Technical Memorandum

To: BJJ Airport Master Plan Technical Advisory Committee

From: CHA Master Plan Update Team

Date: August 5, 2024

Re: Runway 10-28 Safety Area

1.0 INTRODUCTION

Wayne County Airport (BJJ) is a pulic use facility located within Wayne County, OH in the northwestern region of the Village of Smithville. The Airport is approximately five miles northeast of downtown Wooster, 22 miles southwest Akron, OH, and 45 miles southwest of Cleveland, OH. The Airport is located between Highways 3 (west) and 585 (east) and accessible via Honeytown Road/County Road 54. The airport is a general aviation facility that was developed on land purchased by the Wayne County Commissioners in 1963. BJJ operates under a single runway, east/west system designated as Runway 10-28. It is currently 5,189 feet long by 100 feet wide. The runway is equipped with non-precision markings in fair condition. The Runway 28 end contains a 218-foot displacement due to the location of Honeytown Road; however, there are no published declared distances for the runway.

This Runway Safety Area (RSA) Study at BJJ is required pursuant to FAA's Standard Operating Procedure No. 8.0: *Standard Operating Procedures for Runway Safety Area Determination,* FAA Order 5200.8: *Runway Safety Area Program,* and FAA Advisory Circular (AC) 150/5300 13B: *Airport Design.* The standard RSA dimensions for Runway 10-28 are 150 feet in width and 300 feet beyond each runway end for the Runway Design Code (RDC). Although the lateral RSA for Runway 10-28 meets FAA design criteria, the areas beyond the end of each runway contain non-standard grading and incompatible objects.

This RSA study is being completed due to a proposed "triggering action" that normally requires the FAA to review an existing Runway Safety Area Determination (RSAD). A triggering action could include a runway modification or reconstruction, a runway extension, a threshold relocation, master plan update, an Airport Layout Plan (ALP) update, or the implementation/change of declared distances. In this case, the Master Plan and ALP Update are the triggering actions for the Runway 10-28 Safety Area Study Update.

Wayne County is currently updating their Airport Master Plan and Airport Layout Plan (ALP). A typical master plan outlines the future development of an airport and includes several components: identification of existing conditions, forecasting, determining facility requirements, developing alternatives, recommending improvements, and developing capital improvements plans and funding mechanisms. An ALP documents the Master Plan's recommended

improvements over time, and as such, is used as a planning and funding tool by the Federal Aviation Administration (FAA) to prioritize and plan for funding of airport capital improvement projects at airports over a 20-year planning horizon. Thus, any airport that uses FAA Airport Capital Improvement (AIP) funding are bound by Federal Grant Assurance 29 under the Airport and Airway Improvement Act of 1982 which requires an airport sponsor keep its ALP updated. The existing Airport Master Plan and Airport Layout Plan for Wayne County Airport was last updated in 2008.

1.1 Study Objectives

According to FAA Order 5200.8, Paragraph 8(b), there are four categories of RSADs, which are listed below.

- The existing RSA meets the current standards contained in AC 150/5300-13B.
- The existing RSA does not meet standards, but it is practicable to improve the RSA so that it will meet current standards.
- The existing RSA can be improved to enhance safety, but the RSA will still not meet current standards.
- The existing RSA does not meet current standards, and it is not practicable to improve the RSA.

RSADs involving RSAs that will not meet standards must address appropriate RSA improvement alternatives listed in Order 5200.8, Appendix 2. These more complex RSADs normally include an RSA study discussing multiple complex issues and/or options for RSA improvement to gain the maximum RSA practicable. Therefore, this RSA Study for BJJ has three main objectives:

- Identify and evaluate alternatives to improve the RSA for Runway 10-28.
- Maintain existing runway length based on current and projected fleet mix; and
- Provide enough information for FAA to complete an acceptable update to the existing RSAD.

2.0 EXISTING CONDITIONS

Understanding the background of an airport and the region it serves is essential in making informed decisions pertaining to airport-related improvements. This section discussed the existing conditions at BJJ, the existing and future critical aircraft, and the non-standard conditions to the RSA.

2.1 Runway 10-28

BJJ operates under a single runway, east/west system designated as Runway 10-28. The runway is 5,189 feet long by 100 feet wide. The parallel taxiway is south of the runway and extends the entire length. Runway 10-28 is comprised of grooved asphalt and is in good condition according to the most recent FAA Airport Master Record (FAA Form 5010-1). The runway is equipped with non-precision markings in fair condition. The Runway 28 end contains a 218-foot displacement due to the location of Honeytown Road; however, there are no published declared distances for

the runway. The runway is equipped with high intensity runway lighting (HIRL) that is lit from dusk to dawn with incandescent lighting.

Table 2: Runway 10-28 Characteristics

Runway Feature	Runway 10-28
Length	5,189’
Width	100’
Pavement Type	Asphalt – Good Condition
Gradient	0.45%
Edge Lighting	HIRL
Approach Instrumentation	RWY 10 – RNAV (GPS) & VOR RWY 28 – RNAV (GPS) & VOR
Approach Lighting	None
Approach Aids	RWY 10 – PAPI-4 RWY 28 – VASI-4
Runway Markings	Non-precision (fair condition)

Source: Wayne County Airport Master Record (09/16/2022), CHA 2023.

2.2 Critical Aircraft

As discussed in Chapter 2, the ‘critical aircraft’ or ‘design aircraft family’ represents the most demanding aircraft or grouping of aircraft with similar characteristics that are currently using or are anticipated to make ‘regular use’ of an airport. The FAA defines ‘regular use’ within AC 150/5000-1: *Critical Aircraft and Regular Use Determination* as an aircraft or grouping of aircraft that operates at an airport or a specific runway by conducting at least 500 annual operations, including both itinerant and local operations. Note that an aircraft operation is considered either an arrival or departure, and, therefore, regular use excludes touch-and-go operations. When identifying the critical aircraft or design aircraft family, standard aircraft classifications are used based on aircraft approach speed and various dimensional lengths. These classifications include the following:

- **Aircraft Approach Category (AAC):** Consists of a letter (e.g., A through E) corresponding to the critical aircraft’s approach speed in a landing configuration.
- **Airplane Design Group (ADG):** Consists of a Roman numeral (e.g., I through VI) corresponding to the critical aircraft’s wingspan or tail height, whichever is most restrictive.

The identified ACC and ADG are combined to form the Runway Design Code (RDC), which specifies the appropriate design standards for the runway. In addition to the ACC and ADG, the RDC consists of a third component related to runway visibility minimums, expressed as Runway Visual Range (RVR). After determining the RDC for each runway, the airport itself is classified with an Airport Reference Code (ARC). The ARC is used for airport planning and design purposes and is signified by the highest RDC at the airport. The ARC uses the same classification system as the RDC, minus the runway visibility component. Since Runway 10-28 is classified with an RDC of B-II-5000, the ARC for BJJ is B-II. Based on the forecasts, it is recommended that ARC B-II be maintained throughout the planning period. The FAA approved both the existing and future critical

aircraft on June 17, 2024

Table 2: Runway Design Code Summary

Runway	AAC	ADG	RVR
10-28	B	II	5000 (Not lower than 1 mile)

Source: CHA, 2023.

2.3 Existing Runway Safety Areas

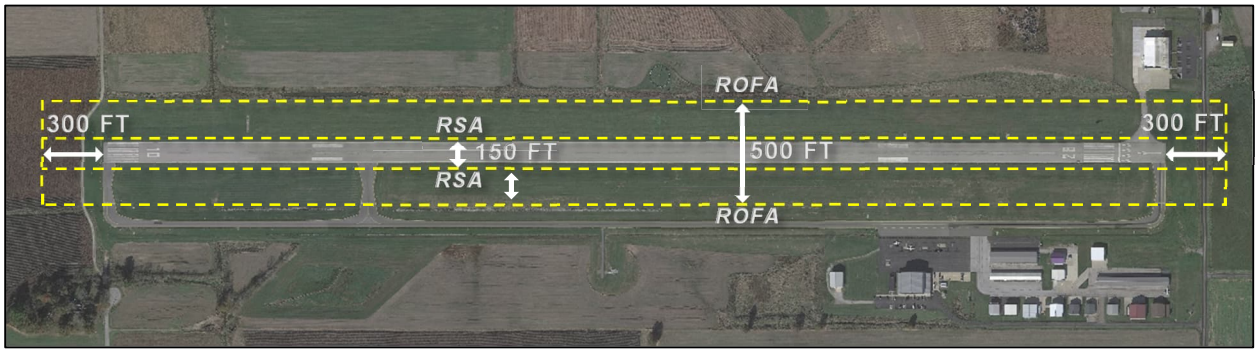
RSA dimension standards are established by the FAA and published AC 150/5300-13B: *Airport Design*. The runway safety area is graded and sized to enhance the safety of aircraft that overshoot, underrun, or veer off the runway. It prevents structural damage to the aircraft or injury to occupants and provides accessibility to rescue and firefighting equipment in the case of an accident. The size of the RSA embankment is dependent upon the AAC/ADG of the critical aircraft using the runway. The RSA dimensional standards for a B-II runway are 150 feet wide (centered on the runway centerline), extending 300 feet beyond the runway departure end and prior to the threshold (see **Figure 1**).

Like the RSA, a Runway Object Free Area (ROFA) is also a rectangular area bordering a runway. The ROFA is to remain clear of above-ground objects except for equipment necessary for air and ground navigation. The ROFA also provides wingtip protection in the event of an aircraft excursion. According to AC 150/5300-13B, the ROFA should:

- Contain no terrain higher than the nearest point of the RSA within a distance equal to half of the most demanding aircraft wingspan of the RDC (i.e., 56.3 / 2 = 28.15 feet).
- Remain clear of parked aircraft, agricultural operations, and non-aeronautical activities.

For RDC B-II runways with instrument approach visibility minimums greater than ¾ miles, the ROFA is offset 250 feet from the runway centerline (i.e., 500-foot total width) and extends 300 feet from the departure end and threshold of each runway end.

Figure 1: Runway 10-28 Safety & Object Free Areas



Source: CHA, 2024.

The areas encompassing the RSA and ROFA immediately adjacent to the runway pavement are

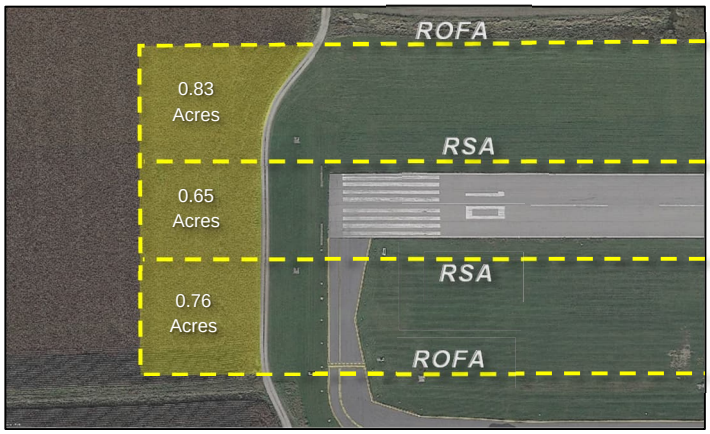
currently free of all objects that are not fixed-by-function, such as runway edge lighting, or providing navigational capability, such as visual approach guidance.

RSA gradient standards are intended to ensure a gradual transition beyond runway pavement to allow a pilot to maintain control of the aircraft traversing the safety area. Based on AC 150/5300-13B, Section 3.16.5, the minimum and maximum longitudinal gradient for the first 200 feet beyond the runway ends are 0.0% and 3.0%, and the minimum and maximum transverse gradients of the RSA are 1.5.% and 5.0%, respectively. The maximum allowable negative gradient 200 feet beyond the runway end is -5.0%.

Runway 10 Safety & Object Free Area

While the RSA and ROFA immediately adjacent to Runway 10-28 meet FAA design criteria, the areas beyond each runway end contain non-standard grading and objects.

Figure 2: Runway 10 Safety & Object Free Areas



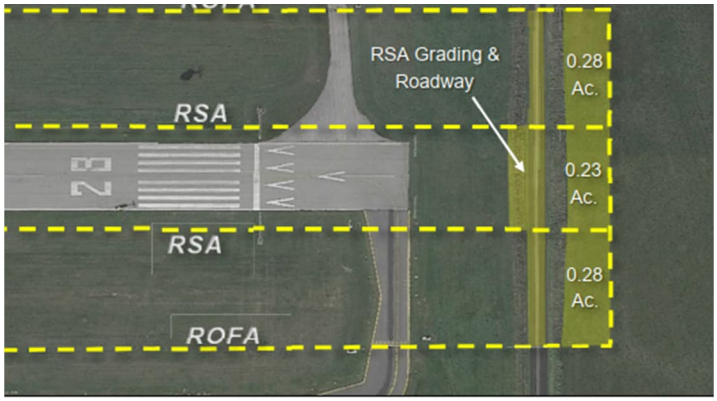
Approximately 95 feet west of the Runway 10 end is a closed portion of Geyers Chapel Road/SR 68. As this portion of the roadway is closed and not open for public travel, the former thoroughfare is not considered an incompatible object. However, west of the road closure, there are approximately 0.65 acres of airport-owned ground within the extended RSA and 1.59 acres within the extended ROFA that contain active farming operations. A review of the topographic data collected as part of this Master Plan revealed that both the longitudinal and transverse grades are within standard. It is recommended that the areas within the extended RSA and ROFA remain free of all agricultural operations.

Runway 28 Safety & Object Free Area

Approximately 240 feet east of the Runway 28 end, approximately 0.23 acres of active farm ground are located within the extended RSA, and 0.56 acres are located within the extended ROFA. Additionally, approximately 160 feet east of the runway end, the terrain decreases by approximately seven feet, where it abuts Honeytown Road/SR 54. Although the decrease in terrain

is acceptable within the ROFA, it does not meet grading criteria within RSA. Additionally, the location of the roadway is an incompatible object within the RSA and ROFA. A review of the topographic data collected as part of this Master Plan revealed that the transverse grades within the RSA are currently standard, varying between 1.7% and 2.5%; however, the longitudinal grades within the first 200 feet and beyond 200 feet vary between -3.0% and -25.0% and therefore non-standard. It is recommended that the areas within the extended RSA and ROFA remain free of all agricultural operations, and alternatives are studied to obtain a standard RSA beyond the runway end.

Figure 3: Runway 28 Safety & Object Free Areas



3.0 RUNWAY LENGTH REQUIREMENTS

To ensure that BJJ can support existing and anticipated aircraft and airline operational demands, a runway length analysis was performed based on specific aircraft performance characteristics as documented in the manufacturer's Aircraft Planning Manuals (APMs). Inadequate runway length can limit the operational capability of an airport, including the types of operating aircraft and their respective destinations. Runway lengths can place restrictions on the allowable takeoff weight of the aircraft, which then reduces the amount of fuel, passengers, and payload that can be carried. To ensure that BJJ can support existing and anticipated aircraft demands, a runway length analysis was performed using guidance outlined within AC 150/5325-4B: *Runway Length Requirements for Airport Design* as well as the critical design aircraft's (Cessna Citation Excel) planning guide.

3.1 AC 150/5325-4B Runway Length Analysis

To conduct the runway length analysis per the guidance outlined within AC 150/5325-4B, the following information was reviewed:

- **Critical Aircraft MTOW:** As discussed in *Chapter 2*, the existing and future critical aircraft for BJJ was identified as the Cessna Citation Excel, which has a maximum certified takeoff weight (MTOW) of 20,200 pounds. According to FAA guidance, aircraft with an MTOW greater than 12,500 pounds are classified as "large."

- **Airport Elevation & Temperature:** The airport elevation and mean maximum temperature of the hottest month directly influence the length required for aircraft takeoff. The elevation of BJJ is 1,135.6 feet mean sea level (MSL), and the mean maximum temperature of the hottest month (July) is 82.4 degrees Fahrenheit.[1]

[1] BJJ elevation obtained from 2023 survey conducted by G & T Associates, and the mean maximum temperature obtained from the National Centers for Environmental Information (1991 - 2020).

- **Percent of Fleet Mix:** The FAA categorizes large aircraft with less than 60,000 pounds MTOW into two family groupings according to "percent of fleet," namely, 75 and 100 percent of the fleet. According to AC 150/5325-4B, the Citation Excel is listed within the 75 percent fleet mix grouping.

- **Useful Load:** Useful load is the difference between the maximum allowable structural gross weight and the operating empty weight of the aircraft. That is, the useful load consists of passengers, cargo, and usable fuel. After selecting the appropriate fleet mix grouping (i.e., 75 or 100 percent) for large aircraft below 60,000 pounds MTOW, performance data within AC 150/5325-4B were used to calculate estimated takeoff lengths at 60 and 90 percent useful load.

According to AC 150/5325-4B, the 75 percent fleet mix takeoff length diagrams are based upon zero wind, uncontaminated (i.e., dry) runway conditions, and zero effective runway gradient. As such, the calculated takeoff lengths were increased by 10 feet for each foot of elevation difference between the high and low points of the runway centerline. Based on airfield survey data, the highest point on Runway 10-28 is 1,135.55 feet located at the Runway 28 end point, and the lowest point is 1,107.14 feet located in the western third of the runway. With a difference of 28.4 feet between the high and low runway points, the calculated runway lengths were increased by 284 feet. **Table 3** lists the adjusted 75 percent fleet mix takeoff calculations for 60 percent and 90 percent useful loads.

Table 3: 75 Percent Fleet Mix Takeoff Calculations

60% Useful Load	90% Useful Load
5,070 FT	6,600 FT

Note: Includes adjustment for effective runway gradient
Source: CHA, 2024.

3.2 Aircraft Planning Manual Length Analysis

To determine a more specific runway length requirement, the Citation Excel flight planning guide was examined using the same planning factors (i.e., MTOW, elevation, and temperature) previously listed. The planning guide, however, identifies different takeoff lengths based on the use of a seven-degree or 15-degree flap setting. According to the guide, a 15-degree flap setting is preferred as this setting requires less takeoff length. However, in situations where a steeper climb gradient is required, such as avoidance of airspace obstructions, a seven-degree setting may be used but requires increased takeoff length. Based on this information estimated takeoff lengths for both flap settings were calculated (**Table 4)**. Like the 75 percent fleet mix takeoff length calculations, 284 feet was added to adjust for the Runway 10-28 gradient. It is important to note that takeoff length calculations assume a maximum takeoff weight, takeoff over a 35-foot object, an uncontaminated runway, zero wind, and anti-ice off.

Table 4: Cessna Citation Excel Planning Guide Takeoff Calculations

7° Flap Setting	15° Flap Setting
5,125 FT	4,780 FT

Note: Includes adjustment for effective runway gradient
Source: CHA, 2024.

Estimated landing lengths were also briefly examined using the planning guide. These lengths, however, remained below all estimated takeoff lengths and were not determined to be a limiting factor.

3.3 Runway Length Recommendation

When comparing the two types of takeoff calculations (i.e., 75 fleet mix and aircraft planning guide), it was noted that the 75 percent fleet mix at 90 percent useful load exceeds the planning guide's estimates at maximum takeoff weight (20,200 pounds). Therefore, the estimated takeoff length for the 75 percent fleet mix at 90 percent useful load was removed from further consideration. However, the estimated takeoff length for the 75 percent fleet mix at 60 percent useful load (5,070 feet) is between the planning guide's seven-degree and 15-degree takeoff length estimates. Additionally, a review was conducted to determine Citation Excel's most frequent destinations from BJJ. This review suggested that the design aircraft can depart to its most frequent destinations without full fuel and, correspondingly, does not regularly depart the airport at maximum takeoff weight. As such, takeoff length estimates derived from the planning guide indicate that Runway 10-28 provides the existing and future design aircraft with sufficient runway length (5,189 feet) throughout the forecast period. Note that this recommendation does not factor potential runway length limitations required by commercial (e.g., Part 135) operators.

4.0 ALTERNATIVES

Alternatives have been developed to address the deficient RSAs for Runway 10-28. Alternative 1 maintains the runway environment in its existing condition as the "do-nothing" alternative. The remaining alternatives seek to improve the RSAs in multiple ways, each with varying amounts of impact to the utility of the runway. The key FAA documents the provided guidance in developing the alternatives for Runway 10-28 include FAA Order 5200.8 FAA AC 150/5220-22B: *Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns*, and FAA Order 5200.9: *Financial Feasibility and Equivalency of RSA improvements and EMAS*. Using these documents, the conceptual alternatives for mitigating the RSA deficiencies included the following:

- Construct standard RSA
- Reduce runway length
- Utilize declared distances
- Relocated, shift, or realign the runway
- Install EMAS

4.1 Alternative A: Construct standard RSA

Alternative A would construct a standard RSA of 150' in width and 300' beyond the end of runway. This alternative would remove all objects within the RSA. At the east end, Honeytown Road would be relocated outside of the standard RSA and the grading within the RSA would be corrected. Since existing Honeytown Road is also within the Runway Protection Zone (RPZ) for Runway 28, the road should be relocated outside of the RPZ by permanently closing, tunnelling, or re-aligning (see **Figure 4**). Beyond the Runway 10 end of pavement, the road (Geyers Chapel Road) that was closed when the runway was extended in the 1990s is also in the extended RSA. However, this road is not accessible to the public, so it will remain in its current location. This alternative was not selected due to the costs and impacts of closing, relocating, or tunneling Honeytown Road.

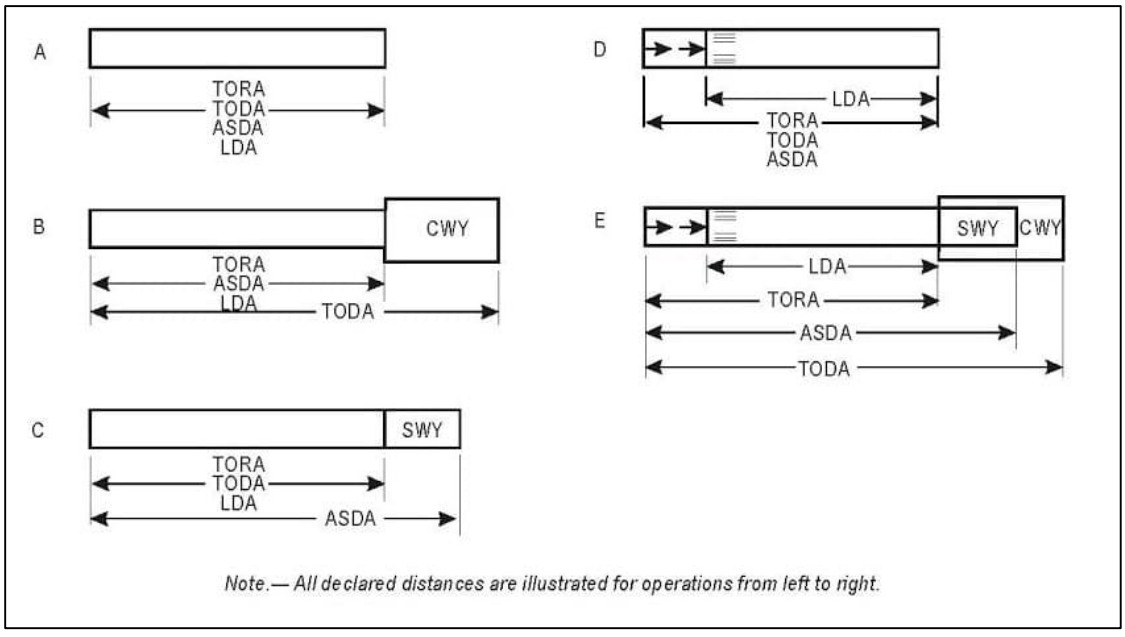
4.2 Alternative B: Reduce Runway Length

Another alternative for meeting RSA standards is to reduce the usable runway length. This is a feasible alternative if the existing and future critical aircraft requires less runway length than what would be available after applying standard RSAs beyond both runway ends. Alternative B would meet all the RSA requirements by effectively reducing the usable runway length and not impacting Honeytown Road. To provide the required 300' beyond each runway end without utilizing declared distances, the usable runway length would be 4,971 feet for all operating lengths in both directions. This alternative was not selected due to the reduction in overall runway length.

4.3 Alternative C: Utilize Declared Distances

When declared distances are used, the airport provides specific runway distance information for calculating maximum operating weights. These four "distances" are described below and depicted in **Figure 5**.

Figure 5: Declared Distances



Hutton Road

Honeytown Road/CR54

Eby Road

Honeytown Road
Tunnel across
Runway Safety Area

Alternate Detour

Approach
Runway Protection Zone
500' x 700' x 1,000'

Departure
Runway Protection Zone
500' x 700' x 1,000'

Honeytown Road
Relocation

Beiler Road

Partial Roadway
Closure (1,050')

300'

150

28

RPZ RPZ RPZ RPZ RPZ RPZ RPZ RPZ RPZ RPZ RPZ RPZ

ROFA ROFA ROFA ROFA ROFA ROFA

OFZ OFZ OFZ

RSA RSA RSA RSA RSA RSA

TOFA TOFA TOFA TOFA TOFA TOFA

TSA TSA TSA TSA TSA TSA

PA PA PA PA PA PA

GRAPHIC SCALE (FEET)
0 100 200 400

LEGEND

- EX. BUILDING
- EX. RUNWAY PAVEMENT
- FUTURE RUNWAY PAVEMENT
- EX. TAXIWAY PAVEMENT
- EX. APRON PAVEMENT (ASPHALT)
- EX APRON PAVEMENT (CONCRETE)
- FUTURE PAVEMENT REMOVAL
- ELEVATION CONTOUR 1100'
- TREE/BRUSH LINE
- WATER/DETENTION AREAS
- FENCE
- NAVAID CRITICAL AREA
- RUNWAY PROTECTION ZONE (RPZ) RPZ
- RUNWAY SAFETY AREA (RSA) RSA
- RUNWAY OBJECT FREE AREA (ROFA) ROFA
- RUNWAY OBSTACLE FREE ZONE (ROFZ) OFZ
- 35' BUILDING RESTRICTION LINE (BRL) BRL
- TAXIWAY SAFETY AREA (TSA) TSA
- TAXIWAY OBJECT FREE AREA (TOFA) TOFA
- AIRPORT PROPERTY LINE PA
- WIND CONE
- POWER POLE

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PROJECT: WAYNE COUNTY AIRPORT (BJJ)
MASTER PLAN UPDATE

TITLE: Alternative A: Construct Standard RSA

EXHIBIT NO. 4

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- **Accelerate-Stop Distance Available (ASDA):** The accelerate-stop distance available (ASDA) is defined as the runway plus stopway (SWY) length declared available for the acceleration/deceleration of an aircraft aborting its takeoff. The ASDA is measured from the point at which the aircraft takeoff run begins to the point where the standard Runway Safety Area (RSA) or Runway Object Free Area (ROFA) begins, whichever is shorter.

- **Landing Distance Available (LDA):** The landing distance available (LDA) is defined as the runway length declared available for the ground run of an aircraft landing. The LDA cannot be longer than the runway, but with obstacles on the ground or in the approach of a given runway, the LDA can be shorter to provide standard RSA(s) and/or clear approach surfaces. The LDA is measured to the point where the standard RSA or ROFA begins at the rollout end of the runway or the runway end, whichever yields a shorter distance.

- **Takeoff Run Available (TORA):** The takeoff run available (TORA) is the distance to accelerate from brake release to lift-off. Typically, the TORA is measured from the start of takeoff to a point 200 feet beyond the beginning of the departure RPZ. However, if a departure RPZ is not located at least 200 feet from the departure end of a runway, the TORA will be shorter than the actual runway length. Regarding RSA compliance, the TORA is not required to have a fully compliant RSA at either end of the runway.

- **Takeoff Distance Available (TODA):** The takeoff distance available (TODA) is defined as the length of the TORA plus the length of a clearway, if provided. A clearway (CWY), if available, is defined as an area beginning at the end of a runway that must be under the Sponsor's control, at least 500 feet wide, cannot exceed 1,000 feet in length, and clear of any obstacle or terrain at an upward slope of 1.25 percent (or 80:1). Like the TORA, the TODA does not require a standard RSA beyond the runway end.

Although the Runway 28 threshold is currently displaced 218', the runway does not have published declared distances according to the FAA's Airport Data & Information Portal (ADIP). Alternative C would result in officially publishing declared distances as depicted in **Figure 6**. While Alternative C does not require any physical changes to Runway 10-28, it would decrease the ASDA for a Runway 10 departure and the LDA for a Runway 10 arrival by 140'. Although the effective LDA would be 218' feet less, aircraft have essentially been using 4,971' for a landing on Runway 28 since the threshold was displaced. This alternative will be implemented in the near term to address the non-standard safety area by publishing the declared distances shown in **Table 5.**

Table 5: Proposed Runway 10-28 Declared Distances

	Runway 10	Runway 28
TORA	5,189'	5,189'
TODA	5,189'	5,189'
ASDA	5,049'	5,189'
LDA	5,049'	4,971'

Source: CHA, 2024.

TAKEOFF RUN AVAILABLE/
TAKEOFF DISTANCE AVAILABLE
(5,189')

ACCELERATE-STOP DISTANCE AVAILABLE/
LANDING DISTANCE AVAILABLE
(5,049')

LANDING DISTANCE AVAILABLE
(4,971')

TAKEOFF RUN AVAILABLE/
TAKEOFF DISTANCE AVAILABLE/
ACCELERATE-STOP DISTANCE AVAILABLE
(5,189')

Geyers Chapel Road

Honeytown Road (CR54

STOCKPILES

10

28

LEGEND

- EX. BUILDING
- EX. RUNWAY PAVEMENT
- EX. TAXIWAY PAVEMENT
- EX. APRON PAVEMENT (ASPHALT)
- EX APRON PAVEMENT (CONCRETE)
- ELEVATION CONTOUR 1100'
- TREE/BRUSH LINE
- WATER/DETENTION AREAS
- FENCE
- NAVAID CRITICAL AREA
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- RUNWAY SAFETY AREA (RSA)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY OBSTACLE FREE ZONE (ROFZ)
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GRAPHIC SCALE (FEET)
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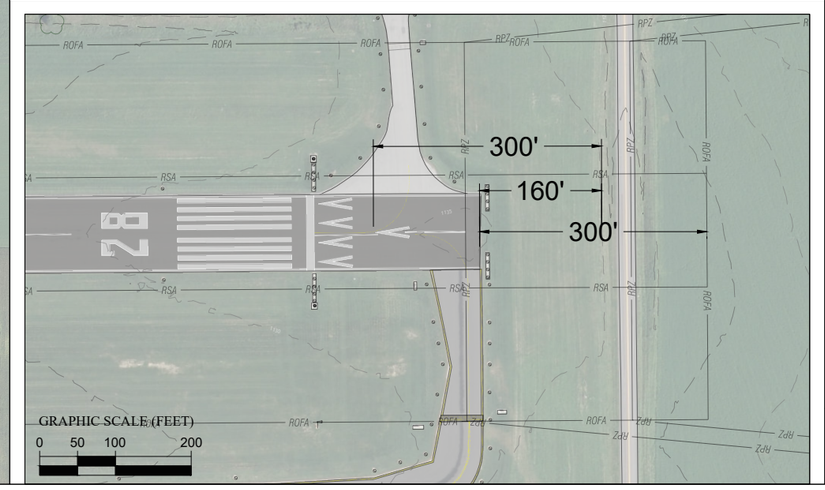

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WAYNE COUNTY AIRPORT (BJJ)
MASTER PLAN UPDATE

PROJECT:

TITLE:
Alternative C: Declared Distances

EXHIBIT NO.
5

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4.4 Alternative D: Shift Runway

When a standard RSA is not obtainable through traditional improvements or with the use of declared distances, other alternatives may be feasible to relocate, shift, or realign a runway. A review of the existing airport property line and terrain to the north indicates a realignment or relocation would not be feasible. However, given the airport-owned property to the west, a runway shift to the west was determined feasible.

Alternative D would remove 218' of pavement behind the existing Runway 28 landing threshold essentially removing the displacement. To account for the loss of 218' of operating length, the Runway 10 end would be extended 230' to effectively shift the runway and its safety areas westward (see **Figure 7**). This alternative does add an additional 12 feet of runway length for a total of 5,201 feet. It is also important to note that while not depicted on the figure, additional improvements would be needed associated with the alternative such as visual approach aid relocation, new approach procedures for Runway 10, and portions of Taxiways 'A' including Taxiways 'A1' and 'A3' would be relocated. This shift would also remove obstructions to the Part 77 34:1 surface for Runway 28, which are currently vehicles on Honeytown Road traversing through approach surface. This alternative was selected as the long-term improvement and shown on the Future ALP.

4.5 Alternative E: Install EMAS

An Engineered Materials Arresting System (EMAS) can be installed to stop aircraft overruns or when there is insufficient safety area beyond the runway end available. According to FAA, Runway Safe is the sole manufacturer of EMAS products that meet the FAA requirements of AC 150-5220-22B. Runway Safe currently has two EMAS systems: the cellular concrete block system called EMASMAX® and a silica foam system called greenEMAS®. EMAS have ongoing maintenance and replacement costs as the crushable blocks have a useful life of approximately 15-20 years and must be repaired or replaced when damaged by aircraft or vehicles.

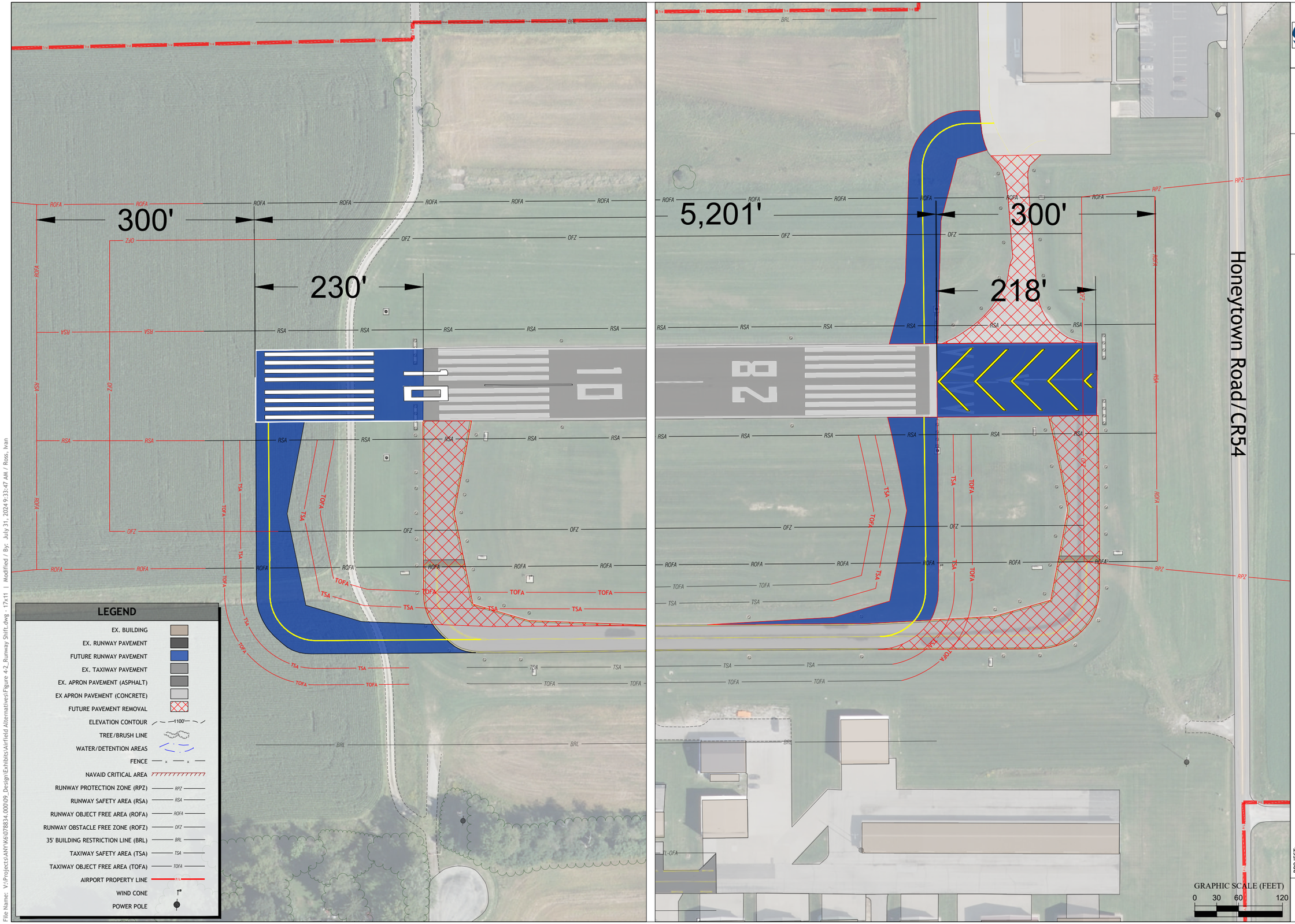
According to FAA Order 5200.8 Runway Safety Area Program, EMAS is the last alternative consideration for addressing RSA deficiencies. It should only be considered and implemented when there are no feasible alternatives. Due to availability of the other presented alternatives to address the non-standard RSA (declared distances or shifting the runway) an EMAS was determined not to be feasible for BJJ.

5.0 RECOMMENDATIONS

During TAC meeting #2 (3/19/24), the preliminary runway alternatives were presented to the group for comment and input. During that meeting, the group collectively decided to implement a near term RSA improvement, as well as a long-term improvement that will be depicted on the Future ALP sheet.

5.1 Near Term RSA Improvement

The near-term improvement selected was Alternative C: Declared Distances. This alternative would involve no infrastructure improvements and would only require coordination with the FAA on publishing the declared distances. Alternative C would result in officially publishing declared



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WAYNE COUNTY AIRPORT (BJJ)
MASTER PLAN UPDATE

PROJECT:

TITLE: Alternative D: Shift Runway West

EXHIBIT NO. 7

File Name: V:\Projects\ANY\K6\078834.000109_Design\Exhibits\Airfield Alternatives\Figure 4-2_Runway Shift.dwg - 17x11 | Modified / By: July 31, 2024 9:33:47 AM / Ross, Ivan

distances depicted in **Table 6**. While Alternative C does not require any physical changes to Runway 10-28, it would decrease the ASDA for a Runway 10 departure and the LDA for a Runway 10 arrival by 140'. These new published operating distances would remove Honeytown Road and non-standard grading off the Runway 10 departure end of the runway.

Table 6: Proposed Runway 10-28 Declared Distances

	Runway 10	Runway 28
TORA	5,189'	5,189'
TODA	5,189'	5,189'
ASDA	5,049'	5,189'
LDA	5,049'	4,971'

Source: CHA, 2024.

5.2 Long-Term RSA Improvement

Since the airport would like to eventually regain the runway length lost by implementing declared distances, the long-term planning improvement to address the RSA is Alternative D: Runway Shift. Alternative D would remove 218' of pavement behind the existing Runway 28 landing threshold essentially removing the displacement. To account for the loss of 218' of operating length, the Runway 10 end would be extended 230' to effectively shift the runway and its safety areas westward. This alternative does add an additional 12 feet of runway length for a total of 5,201 feet. It is recommended that when the FAA is prepared to fund a shift to the west, the operational, fleet mix, and critical aircraft data is reviewed and confirmed to ascertain whether Runway 10-28 requires additional runway length. Currently, 5,200' is sufficient length for the existing and future critical aircraft operating at BJJ.