

## **DOCUMENT REFERENCES AND PREPARERS**

## Appendix A – Document References and Preparers

*Lawrence J. Timmerman Airport*

*Environmental Assessment for Runway Extension*

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### REFERENCES

The following documents and websites were utilized during the preparation of this Environmental Assessment:

*Lawrence J. Timmerman Airport Final Strategic Development and Airport Master Plan Study, February 2008, Coffman Associates, Inc.*

*Milwaukee Comprehensive Plan, Northwest Side, January 2008, Department of City Development*

*Milwaukee Comprehensive Plan, West Side, December 2009, Department of City Development*

*Milwaukee Comprehensive Plan, Citywide Policy Plan, March 2010, Department of City Development*

*City of Wauwatosa Comprehensive Plan 2008-2030, December 2008, Vandewalle & Associates*

*Archaeological Field Survey Report, Timmerman Airport, Milwaukee County, Wisconsin, May 2011, Great Lakes Archaeological Research Center, Milwaukee, WI*

*Wetland Investigation, Timmerman Airport Runway Expansion, April 2011, Ecological Services of Milwaukee, Inc.*

*Technical Memorandum, Environmental Assessment for the Proposed Extension of Runway 15L-33R, May 2011, Edwards Engineering Consultants, LLC*

*Federal Aviation Administration (FAA), FAA Order 1050.1E, Environmental Impacts: Policies and Procedures, March 2006*

*FAA, FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions, April 2006*

*FAA, National Plan of Integrated Airport Systems 2011-2015*

*FAA, Advisory Circular 150/5300-13, Airport Design*

*United States Department of Agriculture – Natural Resources Conservation Service, NCSS Web Soil Survey, <http://websoilsurvey.nrcs.usda.gov/app/>*

*United States Census Bureau, U.S. Census 2000, <http://www.census.gov/main/www/cen2000.html>*

*U.S. Environmental Protection Agency, EJView, <http://epamap14.epa.gov/ejmap/entry.html>*

U.S. Environmental Protection Agency, Green Book Nonattainment Areas for Criteria Pollutants,  
<http://www.epa.gov/oar/oaqps/greenbk/>

## **PREPARERS**

Persons responsible for preparation of this Environmental Assessment document and significant supporting background analysis and materials are listed below.

NAME	EXPERTISE	PROFESSIONAL EXPERIENCE
<b>PREPARERS</b>		
<b>Coffman Associates</b>		
David Fitz, AICP	Land Use Planning, Environmental Analysis, Noise Modeling, Assessment, and Documentation	Masters, Community and Regional Planning. Experience in airport master planning, noise modeling, and land use management.
Kory Lewis	Land Use Planning, Environmental Analysis and Documentation, Noise Monitoring and Assessment, Air Quality Analysis	B.A., Geography; Masters, Urban Planning. Experience in airport noise assessment and land use management. Experience in environmental documentation of various development projects.
Steve Wagner	Airport Master Planning, Operations Forecasting Environmental Analysis and Documentation	B.S., Civil Engineering. Experience in airport master planning, site selection, and environmental documentation.
<b>Edwards Engineering Consultants</b>		
Marc Hilliard, P.E.	Civil Engineer	B.S., Civil Engineering. Responsible for the civil engineering portion of the EA, including the preliminary pavement and grading design, earthwork computations, the construction cost estimate, and the drainage analysis.

## **PROJECT SCOPING MATERIALS AND AGENCY COORDINATION**



## Appendix B – Project Scoping Materials and Agency Coordination

*Lawrence J. Timmerman Airport*

*Environmental Assessment for Runway Extension*

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At the onset of the Environmental Assessment, letters were sent to the following entities seeking input regarding potential environmental resources which could be impacted by the proposed runway extension. A copy of the letter sent to each agency and the response received, if any, follows the table of contents within this appendix.

### **FEDERAL**

Louise Clemency  
Field Supervisor  
Green Bay Ecological Services Office  
U.S. Fish and Wildlife Service  
2661 Scott Tower Drive  
New Franken, WI 54229

Ken Westlake  
NEPA Compliance Coordinator  
U.S. Environmental Protection Agency Region 5  
NEPA Implementation Section (Mail Code E-19J)  
77 W. Jackson Blvd.  
Chicago, IL 60604

Anthony Jernigan  
Project Manager  
U.S. Army Corps of Engineers  
20711 Watertown Rd., Suite F  
Waukesha, WI 56186

Patricia S. Leavenworth  
Natural Resources Conservation Service  
8030 Excelsior Drive  
Madison, WI 53717-2906

Kathleen Schmidt  
Wisconsin Environmental Officer  
U.S. Dept of Housing & Urban Development  
310 West Wisconsin Ave Ste 1380  
Milwaukee WI 53203

Steve Obenauer, Manager  
Minneapolis Airports District Office, MSP-ADO-600  
Federal Aviation Administration  
6020 28th Avenue, South, Room 102  
Minneapolis, Minnesota 55450

### **STATE**

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Wisconsin Department of Natural Resources  
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101 South Webster St  
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Madison, WI 53707-7921

Russ Rasmussen, Bureau Director  
Wisconsin Department of Natural Resources  
Bureau of Watershed Management - WT/3  
101 South Webster St  
PO Box 7921  
Madison, WI 53707-7921

Laurie Osterndorf, Bureau Director  
Wisconsin Department of Natural Resources  
Wisconsin Natural Heritage Program – Bureau of Endangered Resources  
101 South Webster St  
PO Box 7921  
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Patricia Trochlell  
Wetland Ecologist  
Wisconsin Dept. of Natural Resources  
101 South Webster St  
PO Box 7921  
Madison, WI 53707-7921

John Melby  
Bureau Director  
Bureau of Air Management - AM/7  
Wisconsin Department of Natural Resources  
101 South Webster St  
PO Box 7921  
Madison WI 53707-7921

Michael Stevens  
State Historic Preservation Officer  
Division of Historic Preservation  
Wisconsin Historical Society  
816 State Street  
Madison, WI 53706

Eugene Johnson, Director  
Bureau of Equity and Environmental Services  
Wisconsin Department of Transportation  
P.O. Box 7965  
Madison, WI 53707-7965

Wendy Hottenstein, Airport Development  
Engineer  
Bureau of Aeronautics  
Wisconsin Department of Transportation  
4802 Sheboygan Ave., Room 701  
Madison, WI 53705

Dewayne Johnson, Director  
141 NW Barstow Street  
PO Box 798  
Waukesha, WI 53188

Wisconsin Department of Administration  
Division of Intergovernmental Relations  
Office of Federal State Relations  
101 East Wilson St, 10th Floor  
PO Box 8944  
Madison, WI 53708-8944

Michael C. Thompson, Team Supervisor  
Bureau of Integrated Science Services  
Wisconsin Department of Natural Resources  
2300 N. Martin Luther King Drive  
Milwaukee, WI 53212

## **LOCAL**

Rocky Marcoux, Director  
City of Milwaukee  
Department of City Development  
809 N. Broadway  
Milwaukee, WI 53202

C. Thomas Mishefske, Operations Manager  
Department of Neighborhood Services  
City of Milwaukee  
841 N. Broadway First Floor  
Milwaukee, WI 53202

Jeffrey Mantes, Commissioner  
City of Milwaukee, DPW  
Zeidler Municipal Building, Room 501  
841 N. Broadway  
Milwaukee, WI 53202

Molly E. Barrett, Director  
Division of Recreation and Community Services  
Milwaukee Recreation  
5225 W. Vliet St., Room 162  
Milwaukee, WI 53208

William Wehrley, Acting Director  
Public Works Department  
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Wauwatosa, WI 53213

Ken Walbrant, Superintendent  
Parks & Forestry Division  
Public Works Department  
City of Wauwatosa  
7300 Chestnut St.  
Wauwatosa, WI 53213

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Community Development Department  
City of Wauwatosa  
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Wauwatosa, WI 53213

Greg High, Director  
Architecture, Engineering & Environmental  
Services Division  
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Works Department  
2711 W. Wells St., 2nd Floor  
Milwaukee, WI 53208

Sue Black, Director  
Milwaukee County Parks  
9480 Watertown Plank Road  
Wauwatosa, WI 53226

Damon Dorsey  
Milwaukee County Economic Development  
City Campus  
2711 W Wells St.  
Milwaukee, WI 53208

Jack H. Takerian, Director  
Milwaukee County Transportation & Public  
Works Department  
2711 W. Wells St., 3rd Flr.  
Milwaukee, WI 53208

Kenneth Yunker, Executive Director  
Southeastern Wisconsin Regional Planning  
Commission  
W239 N1812 Rockwood Dr.  
PO Box 1607  
Waukesha, WI 53187-1607

Kevin Shafer, P.E., Executive Director  
Milwaukee Metropolitan Sewerage District  
260 W. Seeboth St.  
Milwaukee, WI 53204

Lynne De Bruin  
Milwaukee County Supervisor, 15<sup>th</sup> District  
Milwaukee County Courthouse  
901 North 9th Street, RM 201  
Milwaukee, WI 53233

Johnny L. Thomas  
Milwaukee County Supervisor, 18<sup>th</sup> District  
Milwaukee County Courthouse  
901 North 9th Street, RM 201  
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200 E. Wells St.  
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City of Wauwatosa Alderman, 8<sup>th</sup> District  
10409 W. Woodward Ave.  
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4172 Menomonee River Pkwy.  
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5001 N. 91<sup>st</sup> St.  
Milwaukee, WI 53225

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President  
Gran-Aire, Inc.  
9305 W. Appleton Ave  
Milwaukee, WI 53225

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GENERAL  
**MITCHELL**  
INTERNATIONAL AIRPORT

April 1, 2011

U. S. Fish and Wildlife Service  
Attn: Louise Clemency, Field Supervisor  
Green Bay Ecological Services Office  
2661 Scott Tower Drive  
New Franken, WI 54229

***Environmental Assessment for Runway Extension Project at Lawrence J. Timmerman Airport***

Dear Louise :

The Milwaukee County Board of Supervisors accepted the Airport's Strategic Development and Airport Master Plan Study (Master Plan) for Lawrence J. Timmerman Airport in February 2008. The Master Plan recommends a 300-foot extension and associated improvements at each end of Runway 15L-33R. The recommended runway extensions will increase the length of the runway from 4,106 feet to 4,706 feet. The proposed improvements will occur entirely on existing airport property and will provide safer operating conditions for existing airport users. The Master Plan study summary, along with the newsletter sent to Timmerman neighbors in Fall 2007, can be found at [www.mitchellairport.com/projects.html](http://www.mitchellairport.com/projects.html). Milwaukee County, as owner of Lawrence J. Timmerman Airport, will prepare an Environmental Assessment (EA), pursuant to the requirements of *Section 102(2) of the National Environmental Policy Act (NEPA) of 1969* and by the Federal Aviation Administration (FAA) Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions For Airport Actions*. The Wisconsin Department of Transportation, Bureau of Aeronautics, is the lead agency for the project.

The EA will document the potential for impacts to environmental resources associated with the proposed construction of 300-foot extensions, taxiway extensions, and aircraft run-up pads at each end of Runway 15L-33R. Additionally, the Runway Protection Zones (RPZ) for Runway 15L-33R will be relocated. RPZs are defined in FAA Advisory Circular 150/5300-13, *Airport Design* as an area off the runway end to enhance the protection of people and property on the ground. To assist in your review of the proposed project, a general location exhibit (**Exhibit A**) and the overall layout of the airport (**Exhibit B**) are included for your reference. As previously mentioned and noted on **Exhibit B**, the project will increase the overall length of Runway 15L-33R from 4,106 feet to 4,706 feet. However, due to existing site constraints, thresholds will be established to limit the available runway length depending on the type of aircraft operation (arrival/departure) and flight direction (northwest/southeast). **Table 1** summarizes the proposed changes for the runway pavement. As noted in the table, aircraft departing to

the northwest on Runway 33R will have the full 4,706 feet available, and the remaining arrival and departure lengths will be 4,506 feet.

**TABLE 1**

**Lawrence J. Timmerman Airport**

**Proposed Runway Extension – Available Runway Lengths (feet)**

	Runway 15L		Runway 33R	
	Arrival <sup>1</sup>	Departure <sup>2</sup>	Arrival <sup>3</sup>	Departure <sup>4</sup>
Existing	4,106	4,106	4,106	4,106
Proposed	4,506	4,506	4,506	4,706

Notes:

<sup>1</sup> – Arrivals from the northwest

<sup>2</sup> – Departures to the southeast

<sup>3</sup> – Arrivals from the southeast

<sup>4</sup> – Departures to the northwest

The Milwaukee County Department of Public Works, Airport Engineers Office is soliciting your comments regarding environmental or social resources and sensitivities potentially associated with or affected by the proposed runway extension projects. Additionally, your input regarding any potential cumulative impacts that may occur upon project implementation is requested.

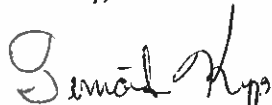
Please send any written comments to our consultant, David Fitz, at the address below by May 2, 2011. As another option, you may fax or e-mail your comments to the number or e-mail address below.

Address: Mr. David Fitz, AICP, Principal  
Coffman Associates, Inc.  
237 NW Blue Parkway, Suite 100  
Lee's Summit, MO 64063  
FAX: 816-524-2575  
E-mail: dfitz@coffmanassociates.com

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, please be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you may request in your comment to withhold this information from public review, we cannot guarantee that we will be able to do so.

If you have any questions or need additional information, please feel free to contact me at 414.747.5716. Thank you for your consideration and timely response.

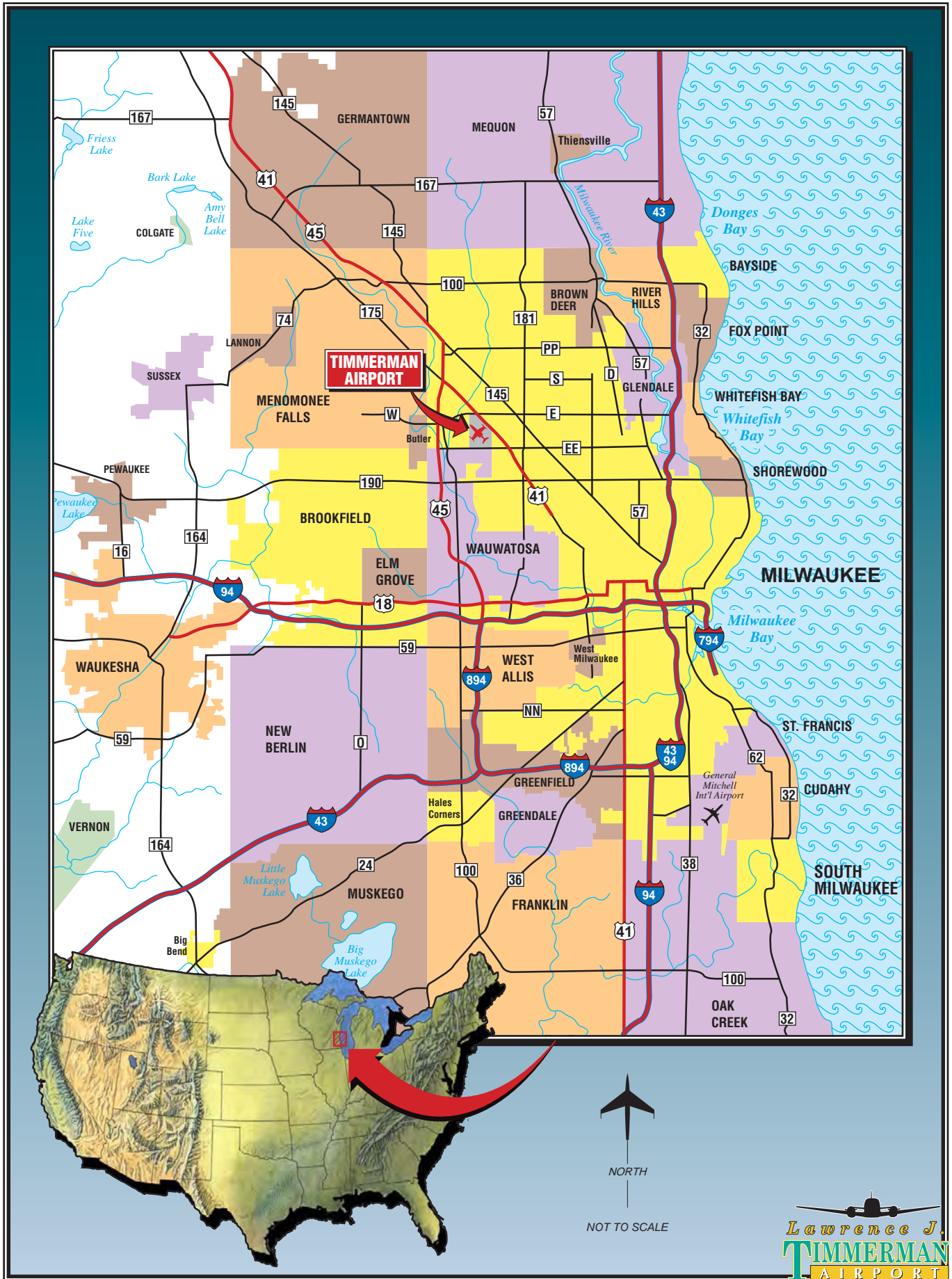
Sincerely,



Timothy Kipp, Managing Engineer – Design  
General Mitchell International Airport

Enclosures

C. David Fitz, Coffman Associates









## Kory A. Lewis

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**From:** David W. Fitz  
**Sent:** Thursday, April 07, 2011 4:40 PM  
**To:** 'tkipp@mitchellairport.com'  
**Cc:** Kory A. Lewis; Stephen C. Wagner  
**Subject:** FW: Timmerman Airport EPA scoping comments

FYI



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**From:** [Sedlacek.Michael@epamail.epa.gov](mailto:Sedlacek.Michael@epamail.epa.gov) [<mailto:Sedlacek.Michael@epamail.epa.gov>]  
**Sent:** Thursday, April 07, 2011 3:04 PM  
**To:** David W. Fitz  
**Subject:** Timmerman Airport EPA scoping comments

Mr. Coffman:

As requested, included in this e-mail are some comments and suggestions from U.S. EPA over the Lawrence Timmerman Airport Runway Expansion Project.

- Consultation for wetlands (USACE), endangered species (US FWS/Wisconsin DNR), historical/cultural artifacts (Wisconsin State Historic Preservation Office).
- Environmental Justice. EPA's program, NEPAassist indicates the area is an EJ area of concern. EPA recommends explaining who is being affected, why they are being affected, and what the project sponsor is doing to avoid negatively impacting those areas of concern (how show how your project will not affect the EJ areas of concern).
- The airport is considered a non-attainment zone for air quality. The non-attainment atmospheric pollutants are:
  - \* Ozone - 1 hour test
  - \* Ozone - 8 hour test
  - \* Sulfur dioxide

The EA should explain why the airport is considered to be in the non-attainment zone, and what is being done to meet attainment standards for air quality (e.g. use of fuel-efficient support vehicles)

- EPA, under Executive Order 13514, has begun actively promoting green building/construction activities. For instance, EPA will likely suggest use of permeable pavement for the runway, and use of energy-efficient lighting indicators.
- Storm water control should be discussed in the draft EA. EPA actively promotes the use of vegetated swales as a way to control and clean storm water. Runways and taxiways, as you know, produce a lot of stormwater. Discussion of methods of storm water management should be in the EA, and though they're not required, EPA will recommend the use of swales due to the many benefits of swales.
- EPA will ask, under the authority of NEPA, what the purpose and need of the project is. Is the runway expansion due to the need to support larger aircraft at the airport, or to allow for more flights at the airport? If so, describe the increases, and explain how that ties into the issues described above.
- Since the runway will be expanded toward the perimeter of the airport complex, will planes be descending at lower

altitudes into the airport? If so, describe how such an action will affect the houses that are next to the airport (noise, air pollution, EJ concerns, etc.).

- EPA will request data from air quality tests, proposed air traffic increases, local car traffic increase, possible effects on local property values, and other such economic/socioeconomic and environmental information.

Please feel free to contact me if you have any questions or comments on the above information. I can be reached at (312) 886-1765, or at [sedlacek.michael@epa.gov](mailto:sedlacek.michael@epa.gov). Thank you for your time, and I hope to see the draft EA soon.

Sincerely,

Mike Sedlacek  
Environmental Scientist  
U.S. EPA



**DEPARTMENT OF THE ARMY**  
**ST. PAUL DISTRICT, CORPS OF ENGINEERS**  
**180 FIFTH STREET EAST, SUITE 700**  
**ST. PAUL MN 55101-1678**

REPLY TO  
ATTENTION

April 8, 2011

Operations  
Regulatory (2011-01112-ADJ)

Mr. Timothy Kipp  
c/o Mr. David Fitz  
Coffman Associates, Inc.  
237 NW Blue Parkway, Ste. 100  
Lee's Summit, Missouri 64063

Dear Ms. Kipp,

We have received a letter requesting comments on the proposed preparation of an Environmental Assessment for Lawrence J. Timmerman Airport dated April 1, 2011. Due to limited information, it is unlikely that U.S. Army Corps of Engineers Regulatory staff will provide specific comments on this document until we receive a jurisdictional determination request and/or a permit application. In lieu of a specific response, please consider the following general information concerning our regulatory program that may apply to the proposed project.

If the proposal involves activity in navigable waters of the United States, it may be subject to the Corps of Engineers' jurisdiction under Section 10 of the Rivers and Harbors Act of 1899 (Section 10). Section 10 prohibits the construction, excavation, or deposition of materials in, over, or under navigable waters of the United States, or any work that would affect the course, location, condition, or capacity of those waters, unless the work has been authorized by a Department of the Army permit.

If the proposal involves discharge of dredged or fill material into waters of the United States, it may be subject to the Corps of Engineers' jurisdiction under Section 404 of the Clean Water Act (CWA Section 404). Waters of the United States include navigable waters, their tributaries, and adjacent wetlands (33 CFR § 328.3). CWA Section 301(a) prohibits discharges of dredged or fill material into waters of the United States, unless the work has been authorized by a Department of the Army permit under Section 404. Information about the Corps permitting process can be obtained online at <http://www.mvp.usace.army.mil/regulatory>.

The Corps' evaluation of a Section 10 and/or a Section 404 permit application involves multiple analyses, including (1) evaluating the proposal's impacts in accordance with the National Environmental Policy Act (NEPA) (33 CFR part 325), (2) determining whether the proposal is contrary to the public interest (33 CFR § 320.4), and (3) in the case of a Section 404 permit, determining whether the proposal complies with the Section 404(b)(1) Guidelines (Guidelines) (40 CFR part 230).

If the proposal requires a Section 404 permit application, the Guidelines specifically require that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR § 230.10(a)). Time and money spent on the proposal prior to applying for a Section 404 permit cannot be factored into the Corps' decision whether there is a less damaging practicable alternative to the proposal.

If an application for a Corps permit has not yet been submitted, the project proposer may request a pre-application consultation meeting with the Corps to obtain information regarding the data, studies or other information that will be necessary for the permit evaluation process. A pre-application consultation meeting is strongly recommended if the proposal has substantial impacts to waters of the United States, or if it is a large or controversial project.

For further information or to request a pre-application consultation meeting, please contact Anthony Jernigan at (262) 717-9544, the Corps' project manager for the County in which this proposal is located.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Cameron", with a long horizontal flourish extending to the right.

Tamara E. Cameron  
Chief, Regulatory Branch





April 25, 2011

Mr. Timothy Kipp  
Mitchell International Airport  
5300 S. Howell Avenue  
Milwaukee, WI 53207-6156

RE: Runway Extension Project: Timmerman Airport

Dear Mr. Kipp:

Thank you for informing us of the above referenced project. We no longer conduct initial reviews for these types of FAA projects. Mr. Robert Newbery, WisDOT Staff Historian, conducts all initial project reviews of this nature. If Mr. Newbery determines that any project that he reviews may affect historic properties, the project is forwarded to us for further review, pursuant to the applicable state or federal laws.

I have sent your submittal to Mr. Newbery, pursuant to the above. With further questions about the nature of his review or the timing of same, you may contact Mr. Newbery directly at (608) 266-0369. Additionally, please send all future project proposals of this nature to Mr. Newbery, Wisconsin Dept. of Transportation, Bureau of Equity and Environmental Services, 4802 Sheboygan Ave., Madison, WI 53707, for his review.

Thank you very much for your attention to, and concern for historic preservation and its relevance in your project design.

Sincerely,

Dan Duchrow  
Division of Historic Preservation  
and Public History

Cc: (w/Enclosure)  
Robert Newbery, WisDOT  
(w/o Enclosure)  
David Fitz, Coffman Associates, Inc.



Preserving The Environment •  
Improving Water Quality

Kevin L. Shafer, P.E.  
Executive Director

April 27, 2011

David Fitz, AICP, Principal  
Coffman Associates, Inc.  
237 NW Blue Parkway, Suite 100  
Lee's Summit, MO 64063

Subject: Environmental Assessment for Runway Extension  
Project at Lawrence J. Timmerman Airport

Dear Mr. Fitz:

We have received a letter dated April 1, 2011 from Mr. Timothy Kipp, Managing Engineer-Design for General Mitchell International Airport that requested comments on the proposed runway extension project at Lawrence J. Timmerman Airport (Timmerman). The Milwaukee Metropolitan Sewerage District (MMSD) provided flood management for the area in 2001 by constructing 60 acre-feet of stormwater runoff storage on the south side of Timmerman along West Hampton Avenue. This area is immediately upstream of Grantosa Creek which had flooded structures located south of West Hampton Avenue.

The storage facility constructed by MMSD on Timmerman does not appear to be impacted by the proposed runway extension shown on Exhibit B; however, Runway 15L-33R extension near West Hampton Avenue may impact the overall drainage that flows west towards the storage facility. Earthwork and grading for the runway extension should be designed to provide drainage that continues to flow west towards the storage facility and not create unintentional ponding or other drainage consequences. In addition, MMSD Chapter 13 Surface and Storm Water Rules should be reviewed for compliance.

We appreciate the opportunity to comment on the proposed runway extension project. If you have any questions or need additional information, please contact Tom Chapman at (414) 225-2154.

Sincerely,

Kevin L. Shafer, P.E.  
Executive Director

KLS/MM:TC/dlm  
Fitz042211EATimmerman.docx



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Green Bay ES Field Office  
2661 Scott Tower Drive  
New Franken, Wisconsin 54229-9565  
Telephone 920/866-1717  
FAX 920/866-1710

April 27, 2011

Mr. David Fitz  
Coffman Associates, Inc.  
237 NW Blue Parkway, Suite 100  
Lee's Summit, Missouri 64063

re: Runway 15L-33R Improvements  
Lawrence J. Timmerman Airport  
City of Milwaukee  
Milwaukee County, Wisconsin

Dear Mr. Fitz:

The U.S. Fish and Wildlife Service (Service) has received your letter dated April 1, 2011, requesting comments on the subject project. The project involves the expansion of a runway located at Lawrence J. Timmerman Airport in the City of Milwaukee, Milwaukee County, Wisconsin. We have reviewed the information provided in your letter and our comments follow.

#### **Federally-Listed Species, Proposed and Candidate Species, and Critical Habitat**

Due to the project location, no federally-listed, proposed, or candidate species would be expected within the project area. This precludes the need for further action on this project as required by the 1973 Endangered Species Act, as amended. Should additional information on listed or proposed species or their critical habitat become available or if project plans change or if portions of the proposed project were not evaluated, it is recommended that you contact our office for further review.

#### **Wetlands and Streams**

We note that the project area may include wetlands. In refining and selecting project alternatives, efforts should be made to select an alternative that does not adversely impact wetlands. If no other alternative is feasible and it is clearly demonstrated that project construction resulting in wetland disturbance or loss cannot be avoided, a wetland mitigation plan should be developed that identifies measures proposed to minimize adverse impacts and replace lost wetland habitat values and other wetland functions and values. Any project that impacts wetlands or waterways, including seasonally ephemeral and intermittent streams, should include design features such as culverts to retain hydrological connection between areas fragmented by the project.

We appreciate the opportunity to respond. Questions pertaining to these comments can be directed to Ms. Jill Utrup 920-866-1734.

Sincerely,

A handwritten signature in black ink that reads "Catherine J. Carnes". The signature is fluid and cursive, with a long horizontal line extending from the end of the name.

Catherine J. Carnes  
Acting Field Supervisor





May 2, 2011

File Ref: 1600

Mr. David Fitz, AICP  
Principal  
Coffman Associates, Inc.  
237 NW Blue Parkway, Suite 100  
Lee's Summit, MO 64063

Dear Mr. Fitz:

Thank you for the opportunity to provide comments for *Milwaukee County – Wisconsin Department of Transportation Bureau of Aeronautics Project ID 0740-54-13, Environmental Assessment for Runway 15L/33R Extension at Lawrence J. Timmerman Airport, Milwaukee County (Project)*. The proposed 300-foot extensions, taxiway extensions, and aircraft run-up pads at both ends of the runway and relocation of Protection Zones will improve safety for existing operations. Department comments and environmental planning information are provided below.

### **Water Quality**

The Project is located in the Milwaukee River Basin. A Basin report and a broad overview of land and water resource quality in the Project area are available at <http://dnr.wi.gov/water/basin/milw/>.

### **Wetlands**

Wetland indicator soils and potential wetlands are present near the project area (map attached).

### **Storm Water Management**

TRANS 401, Wis. Admin. Code, Milwaukee Metropolitan Sewerage District and Milwaukee County storm water management requirements should be considered during planning.

### **Air Quality**

The Department provides on-line information about air quality at <http://dnr.wi.gov/air/aq/health/>. Currently, Milwaukee County does not meet the federal government's 8-hour standard for ground level ozone and 24-hour standard for particulate matter less than 2.5 microns in diameter.

The project is not a capacity expansion and a NR 489, Wis. Admin. Code, Air General Conformity Applicability Analysis is not required.

Consider measures to reduce temporary construction impacts from diesel exhaust emissions and to control dust and paint overspray.

### **Asbestos**

Asbestos containing materials may be present in electrical utilities and other pavement expansion joints. A *Notification of Demolition and/or Renovation and Application for Permit Exemption*, NR 406, 410, and 447 Wis. Adm. Code, is required ten days prior to work if asbestos abatement is required. Contact Mark Davis, Asbestos Specialist, (414) 263-8674, for additional information and permit application materials.

### **Remediation and Redevelopment - Hazardous Substance Releases**

Soil and groundwater contamination is present in Milwaukee County. The Contaminated Lands Environmental Action Network (CLEAN) provides information to assist with investigation, cleanup and re-use of contaminated properties. You may check the database, <http://dnr.wi.gov/org/aw/rr/clean.htm>, for reports of hazardous substance releases in a project area. Brownfield redevelopment grants funding may be available. Contact John Hnat, Hydrogeologist, (414) 263-8644, for further details.

Containers and drums used during construction should be stored in secure locations to prevent vandalism and unwanted dumping. Notify the Department by calling 800-943-0003 if a hazardous substance release or an abandoned container is discovered during development activities.

### **Material Management**

Wastes must be characterized and managed properly. Clean soil, brick, building stone, concrete or reinforced concrete not painted with lead-based paint, broken pavement, and wood not treated or painted with preservatives or lead-based paint are exempt from general solid waste management requirements, *NR 500.08(2)(a)*. A Demolition Checklist is available at <http://dnr.wi.gov/org/aw/wm/publications/newpub/WA651.pdf>. Contact Frank Schultz, Waste Management Team Supervisor, (414) 263-8694, for information.

### **Land - Endangered or threatened species**

No state threatened or endangered species are present in the project area.

Emerald Ash Borer invasive insects are present in Milwaukee County. The Department of Agriculture, Trade and Consumer Protection has established an ash products quarantine to help slow the insects spread. The quarantine may affect clearing and grubbing operations. Information is available at <https://onlineservices.datcp.wi.gov/eab/index.jsp>.

Thanks again for the opportunity to provide Department comments. Please contact me by e-mail at [michaelc.thompson@wisconsin.gov](mailto:michaelc.thompson@wisconsin.gov) or by phone at (414) 263-8648 to discuss the project further. I look forward to reviewing the Project's Environmental Assessment.

Sincerely,



Michael C. Thompson  
Environmental Analysis Team Supervisor

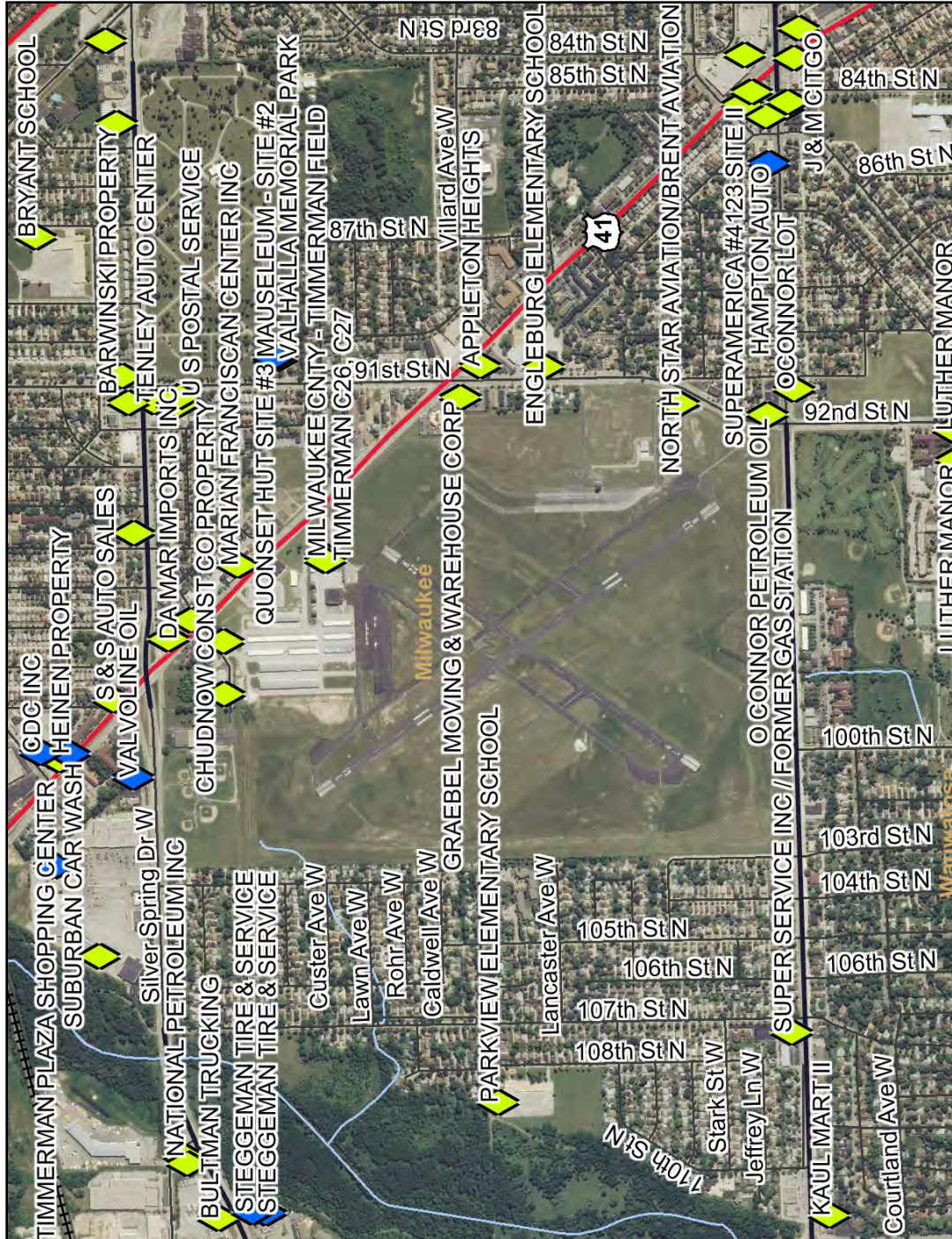
Cc: Timothy Kipp, Milwaukee County – General Mitchell International Airport  
Greg Failey, Milwaukee County - General Mitchell International Airport  
Jerry Kelly, DOT  
Scott Lee, DOT  
Sharon Gayan, DNR  
Mike Friedlander, DNR  
Mark Davis, DNR  
Dan Schramm, DNR  
John Hnat, DNR  
Frank Schultz, DNR  
Owen Boyle, DNR



Exhibit B  
PROPOSED ACTION



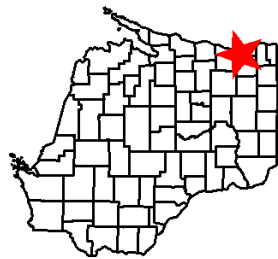
# Map Created on Apr 14, 2011



0 1600 3200 4800 ft.

Map created on Apr 14, 2011  
Note: Not all RR Sites have been geo-located yet.

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.



## Legend

- ◆ Open Sites (ongoing cleanups)
- ◆ Open Sites (ongoing cleanups) - site boundaries shown
- ◆ Closed Sites (completed cleanups)
- ◆ Closed Sites (completed cleanups) - site boundaries shown
- County Boundary
- ✂ Railroads
- County Roads (WDOT)
- County Trunk Highway
- State and U.S. Highways (WDOT)
- State Trunk Highway
- US Highway
- Interstate Highways (WDOT)
- Interstate Highway
- Local Roads (WDOT)
- Civil Towns
- Civil Town
- 24K Open Water
- 24K Rivers and Shorelines
- Municipalities
- NAIP 2008 Color Air Photo



Scale: 1:16,788





- Major Highways**  
 Interstate  
 State Highway  
 U.S. Highways  
 County Roads  
 Local Roads  
**24K County Boundaries**  
 Civil Towns  
 Civil Town  
**USDA Wetspots**  
**DNR Wetland Points**  
 Excavated Pond  
 Dammed Pond  
 Wetland Too Small to Delineate  
 Filled Excavated Pond  
 Filled Dammed Pond  
 Filled Wetland Too Small to Delineate  
 Filled or Drained Wetland  
**DNR Wetland Areas**  
 Upland  
 Wetland  
 Filled or Drained Wetland  
**Wetland Indicator Soils**  
 24K Open Water  
**24K Rivers and Shorelines**  
 Intermittent  
 Fluctuating  
 Perennial  
**Cities and Villages**  
 Village  
 City

Scale: 1:16,165



0 1500 3000 4500 ft.

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

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## ENGINEERING REPORT

## **Appendix C – Engineering Report**

*Lawrence J. Timmerman Airport*

*Environmental Assessment for Runway Extension*

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This appendix includes the preliminary engineering report which outlines the design and construction requirements for the proposed extension project at Lawrence J. Timmerman Airport. The report identifies specific paving, grading, and drainage requirements and associated construction costs.

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# **Lawrence J. Timmerman Airport**

## **Environmental Assessment for the Proposed Extension of Runway 15L-33R**

**Milwaukee County, Wisconsin**

### **Technical Memorandum**

**May 19, 2011**

**Prepared for:**

Coffman Associates

and

Milwaukee County

**Prepared by:**

Edwards Engineering Consultants, LLC

7665 N. Port Washington Road, Suite 103

Milwaukee, WI 53217

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2.0. Runway Extension .....	1
3.0. Grading .....	1
4.0. Drainage .....	2
5.0. Construction Costs .....	3
6.0. References .....	3

### **ATTACHMENTS**

#### **Figures**

Figure 1- Plan/Profile

Figure 2- Typical Sections

Figure 3- Drainage Diagram

#### **Tables**

Probable Construction Costs

## **1.0 Introduction**

The purpose of this memo is to outline various aspects related to the preliminary design of the runway extension project at Lawrence J. Timmerman Airport (Timmerman) for the environmental assessment (EA) document. The proposed runway extension involves lengthening both ends of Runway 15L-33R by 300 feet to meet the needs of existing airport users. This memo will focus on the design and construction requirements for the proposed extension and will identify specific paving, grading, and drainage requirements along with the associated construction costs.

## **2.0 Runway Extension**

As previously stated, the proposed project involves extending Runway 15L-33R at Timmerman by 300 feet at the north and south ends. It is anticipated that the runway extension will have the same cross slope and longitudinal slope as the existing runway in order to have a uniform landing/takeoff surface. This design approach is intended to avoid any slope transitions that do not comply with Federal Aviation Administration (FAA) guidelines for runways. Use of a vertical curve in the design of the runway extension was not a consideration due to the 300-foot minimum curve length requirement by the FAA, which would require partial reconstruction of the existing runway ends which is not within the scope of this project. The existing slopes of Runway 15L-33R are as follows:

Existing Runway Pavement Slopes		
Location	Longitudinal Slope	Cross Slope
15L	0%	1%
33R	0.3%	0%*

\* a 1% slope should be used to promote drainage in accordance with FAA guidelines

It should be noted that although the 0% longitudinal slope at 15L is below the minimum slope of 0.3% recommended by FAA guidelines, it still drains due to the 1% cross slope which directs runoff laterally to either side of the runway. Figure 1 shows a plan and profile view of the proposed runway extension and Figure 2 shows the proposed cross slopes at 15L and 33R.

In addition to matching the existing slopes for the proposed extension it is anticipated that the pavement composition will be the same as the existing runway. This approach is also used with regards to the adjacent taxiways. Based on information obtained from Milwaukee County (County) the current pavement composition of Runway 15L-33R and the taxiways are as follows:

Existing Pavement Sections		
Material	Runway 15L-33R	Taxiways
Asphalt (P401)	5 inches*	8-1/2 inches**
Base Aggregate (P209)	5 inches	5 inches
Open Graded Base (P154)	5 inches	5 inches

\* installed in two separate lifts of 2 inches and 3 inches

\*\* installed in three separate lifts- 2, 2-1/2, and 4 inches

## **3.0 Grading**

FAA guidelines were followed in the proposed grading scheme within the runway safety area (RSA) surrounding both ends of Runway 15L-33R. The RSA for 15L extends 300 feet north of the proposed pavement extension and is 150 feet wide. The RSA for 33R extends 100 feet south of the proposed pavement extension and is also 150 feet wide. For 15L, a slope of 33:1 was used for the initial 200 feet north of the runway extension and a 20:1 slope was used for

the remaining 100 feet inside the RSA. A maximum 4:1 slope was used outside of the RSA in order to minimize the amount of fill needed for the runway extension. A profile of the proposed fill slopes is shown in Figure 1. For 33R, a slope of 33:1 was used within the RSA and a 4:1 slope was used outside of the RSA in accordance with FAA guidelines. A profile of the proposed fill slope for 33R is also shown in Figure 1.

The cross slopes within the RSA for both 15L and 33R ranged from 1.5% to 5%. This slope range ensures that storm water runoff from the runway pavement continues to flow from the runway surface to adjacent drainage facilities. Proposed cross slopes outside of the RSA are typically 4:1 in order to minimize the amount of fill needed for the project. It should be noted that the proposed cross slopes used for the runways were also used for the adjoining taxiways. Figure 2 shows the proposed typical sections for the runway and taxiways at 15L and 33R.

Preliminary earthwork computations were conducted based on the proposed grading scheme shown in Figures 1 and 2. The following table shows a summary of the cut and fill volumes, in cubic yards, associated with the proposed grading:

Calculated Earthwork Volumes (cubic yards)			
Location	Cut	Fill	Net
15L	39,600	85,900	46,300
33R	4,700	4,800	100
<b>Totals</b>	<b>44,300</b>	<b>90,700</b>	<b>46,400</b>

The net total (46,400 cubic yards) from the table above indicates the amount of fill material that needs to be imported to the project site. This is due to the proposed runway extension being located in low lying areas and the lack of on-site excavation required for the project. No shrinkage or expansion factors were incorporated into the total.

#### **4.0 Drainage**

Topographic information obtained from the County was analyzed and drainage basins were delineated within the Timmerman property. The results of the analysis show that four (4) drainage basins exist within the property boundaries. For purposes specific to this section of the report, the four (4) drainage basins were labeled 'A' through 'D' and are shown in Figure 3.0. Analysis of the existing and proposed drainage patterns of Timmerman was limited to the two drainage basins (A & C) that are affected by the proposed project. Basins 'B' and 'D' were excluded from the analysis because there are no drainage impacts to those basins as a result of the proposed work. Storm water runoff rates were calculated for typical storm events using the Rational Method for the current or "existing" conditions in basin 'A' and 'C' as well as for the post-project or "proposed" condition. The Rational Method is a commonly used method to calculate peak storm water runoff rates for a given area and is defined by the following formula:

**Q=CiA**, where

'Q' is the peak runoff rate in cubic feet per second (cfs)

'C' is the runoff coefficient which defines the type of surface within the basin

'i' is the rainfall intensity of a particular storm event in inches per hour (in/hr)

'A' is the area of the basin in acres (ac)

Peak runoff rates (Q) were calculated by assigning values to the components of the formula above. For the runoff coefficient (C), values of 0.95 and 0.20 were used for pavement and grass areas respectively. Intensities (i) for the 10, 25, 50 and 100-year storm events were derived from the Milwaukee Metropolitan Sewerage District's (MMSD) "Recommended Design Rainfall Depths for the Southeastern Wisconsin Region" table<sup>1</sup>. And areas (A) for basins 'A' and 'C' were used in the computations. The following table summarizes the results of the drainage analysis:

Storm Event	Basin A Storm Water Runoff (cfs)			Basin C Storm Water Runoff (cfs)		
	Existing	Proposed	% Change	Existing	Proposed	% Change
10-year	21.1	22.8	7.5%	102.2	102.3	0.1%
25-year	25.5	27.6	7.6%	129.4	129.6	0.2%
50-year	29.5	32.0	7.8%	160.5	160.8	0.2%
100-year	33.5	36.3	7.7%	185.4	185.7	0.2%

In basin 'A' there was an increase in storm water runoff due to the relative increase in pavement area within the basin. The existing pavement area in basin 'A' is 2.4 acres while the proposed pavement area of 2.0 acres, minus the removed existing pavement of 0.7 acres, results in a net increase of 1.3 acres in pavement area or 3.7 acres of total pavement area. Within a total area of 58.1 acres for basin 'A' that resulted in a runoff coefficient (C) increase from 0.23 to 0.25 which contributed to the increased runoff rates. Since the County follows the runoff management guidelines of MMSD, the rules outlined in the "Surface & Storm Water Rules Guidance Manual"<sup>2</sup> should be followed in managing the increased runoff rates. One method that could be implemented in reducing the increased runoff rates is the use of a dry detention basin. A dry detention basin is recommended due to its low construction costs, low maintenance aspects and the fact that needed fill material can be generated from its construction. Figure 3 shows a suggested location for the dry detention basin in basin 'A'. The dry detention basin shown in Figure 3 is approximately 100 feet wide and 500 feet long with an average depth of 3 feet which amounts to 3.4 acre-feet of potential storage. This location could capture and detain most of the storm water runoff from the proposed runway extension at 15L as well as runoff generated from any potential improvements to the hanger area east of 15L. The discharge location for the detention facility is the existing ditch located the fence west of 15L. It should be noted that the detention basin could be expanded to the south to obtain more fill material for the extension of 15L.

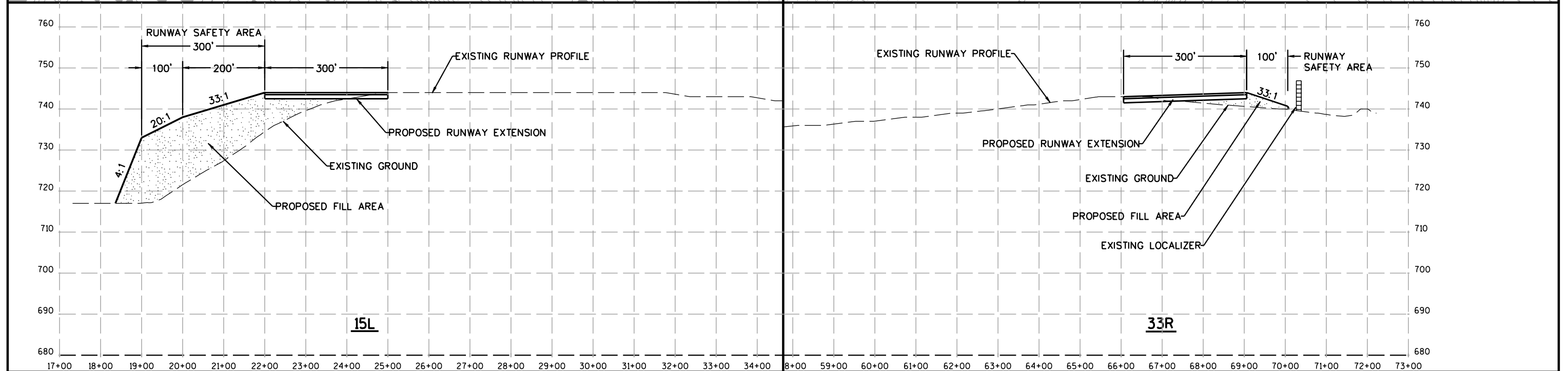
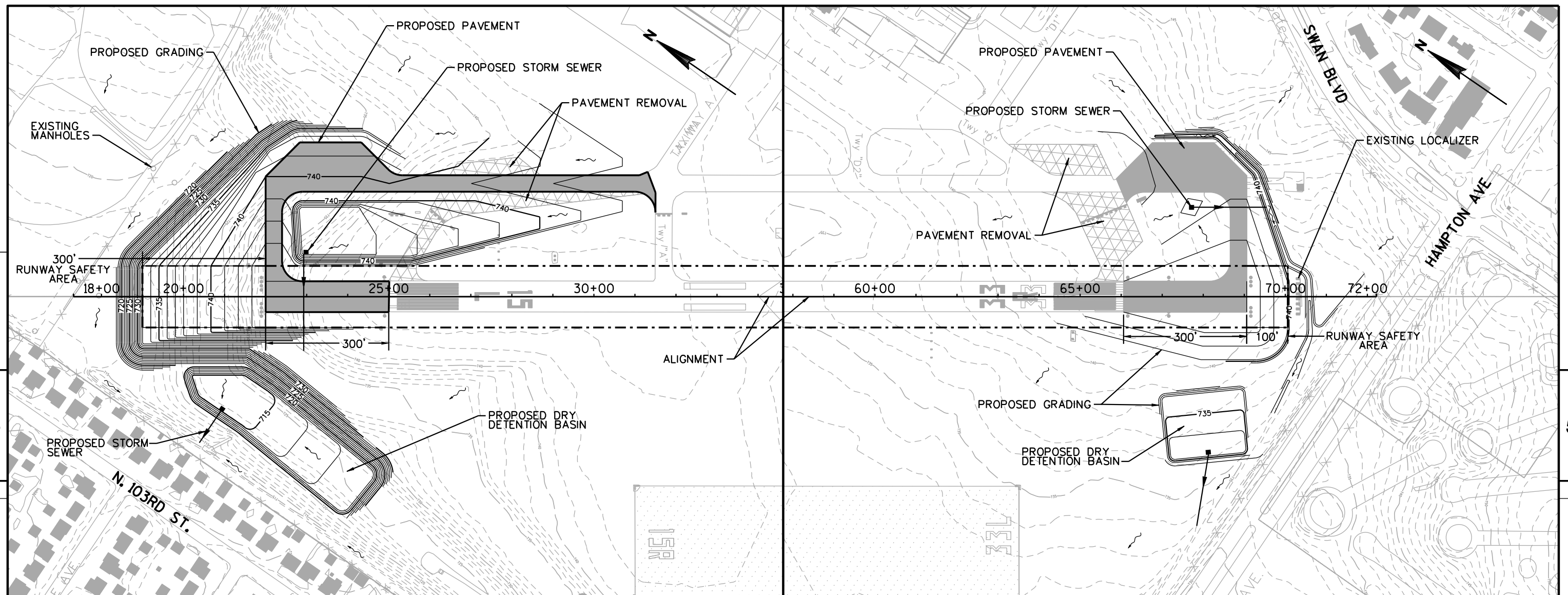
In basin 'C' there was almost no change in the storm water runoff rates from the existing to proposed condition. This is primarily due to the amount of pavement area only increasing by 0.6 acres in the proposed condition within the 258.3 acre basin. That resulted in no visible change to the runoff coefficient (C) which was computed to be 0.41 for this area. Although there was very little change in the runoff rates for basin 'C', under MMSD guidelines, any development that results in the increase of one-half acre or more in new impervious area is subject to providing storm water management plans that comply with MMSD runoff management requirements. To meet these requirements Figure 3 shows a dry detention basin located between 33R and 33L. The detention basin shown has a 200-foot by 200-foot perimeter with an average depth of 1.5 feet which amounts to 1.4 acre-feet of potential storage. This location could capture and detain most of the storm water runoff from the proposed runway extension at 33R.

## 5.0 Construction Costs

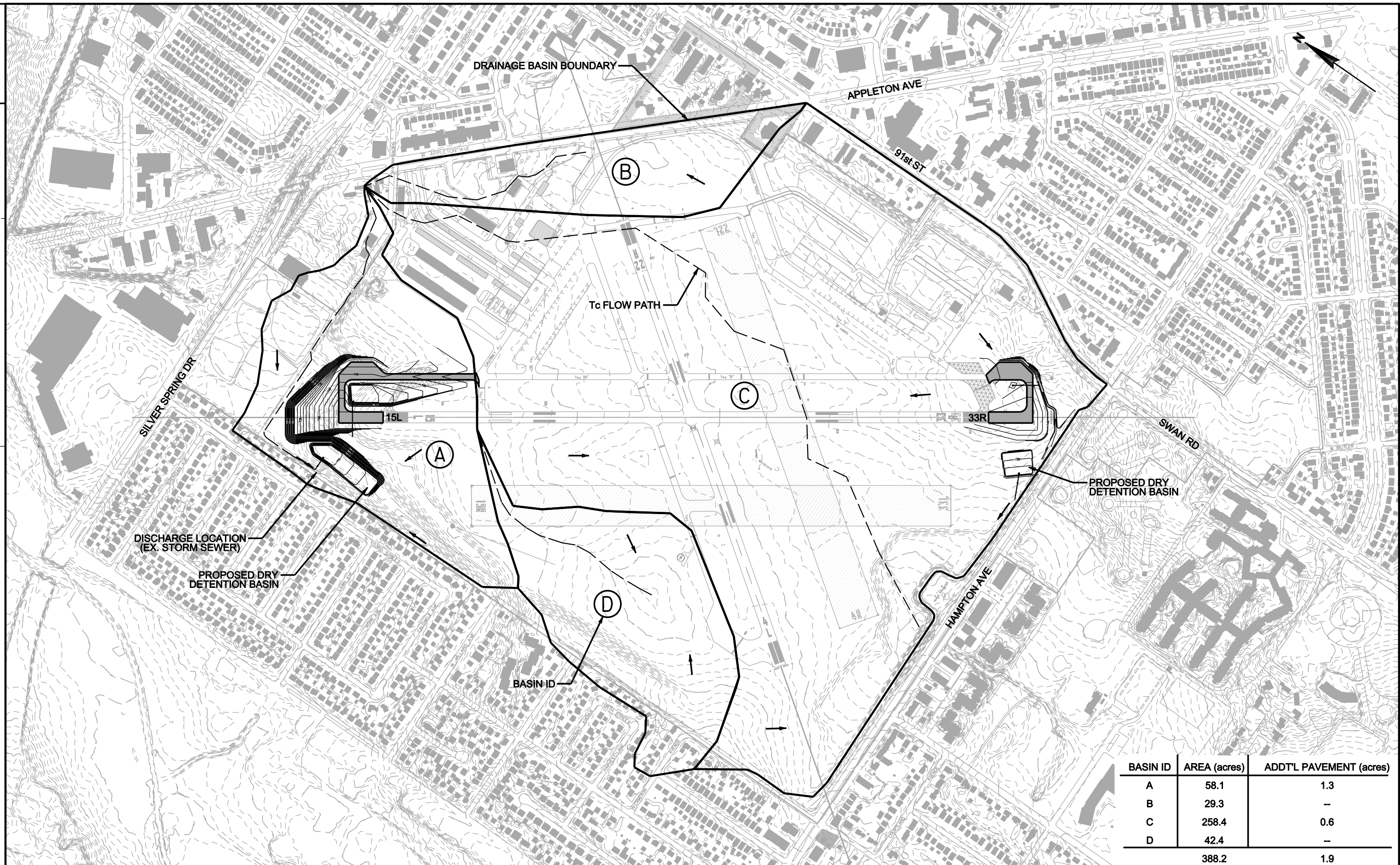
Estimated construction costs associated with the runway extension project are shown in the attached "Probable Construction Costs" table. Unit costs shown in the table were primarily obtained from the Wisconsin Department of Transportation's "Average Unit Price List Bid"<sup>3</sup> for 2010 as well as from other bid results from similar sized projects. For the purposes of this EA, only the larger construction items were tabulated with a contingency added to the total to account for smaller construction items.

## 6.0 References

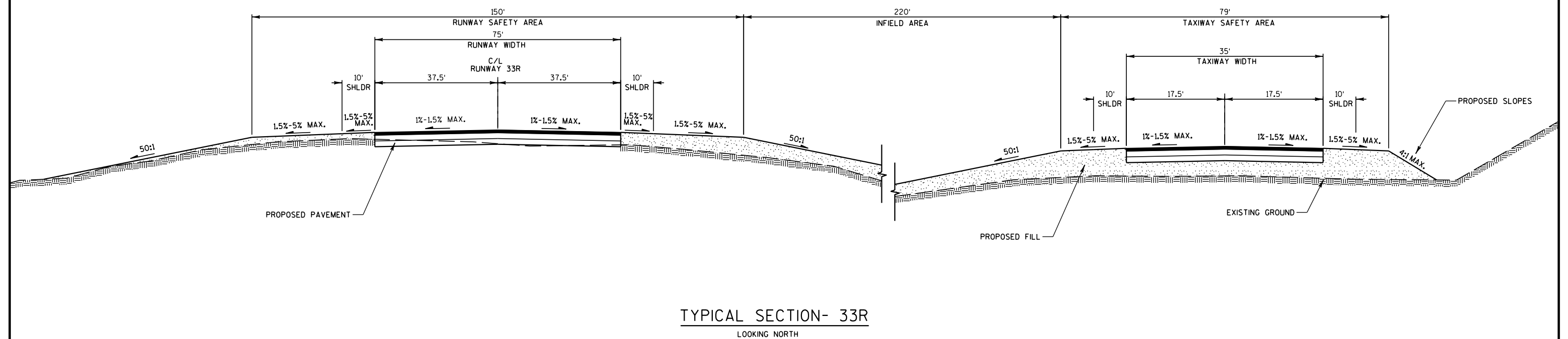
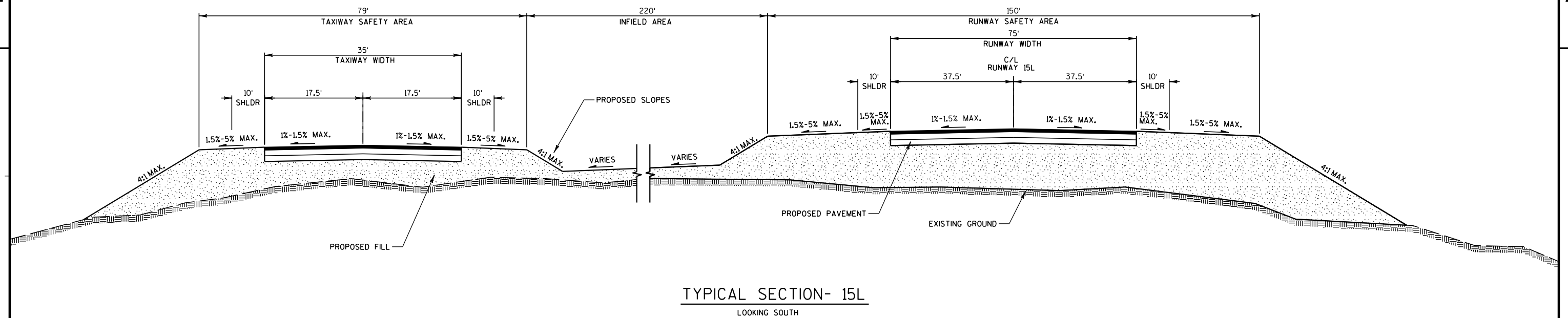
- 1) "Recommended Design Rainfall Depths for the Southeastern Wisconsin Region", in Surface & Storm Water Rules Guidance Manual, Appendix F, Milwaukee Metropolitan Sewerage District (MMSD), January 01, 2002.
- 2) "Surface & Storm Water Rules Guidance Manual", Volume 2- Chapter 13 Technical Guidelines, Milwaukee Metropolitan Sewerage District (MMSD), November, 2010.
- 3) "Average Unit Price List", (Wisconsin Department of Transportation), <http://roadwaystandards.dot.wi.gov/hcci/bid-letting/reports/aupfy08-10.pdf> (Accessed April 21, 2011)







BASIN ID	AREA (acres)	ADD'T'L PAVEMENT (acres)
A	58.1	1.3
B	29.3	—
C	258.4	0.6
D	42.4	—
388.2		1.9





**Timmerman EA**  
**Probable Construction Costs**  
**5/19/2011**

No.	Item	Description	Unit	Qty	Unit Cost	Cost
1	Erosion Control	silt fence, tracking mats, inlet protection	LS	1	\$20,000	\$20,000
2	Demolition	demo of existing taxiway pavement	SY	7,800	\$3	\$23,400
3	Rough Grading	grading cut areas, detention basins & placement of borrow in fill areas	CY	44,300	\$4	\$177,200
4	Import Fill	importing fill, placement, compaction	CY	46,400	\$6	\$278,400
5	Storm Sewer	outlet structures for detention basins, inlets, pipe	LS	1	\$80,000	\$80,000
6	Asphalt Pavement	runway & taxiway pavement	TON	8,000	\$75	\$600,000
7	Base Course	base course and open graded material below asphalt paving	TON	23,000	\$20	\$460,000
8	Finish Grading	including seeding, mulching, fertilizer	SY	97,000	\$3	\$291,000
9	Lighting	runways & taxiways, medium intensity lighting including conduit	LF	4,700	\$80	\$376,000
						<hr/>
						Subtotal \$2,306,000
						Contingency \$576,500
						<hr/>
						<b>Total \$2,882,500</b>
						25%

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**ARCHAEOLOGICAL SURVEY REPORT**

## Appendix D – Archaeological Survey Report

### *Lawrence J. Timmerman Airport*

### *Environmental Assessment for Runway Extension*

---

An archaeological field survey report was prepared for the proposed runway extension at Lawrence J. Timmerman Airport. The report was prepared to determine the presence of properties eligible for inclusion on the National Register of Historic Places (NRHP) and is incorporated as part of this document by reference. This appendix contains materials to document required consultation under Section 106 of the *National Historic Preservation Act of 1966* and Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*.

#### **Section 106 Consultation**

Page D-3 includes a copy of the Wisconsin State Historic Preservation Officer's response to the Wisconsin Department of Transportation, Bureau of Aeronautics' request for concurrence with the finding that no NRHP-eligible properties are located within the project's area of potential effect.

#### **Consultation and Coordination with Indian Tribal Governments**

Page D-5 begins documentation of Wisconsin Department of Transportation's consultation with Indian Tribal Governments regarding the proposed project at Lawrence J. Timmerman Airport. The attached letter was sent to the addresses listed below. One response was received, a copy of which is included at the end of this appendix.

Bad River Band of Lake Superior  
Chippewa Indians of Wisconsin  
Attn: Edith Leoso, THPO  
P.O. Box 39  
Odanah, WI 54861

Forest County Potawatomi Community of Wisconsin  
Attn: Mike Alloway  
Tribal Office  
P.O. Box 340  
Crandon, WI 54520

Ho-Chunk Nation  
Attn: William Quackenbush, THPO Executive Offices  
P.O. Box 667  
405 Airport Road  
Black River Falls, WI 54615

Lac Vieux Desert Band of Lake Superior Chippewa Indians  
Attn: giiewegiizhigookway Martin, THPO  
Ketegitigaaning Ojibwe Nation  
P.O. Box 249  
Watersmeet, MI 49969

Menominee Indian Tribe of Wisconsin  
Attn: Dave Grignon, THPO  
P.O. Box 910  
Keshena, WI 54135

Prairie Band Potawatomi Nation  
Attn: Chairman Steve Ortiz, NHPA Rep.  
16281 Q Road  
Mayetta, KS 66509

Red Cliff Band of Lake Superior  
Chippewa Indians of Wisconsin  
Attn: Larry Balber, THPO  
Red Cliff Band of Lake Superior Chippewa Indians  
88385 Pike Road, Highway 13  
Bayfield, WI 54814

Sac and Fox Nation of Missouri in Kansas and  
Nebraska  
Attn: Jane Nioce  
305 N. Main  
Reserve, Kansas 66434

Sac and Fox Nation of Oklahoma  
Attn: Sandra Massey, NAGPRA Rep.  
RR 2, Box 246  
Stroud, OK 74079

Sac and Fox of the Mississippi in Iowa  
Attn: Jonathan Buffalo, NAGPRA Rep.  
349 Meskwaki Road  
Tarna, Iowa 52339-9629

Sokaogon Chippewa Community  
Mole Lake Band  
Attn: Cultural Resource Director  
3051 Sand Lake Road  
Crandon, WI 54520

# AERONAUTICS

## SECTION 106 REVIEW

### ARCHAEOLOGICAL/HISTORICAL INFORMATION

Wisconsin Department of Transportation

11-0277/m1

SHPO

RECEIVED  
OCT 07 2011  
DIV HIST PRES

#### I. PROJECT INFORMATION

FOS Project ID AIP 3-55-0046-13 [0740-56-13]	County Milwaukee County
Airport Name Lawrence J. Timmerman Airport	Airport Manager Barry Bateman
Project Engineer/Project Manager Wendy Hottenstein, P.E., Bureau of Aeronautics	(Area Code) Telephone Number 608-261-6278
Planning/Design Consultant Kory Lewis, Coffman Associates, Inc.	(Area Code) Telephone Number 816-524-3500
Archaeological Consultant Katherine E. Shillinglaw, Great Lakes Archaeological Research Center, Inc.	(Area Code) Telephone Number (414) 481-2093
Architecture/History Consultant Katherine E. Shillinglaw, Great Lakes Archaeological Research Center, Inc.	(Area Code) Telephone Number (414) 481-2093
Date of Need September 2, 2011	

#### II. PROJECT DESCRIPTION

Type of Project	<input type="checkbox"/> New Construction	<input type="checkbox"/> Reconstruction	<input type="checkbox"/> Recondition	<input type="checkbox"/> Other
	<input type="checkbox"/> Wetland Mitigation	<input checked="" type="checkbox"/> Runway Extension	<input type="checkbox"/> Land Acquisition	
<input type="checkbox"/> Known Cemetery	Amount of land to be disturbed: Acres 69.7	Amount of acres to be acquired Acres 0		

Describe ground disturbing activity associated with proposed construction - e.g., strip construction, slope grading, temporary bypass, realignment, stream channel change, etc.

Brief Project Description: (Be specific and include all activities associated with the project.)

Milwaukee County is proposing improvements to Lawrence J. Timmerman Airport that will allow the airport to better serve general aviation operators by extending the primary runway by an additional 600 feet by constructing an additional 300 feet at each end of Runway 15L-33R. Additionally, the associated parallel taxiway will be extended and drainage improvements will be made in conformance with Milwaukee Metropolitan Sewerage District (MMSD) Chapter 13, Surface and Storm Waters Rules. Construction of the proposed improvements, depicted on Exhibit 1, will include grading, paving and drainage improvements.

In accordance with Federal Aviation Administration *Advisory Circular 150/5300-13, Airport Design* (FAA AC 150/5300-13), the proposed grading scheme within the runway safety area (RSA) at the Runway 15L end extends 300 feet north of the proposed pavement extension and is 150 feet wide. The RSA at the Runway 33R extends end 100 feet south of the proposed pavement extension and is also 150 feet wide.

Drainage analysis indicates that four drainage basins are present on the airport, two of which (Basin A and Basin C) will be altered as a result of the proposed projects. Based on the drainage calculations, the proposed improvements result in a net increase of 1.3 acres within Basin A and 0.6 acres in Basin C. To manage runoff rates in accordance with MMSD Surface and Storm Water Rules, two dry detention basins are proposed. The dry detention basins will capture and detain most of the storm water runoff from the proposed runway extensions.



### III. NOTIFICATION

How has notification of the project been provided to:

- ☒ Property Owners  
☒ Public Information Meeting Notice (Attachment 1)  
☐ Letter [required for Archaeology]  
☐ Telephone Call  
☐ Other

- ☒ Historical Societies/Organizations  
☐ Public Information Meeting Notice  
☒ Letter (Attachment 2)  
☐ Telephone Call  
☐ Other

- ☒ Native American Tribes  
Must notify with:  
☐ Public Info. Mtg. Notice  
☒ Letter

\*Attach one copy of the base letter, list of addresses and comments received. For history include telephone memos as appropriate.

### IV. AREA OF POTENTIAL EFFECTS [APE]

**HISTORY:** Describe the area of potential effects for buildings/structures.

The APE, depicted on Exhibit 2, includes all portions of the project area that may be physically disturbed during construction of the proposed project (area of direct impact) and those areas located within the existing and proposed Runway Protection Zones (RPZs) identified as the area of indirect impact. The area of direct effect includes portions of the existing runway and taxiway system and other associated aviation support infrastructure including lighting and navigation systems. Much of the project area was previously disturbed during soil stripping, grading, and other construction activities related to constructing and contouring at the ends of the runway. The area of indirect effect includes those properties adjacent to the airport which are located within the existing or future RPZs. These areas are developed with residential or commercial structures.

If you wish to claim there is no APE for buildings/structures, you must justify that claim. [NOTE: If there are no buildings/structures of any kind in the APE, go to Item V., check "Architecture/History survey is not needed" and state why.]

**ARCHAEOLOGY:** Area of potential effect for archaeology is the existing and proposed ROW, temporary and permanent easements. Agricultural practices do not constitute a ground disturbance. APE is described above.

### V. SURVEY NEEDED

ARCHAEOLOGY	HISTORY
<input checked="" type="checkbox"/> Archaeological survey is needed [See Chapter 26-35-1 of FDM for procedure and # of exhibits]	<input type="checkbox"/> Architecture/History survey is needed.
<input type="checkbox"/> Archaeological survey is not needed - provide justification <input type="checkbox"/> SHPO records search conducted (date). <input type="checkbox"/> Screening list (date). <input type="checkbox"/> No potential to affect archaeological sites Describe project area and attach project plans	<input checked="" type="checkbox"/> Architecture/History survey is not needed see attached letter 9/8/11 from Coffman Assoc.

**Note:** No historic properties are within area of potential effect, see Attachment 3.

### VI. SURVEY COMPLETED-Documentation required for submittal to BOE

ARCHAEOLOGY	HISTORY
<input type="checkbox"/> Project maps attached [most recent design] <input checked="" type="checkbox"/> ASFR attached [NO archaeological sites(s) identified] <input type="checkbox"/> Report attached [NO potentially eligible site(s) in project area] <input type="checkbox"/> Report attached [potentially eligible site(s) avoided] <input type="checkbox"/> Report attached - cemetery documentation <input type="checkbox"/> Native American response letters & reports [Send four reports + # of copies for NA requests to district.]	<input type="checkbox"/> A/HSF attached [NO buildings/structures identified] <input type="checkbox"/> A/HSF attached [potentially eligible buildings/structures identified.]

### VII. EVALUATION COMPLETED-Documentation required for submittal to BOE

<input type="checkbox"/> Report attached [no arch site(s) eligible for NRHP] <input type="checkbox"/> Report and DOE attached [arch site(s) eligible for NRHP] <input type="checkbox"/> Report and draft DOE attached [arch site(s) eligible for NRHP—avoided through project redesign]	<input type="checkbox"/> DOE attached [no buildings/structure(s) eligible for NRHP] <input type="checkbox"/> DOE attached [building/structure(s) eligible for NRHP]
---	--

### VIII. COMMITMENTS

### IX. PROJECT REVIEW

- ☒ No eligible properties in APE  
☐ No effect on historic buildings and/or archaeological sites eligible for NRHP — 1 Airport Bldg is eligible  
☐ Eligible properties may be affected by project-go to Step 4: Assess effects and begin consultation

Wally Hottel  
(BOA Project Manager)  
9-12-11  
(Date)  
Kenny Lewis  
(Consultant Project Manager)  
9/12/2011  
(Date)

Wally Hottel  
(WisDOT Historic Preservation Officer)  
10/6/2011  
(Date)

Kimberly A. Cook  
(State Historic Preservation Officer)  
Oct 24, 2011  
(Date)

Please remember that Architecture/History surveys (even "windshield") need to be done by a qualified individual.



Division of Transportation  
Investment Management  
PO Box 7914  
Madison, WI 53707-7914

Scott Walker, Governor  
Mark Gottlieb, P.E., Secretary  
Internet: [www.dot.wisconsin.gov](http://www.dot.wisconsin.gov)

Telephone: 608-266-3351

Facsimile (FAX): 608-267-6748

September 7, 2011

Bad River Band of Lake Superior  
*Chippewa Indians of Wisconsin*  
Attn: Edith Leoso, THPO  
P.O. Box 39  
Odanah, WI 54861

**Lawrence J. Timmerman Environmental Assessment for  
Runway 15L/33R Extension**

The Wisconsin Department of Transportation, Bureau of Aeronautics, is beginning preliminary studies for a runway extension at Lawrence J. Timmerman Airport in Milwaukee County. Information obtained from these studies will assist in the design stage to either avoid or minimize the project's effect upon environmental resources. A public hearing is planned to be held during the environmental assessment process. Plans for the project under consideration are described as follows:

- Extend the primary Runway 15L/33R and its parallel taxiway by an additional 600 feet by constructing an additional 300 feet at each end of the runway along with runway safety area improvements off the ends of the runway.
- Drainage improvements will be made in conformance with Milwaukee Metropolitan Sewerage District (MMSD) Chapter 13, Surface and Storm Waters Rules. Analysis indicates that four drainage basins are present on the airport, two of which (Basin A and Basin C) will be altered as a result of the proposed projects. Based on the drainage calculations, the proposed improvements result in a net increase of 1.3 acres within Basin A and 0.6 acres in Basin C.

Enclosed are Exhibits 1 and 2 showing the project area and proposed improvements.

The project may involve federal funds so WisDOT will proceed in accordance with Section 106 of the National Historic Preservation Act. Section 106 assures that an agency identify, evaluate and, if necessary, mitigate prehistoric and historic archaeological sites, burial areas or historic buildings in the project area.

We would be pleased to receive any comments regarding this project or information you wish to share pertaining to archaeological resources located in the area. If your tribe would like to become an interested party under Section 106 of the National Historic Preservation Act or if you would like to receive additional information regarding this proposed project, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Wendy A. Hottenstein".

Wendy A. Hottenstein, P.E.  
Airport Development Engineer

wah  
404bdev.dot/r.01/06/11

cc: Jim Becker, Bureau of Equity & Environmental Services

Bureau of Aeronautics, 4802 Sheboygan Ave., Room 701, Madison, WI 53705

# **LAC VIEUX DESERT BAND OF LAKE SUPERIOR CHIPPEWA INDIANS**

## **Ketegitigaaning Ojibwe Nation Tribal Historic Preservation**

P.O. Box 249, E23857 Poplar Circle Watersmeet, MI 49969

Phone: 906-358-0137 or 0138 Fax: 906-358-4850



Date: September 12, 2011

Project ID: Lawrence J. Timmerman Airport Milwaukee, Runway 15L/33R, and Drainage

Booshoo,

The Ketegitigaaning Ojibwe Nation THPO (Lac Vieux Desert Chippewa) received your requests for comments or interest concerning the National Historic Preservation Act, Section 106 request for review and comment to the effect on historic and cultural sites within the proposed project area. The LVD Tribal Historic Preservation Office has no interests documented at this time in the proposed project areas. LVD has conducted its database research, file research and find no sites within the project area at this time. However that does not mean that they do not exist. It is LVD's belief that many prehistoric sites and Indian historic sites in the area have not yet been identified or documented. LVD is among the many Tribes initiating the process of assisting in this endeavor. LVD urges you to consult other Indian Tribes in your immediate area that may have interests in your project area, if you have not already done so.

If the scope of work changes in any way, or if artifacts or human remains are discovered, please notify LVD immediately so we can assist in making an appropriate determination. LVD urges you to consult other Indian Tribes in your immediate area that may have interests in your project area, if you have not already done so.

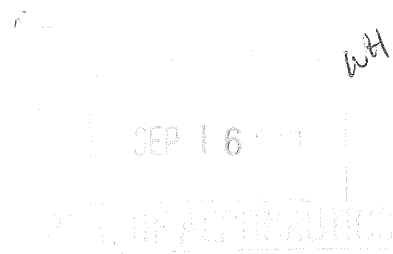
Please forward any future request for review of historic and cultural properties according to the National Historic Preservation Act Section 106 to giiwegiizhigookway Martin, Officer, Tribal Historic Preservation Office. Please keep us informed of future projects as LVD plans to increase our efforts to identify and document sites in the area.

Miigwetch,

giiwegiizhigookway Martin

giiwegiizhigookway Martin, THPO  
Ketegitigaaning Ojibwe Nation  
Tribal Historic Preservation Office  
P.O. 249  
E23857 Poplar Circle  
Watersmeet, Michigan 49969  
Phone: 906-358-0137  
Fax: 906-358-4850

email: gmartin@lvdtribal.com



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## WETLAND SURVEY REPORT

## **Appendix E – Wetland Survey Report**

*Lawrence J. Timmerman Airport*

*Environmental Assessment for Runway Extension*

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This appendix includes the results of the wetland survey conducted for the proposed runway extension project at Lawrence J. Timmerman Airport. A field investigation was conducted to identify the presence of wetlands within the proposed project area.



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April 25, 2011

Linda J Fellenz  
President  
LF Green Development, LLC  
PO Box 370888  
Milwaukee, WI 53237

**SUBJECT: Wetland Investigation**  
Timmerman Airport Runway Expansion  
Milwaukee, Wisconsin

Dear Linda:

At your request, Ecological Services of Milwaukee, Inc. (ESM) performed a field investigation on April 25, 2011 to at the Timmerman Airport Project Area (Study Area; Figure 1) to identify existing wetlands. No wetlands were identified within the Study Area during the field investigation. This letter provides a summary of site conditions and documents the results of the field investigation.

### **Location**

Timmerman Airport is located in Section 32, Township 8 North, Range 21 East in Milwaukee County, Wisconsin, approximately one-half mile east of the Menomonee River. The airport is bounded by Silver Spring on the north, Hampton Avenue on the south, residential properties on the west, and Appleton Avenue and 91<sup>st</sup> Street on the east.

The Study Area (Figure 1) consists of two areas that extend beyond an existing runway. These areas are located in the far northwest and southeastern portions of the airport property.

### **Existing Mapping**

The Site is depicted on the Department of Natural Resources (WDNR) *Wisconsin Wetlands Inventory* (Figure 2). Approximate locations of wetlands have been identified by the WDNR on the Wisconsin Wetlands Inventory maps using aerial photo interpretation. As shown on Figure 2, no wetlands have been identified by WDNR within the airport boundaries.

### **Soil Types**

The *National Cooperative Soil Survey* (Soil Survey; Figure 2; USDA NRCS 2011) depicts inventoried soils within the area. The airport property has been modified through filling, grading to produce drainage swales, ditching and planting with turf grass. Although the soils on the majority of the airport property have not been inventoried, several areas are shown as containing Mequon silt loam – 0 to 2% slopes (MtA). This soil is listed on the Milwaukee County hydric

soils list as hydric inclusions in wetter soils. Mequon silt loam is not a whole unit hydric soil and is not listed on the National Hydric Soils List.

### **Plant Community Types**

No wetlands were identified within the Study Area during the field investigation. Photos taken during the field investigation show that the area consists of mowed lawn dominated by turf grasses and other early successional species including Fescue species (*Festuca* spp.), Kentucky bluegrass (*Poa pratensis*), Canada thistle (*Cirsium arvense*), English plantain (*Plantago lanceolata*), common plantain (*Plantago major*) and clover species (*Trifolium* spp.).

Photos 1-3 show the portion of the Study Area in the northwest corner of the airport property while photos 4-6 show the portion of the Study Area located in the far southeast corner. Drainage swales are present within both of these areas; however, the site has been effectively graded to drain standing water off of the airport property within a short period of time. Although 1-2 inches of standing water was visible on the site in several small (10 square feet to 200 square feet) depressional areas, there was no evidence of wetland vegetation and wetland hydrologic indicators were not observed in these areas. Furthermore, no damage to vegetation was apparent that would have been consistent with prolonged durations of standing water, indicating that the duration of standing water or soil saturation on the site is insufficient to allow for the formation of hydrologic conditions that would support wetland hydrology or wetland plant communities.

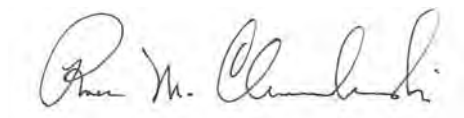
Photos 5 and 6 show a culvert crossing of the service road at the south end of runway 33R. Approximately one dozen dormant cattails (*Typha* spp.) were observed in this constructed swale area growing out of soil built up on the metal culvert pipe and directly adjacent to the pipe in an area measuring approximately 3x3 feet. However, there is no historic evidence of hydric soils or wetlands at this location and the wetland vegetation in this very small area likely exists solely due to backwater conditions created by the culvert and service road.

### **Summary**

No jurisdictional wetlands are present within the Study Area portion of the Timmerman Airport property. Conditions within the Study Area do not support either existing or developing wetland plant communities.

If you have any questions regarding the findings discussed in this report, please contact me at your convenience at (414) 247-1475. Thank you.

Sincerely,



Rose M. Chmielewski  
President

## REFERENCES

Environmental Laboratory. 1987. Corps of Engineers Delineation Manual. U.S. Army Engineer Waterways Experiment Station. Technical Report Y-87-1. Vicksburg, Mississippi. 100 pp. + appendices.

Natural Resources Conservation Service (NRCS; 2011). National Cooperative Web Soil Survey. Available on-line at: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Natural Resources Conservation Service (NRCS; 2005). *Hydric Soils of Milwaukee County* (list).

Reed, Porter B. 1988. National list of Plant Species That Occur in Wetlands: North Central Region (Region 3). U.S. Fish and Wildlife Service. Biological Report. 88 (26.3). 99 pp.

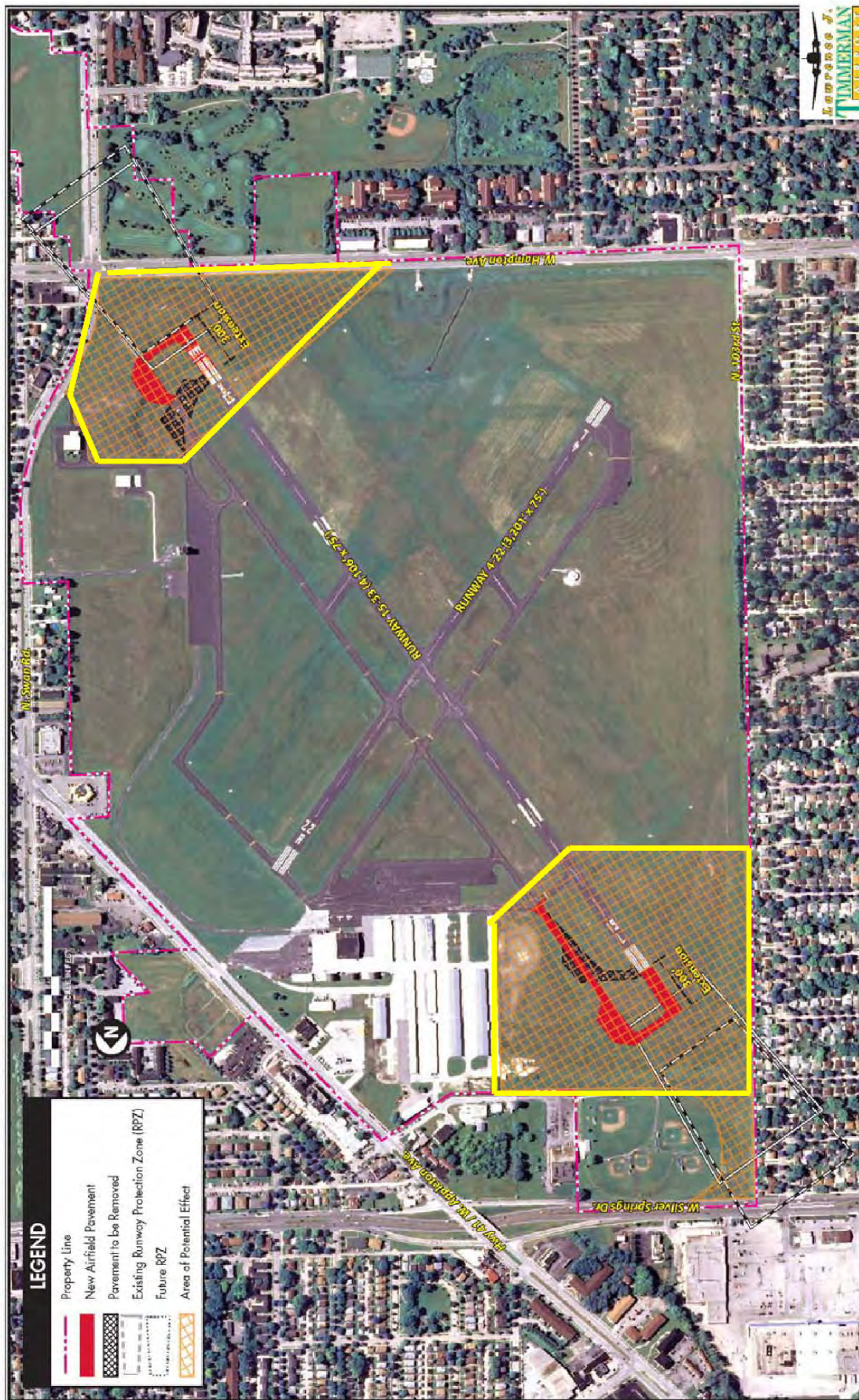
U.S. Army Corps of Engineers (COE). 2009. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. 152 pp, + Appendices.

Wisconsin State Herbarium: University of Wisconsin-Madison. Vascular Plant List. Available online at: <http://www.botany.wi.edu/wisflora/index.html>

Wisconsin Department of Natural Resources, 2011. Surface Water Data Viewer: Wisconsin Wetlands Inventory, Township 8 North, Range 21 East, Milwaukee County, Wisconsin. Available on-line at <http://dnrmaps.wi.gov/imf/imf.jsp?site=SurfaceWaterViewer.wetlands>



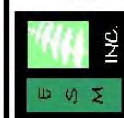




Approximate Study Area Boundary

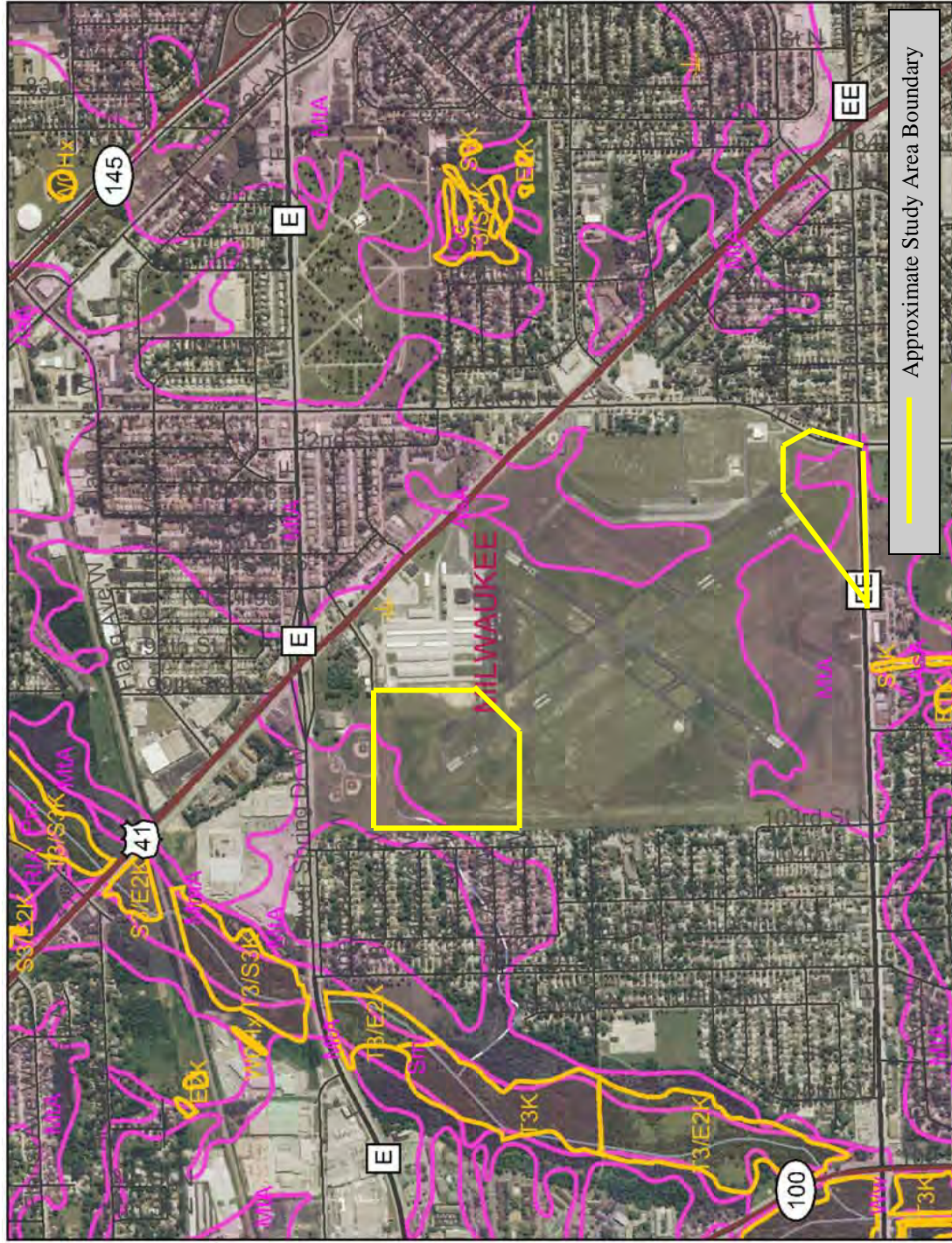
Exhibit —  
AREA OF POTENTIAL EFFECT

Ecological Services of Milwaukee, Inc.





# FIGURE 2: WETLANDS AND HYDRIC SOILS MAP



0 1800 3600 5400 ft.

Wisconsin Wetland Inventory (WWI) maps show graphic representations of the type, size and location of wetlands in Wisconsin. These maps have been prepared from the analysis of high altitude imagery in conjunction with soil surveys, topographic maps, previous wetland inventories and field work. State statutes define a wetland as "an area where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions." The principal focus of the WWI is to produce wetland maps that are graphic representations of the type, size and location of wetlands in Wisconsin. Within this context, the objective of the WWI is to produce reconnaissance level information on the location, type, size of these habitats such that they are accurate at the nominal scale of the 1:24,000 (1 inch = 2000 feet) base map. The DNR recognizes the limitations of using maps for regulatory purposes. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, State, or local agencies concerning specified agency regulatory programs and jurisdictions that may affect such activities. The most accurate method of determining the legal extent of a wetland for federal or state regulations is a field delineation by a professional trained in wetland delineation techniques.



## Legend

- Major Highways**
  - Interstate
  - State Highway
  - U.S. Highways
  - County Roads
  - Local Roads
- 24K County Boundaries**
- Civil Towns**
- Civil Town**
- USDA Wetspots**
- DNR Wetland Points**
- Excavated Pond**
- Dammed Pond**
- Wetland Too Small to Delineate**
- Filled Excavated Pond**
- Filled Dammed Pond**
- Filled Wetland Too Small to Delineate**
- Filled or Drained Wetland**
- DNR Wetland Areas**
  - Upland
  - Wetland
  - Filled or Drained Wetland
  - Wetland Indicator Soils
  - Wetland Open Water
- 24K Rivers and Shorelines**
  - Intermittent
  - Fluctuating
  - Perennial



Scale: 1:19,071





**Figure 3: Photo Log for the Timmerman Airport Study Area**



**Photo 1:** View to west towards runway expansion area in far northwest portion of airport property; residential area to west of airport property visible in background



**Photo 2:** View to south along constructed drainage swale. Photo taken approximately from north-south property line fence approximately 150 feet from northwest corner of airport property.



**Photo 3:** View to south along western boundary of airport property. Ditch line flow was apparent in approximately 200 feet of ditch at the time of the field investigation. No wetland plant species observed.



**Photo 4:** View facing south along service road at southern end of runway 33R in southeastern portion of Study Area.



**Photo 5:** View of vegetation at east side of culvert under service road at southern end of Runway 33R. This swale was observed to be dry during the field investigation.



**Photo 6:** View of vegetation at west side of culvert under service road at southern end of Runway 33R. This swale was observed to be dry during the field investigation.

## **NOISE MODELING AND AIR QUALITY INPUT ASSUMPTIONS**

## **Appendix F**

### **NOISE MODELING AND AIR QUALITY INPUT ASSUMPTIONS**

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This appendix includes information about the noise and air quality modeling assumptions.

#### ***AIRCRAFT NOISE ANALYSIS METHODOLOGY***

The standard methodology for analyzing noise conditions at airports involves the use of a computer simulation model. The Federal Aviation Administration (FAA) has approved the Integrated Noise Model (INM) for use in Environmental Assessments (EAs).

The INM describes aircraft noise in the Yearly Day-Night Average Sound Level (DNL). DNL accounts for the increased sensitivity to noise at night (10:00 p.m. to 7:00 a.m.) and is the metric preferred by the FAA, Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD), among others, as an appropriate measure of cumulative noise exposure. Further noise analysis is required if the results of the noise analysis indicate a 1.5 DNL increase in noise over any noise-sensitive area located within the 65 DNL noise contour.

The INM works by defining a network of grid points at ground level around the airport. It then selects the shortest distance from each grid point to each flight track and computes the noise exposure for each aircraft operation by aircraft type and engine thrust level, along each flight track. Corrections are applied for air-to-ground acoustical attenuation, acoustical shielding of the aircraft engines by the aircraft itself, and aircraft speed variations. The noise exposure levels for each aircraft are summed at each grid location. The DNL at all grid points is used to develop noise exposure contours for selected values (e.g.,

65, 70, and 75 DNL). Noise contours are then plotted on a base map of the airport environs using the DNL metrics.

In addition to the mathematical procedures defined in the model, the INM has another very important element. This is a database containing tables correlating noise, thrust settings, and flight profiles for most of the civilian aircraft and many common military aircraft operating in the United States. This database, often referred to as the noise curve data, has been developed under FAA guidance based on rigorous noise monitoring in controlled settings. In fact, the INM database was developed through more than a decade of research, including extensive field measurements of more than 10,000 aircraft operations. The database also includes performance data for each aircraft to allow for the computation of airport-specific flight profiles (rates of climb and descent). The most recent version of the INM, Version 7.0b, was used for modeling the noise condition for the purposes of this EA.

## INM INPUT

A variety of user-supplied input data is required to use the INM. This includes the airport elevation, average annual temperature, airport area terrain, a mathematical definition of the airport runways, the mathematical description of ground tracks above which aircraft fly, and the assignment of specific take-off weights to individual flight tracks. In addition, aircraft not included in the model's database may be defined for modeling, subject to FAA approval.

## Activity Data

Airport activity is defined as the take-offs and landings by aircraft operating at the facility; this is also referred to as aircraft operations. Activity is further described as either *local*, indicating aircraft practicing take-offs and landings (i.e., performing touch-and-go's), or *itinerant*, referring to the initial departure from or final arrival at the airport.

**Table F1** provides a summary of operations for the existing condition (2011) and two forecast years (2015 and 2020) for the Proposed Action and No Action alternatives.

Existing airport activity (i.e., take-offs and landings, or operations by aircraft) for 2010 was estimated using data collected from the FAA Enhanced Traffic Management System Counts (ETMSC) <sup>1</sup>. Three percent was added to the itinerant operations to account for when the airport traffic control tower (ATCT) is closed (10:00 p.m. to 7:00 a.m. from May to September and 9:00 p.m. to 7:00 a.m. from October to April). According to FAA's December 2010 *Terminal Area Forecast* <sup>2</sup> (TAF), operations in the future are forecast to increase by 0.8 percent annually. The TAF base year operations for the Lawrence J. Timmerman Airport (Timmerman Airport) forecast, however, are set at 29,474. This is approximately 9 percent lower than 2010 ATCT operation counts. To correct for the low base year, actual 2010/2011 operation levels were used and the 0.8 percent growth rate was applied. This equates to a 2015 operation forecast of 33,432 and 34,858 by 2020 without the project. The level of business jet activity is projected to increase from a current level of 295 annual operations to 570 annual operations by 2020 (with the Proposed Action).

1 [aspm.faa.gov/main/etmsc.asp](http://aspm.faa.gov/main/etmsc.asp), FAA Enhanced Traffic Management System Counts (ETMSC)

2 <http://aspm.faa.gov/main/taf.asp>, FAA Terminal Area Forecast December 2010



## **Fleet Mix**

The selection of individual aircraft types is important to the modeling process because different aircraft types generate different noise levels. The aircraft fleet mix was derived from an inventory of existing operations at the airport. **Table F1** summarizes the generalized fleet mix data input into the noise analysis.

## **Database Selection**

In order to select the proper aircraft from the INM database, a review of the current fleet mix for Timmerman Airport was conducted. Different aircraft types generate different noise levels; therefore, selection of individual aircraft plays an important role in the noise modeling process. The following paragraphs outline the database selections used for input into the INM.

**Table F1** lists the annual operations by aircraft type. The included aircraft were selected to provide a realistic representation of airport operations. Flight plans, airline flight schedules, airfield observations, and based aircraft lists were used to determine the types of aircraft which frequently use the airport. To accurately represent the noise conditions at the airport, the INM provides aircraft noise data for many of the aircraft operating in the national fleet. For those aircraft not specifically identified in the INM, the FAA provides a list of appropriate substitute aircraft.

**TABLE F1**  
**Operational Fleet Mix**  
**Lawrence J. Timmerman Airport Aircraft Fleet Mix and Operations**

Aircraft	INM	EDMS	2011 <sup>1</sup>	2015 <sup>2</sup>	2015 <sup>2,3</sup>	2020 <sup>2</sup>	2020 <sup>2,3</sup>
	Designator	Engine	Existing	No Action	Proposed Action	No Action	Proposed Action
<b>ITINERANT OPERATIONS</b>							
<b><i>Turbojet</i></b>							
Business Jet	CNA500	JT15D-4	295	309	312	321	460
Business Jet	MU3001	JT15D-5	0	0	52	0	110
<b>Subtotal</b>			295	309	364	321	570
<b><i>Piston/Turboprop/Helicopter</i></b>							
Turboprop	DHC6	PT6A-27	387	404	430	421	650
Turboprop	CNA441	TPE331-8	388	406	430	422	650
SEP (fixed)	GASEPF	IO-360-B	5,906	6,170	6,170	6,426	6,426
SEP (variable)	GASEPV	IO-360-B	5,906	6,170	6,170	6,426	6,426
MEP	BEC58P	TIO-540-J2B2	2,362	2,468	2,468	2,570	2,570
Helicopter	H500D	250B17B	111	116	116	120	120
<b>Subtotal</b>			15,060	15,809	15,859	16,461	16,917
<b><i>Military</i></b>							
Turboprop	C12	PT6A-41	42	38	38	38	38
Helicopter	S70	T700-GE-700	42	37	37	37	37
<b>Subtotal</b>			84	75	75	75	75
<b>Total Itinerant</b>			<b>15,440</b>	<b>16,118</b>	<b>16,223</b>	<b>16,782</b>	<b>17,487</b>
<b>LOCAL OPERATIONS</b>							
<b><i>Piston/Turboprop/Helicopter</i></b>							
SEP (fixed)	GASEPF	IO-360-B	6,865	7,169	7,169	7,486	7,486
SEP (variable)	GASEPV	IO-360-B	6,865	7,169	7,169	7,486	7,486
MEP	BEC58P	TIO-540-J2B2	2,746	2,867	2,867	2,994	2,994
<b>Subtotal</b>			16,476	17,205	17,205	17,965	17,965
<b><i>Military</i></b>							
Turboprop	C12	PT6A-41	132	110	110	110	110
<b>Subtotal</b>			132	110	110	110	110
<b>Total Local</b>			<b>16,608</b>	<b>17,315</b>	<b>17,315</b>	<b>18,075</b>	<b>18,075</b>
<b>Total Operations</b>			<b>32,047</b>	<b>33,432</b>	<b>33,538</b>	<b>34,858</b>	<b>35,563</b>

Source: <sup>1</sup> Timmerman Airport Traffic Control Tower from April 2010 through March 2011. Three percent added to the itinerant operations to account for when the ATCT is closed.

<sup>2</sup> FAA *Terminal Area Forecasts* (December 2010)

<sup>3</sup> Coffman Associates analysis

Note: As stated in FAA Order 5050.4B, forecasts used in airport environmental analyses should be consistent with the *Terminal Area Forecasts* (TAF). This is described as being within 10 percent of the TAF for the 5-year analytical period and within 15 percent for the 10-year analytical period. The forecast operations are within the 5050.4B tolerances.

The FAA aircraft substitution list indicates that the general aviation single engine variable-pitch propeller model, the GASEPV, represents a number of single engine general aviation aircraft. Among others, these include the Beech Bonanza, Cessna 177 and 180, Piper Cherokee Arrow, and Cessna Caravan. The general aviation single engine fixed-pitch propeller model, the GASEPF, also represents several single engine general aviation aircraft. These include the Cessna 150 and 172, Piper Archer, and the Piper Tomahawk.

The INM provides data for most of the business turbojet aircraft in the national fleet. The CNA500 includes the Cessna 500, 501, and 502. The MU3001 designator was used to represent the Mitsubishi MU-300 and Cessna 560.

Military aircraft in the Timmerman Airport fleet mix were represented by two aircraft types. The turbo-prop aircraft were modeled using the C12 designator. The military helicopter activity was modeled with the S70 designator.

The FAA's substitution list included with the INM documentation identifies the BEC58P, the Beech Baron, as a substitute for light twin-engine aircraft such as Beech 50, Beech 55, Piper PA-23, PA-30, PA-34, Cessna 304, Cessna 310, and Cessna 401, among others. Additionally, the DCH6 is recommended for use in modeling the DeHavilland Dash 6, Beech King Air, and Mitsubishi MU-2. General aviation helicopter operations are represented by the B206L.

All the above choices conform to the Pre-Approved Substitution List published by the FAA Office of Environment and Energy (AEE) branch in Washington, D.C.

### Time-of-Day

The time-of-day at which operations occur is important as input to the INM due to the 10 decibel night-time (10:00 p.m. to 7:00 a.m.) weighting of flights. In calculating airport noise exposure, one operation at night has the same noise emission value as 10 operations during the day by the same aircraft. While Timmerman Airport does have an ATCT, it is closed from 10:00 p.m. to 7:00 a.m. from May to September and 9:00 p.m. to 7:00 a.m. from October to April. Counts for nighttime activity were derived from interviews with airport staff. This was estimated to be approximately three percent of the operations. This percentage of operations was applied to both the Proposed Action and No Action scenarios.

### Runway Use

Runway usage data is another essential input to the INM. For modeling purposes, wind data analysis usually determines runway use percentages. Aircraft will normally land and take-off into the wind. However, wind analysis provides only the directional availability of a runway and does not consider pilot selection, primary runway operations, or local operating conventions.

The runway usage at the airport taken from the 2008 *Timmerman Airport Strategic Development and Airport Master Plan Study* and was confirmed through discussions with the airport staff. **Table F2** summarizes the runway use percentages for existing and forecast conditions.

**TABLE F2**  
**Existing and Future Runway Use by Aircraft Type**  
**Lawrence J. Timmerman Airport**

Runway	Arrivals and Departures			
	Business Jet	Turboprop	Piston	Military
04L	0.0%	0.0%	19.2%	0.0%
04R	0.0%	0.0%	6.4%	0.0%
15L	36.7%	36.7%	7.7%	36.7%
15R	0.0%	0.0%	2.6%	0.0%
22L	0.0%	0.0%	9.1%	0.0%
22R	0.0%	0.0%	27.2%	0.0%
33L	0.0%	0.0%	7.0%	0.0%
33R	63.3%	63.3%	21.1%	63.3%

Source: *Timmerman Airport Strategic Development and Master Plan*, 2008 and Airport Staff

## Flight Tracks

A review of local procedures and radar flight tracks was used to develop consolidated flight tracks for use in the INM. The resulting analysis is a series of flight tracks describing the typical flight corridors used for aircraft arriving and departing Timmerman Airport. For developing flight tracks for input into the INM, radar data samples from the General Mitchell International Airport flight tracking system were used.

**Exhibit F1** depicts the consolidated departure flight tracks developed for input into the INM. INM consolidated flight tracks are developed by plotting the centerline of a concentrated group of radar flight tracks.

Arrival tracks at Timmerman Airport are generally concentrated on the runway centerline due to the precision needed to safely land an aircraft. However, the small general aviation aircraft are able to make shorter approaches to the airport. **Exhibit F2** depicts the consolidated arrival flight tracks at Timmerman Airport.

**Exhibit F3** depicts the consolidated touch-and-go tracks in dark green developed for input into the INM. Typically, Timmerman Airport utilizes a left-hand traffic pattern. **Exhibit F3** also illustrates the helicopter flight tracks developed for this analysis.

## Flight Profiles

The standard arrival profile used in the INM program is a three-degree approach. No indication was given by airport staff that there was any variation on this standard procedure; therefore, the standard approach was included in the model as representative of local operating conditions.

INM Version 7.0b computes the take-off profiles based on the user-supplied airport elevation and average annual temperature entries in the input batch. At Timmerman Airport, the elevation is 745 feet mean sea level (MSL) and the average annual temperature is 47 degrees Fahrenheit (F), based on information from the National Oceanic and Atmospheric Administration. If other than standard conditions (temperature of 59 degrees F and elevations of zero feet MSL) are specified by the user, the profile generator automatically computes the take-off profiles using the airplane performance coefficients in the database and equations in the Society of Aeronautical Engineers, *Aerospace Information Report 1845* (SAE/AIR 1845).

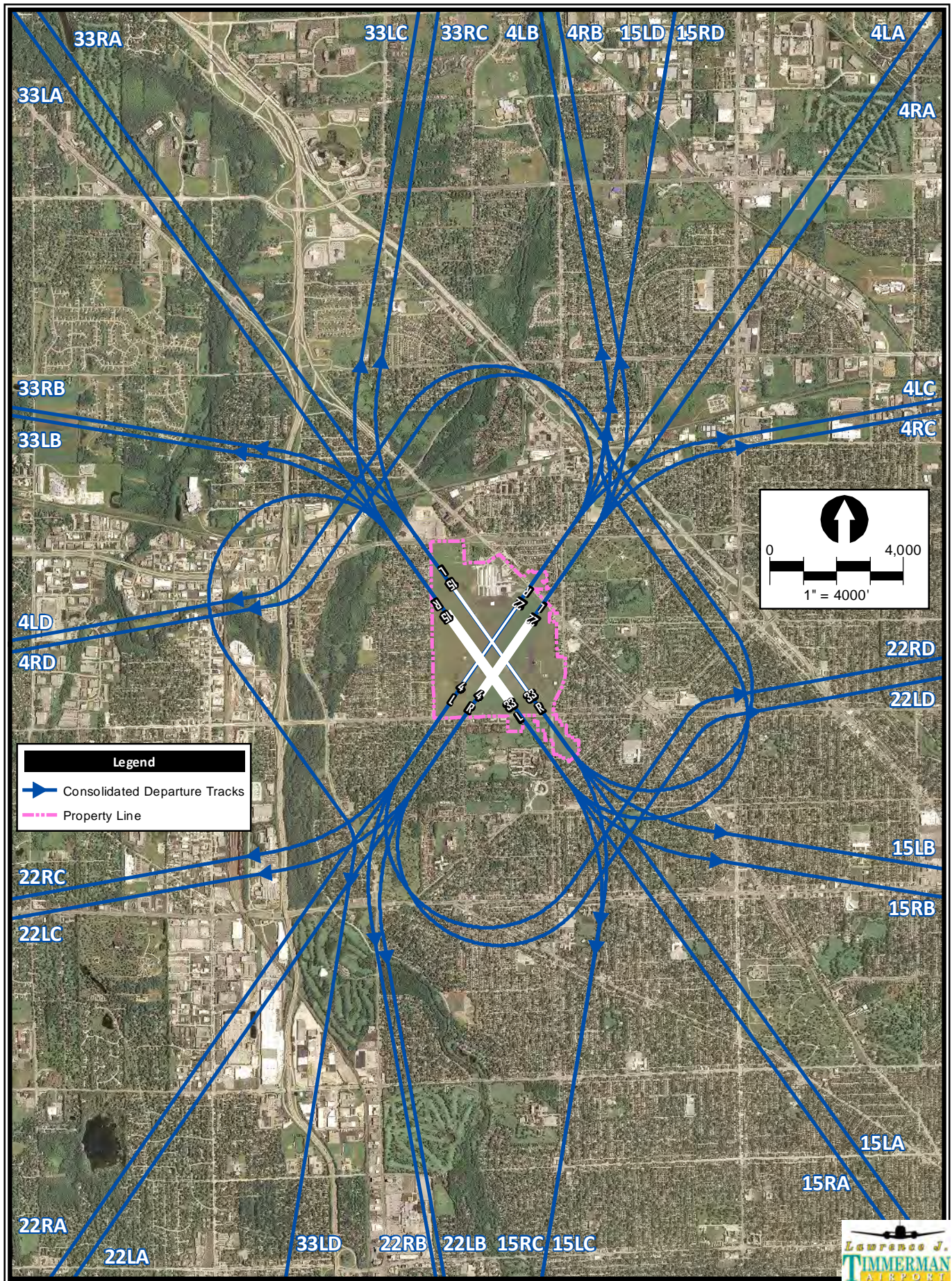
The INM computes separate departure profiles (altitude at a specified distance from the airport with associated velocity and thrust settings) for each of the various types of aircraft using the airport.

## INM OUTPUT

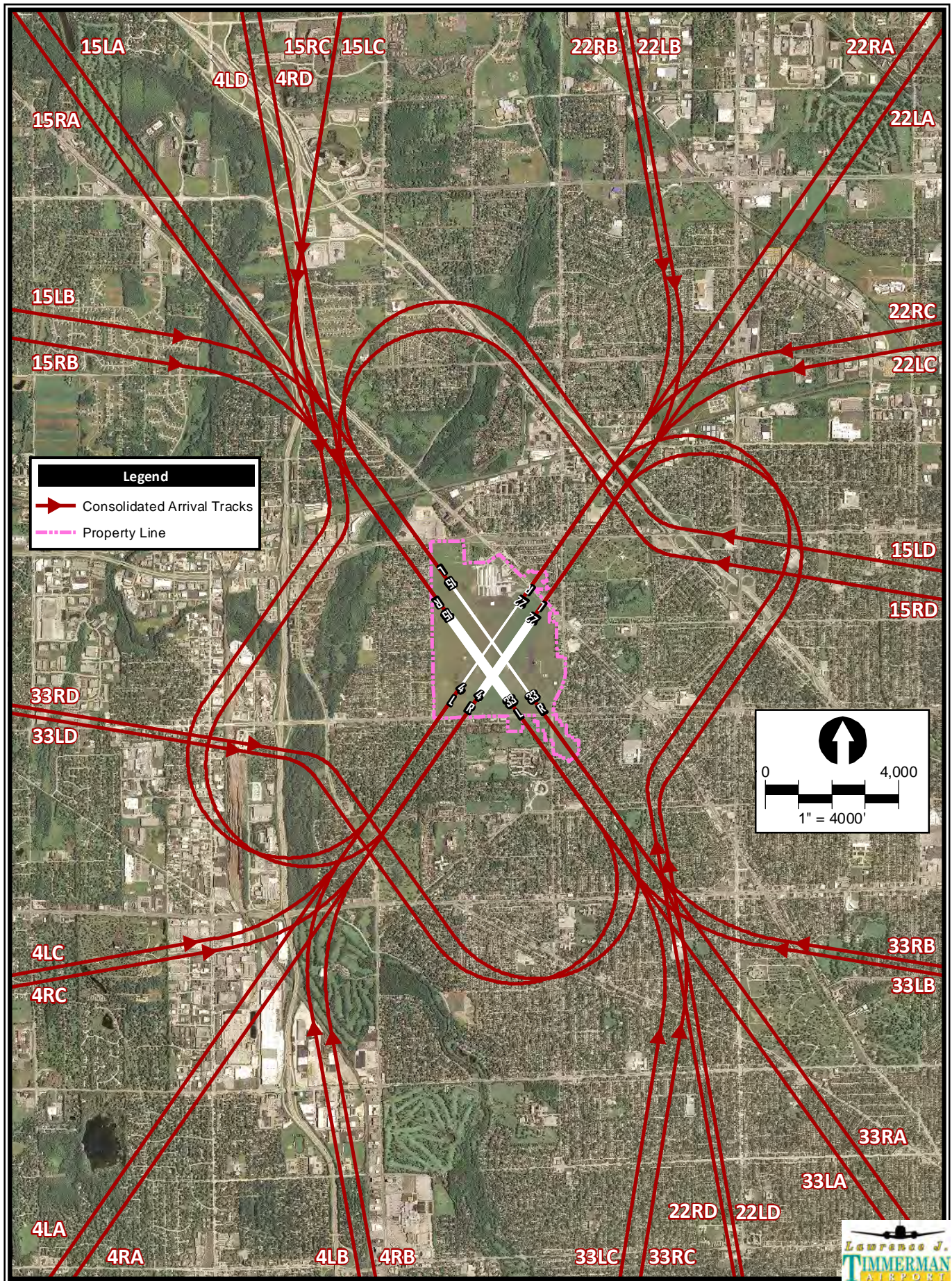
Output data selected for calculation by the INM are annual average noise contours in DNL. The DNL is a measure of the 24-hour noise level of a community to allow for comparison between the No Action and Proposed Action alternatives.

Computer files developed from data described in the previous section provided input to the INM, which generated output files for years and alternatives being evaluated. In accordance with FAA Orders

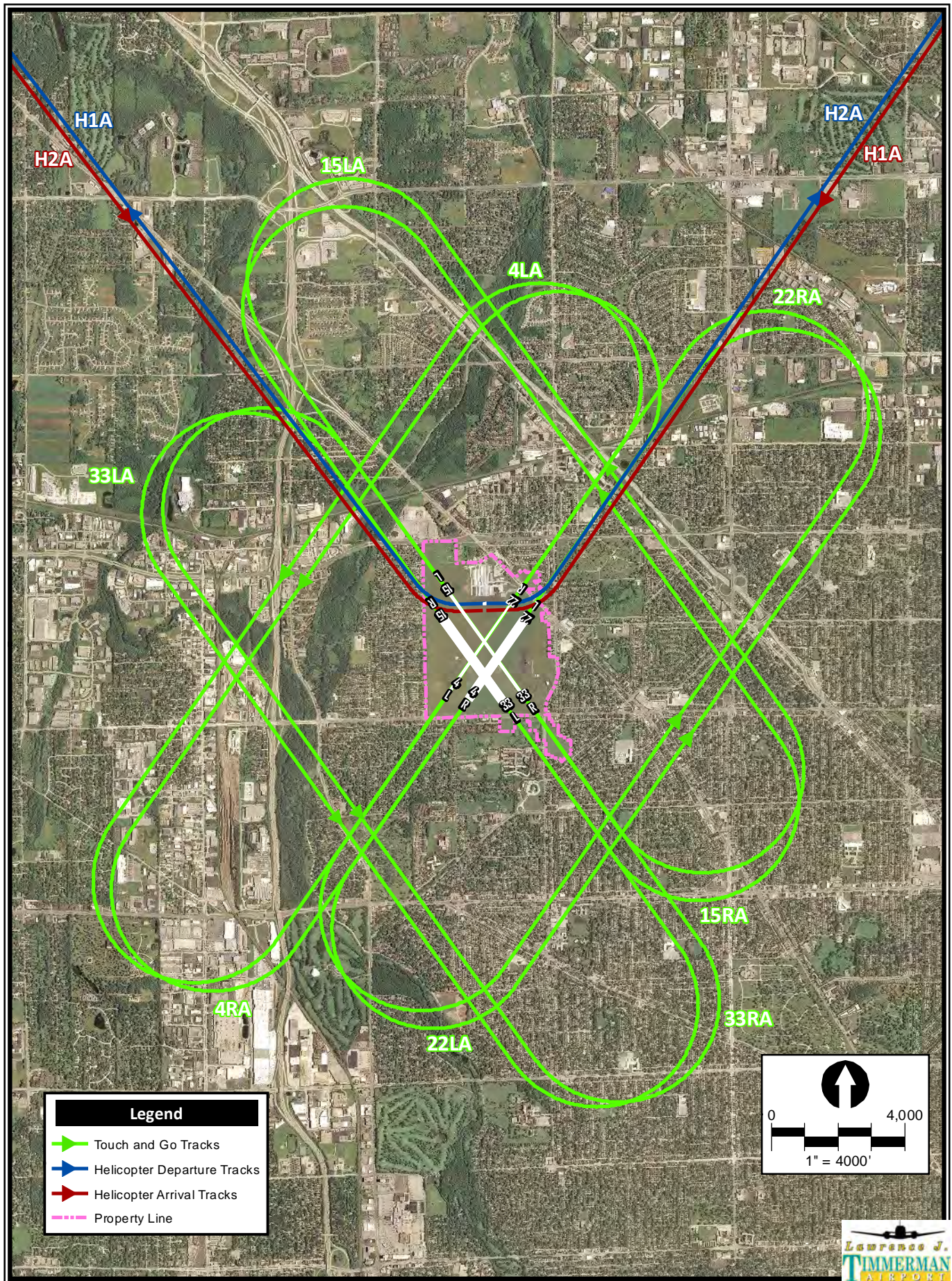














1050.1E and 5050.4B, the 65, 70, and 75 DNL noise contours were produced for each alternative. Contours were prepared for the following: existing condition (2011), year of implementation (2015), and five years beyond (2020). The following sections outline the results of the noise modeling efforts for the Proposed Action and No Action conditions.

#### 2015 Proposed Action Noise Condition

**Exhibit F4** depicts the forecast 2015 noise condition with implementation of the Proposed Action alternative. The 2015 Proposed Action alternative assumes that the FAA's TAF for operations in 2015 will increase for business jet aircraft. This equates to a 0.3 percent increase in total operations above the revised TAF forecast for the 2015 condition. As shown on the exhibit, the 65, 70, or 75 DNL contours all remain on airport property. Therefore, no noise-sensitive land uses are located within the 65, 70, or 75 DNL noise contour under this condition.

#### 2015 No Action Noise Condition

Under the 2015 No Action alternative condition, the 65, 70, or 75 DNL contours all remain on airport property. No noise-sensitive land uses are located within the 65, 70, or 75 DNL noise contours under this condition. **Exhibit F4** depicts the forecast 2015 No Action alternative noise condition.

#### 2020 Proposed Action Noise Condition

**Exhibit F5** depicts the noise condition projected for 2020 for the Proposed Action alternative condition. The 2020 Proposed Action alternative assumes that the revised TAF for operations in 2020 will increase 1.2 percent for business jet aircraft. In this forecast condition, the 65, 70, or 75 DNL contours continue to remain on airport property. Therefore, no noise-sensitive land uses are located within the 65, 70, or 75 DNL noise contour under this condition.

#### 2020 No Action Noise Condition

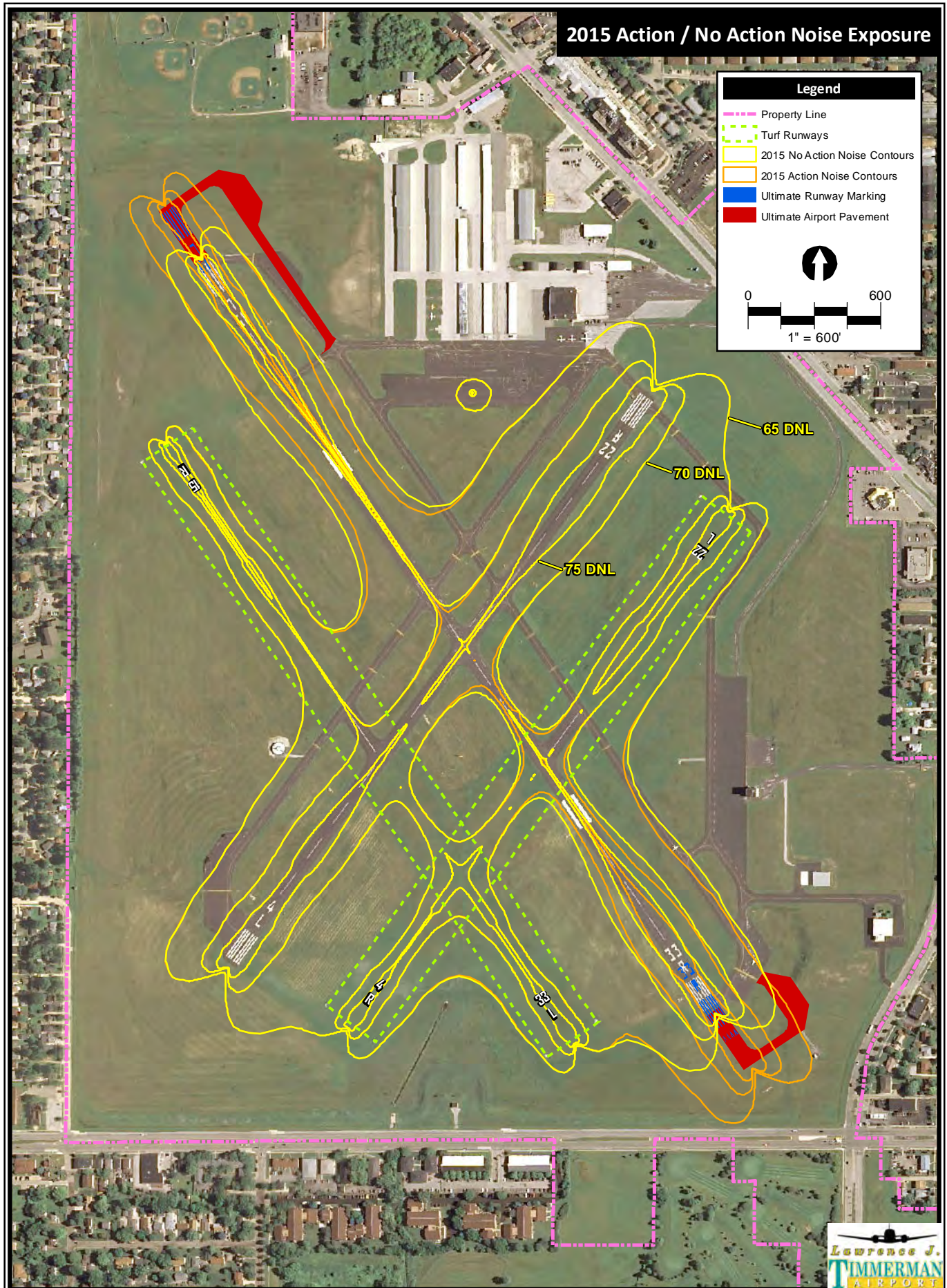
Under the 2020 No Action alternative condition, the 65, 70, or 75 DNL contours all remain on airport property. No noise-sensitive land uses are located within the 65, 70, or 75 DNL noise contours under this condition. **Exhibit F5** depicts the forecast 2020 No Action alternative noise condition.

## ***AIR QUALITY ANALYSIS BACKGROUND INFORMATION AND METHODOLOGY***

### **AIR QUALITY REGULATORY AGENCIES**

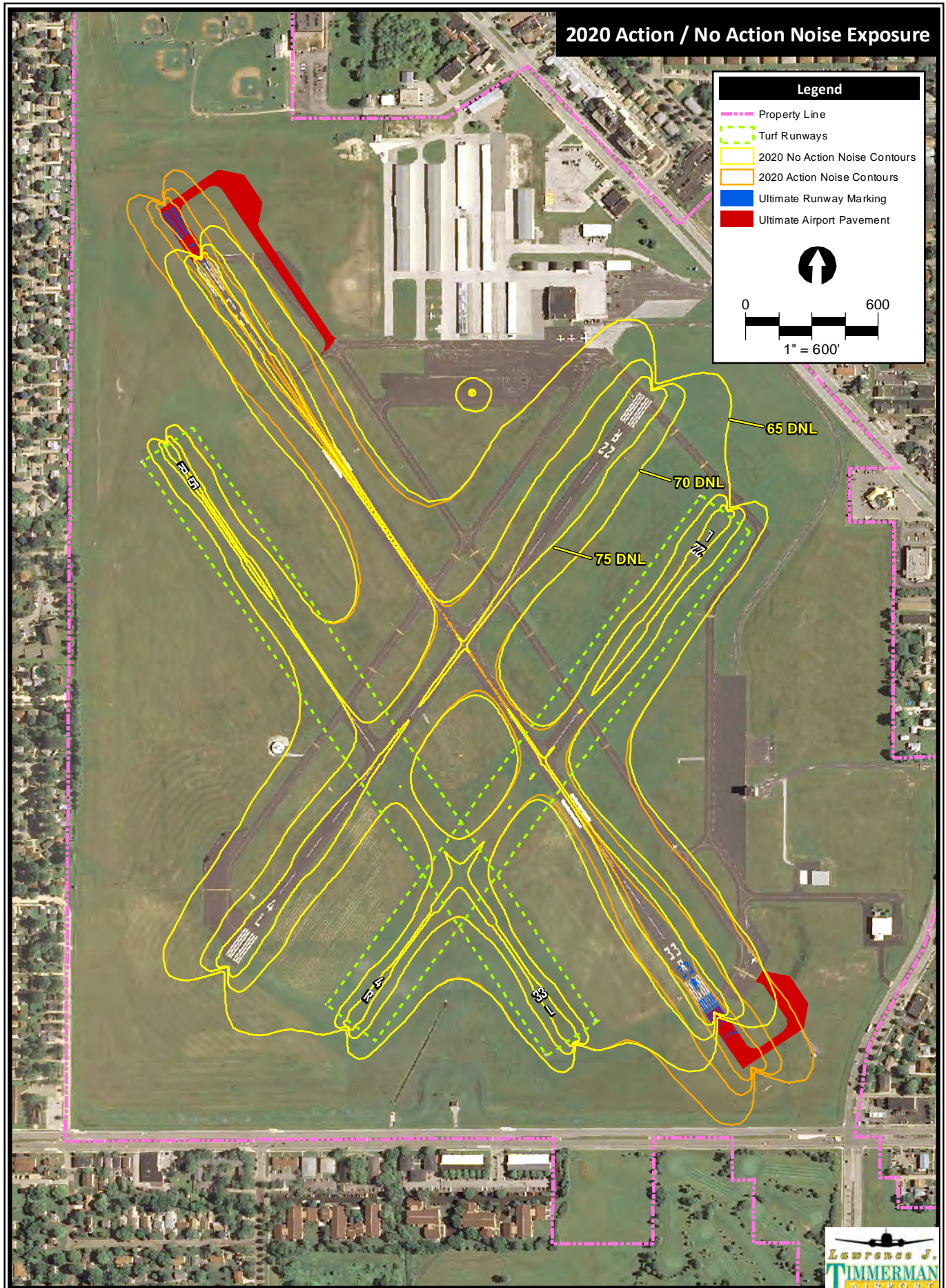
At the Federal level, the United States Environmental Protection Agency (EPA) establishes air quality regulations, and delegates and oversees enforcement responsibility to individual states.

The Lake Michigan Air Directors Consortium (LADCO) is a Regional Planning Organization (RPO) that assists in identifying and assessing air quality issues affecting the states of Wisconsin, Illinois, Indiana, Michigan, and Ohio. Through their Air Management Program, the Wisconsin Department of Natural Resources (WDNR) is the main regulatory agency charged with monitoring air quality conditions, enforcing air quality regulations promulgated by EPA, promulgating state-level air quality regulations, issuing air quality permits, and developing air quality plans in the State of Wisconsin.



Source: Coffman Associates Analysis  
Aerial Photo: 2010 USDA Ortho Imagery





Source: Coffman Associates Analysis  
Aerial Photo: 2010 USDA Ortho Imagery



Additionally, the Wisconsin Department of Transportation (WisDOT) assists WDNR in some aspects of air quality management in Wisconsin as they pertain to mobile sources of air emissions in the state, including developing regional transportation plans (RTP), transportation improvement plans (TIP), and assisting WDNR with developing mobile sources emissions estimates and control strategies. Finally, the local Metropolitan Planning Organization (MPO) with jurisdiction over the area encompassing MWC is the Southeastern Wisconsin Regional Planning Commission (SEWRPC), assisting WDNR and WisDOT in transportation planning.

**Table F3** details the regulatory and planning agencies involved in managing air quality in the area surrounding MWC.

**TABLE F3**  
**Air Quality Regulatory and Planning Agencies**

Level	Agency	Roles/Responsibilities
Federal	United States Environmental Protection Agency (EPA)	<ul style="list-style-type: none"> <li>Establishes and enforces federal air quality regulations</li> <li>Promulgates air quality standards</li> </ul>
Regional	Lake Michigan Air Directors Consortium (LADCO)	<ul style="list-style-type: none"> <li>Assesses regional air quality issues for member states Wisconsin, Illinois, Indiana, Michigan and Ohio</li> </ul>
State	Wisconsin Department of Natural Resources (WDNR)	<ul style="list-style-type: none"> <li>Enforces federal air quality standards and supplements with state standards, where appropriate</li> <li>Installs and maintains ambient air monitoring network</li> <li>Reviews and approves air quality permits</li> <li>Develops air quality plans and emissions inventories</li> </ul>
	Wisconsin Department of Transportation (WisDOT)	<ul style="list-style-type: none"> <li>Prepares <i>Airport Five-Year Improvement Plan</i> and <i>Airport System Plan</i></li> <li>Develops Regional Transportation Plans and Transportation Improvement Plans</li> <li>Assists WDNR in preparation of mobile sources emissions inventories for purposes of air quality planning</li> </ul>
Local	Southeastern Wisconsin Regional Planning Commission (SEWRPC)	<ul style="list-style-type: none"> <li>Metropolitan Planning Organization (MPO) serving Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington and Waukesha counties</li> <li>Ensures recommended transportation plans conform to state air quality plans per the conformity guidelines of the Clean Air Act (CAA)</li> </ul>

Source: KB Environmental Sciences, Inc., 2011

## AMBIENT AIR MONITORING DATA

WDNR operates and maintains a network of ambient air monitors that track pollutant concentrations in the outdoor air and collect data on important atmospheric parameters throughout the state. Of the monitors that were actively recording data over the past three years, the closest to MWC is located seven miles southeast at the WDNR Southeastern Regional Headquarters, and monitors Pb, NO<sub>2</sub>, O<sub>3</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>. Notably, according to data reported to EPA by WDNR, this site and other neighboring monitors ceased recording CO and SO<sub>2</sub> between 2000 and 2007. According to this data, there are no active CO, SO<sub>2</sub>, or Pb monitors in Milwaukee County. **Table F4** summarizes the available data from this monitor for the years 2008-2010.<sup>3</sup> As shown, the 2008 O<sub>3</sub> standard was violated at this monitoring location in 2010, and the 24-hour PM<sub>2.5</sub> standard was exceeded in 2008 and 2009.

**TABLE F4**

### Ambient Air Monitoring Data

Pollutant	Averaging Time	NAAQS Value	2008	2009	2010
NO <sub>2</sub>	Annual	0.053 ppm	0.025	0.026	0.027
	1-hour	0.100 ppm	0.044	0.049	0.066
O <sub>3</sub>	8-hour	0.075 ppm (2008); 0.08 ppm (1997)	0.063	0.067	<b>0.076</b>
PM <sub>10</sub>	24-hour	150 µg/m <sup>3</sup>	N/O	N/O	32
PM <sub>2.5</sub>	Annual	15.0 µg/m <sup>3</sup>	13.2	11.6	9.4
	24-hour	35 µg/m <sup>3</sup>	<b>37</b>	<b>39</b>	33

Source: EPA, 2011.

ppm = parts per million, µg/m<sup>3</sup> = micrograms per cubic meter of air, N/O = not observed.

<sup>1</sup> AQS Site ID 55-079-0026, WDNR Southeastern Regional Headquarters, 2300 North M.L. King Drive

## BASELINE EMISSIONS INVENTORY

The main sources of operational emissions at MWC comprise aircraft and ground service equipment (GSE), defined as off-road equipment and vehicles used to service aircraft, cargo, and passenger needs on the airside.<sup>4</sup> Per FAA guidelines, the latest version of the Emissions and Dispersion Modeling System (EDMS v.5.1.3) was used for this assessment.

**Table F5** presents the baseline emissions inventory (calendar year 2011) of EPA-designated criteria pollutants at MWC from the aircraft and GSE. As shown, existing operations of aircraft and GSE at MWC generate 345 tons of CO, 4 tons of VOC, 1 ton of NO<sub>x</sub>, 0.5 tons of SO<sub>x</sub> and less than 0.1 ton of PM<sub>10</sub> and PM<sub>2.5</sub>. The baseline emissions are dominated by aircraft sources, as general aviation aircraft does not typically utilize much GSE. Aircraft emissions are dominated by single-engine variable piston single-engine fixed piston aircraft, which are the most frequently operated aircraft at MWC.

<sup>3</sup> Pb data is not reported because it is not available in the appropriate averaging form for comparison to the current NAAQS.

<sup>4</sup> According to provided aircraft information and EDMS default equipment assignments, no auxiliary power unit usage occurs at MWC.

**Table F5**  
**BASELINE CRITERIA POLLUTANT EMISSIONS INVENTORY (TONS)**

	CO	VOC	NOx	SOx	PM10	PM2.5
<b>Aircraft</b>	<b>343</b>	<b>4.0</b>	<b>0.5</b>	<b>0.5</b>	<b>&lt;0.1</b>	<b>&lt;0.1</b>
Startup	-	<0.1	-	-	-	-
Taxi Out	7.8	0.4	<0.1	<0.1	<0.1	<0.1
Takeoff	44.4	0.4	0.1	0.1	<0.1	<0.1
Climb Out	49.8	0.4	0.1	0.1	<0.1	<0.1
Approach	222	1.9	0.2	0.3	<0.1	<0.1
Taxi In	19.4	0.9	0.1	<0.1	<0.1	<0.1
<b>GSE</b>	<b>1.7</b>	<b>0.1</b>	<b>0.5</b>	<b>&lt;0.1</b>	<b>&lt;0.1</b>	<b>&lt;0.1</b>
<b>Total</b>	<b>345</b>	<b>4.1</b>	<b>1.0</b>	<b>0.5</b>	<b>&lt;0.1</b>	<b>&lt;0.1</b>

Source: KB Environmental Sciences, Inc., 2011.

**Table F6** provides a hazardous air pollutant (HAP) emissions inventory computed by EDMS for aircraft and GSE at MWC, based on FAA recommendations.<sup>5</sup> In addition, Pb emissions from the combustion of aviation gasoline at MWC were computed based upon EDMS-calculated fuel consumption, using EPA methodology.<sup>6</sup> Using this method, Pb emissions at MWC total 0.23 tons in 2011. This level of Pb emissions falls well within EPA's current threshold of 1.0 tons per year, above which a general aviation airport such as MWC would be subject to air monitoring requirements.<sup>7</sup>

<sup>5</sup> *Guidance for Quantifying Speciated Organic Gas Emissions from Airport Sources*. Federal Aviation Administration Office of Environment and Energy. September, 2009.

<sup>6</sup> *Documentation for Aircraft Component of the National Emissions Inventory Methodology*. Environmental Protection Agency, April 2010. Prepared by Eastern Research Group, ERG No. 0245.02.302.001, Contract No. EP-D-07-097.

<sup>7</sup> 40 CFR 58. *Revisions to Lead Ambient Air Monitoring Requirements*. Final Rule. December 27, 2010.

**TABLE F6**  
**Baseline Hazardous Air Pollutant (HAP) Emissions Inventory (tons)**

	Aircraft	GSE	Grand Total
1,3-butadiene	0.07	--	0.07
2,2,4-trimethylpentane	0.12	--	0.12
2-methylnaphthalene	<0.01	--	<0.01
Acetaldehyde	0.20	--	0.20
Acrolein	0.10	--	0.10
Benzaldehyde	0.45	--	0.45
Benzene	0.08	<0.01	0.08
Ethylbenzene	<0.01	--	<0.01
Formaldehyde	0.64	<0.01	0.65
Methyl alcohol	0.01	--	0.01
M-xylene	0.02	<0.01	0.02
Naphthalene	0.02	--	0.02
N-heptane	0.04	--	0.04
N-hexane	0.04	--	0.04
O-xylene	<0.01	--	<0.01
Phenol	0.01	--	0.01
Propionaldehyde	0.02	--	0.02
Styrene	0.01	--	0.01
Toluene	0.01	<0.01	0.01

Source: KB Environmental Sciences, Inc., 2011

## FORECAST EMISSIONS INVENTORY

The following assumptions were used to calculate project-related emissions discussed in Chapter Four, Environmental Consequences and Mitigation.

### Aircraft Fleet Mix and Activity Levels

For the air quality analysis, aircraft operational levels by aircraft type were based upon a noise analysis conducted for this EA using the FAA's Integrated Noise Model (INM). EDMS aircraft and engine assignments were based primarily upon FAA's list of approved aircraft, engines and substitutions included in INM. In instances where this information was unavailable or unspecified for an INM aircraft type (e.g., GASEPV and GASEPF), EDMS aircraft and engine assignments were made based on aircraft with the largest airframe/engine share in Milwaukee County, as inferred from FAA's tail number registry database. **Table F1** depicts the EDMS aircraft fleet and operational levels utilized in this air quality assessment for both the No Action and with-project alternatives for calendar years 2011, 2015 and 2020.

## Aircraft Time in Mode

Aircraft emissions are based on specific times in each of the four aircraft operating modes: approach, climb-out, takeoff, and taxi/idle-delay. EDMS contains a database of aircraft/engine-specific criteria pollutant emission factors based on engine manufacturer, model, and operational mode. The level of aircraft-related emissions is reflective of the time that an aircraft operates in each of the operational modes with the entire cycle referred to as a landing/take-off (LTO) cycle. An LTO cycle consists of the following operational modes:

- “Taxi/idle” includes the time an aircraft taxis between the runway and a terminal, and all ground-based delay incurred through the aircraft route. The taxi/idle-delay mode includes the landing roll, which is the movement of an aircraft from touchdown through deceleration to taxi speed or full stop.
- “Approach” begins when an aircraft descends below the atmospheric mixing height and ends when an aircraft touches down on a runway.
- “Takeoff” begins when full power is applied to an aircraft and ends when an aircraft reaches approximately 500 to 1,000 feet. At this altitude, pilots typically power back for a gradual ascent.
- “Climb-out” begins when an aircraft powers back from the takeoff mode and ascends above the atmospheric mixing height.

Because the proposed project involves a 300-foot extension on each end of Runway 15L-33R and installation of connecting taxiways, aircraft using the airfield during the with-project alternative would taxi an additional distance compared to the No Action alternative. Taxi times were determined for both the No Action and with-project alternatives by applying a typical aircraft ground speed of 17.26 miles-per-hour (EDMS default value) to measured taxi distances using aerial photographs. These computed taxi times were weighted with airfield runway utilization data prepared for the INM noise analysis to produce a weighted average taxi time for each aircraft type. **Table F7** summarizes these weighted average taxi times by project alternative. The result is a 3 to 9 percent increase in total taxi time with the project improvements.

**Table F7: Aircraft Taxi Times (minutes per operation)**

<b>TABLE F7</b>					
<b>Aircraft Taxi Times (minutes per operation)</b>					
		<b>No Action</b>		<b>With Project</b>	
<b>Aircraft Category</b>		<b>Taxi Out</b>	<b>Taxi In</b>	<b>Taxi Out</b>	<b>Taxi In</b>
Civilian	Jet	2.97	7.91	3.49	8.42
	Turboprop	2.97	7.91	3.49	8.42
	General Aviation	2.92	5.65	3.07	5.79
Military	Turboprop	2.97	7.91	3.49	8.42

## Ground Support Equipment (GSE)

Ground support equipment is a term used to describe the equipment that service aircraft after arrival and before departure at an airport. The type of GSE includes aircraft tugs, baggage tugs, belt loaders, and fuel trucks. Air emissions resulting from the operation of GSE vary depending on the type of equip-



ment, fuel type (gasoline, diesel, propane, electric, etc.) and the duration of equipment operation (engine run time). The type of GSE used depends on the aircraft type and the designated category of an aircraft operation (i.e., passenger, cargo, etc.) with less GSE used for general aviation aircraft than commercial aircraft. GSE emissions were determined based on default information within EDMS for the assigned aircraft, which includes fuel type, equipment type, and time in mode per aircraft operation.

### **Lead Emissions from Piston Aircraft**

Piston aircraft fuel consumption for the MWC fleet was calculated using EDMS internal databases for all project alternatives. This fuel consumption was factored against an aviation gasoline lead emissions factor of 2.12 grams per gallon to determine the total lead emissions. However, EPA guidance states that approximately 5 percent of the lead is retained in the piston engine and engine oil, and accordingly the total lead emissions were adjusted to account for this retention.<sup>8</sup>

### **Hazardous Air Pollutants**

**Tables F8** and **F9** disclose operational emissions of HAPs expected to occur both without and with the project's implementation during 2015 and 2020.

Notably, in 2015, Pb emissions from the combustion of leaded aviation gasoline total 0.24 tons in the No Action alternative and 0.28 tons with implementation of the project. In 2020, No Action alternative emissions of Pb total 0.25 tons, whereas project-alternative emissions total 0.29 tons. Importantly, none of these Pb levels exceed the 1.0 ton per year threshold established by EPA that would require ambient air monitoring of lead in the vicinity of MWC.<sup>9</sup>

<sup>8</sup> *Documentation for Aircraft Component of the National Emissions Inventory Methodology*. Environmental Protection Agency, April, 2010. Prepared by Eastern Research Group, ERG No. 0245.02.302.001, Contract No. EP-D-07-097.

<sup>9</sup> 40 CFR 58. *Revisions to Lead Ambient Air Monitoring Requirements*. Final Rule. December 27, 2010.

**TABLE F8**  
**Year 2015 Hazardous Air Pollutant (HAP) Emissions Inventory (tons)**

	No Action			With Project		
	Aircraft	GSE	Grand Total	Aircraft	GSE	Grand Total
1,3-butadiene	0.08	--	0.08	0.08	--	0.08
2,2,4-trimethylpentane	0.13	--	0.13	0.13	--	0.13
2-methylnaphthalene	<0.01	--	<0.01	<0.01	--	<0.01
Acetaldehyde	0.21	--	0.21	0.22	--	0.22
Acrolein	0.10	--	0.10	0.11	--	0.11
Benzaldehyde	0.47	--	0.47	0.49	--	0.49
Benzene	0.08	<0.01	0.08	0.09	<0.01	0.09
Ethylbenzene	<0.01	--	<0.01	<0.01	--	<0.01
Formaldehyde	0.67	<0.01	0.67	0.73	<0.01	0.73
Methyl alcohol	0.01	--	0.01	0.01	--	0.01
M-xylene	0.02	<0.01	0.02	0.02	<0.01	0.02
Naphthalene	0.02	--	0.02	0.02	--	0.02
N-heptane	0.04	--	0.04	0.04	--	0.04
N-hexane	0.04	--	0.04	0.05	--	0.05
O-xylene	<0.01	--	<0.01	<0.01	--	<0.01
Phenol	0.01	--	0.01	0.01	--	0.01
Propionaldehyde	0.02	--	0.02	0.02	--	0.02
Styrene	0.01	--	0.01	0.02	--	0.02
Toluene	0.01	<0.01	0.01	0.01	<0.01	0.01

Source: KB Environmental Sciences, Inc., 2011

**TABLE F9**  
**Year 2010 Hazardous Air Pollutant (HAP) Emissions Inventory (tons)**

	No Action			With Project		
	Aircraft	GSE	Grand Total	Aircraft	GSE	Grand Total
1,3-butadiene	0.08	--	0.08	0.09	--	0.09
2,2,4-trimethylpentane	0.14	--	0.14	0.14	--	0.14
2-methylnaphthalene	0.01	--	0.01	0.01	--	0.01
Acetaldehyde	0.21	--	0.21	0.26	--	0.26
Acrolein	0.11	--	0.11	0.13	--	0.13
Benzaldehyde	0.49	--	0.49	0.51	--	0.51
Benzene	0.09	<0.01	0.09	0.10	<0.01	0.10
Ethylbenzene	<0.01	--	<0.01	<0.01	--	<0.01
Formaldehyde	0.70	<0.01	0.70	0.82	<0.01	0.82
Methyl alcohol	0.01	--	0.01	0.02	--	0.02
M-xylene	0.02	<0.01	0.02	0.03	<0.01	0.03
Naphthalene	0.02	--	0.02	0.03	--	0.03
N-heptane	0.04	--	0.04	0.05	--	0.05
N-hexane	0.04	--	0.04	0.05	--	0.05
O-xylene	<0.01	--	<0.01	0.01	--	0.01
Phenol	0.01	--	0.01	0.01	--	0.01
Propionaldehyde	0.02	--	0.02	0.03	--	0.03
Styrene	0.01	--	0.01	0.02	--	0.02
Toluene	0.01	<0.01	0.01	0.02	<0.01	0.02

Source: KB Environmental Sciences, Inc., 2011

### Construction Equipment and Vehicles

Activity levels and assignments for on-road construction vehicles have been developed based on a schedule of planned construction activities for the project, including vehicle miles of travel (VMT) and idling time estimates for on-road construction vehicles, by construction task and year. Haul truck trip determinations were made based on an assumed round trip distance of 24 miles (the distance to the nearest fill borrow source), a 16.5-cubic-yard truck capacity, and the reported amounts of fill required to be transported from an off-site source.

Additionally, emissions due to construction employee commutes to and from the work site were calculated, assuming an average commute distance of 20 miles (40 miles round trip) and that one employee would access the work site per piece of construction equipment scheduled per day.

Emissions associated with on-road construction vehicles and employee vehicles have been calculated by combining the activity information with emissions factors, in grams per mile, derived using the MOBILE6.2 emissions model, assuming a 35 mile-per-hour travelling speed and national default parameters (i.e., vehicle distribution factors, emission control programs, etc.). Emissions calculations were based on **Equation 1**. The MOBILE6.2 emissions factors are summarized on **Table F10**, per vehicle type and construction year.

**Equation 1**

$$\text{Emission Rate (tons/year)} = \text{Emission Factor (gram/mile)} * \text{trips per day} * \text{miles per trip} * \text{days/year} * (453.59/2000 \text{ tons/gram})$$

**TABLE F10**  
**On-road Vehicle Emissions Factors**

Vehicle Type	Pollutant	Emissions Factor (Grams/Mile)	
		2013	2014
Employee Vehicle	VOC	0.05	0.05
	CO	2.63	2.63
	NO <sub>x</sub>	0.02	0.02
	SO <sub>2</sub>	0.01	0.01
	PM <sub>10</sub>	0.02	0.02
	PM <sub>2.5</sub>	0.01	0.01
Haul Truck	VOC	0.25	0.25
	CO	0.21	0.21
	NO <sub>x</sub>	0.48	0.48
	SO <sub>2</sub>	0.01	0.01
	PM <sub>10</sub>	0.06	0.06
	PM <sub>2.5</sub>	0.03	0.03

Parameters for off-road construction equipment required for each construction task, including equipment and fuel type, horsepower and annual hours of operation, were estimated based on the anticipated construction schedule. This information was applied to criteria pollutant emissions factors, in grams per horsepower-hour, derived using the NONROAD emissions model (version 2008a), according to **Equation 2**. **Table F11** presents the emissions parameters used to calculate emissions for scheduled equipment, including horsepower, fuel type, and emissions rates.

**Equation 2**

$$\text{Emission Rate (tons/year)} = \text{NONROAD Emission Factor (gram/hp-hour)} * \text{size (hp)} * \text{hours of operation} * \text{Load Factor} * (453.59/2000 \text{ tons/gram})$$



**TABLE F11****Off-road Equipment Emissions Parameters**

Off-Road Equipment	Fuel	HP	LF	VOC	CO	NOx	SO2	2013 Emission Factor (G/HP-HR)		VOC	CO	NOx	SO2	2014 Emission Factor (G/HP-HR)	
								PM 10	PM 2.5					PM 10	PM 2.5
Bomag BW 120 Roller	D	32.6	0.59	0.28	1.54	4.43	0.01	0.25	0.25	0.25	1.27	4.15	0.01	0.20	0.20
Cat 324 DL Hydraulic Excavator	D	188	0.59	0.20	0.81	2.38	0.01	0.16	0.16	0.18	0.68	2.00	0.01	0.13	0.13
Cat 385C L Hydraulic Excavator	D	513	0.59	0.18	1.14	2.94	0.01	0.17	0.17	0.18	1.01	2.57	0.01	0.15	0.15
Cat 450 E Backhoe/Loader	D	124	0.21	0.85	3.20	5.20	0.01	0.59	0.58	0.78	2.89	4.78	0.01	0.55	0.53
Cat 450 E/ 430 E IT Backhoe/Loader	D	102	0.21	0.85	3.20	5.20	0.01	0.59	0.58	0.78	2.89	4.78	0.01	0.55	0.53
Cat 928Hz Wheel Loader	D	149	0.59	0.27	1.22	3.13	0.01	0.28	0.27	0.24	1.08	2.74	0.01	0.25	0.24
Cat D6 Dozer	D	195	0.59	0.21	0.86	2.58	0.01	0.17	0.17	0.19	0.74	2.18	0.01	0.15	0.14
Concrete Saw Husqvarna K1250	G	7.8	0.78	6.28	261.51	2.71	0.22	0.14	0.12	6.22	261.07	2.67	0.22	0.14	0.12
Concrete Trucks	D	325	0.59	0.17	0.94	2.33	0.01	0.16	0.15	0.16	0.78	1.95	0.01	0.13	0.13
Grader	D	180	0.59	0.21	0.85	2.55	0.01	0.17	0.16	0.19	0.73	2.15	0.01	0.15	0.14
Hypac C885D Roller	D	160	0.59	0.27	1.22	3.13	0.01	0.28	0.27	0.24	1.08	2.74	0.01	0.25	0.24
Ingersoll Rand Blaw-Knox Paver PF4410	D	158	0.59	0.26	1.18	3.01	0.01	0.27	0.27	0.23	1.04	2.60	0.01	0.25	0.24
Volvo MC110C Skid Steer Loader	D	84	0.21	1.48	7.27	5.89	0.01	1.12	1.08	1.38	6.88	5.55	0.01	1.05	1.02
Volvo Motor Grader 970	D	250	0.59	0.21	0.85	2.55	0.01	0.17	0.16	0.19	0.73	2.15	0.01	0.15	0.14
Wacker WP-1550 Vibrator Soil	G	6	0.48	7.00	265.17	3.60	0.22	0.11	0.11	6.47	261.18	3.16	0.22	0.11	0.11
Wacker WP-1550W Vibrator Asphalt	G	6	0.48	7.00	265.17	3.60	0.22	0.11	0.11	6.47	261.18	3.16	0.22	0.11	0.11
Water Truck	G	225	0.59	0.17	0.63	1.98	0.01	0.13	0.12	0.16	0.44	1.53	0.01	0.08	0.08

D= Diesel, G = Gasoline, HP = Horsepower, HR = Hour, LF = Load Factor

## **Asphalt Paving Operations and Fugitive Dust Generation**

An emissions factor of 0.053 tons of VOC per acre of asphalt material was applied based on data from the National Association of Clean Air Agencies (NACAA, formerly STAPPA-ALAPCO) to estimate VOC emissions from asphalt placement and curing. The construction schedule provided requisite quantities of bituminous surface material, in tons. Equivalent acreage was calculated using a weight of asphalt of 1,873 tons per acre, assuming a 7.1-inch pavement depth, based on data available from the National Asphalt Pavement Association.

Fugitive dust emissions that may occur due to construction of the proposed project were also estimated. The EPA's *Compilation of Air Pollutant Emissions Factors* (AP-42) provides an uncontrolled PM<sub>10</sub> emissions rate of tons per acre per month for fugitive dust emissions occurring due to travel on unpaved roads, site preparation, grading activities, wind erosion, and other land disturbance activities. It was assumed that a maximum of 25 percent of the presumed dust disturbance area (38 acres) would likely be disturbed on any given construction day, and that 10 percent of the PM<sub>10</sub> emissions occur as PM<sub>2.5</sub>. Lastly, a 75 percent dust control factor was applied to account for preventative measures such as site watering.

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## **PUBLIC PARTICIPATION**

## **Appendix G – Public Participation**

### ***Lawrence J. Timmerman Airport***

### ***Environmental Assessment for Runway Extension***

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This appendix contains materials relating to the public involvement process conducted during preparation of the Environmental Assessment.

A public information workshop was held on May 4, 2011, from 3:00 p.m. to 5:00 p.m. and from 7:00 p.m. to 9:00 p.m. Information on the Environmental Assessment process and preliminary project design exhibits were made available to the public for review. The workshop was announced to the public with a direct mailing to 7,031 addresses within the immediate vicinity of Lawrence J. Timmerman Airport. The mailing was sent on April 8, 2011. Comment sheets were made available to the public. No comments were submitted during the meeting.

Based on the attendance records, ten members of the public attended the May 4, 2011 meetings. Airport staff and members of the consultant team responded to questions related to the environmental process and airport maintenance issues. The primary topics discussed during the meeting are summarized as follows:

- Consultants provided an overview of the environmental review process.
- Consultants described the proposed improvements and explained the drainage features under consideration.
- Airport staff responded to questions regarding maintenance of the adjacent property with regard to mowing and keeping drainage inlets clear of debris.

The following materials are included in this appendix:

- Copy of April 8, 2011 mailing
- Copies of May 4, 2011 public information workshop attendance records
- Copy of comment sheet

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## To Our Neighbors:

The Milwaukee County Board of Supervisors accepted Timmerman Airport's Strategic Development and Airport Master Plan Study (Master Plan) in February 2008. The Master Plan assesses the Airport's current and future role in the regional aviation system and provides guidance and direction regarding future airport development needs. Please see the Fall 2007 Newsletter for more information on the Master Plan process, which can be found at <http://www.mitchellairport.com/projects.html>.

The Master Plan recommends a 300-foot extension to each end of Runway 15L-33R and associated parallel taxiways which will increase runway length from 4,106 feet to 4,706 feet. The proposed runway and taxiway extension projects will occur entirely on existing airport property and will provide safer operating conditions for existing airport users.

As a condition of requesting and accepting a Federal Aviation Administration (FAA) grant for this project, potential environmental impacts must be evaluated and documented in accordance with the National Environmental Policy Act (NEPA) of 1969. Milwaukee County, as owner of the Airport, will prepare an Environmental Assessment (EA) for this project.

Public input is an essential component of the NEPA environmental review process. Accordingly, two public workshops will be held during the course of the study to educate the public on the project and allow for public comment on the proposed improvements. Written comments received during the workshops will be summarized and included in an appendix of the EA.

## PROJECT STATUS

To date, preliminary engineering and design has been undertaken to determine the potential project impact area. Additionally, field studies have been undertaken to determine the presence of cultural, archaeological, and biological resources within the project area. This information and materials regarding the NEPA environmental process will be available to the public at the first public workshop scheduled for **May 4, 2011, from 3:00 p.m. to 5:00 p.m. and from 7:00 p.m. to 9:00 p.m. at the Hyatt Place, 11777 W. Silver Spring Drive, Milwaukee, WI 53225**. The information available at the workshop will also be available at the following website after the meeting:

<http://www.mitchellairport.com/projects.html>.



The second workshop will be held following preparation of the Preliminary EA. A second notice will be sent to you to announce the workshop and availability of this information. Below is a list of potential environmental impacts that will be reviewed as part of the EA.

#### POTENTIAL ENVIRONMENTAL IMPACTS

##### Quality Issues & Resource Categories

*Aircraft Noise*

*Compatible Land Use*

*Social Impacts*

*Induced Socioeconomic Impacts*

*Air Quality*

*Water Quality*

*Light Emissions*

*Construction Impacts*

*Public Parks, Recreation Areas, Nature Preserves*

*Energy Supply and Natural Resources*

For additional information regarding the ongoing runway extension Environmental Assessment for Lawrence J. Timmerman Airport, please contact:

#### **Timothy Kipp**

Managing Engineer – Design  
General Mitchell International Airport  
5300 South Howell Avenue  
Milwaukee, WI 53207  
(414) 747-5716  
tkipp@mitchellairport.com

#### **David Fitz, AICP**

Principal  
Coffman Associates, Inc.  
237 NW Blue Parkway, Suite 100  
Lee's Summit, MO 64063  
(816) 524-3500  
dfitz@coffmanassociates.com

#### **Save the Date:**

Public Workshop  
May 4, 2011

3:00 - 5:00 p.m. & 7:00 - 9:00 p.m.  
Hyatt Place, 11777 W. Silver Spring Drive

Milwaukee County's



C/O General Mitchell International Airport  
5300 S. Howell Avenue  
Milwaukee, Wisconsin 53207

Lawrence J. Timmerman Airport  
Runway Extension Environmental Assessment  
**PUBLIC INFORMATION WORKSHOP  
MEETING ATTENDANCE RECORD**



Meeting: Public Information Workshop #1

Date: May 4, 2011

*Please Print Neatly*

NAME	ADDRESS	PHONE # / E-MAIL
1. <i>Mike Singh</i>	[REDACTED]	Phone #: [REDACTED] E-mail: [REDACTED]
2. <i>David &amp; Barbara Koday</i>	[REDACTED]	Phone #: [REDACTED] E-mail: [REDACTED]
3. <i>Richard T. Heller</i>	[REDACTED] Va	Phone #: [REDACTED] E-mail: [REDACTED]
4. <i>Lois-Dave Lovejoy</i>	[REDACTED]	Phone #: [REDACTED] E-mail: [REDACTED]
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Lawrence J. Timmerman Airport  
Runway Extension Environmental Assessment  
**PUBLIC INFORMATION WORKSHOP  
MEETING ATTENDANCE RECORD**



Meeting: Public Information Workshop #1

Date: May 4, 2011

*Please Print Neatly*

NAME	ADDRESS	PHONE # / E-MAIL
1. Tom + Mary Street	[REDACTED]	Phone #: [REDACTED] E-mail: [REDACTED]
2. Bob + Germaine Stephen	[REDACTED]	Phone #: [REDACTED] E-mail: [REDACTED]
3. John Starkaus	[REDACTED]	Phone #: [REDACTED] E-mail: [REDACTED]
4.		Phone #: _____ E-mail: _____
5.		Phone #: _____ E-mail: _____
6.		Phone #: _____ E-mail: _____
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Lawrence J. Timmerman Airport  
Runway Extension Environmental Assessment  
**PUBLIC INFORMATION WORKSHOP  
MEETING ATTENDANCE RECORD**



Meeting: Public Information Workshop #1 Date: May 4, 2011

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Lawrence J. Timmerman Airport  
Runway Extension Environmental Assessment  
**PUBLIC INFORMATION WORKSHOP  
MEETING COMMENT FORM**



Meeting: Public Information Workshop #1 Date: May 4, 2011

*Please Print Neatly*

*Mail or fax to:*

Dave Fitz  
COFFMAN ASSOCIATES, INC  
237 NW Blue Parkway  
Lee's Summit, MO 64063 FAX: 816-524-2575

G-8

Comments may also be  
submitted to Dave Fitz at:  
[dfitz@coffmanassociates.com](mailto:dfitz@coffmanassociates.com)

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## GLOSSARY OF TERMS

# Glossary of Terms

**100-YEAR FLOOD** - This is a flood having a 1 percent chance of occurring in any given year. Zones A and V of a Flood Insurance Rate Map (FIRM) encompass the area comprising the 100-year floodplain.

## A

**ABOVE GROUND LEVEL:** The elevation of a point or surface above the ground.

**ACCELERATE-STOP DISTANCE AVAILABLE (ASDA):** See declared distances.

**ADVISORY CIRCULAR:** External publications issued by the FAA consisting of nonregulatory material providing for the recommendations relative to a policy, guidance and information relative to a specific aviation subject.

**AIR CARRIER:** An operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

**AIRCRAFT:** A transportation vehicle that is used or intended for use for flight.

**AIRCRAFT APPROACH CATEGORY:** A grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

- Category A: Speed less than 91 knots.
- Category B: Speed 91 knots or more, but less than 121 knots.
- Category C: Speed 121 knots or more, but less than 141 knots.
- Category D: Speed 141 knots or more, but less than 166 knots.
- Category E: Speed greater than 166 knots.

**AIRCRAFT OPERATION:** The landing, takeoff, or touch-and-go procedure by an aircraft on a runway at an airport.

**AIRCRAFT OPERATIONS AREA (AOA):** A restricted and secure area on the airport property designed to protect all aspects related to aircraft operations.

**AIRCRAFT OWNERS AND PILOTS ASSOCIATION:** A private organization serving the interests and needs of general aviation pilots and aircraft owners.

**AIRCRAFT RESCUE AND FIRE FIGHTING:** A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

**AIRFIELD:** The portion of an airport which contains the facilities necessary for the operation of aircraft.

**AIRLINE HUB:** An airport at which an airline concentrates a significant portion of its activity and which often has a significant amount of connecting traffic.

**AIRPLANE DESIGN GROUP (ADG):** A grouping of aircraft based upon wingspan. The groups are as follows:

- Group I: Up to but not including 49 feet.
- Group II: 49 feet up to but not including 79 feet.
- Group III: 79 feet up to but not including 118 feet.
- Group IV: 118 feet up to but not including 171 feet.
- Group V: 171 feet up to but not including 214 feet.
- Group VI: 214 feet or greater.

**AIRPORT AUTHORITY:** A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

**AIRPORT BEACON:** A navigational aid located at an airport which displays a rotating light beam to identify whether an airport is lighted.

**AIRPORT CAPITAL IMPROVEMENT PLAN:** The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

**AIRPORT ELEVATION:** The highest point on the runway system at an airport expressed in feet above mean sea level (MSL).

**AIRPORT IMPROVEMENT PROGRAM:** A program authorized by the Airport and Airway Improvement Act of 1982 that provides funding for airport planning and development.

**AIRPORT LAYOUT DRAWING (ALD):** The drawing of the airport showing the layout of existing and proposed airport facilities.

**AIRPORT LAYOUT PLAN (ALP):** A scaled drawing of the existing and planned land and facilities necessary for the operation and development of the airport.

**AIRPORT LAYOUT PLAN DRAWING SET:** A set of technical drawings depicting the current and future airport conditions. The individual sheets comprising the set can vary with the complexities of the airport, but the FAA-required drawings include the Airport Layout Plan (sometimes referred to as the Airport Layout Drawing (ALD), the Airport Airspace Drawing, and the Inner Portion of the Approach Surface Drawing, On-Airport Land Use Drawing, and Property Map.

**AIRPORT MASTER PLAN:** The planner's concept of the long-term development of an airport.

**AIRPORT MOVEMENT AREA SAFETY SYSTEM:** A system that provides automated alerts and warnings of potential runway incursions or other hazardous aircraft movement events.

**AIRPORT OBSTRUCTION CHART:** A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

**AIRPORT REFERENCE CODE (ARC):** A coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

**AIRPORT REFERENCE POINT (ARP):** The latitude and longitude of the approximate center of the airport.

**AIRPORT SPONSOR:** The entity that is legally responsible for the management and operation of an airport, including the fulfillment of the requirements of laws and regulations related thereto.

**AIRPORT SURFACE DETECTION EQUIPMENT:** A radar system that provides air traffic controllers with a visual representation of the movement of aircraft and other vehicles on the ground on the airfield at an airport.

**AIRPORT SURVEILLANCE RADAR:** The primary radar located at an airport or in an air traffic control terminal area that receives a signal at an antenna and transmits the signal to air traffic control display equipment defining the location of aircraft in the air. The signal provides only the azimuth and range of aircraft from the location of the antenna.

**AIRPORT TRAFFIC CONTROL TOWER (ATCT):** A central operations facility in the terminal air traffic control system, consisting of a tower, 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.

**AIR ROUTE TRAFFIC CONTROL CENTER:** A facility which provides en route air traffic control service to aircraft operating on an IFR flight plan within controlled airspace over a large, multi-state region.

**AIRSIDE:** The portion of an airport that contains the facilities necessary for the operation of aircraft.

**AIRSPACE:** The volume of space above the surface of the ground that is provided for the operation of aircraft.

**AIR TAXI:** An air carrier certificated in accordance with FAR Part 121 and FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

**AIR TRAFFIC CONTROL:** A service operated by an appropriate organization for the purpose of providing for the safe, orderly, and expeditious flow of air traffic.

**AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC):** A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight.

**AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER:** A facility operated by the FAA which is responsible for the central flow control, the central altitude reservation system, the airport reservation position system, and the air traffic service contingency command for the air traffic control system.

**AIR TRAFFIC HUB:** A categorization of commercial service airports or group of commercial service airports in a metropolitan or urban area based upon the proportion of annual national enplanements existing at the airport or airports. The categories are large hub, medium hub, small hub, or non-hub. It forms the basis for the apportionment of entitlement funds.

**AIR TRANSPORT ASSOCIATION OF AMERICA:** An organization consisting of the principal U.S. airlines that represents the interests of the airline industry on major aviation issues before federal, state, and local government bodies. It promotes air transportation safety by coordinating industry and governmental safety programs and it serves as a focal point for industry efforts to standardize practices and enhance the efficiency of the air transportation system.

**ALERT AREA:** See special-use airspace.

**ALTITUDE:** The vertical distance measured in feet above mean sea level.

**ANNUAL INSTRUMENT APPROACH (AIA):** An approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

**APPROACH LIGHTING SYSTEM (ALS):** An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

**APPROACH MINIMUMS:** The altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

**APPROACH SURFACE:** An imaginary obstruction limiting surface defined in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

**APRON:** A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

**AREA NAVIGATION:** The air navigation procedure that provides the capability to establish and maintain a flight path on an arbitrary course that remains within the coverage area of navigational sources being used.

**ATTAINMENT AREA:** An attainment area is a geographical area where the levels of all criteria air pollutants meet the NAAQS.

**AUTOMATED TERMINAL INFORMATION SERVICE (ATIS):** The continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

**AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS):** A reporting system that provides frequent airport ground surface weather observation data through digitized voice broadcasts and printed reports.

**AUTOMATED WEATHER OBSERVATION STATION (AWOS):** Equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dew point, etc.)

**AUTOMATIC DIRECTION FINDER (ADF):** An aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

**AVIGATION EASEMENT:** A contractual right or a property interest in land over which a right of unobstructed flight in the airspace is established.

**AZIMUTH:** Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

**B**

**BASE LEG:** A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

**BASED AIRCRAFT:** The general aviation aircraft that use a specific airport as a home base.

**BEARING:** The horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

**BLAST FENCE:** A barrier used to divert or dissipate jet blast or propeller wash.

**BLAST PAD:** A prepared surface adjacent to the end of a runway for the purpose of eliminating the erosion of the ground surface by the wind forces produced by airplanes at the initiation of takeoff operations.

**BUILDING RESTRICTION LINE (BRL):** A line which identifies suitable building area locations on the airport.

**C**

**CANDIDATE SPECIES:** Any species that either FWS or NMFS is considering for listing as "endangered" or "threatened", but has not yet been the subject of a proposed rule. These species have no legal status and do not have protection under the ESA. However, their inclusion is intended to alert Federal agencies of potential proposals or listings

**CAPITAL IMPROVEMENT PLAN:** The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

**CARGO SERVICE AIRPORT:** An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least

100,000,000 pounds.

**CATEGORY I:** An Instrument Landing System (ILS) that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 100 feet above the horizontal plane containing the runway threshold.

**CATEGORY II:** An ILS that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 50 feet above the horizontal plane containing the runway threshold.

**CATEGORY III:** An ILS that provides acceptable guidance information to a pilot from the coverage limits of the ILS with no decision height specified above the horizontal plane containing the runway threshold.

**CEILING:** The height above the ground surface to the location of the lowest layer of clouds which is reported as either broken or overcast.

**CIRCLING APPROACH:** A maneuver initiated by the pilot to align the aircraft with the runway for landing when flying a predetermined circling instrument approach under IFR.

**CLASS A AIRSPACE:** See Controlled Airspace.

**CLASS B AIRSPACE:** See Controlled Airspace.

**CLASS C AIRSPACE:** See Controlled Airspace.

**CLASS D AIRSPACE:** See Controlled Airspace.

**CLASS E AIRSPACE:** See Controlled Airspace.

**CLASS G AIRSPACE:** See Controlled Airspace.

**CLEAR ZONE:** See Runway Protection Zone.

**COMMERCIAL SERVICE AIRPORT:** A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

**COMMON TRAFFIC ADVISORY FREQUENCY:** A radio frequency identified in the appropriate



aeronautical chart which is designated for the purpose of transmitting airport advisory information and procedures while operating to or from an uncontrolled airport.

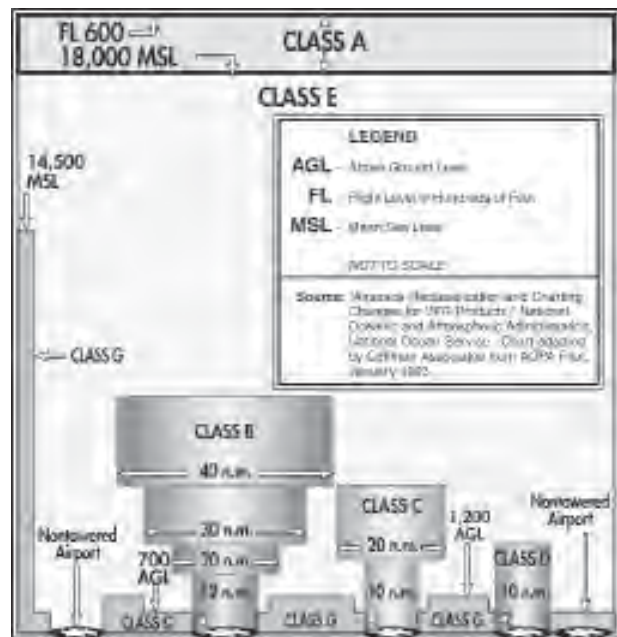
**COMPASS LOCATOR (LOM):** A low power, low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

**CONICAL SURFACE:** An imaginary obstruction-limiting surface defined in FAR Part 77 that extends from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

**CONTROLLED AIRPORT:** An airport that has an operating airport traffic control tower.

**CONTROLLED AIRSPACE:** Airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- **CLASS A:** Generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.
- **CLASS B:**  
Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.
- **CLASS C:** Generally, the airspace from the surface to 4,000 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that



extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- **CLASS D:** Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower. Class D airspace is individually tailored and configured to encompass published instrument approach procedure. Unless otherwise authorized, all persons must establish two-way radio communication.
- **CLASS E:** Generally, controlled airspace that is not classified as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.
- **CLASS G:** Generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.

**CONTROLLED FIRING AREA:** See special-use airspace.

**CRITICAL HABITAT:** This is a designated area having physical and biological features essential to a listed species' survival. Examples include nesting grounds, migration routes, wintering grounds, or other areas needed to support a life history stage. A species need not occupy an area for it to be critical habitat.

**CROSSWIND:** A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

**CROSSWIND COMPONENT:** The component of wind that is at a right angle to the runway centerline or the intended flight path of an aircraft.

**CROSSWIND LEG:** A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

### D

**DECIBEL:** A unit of noise representing a level relative to a reference of a sound pressure 20 micro newtons per square meter.

**DECISION HEIGHT:** The height above the end of the runway surface at which a decision must be made by a pilot during the ILS or Precision Approach Radar approach to either continue the approach or to execute a missed approach.

**DECLARED DISTANCES:** The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- **TAKEOFF RUNWAY AVAILABLE (TORA):** The runway length declared available and suitable for the ground run of an airplane taking off.
- **TAKEOFF DISTANCE AVAILABLE (TODA):** The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA.
- **ACCELERATE-STOP DISTANCE AVAILABLE (ASDA):** The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff.

- **LANDING DISTANCE AVAILABLE (LDA):** The runway length declared available and suitable for landing.

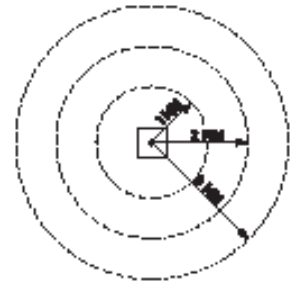
**DEPARTMENT OF TRANSPORTATION:** The cabinet level federal government organization consisting of modal operating agencies, such as the Federal Aviation Administration, which was established to promote the coordination of federal transportation programs and to act as a focal point for research and development efforts in transportation.

**DIRECT EMISSIONS:** Direct emissions are emissions caused by the Federal action that occur at the same time and place as the Federal action. They include emissions from temporary construction activities as well as emissions caused by operation of airport facilities and aircraft.

**DISCRETIONARY FUNDS:** Federal grant funds that may be appropriated to an airport based upon designation by the Secretary of Transportation or Congress to meet a specified national priority such as enhancing capacity, safety, and security, or mitigating noise.

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

**D I S T A N C E  
M E A S U R I N G  
EQUIPMENT (DME):** Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.



**DNL:** The 24-hour average sound level, in A-weighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

**DOWNWIND LEG:** A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

### **E**

**EASEMENT:** The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

**ELEVATION:** The vertical distance measured in feet above mean sea level.

**ENDANGERED SPECIES:** Any species that either the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) designates in danger of extinction throughout all or a significant portion of the species' range

**ENPLANED PASSENGERS:** The total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and nonscheduled services.

**ENPLANEMENT:** The boarding of a passenger, cargo, freight, or mail on an aircraft at an airport.

**ENTITLEMENT:** Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

**ENVIRONMENTAL ASSESSMENT (EA):** An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

**ENVIRONMENTAL AUDIT:** An assessment of the current status of a party's compliance with applicable environmental requirements of a party's environmental compliance policies, practices, and controls.

**ENVIRONMENTAL DUE DILIGENCE AUDIT (EDDA):** An EDDA is a systematic investigation of real property to determine if activities involving hazardous materials have occurred at a site or resulted in environmental contamination.

**ENVIRONMENTAL IMPACT STATEMENT (EIS):** A document required of federal agencies by the

National Environmental Policy Act for major projects are legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

**ENVIRONMENTAL JUSTICE:** Environmental justice analysis considers the potential of Federal actions to cause disproportionate and adverse effects on low-income or minority populations. Environmental justice ensures no low-income or minority population bears a disproportionate burden of effects resulting from Federal actions.

**ESSENTIAL AIR SERVICE:** A federal program which guarantees air carrier service to selected small cities by providing subsidies as needed to prevent these cities from such service.

### **F**

**FEDERAL AVIATION REGULATIONS:** The general and permanent rules established by the executive departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

**FEDERAL INSPECTION SERVICES:** The provision of customs and immigration services including passport inspection, inspection of baggage, the collection of duties on certain imported items, and the inspections for agricultural products, illegal drugs, or other restricted items.

**FINAL APPROACH:** A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

**FINAL APPROACH AND TAKEOFF AREA (FATO):** A defined area over which the final phase of the helicopter approach to a hover, or a landing is completed and from which the takeoff is initiated.

**FINAL APPROACH FIX:** The designated point at which the final approach segment for an aircraft landing on a runway begins for a non-precision approach.

**FINDING OF NO SIGNIFICANT IMPACT (FONSI):** A public document prepared by a Federal agency that presents the rationale why a proposed

action will not have a significant effect on the environment and for which an environmental impact statement will not be prepared.

**FIXED BASE OPERATOR (FBO):** A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

**FLIGHT LEVEL:** A designation for altitude within controlled airspace.

**FLIGHT SERVICE STATION:** An operations facility in the national flight advisory system which utilizes data interchange facilities for the collection and dissemination of Notices to Airmen, weather, and administrative data and which provides pre-flight and in-flight advisory services to pilots through air and ground based communication facilities.

**FRANGIBLE NAVAID:** A navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

## **G**

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**GENERAL AVIATION:** That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

**GENERAL AVIATION AIRPORT:** An airport that provides air service to only general aviation.

**GENERAL CONFORMITY:** General Conformity refers to the requirements under Section 176(c) of the Clean Air Act (CAA) for federal agencies to show that their actions conform to the purpose of the applicable SIP. Section 176(c) of the CAA states:

“No department, agency, or instrumentality of the Federal government must engage in, support in any way or provide financial aid for, license or permit, or approve, any activity which does not conform to an approved State Implementation Plan (SIP).”

As a result, Federal agencies cannot fund or approve activities that do not conform to the SIP established for a nonattainment or maintenance area. Therefore, a

Federal action in nonattainment or maintenance area must not:

- (1) cause or contribute to NAAQS new violations;
- (2) increase the frequency or severity of any existing NAAQS; or
- (3) delay the timely attainment of a NAAQS, interim emissions decreases, or other milestones.

**GENERAL POPULATION:** This is the population that an action affects, but that is not a low-income or minority population.

**GLIDESLOPE (GS):** Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or
2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

**GLOBAL POSITIONING SYSTEM (GPS):** A system of 24 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

**GROUND ACCESS:** The transportation system on and around the airport that provides access to and from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

## **H**

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**HAZARDOUS MATERIALS:** According to 49 CFR Part 172, Table 172.101, these are any substances or materials commercially transported that pose unreasonable risk to public health, safety, and property. They include hazardous wastes and hazardous substances as well as petroleum and natural gas substances and materials.

**HAZARDOUS SUBSTANCES:** Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601(14)) defines this term broadly. It includes hazardous waste, hazardous air pollutants,



hazardous substances designated as such pursuant to the Clean Water Act and the Toxic Substances Control Act and elements, compounds, mixtures, solutions, or substances listed in 40 CFR Part 302 that pose substantial harm to human health or environmental resources. It should be noted that, pursuant to CERCLA, hazardous substances do not include any petroleum or natural gas substances and materials.

**HAZARDOUS WASTES:** Regulations developed pursuant to the Resource Conservation and Recovery Act (RCRA) at 40 CFR Part 261, Subpart C, define this term. Hazardous wastes are solid wastes that are ignitable, corrosive, reactive, or toxic (sometimes called “characteristic wastes”). In addition, Subpart D contains a list of specific types of solid wastes that the EPA has deemed hazardous (sometimes called “listed wastes”).

**HELIPAD:** A designated area for the takeoff, landing, and parking of helicopters.

**HIGH INTENSITY RUNWAY LIGHTS:** The highest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

**HIGH-SPEED EXIT TAXIWAY:** A long radius taxiway designed to expedite aircraft turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

**HISTORIC PROPERTY:** A historic property is, “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior” (36 CFR Section 800.16(l)). Properties or sites having traditional religious or cultural importance to Native American Tribes and Hawaiian organizations may qualify. To qualify, a property must meet the criteria for eligibility under 36 CFR Section 60.4.

**HORIZONTAL SURFACE:** An imaginary obstruction- limiting surface defined in FAR Part 77 that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

## I

**INDIRECT EMISSIONS:** Indirect emissions are emissions caused by a proposed Federal action that occur later in time and/or at a distance from the proposed action.

**INITIAL APPROACH FIX:** The designated point at which the initial approach segment begins for an instrument approach to a runway.

**INSTRUMENT APPROACH PROCEDURE:** A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

**INSTRUMENT FLIGHT RULES (IFR):** Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

**INSTRUMENT LANDING SYSTEM (ILS):** A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

**INSTRUMENT METEOROLOGICAL CONDITIONS:** Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for visual meteorological conditions.

**ITINERANT OPERATIONS:** Operations by aircraft that are not based at a specified airport.

## J

**JURISDICTIONAL WETLANDS** - Section 404 of the Clean Water Act (CWA) governs the dredging and filling of navigable waters of the U.S. The term, “navigable waters of the U.S.” includes wetlands connected or adjacent to navigable waters of the U.S.

Navigable waters of the U.S. are those waters that are subject to the ebb and flow of the tide and/or are used, have been used in the past, or may be susceptible to use to transport interstate or foreign commerce (see 33 CFR Section 329.4). In carrying out Section 404, the Corps uses 33 CFR Parts 320 through 330 to define wetlands under its jurisdiction. To conduct dredge or fill activities in these wetlands, the Corps must issue a permit authorizing those activities. Wetlands under the Corps' jurisdiction are:

"[A]reas that surface or groundwater inundate or saturate at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas."

### **K**

**KNOTS:** A unit of speed length used in navigation that is equivalent to the number of nautical miles traveled in one hour.

### **L**

**LANDSIDE:** The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

**LANDING DISTANCE AVAILABLE (LDA):** See declared distances.

**LARGE AIRPLANE:** An airplane that has a maximum certified takeoff weight in excess of 12,500 pounds.

**LOCAL AREA AUGMENTATION SYSTEM:** A differential GPS system that provides localized measurement correction signals to the basic GPS signals to improve navigational accuracy integrity, continuity, and availability.

**LOCAL OPERATIONS:** Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

**LOCAL TRAFFIC:** Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known

to be departing or arriving from the local practice areas, or aircraft executing practice instrument approach procedures. Typically, this includes touch and-go training operations.

**LOCALIZER:** The component of an ILS which provides course guidance to the runway.

**LOCALIZER TYPE DIRECTIONAL AID (LDA):** A facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

**LONG RANGE NAVIGATION SYSTEM (LORAN):** Long range navigation is an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran is used for en route navigation.

**LOW-INCOME:** According to DOT Order 5610.2, Environmental Justice in Minority and Low-Income Populations, Appendix 1.a, this is a person having a median household income at or below the Department of Health and Human Services' (HHS) poverty guidelines. Although DOT Order 5610.2 directs DOT agencies to HHS poverty guidelines, guidance from the Council on Environmental Quality (CEQ) and the EPA uses the Census Bureau's annual statistical poverty thresholds on income and poverty (Series P-60) to define low income.

**LOW-INCOME POPULATION:** A low-income population is any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed program, policy, or activity.

**LOW INTENSITY RUNWAY LIGHTS:** The lowest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

### **M**

**MAINTENANCE AREA:** This is an area previously designated "nonattainment" but re-designated as a "maintenance area".

**MEDIUM INTENSITY RUNWAY LIGHTS:** The middle classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

**MICROWAVE LANDING SYSTEM (MLS):** An instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

**MIGRATORY BIRD TREATY ACT OF 1918:** Actions that may take a migratory bird species are prohibited. If an action may take a migratory bird or affect its breeding habitat, consultation with the FWS is needed. If it is determined there are no feasible alternatives to taking the migratory bird or its nest, FWS must issue a permit for the taking. The permit will likely require mitigation.

**MILITARY OPERATIONS:** Aircraft operations that are performed in military aircraft.

**MINORITY:** DOT Order 5610.2 Appendix 1.c defines this term as a person who is:

- (1) Black (a person having origins in any of the black racial groups of Africa);
- (2) Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or Spanish culture or origin, regardless of race);
- (3) Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or
- (4) American Indian and Alaskan Native (a person having origins in any of the original peoples of North America and who preserves cultural identification through tribal affiliation or community recognition).

**MINORITY POPULATION** - This population is one the action would affect. It is comprised of Black, Hispanic, Asian-American, or American Indian and Alaskan Native individuals. Each, several, or all of these ethnic groups may live in geographic proximity to one another or may be geographically scattered or transient (e.g., migrant workers) who will be similarly affected by a proposed program, policy, or activity.

**MILITARY OPERATIONS AREA (MOA):** See special-use airspace

**MILITARY TRAINING ROUTE:** An air route depicted on aeronautical charts for the conduct of military flight training at speeds above 250 knots.

**MISSED APPROACH COURSE (MAC):** The flight route to be followed if, after an instrument approach, a landing is not affected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact; or
2. When directed by air traffic control to pull up or to go around again.

**MOVEMENT AREA:** The runways, taxiways, and other areas of an airport which are utilized for taxiing/ hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

## **N**

**NATIONAL AIRSPACE SYSTEM:** The network of air traffic control facilities, air traffic control areas, and navigational facilities through the U.S.

**NATIONAL AMBIENT AIR QUALITY STANDARDS:** Pursuant to the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six “criteria” air pollutants: carbon monoxide (CO); lead (Pb);1 nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM) for both PM<sub>10</sub> and PM<sub>2.5</sub>, and sulfur dioxide (SO<sub>2</sub>). Compliance with the NAAQS means the ambient outdoor levels of these air pollutants are safe for human health, the public welfare, and the environment. States are responsible for designating areas that are attainment, nonattainment, or maintenance for each of the criteria pollutants. States are required to develop EPA-approved plans, called State Implementation Plans (SIPs), to achieve or maintain the NAAQS within timeframes set under the Clean Air Act.

**THE NATIONAL ENVIRONMENTAL POLICY ACT, [42 USC SECTIONS 4321-4347].** - The Act establishes a national environmental policy and the Council on Environmental Quality (CEQ) to oversee the Act’s implementation. The national policy encourages citizens to maintain productive and enjoyable relations between activities and the environment; to promote efforts preventing or removing damage to the environment and biosphere; to stimulate the health and welfare of man; and to

enrich our understanding of the Nation's ecological systems and natural resources.

**NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS:** The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

**NATIONAL TRANSPORTATION SAFETY BOARD:** A federal government organization established to investigate and determine the probable cause of transportation accidents, to recommend equipment and procedures to enhance transportation safety, and to review on appeal the suspension or revocation of any certificates or licenses issued by the Secretary of Transportation.

**NAUTICAL MILE:** A unit of length used in navigation which is equivalent to the distance spanned by one minute of arc in latitude, that is, 1,852 meters or 6,076 feet. It is equivalent to approximately 1.15 statute mile.

**NAVAID:** A term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc.)

**NAVIGATIONAL AID:** A facility used as, available for use as, or designed for use as an aid to air navigation.

**NOISE CONTOUR:** A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

**NONATTAINMENT AREA:** A nonattainment area is a geographic area where the concentration of one or more of the criteria air pollutants is higher than the NAAQS. It is not uncommon for an area to have acceptable levels of five criteria pollutants but an unacceptable level for another. For example, the Washington, D.C., metropolitan area is simultaneously designated attainment for CO but nonattainment for 8-hour ozone.

**NON-DIRECTIONAL BEACON (NDB):** A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his or her bearing to and from the radio beacon and home on, or track to,

the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

**NONJURISDICTIONAL WETLANDS** - Nonjurisdictional wetlands do not involve navigable waters because they are not connected to or adjacent to navigable waters of the United States (U.S.). Dredge and fill activities in these wetlands do not require U.S. Army Corps of Engineers (Corps) approvals, but these wetlands are natural resources FAA must assess under NEPA.

**NON-POINT SOURCES:** These include stormwater runoff from runways, taxiways, aprons, outdoor storage areas, or construction areas that do not flow through conveyance systems. Federal permits are not necessary for non-point source discharges.

**NON-PRECISION APPROACH PROCEDURE:** A standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

**NOTICE TO AIRMEN:** A notice containing information concerning the establishment, condition, or change in any component of or hazard in the National Airspace System, the timely knowledge of which is considered essential to personnel concerned with flight operations.

## **O**

**OBJECT FREE AREA (OFA):** An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

**OBSTACLE FREE ZONE (OFZ):** The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

**ONE-ENGINE INOPERABLE SURFACE:** A surface emanating from the runway end at a slope



ratio of 62.5:1. Air carrier airports are required to maintain a technical drawing of this surface depicting any object penetrations by January 1, 2010.

**OPERATION:** The take-off, landing, or touch-and-go procedure by an aircraft on a runway at an airport.

**OUTER MARKER (OM):** An ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline, indicating to the pilot that he/she is passing over the facility and can begin final approach.

### **P**

**PILOT CONTROLLED LIGHTING:** Runway lighting systems at an airport that are controlled by activating the microphone of a pilot on a specified radio frequency.

**POINT SOURCES:** These are stormwater or other types of discharges from wastewater treatment plants, sanitary sewer systems, collection basins, or other water collection devices that flow through a conveyance (pipe) and discharge to a waterway. The states and the U.S. Environmental Protection Agency (EPA) issue National Pollutant Discharge Elimination System (NPDES) permits authorizing point source discharges into navigable waters of the United States under Section 402 of the Clean Water Act (CWA) (33 USC Section 1342).

**PRECISION APPROACH:** A standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- **CATEGORY I (CAT I):** A precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.
- **CATEGORY II (CAT II):** A precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.
- **CATEGORY III (CAT III):** A precision approach which provides for approaches with minima less than Category II.

**PRECISION APPROACH PATH INDICATOR (PAPI):** A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

**PRECISION APPROACH RADAR:** A radar facility in the terminal air traffic control system used to detect and display with a high degree of accuracy the direction, range, and elevation of an aircraft on the final approach to a runway.

**PRECISION OBJECT FREE AREA (POFA):** An area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

**PRIMARY AIRPORT:** A commercial service airport that enplanes at least 10,000 annual passengers.

**PRIMARY SURFACE:** An imaginary obstruction limiting surface defined in FAR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.

**PRIME FARMLAND:** This is land having the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimal use of fuel, fertilizer, pesticides, or products.

**PROHIBITED AREA:** See special-use airspace.

**PVC:** Poor visibility and ceiling. Used in determining Annual Service Volume. PVC conditions exist when the cloud ceiling is less than 500 feet and visibility is less than one mile.

### **R**

**RADIAL:** A navigational signal generated by a Very High Frequency Omni-directional Range or

VORTAC station that is measured as an azimuth from the station.

**REGRESSION ANALYSIS:** A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

**REMOTE COMMUNICATIONS OUTLET (RCO):** An unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times.

**REMOTE TRANSMITTER/RECEIVER (RTR):** See remote communications outlet. RTRs serve ARTCCs.

**RELIEVER AIRPORT:** An airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

**RESTRICTED AREA:** See special-use airspace.

**RNAV:** Area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used en route and for approaches to an airport.

**RUNOFF POLLUTANTS:** Point source and non-point source runoff may contain pollutants such as metals, oils, greases, hazardous materials, solids, hydrocarbons, pesticides, and herbicides. During dry weather, pollutants can accumulate on impermeable surfaces, but during storms they are washed into creeks, streams, lakes, or other waters causing potential water quality impacts.

**RUNWAY:** A defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic

heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

**RUNWAY ALIGNMENT INDICATOR LIGHT:** A series of high intensity sequentially flashing lights installed on the extended centerline of the runway usually in conjunction with an approach lighting system.

**RUNWAY END IDENTIFIER LIGHTS (REIL):** Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

**RUNWAY GRADIENT:** The average slope, measured in percent, between the two ends of a runway.

**RUNWAY PROTECTION ZONE (RPZ):** An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

**RUNWAY SAFETY AREA (RSA):** A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

**RUNWAY VISIBILITY ZONE (RVZ):** An area on the airport to be kept clear of permanent objects so that there is an unobstructed line of sight from any point five feet above the runway centerline to any point five feet above an intersecting runway centerline.

**RUNWAY VISUAL RANGE (RVR):** An instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

## **S**

**SCOPE:** The document that identifies and defines the tasks, emphasis, and level of effort associated with a project or study.

**SECTION 4(F) REQUIREMENTS:** Section 4(f) states that, subject to exceptions for de minimis impacts, the Secretary of Transportation (Secretary)

may approve a transportation program or project requiring the use of publicly-owned land of a park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance or land of a historic site of national, state, or local significance as determined by the official having jurisdiction over those resources only if:

- (1) there is no prudent and feasible alternative that would avoid using those resources, and
- (2) the program or project includes all possible planning to minimize harm resulting from the use.

**SEGMENTED CIRCLE:** A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

**SHOULDER:** An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

**SLANT-RANGE DISTANCE:** The straight line distance between an aircraft and a point on the ground.

**SMALL AIRPLANE:** An airplane that has a maximum certified takeoff weight of up to 12,500 pounds.

**SPECIAL-USE AIRSPACE:** Airspace of defined dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- **ALERT AREA:** Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.
- **CONTROLLED FIRING AREA:** Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.
- **MILITARY OPERATIONS AREA (MOA):** Designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military

activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.

- **PROHIBITED AREA:** Designated airspace within which the flight of aircraft is prohibited.
- **RESTRICTED AREA:** Airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.
- **WARNING AREA:** Airspace which may contain hazards to nonparticipating aircraft.

**STANDARD INSTRUMENT DEPARTURE (SID):** A preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

**STANDARD INSTRUMENT DEPARTURE PROCEDURES:** A published standard flight procedure to be utilized following takeoff to provide a transition between the airport and the terminal area or en route airspace.

**STANDARD TERMINAL ARRIVAL ROUTE (STAR):** A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

**STATE IMPLEMENTATION PLAN (SIP):** This is a state's detailed description of the regulations, programs, and measures to be used in that state to reduce air pollution and fulfill its responsibilities under the Clean Air Act, as amended (CAA) to attain the NAAQS for all criteria pollutants within the legally required timeframes. The CAA requires each State to prepare and submit a SIP to EPA for approval. EPA's review process for SIPs includes opportunities for public comment.

**STATEWIDE AND LOCALLY IMPORTANT FARMLAND:** This is land that has been designated as "important" by either a state government (State Secretary of Agriculture or higher office) or by county commissioners or an equivalent elected body.

The State Conservationist representing the Natural Resource Conservation Service (NRCS)<sup>1</sup> must agree with the designation.

**STOP-AND-GO:** A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

**STOPWAY:** An area beyond the end of a takeoff runway that is designed to support an aircraft during an aborted takeoff without causing structural damage to the aircraft. It is not to be used for takeoff, landing, or taxiing by aircraft.

**STRAIGHT-IN LANDING/APPROACH:** A landing made on a runway aligned within 30 degrees of the final approach course following completion of an instrument approach.

## **T**

**TACTICAL AIR NAVIGATION (TACAN):** An ultrahigh frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

**TAKEOFF RUNWAY AVAILABLE (TORA):**  
See declared distances.

**TAKEOFF DISTANCE AVAILABLE (TODA):**  
See declared distances.

**TAXILANE:** The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

**TAXIWAY:** A defined path established for the taxiing of aircraft from one part of an airport to another.

**TAXIWAY SAFETY AREA (TSA):** A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

**TERMINAL INSTRUMENT PROCEDURES:** Published flight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

**TERMINAL RADAR APPROACH CONTROL:** An element of the air traffic control system responsible for monitoring the en-route and terminal segment of air traffic in the airspace surrounding airports with moderate to high levels of air traffic.

**TETRAHEDRON:** A device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

**THREATENED SPECIES:** Any species that either FWS or NMFS states is likely to become an endangered species within the foreseeable future throughout all or a significant portion of the species' range.

**THRESHOLD:** The beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

**TOUCH-AND-GO:** An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and go is recorded as two operations: one operation for the landing and one operation for the takeoff.

**TOUCHDOWN:** The point at which a landing aircraft makes contact with the runway surface.

**TOUCHDOWN AND LIFT-OFF AREA (TLOF):** A load bearing, generally paved area, normally centered in the FATO, on which the helicopter lands or takes off.

**TOUCHDOWN ZONE (TDZ):** The first 3,000 feet of the runway beginning at the threshold.

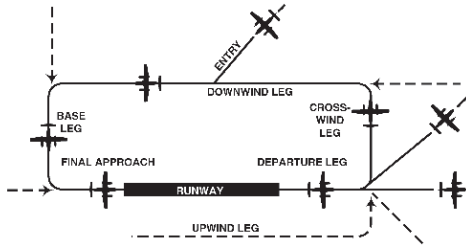
**TOUCHDOWN ZONE ELEVATION (TDZE):** The highest elevation in the touchdown zone.

**TOUCHDOWN ZONE (TDZ) LIGHTING:** Two rows of transverse light bars located symmetrically about the runway centerline normally at 100- foot intervals. The basic system extends 3,000 feet along the runway.

**TRAFFIC PATTERN:** The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.



## Traffic Pattern Illustration



## U

**UNCONTROLLED AIRPORT:** An airport without an air traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

**UNCONTROLLED AIRSPACE:** Airspace within which aircraft are not subject to air traffic control.

**UNIQUE FARMLAND:** This is land used for producing high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture necessary to produce high quality crops or high yields of them economically.

**UNIVERSAL COMMUNICATION (UNICOM):** A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

**UPWIND LEG:** A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."

## V

**VECTOR:** A heading issued to an aircraft to provide navigational guidance by radar.

**VERY HIGH FREQUENCY / OMNIDIRECTIONAL RANGE (VOR):** A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.



**VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE/ TACTICAL AIR NAVIGATION (VORTAC):** A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

**VICTOR AIRWAY:** A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

**VISUAL APPROACH:** An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

**VISUAL APPROACH SLOPE INDICATOR (VASI):** An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to 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. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

**VISUAL FLIGHT RULES (VFR):** Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

**VISUAL METEOROLOGICAL CONDITIONS:** Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

**VOR:** See "Very High Frequency Omnidirectional Range Station."

**VORTAC:** See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

**W**  
.....

**WARNING AREA:** See special-use airspace.

**WIDE AREA AUGMENTATION SYSTEM:** An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of flight.

# Abbreviations

**AC:** advisory circular

**ADF:** automatic direction finder

**ADG:** airplane design group

**AEM:** Area Equivalent Method

**AFSS:** automated flight service station

**AGL:** above ground level

**AIA:** annual instrument approach

**AIP:** Airport Improvement Program

**AIR-21:** Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

**ALS:** approach lighting system

**ALSF-1:** standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

**ALSF-2:** standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT II configuration)

**AOA:** Aircraft Operation Area

**APE:** Area of Potential Effect

**APV:** instrument approach procedure with vertical guidance

**ARC:** airport reference code

**ARFF:** aircraft rescue and fire fighting

**ARP:** airport reference point

**ARPA:** Archeological Resources Protection Act

**ARTCC:** air route traffic control center

**ASDA:** accelerate-stop distance available

**ASOS:** automated surface observation station

**ASR:** airport surveillance radar

**AST:** Above Ground Storage Tank

**ATCT:** airport traffic control tower

**ATIS:** automated terminal information service

**AVGAS:** aviation gasoline - typically 100 low lead (100L)

**AWOS:** automated weather observation station

**BA:** Biological Assessment

**BE:** Biological Evaluation

**BMP:** Best Management Practice

**BRL:** building restriction line

**CAA:** Clean Air Act

**CalTrans** - California Department of Transportation

**CDFG** - California Department of Fish and Game

**CEQ:** Council on Environmental Quality

**CFR:** Code of Federal Regulation

**CIP:** capital improvement program

**CNEL** - Community Equivalent Noise Level

**CO:** Carbon Monoxide

**CWA:** Clean Water Act

**CZM:** Coastal Zone Management

**CZMA:** Coastal Zone Management Act

**DME:** distance measuring equipment

**DNL:** day-night noise level

**DOD:** Department of Defense

**DOI:** Department of the Interior

**DOT:** Department of Transportation

<b>DTWL:</b> runway weight bearing capacity of aircraft with dual-tandem type landing gear	<b>IM:</b> inner marker
<b>DWL:</b> runway weight bearing capacity of aircraft with dual-wheel type landing gear	<b>INM:</b> Integrated Noise Model
<b>EA:</b> Environmental Assessment	<b>JD:</b> Jurisdictional Delineation
<b>EDDA:</b> Environmental Due Diligence Audit	<b>LDA:</b> localizer type directional aid
<b>EDMS:</b> Emissions and Dispersion Modeling System	<b>LDA:</b> landing distance available
<b>EO:</b> Executive Order	<b>LIRL:</b> low intensity runway edge lighting
<b>EPA:</b> Environmental Protection Agency	<b>LMM:</b> compass locator at ILS outer marker
<b>ESA:</b> Endangered Species Act	<b>LORAN:</b> long range navigation
<b>FAA:</b> Federal Aviation Administration	<b>MALS:</b> midium intensity approach lighting system with indicator lights
<b>FAR:</b> Federal Aviation Regulation	<b>MIRL:</b> medium intensity runway edge lighting
<b>FBO:</b> fixed base operator	<b>MITL:</b> medium intensity taxiway edge lighting
<b>FEMA:</b> Federal Emergency Management Agency	<b>MLS:</b> microwave landing system
<b>FICON:</b> Federal Interagency Committee on Noise	<b>MSL:</b> mean sea level
<b>FIRM:</b> Flood Insurance Rate Map	<b>MM:</b> middle marker
<b>FONSI:</b> Finding of No Significant Impact	<b>MOA:</b> military operations area
<b>FPPA:</b> Farmland Protection Policy Act	<b>NAAQS:</b> National Ambient Air Quality Standards
<b>FR:</b> Federal Register	<b>NAS:</b> National Airspace System
<b>FY:</b> fiscal year	<b>NAVAID:</b> navigational aid
<b>GPS:</b> global positioning system	<b>NCP:</b> Noise Compatibility Program
<b>GS:</b> glide slope	<b>NDB:</b> nondirectional radio beacon
<b>HIRL:</b> high intensity runway edge lighting	<b>NEPA:</b> National Environmental Policy Act
<b>HUD:</b> Department of Housing and Urban Development	<b>NHPA:</b> National Historic Preservation Act
<b>IFR:</b> instrument flight rules (FAR Part 91)	<b>NM:</b> nautical mile (6,076.1 feet)
<b>ILS:</b> instrument landing system	<b>NO<sub>2</sub>:</b> Nitrogen Dioxide
	<b>NPDES:</b> National Pollution Discharge Elimination System Permit



**NPIAS:** National Plan of Integrated Airport Systems

**NPRM:** notice of proposed rule making

**NRCS:** National Resources Conservation Service

**NRHP:** National Register of Historic Places

**NRI:** Nationwide Rivers Inventory

**O<sub>3</sub>:** Ozone

**ODALS:** omnidirectional approach lighting system

**OFA:** object free area

**OFZ:** obstacle free zone

**OHWM:** Ordinary High Water Mark

**OM:** outer marker

**PAC:** planning advisory committee

**PAPI:** precision approach path indicator

**PCL:** pilot-controlled lighting

**PFC:** porous friction course

**PFC:** passenger facility charge

**PIW** public information workshop

**PL:** Public Law

**PLASI:** pulsating visual approach slope indicator

**PM<sub>10</sub>:** Particulate Matter 10 microns or larger

**PM<sub>2.5</sub>:** Particulate Matter 2.5 microns or larger

**POFA:** precision object free area

**PVASI:** pulsating/steady visual approach slope indicator

**PVC:** poor visibility and ceiling

**RCO:** remote communications outlet

**REIL:** runway end identifier lighting

**RNAV:** area navigation

**ROD:** Record of Decision

**RPZ:** runway protection zone

**RSA:** runway safety area

**RTR:** remote transmitter/receiver

**RVR:** runway visibility range

**RVZ:** runway visibility zone

**SALS:** short approach lighting system

**SASP:** state aviation system plan

**SCS:** Soil Conservation Service

**SEL:** sound exposure level

**SHPO:** State Historic Preservation Officer

**SID:** standard instrument departure

**SIP:** State Implementation Plan

**SM:** statute mile (5,280 feet)

**SO<sub>2</sub>:** Sulfur Dioxide

**SRE:** snow removal equipment

**SSALF:** simplified short approach lighting system  
with runway alignment indicator lights

**STAR:** standard terminal arrival route

**SWL:** runway weight bearing capacity for aircraft  
with single-wheel tandem type landing gear

**TACAN:** tactical air navigational aid

**TAF:** Federal Aviation Administration (FAA)  
Terminal Area Forecast

**TDZ:** touchdown zone

**TDZE:** touchdown zone elevation

**THPO:** Tribal Historic Preservation Officer

**TODA:** takeoff distance available

**TORA:** takeoff runway available

**TRACON:** terminal radar approach control

**TSA:** Transportation Security Administration

**USACOE:** United States Army Corps of Engineers

**USDA:** United States Department of Agriculture

**USFWS:** United States Fish and Wildlife Services

**UST:** Underground Storage Tank

**VASI:** visual approach slope indicator

**VFR:** visual flight rules (FAR Part 91)

**VHF:** very high frequency

**VOC:** Volatile organic compound

**VOR:** very high frequency omni-directional range

**VORTAC:** VOR and TACAN collocated

**WQC:** Water Quality Certificate

**WUS:** Waters of the United States

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## **GOVERNOR'S AIR AND WATER QUALITY CERTIFICATION**

## **Appendix I – Governor’s Air and Water Quality Certification**

*Lawrence J. Timmerman Airport*

*Environmental Assessment for Runway Extension*

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This appendix contains a copy of the Governor’s Air and Water Quality Certification prepared by the Wisconsin Department of Transportation for the proposed improvements at Lawrence J. Timmerman Airport.

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**Governor's Air and Water Quality  
Certification**

**Lawrence J. Timmerman Airport  
Milwaukee, Wisconsin  
Runway Extension**

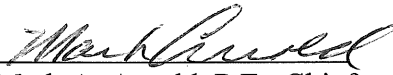
Milwaukee County is proposing improvements to Lawrence J. Timmerman Airport that will allow the airport to better serve general aviation operators by extending the primary runway by an additional 600 feet by constructing an additional 300 feet at each end of Runway 15L-33R. Additionally, the associated parallel taxiway will be extended and drainage improvements will be made in conformance with Milwaukee Metropolitan Sewerage District (MMSD) Chapter 13, Surface and Storm Waters Rules. Construction of the proposed improvements, depicted on Exhibit 1, will include grading, paving and drainage improvements.

In accordance with Federal Aviation Administration *Advisory Circular 150/5300-13, Airport Design* (FAA AC 150/5300-13), the proposed grading scheme within the runway safety area (RSA) at the Runway 15L end extends 300 feet north of the proposed pavement extension and is 150 feet wide. The RSA at the Runway 33R extends end 100 feet south of the proposed pavement extension and is also 150 feet wide.

Drainage analysis indicates that four drainage basins are present on the airport, two of which (Basin A and Basin C) will be altered as a result of the proposed projects. Based on the drainage calculations, the proposed improvements result in a net increase of 1.3 acres within Basin A and 0.6 acres in Basin C. To manage runoff rates in accordance with MMSD Surface and Storm Water Rules, two dry detention basins are proposed. The dry detention basins will capture and detain most of the storm water runoff from the proposed runway extensions.

We are confident that the Air and Water Quality Certification (required by Section 16(e)(1) of the Airport and Airway Development Act of 1970) will be signed by Governor Scott Walker of the State at the same time that the Governor executes the State Finding. This would occur after the FAA has issued a tentative allocation for the project. This is in accordance with Wisconsin Statute 114.33(3), and administrative procedures.

WISCONSIN DEPARTMENT OF TRANSPORTATION  
BUREAU OF AERONAUTICS

  
Mark A. Arnold, P.E., Chief  
Airport Engineering Section

Nov 1, 2011  
Date



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