 Approach	Scripps Ranch-Semillon Blvd./Birch Bluff Ave.	1%	3%	-1%	-1%
C1	I-15	Paseo Bolero Dr.	1%	2%	-	1%
C2		Pomerado and I-15 (near MCAS)	4%	8%	-5%	-7%
C3		Bernardo Center and Bajada	1%	2%	-	1%
C4		Mira Mesa Blvd/Scripps Ranch Blvd. (~1 mile north of MCAS)	2%	4%	-1%	-4%
D1	FCLP(C)	Copley Park and Hickam Field Dr.	2%	5%	-6%	-9%
D2		Santo and Portobello Court	2%	6%	-5%	-7%

*Assumes 16 dB and 26 dB of Noise Level Reductions for windows open and closed, respectively.

No-Action Alternative

Under the No-Action Alternative, no additional or new operations would occur at MCAS Miramar. Therefore, noise conditions would remain unchanged from baseline (refer to Figure 4.3-1).

Summary Comparison of Alternatives

Since SEL and L_{max} metrics would apply to any action alternative, they are presented here in summary fashion. The SEL and L_{max} in Table 4.3-25 reflect conditions specific to flight activity at MCAS Miramar, and would not apply to any other airfield due to differences in flight profiles, altitudes, speeds, and weather. As these data show, the F-35B would generate generally higher L_{max} levels than the F/A-18s.

Table 4.3-25. SEL and L_{max} Comparison for MCAS Miramar												
Operation/Location	KC-130				F/A-18A/C				F-35B ¹			
	SEL (dBA)	L_{max} (dBA)	Power (C TIT)	Speed (kts)	SEL (dBA)	L_{max} (dBA)	Power (%NC)	Speed (kts)	SEL (dBA)	L_{max} (dBA)	Power (%ETR)	Speed (kts)
Seawolf departure in corridor (2,000 ft MSL)	85	80	850	250	92	87	85%	300	92	88	43%	300
Julian departure, Holddown crossing northern MCAS boundary (2,800 ft MSL)					103	93	93%	250	106	98	75%	250
Julian departure, "unrestricted," crossing northern MCAS boundary (4,000 ft MSL) ⁴	90	83	970	180	97	87	93%	350	102	87	75%	250
Arrival (non-break, conventional, thru 1,000 ft AGL, gear down)	90	83	650	135	105	100	85% ³	180	107	102	55%	170
Touch and Go (downwind leg, 1,600 ft MSL, gear down)	88	82	600	150	105	99	85% ³	140	107	101	55%	145
FCLP (downwind leg, 600 ft AGL, gear down)					110	106	85% ³	140	111	107	55%	150
GCA Box (downwind leg, 5,000 ft MSL)	75	66	750	180	79	70	82%	240	82	74	43%	250

Notes:

Weather: 62.5°F, 70% Relative Humidity; SEL=Sound Exposure Level; L_{max} =Maximum (Instantaneous Sound Level)

¹Modeled with reference acoustic data for an F-35A (Edwards AFB, October 2008/September 2009)

²MCAS nominal elevation = 475 ft MSL

³86.1% NC is lower limit per NoiseMap program

⁴KC-130 altitude is 1,600 ft MSL

Table 4.3-26 presents a comparison of impacts among the alternatives.

Table 4.3-26. Comparison of Environmental Consequences – MCAS Miramar Noise					
Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No-Action Alternative
<ul style="list-style-type: none"> • 72% decrease in population within 65 dB CNEL. • 3 to 4 dB CNEL increase at 7 of 17 representative receptors. • Up to 1 additional speech interfering events per daytime hour averaged across 17 receptors. • No increase in nighttime awakenings at 17 representative receptors. • No additional potential hearing loss (PHL) for on- or off-station residents during daytime and evening. 	<ul style="list-style-type: none"> • 100% decrease in population within 65 dB CNEL. • 3 dB CNEL increase at 1 of 17 representative receptors. • Up to 1 fewer speech interfering events per daytime hour averaged across 17 receptors. • No increase in nighttime awakenings at 17 representative receptors. • No additional potential hearing loss for on- or off-station residents during daytime and evening. 	<ul style="list-style-type: none"> • 32% decrease in population within 65 dB CNEL. • 4 to 5 dB CNEL increase at 7 of 17 representative receptors. • 1 additional speech interfering event per daytime hour averaged across 17 receptors. • Nighttime awakenings increase by 1% at 3 of 17 representative receptors. • No additional potential hearing loss for on- or off-station residents during daytime and evening. 	<ul style="list-style-type: none"> • 100% decrease in population within 65 dB CNEL. • No increase at any of 17 representative receptors. • Up to 2 fewer speech interfering event per daytime hour averaged across 17 receptors. • No increase in nighttime awakenings at 17 representative receptors. • No additional potential hearing loss for on- or off-station residents during daytime and evening. 	<ul style="list-style-type: none"> • 121% increase in population within 65 dB CNEL. • 3 to 6 dB CNEL increase at 8 of 17 representative receptors. • 1 to 2 additional speech interfering event per daytime hour averaged across 17 receptors. • Nighttime awakenings increase by 1% at 5 of 17 representative receptors. • No additional potential hearing loss for on- or off-station residents during daytime and evening. 	<ul style="list-style-type: none"> • No changes to noise environment. • 973 people within 65 dB CNEL. • One sensitive receptor exposed to 65 db CNEL. • Average number of speech interfering events is between 1 and 3 per hour. • Percentage awakening ranges between 0 and 9 percent. • No long term exposure to 80 dB CNEL for off-base populations.

