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Eugene F. Kranz Toledo Express Airport Master Plan Update

Inventory of Existing Conditions v1.0

RS&H

Inventory of Existing Conditions

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Eugene F. Kranz Toledo Express Airport
Swanton, Ohio
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Prepared by RS&H, Inc. at the direction of the Toledo-Lucas County Port Authority

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CHAPTER 1

INVENTORY OF EXISTING CONDITIONS

1.1 INTRODUCTION

The Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, outlines the necessary steps in the development of an airport master plan. The initial step, inventory, is the collection of data pertinent to the airport and the area it serves. The objective of the inventory task for Eugene F. Kranz Toledo Express Airport is to provide background information for subsequent phases of analysis.

The development of a master plan for Eugene F. Kranz Toledo Express Airport (TOL) requires the collection and evaluation of data relating to the airport and surrounding area. This information was obtained through on-site investigations of the airport; interviews with airport management, fixed base operators, and air traffic control; as well as the collection and analyses of previous reports and studies. In addition, a survey of tenants' facilities and future plans was conducted during on-site interviews. A glossary of terms used throughout this master plan is provided in **Appendix A**.

1.2 BACKGROUND

Background information regarding TOL is provided in the following sections. The history section provides a brief overview, from the original dedication of the airport through the present-day conditions by highlighting key events in the historical record. The airport setting section provides geographic and meteorological data for the airport and the surrounding area. Finally, the role discussion provides an overview of the airport's placement in the national system of airports and a generalized description of the size and level of air service provided.

1.2.1 History

In January 1955, the City of Toledo opened Eugene F. Kranz Toledo Express Airport. The airport is located twenty-two miles west of downtown Toledo, within Lucas County. The new airport was funded, developed, and established by the City of Toledo because Toledo Municipal Airport, later renamed Metcalf Field, could not grow to accommodate the expanding aviation industry as it was constrained by local railways and roadways. Although several airports are located near the City of Toledo, TOL is the only local commercial service airport associated with the Toledo metropolitan area.

Commercial passenger service airlines have served TOL since it opened on January 6, 1955. The original airlines were Capital Airlines, Delta Air Lines, Eastern Airlines, Trans World Airlines, and United Airlines. Shortly after the airport opened, Lake Central Airlines added service, both Trans World Airlines and Eastern Airlines discontinued service, and Capital Airlines merged with United Airlines. During this time, DC-6s and similar propeller aircraft were the predominate aircraft serving the airport.

In 1957, the Ohio Air National Guard completed the construction of facilities to serve their tactical fighter squadron at the airport and the 180th Fighter Wing and 112th Fighter Squadron of the Ohio Air National Guard were moved from Akron-Canton Regional Airport. The Ohio Air National Guard facilities are located on the east side of the airfield with taxiway access to both runways. The Ohio Air National Guard has supported numerous airport and airfield improvements at TOL including several extensions to Runway 7-25.
The original passenger terminal area was developed in the 1950s and has been expanded several times. It is located on the north side of the airfield, immediately west of Runway 16. The first expansion occurred in 1966

when the terminal apron was expanded to the east and connected to Runway 16 via Taxiway A. As part of this expansion, Runway 16-34 was extended 1,300 feet to its present length of 5,599 feet.

The next major passenger terminal building expansion occurred in the mid-1970s when concessions and support services were added to the terminal building. Also, a second-level concourse, holdrooms, and passenger loading bridges were added during this time. The airlines serving the airport in the mid-1970s included Allegheny, Eastern, Delta, and United. These carriers utilized small to medium sized jets and turboprops and provided direct flights to their hubs. By 1979, five additional carriers were operating at Eugene F. Kranz Toledo Express Airport, including Air Florida, Air Wisconsin, Comair, Frontier, and Trans World Airlines.

The entrance canopy to the passenger terminal was constructed in the early 1990s. The east terminal additional was constructed in the late 1990s.

In 1991, BAX Global, Inc. located its airfreight hub operations at TOL. BAX Global was a major international freight transportation company that provided multi-modal logistics management for business-to-business shippers through a network of nearly 500 offices in 133 countries. BAX Global offered specialized services for the aerospace, automotive, hi-tech, retail, and health care industries and was capable of transporting heavyweight packages and cargo of all sizes. BAX Global's North American transportation system included a mix of aircraft and trucks. BAX Global offered three product delivery options: guaranteed overnight delivery, second-day delivery, and delivery within one to three business days.

As a result of the events of September 2001 and the subsequent airlines' financial difficulties, several air carriers have left the airport. With the exception of Allegiant Air, the remaining air carriers have utilized regional jets for connecting service to the various hub airports. Currently, two airlines, Allegiant Air and American Eagle serve the airport. Direct passenger air carrier service is provided to Chicago (O'Hare), Fort Myers/Punta Gorda, Orlando/Sanford, Tampa/St. Petersburg, and Phoenix-Mesa.

The *Terminal Building Security Reconfiguration and Development and Design* report, completed in February 2005, recommended extensive renovations because of the new security regulations and increased enplanements since the events of September 2001. The commercial passenger terminal renovations program included a new baggage makeup area, new baggage claim area, new baggage screening area, new airline ticketing offices, holdroom expansion, new passenger screening area, a vertical inbound circulation element, central interior core reconfiguration of both levels, new entrance canopy, and a renovated ticketing lobby. The total program was broken into three phases to better fit the operational need of the terminal during construction. The first phase of reconfiguration/construction was completed in 2006 and features the expanded baggage makeup and holdroom above as well as feature renovations to the baggage claim, airline offices and a portion of the public use terminal space. Unfortunately, However, Phases 2 and 3 of the reconfigurations were never realized. As sharp decline in commercial operations beginning in 2005 and ending around 2011 with the airport then only supporting roughly 25% of the 2004 commercial traffic, removed the urgency or need for terminal enhancements.

In 2006, BAX Global was acquired by DB Schenker Logistics, a multimodal cargo operator based in Germany. In 2011, DB Schenker abandoned all airfreight operations and shut down the airfreight cargo hub at Toledo Express after 20 years of operation. The former BAX Global cargo handling facility is now occupied by Tronair,

Inc., a manufacturer of aviation ground service equipment, but does not have any ties to air operations at the airport.

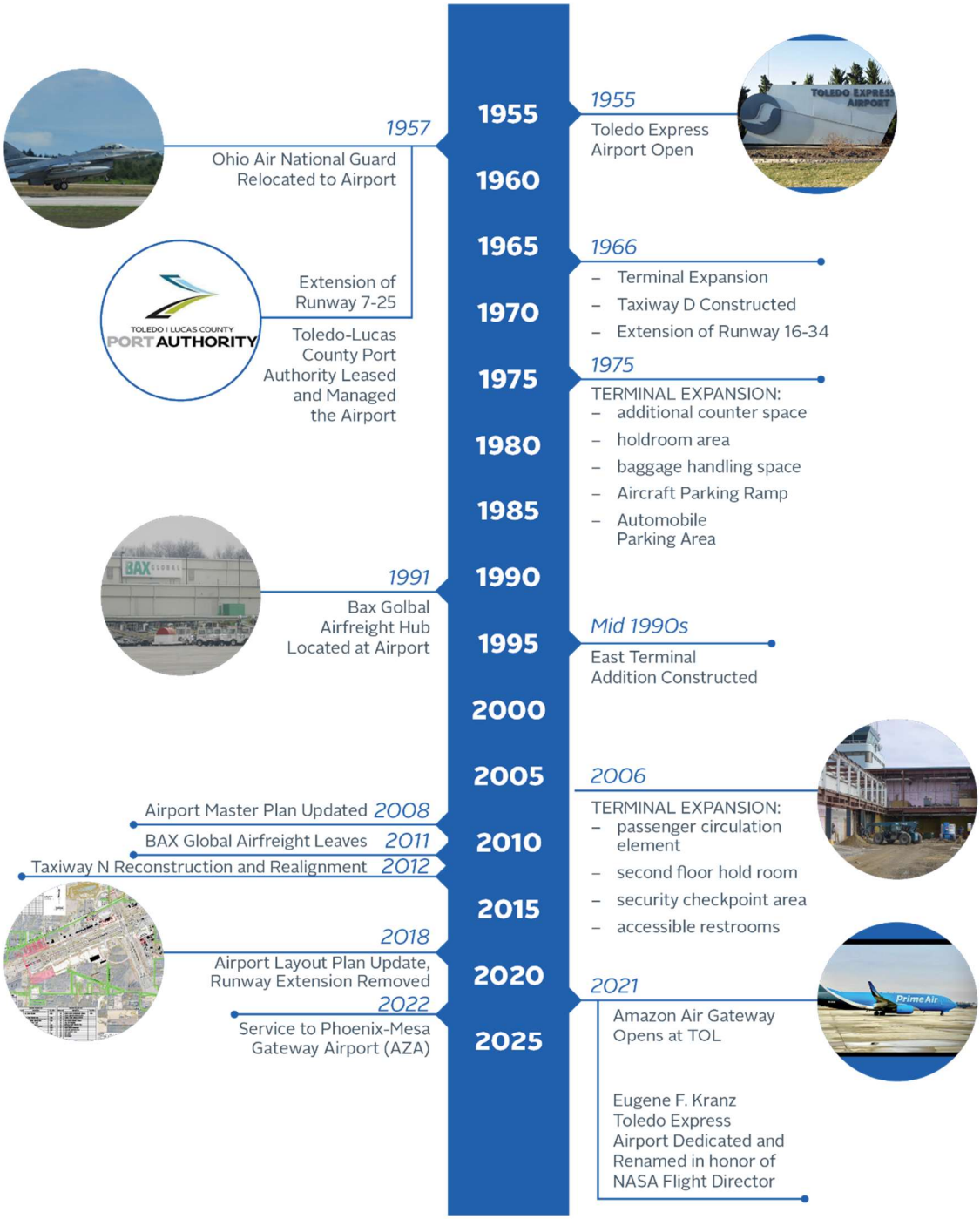
In 2021, Amazon Air began operation at the airport on the eastern portion of the former BAX Global cargo ramp and Pinnacle Logistics began utilizing the existing 65,000 square foot Two Air Cargo Parkway cargo facility in ground handling support of the Amazon Air operation. Amazon Air is a private cargo airline operated by parent company Amazon.com, Inc., a multinational technology company that specializes in e-commerce, as well as artificial intelligence and digital streaming.

An aerial of the airport is provided in **Figure 1-1** and a timeline of airport milestones can be found in **Figure 1-2**.

FIGURE 1-1
AERIAL OF AIRPORT

Source: RS&H Analysis, July 2022

FIGURE 1-2
AIRPORT EVENTS TIMELINE



Source: RS&H Analysis, July 2022

1.2.2 Setting

The City of Toledo is located approximately fifty miles south of Detroit, Michigan and approximately 110 miles east of Cleveland, Ohio. The Toledo metropolitan area is located on the western shores of Lake Erie, along the Maumee River. Transportation and industry originally emerged in the area because of its strategic location near water, rail, and roadway connections. Local deposits of oil and gas have also encouraged local industry development. In addition, agriculture is considered a predominate industry in the region because of the high-quality farming soils. Much of the land located north, south, and west of the airport is currently undeveloped or used for agricultural and preservation purposes. The land to the northeast and southeast of the airport includes residential and business development.

Eugene F. Kranz Toledo Express Airport is listed in the National Plan of Integrated Airport Systems (NPIAS) as a Non-Hub Primary Airport. Based on 2021 information, TOL is ranked sixth in the state in terms of annual enplanements and fourth in the state in terms of annual air cargo tons.

1.2.2.1 Location

TOL is situated immediately southwest of the intersection of U.S. Interstate 80 (I-80) and Airport Highway (State Route 2), as depicted in **Figure 1-3**.

FIGURE 1-3
VICINITY MAP

Source: RS&H Analysis, July 2022

The City of Toledo is located along the northwest boundary of Ohio and Michigan, a few miles inland of Lake Erie. The Toledo metropolitan area includes the counties of Fulton, Lucas, Ottawa, Wood, and Sandusky, as shown in **Figure 1-4**. The Toledo metropolitan area also borders the two Michigan Counties of Lenawee and Monroe.

FIGURE 1-4
AIRPORT LOCATION MAP

Source: RS&H Analysis, July 2022

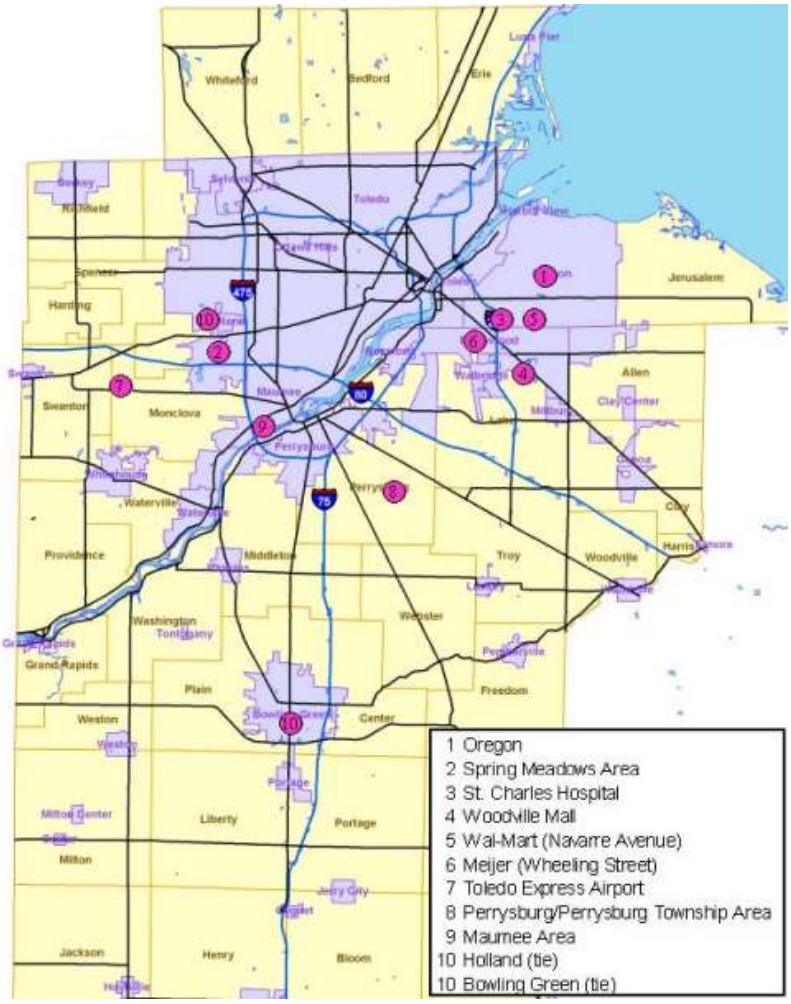
1.2.2.2 Community Economic Overview

The Toledo Metropolitan Area Council of Governments (TMACOG) is an assembly of local governments, public school districts, public universities and colleges, special districts and authorities, and private sector stakeholders that comprise the economic base of the region. TMACOG acts as a forum for local and regional issues among the participating entities and serves as the designated metropolitan planning organization.

TMACOG was initially formed in the 1960s to review federally funded projects and to address federal initiatives and local intergovernmental needs. In the mid-1970s, TMACOG was recognized by the state and federal governments as the areawide agency responsible for conducting programs that would guide rural development and urban growth; provide better transportation systems; improve water and air quality; provide wiser use of energy and natural resources; and ensure long-term economic vitality. TMACOG has since expanded to include more entrepreneurial services and support for issues relating to railroad projects, residential energy conservation, air and water pollution, mass transit, and economic development.

The TMACOG conducted a Regional Transit Study in 2007 to combat perceived shortfalls in the public transportation of the greater Toledo Metropolitan area. The study covered Lucas County in which the City of Toledo is located as well as extended across neighboring Wood and Monroe counties. Among the many deficiencies in public transportation service identified, the study acknowledged the lack of service to the airport outside of one trail service that began in 2003 provided by the Toledo Area Regional Transit Authority (TARTA, this service was discontinued). Public canvasing during the study revealed a majority opinion that public transportation to the airport was needed with roughly 33 percent of the participants claiming prospective use of this new route should it happen. Study recommendations listed a new public service bus route connecting to TOL in the list of top desired destinations for added public transportation service (see **Figure 1-5**). Today there are no current public transportation routes to the airport. [1]

FIGURE 1-5
2007 REGIONAL TRANSIT STUDY RECOMMENDATIONS



1.2.2.3 Ownership and Management

In 1973, the City of Toledo leased TOL to the Toledo-Lucas County Port Authority (Port Authority). The Port Authority was created in 1955 to support commerce utilizing the St. Lawrence Seaway passage through the Great Lakes system. Currently, the Port Authority is responsible for the capital improvements, economic development, and operations of air, water, rail, and surface transportation in the Toledo area. Though the City has retained ownership of the airport property, the Port Authority is entirely responsible for the management and operation of the airport. Additionally, the Port Authority manages the airport's Capital Improvement Program (CIP) and authorizes all grant programs and development projects at the airport.

1.2.2.4 Meteorological Conditions

A review of the prevailing meteorological conditions is necessary to assist in the evaluation of aircraft performance characteristics. Temperature, precipitation, winds, visibility, and cloud ceiling heights are elements used to summarize an area's climate for airport planning purposes.

[1] TMACOG Regional Transit Study, reformatted and republished in 2007

The City of Toledo experiences a continental type of climate, which is characterized by westerly winds and larger temperature fluctuations than in areas at the same latitude near oceans or seas. As a result, the Toledo area occasionally experiences prolonged periods of hot, humid weather in the summer and extreme cold during the winter. Though Toledo is located near Lake Erie, the winds in the area are typically not as strong as they might normally be in a continental area so close to a large body of water. On average, the prevailing winds in the Toledo area are southwesterly, averaging ten miles per hour. The reason Toledo experiences milder winds is because the winds in this area travel from west to east; hence, the winds encounter Toledo before crossing east to Lake Erie.

The average annual temperature at TOL is 50.3 degrees Fahrenheit. Moderately warm temperatures dominate the July summers having the highest average temperature of 73.5 degrees Fahrenheit, and an average maximum temperature of 82.5 degrees Fahrenheit. The highest single-day temperature on record was 104.0 degrees Fahrenheit; it was experienced in June of 1988 and July of 1995. The last annual freeze typically occurs in early April and the first annual freeze occurs around late October. February has the lowest average temperature at 20.6 degrees Fahrenheit. The lowest single-day temperature on record was -20.0 degrees Fahrenheit in January of both 1984 and 1995.

Precipitation is well distributed throughout the year with the crop season, April through September, receiving an average of 19.2 inches, or 56.1 percent of the average annual total. Summer precipitation comes in the form of afternoon showers and thundershowers. The wettest month is May with an average of 3.6 inches of rainfall, while the driest month is January with an average of 2.05 inches. Average seasonal snowfall for the Toledo area is 31.0 inches.[2]

1.2.3 Role

Determination of an airport's classification and role is a function of the FAA and is used in the process of assembling the NPIAS and determining airport project funding levels.

1.2.3.1 Airport NPIAS Classification

An airport must be included in the NPIAS to be eligible for federal funding under the Airport Improvement Program (AIP). The NPIAS is prepared by the FAA every two years and identifies public-use airports considered necessary to provide a safe, efficient, and integrated system of airports to meet the needs of civil aviation, national defense, and the United States Postal Service. It also takes into consideration the relationship of each airport to the rest of the transportation system in a particular area, the forecast of technological developments in aeronautics, and the development forecast in other modes of transportation.

As a commercial service airport, TOL is presently listed in the NPIAS as a Non-hub Primary Airport. A Non-hub Airport accounts for less than 0.05 percent of the total passenger enplanements (but more than 10,000 annual enplanements) provided by commercial aircraft service within the United States.

Detroit Metropolitan Wayne County Airport (DTW, 50 miles northeast of TOL), Fort Wayne International Airport (FWA, 85 miles southwest of TOL), Capital Region International Airport (LAN, 90 miles northwest of TOL), Bishop International Airport (FNT, 95 miles north of TOL), Kalamazoo/Battle Creek International Airport (AZO, 100 miles

2 All recorded weather data collected by the National Oceanic & Atmospheric Administration (NOAA), compiled by RS&H in July 2022

northwest of TOL), and Cleveland Hopkins International Airport (CLE, 100 miles east of TOL) are the closest Primary Airports to TOL in the region spanning across Ohio, Michigan, and Indiana. Per NPIAS classification, DTW is a Large Hub Airport that serves as a hub for Delta Air Lines and is the closest commercial service airport to TOL. FWA, LAN, FNT, and AZO are all classified as Primary Non-Hub Airports serving their respective metropolitan regions (Fort Wayne, Lansing, Flint, and Kalamazoo). CLE in Cleveland is classified as a Medium Hub and the closest commercial service airport in Ohio to TOL.[3]

1.2.3.2 Adjacent Airports and Services

An important part of conducting an inventory at an airport is the examination of neighboring airports and the services they offer. This includes both public and private use airports that may have an impact on the airspace surrounding an airport.

General aviation airports open to the public and located within 25 statute miles of TOL are identified in **Table 1-1** and **Figure 1-6.** In addition to those airports, there are nineteen private airports located in the vicinity of the airport that are not available for public use. Commercial service airports located in Ohio and nearby Michigan and Indiana areas are identified in **Table 1-2** and **Figure 1-6.** These airports play a significant role in identifying the service area for the airport and competition offered by airports with similar services.

TABLE 1-1
SURROUNDING GENERAL AVIATION AIRPORTS AND ASSOCIATED SERVICES

Identifier	Airport	City	State	Runway	Length	Pavement	Instrument Approaches	NPIAS Role	Based Aircraft	Annual Ops
44G	Betz Airport	Blissfield	MI	9-27	2,602'	Turf	N/A	Unclassified	9	3,016
M84	Erie Aerodrome	Erie	MI	18-36	2,670'	Turf	N/A	Unclassified	4	200
FZI	Fostoria Metropolitan	Fostoria	OH	9-27	5,005'	Asphalt	GPS	Basic	11	8,030
USE	Fulton County	Wauseon	OH	9-27	3,882'	Asphalt	GPS	Local	20	22,265
				18-36	2,115'	Turf	N/A			
7W5	Henry County	Napolean	OH	10-28	4,001'	Asphalt	GPS	Local	17	5,512
ADG	Lenawee County	Adrian	MI	5-23	5,001'	Asphalt	GPS	Local	57	17,885
				11-29	1,779'	Turf	N/A			
34G	Merillatt	Tecumseh	MI	18-36	3,608'	Tirf	N/A	Unclassified	21	29,930
22T	Tecumseh Mills	Tecumseh	MI	7-25	4,258'	Asphalt	N/A	Unclassified	9	12,045
				13-31	4,278'	Asphalt	N/A			
TDZ	Toledo Executive	Milbury	OH	4-22		Asphalt	GPS	Local	44	90,520
				14-32		Asphalt	GPS			
DUH	Toledo Suburban	Lambertville	MI	9-27	4,807'	Asphalt	N/A	Unclassified	25	17,155
1G0	Wood County	Bowling Green	OH	10-28	4,199'	Asphalt	GPS	Local	44	32,485
				18-36	2,628'	Asphalt	GPS			

Source: FAA 5010, Airnav.com, Google Maps, operations data from 12-month period ending 31 December 2018

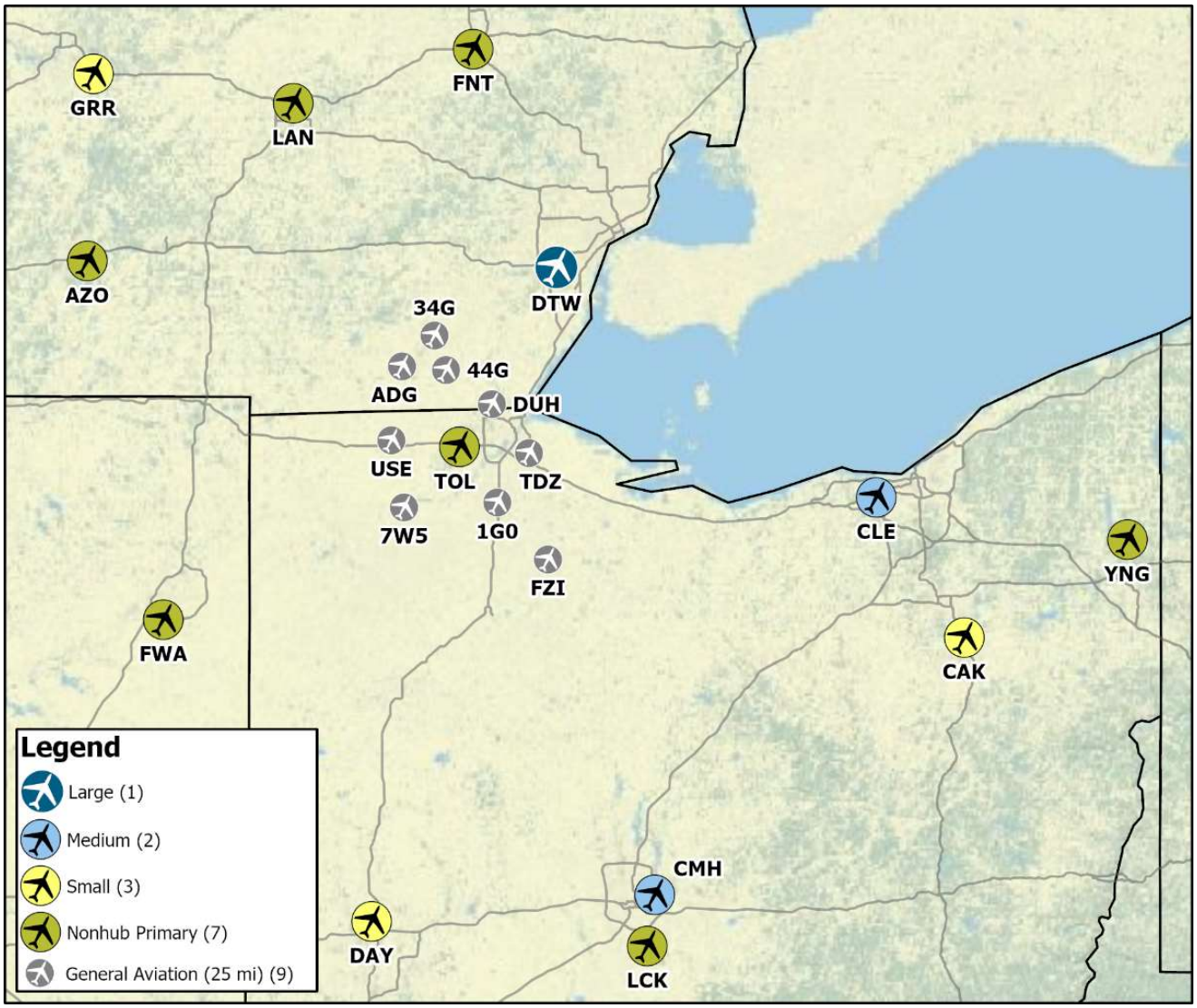
[3] All NPIAS data from the 2021-2025 National Plan of Integrated Airport Systems (NPIAS) Narrative and Appendices

TABLE 1-2
COMMERCIAL SERVICE AIRPORTS AND ASSOCIATED SERVICES

Identifier	Airport	City	State	Runway	Length	Pavement	Instrument Approaches	NPIAS Role	Based Aircraft	Annual Ops
CAK	Akron/Canton Regional	North Canton	OH	1-19	7,601'	Asphalt, grooved	ILS	Non-Hub	147	58,035
				5-23	8,204'	Asphalt, grooved	ILS			
FNT	Bishop International	Flint	MI	9-27	7,201'	Asphalt, grooved	ILS	Non-Hub	93	30,295
				18-36	7,849'	Asphalt, grooved	VOR/GPS			
LAN	Capital Region International	Lansing	MI	6-24	5,003'	Asphalt	GPS	Non-Hub	63	31,025
				10L-28R	3,601'	Asphalt, grooved	N/A			
				10R-28L	8,506'	Asphalt, grooved	ILS			
CLE	Cleveland Hopkins International	Cleveland	OH	6L-24R	9,000'	Concrete, grooved	ILS	Medium	44	71,175
				6R-24L	9,953'	Concrete, grooved	ILS			
				10-28	6,018'	Concrete w/asphalt overlay	GPS			
DTW	Detroit Metropolitan Wayne County	Romulus	MI	3R-21L	10,001'	Concrete, grooved	ILS	Large	9	393,470
				3L-21R	8,501'	Concrete, grooved	N/A			
				4R-22L	12,003'	Concrete, grooved	ILS			
				4L-22R	10,000'	Concrete, grooved	ILS			
				9L-27L	8,708'	Concrete, grooved	ILS (27R)			
				9R-27L	8,500'	Concrete, grooved	ILS (27L)			
TOL	Eugene F. Kranz Toledo Express	Swanton	OH	7-25	10,600'	Asphalt, grooved	ILS	Non-Hub	82	38,690
				16-34	5,599'	Asphalt, grooved	GPS			
FWA	Fort Wayne International	Fort Wayne	IN	5-23	11,981'	Concrete w/asphalt overlay	ILS/GPS	Non-Hub	66	41,245
				9-27	4,001'	Concrete w/asphalt overlay	N/A			
				14-32	8,002'	Concrete w/asphalt overlay	GPS/ILS			
DAY	James M. Cox Dayton International	Dayton	OH	6L-24R	10,901'	Concrete w/asphalt overlay	ILS	Small	34	34,675
				6R-24L	7,285'	Concrete, grooved	GPS/ILS			
				18-36	8,502'	Asphalt, grooved	GPS			
CMH	John Glenn International	Columbus	OH	10L-28R	8,000'	Asphalt, grooved	ILS	Medium	90	78,840
				10R-28L	10,114'	Asphalt, grooved	ILS			
AZO	Kalamazoo/Battle Creek	Kalamazoo	MI	5-23	3,438'	Asphalt, grooved	GPS	Non-Hub	120	37,230
				9-27	2,800'	Asphalt	N/A			
				17-35	6,502'	Asphalt, grooved	GPS/ILS			
LCK	Rickenbacker International	Columbus	OH	5L-23R	11,902'	Asphalt, grooved	ILS/GPS	Non-Hub	32	20,805
				5R-23L	12,102'	Concrete w/asphalt overlay	ILS			
YNG	Youngstown-Warren Regional	Vienna	OH	5-23	5,002'	Asphalt, grooved	N/A	Regional	34	25185
				14-32	9,003'	Asphalt, grooved	ILS			

Source: FAA 5010, Airnav.com, Google Maps, operations data from 12-month period ending 31 December 2018

FIGURE 1-6
COMMERCIAL SERVICE AND GENERAL AVIATION AIRPORTS SURROUNDING TOL



Source: RS&H Analysis, July 2022

1.2.3.3 Aviation Activity Overview

As previously detailed, commercial service at TOL is provided by Allegiant Air and American Eagle. Combined, these airlines offer non-stop commercial service to five cities throughout the United States. The commercial service and scheduled charter destinations are shown in **Figure 1-17.**

FIGURE 1-7
COMMERCIAL SERVICE DESTINATIONS MAP

Source: https://www.toledoexpress.com/, Compiled by RS&H, 2022

1.2.4 Prior and Ongoing Studies

The following list provides a summary of prior and ongoing studies conducted for TOL. These studies are used to provide essential background information regarding the airport, including previously identified areas of concern, existing conditions, and development plans.

- **FAR Part 150 Noise Compatibility Study** – In May 1991, Coffman Associates, Inc. completed the Eugene F. Kranz Toledo Express Airport Noise Compatibility Study. The purpose of the study was to determine the level and impacts of aircraft noise on the surrounding community and to develop abatement and mitigation plans to reduce the level and the impacts of aircraft noise.
- **FAR Part 150 Study Update** – In May 1994, Coffman Associates, Inc., and Yager & Associates completed the update to the May 1991 Noise Study. The purpose of this study was to present higher than anticipated levels of aircraft noise from increased levels of air cargo and general aviation activity. The study also presented additional noise abatement and mitigation actions.
- **Terminal Building Security Reconfiguration Development and Design Report** – In February 2005, Reynolds, Smith and Hills, Inc. completed a terminal security report. The purpose of this report was to identify the new security regulations and measures that were created as a result of the September 11, 2001, events and integrate them into the airport facilities.

- **TOL Commercial Aviation Market Study** – Beginning in December of 2020 through July of 2021, Ailevon Pacific Aviation Consulting conducted a review of current financial and capital deployment operations and an assessment of air cargo, industrial, and airline development opportunities for TOL on behalf of the TLCPA. In addition, an action plan was created utilizing the findings of the market study that outlined a series of action items geared toward continuous growth and improvement to expand the economic and social benefits that TOL delivers to the Toledo region.

- **BIL (FAA ATCT, Terminal, Allocations)** – Signed November of 2021, the Bipartisan Infrastructure Law (BIL) aimed to modernize infrastructure, increase equity in transportation, help fight climate change, strengthen the supply chain, and create jobs. The BIL makes a total $25 billion contribution towards the replacement and/or development of Airport Infrastructure projects ($15B), Air Traffic Facilities ($5B), and Airport Terminals ($5B). Each development group features money disbursements over a five-year period to give airports multiple chances at funding support.

  It is anticipated the TLCPA will pursue funding for all three development groups to replace and enhance airfield infrastructure, replace, or enhance the terminal facility, and relocate the current Air Traffic Control Tower.

- **OHANG Master Plan** – The 180th Fighter Wing of the Ohio Air National Guard (OHANG), located on the eastern side of the airfield, began an internal master plan update to their own facilities and development plan in 2021 with the update to occur alongside the TOL Master Plan.
  The OHANG will perform their internal Master Plan independently with overall airfield development needs to be factored into the greater TOL Master Plan.

- **Approach Upgrades** – In an attempt to spur air cargo and airline growth at TOL the Port Authority acquired a $5 million federal grant appropriation in fiscal year 2022 to upgrade the current CAT I Instrument Landing System (ILS) of either Runway 7 or 25 to permit aircraft operations during lower visibility minimums. The proposed upgrade is anticipated to be scoped and performed in parallel with the TOL Master Plan.

- **Land Development/Noise Land Reuse Plan** – As part of an ongoing effort, the TLCPA is looking to maximize the use and development of land surrounding TOL primarily through ground and facility leases while occasionally selling land determined to have higher value for non-airport uses. Land deemed unnecessary for long-term aeronautical development or protection is released from federal obligation and repurposed as non-aeronautical/compatible use.

1.3 REGIONAL SETTING

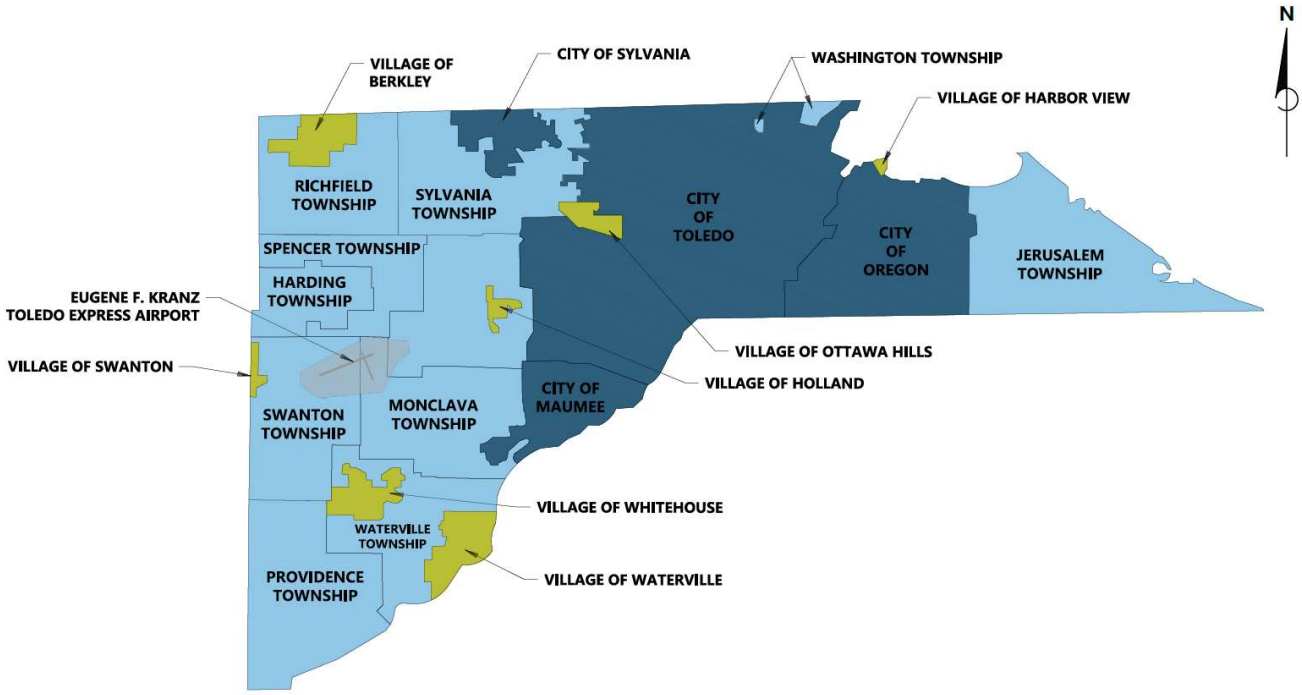
The regional setting is primarily compiled of communities with concerns or services that overlap or transcend their boundaries. The regional setting is sometimes dictated by sheer size or may also be determined by the proximity of communities to each other.

Regions are commonly planned in coordination with a central planning organization that is not affiliated with a single governing agency but performs functions for a region that contains many governmental jurisdictions. Regional planning organizations are usually independent commissions or councils of governments, with only limited authority, and are primarily advisory in nature.

1.3.1 Political Boundaries

Lucas County consists of four cities, seven villages, and eleven townships. TOL is located in north-central Lucas County, within the boundaries of the Village of Swanton. A map depicting the municipal boundaries in Lucas County is provided in **Figure 1-8**.

FIGURE 1-8
POLITICAL BOUNDARIES MAP



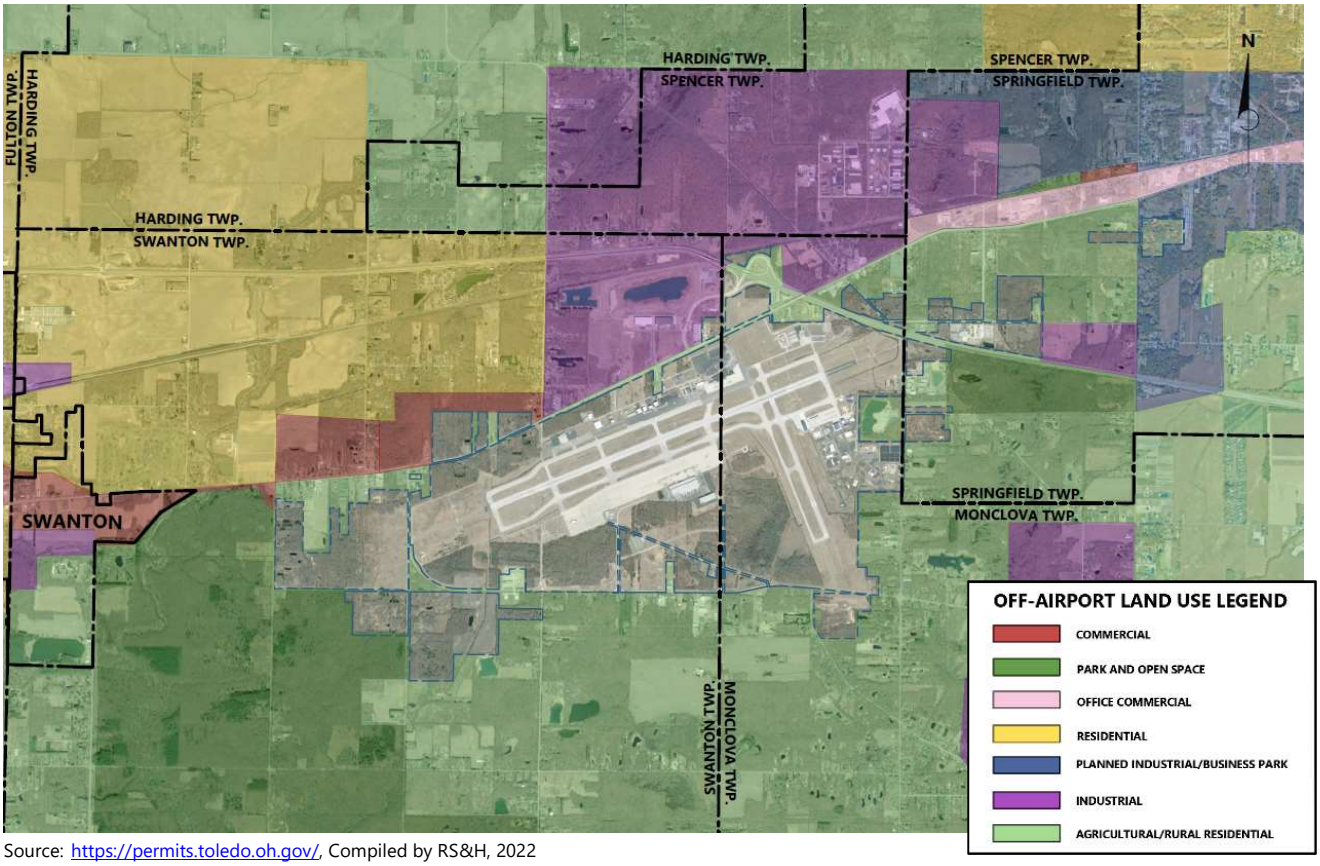
Source: https://www.co.lucas.oh.us/3145/GIS-Maps-Apps-Data, Compiled by RS&H, 2022

1.3.2 Land Use/Zoning

Land use and zoning in the vicinity of an airport controls the location, type, and intensity of new urban land uses and prevents incompatible land use from locating near the approach and departure paths for an airport. Rural zoning in Ohio is controlled through either counties or townships.

TOL is located in Lucas County. Lucas County does not have zoning regulation powers but instead has authorized the Board of Township Trustees to administer zoning rules and regulations. The airport is located immediately adjacent to the townships of Harding, Spencer, Springfield, Monclova, and Swanton. Since townships, villages, and cities are all impacted by the flight tracks of aircraft operating to and from the airport, zoning regulations for these jurisdictions have been described in detail and can be found in the *Airport Environs Plan*. The airport is surrounded by an even distribution of agricultural, industrial, commercial, and residential use land as depicted in **Figure 1-9**.

FIGURE 1-9
AIRPORT LAND USE



Source: https://permits.toledo.oh.gov/, Compiled by RS&H, 2022

1.3.2.1 Harding Township

Adopted in 1970 and updated in 1995, the zoning resolution covers six zoning districts, including one agricultural, two commercial, two industrial, and a planned neighborhood district. The Township does not administer any specific zoning regulations for TOL.

1.3.2.2 Spencer Township

Amended in 1996, Spencer Township originally adopted their zoning resolution in 1963. The resolution covers fourteen districts, including one agricultural, seven residential, two commercial, three industrial, and one planned unit development. The resolution does not permit noise-sensitive uses within the industrial district but does allow certain uses within residential and commercial districts. There are no regulations that apply directly to the airport.

1.3.2.3 Springfield Township

Springfield Township originally passed their zoning resolution in 1955, updated in 1995 and again in 1997. The resolution contains fourteen zones. The Township does not administer any specific zoning regulations for the airport.

1.3.2.4 Monclova Township

Monclova Township adopted their zoning resolution in 1950 and updated it in 1996. The resolution includes eleven zoning districts, including one agricultural, four residential, three commercial, two industrial, and one planned unit development districts. There are no regulations that apply specifically to development near the airport.

1.3.2.5 Swanton Township

Most recently revised in 1996, the Swanton Township resolution contains seven zoning districts, including one agricultural, one residential, three commercial, and two industrial districts. Noise sensitive nonresidential uses are conditionally permitted in the residential districts and within two of the commercial districts located on Whitehouse/Spencer Road and Airport Highway. The Township does not administer zoning regulations for TOL.

1.3.2.6 On-Airport Land Use

Like the regulation of land use and zoning controlling development types on the land surrounding the airport, is the control of land use development on the airport. On-airport development control ensures compatible operations are grouped while operations that may conflict are kept separate. At TOL the land use plan includes aeronautical development sectors reserved for general aviation, commercial, and cargo expansion. Additionally, zoning for airfield operations and support facilities as well as environmental protection regions are established to ensure the compatible development of airport stakeholders with those facilities deemed critical to the operation and regulation of the airport. **Figure 1-10** shows the current land use plan for the airfield at TOL.

1.3.2.6.1 Airfield

Land reserved solely for the purpose of ensuring the safe movement, arrival, and departure of aircraft to and from the airport is classified as Airfield use. All surfaces and facilities necessary for landing and takeoff operations are included and are the airport's number one priority in safe operations and development protection. This land use at TOL comprises 850 total acres and includes runways, taxiways, instrument landing systems, approach lighting systems, airport surveillance radar, as well as Runway Protection Zones (RPZs) and relevant Federal Aviation Regulation (FAR) Part 77 airspace surfaces.

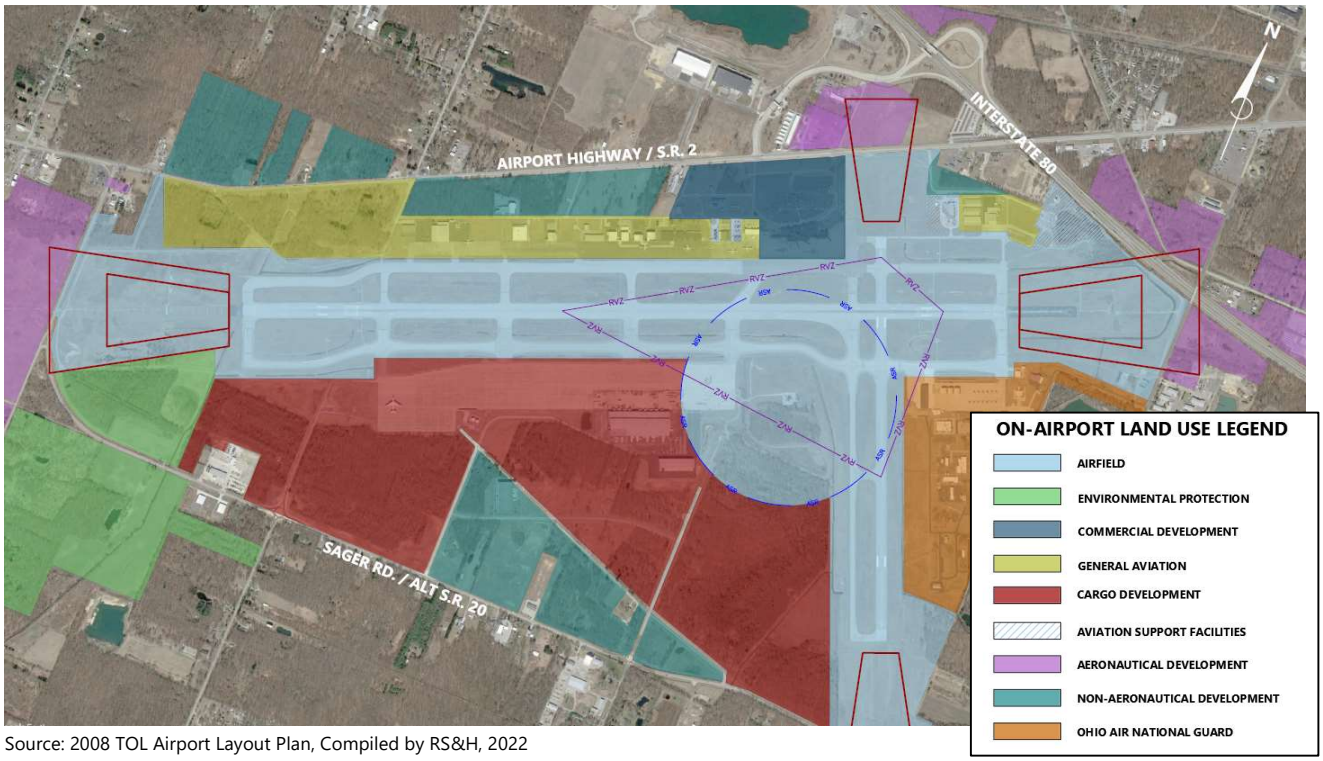
1.3.2.6.2 Environmental

The southwest corner of the airfield at the airport contains wetlands. Development in a wetland requires coordination through the National Environmental Policy Act (NEPA) process to determine anticipated impact of the proposed development on the existing flora and fauna of the area. Split across Sager Road, this piece of land is comprised of 195 acres and is the delineating boundary of western cargo expansion at the airport.

1.3.2.6.3 Commercial

Commercial land is reserved for the current operations of the passenger terminal and facilities that support commercial air service as well as accommodating any planned expansions or development. Commercial land at TOL is comprised of sixty acres of parking lots, terminal roadways, the airside terminal apron, and the passenger terminal facility.

FIGURE 1-10
ON-AIRPORT LAND USE AT TOL



Source: 2008 TOL Airport Layout Plan, Compiled by RS&H, 2022

1.3.2.6.4 General Aviation

Land reserved for the operations and development of private aviation at the airport is classified as General Aviation and includes hangars, FBOs, aprons, and the landside support facilities for each. Additionally, TOL has multiple tenants that own private fuel facilities as well as handle maintenance operations, all of which fall under the General Aviation umbrella. Approximately 155 acres of land is reserved at the airport for general aviation activity.

1.3.2.6.5 Cargo Development

Much of the south airfield at TOL (about 470 acres total) is reserved for air cargo operations. The current air cargo facilities at the airport include the 75-acre cargo apron, aviation fuel farm, and nearly 350,000 square feet of combined warehouse space.

Phase 2 of the 2008 TOL Airport Master Plan conducted a thorough Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis for cargo development at the airport. This SWOT analysis created a development plan for growth in air cargo operations and provided development strategies and a conceptual site layout master plan that encompassed all available land as far west as Taxiway D14 and as far south as Sager Road/U.S. Alternate Route 20. The Airport Layout Plan was not updated to reflect the full cargo development master plan and with the departure of the primary cargo operator, DB Schenker Logistics (formerly BAX Global), the full development master plan was never realized, but is still largely reserved for air cargo expansion.

1.3.2.6.6 Aviation Support Facilities

Facilities that are critical to continued airport operations but not essential to the safe arrival, departure, and enroute phases of flight, are classified as Aviation Support Facilities. At TOL these facilities include the maintenance/SRE facilities, police/operations building, deicer containment facility, and the accompanying storage and staging areas for each. Roughly 20 acres of land is reserved for these facilities.

1.3.2.6.7 Aeronautical/Non-Aeronautical Development

The TLCPA owns approximately 785 acres of land outside of the already in use, or specifically reserved, for development of commercial, general aviation, cargo, or airfield activities. This land was acquired by the airport to support aviation activities but does not have a specific development plan. Much of this land exists outside the Air Operations Area (AOA) and was either acquired to ensure the protection of RPZs and runway approaches or as part of the Noise Compatibility Program being to control land within a certain day-night average sound level (DNL) impact area of the airport. Land under airport/Sponsor ownership that serves a role in the protection of airport operations is reserved for aeronautical use and can only feature development compatible with this purpose. Land owned by the airport but not required for safe operations airport is reserved for non-aeronautical use. Development on non-aeronautical land is only permitted at airport discretion and must still meet all compatibility requirements being adjacent to aviation activities. The TLCPA owns approximately 465 acres of aeronautical development land with the remaining 320 acres reserved for non-aeronautical use.

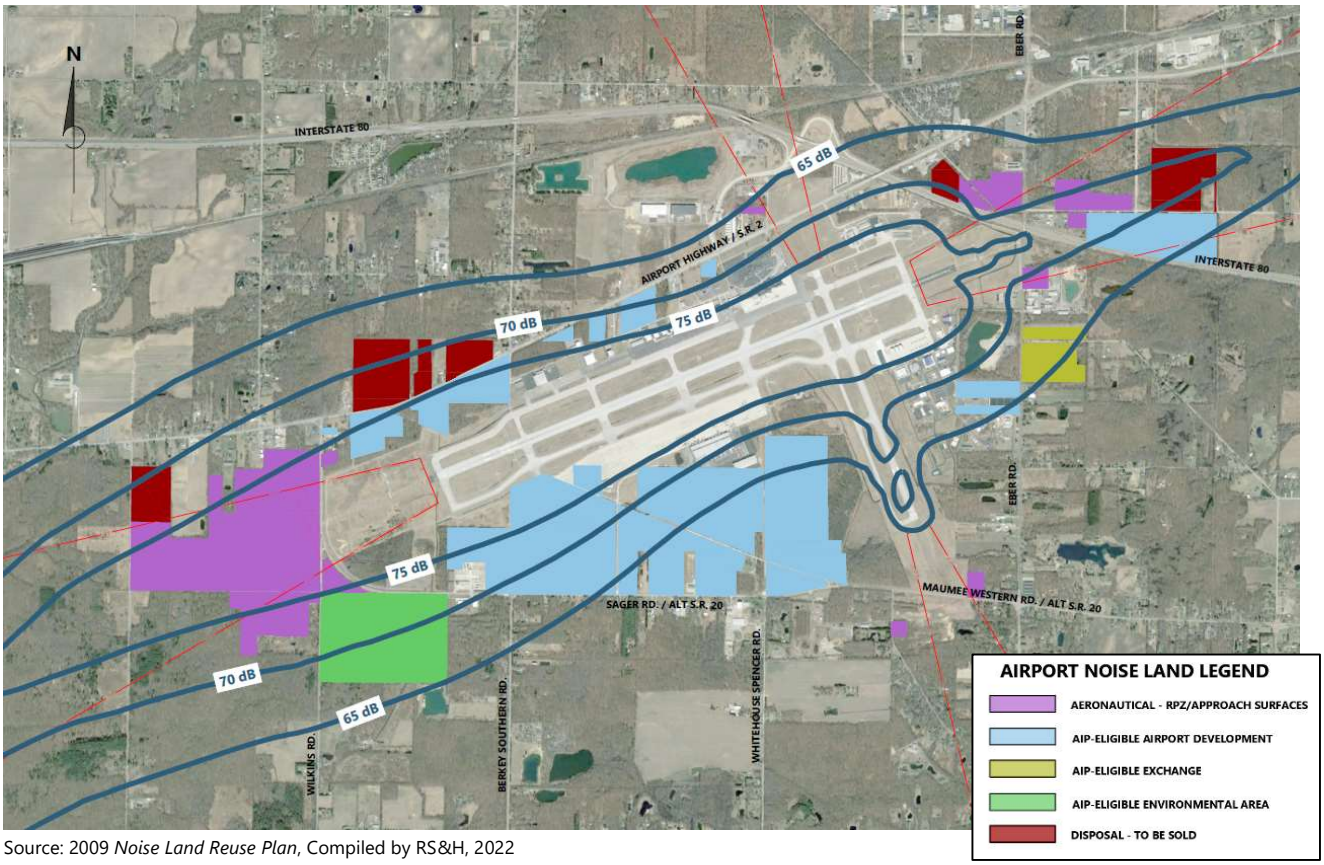
1.3.2.6.8 Ohio Air National Guard

As TOL is a joint-use facility with the Ohio Air National Guard (OANG), the OANG maintains its own 160-acre campus independently of the airport. The OANG also has a development master plan that works in conjunction with the airport's effort to ensure compatible but exclusive development.

1.3.2.7 2009 Noise Land Reuse Plan

As an integral part of the surrounding community, each airport must perform due diligence in limiting its impact on community neighbors with one such avenue being the mitigation and control of noise generated from aircraft and other airport operations. To aid airports in being responsible neighbors in the community, the FAA established a voluntary program under Title 14, Part 150 of the Code of Federal Regulations, or CFR. This Part 150, namely the Airport Noise Compatibility Program, provides a structured approach for airport operators, airlines, pilots, neighboring communities, and the FAA to work together to reduce the number of people who live in significantly noise-impacted areas. Among the initiatives made available to airports under Part 150 is the federal financial aid to airports in acquiring land in noise-sensitive areas to both reduce the number of people within these areas as well as control the development that occurs adjacent to the airport. TOL as acquired approximately 1,210 acres of land under the Noise Compatibility Program and maintains a Noise Land Reuse Plan that keeps inventory of this land and all associated development. A requirement of Part 150, the Noise Land Reuse Plan, keeps stock of all land acquired by an airport using federal funds for the purpose of noise abatement, recording parcels, acreages, AIP acquisition grants, previous owners, and status of the land under airport/Sponsor ownership as well as if the land was deemed no longer necessary for noise mitigation and released from federal obligation (and potentially disposed). The Noise Land Resue Plan for TOL was last updated in 2009 and the map depicting airport Noise Land is shown in **Figure 1-11.**

FIGURE 1-11
AIRPORT NOISE LAND MAP



Source: 2009 *Noise Land Reuse Plan*, Compiled by RS&H, 2022

As land is developed, released, and/or disposed, the airport is required to maintain proper oversight in continually updating the Noise Land Reuse Plan. Changes in the airport's intended use of existing noise land would also prompt an update and review by the FAA.

1.3.3 Public Transportation

Toledo Area Regional Transportation Authority (TARTA) operates over 30 bus routes in and around the Toledo metropolitan area and serves nine different communities. The public bus system does not service TOL at this time.

1.4 BUSINESS ASPECTS

Responsive airport master planning must examine the fiscal environment under which airport improvements may be undertaken. Key aspects of the fiscal environment are the airport's basic business model, operation revenues and expenses, and sources and uses of capital funds.

1.4.1 Business Operating Model Overview

In 1955, the State of Ohio enacted the Port Authority Act to take advantage of the newly created St. Lawrence Seaway system, which allowed access to the Great Lakes from the Atlantic Ocean. Founded on July 18, 1955, the Toledo-Lucas County Port Authority was the first port authority in the state of Ohio. The City of Toledo leased Eugene F. Kranz Toledo Express and Toledo Executive Airport to the TLCPA in 1973. At that same time, the Port Authority assumed responsibility for day-to-day operations of both facilities.

The business model in place at TOL relies on operating revenues from airport tenants and users in the form of rentals and fees to cover the operating costs at the airport. Capital project funding sources include federal grants-in-aid from FAA and State grant programs, Passenger Facility Charges (PFCs), local tax levy revenue and revenue bonds. The airport's Capital Improvement Program is further detailed in the next section.

Airport revenues are generated from a variety of sources, including those through the operation of the airport, non-operating sources, contributions from grants from the federal and state governments to be used for development of capital projects, and the financing of long-term debt. **Table 1-3** details the airport revenues (aeronautical and non-aeronautical) as well as capital grant contributions between fiscal years 2018 and 2020.

TABLE 1-3
HISTORICAL AIRPORT REVENUES (FY2018-2020)

Revenues	Fiscal Year		
	2018	2019	2020
Aeronautical Operating Revenue			
Airlines	$387,510	$396,180	$257,160
Landing Fees (GA and Military)	$235,622	$281,736	$275,420
FBO Revenue	$539	$700	$593
Cargo and Hangar Rentals	$1,567,229	$1,695,892	$1,551,859
Fuel Flowage Fees	$546,863	$612,640	$446,676
Other Non-Passenger Aeronautical Revenue	$192,612	$92,866	$100,253
Total Aeronautical Operating Revenue	**$2,930,375**	**$3,080,014**	**$2,631,961**
Non-Aeronautical Operating Revenue			
Building and Land Rental	$676,584	$871,292	$802,461
Rental Cars - Excludes CFC	$562,795	$576,494	$279,532
Parking and Ground Transportation	$27,780	$31,069	$28,172
Other Operating Revenues	$456	$958	$1,446
Total Non-Aeronautical Operating Revenue	**$1,267,615**	**$1,479,813**	**$1,111,611**
Total Operating Revenue	***$4,197,990***	***$4,559,827***	***$3,743,572***
Nonoperating Revenue (Expenses)			
Investment Income	$68,589	$91,354	$63,971
Interest Expense	($429,533)	($371,346)	($389,752)
Grant Receipts	$1,113,918	$1,693,688	$4,994,617
Passenger Facility Charges	$631,921	$640,080	$364,367
Special Items (loss)	($588,436)	($65,143)	$44,209
Community Agreements	($190,686)	($185,568)	($501,920)
Total Nonoperating Revenue (Expenses)	**$605,773**	**$1,803,065**	**$4,575,492**
Total Revenues	**$4,803,763**	**$6,362,892**	**$4,855,183**

Source: TOL Operating and Financial Summary 2018-2020; Compiled by RS&H, 2022

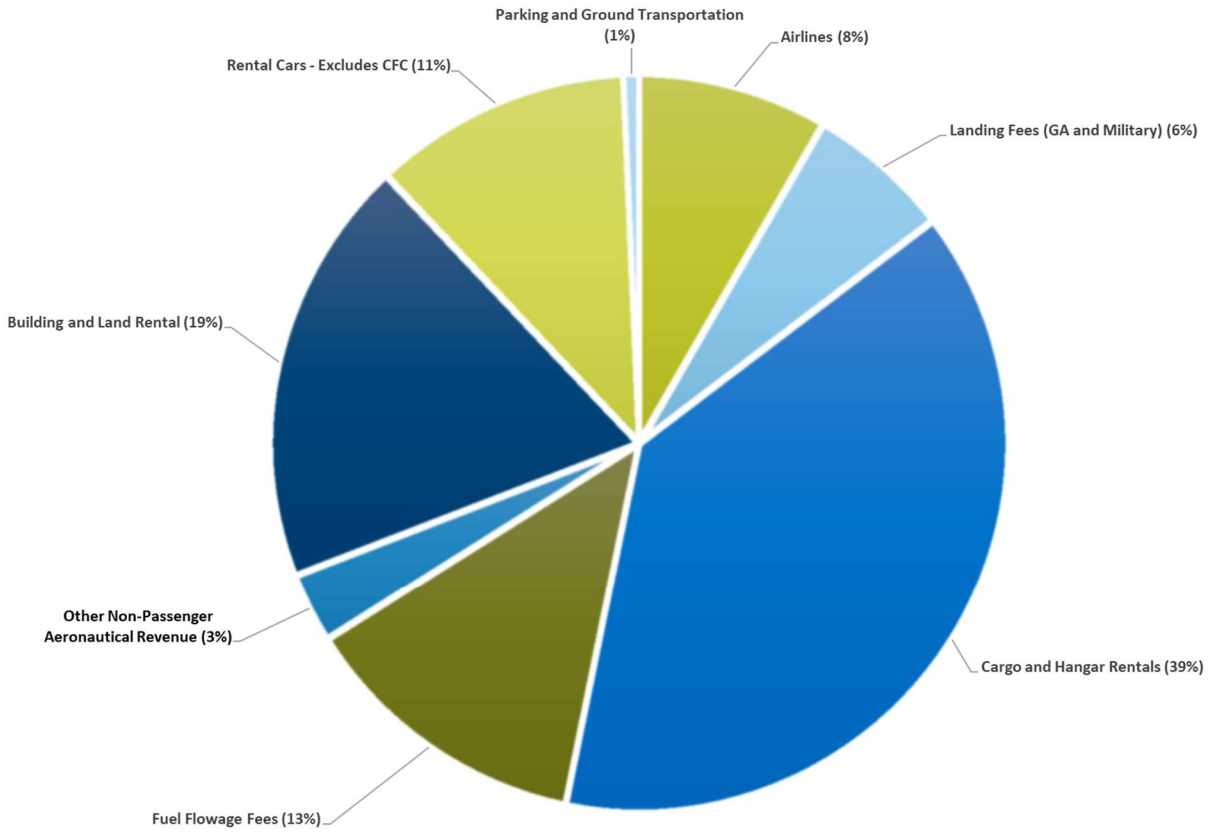
1.4.1.1 Airport Operating Revenues

Revenue generated by the airport because of continued operations is collected via aeronautical and non-aeronautical streams. Aeronautical revenue is attributed to all income from active airfield components of the airport. Rental fees for hangars and cargo facilities, landing fees, fuel flowage fees, and commercial airline fees are the largest sources of aeronautical revenue at the airport.

Non-aeronautical revenue is generated from sources that support the airport but do not play a role in aviation operations. As TOL is a commercial service airport, revenue is generated by concessionaries such as rental car agencies or other ground transportation connecting the airport to the greater Toledo metropolitan area. In

addition, airport assets such as parking lots, and building or land leases not associated with aviation activity also account for sources of non-aeronautical revenue. **Figure 1-12** details the largest sources as an average percentage of airport operating revenue over fiscal years 2018 through 2020.

FIGURE 1-12
AIRPORT OPERATING REVENUE



Source: RS&H Analysis, July 2022

1.4.1.2 Nonoperating Revenue

Revenue that is generated entirely outside of the day-to-day operation of the airport is collected as nonoperating revenue. The largest of these nonoperating revenue streams at TOL are the collection of Passenger Facility Charges (PFCs) and grants.

Commercial service airports like TOL can collect PFCs to help fund qualified development projects. PFCs are collected for the airport by the airlines as part of each enplaning ticket with the current rate set at a maximum of $4.50 per ticket. A maximum of two PFCs can be charged on a one-way trip, or four PFCs charged on a round trip, for a maximum total of $18.00. In order to use these collected PFC funds however, an airport must have an approved development program outlining proposed/existing projects and the source of associated funding that is reviewed and approved by both airport stakeholders (airlines) and the FAA. Eligible projects include those which enhance safety, security, or capacity; reduce noise; or increase air carrier competition. TOL is currently collecting PFCs under PFC Application No. 7 approved in 2016 with an anticipated collection date in June of 2023 based on the fluctuation of passenger traffic. Recent history saw around 120,000 enplaned passengers

passing through TOL which has generated around $600,000 in PFC funds. With the onset of the COVID-19 pandemic in late 2019 however, passenger traffic sharply declined and adversely affected the collection of PFCs in fiscal year 2020.

1.4.2 Sources and Uses of Capital Funds

Through a variety of funding mechanisms TOL can maintain a capital improvement program including federal, state, and local government grants.

1.4.2.1 Federal Funding

Federal funding is available to airports through the FAA AIP dependent upon the airport category, the role filled within NPIAS, and the priority of the improvement as determined within the national priority ranking system. FAA Order 5100.38D *Airport Improvement Program Handbook* details the grant process, project eligibility, allowable costs, and other information relevant to grant acceptance. Entitlement grants are offered annually based on the number of passenger enplanements and the amount of enplaned cargo. TOL was allotted $1,425,897 in Primary Entitlements for Federal Fiscal Year (FFY) 2022 based on the previous year's enplaned passengers. 3.5 percent of the total AIP is also to be disbursed to airports in the form of Cargo Entitlements for all airports with a total annual landed weight of more than 100 million pounds of cargo-only aircraft. Calendar year 2019 was the first year since the departure of BAX Global/DB Schenker Logistics (2011) that the airport did not reach this tonnage threshold (only totaled 41.4 million pounds of cargo in 2019) and thus did not receive cargo entitlement funds. Calendar year 2020 had a similar shortfall (33 million pounds) as 2019, but calendar year 2021 saw a rebound in cargo landed weight largely due in part to Amazon Air beginning operation at TOL in March of the same year once again surpassing the threshold for entitlement funding[4]. **Table 1-4** and **Figure 1-13** illustrate the reported annual landed cargo volume at the airport since 2007.

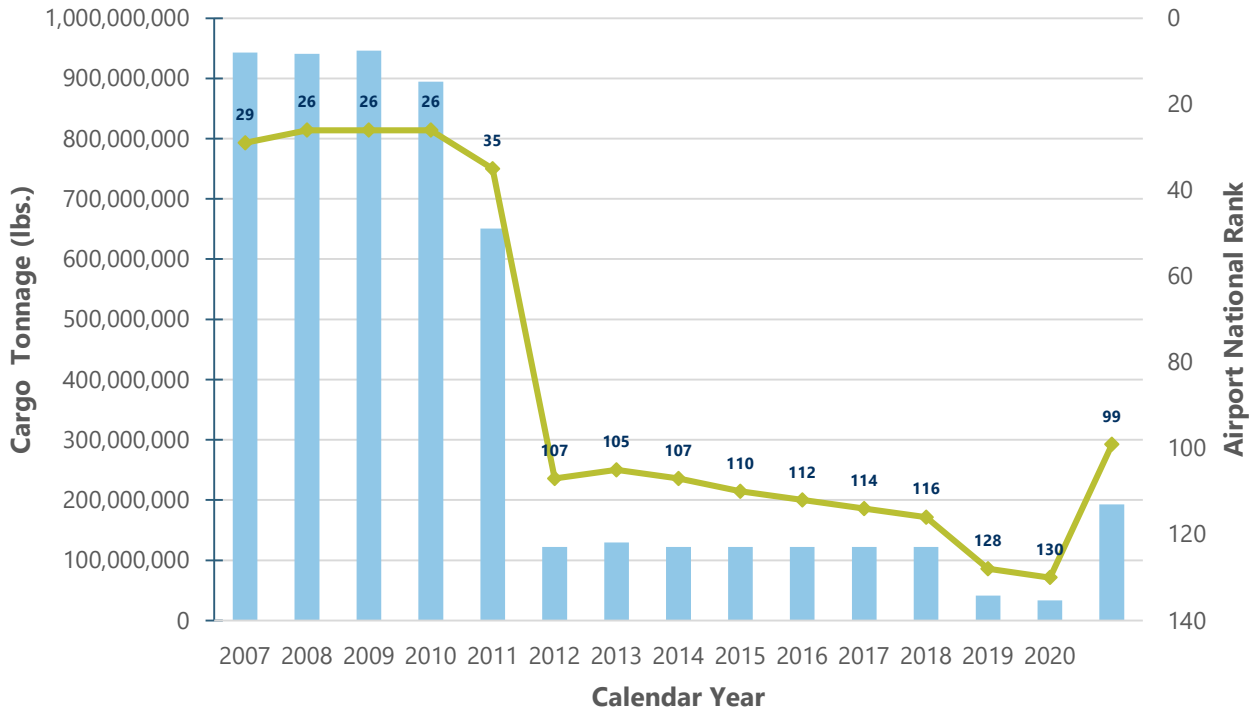
TABLE 1-4
HISTORICAL CARGO REPORTING AT TOL

Calendar Year	National Rank	Service Level	Hub	Landed Weight (lbs.)	% Change
2007	29	P	N	942.8M	2.59%
2008	26	P	N	940.8M	-0.21%
2009	26	P	N	946.1M	0.55%
2010	26	P	N	894.5M	-5.45%
2011	35	P	N	650.7M	-27.25%
2012	107	P	N	122.0M	-81.25%
2013	105	P	N	129.5M	6.10%
2014	107	P	N	122.1M	-5.71%
2015	110	P	N	122.1M	0.00%
2016	112	P	N	122.1M	0.00%
2017	114	P	N	122.1M	0.00%
2018	116	P	N	122.1M	0.00%
2019	128	P	N	41.4M	-66.07%
2020	130	P	N	33.1M	-20.13%
2021	99	P	N	193.0M	483.22%

Source: www.faa.gov, Data All-Cargo Data for U.S. Airports - Previous Years; Compiled by RS&H, 2022

[4] Cargo tonnage provided per CY2020 All Cargo Reporting Data via https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/previous_years/

FIGURE 1-13
HISTORICAL CARGO REPORTING AT TOL (GRAPH)



Source: www.faa.gov, Data All-Cargo Data for U.S. Airports - Previous Years; Compiled by RS&H, 2022

Small Hub, nonhub primary, as well as nonprimary commercial, general aviation, and reliever airports in Ohio can all expect to receive 90 percent of AIP-eligible costs funded through the FAA AIP for projects listed in their Capital Improvement Program (CIP) and identified on an FAA-approved Airport Layout Plan. The remaining 10 percent is covered locally by the airport Sponsor with the State typically matching 5 percent of AIP-eligible project costs.

Section 1.2.4 detailed the implementation of the Bipartisan Infrastructure Law (BIL) and the funds to be made available annually in the form of entitlements and two separate sources of additional funding for terminal and FAA Air Traffic facility development. While details regarding the use, eligibility requirements, and funding responsibilities of the terminal and air traffic programs are still withheld by the FAA, the annual, additional disbursements made to airports over a five-year period in the form of entitlements is given the same eligibility for use as all AIP and PFC funding sources. As a result, all projects at TOL utilizing BIL funding will incur the same 90 percent federal share of eligible project costs.

1.4.2.2 State Funding

Funding allocation and contribution towards airports at the state level is handled by the Ohio Department of Transportation (ODOT) Office of Aviation. For commercial service airports, ODOT tends to observe the development and implementation of airport CIPs but does not get as involved as it does with other nonprimary and general aviation airports. ODOT has two programs in which it disburses funding towards airport development: the State Matching and Direct Grant programs. The State Matching program pays up to five

percent up to the funding cap of the non-federal share of AIP projects with the application process tied directly to the corresponding AIP grant process. The Direct Grant program operates similar to the FAA AIP itself and funds 95 percent of eligible project costs for airport maintenance and development projects. However, the Direct Grant program is only made available to airports that do not receive FAA Air Carrier Enplanement Funds or Air Cargo Entitlements and so TOL is unable to pursue this funding mechanism.[5]

ODOT has also extended the State Matching Grant program to contribute 5 percent in matching funds to all BIL-funded projects beginning with State Fiscal Year (SFY) 2023. However, this 5 percent match of BIL funds is only available to those airports that do not receive FAA passenger or cargo entitlements and so TOL is unable to pursue this funding mechanism and will be entirely responsible for the 10 percent non-federal share of BIL projects.

1.4.2.3 Local Funding

All local funding of airport development is handled by the TLCPA. The airport maintains various streams of revenue such as airline landing fees, building and land rental fees, aircraft and vehicle parking, concessions, customs, as well as other sources inclusive of non-aeronautical revenue (off-airport leases, land disposal, etc.).

1.4.2.4 Capital Improvement Program

As part of the AIP and NPIAS, all airports receiving federal funding for development projects must develop an Airport Capital Improvement Program (ACIP). According to FAA Order 5100.39A, Airports Capital Improvement Program, the ACIP serves as the primary planning tool for systematically identifying, prioritizing, and assigning funds to critical airport development and associated capital needs for the National Airspace System (NAS)[6]. The ACIP for the next fiscal year is discussed annually between airport Sponsor and FAA ADO staff and is then revised and submitted for budgeting within the AIP.

As a primary, non-hub airport the ACIP for TOL reflects the intended use of federal primary entitlement, PFC, and discretionary funds and included the intended use of BIL Airport Improvement Grant (AIG) funds. Additionally, the anticipated contribution of state and local matching funds as well as costs not expected to be eligible for AIP funding are depicted in the ACIP. **Table 1-5** shows the ACIP for federal fiscal year 2022 for the airport as was submitted in March of 2022.

[5] ODOT Office of Aviation Grant Program details found at https://www.transportation.ohio.gov/programs/aviation/Resources/airport-grant
[6] FAA Order 5100.39A found at https://www.faa.gov/

TABLE 1-5
FY2022-2026 AIRPORT CAPITAL IMPROVEMENT PROGRAM

Year	Project Description	Federal AIP Entitlement	Bipartisan Infrastructure Law	Federal AIP Discretionary	Total Federal AIP Funds	Local Funds	State Matching	Passenger Facility Charge	Total Funding/Cost
5-Year FAA Approved CIP									
2022	General Aviation Ramp Improvements - Design	$201,690			$201,690	$0	$11,205	$11,205	$224,100
2022	Air Cargo Apron Rehabilitation - Design/Construct	$1,168,636			$1,168,636	$0	$64,924	$64,924	$1,298,484
2023	Rehabilitate Runway Edge Lighting (LED) - Design/Construct	$1,140,571		$128,584	$1,269,155	$0	$70,509	$70,509	$1,410,173
2023	General Aviation Ramp Improvements - Construct			$3,750,210	$3,750,210	$592,900	$208,345	$208,345	$4,759,800
2023	Paved Perimeter Road - Design/Construct		$1,980,000		$1,980,000	$0	$110,000	$110,000	$2,200,000
2023	Runway Approach Upgrades - Environmental Assessment		$315,000		$315,000	$0	$17,500	$17,500	$350,000
2023	Replace Passenger Boarding Bridge - Design / Construct		$717,880		$717,880	$0	$0	$1,082,120	$1,800,000
2023	Terminal Improvements - Environmental Assessment	$315,000			$315,000	$0	$17,500	$17,500	$350,000
2024	Acquire SRE		$450,000		$450,000	$0	$25,000	$25,000	$500,000
2024	General Aviation Ramp Improvements - Phase 2 - Design/Construct	$590,000		$1,631,020	$2,221,020	$274,200	$123,390	$123,390	$2,742,000
2024	Terminal Improvements - Design	$810,000			$810,000	$300,000	$45,000	$345,000	$1,500,000
2024	Runway Approach Upgrades - Design		$180,000		$180,000	$0	$0	$20,000	$200,000
2024	Remove Obstructions (Runway Approach) - Design		$36,000		$36,000	$0	$2,000	$2,000	$40,000
2025	Terminal Improvements - Construct	$572,000	$2,346,880	$6,448,000	$9,366,880	$2,600,000	$390,000	$643,120	$13,000,000
2025	Remove Obstructions - Construct	$828,000			$828,000	$0	$46,000	$46,000	$920,000
2025	Runway Approach Upgrades - Construct			$7,169,432	$7,169,432	$0	$0	$796,604	$7,966,036
2026	Runway Approach Upgrades - Reimbursable Agreement		$117,000		$117,000	$0	$0	$13,000	$130,000
2026	Rehabilitate General Aviation Ramp - Design/Construct	$1,400,000	$17,500		$1,417,500	$175,000	$78,750	$78,750	$1,750,000

Note: Project details after 2026 beyond horizon of previous planning studies.
Source: Airport Records, 2022; Prepared by RS&H, 2022

1.4.3 Airport Operating Expenses

Keeping an airport operational requires great expenditure in both the support of daily activities as well as ensuring the operational compliance with FAA requirements and federal regulations. Payroll expenses for airport staff as well as contracted services for maintenance and development projects at the airport make up two of the largest sources of budget expenditures for TOL. However, the depreciation of airport assets presents the largest expense averaging over $5.6M annually between fiscal years 2018 and 2020. **Table 1-6** exhibits the operating expenses of TOL.

TABLE 1-6
HISTORICAL AIRPORT OPERATING EXPENSES (FY2018-2020)

Operating Expenses	Fiscal Year		
	2018	2019	2020
Depreciation	$5,640,306	$5,673,064	$5,623,154
Salaries and related payroll expenses	$2,112,635	$2,990,248	$2,358,302
Maintenance, Repairs, and Operating Supplies	$230,198	$69,001	$35,255
Contractual Services	$2,812,579	$2,222,700	$1,593,028
Communications and Utilities	$810,278	$822,548	$647,776
Insurance Claims and Settlements	$89,995	$81,284	$83,341
Total Operating Expenses	**$11,695,991**	**$11,858,845**	**$10,340,856**

Source: TOL Operating and Financial Summary 2018-2020; RS&H Analysis, 2022

Debt Coverage Ratio, or DCR, is a metric used to determine creditworthiness by financial lender reflecting the financial aptitude of a borrower to repay their debt. DCR measures the ratio between the available cash and debt service payments with a DCR of 1.0 indicating a borrower able to cover their debt service at breakeven and a DCR of 1.1 indicating positive cash flow. **Table 1-7** details the DCR of TOL.

TABLE 1-7
HISTORIC AIRPORT DEBT COVERAGE (FY2018 – 2020)

Debt Coverage	Fiscal Year		
	2018	2019	2020
Revenues			
Operating revenues	$4,197,990	$4,197,990	$4,197,990
Nonoperating revenues	$605,773	$605,773	$605,773
Total Revenues	**$4,803,763**	**$4,803,763**	**$4,803,763**
Expenses			
Operating Expenses, Less Depreciation and	$6,055,685	$6,185,781	$4,717,702
Net Revenues	($1,251,922)	($1,382,018)	$86,061
Annual Debt Service	$1,046,125	$1,103,198	$1,240,712
Debt Coverage Ratio (DCR)	**-1.20**	**-1.25**	**0.07**

Source: TOL Operating and Financial Summary 2018-2020; RS&H Analysis, 2022

1.5 AIRFIELD

The airfield facilities at the airport include the runways, taxiways, navigational aids, visual aids, and aeronautical environment. The airfield facilities are identified in **Figure 1-14.**

1.5.1 Runways

The runway configuration consists of the number and orientation of runways. The number of runways provided at an airport depends on the volume of traffic, while the orientation of the runways depends on the direction of the prevailing wind patterns, the size and shape of the area available for development, and land-use or airspace restrictions in the vicinity of the airport. In general, the runway and connecting taxiways are arranged to provide adequate separation between aircraft in the traffic pattern; cause the least interference and delay in taxiing, landing, and takeoff operations; and provide the shortest taxi distance from the terminal area to the runway ends.

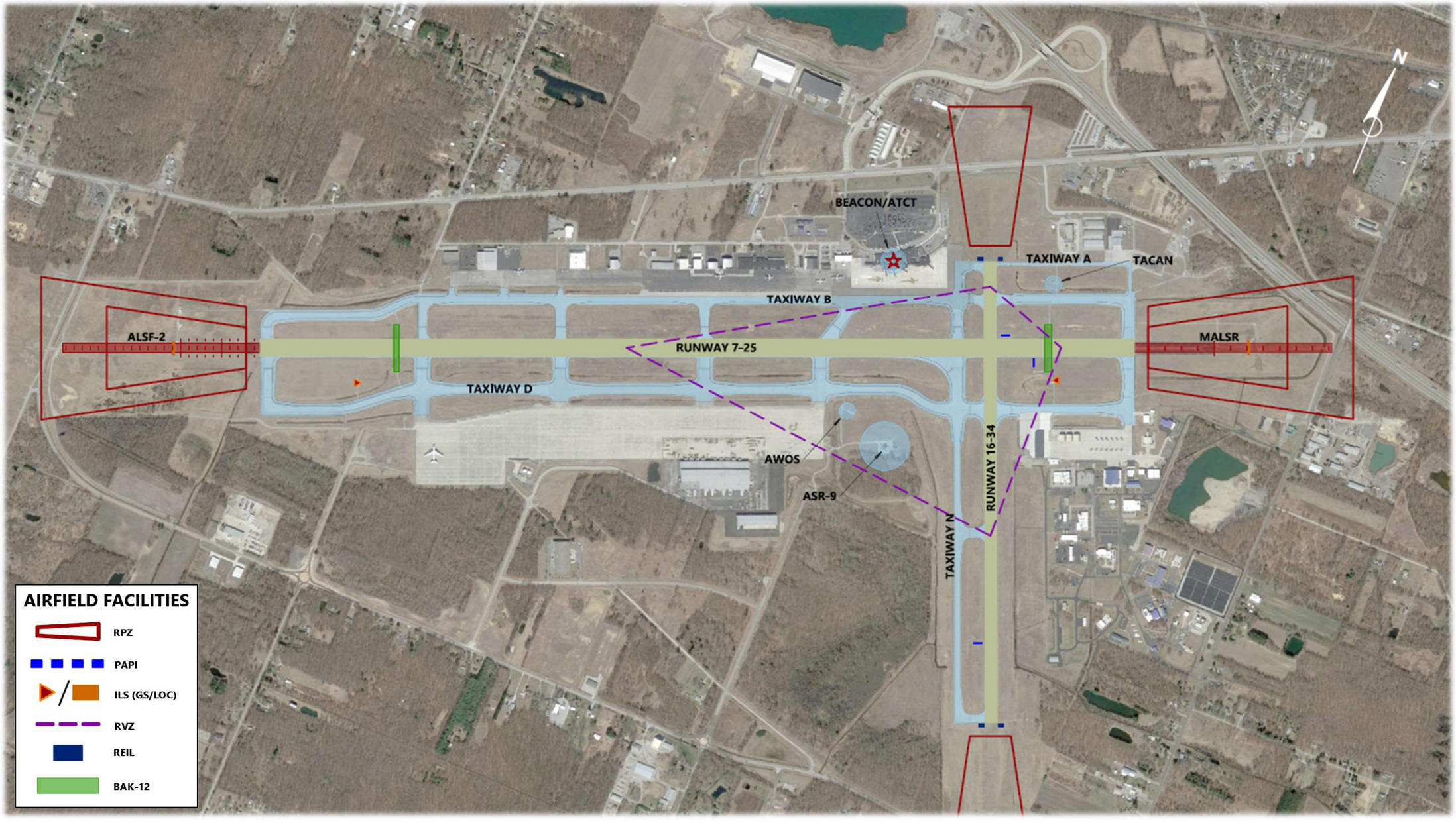
The airfield configuration at TOL is comprised of two intersecting runways. Runway 7-25 is the primary runway at 10,600 feet long and Runway 16-34 is the crosswind runway at 5,599 feet long. A summary of the runway facilities is provided in **Table 1-8**.

TABLE 1-8
AIRFIELD DATA SUMMARY

Characteristic	Runway			
	7	25	16	34
Length (feet)	10,600	10,600	5,599	5,599
Width (feet)	150	150	150	150
Runway Gradient	0.2%	0.2%	0.2%	0.2%
Runway Elevation (MSL)	682.5'	664.9'	674.2'	664.7'
Displaced Threshold (feet)	N/A	N/A	N/A	N/A
AAC	D	D	D	D
Design Group	IV	IV	IV	IV
Surface Type	Concrete w/Grooved Asphalt Overlay		Concrete w/Grooved Asphalt Overlay	
Pavement Strength				
Single Wheel (S)	100,000 lbs.	100,000 lbs.	100,000 lbs.	100,000 lbs.
Dual Wheel (D)	174,000 lbs.	174,000 lbs.	174,000 lbs.	174,000 lbs.
Dual Tandem Wheel (2D)	300,000 lbs.	300,000 lbs.	300,000 lbs.	300,000 lbs.
Double Dual Tandem (2D/2D2)	550,000 lbs.	550,000 lbs.	-	-
Markings	Precision	Precision	Non-Precision	Non-Precision
Lighting	HIRL	HIRL	MIRL	MIRL
Visual Aids	ALSF-2, C/L Lights, TDZ Lights	MALSR, PAPI, C/L Lights	PAPI, REIL	PAPI, REIL
Approach Ratio	50:1	50:1	34:1	34:1
Runway Protection Zone	1,000' x 1,750' x 2,500'	1,000' x 1,750' x 2,500'	500' x 1,010' x 1,700'	500' x 1,010' x 1,700'
Distance Remaining Signs	Yes	Yes	No	Yes

Source: FAA 5010 Master Record, Airport Records, Prepared by RS&H, 2022

FIGURE 1-14
AIRFIELD FACILITIES



Source: RS&H Analysis, July 2022

As shown, the combined Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the design aircraft for the airport is a D-IV. The current design aircraft of the airport is a Douglas DC-8-73F while the future design aircraft was originally anticipated to be the Boeing 767-300F; both aircraft supporting the D-IV Runway Design Code (RDC). The DC-8 formerly operated at the airport under BAX Global/DB Schenker Logistics while the Boeing 767-300F was anticipated to similarly support future cargo operations. Neither aircraft currently operates at the airport and the Aviation Demand Forecast section of the Master Plan includes the process, analysis, and assignment of current and future design aircraft for the airport.

1.5.2 Taxiways

The primary function of a taxiway system is to provide access between runways and the apron areas. The taxiways should be located so that aircraft exiting the runway will have minimal interference with aircraft entering the runway or remaining in the traffic pattern. Taxiways expedite aircraft departures from the runway and increase operational safety and efficiency. Taxiway details at TOL are summarized in **Table 1-9.**

TABLE 1-9
AIRPORT TAXIWAYS

Taxiway Designator	Width	Type
A	40'	Hangar access to RWY 16 and TWY B
B	75'	Parallel for RWY 7-25
D	75'	Parallel for RWY 7-25
N	75'	Parallel for RWY 16-34

Source: Airport Data Collection, Prepared by RS&H, 2022

The airfield configuration has been heavily modified since the early 2000s with the last piece of the former Taxiway C (intermediate full-length taxiway between Taxiway B and Runway 7-25) being removed in 2005. As a result of a number of alterations since its inception, the taxiway nomenclature of the airfield does not tightly follow the typical alphabetical progression. With the correction of a few current non-standard conditions and revision to the Airport's Layout Plan (ALP), the naming convention of taxiways and taxiway connectors will be revisited to encourage a more uniform and logical system that is easier for pilots and ground crews to navigate.

1.5.3 Modification of Standards

The FAA provides regulatory guidelines and design standards for airports that help ensure uniform operating conditions and promote safe practice. When components of an airfield do not meet all of these guidelines or safety requirements by means outside of the airport's control (i.e. natural phenomena or formations and/or old design), the airport may seek to obtain an agreement with the FAA or Modification of Standards (MOS) that provides justification behind the non-standard condition, why it cannot be immediately rectified, and a timeline in which the airport will seek to correct the withstanding nonconformity.

While TOL does not maintain any active Modifications of Standards, the airfield does contain a few non-standard design conditions that will need to be evaluated and corrected as soon as permissible or establish an MOS that addresses a mutually agreeable mitigation schedule with the Port Authority and the FAA. As required of airport sponsors receiving federal grants, each sponsor must abide and uphold grant assurances that include the protection of aeronautical facilities and removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards while preventing the establishment or creation of future airport hazards to protect instrument and visual operations at the airport.[7]

1.5.3.1 Runway Visibility Zone

For an airport with intersecting runways but no Air Traffic Control Tower (ATCT), a clear line-of-sight (LOS) must be maintained between respective points on each runway (half the remaining distance from the intersection) to ensure pilots operating on the airfield have full operational awareness of the airfield and have adequate time to react if necessary. For airports like TOL that have a 24-hour ATCT, this Runway Visibility Zone (RVZ) is not required but recommended to be maintained as a safety precaution. The airfield at TOL currently has a large group of trees within the RVZ on the south side of the airport (near the Airport Surveillance Radar or ASR) that pose obstructions to this LOS. The RVZ on the east side of the airfield is also susceptible to LOS obstructions by aircraft parked on the western ramp of the Ohio Air National Guard base.

In addition to the current obstructions that exist within the RVZ, the geometry of the airfield and location of air operations support structures pose an obstacle to the extension on either runway at the airport. The aircraft storage hangar of the Ohio Air National Guard is located just outside of the southeast edge of the RVZ which also clips the corner of the cargo aircraft apron along the southwest edge. With Runway 16 and 25 unable to be extended due to their proximity to Interstate Route 80, only Runway 7 or 34 could be extended. However, the existing structures outlined above prohibit either extension due to the inherit RVZ expansion that would occur and thus incur another LOS conflict that could only be mitigated by structure demolition or relocation.

1.5.3.2 High Energy Runway/Taxiway Intersections

Taxiways B9 and D9 exist in the central third of Runway 7-25 an area considered by FAA to be a "high-energy area." It is recommended that these high-energy areas remain clear of taxiway crossings to reduce the risk of runway incursions in an area where landing or departing aircraft have little ability to maneuver.

In the Facility Requirements section of this Master Plan, the location and spacing of runway/taxiway intersections necessary to support current air operations will be established. Further along, in preparing Airfield Development Alternatives the mitigation plan for the existing non-standard, high-energy runway/taxiway intersections will be included.

7 Airport Sponsor Assurance located at www.faa.gov, May 2022

1.5.3.3 Runway Blast Pads

Current design requirements require a 200-foot-wide blast pad at the threshold of each runway to provide resistance to jet blast erosion beyond each runway end. Based on the design aircraft for TOL these blast pads should be in place at each of the four runways: Runways 16 and 34 currently have none and Runways 7 and 25 have blast pads with non-standard widths. Right-sized runway blast pads are part of the Facility Requirements and Alternatives Development sections of the Master Plan.

1.5.3.4 Runway Shoulders

For airports such as TOL that accommodate Airplane Design Group IV aircraft, all runways should have paved shoulders to help protect against soil erosion from jet blast. Runway 16-34 currently has no runway shoulder pavement and the design parameters of ADG-IV require the addition of 25-foot shoulders.

1.5.3.5 Taxiway Shoulders

Similar to the need for paved runway shoulders, each taxiway should have paved shoulders to help protect against soil erosion from jet blast. Taxiways B9, B11, B13, N, N1, N2, and N3 require the installation of 20-foot paved taxiway shoulders.

1.5.4 Navigational Aids

Navigational aids (NAVAIDs) assist the pilot with enroute navigation and approaches in to and out of airports. These aids consist of both ground-based electronic systems and a space-based radio system. There are currently four types of navigational aids used at TOL: a very high frequency omni-directional range/tactical air navigation (VORTAC), a non-directional radio beacon (NDB), an instrument landing system (ILS), and approved use of the global positioning system (GPS).

1.5.4.1 Very High Omni Directional Range/Tactical Air Navigation (VORTAC)

The Waterville VORTAC is located approximately eleven nautical miles southeast of the airfield and operates on a frequency of 113.1 megahertz (MHz). VOR stations transmit radio beams, commonly referred to as radials, outward in every direction to provide line of sight guidance for aircraft. The TACAN component of the VORTAC is a military distance measuring equipment (DME) system located in conjunction with a VOR that allows civilians access to the distance guidance information. The Waterville VORTAC provides enroute navigation for aircraft destined for other terminal areas and is utilized for non-precision approaches into.

1.5.4.2 Non-Directional Beacon (NBD)

The TOPHR NDB is located 4.4 nautical miles southwest of the airfield. The TOPHR NDB operates on a frequency of 219 kilohertz (kHz) and transmits a continuous two-letter identifier code, TO, in International Morse Code. The use of automatic direction finder (ADF) equipment on an aircraft to receive the transmitted NDB signals allows the pilot to navigate without line-of-sight limitations. The TOPHR NDB serves as a navigational aid for the NDB approach to Runway 7. As of January 1, 2006, NDBs will no longer be maintained by the FAA and will be decommissioned for navigational use in the near future.

1.5.4.3 Instrument Landing System (ILS)

ILSs serve each end of Runway 7-25. The ILS is a precision approach navigational aid that provides highly accurate course and distance guidance information for the runway. Key components of the ILS are the localizer, providing horizontal guidance, and the glideslope, providing vertical guidance. The TOPHR NDB serves as the locator outer marker and initial approach fix for the ILS approach to Runway 7 and the initial approach fix for Runway 25. It is also defined by the intersection of two radials extending from the Waterville VORTAC and the Sandusky VOR.

1.5.4.4 Global Positioning System (GPS)

GPS is a space-based radio positioning, navigation, and time-transfer station developed and maintained by the Department of Defense (DOD). GPS, at any one time, utilizes three of the 31 strategically placed satellites, to calculate the aircraft's position. From that point, GPS then determines the aircraft's distance, bearing, and estimated time enroute to the next waypoint. GPS can be used in conjunction with or in place of the area navigation (RNAV) approaches to all four runway ends at the airport.

1.5.5 Visual Aids

Visual aids are a necessary component to facilitate an airport's flight operations and enhance safety during periods of inclement weather and darkness by providing visual guidance to pilots in the air and on the ground. Visual aids at TOL include a rotating beacon, touchdown zone lights (TDZL), precision approach path indicators (PAPI), runway end identifier lights (REIL), approach lighting systems (ALS), runway centerline and edge lights, and runway designation markings.

1.5.5.1 Rotating Beacon

The rotating beacon at the airport consists of an alternating white and green light that identifies the airport as a civilian land airport. Airport beacons are used to guide pilots to lighted airports and are normally operated from dusk until dawn. However, if the beacon is on during other hours, it typically indicates that the airport is operating under instrument flight rules (IFR). The rotating beacon at TOL is located atop the ATCT in the passenger terminal complex.

1.5.5.2 Touchdown Zone Lights

Touchdown zone lights (TDZL) consist of two rows of steady white lights that extend from 100 feet beyond the landing threshold and extend 3,000 feet or to the midpoint of the runway, whichever is less. These lights assist pilots in identifying the runway during adverse weather conditions. TDZL are installed on Runway 7.

1.5.5.3 Precision Approach Path Indicators

Precision Approach Pathway Indicators (PAPIs) are installed on Runway 16, Runway 25, and Runway 34. PAPIs provide pilots with visual guidance information during landing. The PAPI systems at the airport consist of one bar of four lights located on either side of the approach runway that appears to project red or white light depending on the position of the aircraft in reference to the defined glideslope path.

1.5.5.4 Runway End Identifier Lights

Runway end identifier lights (REIL) consist of high intensity white strobe lights placed on each side of the runway to enable rapid and positive identification of the runway threshold. REILs are typically installed on runways where an approach lighting system is not available, which holds true for TOL as REILs are installed on both ends of Runway 16-34.

1.5.5.5 Approach Lighting System

A high-intensity approach lighting system with sequenced flashing lights (ALSF-2) is installed on Runway 7. This approach lighting system consists of steady signal lights starting at the landing threshold and extending into the approach area. The system also has a sequenced flashing light that appears to the pilot as a white ball of light traveling at a high speed towards the end of the runway.

A medium-intensity approach lighting system (MALSR) is installed on Runway 25. This approach lighting system is similar to the ALSF-2 installed on Runway 7 except that this system is shorter in length, has fewer lights in the overall system, and does not include a sequenced flashing light.

1.5.5.6 Runway Designation Markings

Runway designation markings vary depending on whether the runway is used exclusively for visual flight rule (VFR) operations or instrument flight rule (IFR) operations. A visual runway is typically marked with the runway designator numbers and a dashed white centerline. Threshold and aiming point markings, as with Runway 16-34, are added to a visual runway to complete the non-precision instrument markings. A precision instrument runway further includes touchdown zone markings, as with Runway 7-25.

1.5.6 Military Airfield Facilities

OANG operations require unique location and landing assist equipment that is proprietary to and maintained by the OANG. Runway 7-25 is the only runway at TOL that supports this equipment and thus is the only runway that can accommodate military operations

1.5.6.1 Tactical Air Navigation System

As previously mentioned in **Section 1.5.4.1**, the Tactical Air Navigation System (TACAN) is a military facility that provides the user with bearing and distance information in relation to a ground or ship-based station. Civil users are able to utilize the TACAN as DME in conjunction with the local VOR to create the joint-use VORTAC system.

1.5.6.2 BAK-12 Aircraft Arresting System

Both Runways 7 and 25 contain a BAK-12 Aircraft Arresting System, the U.S. Air Force and National Guard's standard emergency aircraft arresting system. The BAK-12 is comprised of two parts, the retractable hook cable system that can be "caught" by an aircraft to ensure safe capture during an in-flight emergency, and the energy absorbing system that ensures no damage to aircraft or injury to the pilot when captured by the cable arresting system.

1.5.7 Aeronautical Environment

TOL operates within the aeronautical environment associated with the local, regional, and national system of airports. The aeronautical environment includes the surrounding airspace and the type of aeronautical activity that takes place within the airspace, including arrival and departure procedures.

1.5.7.1 National Airspace Environment

The national airspace system consists of various classifications of airspace that are regulated by the FAA. Airspace classification is necessary to ensure the safety of all aircraft utilizing the facilities during periods of inclement weather, with the primary function of airspace classification being the separation of IFR and VFR traffic.

Pilots flying in controlled airspace are subject to air traffic control (ATC) requirements and must either follow IFR or VFR regulations. These regulations, which include combinations of operating rules, aircraft equipment, and pilot certification, vary depending on the class of airspace and are described in Federal Aviation Regulation (FAR) Part 71, *Designations of Class A, Class B, Class C, Class D, and Class E Airspace Areas, Airways, Routes, and Reporting Points*, and FAR Part 91, *General Operating and Flight Rules*. Each of the classes of airspace can be classified as controlled, uncontrolled, special use, or other airspace.

1.5.7.2 Airport Airspace Environment

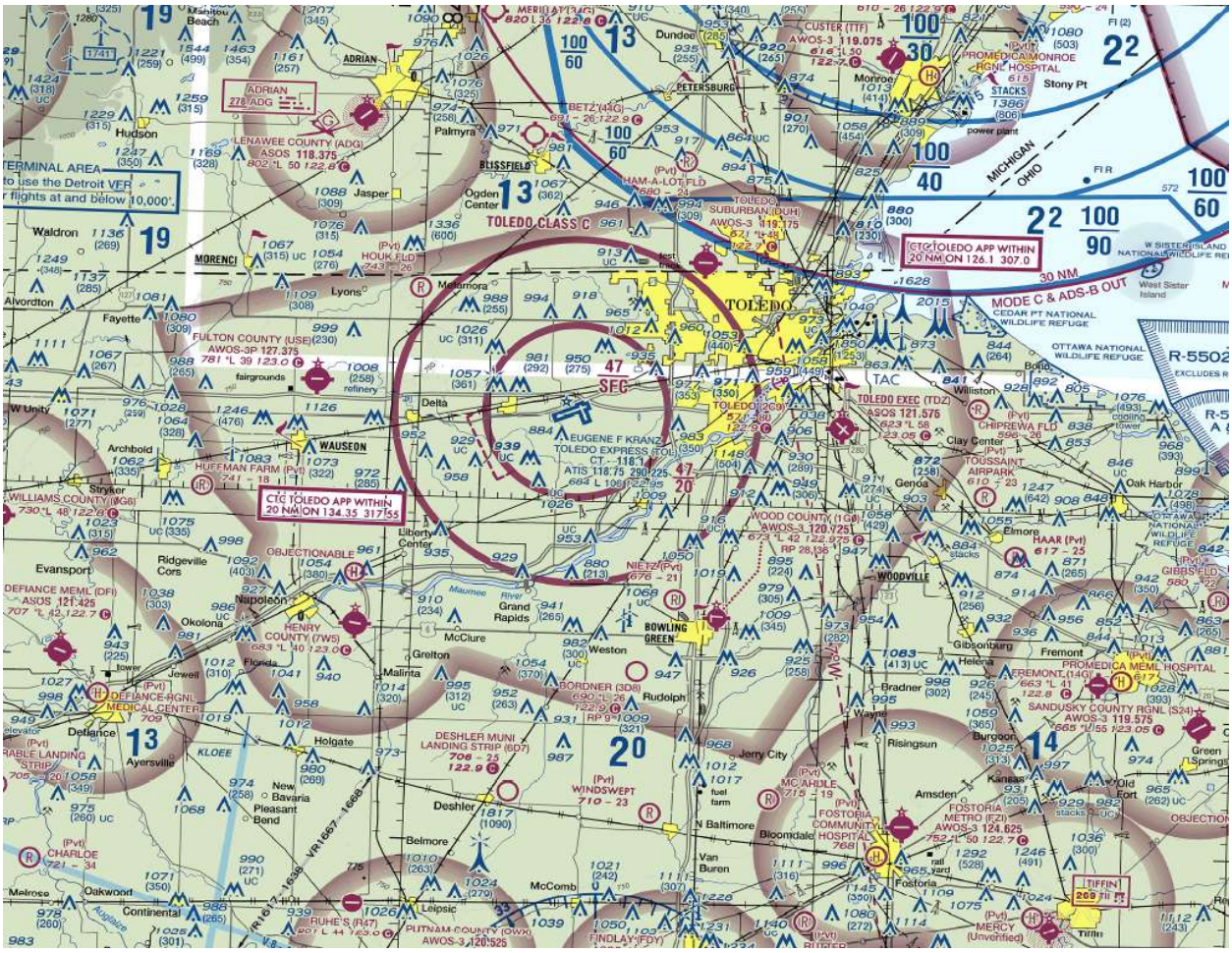
Airspace associated with TOL is depicted on the Detroit sectional aeronautical chart, which is used for the purposes of VFR navigation. The portion of the Detroit sectional chart that includes TOL is shown in **Figure 1-15**.

The airspace surrounding TOL consists of Class C and Class E airspace. The inner four nautical miles of Class C airspace extends from the surface up to, but not including, 4,700 feet mean sea level (MSL). The outer portion of Class C airspace extends from 2,000 feet MSL up to, but not including 4,700 feet above MSL. The Class E airspace surrounding the airport begins at 700 feet above the surface and extends up to Class A airspace (18,000 feet above MSL).

Prior to operating within Class C airspace, aircraft must establish and maintain two-way radio communications with ATC and have a transponder with Mode C capability. The lateral dimensions of Class C airspace are based on the instrument procedures for which the controlled airspace is established. Class C airspace is depicted on sectional aeronautical charts as solid magenta lines, while Class E airspace beginning at 700 feet above MSL is depicted with a magenta band.

The aeronautical environment in the immediate vicinity of the airport also includes ten victor airways. Victor airways are low-level Class E airspace that are eight nautical miles wide, beginning at 1,200 feet above ground level (AGL).

FIGURE 1-15
DETROIT SECTIONAL MAP



Source: U.S. DOT and Federal Aviation Administration, March 24, 2022

1.5.7.3 Instrument Procedures

IFR procedures into terminal areas typically consist of one or a combination of instrument procedures. Instrument procedures associated with an airport can include standard terminal arrivals (STAR), standard instrument departures (SID), or instrument approach procedures.

The instrument approach procedures, or IAPs, are classified as visual, non-precision, or precision approaches. Visual approaches require that sight contact be maintained with the runway facilities and other aircraft in the vicinity of the airport. Often times these approaches are unmonitored and demand pilot proficiency in "see-and-avoid" procedures. Non-precision and precision instrument approaches are controlled approaches and are monitored by the local air traffic jurisdiction. Non-precision approaches differ from precision approaches in that they only provide horizontal guidance, while precision instrument approaches provide both horizontal and vertical guidance information. With the addition of vertical guidance information, precision approaches enable aircraft operations in lower visibility and cloud heights.

TOL is served by a variety of published IAPs identified in **Table 1-10**. There are no SIDS or STARS published for the airport.

TABLE 1-10
PUBLISHED INSTRUMENT APPROACH PROCEDURES

Instrument Approaches	Minimum Visibility (Statute Mile)	Decision Altitude (AGL)
Primary Runway		
Runway 7		
HI-ILS Y OR LOC Y RWY 07	3/8 SM	200'
ILS Z OR LOC Z RWY 07	1/2 SM	200'
RNAV (GPS) RWY 07	3/4 SM	400'
HI-TACAN RWY 07	7/8 SM	500'
Runway 25		
HI-ILS Y OR LOC Y RWY 25	1/2 SM	200'
ILS Z OR LOC Z RWY 25	1/2 SM	200'
RNAV (GPS) RWY 25	3/4 SM	400'
HI-TACAN RWY 25	3/4 SM	400'
Crosswind Runway		
Runway 16		
RNAV (GPS) RWY 16	1 SM	400'
Runway 34		
RNAV (GPS) RWY 34	1 SM	400'

Source: Published instrument approach procedures effective April 21, 2022;
Prepared by RS&H, 2022

1.5.7.4 National Air Traffic Control System

The FAA is responsible for providing a safe, secure, and efficient national aviation system. To fulfill this responsibility, the Air Traffic Services Division of the FAA oversees the control and supervision of activity within the National Airspace System to provide air traffic control. The Air Traffic Services responsibilities include assurance of aircraft separation, air traffic management, dissemination of aviation information, management and maintenance of airways and NAVAID facilities, approach to landing procedures, and aircraft search and rescue.

Control within the National Airspace System is maintained by incorporating a network of air traffic control facilities, which include flight service stations (FSS), air traffic control towers (ATCT), terminal radar approach control (TRACON), and air route traffic control centers (ARTCC).

1.5.7.4.1 ARTCC

Air Route Traffic Control Centers or ARTCCs provide air traffic services to aircraft operating enroute in controlled airspace under Instrument Flight Rules (IFR) between destinations. Control of enroute traffic in the airspace surrounding TOL and above 8,000 MSL feet is the responsibility of Cleveland ARTCC.

1.5.7.4.2 TRACON

The Terminal Radar Approach Control, or TRACON, is responsible for controlling inbound and outbound air traffic within a 30 to 50 nautical mile range of the airport once they drop below 10,000 feet as well as aircraft above this threshold passing through local airspace. Acting as an intermediary between the ARTCC and Air Traffic Control Tower (ATCT), the TRACON is responsible for the safe separation of aircraft flying in congested airspace around the airport. The TRACON for TOL is located within the ATCT facility itself at the airport.

As part of the terminal facility, the TRACON building is owned by the airport with all equipment and services owned and operated by the FAA. Like the rest of the terminal facility, the tower is outdated and requires periodic maintenance to continue proper operation.

1.5.7.4.3 Airport Surveillance Radar

The Airport Surveillance Radar, or ASR, is used to detect and locate aircraft within the terminal area of the airport and relays such information to controllers in the TRACON. The ASR at TOL is located within the RVZ of the airfield south of Taxiway D and west of Taxiway N. The airport is equipped with an ASR-9 that can detect both weather and aircraft.

1.5.7.4.4 Air Traffic Control Tower

TOL's ATCT is in operation 24 hours per day, seven days a week and maintains all air to ground communications and visual signaling within five nautical miles of the airport. Additionally, these controllers are responsible for directing ground movement of all aircraft and vehicles on the runway and taxiway system. Toledo's tower is located on top of the passenger terminal.

1.5.7.4.5 Flight Service Station

The airport does not have a Flight Service Station (FSS) on the field. The FSS handles all pilot briefings and reports, weather observations, flight plan processing, and search and rescue services. All flight service inquiries are directed to the Cleveland FSS located in Cleveland, Ohio.

1.5.7.5 Part 77 Safe, Efficient Use, and Preservation of the Navigable Airspace

Title 14 of the Code of Federal Regulations (CFR) Part 77 establishes airspace surfaces intended to protect aircraft from obstacles during their approach and departure from an airport. If an object, naturally occurring or erected structure, penetrates any of the five surfaces established by Part 77 or imaginary surfaces, that object is declared an obstruction with action to be taken to either remove the obstacle or publish information to alert pilots as to the location of the obstacle. The five Part 77 Imaginary Surfaces include the Primary, Approach, Transitional, Horizontal, and Conical Surfaces.

1.5.7.5.1 Primary Surface

The primary surface is rectangular surfaces centered over a runway that must remain clear of all objects not fixed by function with the width of the surface determined by the utility and instrument approaches the runway is able to accommodate. At TOL, the primary surfaces for each respective runway extend 200 feet beyond the runway ends with the surface 1,000 feet in width for Runway 7-25 and 500 feet in width for Runway 16-34.

1.5.7.5.2 Approach Surface

Based on the approach procedures to the particular runway, the approach surface is a trapezoidal, sloped plane beginning at the end and elevation of the primary surface, extending upward and outward at a predetermined slope intended to protect visual/instrument approaches.

At TOL, Runways 7 and 25 are both precision instrument runways and with the corresponding approach trapezoids beginning at 1,000 feet in width and extending 50,000 feet ultimately terminating at the horizontal surface at 16,000 feet in width. The first 10,000 feet of each approach is protected at a 50:1 slope with the remaining 40,000 feet protected at a 40:1 slope. Runways 16 and 34 are both non precision instrument runways that feature the same approach trapezoids beginning 500 feet in width, extending 10,000 feet until they terminate at the horizontal surface at a width of 3,500 feet. An approach slope of 34:1 is protected for both runways.

1.5.7.5.3 Transitional Surface

The transitional surface extends upward and outward beginning at and perpendicular to the Primary Surface at a 7:1 slope for all runways. The transitional surface ultimately terminates at the horizontal surface 150 feet above the airport elevation.

1.5.7.5.4 Horizontal Surface

The horizontal surface is a flat plane at 150 feet above the elevation of the airport. The geometry of the surface is created by arcs centered on the edge of the primary surface with defined radii and then connected by tangents. The horizontal surface at TOL exists at 833.9 feet above Mean Sea Level, or MSL (airport elevation is 683.9 feet MSL).

1.5.7.5.5 Conical Surface

This surface is a plane sloped at 20:1 extending upward from the periphery of the horizontal surface for 4,000 feet.

1.5.7.6 Airspace Obstructions

The location and relevant Part 77 airspace obstructions for Runway 7-25 and Runway 16-34 as they are published at the time of the inventory update are detailed in **Table 1-11**. The protection of local airspace is the sponsor's utmost priority to ensure the continued safe use of the airport and the Part 77 imaginary surfaces were established to provide a reference point for obstacles that could pose a hazard to airspace navigation. Obstacles that pose an obstruction to one or multiple airspace surfaces, even when recorded and/or marked, can still require the airport to modify their aircraft approach procedures and operating minimums. This can reduce the utility of the airfield, nullifying previous investment and making the airport less accommodating and appealing to operators.

TABLE 1-11
AIRSPACE OBSTRUCTIONS

Runway	Obstruction	Height Above Ground Level	Location	Penetrated Surface
7	Vehicles on Service Road	10'	246′ from DER, 525′ right of centerline	Approach
	Tree	16'	1,339′ from DER, 667′ left of centerline	Transitional
	Trees	58'	beginning 1903′ from DER, 799′ right of centerline	Transitional
	Tree	51'	2,392′ from DER, 852′ left of centerline	Transitional
	Tree	73'	2,604′ from DER, 1,047′ left of centerline	Transitional
16	Ground	13'	59′ from DER, 496′ left of centerline	Transitional
	Tree	55'	618′ from DER, 659′ right of centerline	Transitional
	Trees	68'	beginning 719′ from DER, 42′ right of centerline	Approach
	Tree	10'	985′ from DER, 478′ left of centerline	Transitional
	Tree	30'	1,021′ from DER, 518′ left of centerline	Transitional
	Tree	46'	1,043′ from DER, 571′ left of centerline	Transitional
	Tree	48'	1,139′ from DER, 711′ left of centerline	Transitional
	Tree	61'	1,279′ from DER, 806′ left of centerline	Transitional
	Tree	69'	1,318′ from DER, 689′ left of centerline	Transitional
	Trees	73'	beginning 1,388′ from DER, 648′ left of centerline	Transitional
	Trees	74'	beginning 1,491′ from DER, 80′ left of centerline	Approach
	Trees	81'	beginning 2,607′ from DER, 155′ right of centerline	Approach
	Trees	83'	beginning 2,704′ from DER, 36′ right of centerline	Approach
	Trees	102'	beginning 3,029′ from DER, 45′ right of centerline	Approach
25	Vegetation	8'	245′ from DER, 473′ right of centerline	Transitional
	Vegetation	11'	485′ from DER, 527′ right of centerline	Transitional
	Tree	62'	2,214′ from DER, 870′ right of centerline	Transitional
	Tree	96'	2,362′ from DER, 907′ left of centerline	Transitional
34	Vehicles on Service Road	10'	beginning 247′ from DER, 488′ left of centerline	Approach/Transitional
	Vehicles on Service Road	38'	beginning 445′ from DER, 533′ left of centerline	Transitional
	Vehicles on Service Road	10'	beginning 574′ from DER, 622′ right of centerline	Approach/Transitional
	Pole	38'	632′ from DER, 539′ left of centerline	Transitional
	Poles	38'	beginning 704′ from DER, 522′ left of centerline	Transitional
	Trees, Pole	34'	beginning 1,036′ from DER, 411′ left of centerline	Transitional
	Trees	68'	beginning 1,272′ from DER, 156′ left of centerline	Approach
	Pole	36'	1,287′ from DER, 699′ right of centerline	Transitional
	Trees	76'	beginning 1,826′ from DER, 102′ right of centerline	Approach
	Trees	77'	beginning 2,489′ from DER, 90′ left of centerline	Approach
	Trees, Tower, Grain Elevat	96'	beginning 2,726′ from DER, 92′ left of centerline	Approach
	Tree	82'	2,912′ from DER, 119′ right of centerline	Approach
	Trees	96'	beginning 2,953′ from DER, 451′ right of centerline	Approach

Source: FAA Published Takeoff Minimums and Departure Procedures - AMDT 5 22803; Prepared by RS&H, 2022

As part of the Facility Requirements an Obstruction Evaluation / Airport Airspace Analysis (OE/AAA) will be conducted if mitigation of the obstacles listed above is necessary.

1.6 COMMERCIAL PASSENGER FACILITIES

The commercial passenger facilities consist of the passenger terminal building, terminal gates, and terminal curbfront. These areas are specifically designed to serve passengers utilizing the commercial airline services at TOL. The vehicle parking facilities provided at the airport are also designed to serve commercial passengers and are covered in detail in **Section 1.10**. The commercial passenger facilities are identified in **Figure 1-16.**

FIGURE 1-16
COMMERCIAL PASSENGER FACILITIES

Source: RS&H Analysis, July 2022

1.6.1 Rental Cars

The three on-airport rental car agencies include Alamo/National/Enterprise, Avis/Budget, and Hertz. The passenger terminal building provides rental car counter space for each of the three rental car agencies and a rental car ready/return lot is located immediately adjacent to the east side of the terminal building. The ready/return lot can accommodate 106 vehicles. In addition, each rental car agency operates a quick turnaround lot located northwest of the commercial passenger terminal building, immediately north of the National Flight Services, Inc. west ramp conventional hangar. These areas are used for the fueling, washing, and storage of rental cars.

1.6.2 Passenger Terminal Building

The passenger terminal building is located on the airport's north side, immediately west of Runway 16-34 and north of Taxiway B. The original passenger terminal building was constructed in 1955 and has undergone several renovations. The existing entrance canopy was constructed in the early 1990s and the east terminal addition was added in the late 1990s. The most recent renovations occurred in 2005 through 2006 and included new baggage makeup area, baggage screening, airline ticketing offices, and holdroom expansion as part of an expansion and phased reconfiguration project. The goal of the reconfiguration program was to retrofit and reorganize the existing terminal facility to better meet the needs of the growing passenger traffic the airport was experiencing without disrupting airport operations during construction. Only the first phase of the three-phase program was completed by the end of 2006 with a

decline in passenger traffic and low funding availability the root causes of an incomplete program. The renovations of Phase 1 did improve public circulation, increase the capacity to handle passenger traffic, and enable the airport to meet the current Transportation Security Administration (TSA) requirements regulating passenger and baggage screening.

The terminal building is configured with a linear concept and a parallel gate concourse. The first floor contains a combination of landside and airside operations while the second floor consists almost entirely of passenger holdrooms and associated support services. Housed within the terminal facility and beginning on the second floor and into the tower itself are the local FAA divisions and offices.

In addition, the terminal facility contains a satellite concourse constructed in 1999 that houses Gates 1, 1A, and 2 and consists of two floors of holdroom space. Gates 1 and 1A were both located on the first floor and accommodate ground-loading operations while Gate 2 on the second floor featured a passenger boarding bridge. With the decline in commercial passenger traffic, the satellite concourse was closed and remains in a dormant state.

1.6.2.1 First Floor

The first floor of the terminal building consists of a combination of landside and airside operations. The landside area accommodates the primary airline functions of ticketing, airline ticket offices, inbound/outbound baggage, and baggage claim. In addition, the first floor contains space dedicated to rental car counters, concession area/gift shop, the TLCPA's administrative offices, security checkpoint, and building support systems.

The linear terminal building is organized so that enplaning passenger facilities (concession area/gift shop, security checkpoint, airline ticketing counters, and lobby) are located in the western wing, while deplaning passenger facilities (baggage claim and rental counters) are located in the eastern wing. The western wing also contains the stairs, elevators, and escalators to the second level. Directly behind the escalators is an additional waiting room with views onto the terminal apron and restrooms. The TLCPA's administrative offices and TSA offices are located in this area adjacent to the waiting room. The 2006 terminal reconfiguration featured the expansion of the baggage makeup space as well as reoriented much of the internal layout of the facility to promote easier flow of passenger.

1.6.2.2 Second Floor

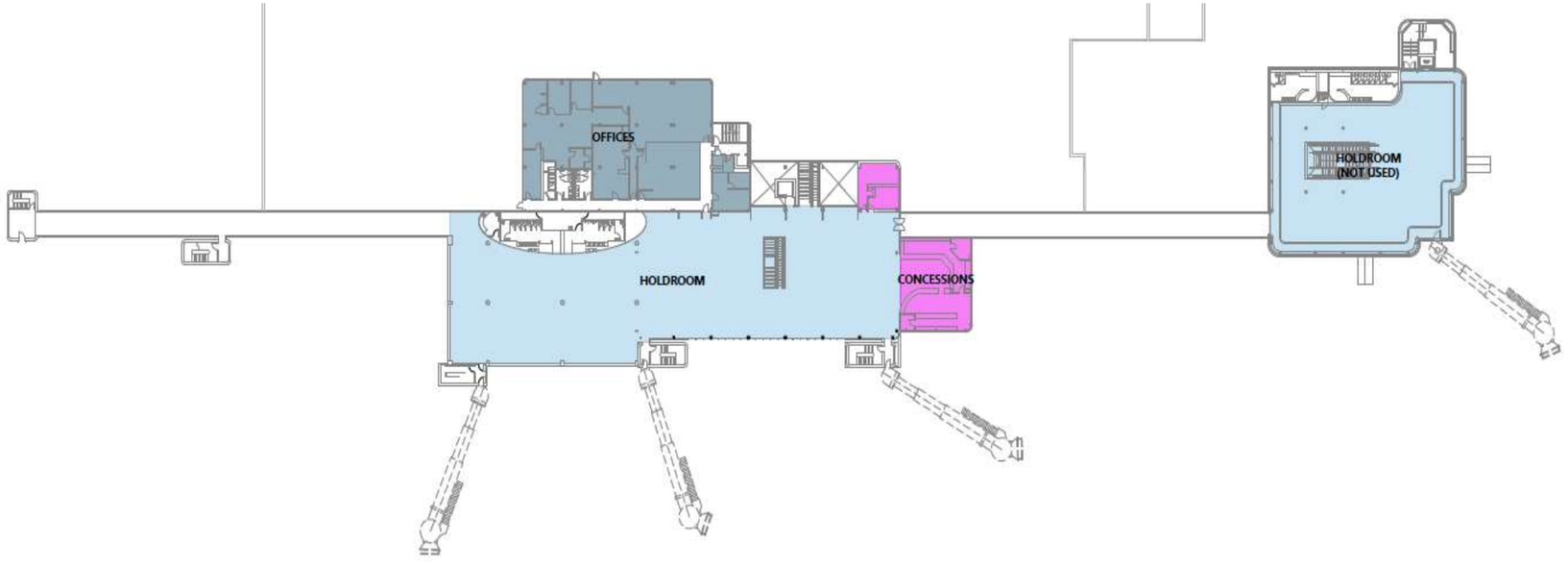
The second floor of the terminal building primarily consists of passenger holdrooms for bridge-loaded aircraft as well as a concessions space featuring two restaurants and a bar. In the 2006 terminal expansion, the second floor added larger bathrooms, 6,000 square feet of holdroom space, and one additional gate. Currently, all passenger enplaning/deplaning activity is managed on the second floor of the main terminal complex with the satellite concourse vacant but maintained as needed.

The second floor is also home to the offices of the local FAA Technical Operations, FAA TRACON, and FAA ATCT departments. Additional FAA office space is also located in the first level of the control tower, one level above the second floor and one below the control tower cab. The layouts of the first and second floor of the terminal are depicted in **Figure 1-17**.

FIGURE 1-17
PASSENGER TERMINAL LAYOUT

FIRST FLOOR

SECOND FLOOR



Source: RS&H Analysis, July 2022

1.6.2.3 Passenger Terminal Condition

As part of the Master Plan update, an inventory and building assessment of the existing terminal facility was conducted. The current terminal facility has many critical infrastructure systems beyond their expected useful life and requiring replacement. Based on the date of initial construction (1955 and expanded in 1966) it is anticipated environmental hazards like asbestos and mold exist within the structure and will require special mitigation to fully remove. Based on an analysis of the current commercial flight activity at TOL, the terminal facility is oversized, with many hallways and spaces used for functions other than their intended purposes or not used at all. From and architectural and mechanical perspective the terminal facility has many code violations that must be addressed. Other life-safety items such as lightning protection and backup systems should potentially be replaced.

With this terminal facility assessment completed, the next step, as part of the Facility Requirement analysis is to develop potential solutions to modernize the facility. The full Terminal Facility Assessment can be found in **Appendix B** of this report.

1.6.3 Passenger Terminal Gates

There are four gates served by passenger loading bridges located at the airport. Of the four gates, three located in the main concourse (Gates 3, 4, and 5) remain active while Gate 2 in the satellite concourse is no longer serviceable. Two additional ground-loading gates are also located in the satellite concourse, now dormant. The terminal primarily serves jet aircraft, but the gates and boarding bridges are also able to accommodate large propeller and small commuter aircraft.

1.6.4 Passenger Terminal Curbfront

A passenger terminal curbfront is provided to promote passengers smooth transition between the air transportation environment and ground transportation environment.

The terminal curbfront roadway, Terminal Parkway, at TOL consists of three, one-way directional traffic lanes, providing for west to east travel as well as a curb parking lane. The inner curbfront has a total physical linear length of 525 feet. Excluding the crosswalks and dedicated police vehicle parking area, the effective length is 481 linear feet. The outer curb has a total length of 410 feet with an effective curb length of 386 feet.

The terminal curbfront is covered by a roof as are each of the buildings vestibules with covered walkways providing shelter between the terminal facility and parking lots opposite Terminal Parkway.

1.7 GENERAL AVIATION FACILITIES

TOL is a full-service airport providing facilities for the commercial passenger sector as well as the general aviation sector. The general aviation facilities at the airport consist of three fixed base operators (FBO), various buildings and hangars, and apron space. All general aviation facilities at the airport are located north of Runway 7-25 and on either side of Runway 16-34. A summary of general aviation facilities is provided in **Table 1-12** and their general locations are identified in **Figure 1-18** with the corresponding number.

TABLE 1-12
GENERAL AVIATION BUILDING INVENTORY

No.	Tenant	Building Type	Approximate Square Feet
1	Toledo Public Schools Aviation Center	Conventional Hangar	16,625
2	Grand Aire, Inc.	Conventional Hangar	53,230
3	Toledo Jet Center LLC	Conventional Hangar	35,525
4	Promedica	Conventional Hangar	12,145
5	TOL Aviation, Inc. (West)	Conventional Hangar	20,800
6	Owens Corning	Conventional Hangar	30,340
7	InterJet West, Inc.	Conventional Hangar	11,625
8	InterJet West, Inc.	Conventional Hangar	17,955
9	Owens Illinois	Conventional Hangar	72,200
10	National Flight Services, Inc. (West)	Conventional Hangar	18,260
11	TOL Aviation, Inc. (East)	T-Hangars	41,750
12	National Flight Services, Inc. (East)	Conventional Hangar	18,950

Source: AirportRecords; Prepared by RS&H, 2022

FIGURE 1-18
GENERAL AVIATION FACILITIES MAP

Source: RS&H Analysis, July 2022

1.7.1 Fixed Based Operators

A fixed-based operator (FBO) is usually a private enterprise that leases land from an airport sponsor on which to provide services to based and itinerant aircraft. The extent of the service provided varies from airport to airport and frequently include aircraft fueling, major and minor maintenance and repair, aircraft rental and/or charter services, flight instruction, pilot lounge, flight planning facilities, aircraft tie-down and/or hangar storage.

There are three FBOs at TOL: Grand Aire, Inc., National Flight Services, Inc., and TOL Aviation, Inc. (**Figure 1-18**: hangars 2, 10 & 12, and 5, respectively). Each of the three FBOs provides aircraft fueling, hangar storage, and apron storage. In addition, National Flight Services provides aircraft charters and engine overhaul services.

1.7.2 Hangars

Hangar facilities at the airport consist of three T-hangar buildings, providing 17 T-hangars units, and 11 conventional hangars. The T-hangars are located north of Runway 7-25 and east of Runway 16-34, between the National Flight Service and the snow removal equipment (SRE) storage building. The T-hangars are grouped in three units; the northern two units are identical and contain five hangar bays each. The southern unit provides seven hangar bays. The conventional hangars are in various locations along the ramp north of Runway 7-25. The locations of the conventional hangars are identified in **Figure 1-18** and their tenants are identified in **Table 1-12** of the existing conventional hangars occupied and only six of the available seventeen T-hangars are currently leased.

1.7.3 Aircraft Aprons

General aviation aprons provide area for based aircraft storage, itinerant aircraft storage, and FBO operations. Aprons dedicated to general aviation operations are located north of Runway 7-25, on either side of Runway 16-34 (see **Figure 1-18**). The apron located on the east side of Runway 16-34 and north of Runway 7-25 is used exclusively for general aviation itinerant and based aircraft operations associated with National Flight Services, Inc. operations and services. According to the most recent Pavement Condition Index (PCI) inspection performed by the Ohio Department of Transportation, the pavement is in good condition.

The apron located west of Runway 16-34 and north of Runway 7-25, excluding the area reserved for use by commercial service operations, is used by a variety of tenants for based and itinerant aircraft operations and storage.

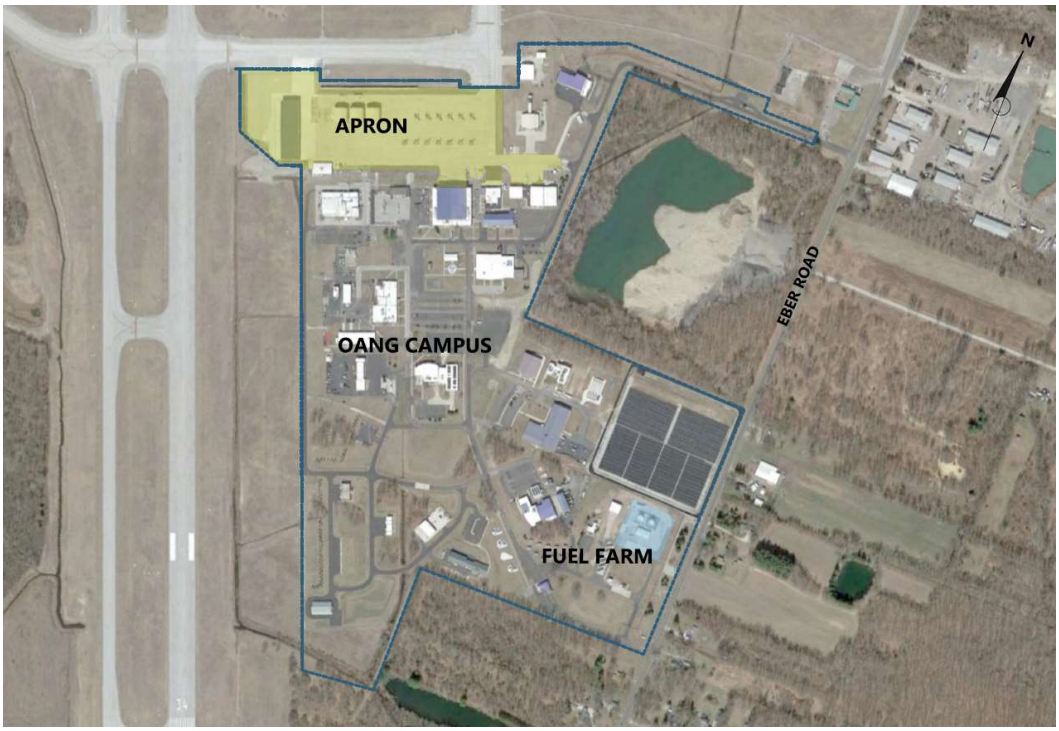
1.8 OHIO AIR NATIONAL GUARD

The Ohio Air National Guard is a team of over 5,000 men and women from across the state of Ohio that support air force combat missions with its air-to-air and air-to-surface capabilities. In peacetime, they are commanded by the Governor of Ohio and may be called to state active duty during natural disasters, civil disturbances, or other state emergencies. During a war or national emergency, they may be called to federal active duty by the President of the United States or Congress.

The 180th Fighter Wing and 112th Fighter Squadron of the Ohio Air National Guard are located on the eastern side of TOL, south of Runway 7-25 and east of Runway 16-34. Their mission is to provide combat ready aircrews capable of deploying anywhere in the world within 24 hours of notification. The facilities of the 180th Fighter Wing and 112th Fighter Squadron are capable of accommodating training and operation maneuvers of its F-16C/D aircraft.

The Ohio Air National Guard's apron consists of approximately 80,000 square yards of concrete pavement located immediately south of Taxiway D and east of Runway 16-34. There are approximately 40 buildings located on the property. The National Guard's fuel farm is located on the southeast corner of the property.

FIGURE 1-19
OHIO AIR NATIONAL GUARD, AERIAL



Source: RS&H Analysis, July 2022

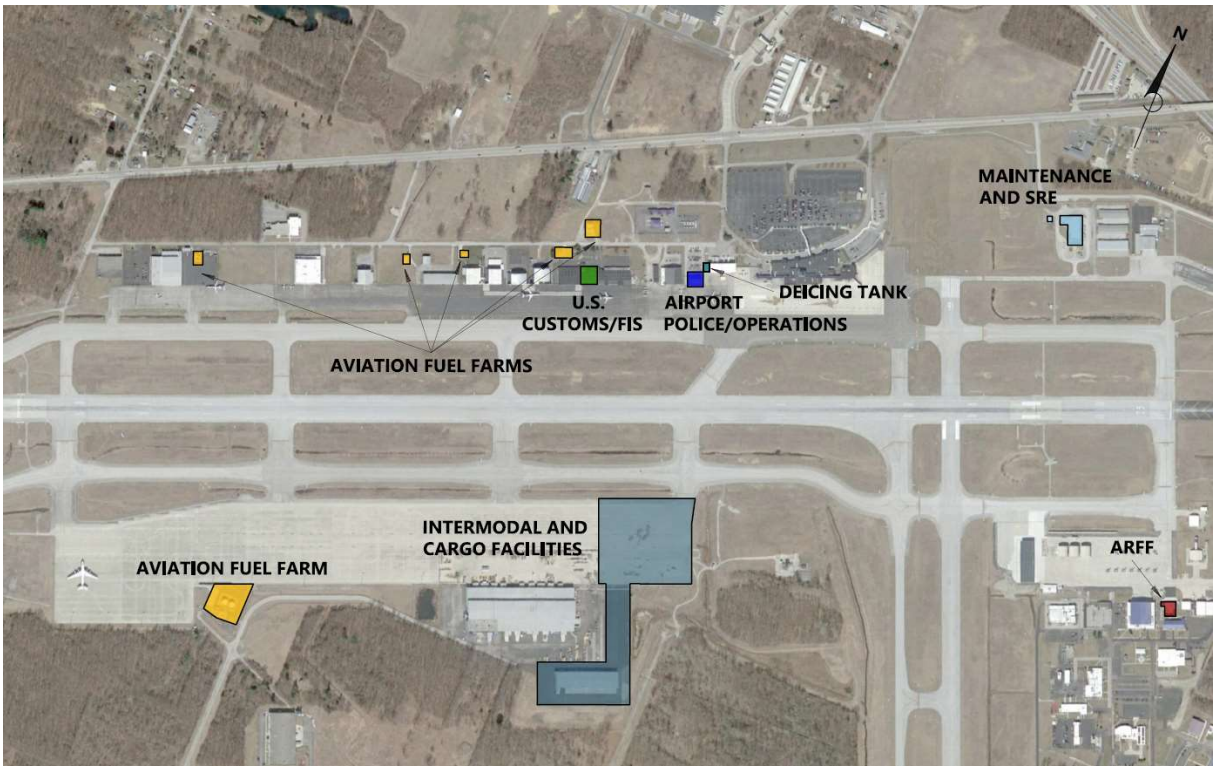
1.9 AVIATION SUPPORT FACILITIES

The support facilities at an airport encompass a broad set of functions that exist to ensure the smooth and efficient operation of the airport. Support facilities at TOL include:

- Airport Police and Operations
- Aircraft Rescue and Firefighting (ARFF)
- Airport Maintenance and Snow Removal Equipment (SRE) Storage
- Intermodal and Cargo Facilities
- Airport Deicing Operations
- Airport Fueling/Fuel Farms
- Federal Inspection Station/U.S. Customs
- Utilities

The locations of primary support facilities are identified in **Figure 1-20**.

FIGURE 1-20
AVIATION SUPPORT FACILITIES



Source: RS&H Analysis, July 2022

1.9.1 Airport Police and Operations

Security and law enforcement at TOL is maintained by airport police stationed in a facility west of the main terminal that provides both direct landside and airside access. The airport police staff is made up of three full-time and two part-time officers and cover all airfield security in and outside of the AOA fence as well as on satellite airport properties. Within the terminal the airport police provide security coverage for the TSA checkpoint and upstairs in the holdroom while also monitoring the airside ramp during enplaning/deplaning operations. Additionally, the airport police serve as an extension of the airport operations staff as required by 14 CFR Part 139 and 49 CFR 1542 and are responsible for observation of the airfield as well as are trained in airspace and AOA surfaces and file daily inspection reports.

The Lucas County Sheriff's Office is also located within the airport terminal. The Sheriff does not have an active role in airport security but can be used to augment airport police if needed.

1.9.2 Aircraft Rescue and Fire Fighting

The purpose of an aircraft rescue and firefighting (ARFF) facility is to save lives by maximizing emergency response and intervention during an airport crisis. The ARFF crew conducts firefighting rescue operations and fire prevention services. More specifically, the ARFF provides emergency assistance; inspection of fuel farms, fuel trucks, and commercial sites; guidance relative to compliance with FAA standards on safety, equipment, and training; and is the medical first responder for an aircraft accident or incident.

Air carrier airport ARFF facilities are assigned an index group based on the length of the air carrier aircraft that use the airport regularly. The 14 CFR Part 139 index determination for an airport is defined by a combination of the length of air carrier aircraft and average daily departures of air carrier aircraft. A listing of the index determinations is provided in **Table 1-13**.

TABLE 1-13
FAR PART 139 INDEX DETERMINATIONS

Index Group	Aircraft Length
A	Aircraft less than 90 feet
B	Aircraft at least 90 feet but less than 126 feet
C	Aircraft at least 126 feet but less than 159 feet
D	Aircraft at least 159 feet but less than 200 feet
E	Aircraft greater than 200 feet

Source: FAR Part 139.315

All firefighting operations at TOL are managed by the Ohio Air National Guard with the primary ARFF facility currently required to maintain vehicles, chemicals, and response items located on the base apron. The Ohio Air National Guard maintains the ARFF facility and operations in accordance with all FAA and military requirements.

Based on the air carrier aircraft historically operating at TOL, the Douglas DC-8, the airport is assigned an ARFF Index C. To support the requirements of Index C, the airport owns two ARFF vehicles, a 2018 Oshkosh Striker ("Rescue 2") and 2005 F550 support vehicle ("Rescue 1", not necessary per Part 139 requirements). The Ohio Air National Guard owns three other ARFF vehicles per military requirements and store/operate the airport's Rescue 2 per their ARFF service contract. See **Table 1-14** for the ARFF vehicle inventory.

TABLE 1-14
ARFF INVENTORY

ARFF Equipment	Make/Year	Ownership	Water Capacity/Rate	Chemical	Capacity/Rate
ARFF 81 W	KME 2014	OHANG	1400/210 GPM	AFFF	57/3%
ARFF 81X	Oshkosh 2011	OHANG	1500/750 GPM	AFFF and Dry/N_2	210/3%
ARFF 81Y	Pierce 2011	OHANG	1400/210 GPM	AFFF	56/3%
Rescue 1	Ford F550 2005	Airport	-	-	-
Rescue 2	Oshkosh 2018	Airport	1500/700 GPM	AFFF and Dry/N_2	210/3%

Source: Airport Data Collection, 2022

1.9.3 Airport Maintenance and SRE

TOL owns and operates a variety of maintenance equipment needed for snow removal, ground maintenance, pavement and facilities maintenance, and general repairs. The Airport Maintenance and SRE Storage Facility is located on the east side of the airfield, just west of the T-Hangars. The space provides 22,500 square feet of maintenance and unheated storage bays. In addition, the old ARFF building located on the west ramp provides additional equipment storage. These two facilities do not provide adequate storage space for maintenance equipment and as a result SRE and other equipment is stored outside.

1.9.4 Intermodal and Cargo Facilities

Located along the south side of Taxiway D and west of Runway 16-34 is a 75-acre concrete aircraft apron. BAX Global formerly occupied this location providing overnight, next-day, and one-to-three-day small package delivery to multi-ton cargo service delivery through aircraft and ground vehicle connections. The eastern portion of the ramp, 52,000 square yards, is currently home to Amazon Air (operated by Sun Country Airlines) as well as transient cargo aircraft operations. A portion of the ramp adjacent to the Amazon Air operation, 37,000 square yards, is currently leased to Tronair, Inc. for non-aeronautical operations support. See **Figure 1-21** for details.

FIGURE 1-21
CARGO FACILITIES MAP

Source: RS&H Analysis, July 2022

1.9.5 Airport Deicing Operations

Deicing operations at the airport are primarily performed by the on-field FBOs drawing from a centralized, airport-owned tank. Similar to fueling contracts, the FBOs deices commercial and cargo aircraft in addition to their own fleet supply. The central deicing tank holding Type I anti-icing fluid has a capacity of 3,000 gallons and is metered for public use and for supplier deliveries.

1.9.6 Airport Fueling/Fuel Farms

The airport currently provides three types of fuels, including 100 low lead (100LL), jet fuel (Jet A), and vehicular gasoline (MoGas). General aviation users typically require 100LL for piston driven aircraft and Jet A for turbine-driven aircraft. Scheduled commercial service aircraft require Jet A fuel. A summary of fuel flowage by user is provided in **Table 1-15.**

TABLE 1-15
FUEL FLOWAGE

Year	Commercial	General Aviation	
	Jet A	100LL	Jet A
2017	1,161,407	74,617	1,633,868
2018	1,356,181	54,754	1,662,486
2019	1,395,083	46,247	2,320,954
2020	755,439	22,486	1,472,597
2021	993,095	40,069	4,669,495

Source: Airport Records; Prepared by RS&H, 2022

*All records in gallons

1.9.6.1 Aircraft Fueling

All of the general aviation, cargo, and commercial aircraft fueling at TOL is provided via FBOs through truck service. The Ohio Air National Guard handles all of their own fueling independently through the use of their own trucks and fuel farm. The airport does not currently provide any self-fueling alternatives.

1.9.6.2 Fuel Storage

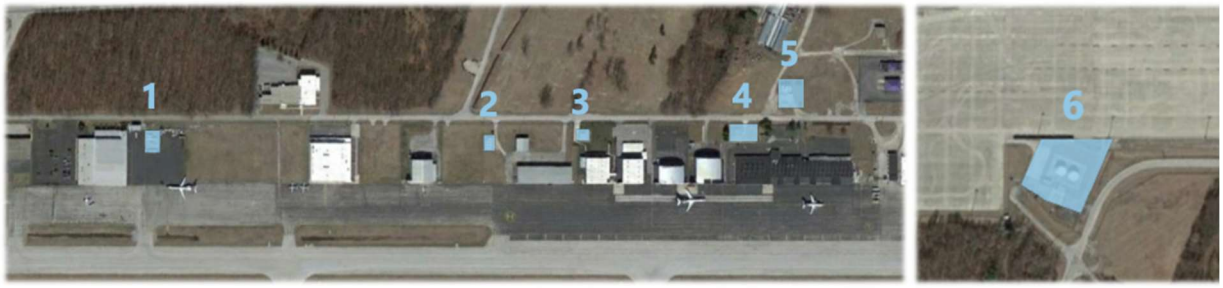
Fuel storage at the airport is handled through a combination of above ground and underground storage tanks. The fuel types, tank capacities, and storage containers style are described for each storage owner in **Table 1-16** with locations of fuel farms shown in **Figure 1-22**.

TABLE 1-16
FUEL STORAGE INVENTORY

No.	Owner/Operator	Size (Gallons)	Fuel Type	Above/ Underground
1	Grand Aire, Inc.	25,000	Jet A	Aboveground
		12,000	100LL AvGas	Aboveground
		1,000	Unleaded	Aboveground
2	TOL Aviation, Inc.	60,000	Jet A	Aboveground
		15,000	100 LL AvGas	Aboveground
		1,000	Unleaded	Aboveground
3	Owens Corning	35,000	Jet A	Aboveground
4	Owens Illinois	60,000	Jet A	Underground
5	National Flight	35,000	Jet A	Aboveground
		17,000	100LL AvGas	Aboveground
		10,000	Unleaded	Aboveground
6	Airport	500,000	Jet A	Aboveground

Source: Airport Records; Prepared by RS&H, 2022

FIGURE 1-22
FUEL STORAGE MAP



Source: RS&H Analysis, July 2022

1.9.7 Federal Inspection Station/U.S. Customs

The airport has a Federal Inspection Station (FIS)/United States Customs service on-sight based in the large general aviation hangar also occupied by Owens Illinois, Inc. located on the general aviation ramp. The FIS/Customs facility was fully staffed until early 2022 when the customers officers relocated off-site. The service is still provided at the airport with the department on call with a two-hour lead time necessary for officers to return to the airport and complete any inspection.

1.9.8 Utilities

The availability of water, sanitary sewer, gas, electric and storm water drainage to an airport must be considered while evaluating the existing utility conditions. The public water distribution and sanitary sewage system are significant governmental responsibilities and capital investments in a new or expanding area. Natural gas and electricity services are normally provided by the private sector. The following sections identify the provider of the various utility services, utility capacities, and locations.

1.9.8.1 Water and Sanitary Sewer

Sanitary sewer services are provided by Lucas County. The sanitary sewer lines for the terminal building discharge into two eight-inch diameter pipes under the north side of the terminal building and extend under the short-term parking lot. The sanitary effluent then flows west via gravity to the sanitary lift station. The sanitary lift station, which is located on the west side of the long-term parking lot, discharges the effluent to the sanitary sewer that runs parallel to Airport Highway.

Water is supplied to airfield facilities via two mainlines also serviced by Lucas County. The north airfield including the terminal and general aviation facilities are supplied by line near the main airport entrance and Airport Highway/S.R. 2 and runs parallel to West Airport Service Road. The south airfield is supplied via a main line beginning at the intersection of Air Cargo Parkway and Sager Road/U.S. Alt Route 20 and running east paralleling Taxiway D.

1.9.8.2 Gas

Natural gas is supplied by the Ohio Gas Company. The natural gas line is located on the far east wall of the terminal building. The two-inch natural gas line crosses the airport entrance road and proceeds west.

The south airfield is supplied by a line running along Whitehouse Spencer Rd. The OANG base is supplied by a gas line originating at Eber Rd.

1.9.8.3 Electric

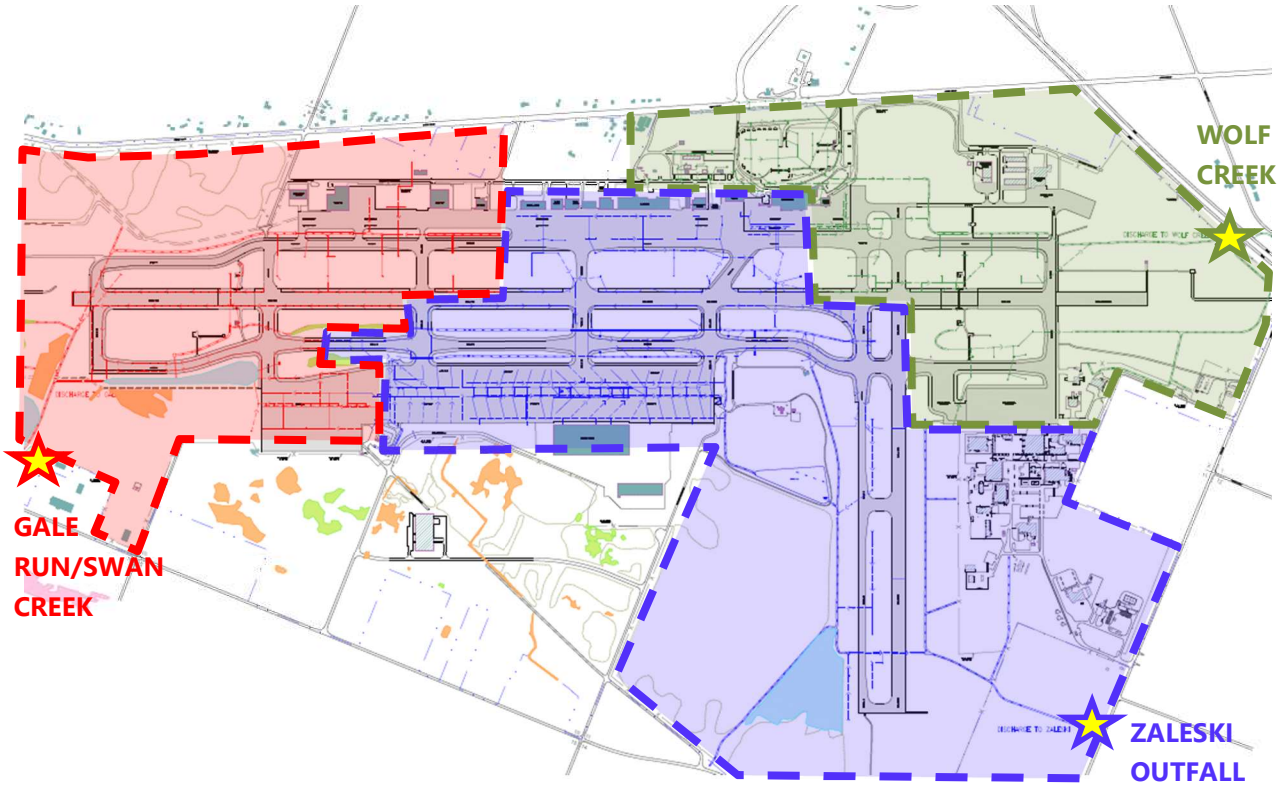
Electrical power in the region is provided by Toledo Edison Power Company. All terminal and airfield facility power is controlled an airfield electrical vault with the FAA ASR and ILS/ALS equipment also maintaining their own power supply. Power to the terminal building is provided via four-inch, six-way concrete encased duct bank from the primary airfield electrical vault located just north of the RAC QTA facility. The OANG maintains its own base power supply as well as supplies the BAK-12 arresting cables located on both Runway 7 and 25. Separate power runs for the general aviation tenants, maintenance facility, and southside electrical vault formerly operated by BAX Global/DB Schenker Logistics cover the remainder of facilities at the airport.

A switchgear and backup generator are also housed within the airfield electrical vault that supplies airfield lighting with emergency backup power while the terminal has its own emergency backup system housed within the facility.

1.9.8.4 Storm Water Drainage

The storm water drainage system is also provided by Lucas County. Drainage for the pavements associated with the commercial passenger terminal building incorporate a combination of curb inlets and catch basins, all connected with reinforced concrete storm sewer pipe. The roadway circulation loop and the short-term parking areas separate into two separate storm water lines, via two manholes located on the north side of the terminal building. Two water meters located in the commercial passenger terminal's boiler room extend north, under the terminal building foundation, to the manholes and connect the airport's water main/fire suppression system. A single water line, located under the short-term parking, connects the parking attendant station with the terminal's main system.
Airfield drainage leaves airport property via three discharge locations: Wolf Creek to the east, the Zaleski outfall to the south at Eber Rd., and Gale Run-Swan Creek to the west. The catchment areas for each are color-coded in **Figure 1-23**.

FIGURE 1-23
AIRFIELD DRAINAGE AT TOL



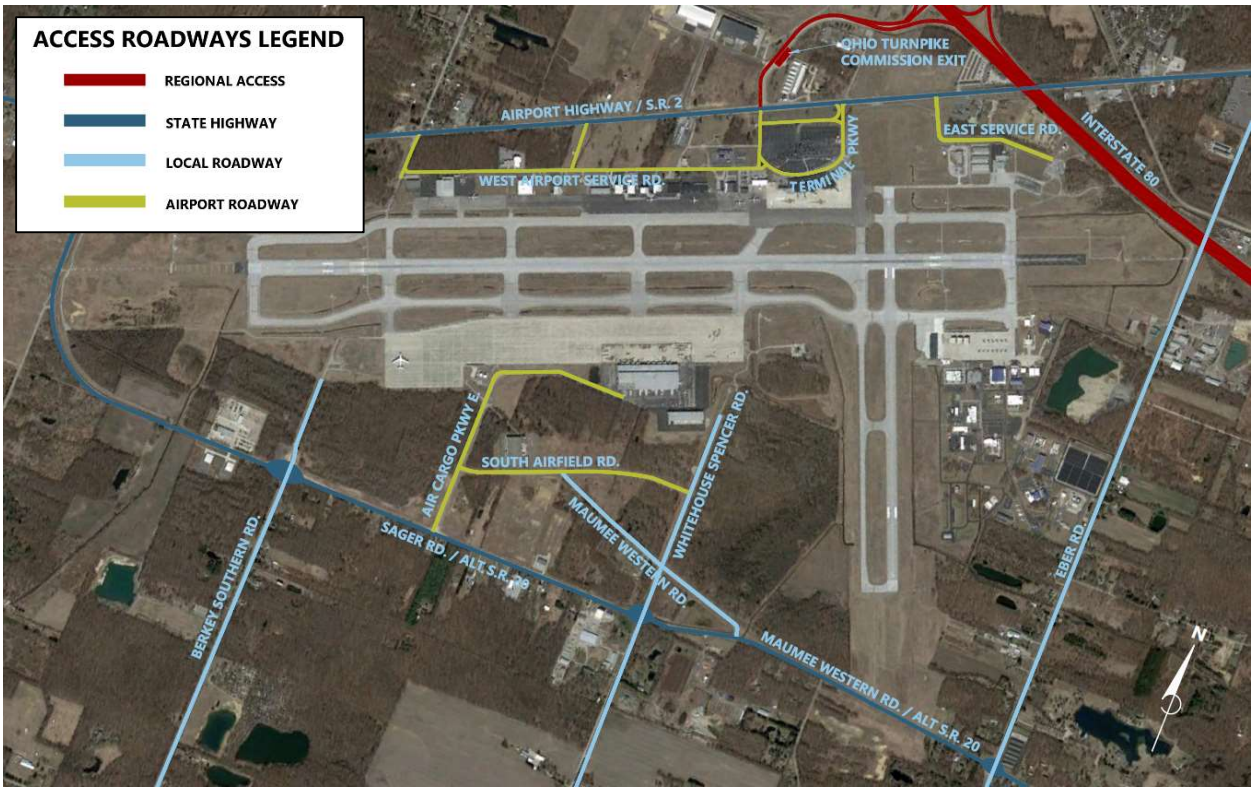
Source: 2016 *TOL Utility Master Plan*; Compiled by RS&H, 2022

The airport maintains a Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention Control and Countermeasure (SPCC) plan for the airfield and all airport facilities and conducts bi-annual facility inspections and stormwater sampling events. Individual tenants that provide fueling, storage of fuels and/or other hazardous chemicals, or conduct maintenance operations are required to maintain their own SPCC to remain in compliance with the airport.

1.10 AIRPORT ACCESS

Convenient, safe, and efficient access to the commercial service terminal is an integral part of an airport system. airport access systems consist of connecting roadways that enable airport users to enter and exit the airport landside facilities and parking facilities. Airport access is comprised of three stages: off-airport access roads, on-airport circulation, and vehicle parking. An aerial map of the surface access roadways in the immediate vicinity of TOL is provided in **Figure 1-24**.

FIGURE 1-24
AIRPORT ACCESS ROADWAYS



Source: RS&H Analysis, July 2022

1.10.1 Off-Airport Access Roads

TOL primarily provides service to residents of northwestern Ohio and southeastern Michigan. The primary means of travel into the airport is by personal vehicles, although there is use by a limited number of taxicabs, rental cars, and hotel shuttles. The majority of vehicles accessing the airport travel along U.S. Interstate 80 (Ohio Turnpike/I-80) and Interstate 475 (I-745).

1.10.1.1 U.S. Interstate 80

The Ohio Turnpike is a multiple lane, limited-access tollway. It is the only major transcontinental corridor from California to New Jersey. An at-grade exit ramp from I-80 provides direct access to the commercial service terminal, immediately north of its intersection with Airport Highway (State Route 2).

1.10.1.2 Interstate 475

I-475 is a multiple lane roadway that is located approximately five miles east of the airport.

1.10.1.3 Airport Highway

Airport Highway (State Route 2) is a four-lane divided roadway, located immediately north of West Airport Service Road and Terminal Parkway. Airport Highway primarily provides local access to the passenger terminal and the general aviation facilities located on the north side of the airport.

1.10.2 On-Airport Circulation

On-airport circulation consists of both public access roads and non-public airport service roads. The public access roads provide access to the commercial service terminal building, general aviation facilities, cargo facilities, and the Ohio Air National Guard. Various operations, maintenance, and other vehicles needing access to the airfield use the non-public airport service roads.

1.10.2.1 Public Roads

Public roads used for access to on-airport facilities include the roadway circulation loop, Airport Highway, Air Cargo Parkway East, Airport Service Road, Eber Road, Maumee Western Road, Whitehouse Spencer Road, and Sager/Wilkins Road.

1.10.2.1.1 Airport Highway/State Route 2

The main public access to TOL, passenger terminal, and general aviation facilities west of Runway 16-34 are all accessible via the Airport Highway segment of State Route 2. Airport Highway borders the northern extents of the airfield stretching from Eber Road as the eastern boundary to Sager Road as the western bounding road.

1.10.2.1.2 Terminal Parkway

Access to the commercial passenger terminal and parking lots is provided via the Terminal Parkway roadway circulation loop that connects to and is located south of Airport Highway. From the intersection of Airport Highway and Terminal Parkway, two one-way south bound lanes provide access to the Airport.

The east lane is used to access the long-term parking lot, and then further south, the short-term parking lot. The west lane is used to access the general aviation facilities. Both roadway circulation loop lanes continue south to connect to the passenger terminal curbfront, where two additional lanes are provided.

Immediately following the west end of the passenger terminal curbfront, the southernmost lane provides access to the rental car ready/return lot and the northernmost lane merges with the exit lane from the short-term parking lot. These three lanes continue eastward and then northward, where they then merge with the exit lane from the long-term parking lot. The westernmost roadway circulation loop lane then splits to provide one-way westward travel along a 400-foot-long roadway that is located approximately seventy-five feet south and parallel to Airport Highway. This one-way westbound road connects to the northern end of the roadway circulation loop. The remaining two northbound roadway circulation loop lanes continue north and intersect with Airport Highway.

1.10.2.1.3 Air Cargo Parkway East

The Air Cargo Parkway East is a two-lane road, located south of the airfield and provides access to the current Tronair, Inc. and Pinnacle Logistics Inc. facilities via Alternate State Route 20/Maumee Western Rd.

1.10.2.1.4 West Airport Service Road

The majority of the general aviation facilities can be accessed from I-80, via Airport Highway and West Airport Service Road. West Airport Service Road is a two-lane asphalt road that only serves airport

facilities; it does not provide access to residential, commercial, or industrial properties not associated with the airport.

1.10.2.1.5 Eber Road

Access to the Ohio Air National Guard is provided via Eber Road. Eber Road is a north-south two-lane asphalt road that also provides access to residential and commercial developments.

1.10.2.1.6 Maumee Western Road

Maumee Western Road (State Route 20-Alternate) is an east-west two-lane asphalt road that runs between South Airfield Road near the Cargo Apron and as far east as Briarfield Road in Maumee. Its north end, adjacent to airport property, is located south of the cargo apron.

1.10.2.1.7 Whitehouse Spencer Road

The cargo apron and supporting facilities can also be accessed by Whitehouse Spencer Road. Whitehouse Spencer Road is a north-south two-lane asphalt road. Its north end terminates at an AOA gate just south of the apron itself. Whitehouse Spencer Road is primarily used as an access point for the ASR and adjacent law enforcement training grounds.

1.10.2.1.8 Sager Road/Wilkins Road

Sager Road (State Route 20-Alternate) borders the western and southern extents of the airfield and merges into Maumee Western Road south of the cargo apron running east. Wilkins Road, also Township Route 108, also borders the western boundary of the airfield where it briefly merges with Sager Road from the south and again splits north of Airport Highway.

1.10.2.2 Private Roads

The perimeter Airport Service Road begins on the western end of the general aviation ramp located west of Runway 16-34. This private gravel service road continues west, then travels south around the approach end of Runway 7 and terminates at the former BAX Cargo Apron on the western edge, where it is referred to as Air Cargo Road. There are two other service roads located on the eastern portion of the airport, connecting Eber Road to the Ohio Air National Guard facilities; one road enters north of the Ohio Air National Guard facilities and the other enters south of the facilities.

1.10.3 Commercial Passenger Vehicle Parking

Vehicle parking at the airport is provided for commercial passengers, rental cars, and users of the general aviation facilities. The airport does not currently provide economy parking lots or designated employee parking. The vehicle parking available at the commercial passenger terminal is summarized in **Table 1-17** and includes the short-term, long-term, administration, and ready rental car lots (rental quick-turn-around, or QTA, not included). The configuration of the vehicle parking facilities is illustrated in **Figure 1-25**.

TABLE 1-17
VEHICLE PARKING CAPACITIES

Parking Lot	Total Spaces
Public Parking	
Short-Term	237
Long-Term	1,412
Private Parking	
Rental Cars	106
Administration	31
Total	1,786

Source: Airport Records, Prepared by RS&H, 2022

FIGURE 1-25
VEHICLE PARKING LOTS

Source: RS&H Analysis, July 2022

1.10.3.1 Public Parking

Both short-term and long-term parking is available at TOL.

1.10.3.1.1 Short-Term Parking

The short-term parking lot is located directly north of the terminal building and has a capacity of 237 spaces. Access to the short-term parking lot is provided in two locations from the roadway circulation loop. The west entrance to the short-term parking lot is located on the east side of the roadway circulation loop; it is the second entrance south of Airport Highway. The east entrance to the short-term parking lot is located on the north side of the roadway circulation loop; it is the first entrance immediately north of the easternmost end of the commercial passenger terminal curbfront. Exits from the short-term

parking lot are provided via exit lanes through the long-term parking lot. Once vehicles exit the queuing areas for the parking lot pay booth, traffic is directed onto the roadway circulation loop.

1.10.3.1.2 Long-Term Parking

The long-term parking lot is adjacent to the short-term parking lot, on its north side. It provides 1,412 parking spaces. Access to the long-term parking is provided via the northernmost exit off the roadway circulation loop. The exit from the long-term parking is centrally located within the lot and provides access to the roadway circulation loop.

1.10.3.2 Administration/Employee Parking

The administration parking lot is located adjacent to the terminal facility on the west side with a capacity of 31 parking spaces. The lot is reserved for business and event parking as well as airport security while airport employees currently use the long-term parking lot.

1.10.3.3 Rental Car Parking

A ready/return lot shared by the four on-airport rental car companies is located immediately adjacent to east side of the passenger terminal and provides 106 spaces not including the QTA lots west of Terminal Parkway. Entrances and exits from the lot are provided from the roadway circulation loop, immediately east of the terminal curbfront.

1.11 ENVIRONMENTAL CONDITIONS

The purpose of considering environmental factors in airport master planning is to help the airport sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing. For a comprehensive description of the existing environmental conditions at TOL, environmental resource categories outlined in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures,* were used as a guide that help identify potential environmental effects during the planning process.

FAA Order 1050.1F and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, require the evaluation of airport development projects as they relate to specific environmental resource categories by outlining impacts and thresholds at which the impacts are considered significant. For some environmental resource categories, this determination can be made through calculations, measurements, or observations. However, other environmental resource categories require that the determination be established through correspondence with appropriate federal, state, and/or local agencies. A complete evaluation of the environmental resource categories identified in FAA Orders 1050.1F and 5050.4B is required during a categorical exclusion, environmental assessment, or environmental impact statement.

Future development plans at the airport take into consideration environmental resources that are known to exist in the vicinity of the airport. Early identification of these environmental resources helps avoid impeding development plans in the future.

This section provides an overview of resource categories defined in FAA Order 1050.1F, Chapter 4, as it applies to the environs at, and surrounding, the airport. **Table 1-18** provides a summary of the environmental resource categories studied for this Master Plan Update. It is important to note that while the environmental analysis is included in this Master Plan Update, it is not in and of itself a NEPA document.

TABLE 1-18
SUMMARY OF ENVIRONMENTAL RESOURCE CATEGORIES STUDIED

Environmental Resource	Description
Air Quality	The airport is in "attainment" for all National Ambient Air Quality Standards (NAAQS). See **Section 1.11.1** for details.
Biological Resources	There are federal- and state-threatened, –endangered and candidate species, and migratory birds in the airport area. There is no critical habitat at the airport. See **Section 1.11.2** for details.
Climate	There are greenhouse gas (GHG) emissions produced at the airport (e.g., aircraft, ground service vehicles, automobiles, etc.). See **Section 1.11.3** for details.
Coastal Resources	The airport lies outside the Ohio Coastal Management Program (CMP) and Coastal Barrier Resource System (CBRS) segment boundaries. See **Section 1.11.4** for details.
Department of Transportation Act, Section 4(f)	The closest Section 4(f) properties to the airport include: Oak Openings Preserve Metropark, Westwinds Metropark, Campbell State Nature Preserve, and Kitty Todd Nature Preserve. See **Section 1.11.5** for details.
Farmlands	The airport does not contain prime farmland or farmland of statewide importance. See **Section 1.11.6** for details.
Hazardous Materials, Solid Waste and Pollution Prevention	There are 17 Resource and Recovery Act (RCRA) Hazardous Waste Generators on airport property. Solid waste generated at the airport is disposed of at Hoffman Road Landfill in Lucas County or alternatively, the Vienna Junction Landfill along the Ohio/Michigan border. The airport operates under the National Pollutant Discharge Elimination System Permit (NPDES) General Permit (OHR000007) for stormwater discharge associated with industrial activity. The Toledo-Lucas County Port Authority (Authority) also maintains an Oil Discharge Contingency Plan, an Integrated Spill Prevention, Control and Countermeasures (SPCC) Plan, and a Stormwater Pollution Prevention Plan (SWPPP) for the airport. See **Section 1.11.7** for details.

Environmental Resource	Description
Historical, Architectural, Archaeological and Cultural Resources	There are no known historical, architectural, archaeological, and cultural resources located on the airport property. However, there is a potential for undiscovered cultural resources being present on the airport property.
Land Use	The airport is surrounded by agricultural, industrial, commercial, residential land uses. On-airport land use includes aeronautical development sectors reserved for general aviation, education facilities, commercial, and cargo expansion.
Natural Resources and Energy Supply	Electricity is supplied to the airport by Toledo Edison Power Company and water is supplied to the airport by the City of Toledo. Natural gas is provided by Washington Gas.
Noise and Noise-Compatible Land Use	South of the airport rural and residential land uses near the airport are sensitive to aircraft noise associated with the airport. However, most of the development north of the airport is dominated by industrial and commercial land use. Noise contours are shown in **Section 1.3.2** for details.
Socioeconomics, Environmental Justice, Children's Environmental Health, and Safety Risks	The airport is located within Lucas County, Census Tract 90.1, Block Group 2 and Census Tract 95, Block Group 3. Aerospace & Natural Science Academy located on the airport serves high school students and offers aviation certification. Off-airport locations include the Children's Discovery Center Daycare, Holland Elementary School, Springfield Junior High School, and Springfield High School. Oak Openings Preserve Metropark is the closest children's recreation area. See **Section 1.11.12** for details.
Visual Effects	Light emissions at the airport currently result from airfield, building, access roadway, parking, and apron area lighting fixtures required for the safe and secure movement of people, vehicles, and aircraft. The visual resources and visual character of the airport currently includes the air traffic control tower, fixed base operators, hangars, education facilities, terminal, and maintenance buildings.
Water Resources	Airport property contains wetlands, floodplains, and surface waters. The airport is located within the Ai Creek watershed, Gale Run-Swan Run watershed, and the Wolf Creek watershed. The airport property does not contain any wild and scenic rivers.

Prepared by: RS&H, 2022

1.11.1 Air Quality

The U.S. Environmental Protection Agency (USEPA) sets NAAQS for certain air pollutants to protect public health and welfare through Section 109 of the Clean Air Act (CAA). The USEPA has identified the following six criteria air pollutants and has set NAAQS for them: Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO_2), 8-Hour Ozone (O_3), Particulate Matter (PM_{10} and $PM_{2.5}$), and Sulfur Dioxide (SO_2).

Areas found to be in violation of one or more NAAQS of these pollutants are classified as "nonattainment" areas. States with "nonattainment" areas must develop a State Implementation Plan (SIP) demonstrating how the areas will be brought back into "attainment" of the NAAQS within designated timeframes. Areas where concentrations of the criteria pollutants are below (i.e., within) these threshold levels are classified as "attainment" areas. Areas with prior "nonattainment" status that have since transitioned to "attainment" are known as "maintenance" areas. According to the United States Environmental Protection Agency (USEPA) parts of Lucas County in which the airport is located exceeded threshold levels for SO_2 (1971) from 1992 until 1999. In the year 2000, the USEPA reclassified the County to "maintenance" status. This status reclassified only applied to the area east of Route 23 and west of the eastern boundary of Oregon township in the vicinity of the greater Toledo area. The airport location, west of Route 23 has not exceeded concentrations limits under the SO_2 (1971) standard. Therefore, the airport, located in western Lucas County, is in "attainment" for all NAAQS for criteria air pollutants.[8]

1.11.2 Biological Resources

Biological resources include terrestrial and aquatic plant and animal species; game and non-game species; special status species; and environmentally sensitive or critical habitats. The following are relevant federal laws, regulations, Executive Orders (EOs), and guidance[9] that protect biotic communities:

- Endangered Species Act (ESA) (16 U.S.C. §§ 1531-1544)
- Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668 et seq.)
- Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.)
- Fish and Wildlife Coordination Act (16 U.S.C. § 661-667d)
- Executive Order (EO) 13112, *Invasive Species* (64 FR 6183)
- Marine Mammal Protection Act (16 U.S.C. § 1361 et seq.)
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703 et seq.)
- EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (66 FR 3853)
- Council on Environmental Quality (CEQ) Guidance on Incorporating Biodiversity Considerations into Environmental Impact Analysis under NEPA; and
- Memorandum of Understanding to Foster the Ecosystem Approach.

[8] U.S. Environmental Protection Agency, Air Quality Green Book, Ohio. Accessed: https://www3.epa.gov/airquality/greenbook/anayo_oh.html, May 2022.

[9] Due to the number of federal laws and EOs applicable to development plans, this section presents only the legal citations or references for those requirements in lieu of summarizing their requirements. See FAA's 1050.1F Desk Reference for more.

While the Endangered Species Act does not protect state-protected species or habitats, NEPA documentation ensures that environmental analysis prepared for airport actions addresses the potential effects to state-protected resources. **Table 1-19** lists the eight federally threatened, endangered or candidate species that have the potential to be found at the airport.[10] The Ohio Department of Natural Resources indicates that there are 142 state-listed animal species and 148 state-listed plant species that have the potential to occur within Lucas County in which the airport property is located.[11] According to the U.S. Fish and Wildlife Service (USFWS), there is no designated critical habitat located on the airport property.[12]

TABLE 1-19
FEDERALLY LISTED SPECIES WITH THE POTENTIAL TO OCCUR IN OR AROUND AIRPORT PROPERTY

Species Common Name	Species Scientific Name	Listing Status
Indiana Bat	*Myotis sodalis*	Endangered
Northern Long-eared Bat	*Myotis septentrionalis*	Federally Threatened
Piping Plover	*Charadrius melodus*	Endangered
Red Knot	*Calidris canutus rufa*	Federally Threatened
Eastern Massasauga (rattlesnake)	*Sistrurus catenatus*	Federally Threatened
Karner Blue Butterfly	*Lycaeides melissa samuelis*	Endangered
Monarch Butterfly	*Danaus plexippus*	Candidate
Eastern Prairie Fringed Orchid	*Platanthera leucophaea*	Threatened

Sources: USFWS, 2022; Prepared by RS&H, 2022

The Migratory Bird Treaty Act (MBTA) prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations, and does not require intent to be proven. According to the USFWS IPaC, there is the potential for 14 migratory bird species with the potential to be found in the vicinity of the airport property, see **Table 1-20** for a complete list.

[10] U.S. Fish and Wildlife Service, Information for Planning and Conservation (IPaC). Accessed: https://ipac.ecosphere.fws.gov/location/7OTTYMOAZNCJ7CM7AIP7DXBIFY/resources#endangered-species, May 2022.
[11] Ohio Department of Natural Resources, State Listed Wildlife and Plant Species By County. Accessed: https://ohiodnr.gov/discover-and-learn/safety-conservation/about-odnr/wildlife/documents-publications/wildlife-plants-county, May 2022.
[12] U.S. Fish and Wildlife Service, Information for Planning and Conservation (IPaC). Accessed: https://ipac.ecosphere.fws.gov/location/7OTTYMOAZNCJ7CM7AIP7DXBIFY/resources#endangered-species, May 2022.

TABLE 1-20
POTENTIAL MIGRATORY BIRDS IN AIRPORT AREA

Species Common Name	Species Scientific Name
Bald Eagle	*Haliaeetus leucocephalus*
Black-billed Cuckoo	*Coccyzus erythropthalmus*
Bobolink	*Dolichonyx oryzivorus*
Canada Warbler	*Cardellina canadensis*
Cerulean Warbler	*Dendroica cerulea*
Eastern Whip-poor-will	*Antrostomus vociferus*
Golden-winged Warbler	*Vermivora chrysoptera*
Henslow's Sparrow	*Ammodramus henslowii*
King Rail	*Rallus elegans*
Lesser Yellowlegs	*Tringa flavipes*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Rusty Blackbird	*Euphagus carolinus*
Short-billed Dowitcher	*Limnodromus griseus*
Wood Thrush	*Hylocichla mustelina*

Sources: USFWS, 2022; Prepared by RS&H, 2022

Essential Fish Habitat (EFH) are those waters and substrate necessary for fish spawning, breeding, feeding, and growth to maturity as defined under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA is the primary law that governs marine fisheries management in U.S. federal waters. The MSA also requires federal agencies to consult with NOAA Fisheries about actions that could damage EFH. The airport is outside of the coastal zones and there are no fish species currently protected under the MSA on the airport property.[13]

1.11.3 Climate

Relevant federal laws, regulations, and EOs that relate to climate include:

- CAA (42 U.S.C. §§ 7408, 7521, 7571, 7661 et seq.)
- EO 13514, *Federal Leadership in Environment Energy and Economic Performance* (74 FR 52117).
- EO 13653, *Preparing the United States for the Impacts of Climate Change* (78 FR 66817); and
- EO 13693, *Planning for Federal Sustainability* (80 FR 15869).

Greenhouse gases (GHG) are gases that trap heat in the earth's atmosphere. Both naturally occurring and man-made GHGs primarily include water vapor, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Activities that require fuel or power are the primary stationary sources of GHGs at airports. Aircraft and ground access vehicles that are not under the control of an airport, typically generate more GHG emissions than airport-controlled sources.

[13] National Marine Fisheries Service, Essential Fish Habitat Mapper. Accessed: https://www.habitat.noaa.gov/apps/efhmapper/, May 2022.

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contributions, the Government Accountability Office (GAO) reports that "domestic aviation contributes about three percent of total carbon dioxide emissions, according to EPA data, "compared with other industrial sources, including the remainder of the transportation sector (20 percent) and power generation (41 percent). The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly three percent of all anthropogenic GHG emissions globally.[14]

1.11.4 Coastal Resources

The primary statutes, regulations, and EOs that protect coastal resources include:

- Coastal Barrier Resources Act (16 U.S.C. § 3501 et seq.);
- Coastal Zone Management Act (CZMA) (16 U.S.C. § 1451-1466);
- National Marine Sanctuaries Act (16 U.S.C. §1431 et seq.);
- EO 13089, *Coral Reef Protection* (63 FR 32701); and
- EO 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes* (75 FR 43021-43027).

The Ohio Coastal Management Program (CMP) is a state-federal partnership program that manages coastal resources along Ohio's 312-mile Lake Erie coast. It is one of 34 State coastal management programs nationwide and received federal approval by the National Oceanic and Atmospheric Administration (NOAA). According to the Ohio Office of Coastal Management, portions of Lucas County lie within Ohio's CMP.[15] The airport is outside the portion of the Ohio CMP within Lucas County. Additionally, there are no Coastal Barrier Resource System (CBRS) segments within airport property boundaries.[16] The closest CBRS segment is over twenty-five miles northeast of the airport along Lake Erie.

1.11.5 Department of Transportation, Section 4(f)

Relevant federal laws, regulations, and EOs that protect Section 4(f) resources include:

- U.S. Department of Transportation (USDOT) Act, Section 4(f) (49 U.S.C. § 303.);
- Land and Water Conservation Fund Act of 1965 (16 U.S.C. §§ 4601-4604 et seq.);
- Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) – Section 6009 (49 U.S.C. § 303.); and
- U.S. Department of Defense Reauthorization (Public Law (P.L.) 105-185, Division A, Title X, Section 1079, November 18, 1997, 111 Stat. 1916).

The USDOT Act, Section 4(f) provides that no project that requires the use of any land from a public park or recreational area, wildlife and waterfowl refuge, or historic site be approved by the Secretary of Transportation unless there is no viable alternative and provisions to minimize any possible harm are included in the planning. Similarly, the Land and Water Conservation Fund (LWCF) Act prevents the

[14] Melrose, Alan, *European ATM and Climate Adaptation: A Scoping Study*, ICAO Environmental Report, 2010. Accessed: http://www.icao.int/environmental-protection/Documents/EnvironmentReport-2010/ICAO_EnvReport10-Ch6_en.pdf, May 2022.
[15] Ohio Department of Natural Resources, Ohio Coastal Atlas Map. Accessed: https://gis.ohiodnr.gov/MapViewer/?config=interactiveatlas, May 2022.
[16] U.S. Fish and Wildlife Service, Coastal Barrier Resources System Mapper. Accessed: https://www.fws.gov/cbra/Maps/Mapper.html, May 2022.

conversion of lands purchased or developed with Land and Water Conservation funds to non-recreation uses, unless the Secretary of the Interior, through the National Park Service, approves the conversion. Conversion may only be approved if it is consistent with the comprehensive statewide outdoor recreation plan when the approval occurs. Additionally, the converted property must be replaced with other recreation property of equivalent usefulness and location, and at least equal fair market value.

The closest Section 4(f) properties to the airport include: Oak Openings Preserve Metropark, Westwinds Metropark, Campbell State Nature Preserve, and Kitty Todd Nature Preserve.[17] The closest LWCF site to the airport is Louis W. Campbell Nature Preserve, located approximately two miles east of the airport, which received $81,750 LWCF funds in 1979.[18] See **Table 1-21** for the complete details of 4(f) properties near the airport.

TABLE 1-21
NEARBY 4(F) PROPERTIES

Park Name	Amenities	Acreage	Approximate Distance from Airport
Oak Openings Preserve Metropark	*Public treehouse village; two campgrounds; two cabins; children's playground; thirteen trails*	*5,000*	*1.0 mile away*
Westwinds Metroparks	*Public archer; 3D archery course; one trail*	*174*	*1.5 miles away*
Campbell State Nature Preserve	*A variety of high-quality habitats for more than 30 state-listed species; one trail; no restroom facilities available*	*210*	*2.5 miles*
Kitty Todd Nature Preserve	*A variety of high-quality habitats for more than one hundred state-listed plant species; one trail; no restroom facilities available*	*1,400*	*2.5 miles away*

Sources: Metroparks Toledo, 2022; Ohio Department of Natural Resources, Prepared by RS&H, 2022

1.11.6 Farmlands

The following statutes, regulations, and guidance pertain to farmlands:

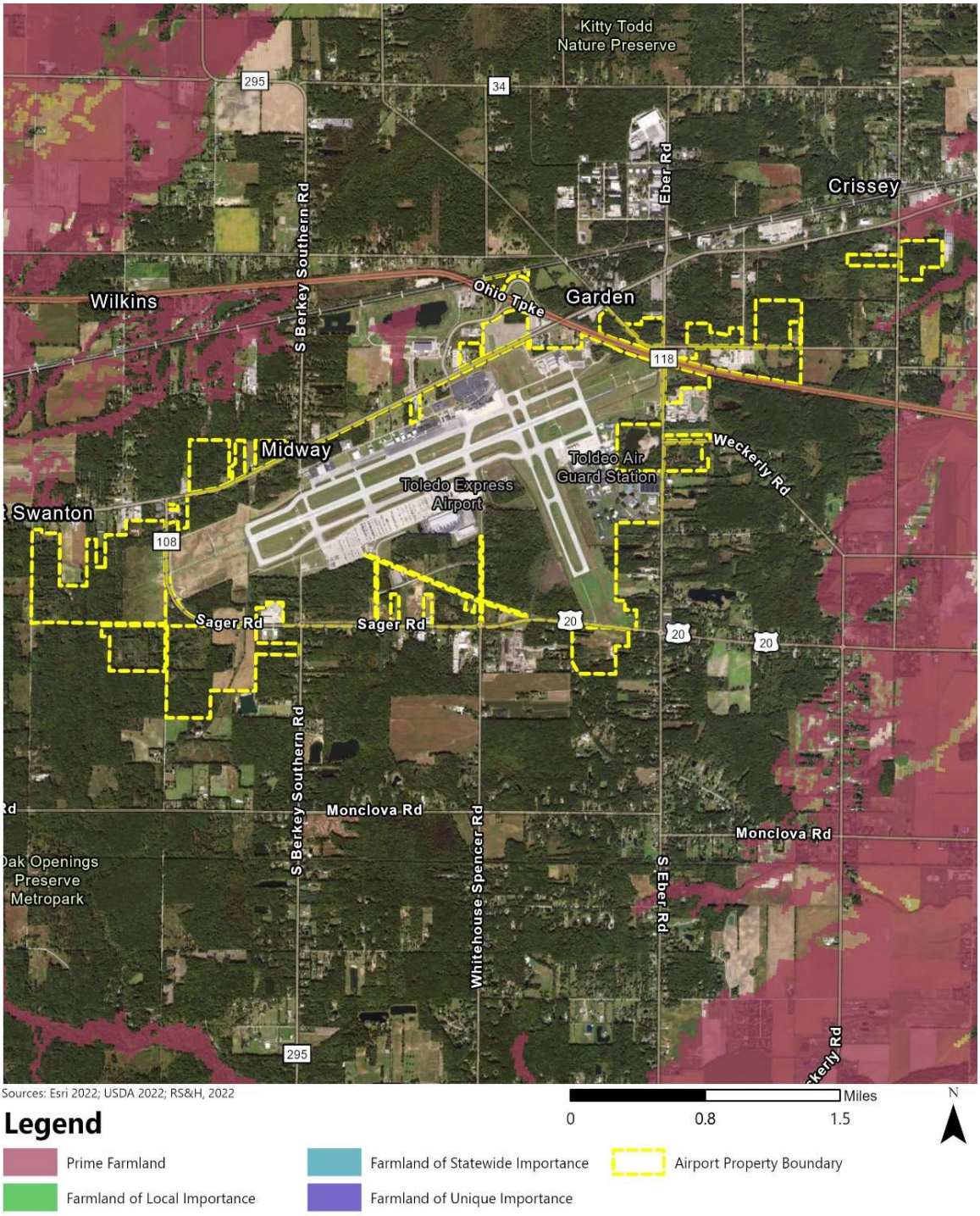
- Farmland Protection Policy Act (FPPA) (7 U.S.C. §§ 4201-4209); and
- CEQ Memorandum on the Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act (45 FR 59189).

The FPPA of 1981 regulates federal actions that have the potential to convert farmland to non-agricultural uses. The FAA requires consideration of "important farmlands," which it defines to include "all pasturelands, croplands, and forests (even if zoned for development) considered to be prime, unique, or statewide or local important lands."[19]According to the Natural Resource Conservation Service (NRCS), the

[17] Metroparks Toledo, Park Map. Accessed https://metroparkstoledo.com/park-map/, May 2022.
[18] Land Water Conservation Fund, Ohio. Accessed: https://lwcf.tplgis.org/mappast/, May 2022.
[19] Federal Aviation Administration, *1050.1F Desk Reference*, February 2020. Accessed: May 2021.

airport property does not contain soils classified as prime farmland or farmland of statewide importance (see **Figure 1-26**).[20]

FIGURE 1-26
FARMLAND SOIL TYPES ON AIRPORT PROPERTY



[20] Natural Resources Conservation Service, Web Soil Survey. Accessed: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx,, May 2022.

1.11.7 Hazardous Materials, Solid Waste, and Pollution Prevention

Federal laws, regulations, and EOs that relate to hazardous materials, solid waste, and pollution prevention include:

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. §§ 9601-9765)
- Emergency Planning and Community Right to Know Act (42 U.S.C. §§ 11001-11050);
- Federal Facilities Compliance Act (42 U.S.C. § 6961);
- Hazardous Materials Transportation Act (49 U.S.C. §§ 5101-5128);
- Oil Pollution Prevention Act of 1990 (33 U.S.C. §§ 2701-2762);
- Pollution Prevention Act (42 U.S.C. §§ 13101-13109);
- Toxic Substances Control Act (TSCA) (15 U.S.C. §§ 2601-2697);
- Resource Conservation and Recovery Act (RCRA) (42 U.S.C. §§ 6901-6992k);
- EO 12088, *Federal Compliance with Pollution Control Standards* (43 FR 47707);
- EO 12580, *Superfund Implementation* (52 FR 2923), (63 CFR 45871), and (68 CFR 37691);
- EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (72 FR 3919); and
- EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (74 FR 52117).

1.11.7.1 Hazardous Materials

In a regulatory context, the terms "hazardous wastes," "hazardous substances," and "hazardous materials" are defined as:

- **Hazardous Wastes.** Subpart C of the RCRA defines hazardous wastes (sometimes called characteristic wastes) as solid wastes that are ignitable, corrosive, reactive, or toxic. Examples include waste oil, mercury, lead, or battery acid. In addition, Subpart D of the RCRA contains a list of specific types of solid wastes that the USEPA has deemed hazardous (sometimes called listed wastes). Examples include degreasing solvents, petroleum refining waste, or pharmaceutical waste.
- **Hazardous Substances**. Section 101(14) of the CERCLA defines hazardous substances broadly and includes hazardous wastes, hazardous air pollutants, or hazardous substances designated as such under the Clean Water Act and TSCA and elements, compounds, mixtures, solutions, or substances listed in 40 CFR Part 302 that pose substantial harm to human health or environmental resources. Pursuant to the CERCLA, hazardous substances do not include any petroleum or natural gas substances and materials. Examples include ammonia, bromine, chlorine, or sodium cyanide.
- **Hazardous Materials.** According to 49 CFR Part 172, hazardous materials are any substances commercially transported that pose unreasonable risk to public health, safety, and property. These substances include hazardous wastes and hazardous substances, as well as petroleum and natural gas substances and materials. As a result, hazardous materials represent hazardous wastes and substances. Examples include household batteries, gasoline, or fertilizers.

Aircraft fuel constitutes the largest quantity of hazardous substances stored and consumed at the airport. Fuel is stored at the fuel farm on airport property in aboveground storage tanks and fuel trucks are used to fuel aircraft. There are three FBOs at the airport: Grand Aire, Inc., National Flight Services, Inc., and TOL Aviation, Inc, each provide aircraft fueling. The National Guard also has a fuel farm located on the southeast corner of the property.

The USEPA identifies the following 17 RCRA hazardous waste generators on airport property:[21]

- Bax Global (Handler ID: OHR000126433);
- Tronair (Handler ID: OHD987047172);
- Grand Aire (Handler ID: OHR000036657);
- Toledo Public Schools (Handler ID: OHD987043551);
- Aeroquip Corp (Handler ID: OHD986998086);
- Toledo Citation Service Center (Handler ID: OHD987021367);
- Dana Flight Operations (Handler ID: OHR000004754);
- National Flight Services (Handler ID: OHR000011759);
- Standard Industrial Painting (Handler ID: OHR000042333);
- Toledo Air Associates, Inc. (Handler ID: OHD982608820);
- Continental Express (Handler ID: OHD987042694);
- Toledo Fire Training Burn Building (Handler ID: OHR000034801);
- Toledo Lucas Co Port Authority (Handler ID: OHR000000398);
- TSA (Transportation Security Administration (Handler ID: OHR000120170);
- AIR BP – Eugene F. Kranz Toledo Express Airport (Handler ID: OHD000817775);
- Marad Fire Training Center (Handler ID: OHD987057502);
- USAF 180th Fighter Wing Air National Guard (Handler ID: OH5570028436)

There are no Superfund sites on airport property. The closest Superfund site to airport property, DSC McLouth Steel Gibraltar Plant (Site EPA ID: MIN000510362), is located approximately fifty-two miles northeast of the airport.[22]

1.11.7.2 Solid Waste

Solid waste generated at the airport is primarily sent to the Hoffman Road Landfill in Lucas County or alternatively, the Vienna Junction Landfill along the Ohio/Michigan border. The Hoffman Road Landfill in Lucas County is about twenty-three miles northeast of the airport in Toledo and the Vienna Junction Landfill is about twenty-five miles northeast of the airport along the Ohio/Michigan border. In 2021, the Ohio EPA approved a capacity expansion of the Hoffman Road Landfill which will provide 39 years of

[21] U.S. Environmental Protection Agency, Envirofacts, RCRA Info. Accessed: https://www3.epa.gov/enviro/facts/rcrainfo/search.html, March 2022.

[22] U.S. Environmental Protection Agency, Superfund, National Priorities List, Ohio. Accessed: https://www.epa.gov/superfund/search-superfund-sites-where-you-live#map, May 2022.

additional life expectancy based on the current average daily waste receipts of 611 tons per day by the landfill. [23]

1.11.7.3 Pollution Prevention

The airport operates under the National Pollutant Discharge Elimination System Permit (NPDES) General Permit (OHR000007) for stormwater discharge associated with industrial. This permit expires on May 31, 2027. The Authority also maintains an Oil Discharge Contingency Plan, an Integrated Spill Prevention, Control and Countermeasures (SPCC) Plan, and a Stormwater Pollution Prevention Plan (SWPPP) for the airport. These plans provide detailed procedures to follow in the unlikely event of a spill to minimize potential effects to the surrounding environment.

1.11.8 Historical, Architectural, Archaeological, and Cultural Resources

The National Historic Preservation Act (NHPA) (54 U.S.C. §§300101 et seq.) establishes the Advisory Council on Historic Preservation (ACHP). The ACHP oversees federal agency compliance with the NHPA. The NHPA also established the National Register of Historic Places (NRHP) that the National Park Service (NPS) oversees. Other applicable statues and EOs include:

- American Indian Religious Freedom Act (42 U.S.C. § 1996)
- Antiquities Act of 1906 (54 U.S.C. §§320301-320303)
- Archeological and Historic Preservation Act (54 U.S.C. §§ 312501-312508)
- Archeological Resources Act (16 U.S.C. §§ 470aa-470mm)
- USDOT Act, Section 4(f) (49 U.S.C. § 303)
- Historic Sites Act of 1935 (16 U.S.C. §§ 461-467)
- Native American Graves Protection and Repatriation Act (25 U.S.C. §§ 3001-3013)
- Public Building Cooperative Use Act (40 U.S.C. §§ 601a, 601a1, 606, 611c, and 612a4)
- EO 11593, *Protection and Enhancement of the Cultural Environment* (36 FR 8921)
- EO 13006, *Locating Federal Facilities on Historic Properties in Our Nation's Central Cities* (61 FR 26071)
- EO 13007, *Indian Sacred Sites* (61 FR 26771)
- EO 13175, *Consultation and Coordination with Indian Tribal Governments* (65 FR 67249)
- Executive Memorandum, Government-to-Government Relations with Native American Tribal Governments (April 29, 1994)
- Executive Memorandum on Tribal Consultation (Nov. 5, 2009) (65 FR 67249); and
- USDOT Order 5650.1, *Protection and Enhancement of the Cultural Environment.*

Coordination with the Ohio State Historic Preservation Office (OSHPO) in accordance with Section 106 of the National Historic Preservation Act is required as part of a project's environmental analysis. Other authorities, such as the American Indian Religious Freedom Act (AIRFA) and Executive Order 12898, may also require consideration of other resource types for considering all aspects of the environment.

[23] Lucas County, Solid Waste Management Plan Update. Accessed: https://www.co.lucas.oh.us/2193/Solid-Waste-Management-Plan-Update, May 2022.

The closest National Register of Historic Places (NRHP)-listed resource is the Fallen Timbers Battlefield and Fort Miamis (west of Maumee on U.S. Route 24), about nine miles southeast of the airport.[24] There are no known historical, architectural, archaeological, and cultural resources located on the airport property. However, the OSHPO designates the area in which the airport is located as the Oak Openings Region of northwest Ohio. Some of the last Ottawa villages in Ohio lined the banks of Swan Creek approximately two miles to the west during the 1830s. Therefore, there is a potential for undiscovered cultural resources on the airport property.[25]

1.11.9 Land Use

Various statutes, regulations, and EOs relevant to land use include:

- The Airport and Airway Improvement Act of 1982, and subsequent amendments (49 U.S.C. 47107(a)(10));
- The Airport Improvement Program (49 U.S.C. 47106(a)(1);
- The Airport Safety, Protection of Environment, Criteria for Municipal Solid Waste Landfills (40 CFR § 258.10); and
- State and local regulations

As described in **Section 1.3.2 *Land Use / Zoning*,** land use of an airport controls the location, type, and intensity of new urban land uses and prevents incompatible land use from locating near the approach and departure paths for an airport. Rural zoning in Ohio is controlled through either counties or townships.

While the airport is in Lucas County, the County does not have zoning regulation powers but instead has authorized the Board of Township Trustees to administer zoning rules and regulations. The airport is located immediately adjacent to the townships of Harding, Spencer, Springfield, Monclova, and Swanton (see **Section 1.3.2*, Land Use / Zoning*** for further details). The airport is surrounded by agricultural, industrial, commercial, and residential land uses as depicted in **Figure 1-9 in Section 1.3.2*, Land Use / Zoning***.

Similarly, on-airport development control ensures compatible operations are grouped while operations that may conflict are kept separate. The airport land use plan includes aeronautical development sectors reserved for general aviation, commercial, and cargo expansion. Additionally, areas for airfield operations and support facilities are established by the Authority to ensure the compatible development of airport stakeholders with those facilities critical to the operation of the airport (see **Figure 1-10 in Section 1.3.2*, Land Use / Zoning*** for further details).

1.11.10 Natural Resources and Energy Supply

Statutes and EOs that are relevant to natural resources and energy supply include:

[24] U.S. National Park Service, National Register of Historic Places. Accessed: https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466, May 2022.

[25] Ohio State Historic Preservation Office, Ohio History Connection. Accessed: https://gis.oshpo.org/Html5Viewer/Index.html?configBase=https://gis.oshpo.org/Geocortex/Essentials/OMS/REST/sites/OHC/viewers/OHS_hv/virtualdirectory/Resources/Config/Default#6, May 2022.

- Energy Independence and Security Act (42 U.S.C. § 17001 et seq.);
- Energy Policy Act (42 U.S.C. § 15801 et seq.);
- EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (72 FR 3919); and
- EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (74 FR 52117).

Natural resources (e.g., water, asphalt, aggregate, etc.) and energy use (e.g., fuel, electricity, etc.) at an airport is a function of the needs of aircraft, support vehicles, airport facilities, support structures, and terminal facilities. Airport personnel and tenants regularly use consumable materials to maintain various airside and landside facilities and services. Those materials may include asphalt, concrete, aggregate for sub-base materials, various metals associated with such maintenance, and fuels associated with the operation of aircraft and vehicles.

Energy use at the airport is primarily in the form of electricity required for the operation of airport-related facilities (e.g., terminal building, hangars, airfield lighting) and fuel for aircraft, aircraft support vehicles/equipment, and airport maintenance vehicles/equipment. Electrical power is necessary to keep the airport operational and safe. The airport receives electricity supplies from Toledo Edison Power Company, which owns and maintains the electric distribution system within Lucas County.[26] The airport receives natural gas from the Ohio Gas Company. [27] None of the natural resources that the airport uses, or has used, are in rare or short supply (see **Section 1.9.8*, Utilities*** for further details).

1.11.11 Noise and Noise-Compatible Land Use

Statutes and EOs relevant to noise and noise-compatible land use include:

- The Control and Abatement of Aircraft Noise and Sonic Boom Act of 1968 (49 U.S.C. § 44715)
- The Noise Control Act of 1972 (42 U.S.C. §§ 4901-4918)
- Aviation Safety and Noise Abatement Act of 1979 (49 U.S.C. § 47501 et seq.)
- Airport and Airway Improvement Act of 1982 (49 U.S.C. § 47101 et seq.)
- Airport Noise and Capacity Act of 1990 (49 U.S.C. §§ 47521-47534, §§ 106(g)
- Section 506 of the FAA Modernization and Reform Act of 2012, *Prohibition on Operating Certain Aircraft Weighting 75,000 Pounds of Less Not Complying with Stage 3 Noise Levels* (49 U.S.C. §§ 47534); and
- State and local noise laws and ordinances.

Day-Night Sound Level (DNL) is based on sound levels measures in relative intensity of sound, (decibels or dB) on the "A-weighted scale" or dBA over a time-weighted average normalized to a 24-hour period.[28] DNL has been widely accepted as the best available method to describe aircraft noise exposure. The

[26] Ohio Public Utilities Commission, Electrical Certified Territories. Accessed: https://maps.puc.state.oh.us/portal/apps/webappviewer/index.html?id=c46ca6c346434bfb87d3aa9a4f9b57a7, May 2022.
[27] Ohio Gas Company, Service Map. Accessed: https://www.ohiogas.com/home.aspx?=service, May 2022.
[28] Federal Aviation Administration, *Technical Support for Day/Night Average Sound Level (DNL) Replacement Metric Research, Final Report*, June 14, 2011. Accessed: May 2021.

USEPA identifies the DNL as the principal metric for airport noise analysis. The FAA requires DNL as the noise descriptor for use in aircraft noise exposure analysis and noise compatibility planning. DNL levels are commonly shown as lines of equal noise exposure, like terrain contour maps, referred to noise contours. All residential areas are considered compatible with a cumulative noise level below DNL 65 dB.

1.11.12 Socioeconomic, Environmental Justice, and Children's Environmental Health and Safety Risks

The primary considerations of socioeconomics analysis are the economic activity, employment, income, population, housing, public services, and social conditions of the area. The Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970 (42 U.S.C. § 61 et seq.), implemented by 49 CFR Part 24, is the primary statute related to socioeconomic impacts. Statutes, EOs, memorandums, and guidance that are relevant to environmental justice and children's environmental health and safety risks include:

- Title VI of the Civil Rights Act, as amended (42 U.S.C. §§ 2000d-2000d-7);
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629);
- Memorandum of Understanding on Environmental Justice and EO 12898;
- USDOT Order 5610.2(a), Environmental Justice in Minority and Low-Income Populations (77 FR 27534);
- CEQ Guidance: *Environmental Justice: Guidance Under the National Environmental Policy Act*;
- Revised USDOT Environmental Justice Strategy (77 FR 18879); and
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885).

The airport location is divided within Census Tract 90.1, Block Group 2 and Census Tract 95, Block Group 3. These census tracts were used to describe the socioeconomic and environmental justice characteristics in the airport area compared to Lucas County, and the State of Ohio (see **Table 1-22**). Census data was obtained from the U.S. Census Bureau 2020 American Community Survey 5-Year Estimates and 2020 Decennial Census Data.

TABLE 1-22
SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE CHARACTERISTICS

Characteristic	Census Tract 90.1, Block Group 2	Census Tract95, Block Group 3	Lucas County	Ohio
Total Population	4,811	2,830	420,716	11,799,448
Percent Minority	10.9%	7.6%	31.5%	5.7%
Percent Living Below the Poverty Level	2.9%	7.9%	18.7%	13.6%
Percent of the population below 18 Years of Age	28.7%	10.7%	23.09%	19.1%
Total Housing Units	1,790	1,227	200,147	5,242,524
Persons per Household	2.71	2.40	2.32	2.41

Sources: U.S. Census Bureau, 2020 ACS 5-Year Estimates; U.S. Census Bureau, 2020 Decennial Census; Prepared by RS&H, 2022

Regarding children's environmental health and safety risks, the closest school in Lucas County to the airport is the Aerospace & Natural Science Academy of Toledo, located on the airport campus.[29] The school serves high school students and offers aviation certification. The closest off-airport school campus is Crissey Elementary School, located approximately 2.5 miles northeast of the airport. The school lies outside the DNL 65 dBA noise contour and arrival/departure path for Runway 7-25. Approximately 3.5 miles northeast of the airport is the Children's Discovery Center Daycare. The Daycare is located in close proximity to the extended Runway 7-25 centerline within the village of Holland. Additional locations in which children are likely to congregate include Holland Elementary School, Springfield Junior High School, and Springfield High School located approximately six miles from the airport and along the extended Runway 7-25 centerline within the village of Holland.

1.11.13 Visual Effects

There is no federal statutory or regulatory requirement for adverse effects resulting from light emissions or visual impacts. FAA Order 1050.1F describes factors to consider within light emissions and visual resources/visual character. A project's potential impact from light emissions include the annoyance or interference with normal activities, as well as effects to the visual character of the area due to light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources.

Various lighting features currently illuminate airport facilities, such as the airfield (e.g., runways and taxiways), buildings, access roadways, automobile parking areas, and apron areas for the safe and secure movement of people and vehicles (e.g., aircraft, passenger cars, etc.). The closest light sensitive area is a rural residential area about 2,100 feet southeast of Runway 16-34.[30]

Structures at the airport include, but are not limited to, fixed base operators, hangars, education facility, the air traffic control tower, terminal, and maintenance buildings. As previously described, the airport is

[29] U.S. Environmental Protection Agency, NEPAssist, Schools. Accessed: https://nepassisttool.epa.gov/nepassist/nepamap.aspx?wherestr=tol+airport, May 2022.
[30] U.S. Environmental Protection Agency, NEPAssist. Accessed: https://nepassisttool.epa.gov/nepassist/nepamap.aspx?wherestr=tol+airport, May 2022.

zoned as Airport District and is developed with visual character that is consistent with this zoning. Rural residential properties south of the airport property may have a direct line of site with airport and its operations; however, vegetation limits residents' line of sight.

1.11.14 Water Resources

Water resources include wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers. These resources typically function as a single, integrated natural system that are important in providing drinking water in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems.

1.11.14.1 Wetlands

Statutes and EOs that are relevant to wetlands include:

- EO 11990, *Protection of Wetlands* (42 FR 26961);
- Clean Water Act (33 U.S.C. §§ 1251-1387);
- Fish and Wildlife Coordination Act (16 U.S.C. § 661-667d) ; and
- USDOT Order 6660.1A, *Preservation of the Nation's Wetlands*.

The Clean Water Act defines wetlands as "…those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." [31] Wetlands have three necessary characteristics:

- Water: presence of water at or near the ground surface for a part of the year;
- Hydrophytic Plants: a preponderance of plants adapted to wet conditions; and
- Hydric Soils: soil developed under wet conditions.

According to the USFWS National Wetland Inventory (NWI) there are wetlands throughout airport property (see **Figure 1-27**).[32] Wetland types present at the airport include Freshwater Emergent, Freshwater Forested/Shrub, and Freshwater Pond.

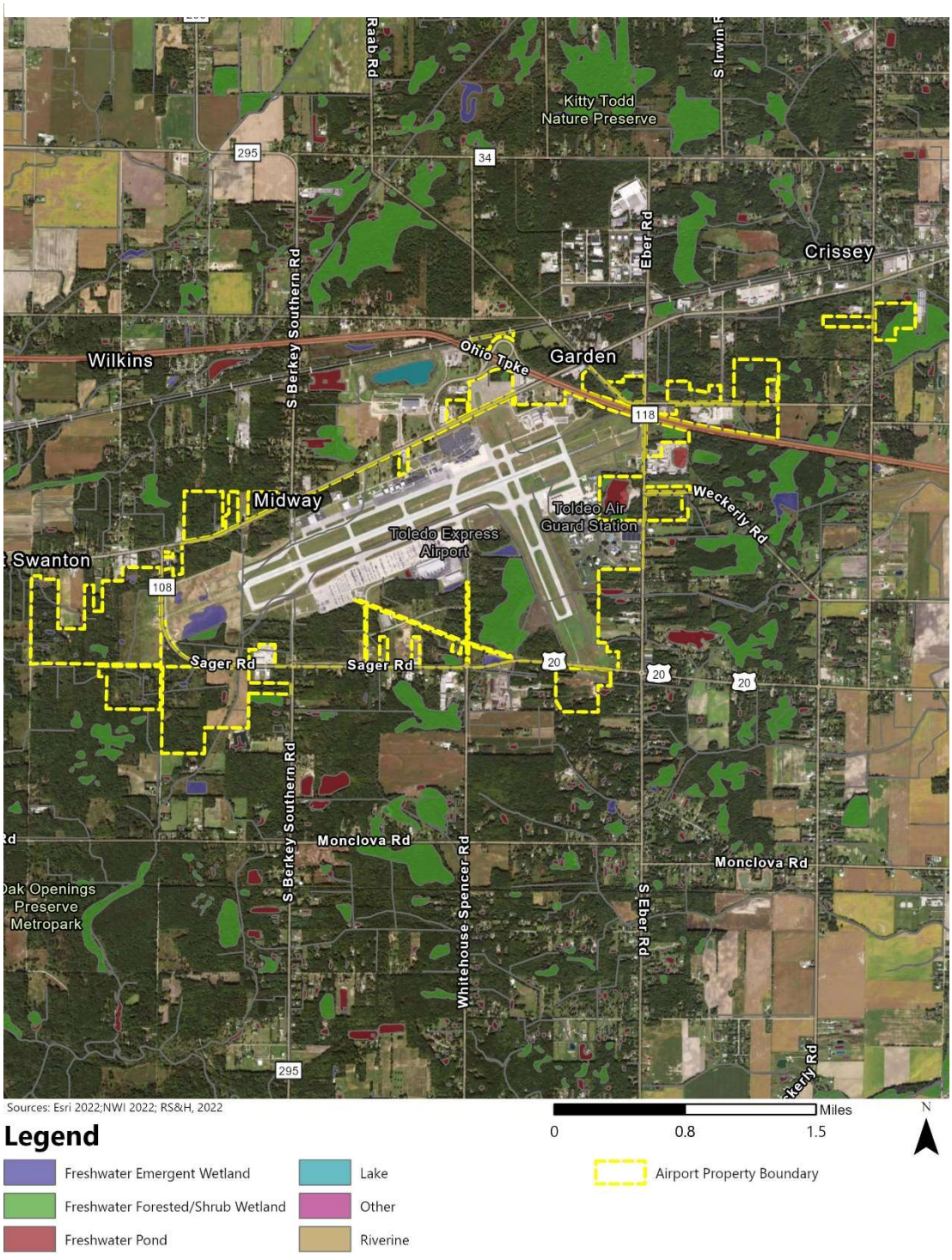
1.11.14.2 Floodplains

Statues and EOs that are relevant to floodplains include:

- EO 11988, *Floodplain Management* (42 FR 26951);
- National Flood Insurance Act (42 U.S.C. § 4001 et seq.); and
- U.S. Department of Transportation (USDOT) Order 5650.2, *Floodplain Management and Protection*.

[31] U.S. Environmental Protection Agency, Section 404 of the Clean Water Act. Accessed: https://www.epa.gov/cwa-404/section-404-clean-water-act-how-wetlands-are-defined-and-identified, May 2022.
[32] U.S. Fish and Wildlife Services, National Wetlands Inventory. Accessed: https://www.fws.gov/wetlands/data/mapper.HTML, May 2022.

FIGURE 1-27
WETLANDS AT AND IN THE VICINITY OF THE AIRPORT



Floodplains are "…lowland areas adjoining inland and coastal water which are periodically inundated by flood waters, including flood-prone area of offshore islands." Floodplains are often referred to in terms of

the 100-year floodplain, rather, the one percent chance of a flood occurring in any given year. The USDOT Order 5650.2 outlines the policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests. Therefore, the objective is to avoid, to the extent practicable, any impacts within the 100-year floodplain. FEMA defines a "regulatory floodway" as "the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height."[33]

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) encompassing the airport, there are floodplains on airport property (see **Figure 1-28**).[34] Portions of the airport are within the 100-year floodplain and regulatory floodway, as well as the 500-year flood area.

1.11.14.3 Surface Waters

Statues that are relevant to surface water include:

- Clean Water Act (33 U.S.C. §§ 1251-1387);
- Fish and Wildlife Coordination Act (16 U.S.C. § 661-667d); and
- Rivers and Harbors Act (33 U.S.C. § 401 and 403).

Surface waters include areas where water collects on the surface of the ground, such as streams, rivers, lakes, ponds, estuaries, and oceans.

Gale Run flows from the north through the airport property through a series of culverts along Taxiway B and underneath Runway 7-25 (see **Figure 1-29**).[35]

1.11.14.4 Groundwater

Statues relevant to groundwater include:

- Safe Drinking Water Act (42 U.S.C. §§ 300(f)-300j-26).

Groundwater is described as the "subsurface water that occupies the space between sand, clay, and rock formations."[36] The airport is located within the Ai Creek watershed (HUC 12 ID: 041000090701), Gale Run-Swan Run watershed (HUC 12 ID: 041000090703), and the Wolf Creek watershed (HUC 12 ID: 041000090803).[37]

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[33] Federal Emergency Management Agency, Glossary. Accessed: https://www.fema.gov/about/glossary, May 2022.
[34] Federal Emergency Management Agency, Flood Map Service Center, Flood Insurance Rate Map 39095C0205E (effective August 16, 2011), 39095C0206E (effective August 16, 2011), 39095C0208E (effective August 16, 2011). Accessed: https://msc.fema.gov/portal/search#searchresultsanchor, May 2022.
[35] U.S. Environmental Protection Agency, NEPAssist, Water. Accessed: https://nepassisttool.epa.gov/nepassist/nepamap.aspx?wherestr=tol+airport, May 2022.
[36] Federal Aviation Administration, *1050.1F Desk Reference*, Section 14.4 Groundwater.
[37] U.S. Environmental Protection Agency, NEPAssist, Water, Watersheds (HUC 12). Accessed: https://nepassisttool.epa.gov/nepassist/nepamap.aspx?wherestr=tol+airport, May 2022

FIGURE 1-28
FLOODPLAINS

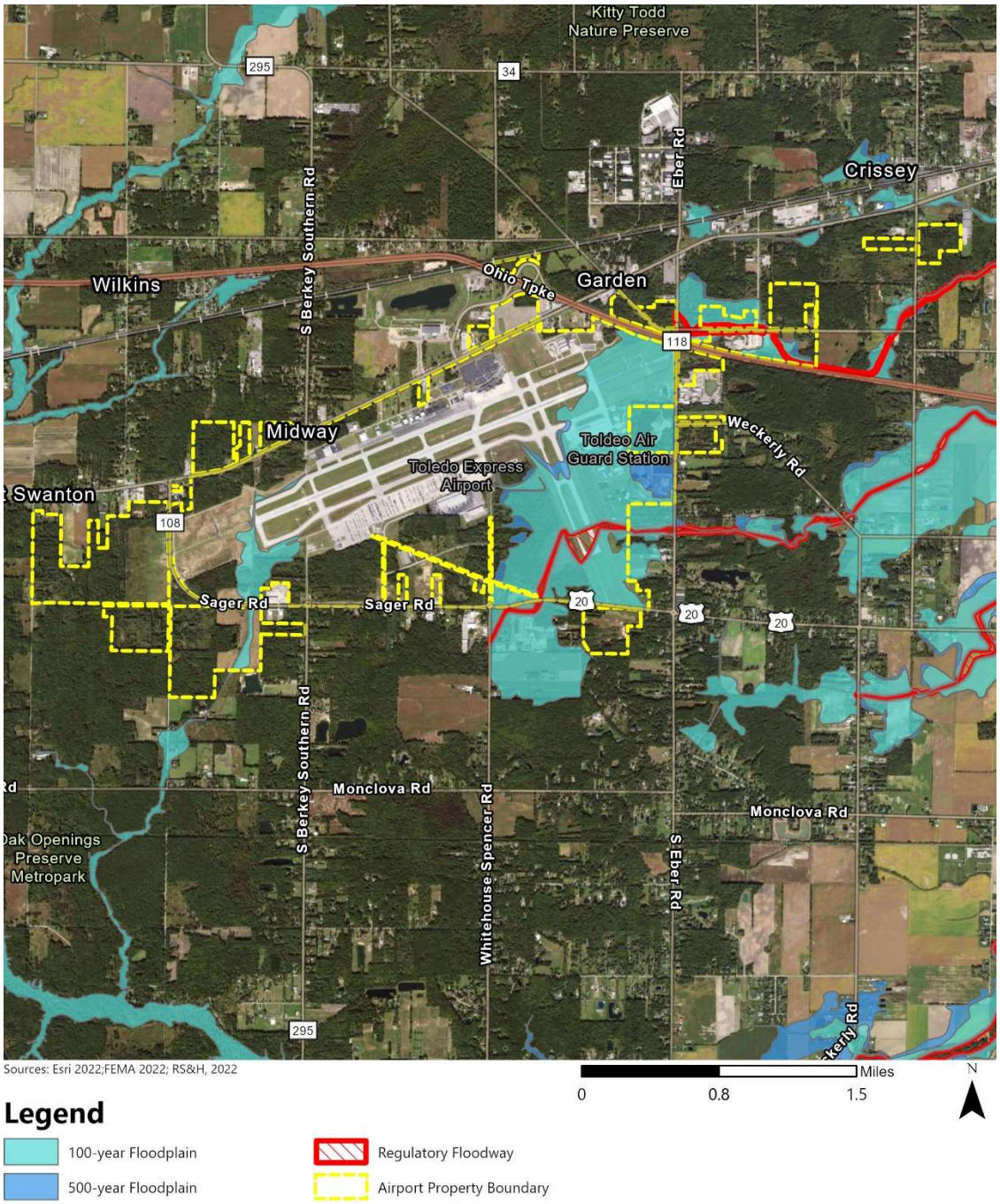
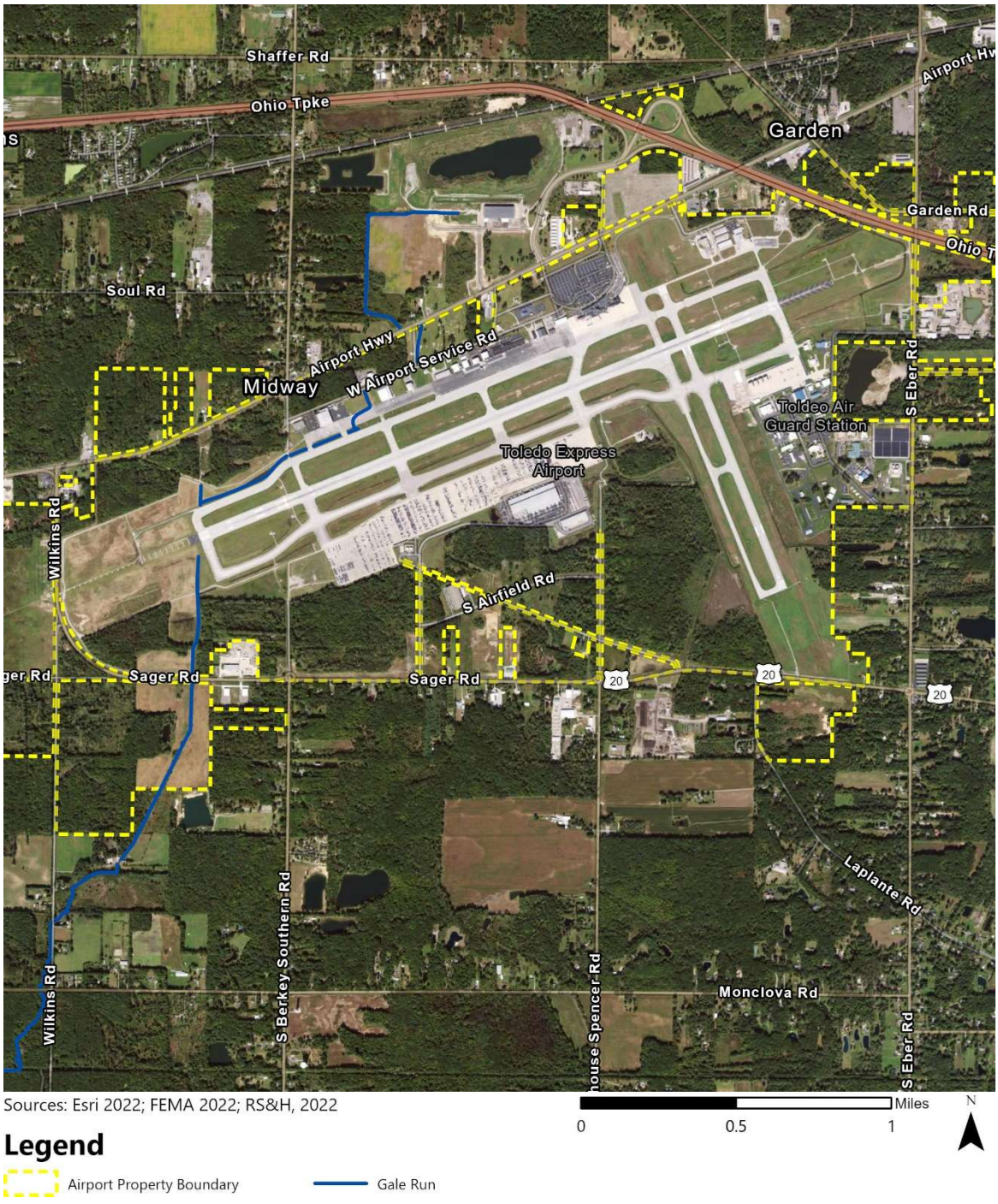


FIGURE 1-29
SURFACE WATERS



The City of Toledo draws water from Lake Erie and provides water to part of Lucas County, including the airport. [38] [39] According to the Ohio EPA, Division of Drinking and Ground Waters, there is one public groundwater approximately 1.2 miles southwest of the airport property which provides water to Swanton Village (PWS ID: OH2601011).[40]

1.11.14.5 Wild and Scenic Rivers

Statues relevant to wild and scenic rivers include:

- Wild and Scenic Rivers Act (16 U.S.C. §§ 1271-1278).

Wild and scenic rivers are defined as "outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations."[41] There are no wild and scenic rivers or river segments within airport property.[42] The closest wild and scenic river, the White Clay Wild and Scenic River, is over ninety-five miles southwest of the airport. The closest river on the Nationwide River Inventory (NRI) is the Sandusky River located over forty-five miles southeast of the airport.[43]

[38] U.S. Environmental Protection Agency. LCE Public Utilities Map Viewer. Accessed: https://lcenggis.co.lucas.oh.us/gisengportal/apps/View/index.html?appid=7451c8be544a4c5ba36ae1e0630195b6, May 2022.
[39] Lucas County Engineer's Office. Accessed: https://enviro.epa.gov/enviro/sdw_form_v3.create_page?state_abbr=OH, May 2022.
[40] Ohio EPA, Division of Drinking and Ground Waters. Ohio's Drinking Water Source Protection Areas. Accessed: https://oepa.maps.arcgis.com/apps/webappviewer/index.html?id=3b39e11ba7fc43c3b41801e3580e6d21, May 2022.
[41] National Wild and Scenic Rivers System, About the WSR Act. Accessed: https://www.rivers.gov/wsr-act.php, May 2022.
[42] U.S. Environmental Protection Agency, NEPAssist, Water, Wild and Scenic Rivers. Accessed: https://nepassisttool.epa.gov/nepassist/nepamap.aspx?wherestr=tol+airport, May 2021.
[43] U.S. National Park Service, Interactive Map of Nationwide River Inventory. Accessed: https://www.nps.gov/maps/full.html?mapId=8adbe798-0d7e-40fb-bd48-225513d64977, May 2022.