

Addressing the Environmental and Land Use Issues of Airport Growth



TABLE OF CONTENTS

Page

CHAPTER 1: INTRODUCTION

Chapter 1: Overview	1 -1
Chapter 2: Airport Planning and Growth	1 -2
Chapter 3: Air	1 -2
Chapter 4: Water	1 -2
Chapter 5: Noise	1 -3
Chapter 6: Land Use and Transportation	1 -3
The Institutional Environment	1 -3

CHAPTER 2: AIRPORT PLANNING AND GROWTH

Airport Capacity Planning	2 - 1
Trends for Airport Growth	2 - 1
<i>Passenger Travel</i>	2 - 1
<i>Domestic</i>	2 - 1
<i>International</i>	2 - 6
<i>Regionals/Commuters</i>	2 - 8
<i>General Aviation</i>	2 - 9
<i>Airport Operations</i>	2 - 9

TABLE OF CONTENTS (cont.)

Page

CHAPTER 3: AIR

<i>Introduction</i>	3 -1
<i>The Causes of Air Pollution at Airports</i>	3 -1
<i>Ground Access (Ground Access Vehicles)</i>	3 -2
<i>The Aircraft Landing and Take -off Cycle (LTO)</i>	3 -3
<i>Preparation of Aircraft for Flight (Ground Support Equipment)</i>	3 -6
<i>Future Estimates of Air Pollution at Airports</i>	3 -8
<i>Current Remediation Activities</i>	3 -14
<i>Ground Access Vehicles</i>	3 -14
<i>Compressed work schedules, telecommuting, and ridesharing</i>	3 -15
<i>Increased Transit Use</i>	3 -16
<i>Alternative Fuel Use</i>	3 -18
<i>Idle Restrictions</i>	3 -18
<i>Congestion Relief</i>	3 -18
<i>Aircraft (LTO Cycle)</i>	3 -19
<i>Reduced Reverse Thrust</i>	3 -21
<i>Reduced Engine Taxi</i>	3 -21
<i>Aircraft Operational Towing</i>	3 -21
<i>Other Aircraft Towing</i>	3 -22
<i>Transporting Passengers to Aircraft Parked Near Runway</i>	3 -22
<i>Aircraft Congestion Reduction</i>	3 -23
<i>Derated Takeoff Power</i>	3 -23
<i>Communications, Navigation, Surveillance (CNS) / Air Traffic Management (ATM)</i>	3 -23
<i>Ground Support Equipment (GSE)</i>	3 -24
<i>Use of LPG/CNG Fuel</i>	3 -25
<i>Use of Electrically-Powered GSE</i>	3 -26
<i>Fixed Equipment</i>	3 -27

CHAPTER 4: WATER

Introduction	4 - 1
Sources of Water Pollution at Airports in Addition to De-icing	4 - 2
De-icing and Anti-icing	4 - 3
<i>Background</i>	4 - 3
<i>Aircraft De-icing and Anti-icing</i>	4 - 3
<i>Runway De-icing</i>	4 - 6
<i>Health Effects</i>	4 - 6
<i>Water Pollution</i>	4 - 6
<i>Extent of Runoff</i>	4 - 7
<i>Specific Instances of Pollution</i>	4 - 8
<i>Current Remediation Activities</i>	4 - 9
<i>Materials Application</i>	4 - 11
<i>Stormwater Collection and Conveyance</i>	4 - 11
<i>Stormwater Storage</i>	4 - 12
<i>Stormwater Treatment, Recycling and Disposal</i>	4 - 12
<i>Example: Denver International Airport</i>	4 - 13
<i>Costs</i>	4 - 14
<i>Possible future remediation measures / alternatives</i>	4 - 14
<i>Aircraft</i>	4 - 16
<i>Material Reduction</i>	4 - 16
<i>Type of Material</i>	4 - 17
<i>Materials Application Techniques</i>	4 - 17
<i>Runway</i>	4 - 17
<i>Watershed Management Plans</i>	4 - 18
Regulations	4 - 18

CHAPTER 5: NOISE

Introduction	5 - 1
Airport Noise	5 - 2
<i>The Source</i>	5 - 2
<i>Measurement</i>	5 - 3
<i>Accepted Levels of Noise</i>	5 - 4

TABLE OF CONTENTS (cont.)

Page

The Factors that Influence Airport Noise	5 - 5
The Impacts of Airport Noise	5 - 6
<i>Behavioral Effects</i>	5 - 6
<i>Learning</i>	5 - 6
<i>Speech</i>	5 - 7
<i>Sleep</i>	5 - 9
<i>Other Effects</i>	5 - 9
<i>Health Effects</i>	5 - 11
<i>Blood Pressure/Cardiovascular Disease</i>	5 - 11
<i>Gastrointestinal Function</i>	5 - 12
<i>Hearing Impairment</i>	5 - 12
The Mitigation of Noise at Airports	5 - 12
<i>Reducing the Noise Level of Aircraft</i>	5 - 12
<i>Airport Design and Operating Procedures: Moving Noise Away from People</i>	5 - 13
<i>Coordinating Airport Operations and Development with Local Land Use Programs</i>	5 - 15
<i>Building Insulation</i>	5 - 18
<i>Noise barriers</i>	5 - 19
<i>Creating Collaborative Relationships</i>	5 - 19
Relevant Federal Regulations Controlling Airport Noise	5 - 20

CHAPTER 6: LAND USE AND TRANSPORTATION

Introduction	6 - 1
The Literature and NEPA Review of Airport Development	6 - 2

TABLE OF CONTENTS (cont.)

	<i>Page</i>
Airport Development/Expansion Results in Economic Benefits to the Community and Growth Pressures around the Airport	6 - 5
The Growth-Inducing Effects of Airport Development/Expansion Impacts Land Use Around the Airport and Throughout the Metropolitan Area	6 - 7
<i>Approach is Generally One-Dimensional</i>	6 - 7
<i>Encouraged by Federal Programs</i>	6 - 7
<i>Land Use Compatibility is Key Area of Conflict</i>	6 - 8
<i>Consideration of Broader Issues Related to the Influence of Airport Development on Land Use Patterns and Transportation Practices is Not Prevalent</i>	6 - 9
<i>A Multi-Dimensional Approach: Airports as Transit Cities</i>	6 - 11
Surface Transportation	6 - 12