APPENDIX A

NOTES RELATED TO CDTC'S THRESHOLD ANALYSIS FOR INCREMENTAL HIGHWAY IMPROVEMENTS IDENTIFIED UNDER THE ALBANY COUNTY AIRPORT AREA GEIS

1. The CDTC staff completed a threshold analysis of development levels and highway improvements for the *Albany County Airport Area Generic Environmental Impact Statement* in accordance with the method outlined at the December 17, 1990 GEIS meeting.

2. In keeping with the generic nature of the study, system-level estimates of highway and intersection capacities were used for each identified improvement. The estimates of capacity were based on CDTC's STEP model formulas rather than from detailed *Highway Capacity Manual* calculations.

3. The results of the threshold analysis for key study area highway and intersection locations are set forth in Tables 1 and 2, respectively. Each table shows GEIS values for base year and cumulative development traffic; existing highway capacity (roughly equivalent to LOS D conditions); additional capacity at each location based on improvements evaluated or proposed in the GEIS; and the amount of development traffic that could be accommodated by each of the incremental improvements. We have also attached two figures prepared under CDTC's Wolf Road study that illustrates the approximate staging of Exit 3 improvements only; both the threshold analysis and Wolf Road staging show consistent results.

4. The information presented in the attached tables is useful in determining the extent to which proposed transportation system improvements can minimize or mitigate existing and expected future congestion. For instance:

- The analysis suggests that recommended "short-term" actions would not only mitigate most of the existing peak hour congestion but could also accommodate traffic growth attendant to some of the expected new development in the airport area, perhaps 5-7 years into the future depending on the location and scope of new development. However, in the short-term it would be prudent to pursue only those improvements which can stand alone (i.e. those that would not be affected by recommended long-term projects). The remaining actions should not be pursued until issues regarding long-term actions are resolved.

  .Regarding Route 7, the analysis clearly shows that the NYSDOT improvements now underway would provide the capacity necessary to accommodate expected traffic growth well into the next century. This conclusion will remain valid as long as Route 7 remains relatively free of traffic signals and conflicting driveways. The analysis shows that existing major intersections, however, would not be able to accommodate GEIS growth. The analysis suggests that with limited additional intersection im

provements, development of a functional service road with limited access to Route 7, and access to a new arterial (or equivalent) west of Albany Shaker Road, Route 7 could function as a major arterial facility beyond the GEIS's planning period.

- The analysis confirms that severe congestion will persist in the Exit 6 area of Route 7, even with NYSDOT (5-lane) or GEIS (6-lane) improvements. The planned reconstruction of Exit 6 and other roadway improvements that may be pursued in conjunction with development in the Route 2/Route 9 area should be coordinated with GEIS findings and recommendations so that a roadway plan can be developed that would best serve traffic growth in this heavily travelled area of Albany County.

- The analysis shows that service roads (as well as other arterial management actions) would have noticeable traffic benefits for Wolf Road and Route 7. It is apparent from the analyses that a functional service road network in the Wolf Road area and Route 7 corridors would reduce peak hour volumes on these facilities by 15-25 percent which would permit them to operate at acceptable level-of-service conditions beyond existing development levels. Service roads together with NYSDOT improvements to Route 7 would provide the capacity necessary to accommodate more than 60 percent of GEIS growth for the area, and with considerably less disruption than a six-lane Route 7 would require.

- Although not discussed in the GEIS, access management actions for other facilities, notably New Karner Road, would also provide significant travel benefits. In general, without careful access control, mobility in the study area will be jeopardized particularly if the full set of highway improvements cannot be carried out.

- The GEIS reaffirmed the findings of CDTC's Wolf Road Area Transportation Study and CDTC's current work on a ten-year regional capacity and mobility plan. The Wolf Road/Albany Shaker Road/Exit 3 area has once again been identified as a critical location on the basis of projected traffic congestion. The threshold analysis indicates that the key segment of Albany Shaker Road under the Northway, even with GEIS short-term intersection improvements and service roads in place, can accommodate about 20 percent of GEIS growth.

- It appears that a solution which includes improvements to Northway and Airport areas at either Exit 3 or Exit 4 would be sufficient to accommodate most GEIS growth (assuming a workable TDM program is in place) without constructing a tunnel under the airport to create additional access to Exit 5. The "tunnel option" can be viewed as a stand-alone alternative should an Exit 3 construction or Exit 4 reconstruction be determined to be infeasible in future environmental/design studies.

- Increasing the capacity of the northern leg of Albany Shaker Road by both widening and constructing a new highway may be viewed as "overkill" if development falls short of predicted levels. Most (about 80 percent) of the forecast growth could be accommodated on a four or five lane facility. However, access to Route 7 via a single at-grade intersection at Albany Shaker Road will be hard-pressed to efficiently service more than 12-15 percent of GEIS growth even with NYSDOT improvements. The analysis suggests that even if a "two arterial" option is not pursued, additional access to Route 7 should be considered, preferably through the development of a service road extending from Vly Road to Wade Road.

- The analysis suggests that most of the available capacity on Sand Creek Road between Wolf Road and Watervliet Shaker Road would be consumed by the proposed Shaker Road development alone. The pursuit of an arterial management study for Central Avenue, as recommended in CDTC's *Pinebush Transportation Study*, may have certain benefits for Sand Creek Road. Facilitating travel along Central Avenue through such actions as access control and signal coordination could remove traffic from the Sand Creek Road traffic stream to bring future travel demand down to levels that could be handled by the existing roadway.

Table 1

Threshold Analysis for Incremental Highway Mainline Improvements for Highways Located in the Airport Area

Link	PM Peak Hour Traffic Demand (VPH) 1990 Volume 2 - Way/Peak	PM Peak Hour Traffic Demand (VPH) 2005 Demand 2 - Way/Peak	Midblock LOS D Peak Threshold Maximum Volume	Midblock LOS D Peak Threshold Pct of Growth
ROUTE 7				
Vly Road to Albany	3,350	6,710		
Shaker Road	1,780	3,500	2,500	42
	w/NYSDOT 5-lane x-section		2,800	59
	w/6-lanes + service rds		4,500	158
Albany Shaker Road	2,850	5,790		
to Old Niskayuna Road	1,600	3,000	2,500	64
	w/NYSDOT 5-lane x-section		2,800	86
	w/6-lanes + service rds.		4,500	207
Old Niskayuna Road	3,280	7,030		
to Wade Road	1,800	3,655	2,500	40
	w/NYSDOT 5-lane x-section		2,800	54
	w/6-lanes + service rds		4,500	145
Wade Road to	3,740	7,790		
I-87 Exit 6	2,057	4,285	1,680	0
WATERVLIET SHAKER ROAD				
New Karner Road to	1,750	3,420		
Sand Creek	1,050	2,050	1,000	0
	w/4-lane x-section		2,500	145
Sand Creek Road to	1,320	3,550		
Albany Shaker Road	790	2,130	1,000	16
	w/4-lane x-section		2,500	128
Old Wolf Road to	1,120	2,860		
I-87 Exit 5	620	1,580	1,000	40
	w/4-lane x-section		2,500	196
SAND CREEK ROAD				
Watervliet Shaker Road to	860	1,650		
Hunting Road	500	960	1000	108
Hunting Road to	1,510	2,470		
Wolf Road	875	1,430	1000	22
Wolf Road to	1,420	2,560		
Colonie Center Access Road	725	1,300	1000	48

Table 1 (continued)

Link	PM Peak Hour Traffic Demand (VPH) 1990 Volume 2 - Way/Peak	2005 Demand 2 - Way/Peak	Midblock LOS D Peak Threshold Maximum Volume	Pct of Growth
OLD WOLF ROAD				
Watervliet Shaker Road to	700	1,770		
I-87 Exit 4	455	1,150	1,000	78
I-87 Exit 4 to Albany	1,330	3,160		
Shaker Road	865	2,050	1,000	11
	w/3-lane x-section (2 sb, 1 nb)		2,500	141
VLY ROAD				
Watervliet Shaker Road to	890	1,340		
Denison Road	535	805	1,000	172
Denison Road to	350	620		
Route 7	185	330	1,000	560
NEW KARNER ROAD				
Central Ave to	1,400	2,320		
Watervliet Shaker Road	840	1,400	1,000	28
	w/4-lane x-section		2,500	295
	w/4-lanes + signalization		1,500	117
WADE ROAD				
Route 7 to	490	1,610		
Old Niskayuna Road	295	970	1,000	104
WOLF ROAD				
Central Ave to	2,570	4,840		
Sand Creek Road	1,415	2,660	1,680	21
	w/service road completion		1930	41
	w/Exit 3 and service roads		--	62
Sand Creek Road to	2,980	4,760		
Metro Park Road	1,540	2,620	1,680	12
	w/service road completion		1930	49
	w/Exit 3 and service roads		--	133
Metro Park Road to	2,860	4,540		
Albany Shaker Road	1,720	2,725	1,680	0
	w/service road completion		1930	21
	w/Exit 3 and service roads		--	113

Table 1 (continued)

Link	PM Peak Hour Traffic Demand (VPH) 1990 Volume 2 - Way/Peak	2005 Demand 2 - Way/Peak	Midblock LOS D Peak Threshold Maximum Volume	Pct of Growth
ALBANY SHAKER ROAD				
Maxwell Road to Wolf Road	2,480 1,365	4,050 2,230	1,500	16
	w/service road + Exit 3		2500	131
Wolf Road to Old Wolf Road	2,610 1,570	7,600 4,560	1,680	4
	w/Exit 3- Airport Connector		4,180	87
Old Wolf Road to Airport Road (south)	2,750 1,510	8,930 4,910	2,500	30
	w/Exit 3 Airport Connection		5,000	103
Airport Road (south) to Watervliet Shaker Road	1,230 675	2,800 1,540	1,000	38
	w/4 lane x-section		2,500	210
Watervliet Shaker Road to Airport Road (north)	460 345	1,620 1,215	1,000	75
	w/6-lane corridor (ASR + N-S Hwy) w/4-lane corridor		3,750 2,500	390 245
Airport Road (north) to Route 7	1,220 730	4,820 2,900	1,000	12
	w/6-lane corridor (ASR + N-S Hwy) w/4-lane corridor		3,750 2,500	139 80

Notes: Approximate mid-block thresholds based upon CDTC's STEP model process which assumes a maximum volume of 800 vph peak direction at LOS C and 1000 vph peak direction at LOS D for two lane arterials; 1,000 vph per lane peak direction at LOS C for multi-lane arterials, 1250 vph per lane peak direction at LOS D. Presence of a continuous median for turn movements is assumed to increase per-lane LOS D maximum volumes to 1400 vph. These values pertain to midblock conditions and not to intersection approach requirements.

Capacity of ramps serving the intersection of Route 7 and the proposed north-south highway under a grade-separated option was assumed to average about 850 vph. This value was derived from an analysis of weaving conditions at this location (under expected future traffic conditions on-ramp volumes of about 650-700 vph would provide a LOS D at merge points; off-ramp maximum volumes were assumed to approach 950 vph).

The mid-block capacity of Albany Shaker Road between Old Wolf Road and Wolf Road was adjusted to reflect the constraints placed on this section of highway by the existing closely spaced traffic signals at Wolf and Old Wolf Road. A similar analysis was included for New Karner Road, given that one or two signals may be needed to safely safely serve traffic attendant to commercial development in the corridor.

The effect of Exit 3 improvements on Wolf Road was measured in terms of the modelled diversions (reduced demand) from Wolf Road to the proposed Exit 3/Airport connection facility. Based on CDTC's *Wolf Road Area Transportation Improvement Study*, future demand along Wolf Road could be reduced by between 10 percent near Central Avenue to almost 40 percent at Albany Shaker Road. The "percent of growth" reflects the reduced demand rather than provision of new capacity.

Table 2

Threshold Analysis for Incremental Intersection Improvements
for Selected Intersections in the Airport Area

Intersection	1990 Peak Entering Volume	2005 Peak Demand	Critical Capacity Thresholds: Maximum Volume (90% of Capacity)	Critical Capacity Thresholds: Pct of Growth
Route 5 and New Karner Road	4,960	6,960	3,800	0
	w/GEIS short-term improvements		5,645	34
	w/GEIS long-term improvements		6,740	90
New Karner Road and Watervliet Shaker Road	2,170	3,800	1,685	0
	w/GEIS short-term improvement		3,390	75
	w/GEIS long-term improvements		4,420	138
***Watervliet Shaker Road and* Sand Creek Road**	1,620	3,550	1,280	0
	w/GEIS short-term improvements		2,727	57
	w/GEIS long-term improvements		3,470	95
Route 7 and Albany Shaker Road (corridor)	3,250	7,580	2,085	0
	w/NYSDOT improvements		3,760	12
	w/long-term improvements including at grade access to N-S highway (5-lane Rte 7)		5,570	54
	w/long-term improvements including grade-separated access to N-S highway (5-lane Rte 7)		7,160	90
	w/long-term improvements including at-grade access to N-S highway (6-lane Rte 7)		6,370	72
	w/long-term improvements including grade-separate access to N-S highway (6-lane Rte 7)		7,760	109
Albany Shaker Road and Watervliet Shaker Road	1,355	3,590	1,350	0
	w/GEIS short-term improvements		2,265	41
	w/GEIS long-term improvements		3,070	77

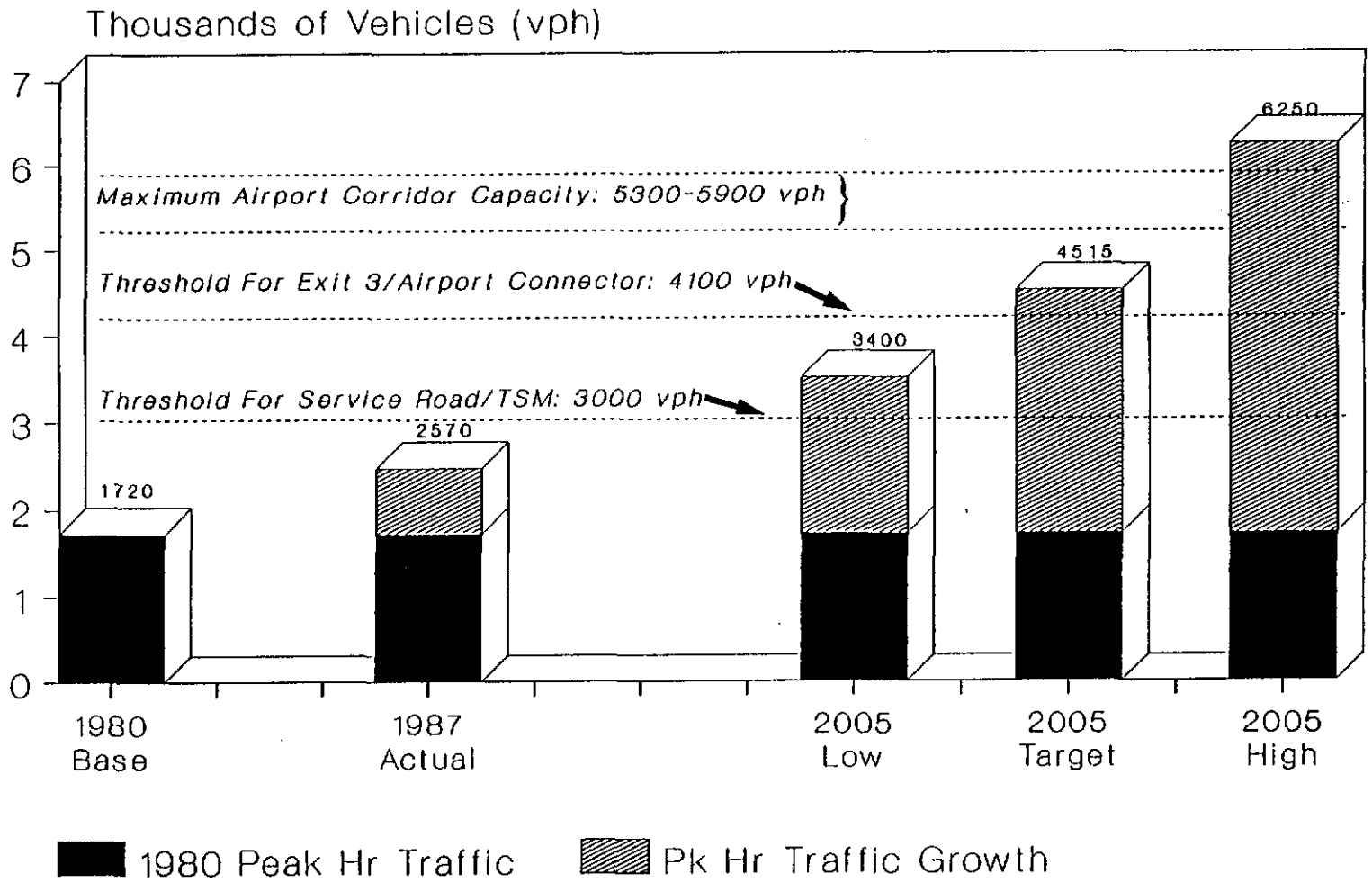
Table 2 (continued)

Intersection	1990 Peak Entering Volume	2005 Peak Demand	Critical Capacity Thresholds: Maximum Volume (90% of Capacity)	Critical Capacity Thresholds: Pct of Growth
Route 7 and Vly Road	3,420	6,975	2,480	0
	w/NYSDOT improvements		3,960	15
	w/GEIS long-term improvements (6-lane Rte 7 and service roads)		5,780	66
	w/NYSDOT improvement and service roads		4,860	40
Route 7 and Wade Road	3,750	8,180	2,725	0
	w/NYSDOT and GEIS short-term improvements		3,760	0
	w/NYSDOT and service road		5,800	46
	w/GEIS 6-lane and service roads		6,600	64
Wolf Road and Sand Creek Road	3,440	5,848	4,733	54
	w/GEIS improvements: Exit 3 and service roads		---	136
Wolf Road and Central Avenue	5,367	6,172	5,370	0
	w/Exit 3 and service roads		---	0 (breakeven)
Wolf Road and Albany Shaker Road	4,490	8,185	4,160	0
	w/GEIS short-term improvements		5,650	30
	w/Exit 3 and service roads		---	105
Watervliet Shaker Road and Old Wolf Road	1,480	2,900	1,600	8
	w/GEIS short-term improvements		3,410	135

Notes: Because of the system-level nature of the analysis, CDTC used the concept of "critical capacity" in the threshold analysis of study area intersections rather than level-of-service which would require detailed Highway Capacity Manual calculations. Critical capacity for each intersection and proposed improvements are based on CDTC's STEP model formulas and roughly approximate LOS D conditions in most situations.

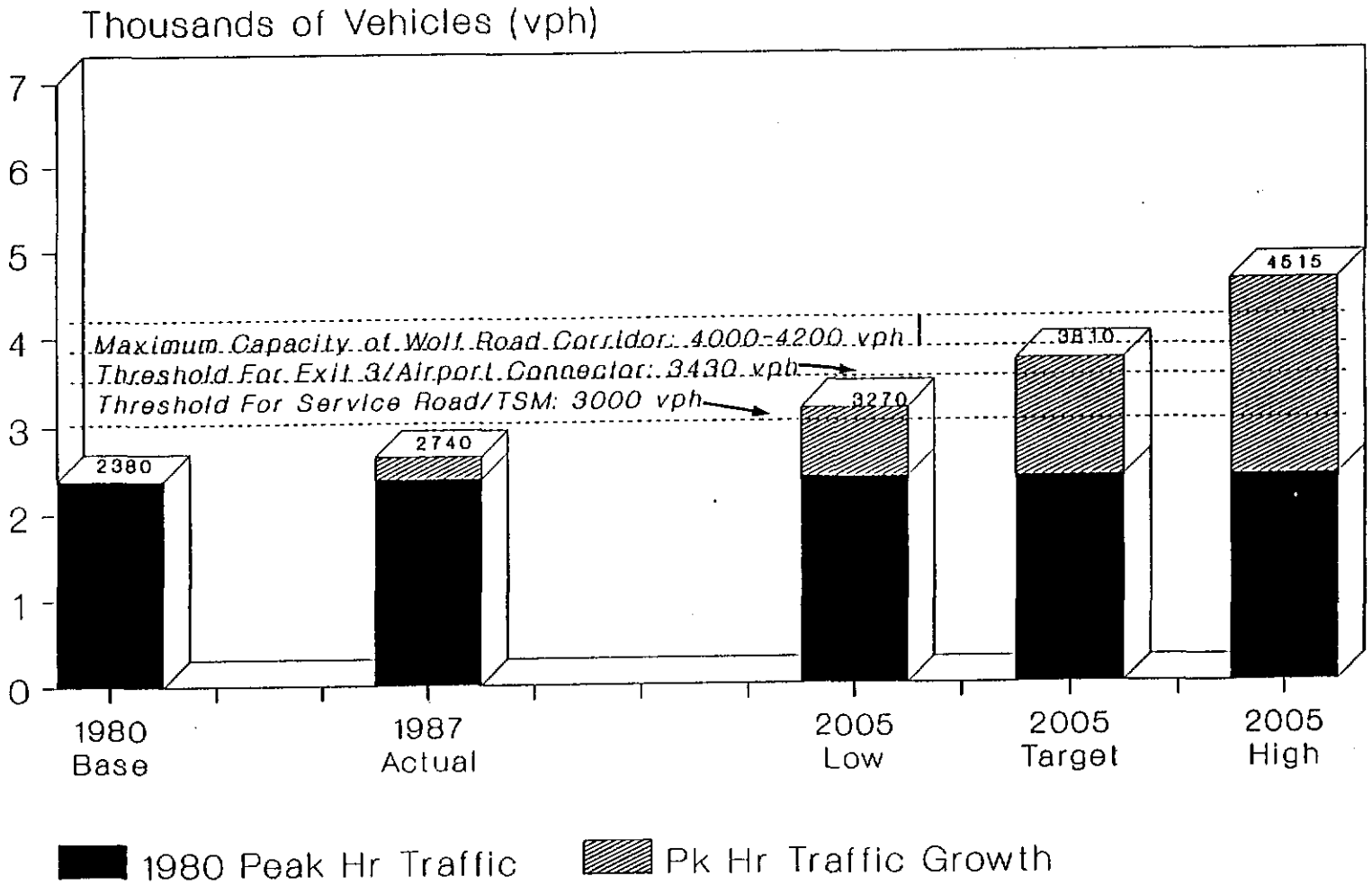
The effect of Exit 3 improvements on Wolf Roads intersection with Central Avenue, Sand Creek Road, and Albany Shaker Road was measured in terms of the modelled diversions (reduced demand) from these intersections to the proposed Exit 3/Airport connector facility. Based on CDTC's Wolf Road Transportation Improvement Study future demand at Central Avenue, Sand Creek Road, and Albany Shaker Road could be reduced by 15, 30 and 40 percent, respectively because of Exit 3. The "percent of growth" for these three intersections reflects the reduced demand rather than provision of any new capacity at these locations.

Threshold Volumes for Wolf Road Plan
(Airport Corridor Demand)



Note: Maximum capacity is defined as the capacity of Albany Shaker Road plus capacity of the Airport Connector.

Threshold Volumes For Wolf Road Plan
(Wolf Road Corridor Demand)



Note: Maximum Capacity is defined as the capacity of Wolf Road plus the capacity of service road system.

TABLE A-1

COST SHARES

* ---------- 42% share --------- * * -- 58% -- *

	Total Cost	Fed/State	County	Town/Vill	Assessment	Annual
Remedial Work:						
Wade Rd/NY 7	0.50	0.00	0.00	0.21	0.29	0.04 (10 yr @ 8%)
All Others	15.00	0.00	6.30	0.00	8.70	1.30 (10 yr @ 8%)
Major Actions:						
Exit 3/4, connector	30.00	12.60	0.00	0.00	17.40	1.63 (25 yr @ 8%)
Service Roads	4.00	0.00	0.00	1.68	2.32	0.22 (25 yr @ 8%)
WSR widening or alternative	10.00	0.00	4.20	0.00	5.80	0.54 (25 yr @ 8%)
ASR widening or alternative	13.00	0.00	5.46	0.00	7.54	0.71 (25 yr @ 8%)
New Carner widening or alt.	8.00	0.00	3.36	0.00	4.64	0.43 (25 yr @ 8%)
Total	80.50	12.60	19.32	1.89	46.69	4.87

APPENDIX B

For illustrative purposes only, examples of development mitigation costs have been calculated for hypothetical commercial (Table No. B-1) and residential (Table No. B-2) projects within the Study Area. The examples below allow direct comparison of typical development mitigation costs as presented in the FGEIS:

TABLE NO. B-1

DEVELOPMENT MITIGATION COST CALCULATION
HYPOTHETICAL OFFICE PROJECT

Project Statistics:

Type: Commercial-Office
Building Size: 10,000 SF
Lot Size: 1 Acre

MITIGATION	TOTAL COST
WATER	$13,500
TRANSPORTATION	*
RECREATION	150
SOLID WASTE	500
GEIS PREPARATION	253
TOTAL	$14,403

TABLE NO. B-2

DEVELOPMENT MITIGATION COST CALCULATION
HYPOTHETICAL RESIDENTIAL PROJECT

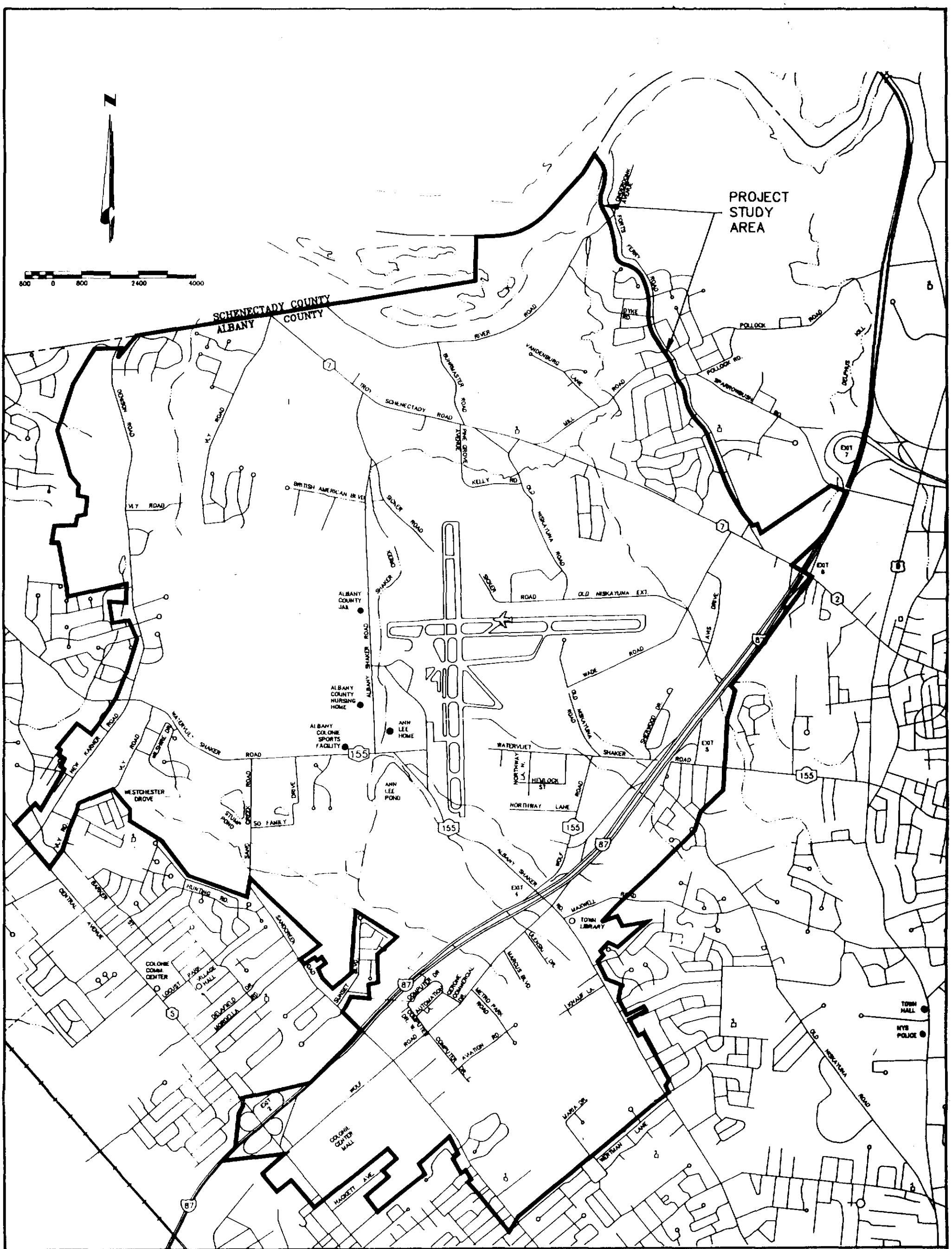
Project Statistics:

Type: Single Family Residential
Project Size: 100 lots
Project Area: 50 Acres

MITIGATION	TOTAL COST
WATER	$347,000
TRANSPORTATION	*
RECREATION	10,100
SOLID WASTE	6,600
GEIS PREPARATION	12,650
TOTAL	$376,350
TOTAL COST PER UNIT	$ 3,764

*Since transportation mitigation costs will be assessed through implementation of a Transportation Development District, costs cannot be determined at this time (See Section H. of Findings Statement).

APPENDIX C



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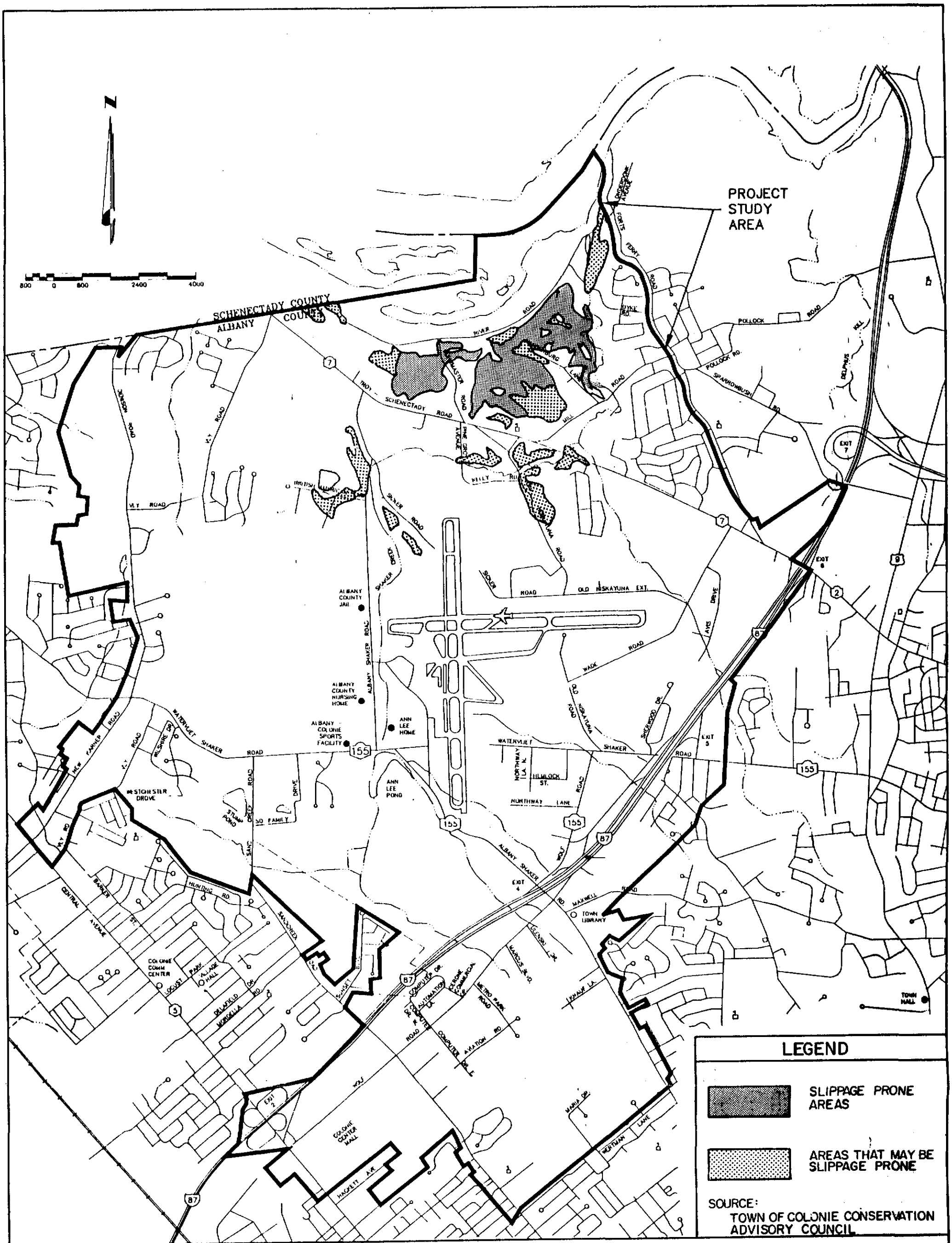
PROJECT STUDY AREA

EXHIBIT NO.

I-A-1

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT



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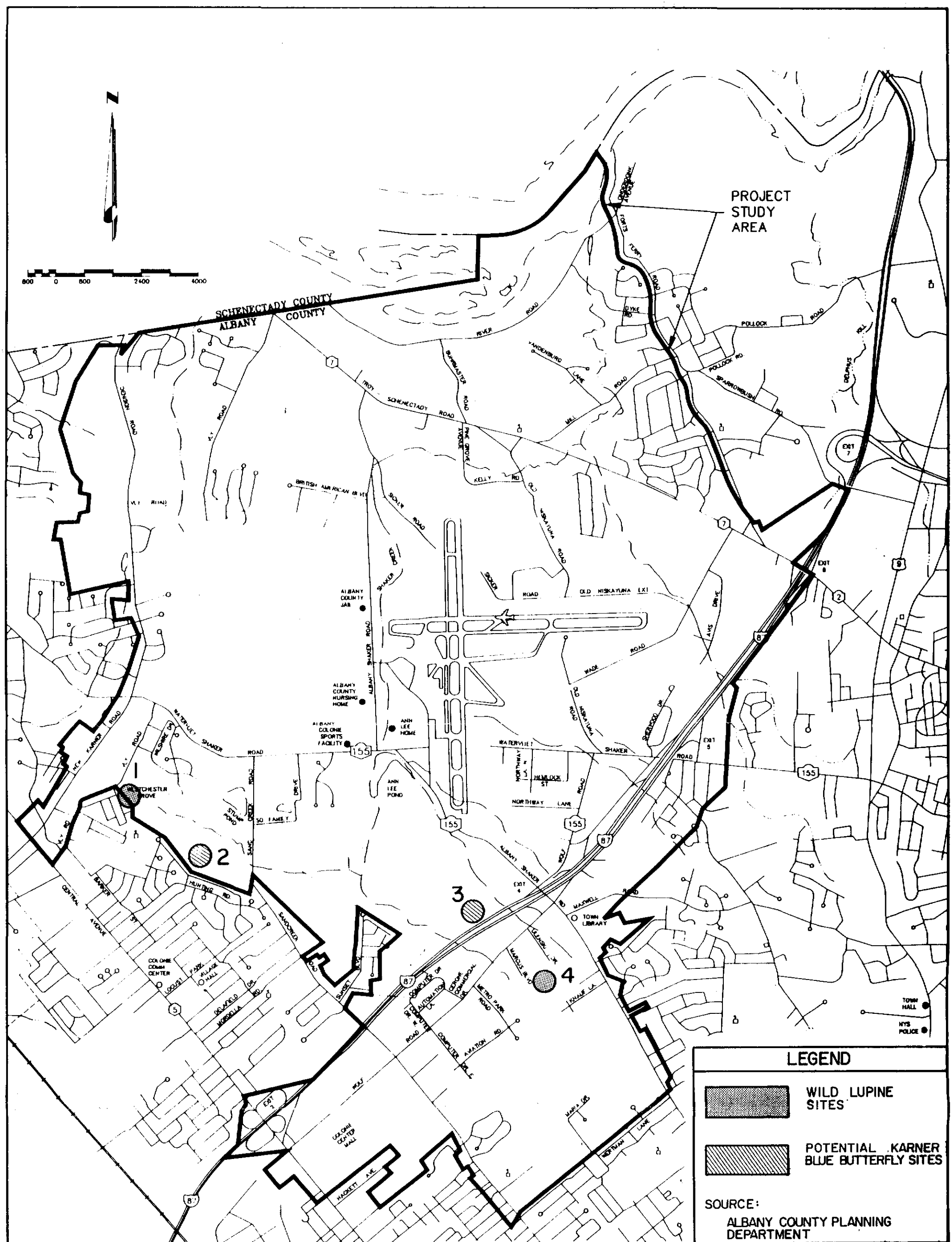
SLIPPAGE PRONE AREAS

EXHIBIT NO.
II - C - 5

AIRPORT AREA GENERIC
ENVIRONMENTAL IMPACT STATEMENT



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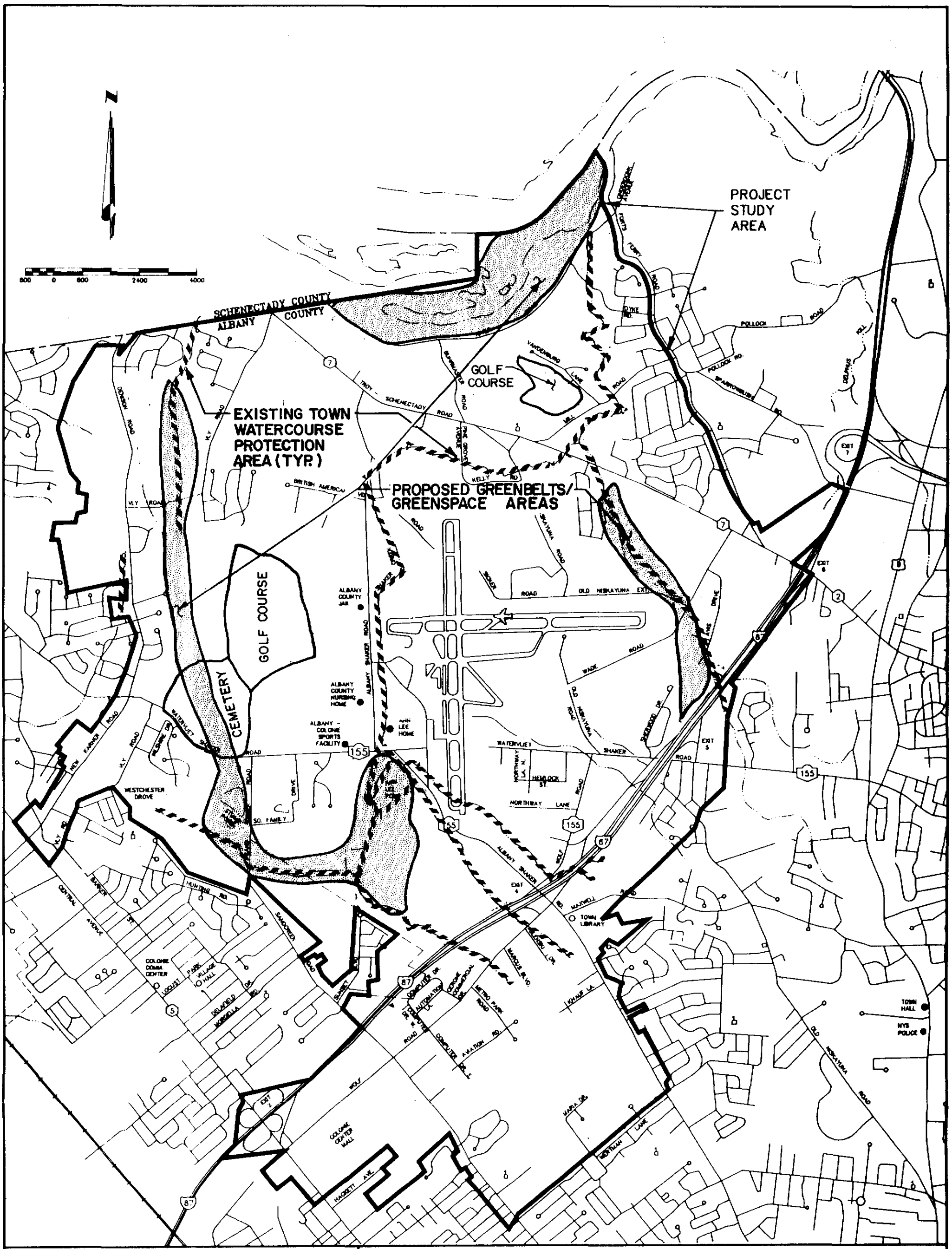
IDENTIFIED WILD LUPINE SITES AND POTENTIAL KARNER BLUE BUTTERFLY SITES

EXHIBIT NO.
II - D - 3

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT



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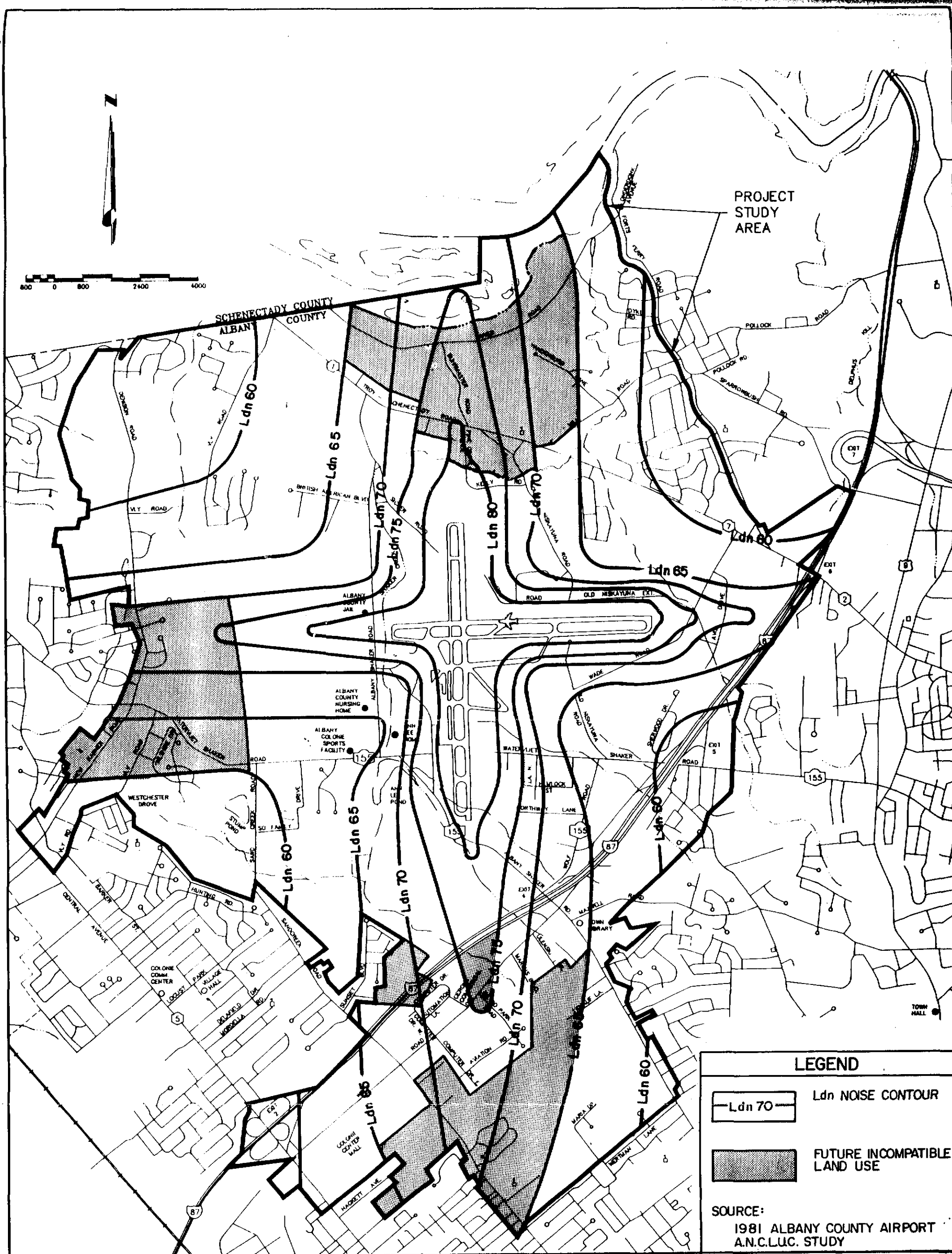
PROPOSED GREENBELTS/GREENSPACE AREAS AND EXISTING TOWN WATERCOURSE PROTECTION AREAS

EXHIBIT NO.

II - D - 5

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT



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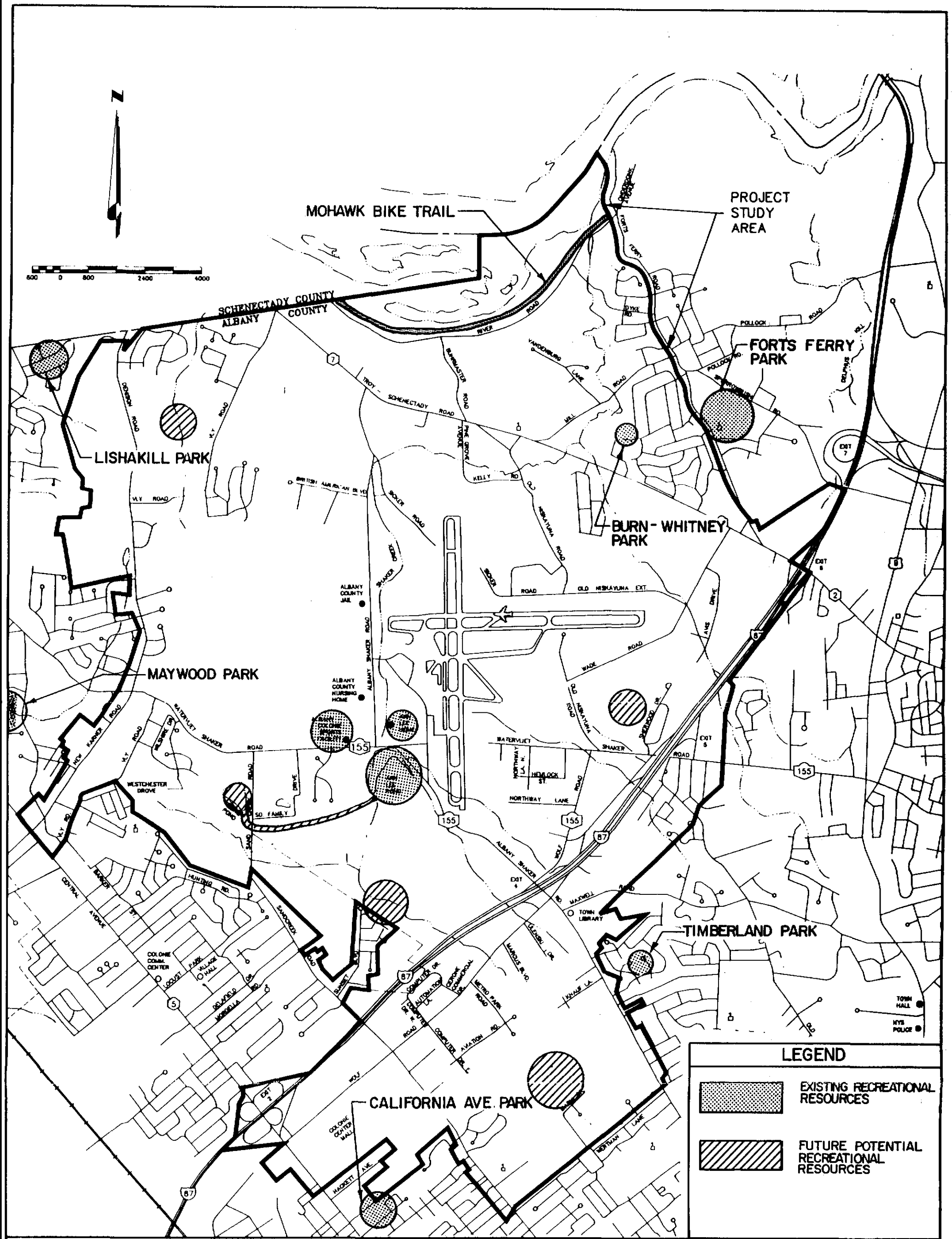
1995 NOISE CONTOURS

EXHIBIT NO.
II - J - 2

AIRPORT AREA GENERIC
ENVIRONMENTAL IMPACT STATEMENT



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EXISTING AND FUTURE POTENTIAL RECREATIONAL RESOURCES

EXHIBIT NO.

II - L - 1

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT