APPENDIX A

AIRPORT ADVISORY COMMITTEES

Cuyahoga County Airport

Community Advisory Committee

Mr. Kevin Delaney
Cuyahoga County Airport
26300 Curtiss Wright Pkwy
Richmond Hts, OH 44143

Ms. Michelle Oakar
Annex Building - 4th floor
112 Hamilton Ct.
Cleveland, OH 44114

Mr. Dennis Roberts
Workforce Development
1275 Ontario Street
Cleveland, OH 44113

Mr. Robert L. Burden
9194 Creekwood Dr.
Mentor, OH 44060

Mr. Hugh Shannon
County Administration Blg, 4th floor
1219 Ontario Street
Cleveland, OH 44113

Ms. Laura Marniella
County Administration Blg, 4th floor
1219 Ontario Street
Cleveland, OH 44113

Mr. Pat Smock
County Administration Blg, 4th floor
1219 Ontario Street
Cleveland, OH 44113

Mr. Joseph Nanni
County Administration Blg, 4th floor
1219 Ontario Street
Cleveland, OH 44113

Mr. Robert E. Aufuldish
Board of Lake County Commissioners
105 Main Street
Painesville, OH 44077

Mr. Kenneth R. Gauntner
Board of Lake County Commissioners
105 Main Street
Painesville, OH 44077

Mr. Kenneth A. Lorenz, Mayor
Willoughby Hills City Hall
35405 Chardon Road
Willoughby Hills, OH 44094

Ms. Wilhelmina Kamis
Willoughby Hills City Hall
35405 Chardon Road
Willoughby Hills, OH 44094

Mr. Daniel Ursu, Mayor
Richmond Heights City Hall
457 Richmond Road
Richmond Hts, OH 44143

Mr. Lee Gase
Richmond Heights City Hall
457 Richmond Road
Richmond Hts, OH 44143

Ms. Kathryn Gambatese
Richmond Heights City Hall
457 Richmond Road
Richmond Hts, OH 44143

Mr. Scott Coleman, Mayor
Highland Heights City Hall
5827 Highland Road
Highland Heights, OH 44143

Ms. Virginia Swanson
Highland Heights City Hall
5827 Highland Road
Highland Heights, OH 44143

Ms. Catherine Haworth
LCDC at Lake Erie College
391 W. Washington Street
Painesville, OH 44077

Ms. Anne Hach
Heights Regional Chamber of Commerce
2490 Lee Blvd., Suite 100
Cleveland Heights, OH 44118

Ms. Beth Hansen
Mayfield Area Chamber of Commerce
1280 SOM Center Road, Suite 308
Mayfield Heights, OH 44124

Ms. Nikki Matala
Willoughby Area Chamber of Commerce
28 Public Square
Willoughby Hills, OH 44094

Mr. Lou Tisler
First Suburbs Development Council
40 Severence Circle
Cleveland Heights, OH 44118

Dr. Linda Williams
Superintendent, Richmond Hts Board of Ed.
447 Richmond Road
Richmond Hts, OH 44143

Ms. Eva Nanni
JB Milano's
3555 Richmond Road
Richmond Hts, OH 44143

Mr. Bruce Mavec
Royal American Group
27181 Euclid Avenue
Euclid, OH 44132

Mr. Gary LaConte
Airport Greens
28980 White Road
Willoughby Hills, OH 44092

Mrs. Florence Klein
4869 Swetland Road
Richmond Hts, OH 44143

Dr. Chester Ho
309 Knollwood Terrace
Richmond Hts, OH 44143

Mr. Mike Coiner
2940 Canterbury Ct.
Willoughby Hills, OH 44092

Ms. Paula Crouse
294 Knollwood Tr.
Richmond Hts, OH 44143

Mr. Romas Pliodzinski
504 Trebisky Road
Richmond Hts, OH 44143

Ms. Tonda DiPlacido
2910 Istra Lane
Willoughby Hills, OH 44092

Ms. Heather Alexander
446 Terrace Drive
Bedford, OH 44146

Cuyahoga County Airport

Technical Advisory Committee

Mr. Kevin Delaney
Cuyahoga County Airport
26300 Curtiss Wright Pkwy
Richmond Hts, OH 44143

Mr. Chris Guido
Cuyahoga County Airport
26300 Curtiss Wright Pkwy
Richmond Hts, OH 44143

Sgt. Andrew Williams
Cuyahoga County Protective Services
County Admin. Bldg., 1219 Ontario Ave.
Cleveland, OH 44113

Lt. Effrem Speigner
Cuyahoga County Protective Services
1642 Lakeside Avenue
Cleveland, OH 44144

Mr. Tony Marlow
Flight Options
26180 Curtiss Wright Pkwy
Richmond Hts, OH 44143

Mr. Edward McDonald
Corporate Wings
355 Richmond Road
Richmond Hts, OH 44143

Mr. Donald Moore
NCC
26460 Curtiss Wright Pkwy
Highland Heights, OH 44143

Mr. Jim Shenk
Five Star Aviation
26500 Curtiss Wright Pkwy
Highland Heights, OH 44143

Mr. Dan Frisone
Eaton Flight Operations
26340 Curtiss Wright Pkwy
Richmond Hts, OH 44143

Mr. Larry Rohl
T & G Flying Club
26300 Curtiss Wright Pkwy
Richmond Hts, OH 44143

Mr. Gerald Allen
3267 Aberdeen Road
Shaker Hts, OH 44120

Mr. Enzo Fatigati
Zomar Group
4041 Batton St. NW, Suite 301B
North Canton, OH 44720

Mr. Robert (Ben) Bettinger
5375 Avion Park
Highland Heights, OH 44143

Ms. Stephanie Swann
FAA-Detroit Airport District Office
11677 South Wayne Road, Suite 107
Romulus, MI 48174

Mr. Jack Krebs
Richmond Hts Planning & Zoning Commission
457 Richmond Road
Richmond Hts, OH 44143

Mr. Robert Mastrangelo
Highland Heights Planning Commission
5827 Highland Road
Highland Heights, OH 44143

Ms. Charlotte Schryer
Willoughby Hills Planning Commission
35405 Chardon Road
Willoughby Hills, OH 44094

Mr. Gene Rowe
Richmond Heights Police Department
457 Richmond Road
Richmond Hts, OH 44143

Mr. Robert Dresser
4932 Geraldine Road
Richmond Hts, OH 44143

Mr. Jon Cepek
Northern Ohio District, USDA-APHIS-
Wildlife Services
Plum Brook Station, 6100 Columbus Ave.
Sandusky, OH 44870

Ms. Jennifer Aszalos
TSA-US Dept. of Homeland Security
Cleveland Hopkins Int'l Airport
5300 Riverside Dr.
Cleveland, OH 44135

Ms. Melanie Kintner
Greenbuilding Coalition
3500 Lorain Avenue, Suite 200
Cleveland, OH 44113

Mr. Steve Zvada
Swagelok Co.
328 Bishop Road
Highland Heights, OH 44143

Mr. Kevin Frazier
Swagelok Co.
328 Bishop Road
Highland Heights, OH 44143

Mr. Umberto Fedeli
Fedeli Group
5005 Rockside Road
Independence, OH 44131

Mr. Larry Rippetoe
Cleveland Construction
18432 Lakeshore Blvd. Apt. 106
Cleveland, OH 44119

Mr. Bob Shea
420 Timberidge Trail
Gates Mills, OH 44040

Mr. Dan Kozar
5107 Lynd Avenue
Lyndhurst, OH 44124

Mr. Frank Lanning
FLC Co. (a Nesco Company)
26301 Curtiss Wright Parkway, Suite 205
Richmond Hts, OH 44143

Mr. Don Iler
1988 Laurel Hill
South Euclid, OH 44118

Mr. Howard Maier
Northeast Ohio Area Coordinating Agency
(NOACA)
1299 Superior Avenue
Cleveland, OH 44114

Ms. Lynn Garrity
Cuyahoga County Soil & Water Conservation
District
6100 West Canal Road
Valley View, OH 44125

Mr. Dennis Roche
Convention and Visitors Bureau
50 Public Square, 3100 Terminal Tower
Cleveland, OH 44113

Mr. Todd Heyman
Progressive Insurance
5920 Landerbrook Drive, Building 3
Mayfield Heights, OH 44124

APPENDIX B

ECONOMIC AND FISCAL IMPACTS REPORT

Airport Master Plan Update
Economic and Fiscal Impacts of the Cuyahoga County Airport

Final Report

Prepared by
Robert Simons & Associates, Inc.
2349 Coventry Road
Cleveland Heights, OH 44118

Prepared for
Cuyahoga County Airport
C&S Engineers, Inc.
RCJ Resources, Inc.

May 16, 2005

TABLE OF CONTENTS

ITEM **PAGE**

EXECUTIVE SUMMARY OF FINDINGS 1
- **Scope of Our Analysis 1**
- **Airport Tenant Survey Results 1**
- **Airport Property Tax Base Analysis 2**
- **Direct Economic Activity in the Cuyahoga County Airport Study Area 2**
- **Indirect Impacts from Basic/Non-Basic Multiplier Effect 2**
- **Taxes and Fiscal Impacts 3**

AIRPORT AREA BUSINESS SURVEY 3
- **Identification of Businesses and Tenants to Survey 3**
- **Preparation of the Survey Instrument and Survey Procedure 4**
- **Key Findings from the Airport Business Tenant Survey 4**

AIRPORT PROPERTY TAX BASE ANALYSIS 4
- **Procedures for Real Estate Data Collection 5**
- **Real Estate Profile of the Study Area 5**

ESTIMATES OF DIRECT ECONOMIC ACTIVITY IN THE STUDY AREA 5
- **Methodology 5**
- **Total Direct Economic Factors in the Cuyahoga County Airport Study Area 5**

INDIRECT IMPACTS FROM BASIC/NON-BASIC MULTIPLIER EFFECT 6
- **Methodology for Estimation of Economic Spin-offs from Study Area Firms 6**
- **Results of Economic Spin-off Analysis 7**

TAXES AND FISCAL IMPACTS 7

LIMITATIONS OF THIS REPORT 7

FIGURE 1: AIRPORT STUDY AREA 8

This economic and fiscal impact analysis of the Cuyahoga County Airport has been prepared by Robert Simons & Associates, Inc. (RS&A). RS&A is a subcontractor to RCJ Resources, Inc., which has in turn acted as a subcontractor to C&S Engineers, Inc., the prime consultant for this engagement. The client is the Cuyahoga County Airport, which has engaged us to update the Cuyahoga County Airport master plan with respect to economic and fiscal impacts of airport activities and tenants.

EXECUTIVE SUMMARY OF FINDINGS

Scope of Our Analysis

Our tasks included a survey of 63 businesses on or very near the Cuyahoga County Airport facility (the airport study area) to determine economic activity related to the Cuyahoga County Airport. We also prepared a property tax base analysis for these same properties. These constitute the direct economic and fiscal (on-budget) effect of the airport area on the economy (off-budget). For those export-oriented firms or tenants among this group, we also prepared an economic impact analysis to determine the spin-off employment and fiscal impacts. The airport study area includes buildings within about ¼ mile of the airport facility, all property on Curtiss Wright Boulevard, all property on Avion Parkway, and commercial property on the 300 blocks of both Bishop Road and Richmond Road. See **Figure 1**, Airport Study Area, which highlights the area where surveyed properties are located. Note that the survey area extends beyond the limits of the Airport property to the south and east.

Airport Tenant Survey Results

In September 2004, we conducted a mail survey of businesses on and near the airport facility, to determine various economic activity levels. The four-page instrument was mailed to firms in the airport area of influence. RCJ Resources staff followed up with a fax to non-respondents. After 3 weeks, we had a response rate of 43% among the 63 airport tenants and local businesses surveyed. The following data were reported among the 22 respondents representing 27 firms:

- 1,700 employees
- 732,000 square feet of space
- Payroll of $46 million (including benefits)
- Average salary: $58,000
- Direct annual expenditures (goods and services, rent, other, excluding fuel): $1.4 million
- Annual personal property taxes paid: $0.5 million
- Over 1,000 hotel nights per year
- Over 100 trucks, planes and other vehicles

The above data are simply reported survey results, with no attempt made to determine the totals for the population of 63 businesses.

Airport Property Tax Base Analysis
We then identified County property tax records, and accumulated data on all real property build out, values and tax payment over the past several years. The area includes over 1.5 million square feet of space, with a market value for tax purposes of about $60 million.

- 24 property owners in 34 different parcels
- 63 tenants and entities
- 1.5 million square feet of developed space
- 890 acres total (including airport but excluding golf course)
- 147 acres of developed property
- Vacancy rate of 5% or less
- Market value for tax purposes of $59 million
- Market values up about 25% since 1996

Direct Economic Activity in the Cuyahoga County Airport Study Area
In order to provide estimates of direct economic impacts, we extrapolated survey results to the entire Airport study area. We used standard economic estimation procedures, including ratio analysis with the real estate data, which are comprehensive. Thus, the direct effects of the Airport study area are conservatively estimated to be:

- 3,000 employees
- Annual payroll of $150 million (including benefits)
- Average salary: $50,000
- 24 property owners in 34 different parcels
- 63 tenants and entities
- 1.5 million square feet of developed space
- Market value for tax purposes of $59 million
- Direct annual expenditures (goods and services, rent, other, including fuel): over $2 million

Indirect Impacts from Basic/Non-Basic Multiplier Effect
Export-oriented employment (basic employment) is recognized to generate service spin-off employment (non-basic employment). Utilizing standard economic base multiplier methodology, we estimated the service (non-basic) economic and employment spin-offs resulting from the export-related (basic) employment in the airport study area. This involves taking the basic industry only, and determining the number of dollars and jobs flowing from this economic engine, within the Cuyahoga County Airport study area. We determined the indirect economic effects of the Airport study area basic employment to be:

- 1,500 additional local retail and service jobs
- $35 million in total additional payroll in local retail and service firms
- $175 million in annual expenditures at local retail and service establishments

Taxes and Fiscal Impacts
The total fiscal impacts of the Cuyahoga County Airport study area are substantial:

- Real property taxes paid in the Airport study area are $1.1 million per year, and real estate taxes are up about 25% since 1996
- Over $1 million in personal property taxes per year
- Direct employee income tax @ 2% are $3 million per year
- Indirect employee income tax @ 2% are $0.7 million per year
- TOTAL annual taxes (real estate, personal, income tax) from Airport study area tenants and property are $5.8 million
- Projected present value of fiscal benefits (20 years) is over $100 million

AIRPORT AREA BUSINESS SURVEY

As indicated in the executive summary, we conducted a mail survey of businesses near the airport facility in September 2004, to determine various economic activity levels. The four-page instrument was mailed to firms in the Airport study area. This part of the work was conducted with the assistance of RCJ Resources, Inc. Some of the businesses were airport tenants; others lease or own property in the airport study area. This area includes buildings on the airport property, all property on Curtiss Wright Boulevard, all property on Avion Parkway, and commercial property on the 300 blocks of both Bishop Road and Richmond Road. See **Figure 1**, Airport Study Area.

Identification of Businesses and Tenants to Survey
Multiple methods were used to identify potential respondents for this survey, including tenant and business lists from the last Cuyahoga County Airport Master Plan, the Cuyahoga County Auditor's office, the internet, and windshield surveys.

We obtained a four year-old list of businesses in the communities in the Master Plan area (primarily Willoughby Hills and Richmond Heights). From these lists, we determined which ones currently existed by on-site verification. Later, this was double checked by entering parcel numbers into the Cuyahoga and Lake County Auditors' websites to make sure there were no mistakes made verifying the existence of these companies if they were property owners.

Next, we identified new businesses that did not exist at the time the four-year-old aforementioned list was made. A log was made to list these companies from a windshield survey, and these were also double checked on the Auditor websites and using the telephone book. At this point the sample frame was set.

Preparation of the Survey Instrument and Survey Procedure
The survey instrument was prepared by RS&A, with input from RCJ, C&S, and Steve Nagy of the Cuyahoga County Airport. The final instrument was pre-tested on one potential respondent, and then sent out with a cover letter on Cuyahoga County Airport letterhead[1].

The instrument was sent to all 63 business tenants by mail in September of 2004. RCJ Resources followed up by fax over the next 3 weeks. Twenty-two respondents representing 27 businesses returned the survey, a response rate of 43%. This response rate is satisfactory for a survey of this type. The firms represent about half of the occupied real estate in the study area.

Key Findings from the Airport Business Tenant Survey
Key findings from the survey responses of 27 firms that are in the airport study area are as follows:

- 1,700 employees
- 732,000 square feet of space
- Payroll of $46 million (including benefits)
- Average salary: $58,000
- Direct annual expenditures (goods and services, rent, other, excluding fuel): $1.4 million
- Annual personal property taxes paid of $0.5 million
- Over 1,000 hotel nights per year
- Over 100 trucks, planes and other vehicles

The above data are simply reported survey results, with no attempt made to determine the totals for the population of 63 businesses.

AIRPORT PROPERTY TAX BASE ANALYSIS

The purpose of this part of the study was to identify property tax records from the Cuyahoga County Auditor, and accumulate data on real property values, built space, and tax payment for a recent year (2003). A very small number of the parcels were in Lake County, and these were excluded from the property base analysis. The purpose was to obtain data on all properties in the Cuyahoga County Airport area.

[1] We also surveyed the 50 largest firms in the Cleveland area with a similar instrument that did not address local property use. We did this at the request of the Cuyahoga County Airport. We obtained 8 responses, which we forwarded along to C&S Engineers, Inc., for their use. These results are not included below.

Procedures for Real Estate Data Collection
Parcel-based property reports were obtained from the Cuyahoga County Auditor's office. Pertinent tax and property information was found on the Cuyahoga County website, including: property size, owner information, current taxes, zoning, and other related parcel information. For the analysis of changes since 1996, we also obtained hard copies of data on property values, building size and property taxes paid, from the Cuyahoga County Auditor. Property data were put on an excel spreadsheet, and internal inconsistencies were identified and reconciled. We also made working maps of the study area to identify tenants and properties.

Real Estate Profile of the Study Area
Key findings are presented below. Unlike the survey results, the figures below are a comprehensive total of study area real estate activity:

- 24 property owners in 34 different parcels
- 63 tenants and entities
- 1.5 million square feet of developed space
- 890 acres total (including airport but excluding golf course)
- 147 acres of developed property
- Vacancy rate of 5% or less
- Market value for tax purposes of $59 million
- Market values up about 25% since 1996

ESTIMATES OF DIRECT ECONOMIC ACTIVITY IN THE STUDY AREA

Methodology
In order to extrapolate survey results to the entire Cuyahoga County Airport study area, we used standard economic estimation procedures, including ratio analysis with the real estate data. We had survey data for 27 (43%) of the firms in the airport study area, and property tax data for all firms and property. Thus, we knew which properties were occupied by companies that did not respond to the survey. We began with the survey results, and calculated ratios of employees per square feet, and other pertinent data. We then did an analysis of non-respondents, and applied these ratios to non-respondent firms, conservatively filling in missing data and being careful not to overestimate the results.

Total Direct Economic Factors in the Cuyahoga County Airport Study Area
The figures below reflect RS&A's conservative estimate of overall direct economic factors in the Cuyahoga County Airport study area:

- 3,000 employees
- Annual Payroll of $150 million (including benefits)
- Average salary: $50,000
- 24 property owners in 34 different parcels

- 63 tenants and entities
- 1.5 million square feet of developed space
- Market value for tax purposes of $59 million
- Direct annual expenditures (goods and services, rent, other, including fuel) of over $2 million

INDIRECT IMPACTS FROM BASIC/NON-BASIC MULTIPLIER EFFECT

Basic employment is typified by export-related manufacturing jobs where the products leave the Cleveland region. This type of employment "increases the size of the economic pie." The spin-off of this employment includes non-basic employment, such as local service and retail jobs, that "service the needs of" the larger flow of dollars brought to the region by basic employment. Utilizing standard economic base multiplier methodology, we estimated the non-basic economic and service employment impact spin-offs resulting from the export-related (basic) employment in the study area. This involves taking the basic industry only, and determining the number of dollars and jobs flowing from this economic engine, within the Cuyahoga County area.

Methodology for Estimation of Economic Spin-offs from Study Area Firms

To determine the economic multiplier, the effect of the income takes three turns, corresponding with direct, indirect, and induced effects. Direct effects are jobs created by the salaries of the employees as this money enters the local economy. The second turn of money in the local economy is based on the need for the industry to purchase goods or services from other local industries based on where the employee works. The third turn of money in the local economy is from personal household spending based on where the employee lives. To determine the effect of the multiplier on local employment, the total effect is multiplied by approximately 40 percent because non-basic (retail and local service) jobs pay on average only 40 percent of basic job salaries. Based on the local salary for retail cashiers and store clerks, the total retail employment effect is divided by the average retail salary to determine the number of retail jobs created by the basic jobs[2]. Income flows from the job creation, after considering local spending behavior.

[2] See, for example, Bendavid-Val, Avrom. 1991. Regional and Local Economic Analysis for Practitioners. Westport, CT: Praeger Publishers; Blair, John P. 1995. Local Economic Development: Analysis and Practice. Thousand Oaks, CA: Sage Publications; and Blakely, Edward J. 1989. Planning Local Economic Development: Theory and Practice. Newbury Park, CA: Sage Publications.

Results of Economic Spin-off Analysis
Based on the above methodology, we determined the indirect economic effects of the Cuyahoga County Airport basic employment to be the following:

- 1,500 additional local retail and service jobs
- $35 million in total additional payroll in local retail and service firms
- $175 million in annual expenditures at local retail and service establishments

TAXES AND FISCAL IMPACTS

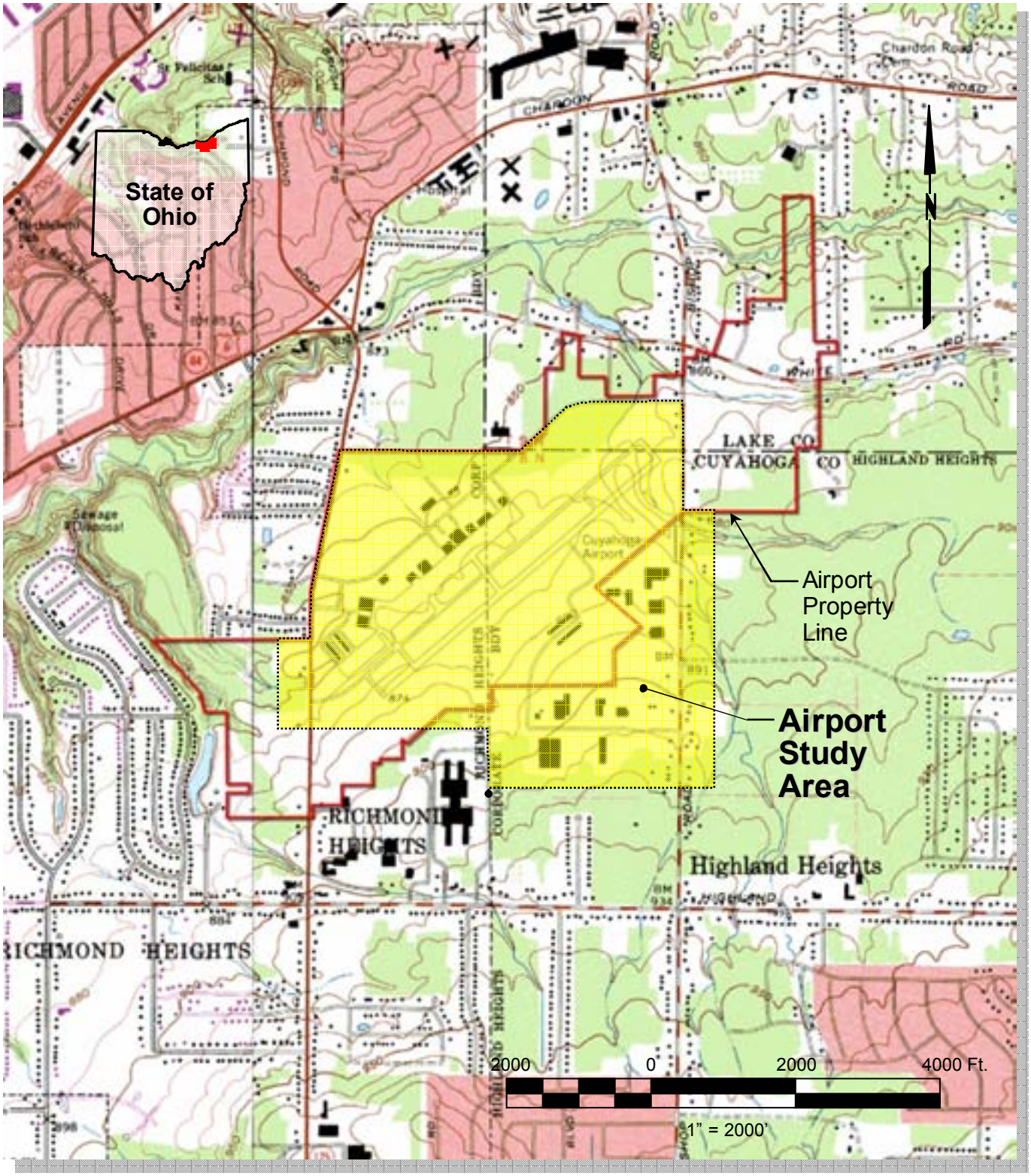
The final step of this study provides estimates of the overall fiscal impacts (on-budget) of Cuyahoga County Airport study area firms, including those taxes paid by induced employment. Direct impacts refer to firms located from within the study area, and indirect effects indicate local service firms generally located elsewhere. However, some could be located within the study area.

The total fiscal impacts of the Cuyahoga County Airport study area are substantial:

- Real property taxes paid in the study area are $1.1 million per year
- Real estate taxes are up about 25% since 1996, when they totaled $807,000
- Over $1 million in personal property taxes per year
- Direct employee income tax @ 2% are $3 million per year, spread out over numerous jurisdictions
- Indirect employee income tax @ 2% are $0.7 million per year, also over numerous jurisdictions
- TOTAL annual taxes (real estate, personal, income tax) from business tenants and property are $5.8 million
- Projected present value of fiscal benefits (20 years) is over $100 million.

LIMITATIONS OF THIS REPORT

The data collection for this report is based on reported survey results from business tenant forms and property records. While believed to be reliable, we made no additional attempt to verify the data, unless otherwise noted in this report. Results of this study are considered valid for six months from the end of data collection (November 2004). The research presented in this report is on a best-efforts basis, and is not intended for use for investment decisions.



Source: USGS Topographic Maps – Mayfield Heights Quadrangle

41°31'57.48"N
81°28'49.20"W

STUDY AREA

Cuyahoga County Airport
Economic and Fiscal Impact Analysis

Airport Study Area

Figure 1

APPENDIX C

ENVIRONMENTAL CORRESPONDENCE AND DOCUMENTATION

ENVIRONMENTAL SCOPING LIST

Michelle Mooney
Cuyahoga County Airport
26300 Curtis Wright Parkway
Cleveland, OH 44143

Katy Jones
Federal Aviation Administration DET ADO
1677 South Wayne Rd., Suite 107
Huron Township, MI 48174

David L. Dennis
Ohio DOT, Office of Aviation
2829 W. Dublin-Granville Rd
Columbus, OH 43235

David Coyle
Ohio DOT District 12
5500 Transportation Blvd.
Garfield Hts., OH 44125

Paul Leuchner
U.S. Army Corps of Engineers, Buffalo Dist
1776 Niagara Street
Buffalo, NY 14207

Matthew Hoehn
Ohio DNR, Division of Wildlife, District 3
912 Portage Lakes Drive
Akron, OH 44319

James Strader
Ohio Historic Preservation Office
567 East Hudson Street
Columbus, OH 43211

Dick Bartz
Ohio DNR, Division of Water
1930 Fountain Square
Columbus, OH 43224

Daniel Urban, Mayor
Richmond Heights City Hall
457 Richmond Road
Richmond Heights, OH 44143

Stephanie R. Swann
Federal Aviation Administration DET ADO
1677 South Wayne Road, Suite 107
Romulus, MI 48174

Gordon D. Proctor
Ohio Department of Transportation
1980 West Broad Street
Columbus, OH 43223

Thomas V. Skinner
U.S. EPA, Region 5
77 W. Jackson Blvd.
Chicago, IL 60604

James D. Stover
Natural Resources Conservation Services
6100 West Canal Road
Valley View, OH 44125

Jeff Van Loon
Ohio DNR, Div. of Soil & Water Conserv
6100 Wedgewood Road
Medina, OH 44256

Paul Alsenas
Cuyahoga County Planning Commission
323 Lakeside Avenue West, Suite 410
Cleveland, OH 44113

Morton F. Ryan, Mayor
Willoughby Hills City Hall
35405 Chardon Road
Willoughby Hills, OH 44094

Francine Hogg, Mayor
Highland Heights City Hall
5827 Highland Road
Highland Heights, OH 44143

ENGINEERS
DESIGN BUILD
TECHNICAL RESOURCES
OPERATIONS

C&S Engineers, Inc
499 Col. Eileen Collins Boulevard
Syracuse, NY 13212
phone 315-455-2000
fax 315-455-9667
www.cs-cs.com

November 19, 2003

Jeff Van Loon
Ohio DNR, Div. of Soil & Water Conserv.
6090 Wedgewood Road
Medina, OH 44256

Re: Cuyahoga County Airport
Airport Master Plan and Runway Safety Area Study

File: A27.001

Dear Mr. Van Loon:

On behalf of the Cuyahoga County Board of Commissioners, C&S Engineers, Inc., is currently preparing a Master Plan and a Runway Safety Area Study for the Cuyahoga County Airport, situated in the communities of Highland Heights, Willoughby Hills, and Richmond Heights, eleven miles east of downtown Cleveland, Ohio. An important task in the Master Plan and Runway Safety Area (RSA) Study will be to identify and characterize sensitive environmental areas within the airport property and vicinity. This effort would assist our planners to make environmentally sound recommendations for the Master Plan and RSA Study as well as support the baseline information for subsequent environmental review requirements at the federal and state level over specific proposed airport projects.

Attached please find a vicinity map of the airport. We would like to request your assistance in providing us with information you possess regarding the Environmental Resource Categories listed below. The categories were derived from the Federal Aviation Administration Order 5050.4a *Airport Environmental Handbook*. If you have data stored in your geographic information system, please guide us on how we may best use your mapping resources for our study.

Your assistance will enable us to identify and quantify our determination of the potential areas of environmental concerns at the Cuyahoga County Airport.

The environmental resource categories are:

Wetlands
Compatible Land Use
Social Impacts
Induced Socioeconomic Impacts
Prime and Unique Farmland
Water Quality
Air Quality
Solid Waste Impacts
Wild and Scenic Rivers
Historic, Architectural, Archeological and Cultural Resources
Endangered and Threatened Species of Flora and Fauna
Flood Plains
Coastal Zone Management
Coastal Barriers
Noise
Energy Supply and Natural Resources
Light Emissions
Construction Impacts
Biotic Communities
Environmental Justice
Protection of Children from Environmental Health Risks and Safety Risks
Department of Transportation Act Section 4(f) Lands

Please let us know by December 22, 2003 if you are aware of issues or areas of concern that we should consider. If you have any questions, please feel free to contact us. Thank you for your assistance.

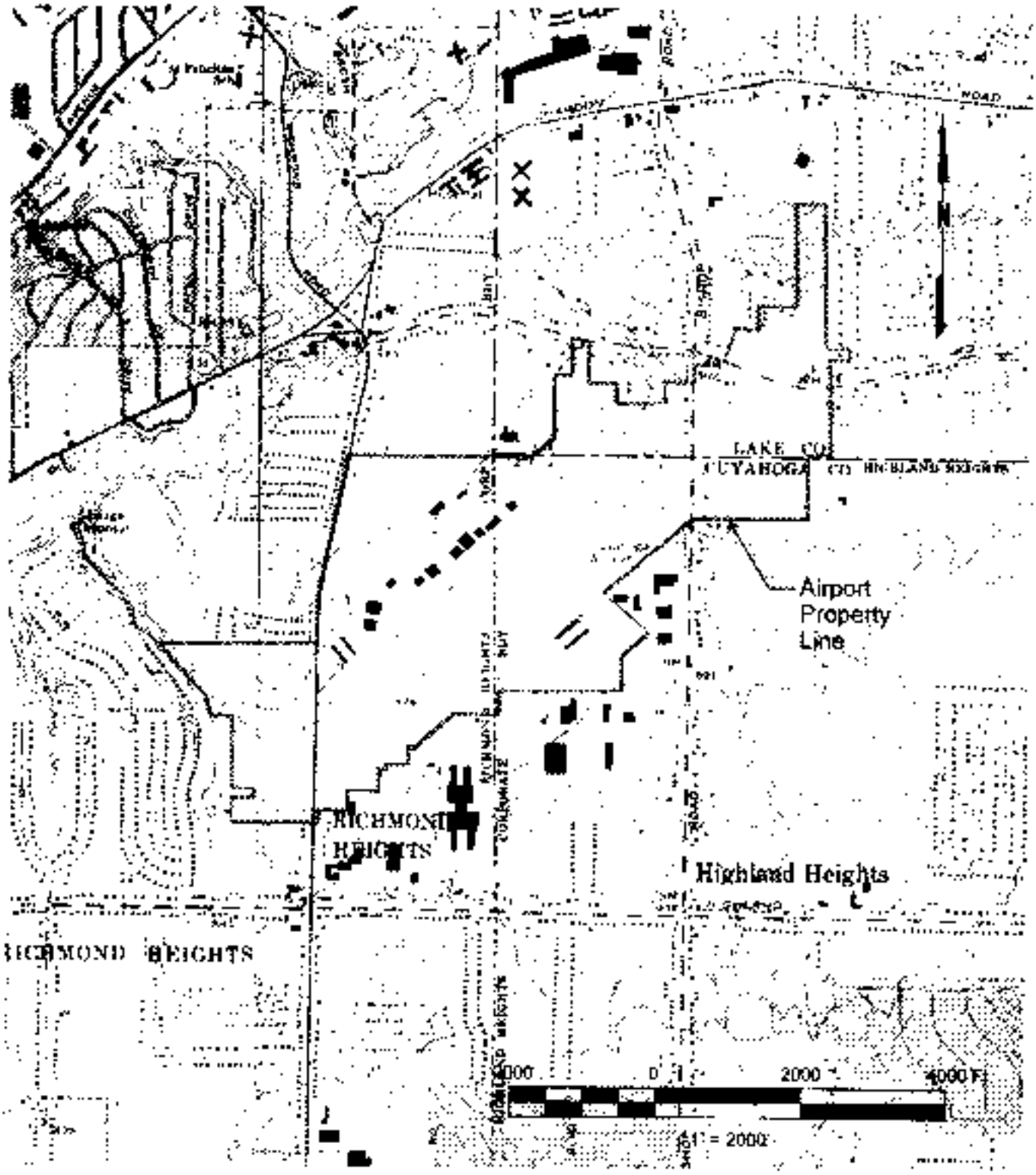
Very truly yours,

C&S ENGINEERS, INC.

Kathleen C. Kane
Senior Planner

KCK:skg

Enc.



Cuyahoga County Airport
Airport Master Plan

Vicinity Map

Figure 1-1

Ohio Department of Natural Resources

Richard S. Bartz, Chief
Division of Water

November 28, 2003

Kathleen C. Kane
C&S Engineers, Inc.
4999 Col. Eileen Collins Boulevard
Syracuse, NY 13212

RE: Cuyahoga County Airport
Airport Master Plan and Runway Safety Area Study
File A27.0010

Dear Ms. Kane,

The proposed project may or may not be located in a Special Flood Hazard Area. To assist you in this determination, please contact the community's floodplain administrator. A list of community floodplain administrators can be found on the ODNR Division of Water website at **http://www.dnr.state.oh.us/water/floodpln/** To view a copy of a Flood Insurance Rate Map for your project area, you can either contact the community floodplain administrator, or obtain a copy online from the FEMA Flood Map Store at **http://store.msc.fema.gov/**.

Sincerely,

Richard S. Bartz
Division of Water

RSB:rsh

COMMUNITY CONTACT LIST

Date: 12/02/2003
Page 38 of 96

[illegible]

[illegible]

The Ohio Department of Natural Resources - Division of Water - Floodplain Management Program

COMMUNITY/DFPA STATUS	LOCAL CONTACT (LC)	
HIGHLAND (HIGHLAND COUNTY) DFPA MAYOR Status N	RONALD BURNETT, MAYOR [illegible] NEW LEXINGTON AVE P.O. BOX 154 HIGHLAND OH 45132 Tel (937) 780-3855 FAX (937) 780-3855	Updated 04/16/1997
HIGHLAND COUNTY (HIGHLAND COUNTY) DFPA NONE Status N	RUSSELL NEWMAN, COUNTY COMMISSIONER/PRESIDENT 119 GOVERNOR FORAKER HILLSBORO OH 45133 Tel (937) 393-1911 FAX	Updated [illegible]
HIGHLAND HEIGHTS (CUYAHOGA COUNTY) DFPA CITY ENGINEER Status R	STEVE HOVANCSEK, CITY ENGINEER 5827 HIGHLAND RD HIGHLAND HTS OH 44143 Tel (440) 461-6266 FAX	Updated [illegible]
HILLIARD (FRANKLIN COUNTY) DFPA CHIEF BUILDING OFFICIAL Status R	ROBERT TUCKER, CITY ENGINEER 3800 MUNICIPAL SQUARE HILLIARD OH 43026 Tel (614) 876-7361 FAX	Updated
HILLSBORO (HIGHLAND COUNTY) DFPA SAFETY SERVICE DIRECTOR Status R	RALPH VAN ZANT, SAFETY SERV. DIRECTOR 105 GOVERNOR TRIMBLE HILLSBORO OH 45133 Tel (937) 393-[illegible] FAX (513) 393-[illegible]	Updated [illegible]
HOCKING COUNTY (HOCKING COUNTY) DFPA [illegible] Status R	BOB BURNS, HOCKING COUNTY PLANNER 88 SOUTH MARKET STREET LOGAN OH 43138 Tel (740) 385-2834 FAX (740) 385-2894	Updated 01/11/2002
HOLGATE (HENRY COUNTY) DFPA NONE Status R	LUSENE GEORGE, VILLAGE ADMINISTRATOR VILLAGE HALL, PO BOX 217 HOLGATE OH 43527 Tel (419) 264-5612 FAX	Updated [illegible]
HOLLAND (LUCAS COUNTY) DFPA ZONING ADMINISTRATOR Status R	NEIL YONKER, MAYOR 1245 CLARION AVE PO BOX 249 HOLLAND OH 43528 Tel (419) 865-7106 FAX	Updated

COMMUNITY CONTACT LIST

[illegible]

The Ohio Department of Natural Resources - Division of Water - Floodplain Management Program

COMMUNITY/DFIRM STATUS	LOCAL CONTACT (LC)	
READING (HAMILTON COUNTY) DFIRM [illegible] Status R	MIKE RAFAEL, SAFETY SERVICE DIRECTOR [illegible] MARKET ST READING OH 45215 Tel [illegible] FAX [illegible]	Updated [illegible]
REMINDERVILLE (SUMMIT COUNTY) DFIRM [illegible] Status R	LAWRENCE FULTON, VILLAGE ENGINEER [illegible] GLENWOOD BLVD REMINDERVILLE OH 44202 Tel [illegible] FAX [illegible]	Updated [illegible]
REYNOLDSBURG (FRANKLIN COUNTY) DFIRM [illegible] Status R	STEPHEN MOORE, CHIEF BUILDING OFFICIAL [illegible] MAIN ST REYNOLDSBURG OH 43068 Tel [illegible] FAX [illegible]	Updated [illegible]
RICHLAND COUNTY (RICHLAND COUNTY) DFIRM [illegible] Status R	[illegible] MARCUS, SUPERINTENDENT OF BUILDING REGULATIONS [illegible] PARK AVE EAST MANSFIELD OH 44902 Tel [illegible] FAX	Updated [illegible]
RICHMOND (JEFFERSON COUNTY) DFIRM NONE Status R	DARA LUTY, MAYOR P.O. BOX [illegible] RICHMOND OH 43944 [illegible] Tel [illegible] FAX	Updated
RICHMOND HEIGHTS (CUYAHOGA COUNTY) DFIRM [illegible] Status R	ROBERT A. ROSSI, BUILDING COMMISSIONER [illegible] RICHMOND RD RICHMOND HTS OH [illegible] Tel [illegible] FAX	Updated [illegible]
RICHWOOD (UNION COUNTY) DFIRM [illegible] Status R	[illegible] LAMBERT, MAYOR [illegible] SOUTH FRANKLIN RICHWOOD OH 43344 Tel [illegible] FAX	Updated [illegible]
RIO GRANDE (GALLIA COUNTY) DFIRM [illegible] Status R	DONALD WOOTEN, MAYOR PO BOX [illegible] RIO GRANDE OH 45674 Tel [illegible] FAX	Updated [illegible]

COMMUNITY CONTACT LIST

[illegible]

The Ohio Department of Natural Resources - Division of Water - Floodplain Management Program

COMMUNITY DFIRM STATUS	LOCAL CONTACT (LC)		
WILLIAMSPORT PICKAWAY COUNTY DFIRM MAYOR Status R	JACK TARBELL MAYOR [illegible] MAIN ST WILLIAMSPORT OH 43164 Tel [illegible] FAX	Updated	[illegible]
WILLOUGHBY LAKE COUNTY DFIRM [illegible] Status R	RICHARD SMITH CHIEF BLDG INSP OFFICIAL ZONING INSPECTOR [illegible] RIVERS RD WILLOUGHBY OH 44094 Tel [illegible] FAX	Updated	[illegible]
WILLOUGHBY HILLS LAKE COUNTY DFIRM [illegible] Status R	IVAN SLEEK BUILDING INSPECTOR [illegible] CHARDON RD WILLOUGHBY OH 44094 Tel [illegible] FAX [illegible]	Updated	[illegible]
WILLSHIRE VAN WERT COUNTY DFIRM MAYOR Status R	SHARON KRAUS MAYOR P O BOX [illegible] WILLSHIRE OH 45898 Tel [illegible] FAX	Updated	[illegible]
WILMINGTON CLINTON COUNTY DFIRM [illegible] Status R	A. SHELDON BUILDING & ZONING INSPECTOR [illegible] EAST ST WILMINGTON OH 45177 Tel [illegible] FAX (937) 383-2214	Updated	[illegible]
WINDHAM PORTAGE COUNTY DFIRM MAYOR Status R	C. JAMES MOORE MAYOR [illegible] CENTER ST WINDHAM OH 44288 Tel [illegible] FAX	Updated	[illegible]
WINTERSVILLE JEFFERSON COUNTY DFIRM MAYOR Status R	LARRY R. HOLDEN ADMINISTRATOR VILLAGE OF WINTERSVILLE MUNICIPAL COMPLEX 200 WINTERSVILLE OH 43953 Tel (740) 264-3179 FAX (740) [illegible]	Updated	[illegible]
WOOD COUNTY WOOD COUNTY DFIRM [illegible] Status R	DAVID WESNER DIRECTOR WOOD COUNTY PLNG COMM ONE COURTHOUSE SQUARE BOWLING OH 43402 Tel [illegible] FAX	Updated	[illegible]

Division of Natural Areas and Preserves
Ohio Department of Natural Resources
1889 Fountain Square Court, F-1
Columbus, Ohio 43224

Date: 12/3/2003

FACSIMILE TRANSMISSION

Please deliver the following fax message to:

Name: Kathleen Dance

From: Debbie Woischke (614-265-6818)

Total number of pages including this cover sheet: 5 If you do not receive all the pages, please call: Office Number: 614/265-6456 Fax Number: 614/267-3096

Comments:

In order to process your request for information for the Cuyahoga Co. Airport Master Plan Study project, please fill out and return the data request form. Please note our fees listed at the top of the form. Feel free to call if you have any questions. Thank you.

DATA REQUEST

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF NATURAL AREAS AND PRESERVES
HERITAGE DATA SERVICES
1889 FOUNTAIN SQUARE COURT, BUILDING F-1
COLUMBUS, OHIO 43224
PHONE: 614-265-6453; FAX: 614-267-3096

INSTRUCTIONS:
Please fill out both sides of this data request form, sign it and return it to the address or fax number listed above along with: (1) a letter formally requesting data and describing your project, and (2) a map detailing the boundaries of your study area. A photocopy from the pertinent portion of a USGS 7.5 minute topographic map is preferred but other maps are acceptable. Our turnaround time is two weeks, although we can often respond more quickly.

FEES:
Fees are determined by the amount of time it takes to complete your project. The charge is $25.00 per ½ hour with a ½ hour minimum. We can perform a data search manually or by computer. The Heritage Data Services staff will determine the most cost-efficient method of doing your search. A cost estimate can be provided upon request. Unless otherwise specified, an invoice will accompany the data services response.

This request is being submitted by: ☐ fax ☐ mail ☐ both

Date: _____

Your Agency/Organization: _____

Your Name/Title: _____

Address: _____

City/State/Zip: _____

Phone/Fax: _____

Project Name/Number: _____

Project is located on the following USGS 7.5 minute topographic map(s): _____

_____

If there is a program or contracting agency requiring this information, please give the name and phone number of a contact person:

_____

The Natural Heritage Data Base contains records for the categories of species and features listed below. Check the appropriate boxes to indicate your selection.

PLANTS:
- ☐ Federal Status Only
- ☐ State Legal Status Only
- ☐ Rare (non-legal status)
- ☐ All of the above

ANIMALS:
- ☐ Federal Status Only
- ☐ State Legal Status Only
- ☐ Rare (non-legal status)
- ☐ All of the above

PLANT COMMUNITIES:
- ☐ All
- ☐ Wetlands Only
- ☐ Other_____

OTHER FEATURES:
- ☐ Geologic Features
- ☐ Breeding/Non-breeding Animal Concentrations
- ☐ Champion Trees
- ☐ State Nature Preserves and Natural Areas
- ☐ State Wild, Scenic and Recreational Rivers
- ☐ State Parks, Forests, Wildlife Areas
- ☐ All of the above
- ☐ Other_____

Besides name, location and status, specify any additional information you need:

_____

_____

The area you want searched:
- ☐ study area as outlined on the map
- ☐ study area plus ½ mile radius
- ☐ study area plus 1 mile radius
- ☐ other_____

How will the information be used:

_____

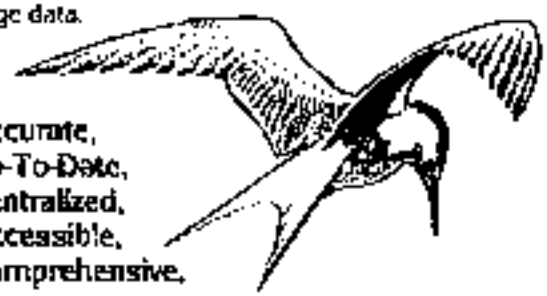
_____

The information supplied above is complete and accurate. Any material supplied by the Natural Heritage Data Base will not be published without prior written permission and without crediting the Division of Natural Areas and Preserves as the source of the material.

Your Signature _____

Ohio Natural Heritage Inventory

...our state's most comprehensive source of information on rare and endangered animals and plants, exemplary natural communities and special geologic features. Beginning in 1976, the Ohio Department of Natural Resources, in conjunction with The Nature Conservancy, established the Ohio Natural Heritage Program (ONHP) to systematically and objectively identify and protect significant natural areas, high quality plant communities, rare animals and plants, and important geologic features. The ODNR Division of Natural Areas and Preserves has managed this inventory and data base since 1977. Now current information on the statewide status and locations of special plants, animals and natural communities is available in one central location. Resource planners can save time and money by referring to the data base for comprehensive natural heritage data.



Accurate,
Up-To-Date,
Centralized,
Accessible,
Comprehensive.

The inventory has compiled information from a broad range of sources, including museum and herbarium collection records, publications and experts throughout the state. Guided by this information, the inventory conducts considerable field research every year to build the data base and keep it current.

Staff members, contractors and volunteers perform field surveys to find and verify specific locations of the features of highest priority and to collect accurate information on the condition, quality and management needs of these features. This process of compiling and verifying data is ongoing, thus continuously updating and improving the data base.

Information is easily accessible in manual, map and computer files that are cross-referenced to provide a flexible data management system. Data can be retrieved from these files in a variety of formats tailored to the needs of different users.

How Can The Inventory Be Used?

Land Use Planning: By consulting the data base early in the planning process, planners can avoid sometimes costly conflicts. The Heritage Program can determine whether the intended project area includes locations of endangered species, of other species of concern, or of other exceptional natural features.

Impact Assessment, Environmental Review, Permit Review: A quick initial assessment from the data base speeds the environmental review process. In addition, expert staff members can provide technical assistance in verifying the presence of a significant element at a particular site and in assessing the likely impacts of proposed activities.

Natural Area Selection, Design and Stewardship: Conservationists can use inventory data to focus efforts on preserving the most critically endangered features of our natural heritage.

Research and Education: Consultation with the Natural Heritage Program helps researchers take advantage of existing knowledge. Information on special features can be used to teach environmental conservation and the value of protecting Ohio's natural diversity or for planning research projects.

Inventory Limitations

The quantity and quality of data collected by the Heritage Program depend on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Ohio have never been thoroughly surveyed, and new species of plants and animals are still being discovered. For these reasons, the Heritage Program cannot provide a definitive statement on the presence, absence or condition of biological elements in any part of Ohio. Heritage reports summarize the existing information regarding the biological elements or locations in question known to ONHP at the time of the request. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

What Information Is Available?

For any specified area of Ohio, the natural heritage data base can provide the following information:

Special Plants and Animals: More than 700 species that are

- on the federal list of threatened and endangered species
- proposed for listing
- under review for possible listing
- on Ohio's official endangered species lists
- of special concern to Ohio

Natural Communities: ranked by state, regional and local significance

Other Special Features: nesting sites of colonial birds, unique geological features, etc.

What Data Formats Are Available?

The inventory's data management system, which includes both computer and manual components, is designed to generate reports in a variety of formats according to the user's needs. Users may request data organized by the following categories:

Geographic Area: county, U.S. Geological Survey topographic quadrangle, river basin, managed area...

Type of Natural Community: forest, prairie, wetland...

Species or feature

Status: on the federal list, proposed for listing, under review, on state legal lists, ..

Of course, requests for data may specify two or more criteria: for example, all state-listed species in Lucas County or all occurrences of special plants on federal land in the area covered by the Pedro quadrangle.

How Can You Request Information?

Prospective data users should obtain data request forms from:

Heritage Data Services
ODNR Division of Natural Areas & Preserves
Fountain Square, Building F-1
Columbus, OH 43224

These forms request detailed information about the planned use of the data and require the data user to agree to certain restrictions. These restrictions include the need to acquire written permission to publish information provided by the Heritage Program and a requirement that the division be given credit as the information source.

The Heritage staff will review the data request form and will contact the prospective data user to answer any questions. A decision will be made about the level of detail necessary to fulfill the data user's needs. A cost estimate for the data search can be given at this time if requested. Fees for services rendered help recover actual costs for the Division of Natural Areas and Preserves. A fee schedule is provided with each form.

The requested information will be retrieved from the Heritage data systems using the most cost-efficient methods, and will be provided to the user with specified restrictions. If the application for access to data is denied, a written explanation will be provided.

Information will not be provided by telephone or to drop-in visitors. Normally, users will receive the requested data within two weeks of ONHP's receipt of the data request form.

Memoranda Of Agreement

Written agreements can be negotiated to offset fees for services. Data users providing useful information to the Heritage Program can obtain reduced or deferred fees. Contact the Heritage Data Manager for details.

ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Ohio Natural Heritage Program
Ohio Department of Natural Resources
Division of Natural Areas and Preserves
Fountain Square, Building F
Columbus, OH 43224
(614) 265-6453 (Voice)
(614) 265-6994 (TDD)

Ohio Natural Heritage Data Services

Ohio Department of Natural Resources
Division of Natural Areas & Preserves

A USER'S GUIDE TO DATA SERVICES

Transmission Report

Date, Time	[illegible]	[illegible]	Destination Station Text	
Local ID 1	[illegible]		Local Station 1	CAS ENGINEERS
Local ID 2			Local Station 2	

This document : Confirmed
(reduced sample and details below)
Document size : 8.64x11.04

CAS
CHARLES
SUGGS BURLO
TECHNICAL RESOURCES
OPERATIONS

Fax Transmittal Sheet

Date

Fax No.

To

Telephone No.

From

CAS Fax No.

Subject

Comments

No.	Date	Description	Original	Copies	Size	Revision	Page Size	Description
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Abbreviations

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
WS Wall Section	MS Millwork Sec	LA [illegible]	[illegible]

C&S COMPANIES
ENGINEERS
DESIGN BUILD
TECHNICAL RESOURCES
OPERATIONS

499 Col. Eileen Collins Blvd
Syracuse, New York 13212

Telephone 315-455-2000
Fax 315-455-9667
www.cscos.com

"Exceeding your expectations"

Fax Transmittal Sheet

Number of pages (including this sheet): 8

Date:
December 16, 2003

Fax No.:
1-614-267-3096

To:
Debbie Woischke
Ohio DNR, Div. of Natural Areas and Preserves
1889 Fountain Square Court, F-1
Columbus, OH 43224

Telephone No.:
614-265-6818

From:
Kathleen C. Kane

C&S File No.:
A27.001.001

Subject:
Cuyahoga County Airport Master Plan

Remarks: Debbie-- Attached is a data request form with markup of a figure identifying the areas of concern: airport property and areas off-airport where obstruction (tree) removal may be proposed. I'm also including a copy of the original November 19, 2003, request that describes the project and lists environmental resource categories. Can you please call me to discuss the time and cost that we should anticipate for your agency to perform the data search and provide this data? Thank you for your help—

Kathy

- [ ] As we discussed
- [ ] Please call me to discuss
- [ ] I will call you to discuss
- [ ] For your review and comment
- [ ] Original to follow by overnight mail
- [ ] Original to follow by regular mail

Important Notice: [illegible]

DATA REQUEST

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF NATURAL AREAS AND PRESERVES
HERITAGE DATA SERVICES
1889 FOUNTAIN SQUARE COURT, BUILDING F-1
COLUMBUS, OHIO 43224
PHONE: 614-265-6453; FAX: 614-267-3096

INSTRUCTIONS:
Please fill out both sides of this data request form, sign it and return it to the address or fax number listed above along with: (1) a letter formally requesting data and describing your project, and (2) a map detailing the boundaries of your study area. A photocopy from the pertinent portion of a USGS 7.5 minute topographic map is preferred but other maps are acceptable. Our turnaround time is two weeks, although we can often respond more quickly.

FEES:
Fees are determined by the amount of time it takes to complete your project. The charge is $25.00 per ½ hour with a ½ hour minimum. We can perform a data search manually or by computer. The Heritage Data Services staff will determine the most cost-efficient method of doing your search. A cost estimate can be provided upon request. Unless otherwise specified, an invoice will accompany the data services response.

****

This request is being submitted by: ☒ fax ☐ mail ☐ both

Date: 12/16/03

Your Agency/Organization: [illegible] Consultants Inc.

Your Name/Title: Senior Planner

Address: 4[illegible] [illegible] Collins Blvd.

City/State/Zip: Syracuse, NY 13[illegible]

Phone/Fax: [illegible] / [illegible]

Project Name/Number: [illegible] Airport Master Plan Study

Project is located on the following USGS 7.5 minute topographic map(s): Mayfield Heights

If there is a program or contracting agency requiring this information, please give the name and phone number of a contact person:

The Natural Heritage Data Base contains records for the categories of species and features listed below. Check the appropriate boxes to indicate your selection.

PLANTS:
- ☐ Federal Status Only
- ☐ State Legal Status Only
- ☐ Rare (non-legal status)
- ☒ All of the above

ANIMALS:
- ☐ Federal Status Only
- ☐ State Legal Status Only
- ☐ Rare (non-legal status)
- ☒ All of the above

PLANT COMMUNITIES:
- ☒ All
- ☐ Wetlands Only
- ☐ Other _____

OTHER FEATURES:
- ☐ Geologic Features
- ☐ Breeding/Non-breeding Animal Concentrations
- ☐ Champion Trees
- ☐ State Nature Preserves and Natural Areas
- ☐ State Wild, Scenic and Recreational Rivers
- ☐ State Parks, Forests, Wildlife Areas
- ☒ All of the above
- ☐ Other _____

Besides name, location and status, specify any additional information you need:

_____

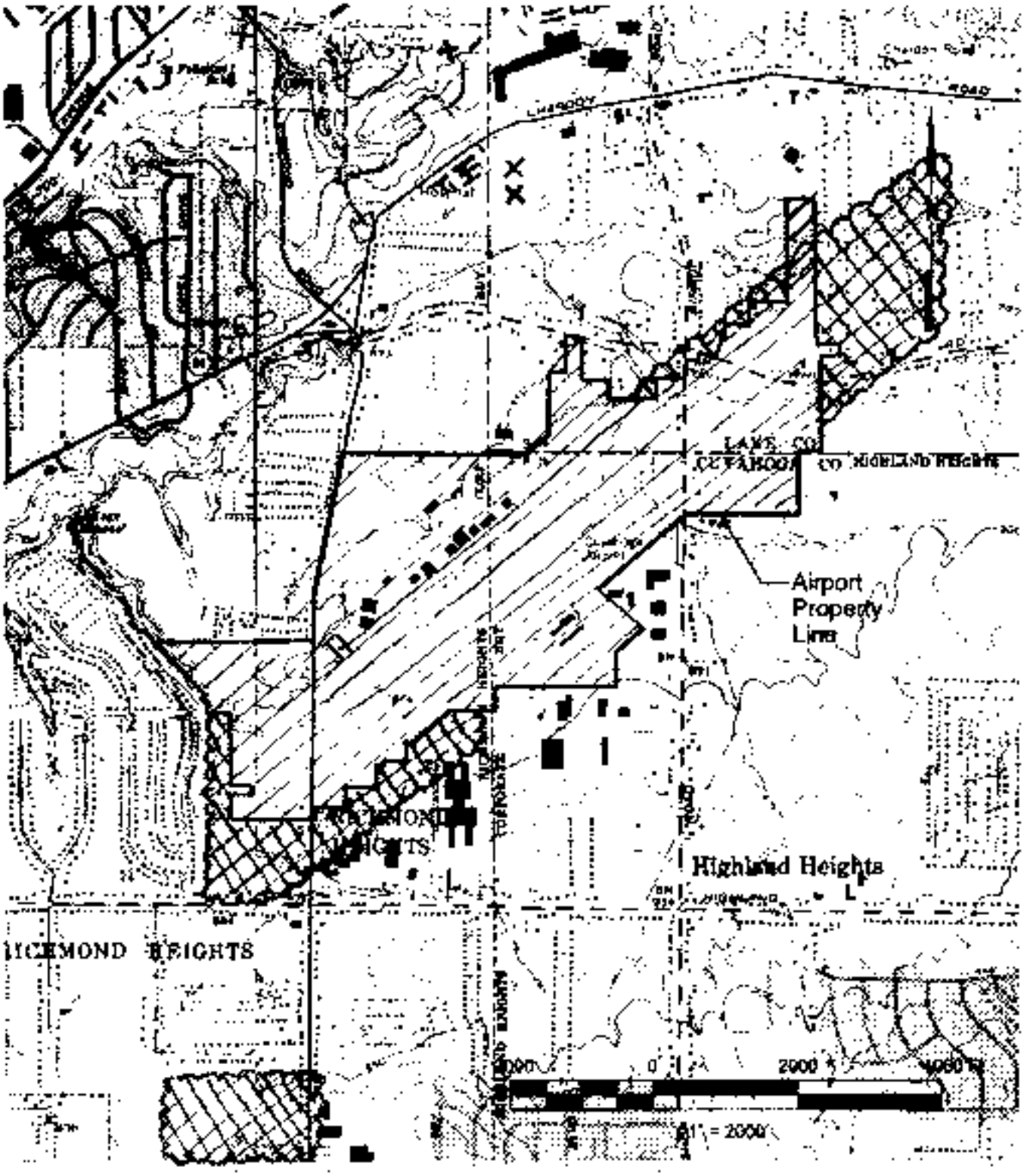
_____

The area you want searched:
- ☐ study area as outlined on the map
- ☐ study area plus ½ mile radius
- ☐ study area plus 1 mile radius
- ☒ other airport property outlined in red on vicinity map. Please be that was sent with original 11/13/03 request letter. NHDS was informed area development formerly known [illegible] and be contacted for [illegible] and [illegible] and [illegible].

How will the information be used: [illegible] information that should be considered or incorporated in the Master Plan

The information supplied above is complete and accurate. Any material supplied by the Natural Heritage Data Base will not be published without prior written permission and without crediting the Division of Natural Areas and Preserves as the source of the material.

Your Signature _____



Source: USGS Topographic Maps - Mayfield Heights Quadrangle

41° 31 57 43" N
81° 26 49 20" W

= airport property

= areas outside airport property where obstructions may be located.

Cuyahoga County Airport
Airport Master Plan

Vicinity Map

Figure 1-1

C&S COMPANIES
ENGINEERS
DESIGN BUILD
TECHNICAL RESOURCES
OPERATIONS

C&S Engineers, Inc
499 Col. Eileen Collins Boulevard
Syracuse, NY 13212
phone 315-455-2000
fax 315-455-9667
www.cscos.com

November 19, 2003

Jeff Van Loon
Ohio DNR, Div. of Soil & Water Conserv.
6090 Wedgewood Road
Medina, OH 44256

Re: Cuyahoga County Airport
Airport Master Plan and Runway Safety Area Study

File: A27.001

Dear Mr. Van Loon:

On behalf of the Cuyahoga County Board of Commissioners, C&S Engineers, Inc., is currently preparing a Master Plan and a Runway Safety Area Study for the Cuyahoga County Airport, situated in the communities of Highland Heights, Willoughby Hills, and Richmond Heights, eleven miles east of downtown Cleveland, Ohio. An important task in the Master Plan and Runway Safety Area (RSA) Study will be to identify and characterize sensitive environmental areas within the airport property and vicinity. This effort would assist our planners to make environmentally sound recommendations for the Master Plan and RSA Study as well as support the baseline information for subsequent environmental review requirements at the federal and state level over specific proposed airport projects.

Attached please find a vicinity map of the airport. We would like to request your assistance in providing us with information you possess regarding the Environmental Resource Categories listed below. The categories were derived from the Federal Aviation Administration Order 5050.4a *Airport Environmental Handbook*. If you have data stored in your geographic information system, please guide us on how we may best use your mapping resources for our study.

Your assistance will enable us to identify and quantify our determination of the potential areas of environmental concerns at the Cuyahoga County Airport.

The environmental resource categories are:

Wetlands
Compatible Land Use
Social Impacts
Induced Socioeconomic Impacts
Prime and Unique Farmland
Water Quality
Air Quality
Solid Waste Impacts
Wild and Scenic Rivers
Historic-Architectural-Archeological and Cultural Resources
Endangered and Threatened Species of Flora and Fauna
Flood Plains
Coastal Zone Management
Coastal Barriers
Noise
Energy Supply and Natural Resources
Light Emissions
Construction Impacts
Biotic Communities
Environmental Justice
Protection of Children from Environmental Health Risks and Safety Risks
Department of Transportation Act Section 4(f) Lands

Please let us know by December 22, 2003 if you are aware of issues or areas of concern that we should consider. If you have any questions, please feel free to contact us. Thank you for your assistance.

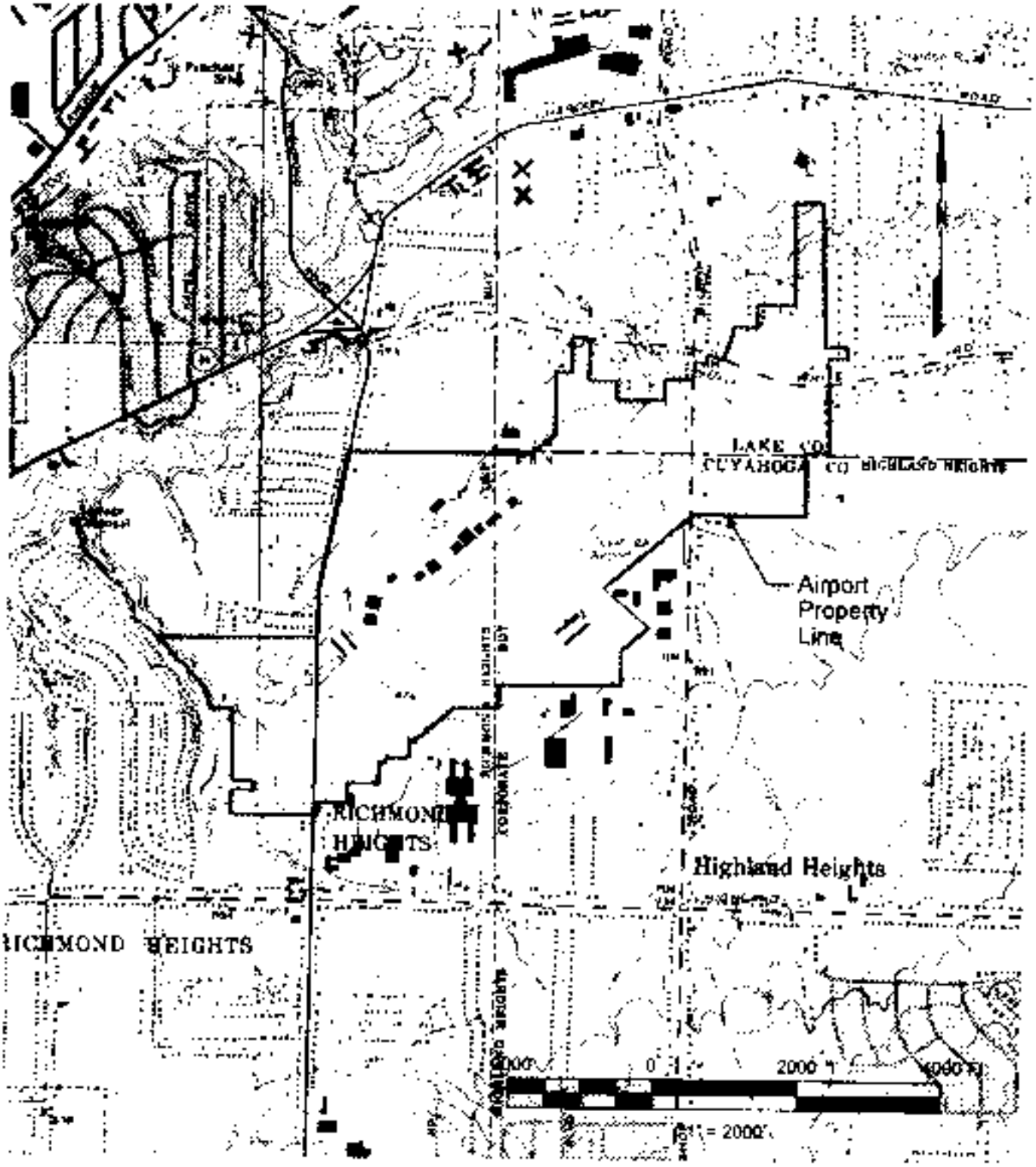
Very truly yours,

C&S ENGINEERS, INC.

Kathleen C. Kane
Senior Planner

KCK/skg

Enc



Source: USGS Topographic Maps - Mayfield Heights Quadrangle

Cuyahoga County Airport
Airport Master Plan

Vicinity Map

Figure 1-1

ENVIRONMENTAL SCOPING LIST

Michelle Mooney
Cuyahoga County Airport
26300 Curtis Wright Parkway
Cleveland, OH 44143

Kary Jones
Federal Aviation Administration DETROIT
1677 South Wayne Rd., Suite 107
Huron Township, MI 48174

David L. Demers
Ohio DOT, Office of Aviation
2829 W. Dublin-Granville Rd
Columbus, OH 43235

David Coyle
Ohio DOT District 12
5500 Transportation Blvd
Garfield Hts., OH 44125

Paul Leuchner
U.S. Army Corps of Engineers, Buffalo Dist.
1776 Niagara Street
Buffalo, NY 14207

Matthew Heelin
Ohio DNR, Division of Wildlife, District 3
912 Portage Lakes Drive
Akron, OH 44319

James Strider
Ohio Historic Preservation Office
567 East Hudson Street
Columbus, OH 43211

Dick Bartz
Ohio DNR, Division of Water
1939 Fountain Square
Columbus, OH 43224

Dan of Lesio, Mayor
Richmond Heights City Hall
[illegible] Richmond Road
Richmond Heights, OH 44143

Stephanie R. Swann
Federal Aviation Administration DETROIT
11677 South Wayne Road, Suite 107
Romulus, MI 48174

Gordon D. Proctor
Ohio Department of Transportation
1980 West Broad Street
Columbus, OH 43223

Thomas V. Skinner
U.S. EPA, Region 5
77 W. Jackson Blvd.
Chicago, IL 60604

James D. Storer
Natural Resources Conservation Services
6100 West Canal Road
Valley View, OH 44125

Jeff Van Loon
Ohio DNR, Div. of Soil & Water Conserv.
6090 Wedgewood Road
Medina, OH 44256

Paul Alsenas
Cuyahoga County Planning Commission
323 Lakeside Avenue West, Suite 400
Cleveland, OH 44113

Morton O'Ryan, Mayor
Willoughby Hills City Hall
35405 Chardon Road
Willoughby Hills, OH 44094

Francine Hogg, Mayor
Highland Heights City Hall
5827 Highland Road
Highland Heights, OH 44143

Ohio Department of Natural Resources

Division of Natural Areas and Preserves
Nancy Strayer, Acting Chief
1889 Fountain Square, Bldg. F-1
Columbus, OH 43224-1388
Phone: (614) 265-6453, Fax: (614) 267-3096

December 17, 2003

Kathy Kane
C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212

Dear Ms. Kane:

After reviewing our Natural Heritage maps and files, I find the Division of Natural Areas and Preserves has no records of rare or endangered species in the Cuyahoga County Airport Master Plan and Runway Safety Area Study project area in Cuyahoga and Lake counties on the Mayfield Heights and East Cleveland Quads (A27.001.001).

There are no existing or proposed state nature preserves or scenic rivers at the project site. We are also unaware of any unique ecological sites, geologic features, breeding or non-breeding animal concentrations, champion trees, or state parks, forests or wildlife areas within the project area.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Please note that although we inventory all types of plant communities, we only maintain records on the highest quality areas. Also, we do not have data for all Ohio wetlands. For National Wetlands Inventory maps, please contact Madge Fitak in the Division of Geological Survey at 614-265-6578.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely

Debbie Warschke, Data Specialist
Division of Natural Areas & Preserves

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

B-199

Kathleen C. Kane
C&S Engineers, Inc
499 Col. Eileen Collins Boulevard
Syracuse, NY 13212

Dear Ms. Kane,

The U.S. Environmental Protection Agency received your November 19, 2003 inquiry for environmental resource information in the vicinity of the Cuyahoga County Airport in Ohio. We understand from your letter that your firm is preparing a Master Plan and a Runway Safety Area Study for this airport. Although your letter did not contain detailed information about the plans, we conclude they are likely to yield projects that will ultimately require environmental assessments or environmental impact statements under the National Environmental Pollution Act (NEPA). To comply with NEPA, environmental documentation must address specific elements. For example, they must clearly identify and substantiate the purpose and need for the project, evaluate all feasible alternatives, characterize the affected environment, and address other issues such as environmental justice, the cumulative impacts of the project, and mitigation. The Federal Aviation Administration (FAA) and the Ohio Department of Transportation (ODOT) have regulations and policies governing compliance with NEPA that will apply to this project. When the Cuyahoga County Airport authority identifies such projects at the scoping stage, the U.S. EPA will be able to provide input about characterizing effects and help identify ways to avoid, minimize, and mitigate specific environmental impacts. The U.S. EPA will, of course, review draft documents in accordance with its authority under NEPA and Section 309 of the Clean Air Act.

You will find environmental resource information on two U.S. EPA websites: (1) the Envirofacts Data Warehouse, http://www.epa.gov/enviro/, and (2) Surf Your Watershed, http://www.epa.gov/surf. In addition, the U.S. EPA Region 5 Cleveland office participated in a project to map and collect geographic information in the Cleveland area. The product is called MAGIC 2001, and it is available as several CDs of GIS data. You can find out more about obtaining these files at http://www.epa.gov/region5/cleve/index.htm. We are aware that the Ohio Department of Transportation (ODOT) is in the early stages of developing a project to address congestion in the Cleveland, Ohio area. We recommend contacting ODOT about this project and its potential to affect the plans you are developing. We also recommend you consult the U.S. Census Bureau website for demographic information.

We hope this information is helpful and trust you will also find more information from the other federal and State agencies on your contact list. If you need further assistance, please contact Anna Miller of my staff at (312) 886-7060.

Sincerely,

Kenneth A. Westlake
Chief, Environmental Planning and Evaluation Branch

Post-it® Fax Note 7671	Date 12/16/3	# of pages ▶ 2
To Kathy Kane	From M Wenham	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

Federal Aviation Administration

Detroit Airports District Office
Metro Airport Center
11677 South Wayne Road, Ste. 107
Romulus, MI 48174

December 10, 2003

Mr. Matthew J. Wenham, PE
C&S Engineers, Inc.
One International Place
20445 Emerald Parkway, Ste. 100
Cleveland, OH 44135

Dear Mr. Wenham:

Cuyahoga County Airport
RSA Study – Environmental Information – Section 4(f)

This letter is in response to your letter dated December 1, 2003, which asks that the Federal Aviation Administration (FAA) make a determination whether or not the golf course located in the Runway 24 Safety Area (RSA) is considered to be Section 4(f) for purposes of the environmental review/evaluation section of the RSA study.

It is our understanding from the information submitted that the golf course is open to the public, owned by Cuyahoga County, located in both Cuyahoga and Lake Counties, and is leased to a private entity to operate and provide services to the public. The golf course is considered publicly owned land and thus a recreational use when the land has been officially designated as such or when the Federal, State, or local officials having jurisdiction over the land determines that one of its major purposes or functions is for park, recreation, or refuge purposes, in this case, a recreational purpose. For the purpose of a determination the officials having jurisdiction are the officials of the agency owning or administering the land.

Based on the submitted information, the FAA finds the golf course to be eligible under the regulations pertaining to Section 4(f) based on the fact that the golf course meets the criteria as a recreational use.

Lastly, when evaluating the golf course property, there should also be a statement as to whether the local government has obtained any grants through the Land and Water Conservation Fund Act to acquire or make improvements to the golf course. Section 6(f) of this Act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the Department of the Interior's (DOI) National Park Service. Section 6(f) directs DOI to assure that replacement lands of equal value, location and usefulness are provided as conditions to such conversions.

I trust that this letter answers your questions. Should you have any additional questions related to the Runway Safety Area Study, please contact Ms. Stephanie Swann at 734-229-2945 or if you have any questions related to the environmental evaluation please contact Ms. Katy Jones at 734-229-2958.

Sincerely,

Irene R. Porter

Irene R. Porter, Manager
Detroit Airports District Office

Post-it® Fax Note 7671	Date 12/17/3	# of pages ▶ 1
To Kathy Kane	From M Wenham	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

C&S Engineers, Inc.
One International Place
20445 Emerald Parkway, Suite 100
Cleveland, OH 44135
Phone 216-619-5449
Fax 216-619-5453
www.cscos.com

Transmittal

To: Katy Jones
Federal Aviation Administration - Detroit ADO
11677 South Wayne Road, Suite 107
Romulus, MI 48174

Date: December 1, 2003

Re: Cuyahoga County Airport
RSA Study – Environmental Overview

File: A27.002.001 DC

Enclosed please find the following:

- General Plan of Cuyahoga County Airport with digital orthophoto.
- General Plan of Cuyahoga County Airport without digital orthophoto

Remarks: As we discussed last week, we are initiating an environmental overview for the RSA Study to determine potential impacts. This will be used in evaluating alternatives. We would like a determination by your office whether or not the golf course would be considered a Section 4f situation. The golf course land is owned by Cuyahoga County Airport and leased to a private owner. It is available for public use. A significant amount of the golf course is actually in Lake County.

If you have any questions or need additional information, please do not hesitate to call.

Very truly yours,

C&S ENGINEERS, INC.

Matthew J. Wenham, P.E.
Project Engineer

Enc.

Cc: Stephanie Swann, Kathy Kane

Ohio Historic Preservation Office

OHIO
HISTORICAL
SOCIETY

December 19, 2003

Kathleen Kane
C & S Engineers, Inc
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212

Dear Ms. Kane:

Re: Cuyahoga County Airport Master Plan & Runway Safety Area Study, Cuyahoga County, Ohio

This letter is in response to your correspondence, received on November 24, 2003. You have asked us to provide information to support a planning document that your firm is preparing on behalf of the Cuyahoga County Commissioners.

This office holds inventory information regarding historic and archaeological sites that have been identified within the State of Ohio. We do not typically respond to this type of information request. You may visit our office to access any of these files during business hours, or you may elect to use our fee-based research service by contacting Carrie Simmons at the above-listed number.

For your information, a cursory examination of our records show that there are historic properties recorded near the airport as well as within the airport grounds. If your study is associated with a project that will require any form of federal assistance, permits or approvals (from FAA or other federal agencies), then that agency is responsible for initiating consultation with this office pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and the associated regulations at 36 CFR Part 800.

If you have any questions about this letter, please call me at (614) 298-2000. Thank you for your cooperation.

Sincerely,

Lisa Adkins, Architecture Review Mgr.
Dept. of Resource Protection and Review

Serial No. [illegible]

Ohio Historic Preservation Office

OHIO
HISTORICAL
SOCIETY

January 5, 2004

Kathleen Kane
C & S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212

Ms. Kane,

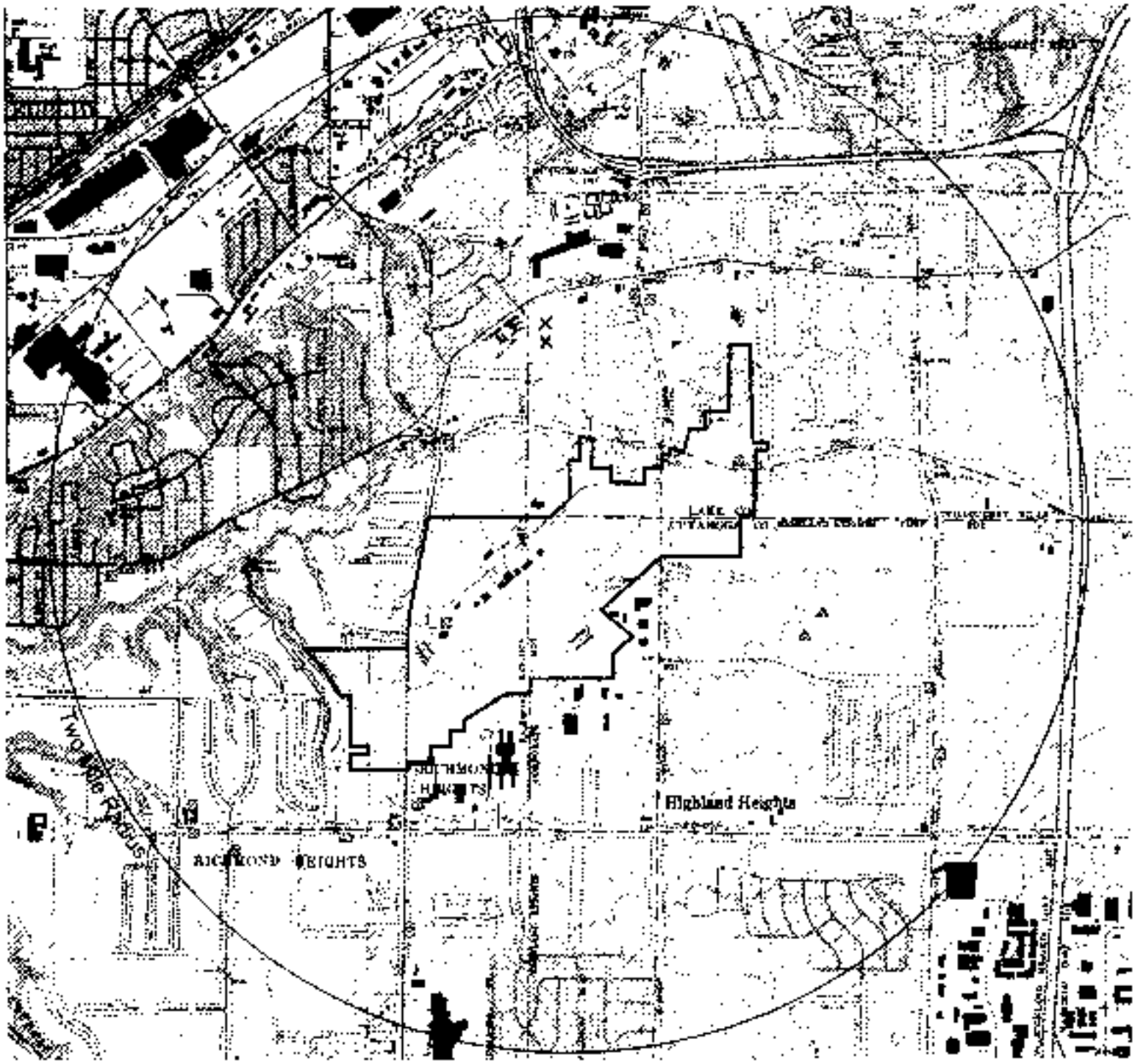
In accordance with our scope of service, attached are the results of the Records Search for Cuyahoga County Airport Master Plan & Runway Safety Area Study, received by our office on January 2, 2004. Included are three map printouts, which show resources identified within the radius you requested, and one table, which lists site numbers, property names and property addresses, as applicable.

These data are provided with the understanding that they will be used in accordance with the signed "Conditions for Use of Digital Resource and Locational Data" submitted as part of your request. If you have any questions please contact me.

Sincerely,

Carrie Simmons
Technical Assistant

Enclosures

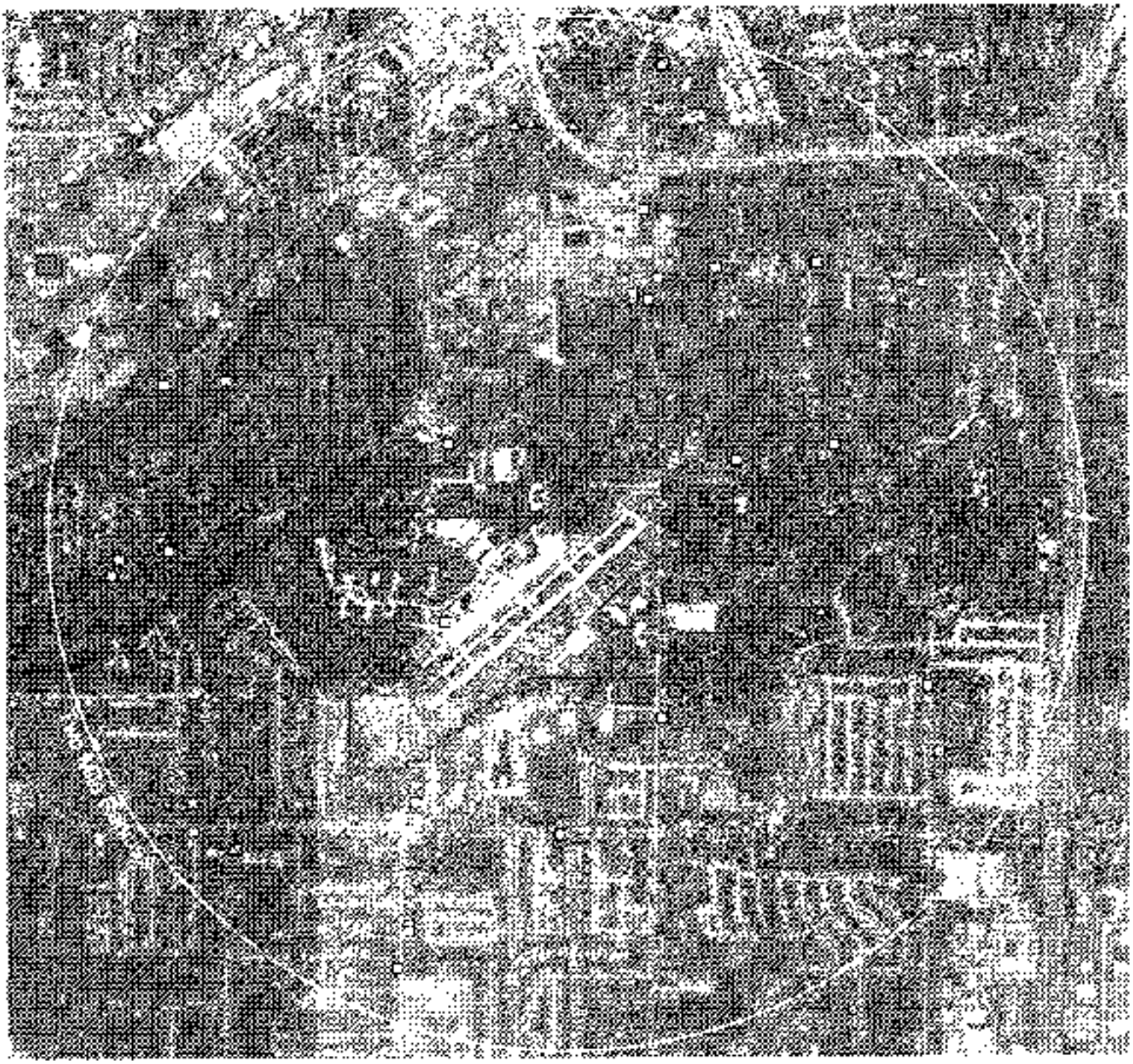


Cuyahoga County Airport Master Plan & Runway Safety Area Study
Mayfield Heights & East Cleveland Quadrangles

- National Register Listed Properties
- Archaeological Inventory Properties
- Historic Inventory Properties

January 5, 2004

0.7 0 0.7 1.4 Miles

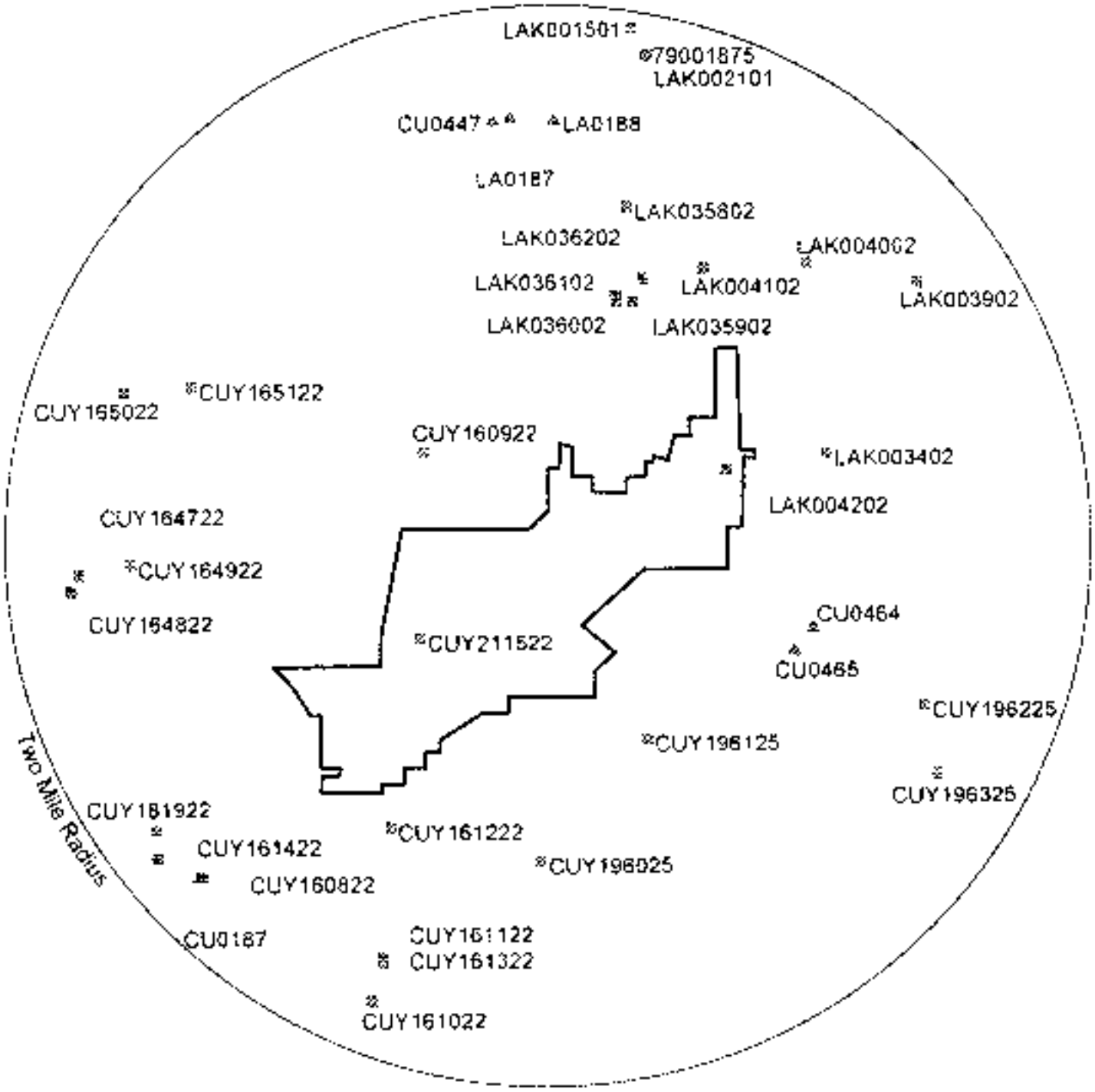


Cuyahoga County Airport Master Plan & Runway Safety Area Study
Mayfield Heights & East Cleveland Quadrangles

National Register Listed Properties
Archaeological Inventory Properties
Historic Inventory Properties

January 5, 2004

0.7 0 0.7 1.4 Miles



Cuyahoga County Airport Master Plan & Runway Safety Area Study
Mayfield Heights & East Cleveland Quadrangles

- National Register Listed Properties
- Archaeological Inventory Properties
- Historic Inventory Properties

January 5, 2004

0.7 0 0.7 1.4 Miles

Cuyahoga County Airport Master Plan & Runway Safety Area Study

Ohio Historic Inventory

NUMBER	PRESENT NAME	OTHER NAME	ADDRESS	UTM ZONE	EASTING	NORTHING
CUY165122			1731 Beverly Hills Dr	17	457439	4602797
CUY196125	Seger House	Hager House	417 Bishop Rd	17	460135	4600687
CUY164822		SP Mason House	23430 Chardon Rd	17	456721	4601586
CUY164722	LH Harris Jr House	Mary R Nevill House	23515 Chardon Rd	17	456758	4601683
CUY164922	BC Hamster House	Comfort E Summer Hse	24091 Chardon Rd	17	457074	4601737
CUY165022	AA Aiken House	George W Woodworth House	Euclid Ave nr TRW Dr	17	457048	4602770
CUY196025	M Stein House	MJ Rau House	5388 Highland Rd	17	459499	4599970
CUY161422		Trebisky House	25618 Highland Rd	17	457223	4599896
CUY161922		Elihu Richmond House	25625 Highland Rd	17	457220	4600172
CUY196225		Stevenson House	376 Miner Rd	17	461781	4600875
CUY196325	Mapes House	Keyt House	447 Miner Rd	17	461854	4600469
CUY211522	Curtiss Wright Hangar		355 Richmond Rd	17	458788	4601291
CUY161222	Richmond Heights School		447 Richmond Rd	17	458609	4600174
CUY161122		John Stevenson House	507 Richmond Rd	17	458558	4599408
CUY161322		Staple Stevenson House	529 Richmond Rd	17	458558	4599377
CUY161022	AW Stevenson House	Samuel Robbins House	552 Richmond Rd	17	458492	4599145
CUY160822	Shebanek Barn		475 Trebisky	17	457486	4599888
CUY160922		Frederick K Keyerleber House	25220 White Rd	17	456814	4602393
LAK035502	Rebol House		2805 Bishop Rd	17	460033	4603851
LAK036102	Hall House		2880 Bishop Rd	17	459990	4603327
LAK035002	Schmyer Hse		2882 Bishop Rd	17	459966	4603293
LAK035902	Krocker House		2885 Bishop Rd	17	460050	4603287
LAK036202	Mercer House		28742 Chardon Rd	17	460120	4603425
LAK004102		WC McFarland Hse	28840 Chardon Rd	17	460478	4603485
LAK004002		William J Smith Hse	29121 Chardon Rd	17	461100	4603514
LAK003902	Guarino House		29650 Chardon Rd	17	461748	4603389
LAK003101	Wickliffe City Hall	Coulallenby (Coulby) Mansion	29730 Ridge Rd	17	460161	4604763
LAK001501	Vacant	FB Squires Residence	28777 Ridge Rd	17	460070	4604920
LAK004202		JP Burridge Hse	28960 White Rd	17	460605	4602285
LAK003402		Augustus White Hse	29320 White Rd	17	461208	4602380

Ohio Archaeological Inventory

NUMBER	SITE NAME	UTM ZONE	EASTING	NORTHING
CU0187	Shebanek Site	17	457470	4599890
CU0447	Outhwaite Shelter House	17	459240	4604380
CU0464		17	461120	4601350
CU0465		17	461010	4601210
LA0187	Norwood Farm Bridge & Waterworks	17	459340	4604400
LA0188	Norwood Farm Mill	17	459600	4604360

National Register of Historic Places

NUMBER	RESOURCE NAME	ADDRESS	UTM ZONE	EASTING	NORTHING
79001875	Courtney Harry Mansion	28730 Ridge Rd	17	460150	4604750

CT Consultants
engineers · architects · planners

Service Area

December 23, 2003

Kathleen C. Kane, Senior Planner
C & S Engineers, Inc.
399 Col. Eileen Collins Boulevard
Syracuse, New York 13212

Re: Cuyahoga County Airport
Master Plan & Runway Safety Area Study

Dear Ms. Kane,

On behalf of the City of Willoughby Hills, I offer this correspondence in response to your letter dated November 19, 2003.

The City of Willoughby Hills understands that you are preparing a 20-year Master Plan for the Cuyahoga County Airport. I also understand that specific attention is being given to a safety area study of the runway that assesses various conditions such as drainage, grade and level, and dimensions. You are requesting input from adjacent communities and or agencies to assist you in that evaluation.

The City has had long standing concerns regarding the noise level and increases in the amount of air traffic generated by this facility and its impact on its residents. ***Please be advised that at this time, these concerns cannot be fully expressed to you due to changes in the Administration and Council for the City as well as the holiday season.*** We will express our concerns in greater detail sometime in January and apologize to you for any inconvenience or delay this may cause.

I can offer some technical information in response. Willoughby Hills is in the process of a major sanitary sewer expansion program in this part of the City. Failing on-site sewerage systems have impaired the water quality of the Euclid Creek and the City is addressing Administrative Findings and Orders issued to them by the Ohio EPA. White and Bishops Roads within the area you identified on your map will be sewered within the next 3 to 4 years.

You should also be advised that the tributary of Euclid Creek is a federally regulated stream. The City falls under the jurisdiction of FEMA and the Ohio Department of Natural Resources and must maintain compliance with their regulations to provide the ability for its residents to obtain flood insurance. Floodway and flood plains have been delineated and the City monitors activities affecting this waterway through our Flood Hazard Ordinance. A copy of the Flood Insurance Map is enclosed for your information.

The zoning in the area is residential. I am enclosing a copy of the zoning map of the area for your review as well.

Again, please consider this our initial reply. We will supplement this correspondence with additional comments soon. The City appreciates receiving this request and would respectfully request to be advised as the plan is developed.

Respectfully yours,

CITY OF WILLOUGHBY HILLS, OHIO

Richard J. Tafelich, P.E.
CITY ENGINEER

RJT:sas

Enclosures

cc: Mayor Morton O'Ryan
Members of Council
Ray Somich, Council-Elect
Kevin Malecek, Council-Elect
Tom Lobe, Law Director

M:\Sas\Letters\Kathleen Kane - Sign Ordinance.docx

The City of Richmond Heights

The City With The Forward Look

457 RICHMOND ROAD
RICHMOND HEIGHTS, OHIO 44143
PHONE 486 2474

December 30, 2003

To: C & S Engineers, Inc
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212

Attn: Kathleen C. Kane

From Lee Gase, Council President

In response to your request last week, I am attaching copies of the legislation generated by Council in 1994 regarding the proposed realignment (bending) of Richmond Road, along with some related correspondence and additional legislation passed by Willoughby Hills.

I have a rather extensive file of correspondence between ourselves, ODOT, the County and FAA during this period, and also have the Feasibility Study prepared by Euthenics in 1992 regarding the realignment and other options, which you may also have. You are welcome to leaf thru any of this sometime when you are in town.

Best regards

CC. Michelle Mooney @ County Airport

COUNTY OF CUYAHOGA

Commissioners
Mary O. Boyle
Timothy F. Hagan
James M. Perro

March 29, 1994

Mr. Dean Nitz, Manager
Detroit Airports District Office
Willow Run Airport, East
8820 Beck Road
Belleville, Michigan 48111

Dear Mr. Nitz:

Representatives of the Cuyahoga Board of County Commissioners have met with officials from the Ohio Department of Transportation (ODOT), the Federal Aviation Administration (FAA), and elected officials of Richmond Heights, one of the municipalities in which the Cuyahoga County Airport is located, in an effort to resolve differences occasioned by the construction of the airport stopway and the widening of Richmond Road.

It was this Board's understanding when it applied for Airport Improvement funds to construct the stopway that this 500-foot extension was not considered essential to the ordinary operation of the runway and hence its length was included in the 1,000-foot distance required by the FAA from the end of the runway to Richmond Road. We have since learned that FAA has revised its regulations, so that for purposes of calculation the 1,000-foot distance now starts at the end of the stopway and extends beyond Richmond Road. This change makes it impossible for the airport to comply with the FAA regulations without eliminating the stopway, since the community and its elected officials have expressed their intention to reject the recommendation of ODOT to relocate Richmond Road.

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 3
To: Mayor Cerny | From: Kate Rushbrook
Co.: Richmond Hts | Co.: 1
Dept.: | Phone #: 443-7193
Fax #: 383-6320 | Fax #:

COUNTY OF CUYAHOGA

We are asking to meet with you and Mr. James Opatrny to explain the county's position--which is that the new regulations should be waived and the stopway included again in the 1,000-foot distance from the edge of the runway to Richmond Road.

Such a meeting is urgently needed so that all parties can proceed in an orderly fashion to discharge their obligations.

Jeri Chaikin, Deputy County Administrator, can be reached at (216) 443-7215 to schedule a date and time when we can meet.

Sincerely yours,

BOARD OF COUNTY COMMISSIONERS

Mary O. Boyle

Mary O. Boyle

Timothy F. Hagan

Timothy F. Hagan

James M. Petro

James M. Petro

cc: Jeri Chaikin
Edwin C. Price
James Opatrny
Marty Gallito
Don Kozar

W - H.//s

RESOLUTION NO. 1994 - 16
(As Amended)

A RESOLUTION IN OPPOSITION TO ENLARGEMENT OF THE SIZE AND EXPANSION OF THE USE OF CUYAHOGA COUNTY AIRPORT, AND DECLARING AN EMERGENCY.

WHEREAS, a principal flight path for the Cuyahoga County Airport is directly over a heavily populated residential area of the City of Willoughby Hills which contains homes valued between One Hundred Thousand Dollars and One Million Dollars; and

WHEREAS, the Cuyahoga County Airport currently handles approximately one hundred thirty-five airplanes, including approximately thirty-five corporate jets, taking off and landing approximately seventy-seven thousand (77,000) times per year; and

WHEREAS, the City of Willoughby Hills and its residents, are subjected to the noise, pollution and danger associated with this flight path; and

WHEREAS, periodically airplanes have crashed in Willoughby Hills when approaching the Cuyahoga County Airport on the above-mentioned flight path; and

WHEREAS, a proposed "stopway" at the southwest end and "blast pad" at the northeast end of the runway which services the above referenced flight path have been proposed; whereas the project summary seeks funds to update the Airport's "master plan" "to meet projected demands for aviation services" and capital improvement "necessary to provide development to meet future demands".

WHEREAS, the proposed "stopway" and "blast pad" may lead to an expansion in the number of flights, size of airplanes, and number of takeoffs and landings using the above-referenced flight path; and

WHEREAS, the residents of the City of Willoughby Hills and the residents of Richmond Heights are most directly and negatively impacted by the noise, pollution and other dangers associated with flights into and out of the airport; and

WHEREAS, both the City of Willoughby Hills and the City of Richmond Heights have objected to the use of Federal funds ($228,918.98) and State funds ($12,717.72) for this project which may result in the destruction of neighborhoods within their cities; and

WHEREAS, the Northeast Ohio Areawide Coordinating Agency determined in its Resolution No. 94-082 that it had received "appropriate input as determined by the NOACA staff" to approve the use of federal, state and local funds for this project; and

WHEREAS, this Administration and Council object to the input upon which NOACA Resolution No. 94-082 was based because it did not seek input from all municipalities most affected by airport expansion, and requested input from municipalities not directly impacted by the safety and health concerns which affect the residents of the City of Willoughby Hills; and

WHEREAS, because the City of Willoughby Hills is directly affected by the use and expansion of the Airport, this Administration and Council hereby request that the City's input concerning the use and expansion of the airport be ensured by the appointment of the City's designee as a member of the Airport's Master Plan Committee; and

WHEREAS, it is the opinion of this Council and Administration that any expansion in the use or size of the above-referenced flight path will have a deleterious affect on the public health, safety and general welfare of the City and the residents of the City of Willoughby Hills.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF WILLOUGHBY HILLS, COUNTY OF LAKE, STATE OF OHIO:

SECTION 1. That this Council and Administration hereby oppose any expansion of the size or use of the Cuyahoga County Airport, and deem any expansion in the size or use of the Cuyahoga County Airport to be deleterious to the public health, safety and general welfare of the City and the residents of the City of Willoughby Hills.

SECTION 2. That the Clerk of Council is directed to forward copies of this Resolution to the Federal Aviation Administration, the Cuyahoga County Commissioners, and all appropriate State and Federal elected representatives.

SECTION 3. That this Resolution constitutes an emergency measure in that the same provides for the immediate preservation of the public peace, health, safety and welfare of the inhabitants of the City of Willoughby Hills and further provides for the usual daily operation of a municipal department; wherefore, this Resolution shall be in full force and effect from and after its passage and approval by the Mayor.

PASSED: July 14, 1994

Council President

Submitted to the Mayor for his approval on this 14 day of July, 1994

Approved by the Mayor July 14, 1994

ATTEST:

Clerk of Council

Mayor

W-H.114

RESOLUTION 1994- 22

A RESOLUTION SUPPORTING THE POSITION OF THE CUYAHOGA COUNTY COMMISSIONERS AND THE CITY OF RICHMOND HEIGHTS IN OPPOSITION TO A PROPOSED RELOCATION OF RICHMOND ROAD WITHIN THE CITY OF RICHMOND HEIGHTS WHICH WILL ULTIMATELY STOP OR SLOW DOWN AIRPORT EXPANSION.

WHEREAS, the City of Willoughby Hills is in support of Richmond Heights Resolutions 42-94 and 67-94; and

WHEREAS, Richmond Road, a state highway within Richmond Heights, presently has had the same street alignment through Richmond Heights from Highland Road to Chardon Road since it was originally laid out by the Ohio Department of Transportation as a state route; and

WHEREAS, the FAA is presently proposing a 1,000-foot distance for safety features but, however, desires to measure the 1,000-foot distance from the end of the 500-foot stopway and not from the end of the runway; and

WHEREAS, Richmond Road is presently located 1,000 feet beyond the end of the runway, 500 feet of which is the stopway; and

WHEREAS, the Cuyahoga Board of County Commissioners has adopted a petition in opposition to the realignment of Richmond Road in a communication of March 29, 1994; and

WHEREAS, it appears to be the strategy of the Federal Aviation Authority to ultimately gain runway lengthening through manipulation of safety rules by permitting the existing 500-foot stopway to be used as an addition to the runway which would necessarily result in the permitted use of larger aircraft with larger capacities and fuel storage to use the former safety stopway as an addition to the runway; and

WHEREAS, the lengthening will permit such larger aircraft and aircraft with higher capacities to have landings and departures that would destroy the neighborhoods of Willoughby Hills, Richmond Heights, Highland Heights, Lyndhurst, South Euclid, Mayfield Village and Euclid as well as other communities in Lake County; and

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF WILLOUGHBY HILLS, COUNTY OF LAKE, STATE OF OHIO:

SECTION 1. That this Council and Administration hereby oppose any expansion of the size or use of services of the Cuyahoga County Airport, and deem any expansion in the size or use of the Cuyahoga County Airport to be deleterious to the public health, safety and general welfare of the City and the residents of the City of Willoughby Hills

SECTION 2. That the Clerk of Council is directed to forward copies of this Resolution to the Federal Aviation Administration, the Cuyahoga County Commissioners, City of Richmond Heights, and all appropriate State and Federal elected representatives.

SECTION 3. That this Resolution constitutes an emergency measure in that the same provides for the immediate preservation of the public peace, health, safety and welfare of the inhabitants of the City of Willoughby Hills and further provides for the usual daily operation of a municipal department; wherefore, this Resolution shall be in full force and effect from and after its passage and approval by the Mayor.

PASSED: July 14, 1994

Submitted to the Mayor for his approval on this 14 day of July, 1994

Approved by the Mayor July 14, 1994

ATTEST:

Clerk of Council

Mayor

6-21-94

RESOLUTION NO.: 42-94
INTRODUCED BY:

A RESOLUTION SUPPORTING THE POSITION OF THE CUYAHOGA COUNTY COMMISSIONERS IN OPPOSITION TO A PROPOSED RELOCATION OF RICHMOND ROAD WITHIN THE CITY OF RICHMOND HEIGHTS.

WHEREAS, Richmond Road, a state highway within Richmond Heights, presently has has had the same street alignment through Richmond Heights from Highland Road to Chardon Road since it was originally laid out by the Ohio Department of Transportation as a state route; and

WHEREAS, the City of Richmond Heights has become aware that the Federal Aviation Authority has requested the Ohio Department of Transportation to realign Richmond Road within the City of Richmond Heights by causing the road to become curved for a distance of some 470 feet westerly from its existing alignment; and

WHEREAS, the Mayor and Council of the City of Richmond Heights support the findings of Euthenics, Inc., Consulting Engineers for the Ohio Department of Transportation for the current Richmond Road widening project, in their Feasibility Study dated August 1992 in which they conclude that "the interests of the community are best served by the widening and improvement of Richmond Road on its present horizontal and vertical alignment"; and

WHEREAS, the Mayor and Council of the City of Richmond Heights did not contest the construction of a 500-foot stopway which was represented as being the necessary safety feature to be in accordance with the Federal Aviation Authority standards in effect at the time of construction; and

WHEREAS, the FAA is presently proposing a 1,000-foot distance for safety features but, however, desires to measure the 1,000-foot distance from the end of the 500-foot stopway and not from the end of the runway; and

WHEREAS, Richmond Road is presently located 1,000 feet beyond the end of the runway, 500 feet of which is the stopway; and

WHEREAS, the Cuyahoga Board of County Commissioners has adopted a petition in opposition to the realignment of Richmond Road in a communication of March 29, 1994; and

WHEREAS, the Mayor and Council of the City of Richmond Heights object to the additional $600,000 of costs to relocate the road as being an undesirable waste of taxpayer money especially when residents of the City of Richmond Heights are being asked to pay assessments for sanitary sewers to comply with the Federal Clean Water Act; and

WHEREAS, the City of Richmond Heights has been advised that no federal funds are to be included in the project; and

WHEREAS, it appears to be the strategy of the Federal Aviation Authority to ultimately gain runway lengthening through manipulation of safety rules by permitting the existing 500-foot stopway to be used as an addition to the runway which would necessarily result in the permitted use of larger aircraft with larger capacities and fuel storage to use the former safety stopway as an addition to the runway; and

WHEREAS, the lengthening will permit such larger aircraft and aircraft with higher capacities to have landings and departures that would destroy the neighborhoods of Richmond Heights, Highland Heights, Lyndhurst, South Euclid, Mayfield Village and Euclid as well as communities in Lake County; and

WHEREAS, the City desires the Ohio Department of Transportation to proceed with the existing straight alignment alternative only and to abandon further consideration for road relocation as recommended by Euthenics, Inc. in its August 1992 "Feasibility Study Cuyahoga County Airport Runway Safety Area"; and

WHEREAS, Mayor Daniel J. Ursu and the entire Council of the City of Richmond Heights strongly support retaining the present alignment for the proposed widening of Richmond Road and urge the Ohio Department of Transportation to reject any request for realignment of the road.

NOW, THEREFORE, Be it Resolved by the Council of the City of Richmond Heights, State of Ohio, that:

Section 1: Mayor Daniel J. Ursu and the entire Council of the City of Richmond Heights hereby record their strong support for retaining the straight alignment of Richmond Road as presently existing and strongly urge the Ohio Department of Transportation to reject any proposed realignment and to proceed with the widening of Richmond Road on its present alignment and as presently authorized.

Section 2: The Clerk of Council be and she is hereby authorized and directed to forward a certified copy of this Resolution to each of the Commissioners of the Board of County Commissioners of Cuyahoga County; Cuyahoga County Planning Commission; Martin Gallito, County Engineer's Office; Northern Ohio Area Coordinating Agency; Daniel R. Kozar, Manager, Cuyahoga County Airport; Federal Aviation Authority; Bryan Groden, Deputy Director, ODOT, District 12; Dennis Knaus, Planning and Design Engineer, ODOT, District 12; Jerry Wray, Director, ODOT; Mike Cope, Transportation Corridor Management Administrator, ODOT; State Representative Ronald Suster; State Senator Judy Sheerer; and Congressman Eric Fingerhut.

Section 3: This Resolution shall take effect and be in force from and after the earliest period allowed by law.

PASSED: April 26, 1994

APPROVED: April 26, 1994

Daniel J. Ursu, Mayor

ATTEST: Marlene A. Smith

Marlene A. Smith,
Clerk of Council

Ray F. Loughin

Ray F. Loughin,
President of Council

I, **Marlene A. Smith, as Clerk of the City of Richmond Heights, Ohio, do hereby certify** that the foregoing is a true and correct copy of Resolution No. 42-94, adopted by the Council of said Municipality on the 26th day of April, 1994.

Marlene A. Smith,
Clerk of Council

RESOLUTION NO.: 67-94
INTRODUCED BY: Mayor and All Council

A RESOLUTION REFUSING CONSENT TO A REALIGNMENT OF RICHMOND ROAD FROM HIGHLAND ROAD TO HORIZON ROAD WITHIN THE CITY OF RICHMOND HEIGHTS.

WHEREAS, the Mayor and Council of the City of Richmond Heights have met with representatives of the Ohio Department of Transportation concerning a proposed realignment of Richmond Road between Highland Road and Horizon Road within the City of Richmond Heights as part of the project to widen Richmond Road; and

WHEREAS, Resolution 42-94 was passed on April 26, 1994 objecting to the requested unnecessary realignment of Richmond Road within the City for the reasons as stated therein; and

WHEREAS, it is the City's understanding that no federal funds are to be used for said project; and

WHEREAS, the Mayor and Council desire to formally refuse City consent to any such realignment of Richmond Road as part of the Ohio Department of Transportation project to widen Richmond Road from Highland Road to Horizon Road under Section 5521.01 of the Ohio Revised Code.

NOW, THEREFORE, Be It Resolved by the Council of the City of Richmond Heights, State of Ohio, that:

Section 1: Mayor Daniel J. Urru and the entire Council of the City of Richmond Heights hereby formally refuse to grant consent to any realignment of Richmond Road between Highland Road and Horizon Road within the City of Richmond Heights pursuant to Section 5521.01 of the Ohio Revised Code and state that any previous legislation, agreements or consent, if any, to the state highway project for the widening of Richmond Road between Highland Road and Horizon Road are hereby repealed.

Section 2: The Clerk of Council be and she is hereby authorized and directed to forward a certified copy of this Resolution to each of the Commissioners of the Board of County Commissioners of Cuyahoga County, Daniel R. Kozar, Manager, Cuyahoga County Airport, Bryan Groden, Ohio Department of Transportation, District 12, State Representative Ronald Suster, State Senator Judy Sheerer, Northern Ohio Area Coordinating Agency, Cuyahoga County Planning Commission and the Federal Aviation Authority.

Section 3: This Resolution shall take effect and be in force from and after the earliest period allowed by law.

PASSED: June 14, 1994

APPROVED: June 14, 1994

Daniel J. Urso, Mayor

ATTEST:

Marlene A. Smith,
Clerk of Council

Ray F. Loushin,
President of Council

I, Marlene A. Smith, as Clerk of the City of Richmond Heights, Ohio, do hereby certify that the foregoing is a true and correct copy of Resolution No. 67-94, adopted by the Council of said Municipality on the 14th day of June, 1994.

Marlene A. Smith,
Clerk of Council

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5
[illegible]

[illegible]

Mr. Sally Kane
C&S Engineers
[illegible]
[illegible]

Dear Mr. Gray:

Thank you for your interest in the [illegible] map and geographic information collection. In Northeast Ohio the Geographic Information Systems (GIS) Action Team pulled together a team of Federal, State and local agencies that developed and distributed this basin planning CD-ROM data set for all 88 counties.

The GIS Action Team's objective was to develop an environmental data tool for local decision-makers. This first development set of CD-ROMs which were distributed to the local community governments throughout a seven county area of Northeast Ohio. The primary purpose was to get community planners and leaders from all levels of government to begin to think "outside their own box" and begin their planning on a basin wide or regional wide basis. About 1,000 CD-ROMs were sent out to the 7 county communities. While reviewing the information for this CD-ROM provided many partnerships were formed with educational institutions. The GIS Action Team wanted to [illegible] and determined to add our [illegible] set of CD-ROMs.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

WELCOME TO MAGIC 2001

A Geographic Information System (GIS) provides a powerful tool for manipulating, analyzing, and printing computerized map and geographic information. This MAGIC 2001 CD offers all users a rudimentary GIS capability. The data files [illegible] prove useful to all GIS users [illegible] in Northeast Ohio.

Many of the people [illegible] GIS in the region have been frustrated by the lack of computerized map data and by the lack of consistency in the formats of the data that was available. This collection of maps and other geographic information [illegible] a first step toward overcoming both of these limitations. This CD is a result [illegible] several of these users got together in an informal group that became known as the GIS Action Team. MAGIC 2001 represents their effort to advance the state of GIS in the region.

What is the region? It is 18 counties in Northeast Ohio: Ashland, Ashtabula, Carroll, Columbiana, Cuyahoga, Geauga, Holmes, Huron, Lake, Lorain, Mahoning, Medina, Portage, Stark, Summit, Trumbull, Tuscarawas, Wayne [illegible] counties [illegible] included on MAGIC [illegible]. It is also the region that is drained by the Black River, Rocky River, Cuyahoga River, and the Chagrin River. Add to that portions of the Vermilion, Tuscarawas, and Grand Rivers.

What data is included? First, the basic information that is needed to create any map of the region. This includes county and municipal boundaries, roads, railroads, lakes, and streams. Second, it includes Census Bureau boundary data that will make it easy to use the 2000 Census information. Third, there are watershed boundary files that identify the specific land areas that drain into each of the major rivers in the region. Fourth, there are numerous files that have been generated by the Ohio Department of Natural Resources over the course of the last 15 years. These files represent [illegible] natural resource characterizations, and more. That is only the beginning. There are two CDs with special information. The first contains the Habitat Sensitivity Analysis files for the Western Lake Erie and Central Lake Erie regions. This information has been provided by the United States Environmental Protection Agency. The second special information CD contains electronic versions of the [illegible] maps [illegible].

How do I use this information? [illegible]

Who is responsible for MAGIC 2000? The GIS Action Team is a loose collaboration of individuals from many agencies and departments. They are [illegible] with their individual [illegible]. A few words about the roles of some of the main players: Judy Wilson, the Northeast Ohio Areawide Coordinating Agency (NOACA) [illegible] "[illegible]" of GIS in the region. [illegible] Director of the Ohio Department of Natural Resources, Division of Water, [illegible] the Northeast Ohio Data and Information Service (NODIS) at Cleveland State University [illegible] and the people of the Lorain County Planning Commission [illegible] GIS [illegible] Mike Sullivan of the Northeast Ohio Data and Information Service (NODIS) at Cleveland State University [illegible] and the people of the Lorain County Planning Commission [illegible] GIS [illegible] Mike Sullivan of the Ohio Department of Natural Resources [illegible] Paul Novak of the USDA [illegible] Mike Lesnick of NOACA, Mike Sullivan of the Cuyahoga Soil and Water Conservation District, Chris Sinclair of the USDA [illegible] Council of Governments to employ their [illegible] and [illegible].

Why did the GIS Action Team make MAGIC 2000? First, to meet an overriding need for consistent data. Second, and more importantly, to continue to provide an infrastructure of GIS to hundreds of local officials and other individuals in the region. [illegible] and expansion of data [illegible] with GIS and [illegible] GIS. With this [illegible] support for GIS [illegible] the region. This will [illegible] better information [illegible] and enhanced applications [illegible].

Where do we go from here? The Northeast Ohio Data and Information Service is designed to be the place where [illegible] GIS data. [illegible] information [illegible] provided here. Start with MAGIC 2000 [illegible] Read the help files [illegible] maps. Talk to other users and look for training [illegible]. [illegible]

User Notes

County Data Disks

- [illegible]
- [illegible]

[illegible]

- [illegible]
- [illegible]

USGS Quadrangles

- [illegible]
- [illegible]
- To open the quadrangles, [illegible] Select the quad that you want to open, click OK and [illegible] Your map will now [illegible] automatically [illegible]
- Open Arcs Notes and [illegible] Select the quad file that you want to open [illegible] Arcs Notes will open the quad for you.

Inland Sensitivity Atlas

- The Inland Sensitivity Atlas was created by USEPA Region [illegible] to respond to oil spills. The intent was to [illegible] so that spill [illegible]
- USEPA's [illegible]

GIS Action Team Members

[illegible]

STEPHEN HOVANCSEK & ASSOCIATES, INC.
Consulting Engineers & Surveyors
[illegible]
[illegible]

January 12, 2004

C & S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212

Attention: Kathleen C. Kane
Senior Planner

Re: **CUYAHOGA COUNTY AIRPORT**

Dear Ms. Kane:

In response to your letter, submitted herewith kindly find one (1) copy each of the following:

Wetlands Map, City of Highland Heights
Flood Zone Map, City of Highland Heights
Storm Sewer Map, vicinity of the airport
Sanitary Sewer Map, vicinity of the airport

If you should have any further concerns, or need any additional assistance, please feel free to contact our office.

Very truly yours,

Andrew K. Blackley, P.E.

AKB/dgr
Enclosures
cc: Mayor Scott L. Coleman
Thomas Evans, Service Director

Cuyahoga County Airport Wind Analysis
(using observations taken at Cleveland Hopkins)
Existing runway orientation is N 49°28'44" E (true)

	All-Weather		VFR		IFR	
runway orientation	% wind coverage @ 10.5 knots/12 MPH	% wind coverage @ 13 knots/15 MPH	% wind coverage @ 10.5 knots/12 MPH	% wind coverage @ 13 knots/15 MPH	% wind coverage @ 10.5 knots/12 MPH	% wind coverage @ 13 knots/15 MPH
10/190	84.33		85.00	91.73	79.39	88.69
20/200	85.15		85.71	92.10	80.88	89.81
30/210	85.81		86.24	92.59	82.41	90.93
40/220	86.35	92.97	86.67	93.11	83.76	91.80
49/229 (existing)	86.93	93.29	87.13	93.40	85.06	92.26
50/230	86.99	93.32	87.19	93.43	85.20	92.31
60/240	87.57	93.55	87.66	93.63	86.47	92.78
69/249 (Alt 26)	87.98	93.75	88.01	93.78	87.22	93.23
70/250	88.00	93.77	88.04	93.80	87.29	93.28
71/251 (Alt 15)	88.03	93.79	88.06	93.82	87.35	93.32
74/254			88.10	93.87	87.52	93.45
75/255	88.10	93.86	88.11	93.88	87.58	93.48
76/256			88.11	93.89		
77/257	88.11		88.11	93.91		
78/258	88.12	93.90	88.11	93.92	87.73	93.57
79/259	88.12		88.10	93.92		
80/260	88.11	93.92	88.09	93.93	87.81	93.62
83/263		93.93		93.93	87.89	93.69
84/264		93.93		93.93	87.91	93.71
85/265		93.93	88.00	93.93	87.92	93.72
86/266		93.92		93.92	87.92	93.74
87/267					87.90	93.75
88/268					87.88	93.76
89/269						93.76
90/270 (Alt 3)	87.85	93.88	87.79	93.86	87.82	93.77
91/271						93.78
92/272						93.78
93/273						93.78
94/274						93.78
95/275						93.78
96/276						93.78
97/277						93.78
98/279						93.77
100/280	87.18	93.63	87.13	93.58	87.16	93.74
110/290	86.39	93.21	86.38	93.17	86.17	93.40
120/300	85.77	92.67	85.87	92.67	84.95	92.59
130/310	85.27		85.51	92.21	83.43	91.35
140/320	84.56		84.97	91.77	81.51	90.06
150/330	83.85		84.42	91.30	79.70	88.72
160/340	83.39		84.06	91.06	78.52	87.61
170/350	83.36		84.09	91.08	78.11	87.26
180/360	83.69		84.42	91.36	78.38	87.74

APPENDIX D

FACILITY REQUIREMENTS CORRESPONDENCE AND DOCUMENTATION

BRIEFING MEMO

aeroinity

TO Kathy Kane, C&S Engineers

FROM Susan J.H. Zellers, P.E.

DATE June 1, 2006

RE Operations Fleet Mix at Cuyahoga County Airport

Introduction

To identify the future runway length needs at Cuyahoga County Airport, operating data were gathered for based business jets. In addition to activity by these based business jets, there is also significant transient business jet activity at the airport. An estimate of the operations for the most demanding business jets was prepared.

Annual Operations by Type

As a part of the inventory process, from September 7, 2003 to September 13, 2003 hourly traffic count information was obtained from the Cuyahoga County Tower. This data showed that 72 percent of those operations were by single engine aircraft and 21 percent were by business jets. The balance was comprised of multi-engine and turbo prop operations as shown in **Exhibit 1**. These percentages were used to estimate the annual operations by each type of aircraft from the 2003 total operations (includes operations not recorded by the tower based on historic airport records.) The 2003 total operations are the basis of the aviation forecasts accepted by the FAA on August 4, 2004.

Exhibit 1
2003 Operations at Cuyahoga County Airport

Type of Aircraft	Operations
Single Engine	50,069
Multi Engine	3,477
Turbo Prop	1,391
Jet	14,603
Total Operations	**69,540**

Source: Percent by type from September 7-13, 2003 Tower Hourly Traffic Records
Total Operations from Cuyahoga County Airport Aviation Forecasts, July 2004

Annual Business Jet Operations

Business jet operations are typically conducted under instrument flight rules (IFR). To divide the total business jet operations shown on Exhibit 1 into annual operations by the various types of business jets, the most recent 12 months of IFR flight plans filed to Cuyahoga County Airport were used. The IFR flight plan data were analyzed to estimate the percentage of operations by each type of business jet. Business jet types conducting less than 100 annual operations were grouped together as "other business jets." The percentage of business jet operations by each type were then applied to the 2003 business jet operations to estimate the operations by each common type of business jet operating at Cuyahoga County Airport. Annual operations levels by the various types of business jets are shown in **Exhibit 2.**

Exhibit 2
2003 Business Jet Operations at Cuyahoga County Airport

Aircraft Type	Percent	Operations
Hawker 400	18.2	2,658
Citation 560/56X	15.5	2,263
HS125	13.0	1,898
Learjet 45	10.0	1,460
Falcon 50	7.1	1,037
Citation 550/551	6.2	905
Challenger 600	5.1	745
Citation 650	3.3	482
Citation 525/526	2.9	423
Learjet 60	2.9	423
Learjet 31	2.6	380
Falcon 2000	2.2	321
Citation 750	1.5	224
Learjet 55	1.5	219
Learjet 35	1.4	204
Gulfstream IV	0.9	131
Other business jets	5.6	820
Total		**14,603**

Other business jets include: Citation 500/501, Challenger 300, Falcon 10, Falcon 20, Falcon 90, Falcon 900, Embraer 135, Global Express, Gulfstream II, Gulfstream V, Legacy, Learjet 24, Learjet 25, Sabreliner, and Westwind.

Source: May 2004 to April 2005 IFR Flight Plans to Cuyahoga County Airport, www.flaweb.com

355 Richmond Road
Suite 1
Richmond Heights, Ohio 44143
Tel 216-289-6566
Fax 216-289-65[illegible]

Acme Operating Corp.

June 1, 2005

Corporate Wings
Attn: Ed McDonald
355 Richmond Road
Richmond Heights, Ohio 44143

Mr. McDonald:

Per your request, I am submitting this letter as evidence of the overall benefit our department would achieve by extending the main runway at Cuyahoga County Airport (CGF) to 6,000 feet, with my professional opinion and encouragement to further pursue such endeavor.

ACME Operating Co. operates a Global Express BBD-700. The Global has the range capability of 6500 nautical miles. We are currently limited operationally with the 5160ft runway. We are restricted to land at or below 60,000# due to its weight bearing capacity, and cannot utilize the full range capability of this aircraft due to the runway length. On a standard day, departing CGF, we can only carry enough fuel to fly 4500 nautical miles. With the runway extended to 6,000ft we could increase our range to 5800 nautical miles. That amounts to a difference of 18% in fuel quantity alone and is considering the cost savings in general for us not having to reposition to airport with a longer runway, as in Cleveland Hopkins (CLE) or Burke Lakefront (BKL) in order to regain this loss in range. This also amounts to a loss of revenue for both the City of Richmond Heights, and Corporate Wings in at least the same amount.

This runway extension would significantly improve safety as well, guarding further against potential runway overruns when the runway is contaminated, and also provide a bigger traffic relief alternative for the presently overloaded Cleveland Hopkins (CLE) airport and ARTCC systems. With the speculation of Burke Lakefront airport being closed, Cuyahoga County airport would then become the only real alternative for corporate and private general aviation to operate. CGF should be capable of handling the added capacity with a 6,000ft runway.

To fully gain the value of this runway improvement, we also must provide the staffing of US Customs and Immigration services at the field. It is not in the interest of "best practice" to offer a world class airport facility and not provide customers services that they are willing to pay for, adds convenience, and positively impacts the aforementioned public entities listed above as well.

I appreciate the opportunity to add my input for this project. Please contact me should you require additional information.

Sincerely,

Chet Keen
Chief Pilot

APPENDIX E

AIRPORT SURVEY RESULTS

Cuyahoga County Airport Master Plan
Pilot Survey

We are asking for your assistance with ideas to make Cuyahoga County Airport a better facility. An important goal of the Airport Master Plan and Runway Safety Area Study is to assess the condition of the facility and the requirements of pilots that may use it so we can serve your needs effectively. Please complete the following survey and return it in the enclosed, postage paid envelope.

Contact Information

1. Name: **85 Sent, 31 Received (36% Response)** 2. Phone: _____

3. Address: _____

4. City _____

5. State: _____ 6. Zip: _____ 7. E-mail: _____

Flight Activity

8. Number of flight hours logged in the last 12 months: **5820**

9. License and Ratings (check all that apply).

☐ Student	**0**	☐ Private	**18**	☐ Commercial	**7**
☐ ATR	**6**	☐ Multi-engine	**13**	☐ Instrument	**19**
☐ Flight Instructor	**9**	☐ Rotorcraft	**1**	☐ ATP	**6**

☐ Other (describe): **2**

10. What is the primary purpose of your flight activity? (If more than one, indicate percentage.)

☐ Business	**20**	_____ %	☐ Personal	**22**	_____ %
☐ Student	**1**	_____ %	☐ Instructor	**2**	_____ %
☐ Air Taxi	**0**	_____ %	☐ Air Taxi (Cargo)	**0**	_____ %

☐ Other (describe): **1** _____ %

11. There are two types of operations: itinerant and local. Itinerant operations are those flights for which the flight begins or ends at an airport other than where your aircraft is based. All other operations are considered local (e.g., touch-and-go operations are local operations). With these definitions in mind, please indicate the estimated number of operations (a landing is one operation and a takeoff is one operation) that you performed during the last 12 months.

Local: **1906** Itinerant: **3175**

12. By what percentage do you expect your flying activity to change during the next five years?

34 % Increase **50** % Decrease ☐ No change **8**

13. How do you have access to an aircraft?

☐ Own	**25**	☐ Share ownership	**1**	☐ Fly corporate aircraft	**5**
☐ Rent	**0**	☐ Belong to flying club	**2**	☐ Commercial airline pilot	**1**
☐ Lease	**0**	☐ Hold inactive pilot license	**0**		

14. How is the aircraft stored?

☐ T-hangar	**20**	☐ Corporate hangar	**6**
☐ Tied-down	**5**	☐ Shared large hangar	**2**

Cuyahoga County Airport

15. Why do you use Cuyahoga County Airport?

☐ Convenience	**23**	☐ Location	**21**	☐ Cost	**1**
☐ Facilities	**14**	☐ Services	**8**		
☐ Other (describe):	**4**				

16. Please rate the following facilities at the Cuyahoga County Airport.

A. FBO Services	☐ Excellent	**5**	☐ Good	**16**	☐ Fair	**6**	☐ Poor	**2**
B. Navaids	☐ Excellent	**11**	☐ Good	**18**	☐ Fair	**1**	☐ Poor	**0**
C. Hangar Facilities	☐ Excellent	**6**	☐ Good	**16**	☐ Fair	**3**	☐ Poor	**5**
D. Runway Pavement Conditions	☐ Excellent	**7**	☐ Good	**18**	☐ Fair	**3**	☐ Poor	**3**
E. Taxiway Pavement Conditions	☐ Excellent	**6**	☐ Good	**11**	☐ Fair	**5**	☐ Poor	**9**
F. Apron Pavement Conditions	☐ Excellent	**7**	☐ Good	**13**	☐ Fair	**5**	☐ Poor	**6**
G. Snow Removal	☐ Excellent	**11**	☐ Good	**11**	☐ Fair	**6**	☐ Poor	**3**
H. Geographic Location	☐ Excellent	**13**	☐ Good	**17**	☐ Fair	**0**	☐ Poor	**0**
I. Flight School Rates			☐ High	**2**	☐ Average	**11**	☐ Low	**0**
J. Maintenance Rates			☐ High	**9**	☐ Average	**15**	☐ Low	**0**
K. Fuel Costs			☐ High	**18**	☐ Average	**13**	☐ Low	**0**
L. Aircraft Storage / Parking Fees			☐ High	**9**	☐ Average	**19**	☐ Low	**0**

17. What type of aircraft do you normally use at Cuyahoga County Airport?

☐ Single Engine (1-2 Seat)	**5**	☐ Single Engine (4 Seat)	**13**	☐ Single Engine (6 Seat)	**3**
☐ Multi-engine (<12,500 lbs)	**6**	☐ Turboprop (<12,500 lbs)	**3**	☐ Rotorcraft	**0**
☐ N/A	**0**	☐ Other (describe):	**5**		

18. Do you plan to upgrade your aircraft? ☐ Yes **8** ☐ No (skip to question 20) **21**

19. If so, what type of aircraft and how soon? **Experimental, Single (4-seat), Jet, Multi-engine**

20. What one improvement would you suggest at Cuyahoga County Airport? **(See attached comments)**

Comments

21. Please feel free to provide any comments about Cuyahoga County Airport.

(See attached comments)

Please return this survey to Kathy Kane, C&S Engineers, Inc., 499 Col. Eileen Collins Blvd., Syracuse, NY 13212, or fax it to: (315)455-9667. If you have any questions, please call Ms. Kane at (315)455-2000.

Pilot Survey Results

Questions no. 20 and 21

20. What one Improvement would you suggest at Cuyahoga County Airport?

- Condominium hangars for small, private aircraft.
- Night tower operation.
- Water/bathroom facilities at T-hangars.
- Urgent, need to repair taxiways (potholes and rocks!).
- Automated weather freq 24 hours!
- Adding a VOT (VHF Omni-Range Test Facility).
- Better quality FBO - friendly to private aircraft (not by corp.).
- ILS Runway 6 - we need a 300' approach and at LEAST 500' extra feet of runway.
- FBO or fuel provider.
- Because of Flight Options who handles the FBO, they overcharge (GA) aircraft. Airport needs a separate FBO.
- AWOS.
- A second FBO to remove the monopoly of Corporate Wings.
- More reasonable T-hangars with heat and insulation.
- Fix the taxiway.
- Fix holes on all taxiways. Install an AWOS at this busy airport.
- ATIS, Runway extension and improve ramp surface.
- Repair ramps and taxiway ASAP.
- ILS 6 to replace back course.

21. Please feel free to provide any comments about Cuyahoga County Airport.

- Great tower personnel.
- The T-hangars are in very poor condition. There is no electricity or access to water.
- I love the airport. The only problem is ice build-up in the winter at the CC hangar.
- A. Taxiway Bravo on NE side of runway is very uneven and bumpy.
  B. Nice airport and good staff (administration and tower personnel).
  C. Condo hangars on NE side would be great and encourage more general aviation (if that is a CGF objective).
- CGF has a long and illustrious history; certainly relieves congestion at Hopkins.
- Very well managed.
- Nice, convenient, a place to be proud of.
- It's a great airport. Please don't forget about us in tie-down!!
- A. Add a WAAS GPS approach for RW 6.
  B. Add an FBO for the little plane folks.
  C. Add more T-hangars (heated and air conditioned).
  D. Add self-serve gas to SE side of field.
- A. Runway Expansion to 6,000ft+ would be great!
  B. 24 hour weather reporting.
  C. ILS for RW 6.
  D. Eliminate "volunteer" curfew and implement noise abatement procedures - we follow this anyways!

- For several years I attempted to get involved in based pilots group and found the management resistant and the group was eliminated. I feel based aircraft pilots should be involved in a committee to help plan things of interest. There is presently no involvement of based pilots.
- Overall nice place.
- In general, I believe it is a very good airport with the one exception of the MAJOR repair work that is needed on the taxiways.
- A. The taxiways and ramps - horrible, runway very bumpy.
  B. We need lower minimums on RW 6 - ILS preferred due to winter winds.
  C. 500-1,000 foot extra on runway would facilitate hot summer take offs and winter landings.
  D. Better fire and rescue equipment.
- We need:
  A. Self service 100LL fuel.
  B. RW 6 GPS approach.
  C. Re-surface apron, taxiway and runway.
- In recent years, the airport conditions have gone from excellent to fair. Not only are the ramps and taxiways in need of better repair, but weed control of these pavements is poor.
- One time I needed air in my tire. They said they didn't have or couldn't get any air. They only want to provide service for jet traffic and over charge the little guy so they don't have to do the work.
- I have been flying out of the airport since 1982. The airport upkeep in the last 3 years has, in my opinion, gone down. This includes airport infrastructure, snow removal to overall appearance. Any questions, please call at (216) 797-1000.
- A. The taxiways are in very bad condition. The holes in the taxiways are dangerous to all aircraft using the airport.
  B. 70,000 flights at the airport require an AWOS system.
- Hours for pilot working in this company are not represented in this report (Flight Options).
- Contract tower operators are doing an excellent job. Corporate Wings line service is also excellent.

APPENDIX F

AIRPORT NOISE EXPOSURE

Charles M Salter Associates Inc

Consultants in
Acoustics
Audio/Visual
System Design
and Telecommunications

130 Sutter Street, Suite 500
San Francisco
California 94104
Tel: 415 397 0442
Fax: 415 397 0454
info@cmsalter.com
www.cmsalter.com

Charles M Salter, PE
David R Schwind, FAES
Anthony P Nash, PE
Eva Duester
Thomas A Schneider, PE
Kenneth W Graven, PE
Eric L Broadhurst, PE
Philip N Sanders
Robert P Alvarado
John C Freytag, PE
Durand R Begault, Ph.D
Michael D Toy, PE
Thomas J Corbett
Rose A Jenzal
Jason R Duty
Cristina L Moyer
Joey G D'Angelo
Eric A Yee
Joshua M Roper
Troy Gimbel
Randy D Wardeck
Peter K Hunt
Andrew L Stanley
Christopher A Pelher
Timothy G Brown
Jeff Cluney
Ethan Salter
Elaine Y Hsieh
Alexander K Salter
Jeremy L Decker
Ryan McClain
Claudia Knoche
Heather Migot
Joselyn Salter
Candice Huey
Brian Good
Marva D Noordzee
Debbie Garcia
Jasmine Recobara
Alison Whitson

14 July 2006

Kathleen Kane, Project Manager
C & S Engineers, Inc.
499 Col. Eileen Collins Blvd.
North Syracuse, NY 13212-3930
E-mail: kkane@cscos.com

Subject: **Cuyahoga Airport Noise Modeling – Summary Report**
CSA Project No. 03-0343

This letter describes the work of Charles M. Salter Associates, Inc. (hereafter CSA) in the preparation of the Airport Master Plan Update for Cuyahoga County Airport (the Master Plan). Our client, C&S ENGINEERS, INC., (C&S), who prepared the Master Plan, managed all work. The CSA work included:

- Acquisition of detailed aircraft operational information,
- Compilation and assimilation of the information,
- Computer modeling of the noise exposure around the airport for various operational scenarios,
- Plotting of the noise exposure contours for evaluation and presentation by C&S, and
- Verification and checking of all input data and output results.

The project began in 2003 with initial assimilation of data and ran through early 2006 with preparation of the final contours. The project entailed extensive correspondence with the Federal Aviation Administration for air traffic control data, with the Airport for fleet information and with C&S for operations forecasts.

Background

Airport noise exposure contours are developed to identify the degree of noise exposure for areas around the local airport. Noise exposure is expressed in terms of a national standard metric that was established in 1974 by the U. S. Environmental Protection Agency (EPA) and soon adopted thereafter by the Federal Aviation Administration (FAA). The standard is the "day-night average sound level", typically abbreviated "DNL" in units of decibels, and abbreviated dB.

The day-night average sound level is an energy-average measure for a 24-hour period; it does not exist for shorter periods. DNL is a noise exposure measure integrating 1) the sound level of each aircraft event, 2) the number of events, and 3) the time of day, penalizing nighttime (i.e., 10 pm to 7 am) noise by 10 dB. Attachment A is a primer on environmental noise explaining various acoustical terminologies and how DNL is developed. The FAA has established the 65 dB contour as the threshold of significance for remediating noise exposure in residential areas.

The DNL contours, according to FAA policy, must represent average daily conditions over a year, and not extraordinarily busy or quiet periods. DNL contours are developed by computer modeling and not by noise measurement.

The computer program approved by the FAA for modeling noise exposure for civil airports is the "Integrated Noise Model", abbreviated "INM." This is a complex program containing all critical noise source data for each aircraft, as well as many other critical parameters necessary to compute the noise exposure at all ground locations and assemble that information into noise contours.

The INM computes the noise exposure from input data including the type of aircraft, number of aircraft (by type), flight tracks and utilization, climb profiles (i.e., how steeply the aircraft depart), runway use, number and time of aircraft operations, and runway locations and configurations. Each of these parameters accesses information in the INM database used to compute the individual noise exposure contribution of each individual aircraft. These individual noise contributions are summed, on an energy basis, to compute the average annual DNL noise exposure.

Noise modeling using the INM is a powerful tool in analyzing the effects of changes in runway configuration, fleet mix or other flight operations. Specifically, INM modeling enables assessment of the noise exposure effects of proposed alternatives under future operational scenarios. The combined effects of fleet mix, flight tracks, climb profiles, volume of operations, and curfew effects (for instance) may all be evaluated. Each of these parameters may then be modified to identify the specific magnitude and location of the DNL noise exposure effects. Difference contours may be generated to show the specific magnitude and locations of the noise exposure change.

Data Assimilation and Input

The specific input parameters to the INM are:

- Aircraft types – individual aircraft have specific noise emission characteristics
- Volume – the number of operations (an arrival and departure each count as one), on an average annual day. Expert information was used in forecasting the number of operations under future scenarios
- Runway use – historical information, dependent largely upon historical wind and weather conditions
- Flight tracks – airport specific routes for all aircraft operations

- Climb profiles – the rate at which the aircraft climbs, depending upon aircraft performance characteristics and load
- Runway alignment – various locations for landing and takeoff thresholds were evaluated
- Weather conditions – average annual conditions were used
- Topography – the ground topography was input to allow distance adjustment for terrain variations

Aircraft Types

The aircraft type information was supplied through C&S by their sub consultant, Aerofinity, in their July 28, 2004 report, *Cuyahoga County Airport Aviation Forecasts.* This information was carefully compiled from records of past operations and from inventories of based aircraft. Standard forecasting techniques were employed in developing the input for the future scenarios. Likewise, the volume information was also supplied with the aircraft type and forecast data. Attachment B is aircraft type information from Aerofinity.

Volume

Aircraft volume information was compiled by several sources: ***The Airport Master Plan*** (1977); forecast information from Aerofinity report ***Cuyahoga County Airport Aviation Forecasts***, July 28, 2004; information from the Airport Tower Manager, Ben Bettinger; and Ohio Dept. of Transportation ***Fixed Base Operator Inventory*** for the Airport (Jan. 15, 2004). The resultant fleet mix by INM designator is shown in Attachment C.

The INM does not specifically designate every type of aircraft possibly using an airport. However, it does contain information for substituting an aircraft in its database for one not extant. This substitution is based upon the engine types, aircraft weights and climb performance characteristics. Some substitutions were used in the INM modeling.

Runway Use and Flight Tracks

FAA air traffic control specialists supplied runway use, day/night use percentage and flight track information. Much of the information relied upon standard published air traffic control arrival and departure routes. However, it was necessary to supplement the standardized information with interview information from these specialists to quantify the flight track information from non-standard operations. These operations occur for aircraft departing or arriving from an unusual direction for which published routes do not exist, or when special instructions (vectors) are given by air traffic control to maintain adequate clearance between aircraft for obvious safety reasons. Air traffic control specialists and Airport management were also helpful in supplying runway use information. Specifically, Airport Tower Manager, Ben Bettinger, and Cleveland Air Traffic Control Center Specialist, Pete DiFranco supplied and reviewed the runway and flight track utilization data, and the day/night percentage use information for the various aircraft types.

To verify the flight track input, C&S monitored aircraft at the Cleveland Air Traffic Control Center and traced aircraft departure and arrival tracks to the Airport. These tracings showed good agreement with the information supplied by the air traffic control specialists. Attachment D shows the log of these observations and comparison with the flight tracks modeled.

When the INM models were run for the various scenarios it was evident that the flight tracks were not a critical parameter. Plotting the DNL contours out to 55 dB still keeps the contours almost entirely within the straight portions of the arrival and departure tracks near the airport. Therefore, changes in aircraft headings and turning radii would not affect the contour shapes because the turns occur almost entirely beyond the outermost (DNL 55 dB) contour. Attachment E shows the tabulation of aircraft volume for each flight track by general aircraft type.

Climb Profiles

Different aircraft climb at different rates depending on their power, aerodynamic characteristics, their load, weather conditions, and directions from air traffic control. The INM database contains the climb performance characteristics for each aircraft as a function of 'stage length', the trip distance. Aircraft generally carry only enough fuel to safely reach their intended destination; therefore aircraft flying the greatest distances will carry the most fuel, weigh more, and have the shallowest climb profiles. Standard weather conditions for average annual conditions are contained in the INM database for the Airport and were used without modification. The climb profiles for the aircraft were assigned using stage lengths with information supplied by the Tower and Cleveland Center air traffic control specialists.

Other Parameters

The Airport layout is contained in the INM database and was used without modification for the base case after verification with other FAA information. The topographic information was input from a separate data file from the U. S. Coast and Geodedic Survey Office (USGS). This topographic information allow the model to more finely compute the distance from aircraft in the air to points on the ground and make the proper minor adjustments to the noise levels.

Modeling

Assembling the data for input to the INM is a lengthy and complex operation. A total of 1018 lines of code were entered for Alternative 1, No Action. The other ten scenarios were similar in length, though most of the parameters were the same for all scenarios.

A quality control system was implemented by CSA to ensure that all data were correct prior to running the models. This system entailed:

- Review of all input data after entry
- Review of all data with a master assumption list prior to running any scenarios
- Numerous checksums to ensure that all data were reasonable and consistent
- Comparison of results to ensure that contour areas and extents were reasonable

Modeling was done for 12 of the 36 scenarios as shown in the Attachment F Matrix for Comparing Airfield Development Alternatives. Each of these scenarios involved shifting a takeoff and/or landing point relative to the existing runway configuration. The actual takeoff and landing thresholds modeled (expressed as stationing points) are shown in Attachment G. Note, for example, that 0 is the location of the existing Runway 6 threshold; -1900 is the location of the Runway 6 threshold with a 1,900-foot runway extension to the west.

A fixed displacement in threshold does not cause an attendant shift in contour distance. The contour displacements vary due to the volume and type of aircraft using that particular displacement, and the total use of that operation (i.e., takeoff or landing). Thus, displacement of a threshold on a heavily used runway will cause more contour movement that that on a lightly used runway.

INM modeling is an important tool used in assessing the effects of operational changes upon the DNL noise exposure. Attachment H shows DNL contours between 55 dB and 74.5 dB in 1.5-dB increments. This colorized figure also shows the flight tracks used in modeling this scenario (Alternative 30). Attachment I is the contour graphic for Alternative 36 showing the contours overlaid over the terrain with runway clear zones and geographical features defined. It is evident that the outer turns do not significantly affect the DNL noise exposure above 55 dB. The INM also allows for direct comparison, in detail, of two alternatives. Attachment J, shown on a terrain map, shows the subtraction of two contours from alternative scenarios. This allows quantification of the difference geographically. Here the 1.5 dB difference contour is plotted in green. Finally, Attachment K is the raw input file to the INM for the base case.

Very Truly yours,

CHARLES M. SALTER ASSOCIATES, INC.

John C. Freytag

John C. Freytag, P.E.
Director

Attachment A

FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

Background

Three aspects of community noise are important in determining subjective response:

- Level (i.e., magnitude or loudness) of the sound.
- The frequency composition or spectrum of the sound.
- The variation in sound level with time.

Airborne sound is a rapid fluctuation of air pressure and local air velocity. Sound levels are measured and expressed in decibels (dB) with 0 dB roughly equal to the threshold of hearing.

The frequency of a sound is a measure of the pressure fluctuations per second measured in units of hertz (Hz). Most sounds do not consist of a single frequency, but are comprised of a broad band of frequencies differing in level. The characterization of sound level magnitude with respect to frequency is the sound spectrum. A sound spectrum is often segmented into octave bands that divide the audible human frequency range (i.e., from 20 to 20,000 Hz) into ten segments.

Frequency Weighting

Many rating methods exist to analyze sound of different spectra. The simplest method is generally used so that measurements may be made and noise impacts readily assessed using basic acoustical instrumentation. This method evaluates audible frequencies by using a single weighting filter that progressively de-emphasizes frequency components below 1000 Hz and above 5000 Hz. This frequency weighting reflects the relative decreased human sensitivity to low frequencies and to extreme high frequencies. This weighting is called A-weighting and is applied by an electrical filter in all U.S. and international standard sound level meters. Some typical A-weighted sound levels are presented in Figure A1.

Noise Exposure

Noise exposure is a measure of noise over a period of time, whereas noise level is a single value at an instant in time. Although a single sound level may adequately describe community noise at any instant in time, community noise levels vary continuously. Most community noise is produced by many distant noise sources that produce a relatively steady background noise having no identifiable source. These distant sources change gradually throughout the day and include traffic, wind through foliage, and distant industrial activities. Superimposed on this slowly varying background is a succession of identifiable noise events of brief duration. These include nearby activities such as single vehicle passbys or aircraft flyovers that cause the community noise level to vary from instant to instant.

A single number called the equivalent sound level, typically referenced by its symbol L_{eq}, is a U.S. and international standard used to describe noise varying over a period of time. The L_{eq} is the average noise exposure level over a period of time (i.e., the total sound energy divided by the duration). It is the constant sound level that would contain the same acoustic energy as the varying sound level, during the same time period. The L_{eq} is useful in describing noise over a period of time with a single numerical value.

Discrete short duration transient noise events, such as aircraft flyovers, may be described by their maximum A-weighted noise level or by their sound exposure level (SEL). The SEL value is preferred over maximum noise levels in defining individual events because measured results may be more reliably repeated and because the duration of the transient event is incorporated into the measure (thereby better relating to subjective response). Maximum levels of transient events vary with instantaneous propagation conditions while a total energy measure, like SEL, is more stable. The SEL of a transient event is a measure of the acoustic energy normalized to a constant duration of one second. The SEL differs from the L_{eq} in that it is the constant sound level containing the same acoustic energy as a one-second event, whereas the L_{eq} is the constant sound level containing the same acoustic energy over the entire measurement period. The SEL

may be considered identical to the California standard Single Event Noise Exposure Level (i.e., SENEL).

SEL values may be summed on an energy basis to compute L_{eq} values over any period of time. This is useful for modeling noise in areas exposed to numerous transient noise events, such as communities around airports. Hourly L_{eq} values are called Hourly Noise Levels (HNL values).

In determining the daily measure of community noise, it is important to account for the difference in human response to daytime and nighttime noise. During the nighttime 1) exterior background noise levels are generally lower than in the daytime, 2) background noise also decreases causing exterior noise intrusions become more noticeable, and 3) people are more often at home. For these reasons, people are more sensitive to noise at night than during other periods of the day.

To account for human sensitivity to nighttime noise, the day-night average sound level (DNL, symbol L_{dn}) descriptor is an international standard adopted by the Environmental Protection Agency in 1974 to describe community noise exposure from all sources. The DNL represents the 24-hour, A-weighted equivalent sound level with a 10 dB penalty added for the nighttime noise, between 10:00 pm and 7:00 am. The Federal Aviation Administration has officially employed DNL as its standard since 1981.

In California, the Community Noise Equivalent Level (CNEL) has been the adopted standard since 1972. DNL and CNEL are typically computed by energy summation of HNL values with the proper adjustment applied for the period of evening or night. The CNEL is computed identically to the DNL but with the addition of a 5 dB penalty for evening (i.e., 7:00 pm to 10:00 pm) noise. The CNEL value is typically less than 1 dB above the DNL value. Noise exposure measures such as L_{eq}, SEL, HNL, DNL, and CNEL are all A-weighted with units expressed in decibels (i.e., dB).

Subjective Response to Noise

The effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with community noise usually produce effects only in the first two categories. No universal measure for the subjective effects of noise has been developed, nor does a measure exist for the corresponding human reactions from noise annoyance. This is primarily due to the wide variation of individual attitude regarding the noise source(s).

An important factor in assessing a person's subjective reaction is to compare the new noise environment to the existing noise environment. In general, the more a new noise exceeds the existing, the less acceptable it is. Therefore, a new noise source will be judged more annoying in a quiet area than it would be in a noisier location.

Knowledge of the following relationships is helpful in understanding how changes in noise and noise exposure are perceived.

- Except under special conditions, a change in sound level of 1 dB cannot be perceived.
- Outside of the laboratory, a 3-dB change is considered a just-noticeable difference.
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected.
- A 10-dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

Combination of Sound Levels

Because we perceive both the level and frequency of sound in a non-linear way, the decibel scale is used to describe sound levels. The frequency scale is also measured in logarithmic increments. Decibels, measuring sound energy, combine logarithmically. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a 3-dB increase; the resultant sound level is the sound level from a single passing automobile plus 3 dB. The rules for decibel addition used in community noise prediction are:

- If two sound levels are within 1 dB of each other, their sum is the highest value plus 3 dB.
- If two sound levels are within 2 to 4 dB of each other, their sum is the highest value plus 2 dB.
- If two sound levels are within 5 to 9 dB of each other, their sum is the highest value plus 1 dB.
- If two sound levels are greater than 9 dB apart, the contribution of the lower value is negligible and the sum is simply the higher value.

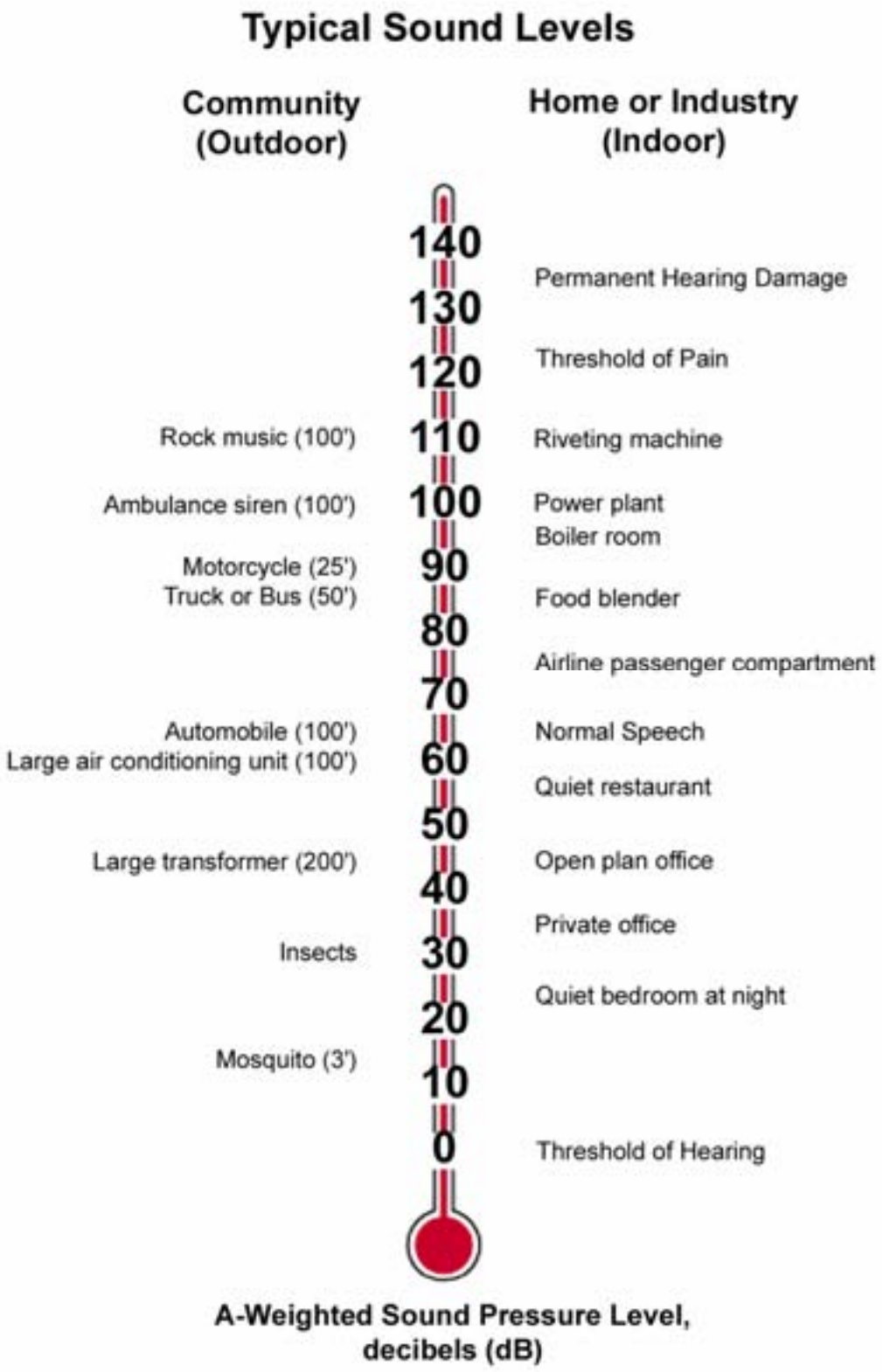

Typical Sound Levels
Community (Outdoor)
Home or Industry (Indoor)
140
Permanent Hearing Damage
130
Threshold of Pain
120
Rock music (100')
110
Riveting machine
Ambulance siren (100')
100
Power plant
Boiler room
Motorcycle (25')
90
Truck or Bus (50')
Food blender
80
Airline passenger compartment
70
Automobile (100')
Normal Speech
Large air conditioning unit (100')
60
Quiet restaurant
50
Large transformer (200')
Open plan office
40
Private office
Insects
30
Quiet bedroom at night
20
Mosquito (3')
10
0
Threshold of Hearing
A-Weighted Sound Pressure Level, decibels (dB)

Figure A1

Attachment B

Aircraft Type Information

51 S. New Jersey St., 2nd Floor
Indianapolis, IN 46204
317.955.8395 317.955.8479 FAX

BRIEFING MEMO

TO Kathy Kane, C&S Engineers

FROM Susan J.H. Zellers, P.E.

DATE June 1, 2005

RE Operations Fleet Mix at Cuyahoga County Airport

Introduction

To identify the future runway length needs at Cuyahoga County Airport, operating data were gathered for based business jets. In addition to activity by these based business jets, there is also significant transient business jet activity at the airport. An estimate of the operations for the most demanding business jets was prepared.

Annual Operations by Type

As a part of the inventory process, from September 7, 2003 to September 13, 2003 hourly traffic count information was obtained from the Cuyahoga County Tower. This data showed that 72 percent of those operations were by single engine aircraft and 21 percent were by business jets. The balance was comprised of multi-engine and turbo prop operations as shown in **Exhibit 1**. These percentages were used to estimate the annual operations by each type of aircraft from the 2003 total operations (includes operations not recorded by the tower based on historic airport records.) The 2003 total operations are the basis of the aviation forecasts accepted by the FAA on August 4, 2004.

Exhibit 1
2003 Operations at Cuyahoga County Airport

Type of Aircraft	Operations
Single Engine	50,069
Multi Engine	3,477
Turbo Prop	1,391
Jet	14,603
Total Operations	**69,540**

Source: Percent by type from September 7-13, 2003 Tower Hourly Flight Records, Total Operations from Cuyahoga County Airport Aviation Forecasts, July 2004.

Annual Business Jet Operations

Business jet operations are typically conducted under instrument flight rules (IFR). To divide the total business jet operations shown on Exhibit 1 into annual operations by the various types of business jets, the most recent 12 months of IFR flight plans filed to Cuyahoga County Airport were used. The IFR flight plan data were analyzed to estimate the percentage of operations by each type of business jet. Business jet types conducting less than 100 annual operations were grouped together as "other business jets." The percentage of business jet operations by each type were then applied to the 2003 business jet operations to estimate the operations by each common type of business jet operating at Cuyahoga County Airport. Annual operations levels by the various types of business jets are shown in **Exhibit 2**.

Exhibit 2
2003 Business Jet Operations at Cuyahoga County Airport

Aircraft Type	Percent	Operations
Hawker 400	18.2	2,658
Citation 560/56X	15.5	2,263
HS125	13.0	1,898
Learjet 45	10.0	1,460
Falcon 50	7.1	1,037
Citation 550/551	6.2	905
Challenger 600	5.1	745
Citation 650	3.3	482
Citation 525/526	2.9	423
Learjet 60	2.9	423
Learjet 31	2.6	380
Falcon 2000	2.2	321
Citation 750	1.6	234
Learjet 55	1.5	219
Learjet 35	1.4	204
Gulfstream IV	0.9	131
Other business jets	5.6	820
Total		**14,603**

Other business jets include: Citation 500/501, Challenger 300, Falcon 10, Falcon 20, Falcon 90, Falcon 900, Embraer 135, Global Express, Gulfstream II, Gulfstream V, Legacy, Learjet 24, Learjet 25, Sabreliner, and Westwind

Source: May 2004 to April 2005 IFR Flight Plans to Cuyahoga County Airport, www.fboweb.com.

Attachment C
Fleet Mix: 2003 Annual Operations by Aircraft Type

AC CAT	INM TYPE	Operations			TOTALS
		Day	Night	Total	
SE	GASEPF	39,254	801	40,055	50,069
	GASEPV	9,814	200	10,014	
	Total	49,068	1,001	50,069	
ME	BEC58P	3,373	104	3,477	3,477
	Total	3,373	104	3,477	
TP	C12	801	33	835	1,391
	DHC6	267	11	278	
	CNA441	267	11	278	
	Total	1,335	56	1,391	
JETS	GIV	128	3	131	14,603
	Falcon 2000	315	6	321	
	Falcon 50	1,016	21	1,037	
	HS 125	130	3	133	
	HS 125 - 800	1,730	35	1,765	
	Lear 35	200	4	204	
	CL600	730	15	745	
	CNA 525/526	415	8	423	
	CNA55B	887	18	905	
	Citation V (CE560)	2,218	45	2,263	
	CNA750	229	5	234	
	Citation III (650)	472	10	482	
	Beechjet (BE400)	2,605	53	2,658	
	Lear 45	1,431	29	1,460	
	Lear 60	415	8	423	
	Lear 31	372	8	380	
	Lear 55	215	4	219	
	Other bus. Jet	804	16	820	
	Total	14,311	292	14,603	
HELO	B212	9	0	9	462
	S70	9	0	9	
	B206L	426	16	442	
	Total	444	17	461	

KEY

AC CAT	Aircraft Category
SE	Single Engine Piston Aircraft
ME	Multi Engine Piston Aircraft
TP	Turboprop Aircraft
JETS	Jet Aircraft
HELO	Helicopters

Attachment D

CUYAHOGA COUNTY AIRPORT -- FLIGHT TRACK VERIFICATION

OBSERVATIONS FROM RADAR -- APRIL 20, 2005									MODELING COMPARISON	
ARR/DEP Time	ARR/ DEP	C&S Track	RW	Aircraft Type	Radius (feet)	Avg Speed (kts)	Bank (degrees)	Magnetic Heading	INM Track Identifier	Track Difference (degrees)
7:10 AM	DEP	1A	24	Navajo	5,124	105	11	045	24D060	-15
7:47 AM	DEP	1B	24	Challenger	8,785	165	15	335	24D320	+15
7:45 AM	DEP	1C	24	Chancellor	5,124	105	11	010	24D010	0
7:55 AM	DEP	2A	24	Lear 60	10,249	170	14	340	24D360	-20
8:09 AM	DEP	2B	24	Hawker	11,713	165	12	340	24D360	-20
8:55 AM	ARR	2C	24	Citation	10,249	120	7	090	24A23VNB	0
9:32 AM	DEP	3A	24	King Air 300	10,249	105	5	180	24D180	0
9:45 AM	DEP	4A	24	Cessna 182	1,464	75	19	080	24D060	-20
9:55 AM	DEP	4B	24	Grumman Tiger	1,464	75	19	150	24D180	0
10:30 AM	DEP	5A	24	Beechjet 400	11,713	150	10	090	24D090	0
10:45 AM	ARR	5B	24	Learjet	3,660	150	29	010	24A36INB	+10
11:00 AM	ARR	5C	24	Cessna 182	2,928	75	10	140	N/A	N/A
11:26 AM	ARR	6A	24	Pilatus	3,660	70	7	020	24A36 (series)	+20
11:35 AM	DEP	6B	24	Citation	23,426	150	5	320	24D320	0
11:55 AM	DEP	7A	24	Lear 45	6,589	150	17	290	N/A	N/A

Attachment E
2003 Aircraft Volume by Flight Track and Aircraft Type

Runway	TYPE	SE	ME	TP	JETS	HELO
Flight tracks						
ID	USE					
NB DEP	0.550					
06D010	0.055	231	22	8	82	
06D270	0.055	231	22	8	82	
06D320	0.220	925	86	31	328	
06D360	0.220	925	86	31	328	
24D010	0.055	595	65	29	318	
24D270	0.055	595	65	29	318	
24D320	0.220	2,379	258	116	1,271	
24D360	0.220	2,379	258	116	1,271	
	1.100	8,261	861	367	3,996	
SB DEP	0.450					
06D090	0.023	95	9	3	34	
06D140	0.068	284	26	9	101	
06D180	0.180	757	70	25	268	
06D200	0.180	757	70	25	268	
24D090	0.023	243	26	12	130	
24D140	0.068	730	79	36	390	
24D180	0.180	1,947	211	95	1,040	
24D200	0.180	1,947	211	95	1,040	
	0.900	6,759	704	300	3,269	
T&G						
06T1		5,608	87	12	15	
24T1		14,420	261	44	58	
		20,028	348	56	73	
NB ARR	0.550					
06A27NB	0.055	231	22	8	82	
06A23NB	0.248	1,041	97	35	369	
06A36NB	0.248	1,041	97	35	369	
24A27NB	0.055	595	65	29	318	
24A23NB	0.248	2,677	290	131	1,429	
24A36NB	0.248	2,677	290	131	1,429	
	1.100	8,261	861	367	3,996	
SB ARR	0.450					
06A27SB	0.045	189	18	6	67	
06A23SB	0.203	852	79	28	302	
06A36SB	0.203	852	79	28	302	
24A27SB	0.045	487	53	24	260	
24A23SB	0.203	2,190	238	107	1,170	
24A36SB	0.203	2,190	238	107	1,170	
	0.900	6,759	704	300	3,269	

DESCRIPTION

TRACK	%HDG/RW	UTIL
06D010	0.10	0.055
06D270	0.10	0.055
06D320	0.40	0.220
06D360	0.40	0.220
24D010	0.10	0.055
24D270	0.10	0.055
24D320	0.40	0.220
24D360	0.40	0.220

TRACK	%HDG/RW	UTIL
06D090	0.05	0.023
06D140	0.15	0.068
06D180	0.40	0.180
06D200	0.40	0.180
24D090	0.05	0.023
24D140	0.15	0.068
24D180	0.40	0.180
24D200	0.40	0.180

TRACK	%HDG/RW	UTIL
06A270	0.20	0.110
06A237	0.90	0.495
06A360	0.90	0.495
24A270	0.20	0.110
24A237	0.90	0.495
24A360	0.90	0.495

TRACK	%HDG/RW	UTIL
06A270	0.20	0.090
06A237	0.90	0.405
06A360	0.90	0.405
24A270	0.20	0.090
24A237	0.90	0.405
24A360	0.90	0.405

Attachment F

Matrix for Comparing Airfield Development Alternatives

Cuyahoga County Airport Master Plan Update

TABLE 5-2: Matrix for Comparing Airfield Development Alternatives

	Road Relocation Required (length)	Noise Impacts: Residental Units within 65 DNL	Noise Impacts: Institutional Uses within 65 DNL (units)	Noise Impacts: Institutional Uses within 65 DNL (acres)	Total Acreage within 65 DNL	Environmental Impacts: Wetlands (acres)	Environmental Impacts: Floodplains (acres)	Environmental Impacts: Historic Properties	Environmental Impacts: 4(f) Resource Avoidance	Probable Construction Costs (millions)	Scored on Scale of 1 (worst) to 5 (best): Environmental Impacts	Comply with Airport Design Standards	Satisfy Airport User Needs (Facility Requirements)	Probable Project Costs	Implementation Feasibility	TOTAL SCORE
Alt. 1: No Action	0	17	5	0.5	293	0	3	N	Y	-	5	1	1	5	1	13
Alt. 2: Fully Compliant RSAs w/o Extending RW	0	-	-	-	-	0	2	N	Y	-	5	5	1	5	1	17
Alternatives for Maintaining Existing Runway Length (5,102 feet)																
Alt. 3: RW Reorientation and/or Relocation	950'	-	-	-	-	0	9	N	N	-	-	5	1	-	1	-
Alt. 4: RW 6 Shift to West (Relocate Richmond Rd.)	4,080'	-	-	-	-	0	2	N	Y	-	-	5	1	-	-	-
Alt. 5: RW 24 Shift to East (Relocate Bishop Rd.)	4,200'	-	-	-	-	0	4	N	N	-	-	5	1	-	-	-
Alt. 6: RW 24 Shift to East (Tunnel Bishop Rd.)	3,000'	-	-	-	-	0	4	N	N	-	-	5	1	-	-	-
Alt. 7: Road Relocations at Both Runway Ends	5,900'	-	-	-	-	0	3	N	N	-	-	5	1	-	-	-
Alt. 8: Declared Distances	0	17	5	0.7	293	0	3	N	Y	$3.2	5	5	1	5	1	17
Alt. 9: EMAS at Runway 6 End	0	-	-	-	-	0	3	N	Y	-	-	5	1	-	-	-
Alt. 10: EMAS at Runway 24 End	0	-	-	-	-	0	3	N	Y	-	-	5	1	-	-	-
Alt. 11: EMAS at Both Runway Ends	0	-	-	-	-	0	3	N	Y	-	-	5	1	-	-	-
Alt. 12: Combination of RW 24 Shift to West & RW 6 EMAS	2,050'	-	-	-	-	0	3	N	N	-	-	5	1	-	-	-
Alt. 13: Combination of RW 6 Shift to West & RW 24 EMAS	2,650'	-	-	-	-	0	3	N	Y	-	-	5	1	-	-	-
Alt. 14: Combination with Displaced Threshold	0	-	-	-	-	0	3	N	Y	-	-	5	1	-	-	-
Alternatives for Providing 5,500-foot Runway																
Alt. 15: Runway Reorientation and/or Relocation	8,900'	-	-	-	-	0	4	N	N	-	-	5	3	-	1	-
Alt. 16: RW 6 Ext. to West (Relocate Richmond Rd.)	3,850'	-	-	-	-	0	2	N	Y	-	-	5	3	-	1	-
Alt. 17: RW 24 Ext. to East (Relocate Bishop Rd.)	4,300'	-	-	-	-	0	6	N	N	-	-	5	3	-	2	-
Alt. 18: RW 24 Ext. to East (Tunnel Bishop Rd.)	3,000'	-	-	-	-	0	6	N	N	-	-	5	3	-	2	-
Alt. 19: Road Relocations at Both Runway Ends	6,850'	-	-	-	-	0	4	N	N	-	-	5	3	-	1	-
Alt. 20: Declared Distances	0	-	-	-	-	0	3	N	Y	-	-	5	3	-	2	-
Alt. 21: EMAS at Runway 6 End	0	-	-	-	-	0	3	N	N	-	-	5	3	-	2	-
Alt. 22: EMAS at Runway 24 End	0	-	-	-	-	0	3	N	Y	-	-	5	3	-	3	-
Alt. 23: EMAS at Both Runway Ends	0	-	-	-	-	0	3	N	Y	-	-	5	3	-	2	-
Alt. 24: Combination of RW 24 Shift to West and RW 6 EMAS	3,300'	-	-	-	-	0	3	N	N	-	-	5	3	-	1	-
Alt. 25: Combination with Displaced Thresholds	0	-	-	-	-	0	3	N	Y	-	-	5	3	-	2	-
Alternatives for Providing 6,000-foot Runway																
Alt. 26: Runway Reorientation and/or Relocation	2,100'	-	-	-	-	0.2	3	N	Y	$70.7	2	5	5	1	1	14
Alt. 27: RW 6 Ext. to West (Tunnel Richmond Rd.)	1,250'	65	3	2.2	289	0	5	N	Y	$29.2	1	5	5	3	1	15
Alt. 28: RW 24 Ext. to East (Relocate Bishop Rd.)	7,200'	7	0	0	290	0	8	N	N	$21.4	3	5	5	4	2	19
Alt. 29: RW 24 Ext. to East (Tunnel Bishop Rd.)	4,050'	7	0	0	290	0	8	N	N	$31.4	3	5	5	3	2	18
Alt. 30: Road Relocations at Both Runway Ends	8,250'	18	2	1.1	289	0	3	N	N	$19.6	2	5	5	4	3	19
Alt. 31: Declared Distances	2,900'	6	1	0.3	290	0	5	N	N	$29.3	3	5	5	3	4	20
Alt. 32: EMAS at Runway 6 End (Tunnel Bishop Rd.)	3,300'	11	1	0.6	289	0	5	N	N	$34.0	3	5	5	3	4	20
Alt. 33: EMAS at Runway 24 End	1,250'	22	2	1.6	289	0	3	N	Y	$33.4	2	5	5	3	3	18
Alt. 34: EMAS at Both Runway Ends	2,650'	11	1	0.6	289	0	5	N	N	$23.3	3	5	5	3	4	20
Alt. 35: Combination of RW 24 Ext. and RW 6 EMAS	4,300'	11	1	0.6	289	0	5	N	N	$18.4	3	5	5	4	2	19
Alt. 36: RW 6 Ext. to West (Relocate Richmond Rd.)	3,850'	65	3	2.2	289	0	5	N	Y	$17.1	3	4	5	3	2	17

Attachment G

Cuyahoga County Airport Noise Modeling Alternatives				
Alternative	**R/W 6 Takeoff Location**	**R/W 6 Landing Location**	**R/W 24 Takeoff Location**	**R/W 24 Landing Location**
1	0	0	5102	5102
8	0	0	5102	4607
27	-1900	-1900	4102	4102
28	100	100	6102	6102
29	100	100	6102	6102
30	-900	-900	5102	5102
31	-400	0	6002	6002
32	-550	-300	5452	5452
33	-1050	-1050	4952	4502
34	-550	-300	5452	5102
35	-550	-300	5452	5452

Notes:
Location of existing Runway 6 end is 0; existing stopway end is -500; existing Runway 24 end is 5102.

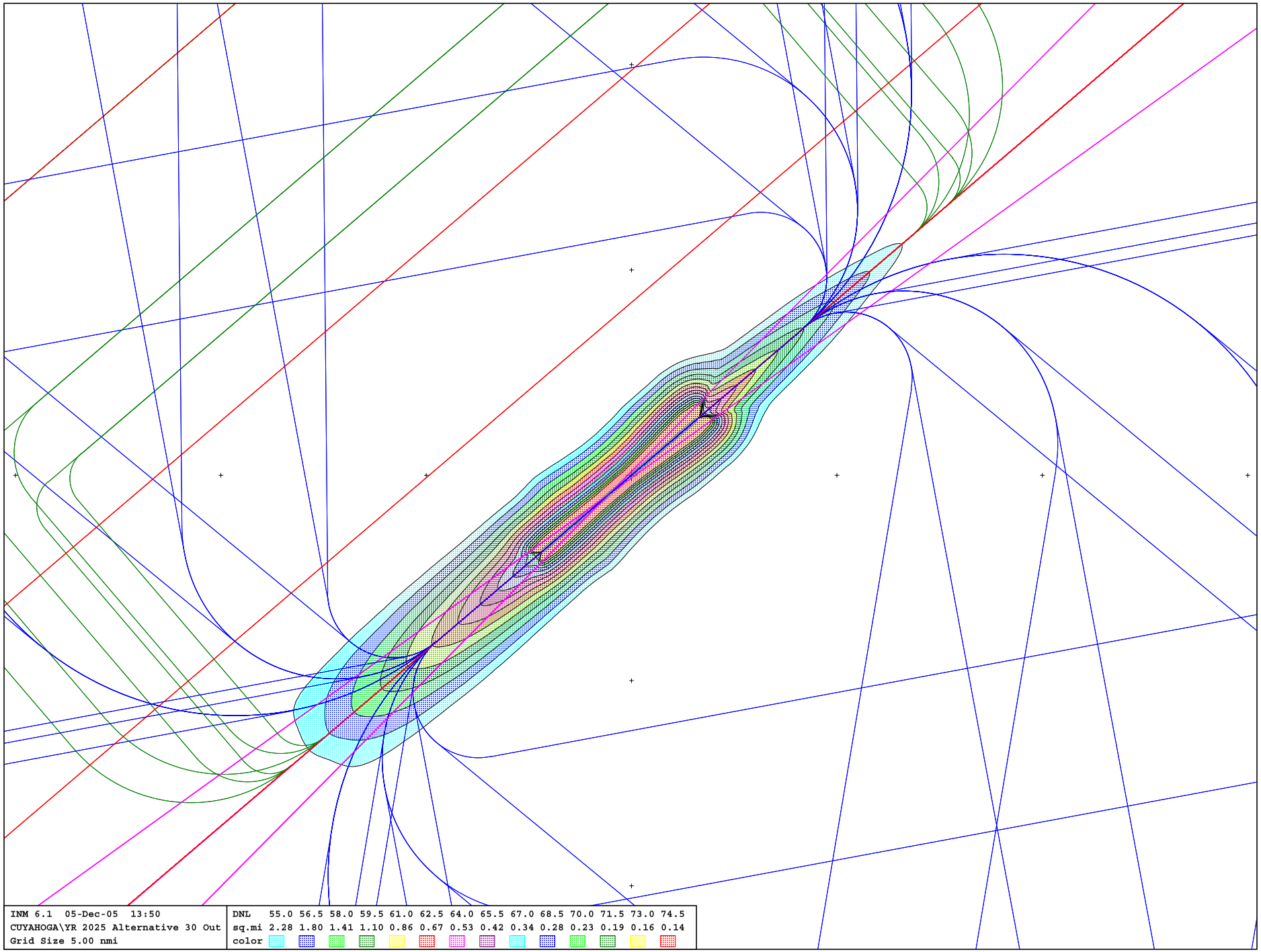
Alternative 28 and 29 are identical (for noise).

Alternative 31 shifts the Runway 6 takeoff location 400' west but maintains the existing Runway 6 location for landing. The total runway length is 6402' (incorporating 400' of the

Alternative 32 and 35 are identical (for noise).

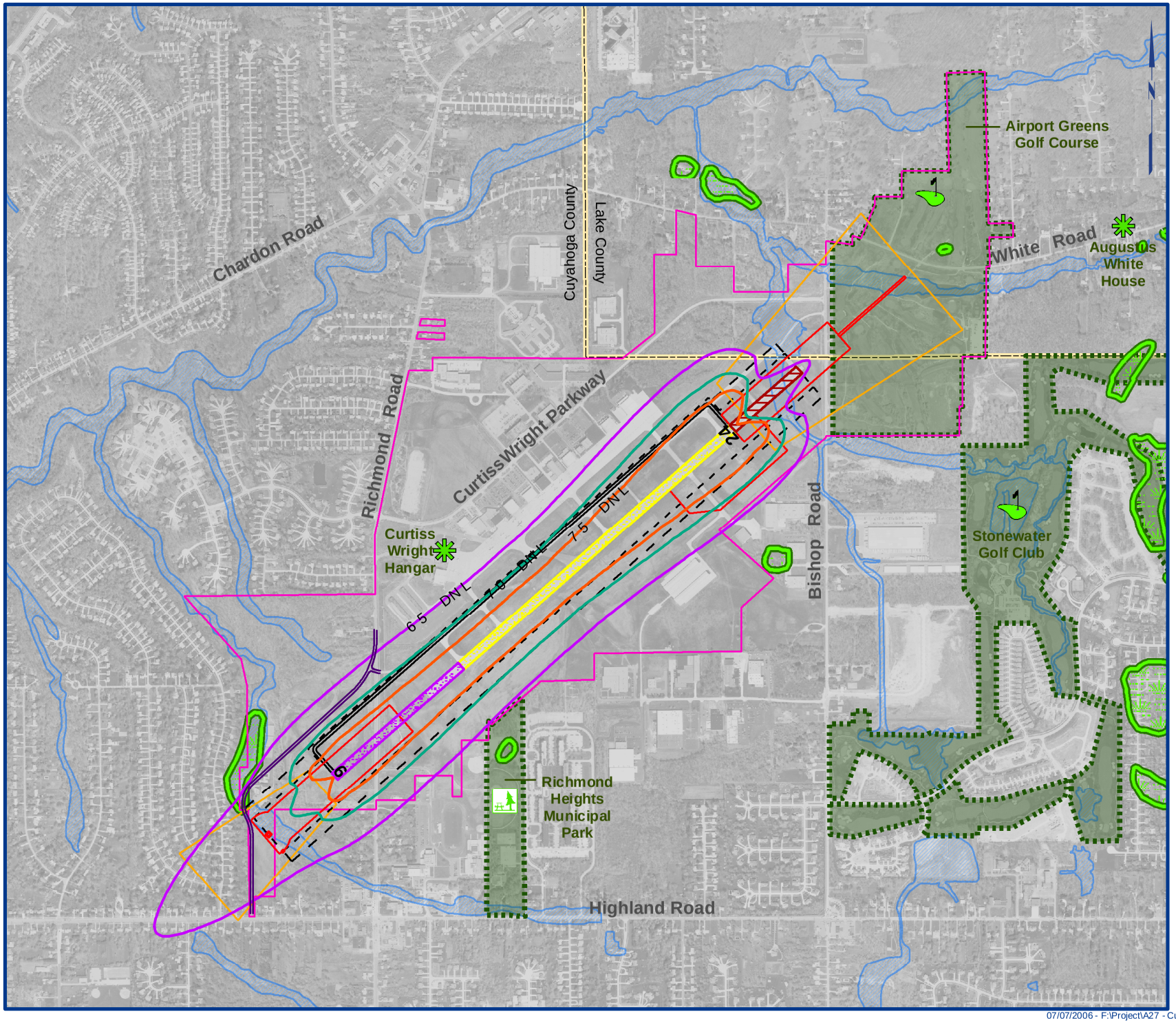
Attachment H

DNL Noise Contours between 55 dB and 74.5 dB and Flight Tracks Modeled (Alternative 30)


INM 6.1 05-Dec-05 13:50
CUYAHOGA\YR 2025 Alternative 30 Out
Grid Size 5.00 nmi
DNL 55.0 56.5 58.0 59.5 61.0 62.5 64.0 65.5 67.0 68.5 70.0 71.5 73.0 74.5
sq.mi 2.28 1.80 1.41 1.10 0.86 0.67 0.53 0.42 0.34 0.28 0.23 0.19 0.16 0.14
color

Attachment I

DNL Noise Contour Graphic Overlaid over Terrain (Alternative 36)



Cuyahoga County Airport

LEGEND

- Existing runway to remain
- Existing pavement to be removed
- New runway or runway extension
- Site requirements for NAVAIDs
- Runway safety area
- Runway object free area
- Runway protection zone
- Airport property line
- Tunneled road
- Relocated road
- Wetlands
- Floodplains
- 4(f) Resource
- Golf Course
- Park
- Historical Resources

SUMMARY

* Extend Runway 6 end 1,900 feet (incorporating stopway)
* Close 1,000 feet at Runway 24 end
* Standard RSA and ROFA beyond both runway thresholds
* Requires rerouting of Richmond Road to intersect with Highland Road
* 6,002-foot runway length available for takeoffs on both runway ends

Usable Runway Length

Runway	6	24
Landing Length	6,002'	6,002'
Departure Length	6,002'	6,002'
Overall Length	6,002'	

0 750 1,500 Feet

Figure 5-36

Alternative 36

Runway 6 Extension to West
(Relocate Richmond Road)

07/07/2006 - F:\Project\A27 - Cuyahoga County\A27001001-MP\GIS\Projects\Alt36.mxd

Attachment K
Raw Input to the INM for the 2003 Base Case

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
GASEPF	A	STANDARD	1	06	06A23PNB	2.2359	0.0000	0.0456
GASEPF	A	STANDARD	1	06	06A23PSB	1.8293	0.0000	0.0373
GASEPF	A	STANDARD	1	06	06A27PNB	0.4969	0.0000	0.0101
GASEPF	A	STANDARD	1	06	06A27PSB	0.4065	0.0000	0.0083
GASEPF	A	STANDARD	1	06	06A36PNB	2.2359	0.0000	0.0456
GASEPF	A	STANDARD	1	06	06A36PSB	1.8293	0.0000	0.0373
GASEPF	A	STANDARD	1	24	24A23PNB	5.7494	0.0000	0.1173
GASEPF	A	STANDARD	1	24	24A23PSB	4.7040	0.0000	0.0960
GASEPF	A	STANDARD	1	24	24A27PNB	1.2776	0.0000	0.0261
GASEPF	A	STANDARD	1	24	24A27PSB	1.0453	0.0000	0.0213
GASEPF	A	STANDARD	1	24	24A36PNB	5.7494	0.0000	0.1173
GASEPF	A	STANDARD	1	24	24A36PSB	4.7040	0.0000	0.0960
GASEPF	D	STANDARD	1	06	06DP010	0.4969	0.0000	0.0101
GASEPF	D	STANDARD	1	06	06DP090	0.2033	0.0000	0.0041
GASEPF	D	STANDARD	1	06	06DP140	0.6098	0.0000	0.0124
GASEPF	D	STANDARD	1	06	06DP180	1.6261	0.0000	0.0332
GASEPF	D	STANDARD	1	06	06DP200	1.6261	0.0000	0.0332
GASEPF	D	STANDARD	1	06	06DP270	0.4969	0.0000	0.0101
GASEPF	D	STANDARD	1	06	06DP320	1.9874	0.0000	0.0406
GASEPF	D	STANDARD	1	06	06DP360	1.9874	0.0000	0.0406
GASEPF	D	STANDARD	1	24	24DP010	1.2776	0.0000	0.0261
GASEPF	D	STANDARD	1	24	24DP090	0.5227	0.0000	0.0107
GASEPF	D	STANDARD	1	24	24DP140	1.5680	0.0000	0.0320
GASEPF	D	STANDARD	1	24	24DP180	4.1814	0.0000	0.0853
GASEPF	D	STANDARD	1	24	24DP200	4.1814	0.0000	0.0853
GASEPF	D	STANDARD	1	24	24DP270	1.2776	0.0000	0.0261
GASEPF	D	STANDARD	1	24	24DP320	5.1106	0.0000	0.1043
GASEPF	D	STANDARD	1	24	24DP360	5.1106	0.0000	0.1043
GASEPF	T	STANDARD	1	06	06TP1	12.0451	0.0000	0.2458
GASEPF	T	STANDARD	1	24	24TP1	30.9731	0.0000	0.6321

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
GASEPV	A	STANDARD	1	06	06A23PNB	0.5590	0.0000	0.0114
GASEPV	A	STANDARD	1	06	06A23PSB	0.4573	0.0000	0.0093
GASEPV	A	STANDARD	1	06	06A27PNB	0.1242	0.0000	0.0025
GASEPV	A	STANDARD	1	06	06A27PSB	0.1016	0.0000	0.0021
GASEPV	A	STANDARD	1	06	06A36PNB	0.5590	0.0000	0.0114
GASEPV	A	STANDARD	1	06	06A36PSB	0.4573	0.0000	0.0093
GASEPV	A	STANDARD	1	24	24A23PNB	1.4373	0.0000	0.0293
GASEPV	A	STANDARD	1	24	24A23PSB	1.1760	0.0000	0.0240
GASEPV	A	STANDARD	1	24	24A27PNB	0.3194	0.0000	0.0065
GASEPV	A	STANDARD	1	24	24A27PSB	0.2613	0.0000	0.0053
GASEPV	A	STANDARD	1	24	24A36PNB	1.4373	0.0000	0.0293
GASEPV	A	STANDARD	1	24	24A36PSB	1.1760	0.0000	0.0240
GASEPV	D	STANDARD	1	06	06DP010	0.1242	0.0000	0.0025
GASEPV	D	STANDARD	1	06	06DP090	0.0508	0.0000	0.0010
GASEPV	D	STANDARD	1	06	06DP140	0.1524	0.0000	0.0031
GASEPV	D	STANDARD	1	06	06DP180	0.4065	0.0000	0.0083
GASEPV	D	STANDARD	1	06	06DP200	0.4065	0.0000	0.0083
GASEPV	D	STANDARD	1	06	06DP270	0.1242	0.0000	0.0025
GASEPV	D	STANDARD	1	06	06DP320	0.4969	0.0000	0.0101
GASEPV	D	STANDARD	1	06	06DP360	0.4969	0.0000	0.0101
GASEPV	D	STANDARD	1	24	24DP010	0.3194	0.0000	0.0065
GASEPV	D	STANDARD	1	24	24DP090	0.1307	0.0000	0.0027
GASEPV	D	STANDARD	1	24	24DP140	0.3920	0.0000	0.0080
GASEPV	D	STANDARD	1	24	24DP180	1.0453	0.0000	0.0213
GASEPV	D	STANDARD	1	24	24DP200	1.0453	0.0000	0.0213
GASEPV	D	STANDARD	1	24	24DP270	0.3194	0.0000	0.0065
GASEPV	D	STANDARD	1	24	24DP320	1.2776	0.0000	0.0261
GASEPV	D	STANDARD	1	24	24DP360	1.2776	0.0000	0.0261
GASEPV	T	STANDARD	1	06	06TP1	3.0113	0.0000	0.0615
GASEPV	T	STANDARD	1	24	24TP1	7.7433	0.0000	0.1580

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
BEC58P	A	STANDARD	1	06	06A23PNB	0.2573	0.0000	0.0080
BEC58P	A	STANDARD	1	06	06A23PSB	0.2105	0.0000	0.0065
BEC58P	A	STANDARD	1	06	06A27PNB	0.0572	0.0000	0.0018
BEC58P	A	STANDARD	1	06	06A27PSB	0.0468	0.0000	0.0014
BEC58P	A	STANDARD	1	06	06A36PNB	0.2573	0.0000	0.0080
BEC58P	A	STANDARD	1	06	06A36PSB	0.2105	0.0000	0.0065
BEC58P	A	STANDARD	1	24	24A23PNB	0.7718	0.0000	0.0239
BEC58P	A	STANDARD	1	24	24A23PSB	0.6315	0.0000	0.0195
BEC58P	A	STANDARD	1	24	24A27PNB	0.1715	0.0000	0.0053
BEC58P	A	STANDARD	1	24	24A27PSB	0.1403	0.0000	0.0043
BEC58P	A	STANDARD	1	24	24A36PNB	0.7718	0.0000	0.0239
BEC58P	A	STANDARD	1	24	24A36PSB	0.6315	0.0000	0.0195
BEC58P	D	STANDARD	1	06	06DP010	0.0572	0.0000	0.0018
BEC58P	D	STANDARD	1	06	06DP090	0.0234	0.0000	0.0007
BEC58P	D	STANDARD	1	06	06DP140	0.0702	0.0000	0.0022
BEC58P	D	STANDARD	1	06	06DP180	0.1871	0.0000	0.0058
BEC58P	D	STANDARD	1	06	06DP200	0.1871	0.0000	0.0058
BEC58P	D	STANDARD	1	06	06DP270	0.0572	0.0000	0.0018
BEC58P	D	STANDARD	1	06	06DP320	0.2287	0.0000	0.0071
BEC58P	D	STANDARD	1	06	06DP360	0.2287	0.0000	0.0071
BEC58P	D	STANDARD	1	24	24DP010	0.1715	0.0000	0.0053
BEC58P	D	STANDARD	1	24	24DP090	0.0702	0.0000	0.0022
BEC58P	D	STANDARD	1	24	24DP140	0.2105	0.0000	0.0065
BEC58P	D	STANDARD	1	24	24DP180	0.5613	0.0000	0.0174
BEC58P	D	STANDARD	1	24	24DP200	0.5613	0.0000	0.0174
BEC58P	D	STANDARD	1	24	24DP270	0.1715	0.0000	0.0053
BEC58P	D	STANDARD	1	24	24DP320	0.6861	0.0000	0.0212
BEC58P	D	STANDARD	1	24	24DP360	0.6861	0.0000	0.0212
BEC58P	T	STANDARD	1	06	06TP1	0.2310	0.0000	0.0071
BEC58P	T	STANDARD	1	24	24TP1	0.6930	0.0000	0.0214

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
C12	A	NOISEMAP	1	06	06A23TNB	0.0548	0.0000	0.0023
C12	A	NOISEMAP	1	06	06A23TSB	0.0448	0.0000	0.0019
C12	A	NOISEMAP	1	06	06A27TNB	0.0122	0.0000	0.0005
C12	A	NOISEMAP	1	06	06A27TSB	0.0100	0.0000	0.0004
C12	A	NOISEMAP	1	06	06A36TNB	0.0548	0.0000	0.0023
C12	A	NOISEMAP	1	06	06A36TSB	0.0448	0.0000	0.0019
C12	A	NOISEMAP	1	24	24A23TNB	0.2060	0.0000	0.0086
C12	A	NOISEMAP	1	24	24A23TSB	0.1686	0.0000	0.0070
C12	A	NOISEMAP	1	24	24A27TNB	0.0458	0.0000	0.0019
C12	A	NOISEMAP	1	24	24A27TSB	0.0375	0.0000	0.0016
C12	A	NOISEMAP	1	24	24A36TNB	0.2060	0.0000	0.0086
C12	A	NOISEMAP	1	24	24A36TSB	0.1686	0.0000	0.0070
C12	D	NOISEMAP	1	06	06DT010	0.0122	0.0000	0.0005
C12	D	NOISEMAP	1	06	06DT090	0.0050	0.0000	0.0002
C12	D	NOISEMAP	1	06	06DT140	0.0149	0.0000	0.0006
C12	D	NOISEMAP	1	06	06DT180	0.0398	0.0000	0.0017
C12	D	NOISEMAP	1	06	06DT200	0.0398	0.0000	0.0017
C12	D	NOISEMAP	1	06	06DT270	0.0122	0.0000	0.0005
C12	D	NOISEMAP	1	06	06DT320	0.0487	0.0000	0.0020
C12	D	NOISEMAP	1	06	06DT360	0.0487	0.0000	0.0020
C12	D	NOISEMAP	1	24	24DT010	0.0458	0.0000	0.0019
C12	D	NOISEMAP	1	24	24DT090	0.0187	0.0000	0.0008
C12	D	NOISEMAP	1	24	24DT140	0.0562	0.0000	0.0023
C12	D	NOISEMAP	1	24	24DT180	0.1498	0.0000	0.0062
C12	D	NOISEMAP	1	24	24DT200	0.1498	0.0000	0.0062
C12	D	NOISEMAP	1	24	24DT270	0.0458	0.0000	0.0019
C12	D	NOISEMAP	1	24	24DT320	0.1831	0.0000	0.0076
C12	D	NOISEMAP	1	24	24DT360	0.1831	0.0000	0.0076

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
DHC6	A	STANDARD	1	06	06A23TNB	0.0183	0.0000	0.0008
DHC6	A	STANDARD	1	06	06A23TSB	0.0149	0.0000	0.0006
DHC6	A	STANDARD	1	06	06A27TNB	0.0041	0.0000	0.0002
DHC6	A	STANDARD	1	06	06A27TSB	0.0033	0.0000	0.0001
DHC6	A	STANDARD	1	06	06A36TNB	0.0183	0.0000	0.0008
DHC6	A	STANDARD	1	06	06A36TSB	0.0149	0.0000	0.0006
DHC6	A	STANDARD	1	24	24A23TNB	0.0687	0.0000	0.0029
DHC6	A	STANDARD	1	24	24A23TSB	0.0562	0.0000	0.0023
DHC6	A	STANDARD	1	24	24A27TNB	0.0153	0.0000	0.0006
DHC6	A	STANDARD	1	24	24A27TSB	0.0125	0.0000	0.0005
DHC6	A	STANDARD	1	24	24A36TNB	0.0687	0.0000	0.0029
DHC6	A	STANDARD	1	24	24A36TSB	0.0562	0.0000	0.0023
DHC6	D	STANDARD	1	06	06DT010	0.0041	0.0000	0.0002
DHC6	D	STANDARD	1	06	06DT090	0.0017	0.0000	0.0001
DHC6	D	STANDARD	1	06	06DT140	0.0050	0.0000	0.0002
DHC6	D	STANDARD	1	06	06DT180	0.0133	0.0000	0.0006
DHC6	D	STANDARD	1	06	06DT200	0.0133	0.0000	0.0006
DHC6	D	STANDARD	1	06	06DT270	0.0041	0.0000	0.0002
DHC6	D	STANDARD	1	06	06DT320	0.0162	0.0000	0.0007
DHC6	D	STANDARD	1	06	06DT360	0.0162	0.0000	0.0007
DHC6	D	STANDARD	1	24	24DT010	0.0153	0.0000	0.0006
DHC6	D	STANDARD	1	24	24DT090	0.0062	0.0000	0.0003
DHC6	D	STANDARD	1	24	24DT140	0.0187	0.0000	0.0008
DHC6	D	STANDARD	1	24	24DT180	0.0499	0.0000	0.0021
DHC6	D	STANDARD	1	24	24DT200	0.0499	0.0000	0.0021
DHC6	D	STANDARD	1	24	24DT270	0.0153	0.0000	0.0006
DHC6	D	STANDARD	1	24	24DT320	0.0610	0.0000	0.0025
DHC6	D	STANDARD	1	24	24DT360	0.0610	0.0000	0.0025
DHC6	T	STANDARD	1	06	06TT1	0.0061	0.0000	0.0003
DHC6	T	STANDARD	1	24	24TT1	0.0231	0.0000	0.0010

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
CNA441	A	STANDARD	1	06	06A23TNB	0.0183	0.0000	0.0008
CNA441	A	STANDARD	1	06	06A23TSB	0.0149	0.0000	0.0006
CNA441	A	STANDARD	1	06	06A27TNB	0.0041	0.0000	0.0002
CNA441	A	STANDARD	1	06	06A27TSB	0.0033	0.0000	0.0001
CNA441	A	STANDARD	1	06	06A36TNB	0.0183	0.0000	0.0008
CNA441	A	STANDARD	1	06	06A36TSB	0.0149	0.0000	0.0006
CNA441	A	STANDARD	1	24	24A23TNB	0.0687	0.0000	0.0029
CNA441	A	STANDARD	1	24	24A23TSB	0.0562	0.0000	0.0023
CNA441	A	STANDARD	1	24	24A27TNB	0.0153	0.0000	0.0006
CNA441	A	STANDARD	1	24	24A27TSB	0.0125	0.0000	0.0005
CNA441	A	STANDARD	1	24	24A36TNB	0.0687	0.0000	0.0029
CNA441	A	STANDARD	1	24	24A36TSB	0.0562	0.0000	0.0023
CNA441	D	STANDARD	1	06	06DT010	0.0041	0.0000	0.0002
CNA441	D	STANDARD	1	06	06DT090	0.0017	0.0000	0.0001
CNA441	D	STANDARD	1	06	06DT140	0.0050	0.0000	0.0002
CNA441	D	STANDARD	1	06	06DT180	0.0133	0.0000	0.0006
CNA441	D	STANDARD	1	06	06DT200	0.0133	0.0000	0.0006
CNA441	D	STANDARD	1	06	06DT270	0.0041	0.0000	0.0002
CNA441	D	STANDARD	1	06	06DT320	0.0162	0.0000	0.0007
CNA441	D	STANDARD	1	06	06DT360	0.0162	0.0000	0.0007
CNA441	D	STANDARD	1	24	24DT010	0.0153	0.0000	0.0006
CNA441	D	STANDARD	1	24	24DT090	0.0062	0.0000	0.0003
CNA441	D	STANDARD	1	24	24DT140	0.0187	0.0000	0.0008
CNA441	D	STANDARD	1	24	24DT180	0.0499	0.0000	0.0021
CNA441	D	STANDARD	1	24	24DT200	0.0499	0.0000	0.0021
CNA441	D	STANDARD	1	24	24DT270	0.0153	0.0000	0.0006
CNA441	D	STANDARD	1	24	24DT320	0.0610	0.0000	0.0025
CNA441	D	STANDARD	1	24	24DT360	0.0610	0.0000	0.0025
CNA441	T	STANDARD	1	06	06TT1	0.0061	0.0000	0.0003
CNA441	T	STANDARD	1	24	24TT1	0.0231	0.0000	0.0010

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
GIV	A	STANDARD	1	06	06A23JNB	0.0089	0.0000	0.0002
GIV	A	STANDARD	1	06	06A23JSB	0.0073	0.0000	0.0001
GIV	A	STANDARD	1	06	06A27JNB	0.0020	0.0000	0.0000
GIV	A	STANDARD	1	06	06A27JSB	0.0016	0.0000	0.0000
GIV	A	STANDARD	1	06	06A36JNB	0.0089	0.0000	0.0002
GIV	A	STANDARD	1	06	06A36JSB	0.0073	0.0000	0.0001
GIV	A	STANDARD	1	24	24A23JNB	0.0344	0.0000	0.0007
GIV	A	STANDARD	1	24	24A23JSB	0.0282	0.0000	0.0006
GIV	A	STANDARD	1	24	24A27JNB	0.0077	0.0000	0.0002
GIV	A	STANDARD	1	24	24A27JSB	0.0063	0.0000	0.0001
GIV	A	STANDARD	1	24	24A36JNB	0.0344	0.0000	0.0007
GIV	A	STANDARD	1	24	24A36JSB	0.0282	0.0000	0.0006
GIV	D	STANDARD	1	06	06DJ010	0.0020	0.0000	0.0000
GIV	D	STANDARD	1	06	06DJ090	0.0008	0.0000	0.0000
GIV	D	STANDARD	1	06	06DJ140	0.0024	0.0000	0.0000
GIV	D	STANDARD	1	06	06DJ180	0.0065	0.0000	0.0001
GIV	D	STANDARD	1	06	06DJ200	0.0065	0.0000	0.0001
GIV	D	STANDARD	1	06	06DJ270	0.0020	0.0000	0.0000
GIV	D	STANDARD	1	06	06DJ320	0.0079	0.0000	0.0002
GIV	D	STANDARD	1	06	06DJ360	0.0079	0.0000	0.0002
GIV	D	STANDARD	1	24	24DJ010	0.0077	0.0000	0.0002
GIV	D	STANDARD	1	24	24DJ090	0.0031	0.0000	0.0001
GIV	D	STANDARD	1	24	24DJ140	0.0094	0.0000	0.0002
GIV	D	STANDARD	1	24	24DJ180	0.0250	0.0000	0.0005
GIV	D	STANDARD	1	24	24DJ200	0.0250	0.0000	0.0005
GIV	D	STANDARD	1	24	24DJ270	0.0077	0.0000	0.0002
GIV	D	STANDARD	1	24	24DJ320	0.0306	0.0000	0.0006
GIV	D	STANDARD	1	24	24DJ360	0.0306	0.0000	0.0006
GIV	T	STANDARD	1	06	06TJ1	0.0004	0.0000	0.0000
GIV	T	STANDARD	1	24	24TJ1	0.0014	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FAL20A	A	STANDARD	1	06	06A23JNB	0.0218	0.0000	0.0004
FAL20A	A	STANDARD	1	06	06A23JSB	0.0178	0.0000	0.0004
FAL20A	A	STANDARD	1	06	06A27JNB	0.0048	0.0000	0.0001
FAL20A	A	STANDARD	1	06	06A27JSB	0.0040	0.0000	0.0001
FAL20A	A	STANDARD	1	06	06A36JNB	0.0218	0.0000	0.0004
FAL20A	A	STANDARD	1	06	06A36JSB	0.0178	0.0000	0.0004
FAL20A	A	STANDARD	1	24	24A23JNB	0.0844	0.0000	0.0017
FAL20A	A	STANDARD	1	24	24A23JSB	0.0690	0.0000	0.0014
FAL20A	A	STANDARD	1	24	24A27JNB	0.0187	0.0000	0.0004
FAL20A	A	STANDARD	1	24	24A27JSB	0.0153	0.0000	0.0003
FAL20A	A	STANDARD	1	24	24A36JNB	0.0844	0.0000	0.0017
FAL20A	A	STANDARD	1	24	24A36JSB	0.0690	0.0000	0.0014
FAL20A	D	STANDARD	1	06	06DJ010	0.0048	0.0000	0.0001
FAL20A	D	STANDARD	1	06	06DJ090	0.0020	0.0000	0.0000
FAL20A	D	STANDARD	1	06	06DJ140	0.0059	0.0000	0.0001
FAL20A	D	STANDARD	1	06	06DJ180	0.0158	0.0000	0.0003
FAL20A	D	STANDARD	1	06	06DJ200	0.0158	0.0000	0.0003
FAL20A	D	STANDARD	1	06	06DJ270	0.0048	0.0000	0.0001
FAL20A	D	STANDARD	1	06	06DJ320	0.0193	0.0000	0.0004
FAL20A	D	STANDARD	1	06	06DJ360	0.0193	0.0000	0.0004
FAL20A	D	STANDARD	1	24	24DJ010	0.0187	0.0000	0.0004
FAL20A	D	STANDARD	1	24	24DJ090	0.0077	0.0000	0.0002
FAL20A	D	STANDARD	1	24	24DJ140	0.0230	0.0000	0.0005
FAL20A	D	STANDARD	1	24	24DJ180	0.0614	0.0000	0.0013
FAL20A	D	STANDARD	1	24	24DJ200	0.0614	0.0000	0.0013
FAL20A	D	STANDARD	1	24	24DJ270	0.0187	0.0000	0.0004
FAL20A	D	STANDARD	1	24	24DJ320	0.0750	0.0000	0.0015
FAL20A	D	STANDARD	1	24	24DJ360	0.0750	0.0000	0.0015
FAL20A	T	STANDARD	1	06	06TJ1	0.0009	0.0000	0.0000
FAL20A	T	STANDARD	1	24	24TJ1	0.0034	0.0000	0.0001

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FAL50	A	STANDARD	1	06	06A23JNB	0.0703	0.0000	0.0014
FAL50	A	STANDARD	1	06	06A23JSB	0.0575	0.0000	0.0012
FAL50	A	STANDARD	1	06	06A27JNB	0.0156	0.0000	0.0003
FAL50	A	STANDARD	1	06	06A27JSB	0.0128	0.0000	0.0003
FAL50	A	STANDARD	1	06	06A36JNB	0.0703	0.0000	0.0014
FAL50	A	STANDARD	1	06	06A36JSB	0.0575	0.0000	0.0012
FAL50	A	STANDARD	1	24	24A23JNB	0.2726	0.0000	0.0056
FAL50	A	STANDARD	1	24	24A23JSB	0.2230	0.0000	0.0046
FAL50	A	STANDARD	1	24	24A27JNB	0.0606	0.0000	0.0012
FAL50	A	STANDARD	1	24	24A27JSB	0.0496	0.0000	0.0010
FAL50	A	STANDARD	1	24	24A36JNB	0.2726	0.0000	0.0056
FAL50	A	STANDARD	1	24	24A36JSB	0.2230	0.0000	0.0046
FAL50	D	STANDARD	1	06	06DJ010	0.0156	0.0000	0.0003
FAL50	D	STANDARD	1	06	06DJ090	0.0064	0.0000	0.0001
FAL50	D	STANDARD	1	06	06DJ140	0.0192	0.0000	0.0004
FAL50	D	STANDARD	1	06	06DJ180	0.0511	0.0000	0.0010
FAL50	D	STANDARD	1	06	06DJ200	0.0511	0.0000	0.0010
FAL50	D	STANDARD	1	06	06DJ270	0.0156	0.0000	0.0003
FAL50	D	STANDARD	1	06	06DJ320	0.0625	0.0000	0.0013
FAL50	D	STANDARD	1	06	06DJ360	0.0625	0.0000	0.0013
FAL50	D	STANDARD	1	24	24DJ010	0.0606	0.0000	0.0012
FAL50	D	STANDARD	1	24	24DJ090	0.0248	0.0000	0.0005
FAL50	D	STANDARD	1	24	24DJ140	0.0743	0.0000	0.0015
FAL50	D	STANDARD	1	24	24DJ180	0.1982	0.0000	0.0040
FAL50	D	STANDARD	1	24	24DJ200	0.1982	0.0000	0.0040
FAL50	D	STANDARD	1	24	24DJ270	0.0606	0.0000	0.0012
FAL50	D	STANDARD	1	24	24DJ320	0.2423	0.0000	0.0049
FAL50	D	STANDARD	1	24	24DJ360	0.2423	0.0000	0.0049
FAL50	T	STANDARD	1	06	06TJ1	0.0029	0.0000	0.0001
FAL50	T	STANDARD	1	24	24TJ1	0.0111	0.0000	0.0002

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
HS125	A	STANDARD	1	06	06A23JNB	0.0090	0.0000	0.0002
HS125	A	STANDARD	1	06	06A23JSB	0.0074	0.0000	0.0002
HS125	A	STANDARD	1	06	06A27JNB	0.0020	0.0000	0.0000
HS125	A	STANDARD	1	06	06A27JSB	0.0016	0.0000	0.0000
HS125	A	STANDARD	1	06	06A36JNB	0.0090	0.0000	0.0002
HS125	A	STANDARD	1	06	06A36JSB	0.0074	0.0000	0.0002
HS125	A	STANDARD	1	24	24A23JNB	0.0349	0.0000	0.0007
HS125	A	STANDARD	1	24	24A23JSB	0.0286	0.0000	0.0006
HS125	A	STANDARD	1	24	24A27JNB	0.0078	0.0000	0.0002
HS125	A	STANDARD	1	24	24A27JSB	0.0063	0.0000	0.0001
HS125	A	STANDARD	1	24	24A36JNB	0.0349	0.0000	0.0007
HS125	A	STANDARD	1	24	24A36JSB	0.0286	0.0000	0.0006
HS125	D	STANDARD	1	06	06DJ010	0.0020	0.0000	0.0000
HS125	D	STANDARD	1	06	06DJ090	0.0008	0.0000	0.0000
HS125	D	STANDARD	1	06	06DJ140	0.0025	0.0000	0.0001
HS125	D	STANDARD	1	06	06DJ180	0.0065	0.0000	0.0001
HS125	D	STANDARD	1	06	06DJ200	0.0065	0.0000	0.0001
HS125	D	STANDARD	1	06	06DJ270	0.0020	0.0000	0.0000
HS125	D	STANDARD	1	06	06DJ320	0.0080	0.0000	0.0002
HS125	D	STANDARD	1	06	06DJ360	0.0080	0.0000	0.0002
HS125	D	STANDARD	1	24	24DJ010	0.0078	0.0000	0.0002
HS125	D	STANDARD	1	24	24DJ090	0.0032	0.0000	0.0001
HS125	D	STANDARD	1	24	24DJ140	0.0095	0.0000	0.0002
HS125	D	STANDARD	1	24	24DJ180	0.0254	0.0000	0.0005
HS125	D	STANDARD	1	24	24DJ200	0.0254	0.0000	0.0005
HS125	D	STANDARD	1	24	24DJ270	0.0078	0.0000	0.0002
HS125	D	STANDARD	1	24	24DJ320	0.0310	0.0000	0.0006
HS125	D	STANDARD	1	24	24DJ360	0.0310	0.0000	0.0006
HS125	T	STANDARD	1	06	06TJ1	0.0004	0.0000	0.0000
HS125	T	STANDARD	1	24	24TJ1	0.0014	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
HS1258	A	STANDARD	1	06	06A23JNB	0.1196	0.0000	0.0024
HS1258	A	STANDARD	1	06	06A23JSB	0.0979	0.0000	0.0020
HS1258	A	STANDARD	1	06	06A27JNB	0.0266	0.0000	0.0005
HS1258	A	STANDARD	1	06	06A27JSB	0.0218	0.0000	0.0004
HS1258	A	STANDARD	1	06	06A36JNB	0.1196	0.0000	0.0024
HS1258	A	STANDARD	1	06	06A36JSB	0.0979	0.0000	0.0020
HS1258	A	STANDARD	1	24	24A23JNB	0.4639	0.0000	0.0095
HS1258	A	STANDARD	1	24	24A23JSB	0.3796	0.0000	0.0078
HS1258	A	STANDARD	1	24	24A27JNB	0.1031	0.0000	0.0021
HS1258	A	STANDARD	1	24	24A27JSB	0.0843	0.0000	0.0017
HS1258	A	STANDARD	1	24	24A36JNB	0.4639	0.0000	0.0095
HS1258	A	STANDARD	1	24	24A36JSB	0.3796	0.0000	0.0078
HS1258	D	STANDARD	1	06	06DJ010	0.0266	0.0000	0.0005
HS1258	D	STANDARD	1	06	06DJ090	0.0109	0.0000	0.0002
HS1258	D	STANDARD	1	06	06DJ140	0.0326	0.0000	0.0007
HS1258	D	STANDARD	1	06	06DJ180	0.0870	0.0000	0.0018
HS1258	D	STANDARD	1	06	06DJ200	0.0870	0.0000	0.0018
HS1258	D	STANDARD	1	06	06DJ270	0.0266	0.0000	0.0005
HS1258	D	STANDARD	1	06	06DJ320	0.1063	0.0000	0.0022
HS1258	D	STANDARD	1	06	06DJ360	0.1063	0.0000	0.0022
HS1258	D	STANDARD	1	24	24DJ010	0.1031	0.0000	0.0021
HS1258	D	STANDARD	1	24	24DJ090	0.0422	0.0000	0.0009
HS1258	D	STANDARD	1	24	24DJ140	0.1265	0.0000	0.0026
HS1258	D	STANDARD	1	24	24DJ180	0.3374	0.0000	0.0069
HS1258	D	STANDARD	1	24	24DJ200	0.3374	0.0000	0.0069
HS1258	D	STANDARD	1	24	24DJ270	0.1031	0.0000	0.0021
HS1258	D	STANDARD	1	24	24DJ320	0.4124	0.0000	0.0084
HS1258	D	STANDARD	1	24	24DJ360	0.4124	0.0000	0.0084
HS1258	T	STANDARD	1	06	06TJ1	0.0049	0.0000	0.0001
HS1258	T	STANDARD	1	24	24TJ1	0.0188	0.0000	0.0004

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
LEAR35	A	STANDARD	1	06	06A23JNB	0.0138	0.0000	0.0003
LEAR35	A	STANDARD	1	06	06A23JSB	0.0113	0.0000	0.0002
LEAR35	A	STANDARD	1	06	06A27JNB	0.0031	0.0000	0.0001
LEAR35	A	STANDARD	1	06	06A27JSB	0.0025	0.0000	0.0001
LEAR35	A	STANDARD	1	06	06A36JNB	0.0138	0.0000	0.0003
LEAR35	A	STANDARD	1	06	06A36JSB	0.0113	0.0000	0.0002
LEAR35	A	STANDARD	1	24	24A23JNB	0.0536	0.0000	0.0011
LEAR35	A	STANDARD	1	24	24A23JSB	0.0439	0.0000	0.0009
LEAR35	A	STANDARD	1	24	24A27JNB	0.0119	0.0000	0.0002
LEAR35	A	STANDARD	1	24	24A27JSB	0.0097	0.0000	0.0002
LEAR35	A	STANDARD	1	24	24A36JNB	0.0536	0.0000	0.0011
LEAR35	A	STANDARD	1	24	24A36JSB	0.0439	0.0000	0.0009
LEAR35	D	STANDARD	1	06	06DJ010	0.0031	0.0000	0.0001
LEAR35	D	STANDARD	1	06	06DJ090	0.0013	0.0000	0.0000
LEAR35	D	STANDARD	1	06	06DJ140	0.0038	0.0000	0.0001

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
LEAR35	D	STANDARD	1	06	06DJ180	0.0101	0.0000	0.0002
LEAR35	D	STANDARD	1	06	06DJ200	0.0101	0.0000	0.0002
LEAR35	D	STANDARD	1	06	06DJ270	0.0031	0.0000	0.0001
LEAR35	D	STANDARD	1	06	06DJ320	0.0123	0.0000	0.0003
LEAR35	D	STANDARD	1	06	06DJ360	0.0123	0.0000	0.0003
LEAR35	D	STANDARD	1	24	24DJ010	0.0119	0.0000	0.0002
LEAR35	D	STANDARD	1	24	24DJ090	0.0049	0.0000	0.0001
LEAR35	D	STANDARD	1	24	24DJ140	0.0146	0.0000	0.0003
LEAR35	D	STANDARD	1	24	24DJ180	0.0390	0.0000	0.0008
LEAR35	D	STANDARD	1	24	24DJ200	0.0390	0.0000	0.0008
LEAR35	D	STANDARD	1	24	24DJ270	0.0119	0.0000	0.0002
LEAR35	D	STANDARD	1	24	24DJ320	0.0477	0.0000	0.0010
LEAR35	D	STANDARD	1	24	24DJ360	0.0477	0.0000	0.0010
LEAR35	T	STANDARD	1	06	06TJ1	0.0006	0.0000	0.0000
LEAR35	T	STANDARD	1	24	24TJ1	0.0022	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
CL600	A	STANDARD	1	06	06A23JNB	0.0505	0.0000	0.0010
CL600	A	STANDARD	1	06	06A23JSB	0.0413	0.0000	0.0008
CL600	A	STANDARD	1	06	06A27JNB	0.0112	0.0000	0.0002
CL600	A	STANDARD	1	06	06A27JSB	0.0092	0.0000	0.0002
CL600	A	STANDARD	1	06	06A36JNB	0.0505	0.0000	0.0010
CL600	A	STANDARD	1	06	06A36JSB	0.0413	0.0000	0.0008
CL600	A	STANDARD	1	24	24A23JNB	0.1958	0.0000	0.0040
CL600	A	STANDARD	1	24	24A23JSB	0.1602	0.0000	0.0033
CL600	A	STANDARD	1	24	24A27JNB	0.0435	0.0000	0.0009
CL600	A	STANDARD	1	24	24A27JSB	0.0356	0.0000	0.0007
CL600	A	STANDARD	1	24	24A36JNB	0.1958	0.0000	0.0040
CL600	A	STANDARD	1	24	24A36JSB	0.1602	0.0000	0.0033
CL600	D	STANDARD	1	06	06DJ010	0.0112	0.0000	0.0002
CL600	D	STANDARD	1	06	06DJ090	0.0046	0.0000	0.0001
CL600	D	STANDARD	1	06	06DJ140	0.0138	0.0000	0.0003
CL600	D	STANDARD	1	06	06DJ180	0.0367	0.0000	0.0007
CL600	D	STANDARD	1	06	06DJ200	0.0367	0.0000	0.0007
CL600	D	STANDARD	1	06	06DJ270	0.0112	0.0000	0.0002
CL600	D	STANDARD	1	06	06DJ320	0.0449	0.0000	0.0009
CL600	D	STANDARD	1	06	06DJ360	0.0449	0.0000	0.0009
CL600	D	STANDARD	1	24	24DJ010	0.0435	0.0000	0.0009
CL600	D	STANDARD	1	24	24DJ090	0.0178	0.0000	0.0004
CL600	D	STANDARD	1	24	24DJ140	0.0534	0.0000	0.0011
CL600	D	STANDARD	1	24	24DJ180	0.1424	0.0000	0.0029
CL600	D	STANDARD	1	24	24DJ200	0.1424	0.0000	0.0029
CL600	D	STANDARD	1	24	24DJ270	0.0435	0.0000	0.0009
CL600	D	STANDARD	1	24	24DJ320	0.1740	0.0000	0.0036
CL600	D	STANDARD	1	24	24DJ360	0.1740	0.0000	0.0036
CL600	T	STANDARD	1	06	06TJ1	0.0021	0.0000	0.0000
CL600	T	STANDARD	1	24	24TJ1	0.0080	0.0000	0.0002

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
CNA525	A	STANDARD	1	06	06A23JNB	0.0287	0.0000	0.0006
CNA525	A	STANDARD	1	06	06A23JSB	0.0235	0.0000	0.0005
CNA525	A	STANDARD	1	06	06A27JNB	0.0064	0.0000	0.0001
CNA525	A	STANDARD	1	06	06A27JSB	0.0052	0.0000	0.0001
CNA525	A	STANDARD	1	06	06A36JNB	0.0287	0.0000	0.0006
CNA525	A	STANDARD	1	06	06A36JSB	0.0235	0.0000	0.0005
CNA525	A	STANDARD	1	24	24A23JNB	0.1112	0.0000	0.0023
CNA525	A	STANDARD	1	24	24A23JSB	0.0910	0.0000	0.0019
CNA525	A	STANDARD	1	24	24A27JNB	0.0247	0.0000	0.0005
CNA525	A	STANDARD	1	24	24A27JSB	0.0202	0.0000	0.0004
CNA525	A	STANDARD	1	24	24A36JNB	0.1112	0.0000	0.0023
CNA525	A	STANDARD	1	24	24A36JSB	0.0910	0.0000	0.0019
CNA525	D	STANDARD	1	06	06DJ010	0.0064	0.0000	0.0001
CNA525	D	STANDARD	1	06	06DJ090	0.0026	0.0000	0.0001
CNA525	D	STANDARD	1	06	06DJ140	0.0078	0.0000	0.0002
CNA525	D	STANDARD	1	06	06DJ180	0.0208	0.0000	0.0004
CNA525	D	STANDARD	1	06	06DJ200	0.0208	0.0000	0.0004
CNA525	D	STANDARD	1	06	06DJ270	0.0064	0.0000	0.0001
CNA525	D	STANDARD	1	06	06DJ320	0.0255	0.0000	0.0005
CNA525	D	STANDARD	1	06	06DJ360	0.0255	0.0000	0.0005
CNA525	D	STANDARD	1	24	24DJ010	0.0247	0.0000	0.0005
CNA525	D	STANDARD	1	24	24DJ090	0.0101	0.0000	0.0002
CNA525	D	STANDARD	1	24	24DJ140	0.0303	0.0000	0.0006
CNA525	D	STANDARD	1	24	24DJ180	0.0809	0.0000	0.0017
CNA525	D	STANDARD	1	24	24DJ200	0.0809	0.0000	0.0017
CNA525	D	STANDARD	1	24	24DJ270	0.0247	0.0000	0.0005
CNA525	D	STANDARD	1	24	24DJ320	0.0988	0.0000	0.0020
CNA525	D	STANDARD	1	24	24DJ360	0.0988	0.0000	0.0020
CNA525	T	STANDARD	1	06	06TJ1	0.0012	0.0000	0.0000
CNA525	T	STANDARD	1	24	24TJ1	0.0045	0.0000	0.0001

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
CNA55B	A	STANDARD	1	06	06A27JNB	0.0613	0.0000	0.0013
CNA55B	A	STANDARD	1	06	06A27JSB	0.0502	0.0000	0.0010
CNA55B	A	STANDARD	1	06	06A23JNB	0.0136	0.0000	0.0003
CNA55B	A	STANDARD	1	06	06A23JSB	0.0112	0.0000	0.0002
CNA55B	A	STANDARD	1	06	06A36JNB	0.0613	0.0000	0.0013
CNA55B	A	STANDARD	1	06	06A36JSB	0.0502	0.0000	0.0010
CNA55B	A	STANDARD	1	24	24A27JNB	0.2379	0.0000	0.0049
CNA55B	A	STANDARD	1	24	24A27JSB	0.1946	0.0000	0.0040
CNA55B	A	STANDARD	1	24	24A23JNB	0.0529	0.0000	0.0011
CNA55B	A	STANDARD	1	24	24A23JSB	0.0432	0.0000	0.0009
CNA55B	A	STANDARD	1	24	24A36JNB	0.2379	0.0000	0.0049
CNA55B	A	STANDARD	1	24	24A36JSB	0.1946	0.0000	0.0040
CNA55B	D	STANDARD	1	06	06DJ010	0.0136	0.0000	0.0003
CNA55B	D	STANDARD	1	06	06DJ090	0.0056	0.0000	0.0001
CNA55B	D	STANDARD	1	06	06DJ140	0.0167	0.0000	0.0003
CNA55B	D	STANDARD	1	06	06DJ180	0.0446	0.0000	0.0009
CNA55B	D	STANDARD	1	06	06DJ200	0.0446	0.0000	0.0009
CNA55B	D	STANDARD	1	06	06DJ270	0.0136	0.0000	0.0003
CNA55B	D	STANDARD	1	06	06DJ320	0.0545	0.0000	0.0011
CNA55B	D	STANDARD	1	06	06DJ360	0.0545	0.0000	0.0011
CNA55B	D	STANDARD	1	24	24DJ010	0.0529	0.0000	0.0011
CNA55B	D	STANDARD	1	24	24DJ090	0.0216	0.0000	0.0004
CNA55B	D	STANDARD	1	24	24DJ140	0.0649	0.0000	0.0013
CNA55B	D	STANDARD	1	24	24DJ180	0.1730	0.0000	0.0035
CNA55B	D	STANDARD	1	24	24DJ200	0.1730	0.0000	0.0035
CNA55B	D	STANDARD	1	24	24DJ270	0.0529	0.0000	0.0011
CNA55B	D	STANDARD	1	24	24DJ320	0.2114	0.0000	0.0043
CNA55B	D	STANDARD	1	24	24DJ360	0.2114	0.0000	0.0043
CNA55B	T	STANDARD	1	06	06TJ1	0.0025	0.0000	0.0001
CNA55B	T	STANDARD	1	24	24TJ1	0.0097	0.0000	0.0002

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
CNA560	A	STANDARD	1	06	06A23JNB	0.1534	0.0000	0.0031
CNA560	A	STANDARD	1	06	06A23JSB	0.1255	0.0000	0.0026
CNA560	A	STANDARD	1	06	06A27JNB	0.0341	0.0000	0.0007
CNA560	A	STANDARD	1	06	06A27JSB	0.0279	0.0000	0.0006
CNA560	A	STANDARD	1	06	06A36JNB	0.1534	0.0000	0.0031
CNA560	A	STANDARD	1	06	06A36JSB	0.1255	0.0000	0.0026
CNA560	A	STANDARD	1	24	24A23JNB	0.5948	0.0000	0.0121
CNA560	A	STANDARD	1	24	24A23JSB	0.4866	0.0000	0.0099
CNA560	A	STANDARD	1	24	24A27JNB	0.1322	0.0000	0.0027
CNA560	A	STANDARD	1	24	24A27JSB	0.1081	0.0000	0.0022
CNA560	A	STANDARD	1	24	24A36JNB	0.5948	0.0000	0.0121
CNA560	A	STANDARD	1	24	24A36JSB	0.4866	0.0000	0.0099
CNA560	D	STANDARD	1	06	06DJ010	0.0341	0.0000	0.0007
CNA560	D	STANDARD	1	06	06DJ090	0.0139	0.0000	0.0003
CNA560	D	STANDARD	1	06	06DJ140	0.0418	0.0000	0.0009
CNA560	D	STANDARD	1	06	06DJ180	0.1115	0.0000	0.0023
CNA560	D	STANDARD	1	06	06DJ200	0.1115	0.0000	0.0023
CNA560	D	STANDARD	1	06	06DJ270	0.0341	0.0000	0.0007
CNA560	D	STANDARD	1	06	06DJ320	0.1363	0.0000	0.0028
CNA560	D	STANDARD	1	06	06DJ360	0.1363	0.0000	0.0028
CNA560	D	STANDARD	1	24	24DJ010	0.1322	0.0000	0.0027
CNA560	D	STANDARD	1	24	24DJ090	0.0541	0.0000	0.0011
CNA560	D	STANDARD	1	24	24DJ140	0.1622	0.0000	0.0033
CNA560	D	STANDARD	1	24	24DJ180	0.4326	0.0000	0.0088
CNA560	D	STANDARD	1	24	24DJ200	0.4326	0.0000	0.0088
CNA560	D	STANDARD	1	24	24DJ270	0.1322	0.0000	0.0027
CNA560	D	STANDARD	1	24	24DJ320	0.5287	0.0000	0.0108
CNA560	D	STANDARD	1	24	24DJ360	0.5287	0.0000	0.0108
CNA560	T	STANDARD	1	06	06TJ1	0.0062	0.0000	0.0001
CNA560	T	STANDARD	1	24	24TJ1	0.0242	0.0000	0.0005

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
CNA750	A	STANDARD	1	06	06A23JNB	0.0159	0.0000	0.0001
CNA750	A	STANDARD	1	06	06A23JSB	0.0130	0.0000	0.0001
CNA750	A	STANDARD	1	06	06A27JNB	0.0035	0.0000	0.0003
CNA750	A	STANDARD	1	06	06A27JSB	0.0029	0.0000	0.0003
CNA750	A	STANDARD	1	06	06A36JNB	0.0159	0.0000	0.0003
CNA750	A	STANDARD	1	06	06A36JSB	0.0130	0.0000	0.0003
CNA750	A	STANDARD	1	24	24A23JNB	0.0615	0.0000	0.0003
CNA750	A	STANDARD	1	24	24A23JSB	0.0503	0.0000	0.0002
CNA750	A	STANDARD	1	24	24A27JNB	0.0137	0.0000	0.0013
CNA750	A	STANDARD	1	24	24A27JSB	0.0112	0.0000	0.0010
CNA750	A	STANDARD	1	24	24A36JNB	0.0615	0.0000	0.0013
CNA750	A	STANDARD	1	24	24A36JSB	0.0503	0.0000	0.0010
CNA750	D	STANDARD	1	06	06DJ010	0.0035	0.0000	0.0001
CNA750	D	STANDARD	1	06	06DJ090	0.0014	0.0000	0.0000
CNA750	D	STANDARD	1	06	06DJ140	0.0043	0.0000	0.0001
CNA750	D	STANDARD	1	06	06DJ180	0.0115	0.0000	0.0002
CNA750	D	STANDARD	1	06	06DJ200	0.0115	0.0000	0.0002
CNA750	D	STANDARD	1	06	06DJ270	0.0035	0.0000	0.0001
CNA750	D	STANDARD	1	06	06DJ320	0.0141	0.0000	0.0003
CNA750	D	STANDARD	1	06	06DJ360	0.0141	0.0000	0.0003
CNA750	D	STANDARD	1	24	24DJ010	0.0137	0.0000	0.0003
CNA750	D	STANDARD	1	24	24DJ090	0.0056	0.0000	0.0001
CNA750	D	STANDARD	1	24	24DJ140	0.0168	0.0000	0.0003
CNA750	D	STANDARD	1	24	24DJ180	0.0447	0.0000	0.0009
CNA750	D	STANDARD	1	24	24DJ200	0.0447	0.0000	0.0009
CNA750	D	STANDARD	1	24	24DJ270	0.0137	0.0000	0.0003
CNA750	D	STANDARD	1	24	24DJ320	0.0547	0.0000	0.0011
CNA750	D	STANDARD	1	24	24DJ360	0.0547	0.0000	0.0011
CNA750	T	STANDARD	1	06	06TJ1	0.0006	0.0000	0.0000
CNA750	T	STANDARD	1	24	24TJ1	0.0025	0.0000	0.0001

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
CNA650	A	STANDARD	1	06	06A23JNB	0.0327	0.0000	0.0001
CNA650	A	STANDARD	1	06	06A23JSB	0.0267	0.0000	0.0001
CNA650	A	STANDARD	1	06	06A27JNB	0.0073	0.0000	0.0007
CNA650	A	STANDARD	1	06	06A27JSB	0.0059	0.0000	0.0005
CNA650	A	STANDARD	1	06	06A36JNB	0.0327	0.0000	0.0007
CNA650	A	STANDARD	1	06	06A36JSB	0.0267	0.0000	0.0005
CNA650	A	STANDARD	1	24	24A23JNB	0.1267	0.0000	0.0006
CNA650	A	STANDARD	1	24	24A23JSB	0.1036	0.0000	0.0005
CNA650	A	STANDARD	1	24	24A27JNB	0.0282	0.0000	0.0026
CNA650	A	STANDARD	1	24	24A27JSB	0.0230	0.0000	0.0021
CNA650	A	STANDARD	1	24	24A36JNB	0.1267	0.0000	0.0026
CNA650	A	STANDARD	1	24	24A36JSB	0.1036	0.0000	0.0021
CNA650	D	STANDARD	1	06	06DJ010	0.0073	0.0000	0.0001
CNA650	D	STANDARD	1	06	06DJ090	0.0030	0.0000	0.0001
CNA650	D	STANDARD	1	06	06DJ140	0.0089	0.0000	0.0002
CNA650	D	STANDARD	1	06	06DJ180	0.0238	0.0000	0.0005
CNA650	D	STANDARD	1	06	06DJ200	0.0238	0.0000	0.0005
CNA650	D	STANDARD	1	06	06DJ270	0.0073	0.0000	0.0001
CNA650	D	STANDARD	1	06	06DJ320	0.0290	0.0000	0.0006
CNA650	D	STANDARD	1	06	06DJ360	0.0290	0.0000	0.0006
CNA650	D	STANDARD	1	24	24DJ010	0.0282	0.0000	0.0006
CNA650	D	STANDARD	1	24	24DJ090	0.0115	0.0000	0.0002
CNA650	D	STANDARD	1	24	24DJ140	0.0345	0.0000	0.0007
CNA650	D	STANDARD	1	24	24DJ180	0.0921	0.0000	0.0019
CNA650	D	STANDARD	1	24	24DJ200	0.0921	0.0000	0.0019
CNA650	D	STANDARD	1	24	24DJ270	0.0282	0.0000	0.0006
CNA650	D	STANDARD	1	24	24DJ320	0.1126	0.0000	0.0023
CNA650	D	STANDARD	1	24	24DJ360	0.1126	0.0000	0.0023
CNA650	T	STANDARD	1	06	06TJ1	0.0013	0.0000	0.0000
CNA650	T	STANDARD	1	24	24TJ1	0.0051	0.0000	0.0001

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
BEC400	A	STANDARD	1	06	06A23JNB	0.1801	0.0000	0.0008
BEC400	A	STANDARD	1	06	06A23JSB	0.1474	0.0000	0.0007
BEC400	A	STANDARD	1	06	06A27JNB	0.0400	0.0000	0.0037
BEC400	A	STANDARD	1	06	06A27JSB	0.0328	0.0000	0.0030
BEC400	A	STANDARD	1	06	06A36JNB	0.1801	0.0000	0.0037
BEC400	A	STANDARD	1	06	06A36JSB	0.1474	0.0000	0.0030
BEC400	A	STANDARD	1	24	24A23JNB	0.6986	0.0000	0.0032
BEC400	A	STANDARD	1	24	24A23JSB	0.5716	0.0000	0.0026
BEC400	A	STANDARD	1	24	24A27JNB	0.1552	0.0000	0.0143
BEC400	A	STANDARD	1	24	24A27JSB	0.1270	0.0000	0.0117
BEC400	A	STANDARD	1	24	24A36JNB	0.6986	0.0000	0.0143
BEC400	A	STANDARD	1	24	24A36JSB	0.5716	0.0000	0.0117
BEC400	D	STANDARD	1	06	06DJ010	0.0400	0.0000	0.0008
BEC400	D	STANDARD	1	06	06DJ090	0.0164	0.0000	0.0003
BEC400	D	STANDARD	1	06	06DJ140	0.0491	0.0000	0.0010
BEC400	D	STANDARD	1	06	06DJ180	0.1310	0.0000	0.0027
BEC400	D	STANDARD	1	06	06DJ200	0.1310	0.0000	0.0027
BEC400	D	STANDARD	1	06	06DJ270	0.0400	0.0000	0.0008
BEC400	D	STANDARD	1	06	06DJ320	0.1601	0.0000	0.0033
BEC400	D	STANDARD	1	06	06DJ360	0.1601	0.0000	0.0033
BEC400	D	STANDARD	1	24	24DJ010	0.1552	0.0000	0.0032
BEC400	D	STANDARD	1	24	24DJ090	0.0635	0.0000	0.0013
BEC400	D	STANDARD	1	24	24DJ140	0.1905	0.0000	0.0039
BEC400	D	STANDARD	1	24	24DJ180	0.5081	0.0000	0.0104
BEC400	D	STANDARD	1	24	24DJ200	0.5081	0.0000	0.0104
BEC400	D	STANDARD	1	24	24DJ270	0.1552	0.0000	0.0032
BEC400	D	STANDARD	1	24	24DJ320	0.6210	0.0000	0.0127
BEC400	D	STANDARD	1	24	24DJ360	0.6210	0.0000	0.0127
BEC400	T	STANDARD	1	06	06TJ1	0.0073	0.0000	0.0001
BEC400	T	STANDARD	1	24	24TJ1	0.0284	0.0000	0.0006

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
LEAR45	A	STANDARD	1	06	06A23JNB	0.0989	0.0000	0.0004
LEAR45	A	STANDARD	1	06	06A23JSB	0.0810	0.0000	0.0004
LEAR45	A	STANDARD	1	06	06A27JNB	0.0220	0.0000	0.0020
LEAR45	A	STANDARD	1	06	06A27JSB	0.0180	0.0000	0.0017
LEAR45	A	STANDARD	1	06	06A36JNB	0.0989	0.0000	0.0020
LEAR45	A	STANDARD	1	06	06A36JSB	0.0810	0.0000	0.0017
LEAR45	A	STANDARD	1	24	24A23JNB	0.3837	0.0000	0.0017
LEAR45	A	STANDARD	1	24	24A23JSB	0.3140	0.0000	0.0014
LEAR45	A	STANDARD	1	24	24A27JNB	0.0853	0.0000	0.0078
LEAR45	A	STANDARD	1	24	24A27JSB	0.0698	0.0000	0.0064
LEAR45	A	STANDARD	1	24	24A36JNB	0.3837	0.0000	0.0078
LEAR45	A	STANDARD	1	24	24A36JSB	0.3140	0.0000	0.0064
LEAR45	D	STANDARD	1	06	06DJ010	0.0220	0.0000	0.0004
LEAR45	D	STANDARD	1	06	06DJ090	0.0090	0.0000	0.0002
LEAR45	D	STANDARD	1	06	06DJ140	0.0270	0.0000	0.0006
LEAR45	D	STANDARD	1	06	06DJ180	0.0720	0.0000	0.0015
LEAR45	D	STANDARD	1	06	06DJ200	0.0720	0.0000	0.0015
LEAR45	D	STANDARD	1	06	06DJ270	0.0220	0.0000	0.0004
LEAR45	D	STANDARD	1	06	06DJ320	0.0880	0.0000	0.0018
LEAR45	D	STANDARD	1	06	06DJ360	0.0880	0.0000	0.0018
LEAR45	D	STANDARD	1	24	24DJ010	0.0853	0.0000	0.0017
LEAR45	D	STANDARD	1	24	24DJ090	0.0349	0.0000	0.0007
LEAR45	D	STANDARD	1	24	24DJ140	0.1047	0.0000	0.0021
LEAR45	D	STANDARD	1	24	24DJ180	0.2791	0.0000	0.0057
LEAR45	D	STANDARD	1	24	24DJ200	0.2791	0.0000	0.0057
LEAR45	D	STANDARD	1	24	24DJ270	0.0853	0.0000	0.0017
LEAR45	D	STANDARD	1	24	24DJ320	0.3411	0.0000	0.0070
LEAR45	D	STANDARD	1	24	24DJ360	0.3411	0.0000	0.0070
LEAR45	T	STANDARD	1	06	06TJ1	0.0040	0.0000	0.0001
LEAR45	T	STANDARD	1	24	24TJ1	0.0156	0.0000	0.0003

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
LEAR60	A	STANDARD	1	06	06A23JNB	0.0287	0.0000	0.0001
LEAR60	A	STANDARD	1	06	06A23JSB	0.0235	0.0000	0.0001
LEAR60	A	STANDARD	1	06	06A27JNB	0.0064	0.0000	0.0006
LEAR60	A	STANDARD	1	06	06A27JSB	0.0052	0.0000	0.0005
LEAR60	A	STANDARD	1	06	06A36JNB	0.0287	0.0000	0.0006
LEAR60	A	STANDARD	1	06	06A36JSB	0.0235	0.0000	0.0005
LEAR60	A	STANDARD	1	24	24A23JNB	0.1112	0.0000	0.0005
LEAR60	A	STANDARD	1	24	24A23JSB	0.0910	0.0000	0.0004
LEAR60	A	STANDARD	1	24	24A27JNB	0.0247	0.0000	0.0023
LEAR60	A	STANDARD	1	24	24A27JSB	0.0202	0.0000	0.0019
LEAR60	A	STANDARD	1	24	24A36JNB	0.1112	0.0000	0.0023
LEAR60	A	STANDARD	1	24	24A36JSB	0.0910	0.0000	0.0019
LEAR60	D	STANDARD	1	06	06DJ010	0.0064	0.0000	0.0001
LEAR60	D	STANDARD	1	06	06DJ090	0.0026	0.0000	0.0001
LEAR60	D	STANDARD	1	06	06DJ140	0.0078	0.0000	0.0002
LEAR60	D	STANDARD	1	06	06DJ180	0.0208	0.0000	0.0004
LEAR60	D	STANDARD	1	06	06DJ200	0.0208	0.0000	0.0004
LEAR60	D	STANDARD	1	06	06DJ270	0.0064	0.0000	0.0001
LEAR60	D	STANDARD	1	06	06DJ320	0.0255	0.0000	0.0005
LEAR60	D	STANDARD	1	06	06DJ360	0.0255	0.0000	0.0005
LEAR60	D	STANDARD	1	24	24DJ010	0.0247	0.0000	0.0005
LEAR60	D	STANDARD	1	24	24DJ090	0.0101	0.0000	0.0002
LEAR60	D	STANDARD	1	24	24DJ140	0.0303	0.0000	0.0006
LEAR60	D	STANDARD	1	24	24DJ180	0.0809	0.0000	0.0017
LEAR60	D	STANDARD	1	24	24DJ200	0.0809	0.0000	0.0017
LEAR60	D	STANDARD	1	24	24DJ270	0.0247	0.0000	0.0005
LEAR60	D	STANDARD	1	24	24DJ320	0.0988	0.0000	0.0020
LEAR60	D	STANDARD	1	24	24DJ360	0.0988	0.0000	0.0020
LEAR60	T	STANDARD	1	06	06TJ1	0.0012	0.0000	0.0000
LEAR60	T	STANDARD	1	24	24TJ1	0.0045	0.0000	0.0001

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
LEAR31	A	STANDARD	1	06	06A23JNB	0.0258	0.0000	0.0001
LEAR31	A	STANDARD	1	06	06A23JSB	0.0211	0.0000	0.0001
LEAR31	A	STANDARD	1	06	06A27JNB	0.0057	0.0000	0.0005
LEAR31	A	STANDARD	1	06	06A27JSB	0.0047	0.0000	0.0004
LEAR31	A	STANDARD	1	06	06A36JNB	0.0258	0.0000	0.0005
LEAR31	A	STANDARD	1	06	06A36JSB	0.0211	0.0000	0.0004
LEAR31	A	STANDARD	1	24	24A23JNB	0.0999	0.0000	0.0005
LEAR31	A	STANDARD	1	24	24A23JSB	0.0817	0.0000	0.0004
LEAR31	A	STANDARD	1	24	24A27JNB	0.0222	0.0000	0.0020
LEAR31	A	STANDARD	1	24	24A27JSB	0.0182	0.0000	0.0017
LEAR31	A	STANDARD	1	24	24A36JNB	0.0999	0.0000	0.0020
LEAR31	A	STANDARD	1	24	24A36JSB	0.0817	0.0000	0.0017
LEAR31	D	STANDARD	1	06	06DJ010	0.0057	0.0000	0.0001
LEAR31	D	STANDARD	1	06	06DJ090	0.0023	0.0000	0.0000
LEAR31	D	STANDARD	1	06	06DJ140	0.0070	0.0000	0.0001
LEAR31	D	STANDARD	1	06	06DJ180	0.0187	0.0000	0.0004
LEAR31	D	STANDARD	1	06	06DJ200	0.0187	0.0000	0.0004
LEAR31	D	STANDARD	1	06	06DJ270	0.0057	0.0000	0.0001
LEAR31	D	STANDARD	1	06	06DJ320	0.0229	0.0000	0.0005
LEAR31	D	STANDARD	1	06	06DJ360	0.0229	0.0000	0.0005
LEAR31	D	STANDARD	1	24	24DJ010	0.0222	0.0000	0.0005
LEAR31	D	STANDARD	1	24	24DJ090	0.0091	0.0000	0.0002
LEAR31	D	STANDARD	1	24	24DJ140	0.0272	0.0000	0.0006
LEAR31	D	STANDARD	1	24	24DJ180	0.0726	0.0000	0.0015
LEAR31	D	STANDARD	1	24	24DJ200	0.0726	0.0000	0.0015
LEAR31	D	STANDARD	1	24	24DJ270	0.0222	0.0000	0.0005
LEAR31	D	STANDARD	1	24	24DJ320	0.0888	0.0000	0.0018
LEAR31	D	STANDARD	1	24	24DJ360	0.0888	0.0000	0.0018
LEAR31	T	STANDARD	1	06	06TJ1	0.0010	0.0000	0.0000
LEAR31	T	STANDARD	1	24	24TJ1	0.0041	0.0000	0.0001

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
LEAR55	A	STANDARD	1	06	06A23JNB	0.0148	0.0000	0.0001
LEAR55	A	STANDARD	1	06	06A23JSB	0.0121	0.0000	0.0001
LEAR55	A	STANDARD	1	06	06A27JNB	0.0033	0.0000	0.0003
LEAR55	A	STANDARD	1	06	06A27JSB	0.0027	0.0000	0.0002
LEAR55	A	STANDARD	1	06	06A36JNB	0.0148	0.0000	0.0003
LEAR55	A	STANDARD	1	06	06A36JSB	0.0121	0.0000	0.0002
LEAR55	A	STANDARD	1	24	24A23JNB	0.0576	0.0000	0.0003
LEAR55	A	STANDARD	1	24	24A23JSB	0.0471	0.0000	0.0002
LEAR55	A	STANDARD	1	24	24A27JNB	0.0128	0.0000	0.0012
LEAR55	A	STANDARD	1	24	24A27JSB	0.0105	0.0000	0.0010
LEAR55	A	STANDARD	1	24	24A36JNB	0.0576	0.0000	0.0012
LEAR55	A	STANDARD	1	24	24A36JSB	0.0471	0.0000	0.0010
LEAR55	D	STANDARD	1	06	06DJ010	0.0033	0.0000	0.0001
LEAR55	D	STANDARD	1	06	06DJ090	0.0013	0.0000	0.0000
LEAR55	D	STANDARD	1	06	06DJ140	0.0040	0.0000	0.0001
LEAR55	D	STANDARD	1	06	06DJ180	0.0108	0.0000	0.0002
LEAR55	D	STANDARD	1	06	06DJ200	0.0108	0.0000	0.0002
LEAR55	D	STANDARD	1	06	06DJ270	0.0033	0.0000	0.0001
LEAR55	D	STANDARD	1	06	06DJ320	0.0132	0.0000	0.0003
LEAR55	D	STANDARD	1	06	06DJ360	0.0132	0.0000	0.0003
LEAR55	D	STANDARD	1	24	24DJ010	0.0128	0.0000	0.0003
LEAR55	D	STANDARD	1	24	24DJ090	0.0052	0.0000	0.0001
LEAR55	D	STANDARD	1	24	24DJ140	0.0157	0.0000	0.0003
LEAR55	D	STANDARD	1	24	24DJ180	0.0419	0.0000	0.0009
LEAR55	D	STANDARD	1	24	24DJ200	0.0419	0.0000	0.0009
LEAR55	D	STANDARD	1	24	24DJ270	0.0128	0.0000	0.0003
LEAR55	D	STANDARD	1	24	24DJ320	0.0512	0.0000	0.0010
LEAR55	D	STANDARD	1	24	24DJ360	0.0512	0.0000	0.0010
LEAR55	T	STANDARD	1	06	06TJ1	0.0006	0.0000	0.0000
LEAR55	T	STANDARD	1	24	24TJ1	0.0023	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
CNA501	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
CNA501	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
CNA501	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
CNA501	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
CNA501	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
CNA501	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
CNA501	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
CNA501	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
CNA501	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
CNA501	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
CNA501	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
CNA501	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
CNA501	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
CNA501	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
CNA501	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
CNA501	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
CNA501	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
CNA501	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
CNA501	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
CNA501	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
CNA501	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
CNA501	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
CNA501	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
CNA501	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
CNA501	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
CNA501	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
CNA501	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
CNA501	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
CNA501	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
CNA501	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FAL10	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
FAL10	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
FAL10	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
FAL10	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
FAL10	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
FAL10	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
FAL10	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
FAL10	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
FAL10	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
FAL10	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
FAL10	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
FAL10	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
FAL10	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
FAL10	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
FAL10	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
FAL10	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
FAL10	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
FAL10	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
FAL10	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
FAL10	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
FAL10	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
FAL10	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
FAL10	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
FAL10	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
FAL10	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
FAL10	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
FAL10	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
FAL10	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
FAL10	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
FAL10	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FAL20	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
FAL20	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
FAL20	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
FAL20	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
FAL20	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
FAL20	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
FAL20	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
FAL20	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
FAL20	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
FAL20	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
FAL20	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
FAL20	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
FAL20	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
FAL20	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
FAL20	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
FAL20	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
FAL20	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
FAL20	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
FAL20	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
FAL20	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
FAL20	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
FAL20	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
FAL20	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
FAL20	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
FAL20	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
FAL20	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
FAL20	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
FAL20	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
FAL20	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
FAL20	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
EMB135	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
EMB135	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
EMB135	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
EMB135	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
EMB135	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
EMB135	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
EMB135	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
EMB135	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
EMB135	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
EMB135	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
EMB135	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
EMB135	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
EMB135	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
EMB135	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
EMB135	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
EMB135	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
EMB135	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
EMB135	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
EMB135	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
EMB135	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
EMB135	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
EMB135	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
EMB135	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
EMB135	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
EMB135	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
EMB135	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
EMB135	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
EMB135	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
EMB135	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
EMB135	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
EMBLEG	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
EMBLEG	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
EMBLEG	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
EMBLEG	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
EMBLEG	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
EMBLEG	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
EMBLEG	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
EMBLEG	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
EMBLEG	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
EMBLEG	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
EMBLEG	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
EMBLEG	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
EMBLEG	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
EMBLEG	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
EMBLEG	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
EMBLEG	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
EMBLEG	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
EMBLEG	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
EMBLEG	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
EMBLEG	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
EMBLEG	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
EMBLEG	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
EMBLEG	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
EMBLEG	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
EMBLEG	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
EMBLEG	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
EMBLEG	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
EMBLEG	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
EMBLEG	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
EMBLEG	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
GII	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
GII	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
GII	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
GII	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
GII	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
GII	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
GII	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
GII	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
GII	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
GII	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
GII	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
GII	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
GII	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
GII	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
GII	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
GII	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
GII	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
GII	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
GII	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
GII	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
GII	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
GII	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
GII	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
GII	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
GII	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
GII	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
GII	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
GII	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
GII	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
GII	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
GV	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
GV	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
GV	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
GV	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
GV	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
GV	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
GV	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
GV	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
GV	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
GV	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
GV	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
GV	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
GV	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
GV	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
GV	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
GV	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
GV	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
GV	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
GV	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
GV	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
GV	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
GV	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
GV	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
GV	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
GV	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
GV	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
GV	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
GV	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
GV	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
GV	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
LEAR24	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
LEAR24	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
LEAR24	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
LEAR24	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
LEAR24	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
LEAR24	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
LEAR24	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
LEAR24	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
LEAR24	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
LEAR24	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
LEAR24	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
LEAR24	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
LEAR24	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
LEAR24	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
LEAR24	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
LEAR24	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
LEAR24	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
LEAR24	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
LEAR24	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
LEAR24	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
LEAR24	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
LEAR24	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
LEAR24	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
LEAR24	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
LEAR24	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
LEAR24	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
LEAR24	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
LEAR24	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
LEAR24	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
LEAR24	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
LEAR25	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
LEAR25	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
LEAR25	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
LEAR25	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
LEAR25	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
LEAR25	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
LEAR25	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
LEAR25	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
LEAR25	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
LEAR25	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
LEAR25	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
LEAR25	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
LEAR25	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
LEAR25	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
LEAR25	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
LEAR25	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
LEAR25	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
LEAR25	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
LEAR25	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
LEAR25	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
LEAR25	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
LEAR25	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
LEAR25	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
LEAR25	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
LEAR25	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
LEAR25	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
LEAR25	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
LEAR25	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
LEAR25	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
LEAR25	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
SABR70	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
SABR70	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
SABR70	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
SABR70	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
SABR70	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
SABR70	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
SABR70	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
SABR70	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
SABR70	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
SABR70	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
SABR70	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
SABR70	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
SABR70	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
SABR70	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
SABR70	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
SABR70	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
SABR70	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
SABR70	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
SABR70	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
SABR70	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
SABR70	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
SABR70	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
SABR70	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
SABR70	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
SABR70	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
SABR70	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
SABR70	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
SABR70	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
SABR70	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
SABR70	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
IA1125	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
IA1125	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
IA1125	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
IA1125	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
IA1125	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
IA1125	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
IA1125	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
IA1125	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
IA1125	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
IA1125	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
IA1125	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
IA1125	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
IA1125	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
IA1125	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
IA1125	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
IA1125	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
IA1125	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
IA1125	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
IA1125	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
IA1125	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
IA1125	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
IA1125	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
IA1125	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
IA1125	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
IA1125	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
IA1125	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
IA1125	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
IA1125	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
IA1125	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
IA1125	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
CL300	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
CL300	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
CL300	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
CL300	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
CL300	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
CL300	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
CL300	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
CL300	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
CL300	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
CL300	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
CL300	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
CL300	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
CL300	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
CL300	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
CL300	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
CL300	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
CL300	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
CL300	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
CL300	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
CL300	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
CL300	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
CL300	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
CL300	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
CL300	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
CL300	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
CL300	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
CL300	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
CL300	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
CL300	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
CL300	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FAL90	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
FAL90	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
FAL90	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
FAL90	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
FAL90	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
FAL90	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
FAL90	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
FAL90	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
FAL90	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
FAL90	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
FAL90	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
FAL90	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
FAL90	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
FAL90	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
FAL90	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
FAL90	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
FAL90	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
FAL90	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
FAL90	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
FAL90	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
FAL90	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
FAL90	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
FAL90	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
FAL90	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
FAL90	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
FAL90	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
FAL90	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
FAL90	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
FAL90	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
FAL90	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FAL900	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
FAL900	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
FAL900	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
FAL900	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
FAL900	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
FAL900	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
FAL900	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
FAL900	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
FAL900	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
FAL900	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
FAL900	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
FAL900	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
FAL900	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
FAL900	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
FAL900	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
FAL900	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
FAL900	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
FAL900	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
FAL900	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
FAL900	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
FAL900	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
FAL900	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
FAL900	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
FAL900	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
FAL900	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
FAL900	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
FAL900	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
FAL900	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
FAL900	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
FAL900	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
BD700	A	STANDARD	1	06	06A23JNB	0.0037	0.0000	0.0000
BD700	A	STANDARD	1	06	06A23JSB	0.0030	0.0000	0.0000
BD700	A	STANDARD	1	06	06A27JNB	0.0008	0.0000	0.0001
BD700	A	STANDARD	1	06	06A27JSB	0.0007	0.0000	0.0001
BD700	A	STANDARD	1	06	06A36JNB	0.0037	0.0000	0.0001
BD700	A	STANDARD	1	06	06A36JSB	0.0030	0.0000	0.0001
BD700	A	STANDARD	1	24	24A23JNB	0.0144	0.0000	0.0001
BD700	A	STANDARD	1	24	24A23JSB	0.0118	0.0000	0.0001
BD700	A	STANDARD	1	24	24A27JNB	0.0032	0.0000	0.0003
BD700	A	STANDARD	1	24	24A27JSB	0.0026	0.0000	0.0002
BD700	A	STANDARD	1	24	24A36JNB	0.0144	0.0000	0.0003
BD700	A	STANDARD	1	24	24A36JSB	0.0118	0.0000	0.0002
BD700	D	STANDARD	1	06	06DJ010	0.0008	0.0000	0.0000
BD700	D	STANDARD	1	06	06DJ090	0.0003	0.0000	0.0000
BD700	D	STANDARD	1	06	06DJ140	0.0010	0.0000	0.0000
BD700	D	STANDARD	1	06	06DJ180	0.0027	0.0000	0.0001
BD700	D	STANDARD	1	06	06DJ200	0.0027	0.0000	0.0001
BD700	D	STANDARD	1	06	06DJ270	0.0008	0.0000	0.0000
BD700	D	STANDARD	1	06	06DJ320	0.0033	0.0000	0.0001
BD700	D	STANDARD	1	06	06DJ360	0.0033	0.0000	0.0001
BD700	D	STANDARD	1	24	24DJ010	0.0032	0.0000	0.0001
BD700	D	STANDARD	1	24	24DJ090	0.0013	0.0000	0.0000
BD700	D	STANDARD	1	24	24DJ140	0.0039	0.0000	0.0001
BD700	D	STANDARD	1	24	24DJ180	0.0104	0.0000	0.0002
BD700	D	STANDARD	1	24	24DJ200	0.0104	0.0000	0.0002
BD700	D	STANDARD	1	24	24DJ270	0.0032	0.0000	0.0001
BD700	D	STANDARD	1	24	24DJ320	0.0128	0.0000	0.0003
BD700	D	STANDARD	1	24	24DJ360	0.0128	0.0000	0.0003
BD700	T	STANDARD	1	06	06TJ1	0.0002	0.0000	0.0000
BD700	T	STANDARD	1	24	24TJ1	0.0006	0.0000	0.0000

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
B212	V	H06AOVF	1	OVF	H06AOVF	0.0036	0.0000	0.0002
B212	V	H06DOVF	1	OVF	H06DOVF	0.0085	0.0000	0.0004
B212	V	H24AOVF	1	OVF	H24AOVF	0.0036	0.0000	0.0002
B212	V	H24DOVF	1	OVF	H24DOVF	0.0085	0.0000	0.0004
S70	V	H06DOVF	1	OVF	H06DOVF	0.0036	0.0000	0.0002
S70	V	H24DOVF	1	OVF	H24DOVF	0.0085	0.0000	0.0004
S70	V	H06AOVF	1	OVF	H06AOVF	0.0036	0.0000	0.0002
S70	V	H24AOVF	1	OVF	H24AOVF	0.0085	0.0000	0.0004
B206L	V	H06DOVF	1	OVF	H06DOVF	0.1750	0.0000	0.0067
B206L	V	H24DOVF	1	OVF	H24DOVF	0.4083	0.0000	0.0157
B206L	V	H06AOVF	1	OVF	H06AOVF	0.1750	0.0000	0.0067
B206L	V	H24AOVF	1	OVF	H24AOVF	0.4083	0.0000	0.0157

APPENDIX G

RUNWAY SAFETY AREA STUDY

Runway Safety Area Study
Final Draft Report

Cuyahoga County Airport
Robert D. Shea Field

C&S COMPANIES
ENGINEERS
DESIGN BUILD
TECHNICAL RESOURCES
OPERATIONS

20445 Emerald Parkway, Suite 100
Cleveland, Ohio 44135

September 2006

Runway Safety Area Study

Final Draft Report

Cuyahoga County Airport

C&S Engineers, Inc.
One International Place
20445 Emerald Parkway, Suite 100
Cleveland, OH 44135

September 2006

TABLE OF CONTENTS

Page

SECTION 1 – INTRODUCTION 1
1.01 GENERAL 1
1.02 PURPOSE AND SCOPE OF STUDY 1
1.03 STUDY AREA 3
1.04 CLIMATE 3
1.05 AIRPORT MASTER PLAN 3

SECTION 2 – RUNWAY SAFETY AREA REQUIREMENTS AND DEFICIENCIES 4
2.01 CRITICAL AIRCRAFT - AIRPORT REFERENCE CODE 4
2.02 RUNWAY SAFETY AREA REQUIREMENTS 6
2.03 RUNWAY SAFETY AREA EXISTING CONDITIONS 10
2.04 PRELIMINARY RUNWAY LENGTH ANALYSIS 15
2.05 RUNWAY SAFETY AREA DEFICIENCIES 17

SECTION 3 – ALTERNATIVES FOR RSA IMPROVEMENT 20
3.01 ALTERNATIVES FROM THE AIRPORT MASTER PLAN 20

SECTION 4 – ALTERNATIVES EVALUATION 21
4.01 EVALUATION CRITERIA FROM THE AIRPORT MASTER PLAN 21

SECTION 5 – FINANCIAL FEASIBILITY OF RSA IMPROVEMENTS 22
5.01 FAA ORDER 5200.9 22
5.02 DETERMINATION OF MAXIMUM FEASIBLE COST 22

LIST OF TABLES

2-1 2003 BASED AIRCRAFT FLEET MIX 4
2-2 ARC CHARACTERISTICS 5
2-3 2003 BASED AIRCRAFT – CRITICAL AIRCRAFT 6
2-4 AIRPORT DESIGN STANDARDS FOR RUNWAY 6-24 8
2-5 RUNWAY LENGTH REQUIREMENTS 16

LIST OF FIGURES

1-1 VICINITY MAP 2

2-1 GENERAL PLAN 9
LEGEND 11
2-2 RUNWAY 6 SAFETY AREA – EXISTING CONDITIONS 12
2-3 RUNWAY 6-24 SAFETY AREA – EXISTING CONDITIONS 13
2-4 RUNWAY 24 SAFETY AREA – EXISTING CONDITIONS 14

APPENDIX A

ALTERNATIVE DESCRIPTIONS AND FIGURES FROM MASTER PLAN…… …..……..25

APPENDIX B

PROBABLE PROJECT COST MAXTRIX …….26

APPENDIX C

FAA CONCURRENCE WITH THE FORECASTS LETTER …….27

SECTION 1 – Introduction

1.01 General

Cuyahoga County Airport is a publicly owned, public-use, general aviation reliever facility. It serves the aviation needs of eastern Cuyahoga County and western Lake County in the northeastern Ohio Region. Cuyahoga County owns the Airport. The operation and maintenance is the responsibility of the Department of Development under the auspices of the Board of County Commissioners.

The Airport is located in two counties, Cuyahoga and Lake, and three cities, Richmond Heights, Highland Heights, and Willoughby Hills, approximately eleven miles east of downtown Cleveland, Ohio. Cuyahoga County contains a population of 1,393,978 based on the 2000 Decennial Census. Lake County contains a population of 227,511 based on the 2000 Census. Richmond Heights has a population of 10,944; Highland Heights has a population is 8,082; and Willoughby Hills has a population of 8,668.

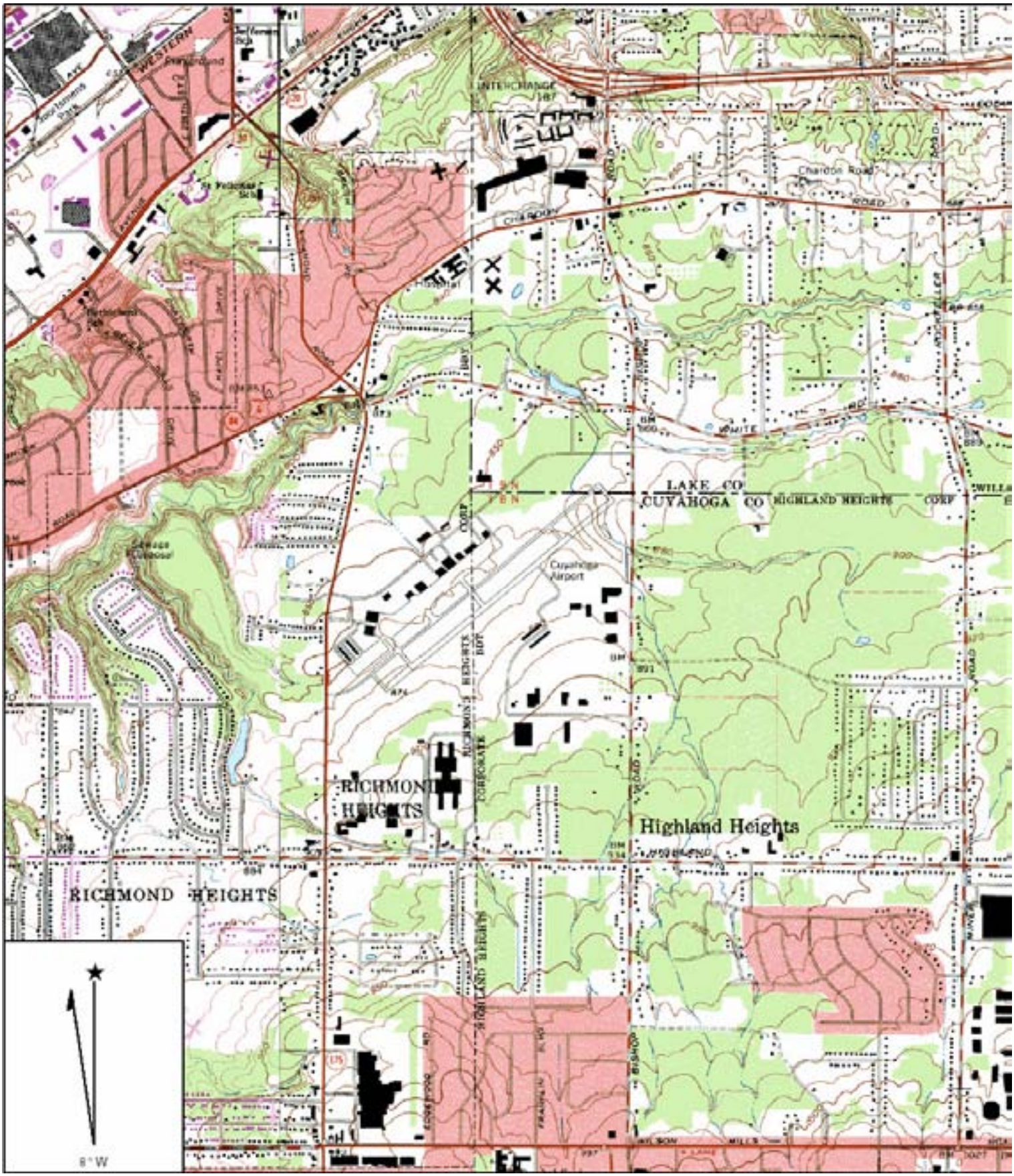
The land area of the Airport consists of approximately 640 acres. The Cuyahoga County Airport is principally located in Richmond Heights to the east of Richmond Road, north of Highland Road, and south of White Road. On the east side of the Airport is Bishop Road (with an Airport parcel extending east of the road that incorporates a golf course). The Airport is located approximately 10 minutes from Interstate 90, a major east-west highway, and Interstate 271, a major north-south highway. **Figure 1-1** shows the Airport and vicinity.

1.02 Purpose and Scope of Study

The main purpose of this study is to document and identify currently existing deficiencies of the Runway Safety Area (RSA) at Cuyahoga County Airport based on the existing runway length and use. The Federal Aviation Administration (FAA) has "targeted" all RSA at Part 139 certificated airports for improvements by 2007. The Cuyahoga County Department of Development, as the Airport Sponsor, desires to complete this Runway Safety Area Study in order to comply with FAA standards of the FAA Order 5200.8, *Runway Safety Area Program*, FAA Advisory Circular (AC) 150/5300-13, *Airport Design,* and other applicable airport design Advisory Circulars.

This report will address and make recommendations in some of the following areas as they relate to Cuyahoga County Airport:

- Critical Aircraft
- Runway Safety Area Requirements
- Existing Conditions
- Runway Length Analysis
- Runway Safety Area Deficiencies
- Improvement Alternatives from the Airport Master Plan
- Probable Project Costs



COMMISSIONERS
Jimmy Dimora
Peter Lawson Jones
Tim McCormack

C&S COMPANIES
ENGINEERS
DESIGN BUILD
TECHNICAL RESOURCES
OPERATIONS

CUYAHOGA COUNTY AIRPORT

Vicinity Map

Figure 1-1

1.03 Study Area

The existing physical and natural conditions were inventoried and studied for their applicability to the development of alternatives of the runway safety area. The study area for determination of the runway safety area conditions or deficiencies consists of the area within the limits of the runway safety area, and adjacent areas that may be affected by any recommended improvements, such as grading.

1.04 Climate

Summers are moderately warm and humid and winters are cool to cold and cloudy with an average of five days with sub-zero temperatures. The average temperature for the year is 49.7 °F.

The daily range in temperature is usually greatest in the late summer and least in winter. The coldest month on record is January 1977. The warmest month on record is July 1995. On the average, freezing temperatures in fall are recorded in October while the last freezing temperature in spring normally occurs in May.

Showers and thunderstorms account for most of the rainfall during the growing season. Snowfall may fluctuate widely from the annual mean of 50 inches. Mean annual snowfall increases from west to east in Cuyahoga County ranging from about 45 inches in the west to more than 90 inches in the extreme east.

1.05 Airport Master Plan

The Airport is updating its Airport Master Plan concurrently with this study. When this study was started, the Airport Master Plan was in its preliminary stages. The Airport Master Plan has progressed including alternatives analysis, evaluation and environmental overview. Thus, this document references the alternatives and is consistent with the Airport Master Plan. Alternatives developed in the Airport Master Plan, as included in this study, improve the runway safety areas to meet design standards.

SECTION 2 – RSA Requirements and Deficiencies

2.01 Critical Aircraft – Airport Reference Code

The following information was prepared by Aerofinity, Inc., for use in this study as well as the associated Airport Master Plan:

Existing Users
The 2003 based aircraft were examined to determine the existing users at the airport, as shown in **Table 2-1**. There were 301 based aircraft at Cuyahoga County Airport; of these 195 are jet aircraft ranging from Cessna Citations to Gulfstream IVs. Since 1997, the number of based aircraft registered at Cuyahoga County Airport has more than doubled. This growth can be primarily attributed to the success of Flight Options in the area of fractional ownership activities, a relatively new concept that has flourished as an option for general aviation users.

Table 2-1
2003 Based Aircraft Fleet Mix
Cuyahoga County Airport

Single Engine	63
Multi-Engine	16
Turbo Prop	25
Jet	195
Helicopter	2
	301

The operation records have also been reviewed for the past five years, the total operations have ranged from 56,000 to 76,000 annual operations. As a part of the inventory process, hourly operations data for the week of September 7 to 13, 2003 was provided. This data identified that approximately 70% of the operations are itinerant and 30% are local. Also, of the 1,775 operations conducted that week 1,278 (72%) were conducted by single engine aircraft, 376 (21%) were conducted by jet aircraft and the balance were conducted by turboprop and multiengine aircraft. The numbers of operations per based aircraft (OPBA) at the airport are most likely undergoing a change, given the growth in based aircraft and unique characteristics of fractionally owned aircraft. This will be analyzed further in later stages of the forecasting and facilities analysis.

Airport Reference Code
In order to plan airfield facilities to accommodate the current and projected users, an Airport Reference Code (ARC) must be determined for the airport. According to *FAA Advisory Circular 150/5300-13, Airport Design*, the ARC is a system used to relate airport planning and design criteria to the operational and physical characteristics of the aircraft intended to use the airport.

A combination of two codes is used to develop the ARC. The first code, Aircraft Approach Category, relates to the approach speed of an aircraft. The second code, Airplane Design Group, pertains to the design group determined by the wingspan of an aircraft. The ARC is based upon the aircraft or combination of aircraft with the highest approach speed code and the greatest wingspan that use or are expected to make substantial use of the airport. Per *FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, substantial use means 500 or more annual itinerant operations or scheduled commercial service. An operation is a takeoff or landing by aircraft.

Table 2-2 summarizes the aircraft approach category and airplane design group.

Table 2-2
ARC Characteristics

Aircraft Approach Category	Speed (knots)	Airplane Design Group	Wingspan (feet)
A	Less than 91	I	Less than 49
B	91 to less than 121	II	49 up to but not including 79
C	121 to less than 141	III	79 up to but not including 118
D	141 to less than 166	IV	118 up to but not including 171
E	166 or more	V	171 up to but not including 214
		VI	214 up to but not including 262

Source: FAA Advisory Circular 150/5300-13, Airport Design 3

Critical Design Aircraft

Examining the existing users and airport reference code information, the jet aircraft are the largest aircraft making substantial use of the airport. The 376 jet operations in a week, equates to approximately 20,000 annual operations, well exceeding the FAA definition of substantial use (500 annual operations).

The based jet aircraft range from Cessna Citations (ARC B-I/II) to Gulfstream IVs (D-II). **Table 2-3** shows the most common jet aircraft based at Cuyahoga County. Many of these aircraft have design group II wingspans. The fastest approach category is D, with the Gulfstream IVs being the largest and fastest aircraft. Therefore, it is recommended that an ARC of D-II be used for planning improvements to serve existing and future users of the airport. The published instrument approach procedures include minimums for up to approach category D aircraft.

Table 2-3
2003 Based Aircraft – Critical Aircraft
Cuyahoga County Airport

Lear 55	C-I
Challenger	C-II
Hawker 800XP	C-II
Beechjet 400A	B-I
Gulfstream IV	D-II
Falcon 50	B-II
Lear 45	C-I
Citation Jet	B-I
Citation II	B-II
Citation III	B-II
Citation V	B-II
Recommendation:	**D-II**

This analysis of existing users at the Airport, determination of the appropriate Airport Reference Code, and identification of the critical design aircraft provide the basis for runway safety area dimensional criteria as discussed in the following section. This background, along with the July 28, 2004 *Cuyahoga County Airport Aviation Forecasts* final report prepared by Aerofinity, Inc., is also essential to the development of facility requirements as part of the Airport Master Plan. In an August 12, 2004, letter to the Airport, the FAA noted their concurrence with the forecasts presented in the July 28, 2004, document for the completion of the Master Plan and the Runway Safety Area Study. This letter is included in the report as Appendix C.

2.02 Runway Safety Area Requirements

In accordance with Advisory Circular 150/5300-13, *Airport Design,* a Runway Safety Area (RSA) is a defined surface surrounding the runway, which is prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

Furthermore, the FAA design standards indicate that RSAs shall be:

- Cleared and graded and have no potential hazardous ruts, humps, depressions or other surface variations.
- Drained by grading or storm sewers to prevent water accumulation.
- Capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment and the occasional passage of aircraft without causing structural damage to the aircraft.
- Free of objects, except for objects that need to be located in the runway safety area because of their function. Objects higher than 3 inches above grade should be constructed, to the extent practicable, on low impact resistant supports (frangible

mounted structures) of the lowest practical height with the frangible point no higher than 3 inches above grade. Other objects, such as manholes, should be constructed at grade. In no case should their height exceed 3 inches above grade.

RSAs that are non-standard can no longer receive modification of standards from the FAA. The FAA dimensional standards remain in effect regardless of the presence of natural or man-made objects or surface conditions that might create a hazard to aircraft. Facilities including NAVAIDs that would not normally be permitted in an RSA should not be installed inside the standard RSA dimensions even when the RSA does not meet standards in other respects. An evaluation of practicable alternatives for improving non-standard RSA is required until it meets FAA standards for grade, compaction and object frangibility.

Navigational aids might impact the effectiveness of the RSA. The FAA wants to greatly improve the margin of safety for landing or departing aircraft, and therefore has established guidelines for NAVAID locations, including the following:

- RSA grades sometimes require approach lights to be mounted on towers that could create a hazard for aircraft. Therefore, consider any practicable RSA construction to a less demanding grade than the standard grade to avoid the need for structures.
- Instrument landing system (ILS) facilities (glide slope and localizers) are not required to be located inside the RSA. However, they do require a graded area around the antenna. (See Chapter 6 in Advisory Circular 150/5300-13, *Airport Design* for more information.) RSA construction that ends abruptly in a precipitous drop-off can result in design proposals where the facility is located inside the RSA. Therefore, consider any practicable RSA construction beyond the standard dimensions that could accommodate ILS facilities if and when they are installed.

The RSA limits for an airport with an Airport Reference Code of D-II are 500 feet wide by 1000 feet beyond the runway end or stopway end. Additional design standards that apply to Cuyahoga County Airport are in **Table 2-4**.

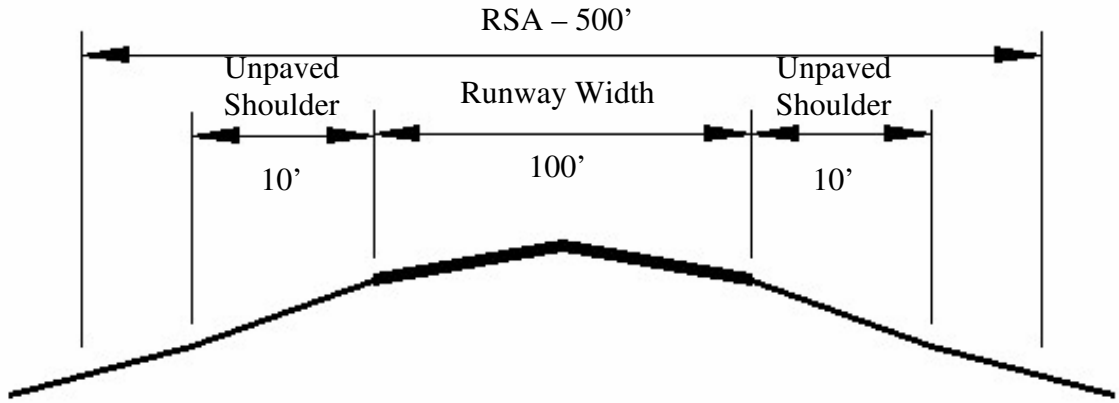
TABLE 2-4
Airport Design Standards for Runway 6-24

Item	Design Standard ARC (D-II)	Existing Condition	Meet Requirements?
Runway Width	100’	100’*	Yes
Runway Safety Area			
-Width	500’	310’*	No
-Length Beyond (Overruns)			
-Length (Beyond Runway End - 24)	1,000’	57’*	No
-Length (Beyond Stopway - 6)	1,000’	43’*	No
-Length Prior to Landing Threshold (Undershoots)			
-Length (Beyond Runway End - 24)	600’	57’*	No
-Length (Beyond Stopway - 6)	600’	43’*	No
Runway Object Free Area			
-Width	800’	735’*	No
-Length (Beyond Runway End - 24)	1,000’	0’*	No
-Length (Beyond Stopway - 6)	1,000’	285’*	No

* Refer to Existing Conditions and Deficiencies sections Source: Advisory Circular 150/5300-13 and C&S Engineers, Inc.

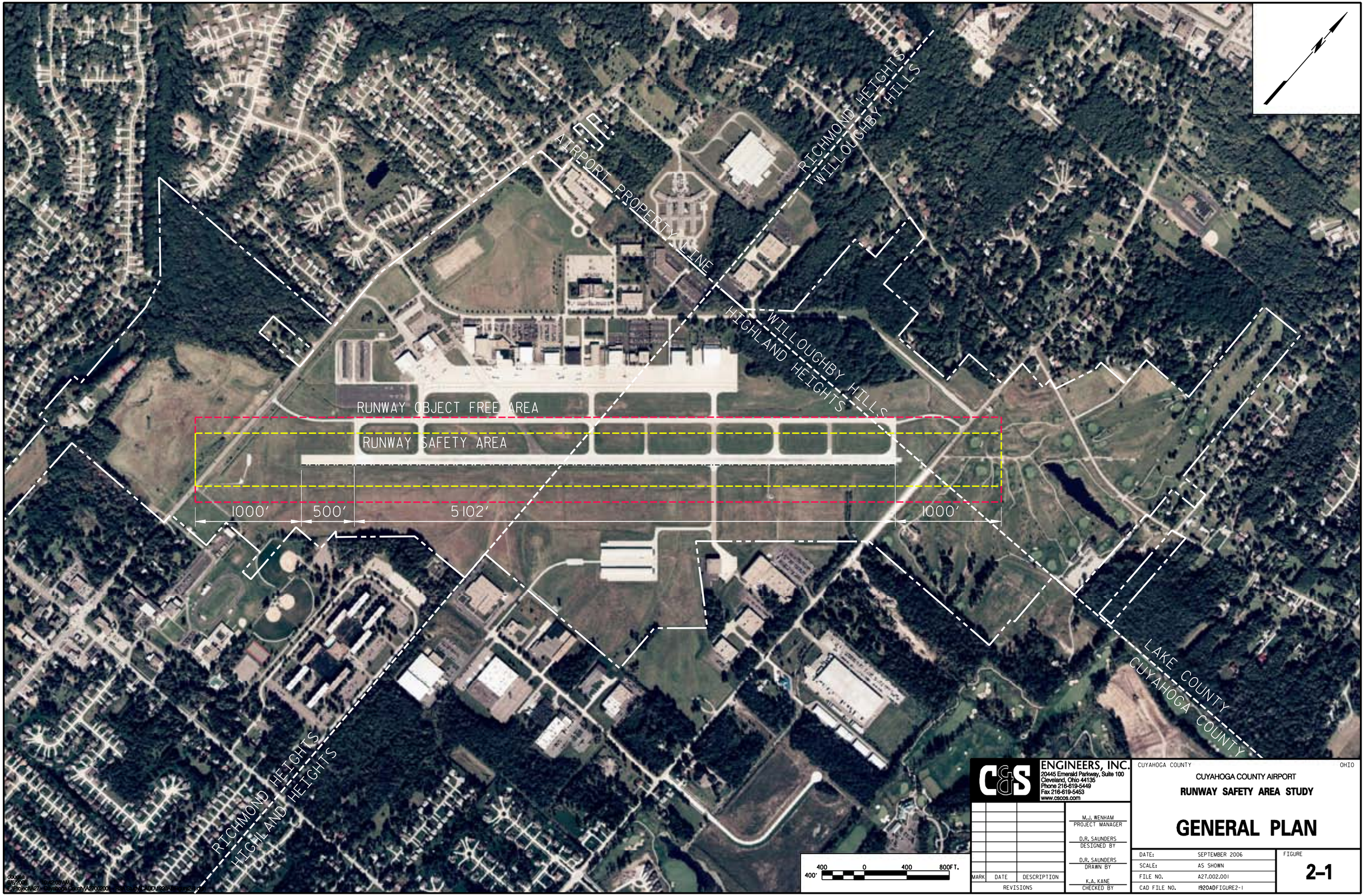
A general plan depicting the airport property line and runway safety area is shown in **Figure 2-1.**

The transverse grade limitations for aircraft approach categories C and D provided in Advisory Circular 150/5300-13, *Airport Design,* are shown below.



- Transverse grades
  - On runway – 1% to 1.5%
  - On shoulder – 3% to 5%
  - In RSA but outside of shoulder – 1.5% to 3%

The FAA also states that a 1.5 inch drop from paved to unpaved surfaces is recommended and drainage ditches may not be located within the safety area.



C&S ENGINEERS, INC.
20445 Emerald Parkway, Suite 100
Cleveland, Ohio 44135
Phone 216-619-5449
Fax 216-619-5453
www.cscos.com

MARK	DATE	DESCRIPTION

REVISIONS

M.J. WENHAM
PROJECT MANAGER

D.R. SAUNDERS
DESIGNED BY

D.R. SAUNDERS
DRAWN BY

K.A. KANE
CHECKED BY

CUYAHOGA COUNTY OHIO

CUYAHOGA COUNTY AIRPORT

RUNWAY SAFETY AREA STUDY

GENERAL PLAN

DATE:	SEPTEMBER 2006	FIGURE
SCALE:	AS SHOWN	2-1
FILE NO.	A27.002.001	
CAD FILE NO.	1920ADFIGURE2-1	

Copyright ©

2.03 Runway Safety Area Existing Conditions

This section inventories and describes the types of objects located within the runway safety area. Section 2.05 provides an evaluation of the existing conditions and notes deficiencies associated with each object.

Along Runway 6-24 (between runway ends) - Existing Conditions (See Figures 2-2, 2-3 and 2-4)

There are two types of navigational aids (NAVAIDs) that are within the RSA along Runway 6-24, visual approach slope indicators (VASI-4s) and precision approach path indicators (PAPIs). Both NAVAIDs are located on frangible couplings. A supplemental wind cone is located within the safety area, but is on frangible couplings. Drainage swales, grades that do not meet criteria, and drainage structures are common within the runway safety area. Drainage structures, which include catch basins and manholes, are located within the RSA but are not obstacles if the grade change is less than 3% or the structure is less than 3" above or below surrounding grade.

On the east side of Runway 6-24 the structures are located approximately 125 feet from the runway centerline, and the west side of Runway 6-24 the structures are located approximately 185 feet from the runway centerline. The structures themselves are not obstacles, but the grades in the vicinity are steeper than the criteria. Drainage swales or ditches should not be located within the runway safety area. In other areas not associated with structures, there are grades that are steeper than design criteria.

Runway 6 Approach End – Existing Conditions (See Figure 2-2)

The following objects are located within the runway safety area on the Runway 6 Approach End and need to be addressed:

- Runway End Identifier Lights (REILs)
  - Located on frangible couplings
- Localizer
  - Located on non-frangible couplings
- Localizer building
- Shrubs and treeline
  - Shrubs along the fence and treeline on the west side of Richmond Road
- Richmond Road
  - Located below the grade of the runway, but still in the RSA
- Perimeter fence
- Fire hydrants and utility poles
  - Located along Richmond Road
- Drainage swales
  - Grades that do not meet criteria and drainage structures are common within the runway safety area.

LEGEND

℄	RUNWAY/TAXIWAY CENTERLINE
PL	AIRPORT PROPERTY LINE
	EXISTING EDGE OF WATER
	EXISTING EDGE OF WOODS
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE
416	EXISTING CONTOUR LINE
	EXISTING SWALE CENTERLINE
	EXISTING FENCE LINE
	EXISTING GUIDE RAIL
	EXISTING STONE WALL
12"D	EXISTING DRAINAGE LINE
6"UD	EXISTING UNDERDRAIN
CO	EXISTING UNDERDRAIN CLEANOUT
CB CB	EXISTING CATCH BASIN
DMH	EXISTING DRAINAGE MANHOLE
	EXISTING HEADWALL
	EXISTING PIPE END SECTION
6"W	EXISTING WATER LINE
	EXISTING HYDRANT
WV	EXISTING WATER VALVE
8"S	EXISTING SANITARY LINE
SMH	EXISTING SANITARY MANHOLE
6"G	EXISTING GAS LINE
GV	EXISTING GAS VALVE
T	EXISTING UNDERGROUND TELEPHONE LINE
OH/T	EXISTING OVERHEAD TELEPHONE LINE
T	EXISTING TELEPHONE JUNCTION BOX
E	EXISTING UNDERGROUND ELECTRIC LINE
OH/E	EXISTING OVERHEAD ELECTRIC LINE
LP	EXISTING LIGHT POLE
UP	EXISTING UTILITY POLE
D	EXISTING CONCRETE DUCT MARKER
C	EXISTING CONCRETE CABLE MARKER
S	EXISTING CONCRETE SPLICE MARKER
	EXISTING BOLLARD OR POST
	EXISTING TIE-DOWN
	EXISTING SINGLE POST TRAFFIC SIGN
	EXISTING DOUBLE POST TRAFFIC SIGN
	EXISTING RETROREFLECTIVE MARKER
MW	EXISTING MONITORING WELL
OW	EXISTING OBSERVATION WELL
	EXISTING RUNWAY OR TAXIWAY EDGE LIGHT
	EXISTING AIRFIELD GUIDANCE SIGN
	EXISTING REIL UNIT
E	EXISTING ELECTRICAL BOX
D	EXISTING ELECTRICAL DISCONNECT
	EXISTING TRANSFORMER
	EXISTING WINDCONE AND ANEMOMETER
	MALSR

EMH	EXISTING ELECTRICAL MANHOLE
PB	EXISTING PULLBOX
HH	EXISTING HANDHOLE
SC	EXISTING SPLICE CAN
	EXISTING AIRFIELD LIGHTING CABLE IN TRENCH
	EXISTING AIRFIELD LIGHTING CABLE IN CONDUIT
4-WAY	EXISTING DUCT BANK
420	PROPOSED CONTOUR LINE
418.2	PROPOSED INTERMEDIATE CONTOUR LINE
419.58	PROPOSED SPOT ELEVATION
	PROPOSED SWALE CENTERLINE
	PROPOSED FENCE LINE
24"D	PROPOSED DRAINAGE LINE
6"UD	PROPOSED UNDERDRAIN
CO	PROPOSED UNDERDRAIN CLEANOUT
CB CB	PROPOSED CATCH BASIN
DMH	PROPOSED DRAINAGE MANHOLE
	PROPOSED HEADWALL
	PROPOSED PIPE END SECTION
E	PROPOSED UNDERGROUND ELECTRIC LINE
	PROPOSED SINGLE POST TRAFFIC SIGN
	PROPOSED DOUBLE POST TRAFFIC SIGN
	PROPOSED BASE MOUNTED EDGE LIGHT
	PROPOSED STAKE MOUNTED EDGE LIGHT
	PROPOSED AIRFIELD GUIDANCE SIGN
10	PROPOSED AIRFIELD GUIDANCE SIGN INDEX NUMBER
T-2 38	PROPOSED GUIDANCE SIGN AND LIGHT UNIT ID TAG NUMBER
	PROPOSED REIL UNIT
E	PROPOSED ELECTRICAL BOX
D	PROPOSED ELECTRICAL DISCONNECT
EMH	PROPOSED ELECTRICAL MANHOLE
PB	PROPOSED PULLBOX
HH	PROPOSED HANDHOLE
SC	PROPOSED SPLICE CAN
	PROPOSED AIRFIELD LIGHTING CABLE IN TRENCH
	PROPOSED AIRFIELD LIGHTING CABLE IN CONDUIT
4-WAY	PROPOSED DUCT BANK
	EXISTING EDGE LIGHT UNIT TO BE REMOVED
	EXISTING AIRFIELD GUIDANCE SIGN TO BE REMOVED
	EXISTING AIRFIELD LIGHTING CABLE TO BE ABANDONED
4-WAY	EXISTING DUCT BANK TO BE REMOVED
EMH	EXISTING ELECTRICAL MANHOLE TO BE REMOVED
CB CB	EXISTING CATCH BASIN TO BE REMOVED
12"D	EXISTING DRAINAGE LINE TO BE REMOVED
24"D	EXISTING DRAINAGE PIPE TO BE REMOVED AND REPLACED
	EXISTING AIRFIELD GUIDANCE SIGN TO BE MODIFIED
	EXISTING RUNWAY OR TAXIWAY EDGE LIGHT TO BE MODIFIED

C&S ENGINEERS, INC.
20445 Emerald Parkway, Suite 100
Cleveland, Ohio 44135
Phone 216-619-5449
Fax 216-619-5453
www.cscos.com

MARK	DATE	DESCRIPTION

REVISIONS

M.J. WENHAM — PROJECT MANAGER
D.R. SAUNDERS — DESIGNED BY
D.R. SAUNDERS — DRAWN BY
K.A. KANE — CHECKED BY

CUYAHOGA COUNTY — OHIO

CUYAHOGA COUNTY AIRPORT

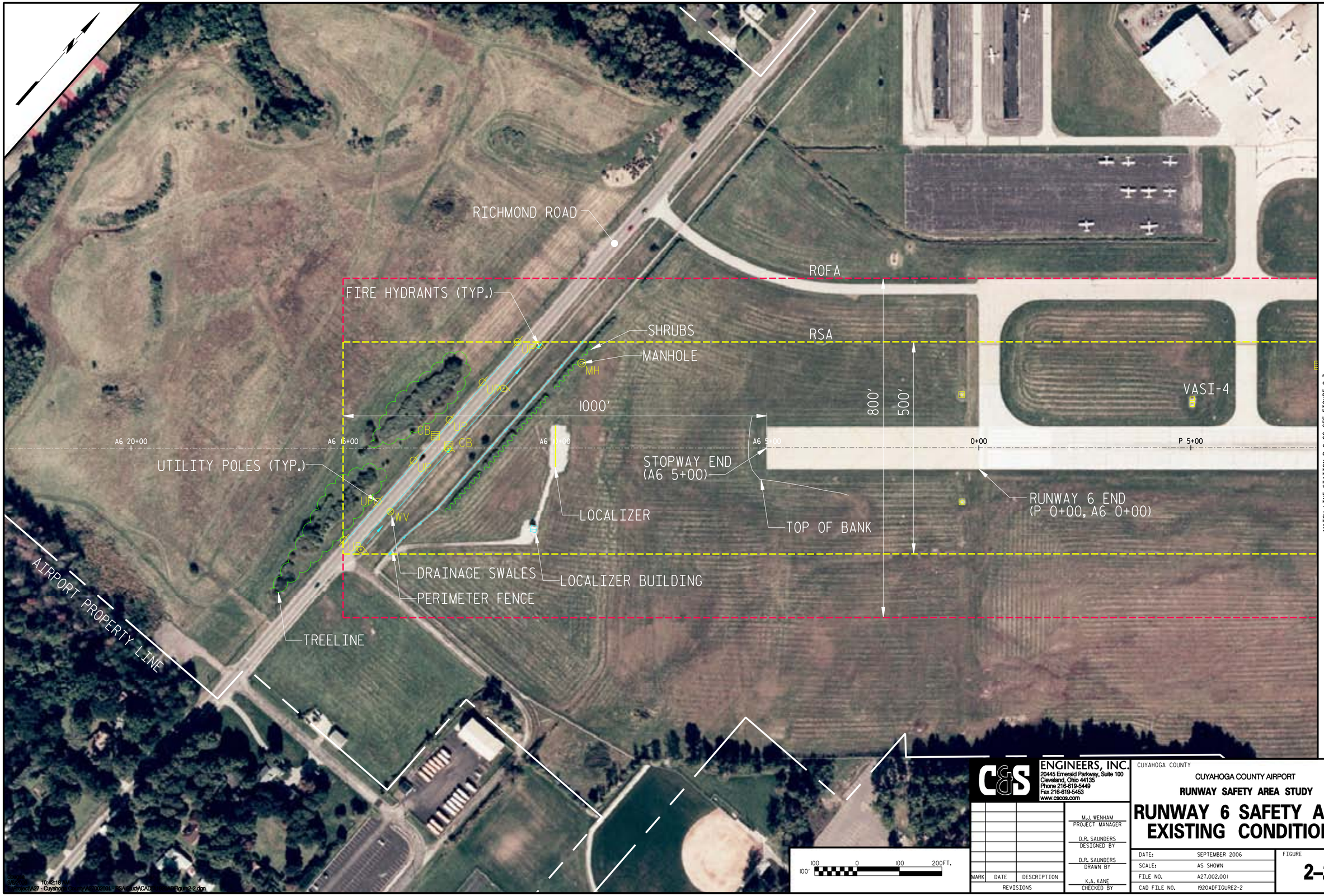
RUNWAY SAFETY AREA STUDY

LEGEND

DATE:	SEPTEMBER 2006	FIGURE
SCALE:	AS SHOWN	
FILE NO.	A27.002.001	
CAD FILE NO.	1920ADLEGEND	

dougsa
9/6/2006 10:41:46 AM
F:\Project\A27 - Cuyahoga County\A27002001 - RSA Study\CADD\1920ADLegend.dgn

Copyright ©



C&S ENGINEERS, INC.
20445 Emerald Parkway, Suite 100
Cleveland, Ohio 44135
Phone 216-619-5449
Fax 216-619-5453
www.cscos.com

MARK	DATE	DESCRIPTION

REVISIONS

M.J. WENHAM
PROJECT MANAGER

D.R. SAUNDERS
DESIGNED BY

D.R. SAUNDERS
DRAWN BY

K.A. KANE
CHECKED BY

CUYAHOGA COUNTY OHIO

CUYAHOGA COUNTY AIRPORT

RUNWAY SAFETY AREA STUDY

RUNWAY 6 SAFETY AREA EXISTING CONDITIONS

DATE:	SEPTEMBER 2006	FIGURE
SCALE:	AS SHOWN	2–2
FILE NO.	A27.002.001	
CAD FILE NO.	I920ADFIGURE2-2	

Copyright ©

C&S ENGINEERS, INC.
20445 Emerald Parkway, Suite 100
Cleveland, Ohio 44135
Phone 216-619-5449
Fax 216-619-5453
www.cscos.com

MARK	DATE	DESCRIPTION

REVISIONS

M.J. WENHAM — PROJECT MANAGER
D.R. SAUNDERS — DESIGNED BY
D.R. SAUNDERS — DRAWN BY
K.A. KANE — CHECKED BY

CUYAHOGA COUNTY — OHIO

CUYAHOGA COUNTY AIRPORT

RUNWAY SAFETY AREA STUDY

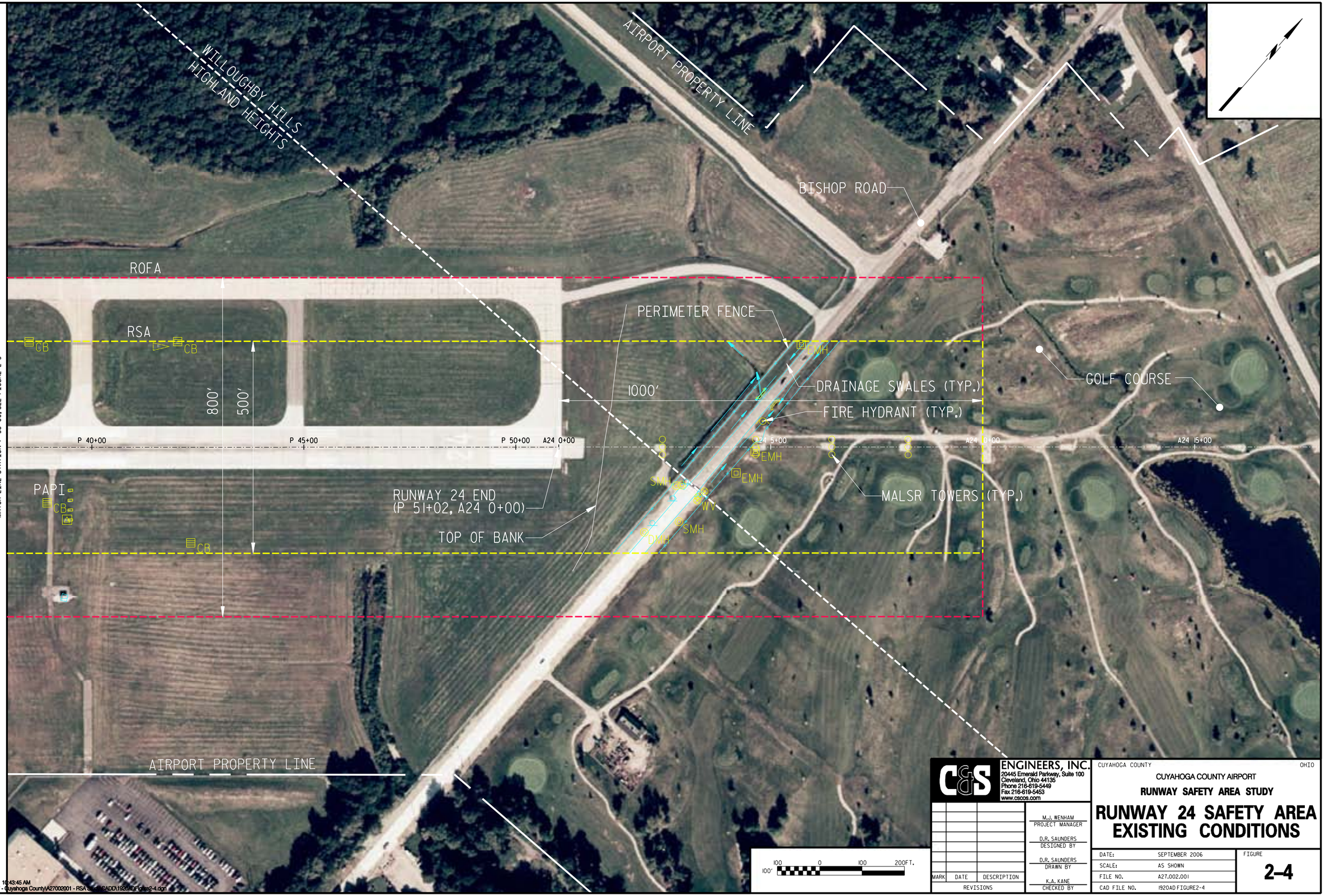
RUNWAY 6–24 SAFETY AREA EXISTING CONDITIONS

DATE:	SEPTEMBER 2006
SCALE:	AS SHOWN
FILE NO.	A27.002.001
CAD FILE NO.	1920AD FIGURE2-3

FIGURE 2–3

dougsa
9/6/2006 10:01:24 AM
F:\Project\A27 - Cuyahoga C... - RSA Study\CADD\1920AD Figure2-3.dgn

Copyright ©



dougsa
9/6/2006 10:43:45 AM
F:\Project\A27 - Cuyahoga County\A27002001 - RSA Study\CADD\1920\DFG\fig2-4.dgn

C&S ENGINEERS, INC.
20445 Emerald Parkway, Suite 100
Cleveland, Ohio 44135
Phone 216-619-5449
Fax 216-619-5453
www.cscos.com

MARK	DATE	DESCRIPTION

REVISIONS

M.J. WENHAM
PROJECT MANAGER

D.R. SAUNDERS
DESIGNED BY

D.R. SAUNDERS
DRAWN BY

K.A. KANE
CHECKED BY

CUYAHOGA COUNTY OHIO

CUYAHOGA COUNTY AIRPORT

RUNWAY SAFETY AREA STUDY

RUNWAY 24 SAFETY AREA EXISTING CONDITIONS

DATE:	SEPTEMBER 2006	FIGURE
SCALE:	AS SHOWN	2-4
FILE NO.	A27.002.001	
CAD FILE NO.	1920ADFIGURE2-4	

Copyright ©

Runway 24 Approach End – Existing Conditions (See Figure 2-4)

The following objects are located within the runway safety area on the Runway 24 Approach End and need to be addressed:

- MALSR towers
  - Located on non-frangible couplings
- Bishop Road
  - Located below the grade of the runway, but still in the RSA
- Perimeter fence
- Fire hydrants
  - Located along Bishop Road
- Drainage swales
  - Grades that do not meet criteria and drainage structures are common within the runway safety area. Drainage swales located on airside property may contain wetlands.
- Golf course
  - Grades greater than criteria

2.04 Preliminary Runway Length Analysis

The following information was prepared by Aerofinity, Inc., for use in this study:

Facility Requirements

The primary facility requirements consideration for the runway safety analysis is runway length. Runway length requirements are based on five primary factors.

- Airport elevation
- Mean daily maximum temperature of the hottest month
- Maximum change in the runway centerline
- Wet or dry pavement
- Stage length of the longest non-stop trip (considered for aircraft more than 60,000 pounds only)

These factors are critical because aircraft performance declines as elevation, temperature and runway gradient factors increase. The *FAA Advisory Circular 150/5325-4A, Runway Length Requirements* for Airport Design has been used as a starting point for reviewing the appropriate runway length. **Table 2-5** is a partial printout of the Airports Design Program, version 4.3B to identify runway length requirements at Cuyahoga County Airport. Because of the number of operations by business jet aircraft, the range of runway length findings for large business aircraft have been shown. Special emphasis has been given to the runway length requirements for 100% of the large business aircraft fleet, when operating at 60% useful load. This is considered to be representative of the critical aircraft user requirements at Cuyahoga County Airport.

Table 2-5
Runway Length Requirements
Cuyahoga County Airport

Airport and Runway Data		
Airport elevation		879 feet MSL
Mean daily maximum temperature of the hottest month (July)		81.4 °F
Maximum difference in runway centerline elevation		6 feet
Length of haul for airplanes of more than 60,000 pounds		500 miles
Runway Length Recommended for Airport Design		
	Dry Runway	Wet Runway
Large airplanes of 60,000 pounds or less		
75 % of these large airplanes at 60% useful load	4,780’	5,420’
75% of these large airplanes at 90% useful load	6,280’	7,000’
100 % of these large airplanes at 60% useful load	***5,410’***	***5,500’***
100 % of these large airplanes at 90% useful load	8,010’	8,010’
Airplanes of more than 60,000 pounds	Approx. 5,320’	Approx. 5,320’

The runway length requirements in **Table 2-5** demonstrate the variability of airfield demands based upon the aircraft type and load. For large aircraft weighing less than 60,000 pounds, useful load is the measure that is sensitive to stage length. The farther an aircraft is flying nonstop, the more fuel it needs onboard at takeoff, thus increasing its percent of total useful load at takeoff. ***Per the FAA’s design program, approximately 5,500 feet is needed to accommodate large business aircraft operations, depending upon load requirements.*** Since the FAA program uses a combination of aircraft rather than detailed operating specification, it provides general planning guidance rather than specific runway length requirements. The FAA uses this program as a guideline to determine what they will fund for the development of runway length at general aviation airports. The FAA will consider approval of runway lengths beyond those identified in the Airport Design Program if specific need can be documented based upon user data.

Based on this analysis, with an existing runway length of 5,100 feet, when considering runway safety area improvements, preservation of at least as much runway length as presently exists is of utmost importance to supporting the high level of jet operations at Cuyahoga County Airport.

The existing runway length is 5,102 feet with 500 feet of Stopway. The Stopway is not used as runway. However, it can be used by pilots as a planning tool as part of accelerate-stop distance available (ASDA) according to the FAA Advisory Circular 150/5300-13, *Airport Design,* Appendix 14, *Declared Distances*. The Stopway does not have any impact on pilot calculations of takeoff run available (TORA), takeoff distance available (TODA), and landing distance available (LDA). The Stopway is not runway safety area and may not be used in lieu of RSA. The RSA begins at the end of the Stopway, and RSA may not be shortened to accommodate a Stopway.

2.05 Runway Safety Area Deficiencies

The existing Runway 6-24 Safety Area does not fully comply with current FAA standards. At this time the width along the runway, the length beyond the Runway 24 end and length beyond the stopway at Runway 6 end do not meet criteria. The existing RSA for Runway 6 approach end is 310 feet wide and 43 feet beyond the stopway end. The existing RSA for Runway 24 approach end is 310 feet wide and 57 feet beyond the runway end.

Refer to Figures 2-2, 2-3, and 2-4 for plans showing objects in the RSAs. Plans were developed using aerial photogrammetry performed for the Runway Safety Area Study and Airport Master Plan.

Runway 6-24 Deficiencies (See Figure 2-2, 2-3 and 2-4)

The features located within the RSA along Runway 6-24 are as follows:

- In general, the grades along Runway 6-24 do not meet criteria. By visual review, RSAs along the runway length appear to meet criteria; however, detailed elevations from aerial photogrammetry indicate many areas have grades that are too steep.
- Drainage Structures – west side of runway
    - Catch basin at Sta. P 8+02 and an offset of 195’ L
    - Catch basin at Sta. P 12+19 and an offset of 184’ L
    - Catch basin at Sta. P 14+40 and an offset of 242’ L
    - Drainage manhole at Sta. P 15+50 and an offset of 242’ L
    - Catch basin at Sta. P 20+03 and an offset of 187’ L
    - Catch basin at Sta. P 20+03 and an offset of 182’ L
    - Catch basin at Sta. P 25+71 and an offset of 225’ L
    - Catch basin at Sta. P 30+84 and an offset of 223’ L
- Drainage Structures – east side of runway
    - Catch basin at Sta. P 13+34 and an offset of 125’ R
    - Drainage manhole at Sta. P 13+58 and an offset of 180’ R
    - Catch basin at Sta. P 20+01 and an offset of 125’ R
    - Catch basin at Sta. P 32+79 and an offset of 132’ R
    - Catch basin at Sta. P 20+03 and an offset of 187’ R
    - Catch basin at Sta. P 35+88 and an offset of 134’ R
    - Catch basin at Sta. P 38+94 and an offset of 131’ R
    - Catch basin at Sta. P 42+33 and an offset of 226’ R

Runway 6 Approach End Deficiencies (See Figure 2-2)

The features located within the RSA at the Runway 6 approach end are as follows:
(The lengths shown below are from the stopway end, which is the beginning of the 1,000-foot RSA.)

- Grades not meeting criteria
  - The top of bank is located 45' from the end of the stopway along the extended runway centerline.
- Localizer
  - The localizer is at Sta. A6 10+00 (500') along the extended centerline.
- Localizer building
  - The localizer building is at Sta. A6 10+51 (551') and an offset of 192' L.
- Juniper shrubs
  - The shrubs are located a distance of 759' to 420' out with an offset of 250' L to 250' R.
- Treeline
  - The treeline is located a distance of 1,000' to 720' out with an offset of 250' L to 250' R.
- Perimeter fence
  - The perimeter fence is located a distance of 890' to 435' out with an offset of 250' L to 250' R.
- Swale
  - The swale is located a distance of 945' to 530' out with an offset of 250' L to 250' R.
- Richmond Road
  - Richmond Road is located a distance of 1,000' to 550' out with an offset of 250' L to 250' R.
- Drainage manhole
  - Drainage manhole at Sta. A6 9+37 (437') and an offset of 200' R.
- Utility poles
  - Utility pole at Sta. A6 14+98 (998') and an offset of 217' L.
  - Utility pole at Sta. A6 14+18 (918') and an offset of 127' L.
  - Utility pole at Sta. A6 13+34 (834') and an offset of 30' L.
  - Utility pole at Sta. A6 12+49 (749') and an offset of 67' R.
  - Utility pole at Sta. A6 11+71 (671') and an offset of 155' R.
  - Utility pole at Sta. A6 10+88 (588') and an offset of 250' R.
- Fire hydrants
  - Fire hydrant at Sta. A6 14+58 (958') and an offset of 240' L.
  - Fire hydrant at Sta. A6 12+52 (752') and an offset of 3' L.
  - Fire hydrant at Sta. A6 11+21 (621') and an offset of 141' R.
  - Fire hydrant at Sta. A6 10+38 (538') and an offset of 242' R.

Runway 24 Approach End Deficiencies (See Figure 2-4)

The features located within the RSA at the Runway 24 approach end are as follows:
(Lengths shown are from runway end.)

- Grades not meeting criteria
  - The top of bank is located a distance of 143' to 56' out with an offset of 250' L to 250' R.
- MALSR
  - MASLR tower at Sta. A24 2+45 along the extended centerline.
  - MASLR tower at Sta. A24 4+65 along the extended centerline.
  - MASLR tower at Sta. A24 6+45 along the extended centerline.
  - MASLR tower at Sta. A24 8+25 along the extended centerline.
- Ditches/swales
  - The ditch inside the perimeter fence starts at Sta. A24 2+90 and an offset of 45' R and flows to Sta. A24 3+96 and an offset of 250' L.
  - The swale starts at Sta. A24 4+05 and an offset of 42' L and flows to Sta. A24 5+83 and an offset of 250' L.
  - The swale starts at Sta. A24 3+60 and an offset of 84' R and flows to Sta. A24 6+40 and an offset of 250' L.
- Perimeter fence
  - The perimeter fence is located a distance of 130' to 556' out with an offset of 250' L to 250' R.
- Golf course fence
  - The golf course is located a distance of 235' to 663' out with an offset of 250' L to 250' R.
- Bishop Road
  - The centerline of Bishop Road is located a distance of 166' to 583' out with an offset of 250' L to 250' R.
- Fire hydrants
  - Fire hydrant at Sta. A24 4+81 and an offset of 61' L.
- Road signs
  - There are numerous signs located within the RSA along Bishop Road.

SECTION 3 – Alternatives for RSA Improvement

3.01 Alternatives from the Airport Master Plan

The Airport Master Plan has developed thirty-six alternatives that will allow the airport to accommodate the demands imposed upon the airport. Alternatives to be considered include options for maintaining existing runway length (which is currently 5,102 feet). Several additional options consider providing additional runway lengths of 5,500 feet and 6,000 feet.

See Appendix A, Alternative Descriptions and Figures from Airport Master Plan for a more detailed explanation of alternatives. For the latest updates of the descriptions and figures, see the latest update of the Airport Master Plan.

The alternatives created for the master plan were evaluated and a cost was derived for each. The total project cost includes probable construction, land acquisition, noise mitigation, engineering and administration.

The total land acquisition probable project costs were determined by plotting a large scale plan that encompasses the airport and surrounding land that may need to be acquired. The runway object free area, runway safety area, runway protection zone and any road relocations were then transferred to the plan in order to determine which parcels were affected. If only a small portion of a parcel was affected, it was assumed that the entire parcel would be acquired.

The costs associated with noise mitigation assume a per unit cost of $47,000 (including design, construction, and inspection) for residencies within the 65 DNL. Noise contours were not developed for all alternatives but data and cost were extrapolated from noise contours that were completed for the remaining alternatives.

As requested by the FAA, the project cost allocation for the RSA improvement costs for each alternative was also determined. Alternatives 15 through 36 required a hypothetical alternative in order to determine the project cost allocation for the RSA improvements.

As stated in the FAA Order 5200.9, the land acquisition costs for the RSA improvements are only for the runway safety area, runway object free area and any land needed for road relocations. This does not include land in the runway projection zone. Noise mitigation was not allocated to any RSA improvement hypothetical alternatives because the length of runway would not change from what is currently being utilized.

The capacity portion for each of the projects would be the Total Probable Project Cost minus the RSA allocation.

The cost summaries for each alternative can be viewed in a more detailed table in Appendix B, Probable Project Cost Matrix

SECTION 4 – Alternatives Evaluation

4.01 Evaluation Criteria from the Airport Master Plan

In the Airport Master Plan, the alternatives have undergone a comparative evaluation process using qualitative and quantitative factors. Ideally, the evaluation process would express all factors involved in terms of a common quantitative measure, such as dollar value or number of homes impacted by sound. Because of the difficulties inherent in expressing certain factors in quantifiable terms, the evaluation process must rely on the use of both quantitative and qualitative measures.

The alternatives evaluation process considered the following five categories as a basis for individual evaluation as well as for comparison purposes:

- Airport Design Standards
- Environmental Impacts
- Development Costs
- Facility Requirements
- Implementation Feasibility.

The Airport Master Plan shall select an alternative that can achieve the best overall solution to the airport's needs.

SECTION 5 – Financial Feasibility of RSA Improvements

5.01 FAA Order 5200.9

FAA Order 5200.9, *Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems,* was published on March 15, 2004. The order's purpose as described in the publication is the following:

> "This is guidance for (a) comparing various runway safety area (RSA) improvement alternatives with improvements that use Engineered Material Arresting Systems (EMAS); and (b) determining the maximum financially feasible cost for RSA improvements, whether they involve EMAS or not. This guidance will help airport sponsors develop a sound proposed action for environmental review purposes. Regional Airports Division Managers should also use it when preparing an RSA practicability determination as required by FAA Order 5200.8, *Runway Safety Area Program*.
>
> This guidance uses a standard EMAS installation as a benchmark for comparing and determining the best financially feasible alternative for RSA improvements. It should be used for new runway projects when comparing the costs of providing a standard RSA to the costs of installing EMAS. It may also be used to justify decreasing the dimensions of existing RSAs in connection with runway extension projects (see Paragraph 8)."

This order provides a methodology for determining the maximum financially feasible cost for RSA improvements.

5.02 Determination of Maximum Feasible Cost

FAA Order 5200.9 outlines the required steps to establish the maximum feasible cost for improving the RSA. The major steps are as follows:

1. Determine design aircraft
2. Determine EMAS bed length
3. Determine maximum feasible cost

Design Aircraft

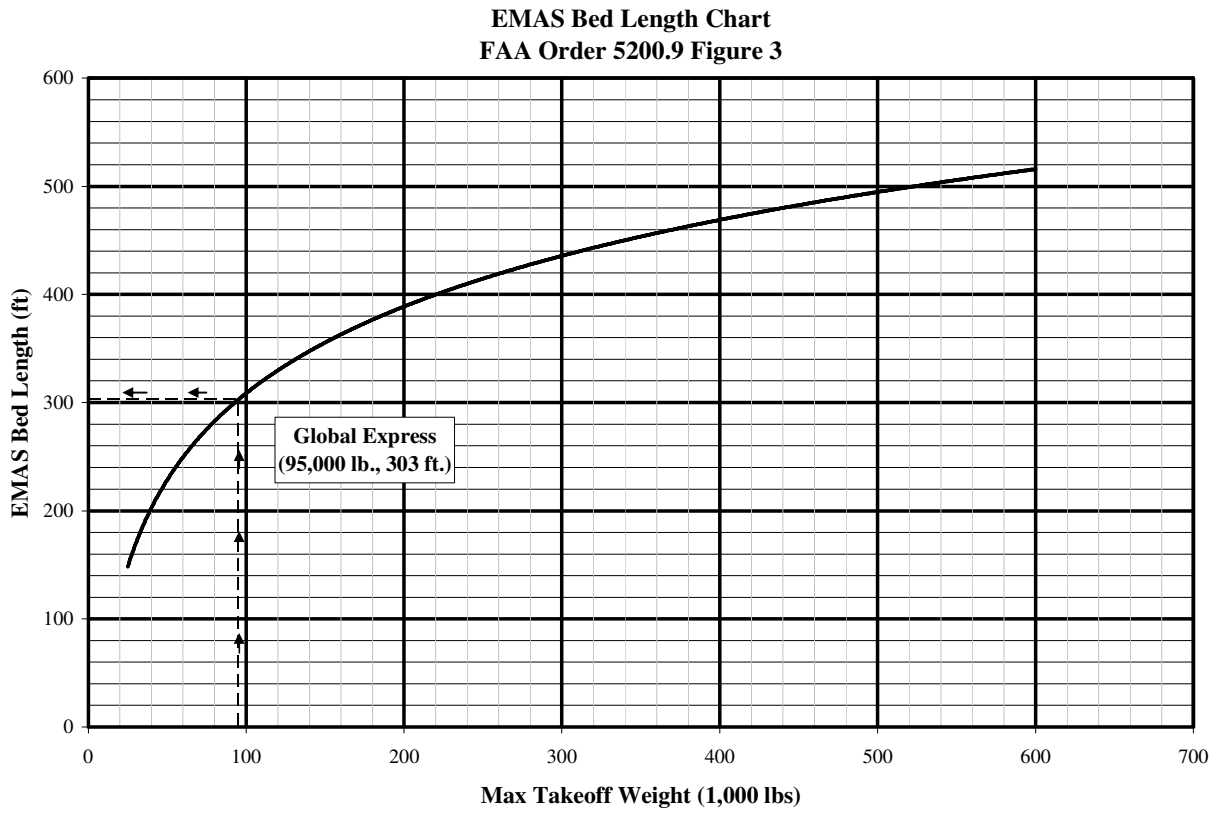
The design aircraft for this analysis is the aircraft that regularly uses the runway and places greatest demand on the EMAS. This is usually the heaviest or largest aircraft that regularly uses the runway. Normally "regularly use" for federal funding is at least 500 operations on the runway. However, Order 5200.9 recommends considering future trends in runway use before making a final determination of design aircraft, as it relates to this analysis.

As discussed in Section 2, the ongoing Airport Master Plan at Cuyahoga County Airport recommended an airport reference code (ARC) of D-II and identified the critical design aircraft

as a Gulfstream IV. However, a regular tenant of the airport operates a Global Express jet, which is heavier than the Gulfstream IV, and would be more demanding on an EMAS. Although the Global Express jet does not currently make 500 operations on an annual basis, it does regularly use the runway. The Global Express jet weighs 95,000 pounds maximum at takeoff, and has an ARC of C-III, which does not change the design standards for the runway safety area.

EMAS Bed Length

A general correlation developed by the FAA relates maximum takeoff weight and estimated EMAS bed length. FAA Order 5200.9 uses this relationship to develop an estimated EMAS bed length, which is used for planning and evaluation purposes only. An interpretation by C&S Engineers of **Figure 3** from FAA Order 5200.9 is shown below.

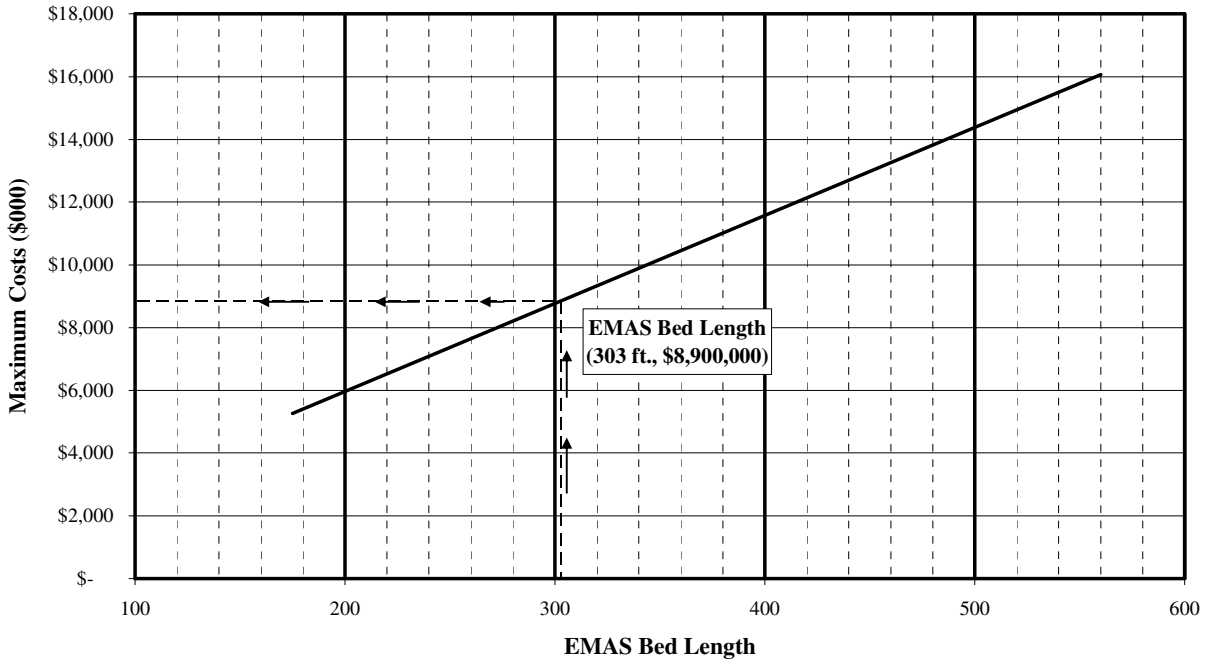


The maximum takeoff weight of 95,000 lbs. corresponds to an EMAS bed length of 303 feet.

Maximum Feasible Cost

Another correlation developed by the FAA compares the EMAS bed length to the maximum feasible cost for improving the runway safety area. The maximum feasible expenditure is applied to the improvement of the entire RSA, including both runway ends and the full width of the RSA. An interpretation by C&S Engineers of **Figure 4** of FAA Order 5200.9 is shown below.

Maximum Feasible RSA Improvement Cost
(100 foot runway width)
FAA Order 5200.9 Figure 4



The EMAS bed length of 303 feet corresponds to a maximum feasible RSA improvement cost of $8,900,000.

The selection of preferred alternatives for runway safety area improvements will be selected in the Airport Master Plan.

APPENDIX A

ALTERNATIVE DESCRIPTIONS AND FIGURES FROM MASTER PLAN

APPENDIX B

PROBABLE PROJECT COST MATRIX

Cuyahoga County Airport
Runway Safety Area Study
Cost Evaluation of Additional Alternatives

Probable Project Cost Matrix

	Total Probable Project Cost (millions)	Total Probable Project Construction Costs (millions)	Total Land Acquisition Probable Project Costs (millions)	Total Noise Mitigation Probable Project Costs (millions)	Project Cost Allocation - RSA Improvements (millions)	Project Cost Allocation - Capacity (millions)
	Column A = Column B+C+D	Column B	Column C	Column D	Column E	Column F = Column A - E
Alt. 1: No Action	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Alt. 2: Fully Compliant RSAs w/o Extending RW	$6.0	$5.0	$1.0	$0.0	$5.0	$1.0
Alternatives for Maintaining Existing Runway Length (5,102 feet)						
Alt. 3: RW Reorientation and/or Relocation	$114.8	$72.0	$42.8	N/A	$102.4	$12.4
Alt. 4: RW 6 Shift to West (Relocate Richmond Rd.)	$17.0	$13.1	$3.1	$0.8	$13.8	$3.2
Alt. 5: RW 24 Shift to East (Relocate Bishop Rd.)	$15.8	$13.0	$2.7	$0.1	$13.0	$2.8
Alt. 6: RW 24 Shift to East (Tunnel Bishop Rd.)	$28.4	$25.6	$2.7	$0.1	$25.6	$2.8
Alt. 7: Road Relocations at Both Runway Ends	$18.0	$15.6	$2.0	$0.3	$16.3	$1.6
Alt. 8: Declared Distances	$6.0	$3.2	$2.0	$0.8	$3.2	$2.8
Alt. 9: EMAS at Runway 6 End	$12.3	$9.2	$2.3	$0.8	$9.2	$3.1
Alt. 10: EMAS at Runway 24 End	$12.8	$10.6	$2.1	$0.1	$10.6	$2.2
Alt. 11: EMAS at Both Runway Ends	$19.1	$16.3	$2.5	$0.3	$16.3	$2.8
Alt. 12: Combination of RW 24 Shift to West & RW 6 EMAS	$17.7	$15.4	$2.0	$0.3	$15.4	$2.4
Alt. 13: Combination of RW 6 Shift to West & RW 24 EMAS	$15.9	$13.7	$2.1	$0.1	$13.7	$2.3
Alt. 14: Combination with Displaced Threshold	$6.7	$4.2	$2.4	$0.2	$4.2	$2.6
Alternatives for Providing 5,500-foot Runway						
Alt. 15: Runway Reorientation and/or Relocation	$73.8	$49.1	$24.8	N/A	$63.6	$10.3
Alt. 16: RW 6 Ext. to West (Relocate Richmond Rd.)	$19.0	$13.0	$4.9	$1.1	$13.1	$5.9
Alt. 17: RW 24 Ext. to East (Relocate Bishop Rd.)	$19.2	$13.4	$5.7	$0.1	$13.0	$6.2
Alt. 18: RW 24 Ext. to East (Tunnel Bishop Rd.)	$32.0	$27.1	$4.8	$0.1	$25.6	$6.4
Alt. 19: Road Relocations at Both Runway Ends	$19.1	$15.6	$3.2	$0.3	$13.9	$5.2
Alt. 20: Declared Distances	$8.1	$4.2	$3.8	$0.2	$3.2	$4.9
Alt. 21: EMAS at Runway 6 End	$15.3	$10.4	$4.6	$0.3	$9.9	$5.4
Alt. 22: EMAS at Runway 24 End	$15.3	$11.1	$3.9	$0.3	$10.6	$4.7
Alt. 23: EMAS at Both Runway Ends	$20.8	$16.5	$3.9	$0.3	$16.3	$4.5
Alt. 24: Combination of RW 24 Shift to West and RW 6 EMAS	$21.0	$16.8	$3.9	$0.3	$16.4	$4.7
Alt. 25: Combination with Displaced Thresholds	$11.5	$5.7	$5.1	$0.7	$4.7	$6.7
Alternatives for Providing 6,000-foot Runway						
Alt. 26: Runway Reorientation and/or Relocation	$117.4	$70.7	$46.7	N/A	$92.2	$25.2
Alt. 27: RW 6 Ext. to West (Tunnel Richmond Rd.)	$39.4	$29.2	$8.7	$1.5	$24.2	$15.2
Alt. 28: RW 24 Ext. to East (Relocate Bishop Rd.)	$34.0	$21.4	$12.4	$0.2	$13.0	$21.0
Alt. 29: RW 24 Ext. to East (Tunnel Bishop Rd.)	$43.5	$32.0	$11.3	$0.2	$25.6	$17.9
Alt. 30: Road Relocations at Both Runway Ends	$26.1	$20.1	$5.5	$0.5	$14.3	$11.9
Alt. 31: Declared Distances	$39.8	$29.3	$10.3	$0.2	$23.3	$16.6
Alt. 32: EMAS at Runway 6 End (Tunnel Bishop Rd.)	$41.6	$34.0	$7.2	$0.4	$29.2	$12.4
Alt. 33: EMAS at Runway 24 End	$37.9	$33.4	$3.9	$0.6	$13.7	$24.2
Alt. 34: EMAS at Both Runway Ends	$29.8	$23.3	$6.1	$0.4	$16.3	$13.5
Alt. 35: Combination of RW 24 Ext. and RW 6 EMAS	$25.4	$18.4	$6.7	$0.3	$13.1	$12.4
Alt. 36: RW 6 Ext. to West (Relocate Richmond Rd.)	$27.3	$17.1	$8.7	$1.5	$13.8	$13.5

NOTE: Land Acquisition Costs include cost to acquire land, standard relocation package costs and services cost based on most recently updated assessments in Lake County and Cuyahoga County.

APPENDIX C

FAA CONCURRENCE WITH THE FORECASTS LETTER

U.S. Department of Transportation
Federal Aviation Administration

Detroit Airports District Office
Metro Airport Center
11677 South Wayne Road, Ste. 107
Romulus, MI 48174

August 12, 2004

received
AUG 17 2004

Mr. Steve Nagy, Airport Director
Cuyahoga County Airport
26300 Curtiss Wright Parkway
Cleveland, OH 44143

Dear Mr. Nagy:

Cuyahoga County Airport
Master Plan Update Review of Aviation Forecasts

We have reviewed the Cuyahoga County Airport Aviation Forecasts that were received in this office on July 30, 2004.

Based on our review of the document, we provided recommended changes to the draft Terminal Area Forecast (TAF) which is currently being reviewed by the appropriate FAA field officials. The FAA concurs with the forecasts presented for "Planning Purposes Only" for the completion of the Master Plan Update and the Runway 5/23 Safety Area Study.

Upon receipt of this letter the completed Runway 5/23 Safety Area Study can be submitted to Ms. Stephanie Swann, Program Manager at (734) 229-2945 and all additional Master Plan Update documentation to myself.

Please forward this correspondence to the appropriate consultants and do not hesitate to contact me at (734) 229-2958 or katherine.s.jones@faa.gov if you have any additional questions.

Sincerely,

Katherine S. Jones

Katherine S. Jones
Community Planner
Detroit Airports District Office

cc: ODOT/OA

APPENDIX H

GLOSSARY AND ABBREVIATIONS

Abbreviated Aviation Terms and Names

AAAE	American Association of Airport Executives
AC	Advisory Circular (FAA)
ACHP	Advisory Council on Historic Preservation
ACI-NA	Airports Council International-North America
ACM	Asbestos-containing materials
ADA	Americans with Disabilities Act
ADO	Airports District Office (FAA)
ADPM	Average day of the peak month
AGL	Above ground level
AIP	Airport Improvement Program
AIR-21	Aviation Investment and Reform Act for the 21st Century
ALP	Airport Layout Plan
ALPA	Airline Pilots Association
ALUC	Airport Land Use Commission
ANG	Air National Guard
AOA	Air operations area
AOPA	Aircraft Owners and Pilots Association
APM	Automated people mover
APU	Auxiliary power unit
AQMP	Air Quality Management Plan
ARC	Airport Reference Code
ARFF	Aircraft rescue and fire fighting (formerly crash/fire/rescue (CFR))
ARP	Airport reference point
ARSA	Airport Radar Service Area (now, Class C airspace)
ARSR	Air route surveillance radar
ARTCC	Air Route Traffic Control Center
ASV	Annual service volume
ATA	Air Transport Association of America
ATC	Air traffic control
ATCT	Airport traffic control tower
BCA	Benefit-cost analysis (FAA)
BEA	Bureau of Economic Analysis (U.S. Department of Commerce)
BIDS	Baggage Information Display System
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics (U.S. Department of Labor)
BMP	Best management practices
BRL	Building restriction line
CATER	Collection and Analysis of Terminal Records
CBD	Central Business District
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund)

CFR	Code of Federal Regulation
CMSA	Consolidated Metropolitan Statistical Area
CO	Carbon monoxide
CPI	Consumer Price Index
dBA	A-weighted decibels
DBE	Disadvantaged Business Enterprise
DBO	Date of Beneficial Occupancy
DEIS	Draft Environmental Impact Statement
DGPS	Differential global positioning system
DME	Distance measuring equipment
DNL	Day-night average sound level (expressed in dBA)
DOT	Department of Transportation
EA	Environmental Assessment
EDMS	Emissions and Dispersion Modeling System
EIR	Environmental Impact Report (state)
EIS	Environmental Impact Statement (federal)
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed base operator
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FFY	Federal Fiscal Year
FHA	Federal Housing Administration
FHWA	Federal Highway Administration
FICAN	Federal Interagency Committee on Aircraft Noise
FICON	Federal Interagency Committee on Noise
FICUN	Federal Interagency Committee on Urban Noise
FIDS	Flight Information Display System
FIP	Federal Implementation Plan
FIRM	Flood Insurance Rate Map
FIS	Federal Inspection Services
FONSI	Finding of No Significant Impact
FSS	Flight service station
FTZ	Foreign trade zone
FY	Fiscal Year
GA	General aviation
GAO	Government Accounting Office
GARB	General Airport Revenue Bonds
GDP	Gross domestic product
GDS	Global distribution system
GIS	Geographic Information System

GPO	Government Printing Office
GPS	Global positioning system
GSE	Ground support equipment
GTC	Ground Transportation Center
HIRL	High-intensity runway lights
HOV	High occupancy vehicle
HUD	U.S. Department of Housing and Urban Development
IAB	International Arrivals Building
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IFR	Instrument flight rules
ILS	Instrument landing system
IMC	Instrument meteorological conditions
INM	Integrated Noise Model
INS	Immigration and Naturalization Service
ISTEA	Intermodal Surface Transportation Efficiency Act (1991)
IT	Information technology
ITB	International Terminal Building
LBE	Local Business Enterprise
LDA	Localizer-type directional aid
LLWAS	Low Level Windshear Advisory System
LOI	Letter of Intent
LOS	Level of service
MALS	Medium intensity approach lighting system
MALSF	Medium-intensity approach lighting system with sequenced flashers
MALSR	Medium-intensity approach lighting system with runway alignment indicator lights
MBE	Minority-owned Business Enterprise
mgd	Million gallons per day
MGTW	Maximum gross takeoff weight
MIRL	Medium-intensity runway lights
MLS	Microwave landing system
MOA	Memorandum of Agreement
MOU	Memorandum of Understandign
mph	Miles per hour
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
MSL	Mean sea level
MTOW	Maximum takeoff weight
NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station

NAS	National Airspace System
NCDC	National Climatic Data Center
NCP	Noise Compatibility Program
NDB	Nondirectional radio beacon
NEPA	National Environmental Policy Act
NLA	New Large Aircraft
NLR	Noise level reduction
NO	Nitrogen oxides
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOP	Notice of Preparation
NPA	National Planning Association
NPDES	National Pollutant Discharge Elimination System
NPIAS	National Plan of Integrated Airport Systems
NTSB	National Transportation Safety Board
NWS	National Weather Service
O&D	Origin and destination
O&M	Operation and maintenance
OAG	Official Airline Guide (a registered trademark of Official Airline Guides, Inc.)
ODALS	Omnidirectional Approach Lighting System
OFA	Object free area
OFZ	Obstacle free zone
OSHA	Occupational Safety and Health Administration
PAL	Planning activity level
PAPI	Precision approach path indicator
PAR	Precision approach radar
PCB	Polychlorinated biphenyls
PFC	Passenger facility charge
PL	Public Law
PM	Particulate matter
PMSA	Primary Metropolitan Statistical Area
PRM	Precision runway monitor
R&D	Research and development
RAIL	Runway alignment indicator lights
RAPCON	Radar approach control
RDSIM	Runway Delay Simulation Model (FAA)
REIL	Runway end identifier lights
RIMS	Regional Input-Output Modeling System
ROD	Record of Decision
RPM	Revenue passenger miles
RPZ	Runway protection zone (formerly clear zone)
RSA	Runway safety area
RVR	Runway visual range

SEL	Sound exposure level
SHPO	State Historic Preservation Officer
SIMMOD	Airport and Airspace Simulation Model (FAA)
SIP	State Implementation Plan
SLUCM	Standard Land Use Coding Manual
STAR	Standard Terminal Arrival Route
SWAP	Severe Weather Avoidance Plan
TACAN	Tactical area navigational aid
TCA	Terminal Control Area (now, Class B airspace)
TCAS	Terminal Collision Avoidance System
TDM	Transportation Demand Management
TEA 21	Transportation Equity Act for the 21st Century (1998)
TERPS	U.S. Standard for Terminal Instrument Procedures (FAA Handbook 8260.3B)
TODA	Takeoff distance available
TORA	Takeoff run available
TRACON	Terminal Radar Approach Control
TRB	Transportation Research Board
USC	United States Code
USGS	United States Geological Survey
USPS	United States Postal Service
UST	Underground storage tank
VASI	Visual approach slope indicator
VMC	Visual meteorological conditions
VMT	Vehicle miles traveled
VOC	Volatile organic compounds
VOR	Very-high frequency omnidirectional range station
VORTAC	Very-high frequency omnidirectional range tactical air navigation
VFR	Visual flight rules
WAAS	Wide Area Augmentation System
WBE	Woman-owned Business Enterprise
WVAS	Wake Vortex Advisory System

GLOSSARY OF TERMS

A-WEIGHTED SOUND LEVEL (dBA) The ear does not respond equally to sound frequencies. It is less efficient at low and high frequencies than it is at medium or speech-range frequencies. Thus, to obtain a single number representing the sound level of a noise having a wide range of frequencies in a manner representative of the ear's response, it is necessary to reduce the effects of the low and high frequencies with respect to the medium frequencies. The resultant sound level is said to be A-weighted, and the units are decibels (dB); hence, the abbreviation is dBA. The A-weighted sound level is also called the noise level. Sound level meters have an A-weighting network for measuring A-weighted sound level.

ACCEPTABLE (DNL not exceeding 65 decibels) The noise exposure may be of some concern but common building constructions will make the indoor environment acceptable and the outdoor environment will be reasonably pleasant for recreation and play.

AIP See AIRPORT IMPROVEMENT PROGRAM.

AIR CARRIER, CERTIFICATED ROUTE An air carrier holding a Certificate of Public Convenience and Necessity, issued by the Federal Aviation Administration (FAA), to conduct scheduled services over specified routes and a limited amount of nonscheduled operations.

AIR CARRIER, COMMUTER An air taxi operator who (1) performs at least five round trips per week between two or more points and publishes flight schedules that specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a contract with the U.S. Postal Service.

AIRCRAFT DELAY The additional travel time, caused by aircraft congestion, taken by an aircraft to move from point A to point B.

AIRCRAFT OPERATION An aircraft arrival (landing) or an aircraft departure (takeoff) represents one aircraft operation. A low approach below traffic pattern altitudes or a touch-and-go operation is counted as both a landing and a takeoff, that is, as two operations. Aircraft operations are recorded by the FAA in four categories: air carrier, air taxi, general aviation, and military.

AIR CARRIER Operations performed in revenue service by certificated route air carriers.

AIR TAXI/COMMUTER Operations performed by operators of aircraft holding an air taxi certificate under Part 298 of the FAA regulations. This category includes commuter airline operations (excluding certificated commuter airlines), mail carriers under contract with the U.S. Postal Service, and operators of nonscheduled air taxi service.

GENERAL AVIATION All civil aircraft operations not classified as air carrier or air taxi operations.

MILITARY Operations performed by military groups, such as the Air National Guard, the U.S. Air Force, or the U.S. Marine Corps. Aircraft operations may also be described as local or itinerant.

LOCAL Local operations are performed by aircraft that (1) operate in the local traffic pattern or within sight of the airport, (2) are known to be departing for, or arriving from, flight in local practice areas within a 20-mile radius of the airport, and (3) execute simulated instrument approaches or low passes at the airport.

ITINERANT - All aircraft operations other than local operations.

AIRCRAFT PARKING APRON - See APRON.

AIRCRAFT PARKING POSITION - The area on the ramp where aircraft park for servicing and preparation for flight.

AIRFIELD CAPACITY (HOURLY) - The maximum number of aircraft operations (landings or takeoffs) that can take place on an airfield in one hour under specific conditions.

AIR NAVIGATION FACILITY (NAVAID) - A facility designed for use as an aid to air navigation, including landing areas, lights, any apparatus or equipment for disseminating weather information, for signaling, for radio direction-finding, or for radio or other electronic communication, and any other structure or mechanism having a similar purpose for guiding and controlling flight in the air or the landing or takeoff of aircraft.

AIRPORT ACCESS AND PARKING PLAN - A plan that indicates the proposed routing of airport access facilities to central business districts and to points of connection with existing or planned arteries and based on airport access studies that take into account traffic demands, existing and potential access problems, highway and rapid rail facilities, and in-town terminal facilities. The plan also incorporates on- and off-airport parking facilities for passengers, employees, and visitors and is a required element of an airport master plan.

AIRPORT APPROACH AND RUNWAY PROTECTION ZONE LAYOUT PLAN - A plan map showing the imaginary surfaces that specify the maximum height of structures, trees, and other phenomena around an airport and which is prepared in accordance with FAR Part 77, "Objects Affecting Navigable Airspace." The plan is required as part of an airport master plan.

AIRPORT ELEVATION - The highest point of an airport's usable runways measured in feet above mean sea level (msl).

AIRPORT ENVIRONS - The area surrounding an airport that is considered to be directly affected by the presence and operation of the airport.

AIRPORT IMAGINARY SURFACES - Imaginary surfaces established at an airport for obstruction determination purposes, and consisting of primary, approach-departure, horizontal, vertical, conical, and transition surfaces.

AIRPORT IMPROVEMENT PROGRAM (AIP) - A program administered by the Federal Aviation Administration to provide financial grants-in-aid for airport planning, airport development projects, and noise compatibility programs. The program was established through the Airport and Airway Improvement Act of 1982, which was incorporated as Title V of the Tax Equity and Fiscal Responsibility Act of 1982 (P.L. 97-248).

AIRPORT LAND USE PLAN - A generalized plan depicting proposed land uses within the airport boundary. The land use plan is a required element of an airport master plan.

AIRPORT LAYOUT PLAN (ALP) - A plan for an airport showing boundaries and proposed additions to all areas owned or controlled by the sponsor for airport purposes, the location and nature of existing and proposed airport facilities and structures, and the location on the airport of existing and proposed navigation aids and improvements thereon. The ALP is a required element of an airport master plan.

AIRPORT MASTER PLAN – An assembly of appropriate documents and drawings covering the development of a specific airport from a physical, economic, social, and political jurisdictional perspective. The airport master plan includes an airport land use plan, airport layout plan, airport approach and runway protection zone layout plan, terminal area plan, airport access and parking plan, staging plan, and financial plan.

AIRPORT NOISE AND CAPACITY ACT OF 1990 – Public Law 101-508, enacted November 5, 1990. Two important provisions of the law were the establishment of a national aviation noise policy (Sections 9305 and 9309) and the creation of a passenger facility charge (Sections 9110 and 9111), which enables airport sponsors to impose fees on the tickets issued to departing passengers. An amendment to FAR Part 91, "Transition to an All Stage 3 Fleet Operating in the 48 Contiguous United States and the District of Columbia," and new FAR Part 161, "Notice and Approval of Airport Noise and Access Restrictions," implement the national noise policy. New FAR Part 158, "Passenger Facility Charges," implements that portion of the Act authorizing the imposition of such charges.

AIRPORT SPONSOR – A public agency or tax-supported organization, such as an airport authority, that is authorized to own and operate an airport, to obtain property interests, to obtain funds, and to be legally, financially, and otherwise able to meet all applicable requirements of current laws and regulations.

AIRPORT SURVEILLANCE RADAR (ASR) – Radar providing position of aircraft by azimuth and range data. It does not provide elevation data. ASR is designed for range coverage up to 60 nautical miles and is used by terminal area air traffic control.

AIRPORT TRAFFIC CONTROL TOWER (ATCT) – A central operations facility in the terminal air traffic control system, consisting of a tower cab structure, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices, to provide safe and expeditious movement of terminal air traffic.

AIRSPACE – Space in the air above the surface of the earth or a particular portion of such space, usually defined by the boundaries of an area on the surface projected upward.

AIRSPEED – The speed of an aircraft relative to its surrounding air mass. See: calibrated airspeed; indicated airspeed, true airspeed.

AIR TRAFFIC CONTROL (ATC) – A service operated by appropriate authority (the FAA) to promote the safe, orderly, and expeditious flow of air traffic.

AMBIENT NOISE – The total of all noise in a system or situation, independent of the presence of the specific sound to be measured. In acoustical measurements, strictly speaking, ambient noise means electrical noise in the measurement system. However, in popular usage, ambient noise is also used to mean "background noise" or "residual noise."

APPROACH SPEED – The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration.

APRON – A paved area that provides the connection between the terminal buildings and the airfield. The apron includes aircraft parking areas, called ramps, and aircraft circulation and taxiing areas for access to these ramps. On the ramp, aircraft park in locations typically designated as gate positions or gates.

ATC See AIR TRAFFIC CONTROL.

AUTOMATED RADAR TERMINAL SYSTEM (ARTS) Computer-aided radar display subsystems capable of associating alphanumeric data with radar returns.

AVERAGE DAILY TRAFFIC (ADT) The average traffic flow on a specific street, road, or highway segment. ADT can be either total average flow or the average traffic in each direction.

AVIATION SAFETY AND NOISE ABATEMENT ACT OF 1979 Public Law 96-193, enacted February 18, 1980. The purpose of the Act is to provide assistance to airports in preparing and carrying out noise compatibility programs and in assuring continued safety for aviation. The Act also contains provisions that extend until January 1, 1988, the requirement for certain types of aircraft to comply with Part 36 of the Federal Aviation Regulations (see also FAR Part 36).

BACKGROUND NOISE See AMBIENT NOISE.

BENEFICIAL OCCUPANCY See DATE OF BENEFICIAL OCCUPANCY.

BUILDING CODE A legal document that sets forth requirements to protect the public health, safety, and general welfare as they relate to the construction and occupancy of buildings and structures. The code establishes the minimum acceptable conditions for matters found to be in need of regulation. Topics generally covered are: exits, fire protection, structural design, sanitary facilities, light, and ventilation. Sound insulation may also be included.

BUILDING PERMIT A permit issued by a local political jurisdiction (village, town, city, or county) to erect or modify a structure.

BUILDING RESTRICTION LINE (BRL) The BRL should be located on an airport layout plan to identify suitable locations for building areas on airports. It is recommended that the BRL encompass the runway protection zones, the runway visibility zone, areas required for airport traffic control tower clear line of sight, and all airport areas with less than 35-foot clearance under the FAR Part 77 surfaces.

CAPITAL IMPROVEMENT PROGRAM (CIP) A multiyear (sometimes a single year) schedule of capital expenditures for construction or equipment at an airport.

CEQ (COUNCIL ON ENVIRONMENTAL QUALITY) REGULATIONS CEQ Regulations implementing the National Environmental Policy Act of 1969 (NEPA) were published in the Federal Register on November 29, 1978. References to the 4 Regulations in FAA Order 5050.4A (Airport Environmental Handbook) identify a given section, e.g., CEQ 1508 or CEQ 1508.8. (See also IMPACT.)

CONTOUR See NOISE CONTOUR.

CONTRAFLOW - The FAA approved a procedure called "contraflow" as part of our current Noise Compatibility Program. Weather permitting, this procedure calls for all operations between the hours of 10:00 p.m. and 7:00 a.m. to be conducted south of the airport, where extensive mitigation programs have been implemented with Federal, state, and local resources. Specifically, this procedure sets aside the first few overnight hours to accommodate arrivals from the south, and the last few for departures to the south, with some room for transition before and after each block.

DATE OF BENEFICIAL OCCUPANCY (DBO) - The date on which the replacement terminal facilities are so substantially complete that they are usable by Airport tenants and the public without hazard or undue inconvenience.

DAY-NIGHT AVERAGE SOUND LEVEL (DNL) - A method for predicting, by a single number rating, cumulative aircraft noise that affects communities in airport environs. The DNL value represents decibels of noise as measured by an A-weighted sound-level meter (see also). In the DNL procedure, the noise exposure from each aircraft takeoff or landing at ground level around an airport is calculated, and these noise exposures are accumulated for a typical 24-hour period. (The 24-hour period often used is the average day of the peak month for aircraft operations during the year being analyzed.) Daytime and nighttime noise exposures are considered separately. A weighting factor equivalent to a penalty of 10 decibels is applied to operations between 10 p.m. and 7 a.m. to account for the increased sensitivity of people to nighttime noise. The DNL values can be expressed graphically on maps using either contours or grid cells. DNL may also be used for measuring other noise sources, such as automobile traffic, to determine combined noise effects.

dBA - See A-WEIGHTED SOUND LEVEL.

DECIBEL (dB) - A unit for measuring the volume of a sound, equal to the logarithm of the ratio of the intensity of the sound to the intensity of an arbitrarily chosen standard sound.

DEPLANED PASSENGERS - The volume of passengers inbound to an airport. The annual passenger volume of an airport is the total of deplaned and enplaned passengers (see also).

DEREGULATION ACT - Airline regulatory reform act of 1978. Designed, among other things, to encourage competition among domestic airlines, the Act allows an airline greater freedom to enter and leave any given market.

DEVELOPMENT PLAN - A detailed land use plan for all or specific areas on an airport. The plan usually includes a plot map depicting parcel size and configuration, access, land use categories, utilities, and performance standards for each parcel and use category.

DISPLACED THRESHOLD - A runway threshold that is located at a point other than the designated beginning of the runway.

DIVERT - To change from a scheduled landing base to an alternate airfield.

DNL - See DAY-NIGHT AVERAGE SOUND LEVEL.

EFFECTS - See IMPACT.

ENGINE RUNUP AREA - An area on an airport where aircraft engines are serviced or tested. The noise from such servicing or testing can affect neighborhoods adjacent to the airport.

ENPLANED PASSENGERS - The volume of passengers outbound from an airport. The annual passenger volume of an airport is the total of enplaned and deplaned passengers (see also).

ENVIRONMENTAL IMPACT STATEMENT (EIS) - A statement prepared under the requirements of the National Environmental Policy Act of 1969 (NEPA), Section 102(2)(c). The EIS represents a federal agency's evaluation of the effects of a proposed action on the environment. Regulations relating to the preparation of an EIS are published in FAA Order 5050.4A.

FAA See FEDERAL AVIATION ADMINISTRATION.

FAA ADVISORY CIRCULAR 150/5300-13 This document, titled "Airport Design," contains airport design standards, including descriptions of various subdivisions of FAR Part 77 (see also) such as obstacle free zones (OFZs), object free areas (OFAs), and runway protection zones (RPZs) formerly referred to as "clear zones" on airports. According to Paragraph 211, "Safe and efficient operations at an airport require that certain areas on and near the airport be clear of objects or restricted to objects with a certain function, composition, and/or height." To achieve this requirement, object clearing criteria contained in the handbook describe the type of objects tolerated within various subdivisions of FAR Part 77. Aircraft are controlled by aircraft operating rules and not by these criteria. However, objects not in conformance with these criteria may result in aircraft operating restrictions.

FAA HANDBOOK 7400.2 This document, titled "Procedures for Handling Airspace Matters," contains procedures and guide-lines for conducting aeronautical studies and determining effects of existing or proposed objects that exceed FAR Part 77 (see also) standards. Objects that exceed FAR Part 77 standards are subject to an aeronautical study and are presumed to be hazards to air navigation unless an aeronautical study determines otherwise. However, once an aeronautical study has been initiated, Part 77 standards are not the basis for determining whether or not an object would be a hazard. Other standards, including operational, proce-dural, and electronic requirements, are used to determine if the object being studied would actually be a hazard to air navigation. The outcome of an FAA aeronautical study is either a "Determination of No Hazard" or "Determination of Hazard to Air Navigation."

FAA HANDBOOK 8260.3B This document, titled "TERPS," contains obstruction clearance criteria for instrument procedures. Imaginary surfaces for each particular type of instrument procedure are described. If an object would penetrate the imaginary surfaces for a particular procedure and could not be relocated or sufficiently reduced in height, one of the following actions would be necessary: (1) alteration of the procedure, to minimize or eliminate effects, (2) increase in the minimum cloud ceiling and/or visibility requirements for conducting the procedure, (3) some combination of (1) and (2); or (4) preclusion of the affected procedure.

FAA ORDER 5050.4A This document, entitled "Airport Environ-mental Handbook," was published by the FAA on October 8, 1985. It contains all of the essential information an airport sponsor needs to meet both procedural and substantive environmental requirements.

FAR PART 36 Federal Aviation Regulations Part 36, "Noise Standards: Aircraft Type and Airworthiness Certification." Establishes noise standards for the civil aviation fleet. Some extensions for compliance are included in the Aviation Safety and Noise Abatement Act of 1979 (see also).

FAR PART 77 Federal Aviation Regulations Part 77, "Objects Affecting Navigable Airspace." Establishes standards for determining obstructions and conducting aeronautical studies to determine the potential effects of obstructions on aircraft operations. Objects are considered to be obstructions to air navigation according to FAR Part 77 if they would exceed certain heights or penetrate certain imaginary surfaces established in relation to airports. Objects classified as obstructions are subject to an aeronautical study by FAA to determine their potential effects on aircraft operations.

FAR PART 91 Federal Aviation Regulations Part 91, "General Operating and Flight Rules." On September 25, 1991, the FAA issued an amendment to FAR Part 91 (14 CFR Part 91) in conformance with requirements of the Airport Noise and Capacity Act of 1990 (see also). The amendment to the aircraft operating rules requires a phased transition to an all Stage 3 fleet operating in the 48 contiguous United States and the District of Columbia by December 31, 1999. The amendment places a cap on the

number of Stage 2 aircraft allowed to operate in the United States and provides for a continuing reduction in the population exposed to noise from Stage 2 aircraft.

FAR PART 150 Federal Aviation Regulations Part 150, "Airport Noise Compatibility Planning." An FAR Part 150 Program is an FAA-assisted study designed to increase the compatibility of land and facilities in the areas surrounding an airport that are most directly affected by the operation of the air-port. The specific purpose is to reduce the adverse effects of noise as much as possible by implementing both on-airport noise abatement measures and off-airport noise mitigation programs. The basic products of an FAR Part 150 program typically include (1) noise exposure maps for the existing condition and for five years in the future; (2) workable on-airport noise abatement measures, such as preferential run-way use programs, new or preferential flight tracks, curfews; (3) off-airport noise mitigation measures (land use control programs and regulations), such as land acquisition, soundproofing, or special zoning; (4) an analysis of the costs and the financial feasibility of the recommended measures; and (5) policies and procedures related to the implementation of on- and off-airport programs. A community involvement program is carried on throughout all phases of development of the program.

FAR PART 158 Federal Aviation Regulations Part 158, "Passenger Facility Charges." Adopts new regulations to establish a passenger facility charge (PFC) program. The rule implements Sections 9110 and 9111 of the Airport Noise and Capacity Act of 1990 (see also), which requires the Department of Transportation to issue regulations under which a public agency may be authorized to impose a PFC of $1, $2, or $3 per enplaned passenger at a commercial service airport it controls. The proceeds from such PFC's are to be used to finance eligible airport-related projects that pre-serve or enhance safety, capacity, or security of the national air transportation system, reduce noise from an airport that is part of such system, or furnish opportunities for enhanced competition between or among air carriers. The rule sets forth procedures for public agency applications for authority to impose PFC's, for FAA processing of such applications; for collection, handling, and remittance of PFC's by air carriers; for recordkeeping and auditing by air carriers and public agencies; for terminating PFC authority; and for reducing federal grant funds apportioned to large and medium hub airports imposing a PFC.

FAR PART 161 Federal Aviation Regulations Part 161, "Notice and Approval of Airport Noise and Access Restrictions." Establishes a program for reviewing airport noise and access restrictions on the operations of Stage 2 and Stage 3 aircraft. This rule is in response to specific provisions in the Airport Noise and Capacity Act of 1990 (see also) and is a major element of the national aviation noise policy required by that statute.

FBO (FIXED BASE OPERATOR) The small but important building near the ramp and runways of a small airport, from which airfield activity is coordinated.

FEDERAL AVIATION ADMINISTRATION (FAA) The FAA is the agency of the U.S. Department of Transportation that is charged with (1) regulating air commerce to promote its safety and development, (2) achieving the efficient use of navigable airspace of the United States; (3) promoting, encouraging, and developing civil aviation; (4) developing and operating a common system of air traffic control and air navigation for both civilian and military aircraft; and (5) promoting the development of a national system of airports.

FINDING OF NO SIGNIFICANT IMPACT (FONSI) A finding by the FAA that a proposed action by an airport sponsor will have no significant impact on the environment. Specific guide-lines for the preparation of a FONSI report are included in FAA Order 5050.4A.

FLIGHT TRACK The average flight path flown by aircraft within specific corridors. Deviation from these tracks occurs because of weather, pilot technique, air traffic control, and aircraft weight. Individual

flight tracks within a corridor are "averaged" for purposes of modeling noise exposure using the Integrated Noise Model (see also).

FONSI See FINDING OF NO SIGNIFICANT IMPACT.

GATE- The designated location in a terminal building that contains an airline podium area where ticketed passengers check in for a specific flight. (See also APRON.)

GENERAL AVIATION (GA) All civil aviation except that classified as air carrier or air taxi. The types of aircraft typically used in GA activities vary from multiengine jet aircraft to single-engine piston aircraft.

GENERAL PLAN (sometimes referred to as a comprehensive plan or community plan) An overall plan of a political jurisdiction setting forth the goals and objectives of the jurisdiction, policies for development and redevelopment, and maps showing the spatial arrangement of land uses, circulation routes, and community facilities.

GPS (Global Positioning System)- A satellite navigation system designed to provide instantaneous position, velocity and time information almost anywhere on the globe at any time, and in any weather.

IFR See INSTRUMENT FLIGHT RULES

IFR AIRPORT- An airport with an authorized instrument approach procedure.

IFR CONDITIONS Weather conditions that require aircraft to be operated in accordance with instrument flight rules

IFR MINIMUMS AND DEPARTURE PROCEDURES (FAR PART 91) - Prescribed takeoff rules. For some airports, obstructions or other factors require the establishment of nonstandard takeoff minimums or departure procedures, or both, to assist pilots in avoiding obstacles during climb to the minimum en route altitude.

ILS See INSTRUMENT LANDING SYSTEM.

IMPACT In environmental studies, the word "impact" is used to express the extent or severity of an environmental problem, e.g., the number of persons exposed to a given noise environment. As indicated in CEQ 1500 (Section 1508.8), impacts and effects are considered to be synonymous. Effects or impacts may be ecological, aesthetic, historic, cultural, economic, social, or health related, and they may be direct, indirect, or cumulative.

INM See INTEGRATED NOISE MODEL.

INSTRUMENT APPROACH An approach to an airport, with intent to land, by an aircraft flying in accordance with an IFR flight plan, when the visibility is less than 3 miles and/or when the ceiling is at or below the minimum initial altitude.

INSTRUMENT APPROACH RUNWAY A runway served by an electronic and providing at least directional guidance adequate for a straight-in approach.

INSTRUMENT FLIGHT RULES (IFR) Rules specified by the FAA for flight under weather conditions in which visual reference cannot be made to the ground and the pilot must rely on instruments to fly and navigate.

INSTRUMENT LANDING SYSTEM (ILS) - A system that provides in the aircraft the lateral, longitudinal, and vertical electronic guidance necessary for an instrument landing.

INSTRUMENT OPERATION - An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal control facility or air route traffic control center.

INSTRUMENT RUNWAY - A runway equipped with electronic and visual navigation aids and for which a straight-in (precision or nonprecision) approach procedure has been approved or is planned.

INTEGRATED NOISE MODEL (INM) - A computer model developed by the FAA and required by the FAA for use in environmental assessments, environmental impact statements, and FAR Part 150 studies for developing existing and future aircraft noise exposure maps.

LAND USE COMPATIBILITY - The compatibility of land uses surrounding an airport with airport activities and particularly with the noise from aircraft operations.

LAND USE COMPATIBILITY ASSURANCE - Documentation provided by an airport sponsor to the FAA. The documentation is related to an application for an airport development grant. Its pur-pose is to assure that a reasonably appropriate action, including the adoption of zoning laws, has been taken or will be taken to restrict the use of land adjacent to the airport or in the immediate vicinity of the airport. Such uses are limited to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft.

LAND USE CONTROLS--Controls established by local or state governments to carry out land use planning. The controls include zoning, subdivision regulations, land acquisition (in fee simple, lease-back, or easements), building codes, building permits, and capital improvement programs (to pro-vide sewer, water, utilities, or other service facilities).

LAND USE PLANNING - Comprehensive planning carried out by units of local government, for all areas under their jurisdiction, to identify the optimum uses of land and to serve as a basis for the adoption of zoning or other land use controls.

LOUDNESS - The judgment of the intensity of a sound by a person. Loudness depends primarily on the sound pressure of the stimulus. Over much of the loudness range, it takes about a threefold increase in sound pressure (approximately 10 decibels) to produce a doubling of loudness.

MITIGATION MEASURE - An action that can be planned or taken to alleviate (mitigate) an adverse environmental impact. Mitigation includes:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing the impact by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. Compensating for the impact by replacing or providing substitute resources or environments. A proposed airport development project, or alternatives to that project, may constitute a mitigation measure.

NAVAID - See AIR NAVIGATION FACILITY.

NOISE - Any sound that is considered to be undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying.

NOISE ABATEMENT PROCEDURES - Changes in runway use, flight approach and departure routes and procedures, and other air traffic procedures that are made to shift adverse aviation effects away from noise-sensitive areas (such as residential neighborhoods).

NOISE ATTENUATION OF BUILDINGS - The use of building materials to reduce noise through absorption, transmission loss, and reflection of sound energy.

NOISE CONTOURS - Lines drawn on a map that connect points of equivalent Ldn or CNEL values. They are usually drawn in 5-Ldn intervals, such as connections of Ldn 75 values, Ldn 70 values, Ldn 65 values, and so forth.

NOISE CONTROL PLANS - Documentation by an airport sponsor of actions to be taken by the sponsor to reduce the effect of aviation noise. These actions are to be taken by the sponsor either alone or in cooperation with the FAA, airport users, and affected units of local government, with appropriate comments from affected citizens. Alternative actions should be considered, particularly where proprietary use restrictions (see also) on aircraft operations are involved.

NOISE LEVEL REDUCTION (NLR) - The noise reduction between two areas or rooms is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of noise reduction combines the effect of the transmission loss performance of structures separating the two areas or rooms and the effect of acoustic absorption present in the receiving room.

NOISE-SENSITIVE LAND USE - Land uses that can be adversely affected by high levels of aircraft noise. Residences, schools, hospitals, religious facilities, libraries, and other similar uses are often considered to be sensitive to noise.

NORMALLY UNACCEPTABLE (DNL above 65 but not exceeding 75 decibels) - The noise exposure is significantly more severe; barriers may be necessary between the site and prominent noise sources to make the outdoor environment acceptable; special building constructions may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.

OBSTACLE FREE ZONE (OFZ) - The OFZ is a three-dimensional volume of airspace that supports the transition of ground-to-airborne-aircraft operations (and vice versa). The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible navaids whose location is fixed by function. The runway OFZ and, when applicable, the inner-approach OFZ, and the inner-transitional OFZ compose the obstacle free zone.

OBSTRUCTION - An object that exceeds a limiting height or penetrates an imaginary surface described by current Federal Aviation Regulations (Part 77).

PATTERN - The configuration or form of a flight path flown by an aircraft, or prescribed to be flown, as in making an approach to a landing.

PRECISION APPROACH PROCEDURE - A standard instrument procedure for an aircraft to approach an airport in which an electronic glide scope is provided - for example, an instrument landing system and precision approach radar.

PREFERENTIAL RUNWAY USE (PROGRAM)– A noise abatement action whereby the FAA Air Traffic Division, in conjunction with the FAA Airports Division, assists the airport sponsor in developing a program that gives preference to the use of a specific runway(s) to reduce overflights of noise-sensitive areas.

PRIORITY ACTION PROGRAM – See STAGING PLAN.

PROPRIETARY USE RESTRICTIONS – Restrictions by an airport sponsor on the number, type, class, manner, or time of aircraft operations at the airport.

RAMP – See APRON.

RELEASE POINT – A point on approach where aircraft are free to start their maneuver to centerline as needed.

RETROFIT – The retroactive modification of existing jet aircraft engines for noise abatement purposes.

RUNWAY OBJECT FREE AREA – The runway object free area (OFA) is a two-dimensional ground area surrounding the runway. The runway OFA clearing standard precludes parked airplanes and objects, except objects whose location is fixed by function.

RUNWAY PROTECTION ZONE (RPZ) – The RPZ (formerly the runway clear zone) is trapezoidal in shape and centered about the extended runway centerline. It begins 200 feet beyond the end of the area usable for takeoff or landing. Displacing the threshold does not change the beginning point of the RPZ. The RPZ dimensions are functions of the design aircraft, type of operation, and visibility minimums.

RUNWAY THRESHOLD – The beginning of that portion of a runway usable for landing.

RUNWAY USE PROGRAM – See PREFERENTIAL RUNWAY USE PROGRAM.

SEVERE NOISE EXPOSURE – Exposure to aircraft noise that is likely to interfere with human activity in noise-sensitive areas; repeated vigorous complaints can be expected and group action is probable. This exposure may be specified by a cumulative noise descriptor as a level of noise exposure, such as DNL 75. (See also SIGNIFICANT NOISE EXPOSURE.)

SIGNIFICANT EFFECT ON THE ENVIRONMENT – A substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself is not considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

SIGNIFICANT NOISE EXPOSURE – Exposure to aircraft noise that is likely to interfere with human activity in noise-sensitive areas; individual complaints may be expected and group action is possible. This exposure may be specified by a cumulative noise description as a level of noise exposure, such as DNL 65. (See also SEVERE NOISE EXPOSURE.)

SOUND INSULATION – (1) The use of structures and materials designed to reduce the transmission of sound from one room or area to another, or from the exterior to the interior of a building. (2) The degree of reduction in sound transmission by means of sound insulating structures and materials.

SOUND LEVEL (NOISE LEVEL) The weighted sound pressure level obtained by the use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum.

SOUND LEVEL METER An instrument, consisting of a microphone, an amplifier, an output meter, and frequency-weighting networks, that is used to measure noise and sound levels in a specified manner.

STAGE 3 AIRCRAFT - Aircraft Flying in the US and Europe must be certified as Stage 3 compliant after December 31, 2999. Stage 3 is the standard that defines allowable noise emissions and is defined in Part 36 of Title 14 Code of Federal Regulations.

TAXI The movement of an airplane under its own power on the surface of an airport

TAXIWAY A road leading from the airplane parking area to the runway; always marked with yellow lines.

TERPS Certain airspace needs to be cleared for aircraft operations. This airspace is determined by the application of operating rules and terminal instrument procedures (TERPS). Removing obstructions to air navigation, except those which an FAA aeronautical study determined need not be removed, satisfies these requirements. Subpart C of FAR Part 77 defines obstructions to air navigation. (Also see FAA HANDBOOK 8260.3B.)

TOWER See AIRPORT TRAFFIC CONTROL TOWER (ATCT).

UNACCEPTABLE (DNL above 75 decibels) The noise exposure at the site is so severe that the construction cost to make the indoor noise environment acceptable may be prohibitive and the outdoor environment would still be unacceptable.

VFR AIRPORT An airport without an authorized or planned instrument approach procedure.

VFR CONDITIONS Weather conditions that permit aircraft to be operated in accordance with visual flight rules.

VHF OMNIDIRECTIONAL RANGE (VOR) A radio transmitter facility in the navigation system radiating a VHF radio wave modulated by two signals, the relative phases of which are compared, resolved, and displayed by a compatible airborne receiver to give the pilot a direct indication of bearing relative to the facility.

VISUAL APPROACH - An approach in an airport wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of a radar facility and having air traffic control authorization, may deviate from the prescribed instrument approach procedure and proceed to the airport of destination, served by an operational control tower, by visual reference to the surface.

VISUAL APPROACH SLOPE INDICATOR (VASI) An airport lighting facility in the terminal area navigation system used primarily under VFR conditions. It provides vertical visual guidance to aircraft during approach and landing by radiating a directional pattern of high-intensity, red- and white-focused light beams, which indicate to the pilot that he is "on path" if he sees red white, "above path" if white white, and "below path" if red red.

VISUAL FLIGHT RULES (VFR) Rules that govern the procedures for conducting flight under visual conditions (Federal Aviation Regulations Part 91).

VISUAL RUNWAY A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved airport layout plan, or by any planning document submitted to the FAA by competent authority.

ZONING AND ZONING ORDINANCES Ordinances that divide a community into zones or districts according to the present and potential use of properties for the purpose of controlling and directing the use and development of those properties. Zoning is concerned primarily with the use of land and buildings, the height and bulk of buildings, the proportion of a lot that buildings may cover, and the density of population of a given area. As an instrument of plan implementation, zoning deals principally with the use and development of privately owned land and buildings. The objective of zoning legislation is to establish regulations that provide locations for all essential uses of land and buildings and to ensure that each use is located in the most appropriate place. In noise compatibility planning, zoning can be used to achieve two major aims: (1) to reinforce existing compatible land uses and promote the location of future compatible uses on vacant or underdeveloped land, and (2) to convert existing incompatible uses to compatible uses over time.