

Chapter One

Introduction & Purpose and Need

1.0 GENERAL

The Federal Aviation Administration (FAA) has established the National Plan of Integrated Airport Systems (NPIAS) which identifies more than 3,400 existing and proposed airports that are significant to national air transportation and thus eligible to receive Federal grants under the Airport Improvement Program (AIP), which includes the Lansing Municipal Airport (IGQ or Airport). In addition, the FAA develops aviation forecasts annually for active airports in the NPIAS. In 2004, the Village of Lansing, as owner and Sponsor of the Airport, initiated a Master Plan Update to evaluate the existing facility, develop an aviation forecast, evaluate development alternatives, and identify the facility requirements and plan implementation.

The Village of Lansing plans to apply for federal financial assistance under the AIP, as authorized by the public law requirements of the *Vision 100-Century of Aviation Reauthorization Act* (Public Law (P.L.) 108-176) in order to construct proposed improvements. Because of potential environmental impacts associated with the proposed development, and to be eligible for federal funds, the Sponsor is required by the FAA to prepare an Environmental Assessment (EA). This EA is prepared in conformance with the applicable sections of the Federal Aviation Administration's (FAA) Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, and FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*.

This EA has been prepared to provide an understanding of the Sponsor's Proposed Action at the Lansing Municipal Airport, evaluate reasonable alternatives, identify potential environmental consequences associated with the proposed development, and mitigate possible negative environmental impacts.

1.1 SETTING

The Lansing Municipal Airport is a general aviation reliever facility, which currently serves the general and corporate aviation demands of southern Cook County, Illinois and northwestern Indiana. The Airport is located in the Villages of Lansing and Lynwood, Illinois within the southeastern portion of Cook County, and is on the Illinois/Indiana border. The Airport is located southeast of the Interstate 294 and 80 interchange, approximately 21 miles southeast of Chicago Midway International Airport. The Airport is owned and operated by the Village of Lansing. The Airport currently provides services and facilities for general aviation aircraft which range in size from helicopters and single engine piston to twin engine business jets. See **Exhibit 1-1: Location Map** in **Appendix A**.

1.2 BACKGROUND

Designated as a reliever airport, IGQ serves in an integral role to “relieve” general aviation and smaller corporate congestion at Chicago Midway International and Chicago O’Hare International Airport, which serve the scheduled and charter air carrier demands of the Chicago region. The Airport accommodates a portion of the general aviation/corporate demands for the southern Cook and northern Will County areas in Illinois, as well as northwestern Lake County in Indiana. The Airport offers two paved runways for the operation of general aviation aircraft.

Lansing Municipal Airport has been in a process of improvement for the past several years. The Airport completed an Environmental Assessment in 1992, which assessed the development of a 4,000 foot runway, now the primary Runway 18/36. The Village of Lansing sponsored that runway development effort primarily to meet aeronautical demand as a number of smaller public and private general aviation facilities were closed and business aviation increased.

1.2.1 Historic Airport Activity

The Airport currently does not have an airport traffic control tower, which limits the availability of accurate operational data. According to the 2011 FAA Airport Master Record, IGQ experiences approximately 54,000 operations annually. Over the past five years, the number of operations at IGQ has remained relatively consistent; but given national and local trends, it is believed IGQ is in a position to see moderate to significant growth in operations. With respect to general aviation activity nationally, the FAA noted the following in their report titled *FAA Aerospace Forecast Fiscal Years 2010-2030*: “...the long-term outlook remains favorable. We see growth in business aviation demand over the long term driven by a growing U.S. and world economy.”

According to the 2011 Airport Master Record, the Airport reported 187 aircraft based on the field, including 142 single-engines, 21 multi-engines, 10 jet aircraft, 13 helicopters and 1 ultra-light aircraft based at IGQ in 2008. Of the 54,000 total aircraft operations reported on the most recent 2011 Airport Master Record, over 90 percent being conducted by general aviation aircraft. The remaining 10 percent of operations were conducted by users operating under FAR Part 135¹ (denoted Air Taxi). An aircraft operation is classified as a takeoff or a landing. Of the total operations, over 50 percent were conducted locally (i.e. takeoff, land and operate in the vicinity of the same airport/touch and go) with the remaining 50 percent being itinerant. The majority of itinerant operations is transient in nature and is often related to business in the Chicago area. **Tables 1-1 and 1-2** below provide a breakdown of the activity reported for IGQ.

¹ Federal Aviation Regulations Part 135: Operating requirements: Commuter and on demand operations and rules governing persons on board such aircraft.

**Table 1-1:
2010 Based Aircraft**

<u>Aircraft Type</u>	<u>Based Aircraft</u>
Single-Engine	142
Multi-Engine	21
Jet	10
Helicopter	13
Other	1
Total	187

Source: 2011 FAA Airport Master Record - 5010 Form

**Table 1-2:
2010 Airport Operational Activity**

<u>Operation Type</u>	<u>Aircraft Operations</u>
Air Taxi	5,000
GA Local	27,000
GA Itinerant	22,000
Military	0
Total	54,000

Source: 2011 FAA Airport Master Record - 5010 Form.

1.2.2 Critical Aircraft Analysis

Current activity levels at IGQ indicate a predominance of local general aviation traffic. However, the Airport also experiences significant levels (nearly 22,000 annual operations) of general aviation itinerant activity, and limited numbers of air taxi operations that signify for-hire charter services or corporate users operating under FAR Part 135. **Table 1-3** provides the existing runway characteristics at IGQ.

**Table 1-3:
Existing Runway Characteristics**

<u>Feature</u>	<u>Runway 18/36</u>	<u>Runway 09/27</u>
Length	4,002'	3,396'
Width	75'	75'
Pavement	Asphalt	Asphalt
Strength (pounds)	23,000 (SW)	12,500 (SW)
Gradient	0.05%	0.06%
Lighting	MIRL	MIRL
Approach Instrumentation	Non-Precision	Non-Precision
Approach Lighting	REIL	REIL
Approach Slope Aids	PAPI	PAPI
Threshold Crossing Height	40'	40'
Runway Markings	Non-Precision	Non-Precision

Source: CMT Data & FAA Airport Master Record- 5010 Form

The Airport's dimensional standards should be selected based upon the most demanding aircraft that uses, or is highly likely to use, the airport on a regular basis.² The critical design aircraft is classified by its approach speed and wingspan; the two criteria are used to assign an Airport Reference Code (ARC). Generally, aircraft approach speed dictates design standards used for runway and runway-related facilities, while airplane wingspan primarily dictates separation criteria involving taxiways and taxilanes. **Table 1-4** provides a description of the ARC established by the FAA to categorize aircraft according to operating speed and wingspan.

**Table 1-4:
Aircraft Approach Category and Design Group**

Aircraft Approach Category		
A grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certified landing weight. The categories are:	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 166 knots or more
Airplane Design Group		
A grouping of airplanes based on wingspan. The groups are:	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 up to but not including 262 feet

Source: FAA AC 150/5300-13

Based upon the anticipated levels of future aviation activity documented in the 2009 Airport Master Plan Update, the future critical aircraft for the primary Runway 18/36 at IGQ is expected to maintain a composite ARC of B-II, with the Falcon 900 identified as the critical aircraft.

1.2.3 Runway Length Analysis

FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, provides guidance in determining required runway length. Based upon this guidance, runways should be designed to accommodate the operational needs of the most demanding aircraft within a specified fleet

² "Regular basis" is defined as at least 500 annual itinerant operations.

mix expected to operate at the airport on a regular basis within the 20-year planning period. The most demanding class of aircraft currently operating regularly at IGQ are turboprops and small business jets both comprising an Airport Reference Code (ARC) of B-II. Aircraft in this family include the Beech Super King Air B200, Dassault Falcon 10 and Falcon 900, and the Cessna Citation II. These aircraft types fall within the 75% fleet mix classification as identified in **Table 1-5**.

**Table 1-5:
Aircraft within the 75% Fleet Mix Classification**

Model	ARC	Manufacturer	Model	ARC
Sn-601 Corvette	B-I	Dassault	Falcon 10	B-I
125-700	C-I	Dassault	Falcon 20	B-II
400A	C-I	Dassault	Falcon 50/50 EX	B-II
Premier I	B-I	Dassault	Falcon 900/900B	B-II
2000 Starship	N/A	Dassault	Jet Commander 1121	C-I
Challenger 300	N/A	IAI	Westwind 1123/1124	C-I
500 Citation/501 Citation Sp.	B-I	Learjet	20 Series	C-I
Citation I/II/III	B-I/B-II/C-II	Learjet	31/31A/31A ER	C-I
525A Citation II (CJ-2)	B-II	Learjet	35/35A/36/36A	C-I
550 Citation Bravo	B-II	Learjet	40/45	C-I
550 Citation II	B-II	Mitsubishi	Mu-300 Diamond	B-I
551 Citation II/Special	B-II	Raytheon	390 Premier	B-I
552 Citation	B-II	Raytheon Hawker	400/400 XP	C-I
560 Citation Encore	B-II	Raytheon Hawker	600	C-I
560/560 XL Citation Excel	B-II	Sabreliner	40/60	B-I/C-I
560 Citation V Ultra	B-II	Sabreliner	75A	C-II
650 Citation VII	C-II	Sabreliner	80	C-II
680 Citation Sovereign	N/A	Sabreliner	T-39	N/A

Sources: Table 3-1 of FAA AC 150/5325-4B, ARC classifications were taken from FAA AC 150/5300-13, FAA's Website, and FAA Central Region Newsletter

Using FAA's AC 150/5325-4B, *Runway Length Requirements for Airport Design*, a runway length analysis was conducted for IGQ. **Table 1-6** indicates runway takeoff distances required, for corporate aircraft families based upon aircraft type and operational payloads.

**Table 1-6:
Takeoff Length Requirements**

Aircraft Type (AC 150/5325-4B)	Takeoff Length Requirements	
	Airport Elevation, 84° F	
	60% Payload	90% Payload
75% of Fleet Mix	4,801'	6,526'
100% of Fleet Mix	5,460'	8,150'

Note: Runway lengths for all aircraft are adjusted for airport elevation and temperature using FAA runway length AC 150/5325-4B. Source: CMT analysis of aircraft performance manuals.

At its existing length of 4,002 feet, Runway 18/36 is insufficient to accommodate the takeoff requirements of anticipated future corporate aircraft operating at payloads of 60% or 90%. It is clear that there are both existing and potential future operational scenarios where the existing runway length does, and will continue to, result in operational limitations on aircraft using IGQ. From the data presented in **Table 1-6**, a minimum primary runway length of 5,500 feet should be considered to accommodate most aircraft departures at a 60% payload. Although extending Runway 18/36 to 5,500 feet may vastly enhance the operational capabilities and flexibility of IGQ, limitations will still be placed on larger corporate jets within the 100% Fleet Mix, particularly during hot days for operational missions requiring the aircraft to depart between 60% and 90% payload. Considering the Airport's future objectives to enhance its role as a business aviation facility, planning should include provisions to extend Runway 18/36 to its maximum allowable length given the constraints of the area (i.e. Glenwood Lansing Road, Burnham Avenue, and the proposed Joe Orr Road extension). A proposal to extend Joe Orr Road from Lynwood to Dyer has also been considered for a number of years. The road extension is proposed to the south of the Runway 36 end. The proposed road became a limiting factor to the ultimate length of Runway 18/36. In 2003, the Village of Lansing, on behalf of the Village of Lynwood, submitted the proposed Joe Orr Road alignment to the FAA for an airspace study. This proposed road alignment is currently depicted on the approved Airport Layout Plan.

As a part to the Airport Master Plan update, an Illinois Department of Transportation-Division of Aeronautics Airport Use Survey was conducted. The surveys indicated that a longer primary runway is needed to accommodate corporate aviation. Additionally a memo prepared by the Illinois Department of Transportation-Division of Aeronautics in 2007, which summarized the survey data, stated that an extension to Runway 18/36 up to 6,700 feet is justified. The memo is included in **Appendix E**.

1.2.4 Landside Development

Landside development at an airport can include apron areas, aircraft storage facilities, fixed base operators, aircraft fueling areas, maintenance facilities, aircraft rescue and firefighting facilities, and other ancillary development. In addition to these airport-related facilities, stormwater detention areas are typically required to accommodate runoff requirements.

The Airport has recently completed the North Quadrant Hangar site work. The North Quadrant project is being constructed to provide capacity relief for an increasing number of based aircraft and is in response to a significant demand for corporate hangar space. Based upon discussions with the Sponsor, it is anticipated that the hangar expansion would provide space for aviation related business. It is assumed that future hangar demand would be for a mix of T-hangar, corporate hangar, and community/group hangar facilities, depending upon owner preferences and the actual fleet mix. In order to properly plan for these facilities, and not interfere with future airfield development recommendations, general development areas need to be designated.

The 2009 Master Plan Update identified the landside facility requirements for IGQ based on a 20 year forecast planning period. Even though this EA generally covers development that is planned for the next five-years, the Sponsor has indicated a preference to environmentally assess all of the landside areas that were identified within the Master Plan, and which are currently shown on the Airport Layout Plan. In addition, as landside areas are developed when the demand is realized, construction of associated stormwater detention areas would also be required. Therefore, several areas have been identified on the Airport to accommodate these detention areas. This approach allows the Airport more flexibility in planning for future tenants that have certain preferences for varying hangar sizes, apron layouts, and landside infrastructure needs.

In August 2009, a Final Drainage Report³ was completed for the Airport. The intent of the Drainage Report was to provide a comprehensive drainage plan that would reduce the flood impact on the Airport, while opening the area west of the Lansing Drainage Ditch to development in accordance with the approved Airport Layout Plan (ALP). The Little Calumet River DWP recognized regional problem areas and identified improvement projects. The Lansing Municipal Airport and vicinity was identified as one of the problem areas. Within this area, overbanking along both banks of the Lansing Drainage Ditch occurs. The 2009 IGQ Drainage Report is consistent with recommendations of the Little Calumet River DWP. The recommendations from the 2009 Final Drainage Report are included as a part of the Alternative 1/Sponsor's Proposed Action. These recommendations include a proposed taxiway extension that would contain flood flows to the east side of that taxiway by creating a lateral boundary, parallel to the Lansing Drainage Ditch. Constraining the Lansing Drainage Ditch flood flows to the east side of the taxiway would remove the westerly development area of the airport from the floodway. Channel widening modifications along Lansing Drainage Ditch between the Lansing Drainage Diversion and Runway 9/27, are also proposed to constrain the flows.

1.3 PURPOSE AND NEED

As a reliever to Chicago O'Hare International Airport and Chicago Midway International Airport, IGQ helps to reduce air carrier congestion by providing facilities and services suitable for attracting and diverting general aviation and corporate business aviation away from major air carrier airports. The Airport is a critical component of the City of Chicago transportation system in addition to the surrounding counties, and is therefore an asset to both Illinois and Indiana and the National Airport System. Aviation activity at the Airport is expected to increase throughout the next five years. Based on the previous information contained in the project background, the following purpose and need statement has been formulated:

³ Lansing Municipal Airport - Final Drainage Report, Crawford, Murphy & Tilly, Inc., August 2009.

- ◆ The **Purpose** of the Sponsor's Proposed Action is to accommodate and enhance the margin of safety and efficiency for the aircraft currently operating at the Airport and aircraft expected to operate at the Airport in the near future. This Purpose should be accomplished in a manner that meets the physical and operational requirements of airport users and complies with current FAA airport design standards, while considering the Airport's physical constraints.
- ◆ The **Need** for the Sponsor's Proposed Action is to accommodate aircraft that either operate in a constrained condition at IGQ or are restricted from using the airfield due to the physical limitations of the runway. Additionally, the need is to reduce the floodplain limits, at the Airport, to accommodate future landside development for these aircraft.

The longest runway at IGQ is Runway 18/36, which offers 4,002 feet for both takeoffs and landings. Although it is the Sponsor's preference to extend the primary runway to the 6,700 foot length as identified in IDOT's 2007 memo, this runway is constrained by a proposed extension of Joe Orr Road.

Therefore, an analysis was conducted to determine what maximum runway length could be realized using the ARC B-II safety area and runway approach criteria, while considering the future location of the Joe Orr Road extension. Based on this analysis, the need can best be accomplished by extending the overall length to 5,902 feet, by extending the existing Runway 18 end by 1,615 feet and the Runway 36 end by 285 feet. Extending Runway 18/36 to 5,902 feet would vastly enhance the operational capabilities and flexibility of IGQ. The runway extension would provide for more than 100% of the existing fleet mix to depart at a 60% payload. The extension would also alleviate current limitations being placed on larger corporate jets within 100% of the fleet mix, particularly during hot days for operational missions requiring the aircraft to depart between 60% and 90% payload. Considering the Airport's future objectives to enhance its role as a corporate aviation facility, extending Runway 18/36 to 5,902 feet would meet the Airport's objectives by accommodating all but the most extreme operations anticipated at IGQ. In addition, the increased runway length would provide a greater safety margin for the existing and future critical aircraft.

In addition to extending the primary runway at IGQ, the Sponsor's Proposed Action would include ancillary projects as described in **Section 1.4 - Sponsor's Proposed Action**, in order to address the existing and future needs of the Airport.

1.4 SPONSOR'S PROPOSED ACTION

In order to accommodate increasing aeronautical demand, the Airport intends to implement airport improvements that include the work elements listed below. The projects are to provide facilities that incorporate the safety and operational improvements recommended by the FAA

and the Airport. The projects would also provide an additional level of safety and efficiency to allow the Airport to fulfill its role as a general aviation reliever airport.

1. Construct, light and mark (including signage) a 1,615' x 75' extension to Runway 18 and parallel taxiway, including grading and drainage.
2. Construct, light and mark (including signage) a 285' x 75' extension to Runway 36 and parallel/connecting taxiways, including grading and drainage.
3. Construct, light and mark (including signage) extensions to taxiways Golf and Kilo, including grading and drainage.
4. Remove existing connector taxiway Echo.
5. Strengthen existing Runway 18/36 and taxiways to terminal ramp areas.
6. Construct, light and mark automobile parking and access roadways, including grading and drainage.
7. Construct, light and mark aircraft parking aprons and buildings/hangars, including grading and drainage.
8. Construct fire protection system to southwest quadrant.
9. Install approach light system to Runway 36.
10. Install airport security/perimeter fencing.
11. Relocate the Runway 18 Localizer and access road.
12. Relocate Distance Measuring Equipment (DME) and access road.
13. Relocate and replace Automated Weather Observation System (AWOS) and access road.
14. Relocate PAPI's to Runways 18 & 36.
15. Relocate REIL's to Runways 18 & 36.
16. Relocate wind indicators for Runways 18 & 36.
17. Construct compensatory stormwater storage basins.
18. Construct a 30' channel widening modification along the Lansing Drainage Ditch between the Lansing Diversion and Runway 9/27.
19. Rehabilitate north quadrant T-hangar apron.
20. Acquire approximately 75 acres of land, in fee simple title, including relocation assistance for one residence.
21. Acquire approximately 30 acres of aviation easements.
22. Modify Standard Instrument Approach Procedures (SIAP) for Runway 18/36.
23. Mitigate floodplain encroachment of as much as approximately 62 acres of floodplains.
24. Mitigate wetland impacts of as much as approximately 6 acres of wetlands.
25. Approval of the Airport Layout Plan.

Exhibit 1-2: Alternative 1/Sponsor's Proposed Action in **Appendix A** provides an illustration of the Sponsor's Proposed Action.

1.5 REQUESTED FEDERAL, STATE, AND LOCAL ACTIONS

Several actions by federal, state, and local governmental bodies are required to obtain environmental approval and/or coordination of the proposed project. Outlined below is a list of agencies and actions necessary to develop the proposed projects.

1.5.1 Federal Actions

The proposed action would require compliance by U.S. Department of Transportation - FAA, with the indicated federal statutory or regulatory requirements:

- ◆ Unconditional approval of the revised Airport Layout Plan (ALP) for the projects listed in Section 1.4 of the EA, which constitute the proposed action.
- ◆ Final airspace determination (14 CFR Part 157) (49 U.S.C. 40103(b), 40113).
- ◆ Final determination of potential obstructions to navigable airspace per an aeronautical study outlined under 14 CFR Part 77 (49 U.S.C. 40103(b) and 40113).
- ◆ Final certification that proposed aeronautical development is reasonably necessary for use in air commerce or for national defense (49 U.S.C. 44502(b); 14 CFR Part 169).
- ◆ Final environmental approval for Federal Construction of Navigational Aids.
- ◆ Final environmental approval to modify approach procedures contained in this document, per 49 U.S.C. 40103(b) and 14 CFR Part 91.
- ◆ Issue a finding for Executive Order 12372 – *Intergovernmental Review of Federal Programs*.
- ◆ Issue a finding for the Department of Transportation Order 5610.2, *Environmental Justice in Minority and Low-Income Populations*, implements Federal Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*.
- ◆ Issue a finding for The Department of Transportation Order 5660.1A, *Preservation of the Nation's Wetlands*, implements Federal Executive Order 11990, *Protection of Wetlands*.
- ◆ Issue a finding for The Department of Transportation Order 5650.2, *Floodplain Management and Protection*, implements Federal Executive Order 11988, *Floodplain Management*.

1.5.2 State Actions

Development at the Airport would require actions on the part of several state and local agencies as identified below:

Illinois Department of Transportation (IDOT) - Division of Aeronautics

- ◆ IDOT acceptance of the forecast analyses contained in this document, and approval of the ALP [49 U.S.C. 47107 (a)(16)].
- ◆ Application for all required permits.
- ◆ Application for federal assistance in the construction, development, and maintenance of the facility.
- ◆ Coordination with the Illinois Historic Preservation Agency, State Historic Preservation Officer (SHPO), pursuant to Section 106 of the *National Historic Preservation Act of 1966* (NHPA).
- ◆ Coordination with Illinois Department of Natural Resources (IDNR) regarding threatened and endangered species and wetlands.
- ◆ Coordination with the Illinois Department of Agriculture regarding prime and important farmlands.

Illinois Environmental Protection Agency (IEPA)

- ◆ Approval of the National Pollutant Discharge Elimination System (NPDES) Permits.

1.5.3 Regional and Local Actions

The Airport Sponsor would coordinate with the following regional and local entities to obtain permits and approvals as necessary:

- ◆ Chicago Metropolitan Agency for Planning (CMAP)
- ◆ Metropolitan Water Reclamation District of Greater Chicago (MWRD)
- ◆ Local Communities
- ◆ Local Highway Districts
- ◆ Local Fire and Rescue Services
- ◆ Local Planning and Zoning Administrators
- ◆ Local Municipalities, Townships and Counties