

AIRPORT AREA STRATEGIC LAND USE PLAN



**TOWN OF ZIONSVILLE, IN
HAMILTON COUNTY AIRPORT AUTHORITY
ADOPTED JANUARY 18, 2022**

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ACKNOWLEDGMENTS

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EXECUTIVE SUMMARY

INTRODUCTION

The Town of Zionsville has experienced significant growth over the last two decades. Residential development continues to expand outward from the Zionsville Village and is now reaching into the southern portion of Union Township.

The same factors that make Zionsville a desirable place to live are also making the Indianapolis Executive Airport (Airport, TYQ, or KTYQ) an attractive location for air travel. This has resulted in the steady growth of the airport.

However, it is increasingly apparent that adjacent land development and Airport operations can result in conflicting priorities, hence the reason that the Town and the Airport have identified a need to address these concerns.

A map of the Town of Zionsville, the Airport and the Study Area for this plan is provided to the right. **(Figure 1.1)**

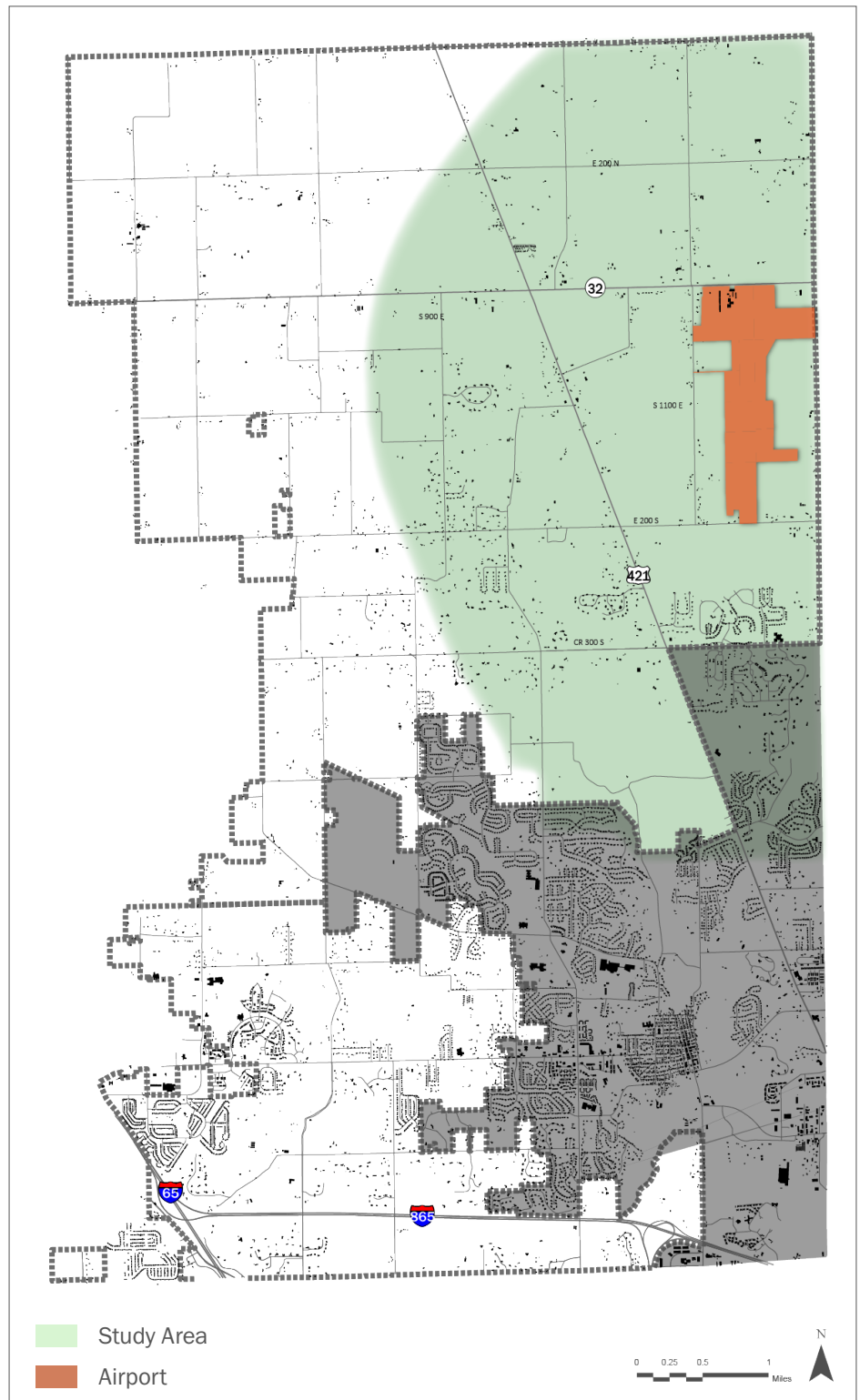


FIGURE 1.1 MAP OF ZIONSVILLE AND STUDY AREA

Airport Background

The Airport is classified as a National Airport per FAA classifications. This means that the Airport will remain focused on serving smaller jets, and multi-engine and single engine aircraft – the same fleet mix of aircraft that are currently operating at the airport today. This includes charter flights, corporate travel, recreational activities, and training flights.

As a result of steady growth, the Airport established a long-range master plan in 2008 to enhance safety for its users. This includes an extension of its runway (Runway 18/36) that is scheduled to open in 2022. There is a misconception that the runway extension would allow larger aircraft to land. This simply is not the case. Landing larger aircraft requires a thicker pavement to increase the load bearing capacity, and there are no short- or long-term plans to increase the load bearing capacity of the runway.

Plan Intent

Recognizing that it is important to be proactive in making land use decisions before conflicts become more significant, the Town of Zionsville and the Hamilton County Airport Authority/ Indianapolis Executive Airport jointly commissioned this Strategic Future Land Use Plan for the area surrounding the Airport.

This plan is intended to build off land use policies in Zionsville’s Comprehensive Plan and provide more specific guidance for land use decisions in areas surrounding the airport by:

- Supporting appropriate long-term development that meets Zionsville’s community and economic development goals.
- Sustaining the Airport as an economic engine for Zionsville and surrounding areas.

Ultimately, achieving these two goals requires identifying land uses that are complementary in type and intensity to airport operations and that support Zionsville’s quality of place goals.

It is important to understand that this is not a plan to push short-term development in the area. This is not possible because the utility infrastructure is not in place to support it. Rather, this is a long-term policy plan to supplement the Comprehensive Plan and to guide land use decisions as development pressures reach this area.

KEY CONSIDERATIONS

Planning for this area is influenced by several key issues and opportunities. Each of these were evaluated and are reflected in the final recommendations for the future land use plan. These considerations are summarized in the following paragraphs.

Existing Development in Overflight Areas

In preparing this plan, the Town and Airport recognize that some development has already occurred in areas close to the airport. In particular, the residents from the Brookhaven and Fieldstone neighborhoods south of the Airport have expressed concerns about aircraft flying low over their homes, the frequency of aircraft overflight, and associated noise concerns. During public meetings, they voiced concern that the runway extension could make these issues more significant.

Both the Town and Airport understand the residents' concerns. Accordingly, it is very important to provide clarifications regarding the intent of this plan, as well as the intent of the runway extension, including:

1. This plan is intended to guide land use decisions around the airport.
2. The runway extension project is intended to improve aircraft safety.
3. The Airport has no short- or long-term plans to allow, on a regular basis, larger aircrafts than business jets, nor is it supported by the FAA.
4. The Airport has no short- or long-term plans to start commercial passenger service, nor is it supported by the FAA.

New Development in Overflight Areas

During public meetings, residents in existing overflight areas strongly recommended against further development of similar areas, to avoid others being put in their own situations.

Nonetheless, some areas south of the existing runway are currently zoned to allow residential development. The zoning decisions were made by Boone County, prior to this area being incorporated into the Town of Zionsville's jurisdiction.


Since the rough draft of this document was published, the Zionsville Plan Commission has approved a proposed development in the flight path south of the Airport. Although development was not desired at this site, the Plan Commission had no legal grounds to reject the development proposal since it had the required zoning.

Approval of this development is a unique situation, and is not intended to set a precedent. The goal remains that development in overflight areas should be prohibited.

Compatible Land Uses

While Zionsville's current Comprehensive Plan acknowledges that an array of issues must be reviewed when considering development near the Airport, the written guidance remains broad. Additional direction and clarity is needed to evaluate land use decisions near the airport to ensure compatibility.

One key purpose of this plan is to identify land uses that can co-exist with an adjacent airport. In general, the main compatibility concerns are tall structures/vegetation, density/concentrations of



people, noise sensitivity, visual obstructions and wildlife attractants.

For areas closest to the airport and runways, this plan recommends open space, agriculture and agri-businesses uses. The next tier of development could also include commercial uses and employer sites.

Residential Development Compatibility

This plan has established four tiers of residential development intensity around the airport. As outlined in Figure 1.2, the plan discourages all residential in areas closest to the airport or along flight paths. In the second tier, there is some existing residential that should not be expanded. In the third tier, multi-family and single-family attached housing can be considered. New single-family residential (detached) should be limited to areas in Tier 4.

Economic Development Sites

Another key question for this plan has been if there is land within the study area that is appropriate for creating employer sites for economic development.

Notably, the Airport is already a major economic engine for Zionsville and surrounding areas, contributing over \$430,000,000¹ to the local economy on an annual basis. A fundamental economic development strategy is to build around assets. Here, there is a significant opportunity to create employer sites that take advantage of the Airport. These sites could target travel intensive businesses, advanced manufacturing with small-scale aviation-driven logistics requirements or aviation related industries. Sites are also attractive because they could be provided with direct access to the runway.

Any development within the study area should be made compatible within the adjacent rural area.

Appropriate development should be low-rise and have all operations fully enclosed, with quality architecture and generous open space. Large scale warehousing or logistics operations would not be appropriate, nor would heavy industrial operations.

Airport Village

In the medium- to long-term, the most likely area for commercial growth is the U.S. 421 and S.R. 32 intersection. In particular, the S.R. 32 corridor is envisioned as the primary east-west corridor through the study area and could develop into a critical regional transportation corridor.

The development strategy for this commercial zone is built around the idea of an Airport Village. This district is envisioned as a vibrant mixed-use district that will attract new businesses and professionals to the area. It will consist of a traditional mixed-use urban center with two and three-story office, retail, commercial and upper floor residential areas. Airport related businesses will be encouraged, but it should serve both the aviation industry and community at-large. Density should be modeled after the existing Zionsville Village so that it is compatible with the Town's overall development goals outlined in the Comprehensive Plan.

1 2012 Indiana Airports Economic Impact Study

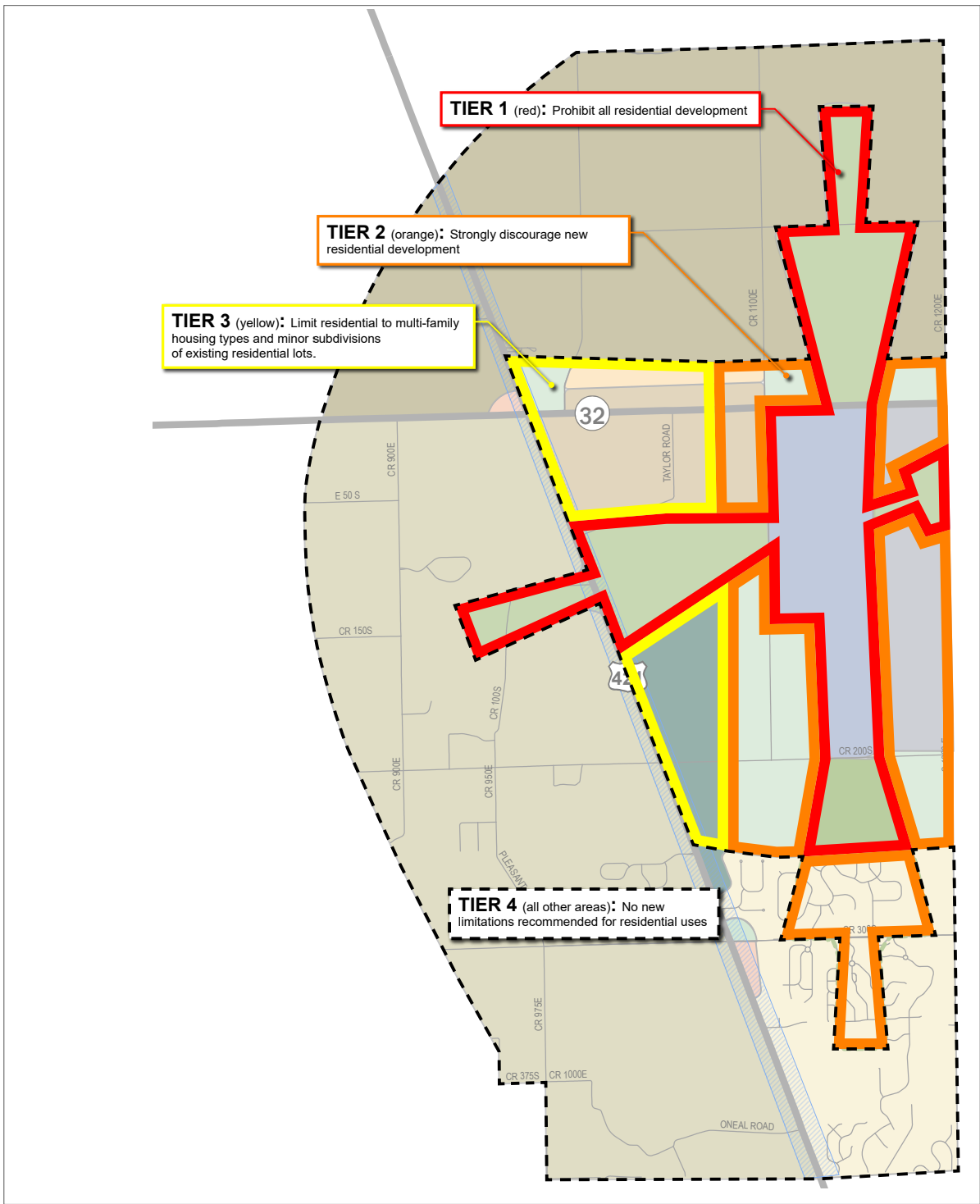


FIGURE 1.2 RESIDENTIAL DEVELOPMENT COMPATIBILITY MAP



KEY RECOMMENDATIONS

Ultimately the considerations described previously served as the foundation for developing the final recommendations and associated future land use map. These recommendations are summarized below.

- 1. Support Airport Plans to Improve Safety:** This plan is based on the premise that runway improvements should be intended for aircraft safety, and not to enable larger aircraft to land at the Airport or change the fleet mix of aircraft that use the Airport today.
- 2. Protect Against New Development in Overflight Areas:** Undeveloped areas in the flight path south of CR 200 S should remain agricultural/open space. The Town and Airport will need to work together to rezone the land and/or the Airport will need to acquire the property.
- 3. Encourage Land Uses per the Included Future Land Use Map:** The new future land use map is shown in Figure 1.3 (page 12) of the Executive Summary.
- 4. Implement a Zoning Overlay District:** A new zoning overlay district should be implemented to enact the recommendations of this plan.
- 5. Support the Development of an Employer Sites District:** The area east of the Airport should be reserved for the creation of future employer sites. The architecture of the district should be designed to complement the airport and surrounding rural landscape.
- 6. Support the Development of an Airport Village Mixed Use District:** Land at the southeast corner of U.S. 421 and S.R. 32, extending east to the Airport, should be reserved for the future creation of the Airport Village Mixed Use District.

Future Land Use Map

The Future Land Use Map (Figure 1.3) identifies the recommended future land use patterns in the area surrounding the Airport. In general, the plan encourages open space and agricultural uses closest to the airport to encourage compatibility. Land uses can gradually increase in intensity as you move further away from the runways. Detailed descriptions of each district are provided in Chapter 7.

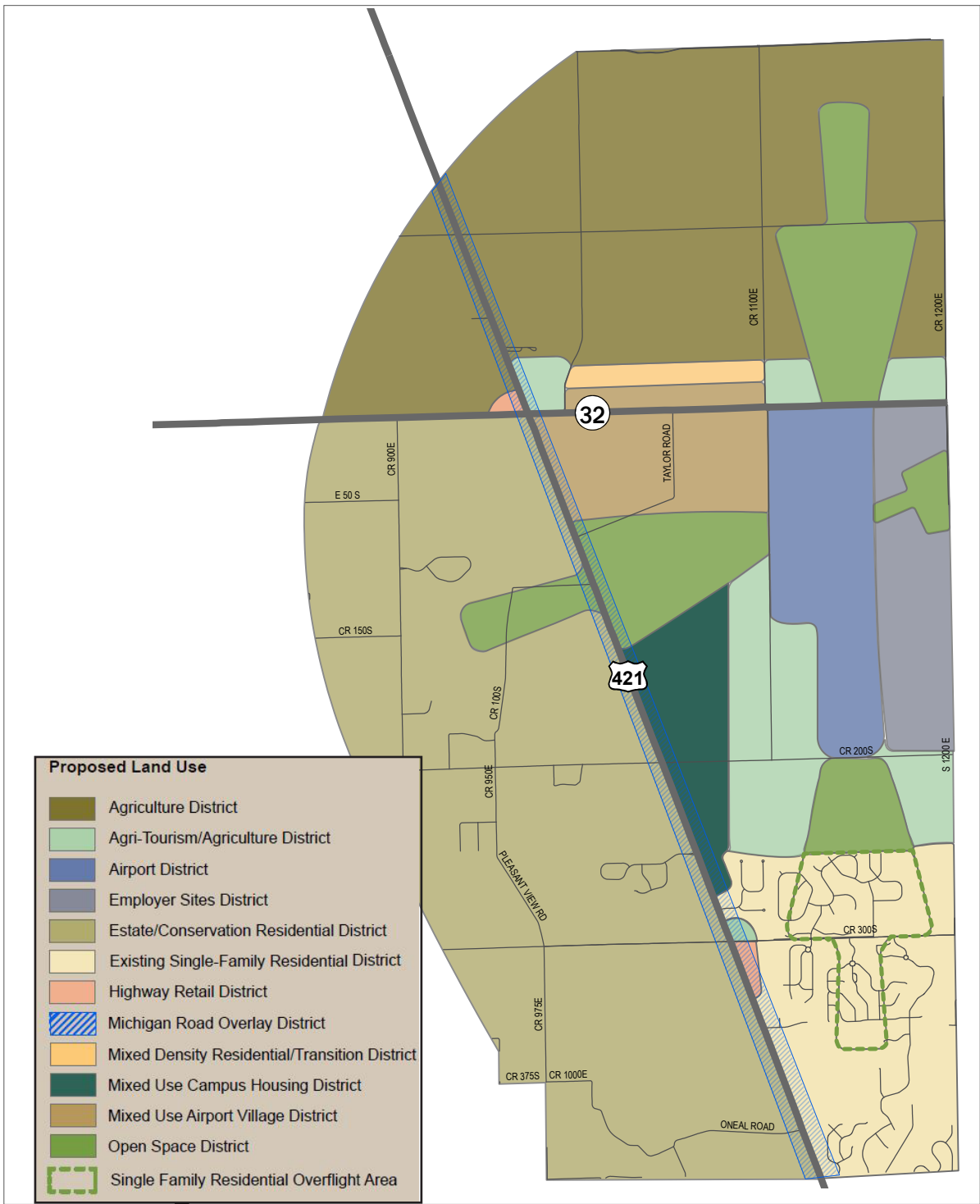


FIGURE 1.3 PROPOSED FUTURE LAND USE MAP



2



INTRODUCTION

OVERVIEW

As Zionsville's growth and development extends to the north, the Town of Zionsville and the Indianapolis Executive Airport/Hamilton County Airport Authority (Airport) have identified the need for a plan to guide land use and development decisions around the airport. This plan presents strategies to ensure compatible development in the near and long-term future.

A Shared Land Use Plan

With Zionsville's continued growth and planned Airport improvements, it is anticipated that conflicts between residential development and airport operations will increase over time. The current land use policies do not provide enough protection for residents, nor the airport. Recognizing these issues, the Town of Zionsville and the Indianapolis Executive Airport/Hamilton County Airport Authority partnered to develop a joint future land use plan for this area. This plan identifies appropriate development to serve the needs of the growing town while ensuring the long-term viability of the Airport.

Zionsville Development Trends

Zionsville is growing with development pressures pushing north along U.S. 421. Recent development proposals within the areas surrounding the Airport emphasize the need to have a clear land use plan in place. The land within Zionsville's rural service district was recently annexed into the town and utilizes Boone County's 2009 Comprehensive Plan for future land use recommendations. This future land use plan does not accurately reflect the current and projected development trends within the Study Area, therefore making land use policy revisions necessary to correspond with Zionsville's future land use and development goals.

Key Goals

- ▶ **To protect current and future Airport uses.**
- ▶ **To achieve an appropriate mix of Airport compatible development.**
- ▶ **To support Zionsville's community development, quality of life and economic development goals.**

Airport Development Trends

The Indianapolis Executive Airport is experiencing steady growth and change. Overall flight operations continue to increase and the Airport is extending its runway to provide additional safety for its users. The Federal Aviation Administration (FAA) requires that the Airport implement measures to ensure compatible development around the airport. Because of the lack of development pressures to date, few measures are currently in place. Therefore, proposed land use policy must address airport protections to ensure the future safety and viability of the airport and nearby development.

STUDY AREA

Figure 2.1 illustrates the primary focus area of this planning effort. The study area encompasses roughly 12,000 acres and is broadly defined to include the Airport restrictive boundaries within the Zionsville Rural Service Area. The primary focus within these boundaries relate to the undeveloped areas within Town of Zionsville’s jurisdiction. A more detailed explanation of how the Study Area was identified is provided in Chapter 3 of this plan.

Secondary Considerations

This plan also includes basic recommendations for portions of the operational area of the Airport located within developed areas of the Town of Zionsville’s jurisdiction. Since these areas have already been developed, they are not the primary focus of the plan. However, the general recommendations for compatible development of the Study Area should also apply to redevelopment decisions within all Part 77 Surfaces (See Chapter 3).

Limitations

The operational area for the Airport extends beyond the Town of Zionsville’s jurisdiction to the north, south and east. Because of this, the Airport will need to partner separately with Boone County, Hamilton County and Marion County authorities to address land use and development considerations beyond the Study Area.

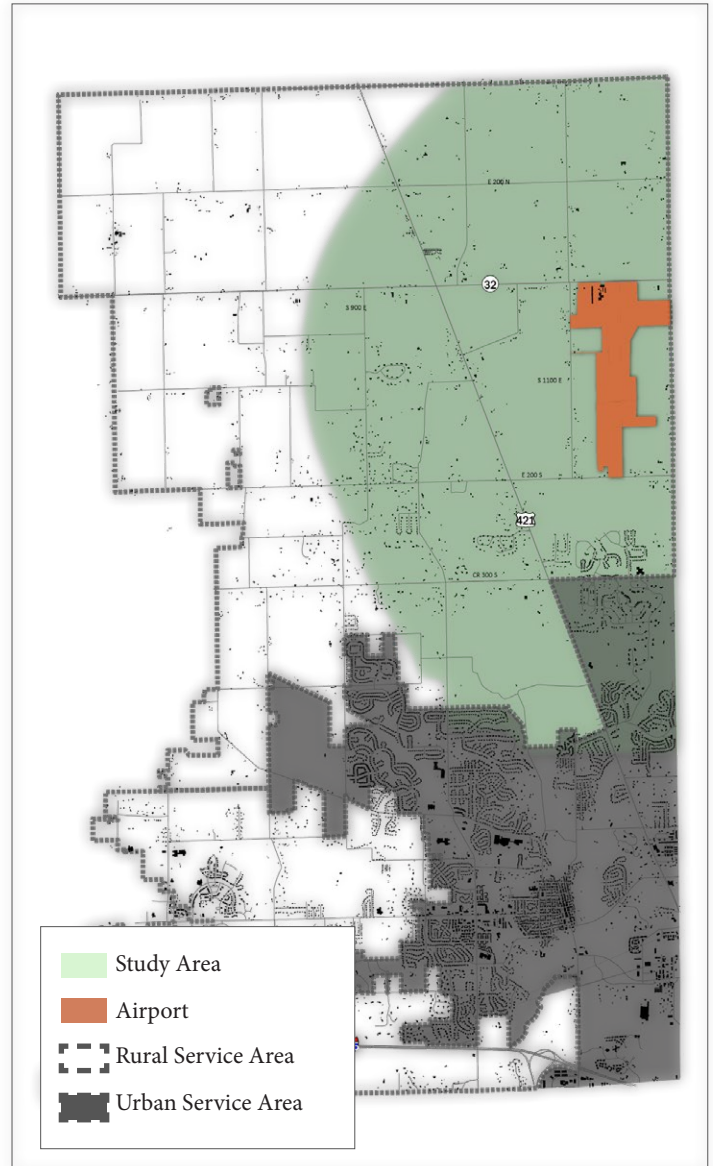


FIGURE 2.1: ZIONSVILLE STUDY AREA



PROCESS

The following is a summary of the planning process.

- ▶ **AUTHORIZATION**

This plan was jointly authorized by the Town of Zionsville and the Hamilton County Airport Authority.
- ▶ **STEERING COMMITTEE**

A steering committee was assigned to guide plan development. This committee met 4 times and consisted of 6 individuals representing both Airport and Town interests.
- ▶ **DEVELOPMENT ANALYSIS**

An analysis of land use and economic trends was completed to provide future land use recommendations for the Study Area. Key topics in this analysis include population characteristics, current development policies, economic opportunities, housing, and an evaluation of best practices.
- ▶ **STAKEHOLDER MEETINGS**

Meetings were held with various airport users to understand the existing use of the Airport and future needs. Upon completion of the draft plan, the recommendations were presented to Airport stakeholders for additional input.
- ▶ **AIRPORT ANALYSIS**

Mead & Hunt led analysis to identify the operational area of the Airport. They also provided recommendations on land use development policies supportive of airport operations.
- ▶ **PUBLIC PARTICIPATION**

An early summary of airport issues was released on July 27, 2020, along with a video presentation of findings. An open house intended for July was postponed due to COVID-19 concerns. Later, an on-line open house was held on October 6, 2020 to answer questions about the Airport's runway extension plans. Additionally, an on-line open house to discuss the plan was held on November 19, 2020. Input was collected during and following each of these events.

STUDY AREA DEMOGRAPHIC PROFILE

The following demographics provide a snapshot into the current and projected conditions for the Study Area. Esri Business analyst was used to supply this information and provide a snapshot of how the area compares to the state of Indiana and the United States. The demographics below focus on housing and population trends. A more detailed analysis is covered in Chapter 5.

KEY TRENDS

Figure 2.2 provides an overview of the annual growth rate for key economic and population indicators. These trends provide a broader look into the development pressures occurring within the Study Area. The area's projected growth rate is significantly higher than the state for all but one key indicator.

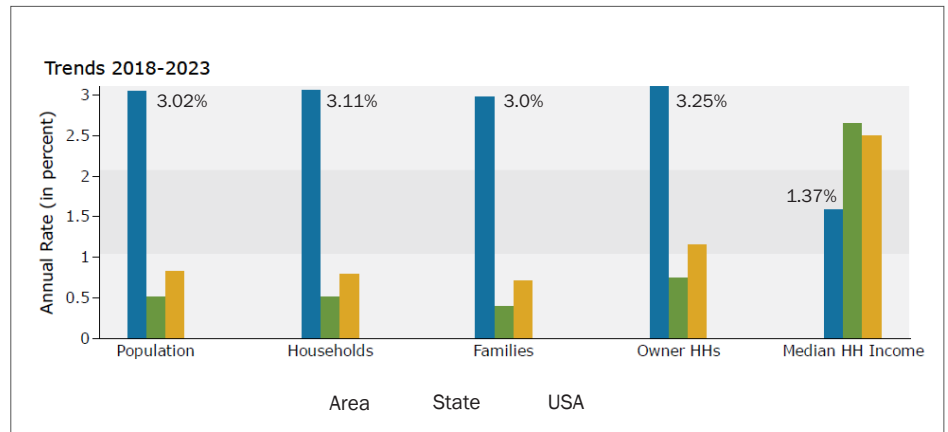


FIGURE 2.2: TREND COMPARISON
SOURCE: ESRI COMMUNITY PROFILE

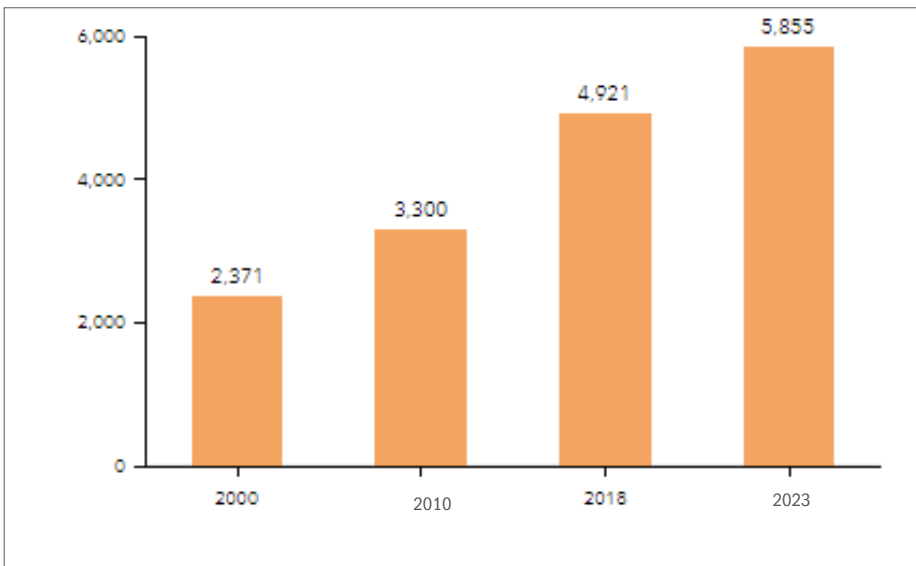


FIGURE 2.3: POPULATION GROWTH
SOURCE: ESRI COMMUNITY PROFILE

Population

By 2018, the population within the study area had more than doubled in size since 2000. This trend is expected to continue with an annualized projected growth rate of 3.54% through 2023. This is significant considering the the limited access to utilities in much of the Study Area.

Workforce

A vast majority of the population in the Study Area, as noted in **Figure 2.4** are employed within the white collar sector. This correlates with the comparatively high level of educational attainment within the study area.

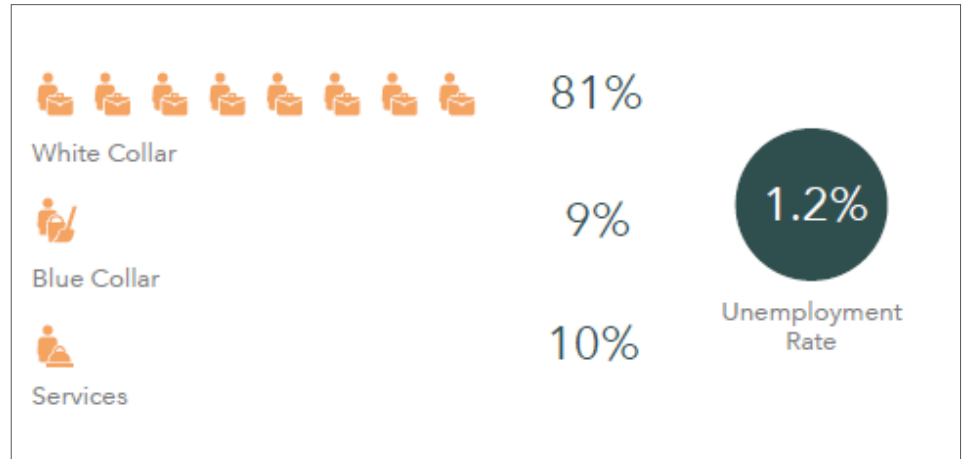


FIGURE 2.4: WORKFORCE DISTRIBUTION
SOURCE: ESRI COMMUNITY PROFILE

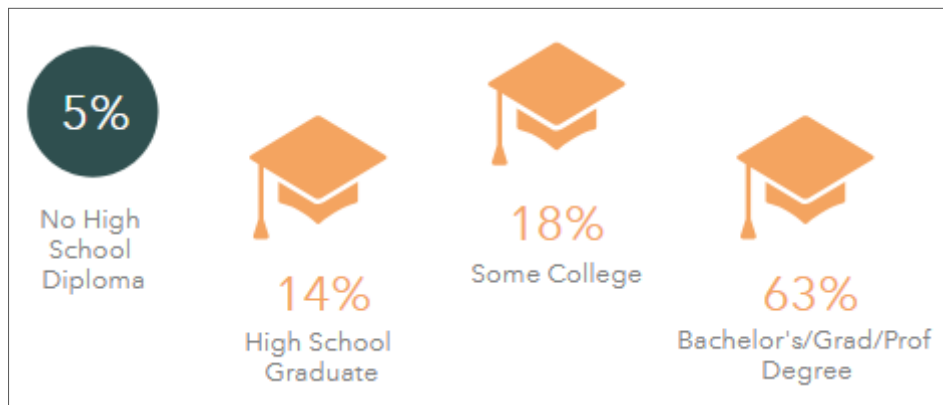


FIGURE 2.5: EDUCATIONAL ATTAINMENT
SOURCE: ESRI COMMUNITY PROFILE

Education

As shown in **Figure 2.5**, the Study Area is highly educated with 63% of the population holding a bachelor's degree. This is significantly higher compared to the state average where only 25% of the population holds a bachelor's degree or higher.

Income

The median household income within the Study Area is \$129,801 which is significantly higher compared to the state where the median household income is \$52,182. Also seen in **Figure 2.6** 31% of the households earn over \$200,000 a year while the majority of the households within the study area earn above \$75,000 a year.

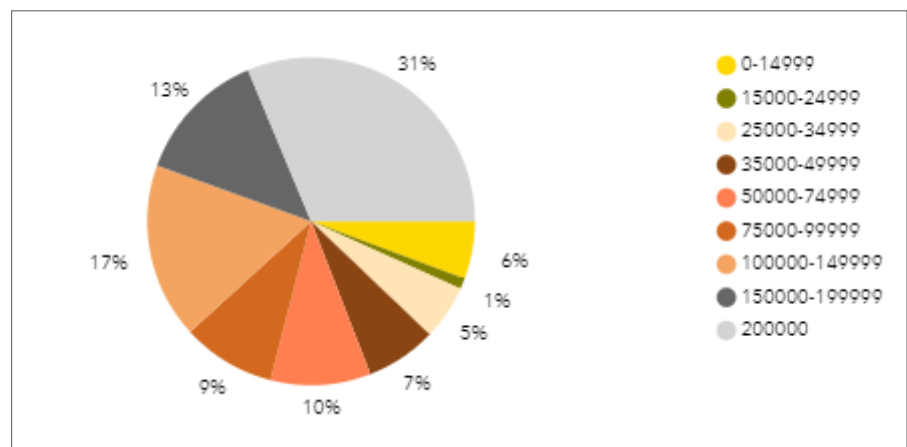


FIGURE 2.6: INCOME DISTRIBUTION
SOURCE: ESRI COMMUNITY PROFILE

Age

With a median age of 41.7, as seen in **Figure 2.7**, the age distribution reflects an increased percentage of older adults aged 55 and up. With an aging population, the types of services and amenities required will vary. However, with a projected increase in percentage of adults between 25-34, an increase in younger children may also be expected within the coming years.

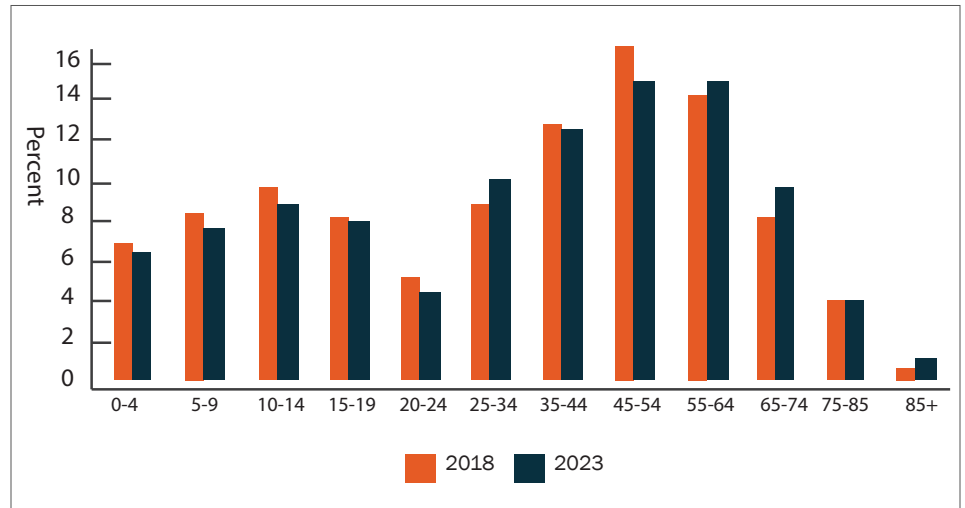


FIGURE 2.7: AGE DISTRIBUTION
SOURCE: ESRI COMMUNITY PROFILE

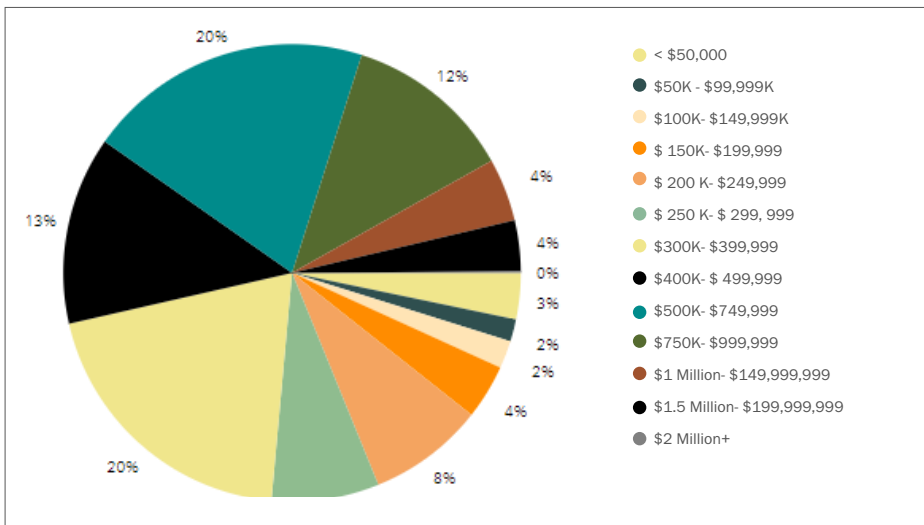


FIGURE 2.8: HOME VALUE DISTRIBUTION
SOURCE: ESRI COMMUNITY PROFILE

Home Value

The highest percentage of home values within the Study Area rests between \$300,000 to \$749,000. These home values, referenced in **Figure 2.8**, are significantly higher than the state and county. Chapter 5 provides a more detailed analysis of housing trends specific to Zionsville.

Home Occupation

The majority of the homes within the Study Area are owner-occupied with only 6% of the households occupied by renters as seen in **Figure 2.9**.

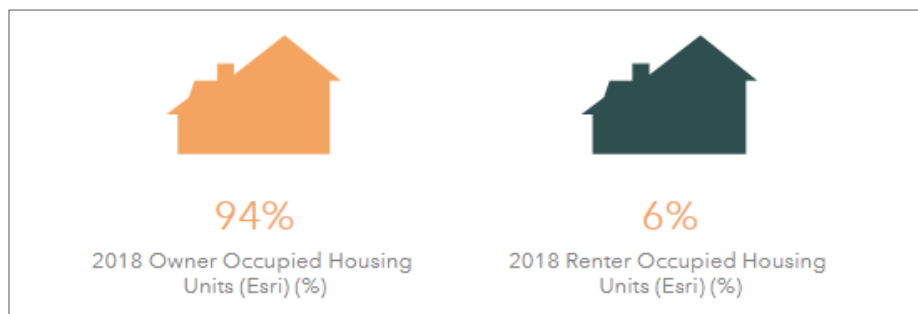


FIGURE 2.9: OWNER VS RENTER
SOURCE: ESRI COMMUNITY PROFILE



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3



**AIRPORT
ANALYSIS**

AIRPORT OVERVIEW

The Indianapolis Executive Airport (Airport, TYQ, or KTYQ) is an important part of the local, state and national aviation system. It is a busy general aviation (GA) airport providing reliever services to Indianapolis International Airport. Aviation plays a crucial role in business, tourism, emergency services, agriculture, and even public safety. Communities depend upon airports to provide needed services and accessibility to connections within the state, the nation, and the world.

The Airport provides aviation access to Boone County, Hamilton County, and the Indianapolis metropolitan area. With corporate flight departments such as Beck's Hybrids based at the airport and the aviation service provided by First Wing Jet Center, the airport experiences a significant amount of activity. As reported in the 2012 Indiana Airports Economic Impact Study, the Airport contributes over \$430,000,000 in economic impact to the State of Indiana through the combination of on-airport, airport users, and multiplier rated jobs, payroll, and output.



INDIANAPOLIS EXECUTIVE AIRPORT
SOURCE: MEAD AND HUNT

Key points

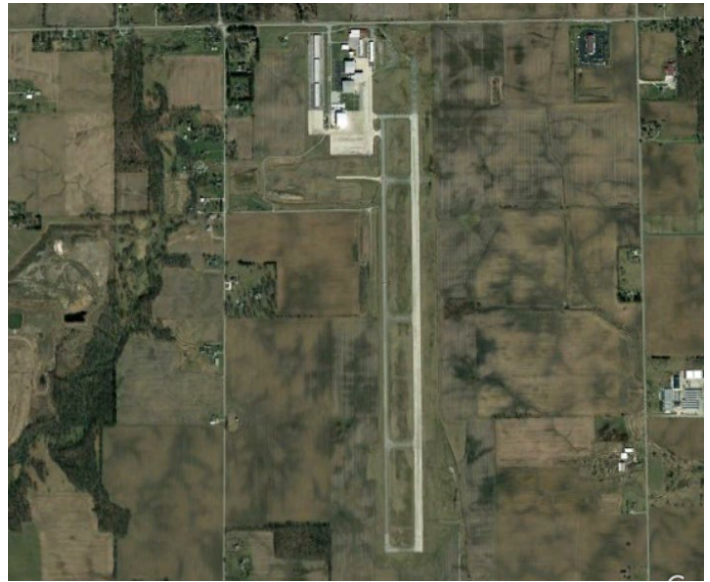
Since its transfer to public ownership in 2003, based aircraft and operations have grown, and the Airport has solidified its role as a vital transportation link for residents of the local, regional, state, and national community, whether they use the system directly or indirectly.

TYQ is also an important economic engine that serves corporate aircraft activity as well as more traditional recreational and training activity.

Development around the airport is recommended to meet FAA regulation requirements to ensure safety to airport users and surrounding development.

ROLE IN THE NATIONAL AND STATE AVIATION SYSTEM

The Airport is recognized by the FAA as a GA airport. This recognition indicates that the airport does not support operations by commercial airlines such as Delta and United. TYQ is available for use by all other aeronautical users such as corporate aircraft, recreational flights, and flight training. The airport is one of nearly 3,000 airports in this GA category nationwide. Based upon the 2012 FAA report *General Aviation Airports: A National Asset (ASSET Study)*, the Airport has been classified as a National airport. This classification acknowledges the extensive number of based aircraft and the aviation activity TYQ experiences. **Table 3.1** summarizes the criteria to be classified as a National airport, while **Figure 3.1** is an excerpt from the FAA ASSET Study that shows each of the study categories with a brief description. The Airport is one of 84 airports in the National classification.



AERIAL OVERVIEW OF AIRPORT
SOURCE: GOOGLE EARTH

CRITERIA USED TO DEFINE THE NEW NATIONAL CATEGORY (all numbers are annualized)	
1	5,000+ instrument operations, 11+ based jets, 20+ international flights, or 500+ interstate departures; or
2	10,000+ enplanements and at least 1 charter enplanement by a large certificated air carrier; or
3	500+ million pounds of landed cargo weight.

TABLE 3.1: NATIONAL AIRPORT CLASSIFICATION CRITERIA
SOURCE: FAA, GENERAL AVIATION AIRPORTS: A NATIONAL ASSET STUDY, 2012

GROUP (number of airports)	DEFINITIONS
National (84)	<u>Serves National- Global Markets</u> Very high levels of activity with many jets and multi engine propeller aircraft. Averaging about 200 total based aircraft, including 30 jets.
Regional (467)	<u>Serves Regional- National Markets</u> High levels of activity with some jets and multi engine propeller aircraft. Averaging about 90 total based aircraft, including 3 jets.
Local (1,236)	<u>Serves Local- Regional Markets</u> Moderate levels of activity with some multi engine propeller aircraft. Averaging about 33 based propeller-driven aircraft and no jets.
Basic (668)	<u>Often Serving Critical Aeronautical Functions within Local and Regional Markets</u> Moderate- Low levels of activity. Average about 10 propeller-driven aircraft and no jets.
FUNCTIONS (varies among individual airports)	<ul style="list-style-type: none"> ■ Emergency Preparedness and Response ■ Critical Community Access ■ Other Aviation Specific Functions ■ Commercial, Industrial and Economic Activities ■ Destination and Special Functions

TABLE 3.2: GENERAL AVIATION AIRPORT CATEGORIES DEFINED BY THE 2012 ASSET STUDY
 SOURCE: FAA, GENERAL AVIATION AIRPORTS: A NATIONAL ASSET STUDY, 2012

MINIMUM SERVICE LEVELS

The 2012 Indiana State Aviation System Plan also classifies TYQ as a Regional Airport. This state classification as a Regional Airport is different from the FAA classification as a National Airport. With this state classification, TYQ is expected to meet the recommendations of the Indiana Department of Transportation (INDOT) for minimum service levels. **Table 3.3** compares these minimum levels of service with the current conditions. As this shows, the only item where the Airport is not meeting the minimum level of service is the implementation of zoning/land use coordination. Implementation of this strategic plan may be an initial step in addressing this level of service recommendation.

INDOT Minimum Service Level Recommendation	Regional Airport Classification	Existing Indianapolis Executive Airport
Primary Runway Length	5,000-7,000 feet	5,501 feet
Primary Runway Pavement Strength	60,000 pounds	45,000 pounds single-wheel 90,000 pounds dual-wheel
Primary Runway Grooving	Yes	Yes
Primary Runway End Identifier Lights (REILS)	Yes	Yes
Primary Runway Visual Slope Indicators or Approach Lights	Yes	Yes
Perimeter Fencing	Yes	Yes
Zoning or Land Use Coordination	Yes	No

TABLE 3.3: INDOT MINIMUM SERVICE LEVEL RECOMMENDATIONS

SOURCE: 2012 INDIANA STATE AVIATION SYSTEM PLAN & FAA AIRPORT MASTER RECORD, LAST INSPECTION DATE 7/9/2018

EXISTING CONDITIONS

The existing conditions of the Airport have been separated into three groups for this report: aircraft and operations, airside infrastructure, and landside infrastructure. Each are briefly summarized to give a basic understanding of the Airport facilities and activity.

Based Aircraft and Operations

The Airport experiences an extensive amount of activity that can be attributed to the based aircraft as well as a significant amount of itinerant aircraft. TYQ is home to over 80 aircraft that include single-engine aircraft, multi-engine aircraft, jet aircraft, and helicopters as summarized in **Table 3.4**. These aircraft and the additional activity from itinerant aircraft account for approximately 34,000 operations annually where an operation is either a takeoff or a landing by an aircraft. **Table 3.5** summarizes the specific operations that are reported by category for 2019. Since the Airport does not have an air traffic control tower, the specific number of operations are estimated using operational logs, FAA Traffic Flow Management System Counts and other FAA forecasting processes.

TYPE OF OPERATION	NUMBER OF OPERATIONS
Air Carrier	0
Air Taxi	2,036
GA Local	14,934
GA Itinerant	16,970
Military	0
TOTAL	33,940

TABLE 3.4: 2018 ANNUAL OPERATIONS
SOURCE: FAA TERMINAL AREA FORECASTS - ISSUED JANUARY 2020

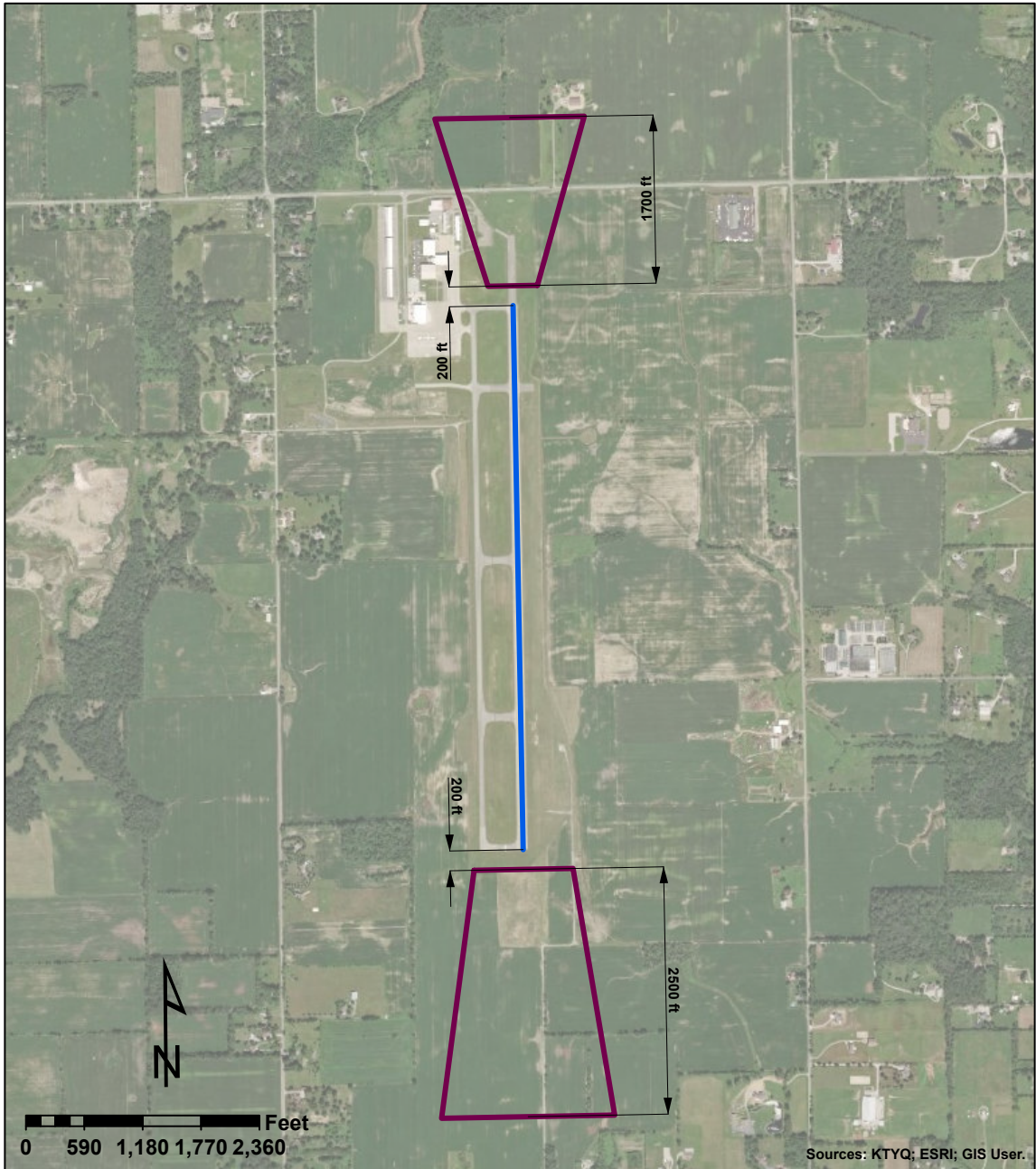
TYPE OF AIRCRAFT	NUMBER OF BASED AIRCRAFT
Single-Engine	59
Multi-Engine	7
Jets	16
Helicopters	4
TOTAL	86 including helicopters

TABLE 3.5: CURRENT BASED AIRCRAFT BY CLASSIFICATION
SOURCE: FAA AIRPORT MASTER RECORD, FORM 5010-1, PER INSPECTION
DATE 6/18/2020

AIRSIDE INFRASTRUCTURE

The Airport currently operates with a single concrete runway in a north-south orientation, Runway 18/36. This runway is 5,501 feet long by 100 feet wide. It has a full parallel taxiway that facilitates aircraft movement to both ends of the runway and into the terminal and hangar area with connector taxiways and a large aircraft parking apron in front of the terminal area. The runway can accommodate activity at night and in inclement weather, since it has high intensity runway lighting and medium intensity taxiway lighting. **Figure 3.1** illustrates the orientation of the runway on the site and the associated Runway Protection Zones (RPZs) for each runway end. The RPZs for each runway end are trapezoidal surfaces located off the end of a runway that are designed to enhance the protection of people and property on the ground. These areas, where feasible, should be clear of all obstructions and large gatherings of people to reduce incompatible land uses. The size of the RPZ is predicated on the type of aircraft that use the runway and the associated approach minimums. The specific dimensions are outlined in FAA Advisory Circular (AC) 150/5300-13-A, Change 1, Airport Design.

Additionally, the runway has an instrument landing system (ILS) on Runway 36. The ILS is a ground-based set of navigational equipment that is defined as a precision approach. The ILS provides both horizontal and vertical guidance to aircraft that are equipped with the necessary instruments to use the ILS to assist them in landing at the Airport. Runway 18 has a global positioning system (GPS) approach that provides additional vertical guidance to landing aircraft that is defined as a non-precision approach. These approaches are important to the utility of the airport. There are specific airspace clearance requirements that must be met to maintain these approaches. The clearance requirements are discussed on the following page.



Existing Runway Protection Zones (RPZs)
 Indianapolis Executive Airport (KTYQ)
 Zionsville, Indiana

Legend	
—	Existing Runway 18/36
—	Existing RPZs

FIGURE 3.1: EXISTING RUNWAY AND RUNWAY PROTECTION ZONES

LANDSIDE INFRASTRUCTURE

To support the operation of the Airport, there is a significant amount of infrastructure dedicated to aircraft storage and services. A large terminal building offers both based and itinerant pilot services through the Fixed-Base Operator (FBO), First Wing Jet Center. These services include passenger waiting areas, restroom facilities, aircraft fuel (100 low-lead and Jet A), flight training, aircraft maintenance and repair, and charter services. There are numerous box-style and t-style hangars for aircraft storage as well as large corporate hangars. These structures house the 80+ based aircraft and offer overnight storage options for itinerant aircraft. **Figure 3.2** exhibits the hangars, terminal building area, corporate hangars, apron areas, and automobile parking in the northwestern corner of the airport.



FIGURE 3.2: LANDSIDE INFRASTRUCTURE

PLANNED AND FUTURE IMPROVEMENTS

The Airport continues to plan for future development to provide a facility to meet the GA needs of the Northwestern Indianapolis metropolitan area. **Figures 3.3** and **Figure 3.4** illustrates the proposed improvements to the runways and the associated RPZs for each runway.

Phase I Primary Runway extension

As part of the 2008 Master Plan, a 1,500-foot extension to Runway 18/36 is planned to the south end of the runway. The extension would make the runway 7,001 feet long. RPZs for the Phase I Primary Runway Extension are shown in **Figure 3.3**. The Phase I extension of Runway 18/36 is currently underway with land acquisition complete and the design and preliminary construction underway. Completion of the runway extension is anticipated in 2023, depending upon the receipt the necessary federal funds to support the construction.

Phase II Primary Runway Extension

The 2008 Master Plan also envisioned a future second runway expansion from 7,001 to 7,700 feet, which is the ultimate planned runway length. While the airport is still working on the Phase 1 runway expansion, the FAA requires the airport to protect its future runway length, RPZ and Approach Surfaces. The RPZ and approach surfaces for the future Phase 2 Primary Runway Extension is shown in **Figure 3.4**. Development within this area should be limited to open space.

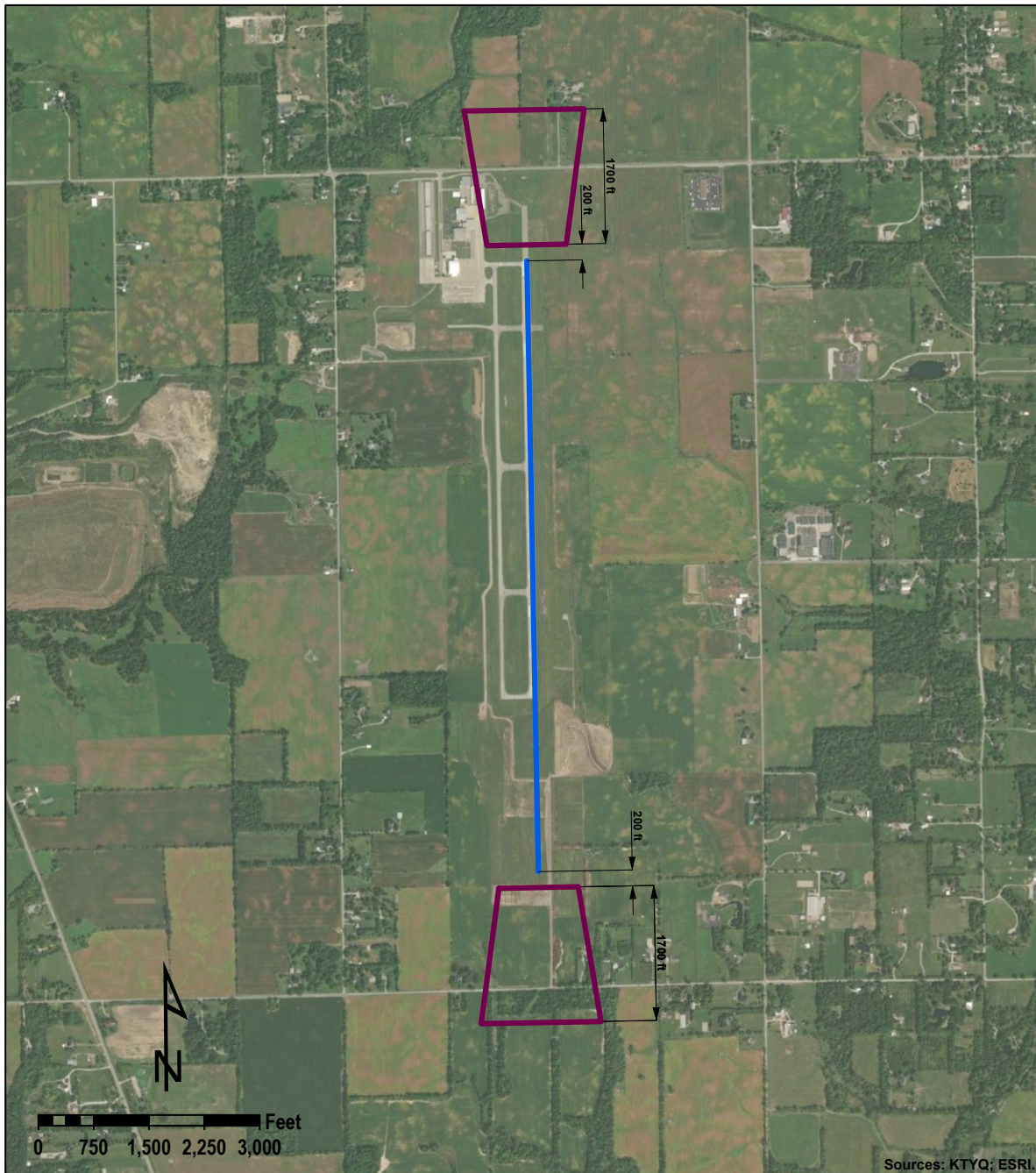
Hangar Expansions

Additional hangars have also been planned for and illustrated on the future airport layout plan for TYQ. These facilities are not critical to the broader context of the strategic plan; however, they are important to note, because they indicate future growth in the number of based aircraft, which suggests continued and increased use of the facility. This supports the need to protect not only

the approach to the Airport for aircraft operations, but also to address potential quality of life concerns for neighbors located in proximity to the Airport.

Crosswind Runway

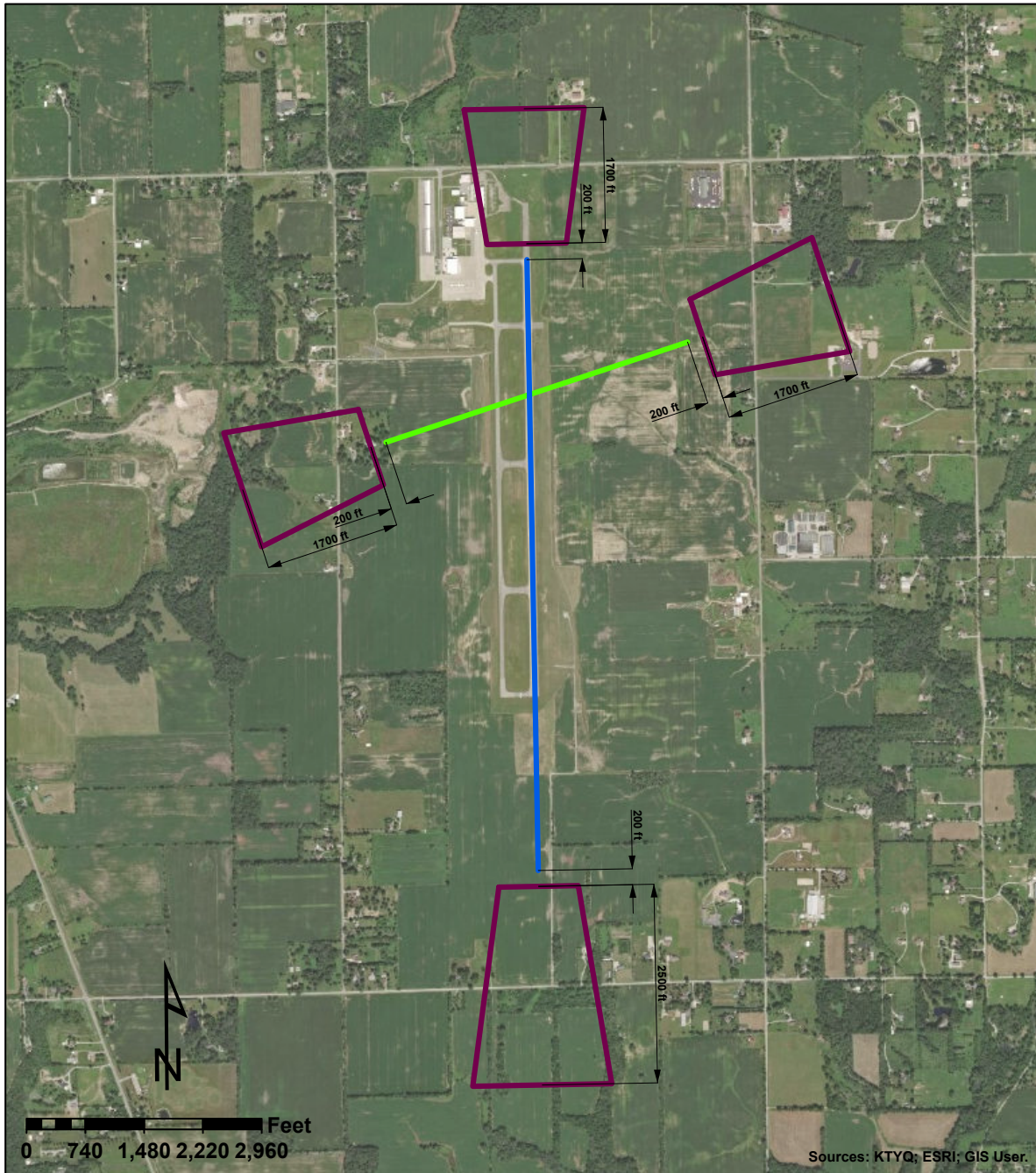
The Master Plan also anticipates the construction of a crosswind runway in the future. A crosswind runway is often justified when the current runway orientation does not provide adequate wind coverage. The FAA requires 95 percent wind coverage for aircraft that are forecasted to use the airport on a regular basis. If a runway does not provide at least 95 percent wind coverage, a crosswind runway may be required. A long-term crosswind runway would have non-precision approaches to each runway end. The crosswind runway would be 4,000 feet long and 75 feet wide on a northeast/southwest orientation with a designation of Runway 7/25. Runway 7/25 would be located south of the existing terminal area. This runway would increase the utility of the airfield by providing a secondary runway for the smaller GA aircraft that experience difficulty landing or taking off when winds are out of the southwest/west or northeast/east. Development within RPZs and approach surfaces for the future crosswind runway should be limited to open space. A map of associated RPZs is shown in **Figure 3.4**.



**Future Runway Protection Zone (RPZ)
Runway 18/36 - Phase I
Indianapolis Executive Airport (KTYQ)
Zionsville, Indiana**

Legend	
▬	RPZ (Phase I)
▬	Runway 18/36 (Phase I)

FIGURE 3.3: RUNWAY 18/36 WITH PHASE 1 EXTENSION AND ASSOCIATED RUNWAY PROTECTION ZONES.



**Future Runway Protection Zones (RPZs)
Indianapolis Executive Airport (KTYQ)
Zionsville, Indiana**

Legend
 — Future Runway 18/36
 — Future Crosswind
 — Future RPZs

FIGURE 3.4: FUTURE PHASE II PRIMARY RUNWAYS AND ASSOCIATED RUNWAY PROTECTION ZONES (WITH FUTURE CROSSWIND RUNWAY AND FUTURE PHASE I PRIMARY RUNWAY EXTENSION)

FLIGHT PATTERNS

The area in which aircraft operate, when they are near an airport preparing for landing or takeoff, is called the airport traffic area or airport traffic pattern. It generally refers to a standard path that aircraft use when taking off or landing at an airport while maintaining visual contact with the runway. The use of a traffic pattern is for air safety as it provides a consistent flight pattern that pilots can anticipate. Pilots can also expect other air traffic to operate in that traffic pattern that enables the pilots to see those other aircraft and avoid them while operating in proximity to that airport.

At most airports serving single-engine propeller aircraft, a traffic pattern extends from 600 feet to 1,500 feet above the ground and is typically rectangular. If jet aircraft use an airport, the pattern may extend up to 2,500 feet above ground, since they operate at higher speeds that require additional elevation to accommodate aircraft maneuvers. **Figure 3.5** illustrates a typical traffic pattern operation for a single runway based upon the FAA recommendations as outlined by the Federal Aviation Regulations Aeronautical Information Manual (FAR/AIM) 2017.

While there is a traffic pattern that is typically used, pilots are allowed to enter and exit the airport traffic area at their discretion. Consequently, not every aircraft is going to fly in the exact same location each time they operate at the airport. The traditional rectangular traffic pattern illustrated in Figure 3.5 is most frequently used when aircraft at being used for training operations.

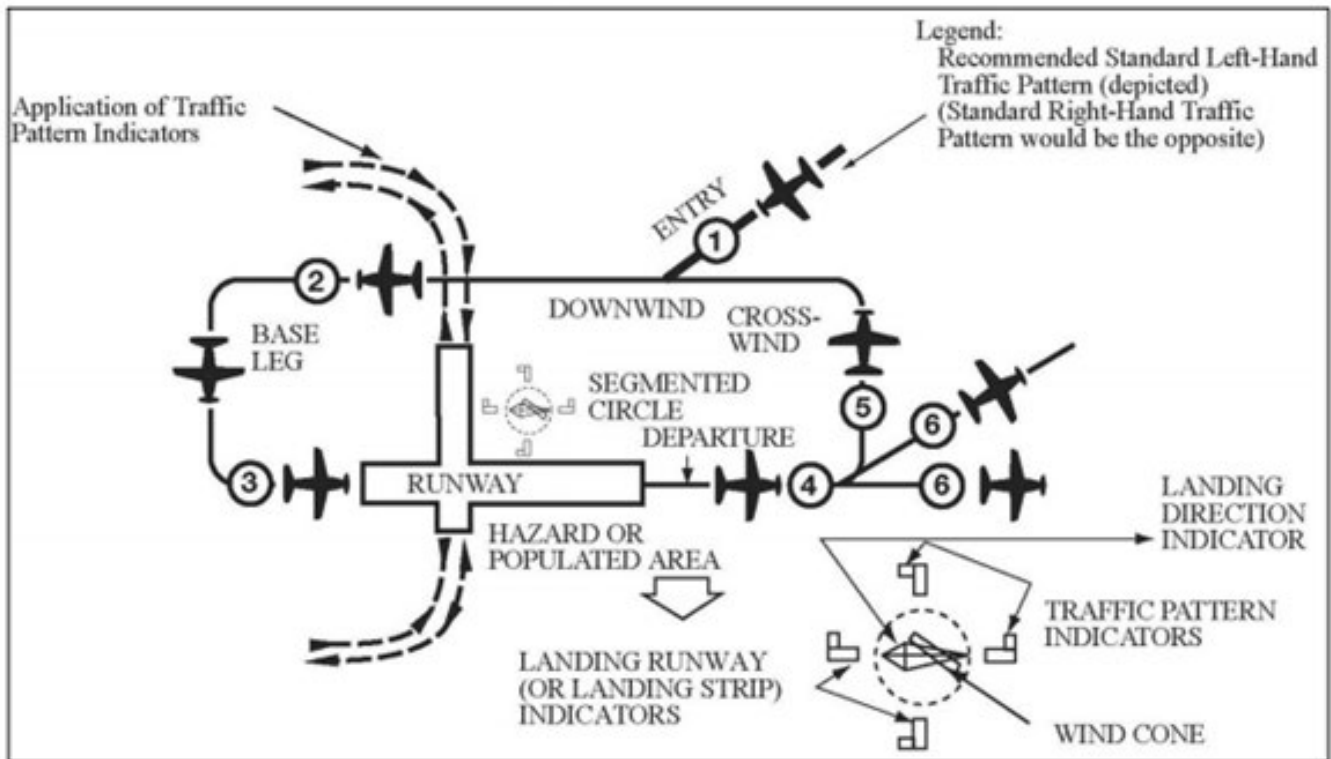
At TYQ, conversations with the based users revealed that two sets of traffic patterns were generally observed. There is a typical set of patterns for the corporate jet aircraft and one for the smaller GA aircraft, including the training operations. **Figure 3.6** illustrates the patterns for both the jet and GA

aircraft for the existing use of Runway 18/36. As shown, the corporate aircraft use a less traditional approach to the airport when arriving from the north or west to keep operations over Hwy 421. They also attempt to keep their turns to Runway 36 as far north as feasible and still maintain an appropriate descent into the airport.

This attempts to alleviate overflights of the residential area to the south as much as feasible, while maintaining a safe operating environment for the aircraft.

In the future scenario, with the extension of Runway 18/36 to the south and the construction of the crosswind Runway 7/25, additional traffic patterns will become operational. **Figure 3.8** illustrates where the two typical sets of traffic patterns are expected to be once the future runway extension constructed. The same approaches generally along the HWY 421 corridor are expected for the corporate aircraft and the rectangular pattern for the GA traffic are expected to continue.

These traffic patterns are not the only location in which aircraft will operate. Pilots can use their discretion when landing or departing the runway environment; therefore, there may be overflights that occur outside of the area shown. However, these are expected to occur less frequently. A diagram showing a wider range of common flight patterns is provided in **Figure 3.7**. This data was collected using flight tracking information. It illustrates the use of that typical rectangular pattern as well as the approaches from the northwest, along Hwy 421 by the corporate aircraft. Again, it must be noted that the actual location of approach and departure paths is generally determined by the pilot-in-command of each aircraft, and can therefore vary by individual operation.



EXAMPLE—
Key to traffic pattern operations

1. Enter pattern in level flight, abeam the midpoint of the runway, at pattern altitude. (1,000' AGL is recommended pattern altitude unless established otherwise. . .)
2. Maintain pattern altitude until abeam approach end of the landing runway on downwind leg.
3. Complete turn to final at least $\frac{1}{4}$ mile from the runway.

4. Continue straight ahead until beyond departure end of runway.
5. If remaining in the traffic pattern, commence turn to crosswind leg beyond the departure end of the runway within 300 feet of pattern altitude.
6. If departing the traffic pattern, continue straight out, or exit with a 45 degree turn (to the left when in a left-hand traffic pattern; to the right when in a right-hand traffic pattern) beyond the departure end of the runway, after reaching pattern altitude.

FIGURE 3.5 : SINGLE RUNWAY TRAFFIC PATTERNS

SOURCE: FEDERAL AVIATION REGULATIONS AERONAUTICAL INFORMATION MANUAL 2017, FIGURE 4-3-2

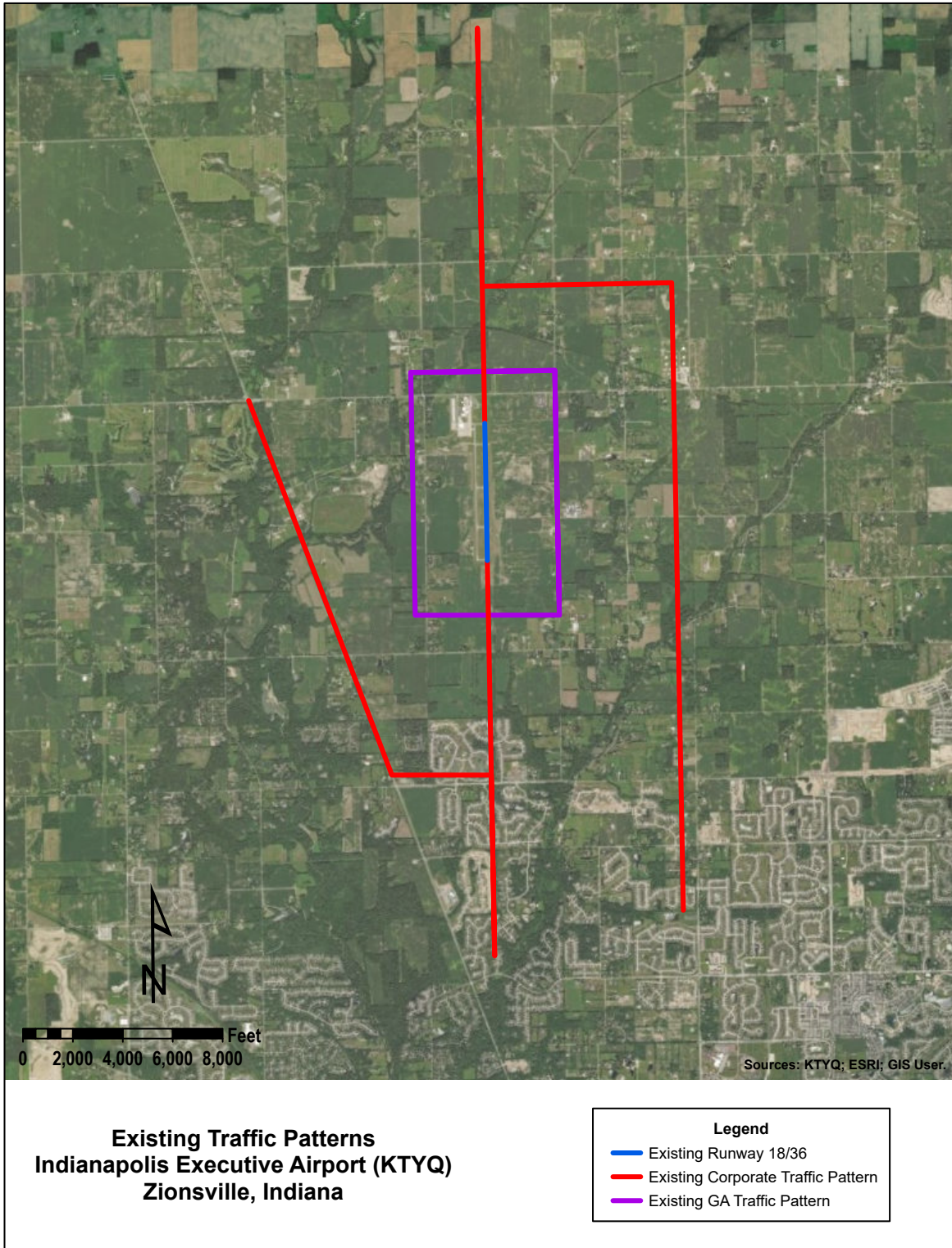
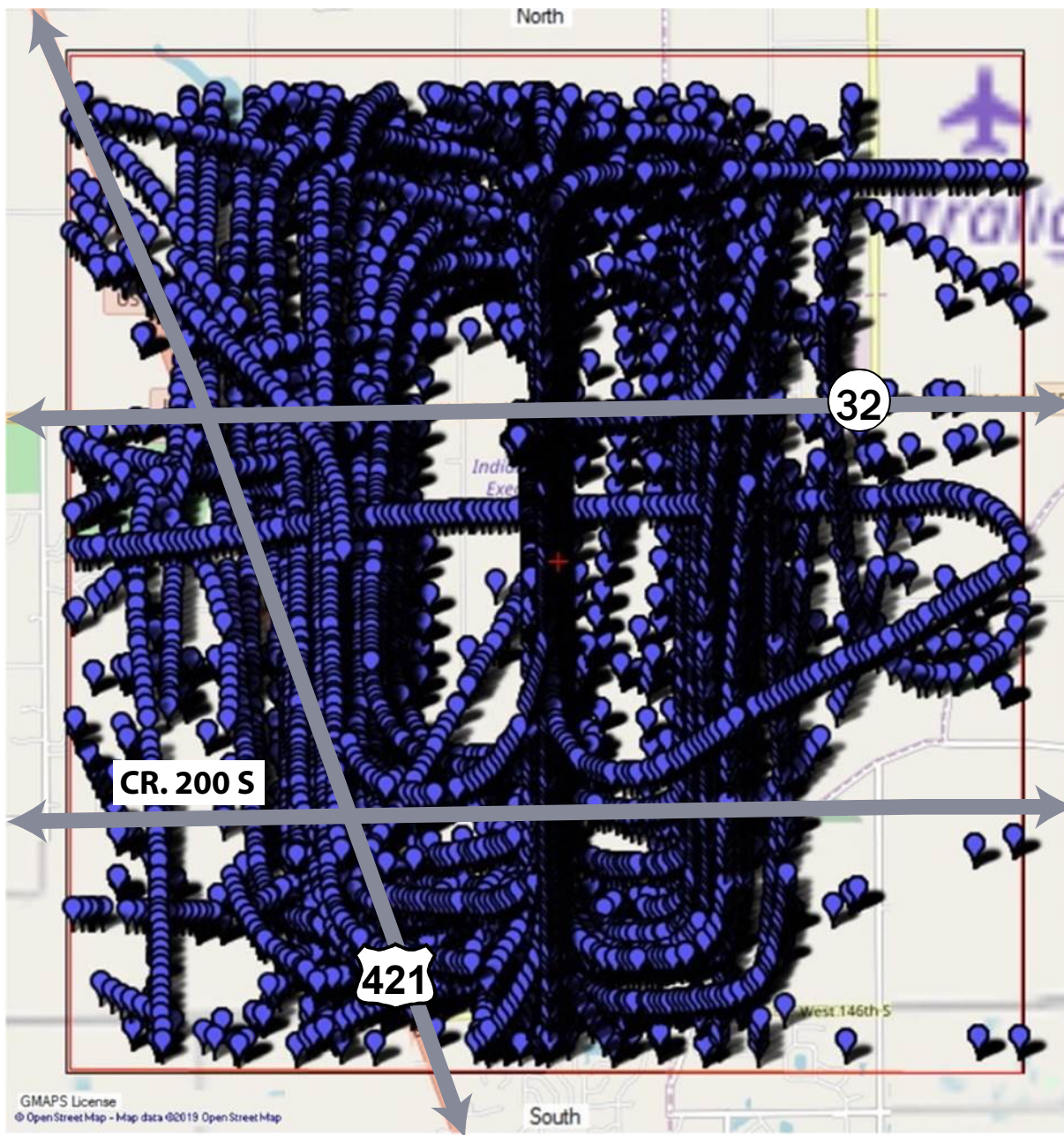


FIGURE 3.6: EXISTING JET AND GA AIRCRAFT FLIGHT PATTERNS



Source: G.A.R.D system by Invisible Intelligence LLC

FIGURE 3.7: SNAPSHOT OF ACTUAL RECORDED FLIGHT TRACKS LANDING AND DEPARTING FROM TYQ AND SOME OVERFLIGHTS. (Blue dots represent where an On-board Signal was reported.)

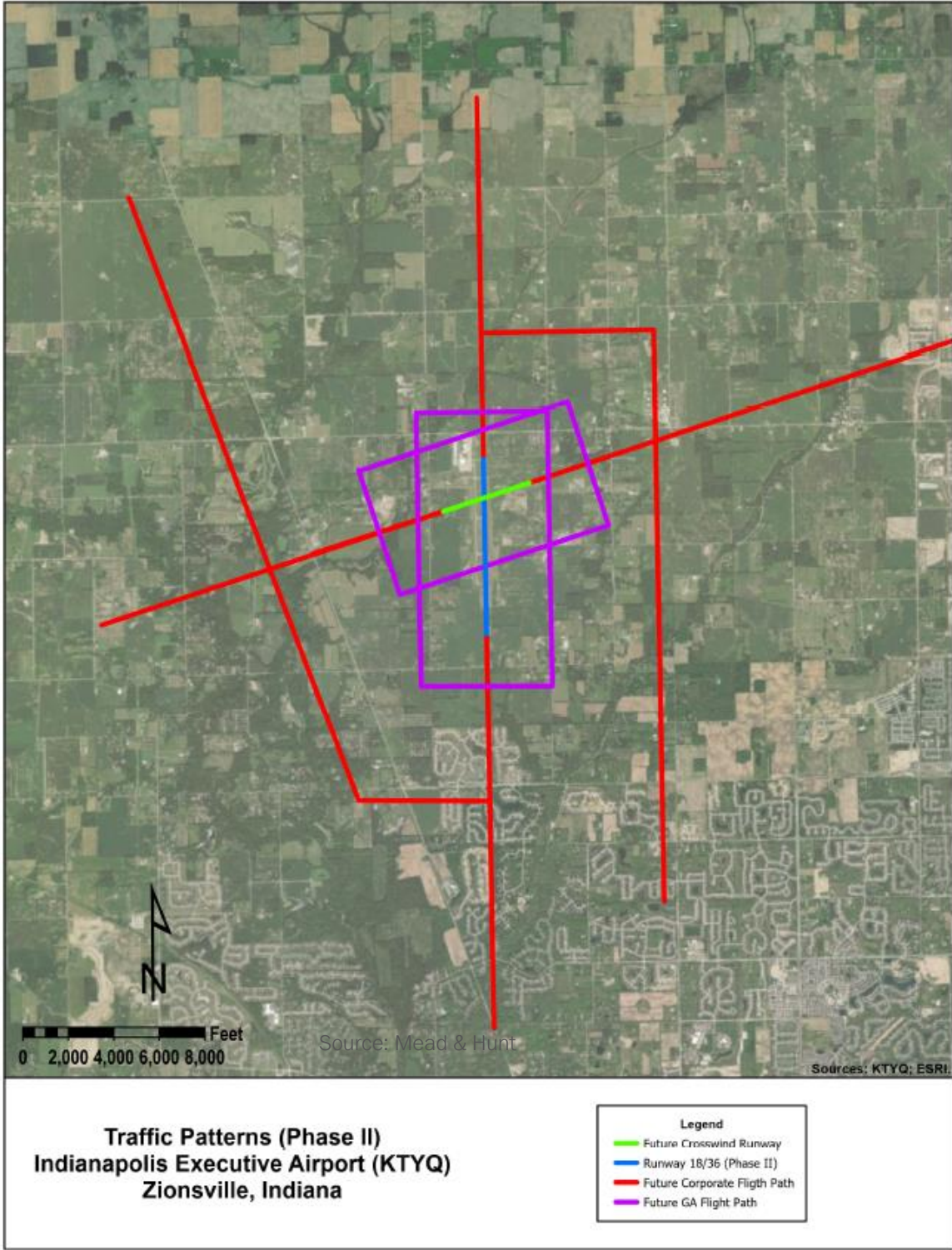


FIGURE 3.8: FUTURE AIRCRAFT TRAFFIC PATTERNS (INCLUDING PHASE II PRIMARY RUNWAY EXTENSION)

AIRPORT DESIGN SURFACES

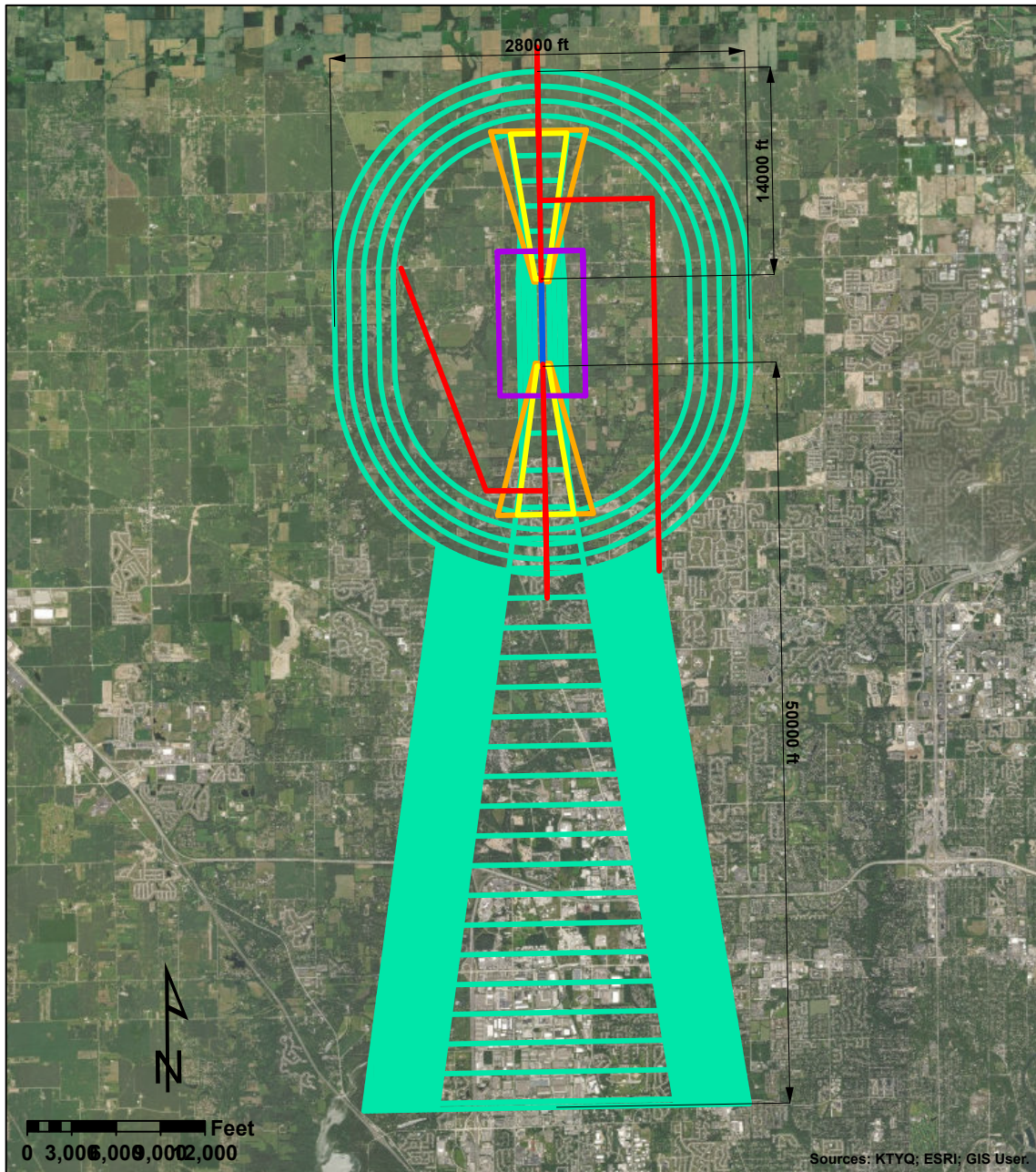
In the airport environment, it is necessary to maintain an area in which safe and efficient landing and takeoff operations can occur. According to FAA AC 150/5300-13A, *Airport Design*, this requires certain areas on and near the airport to be clear of objects or restricted to objects with a certain function, composition, and/or height. These surfaces are referred to as airport design surfaces.

Code of Federal Regulations (CFR) 14 Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77), exists to protect the navigable airspace around and in the vicinity of an airport. Part 77 contains the various imaginary surfaces that exist to maintain a safe and efficient operating environment.

According to AC 150/5300-13A, “any existing or proposed object, whether man-made or of natural growth that penetrates these surfaces is classified as an ‘obstruction’ and is presumed to be a hazard to air navigation.” It is important the airport operator is aware of and actively reviews existing and proposed objects that could affect existing and future airspace at and around an airport.

This study has evaluated the Part 77 surfaces, both existing and the anticipated future surfaces, in addition to applicable airport design surfaces according to AC 150/5300-13A. Each surface was mapped using a geographic information system (GIS) application to define the limits of the area that should be considered in this study. **Appendix A** contains a more detailed set of graphics and narrative that further define the surfaces. In this section, only the combined elements will be reviewed to exhibit the full area that is being considered in this study.

Figures 3.9 through **3.12** illustrate combined surfaces for the existing and the future conditions. The full extents of each set of surfaces are shown in **Figure 3.9** (existing) and **Figure 3.11** (future), while a more compact view is shown in **Figure 3.10** (existing) and **Figure 3.12** (future). When reviewing the full extents of the area of impact, the existing footprint encompasses an area that extends to the north approximately 2.6 miles while the area to the south extends approximately 9.5 miles and a distance of approximately 5.3 miles is covered by the east-west extents of the surfaces. In the future scenario, this area expands due to the inclusion of the crosswind runway and the extension to the southern end of Runway 18/36. The northern extent is still approximately 2.6 miles while the southern extent is approximately 9.8 miles and the east-west distance expands to approximately 6.1 miles.



**Existing Airport Surfaces (Full Extent)
Indianapolis Executive Airport (KTYQ)
Zionsville, Indiana**

Legend	
Existing Runway 18/36	Existing TSS
Existing Depature Surfaces	Corporate Traffic Pattern
Existing Part 77 Surfaces	GA Traffic Pattern

FIGURE 3.9: EXISTING SURFACES

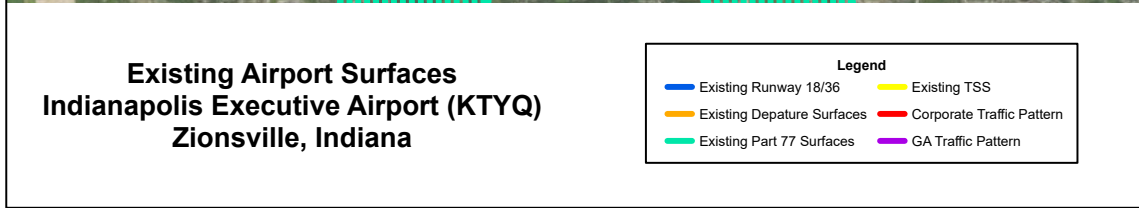
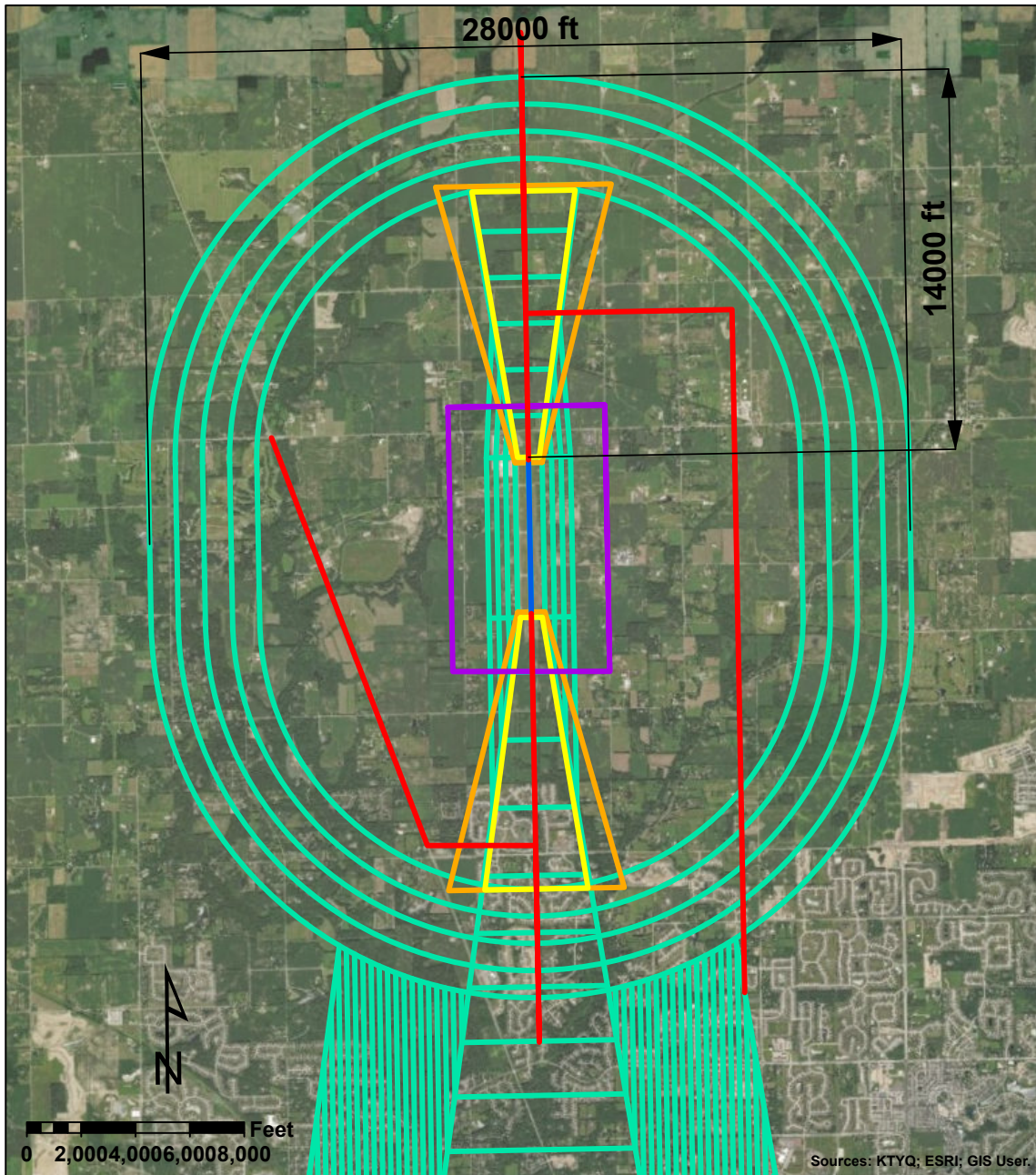


FIGURE 3.10: EXISTING SURFACES (COMAPCT VIEW)

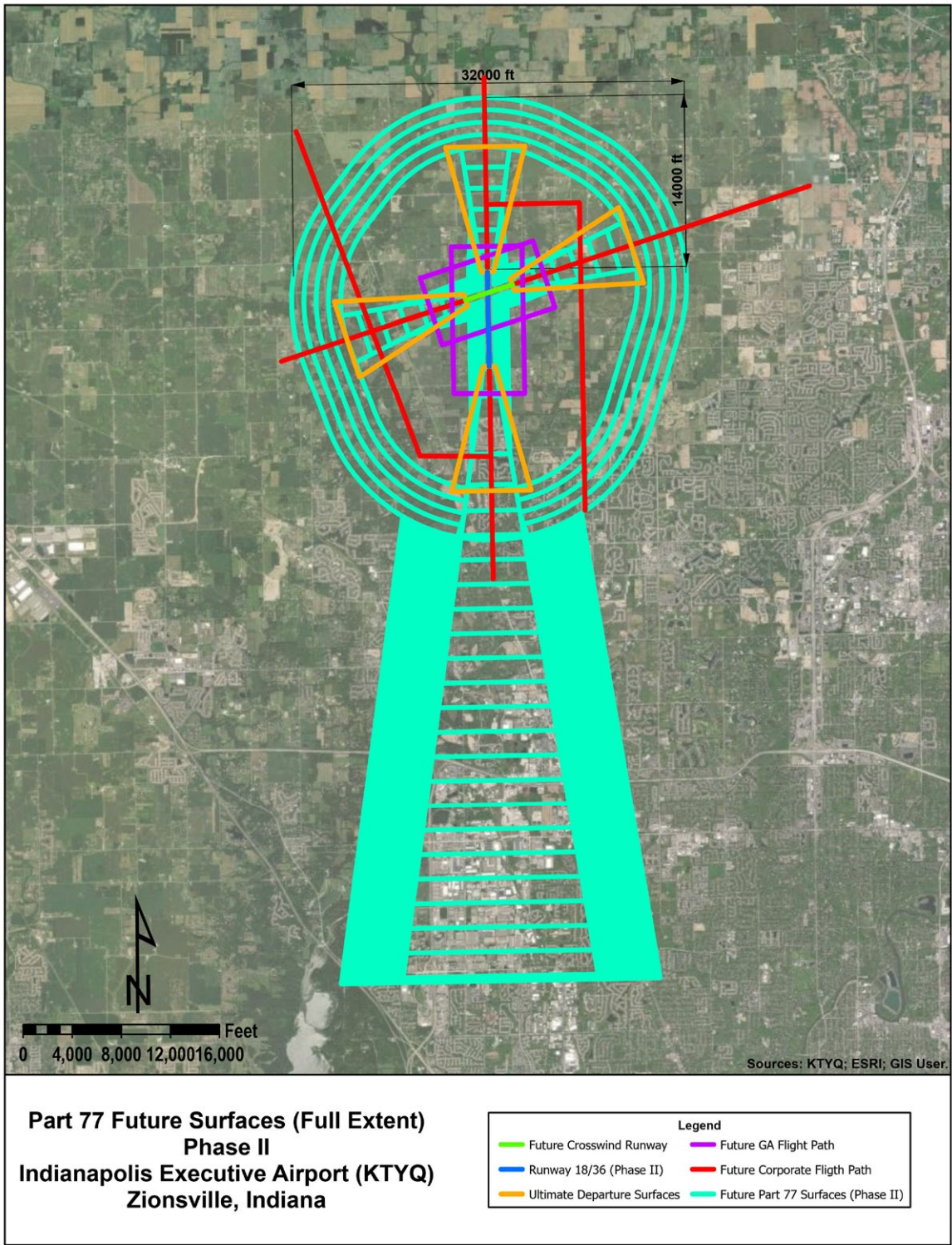


FIGURE 3.11: FUTURE SURFACES

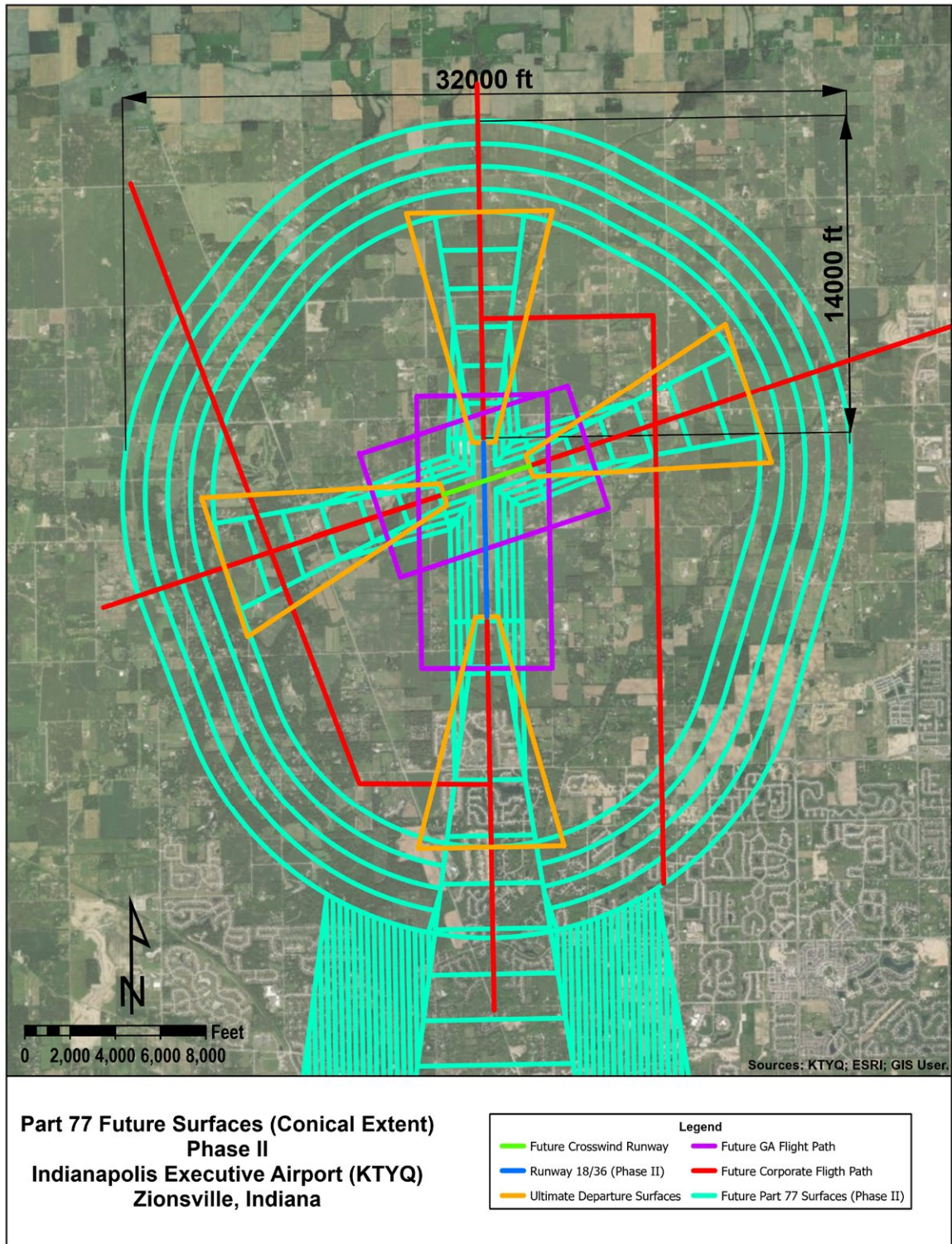


FIGURE 3.12: FUTURE SURFACES (COMPACT VIEW)

STUDY AREA DEFINITION

After review of the existing and future surfaces defined in **Figures 3.9 to 3.12**, the Study Area was defined to include undeveloped areas located within the boundaries of the surfaces.

See **Figure 3.13** for a map of the surfaces, with the Study Area boundary identified. For the purposes of this illustration, only a basic outline of the surfaces are included for the graphic.

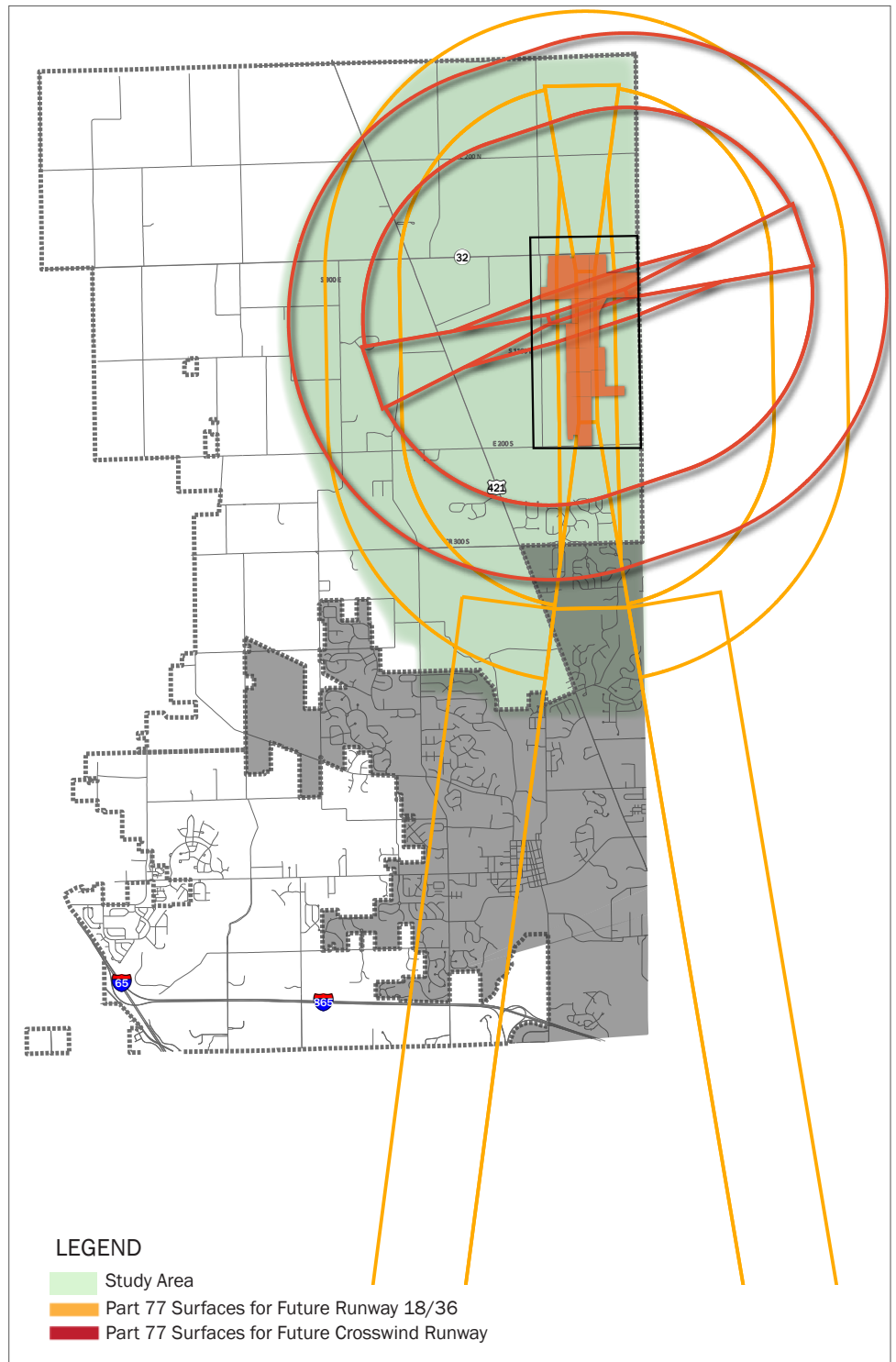


FIGURE 3.13: SURFACES IDENTIFYING THE STUDY AREA



COMPATIBLE LAND USES

Protecting airports from encroachment of incompatible land uses is important. As demand for development space increases, both on the ground and into the airspace, land uses that are incompatible with airport operations can threaten the safety and viability of airports and of citizens on the ground near airports. Compatible land uses near airports protect the public investment in the infrastructure and ensure that airports can meet the needs of local businesses and citizens.

Compatible land uses are those that can coexist with a nearby airport without constraining the safe and efficient operation of the airport or exposing people living or working nearby to unacceptable hazards.

When evaluating compatibility, five main areas of concern are considered:

- Tall Structures/Vegetation (buildings, vegetation, towers, wind turbines, etc.)
- Density/Concentrations of People (theaters, hospitals, schools, churches, etc.)
- Noise Sensitivity (residential, schools, churches, etc.)
- Visual Obstructions (steam, light, glare, etc.)
- Wildlife Attractants (sources of food, water, and shelter)

Each of these areas of concern are discussed in more detail to highlight some of the potential impacts and the relationship to airport and aircraft operations.

Tall Structures/Vegetation

Tall structures can include built infrastructure such as cell towers, power lines, wind turbines, and tall buildings, as well as natural growth such as trees and even local terrain and topography depending upon the proximity to the airport environment. Land uses that protrude into the air are often the easiest for people to recognize as land use concerns, since they understand that aircraft fly in the air. The primary concern with this category is that tall structures or height issues can reduce the utility of an airport. When aircraft are approaching or departing an airport, they are operating at reduced speeds close to the ground; consequently, the airspace needs to be clear of obstructions that could impede their ability to reach the runway environment. If tall structures are built or if vegetation grows into these operational areas, they can force the aircraft to operate at higher altitudes. Operation at higher altitudes reduces their ability to effectively use the runway, and in turn, reduces the utility of the airport.

The FAA has a notification process that reviews proposed construction that may pose a hazard to air navigation. This is accomplished through the submission of a *Notice of Proposed Construction of Alteration* (FAA Form 7460-1). This process does



SOURCE: BPA.GOV

not necessarily protect an airport from impacts due to tall structures, because the FAA does not have police power to prohibit uses. They can only determine if an object is a hazard, a non-hazard, or a hazard that can be mitigated. In some instances, the mitigation measure is to raise the approach minimums to the airport, which reduces the utility of the airport. Additionally, a finding of non-hazard can also fall into the category where an approach may be mitigated to provide that finding. Therefore, the FAA response should be reviewed closely by the Airport to assess the full impact of a potential development. Consequently, it is important for local municipalities to police the construction of tall structures and manage the growth of vegetation at the local level to ensure the airspace in proximity to the airport can be kept clear of obstructions.

Density/Concentrations of People

Aircraft accidents are limited compared to other modes of transportation such as automobiles. Yet, accidents do happen, and often, they take place during takeoff or landing when an aircraft is flying at reduced speeds and at lower elevations. Therefore, providing areas near an airport that are free of obstructions is important. This includes limiting the number people in proximity to an airport. Reducing the density or concentration of people in areas such as the runway approach areas is one way to reduce potential injury should an aircraft accident take place during landing or takeoff.

Addressing this issue can take two forms.

First, the overall number of persons allowed to congregate in the approach areas or the aircraft traffic pattern should be limited. This means high density residential uses or large sporting venues, hospitals, churches, and schools should be discouraged from these areas. Additionally, from a physical perspective, areas of open space should be designed into site plans to provide pockets of undeveloped or at least less populated areas for emergency use, if necessary. This does not mean that site damage may not occur in these areas in the event of an accident. It simply means impacts may be reduced if development is less dense and a smaller concentration of people are in the area.



SOURCE: SPORTS.USATODAY.COM

Noise Sensitivity

Aircraft operations can create sound levels that annoy people in communities near airports and cause additional effects such as speech interference, sleep disturbance, and disruption to classroom learning. For residents near airports, these effects can often impact quality of life, and therefore, are often considered when assessing compatible land use.

This list provides a sample of factors that can impact noise concerns:

- Number of aircraft operations
- Type of aircraft using the airport
- Time of day for operations
- Airfield layout
- Percentage of time each runway or runway direction is used
- Location and frequency of use of flight tracks/patterns

Additionally, this list includes: a sample of factors that can determine how a local community responds to noise:

- Type of surrounding land uses and the noise levels that these land uses themselves generate
- Type of surrounding environment and its ambient noise level
- Topography of surrounding land
- Noise sensitivity of surrounding land uses
- Past experiences with noise exposure

A noise analysis was part of the 2012 environmental assessment conducted for the Runway 18/36 extension. The noise analysis determined that no schools, hospitals, churches

or commercial use buildings were within the FAA approved 65 Day/Night Level (DNL) contour for TYQ. This does not mean that land uses outside of this contour may not experience some degree of annoyance due to overflights, but this result is below the acceptable threshold for noise exposure set by the FAA and the US Department of Housing and Urban Development (HUD).

To maintain this limited number of noise sensitive uses, it is important for the strategic plan to guide growth and development in the Airport influence area toward those uses that are less impacted by noise. Where that is infeasible, owners or users in these areas must be made aware of the potential impacts. This can be accomplished through educational programs, deed restrictions, and even requiring the use of enhanced building materials to shield the uses from potential noise impacts.

Residential development is often a use that is considered to be noise sensitive. Multi-family and single-family attached housing are considered a bit more compatible with airport operations since they are less susceptible to noise issues due to their more limited activities outside and the inherent noisier environment that are associated with these uses since they share walls and have higher densities.

Single-family residential development is usually a use that is recommended to be limited in proximity to airports as they usually have a quieter ambient noise footprint as well as have greater outdoor activities (i.e. backyard uses) that place residents outdoors where aircraft overflights may be perceived as an annoyance.



SOURCE: SCIENCING.COM



SOURCE: WORLDTLAS.COM

Visual obstructions

Although not a physical obstruction in airspace, visual obstructions can also pose hazards to flight. Since many aircraft operations occur without navigational aids, clear visibility is important. This is applicable at TYQ because extensive flight training takes place there. Land uses that can obscure a pilot's vision can be a concern and should be limited. Visibility can be reduced through multiple ways, which include dust, smoke, glare, light emissions, steam and smog.

Often these issues are ancillary to the primary type of land use. For example, smoke or steam may be generated by a manufacturing operation. Glare may be created by a reflective material on a building near the airport.

Glare produced from reflective surfaces can blind or distract pilots during low-level flight operations. Water surfaces, light-colored or mirrored building materials, and solar farms are examples of surfaces that can produce glare that can be distracting to pilots. It is important to evaluate these items to consider whether or not they may impact a pilot's vision. Measures should be taken to minimize the use of reflective materials in

proximity of the airport to address this issue. For example, the angle of reflection from a proposed structure that may have reflective materials should be considered, relative to the angle of approach/departure that an aircraft may take upon ascent/decent from the runway surface. Additionally, the amount of sun exposure to a surface may also be a consideration. Coordination with the FAA is recommended to address potential glare/glint issues with these types of developments.

Specifically related to solar projects, it is recommended that any solar development in the study area or within the Part 77 surfaces be subject to a Glint/Glare analysis, in addition to the normal Federal Aviation Administration (FAA) Form 7460-1 Notice of Proposed Construction or Alteration Airspace Review conducted through the Obstruction Evaluation/Airport Airspace Analysis (OE/AAA).

Wildlife Attractants

Wildlife hazards to aircraft were brought to the national stage with the Miracle on the Hudson, when a commercial airliner struck a flock of birds over New York City and was forced to make an

emergency landing on the Hudson River. What could have ended tragically instead serves as a perfect example of why it is important to limit land uses that create wildlife attractants near airports.

Wildlife attractants as defined by the FAA in AC 150/5200-33B are “any human-made structure, land use, practice, or human-made or natural geographic feature that can attract or sustain hazardous wildlife within the landing or departing surface or the airport operations area.” Essentially, an airport should look to limit land uses that generate options that provide food, water, or shelter for wildlife. Per the FAA in AC 150/5200-33B, the study area should encompass approximately 5 to 7 miles from the airport operations area when assessing wildlife hazards.

A brief list of land uses that are discouraged would include ponds, pools, sewage lagoons, water detention and retention basins, and sources of food.

FEDERAL AND STATE REQUIREMENTS

The FAA is the federal agency responsible for the management and preservation of the national air space system. As such the FAA has established requirements that address issues related to height of structures that penetrate the airspace and established requirements for airports to address land use compatibility in their local community. As an Airport that has received federal funding, TYQ is required to address these issues. The State of Indiana also has permitting requirements focused on noise sensitive land uses.

Part 77 Surfaces

As noted previously, because the Airport is part of the federal aviation system and has taken federal funds for capital improvement projects, it is obligated to meet certain design standards. The airport needs to meet the requirements of Part 77 surfaces in addition to applicable airport design surfaces according to FAA AC 150/5300-13A. The surfaces associated with each of these are discussed in greater detail in **Appendix A** and lay the foundation for the extents of the area to be considered for land use compatibility.

Federal Obstruction Evaluation

In administering Title 14 of Part 77, the FAA requires that any construction that takes place in proximity to airport or development that is more than 200 feet above the ground be evaluated for possible impacts to the national airspace system. This is handled through a process call the Obstruction Evaluation and Airspace Analysis with the use of the FAA Form 7460-1. The specific requirements for submitting include:

- The height of a structure is more than 200 feet above ground level or
- The use/structure is within 20,000 feet of a runway and penetrates a 100:1-foot slope extending from any point on a runway

The required notification can be accomplished by using the online portal at: <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>

Federal Grant Assurances

Airports that have accepted federal funding must also take on the responsibility to address the 39 grant assurances included within the federal contracting process. Two of these grant assurances are particularly focused on issues related to land use compatibility and approach protection.

Grant Assurance # 21 – Compatible Land use

This assurance states that an airport will “take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft.”

Grant Assurance #20 – Hazard Removal & Mitigation

This assurance states that an airport will “take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting, or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.”

State Requirements

Within the State of Indiana, the Indiana Department of Transportation, (INDOT) uses a permitting process to address the construction of land uses in a noise sensitive area per Indiana Code (I.C.) 8-21-10. These specific requirements for filing for a permit include uses that are:

- A residence, school, church, child care facility, medical facility, retirement home or nursing home, within the noise sensitive area established by INDOT per I.C. 8-21-10
- Within an area laying 1,500 feet on either side of the runway centerline and the extended centerline of the runway for one (1) nautical mile from the boundary of any public use airport.

CONCLUSIONS

The Indianapolis Executive Airport is an asset to not only the local community but the state of Indiana and the national airspace system. As such, ensuring the long-term viability of aircraft to safely operate in to and out of the airport is important. Additionally, maintaining the safety and the quality of life of individuals who reside and work in proximity to the airport is also key. Balancing these two goals requires thorough review and dedication by a wide audience. Understanding the various impacts and the resulting consequences that can occur if these impacts are not assessed and managed is crucial to the implementation of a successful land use compatibility program. Reviewing the needs of the Airport, fine-tuning the areas that should be considered for evaluation, and assessing the results with the long-term development needs and goals for the Town of Zionsville are the foundation of the land use planning exercise.



SOURCE: JETPHOTOS.COM



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4



DEVELOPMENT ANALYSIS

INTRODUCTION

The intent of this chapter is to present a summary of existing development conditions within the study area related to land use regulations, environmental conditions and utility availability.

Key Points

The future land use policy was established with a 2014 amendment to the Zionsville Comprehensive Plan, which adopted the 2009 Boone County Comprehensive Plan future land use maps for Union and Eagle Townships.

Because of sanitary sewer territory boundaries, the area remaining in the Study Area that can be served with existing sanitary sewer service is limited. New development will be limited until sanitary sewer service is provided.

Areas west of U.S. 421 have key environmental assets including floodplains, wetlands and contiguous tree canopy.

The Study Area is served by U.S. 421 and S.R. 32, both of which are two-lane highways extending throughout the Study Area.

CURRENT DEVELOPMENT POLICIES

Existing land use Maps

The current land use policy for the study area is based on the 2014 amendment to the Zionsville Comprehensive Plan. This amendment was needed after Zionsville’s corporate limits were extended to include Eagle and Union Townships, which included the Study Area. Zionsville chose to adopt the Future Land Use Maps from Eagle and Union Township as had been included in the 2009 Boone County Comprehensive Plan. These maps are presented in **Figures 4.1 and 4.2.**

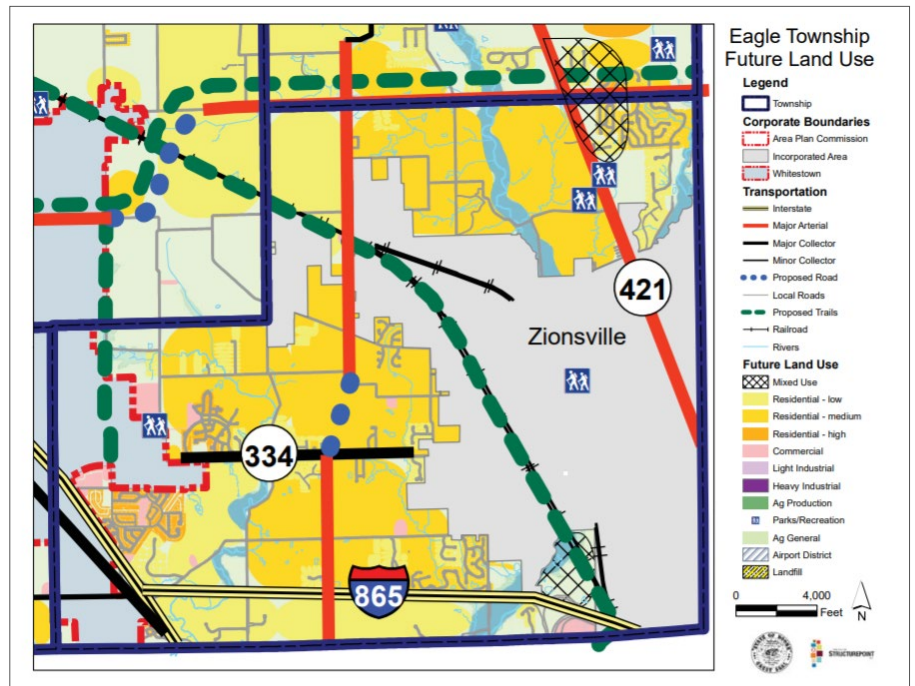


FIGURE 4.1: EAGLE TOWNSHIP LAND USE MAP
SOURCE: 2014 ZIONSVILLE AMENDMENT

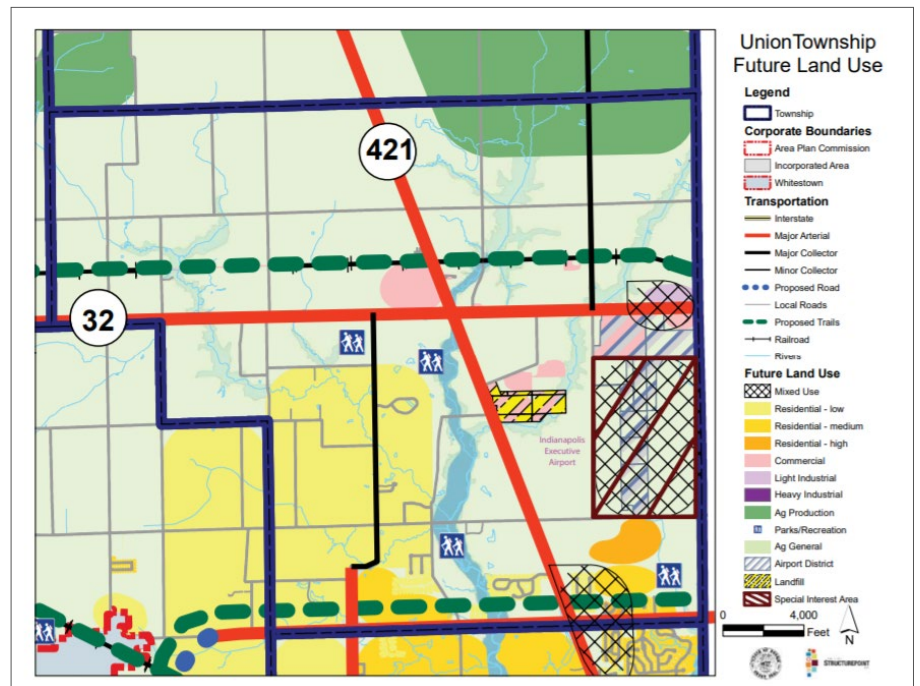


FIGURE 4.2: UNION TOWNSHIP LAND USE MAP
SOURCE: 2014 ZIONSVILLE AMENDMENT

CURRENT ZONING MAP

Current development policies for the Study Area reflect a range of development standards. A summary of these requirements is presented in the following map, **Figure 4.3**.

Zoning

AGRICULTURE

Min. Acreage on Well/Septic: 2
Min. Acreage on Utilities: 2

RE: RURAL EQUESTRIAN DISTRICT

Min. Acreage on Well/Septic: 3
Min. Acreage on Utilities: 3

R1: RURAL SINGLE-FAMILY RESIDENTIAL

Min. Acreage on Well/Septic: 2
Min. Acreage on Utilities: 1

R2: RURAL SINGLE AND TWO FAMILY RESIDENTIAL

Min. Acreage on Well/Septic: 2
Min. Acreage on Utilities: 0.6

R3: RURAL SINGLE-FAMILY RESIDENTIAL

Min. Acreage on Well/Septic: 2
Min. Acreage on Utilities: 0.23

I-2: RURAL GENERAL INDUSTRIAL

“Accommodate all types of industrial uses within the town’s rural area which may require enclosed or unenclosed spaces for storage, manufacturing and fabricating.”

LB- RURAL LOCAL BUSINESS

Convenience and necessity facilities

AZ: RURAL AIRPORT ZONING DISTRICT

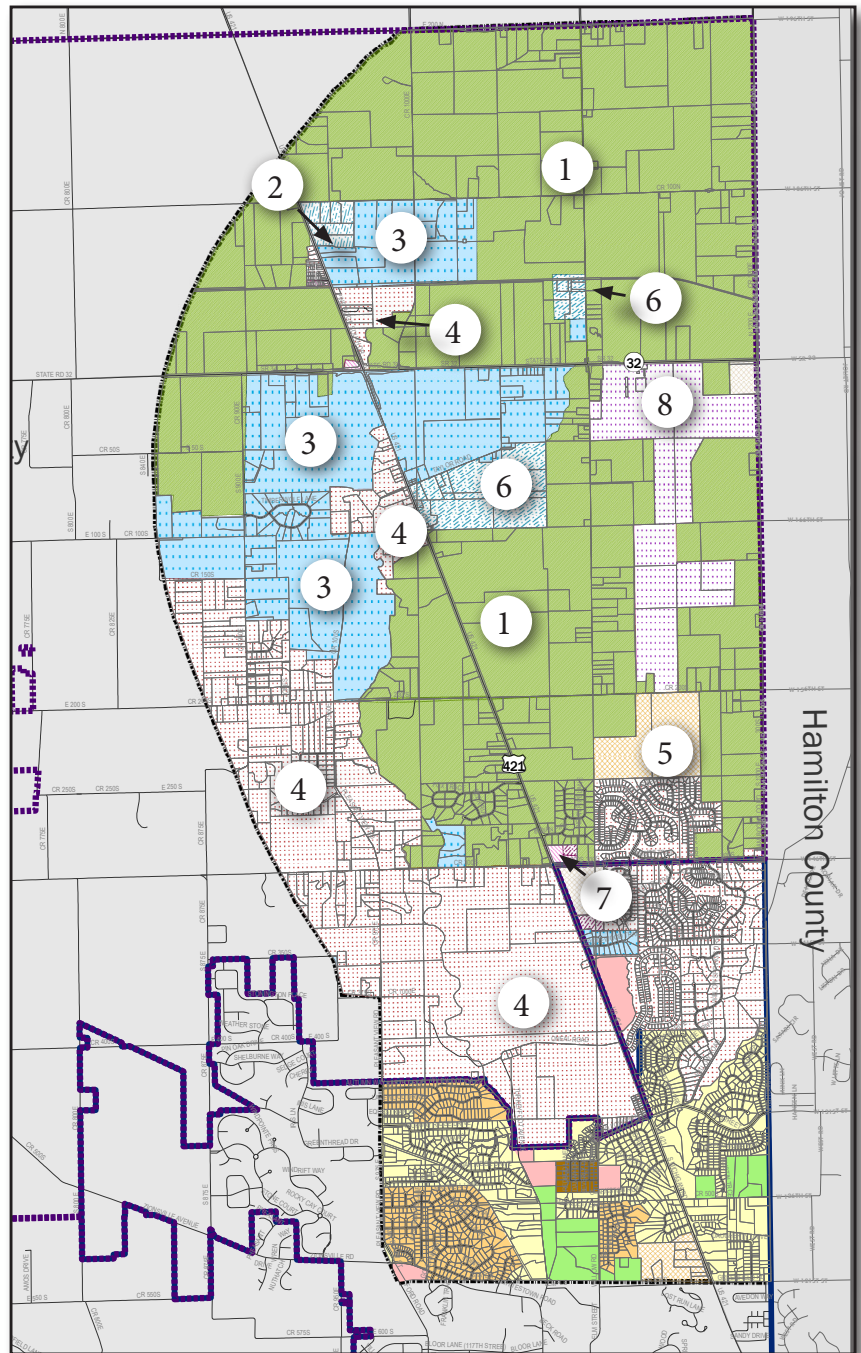


FIGURE 4.3: ZONING MAP OF STUDY AREA

CURRENT DEVELOPMENT

While much of the study area is rural residential or agricultural in nature, some portions of the Study Area have been subdivided for residential use. A map of subdivided properties is provided in **Figure 4.4**

Policies

The Study Area is a desirable established real estate market due to its' rural character and natural resource amenities. Development densities within the Study Area average 1.75 dwelling units per acre. Stakeholder input received for this area identified the desire to retain current character while preserving natural resources.

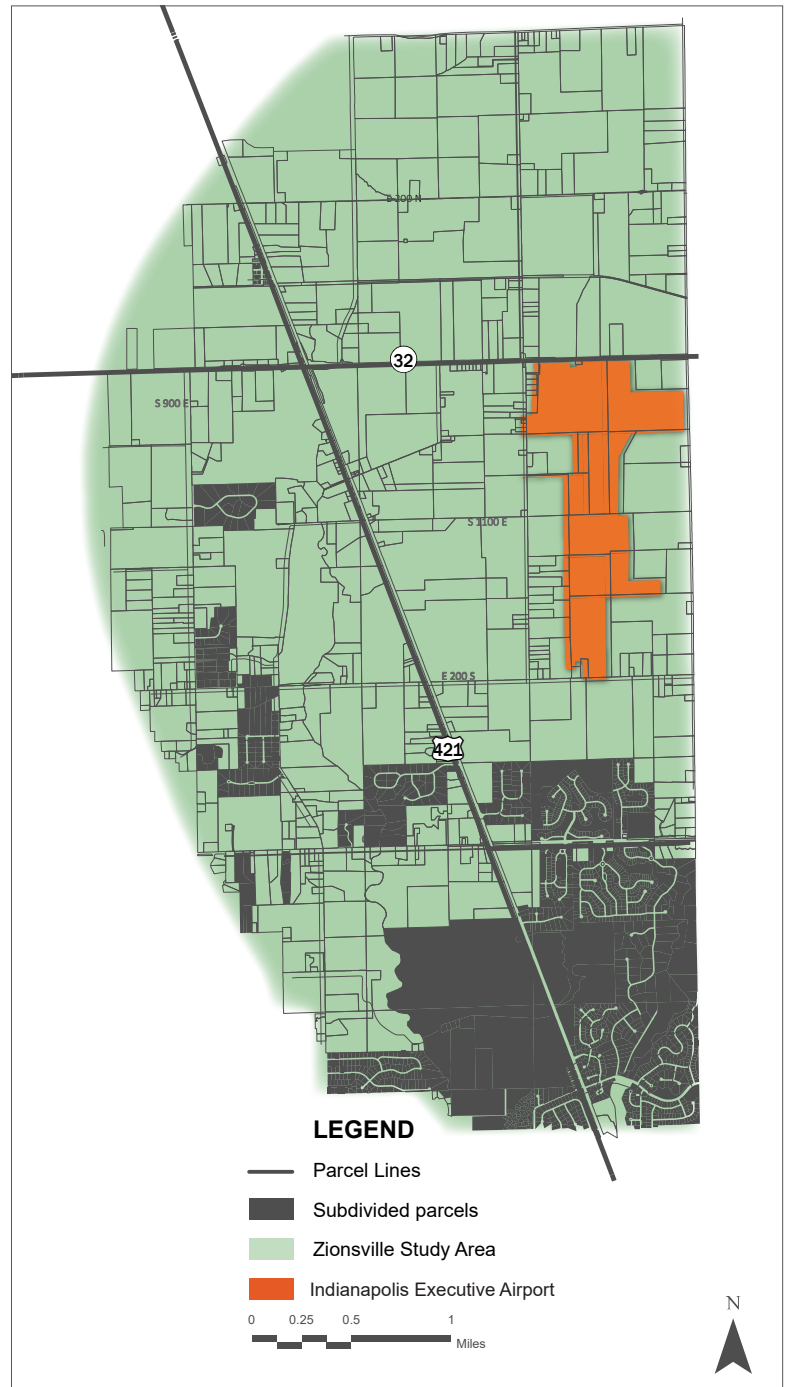


FIGURE 4.4: STUDY AREA SUBDIVISIONS

ENVIRONMENTAL CONDITIONS

Hydrology

The Eagle Creek watershed is the primary watershed within the study area. The typical drainage pattern flows from north to south across the site. There are a series of wetlands and floodplains within the Study Area, mostly along Eagle Creek.

Topography

Areas west of U.S. 421 exhibit a fair degree of elevation change. Grades fall over 100 feet between S.R. 32 and C.R. 300 N. East of U.S. 421 in the area surrounding the airport, the elevations are relatively level.

Tree Cover

There is significant tree canopy in the lands west of U.S. 421 along Eagle Creek. Notably, this area represents one of the largest areas of contiguous tree cover remaining in Boone County. Many of these areas are forested wetlands.

Known Environmental Conditions

There is a former Superfund site located on U.S. 421, southeast of the U.S. 421/S.R. 32 intersection. A remediation solution is in place for the site, but re-use of the site will be limited for many years.

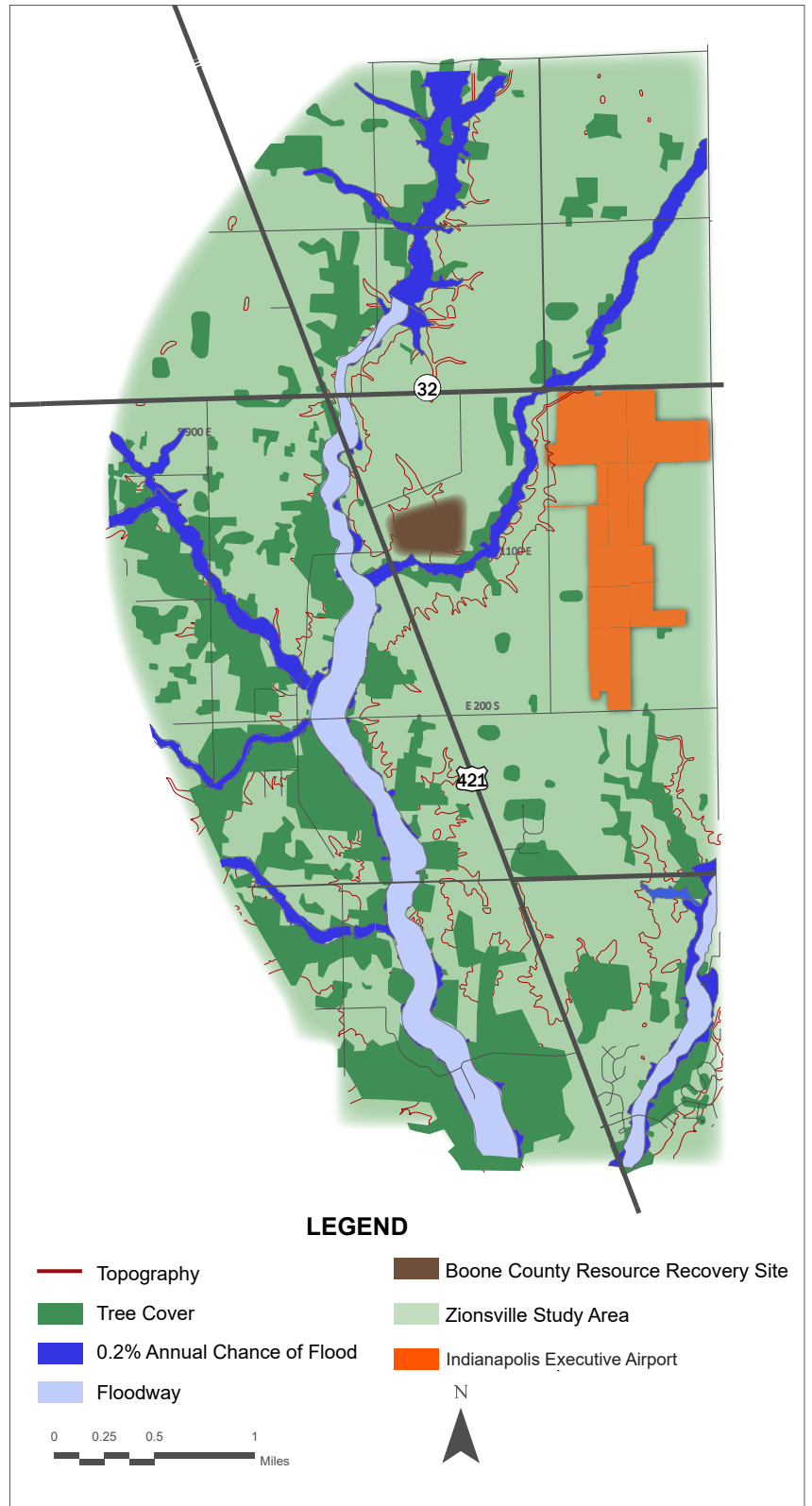


FIGURE 4.5: ENVIRONMENTAL CONSTRAINTS

TRANSPORTATION

Zionsville is located where regional surface transportation corridors connect the the town and rural Boone County to the Indianapolis metropolitan area. However, the Study Area is currently only served by two lane state highways, which limits connectivity. Key regional corridors as shown in **Figure 4.6** include:

S.R. 32: A high traffic corridor for commuters, freight and local traffic connecting I-74, I-65, U.S. 31 and I-69. The Indianapolis Metropolitan Planning Organization (MPO) 2045 Long Range Transportation Plan identifies this corridor for future upgrades to a five-lane corridor (currently two-lanes).

U.S. 421: This corridor connects the Study Area to an interchange on I-465. It is currently a two-lane highway through the Study Area, but widens to four lanes south of C.R. 550 South.

C.R. 300 S/146TH STREET: The C.R. 300 S/146th Street corridor is a primary east-west corridor connecting Boone County and Hamilton County. Work is currently underway within both counties to widen the corridor from two to four lanes. A new connector roadway was recently installed west of the Study Area to link this corridor to Albert S. White Parkway in Whitestown, which connects to I-65 at S.R 267.

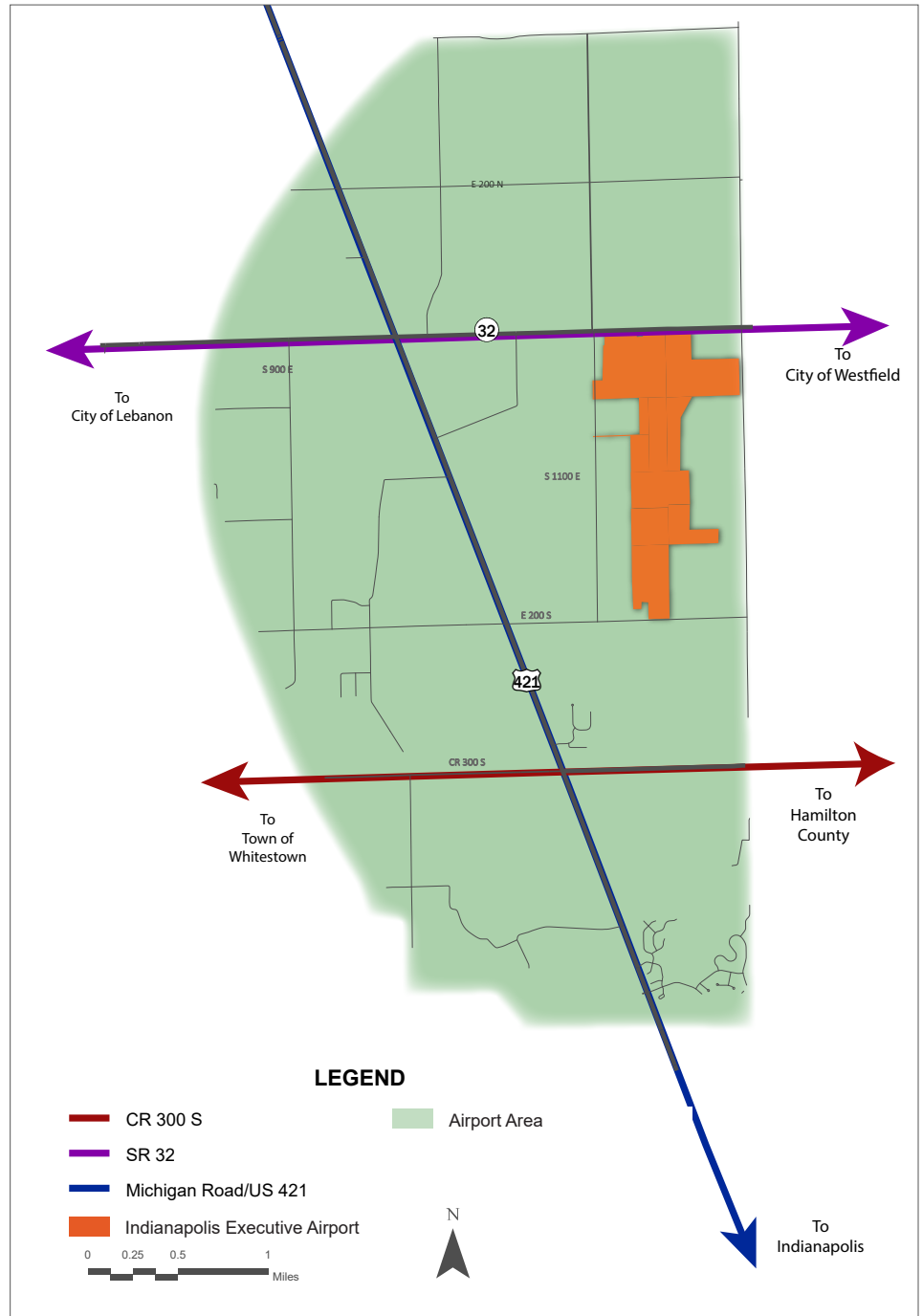


FIGURE 4.6 TRANSPORTATION CONDITIONS MAP

UTILITIES

Sanitary Sewer

Sanitary sewer service to the southern part of the Study Area is provided by TriCo. Existing infrastructure is in place and future extensions can be made to remaining unserved portions of their service territory. **Figure 4.7** shows the sewer providers for the study area is provided on the following page.

The northern portion of the Study Area is the service territory for HSE Utilities. No sanitary sewer infrastructure has been installed within HSE territories in Boone County. No public plans for future service have been announced and no timetable has been established.

Since there is limited undeveloped area remaining in the TriCo sewer service area, and since there are no immediate plans to extend sanitary sewers into the HSE service territory, Zionsville's northern expansion will soon be limited by sanitary sewer availability.

Electric

Electric service is provided to the site by a combination of Duke Energy and Boone REMC. Services are not currently suitable for significant development, and extensive upgrades will be required to meet future needs of the study area.

Gas

The Study Area is within the service territory for Vectren. Services would need to be upgraded to meet future needs of the Study Area.

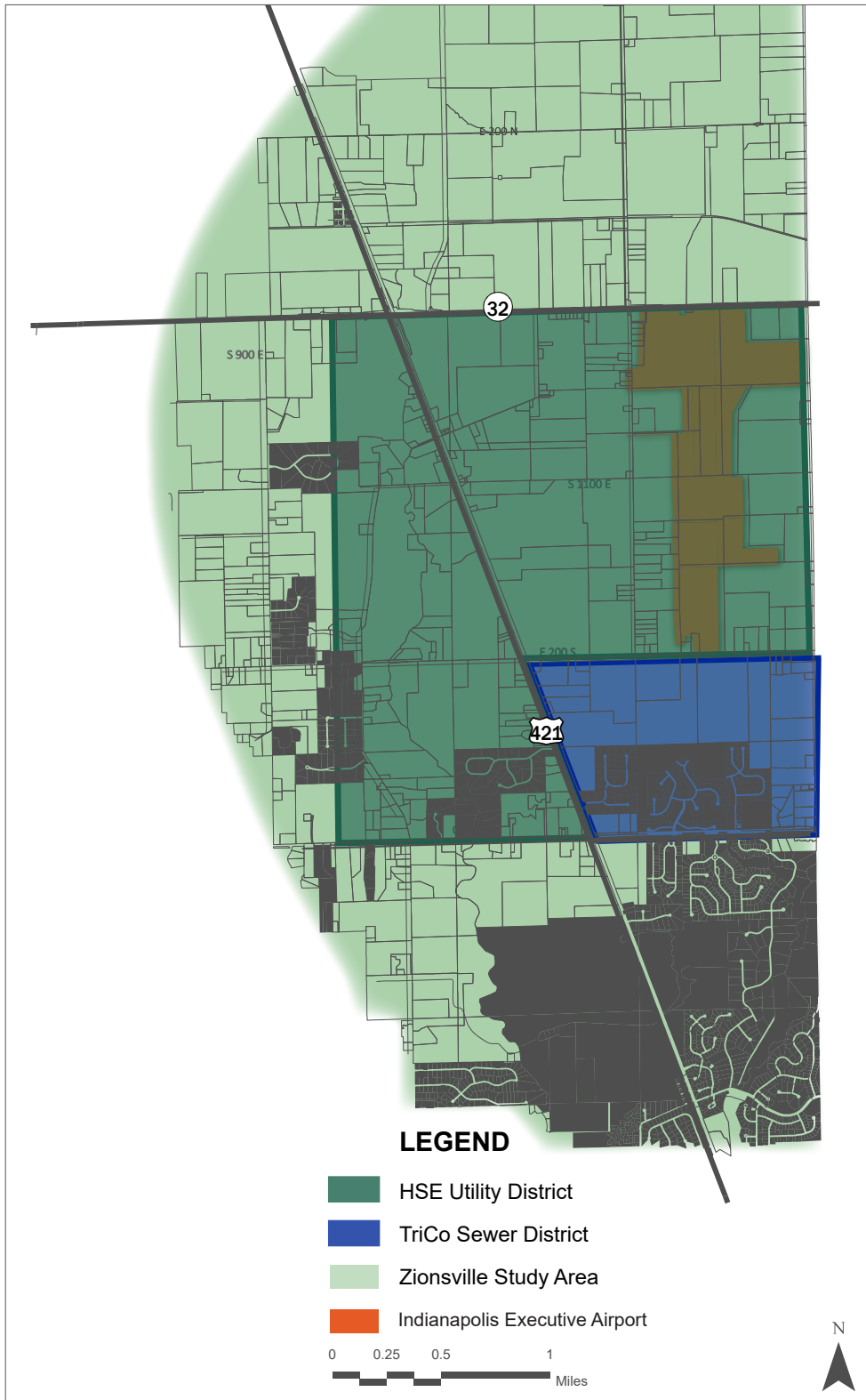


FIGURE 4.7: SANITARY SEWER SERVICE TERRITORY MAP



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5



**ECONOMIC
ANALYSIS**

EXISTING ECONOMIC CONDITIONS

The intent of Chapter 5 of is to provide an overview of current economic conditions impacting the Study Area. This analysis will be used to provide recommendations for short-term and long-term development opportunities.

Key Points

Based on income data and growth trends, medium to long-term potential for additional neighborhood or regional scale retail development exists.

With the limited space available in existing employment centers in Zionsville, there will be a future need and opportunity for land to be allocated for employment centers. The area surrounding the airport provides a unique opportunity to meet this need.

Income data and growth trends indicate short-term, medium-term, and long-term potential for housing development.

Recent developments and opportunities for agri-tourism and rural businesses have provided unique opportunities for development and economic vitality.

ECONOMIC SNAPSHOT

Zionsville Overview

To begin, it is important to consider the larger context. This Study Area is located on the north side of the Town of Zionsville, which is located in the greater Indianapolis metropolitan area. Zionsville is generally considered to be a growing, affluent community. Key characteristics for the town of Zionsville are outlined below in

Table 5.1.

Study Area Overview

- Most of the listed population within the Study Area is located south of C.R. 200 S. (156th Street).
- The area is growing at a rapid pace (60% increase in population between 2010 and 2018).
- The northern portion of the Study Area is primarily rural residences whose occupants can be characterized as well educated, and upper middle class, based on demographic data. Most are empty nesters or soon will become empty nesters.
- In the southern (suburban) portion of the Study Area, especially south of C.R 200 S., the majority of residents are well-educated career professionals with school age or younger children.

	ZIONSVILLE	STUDY AREA
2000 POPULATION	15,754	2,371
2010 POPULATION	23,502	3,300
2018 POPULATION	29,073	4,921
2023 POPULATION FORECAST	33,571 (2.92% growth rate)	5,855 (3.54% growth rate)
2018 MEDIAN AGE	39.4	41.7
2018 HOUSEHOLDS	10,283	1,616
2018 AVERAGE HOUSEHOLD SIZE	2.83	3.05
2018 MEDIAN HOUSEHOLD INCOME	\$119,320	\$129,801

TABLE 5.1: ECONOMIC SNAPSHOT

*SOURCE: ESRI 2018-2023 ESTIMATES AND U.S. CENSUS

*Growth rates are forecasted to continue between 2018 and 2023

TRAFFIC PATTERN OBSERVATIONS

Key observations related to traffic patterns within the Study Area follow:

- According to INDOT’s database, counts on U.S. 421 vary from 12,977 south of C.R. 300 S. to 5,726 north of S.R. 32.
- Counts on S.R. 32 vary from 7,849 at the Hamilton-Boone County line to 7,259 at the intersection of U.S. 421.
- U.S. 421 is a 4 lane highway from I-465 to C.R. 550 S. North of this corridor, it is a 2 lane highway.
- S.R. 32 is planned for expansion in the coming decade.
- C.R. 300 S is expected to become a primary East/West thoroughfare connecting Zionsville to Westfield and Carmel.

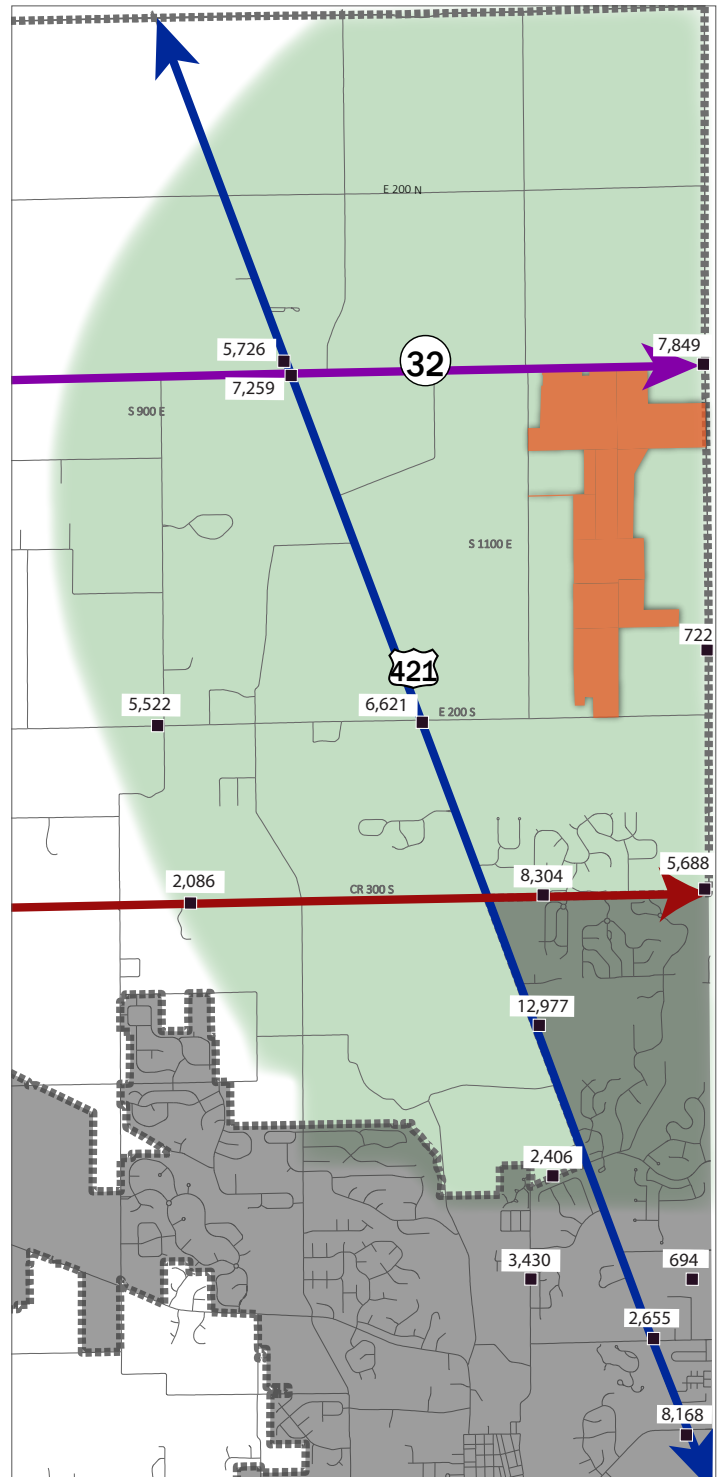


FIGURE 4.8: TRAFFIC COUNT MAP

SOURCE: INDOT TRAFFIC COUNT DATABASE SYSTEM (TCDS)- PULLED FEBRUARY 25, 2019 (DATA FROM 2020 WAS IMPACTED BY THE PANDEMIC AND MAY NOT REFLECT ACCURATE FIGURES.)

RETAIL ANALYSIS

Existing Regional Retail Districts

There are two regional retail districts within ten miles of the Study Area. Regional retail districts are defined as having over 100 acres of retail development and are noted in **Table 5.2**. Other regional attractions within the area are not limited to big box retail, but local agri-tourism destinations such as Trader’s Point Creamery, Stucky’s Orchard and the Country Market.

LOCATION	DESCRIPTION	KEY BUSINESSES
I-465/U.S. 421 Area	Large regional development district extends along U.S. 421 from 96th Street to past 106th Street; includes portions of Boone, Hamilton and Marion Counties	Costco, Wal-Mart, JC Penny, Lowes, Best Buy, Home Depot, Target, Starbucks
U.S. 31/146th Street	Large regional development includes Clay Terrace and Village Park Plaza.	Whole Foods, Lowes, Menards, Barnes & Noble, Regal Cinemas, Target

TABLE 5.2: REGIONAL RETAIL DISTRICTS

Neighborhood Retail Centers

There are multiple neighborhood scale retail centers located within 10 miles of the Study Area. The district at the intersection of U.S. 421 and C.R. 300 N. is within the Study Area, but is proposed and does not currently have a definitive time line for development. Neighborhood Retail Centers are defined as retail areas consisting of under 100 acres of development and are summarized in **Table 5.3** while those along 146th Street are shown in **Table 5.4**.

LOCATION	SIZE (ACRES)	KEY BUSINESSES
Main/Oak Street (Zionsville Village)	25 Acres	Boutique shops, local small businesses and local restaurants
131st Street (Main Street) and Towne Road	30 Acres	CVS
Village of West Clay (Meeting House Road)	12 Acres	Offices, restaurants
146th Street and Ditch Road	23 Acres	CVS
116th Street and Keystone	60 Acres	Meijer
U.S. 31/S.R. 32	50 Acres	Primary a highway-oriented retail district; fast-food, gasoline stations
U.S. 421 (Michigan Road) and C.R. 300 N.- Under Construction	30 Acres	New development under construction

TABLE 5.3: EXISTING NEIGHBORHOOD RETAIL CENTERS WITHIN 10 MILES OF THE STUDY AREA

SHORT-TERM RETAIL MARKET POTENTIAL

The following factors influence retail market potential for the Study Area in the short-term:

- There are currently no developed retail districts in the Study Area.
- Existing retail districts are at least seven miles from the intersection of U.S. 421 and S.R. 32, and over four miles from the Intersection of U.S. 421 and C.R. 300 S.
- Within the Study Area, the Market Potential Index (MPI) for most products and consumer behaviors exceeds 100 according to ESRI data. This means that residents in the local market spend more on goods and services than the average America.
- Traffic counts on U.S. 421 south of C.R. 300 South are over 12,000 vehicles per day. Areas south of C.R. 300 S. are over four miles from the nearest retail district. Traffic decreases considerably north of C.R. 300 S. and west of U.S. 421.

- The intersection of U.S. 421 and S.R. 32 is the only intersection of state highways in the Study Area. However, there are only 139 households within one-mile radius market centered on the U.S. 421 and S.R. 32 intersection, which is insufficient to support retail development in the short term. Traffic counts at this intersection are also modest.

Recommendations

Because of traffic patterns, distance from the nearest retail district, and MPI data for the area, the intersection of U.S. 421 and C.R. 300 S. has short-term potential for retail development. It is understood that a 30-acre development has been proposed at this location, but construction has not commenced.

Other locations in the Study Area do not have sufficient traffic counts or population to support significant retail development in the short-term.

LOCATION	SIZE (ACRES)	KEY BUSINESSES
146th Street and Ditch Road	23 Acres	CVS
146th Street and Carey Road	9 Acres	Fresh Thyme
146th Street and Gray Road	20 Acres	Walgreens
146th Street and Hazel Dell Parkway	100 Acres	Kroger, IU Health Urgent Care
146th Street and River Road	10 Acres	Ricker's Gas Station, Strip Centers

TABLE 5.4: EXISTING NEIGHBORHOOD RETAIL CENTERS ALONG 146TH STREET

LONG-TERM RETAIL MARKET POTENTIAL

Based on the Market Potential Index (MPI) data and growth rate of the Study Area, it can be expected that there will be medium- to long-term opportunities for additional retail development in the Study Area.

The timing and scale of such opportunities can vary and will be highly dependent upon how fast this area grows. According to ESRI forecast data, the area is forecasted to grow by 3.64% between 2018 and 2023. If this area continues at this pace, the Study Area population could grow to over 7,000 within ten years, and to over 10,000 within 20 years (see **Table 5.5**). Population forecasts this far in advance are difficult to predict with any accuracy, but it can be concluded that there is opportunity for future growth.

Recommendations

For the purposes of future land use planning, population projections indicate that additional land should be reserved for future retail development in addition to the proposed 30 acres at U.S. 421/C.R. 300 S. Because of distances to other regional retail centers there is potential for development of a larger neighborhood retail center or even a small regional retail center within the Study Area. The timing and scale of such developments is highly dependent upon future growth patterns.

YEAR	POPULATION PROJECTION AT 3.64% ANNUAL GROWTH
2018*	4,921
2023 Forecast (5 years)**	5,885
2028 Forecast (10 years)***	7,037
2033 Forecast (15 years)***	8,414
2038 Forecast (20 years)***	10,061

TABLE 5.5: POTENTIAL POPULATION FORECAST IN STUDY AREA AT CURRENT GROWTH RATES

* SOURCE: ESRI

** SOURCE: ESRI POPULATION FORECAST- BASED ON 3.64% ANNUAL GROWTH RATE BETWEEN 2018 AND 2023

*** ASSUMES 3.64% GROWTH RATE CONTINUES BETWEEN 2023 AND 2038

EXISTING EMPLOYMENT DISTRICTS

A summary of existing economic development districts within 10 miles of the Study Area are outlined in **Tables 5.6 and 5.7:**

LOCATION	DESCRIPTION	KEY BUSINESSES
Park 100	This district is largely built out, and consists of office, commercial, retail, warehouse and manufacturing businesses. Area is generally bordered by I-465, 71st Street and Georgetown Road.	DOW AgroSciences
Whitestown/Anson	Development in progress along I-65 between Whitestown Parkway and Albert S. White Drive. Businesses largely consist of large manufacturing and distribution facilities.	Amazon Fulfillment
Lebanon Enterprise Business Park	This is a partially developed industrial park consisting of large manufacturing and distribution facilities. It is located along I-465 on the southwest side of Lebanon.	Subaru

TABLE 5.6: REGIONAL EMPLOYMENT DISTRICTS

LOCATION	DESCRIPTION	KEY BUSINESSES
106th Street Corridor	This district consists of a mix of older and newer businesses located west of US 421 in southeast Zionsville.	Creekside Corporate Park

TABLE 5.7: EMPLOYMENT DISTRICTS WITHIN ZIONSVILLE

EXISTING EMPLOYMENT DISTRICT MARKET POTENTIAL

The following factors influence the short-term market potential for the development of new office, warehousing, manufacturing and related businesses in the Study Area:

- There is not a significant employment district within the Study Area.
- The Holiday Farms development includes office development along U.S. 421 south of C.R. 300 S.
- Other than the greater 106th Street corridor, there is limited land zoned for employment sites in Zionsville. This is representative of a broader trend on the near north side of Indianapolis, where there is limited land allocated for light (enclosed) industrial, and very limited land for heavy industrial developments.
- The Study Area does not currently have supporting retail and convenience services that would necessary for an employment center. The development of proposed retail near U.S. 421 and C.R. 300 S. would help but not entirely satisfy the anticipated demand. The Study Area is located almost eight miles west from U.S. 31, nine miles from I-465 (at U.S. 421) and over ten miles from I-65 (at Indianapolis Avenue). Corridors connecting the Study Area to the interstates are predominantly 2 lane highways, some with a heavy mix of residential traffic. These factors limit the types of businesses that would be attracted to this area.

- The other portion of the Study Area where employment land uses must be considered is the area surrounding the airport itself. Current land uses at the airport are mostly hangars with associated office spaces. These support multiple businesses using the airport as a base for corporate travel.

Recommendations

It is anticipated that there will be future need and opportunity for land to be allocated for employment centers because of the limited space available in existing employment centers in Zionsville.

HOUSING ANALYSIS

Several factors influence the market potential for housing development in Zionsville and the Study Area, including:

- Population Trend:** The population of Zionsville and the Study Area are both growing. Forecasts indicate that population of the Study Area will grow by 3.6% between 2018 and 2023 and that Zionsville will grow by 2.92% during that same period as shown in Table 5.8. This population growth is not a new trend. There has been consistent growth over the last two decades.
- Schools:** Zionsville Community Schools receive high marks from the State of Indiana. The entire Study Area is located within the service area for Zionsville Community Schools.
- Location:** Zionsville is located within the northern suburbs of the greater Indianapolis metropolitan area. This area is highly attractive for housing development as evidenced by its strong population growth in recent years.
- Home Values:** The median home value in Zionsville is \$375,704. This exceeds Indiana’s median value of \$143,367. Nearly 59% of homes range between \$300,000 and \$749,999, nearly 10% of homes are within the \$750,000 to \$1.9MM range, and nearly 32% of homes fall below \$299,000.

TIME PERIOD	ZIONSVILLE GROWTH RATE	INDIANA GROWTH RATE
2018-2023 (Forecasted)	2.92%	.052%
2000-2010	4.08%	0.64%

TABLE 5.8 POPULATION TRENDS

SOURCE: ESRI

- Housing Product Range:** Most homes in Zionsville and the Study Area are single family, owner-occupied units. Regional and national trends indicate that Zionsville should expect additional demand for a wider variety of housing types in the future.
- Housing in Study Area:** Housing development in the northern portion of the Study Area is limited to single family rural homes and in the southern portion of the district more suburban style single family homes.

Recommendations

Based on the strong past performance of the housing market in Zionsville, land use planning decisions should be based on the assumption that those demands will continue into the future. Housing will be a key component of future land use in the Study Area.

6



KEY PLANNING ISSUES

KEY PLANNING ISSUES

Planning for the Study Area ultimately needs to balance residential growth with airport protection. Several key planning topics were identified during the planning process that heavily influence the final recommendations. In this section of the plan, these key issues are presented, options are identified, and recommendations are made.

Key Points

The town's policy of avoiding leapfrog development should apply to the Study Area.

Develop and formally adopt an Environmental Overlay District to protect natural areas in the Study Area specifically west of US 421.

Define a mixed-use district surrounding the airport to meet residential development pressures, protect current airport operations and strengthen the long-term viability of the Airport.

Update current Zionsville zoning regulations to incorporate airport related development requirements.

Facilitate development of an airport-related employment center to protect and enhance the airport, while supporting economic development for Zionsville and surrounding areas.

Develop an airport overlay district for the entire study area to enact development standards that protect airport operations.

It is recommended that Zionsville investigate adoption of a form-based code to manage development of the mixed-use portions of the Study Area.

LEAPFROG DEVELOPMENT

Zionsville's Comprehensive Plan outlines a policy in which the community's intent is to grow radially out from the Village. Zionsville's policy is also to avoid leapfrog development in order to reduce occurrence of unregulated growth.

Both of these are appropriate policies for the Town's growth to date, but following these policies within the Study Area could be challenging. Specifically, development with sanitary sewers can only be extended to C.R. 200 N. Areas north of C.R. 200 N. are in a different sewer territory, and no infrastructure has been developed for that area.

It is possible that demand for sewer service to the airport could result in sewer infrastructure being extended to the S.R. 32 corridor before other parts of the Study Area. While service to the airport is desirable, it should not be used as justification for developing the S.R. 32 corridor before other parts of the Study Area. The town's policy of avoiding leapfrog development should apply to this area.

What is leapfrog development?

Leapfrog development is often referred to as clustered urban or suburban sprawl dispersed sporadically throughout an area. Typically, this development requires extension of utilities through undeveloped areas.

Recommendations

The town's policy of avoiding leapfrog development should apply to the Study Area.

ESTATE HOUSING

Areas west of U.S. 421 and south of S.R. 32 are highly desirable for housing because of the scenic natural setting. This natural setting derives from the Eagle Creek watershed, its floodplains, wetlands and extensive tree canopy.

This plan establishes dual goals of supporting rural estate housing in this area, while also protecting these natural areas.

Current zoning requirements for this area allow 0.6 to 1.0 acre minimum lot sizes with sanitary sewers, and 2.0 acre minimum when on septic systems. Since there are no sanitary sewers currently available, the practical minimum lot size is 2 acres.

While 2.0 acre lot minimums are effective in creating low-density estate housing, they are not effective in preserving natural areas and can contribute to sprawl.

Possible strategies for balancing development goals could include encouragement of conservation/cluster subdivisions and/or an environmental protection overlay.

CONSERVATION/CLUSTER SUBDIVISIONS

Conservation subdivisions allow flexible lot sizes (usually meaning smaller lots) in order to protect natural areas or open space.

Since 2 acres is the minimum lot size for septic, it is not feasible to reduce lot sizes further with a conservation subdivision approach, therefore this approach is less effective.

If sanitary sewers were to be extended to the area in the future, it would allow lot sizes at the lower end of current requirements (0.6 to 1.0 acre lots) and make conservation subdivisions a more feasible strategy.

ENVIRONMENTAL OVERLAY DISTRICT

Another strategy is to establish an overlay district that identifies detailed performance measures for protecting environmental features. This could provide flexibility in lot sizes when possible, to accomplish stated environmental goals. This could also be specific in requiring certain amounts of open space in each development. This approach is broader in application, and can utilize conservation subdivisions for sewered areas, while providing expectations for developments without sewer. An overlay district could also address requirements for single lot developments that are more common in estate housing.

Recommendations

Encourage adoption of an environmental overlay district for areas west of US 421 and south of SR 32.

AGRICULTURE LAND NORTH OF S.R. 32

Areas north of S.R 32 generally consist of agricultural or very low density residential uses. These areas should continue to be used for agriculture in the short- to medium-term but it is anticipated that much of the Study Area will be developed in the long-term. Therefore, a key goal for the Study Area is to maintain the effectiveness of agricultural lands until it is an appropriate time for development.

A key to accomplishing this goal is to avoid incremental development in agricultural areas in the short- to medium-term. As lots are subdivided smaller than 10 to 20 acres, these areas become more residential in character. This land fragmentation poses long-term development challenges as lots smaller than 10-20 acres are more difficult to aggregate into larger lots for development.

Therefore, it is recommended that subdivision of land in agricultural areas be discouraged until sanitary sewer is available. When allowed, minimum lot sizes of 10-20 acres should be required.

Additionally, areas along S.R. 32 and U.S. 421 are desirable for agri-tourism and agri-business operations. Such uses would support the agricultural sector, while being compatible with airport operations.



FIGURE 6.2: EXURBAN DEVELOPMENT PATTERNS
SOURCE: ELPC.ORG

Recommendations

Discourage residential development in agricultural areas until sanitary sewer is available.

Require minimum lot sizes of 10-20 acres in agricultural lands.

AIRPORT COMPATIBLE LAND USES

The goal of this plan is to identify strategies that allow Zionsville to grow, while protecting and enhancing the Airport.

Central to this goal is identifying what type of development is complimentary to airport operations, and what causes conflicts. In the Airport Analysis Chapter, the following potentially conflicting uses are identified:

- Tall Structures/Vegetation (buildings, vegetation, towers, wind turbines, etc.)
- Density/Concentrations of People (theaters, hospitals, schools, churches, etc.)
- Noise Sensitivity (residential, schools, churches, etc.)
- Visual Obstructions (steam, light, glare, etc.)
- Wildlife Attractants (sources of food, water, and shelter)

Based on these factors, it is apparent that most commercial and light industrial would be complimentary uses as long as they do not have light, glare, steam or concentrations of people or wildlife attractants. Similarly, most agricultural operations are compatible with an airport, as long as they do not produce steam, light or glare and use of best management practices to reduce wildlife attractants.

On the other hand, traditional suburban single family residential is not considered compatible because of noise sensitivity. More dense residential uses, where there is some expectation of noise disruption, can be considered compatible when developed in moderation. This includes uses such as townhomes, condominiums, apartments, and other increased density one-and two-family housing.

Generally Complimentary Uses	Conflicting Uses
Commercial (without concentrations of people)	Commercial (with concentrations of people)
Light Industrial (without steam, light, glare)	Heavy Industrial (with steam, light or glare)
Townhomes, Apartments, Mixed-Density Residential in Moderate Amounts	Suburban Single family residential
Agriculture	Assembly Uses (Churches, Schools, Theaters, Hospitals)

TABLE 6.1 LAND USE COMPATIBILITY WITH AIRPORT OPERATIONS

There are multiple alternatives available for future land use surrounding the airport. Including the following:

Residential uses can be considered around the airport, but the type of residential is highly dependent upon its location. Figure 6.3 provides a graphic depicting this.

Tier 1: This area is limited to open space, airport operations and air-side businesses. Because of safety and noise issues, all residential should be prohibited in this area.

Tier 2: This area is close to the runway resulting in noise disruption. In addition to runway and taxiway traffic, general aviation pattern work occurs in this area. Because of noise and safety issues, new residential development is strongly discouraged in this area. Existing residential may remain, but should not be expanded.

Tier 3: This area is further from the airport and outside of the most intense general aviation traffic. However, corporate and general aviation aircraft fly relatively low in this area. Residential can be considered in moderate amounts, but structures should be clustered to create generous open spaces in the development for safety. Residential land uses that are less sensitive to noise disruption can be considered, as follows:

- New multi-family housing can be considered in moderate amounts.
- New single-family (attached) housing can be considered in moderate amounts.
- New single-family (detached) housing should be discouraged, except the minor subdivision of existing residential lots.

Tier 4: No limitations to residential development are recommended for this area.

Agriculture

The current land use surrounding the Airport is primarily agriculture. Maintaining agriculture as the dominant use is the most effective way to prevent incompatible development, but it does not create complimentary uses that could enhance the

KEY PLANNING ISSUES

Airport. Trying to maintain agriculture in an area where there are strong residential development pressures will be challenging.

Employment District

Creating an employment district will allow development of compatible businesses that could take advantage of the Airport. Various retail, commercial, manufacturing and other businesses are potential opportunities.

Mixed-Use District

Since this is a relatively large area, there is potential to mix a range of uses together within the Study Area to result in a plan that meets residential growth pressures, protects current Airport operations and provides an opportunity to strengthen the long-term viability of the Airport.

Agri-tourism

Areas along S.R. 32 and U.S. 421 are attractive locations for agri-tourism businesses. As long as uses avoid light, glare and other conflicting conditions, agri-tourism businesses would be complimentary and should be encouraged.

Recommendations

Establish a future land use plan which directs uses where they are most appropriate within the Study Area.

Enact an airport overlay district to establish open space and development standards for the Study Area.

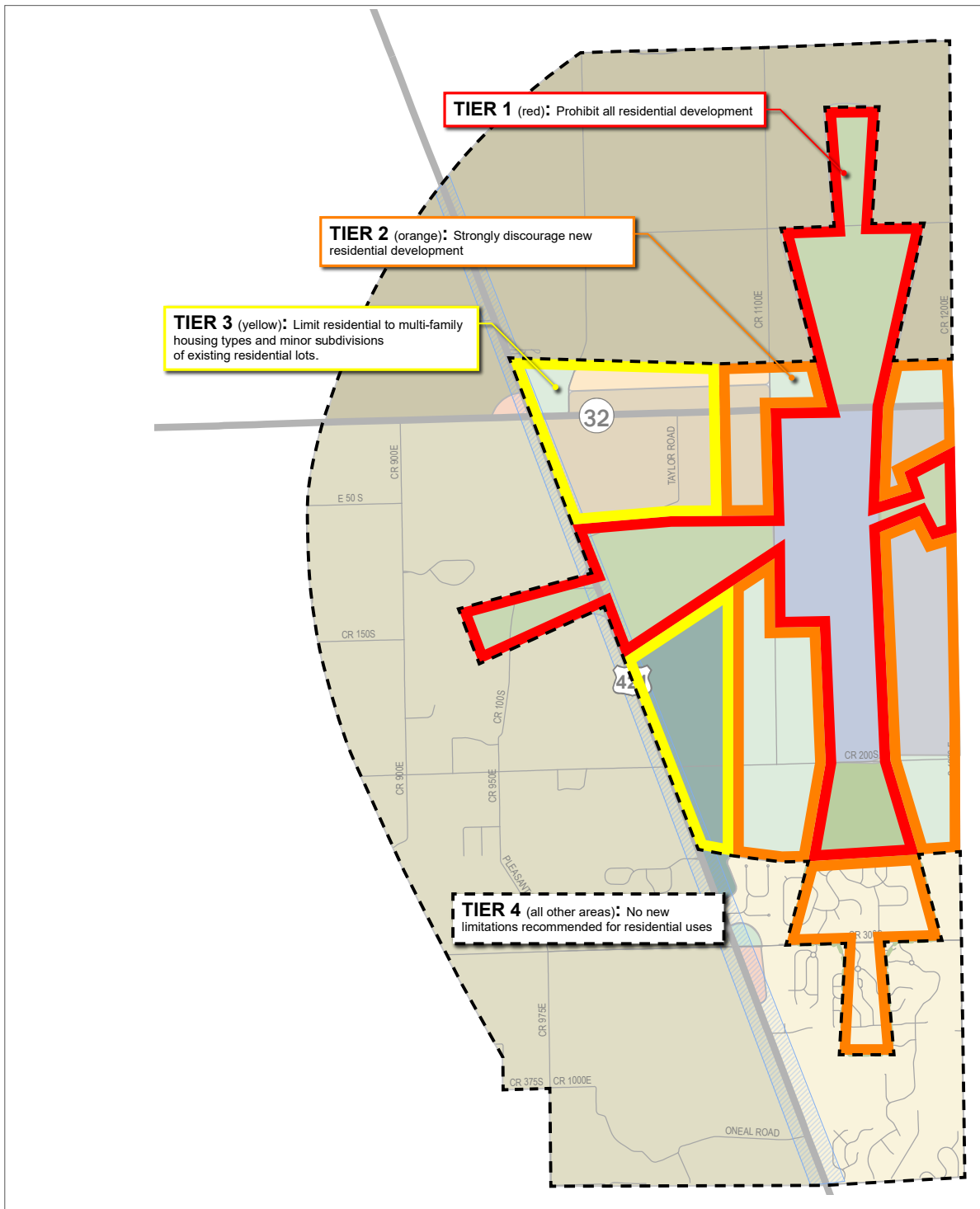


FIGURE 6.3 RESIDENTIAL DEVELOPMENT COMPATIBILITY MAP



EMPLOYER SITES

One option for protecting and enhancing the airport is to encourage development of complimentary employment centers. In the 2012 Indiana Airports Economic Impact Study, the Indianapolis Executive Airport was found to contribute over \$430 million in economic impact to the State of Indiana through the combination of on-airport, airport users, and multiplier related jobs, payroll and output. This demonstrates a significant economic impact.

There are multiple opportunities to drive additional airport related job creation and economic development, including:

- Time sensitive manufacturing
- Technology distribution facilities
- Office development, especially air-travel intensive businesses

This would meet a key need for Zionsville for the development of new employment centers.

There are factors limiting this opportunity in the short-term. The lack of utility infrastructure to support development is a critical factor that has been mentioned multiple times in this report. Current roadway infrastructure is also limiting factor however, the widening of S.R. 32 is being considered, and would support connections to U.S. 31 and I-65.

Additionally, an employer sites district would need to be carefully designed to be compatible with the adjacent rural landscape. Desired development characteristics would include quality architecture, generous open space within sites and developments, low-rise structures and fully

enclosed manufacturing operations. Heavy industrial uses, outside storage and distribution warehouses should be avoided.

One question that came up during planning was if the tax-exempt status of the Airport would encourage businesses to locate on Airport property instead of the Employer Sites district. This issue was addressed in a 2015 Settlement Agreement between the town and the Hamilton County Airport Authority. This agreement stipulated that future aviation related development on Airport property would be exempt from property taxes. The agreement also noted that any non-aviation related development would be subject to property taxes. As a result, non-aviation businesses would pay property taxes regardless of their location in the area.

Recommendations

The development of an Airport-related employment center would serve to protect and enhance the Airport, while supporting economic development for Zionsville and surrounding areas.

Roadway and utility upgrades would be required to support development.

AIRPORT VILLAGE

Because of the open land around the Airport, there is an opportunity to create a unique mix of uses in the Study Area, all centered around the Airport. The prevailing model for this is called an Airport City.

An Airport City (or Aerotropolis) is a development form physically and economically centered on an airport. In this approach, adjacent land uses are designed to leverage the asset of the airport to create a live, work and play district that serves as an economic engine for the region.

Promoted by Dr. John Kasarda, most Airport City models have a combination of cargo, intermodal, passenger and executive service. This concept has had a significant influence internationally, especially in developing countries where airports and surrounding development can be master planned on greenfield sites.

In the United States, there are few new airports being developed on greenfield sites that could take advantage of this concept. Still, the model is influencing redevelopment strategies for areas surrounding major airports.

There are multiple parallels to this concept that influence how to approach long term planning for the Study Area. These include:

- The Study Area has significant undeveloped land around the airport that could be developed in a manner supportive of the airport.
- This plan has identified a mix of land uses that could accommodate Airport City principles.

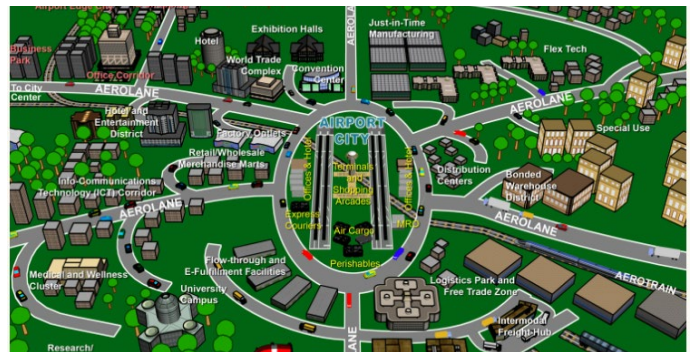


FIGURE 6.4: AIRPORT CITY CONCEPT

SOURCE: AEROTROPOLISBUSINESSCONCEPTS.AERO

It is recommended that the Airport City concept be adapted at a reduced scale appropriate for the Study Area. This would include providing a mix of commercial, residential and employment districts around the Airport.

Within this overall development pattern, it is recommended that land be reserved for a future “Airport Village” district. This district is envisioned as a vibrant mixed-use district that will attract new businesses and professionals to the area. It will consist of a traditional mixed-use urban center with office, retail, commercial and upper floor residential areas. Airport related businesses will be encouraged, but it should serve both the aviation industry and community at-large. Density should be modeled after the existing Zionsville Village so that it is compatible with the Town’s overall development goals.

Recommendations

Include a mix of commercial, residential and employment districts in the Study Area, incorporating principles of the Airport City development form.

Reserve land for development of a future Airport Village mixed-use district.

C.R. 200 S. RUNWAY PROTECTION ZONE

The FAA requires that future Runway Protection Zones (RPZs) and approach surfaces along runway extensions be protected from development. However, some of the land requiring protection along C.R. 200 S. is currently zoned for residential development.

Required areas of protection are shown in **Figure 6.5**. These lands are currently undeveloped agricultural properties. However, as shown in **Figure 4.3**, this area is currently zoned for R3 Rural Single Family Residential. The zoning for this area was established by the county prior to being included in the current corporate limits of the Town of Zionsville.

Should this area be developed, the FAA could require removal of any homes developed in the area before the Phase II primary runway extension could be built.

Since the rough draft of this document was published, the Zionsville Plan Commission has approved a proposed development at the site with R3 zoning that is in the flight path south of the Airport. Although development was not desired at this site, the Plan Commission had no legal grounds to reject the development proposal since it had the required zoning.

Approval of this development is a unique situation, and is not intended to set a precedent. The goal remains that development in overflight areas should be prohibited.

Recommendations

It is ultimately recommended that all areas within the RPZs and approach surfaces for the future Phase II runway extension remain open space and be protected from development. This includes the areas identified in Figure 6.4.

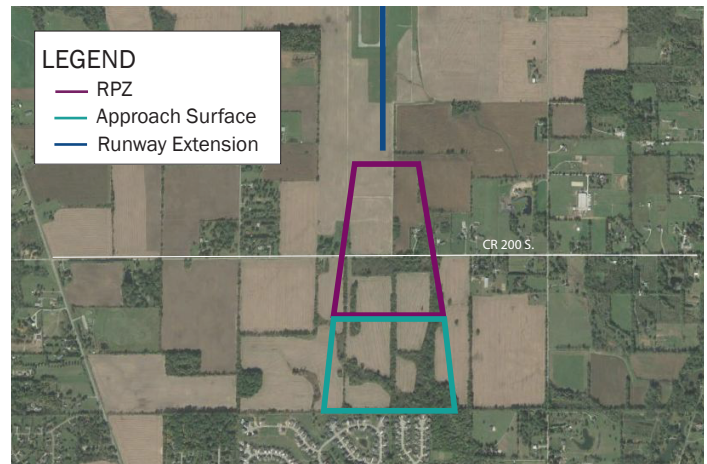


FIGURE 6.5: APPROACH SURFACE

ZONING OVERLAY DISTRICT

It is recommended that Zionsville and the Airport partner to update underlying zoning to address airport issues and/or implement a zoning overlay district to provide additional regulation of development surrounding the Airport. Key components of this regulation would include:

Type of Regulation

The ordinance or overlay district should enforce compatible land uses by imposing land use restrictions and height limitations on buildings, structures, objects, and natural vegetation developed near the Airport. These regulations can be used to evaluate land use decisions in proximity to the airport and may include:

- Land use-related restrictions based on noise and safety concerns
- Height-related restrictions

Building Permits and Site Plan Review

One of the key components of these zoning controls is to establish development plan review requirements related to Airport needs including concerns for the long-term utility of the Airport and the safety and quality of life for those located near the Airport.

Many issues can be minimized or mitigated if they are addressed early with a property owner, prior to construction. This reduces potential conflicts. Examples of these questions to ask during the TAC review process are included on the following page.

Regulation Coverage Area

This regulation should apply to all properties within the Study Area boundary including the RPZ areas, the approach areas, the areas adjacent to the runway environment, and the traffic pattern area create the Study Area. The areas that fully encompass the additional Part 77 surfaces include areas outside of Zionsville's jurisdiction, and therefore are not able to be fully managed within the constraints of this planning document. The Airport will need to work with the other jurisdictions to implement needed protections.

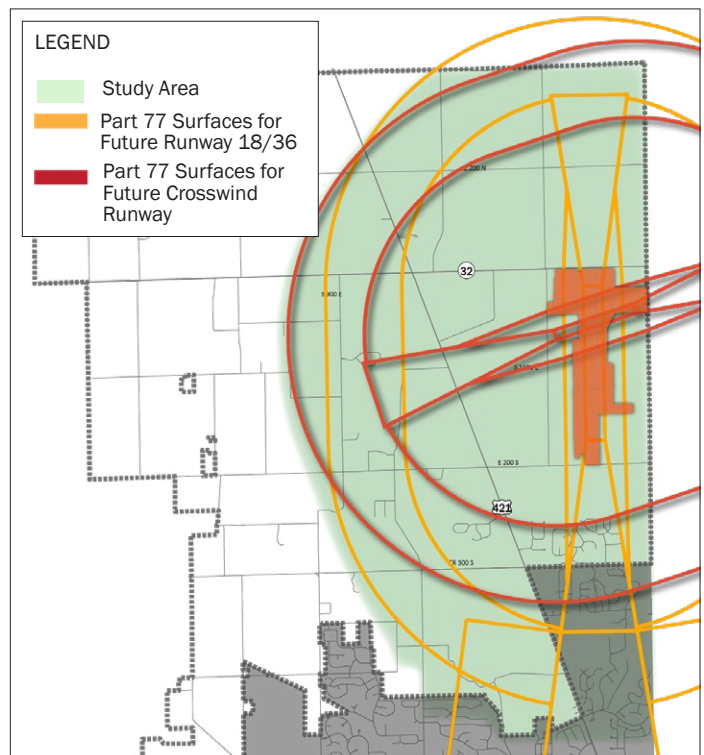


FIGURE 6.6: STUDY AREA

Example TAC Review Questions

General Location Issues

- Is the use adjacent to or within any of the identified airport surfaces?
- Can the use be shifted within the site to maintain open space and proximity requirements to the extended runway centerline?

Height-Related Issues

- Is the height of the proposed use a concern?
- Is an FAA Form 7460-1 required?

Noise-Related Issues

- Is the use likely to be noise sensitive? (residence, school, church, child care facility, etc.)
- Is an INDOT noise sensitive use permit required?

Density-Related Issues

- Is the use likely to create a frequent significant concentration of people?

Wildlife-Related Issues

- Is the use likely to attract avian wildlife?
- Is the use likely to create avian wildlife attractants other than water bodies? (roosting habitat, food sources, etc.)
- Is the use likely to create wildlife attractants due to uncontained or uncovered exterior solid waste disposal facilities?

Visibility-Related Issues

- Is the use likely to create unnecessary diffusion of light that could impair a pilot's vision?
- Is the use likely to create visual obstructions that would endanger the visibility of pilots during landing, takeoff, or maneuvering of aircraft?
- Is the use likely to create glint/glare that could impair a pilot's vision?

Other Issues

- Does the use include storage of flammable/hazardous materials as defined by the International Building Code?

The following development policies are recommended to address five land use areas of concern.

Tall Structures/Height Concerns

Since the area will be in proximity to the key operational areas of the Airport, limiting the height of structures and natural vegetation in that area will be key. Selecting a base height, considering the actual ground elevation compared to the mean sea level elevation of the various airport surfaces, is important to determine the acceptable structure heights.

Density Concerns

Portions of the overlay district, especially the Mixed Use “Airport Village” are expected to have elements which may create concentrations of people, it will be important to balance the uses with the known safety concerns. For example, the area may include a hotel or apartments that may cater to people employed by businesses related to aeronautical use. Since this may create a concentration of people in proximity to the airport, the specific location relative to the airport operations areas will be critical when approving locations for these uses. Enhanced safety can be employed through use of additional building signage in marking exits and use of open space in proximity to these denser uses. These strategies can create areas with less development to be used, if necessary, in the event of an aircraft accident.

Noise Concerns

Noise concerns in the overlay district can likely be addressed in several ways. First, noise concerns can be minimized with enhanced building construction materials that reduce the amount of noise experienced inside of a structure. The use of noise covenants for development in the Airport Village would also place property owners on notice that they are within an area that can be subjected to noise impacts. This discloses to the residents, tenants, and other people near the Airport of the potential exposure to aircraft noise. Finally, the anticipated mix of land uses for the Airport Village should create their own set of ambient noise levels that may be of complementary nature to the airport operations and therefore mask some of the anticipated noise.

Visual Concerns

Limiting uses that can cause visual distractions or obscure a pilot’s vision is important. In the overlay district, it would be important to require design standards such as the following:

- ▶ **Down-shielded lighting to reduce ambient light emissions.**
- ▶ **Avoiding linear patterns of lights that could be misidentified as a runway or taxiway.**
- ▶ **Avoidance of structures that emit significant light such as LED billboards that create significant light sources.**
- ▶ **Using of building materials that reduce glare.**
- ▶ **Solar land uses should be subject to the results of a glint/glare study and appropriate review by the Federal Aviation Administration (FAA) using the FAA Form 7460-1 Notice of Proposed Construction or Alteration Airspace Review conducted through the Obstruction Evaluation/Airport Airspace Analysis (OE/AAA).**

Wildlife Concerns

Limiting avian wildlife attractants is important in certain areas of a future overlay districts. This can be accomplished in multiple ways, including the following key strategies. First, limit landscaping that could provide wildlife food sources and habitat. Second, specify methods for proper storage and containment of solid waste within the overlay district. Carefully managed design and location of water bodies for either aesthetic purposes (fountains, ponds, etc.) and those for water management (detention and retention ponds) in order to reduce possible impacts.

Other Concerns

To address several of the concerns noted above, it may be advantageous for the Town of Zionsville to require a combination of easements and restrictive covenants within the Airport District to ensure that land owners fully understand the various limitations that exist for their properties. For a property in the overlay district to be developed may require the execution of an aviation easement that would clearly define the limits of allowable heights for development on the property. This easement should also contain provisions that limit certain land uses, such as those generating wildlife hazards. Additionally, a covenant or deed restriction could be employed to legally acknowledge that the property is in proximity to the airport and may be subject to aircraft overflights and noise. While this does not reduce the actual impact or exposure, it does notify and educate future property owners of the concern and fully disclose that the property is subject to these activities.

This also could transfer responsibility for mitigation of future impacts to the property owner, should they create an incompatible use that does not comply with the language of the easement or the covenant. These types of documents are maintained in perpetuity with the property.

Recommendation

- ▶ **Zionsville should update its zoning regulations to incorporate airport related development concerns. In the short term, the adoption of an overlay district would be the quickest way to establish the protections. However, update of the underlying zoning districts may prove to be the most comprehensive way to address regulation in this area a development pressures intensify in the future.**



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7



LAND USE ANALYSIS

INTRODUCTION

Previous chapters of this plan provided recommendations based on airport analysis, development analysis, economic analysis, and analysis of key planning topics. In this chapter, the key findings are summarized by geographic sub-area. Recommendations for each sub-area are also provided. This established the basis for the detailed recommendations included in the next chapter.

Key Points

The following primary future land use recommendations have been identified for each sub-area:

WEST OF U.S. 421

Develop estate residential housing. Adopt an Environmental Overlay District to address development in environmentally sensitive areas.

NORTH S.R. 32

Maintain the area for agricultural uses until supporting infrastructure is extended to this area.

SR 32 CORRIDOR

Create commercial districts along S.R. 32 to take advantage of proximity to the highway and Airport.

SOUTH OF C.R. 200 S.

Discourage new single-family housing in undeveloped parts of this area.

AIRPORT DISTRICT

Create a mixed use commercial/residential district along S.R. 32.

Encourage development of an employment district.

Residential should be limited to areas west of C.R. 1100 E, and should not include single-family housing.

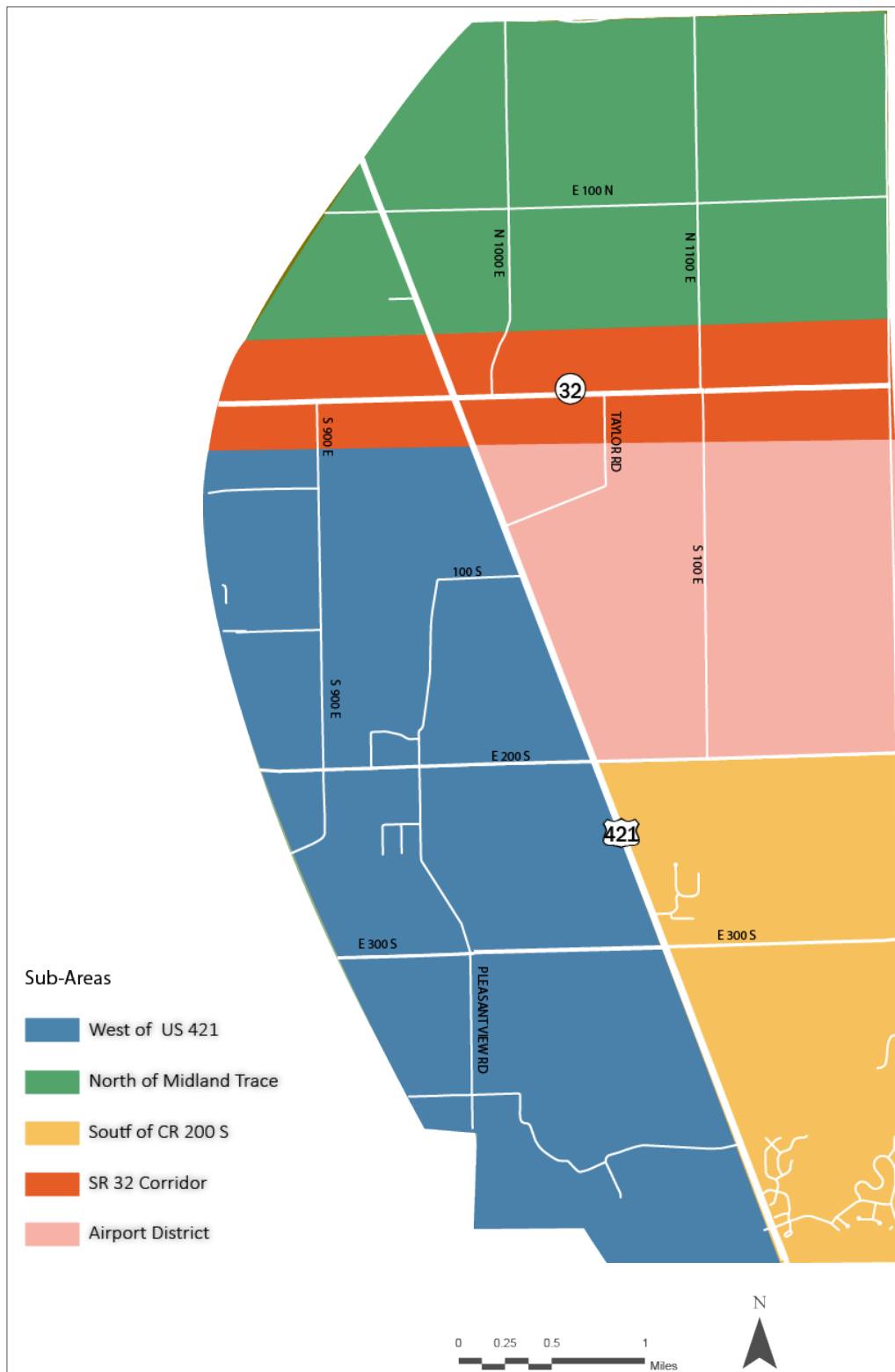


FIGURE 7.1: SUB-AREA MAP

WEST OF U.S. 421

Recommendations

- ▶ **Maintain estate residential housing.**
- ▶ **Establish an Environmental Overlay District to address development in environmentally sensitive areas.**
- ▶ **Maintain open space for long-term cross-wind runway.**

Land Use Considerations

- Estate residential land use is preferred for this area.
- Development should avoid adverse impacts on environmental resources.
- Utility infrastructure is not in place to support development.

Airport Impacts

- Flight patterns along U.S. 421 and general aviation overflight will generate noise.
- Airport is required by FAA to protect the overflight pattern for the long term cross-wind runway.
- This area has noise, height, wildlife, glare and smoke concerns associated with development.

Current Zoning

- Estate residential (Land Use)
- R1- Rural Single Family Residential
- R2- Rural Single and Two Family Residential

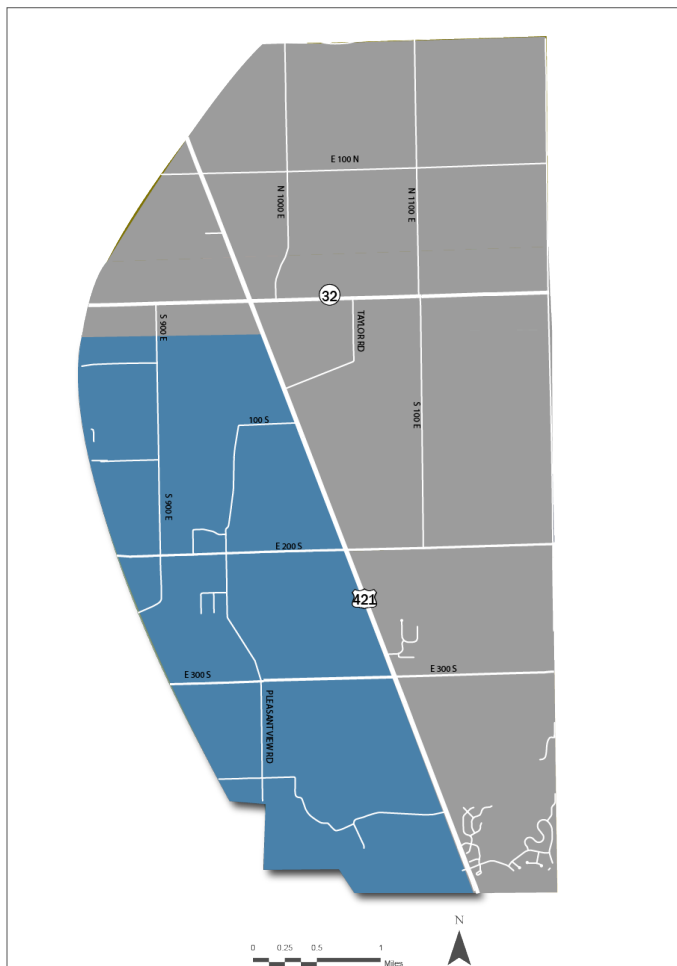


FIGURE 7.2 WEST OF U.S. 421 STUDY AREA

NORTH S.R. 32

Recommendations

- ▶ **Maintain as an agricultural district until utility infrastructure is available for this area to support development.**
- ▶ **Require 10 to 20 acre minimum lot sizes for subdivision of land in the short-to medium-term.**
- ▶ **Require open space at runway approach.**

Land Use Considerations

- Utility infrastructure is not in place to support development.
- Town’s goal is to protect agricultural character of this area until it is ready for development.

Airport Impacts

- Flight patterns along U.S. 421, general aviation overflight and the runway approach will generate noise.
- Open space should be designated in specific areas to protect the runway approach.
- This area is within a zone where there are noise, height, wildlife, glare and smoke concerns associated with development.

Current Zoning

- Agriculture (Land Use)
- R1- Rural Single Family Residential
- RE- Rural Equestrian

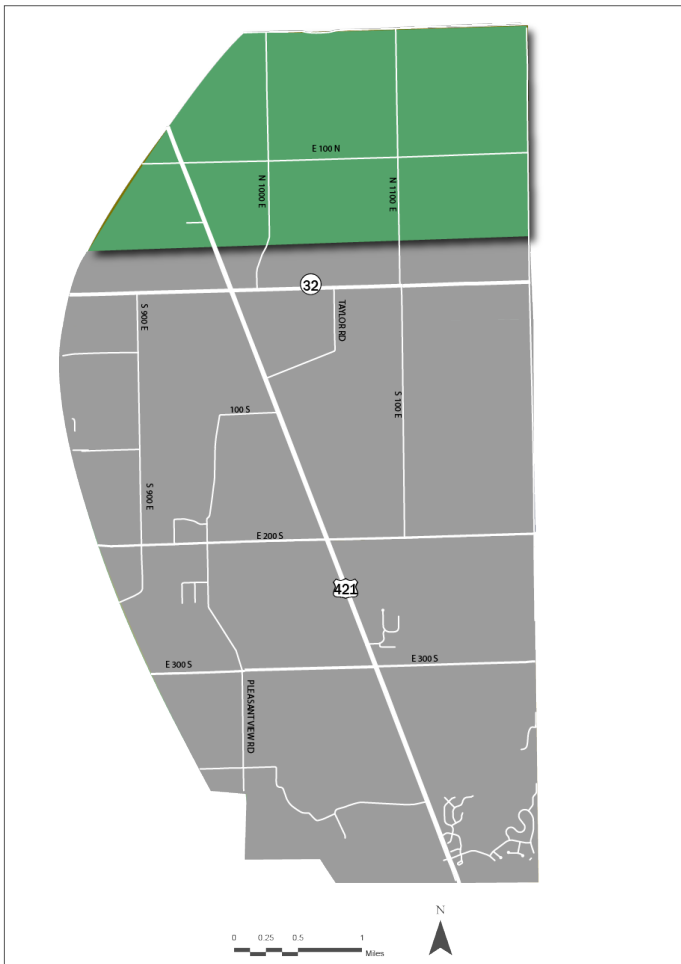


FIGURE 7.3 NORTH OF MIDLAND TRACE STUDY AREA

SOUTH OF C.R. 200 S.

Recommendations

Require open space at the runway approach.

Require noise mitigation measures in new construction.

Prohibit increases in current development intensity in existing residential areas.

Discourage new single-family residential in undeveloped parts of this area.

Land Use Considerations

- A significant portion of the area has already been subdivided for residential use.
- The northern portion of this area is mostly served by TriCo Sewer, and could be provided sewer service to support development in the short-term.
- Area south of runway along C.R. 200 S currently zoned for residential.

Airport Impacts

- Flight patterns along U.S. 421, general aviation overflight and the runway approach will generate noise.
- Open space should be designated to protect the runway approach.
- This area has noise, height, wildlife, glare and smoke concerns associated with development.
- The primary approach pattern for the Airport is southbound generally following U.S. 421, then turning eastward toward the runway, then traveling northbound to the runway. This generates noise and overflight over any development in this area.

Current Zoning

- Residential (land use)
- R2- Rural Single and Two Family Residential
- GB- Rural General Business
- Agriculture (land use)

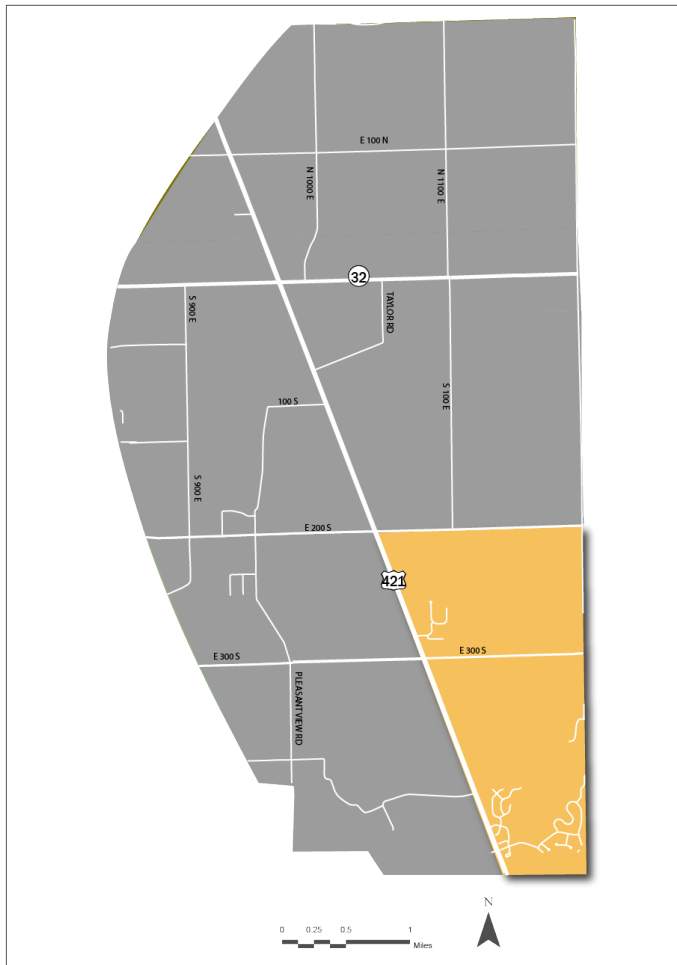


FIGURE 7.4 SOUTH OF C.R. 200 S. STUDY AREA

S.R. 32 CORRIDOR

Recommendations

Encourage creation of commercial districts along SR 32 to take advantage of proximity to the highway and airport.

Protect existing rural businesses.

Land Use Considerations

- The area does not currently have sanitary sewer service.
- Long term upgrade of S.R. 32 will increase traffic and improve vehicle accessibility to this area.
- Development in the area will generate need for supporting retail services .
- Existing rural businesses should be protected.

Airport Impacts

- Flight pattern along 421, general aviation overflight, and the runway approach will generate noise.
- Open space should be designated to protect the runway approach.
- This area is within a zone where there are noise, height, wildlife, glare and smoke concerns associated with development.

Current Zoning

- Agricultural (land use)
- R2- Rural Single and Two Family Residential
- R1- Rural Single Family Residential
- I2- Rural General Industrial



FIGURE 7.5 S.R. 32 CORRIDOR STUDY AREA

AIRPORT DISTRICT

Recommendations

Encourage creation of mixed use commercial/residential district along SR 32.

Encourage development of an employment district.

Discourage detached single-family residential uses.

Land Use Considerations

- No sanitary sewer service is currently available.
- No residential should be permitted east of C.R. 1100 E due to proximity to the runway.
- Residential west of C.R. 1100 E should be limited to specialty residential uses that are not sensitive to airport related noise.
- New single-family detached residential uses are not appropriate.
- There are opportunities for land-side and air-side businesses within this area.

Airport Impacts

- Flight pattern along U.S. 421, general aviation overflight, and the runway approach will generate noise.
- Open space should be designated to protect the runway approach and long-term cross-wind runway.
- This area has noise, height, wildlife, glare and smoke concerns associated with development.

Current Zoning

- Agricultural (land use)
- AZ- Rural Airport Zoning District

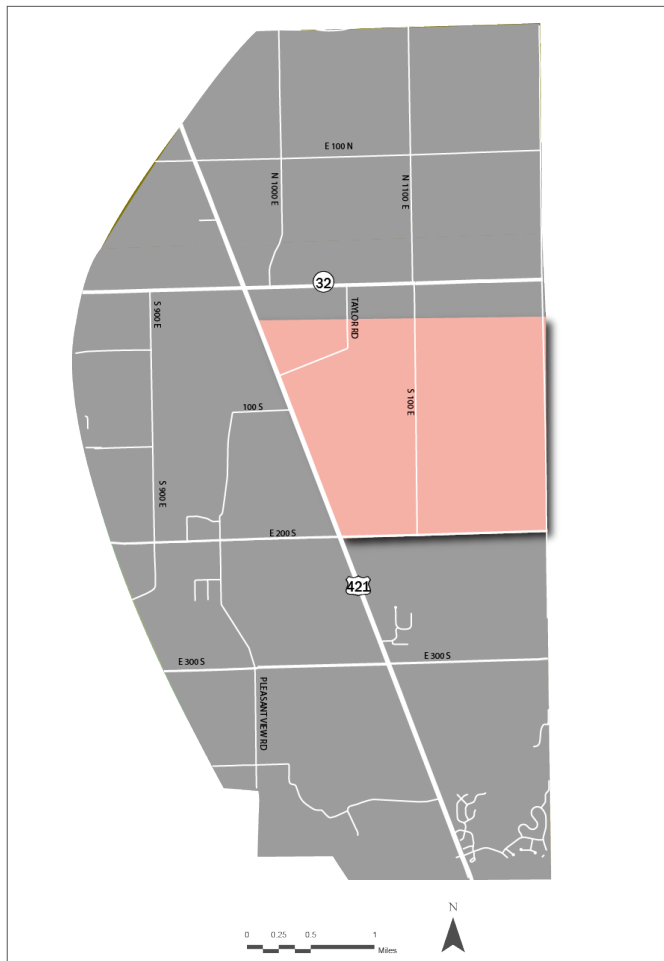
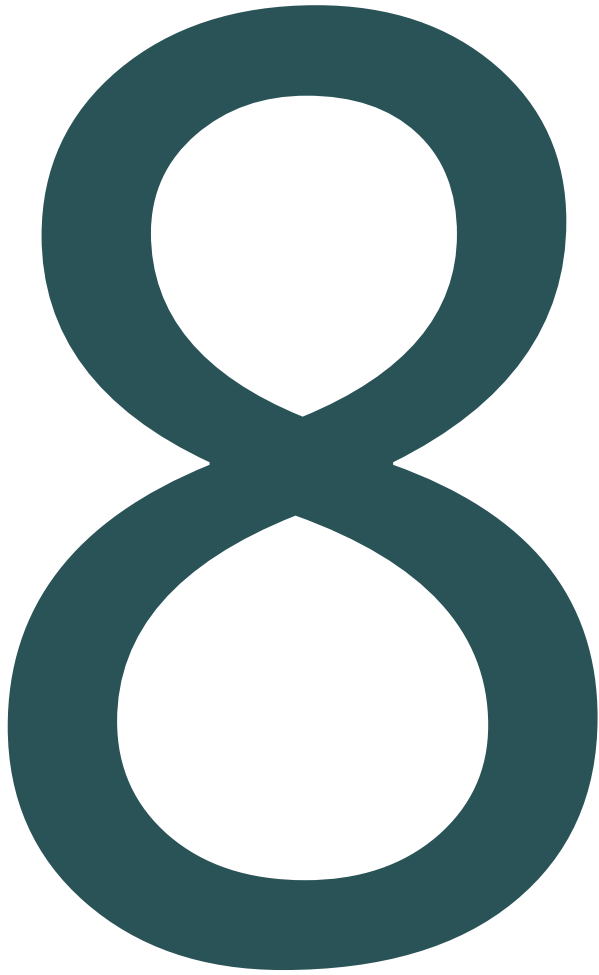


FIGURE 7.6 AIRPORT DISTRICT STUDY AREA



RECOMMENDATIONS

OVERVIEW OF KEY RECOMMENDATIONS

The goals of this plan have been to:

1. Support appropriate long-term development that meets Zionsville's community and economic development goals.
2. Sustain the Airport as an economic engine for Zionsville and surrounding areas in order to meet these goals, this plan offers the following key recommendations.

Support Airport Plans to Improve Safety:

This plan is based on the premise that runway improvements should be intended for aircraft safety, and not to enable larger aircraft to land at the Airport or change the fleet mix of aircraft that use the Airport today.

Protect Against New Development in Overflight Areas: Undeveloped areas in the flight path south of CR 200 S should remain agricultural/open space. The Town and Airport will need to work together to rezone the land and/or the Airport will need to acquire the property.

Encourage Land Uses per the Included Future Land Use Map: The new future land use map is shown in Figure 8.1.

Implement a Zoning Overlay District: A new zoning overlay district should be implemented to enact the recommendations of this plan.

Support the Development of an Employer Sites District: The area east of the Airport should be reserved for the creation of future employer sites. The architecture of the district should be designed to complement the airport and surrounding rural landscape.

Support the Development of an Airport Village Mixed Use District: Land at the southeast corner of U.S. 421 and S.R. 32, extending east to the Airport, should be reserved for the future creation of the Airport Village Mixed Use District.

PROPOSED LAND USE

The recommended future land use map is presented on this page. Summaries of each of the land uses are included on the following pages. A comparison between the existing zoning in the area and the proposed changes is provided on Figures 8.2 and 8.3.

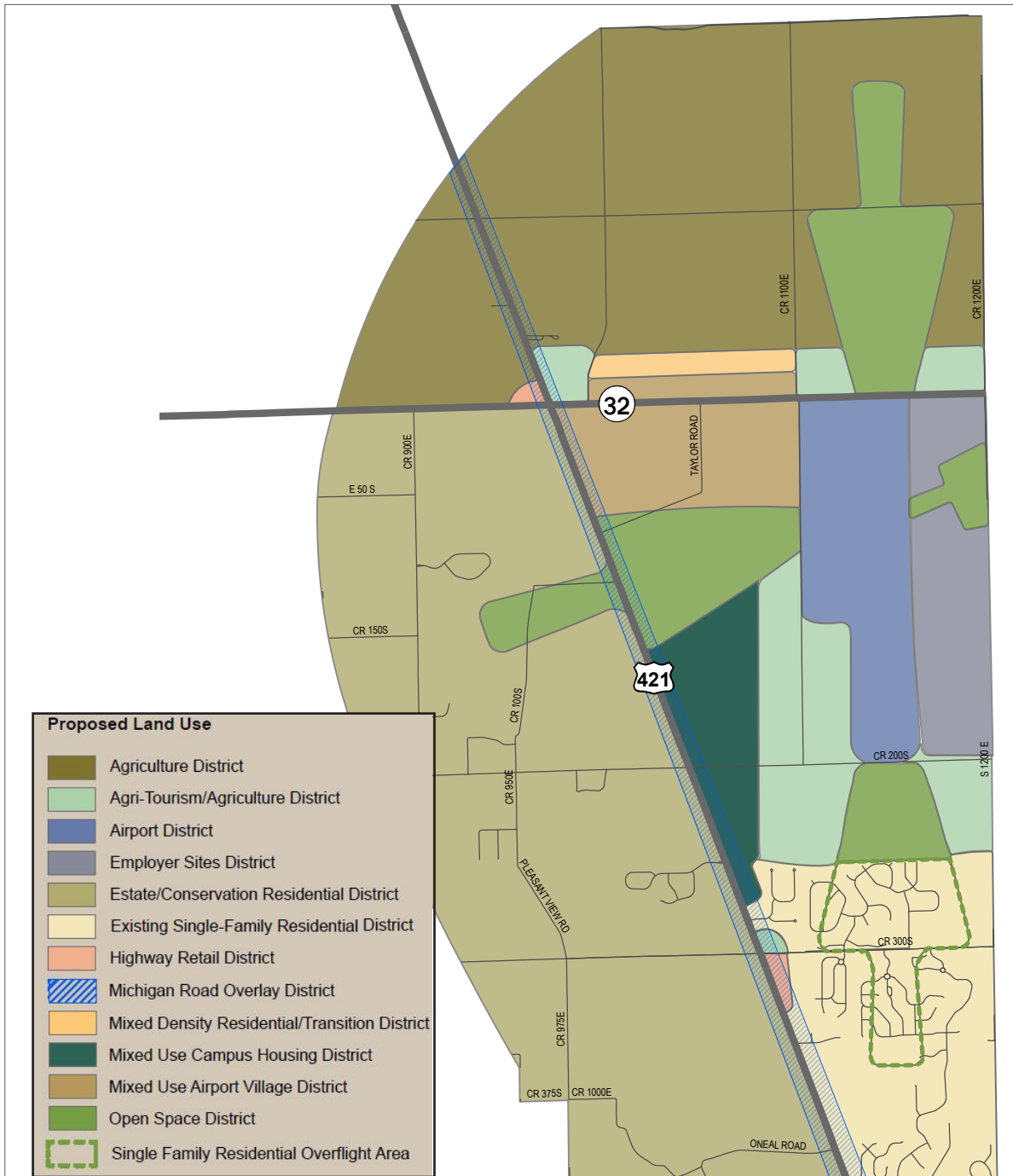


FIGURE 8.1 PROPOSED LAND USE MAP



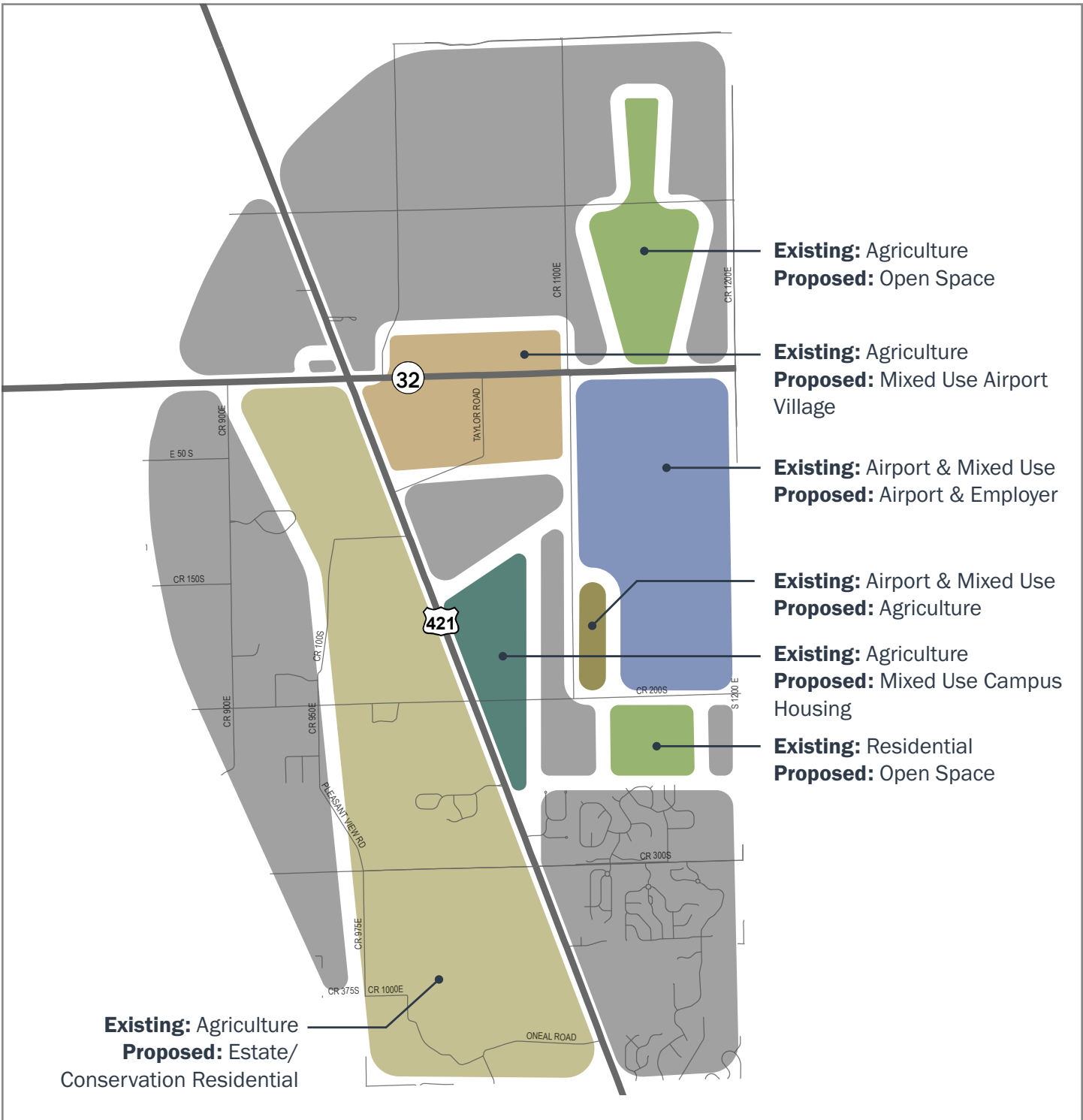


FIGURE 8.3 - LAND USES THAT ARE MODIFIED WITH THIS PLAN



AGRICULTURE DISTRICT

The intent of this district is to maintain existing agricultural uses north of S.R. 32 for the foreseeable future.

Future Land Use Recommendations

This district is in the most rural portion of the study area, and should remain agricultural in nature. Agricultural uses should be preserved in this area until such time as areas south of SR 32 have been fully built-out.

Minimize rural residential development through large minimum lot sizes (10-20 acres per residence).

Larger scale, traditional agricultural production is the predominant use in this area and should be preserved as such until the remainder of the study area is nearing full build-out.

Solar is appropriate within this district, subject to the results of a glint/glare study

Solar is appropriate within this district, subject to the results of a glint/glare study and appropriate review by the FAA) using FAA Form 7460-1 Notice of Proposed Construction or Alteration Airspace Review conducted through the Obstruction Evaluation/Airport Airspace Analysis (OE/AAA).

AGRI-TOURISM/AGRICULTURE DISTRICT

This district is intended to maintain existing agricultural uses around the Airport and also allow for agri-tourism uses.

Future Land Use Recommendations

Areas closest to the Airport are especially sensitive to development. In these areas, uses should be limited to agriculture and agri-tourism uses. This blend of uses is intended to maintain significant open space while also providing for economic opportunities through agri-tourism businesses.

Future agricultural uses are encouraged to be small in scale with emphasis on low-impact, local and regional food production, and agri-tourism.

Existing agricultural uses within these areas are encouraged to continue.

Agri-tourism oriented operations include but are not limited to farm stands, local food markets, food co-operatives, local food oriented restaurants, wineries, breweries, u-pick operations, demonstration farms, equestrian farms and related facilities.

Existing residential uses in this district may remain. However, subdivision of properties to allow additional housing units should be discouraged.

Solar is appropriate within this district, subject to the results of a glint/glare study and appropriate review by the FAA) using FAA Form 7460-1 Notice of Proposed Construction or Alteration Airspace Review conducted through the Obstruction Evaluation/Airport Airspace Analysis (OE/AAA).

AIRPORT DISTRICT

Located adjacent to the runway, this area is envisioned to include airport operations, aircraft hangers and employer sites with direct air-side access to the runway.

Future Land Use Recommendations

The future land use will consist of both airport operations and air-side businesses. For airport operations, uses would include the runway, taxiways, operations buildings and associated equipment. Associated land uses including aircraft hangers are also appropriate in this district. Commercial/office/light manufacturing uses are also appropriate in this district, especially those that require direct air-side access or businesses that interact with airport operations in some manner. This could include flight training, offices, light (enclosed) manufacturing, technology, small scale shipping and related businesses.

- ▶ **The form of this district is predominantly two-story in scale, but should offer flexibility for unique businesses.**
- ▶ **New residential uses are prohibited in this area.**
- ▶ **Appropriate buffering should be provided around existing adjacent residential uses.**
- ▶ **Commercial/office/light manufacturing uses should follow the standards of the Employer Sites District.**
- ▶ **Solar is appropriate within this district, subject to the results of a glint/glare study and appropriate review by the FAA using FAA Form 7460-1 Notice of Proposed Construction or Alteration Airspace Review conducted through the Obstruction Evaluation/Airport Airspace Analysis (OE/AAA).**

EMPLOYER SITES DISTRICT

The intent of this district is to support the development of compatible employer sites.

Future Land Use Recommendations

This district is intended for the creation of employer sites that take advantage of their proximity to the Airport. These sites could target travel intensive businesses, advanced manufacturing with small-scale aviation-driven logistics requirements or aviation related industries. Sites also have the opportunity to directly access to the runways. Development within this district area should be made compatible within the adjacent rural area. Appropriate development should be low-rise and have all operations fully enclosed, with quality architecture and generous open space. Large scale warehousing or logistics operations would not be appropriate, nor would heavy industrial operations.

Support the creation of an employer sites district adjacent to the Airport.

Solar is appropriate within this district, subject to the results of a glint/glare study and appropriate review by the FAA using FAA Form 7460-1 Notice of Proposed Construction or Alteration Airspace Review conducted through the Obstruction Evaluation/Airport Airspace Analysis (OE/AAA).

ESTATE/CONSERVATION RESIDENTIAL DISTRICT

The intent is for this area to remain low density, estate residential with a heavy emphasis on preservation of tree canopy and environmental resources.

Future Land Use Recommendations

Low density, estate residential should be the predominant land use in this district. Minimum lot sizes shall be 2 acres (without utilities) or 0.6 acres with utilities.



SOURCE: EXTENSION.ORG

Implement an Environmental Overlay District to protect the tree canopy, floodplains, riparian corridors and other environmental assets from development. This overlay should:

- Prohibit development within the Eagle Creek floodplain.
- Minimize or prohibit disruption to classified wetlands.
- Preserve and expand of the continuous tree canopy along Eagle Creek.

Sites within this area offer unique recreational opportunities, so development of recreational assets within this area is encouraged. This could include:

- Develop multi-use recreational trails along Eagle Creek.
- Connect the Eagle Creek Trail north to the planned Midland Trace Trail and south to the Big 4 Trail (Zionsville Rail Trail).
- Acquire property for development of public parks.

HIGHWAY RETAIL DISTRICT

This district is intended to include a mix of convenience retail uses and highway oriented commercial. Since this district will serve adjacent neighborhoods, the form of this district should be highly walkable, while also accommodating the automobile.

Future Land Use Recommendations

Two highway oriented commercial nodes are included in the future land use plan for the Study Area.

The commercial district at the U.S. 421 and C.R. 300 S intersection is intended as a medium scale commercial node. Appropriate land uses would include grocery stores, pharmacies, restaurants, offices, gas stations and related uses.

Similar land uses are appropriate at the commercial district at the northwest corner of U.S. 421 and S.R. 32. Development in this area is envisioned as following the form of the proposed Airport Village, but with more flexibility to accommodate highway oriented business uses.

Permitted uses would include grocery stores, pharmacies, gas stations, restaurants, offices and other highway oriented businesses.

The U.S. 421/S.R. 32 commercial district should follow the form of the Mixed-Use Airport Village District.

Roadways serving highway oriented commercial businesses should integrate with the street grid serving adjacent neighborhoods.

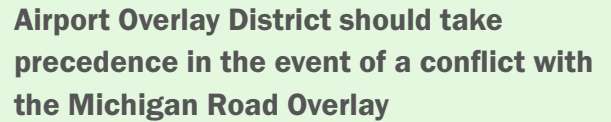
Since this district is adjacent to neighborhoods, larger scale highway-oriented businesses should be prohibited. This includes automotive sales, truck stops, and similar facilities.

MICHIGAN ROAD OVERLAY DISTRICT

The Michigan Overlay refers to the existing Urban U.S. Highway 421- Michigan Road Corridor Overlay District. The ordinance seeks to “foster development that will provide this district with a special sense of place that will increase property values, protect existing residential uses and attract new businesses.”

Future Land Use Recommendations

The Michigan Overlay refers to the existing Urban U.S. Highway 421- Michigan Road Corridor Overlay District. The ordinance seeks to “foster development that will provide this district with a special sense of place that will increase property values, protect existing residential uses and attract new businesses.”



Airport Overlay District should take precedence in the event of a conflict with the Michigan Road Overlay

MIXED DENSITY RESIDENTIAL/TRANSITION AREA DISTRICT

This district is intended to serve as a transition between the Airport Village District and the adjacent Agricultural District.

Future Land Use Recommendations

Located just north of the Airport Village District and north of S.R. 32, this district serves as a mixed-density transition zone between the Airport Village and agricultural districts. The intent is for this area to remain agricultural land use for the short-term. When sanitary sewer service is available, the long-term goal is to develop this with one- and two-family residential.

The goal for this area is for it to be one- and two-family residential development served by sanitary sewers.

- Encourage sanitary sewer service extension to the area.
- Encourage residential development consistent with Zionsville's current one and two-family residential zoning. 1 acre (R-1) and 0.6 acre (R-2) minimum lot size with sanitary sewer service.
- Encourage higher density uses closer to the Airport Village District and lower density uses closer to the agricultural district.

MIXED-USE AIRPORT VILLAGE DISTRICT

The Mixed-Use Airport Village district is intended as a mixed-use central business district. It consists of retail, restaurant, hotel, office, residential and related uses established in a traditional urban form.

Future Land Use Recommendations

This district is envisioned as a vibrant mixed-use district that will attract new businesses and professionals to the area. It will consist of a traditional mixed-use urban center with two and three-story office, retail, commercial and upper floor residential areas. Airport related businesses will be encouraged, but it should serve both the aviation industry and community at-large. Density should be modeled after the existing Zionsville Village so that it is compatible with the Town's overall development goals.



SOURCE: ROCHESTERSUBWAY.COM

Industrial/manufacturing uses are prohibited within this district.

Parking should be in the form of multi-story parking structures or on-street parking. Surface parking should be minimized.

This area is especially sensitive to overflight patterns and perceptual noise disturbances. Building and site design should be carefully coordinated to meet the recommendations of this plan.

Provisions for convenient pedestrian access under/over S.R. 32 should be in place prior to development of mixed-use properties north of S.R. 32.

Residential development should be two-to-three story in form, and incorporate first floor commercial space.

All development within this district should adhere to traditional, high-quality design and setback standards to promote walkable, connected, and aesthetically pleasing environments.

MIXED-USE CAMPUS HOUSING DISTRICT

This area would consist of low-rise, campus style housing and supportive uses

Future Land Use Recommendations

This district is intended to identify criteria for allowing limited residential development in areas relatively close to the airport. While not within a runway protection zone or approach area, this district will still be subject to noise from frequent overflight. Development in this area should be intended to attract users more resilient to airport disturbances.

The primary development at the site is intended to be low-rise, attached campus style housing following a traditional urban form. Uses may include supportive and low-intensity commercial also following a traditional urban form. Additionally, this district can include agriculture and agri-tourism uses as an extension of adjacent districts.

Campus-style housing is defined as having the following characteristics.

- The district will largely consist of one-story attached housing, including a mix of two-family, and multi-family housing types.
 - Because of the proximity of this district to the Airport and since this area is subject to regular overflight, single family (attached) residential development should be discouraged.
 - A limited number of two-story structures may be considered where lower ground elevations nearby U.S. 421 would permit their development without exceeding the heights of other structures.
- Supportive and low-intensity commercial uses can be included. Uses should primarily support the daily needs of residents within this district, and may include restaurants, day-care, dry cleaning, small/boutique grocery stores, offices and small medical facilities. Highway oriented businesses and larger retail uses should be discouraged.
 - Development should be designed with an abundance of open space.
 - The district is intended for specialty housing for residents more resilient to airport disturbances, such as seniors.
 - Development should adhere to building standards that reduce perceptual noise disturbances from air traffic.

OPEN SPACE DISTRICT

This district is intended to serve dual roles of providing recreational areas and accommodating open space for primary overflight areas.

Future Land Use Recommendations

The extended axis of the primary north-south runway north of S.R. 32 and south of C.R. 200 S. should be mandated as open space areas to accommodate a factor of safety for overflight areas. Areas along this axis and within the existing and future runway protection zones (RPZ) and approach areas should be free of obstructions including but not limited to roads, buildings, street lights, playground equipment, shelters, trees, bodies of water and related improvements. Areas adjacent to this should remain open as much as practical, but may incorporate low vertical features as long as a concentration of people is not created.

Along the axis of the crosswind (east-west) runway, the airport is mandated by FAA to provide protection even though the Airport does not have plans for constructing the crosswind runway at this time. To meet these requirements, areas east and west of the runways within the RPZ surface should be maintained free of obstructions. Because this surface intersects with the former super-fund site, this could include greenspace, subject to terms of earlier remediations. Areas outside the RPZ surface could have above ground features supporting public park and recreation space. Open space areas could also be developed with limited surface features within the RPZ surface, so long as an adaptation plan is developed requiring removal of those features should the crosswind runway need to be realized at a later date.



SOURCE: SONOMAOPENSOURCE.ORG

To achieve the open space requirements, these areas could be part of cluster development, or land could be set aside by developers for creation of

Sidewalks and trails are encouraged throughout all portions of the open space.

Suitable uses in the Open Space District include agriculture, parks, nature areas and related spaces.

Protect open space at and around primary overflight areas.

Solar is appropriate within this district, subject to the results of a glint/glare study and appropriate review by the FAA using FAA Form 7460-1 Notice of Proposed Construction or Alteration Airspace Review conducted through the Obstruction Evaluation/Airport Airspace Analysis (OE/AAA).

SINGLE FAMILY RESIDENTIAL OVER FLIGHT AREA

This district includes existing single family residential areas located along the flight path immediately south of the Airport. This area has already been developed, but has been included in this plan to outline appropriate parameters for evaluating changes or improvements in the area.

Future Land Use Recommendations

The intent is for existing to encourage existing single family residential uses south of the airport to continue. This plan also supports future additions or lot improvements that are consistent with the current character and development patterns in the district.

As future improvements at these sites are reviewed (including customary permits, infill or redevelopment projects), the intent is that there should be no increase in development height, density or intensity of use. These stipulations should be more specifically defined in the future Zoning Overlay District.

The following recommendations encourage existing single family residential uses to remain, and not be changed. Uses within existing single family residential developments south of the Airport may continue. Similarly, additions or improvements within these developments should be supported, as long as they conform to Town ordinances and they are consistent with current neighborhood character and development patterns.

Existing single family residential uses may continue without change.

Future infill, redevelopment or improvement projects within this district should be consistent with the current character and development patterns and not create opportunities for greater population density.



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9



APPENDIX

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CONTENTS

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- ▶ **TYQ AIRPORT SURFACES** **121**

ADOPTING RESOLUTION



**CERTIFICATION TO THE
TOWN COUNCIL
OF THE TOWN OF ZIONSVILLE, BOONE COUNTY, INDIANA**


November 16, 2021

To the Town Council of the Town of Zionsville, Indiana:

Be it advised that, pursuant to Indiana Code 36-7-4, on November 16, 2021, the Town of Zionsville Advisory Plan Commission (the "Commission"), by a vote of 6 in favor and 0 opposed, (member Mary Grabianowski recused herself and did not participate in the discussion or vote), gave a ***Favorable Recommendation*** to proposal #2021-29-CPA to amend the Master Development Plan for the Town of Zionsville, specifically, the Town of Zionsville Comprehensive Plan, as re-titled ("the Plan"). The proposal updates both the text and maps contained within the Plan specific to land use surrounding the Indianapolis Executive Airport.

The Town of Zionsville Advisory Plan Commission hereby certifies proposal #2021-29-CPA to amend the Town of Zionsville Comprehensive Plan (a copy of which is attached to this Certification and incorporated here by this reference) to the Town Council of Zionsville, Indiana, with a Favorable Recommendation.

**TOWN OF ZIONSVILLE
ADVISORY PLAN COMMISSION**



David Franz, President

Attest: 
Wayne DeLong, AICP
Secretary Town of Zionsville Advisory Plan Commission

ADOPTING RESOLUTION

**RESOLUTION NO.
2021-19
OF THE TOWN COUNCIL OF THE TOWN OF ZIONVILLE,
INDIANA AMENDING THE ZIONSVILLE
MASTER DEVELOPMENT PLAN PURSUANT
TO INDIANA CODE §36-7-4-500, *ET. SEQ.***

WHEREAS, Indiana Code §36-7-4-500, *et. seq.* confers upon the Town Council the power to adopt and amend the Town's Master Development Plan; and

WHEREAS, on or about January 4, 2010, the Town Council approved and adopted the Master Development Plan for Zionsville, Indiana, as subsequently amended or modified (the "Plan"); and

WHEREAS, the text and maps of the Plan serve to guide and direct future development and growth in the Town of Zionsville and its planning area; and

WHEREAS, the Airport Study for the Town is to be included within and a part of the Plan; and

WHEREAS, from time to time the Town Council approves and adopts amendments to the Land Use component to the Plan, to include ac Airport Study to the Town of Zionsville

WHEREAS, an Implementation Plan was completed by HWC Engineering, Mead & Hunt Architecture and the Town of Zionsville which recommends an implementation schedule and best practices; and

WHEREAS, in accordance with Indiana Code §36-7-4-507 and -508, the Zionsville Advisory Plan Commission gave proper notice of and conducted a public hearing on November 16, 2021, to consider the incorporation of revisions and updates to the Comprehensive Plan of the Town of Zionsville

WHEREAS, the Zionsville Advisory Plan Commission on November 16, 2021, approved the Plan amendment and certified to the Town Council its favorable recommendation for amending the Plan by inclusion of revised and updated Master Plan goals, which certification is set forth on Exhibit A attached hereto; and

WHEREAS, the Town Council has been requested to amend the Plan and fix a time when the same shall take effect.

**NOW, THEREFORE, BE IT RESOLVED BY THE TOWN
COUNCIL OF THE TOWN OF ZIONSVILLE, INDIANA, IN
ACCORDANCE WITH INDIANA CODE §36-7-4-511, AND ALL ACTS
AMENDATORY AND SUPPLEMENTAL THERETO, AS FOLLOWS:**

1. **AMENDMENT.** The 2020 Zionsville Comprehensive Plan is hereby amended by incorporation of revisions and updates to the Plan as set forth on Exhibit A attached hereto and made a part hereof.
2. **CONSTRUCTION OF CLAUSE HEADINGS.** The clause headings

ADOPTING RESOLUTION

RES 2021-19



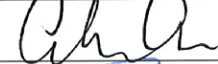
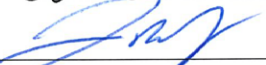


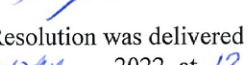
appearing herein have been provided for convenience and reference and do not purport and shall not be deemed to define, limit or extend the scope or intent of the clause to which they appertain.

3. **CONFLICTS WITH THIS RESOLUTION.** If any part of this Resolution shall be held invalid, such part shall be deemed severable and the invalidity thereof shall not affect the remainder of this Resolution.

4. **EFFECTIVE DATE.** This Resolution shall be in full force and effect from and after the date hereof.

DULY PASSED AND ADOPTED this 18th day of January 2022, by the Town Council of the Town of Zionsville, Boone County, Indiana, having passed by a vote of 7 in favor and 0 opposed.

TOWN COUNCIL OF THE TOWN OF ZIONSVILLE,
BOONE COUNTY, INDIANA

Signature	YEA	NAY
Josh Garrett,		
Jason Plunkett,		
Brad Burk,		
Alexander Choi,		
Joe Culp,		
Craig Melton,		
Bryan Traylor,		

I hereby certify that the foregoing Resolution was delivered to the Town of Zionsville Mayor Emily Styron on the 18th day of January 2022, at 12 p.m.

ATTEST: 
Amelia Lacy, Municipal Relations Coordinator



Emily Styron, Mayor

**MAYOR'S
APPROVAL**

1/19/2022

DATE

Emily Styron, Mayor

**MAYOR'S
VETO**

DATE

TYQ AIRPORT SURFACES

Introduction

The following sections discuss Code of Federal Regulations (CFR) 14 Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77 surfaces) at the Indianapolis Executive Airport (Airport, TYQ, or KTYQ) in addition to applicable airport design surfaces according to FAA Advisory Circular (AC) 150/5300-13A, Airport Design. Each surface will be depicted in an exhibit demonstrating the existing and future surfaces at the Airport.

Existing and Future Part 77 Surfaces

Several surfaces exist under Part 77 that are established in relation to the airport and to each runway. The size of each imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimension of the approach surface applied to each runway end is determined based on the most precise approach procedure that exists or is planned for that runway end.

TYQ currently has one runway, Runway 18/36, which runs north and south. The existing approach for Runway 18 is a non-precision approach, while Runway 36 has a precision approach. Existing surfaces and conditions are based on the existing approaches to Runway 18/36. Lastly, Runway 18/36 will also be extended in the future. Runway 18 will remain a non-precision approach, while Runway 36 will remain a precision approach for future conditions.

For this discussion, existing surfaces and conditions are based on Runway 18/36 as it currently exists. Future surfaces and conditions will be based on the extension to Runway 18/36, while maintaining current approaches and the new crosswind runway with non-precision approaches to each end.

The following subsections will discuss each Part 77 surface and their effect on existing and future conditions. All these surfaces are exhibited in a combined graphic with the existing and future conditions being shown separately. Existing surfaces are shown in Figures A1 and A2 while future surfaces are exhibited in Figures A3 and A4. Some of these surfaces have heights attributed to them. These heights are often referenced in two ways. The first height is above ground level (AGL) and measures the height of an object above the actual ground. The other height measurement is mean sea level (MSL) where the height is measured based upon the height from the level of the ocean. MSL is used in aviation because it creates a consistent datum for height across an entire country. Since the topography varies so much across the county, it would not be feasible to measure heights in AGL, since that variation would correlate to the terrain. The Airport elevation is reported at 922 feet MSL, and each runway end has its own elevation, also measured in MSL, which are components of the calculation for the various surface heights.

Existing and Future Primary Surfaces

The primary surface is centered longitudinally and extends 200 feet beyond each end of the runway. The width of the primary surface is dependent on the type of approach to the runway, and the width coincides with the most precise approach to either end of the runway. According to guidance in Part 77, the existing primary surface for Runway 18/36 is 1,000 feet wide and extends 200 feet beyond either runway end. This area is supposed to be clear of all obstructions except those considered to be fixed by function such as runway lights or navigational aid equipment.

The future primary surface for Runway 18/36 will remain 1,000 feet wide and will extend in accordance with the runway extension. The new crosswind runway will have non-precision approaches to each runway end for which design standards dictate a primary surface that is 500 feet wide. Due to the complexity of the exhibits, primary surfaces for existing and future conditions have not been depicted in Figures A1, A2, A3 or A4.

Existing and Future Horizontal Surfaces

The horizontal surface is a plane that exists 150 feet above the established airport elevation. The perimeter is constructed by swinging arcs of a specific radius from the center of each end of the primary surface for each runway. According to Part 77, the radius of each arc extends 10,000 feet for runways that are not designated as utility or visual. The existing and future horizontal surfaces are depicted by the innermost circular contour in Figures A1 and A2 and Figures A3 and A4, respectively. This surface has heights associated with it that begin at the airport elevation of 922 feet MSL and extend 150 feet above the ground to a height of 1,072 feet MSL.

Existing and Future Conical Surfaces

The conical surface extends outward and upward from the horizontal surface at a slope of 20:1 and a horizontal distance of 4,000 feet. The existing and future conical surfaces are depicted on Figures A1 and A2 and Figures A3 and A4, respectively. Allowable heights are also associated with these surfaces. They begin at the horizontal surface elevation of 1,072 feet MSL and extend to a height of 1,272 feet MSL, which is approximately 300 feet above the Airport elevation.

Existing and Future Approach Surfaces

The approach surface is centered longitudinally on the extended runway center line and extends outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway and is based on the type of approach available or planned for that runway end. The approach surface begins 200 feet from the end of the runway, and the height element begins at the individual runway end elevation.

The inner width of the approach is the same width as the primary surface (1,000 feet) and expands uniformly to a width of 16,000 feet. According to Part 77, existing approach surfaces for Runway 18/36 are 10,000 feet long at a slope of 50:1 with 40,000 feet at a slope of 40:1. The approach surface is based on the most precise approach to either end of the runway. Future approach surfaces for Runway 18/36 will remain approximately the same except for the approach surface for Runway 36 shifting slightly south to reflect the future extension to Runway 18/36.

The future crosswind is expected to have non-precision approaches to both ends of the runway, with visibility minimums as low as $\frac{3}{4}$ of a mile. According to Part 77, the inner width of the approach surface is 1,000 feet and the outer width is 4,000 feet. The approach surface extends horizontally 10,000 feet at a slope of 34:1, and extends from the end of each runway end, beginning at an offset that is 200 feet from the end of each runway end. These surfaces also have height associated with them extending from the airport elevation out to a height of over 1,000 feet above the Airport elevation on Runway 18/36. These specific heights have not been depicted in Figures A1 through A4. Existing and future approach surfaces for TYQ are depicted in Figures A1 and A2 and Figures A3 and A4, respectively

Existing and Future Transitional Surfaces

The final Part 77 imaginary surface is the transitional surface. The transitional surfaces connect to the outer edges of the primary and approach surfaces. The slope of the transitional surfaces is 7:1 outward and upward at right angles to the runway centerline. The inner height begins at the airport elevation of 922 feet MSL and extends to a height of 150 feet AGL to 1,072 feet MSL where they intersect the Horizontal Surface. The existing and future transitional surfaces are depicted in Figures A1 and A2 and Figures A3 and A4, respectively.

Existing and Future Airport Design Surfaces

AC 150/5300-13A contains various design surfaces that are important to consider when maintaining a safe and efficient airport operating environment. A sample of several airport design surfaces are important to land use compatibility that were included in the mapping effort are summarized below.

Existing and Future Departure Surfaces

The departure surface is a trapezoidal shape and extends along the extended runway centerline at a slope of 40:1. The intent of the departure surface is to provide departing aircraft with a clear path of airspace free of obstructions. It is much like the approach surface for landing aircraft. The departure surface is 1,000 feet wide and expands uniformly to a width of 6,466 feet, extending horizontally for 10,200 feet, beginning at the end of the runway pavement. The existing and future departure surfaces are depicted in Figure A5 and Figure A6, respectively.

Existing and Future Threshold Siting Surfaces

The Threshold Siting Surface (TSS) should be clear of objects to protect aircraft arriving and departing the runway. Depending on the runway type, the slope and dimensions of the TSS vary. AC 150/5300-13A, Table 3-2 outlines the dimensions for each runway type. For the existing conditions at TYQ, the TSS for both ends of Runway 18/36 measures 800 feet wide at the runway end, 10,000 feet long, and 3,800 feet at the outer width at a slope of 20:1. Figure A7 depicts the existing TSS at the Airport.

The future TSS will include the runway extension to Runway 18/36 as well as the future crosswind runway. While the TSS for Runway 36 will shift further south, the TSS dimensions for both runway ends will remain the same.

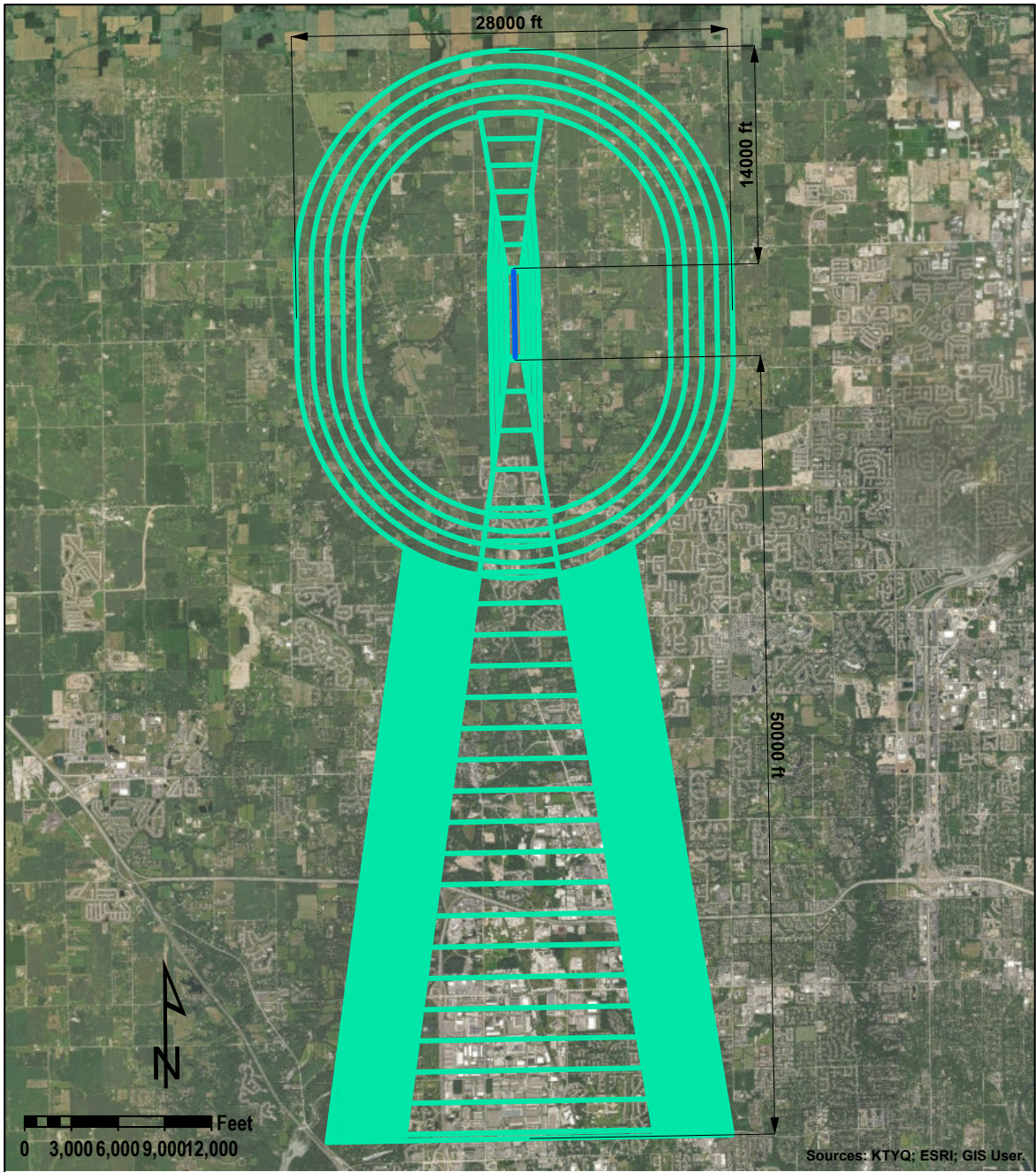
The future crosswind runway, as discussed previously will have non-precision approaches planned to each end with $\frac{3}{4}$ mile visibility. The dimensions for each runway end are 800 feet at the inner width, 10,000 feet long, 3,800 feet at the

outer width at a slope of 20:1. The future TSS for each runway end is shown in Figure A8.

Overall Existing and Future Airport Surfaces

To illustrate the all existing surfaces at TYQ, Figure A9 is included along with Figure A10, which is a condensed version that excludes the extended approach surface to focus on the area closest in proximity to the runway environment.

To exhibit all future surfaces at TYQ in addition to the extension to Runway 18/36 and the future crosswind runway, Figure A11 is included. Figure A12 is provided to illustrate the area closer to the Airport environment.



**Part 77 Existing Surfaces (Full Extent)
Indianapolis Executive Airport (KTYQ)
Zionsville, Indiana**

Legend	
—	Existing Runway 18/36
—	Existing Part 77 Surfaces

FIGURE A.1: EXISTING SURFACES (FULL EXTENT)

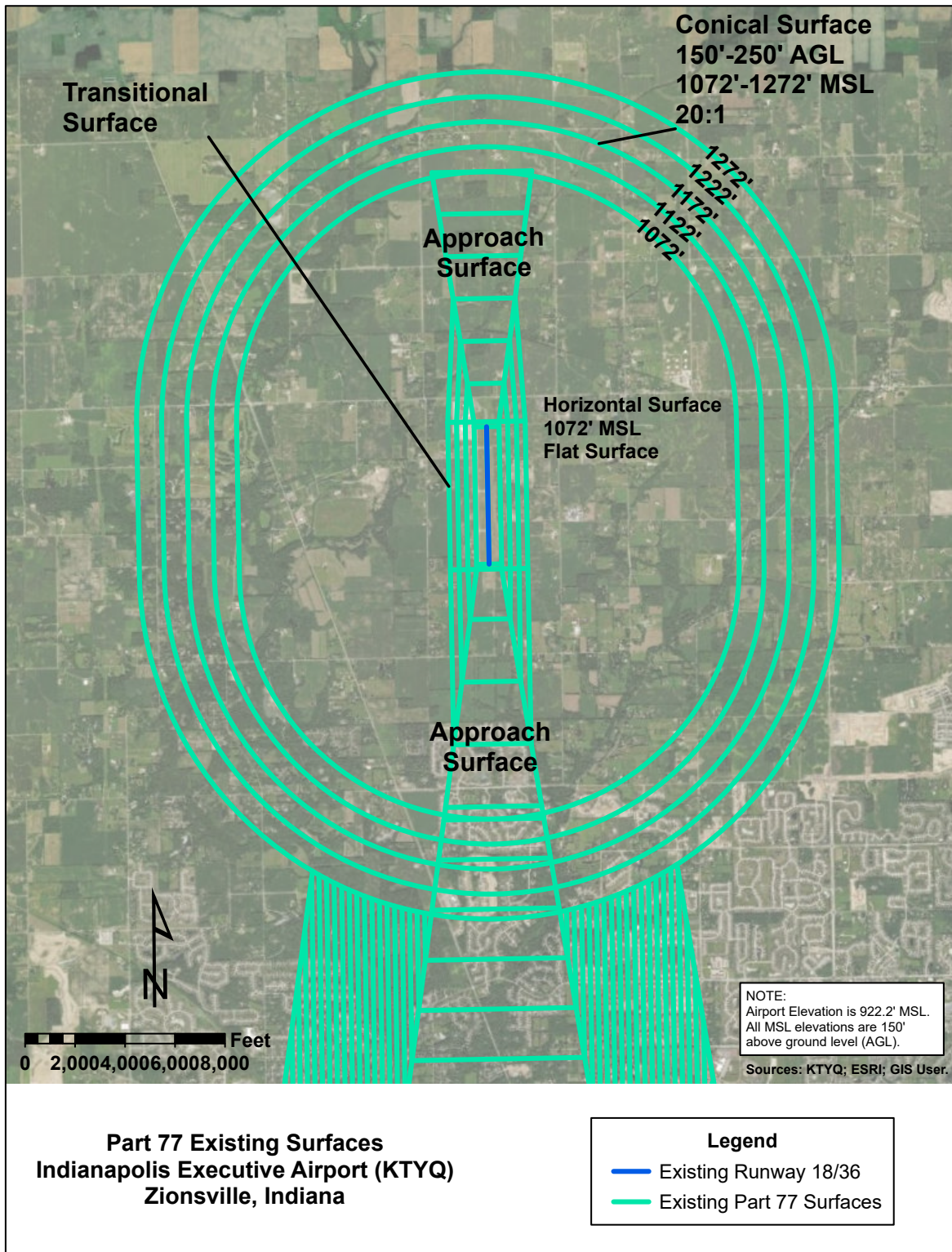
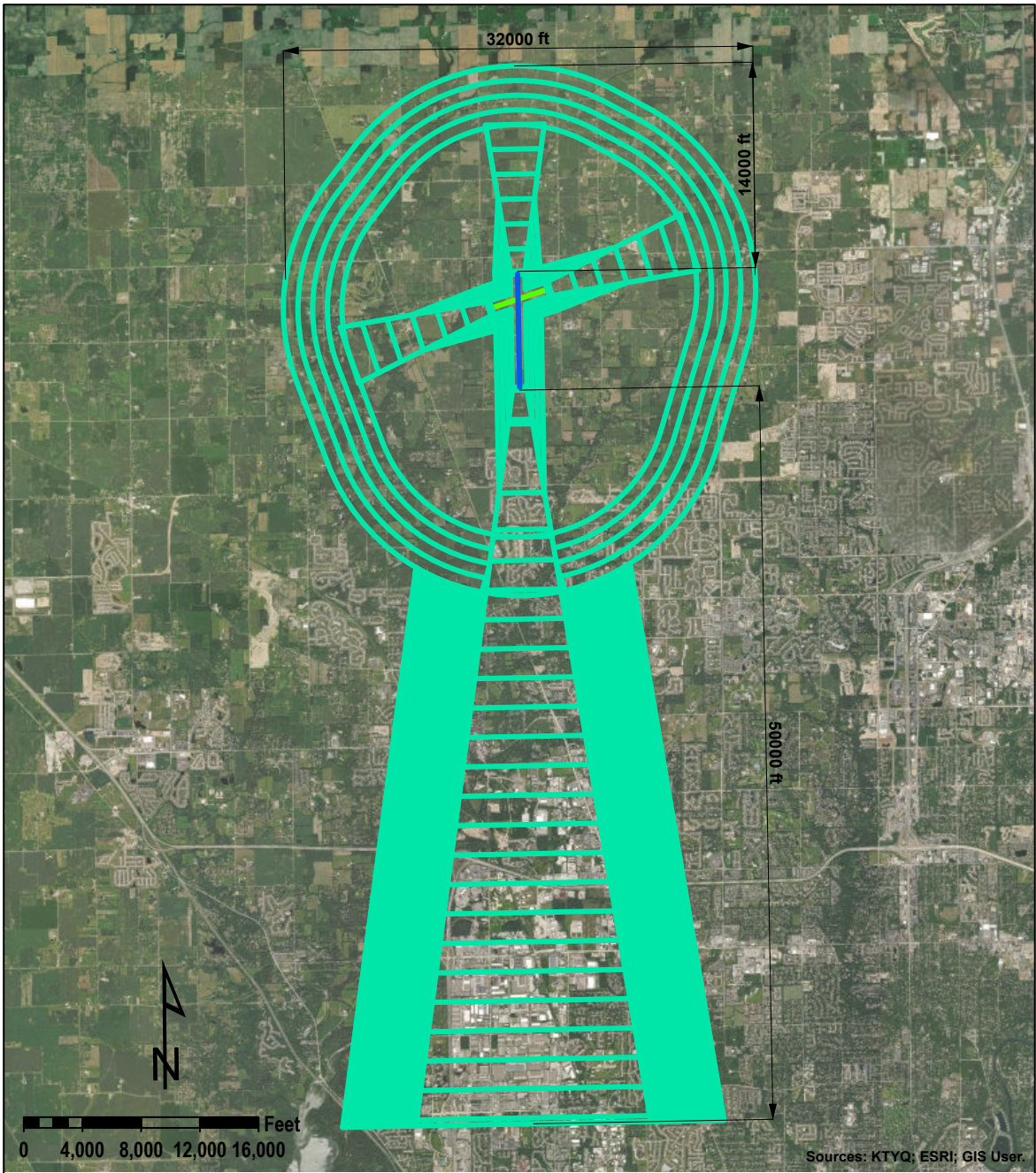


FIGURE A.2: PART 77 EXISTING SURFACES



**Part 77 Future Surfaces (Full Extent)
Indianapolis Executive Airport (KTYQ)
Zionsville, Indiana**

Legend	
—	Future Runway 18/36
—	Future Crosswind

FIGURE A.3: PART 77 FUTURE SURFACES (FULL EXTENT)

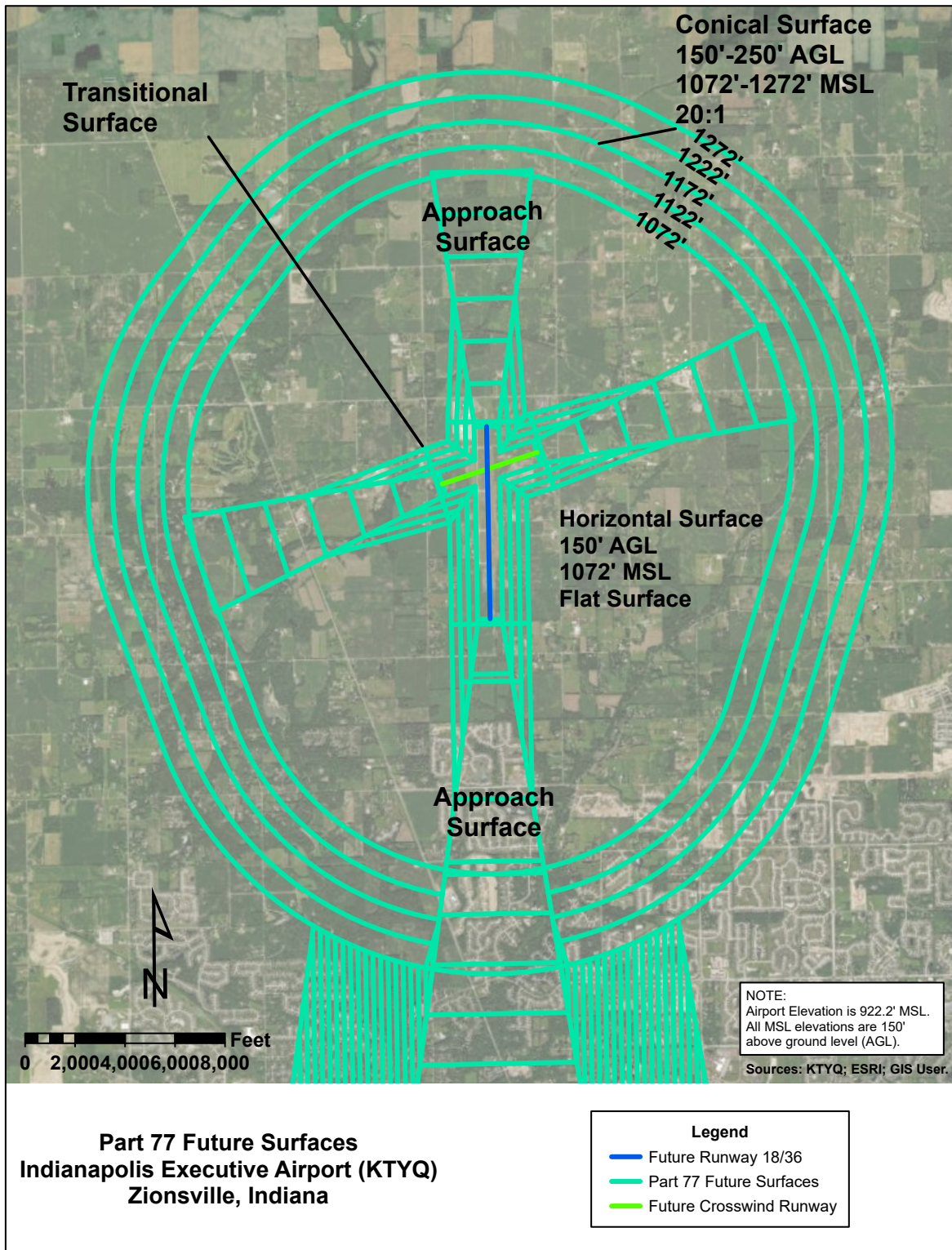


FIGURE A.4: FUTURE SURFACES

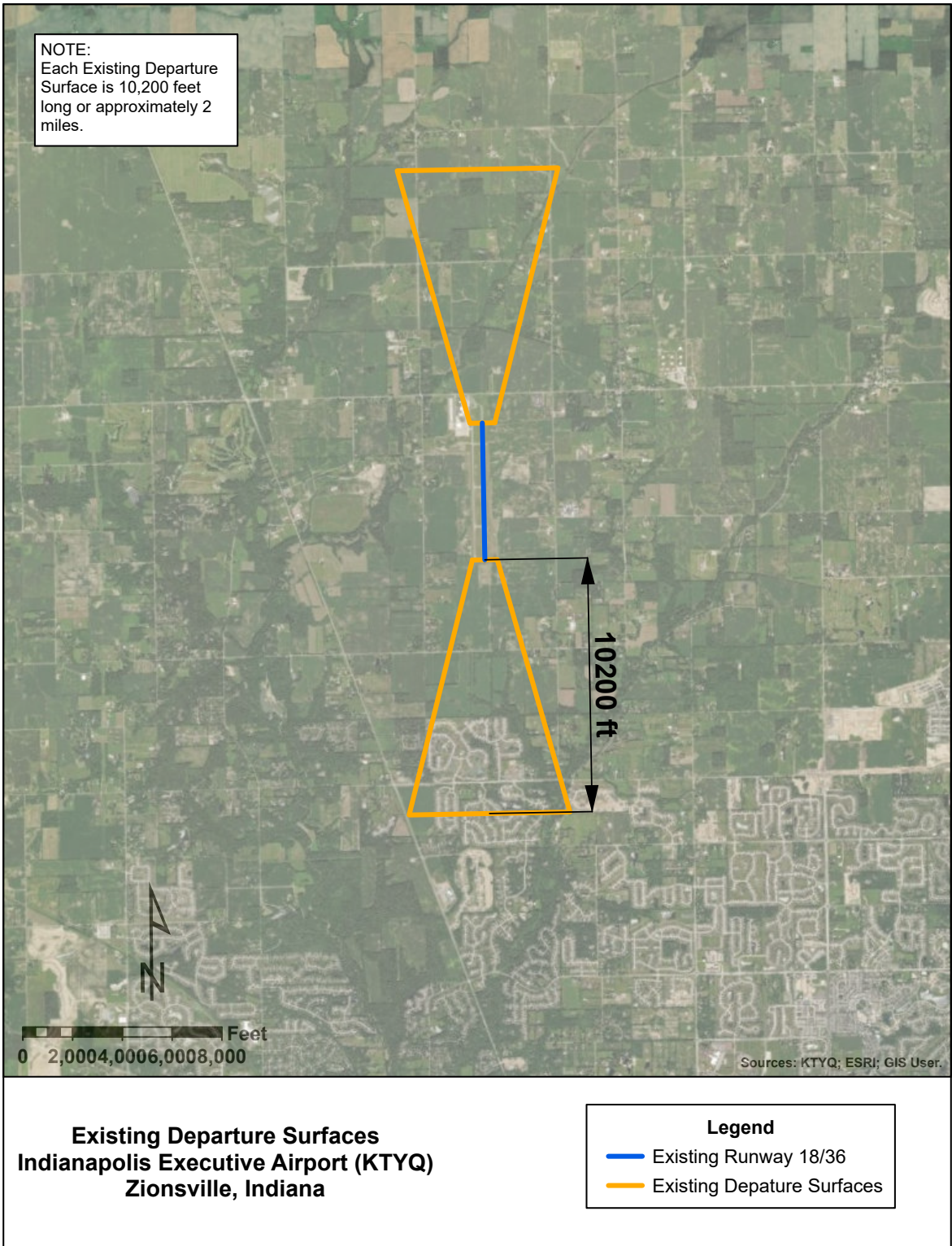


FIGURE A.5: EXISTING DEPARTURE SURFACES

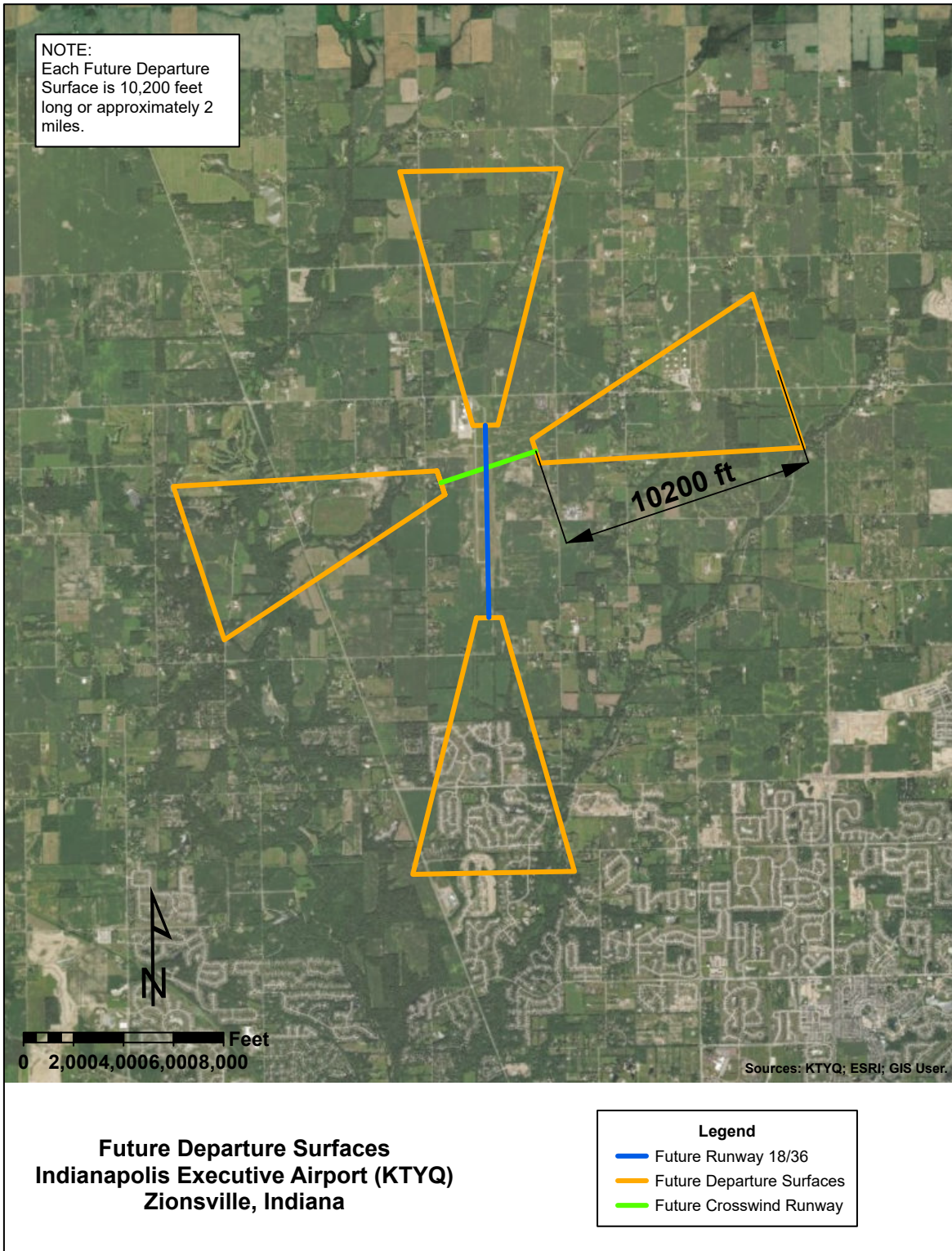


FIGURE A.6: FUTURE DEPARTURE SURFACES

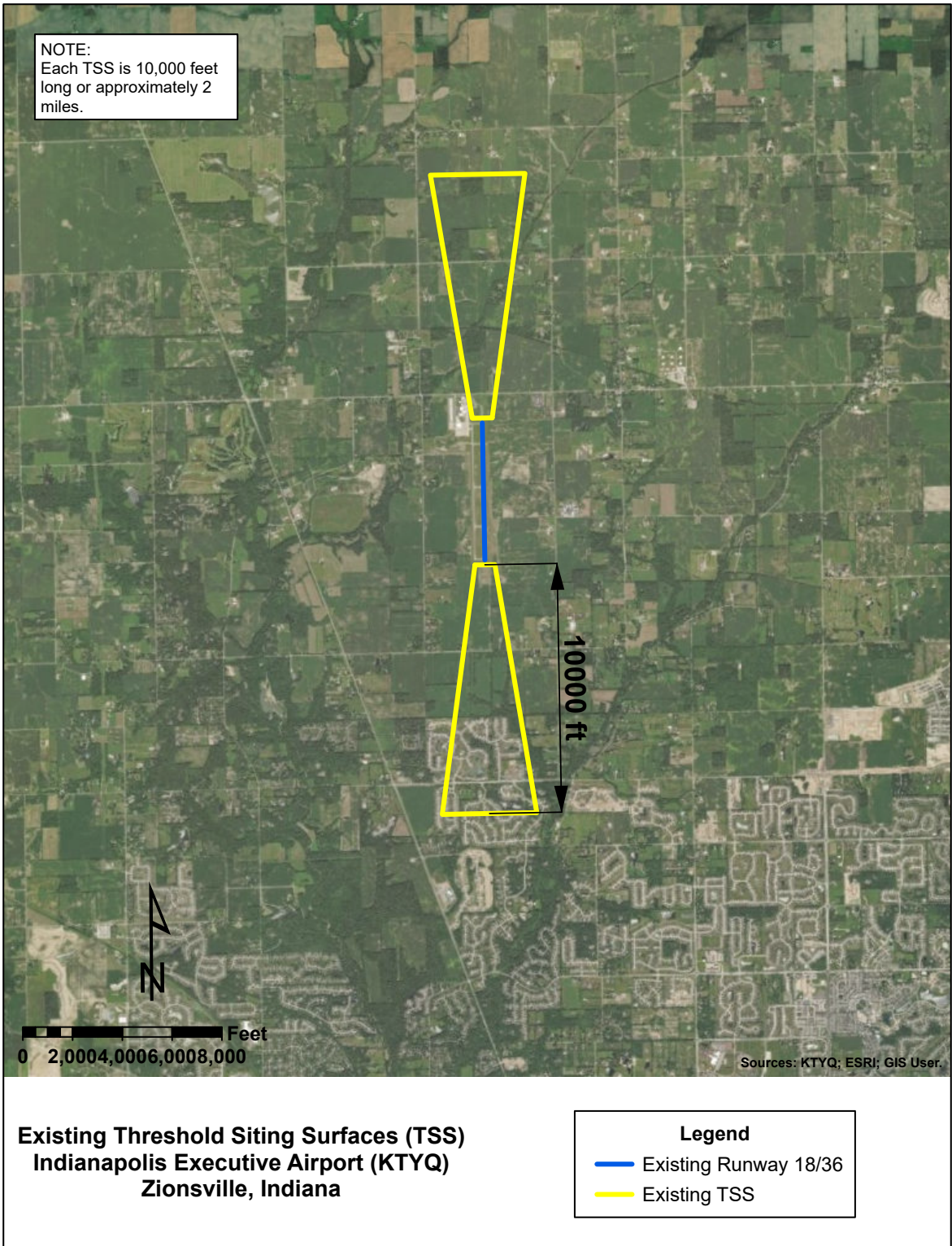


FIGURE A.7: EXISTING THRESHOLD SITING SURFACES (TSS)

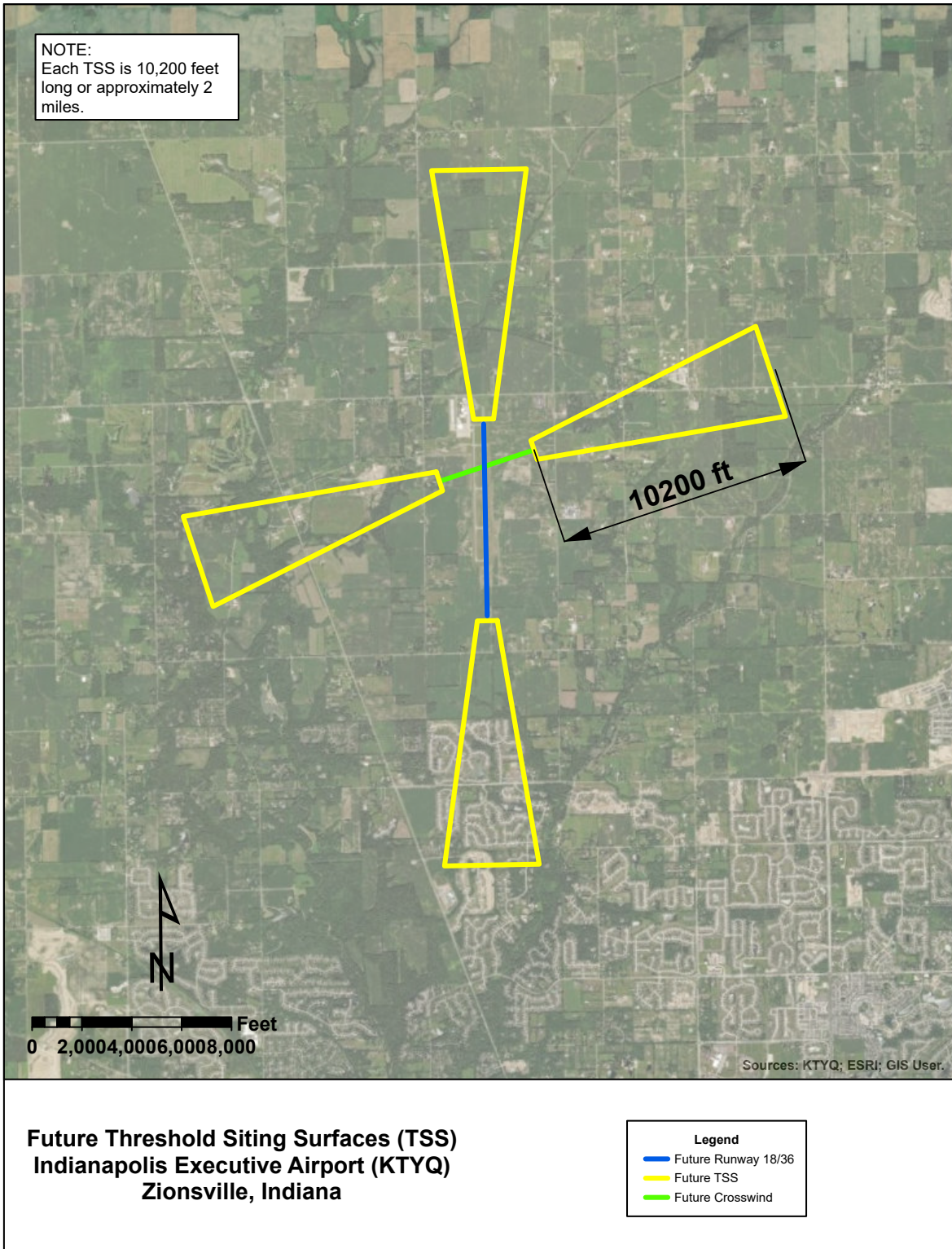
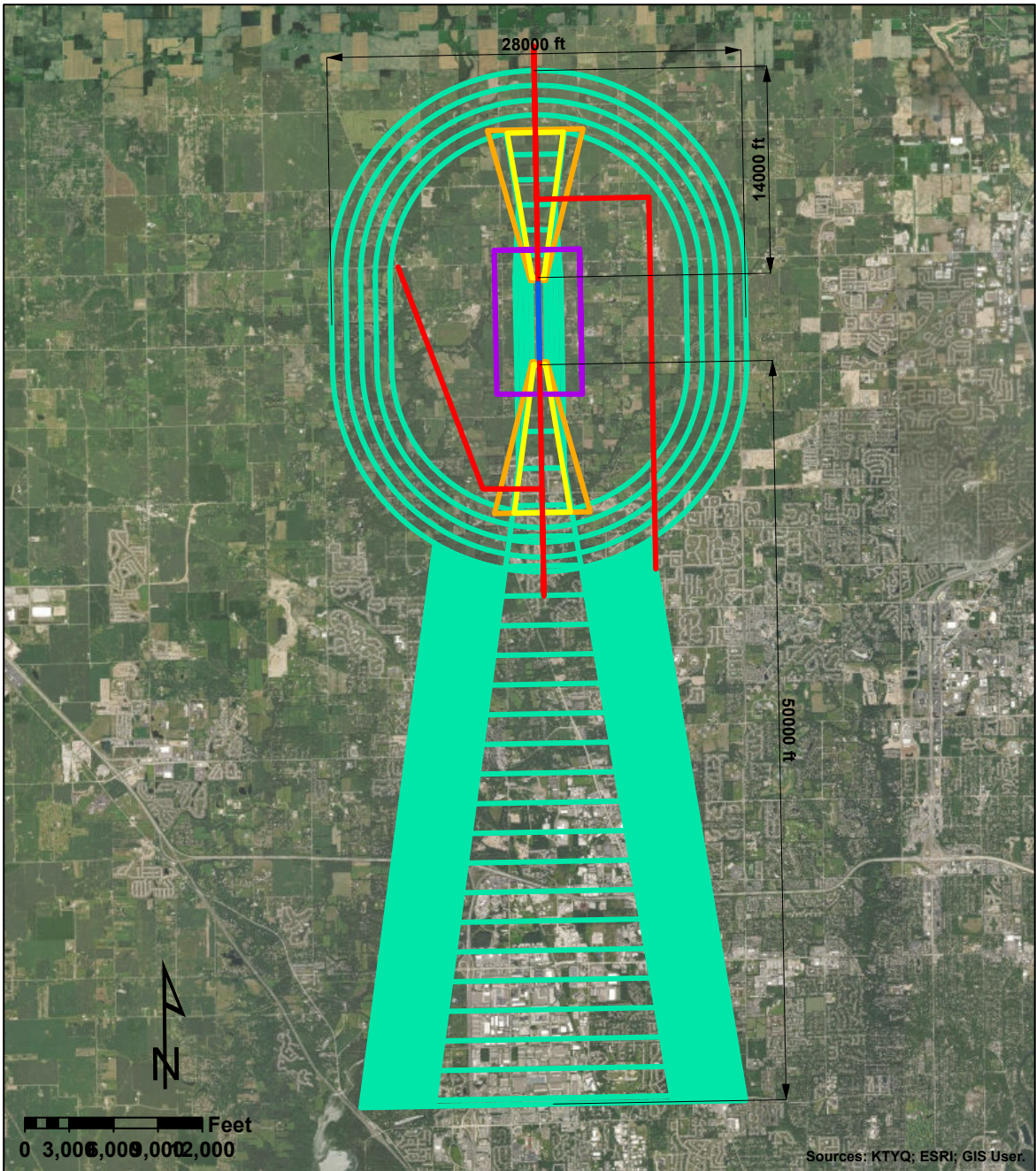


FIGURE A.8: EXISTING THRESHOLD SITING SURFACES (TSS)



**Existing Airport Surfaces (Full Extent)
Indianapolis Executive Airport (KTYQ)
Zionsville, Indiana**

Legend	
Existing Runway 18/36	Existing TSS
Existing Departure Surfaces	Corporate Traffic Pattern
Existing Part 77 Surfaces	GA Traffic Pattern

FIGURE A.9: EXISTING AIRPORT SURFACES (FULL EXTENT)

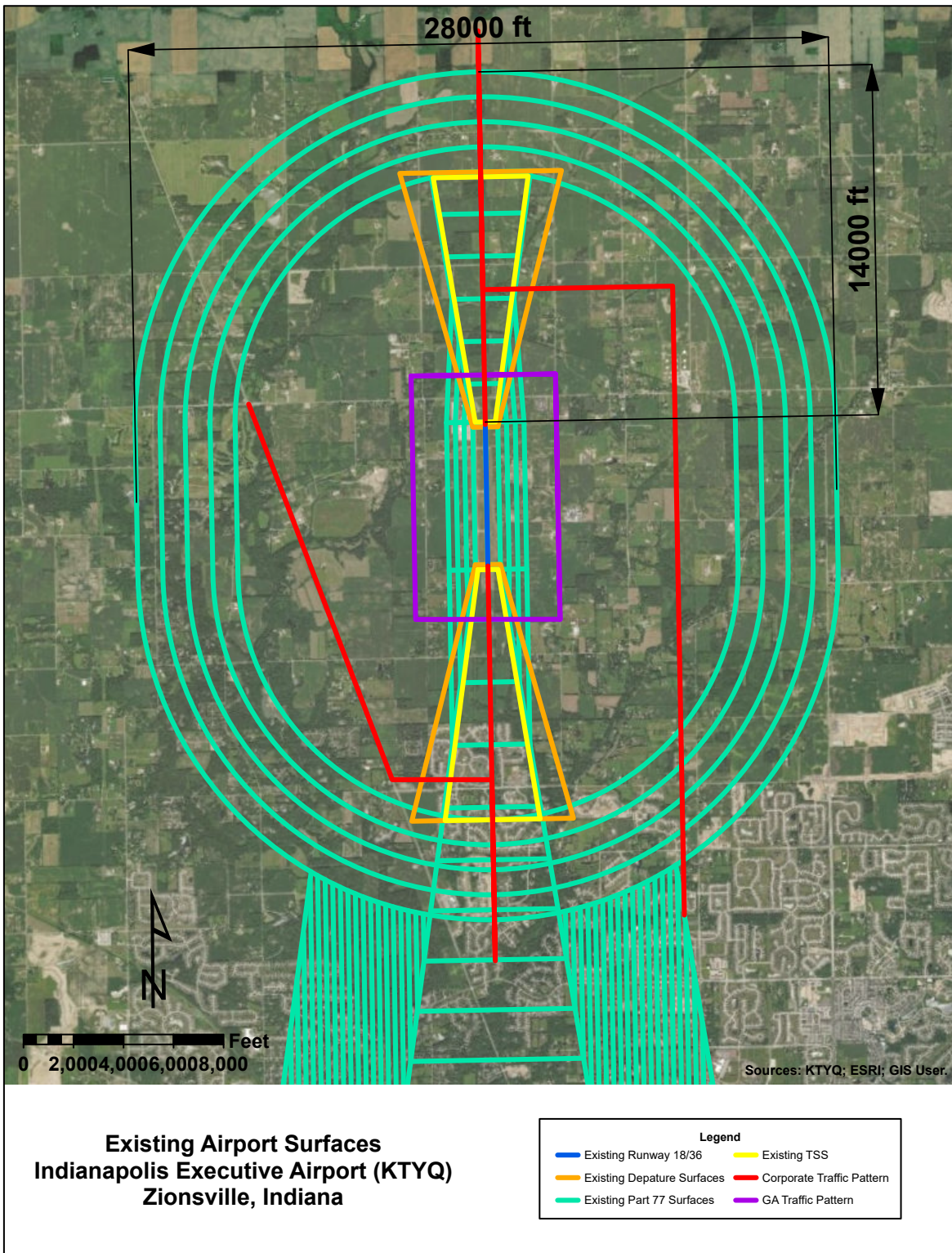
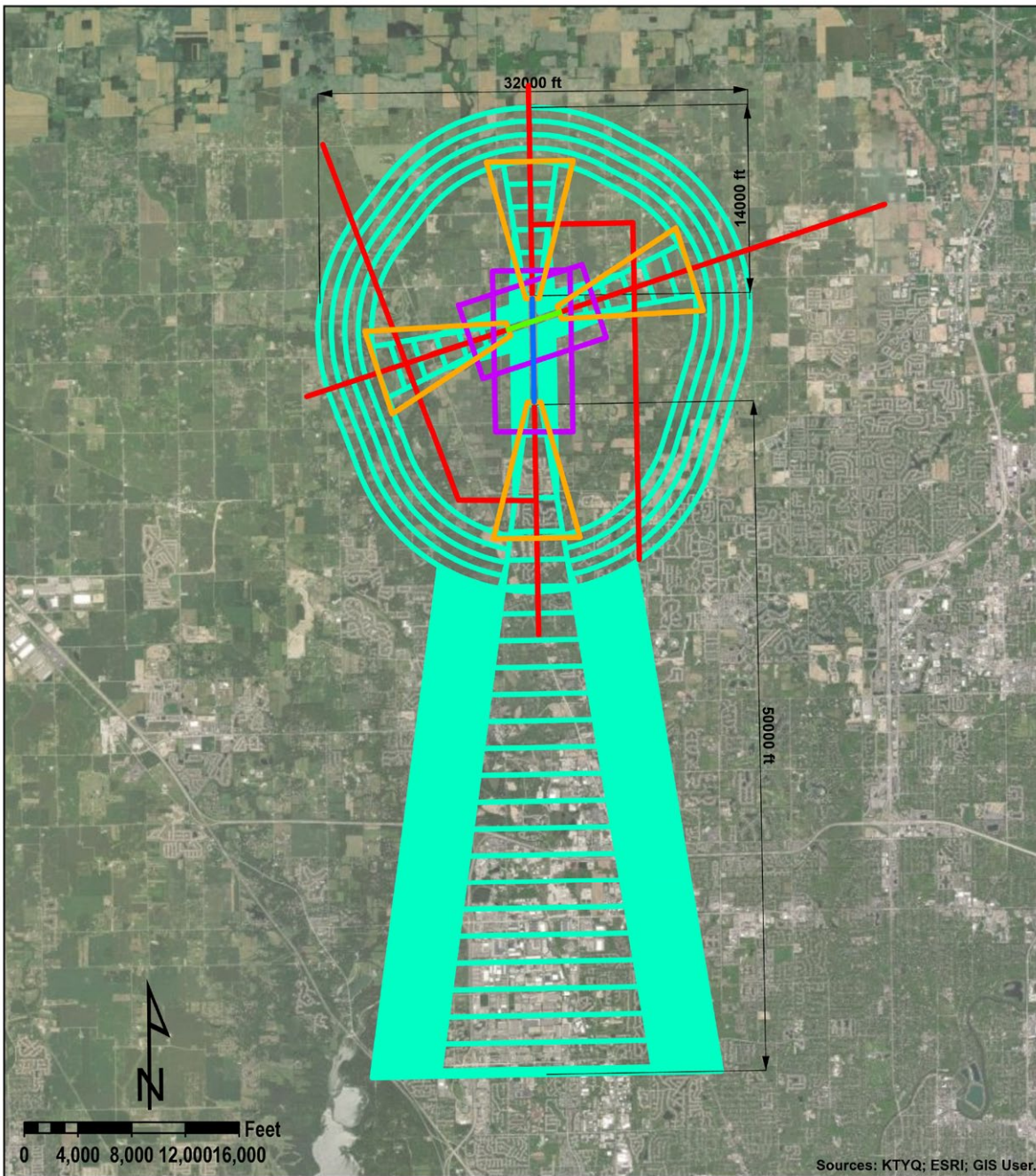


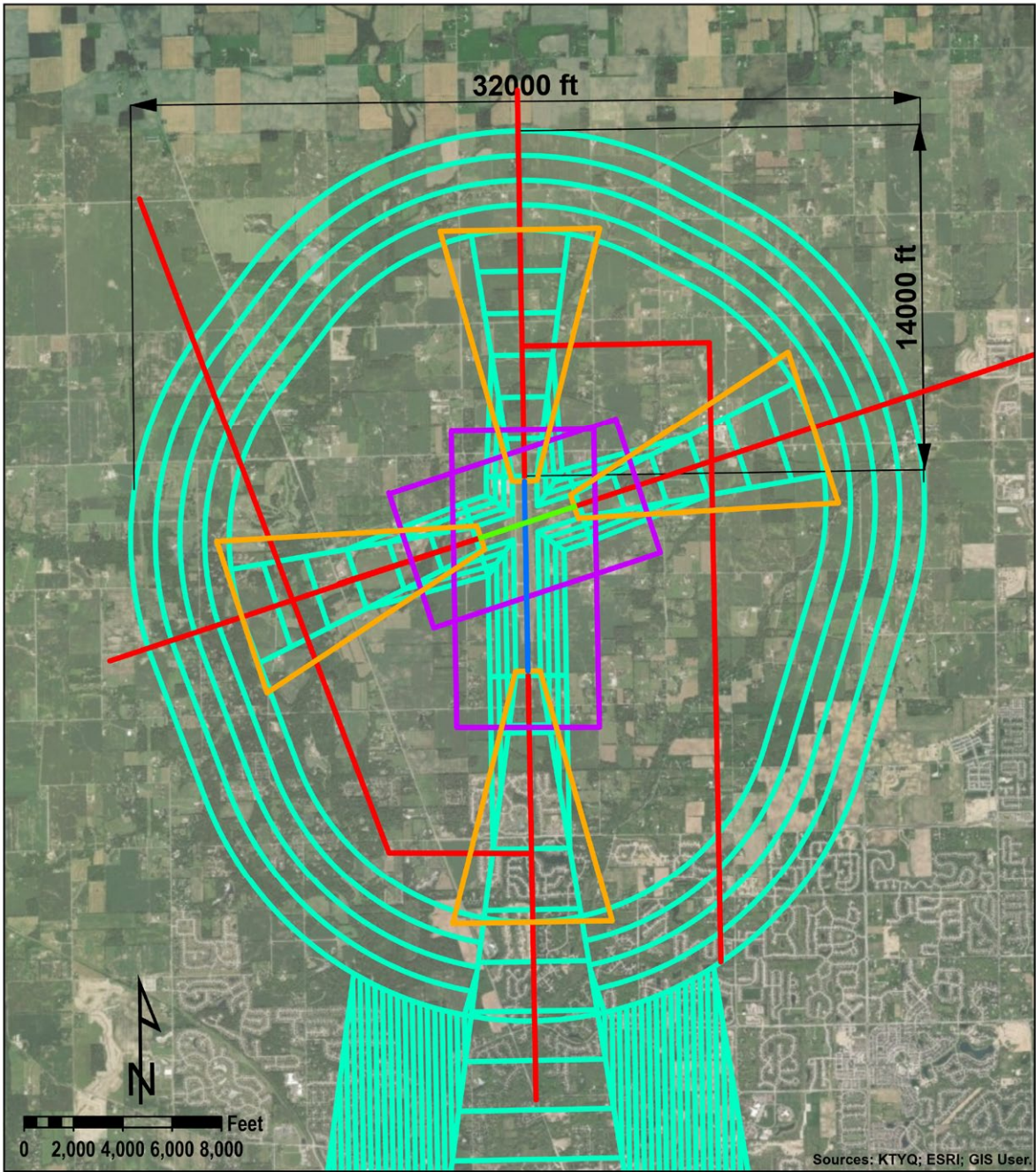
FIGURE A.10: EXISTING AIRPORT SURFACES



**Part 77 Future Surfaces (Full Extent)
Phase II
Indianapolis Executive Airport (KTYQ)
Zionsville, Indiana**

Legend	
Future Crosswind Runway	Future GA Flight Path
Runway 18/36 (Phase II)	Future Corporate Flight Path
Ultimate Departure Surfaces	Future Part 77 Surfaces (Phase II)

FIGURE A.11: PART 77 FUTURE SURFACES (FULL EXTENT)



**Part 77 Future Surfaces (Conical Extent)
Phase II
Indianapolis Executive Airport (KTYQ)
Zionsville, Indiana**

Legend	
Future Crosswind Runway	Future GA Flight Path
Runway 18/36 (Phase II)	Future Corporate Flight Path
Ultimate Departure Surfaces	Future Part 77 Surfaces (Phase II)

FIGURE A.12: PART 77 FUTURE SURFACES (CONICAL EXTENT)

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