5.0 NOISE COMPATIBILITY PROGRAM

This chapter presents the Draft Noise Compatibility Program (Draft NCP) for the Waterbury-Oxford Airport (OXC), as well as the noise contour updates for current year activity levels and a forecast five-year period.

This information is provided in the following sections:

- *Section 5.1 – Noise Contour Updates* – Describes the noise contour updates for current year activity levels and a forecast five-year period.
- *Section 5.2 – Review of Candidate Alternatives for NCP* – Describes the noise abatement and land use alternatives that were "candidates" for inclusion in the NCP.
- *Section 5.3 – Selection of Noise Abatement Measures* – Describes the recommended noise abatement measures.
- *Section 5.4 – Evaluation of Impacts* – Combines the recommended noise abatement measures to form the NCP contours – recalculates impacts to noise sensitive land uses.
- *Section 5.5 – Selection of Land Use Measures* – Describes the recommended land use measures.
- *Section 5.6 – Implementation Measures* – Describes actions to facilitate the implementation of the NCP recommendations.
- *Section 5.7 – Implementation Actions/Schedule/Cost* – Summarizes all of the NCP recommendations and provides an anticipated schedule for their implementation.
- *Section 5.*8 *– Noise Exposure Maps* – Provides the official Noise Exposure Maps (NEMs) for OXC.

5.1 Noise Contour Updates

As discussed in the Foreword and Chapter 2, previous analyses of the Noise Study were conducted using the FAA's Integrated Noise Model (INM) Version 6.1, for Baseline 2003 and Forecast 2008 conditions. A new version of INM (Version 7.0) was released in 2007. At the request of the FAA, updated Day-Night Average Noise Level (DNL) contours were generated for OXC using INM Version 7.0. In addition, the base and forecast years were updated to reflect current conditions. Noise contours were generated for the following three scenarios:

- ***Year 2007 Baseline –*** Represents the most recent full year of activity at OXC.
- ***Year 2012 Baseline –*** Represents the five-year forecast activity level at OXC.
- ***Year 2012 Mitigated –*** Represents the 2012 forecast activity levels, combined with the recommended NCP measures described in this chapter.

Year 2007 & 2012 Baseline Scenarios

Throughout the Noise Study, Stage II jet operations have been identified as the primary noise creators at OXC. Stage II jets are older and noisier aircraft that are no longer in production, and an increasing number are retired from service each year. The trend of "retiring from service" has been evident at OXC. For example, there were 1,117 documented Stage II jet operations at OXC in 2003, which decreased to 832 in 2007 (see Table 5-1). This represents a 25.5 percent decrease in Stage II jet operations over the four-year period. While total jet operations have increased at

OXC, the majority are by newer-generation jets that adhere to strict aircraft noise certification standards (i.e., Stage III jets). As a result, noise exposure has actually been decreasing at OXC in recent years, even as total jet activity increases.

As previously mentioned, INM Version 7.0 was used to generate the DNL contours for the 2007 and 2012 Baseline scenarios. For 2007, recorded activity from the OXC Air Traffic Control Tower (ATCT) and the FAA Flight Plan database were used to determine the INM inputs. The assumptions for flight tracks, runway use, touch & go operations, and nighttime activity were reviewed and it was determined that they should remain the same as the analyses in Chapter 2 (see Section 2.2.1). Other operational characteristics, such as the percentage of jet operations, were based on the actual recorded data in 2007. A comparison of activity levels in 2003, 2007, and 2012 is provided in Table 2-1.

TABLE 5-1 – COMPARISON OF OPERATIONS

Aircraft Type	Year			Change (2003-2007)	Change (2007-2012)
	2003	2007	2012 (forecast)		
SE Piston	49,445	45,348	47,908	(8.3%)	5.6%
ME Piston	9,255	9,288	9,812	0.4%	5.6%
Turboprop	3,100	3,196	3,627	3.1%	13.5%
Jet (Stage III)	2,583	4,968	6,993	92.3%	40.7%
Jet (Stage II)	1,117	832	620	(25.5%)	(25.5%)
Helicopter	500*	500*	525	0.0%	5.0%
Total Operations	66,000	64,132	69,485	(2.8%)	8.3%

* Plus 3,000 annual helicopter flyovers

The forecasts from the Airport Master Plan Update (AMPU) were used to determine the piston, turboprop, and helicopter INM inputs for 2012. Note that an additional 3,000 annual helicopter flyovers were included in the noise analysis. These helicopter flyovers are not shown in Table 5-1 as they do not take-off or land at OXC. The updated Jet operations were calculated based on the following updated assumptions:

- ***Total Jet Operations –*** The current year (2007) ratio of ***based jets / operations*** is ***64 / 5,800***. By 2012, it is assumed that a new hangar will be developed at OXC with storage capacity for 20 additional jets. Applying the 2007 ratio to the assumption for 2012 provides ***84 based jets / 7,613 total jet operations***.
- ***Stage II Jet Operations –*** The number of stage II jet operations decreased 25.5 percent from 2003 to 2007. Based on this past trend at OXC, it is assumed that Stage II jet operations will continue to decrease at a rate equal to 25.5 percent from 2007 to 2012. This represents a conservative assumption, as an increasing number of Stage II jets are retired from service each year.

The INM inputs for the 2007 and 2012 Baseline scenarios are provided in Tables 5-2 and 5-3 – the numbers reflect average daily operations at OXC. The associated noise contours are illustrated on Figures 5-1 and 5-2.

TABLE 5-2 – AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS 2007 BASELINE SCENARIO

Aircraft		INM Code	Daily Aircraft Operations				
			Departures		Arrivals		Total
Type	Name		Day	Night	Day	Night	
Piston Aircraft Operations							
SE Piston	Cessna 172*	CNA172	30.312	3.368	30.312	3.368	67.359
ME Piston	Baron 58B	BEC58P	10.103	1.123	10.103	1.123	22.452
Piston Aircraft Totals			40.415	4.491	40.415	4.491	89.811
Turboprop Aircraft Operations							
Turboprop – SE	Caravan 208*	CNA208	1.340	0.149	1.340	0.149	2.978
Turboprop – ME	King Air 200*	BEC200	1.301	0.145	1.301	0.145	2.890
Turboprop – ME	Cessna Conquest	CNA441	1.301	0.145	1.301	0.145	2.890
Turboprop Aircraft Totals			3.942	0.438	3.942	0.438	8.759
Jet Aircraft Operations							
Small Jet - Stage II	Lear 25	LEAR25	0.250	0.028	0.250	0.028	0.556
Small Jet - Stage III	Citation II/V*	CNA550	2.252	0.250	2.252	0.250	5.005
Medium Jet - Stage II	Hawker 125-700*	HS125	0.258	0.029	0.258	0.029	0.573
Medium Jet - Stage III	Hawker 125-800*	HS1258	2.317	0.257	2.317	0.257	5.148
Large Jet – Stage II	Gulfstream II/III	GIIB	0.519	0.058	0.519	0.058	1.153
Large Jet – Stage III	Gulfstream IV	GIV	1.037	0.115	1.037	0.115	2.304
Large Jet – D-III	Gulfstream V	GV	0.519	0.058	0.519	0.058	1.153
Jet Aircraft Totals			7.152	0.795	7.152	0.795	15.893
Touch & Go Aircraft and Helicopter Operations							
SE Piston	Cessna 172	CNA172	56.882	0.000	n/a	n/a	56.882
ME Piston	Baron 58B	BEC58P	2.995	0.000	n/a	n/a	2.995
Helicopter	Hughes 500	H500D	0.685	0.000	n/a	n/a	0.685
Helicopter	Blackhawk	S70	0.685	0.000	n/a	n/a	0.685
Touch & Go Operation Totals			61.247	0.000	n/a	n/a	61.247
Helicopter Overflight Operations							
Helicopter	Sikorsky S-76	S76	8.219	0.000	n/a	n/a	8.219
Overall Airport Operation Totals			120.974	5.723	51.508	5.723	183.929

Notes:
Touch & go operations are prohibited at night. Each touch & go is recorded by the ATCT as a local operation (listed here as a departure). However, each touch & go does include a landing, which is incorporated in the INM.

Aircraft Substitutions

*Non-standard INM aircraft type

INM provides a standard substitution for each of the non-standard types listed above. The approved substitutions are listed at right.

Non-Standard Aircraft		Standard Substitution	
Name	Code	Name	Code
Cessna 172	CNA172	SE Piston PF	GASEPF
Caravan 208	CNA208	SE Piston PF	GASEPF
King Air 200	BEC200	Twin Otter	DHC6
Citation II/V	CNA550	Mitsubishi 300-1	MU3001
Hawker 125-700	HS125	Learjet 25	LEAR25
Hawker 125-800	HS1258	Learjet 35	LEAR35

TABLE 5-3 – AVERAGE ANNUAL DAILY AIRCRAFT OPERATIONS 2012 BASELINE SCENARIO

Aircraft		INM Code	Daily Aircraft Operations				
			Departures		Arrivals		Total
Type	Name		Day	Night	Day	Night	
Piston Aircraft Operations							
SE Piston	Cessna 172*	CNA172	32.023	3.558	32.023	3.558	71.162
ME Piston	Baron 58B	BEC58P	10.674	1.186	10.674	1.186	23.721
Piston Aircraft Totals			42.697	4.744	42.697	4.744	94.882
Turboprop Aircraft Operations							
Turboprop – SE	Caravan 208*	CNA208	1.520	0.169	1.520	0.169	3.378
Turboprop – ME	King Air 200*	BEC200	1.476	0.164	1.476	0.164	3.279
Turboprop – ME	Cessna Conquest	CNA441	1.476	0.164	1.476	0.164	3.279
Turboprop Aircraft Totals			4.472	0.497	4.472	0.497	9.937
Jet Aircraft Operations							
Small Jet - Stage II	Lear 25	LEAR25	0.186	0.021	0.186	0.021	0.414
Small Jet - Stage III	Citation II/V*	CNA550	3.098	0.344	3.098	0.344	6.885
Medium Jet - Stage II	Hawker 125-700*	HS125	0.192	0.021	0.192	0.021	0.427
Medium Jet - Stage III	Hawker 125-800*	HS1258	3.187	0.354	3.187	0.354	7.082
Large Jet – Stage II	Gulfstream II/III	GIIB	0.386	0.043	0.386	0.043	0.858
Large Jet – Stage III	Gulfstream IV	GIV	1.497	0.166	1.497	0.166	3.326
Large Jet – D-III	Gulfstream V	GV	0.838	0.093	0.838	0.093	1.863
Jet Aircraft Totals			9.385	1.043	9.385	1.043	20.855
Touch & Go Aircraft and Helicopter Operations							
SE Piston	Cessna 172	CNA172	60.093	0.000	n/a	n/a	60.093
ME Piston	Baron 58B	BEC58P	3.162	0.000	n/a	n/a	3.162
Helicopter	Hughes 500	H500D	0.721	0.000	n/a	n/a	0.721
Helicopter	Blackhawk	S70	0.721	0.000	n/a	n/a	0.721
Touch & Go Operation Totals			64.696	0.000	n/a	n/a	64.696
Helicopter Overflight Operations							
Helicopter	Sikorsky S-76	S76	8.219	0.000	n/a	n/a	8.219
Overall Airport Operation Totals			129.468	6.284	56.553	6.284	198.589

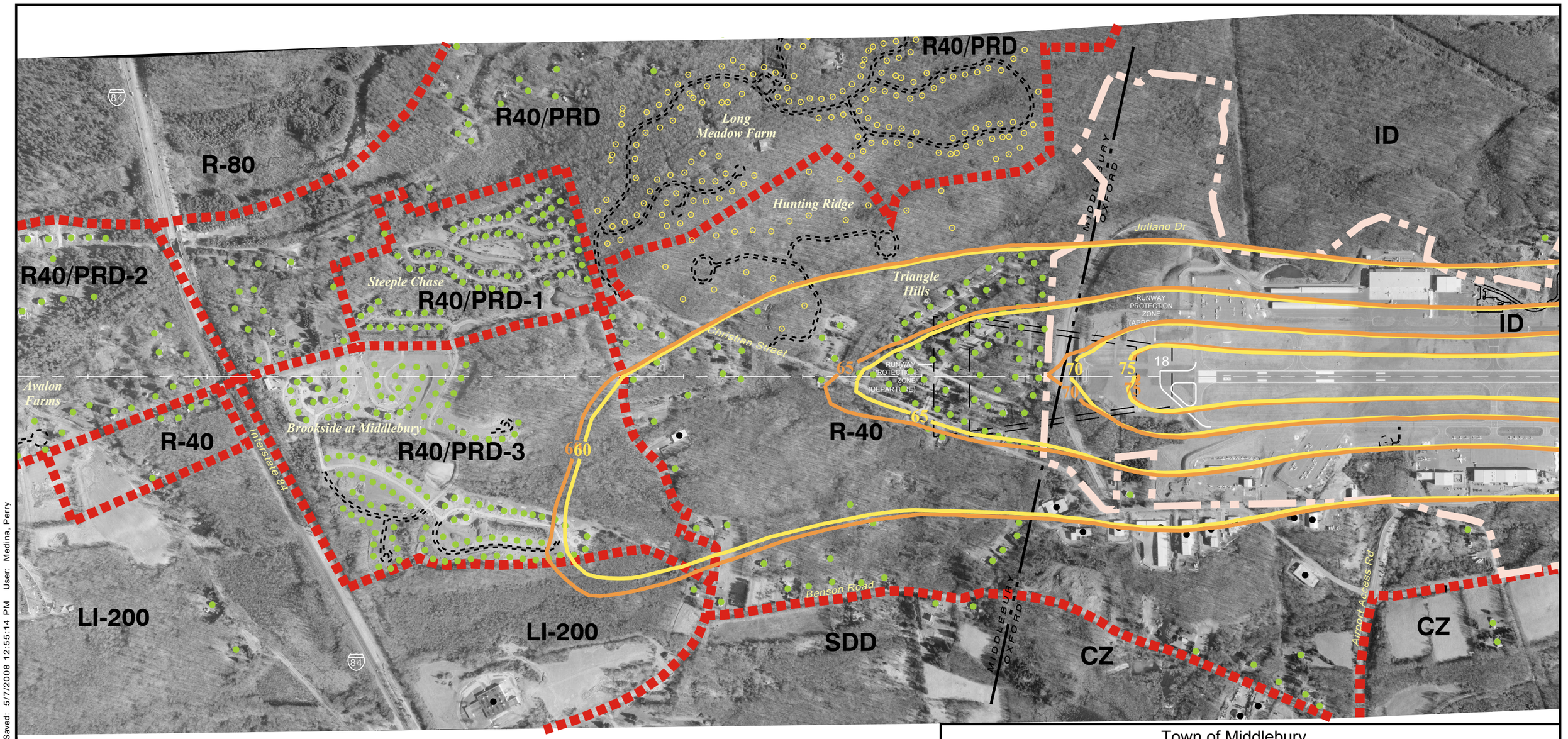
Notes:
Touch & go operations are prohibited at night. Each touch & go is recorded by the ATCT as a local operation (listed here as a departure). However, each touch & go does include a landing, which is incorporated in the INM.

Aircraft Substitutions

*Non-standard INM aircraft type

INM provides a standard substitution for each of the non-standard types listed above. The approved substitutions are listed at right.

Non-Standard Aircraft		Standard Substitution	
Name	Code	Name	Code
Cessna 172	CNA172	SE Piston PF	GASEPF
Caravan 208	CNA208	SE Piston PF	GASEPF
King Air 200	BEC200	Twin Otter	DHC6
Citation II/V	CNA550	Mitsubishi 300-1	MU3001
Hawker 125-700	HS125	Learjet 25	LEAR25
Hawker 125-800	HS1258	Learjet 35	LEAR35



LEGEND

- Runway Alignment (Marks every 1,000')
- Town Boundary
- Approx. Airport Property Line
- Zoning Limit
- State Park Trail

DNL = Day-Night Average Noise Level

- 65 — 2007 Baseline Noise Contour with dB Level in DNL
- 65 — 2012 Baseline Noise Contour with dB Level in DNL

- Single family, Existing
- Single family, Proposed*
- Commercial, Existing
- Commercial, Future*

Note: No schools, churches, medical facilities or milti-family dwellings are located within the photo area.

*Per approved Site Plans provided by the Towns of Oxford and Middlebury

0 800
Scale in feet

Town of Middlebury

ZONE	Description		
R-40	Residential	LI	Light Industry
R-80	Residential	SDD	Special Development District
R-40/PRD	Planned Residential Development		

Source:Official Middlebury, CT Zoning Map - May 1, 2003

CLOUGH HARBOUR & ASSOCIATES LLP
2139 Silas Deane Highway, Suite 212 · Rocky Hill, CT 06067-2336
Main: (860) 257-4557 · www.cloughharbour.com

DATE: APRIL 2008

SCALE: AS NOTED

Figure 5-1

2007 & 2012 BASELINE NOISE CONTOURS - TOWN OF MIDDLEBURY

Connecticut Department of Transportation
FAR Part 150 Noise Study
Towns of Middlebury and Oxford

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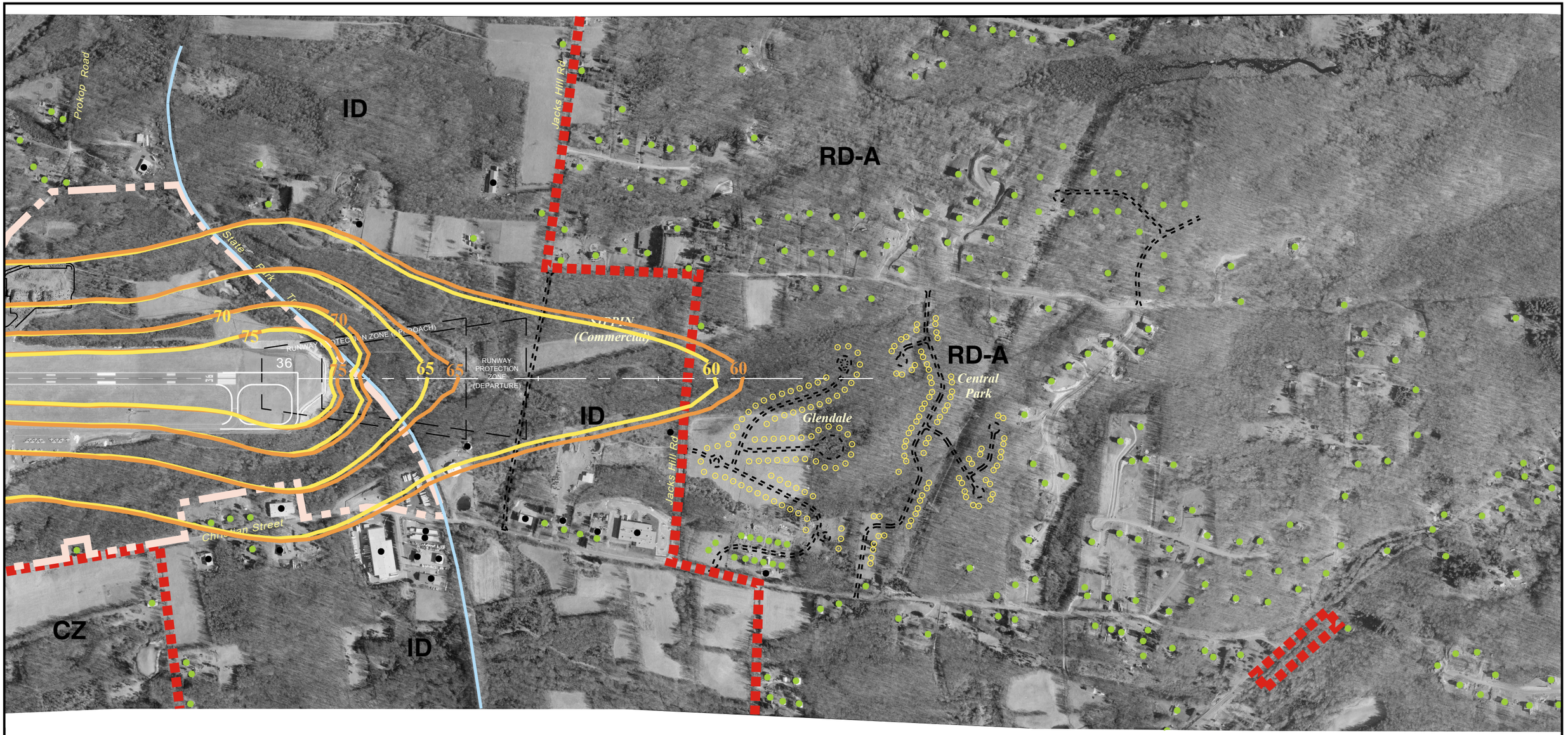

LEGEND

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- Single family, Existing
- Single family, Proposed*
- Commercial, Existing
- Commercial, Future*

Note: No schools, churches, medical facilities or milti-family dwellings are located within the photo area.

*Per approved Site Plans provided by the Towns of Oxford and Middlebury

0 800
Scale in feet

Town of Oxford

ZONE	Description	ZONE	Description
C	Commercial	ID	Industrial District
CZ	Corporate Zone	RD-A	Residential District - A

Source: Oxford Zoning Map

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SCALE: AS NOTED

Figure 5-2

2007 & 2012 BASELINE NOISE CONTOURS - TOWN OF OXFORD

Connecticut Department of Transportation
FAR Part 150 Noise Study
Towns of Middlebury and Oxford

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As illustrated on the figures and summarized in Table 5-4, the primary difference between the 2007 and 2012 Baseline scenarios is the number of homes exposed to noise levels greater than DNL 65 decibels (dB) – 51 homes in 2007; 42 homes in 2012. Compared to the 2007 Baseline scenario, there is an overall reduction of six homes exposed to noise levels greater than DNL 60 dB in 2012. The reduction in noise exposure is caused by the anticipated decrease in Stage II jet operations.

TABLE 5-4 – 2007 BASELINE versus 2012 BASELINE

2007 Baseline Scenario					
Category	***60-65 DNL***	***65-70 DNL***	***70+ DNL***	***65+ DNL***	***60+ DNL***
Housing Units					
Existing	47	51	0	51	98
Planned	4	0	0	0	4
Total	*51*	*51*	*0*	*51*	*102*
Population*					
Existing	115	124	0	124	239
Planned	10	0	0	0	10
Total	125	124	0	124	249
Area					
Square Miles	0.58	0.23	0.21	0.44	1.02
Acres	371	147	134	282	653
2012 Baseline Scenario					
Category	***60-65 DNL***	***65-70 DNL***	***70+ DNL***	***65+ DNL***	***60+ DNL***
Housing Units					
Existing	52	42	0	42	94
Planned	2	0	0	0	2
Total	*54*	*42*	*0*	*42*	*96*
Population*					
Existing	127	102	0	102	229
Planned	5	0	0	0	5
Total	132	102	0	102	234
Area					
Square Miles	0.56	0.22	0.20	0.42	0.98
Acres	358	141	128	269	627

Note: No noise sensitive facilities are located in the noise contour.
*Based on 2.44 persons per household for New Haven County, US Census 2000.

In Section 5.3, the 2012 Baseline contour is modified to reflect the recommended noise abatement measures for OXC (i.e., the 2012 NCP contour).

5.2 Review of Candidate Alternatives for NCP

The previous chapters identified a total of 31 noise abatement and land use alternatives for potential inclusion in the OXC Noise Compatibility Program (NCP). The NCP presents the recommended measures for OXC, with the overall goal of improving airport noise compatibility in the surrounding communities. Note that the recommendation of an alternative does not guarantee that it would be implemented, as there may be issues associated with federal/state funding availability, environmental and municipal approvals, and homeowner participation.

Of the 31 alternatives, 14 "Candidate Alternatives" were identified for further evaluation and consideration. Eight of the "Candidate Alternatives" have been selected for inclusion in the OXC NCP, as summarized in Table 5-5, and are referred to herein as "NCP Measures."

TABLE 5-5 – SUMMARY OF CANDIDATE ALTERNATIVES

Candidate Alternative	*Included In NCP*	*NCP Measure*	*Page*
Candidate Noise Abatement Alternatives (see Chapter 3)			
NA.2A – Create Area Navigation (RNAV) overlay procedures for Runway 18.	Yes	**NA-1**	**5-11**
NA.2B – Implement the National Business Aviation Association (NBAA) noise abatement close-in departure procedures.	Yes	**NA-2**	**5-12**
NA.3B – Establish Runway 18 as the preferential nighttime (10:00 p.m. to 7:00 a.m.) runway.	Yes	**NA-3**	**5-14**
Candidate Land Use Alternatives (see Chapter 4)			
P.1C – All proposed zoning changes and development actions within two miles of the OXC property line should be forwarded to a ConnDOT representative for comment.	Yes	**LU-1**	**5-20**
P.4 – Preventative acquisition of undeveloped residentially-zoned property (through voluntary sale).	No	N/A	N/A
P.5 – Establish fair disclosure regulations for new residential development, and for the transfer of existing homes.	Yes	**LU-2**	**5-21**
P.6 – Require avigation easements for the approval of new residential development.	No	N/A	N/A
P.7 – Establish noise related subdivision regulations for new residential development.	Yes	**LU-3**	**5-22**
P.8 – Establish noise overlay zoning for Alternatives P.5, P.6, and P.7.	No	N/A	N/A
C.1A – Voluntary acquisition of all homes within the 70 DNL contour.	No	N/A	N/A
C.1B – Voluntary acquisition of all homes within the 65-70 DNL contour.	No	N/A	N/A
C.1C – For neighborhood continuity and equitable planning purposes, voluntary acquisition of all homes within the 65-70 DNL contour and a select number of homes outside the 65 DNL contour.	Yes	**LU-4**	**5-23**
C.3A – Voluntary sound insulation program for all homes within the 65-70 DNL contour.	No	N/A	N/A
C.3B – As an alternative option, voluntary sound insulation for all homes eligible under C.1C, except those located in the Runway Protection Zone (RPZ).	Yes	**LU-5**	**5-24**

As shown in Table 5-5, six of the "Candidate Land Use (LU) Alternatives" were not selected for inclusion in the NCP. Reasons for their non-inclusion are summarized below.

- **P.4** was not included because there does not appear to be any remaining undeveloped residentially-zoned properties exposed to noise levels greater than DNL 65 dB. Efforts would be better focused on corrective land use measures, such as voluntary property acquisition or sound insulation.
- **P.6** was not included because it was decided that avigation easements could be better implemented through the municipal subdivision approval process (see LU-3).
- **P.8** was not included because all of the NCP recommendations apply to the same general area, with similar noise levels. Noise overlay zoning is typically used for complex NCPs, to illustrate specific recommendations for various noise contour intervals.
- **C.1A** was not included because no homes are located within the 2012 Baseline 70-75 DNL contour.
- **C.1B** was not included, but voluntary acquisition of all of the associated homes is accounted for under LU-4.
- **C.3A** was not included, but voluntary sound insulation of all of the associated homes (outside the RPZ) is accounted for under LU-5.

5.3 Selection of Noise Abatement Measures

As shown in Table 5-5, all three "Candidate Noise Abatement (NA) Alternatives" identified in Chapter 3 have been selected for inclusion in the OXC NCP. Table 5-6 summarizes the recommended NA measures, including information on the primary party responsible for implementation, estimated costs to various stakeholders, and target timeframe for implementation. The pages after Table 5-6 describe each NCP measure using a standardized format that provides the following information:

- Description of Measure
- Background & Intent
- Land Use Compatibility Improvement
- Responsible Implementing Parties
- Implementation Steps, Costs, & Phasing
- Effects on Other Programs/Measures

.

TABLE 5-6 – NCP NOISE ABATEMENT RECOMMENDATIONS

Measure	*Responsible Party*	*Cost to Airport*	*Cost to Local Governments*	*Cost to Users*	*Implementation*
NA-1 Create Area Navigation (RNAV) overlay procedures for existing and proposed departure procedures on Runway 18 (for all RNAV equipped aircraft).	ConnDOT, FAA Air Traffic, and airport operators.	None	None	None	A noise abatement air traffic action cannot be implemented until the potential environmental impacts have been assessed and documented.
NA-2 Implement the National Business Aviation Association (NBAA) noise abatement close-in departure procedures.	ConnDOT and airport operators.	None	None	None	ConnDOT has requested the implementation of this measure as soon as practical.
NA-3 Establish Runway 18 as the preferential nighttime (10:00 p.m. to 7:00 a.m.) runway.	ConnDOT, FAA Air Traffic, and airport operators.	None	None	None	A noise abatement air traffic action cannot be implemented until the potential environmental impacts have been assessed and documented.

NOISE COMPATIBILITY PROGRAM MEASURE: NA-1

Description: Create Area Navigation (RNAV) overlay procedures for existing and proposed departure procedures on Runway 18 (for all RNAV equipped aircraft).

Background and Intent: These procedures utilize on-board Global Positioning System (GPS) equipment to fly defined routes that avoid noise sensitive areas. RNAV overlay procedures cannot be implemented until the environmental review process is completed under the National Environmental Policy Act (NEPA).

RNAV procedures utilize ground-based Differential Global Positioning System (DGPS antenna); satellite-based, Global Positioning System (GPS); and on-board Flight Management System (FMS)/GPS equipment to assist the pilot in navigating from point to point. The use of GPS/FMS can reduce the width and size of departure corridors over standard navigation techniques. The advantage of FMS is that it can more accurately guide the aircraft towards the desired point than can the GPS/pilot system. Aircraft must be equipped with the necessary equipment to fly RNAV/FMS procedures. Initial review by FAA eliminated the consideration of a RNAV departure procedure for Runway 36 as the left turn after takeoff prevents the minimum 2-mile straight segment required by the procedure.

Land Use Compatibility Improvement: RNAV procedures may result in a narrowing of the noise patterns along the paths defined by the procedures and reduce the dispersion of traffic associated with traditional vectoring of aircraft. The evaluation identified a small improvement in noise exposure within the 65+ DNL contour.

Responsible Implementing Parties: ConnDOT, FAA Air Traffic, and airport operators.

Implementation Steps, Costs, and Schedule:
Steps: ConnDOT would adopt the 2012 NCP and the FAA would issue a Record of Approval (ROA). The RNAV Runway 18 departure procedures would be developed by FAA Flight Procedures, following an evaluation of environmental impacts.

Costs: The costs for the development and publication of new procedures, and changing approach plates at radar positions, would be the responsibility of the FAA. In addition, the cost of an environmental analysis would be required.

Schedule: This measure is recommended for implementation as soon as practical.

Effects on Other Programs/Measures: None expected.

NOISE COMPATIBILITY PROGRAM MEASURE: NA-2

Description: Implement the National Business Aviation Association (NBAA) noise abatement close-in departure procedures (see http://web.nbaa.org/public/ops/quietflying/).

Background and Intent: The NBAA noise abatement close-in departure procedures involve the management of aircraft thrust, flap settings, speed, and climb rate to reduce noise shortly after takeoff. These procedures would decrease noise levels close to the Airport. The NBAA objectives are to reduce noise exposure for persons on the ground. The NBAA noise procedures are recommended as a standard for all operations of turbojet business aircraft where aircraft manufacturers have not recommended specific procedures.

The standard NBAA close-in departure procedure calls for a thrust cutback at 500 feet above ground level (AGL) and 1,000 feet per minute climb to 3,000 feet altitude during acceleration and flap retraction (see Figure 5-3). Refinements may be included based on local conditions during implementation.

Land Use Compatibility Improvement: This measure would decrease noise associated with thrust used during takeoff. The close-in procedure would result in lower noise levels in areas near the Airport (see Table 5-7).

However, the measure will slightly increase the average noise for homes located farther away from the Airport (in locations beyond 65 DNL contour).

Responsible Implementing Parties: Aircraft operators at OXC, per the request of ConnDOT.

Implementation Steps, Costs, and Schedule:
Steps: ConnDOT requests that each turbojet operator at OXC begin flying the NBAA close-in departure procedures.

Costs: No costs are expected as a result of the implementation of this measure.

Schedule: ConnDOT has requested the implementation of this measure as soon as practical.

Effects on Other Programs/Measures: None expected.

TABLE 5-7 – TYPICAL NOISE REDUCTION FROM THE USE OF NBAA CLOSE-IN DEPARTURE PROCEDURES (CALCULATED USING LMAX)

Procedure	***Distance from Runway End (feet)***							
	250	***500***	***1,000***	***2,000***	***3,000***	***4,000***	***5,000***	***10,000***
Standard Departure Procedures	87.2	86.4	85.0	82.6	80.6	78.9	77.4	72.2
NBAA Close-in Departure Procedures	82.0	81.5	80.7	79.2	77.9	76.8	75.7	71.5
Difference	-5.2	-4.9	-4.3	-3.4	-2.7	-2.1	-1.7	-0.7

Note: The GIV was used to calculate noise levels.

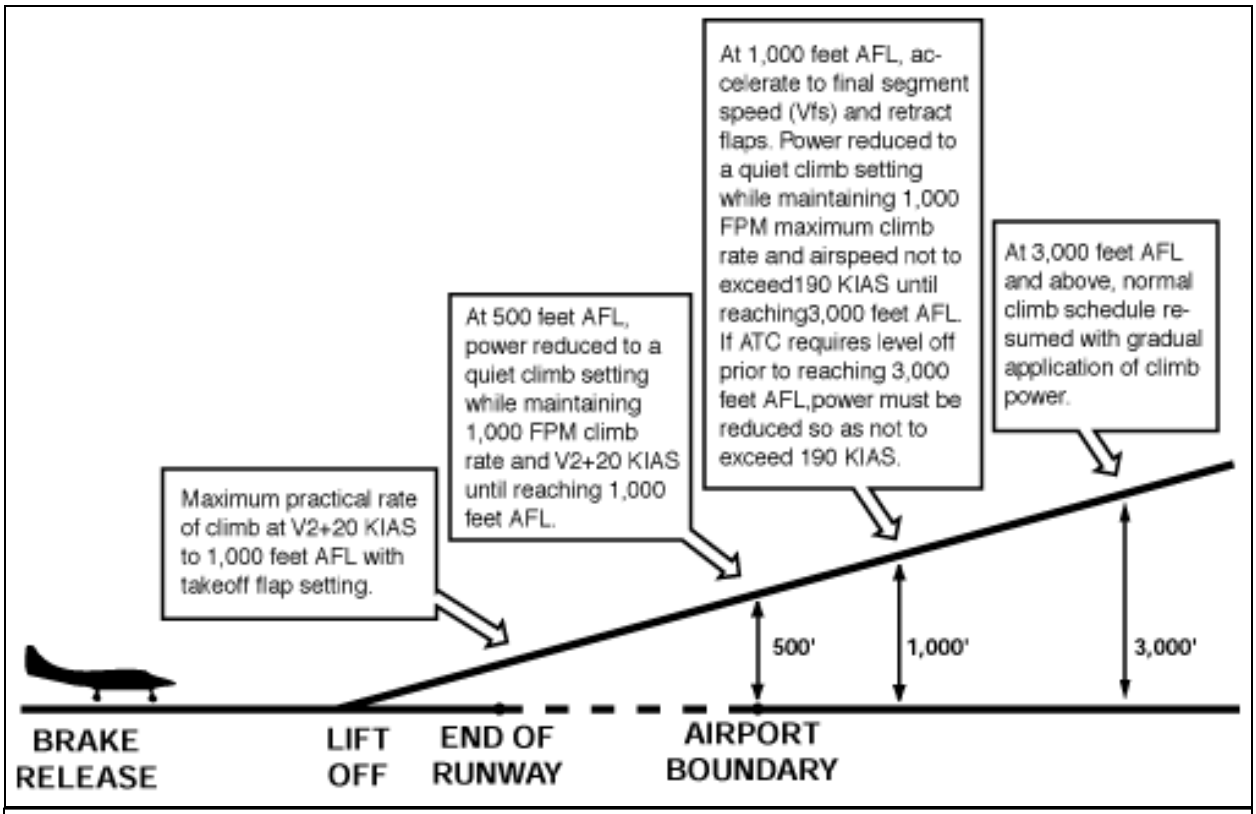


Figure 5-3 NBAA Close-In Departure Procedure

NOISE COMPATIBILITY PROGRAM MEASURE: NA-3

Description: Establish Runway 18 as the preferential nighttime (10:00 p.m. to 7:00 a.m.) runway.

Background and Intent: Currently, the Airport operates approximately 73 percent of the time in north flow (Runway 36) and 27 percent in south flow (Runway 18). Reasons for Runway 36 being the preferred runway include: the prevailing winds favoring the use of Runway 36, airspace design coordination required north of the Airport, and Runway 36 is equipped with a precision Instrument Landing System (ILS).

Given the preference for Runway 36, the intent of this measure is to maximize use of Runway 18 at night when aircraft noise is generally more disruptive. There are relatively few aircraft operations at night, which limits the necessary coordination efforts.

This measure has been designed in accordance with FAA Order 8400.9, *National Safety and Operational Criteria for Runway Use Programs*. The order specifies that a runway use program may be used for noise purposes with a tailwind up to five knots. Nighttime wind and weather analysis shows that the Airport is capable of operating in south flow 73 percent of the time with a three-knot tailwind.

Land Use Compatibility Improvement: This measure would reduce overflights of the populated area north of the Airport in the Triangle Hills neighborhood during nighttime hours.

Responsible Implementing Parties: ConnDOT, FAA Air Traffic, and airport operators.

Implementation Steps, Costs, and Schedule:
Steps: ConnDOT would adopt the 2012 NCP and the FAA would issue a Record of Approval (ROA). An evaluation of environmental impacts would be required prior to implementation, as required for noise abatement air traffic actions.

Costs: The cost of an environmental analysis would be required.

Schedule: This measure is recommended for implementation as soon as practical.

Effects on Other Programs/Measures: None expected.

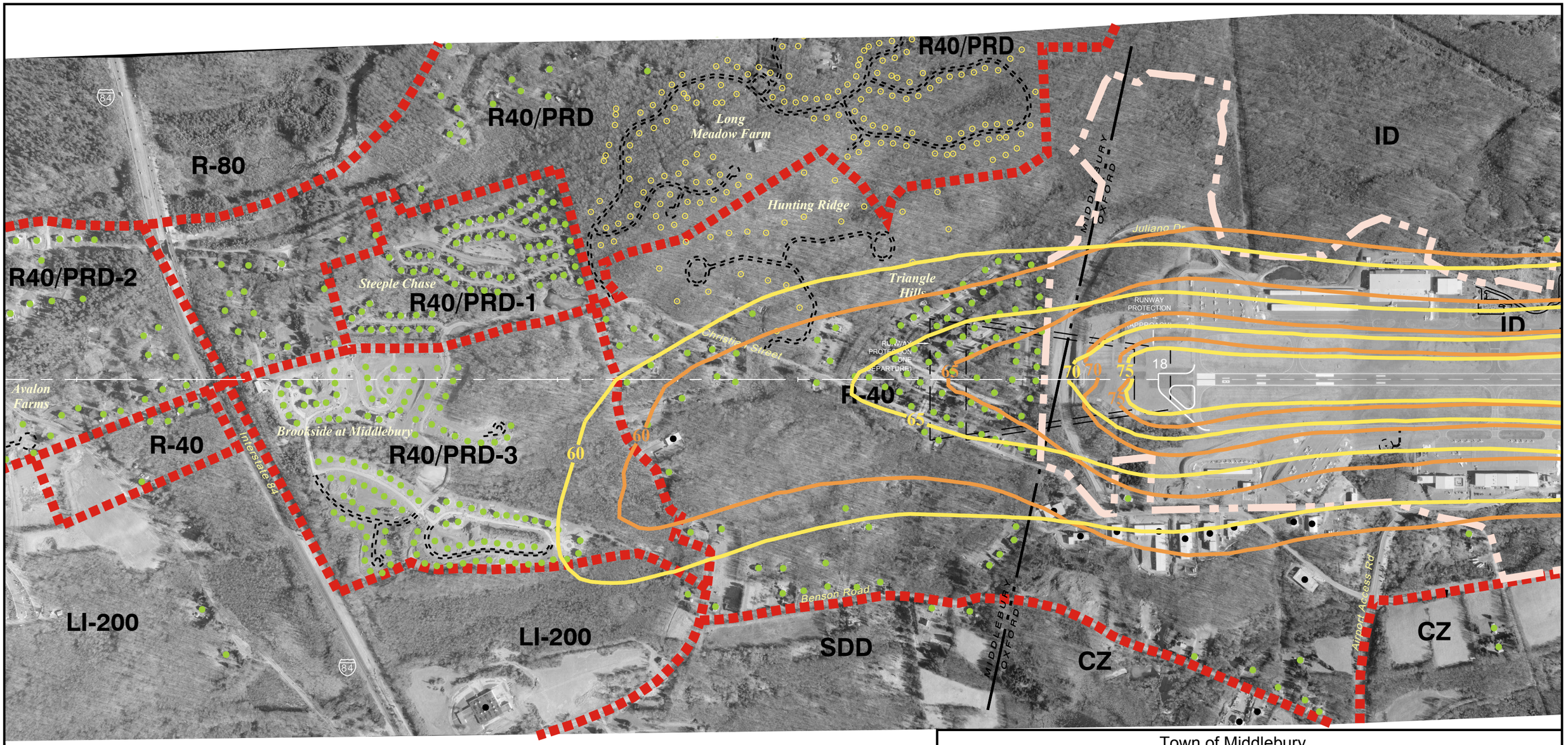
5.4 Evaluation of impacts

The 2012 NCP noise contours are similar in size and shape to the 2012 Baseline noise contours (see Figures 5-4 and 5-5). However, due to the implementation of NCP Measure NA-3 (i.e., Runway 18 as the preferential nighttime runway), the NCP contours are smaller to the north and larger to the south of the Airport. Overall, with the implementation of the NCP, there would be a reduction of 26 homes exposed to noise levels greater than 65 DNL in the Town of Middlebury (see Table 5-8). However, there would be an increase in the number of proposed homes within the 60-65 DNL near the Glendale development (currently under construction) in the Town of Oxford.

TABLE 5-8 – 2012 BASELINE versus 2012 NCP

2012 Baseline Scenario					
Category	***60-65 DNL***	***65-70 DNL***	***70+ DNL***	***65+ DNL***	***60+ DNL***
Housing Units					
Existing	52	42	0	42	94
Planned	2	0	0	0	2
Total	*54*	*42*	*0*	*42*	*96*
Population*					
Existing	127	102	0	102	229
Planned	5	0	0	0	5
Total	132	102	0	102	234
Area					
Square Miles	0.56	0.22	0.20	0.42	0.98
Acres	358	141	128	269	627
2012 NCP Conditions					
Category	***60-65 DNL***	***65-70 DNL***	***70+ DNL***	***65+ DNL***	***60+ DNL***
Housing Units					
Existing	65	16	0	16	81
Planned	33	0	0	0	33
Total	*98*	*16*	*0*	*16*	*114*
Population					
Existing	159	39	0	39	198
Planned	80	0	0	0	80
Total	239	39	0	39	278
Area					
Square Miles	0.58	0.21	0.24	0.45	1.03
Acres	371	134	154	288	659

Note: No noise sensitive facilities are located in the noise contour.
*Based on 2.44 persons per household for New Haven County, US Census 2000.



LEGEND

- Runway Alignment (Marks every 1,000')
- Town Boundary
- Approx. Airport Property Line
- Zoning Limit
- State Park Trail

DNL = Day-Night Average Noise Level

- 65 — 2012 NCP Noise Contour with dB Level in DNL
- 65 — 2012 Baseline Noise Contour with dB Level in DNL

- Single family, Existing
- Single family, Proposed*
- Commercial, Existing
- Commercial, Future*

Note: No schools, churches, medical facilities or milti-family dwellings are located within the photo area.

*Per approved Site Plans provided by the Towns of Oxford and Middlebury

0 800
Scale in feet

Town of Middlebury

ZONE	Description		
R-40	Residential	LI	Light Industry
R-80	Residential	SDD	Special Development District
R-40/PRD	Planned Residential Development		

Source:Official Middlebury, CT Zoning Map - May 1, 2003

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Figure 5-4

2012 BASELINE & NCP CONTOURS TOWN OF MIDDLEBURY

Connecticut Department of Transportation
FAR Part 150 Noise Study
Towns of Middlebury and Oxford

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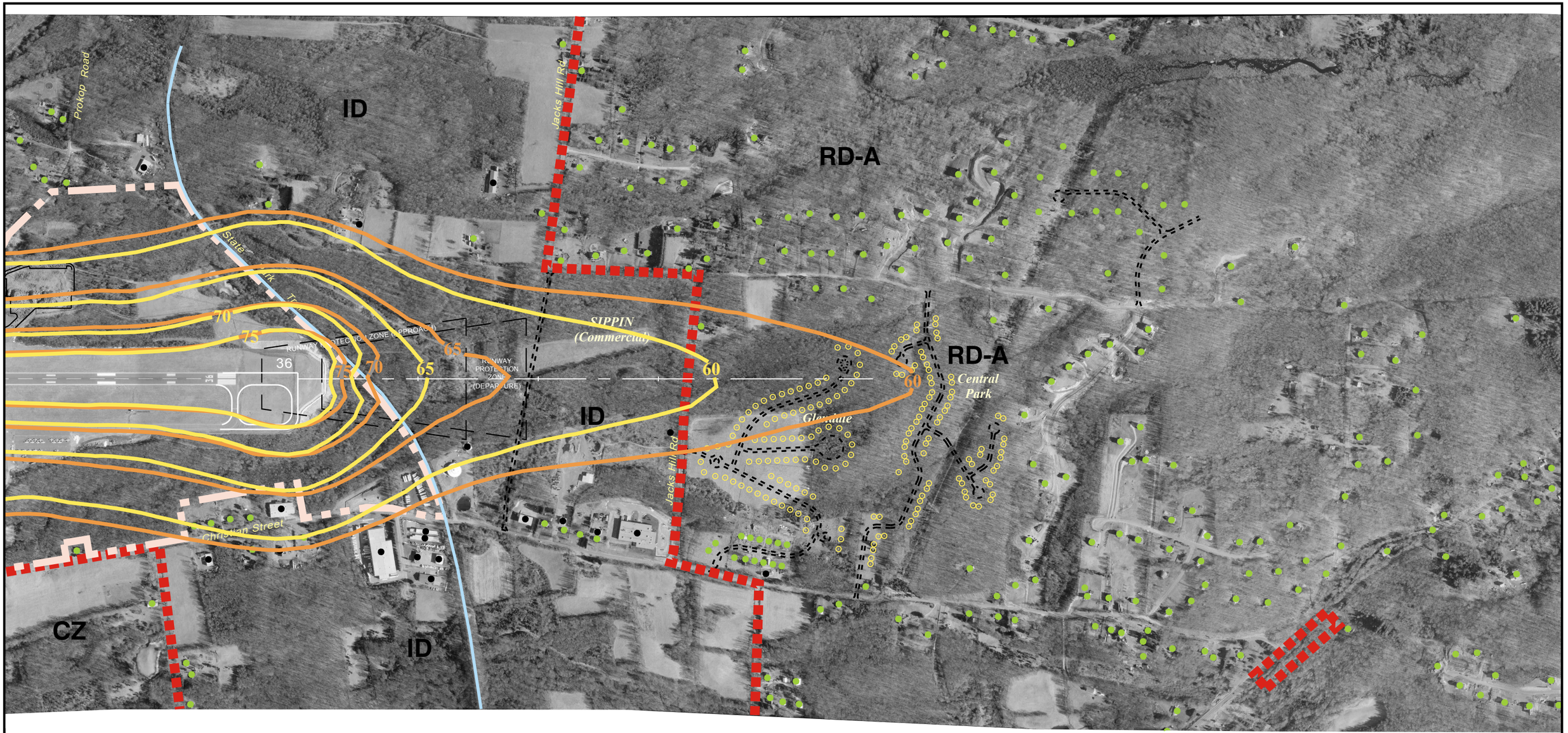

LEGEND

- Runway Alignment (Marks every 1,000')
- Town Boundary
- Approx. Airport Property Line
- Zoning Limit
- State Park Trail

DNL = Day-Night Average Noise Level

- 65 — 2012 NCP Noise Contour with dB Level in DNL
- 65 — 2012 Baseline Noise Contour with dB Level in DNL

- Single family, Existing
- Single family, Proposed*
- Commercial, Existing
- Commercial, Future*

Note: No schools, churches, medical facilities or milti-family dwellings are located within the photo area.

*Per approved Site Plans provided by the Towns of Oxford and Middlebury

0 800
Scale in feet

Town of Oxford

ZONE	Description	ZONE	Description
C	Commercial	ID	Industrial District
CZ	Corporate Zone	RD-A	Residential District - A

Source: Oxford Zoning Map

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Figure 5-5

2012 BASELINE & NCP CONTOURS TOWN OF OXFORD

Connecticut Department of Transportation
FAR Part 150 Noise Study
Towns of Middlebury and Oxford

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5.5 Selection of Land Use Measures

As shown in Table 5-5, five of the 11 "Candidate Land Use (LU) Alternatives" identified in Chapter 4 have been selected for inclusion in the OXC NCP. Table 5-9 summarizes the recommended LU measures, including information on the primary party responsible for implementation, estimated costs to various stakeholders, and target timeframe for implementation. The pages following Table 5-9 describe each NCP measure using a standardized format that provides the following information:

- Description of Measure
- Background & Intent
- Land Use Compatibility Improvement
- Responsible Implementing Parties
- Implementation Steps, Costs, & Phasing
- Effects on Other Programs/Measures

As states in Chapter 4, the Town of Middlebury does not agree with a number of land use alternatives and recommendations (See Town of Middlebury First Selectman's comments on the draft report in Appendix E, comment C3). However, the recommendations are included in the final report as the State's recommendation to the towns and public.

TABLE 5-9 – NCP LAND USE RECOMMENDATIONS

Measure	*Responsible Party*	*Cost to Airport*	*Cost to Local Governments*	*Cost to Users*	*Implementation*
LU-1 Encourage local towns to retain all commercial and industrial districts within two miles of the OXC property line. All proposed zoning changes and development actions should be forwarded to a ConnDOT representative for comment.	ConnDOT, Towns of Middlebury, Oxford, and Southbury	Minimal - Administrative	Minimal - Administrative	None	Pending approval by the towns, ConnDOT has requested the implementation of this measure as soon as practical.
LU-2 Establish fair disclosure regulations for new residential development, and for the transfer of existing homes, within the NCP contours (≥ 60 DNL).	ConnDOT, Towns of Middlebury and Oxford.	None	Minimal - Administrative	None	Pending approval by the towns.
LU-3 Establish noise related subdivision regulations for new residential development within the NCP contours (≥ 60 DNL). The subdivision regulations could include fair disclosure regulations, avigation easements, and NLR requirements.	Towns of Middlebury and Oxford	None	Minimal - Administrative	None	Pending approval by the towns.
LU-4 For neighborhood continuity and equitable planning purposes, voluntary acquisition of all homes within the 65-70 DNL contour and a select number of homes outside the 65 DNL contour.	FAA, ConnDOT, property owners	Would partially assume the costs.	None	None	A corrective property acquisition program cannot be implemented until the potential environmental impacts have been assessed and documented.
LU-5 As an alternative, voluntary sound insulation for all homes eligible under LU-4, except those located in the Runway Protection Zone (RPZ).	FAA, ConnDOT, property owners	Would partially assume the costs.	None	None	At the discretion of the FAA and ConnDOT.

Note: The Town of Middlebury does not agree with a number of land use recommendations (See Town of Middlebury First Selectman's comments on the draft report in Appendix E, comment C3).. However, the recommendations are included in the final report as the State's recommendation to the towns and public.

NOISE COMPATIBILITY PROGRAM MEASURE: LU-1

Description: Encourage Middlebury, Oxford, and Southbury to retain all commercial and industrial districts within two miles of the OXC property line. All proposed zoning changes and development actions should be forwarded to a ConnDOT representative for comment.

Background and Intent: This measure would promote compatible land use within the vicinity of OXC by appointing an OXC representative to review proposed zoning changes within the Towns of Middlebury, Oxford, and Southbury. The OXC representative would provide opinions regarding compatibility with the Airport and noise exposure. This measure would encourage the towns to make planning decisions that help prevent additional incompatible noise exposure.

Land Use Compatibility Improvement: Encourages the towns to make planning decisions that help prevent additional incompatible noise exposure.

Responsible Implementing Parties: ConnDOT, Towns of Middlebury, Oxford, and Southbury.

Implementation Steps, Costs, and Phasing:
Steps: Each town is requested to forward all proposed zoning changes and development actions within two miles of the OXC property line to a ConnDOT representative for comment. This measure could apply to any actions of the Planning and Zoning Commission, Zoning Board of Appeals, etc., as appropriate. As part of this measure, ConnDOT would provide a map depicting the areas where review authority is requested.

Costs: The costs are anticipated to be minimal and administrative in nature.

Schedule: ConnDOT has requested the implementation of this measure as soon as practical.

Effects on Other Programs/Measures: None expected.

NOISE COMPATIBILITY PROGRAM MEASURE: LU-2

Description: Establish fair disclosure regulations for new residential development, and for the transfer of existing homes, within the NCP contours (exposure ≥ 60 DNL).

Background and Intent: Fair disclosure regulations would provide an ethical means for conducting real estate transactions, ensuring that prospective buyers are made aware of the potential for aircraft noise exposure. Fair disclosure typically requires that an official notification be attached to property transfer documents, and be disclosed on sales contracts, promotional materials, etc.

Land Use Compatibility Improvement: New buyers would be informed of potential noise disturbance, and would use that information to make a purchase decision.

Responsible Implementing Parties: Towns of Middlebury and Oxford.

Implementation Steps, Costs, and Phasing:
Steps: ConnDOT would adopt the 2012 NCP and the FAA would issue a Record of Approval (ROA). After the ROA is issued, this measure would have to be implemented on the town level. The towns would adopt fair disclosure regulations within the NCP contours (exposure ≥ 60 DNL), establishing it as a requirement for sales transactions.

Alternatively, ConnDOT could request the Connecticut General Assembly to revise *Connecticut Statutes Section 20-327b (Uniform Property Condition Disclosure Act)* to include disclosure requirements for known airport noise levels. If approved, airport noise levels would be added as a separate category on the *Residential Property Condition Disclosure Report* form, which is required for sales of residential property in Connecticut.

Costs: The costs are expected to be minimal and administrative in nature.

Schedule: ConnDOT has requested the implementation of this measure as soon as practical. The adoption and schedule would be determined by the towns.

Effects on Other Programs/Measures: None expected.

NOISE COMPATIBILITY PROGRAM MEASURE: LU-3

Description: Establish noise related subdivision regulations for new residential development within the NCP contours (exposure ≥ 60 DNL). The subdivision regulations could include avigation easements and Noise Level Reduction (NLR) requirements.

Background and Intent: If new subdivisions are to be constructed within the NCP contours, this measure would ensure they are constructed to be compatible with aircraft noise exposure (i.e., to provide effective interior NLR – FAA recommends a target of 45 dB for interior noise levels). In addition, this measure would ensure that prospective buyers are made aware of the potential for aircraft noise exposure through a permanent deed restriction (i.e., an avigation easement).

Land Use Compatibility Improvement: Subdivision regulations would ensure that newly developed homes within the NCP contours are properly constructed, and that prospective buyers are made aware of the potential for noise exposure.

Responsible Implementing Parties: Towns of Middlebury and Oxford.

Implementation Steps, Costs, and Phasing:
Steps: ConnDOT would adopt the 2012 NCP and the FAA would issue a Record of Approval (ROA). After the ROA is issued, this measure would have to be implemented on the town level. The towns would revise their subdivision regulations to require avigation easements and NLR measures for new residential development within the NCP contours.

Costs: The costs are expected to be minimal and administrative in nature.

Schedule: ConnDOT has requested the implementation of this measure as soon as practical. The adoption and schedule would be determined by the towns.

Effects on Other Programs/Measures: None expected.

NOISE COMPATIBILITY PROGRAM MEASURE: LU-4

Description: For neighborhood continuity and equitable planning purposes, voluntary acquisition of all homes within the 65-70 DNL contour and a select number of homes outside the 65 DNL contour (see Figure 5-6). This may include up to 71 homes in Middlebury.

Background and Intent: Property acquisition is the most direct way to achieve airport land use compatibility, and typically consists of an airport sponsor purchasing existing homes exposed to high levels of aircraft noise. Property acquisition programs are voluntary, and property owners are notified in advance of the airport sponsor's intentions.

As required when federal funds are utilized under the *Uniform Relocation and Real Property Acquisition Policies Act*, independent appraisals determine the fair market value (FMV) of a property. In addition to providing FMV, compensation is also provided for relocation expenses.

The purchased homes would most likely be demolished, and the associated parcels would be converted to open space and their redevelopment would be prevented. This measure was identified for noise compatibility, neighborhood continuity, and equitable planning purposes.

Land Use Compatibility Improvement: This measure would provide residents exposed to incompatible noise levels with the opportunity to relocate, thereby reducing the number of impacted properties and population.

Responsible Implementing Parties: ConnDOT, FAA, and participating property owners.

Implementation Steps, Costs, and Phasing:
Steps: ConnDOT would adopt the 2012 NCP and the FAA would issue a Record of Approval (ROA). After the ROA is issued, an evaluation of environmental impacts must be conducted and funding must be issued prior to implementation. In addition, ConnDOT would determine the eligibility of homes, conduct appraisals of fair market value (FMV), and handle negotiations and transactions.

Costs: Recent sale prices of homes in the vicinity of the Triangle Hills neighborhood have ranged between $250,000 and $400,000. For estimating purposes, the $350,000 value that was previously used in Chapter 4 to value the acquisition alternatives is also used here, although actual costs would be determined based on the FMV at the time of sale. Thus, the total costs for this measure could exceed $25 million, depending on participation levels, in addition to the costs for follow-up environmental/implementation studies and property appraisals.

Schedule: ConnDOT has requested the implementation of this measure as soon as practical, after environmental and implementation studies have been completed, and pending funding availability.

Effects on Other Programs/Measures: None expected.

NOISE COMPATIBILITY PROGRAM MEASURE: LU-5

Description: As an alternative option, voluntary sound insulation for all homes eligible under LU-4, except those located in the Runway Protection Zone (RPZ). This may include up to 37 homes in Middlebury.

Background and Intent: At previous Noise Study meetings, various residents of the Triangle Hills neighborhood indicated a willingness to relocate while others wish to remain. This measure provides residents with an alternative option of voluntary sound insulation. All homes eligible under LU-4 would be eligible for voluntary sound insulation, except those located in the RPZ. This measure also applies to a select number of homes outside the 65 DNL contour for neighborhood continuity and equitable planning purposes. It is noted, however, that voluntary acquisition would be the only corrective land use measure afforded to homes located in the RPZ.

Land Use Compatibility Improvement: This measure would provide residents exposed to incompatible noise levels with sound insulation, thereby reducing interior noise levels.

Responsible Implementing Parties: ConnDOT, FAA, and participating property owners.

Implementation Steps, Costs, and Phasing:
Steps: ConnDOT would adopt the 2012 NCP and the FAA would issue a Record of Approval (ROA). After the ROA is issued, ConnDOT would determine the eligibility of homes, design the sound insulation program, and handle transactions with homeowners.

Costs: For estimating purposes, the $30,000 value that was previously used in Chapter 4 to value the sound insulation alternatives is also used here, although actual costs would be determined at the time of implementation. Total costs for this measure would depend on participation levels.

Schedule: The ConnDOT has requested the implementation of this measure as soon as practical, after an implementation study has been completed, and pending funding availability.

Effects on Other Programs/Measures: None expected.

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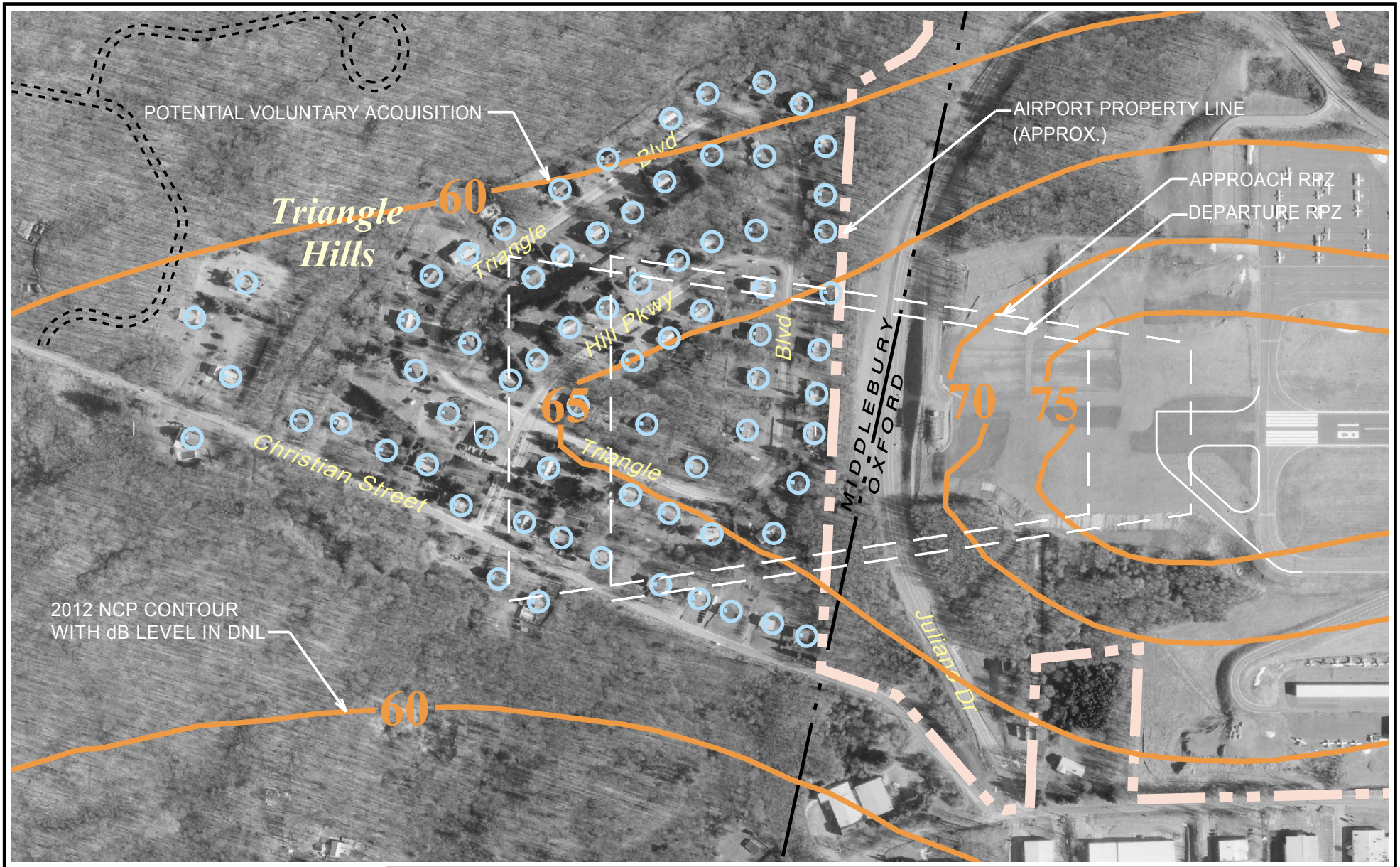

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DATE: APRIL 2008

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Figure 5-6

NCP MEASURE LU-4
VOLUNTARY ACQUISITION OF 71 HOMES

Connecticut Department of Transportation
FAR Part 150 Noise Study
Towns of Middlebury and Oxford

5.6 Implementation Measures

Implementation measures consist of actions taken to facilitate the execution of the NCP recommendations, to operate the program on a daily basis, and to periodically review and update the program. The subsequent pages provide information on four implementation measures that have been selected for inclusion in the OXC NCP. All of these measures are intended to be implemented immediately after ConnDOT adopts the 2012 NCP and the FAA issues a Record of Approval (ROA). Each NCP measure is presented using a standardized format that provides the following information:

- Description of Measure
- Background & Intent
- Responsible Implementing Parties
- Implementation Steps

NOISE COMPATIBILITY IMPLEMENTATION MEASURE: IM-1

Description: Establish Noise Abatement Committee.

Background and Intent: The Noise Abatement Committee would assist in the implementation and enforcement of the NCP recommendations, and could consist of representatives from ConnDOT, airport businesses, surrounding towns, and nearby neighborhoods. The committee would monitor the progress and reliability of the NCP recommendations, and provide suggestions as to how the program could be more effectively implemented or changed.

Responsible Implementing Parties: ConnDOT, with participation from airport businesses, surrounding towns, and nearby residents.

Implementation Steps: Periodically hold meetings at the Airport Manager's office to review the progress of the NCP recommendations. The meetings should initially be held quarterly, but may be reduced in the future.

NOISE COMPATIBILITY IMPLEMENTATION MEASURE: IM-2

Description: Develop a website for public outreach (e.g., www.oxcstudies.com).

Background and Intent: The purpose of developing a website for public outreach is to provide a location where interested parties can obtain updated information and send noise complaints. The system would help identify problematic areas by collecting noise complaint data, providing useful information for the Airport Manager to communicate to airport businesses and pilots. The system would also provide useful information for future Noise Study updates.

Responsible Implementing Parties: ConnDOT.

Implementation Steps: Continue use of www.oxcstudies.com to provide information to the public.

NOISE COMPATIBILITY IMPLEMENTATION MEASURE: IM-3

Description: Publish recommended noise abatement procedures in pilot guides.

Background and Intent: This measure consists of publishing the recommended noise abatement measures in pilot guides and installing permanent signs at the runway ends. For example, the pilot guides would indicate that "National Business Aviation Association (NBAA) noise abatement close-in departure procedures are in effect" and "Runway 18 is the preferred runway for departures between 10:00 p.m. and 7:00 a.m." Once published, pilots would be required to follow these procedures whenever possible.

Responsible Implementing Parties: ConnDOT.

Implementation Steps: Publish recommended noise abatement procedures in pilot guides and install permanent signs at the runway ends.

NOISE COMPATIBILITY IMPLEMENTATION MEASURE: IM-4

Description: Provide for updates to the NCP measures and noise contours.

Background and Intent: Based on the recommendations and findings from IM-1 and IM-2, this measure would provide for updates to the NCP measures and noise contours. In addition, if there are substantial changes in OXC activity levels or surrounding development patterns, this measure would review if there is any need to update the NCP measures and noise contours.

Responsible Implementing Parties: ConnDOT.

Implementation Steps: Periodically review the effectiveness of the NCP measures, accuracy of the NCP noise contours, and changes in OXC activity levels and surrounding development patterns.

5.7 Implementation Actions/Schedule/Costs

The previous sections have presented the recommended measures for the OXC NCP. If approval of the OXC NCP occurs in 2008, the implementation actions and schedule shown in Table 5-10 may be assumed for the recommended measures.

Note that the schedule in Table 5-10 assumes that all of the measures would be approved by the FAA and implemented by the "Primary Party Responsible" (see Table 5-11). As shown in Table 5-10, the measures that do not require environmental analysis can begin implementation immediately following approval of the OXC NCP. The other measures must receive environmental approval before they can begin implementation. The voluntary acquisition program would take several years to fund and implement, and the homes exposed to the highest noise levels would be those first eligible for acquisition.

TABLE 5-10 – IMPLEMENTATION ACTIONS AND SCEDULE			
Measure	***(Year) Action 1***	***(Year) Action 2***	***(Year) Action 3***
NA-1 Create RNAV overlay procedure on Runway 18	(2008) Conduct NEPA environmental analysis (CATEX)	(2009) FAA development and review of procedure	(2009-2010) Procedure is implemented/published for use
NA-2 Implement the NBAA noise abatement procedures	(2008) ConnDOT publishes use of NBAA procedures at OXC		
NA-3 Establish Runway 18 as the preferential nighttime (10:00 p.m. to 7:00 a.m.) runway	(2008) Conduct NEPA environmental analysis (CATEX)	(2009) Procedure is implemented/published for use	
LU-1 All proposed zoning changes should be forwarded to a ConnDOT representative for comment	(2008) ConnDOT requests that the towns allow an OXC representative to comment on proposed zoning changes	(2009) The towns implement or reject ConnDOT's request	
LU-2 Establish fair disclosure regulations	(2008) ConnDOT requests that the towns implement fair disclosure regulations	(2009) The towns implement fair disclosure regulations or reject ConnDOT's request	
LU-3 Establish noise related subdivision regulations for new residential development	(2008) ConnDOT requests that the towns implement subdivision regulations	(2009) The towns implement subdivision regulations or reject ConnDOT's request	
LU-4 Voluntary property acquisition	(2008-2009) Conduct NEPA environmental analysis (EA)	(2009-2010) Prepare implementation plan and initial property appraisals	(2010-2015) Acquisition program is implemented
LU-5 Voluntary sound insulation	(2009-2010) Conduct implementation study	(2010) Design sound insulation program	(2010-2015) Sound insulation program is implemented
IM-1 Establish Noise Abatement Committee	(2008) ConnDOT establishes a noise abatement committee		
IM-2 Develop a website for public outreach	(2008) ConnDOT develops a public outreach website		
IM-3 Publish recommended noise abatement measures in pilot guides	(2009) ConnDOT develops documentation for approval	(2009-2010) NA-1 and NA-3 are published in pilot guides and airfield signs are posted at OXC	
IM-4 Provide for updates to NCP measures and noise contours	(2008) ConnDOT begins annual reviews of the NCP implementation		

Notes: For LU-4, ConnDOT has initiated a request for funding of this measure in 2009. Actual funding would be dependent upon FAA approval of the subsequent EA study and availability.
The Town of Middlebury does not agree with a number of land use recommendations (See Town of Middlebury First Selectman's comments on the draft report in Appendix E, comment C3).

Table 5-11 summarizes the primary responsible party, anticipated costs, and potential funding source of the NCP measures.

- ***Primary Party Responsible –*** Represents the primary agency or municipality responsible for implementing the recommended measure.
- ***Costs –*** Actual costs would be determined at the time of implementation. Costs may be associated with appraisals, design, insulation, acquisition, demolition/restoration, etc., or other administrative actions.
- ***Potential Funding Source –*** Funding would be obtained through the FAA Airport Improvement Program (AIP) and ConnDOT.

TABLE 5-11 – IMPLEMENTATION RESPONSIBILITIES AND COSTS

Measure	*Primary Party Responsible*	*Costs*	*Potential Funding Source*
NA-1	FAA	Administrative	FAA/ConnDOT
NA-2	ConnDOT	Administrative	N/A
NA-3	ConnDOT	Administrative	FAA/ConnDOT
LU-1	Towns of Middlebury, Oxford, and Southbury	Administrative	N/A
LU-2	Towns of Middlebury and Oxford	Administrative	N/A
LU-3	Towns of Middlebury and Oxford	Administrative	N/A
LU-4	ConnDOT	Implementation and Appraisal Studies, Acquisition/Demolition/Restoration	FAA/ConnDOT
LU-5	ConnDOT	Implementation Study, Design, Insulation	FAA/ConnDOT
IM-1	ConnDOT	Administrative	N/A
IM-2	ConnDOT	Administrative	N/A
IM-3	FAA & ConnDOT	Signs	FAA/ConnDOT
IM-4	ConnDOT	Administrative	N/A

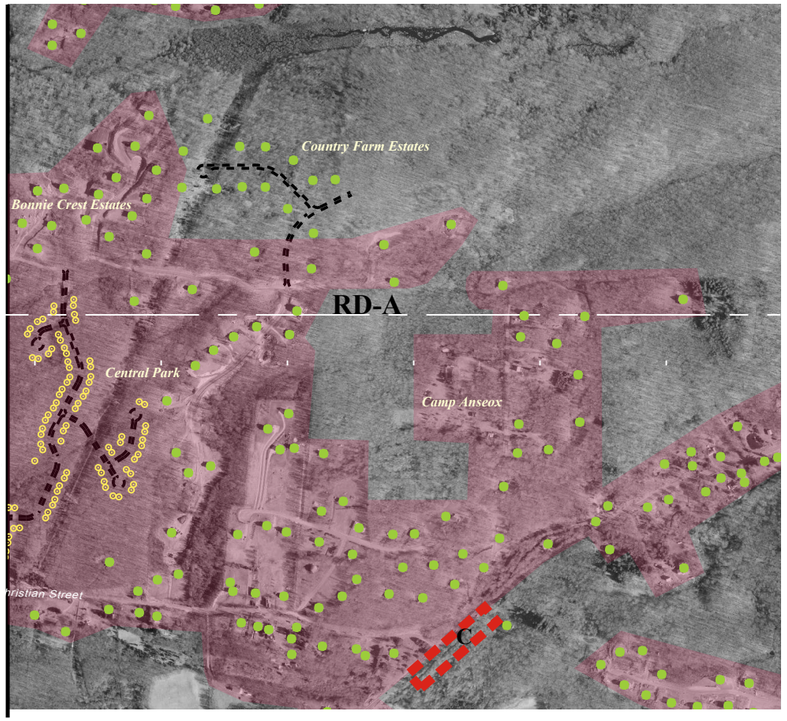
5.8 Noise Exposure Maps

This section provides the official Noise Exposure Maps (NEMs) for OXC. The FAA requires the submission of NEMs for Federal Aviation Regulations (FAR) Part 150 Noise Studies. The NEMs must depict airport noise contours, property lines, runway configurations, jurisdictional boundaries, and land use and zoning.

For OXC, NEMs are provided for the following three conditions:

- ***Year 2007 Baseline –*** Represents the most recent full year of activity at OXC.
- ***Year 2012 Baseline –*** Represents the five-year forecast activity level at OXC.
- ***Year 2012 NCP –*** Represents the 2012 forecast activity levels, combined with the recommended NCP measures described in this chapter.

The NEMs are depicted on the subsequent pages.



0 1,200 2,400

Scale in feet

ZONING

Runway Alignment (Marks every 1,000')

Town Boundary

Approx. Airport Property Line

Zoning Limit

Town of Oxford

ZONE	Description
C	Commercial
CZ	Corporate Zone
ID	Industrial District
RD-A	Residential District - A

Source:Oxford Zoning Map

Town of Middlebury

ZONE	Description
R-40	Residential
R-80	Residential
R-40/PRD-1	Planned Residential Development
R-40/PRD-2	Planned Residential Development
R-40/PRD-3	Planned Residential Development
LI	Light Industry
SDD	Special Development District

Source:Official Middlebury, CT Zoning Map - May 1, 2003

LAND USE

- Airport Property
- Undeveloped, Open, Wooded
- Residential
- Commercial/Industrial
- State Park Trail

- Single family, Existing
- Single family, Post 2003
- Single family, Future*
- Commercial, Existing
- Commercial, Future*

*Per approved Site Plans provided by the Towns of Oxford and Middlebury

Miscellaneous

65 Noise Contour with dB Level in DNL

DNL = Day-Night Average Noise Level

Note:
No schools, churches, medical facilities or multi-family dwellings are located within the photo area.

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Figure 5-7

2007 BASELINE NOISE CONTOURS

Connecticut Department of Transportation
FAR Part 150 Noise Study
Towns of Middlebury and Oxford

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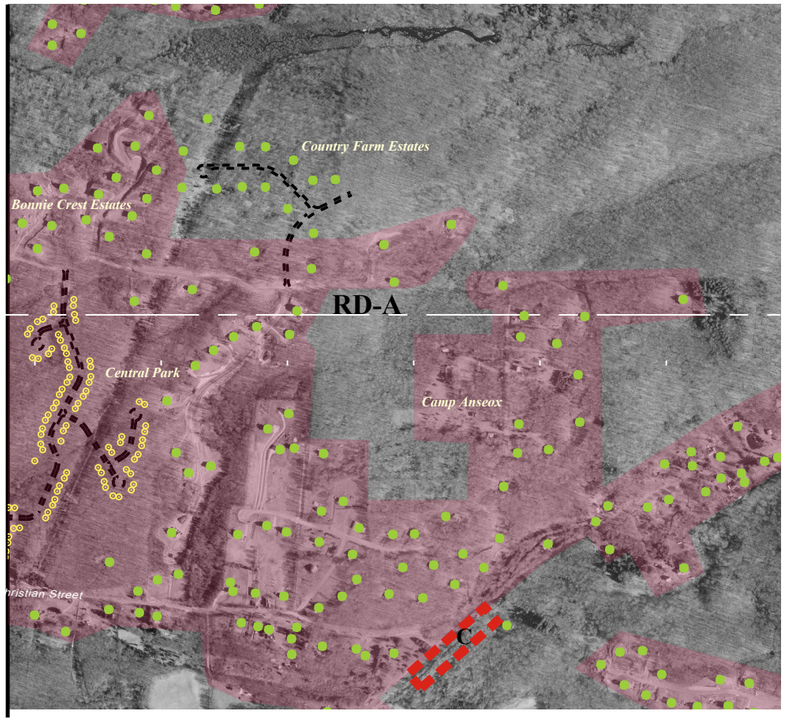

0 1,200 2,400

Scale in feet

ZONING

Runway Alignment (Marks every 1,000')

Town Boundary

Approx. Airport Property Line

Zoning Limit

Town of Oxford

ZONE	Description
C	Commercial
CZ	Corporate Zone
ID	Industrial District
RD-A	Residential District - A

Source:Oxford Zoning Map

Town of Middlebury

ZONE	Description
R-40	Residential
R-80	Residential
R-40/PRD-1	Planned Residential Development
R-40/PRD-2	Planned Residential Development
R-40/PRD-3	Planned Residential Development
LI	Light Industry
SDD	Special Development District

Source:Official Middlebury, CT Zoning Map - May 1, 2003

LAND USE

- Airport Property
- Undeveloped, Open, Wooded
- Residential
- Commercial/Industrial
- State Park Trail

- Single family, Existing
- Single family, Post 2003
- Single family, Future*
- Commercial, Existing
- Commercial, Future*

*Per approved Site Plans provided by the Towns of Oxford and Middlebury

Miscellaneous

65 Noise Contour with dB Level in DNL

DNL = Day-Night Average Noise Level

Note:
No schools, churches, medical facilities or multi-family dwellings are located within the photo area.

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DATE: APRIL 2008

SCALE: AS NOTED

Figure 5-8

2012 BASELINE NOISE CONTOURS

Connecticut Department of Transportation
FAR Part 150 Noise Study
Towns of Middlebury and Oxford

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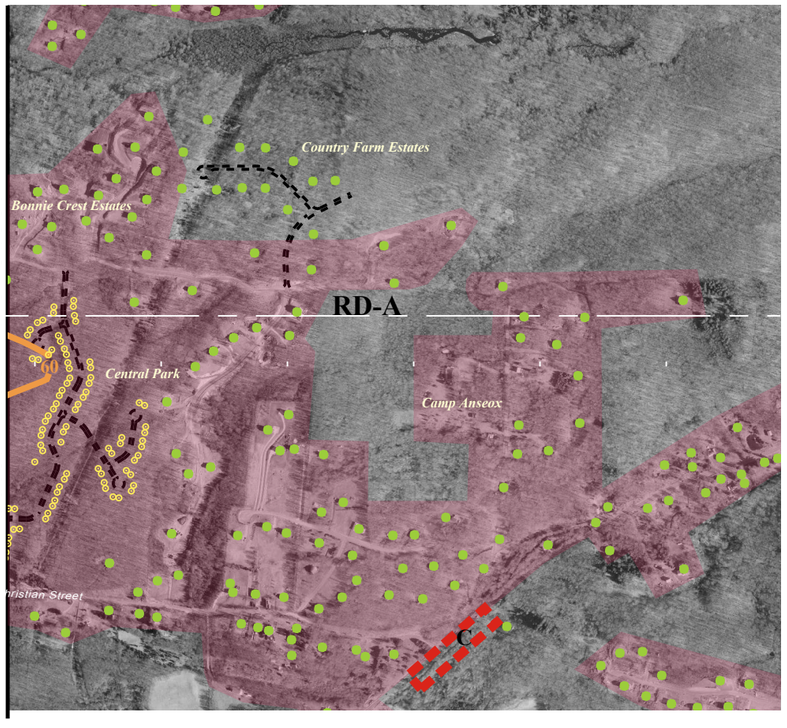

ZONING

Runway Alignment (Marks every 1,000')
Town Boundary
Approx. Airport Property Line
Zoning Limit

Town of Oxford

ZONE	Description
C	Commercial
CZ	Corporate Zone
ID	Industrial District
RD-A	Residential District - A

Source:Oxford Zoning Map

Town of Middlebury

ZONE	Description
R-40	Residential
R-80	Residential
R-40/PRD-1	Planned Residential Development
R-40/PRD-2	Planned Residential Development
R-40/PRD-3	Planned Residential Development
LI	Light Industry
SDD	Special Development District

Source:Official Middlebury, CT Zoning Map - May 1, 2003

LAND USE

- Airport Property
- Undeveloped, Open, Wooded
- Residential
- Commercial/Industrial
- State Park Trail

- Single family, Existing
- Single family, Post 2003
- Single family, Future*
- Commercial, Existing
- Commercial, Future*

*Per approved Site Plans provided by the Towns of Oxford and Middlebury

Miscellaneous

65 Noise Contour with dB Level in DNL

DNL = Day-Night Average Noise Level

Note:
No schools, churches, medical facilities or multi-family dwellings are located within the photo area.

0 1,200 2,400
Scale in feet

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DATE: APRIL 2008
SCALE: AS NOTED

Figure 5-9

2012 NCP NOISE CONTOURS

Connecticut Department of Transportation
FAR Part 150 Noise Study
Towns of Middlebury and Oxford

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