MIDDLEBURY STATE AIRPORT (6B0)

Airport Master Plan (DRAFT Report)

December 2022

VERMONT AGENCY OF TRANSPORTATION

Prepared By:

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TABLE OF CONTENTS

1 Inventory of Existing Conditions 1-1
1.1 Airport History 1-1
1.2 Airport Role 1-1
1.3 Airport Location 1-2
1.4 Local Zoning 1-5
1.5 Area Plan Study Goals 1-7
1.6 Airport Facilities 1-7
1.6.1 Airside Facilities 1-7
1.6.2 Landside Facilities 1-12
1.7 Existing Airport Activity Data 1-15
2 Forecasts of Aviation Activity 2-1
2.1 Forecast Categories 2-1
2.2 Impacts of COVID-19 2-2
2.3 Applied Forecast Data 2-3
2.4 Airport Catchment Area & Socioeconomic Data 2-5
2.5 Baseline Activity Data & 6B0 TAF 2-5
2.5.1 Baseline Activity Summary 2-6
2.6 Aviation Activity Forecasts 2-7
2.6.1 TAF Based Forecasts 2-8
2.6.2 Vermont Airport System Plan 2-11
2.6.3 Econometric Forecasts 2-12
2.6.4 Operations per Based Aircraft Forecasts 2-13
2.7 State Legislature Initiative 2-14
2.8 Summary of Forecast 2-14
2.9 Preferred Forecasts 2-14
2.10 Local/Itinerant Operations 2-18
2.11 Aircraft Fleet Mix Forecast 2-18
2.12 Peak Activity 2-19
2.13 Critical Aircraft 2-21

3 Facility Requirements 3-1
3.1 Forecast Summary 3-1
3.2 Airside Facility Requirements 3-2
3.2.1 Design Aircraft 3-2
3.2.2 FAA Design Standards 3-3
3.2.3 Runway Design Standards 3-5
3.2.4 Taxiway Design Standards 3-9
3.2.5 Airfield Capacity 3-9
3.2.6 Runway Length 3-10
3.2.7 Wind Coverage 3-11
3.2.8 Airfield Pavement Strength 3-12
3.2.9 Airfield Pavement Condition 3-12
3.2.10 Airfield Lighting, Navigational Aids & Instrument Procedures 3-12
3.2.11 Airspace Obstructions 3-13
3.3 Landside Facility Requirements 3-16
3.3.1 Aircraft Storage & Tie-Down Space 3-16
3.3.2 Fuel Storage Requirements 3-18
3.3.3 Vehicle Parking Requirements 3-18
3.3.4 Airport Security and Fencing 3-18
3.4 Facility Requirements Summary 3-19
4 Development Alternatives 4-1
4.1 Influencing Development Factors 4-1
4.2 Development Alternatives 4-2
4.2.1 Airfield Alternatives 4-2
4.2.2 Hangar and Terminal Development 4-5
4.3 Recommended Plan 4-7
5 Environmental Overview 5-1
5.1 Air Quality 5-2
5.2 Biotic Resources 5-3
5.2.1 Threatened and Endangered Species 5-3

5.3 Climate 5-7
5.4 Coastal Resources 5-7
5.5 Department of Transportation Act, Section 303 5-7
5.6 Prime and Unique Farmland 5-7
5.7 Hazardous Materials 5-10
5.8 Historic, Architectural, Archaeological, and Cultural Resources 5-10
5.9 Land Use 5-12
5.10 Natural Resource & Energy Supply 5-14
5.11 Noise & Compatible Land Use 5-14
5.12 Environmental Justice 5-15
5.13 Visual Effects 5-16
5.14 Water Resources 5-16
5.14.1 Surface Water 5-16
5.14.2 Groundwater 5-17
5.14.3 Stormwater 5-17
5.14.4 Wild and Scenic Rivers 5-17
5.14.5 Wetlands 5-18
5.14.6 Floodplains 5-18
5.15 Summary 5-21
6 Implementation Plan 6-1
6.1 Airport Capital Improvement Plan 6-1
6.2 Airport Layout Plan 6-2
6.2.1 Existing and Future ALP Sheets 6-3
6.2.2 Airport Airspace 6-4
6.2.3 Land Use Plan & Property Map 6-4
Appendix A – Recycling Plan A-1
Appendix B - Master Plan Update Public Comment & Responses B-1
Appendix C – IPaC Resource List C-1

LIST OF FIGURES

Figure 1-1 – Middlebury State Airport Location 1-3
Figure 1-2 – Vermont Rail & Aviation Transportation Networks 1-4
Figure 1-3 – Apron Areas 1-9
Figure 1-4 – National Airspace System 1-11
Figure 1-4 – Middlebury State Airport Airspace 1-11
Figure 1-6 – Airport Buildings & Structures 1-14
Figure 2-1– 6B0 Catchment Area (Addison County, VT) 2-5
Figure 2-2 – 6B0 Peak Month (2015 - 2020) 2-20
Figure 2-3 – 6B0 Peak Day (2015 - 2020) 2-21
Figure 3-1 – FAA Safety Areas and Runway Protection Zones 3-4
Figure 3-2 – Runway Safety Areas 3-6
Figure 3-3 – Runway 1-19 RPZs 3-8
Figure 3-4 – Runway 1-19 Existing Approach Surfaces 3-14
Figure 3-5 – Runway 1-19 Future Approach Surfaces 3-15
Figure 4-1 – North Development Area 4-9
Figure 4-2 – South Development Area 4-10
Figure 4-3 – Central Terminal Building Development 4-11
Figure 4-4 – Central Terminal Building Development (Alternative Layouts) 4-12
Figure 4-5 – Recommended Plan 4-13
Figure 5-1: Vermont ANR Natural Resources Atlas Habitat Blocks 5-6
Figure 5-2: NRCS Soils Map Farmland Classification 5-9
Figure 5-3: Historic Resources 5-11
Figure 5-4: Land Use 5-13
Figure 5-5: Water Resources 5-20

LIST OF TABLES

Table 1-1 – Runway 1-19 1-8
Table 1-2 – Airport Buildings & Structures 1-12
Table 2-1 – Middlebury State Airport Terminal Area Forecast (2021) 2-6
Table 2-2 – 6B0 Baseline Year 2020 Airport Operations 2-6
Table 2-3 – 6B0 Baseline Year 2020 Based Aircraft 2-6

Table 2-4 – 6B0 TAF Based Forecast Scenarios 2-8
Table 2-5 – Sitewide TAF Based Projected Growth Forecast (All Users) 2-9
Table 2-6 – Statewide TAF Based Projected Growth Forecast (General Aviation) 2-9
Table 2-7 – Statewide TAF Based Historic Trend Forecast (All Users) 2-10
Table 2-8 – Statewide TAF Based Historic Trend Forecast (General Aviation) 2-10
Table 2-9 – Vermont Airport System Plan Growth for Middlebury (Operations) 2-11
Table 2-10 – Vermont Airport System Plan Scenarios (Operations) 2-11
Table 2-11 – Vermont Airport System Plan Growth for Middlebury (Based Aircraft) 2-12
Table 2-12 – Vermont Airport System Plan Scenarios (Based Aircraft) 2-12
Table 2-13 – TAF Based Econometric Forecasts 2-13
Table 2-14 – OPBA Forecast 2-14
Table 2-15 – Preferred Based Aircraft Forecast 2-15
Table 2-16 – Preferred Operations Forecast 2-15
Table 2-17 – Preferred Operations Forecast vs. FAA TAF 2-16
Table 2-18 – Operations Forecast Summary 2-17
Table 2-19 – Based Aircraft Forecast Summary 2-17
Table 2-20 – Local/Itinerant Operations 2-18
Table 2-21 – FAA Fleet Mix Projection 2-18
Table 2-22 – Operations Fleet Mix 2-19
Table 2-23 – Based Aircraft Fleet Mix 2-19
Table 2-24 – 6B0 Peak Month, Day, Hour 2-21
Table 3-1 – Forecast Summary 3-1
Table 3-2 – Runway Design Code Analysis Summary 3-3
Table 3-3 – Runway and Taxiway Design Standards 3-5
Table 3-4 – Declared Distances 3-5
Table 3-5 - Taxiways 3-9
Table 3-6 – ASV and Hourly Capacity 3-10
Table 3-7 - Critical Aircraft Runway Length Requirements 3-11
Table 3-8 – Runway Wind Coverage 3-11
Table 3-9 – Existing Runway 1-19 Approach Surfaces 3-13

Table 3-10 – Future Runway 1-19 Approach Surfaces 3-15
Table 3-11 – 6B0 Current and Forecasted Based Aircraft 3-16
Table 3-12 – Estimated Aircraft Hangar Storage Area Requirements 3-17
Table 3-13 – Estimated Aircraft Tie-Down Area Requirements 3-17
Table 3-14 – Facility Recommendations 3-19
Table 4-1 – Summary of Facility Requirements 4-2
Table 4-2 – Future Runway 1-19 Approach Surfaces 4-4
Table 4-3 – Hangar Expansion 4-6
Table 5-1: Minority & Low-Income Population Groups 5-15
Table 6-1 – 6B0 Airport Capital Improvement Plan (ACIP) 6-2
Table 6-2 – ALP Drawing Index 6-3

1 Inventory of Existing Conditions

Understanding the background of an airport and the region it serves is essential to making informed decisions pertaining to airport-related improvements. Therefore, to develop a well-rounded understanding of the Middlebury State Airport ('6B0' or 'the Airport'), an inventory of key airport elements was conducted and discussed in the subsequent sections.

1.1 Airport History

The Middlebury State Airport was privately developed by the Quesnel Family in the 1950s as an airfield for aircraft performing aerial pesticide application. The Airport was later acquired by the Town of Middlebury in 1966. During this period, the Town paved Runway 1-19, which at the time measured 2,500 feet in length by 50 feet in width. In 1970, the Airport was transferred to the State of Vermont Aeronautics Board and rededicated as the Middlebury State Airport. In 1976, the Vermont National Guard constructed a gravel parallel taxiway (Taxiway 'A'). Throughout the following decades, several infrastructure-related improvements were made including:[1]

- Land acquisition: 1976
- Apron construction: 1976
- Fuel farm installation: 1993
- Runway rehabilitation: 2000
- Terminal building and hangar construction: 2003
- Runway extension: 2017

1.2 Airport Role

6B0 is a public-use airport owned by the State of Vermont and maintained by the Vermont Agency of Transportation (VTrans). According to the Federal Aviation Administration's (FAA) *2021 – 2025 National Plan of Integrated Airport Systems (NPIAS) Report*, 6B0 is designated as a General Aviation (GA) airport and is currently classified with a role of "local". As stated in the NPIAS report, a local airport, *"provides communities with access to local and regional markets, is generally located near larger population centers, and has moderate levels of activity with some multi-engine propeller aircraft*." Additionally, 6BO is classified as a Category 2 airport within the

[1] Middlebury State Airport: Final Environmental Assessment & Finding of No Significant Impact for Runway 1-19 Extension

Vermont State Aviation System Plan (VSASP). According to the VSASP, Category 2 airports, "*offer a higher level of facilities and services than Category 1 Airports. Typically have equipment that enhances safety of use during inclement weather, and complimentary facilities and services that may be able to accommodate smaller jet aircraft during favorable conditions*." For Category 2 airports, the VSASP recommends:

- A primary runway of at least 5,000 feet in length
- Self-serve fuel (both 100LL and Jet-A)
- Full-time airport manager and operations staff
- A full-serve Fixed Base Operator (FBO)
- Runway and taxiway edge lighting
- A GPS instrument approach procedure providing vertical guidance
- A terminal building
- Owned snow removal equipment
- Aircraft and avionics maintenance services
- A rotating beacon

Subsequent sections of this Master Plan will review each recommendation in relation to existing services and facilities available at 6B0.

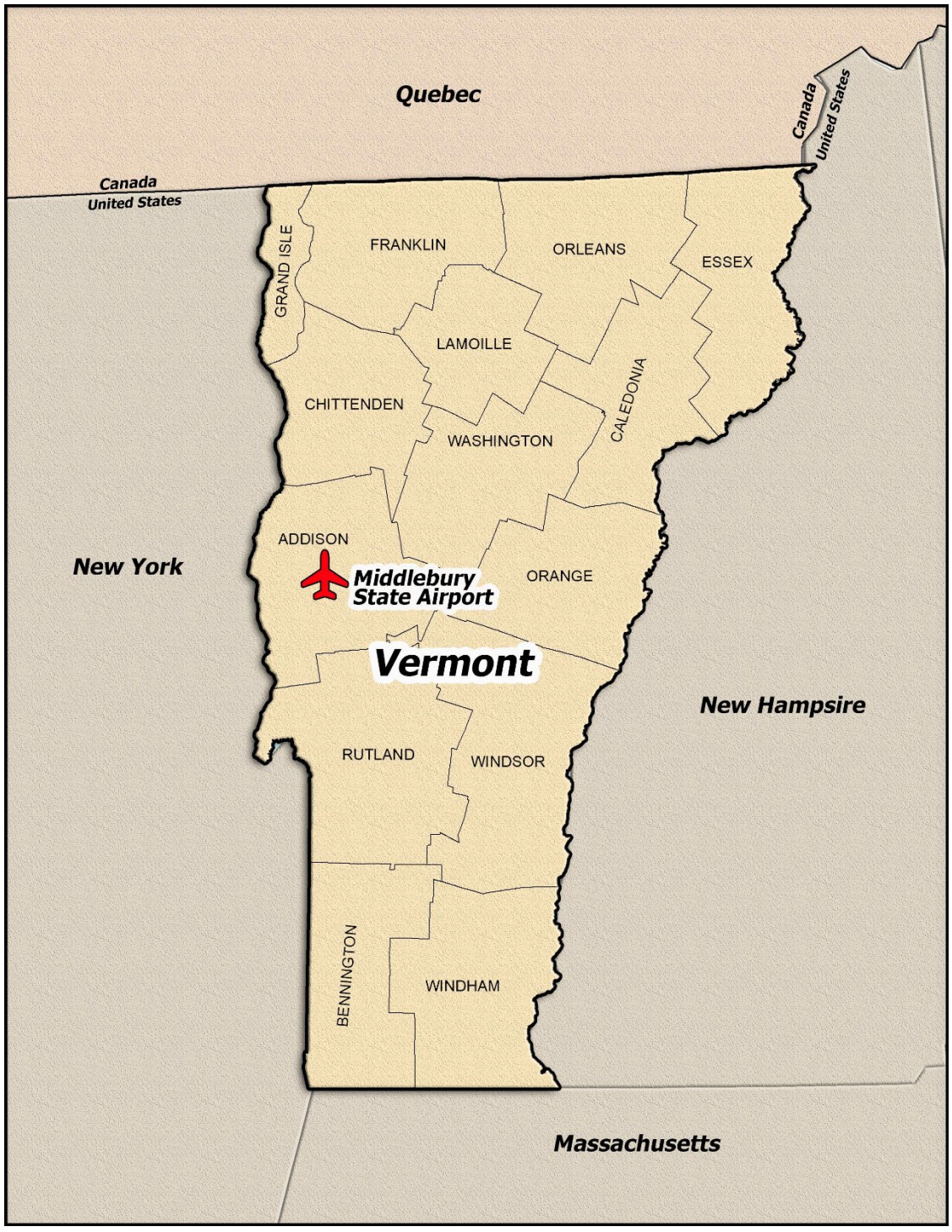
1.3 Airport Location

6B0 is located in the Town of Middlebury, VT; approximately six miles southwest of the Middlebury central business district. The Town of Middlebury serves as the Addison County seat and is located approximately 30 miles south of Burlington, 35 miles southwest of Montpelier, 100 miles north-northeast of Albany, NY, and 155 miles northwest of Boston, MA.

The Airport is accessible on the ground via Vermont State Route 116, 125, and Highway 7. **Figure 1-1** depicts the location of 6B0 respective to the State of Vermont and the Addison County region. The nearest public transit bus stop is approximately 2-miles away at Maplefields on the Rutland Connector Tri-Valley Transit (TVT) route.

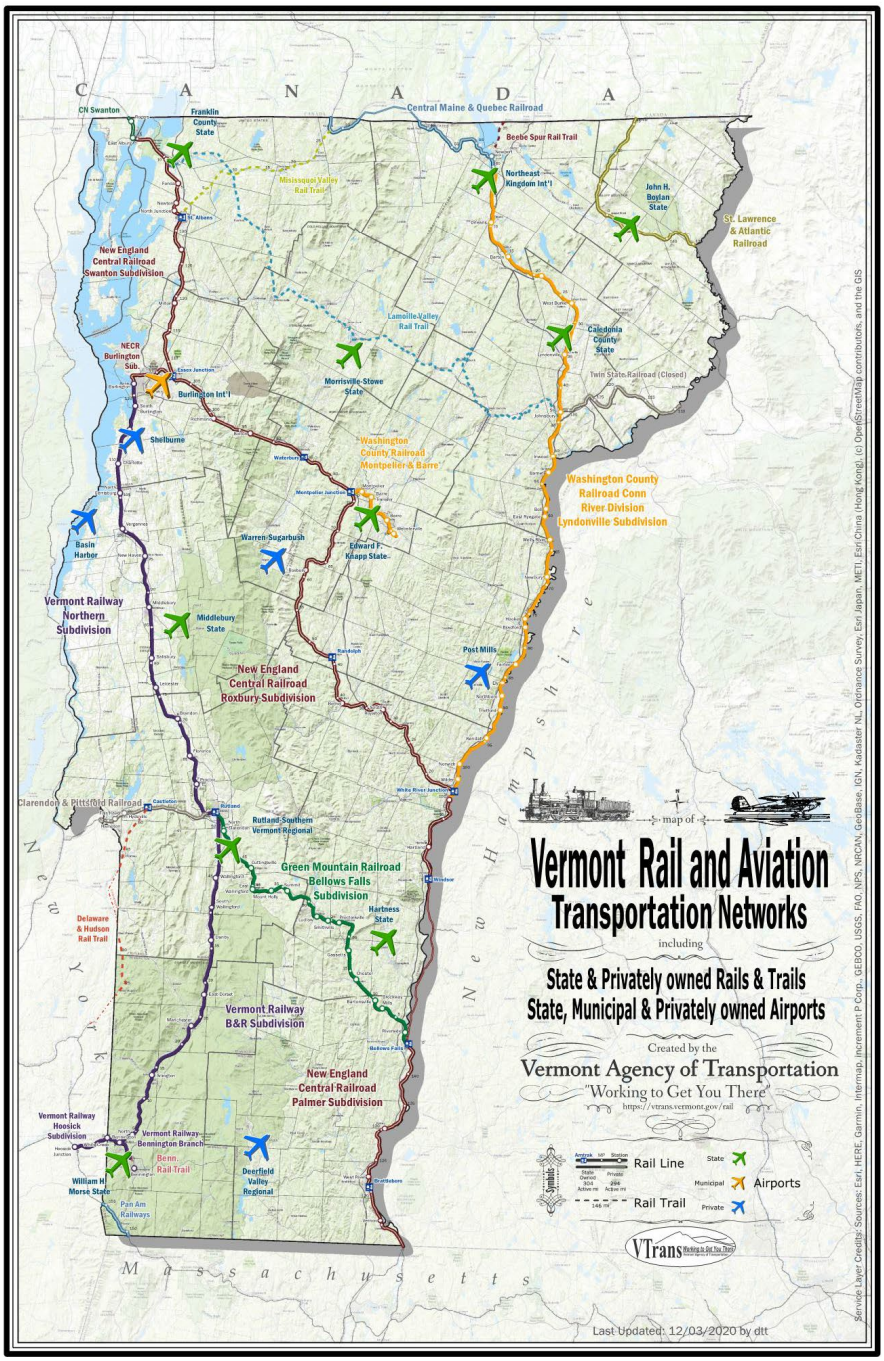
In addition to owning and maintaining a network of airports within the State of Vermont, VTrans also ensures safe and efficient transportation of people and goods through the State's railway infrastructure. **Figure 1-2** depicts the agency's network of airports along with the State's railway system.

Figure 1-1 – Middlebury State Airport Location



Source: CHA, 2021.

Figure 1-2 – Vermont Rail & Aviation Transportation Networks

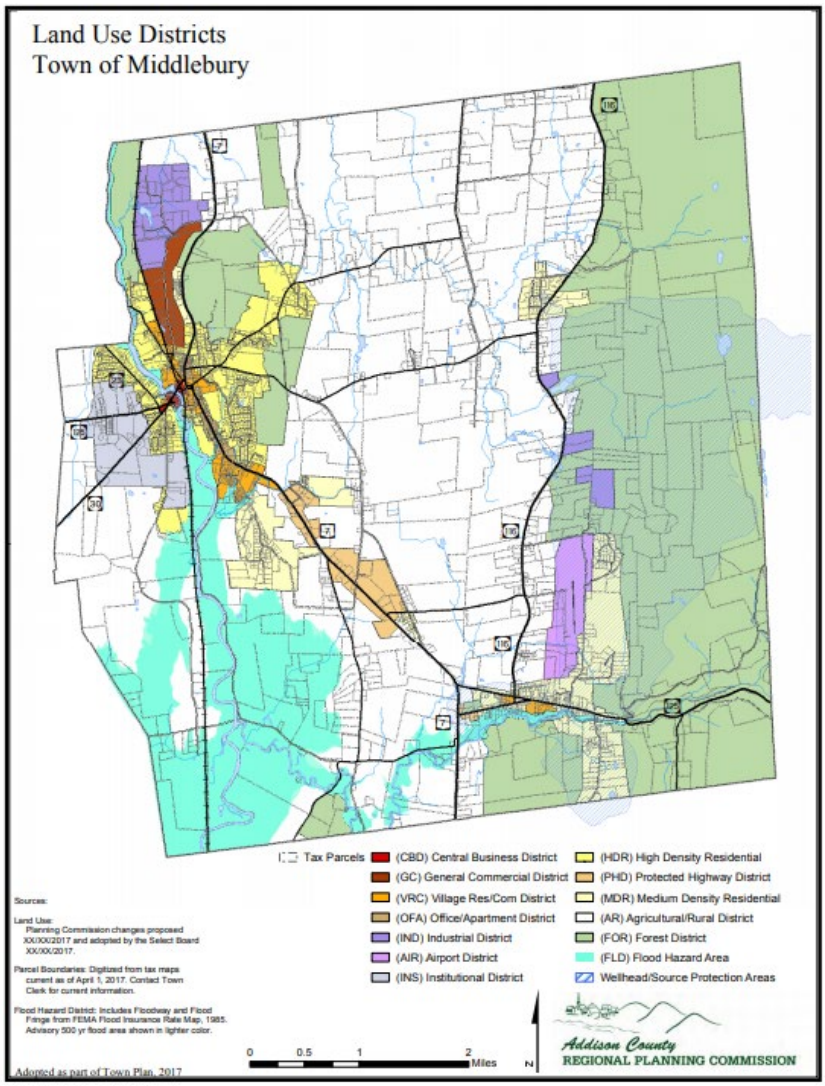


Source: Vermont Agency of Transportation.

1.4 Local Zoning

Local zoning and planning regulations have established an Airport District (AIR) of the area which encompasses 6B0 and portions of surrounding land. AIR districts are land use regulations which seek to ensure aviation safety by limiting the height and type of structure in the given proximity. According to the 2017 Middlebury Comprehensive Plan, "*The Airport District includes the State Airport and supporting facilities such as storage and maintenance. AIR District activities include light freight and passenger services and airplane storage and maintenance. Light industry, warehousing and other commercial uses, when consistent with height limitations and safety regulations, are allowed in AIR. New residential development is not a permitted use in this district*."

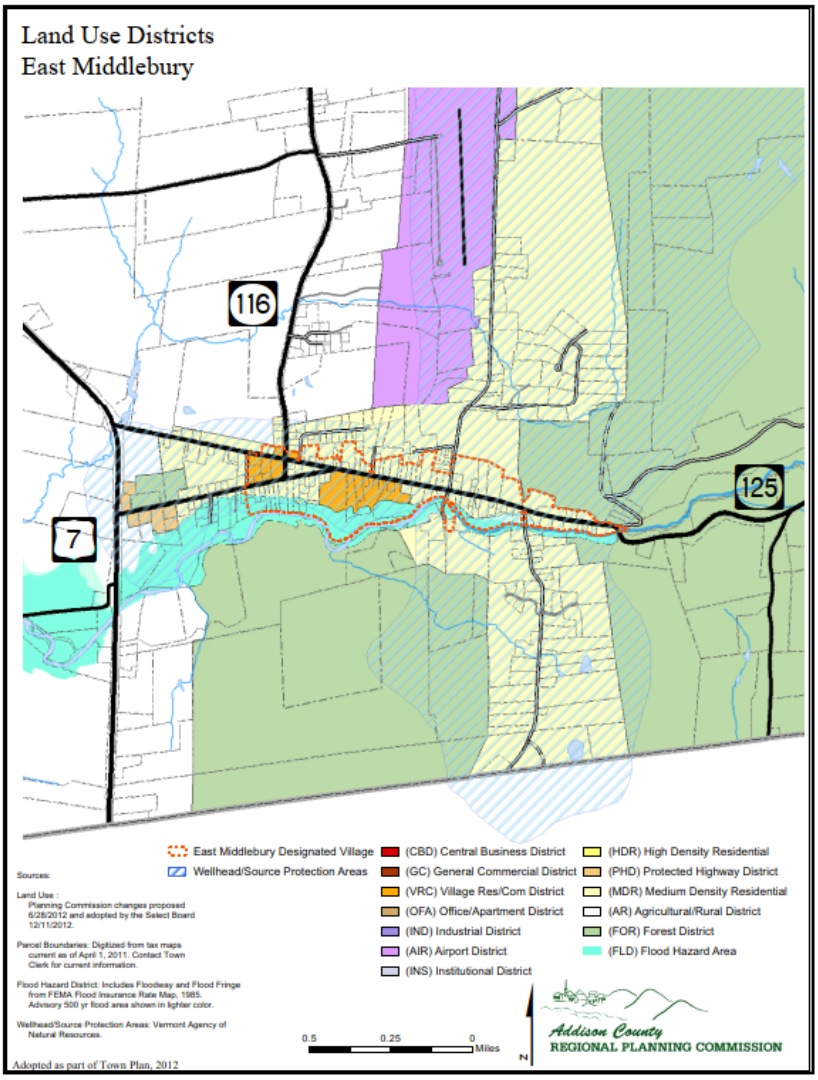
Figure 1-3 — Airport (AIR) Overlay District



Source: Addison County Regional Planning Commission

The land which surrounds the airport is primarily zoned Medium Density Residential (MDR), Forest District (FOR), and Agriculture/ Rural District. 6B0 is located outside of the barriers of the established East Middlebury Designated Village. In addition, a portion of the airport's land is located within a wellhead source protection area.

Figure 1-4 — East Middlebury Land Use Districts



Source: Addison County Regional Planning Commission

1.5 Area Plan Study Goals

Town, regional, and Vermont State entities have each crafted plans incorporating goals for 6B0 in distinct capacities. The 2017 Town of Middlebury Master Plan incorporates a singular strategy to, "*Promote alternative modes of transportation such as bus, rail, air and ride sharing*."

The Addison County Regional Plan, adopted in July of 2018, identifies the goal of promoting *"the Middlebury Airport to support economic development in the Region."* In order to achieve this, the ACRPC states that implemented policy should, *"Support infrastructure investment and services necessary to allow the Middlebury Airport to function effectively as a small, regional airport."* Recommended actions to realize such proposed policy include constructing additional hangers and parking.

The VTrans Vermont Western Corridor Transportation Management Plan from 2010 lists five overarching goals which drive the formation of the stated document. Of these five, two include the mention of airports. The first is *Freight* which seeks to, "Improve freight movements in the Western Corridor"; the other is *Economic Vitality* which desires to "Support corridor investments that promote economic vitality in the region."

1.6 Airport Facilities

A primary role of master planning is developing a detailed listing of recommended facilities and improvements for implementation over the 20-year planning period. As such, the first step in this process is to compile an inventory of existing facilities and to review their current condition.

Airport facilities are often described as either airside or landside, depending upon the type of operation they support. Airside facilities are those related to the landing, takeoff, and taxiing of aircraft in the airport environment. Examples of airside facilities include: the runway and taxiway system; airfield lighting, marking and visual aids; and aircraft parking and apron areas. Landside facilities are those related to the transition from air to ground movement or vice versa. Examples of landside facilities include: the airport terminal building, aircraft refueling area, aircraft storage, and vehicle parking.

1.6.1 Airside Facilities

1.6.1.1 Runways

6B0 operates under a single runway, north/south system designated as Runway 1-19. Runway 1-19 is 3,206 feet in length by 60 feet in width. The Runway 1 end has a 141-foot displacement to accommodate the Runway Safety Area beyond the end of the runway. The runway is constructed of asphalt and is listed in good condition within the most recent FAA Airport Master Record (FAA Form 5010-1). The runway's load-bearing capacity is estimated at 12,500 pounds for single-wheel aircraft.

Runway 1-19 does not currently have a published Instrument Approach Procedure (IAP) and is, therefore, categorized as a visual approach runway. Subsequent sections of this Master Plan will examine the potential for a non-precision IAP on each runway end.

Table 1-1 presents the characteristics of Runway 1-19.

Table 1-1 – Runway 1-19

Runway Feature	Runway 1-19
Length	3,206’
Width	60’
Pavement Type	Asphalt – Good Condition
Pavement Strength	12,500 lbs. Single-Wheel
Gradient	0%
Edge Lighting	None
Approach Instrumentation	None
Approach Lighting	None
Approach Aids	None
Runway Markings	Basic/Visual

Source: FAA Airport Master Record, CHA 2021.

1.6.1.2 Taxiways

Taxiway ‘A’ serves as a full-length parallel taxiway for Runway 1-19. As part of the 700-foot north runway extension completed in 2017, the taxiway width was reduced from 35 feet to 25 feet to meet FAA design standards for Taxiway Design Group 1B. The taxiway markings are currently in good condition.

In addition to Taxiway ‘A’, six taxiway connectors are located west of the runway and provide ingress/egress to Runway 1-19 and various apron areas.

1.6.1.3 Aprons

Airport aprons, also referred to as ramps, provide space for short-term and long-term aircraft parking, as well as the loading/unloading of passengers and goods. There are a total of three public-use apron areas located throughout 6B0:

- **North Apron:** The North Apron is located in the northern portion of the Airport and west of the Runway 19 end. The apron approximately 120,915 square feet and contains 42 aircraft tie-down positions accommodating single- and twin-engine piston aircraft. A connector taxiway to the apron is located between Taxiways “A1” and “A2”.
- **Fueling Apron:** The Fueling Apron is located south of the Lower Apron and is approximately 16,470 square feet, excluding the taxiway connector. The self-serve fueling pump is located along the western edge of the apron area. A staging area for the equipment storage building is located on the southwestern corner of the apron. With limited spacing within the apron, aircraft must park on a different apron upon refueling.

- **Terminal Apron:** This apron is located in the central portion of the Airport, adjacent to Taxiway 'A' and directly east of the terminal building. With only approximately 9,000 square feet available, aircraft parking within this apron area is limited to ensure adequate taxiway safety area clearance (65.5 feet) from Taxiway 'A'.
- In addition to the listed apron area, there are several private apron areas associated with private hangars. These areas are unavailable for transient aircraft parking.

Figure 1-3 depicts each apron area.

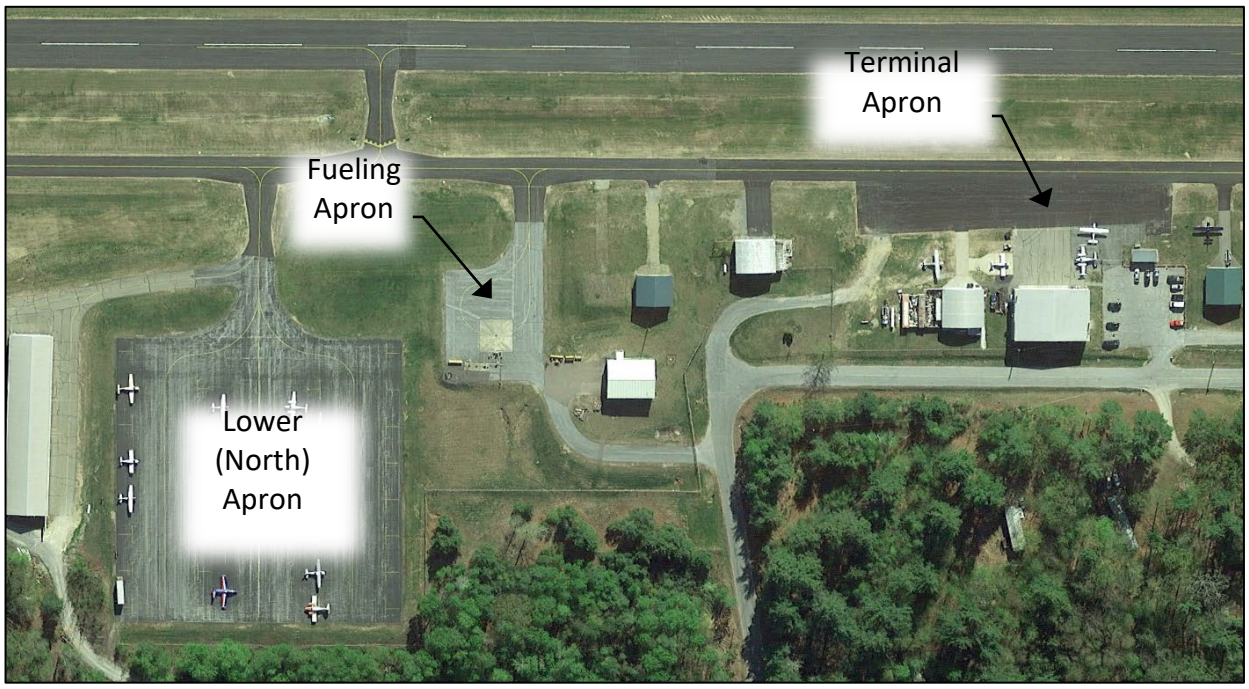


Figure 1-3 – Apron Areas

1.6.1.4 Automated Surface Observing System

An Automated Weather Observing System (AWOS) provides pilots with current meteorological conditions, such as wind speed, direction, and cloud ceiling. An AWOS-III at 6B0 was installed in 2014 and is located east the Runway 19 end.[2] The AWOS is maintained by the National Weather Service (NWS) and the data is uploaded directly to the NWS database and available for public review.

1.6.1.5 Visual Aids & Lighting

Due to the Green Mountain Range east of the Airport, Runway 19 has a right-hand (i.e., non-standard) traffic pattern. Traffic pattern turning indicators are located approximately 240 feet

[2] An AWOS-III provides: barometric pressure, wind speed/direction, temperature, dew point, density altitude, visibility, precipitation values, cloud height, and sky condition

east of Runway 1-19 provide aircraft with a visual indication of the direction to turn when operating within the traffic pattern. A wind cone is located between the turn indicators.

The Airport is not equipped with runway or taxiway edge lighting or a directional rotating beacon. As such, Runway 1-19 is not currently operational at night.

1.6.1.6 Runway Markings & Instrument Approach Procedures

Runway markings denote runway direction, type of approach associated with the runway (e.g., visual, non-precision, precision), runway width, and provide aiming guidance to aircraft. The Runway 1 end contains displacement markings as well as additional markings to aid in the demarcation of the displaced threshold. While similar to non-precision markings, Runway 1 markings are still considered visual/basic due to the absence of a published IAP. The Runway 19 end only contains the runway designation number, thus indicating a visual only approach. The Runway 1-19 markings were repainted as part of the 700-foot north runway extension completed in 2017 and are currently in good condition.

Visual Markings in red brackets

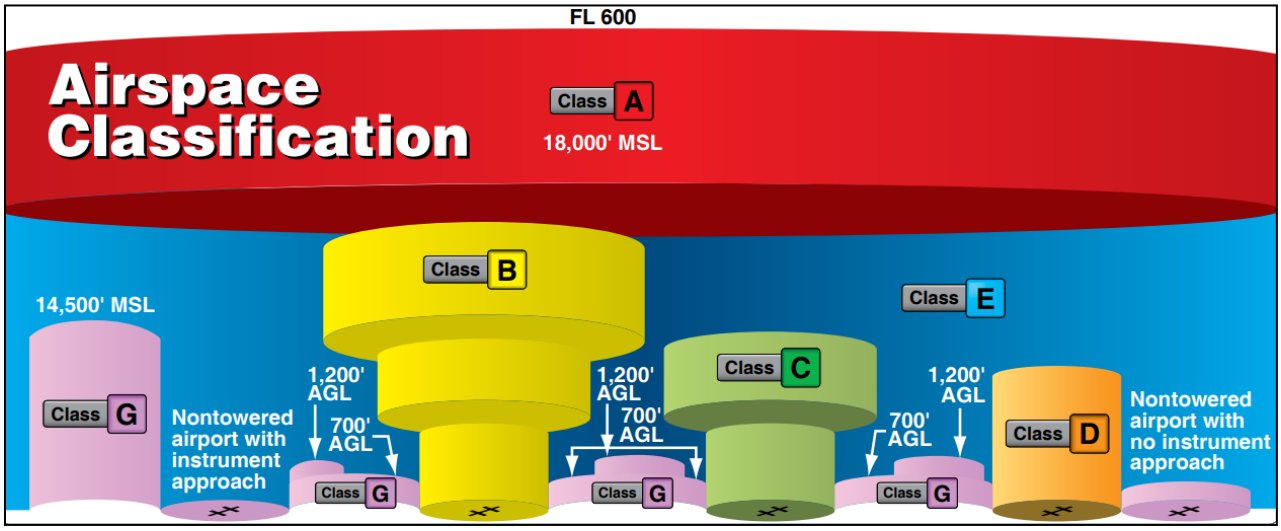
1.6.1.7 Airspace

There are two types of aircraft flight operations in the National Airspace System (NAS): Visual Flight Rules (VFR) and Instrument Flight Rules (IFR). VFR operations rely on pilots maintaining visual separation from aircraft and objects and require minimum weather conditions for operation. Conversely, IFR operations rely on radar detection, instrument navigation, and separation by Air Traffic Control (ATC). IFR flights permit operations below VFR weather minimums (i.e., during IMC). As discussed above, Runway 1-19 does not have any published IAPs.

The NAS classifies airspace uses a lettering-system (e.g., Class A, B, C, D, E, and G) and includes controlled and uncontrolled areas of airspace. Class A airspace is a controlled airspace and is generally reserved for business and commercial aircraft as it begins at 18,000 feet above Mean Seal Level (MSL). Class A airspace requires operation under IFR flight plan and communication with ATC. The Class B, C, and D airspaces are also considered controlled airspace and are generally centered around larger airports. Communication with ATC must be established prior to entering the Class B, C, or D airspaces. The Class E and G airspaces encompass the majority of the NAS's airspace below 18,000 feet MSL. Class E airspace can be either controlled or uncontrolled,

depending on the type of operation (i.e., VFR or IFR). Class G airspace is always uncontrolled. **Figure 1-4** depicts the National Airspace System.

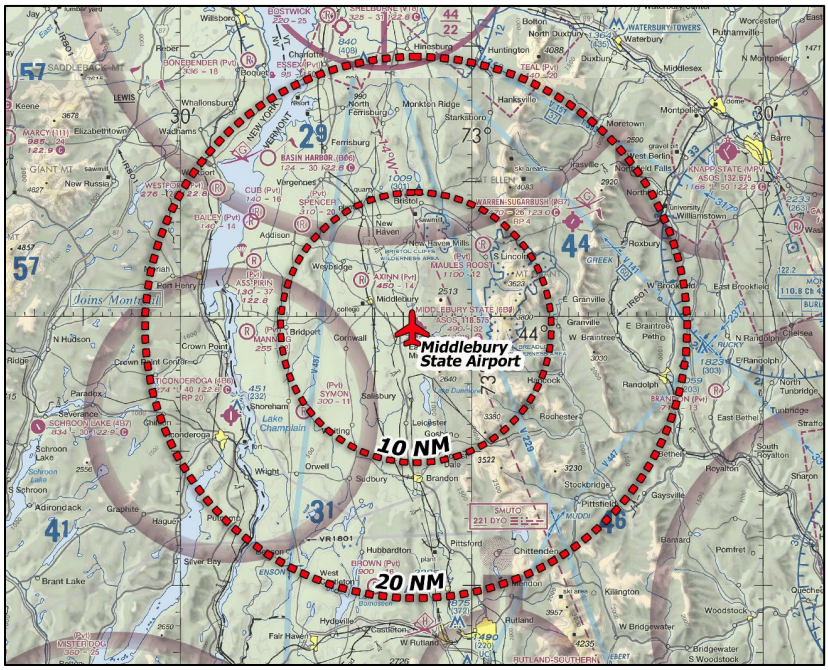
Figure 1-4 – National Airspace System



Source: Chapter 15, *FAA Pilot's Handbook of Aeronautical Knowledge, 2016.*

Most non-towered GA airports are located within Class G airspace. Generally, Class G airspace extends vertically from the ground to either 700 feet or 1,200 feet above ground level where it then becomes Class E airspace. Class G airspace extending to 700 feet is denoted on the FAA sectional chart by a shaded magenta circle around the the airport whereas the absence of the magenta circle denotes Class G airspace extending to 1,200 feet, with the exception of a few select locations within the United States where Class G extends to 14,500 feet mean sea level.

Figure 1-5 – Middlebury State Airport Airspace



Source: FAA Sectional Aeronautical Chart, CHA, 2021

As shown on **Figure 1-4**, 6B0 is located within Glass G airspace extending from the ground to 1,200 feet above ground level. Class G airspace is considered uncontrolled and does not require two-way radio communication. However, aircraft must adhere to weather

minimums specific to each class of airspace.

1.6.2 Landside Facilities

There are a total of 18 landside buildings or facilities located at 6B0 consisting of aircraft hangars, the passenger terminal building, and equipment storage buildings. **Table 1-2** lists the on-airport buildings and structures at 6B0 and **Figure 1-6** depicts their location.

Table 1-2 – Airport Buildings & Structures

No.	Facility	Area (SF)
1	T-Hangar	8 Stalls
2	AWOS-III	-
3	Fuel Farm	-
4	Equipment Storage	2,750 SF
5	Box Hangar	1,850 SF
6	Box Hangar	1,850 SF
7	Box Hangar	2,275 SF
8	Terminal Building/Hangar	5,400 SF
9	Picnic Pavilion	400 SF
10	Segmented Circle	-
11	Box Hangar	2,000 SF
12	Box Hangar	5,000 SF
13	Sand Storage Shed	-
14	Box Hangar	1,675 SF
15	Box Hangar	1,500 SF
16	Box Hangar	5,575 SF
17	Box Hangar	4,350 SF
18	T-Hangar	3 Stalls
19	Box Hangar	1,640 SF

Source: VTrans, CHA, 2021.

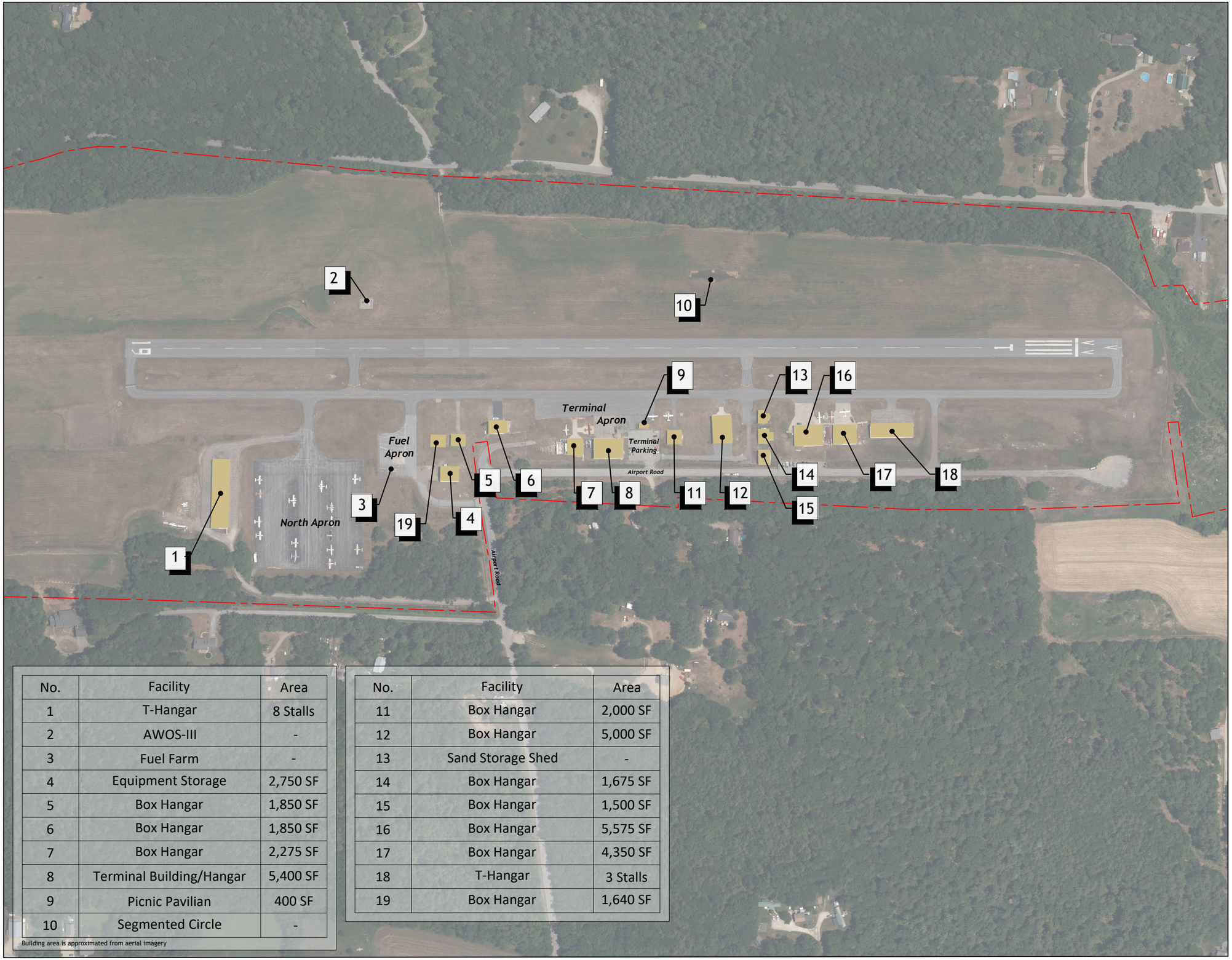
Note: Building area is approximated from aerial imagery

1.6.2.1 Airport Terminal Building

The Airport terminal building is located west of the Terminal Apron. The building is approximately 5,400 square feet and consists of a community hangar area along with small office space. The building is owned by VTrans and leased by J & M Aviation, which provides aircraft maintenance services on the field. Although J & M Aviation leases the entirety of the building, a small pilot/passenger lounge area containing a restroom and sitting area is located within the southern portion of the building.

Vehicle access to the terminal building is provided via Vermont Route 116 and Airport Road. A vehicle parking area is located south of the terminal building and contains approximately 20 parking spaces. A

picnic pavilion with tables is located east of the vehicle parking area, but within the airside portion (i.e., inside the security fence) of the Airport.



No.	Facility	Area
1	T-Hangar	8 Stalls
2	AWOS-III	-
3	Fuel Farm	-
4	Equipment Storage	2,750 SF
5	Box Hangar	1,850 SF
6	Box Hangar	1,850 SF
7	Box Hangar	2,275 SF
8	Terminal Building/Hangar	5,400 SF
9	Picnic Pavilian	400 SF
10	Segmented Circle	-

Building area is approximated from aerial imagery

No.	Facility	Area
11	Box Hangar	2,000 SF
12	Box Hangar	5,000 SF
13	Sand Storage Shed	-
14	Box Hangar	1,675 SF
15	Box Hangar	1,500 SF
16	Box Hangar	5,575 SF
17	Box Hangar	4,350 SF
18	T-Hangar	3 Stalls
19	Box Hangar	1,640 SF

VERMONT
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MIDDLEBURY STATE AIRPORT MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 150 300 600

LEGEND

Airport Property Boundary

On-Airport Building

Figure 1-6
Airport Buildings & Structures

1.6.2.2 Aircraft Hangars

There are a total of 12 buildings located throughout the Airport with aircraft storage capacity, although Buildings #8 and #16 only temporarily store aircraft during periods of maintenance. Additionally, Building #13 is beyond its useful life and is not currently capable of storing aircraft. Potential plans for future hangar development are discussed within **Chapter 3, *Facility Requirements***.

1.6.2.3 Airport Tenants

There are two full-time tenants located on the Airport providing aircraft maintenance services. As previously discussed, J & M Aviation provides aircraft maintenance and painting services. Additionally, Green Mountain Avionics (Building #16) provides aircraft radio maintenance and installation services.

1.6.2.4 Aircraft Refueling

A 10,000 gallon 100 Low-Lead underground fuel storage tank is located on the western portion of the Fuel Apron. The fuel pump allows for 24-hour self-serve refueling. Jet-A fuel is not currently available at the Airport

1.6.2.5 Vehicle Parking

In addition to the terminal building parking lot, a second lot is located near the southernmost hangars and contains 10 additional parking spaces. Several of the hangars throughout the Airport also contain space for vehicle parking.

1.6.2.6 Airport Security

Many GA airports have limited security procedures and rely heavily on the flying community to report suspicious or hazardous activity. The Facility Requirements portion of this master plan will further discuss general recommendations regarding existing security practices and procedures in accordance with the Transportation Security Administration's (TSA) Airport Characteristics Measurement Tool.

1.7 Existing Airport Activity Data

As 6B0 is a GA airport, the majority of its activity is generated by light, private, recreational, and training aircraft utilizing single- and multi-engine piston aircraft. According to the 2021 FAA Terminal Area Forecast (TAF), there were approximately 6,350 annual operations at 6BO in 2020, which amounts to an average of 17 landings per day. Of that total, operations consisted of approximately 67 percent local and 33 percent itinerant according to the 2020 TAF. Local operations are flights that originate at 6B0 and generally stay within the airport vicinity, conducted mostly by based aircraft, and primarily include single- and multi-engine piston aircraft.

Itinerant operations are flights arriving from outside of or departing the local area and are conducted by a mix of based and transient aircraft.

The number of based aircraft at an airport is used to determine the need for aircraft hangar space, apron area, and other related facilities. Based aircraft include those owned by individuals, businesses, or organizations that are stored at the Airport on a regular basis. According to FAA Airport Master Records, 6B0 has a total of 17 based aircraft. Of that total, there are 15 are single-engine piston aircraft and two are multi-engine aircraft. However, an additional based aircraft inventory review was conducted via a site visit, resulting in a confirmed 30 based aircraft. Additional details of the 30 based aircraft will be discussed in Chapter 2, *Forecast of Aviation* Activity. As 6B0 is a GA airport, the majority aviation activity is generated by light, private, recreational, and training aircraft utilizing single- and multi-engine piston aircraft. Chapter 2 will examine potential activity forecasts and future airport demand.

2 Forecasts of Aviation Activity

Projecting the future demand of aviation activity at an airport is a vital step in the airport master planning process. The forecasts of aviation activity presented within this chapter will serve as the basis for effective decision-making, airport development guidance, and facility recommendations in subsequent chapters of the Middlebury State Airport (6B0) Master Plan Update. The projections help guide airport development over the 20-year planning horizon by identifying current and future facility needs and providing a general timeline of when those developments may be needed. Prior to use in the master planning effort, the recommended forecasts are submitted to the Federal Aviation Administration (FAA) for review and approval. Once approved, the forecasts are then used to perform the Facility Requirements and to prepare a Development Plan for this Master Plan Update.

Forecasts are prepared for short-term (1-5 years), intermediate-term (6-10 years), and long-term (11-20 years) intervals. Short-term forecasts are used to identify deficiencies that need immediate attention. Medium-term forecasts are used in planning foreseeable capital improvement needs. Long-term forecasts provide more generalized information and are used for space and land use planning to accommodate potential future demand.

General aviation (GA) airports are typically influenced by national and regional trends in population, household income, airport prominence, airport-based aircraft, and the region in which the airport is located. The population growth (or decline) can have an influence on the growth of aviation demand. Household income could be an indicator of GA aircraft purchase trends or overall increase in flying. Airports that have enhanced facilities and services to offer users will generally attract greater aviation activity. An airport's based aircraft count is also another factor that directly contributes to aviation activity. The addition of hangars, instrument approaches, and facilities that can accommodate a wider range of piston, twin-engine, and turbine aircraft, can increase airport activity and demand.

2.1 Forecast Categories

Aviation demand forecasts are prepared for a variety of aviation categories. These categories are determined based on the type and level of activity expected at an airport over the planning horizon and can vary in relevance depending on the size and category of an airport and the basic objectives of a specific master plan. The forecasts prepared for 6B0 include the following categories:

- **Based Aircraft:** Based aircraft are defined as aircraft that use a specific airport as a home base. These are the aircraft that typically rent tie-down or hangar space for extended periods of time and, depending on state and local regulations, are registered as based at that specific airport and pay local user taxes to that jurisdiction. It is important to note that the number of based aircraft at most GA airports is, perhaps, the most important indicator of growth as based aircraft most directly affect the daily aircraft activity.

- **Operations:** An operation can be defined as either a take-off or landing of an aircraft. Operations are typically segregated into three sectors based on the aircraft/operator's purpose and operating certifications. These sectors include:
  - **General aviation** encompasses all other operations not including air carrier, air taxi and commuter, and military. These operations are conducted under Federal Aviation Regulation (FAR) Part 91 (General Operating and Flight Rules).
  - **Air taxi** operations are considered itinerant GA operations (i.e., operations that did not originate at the airport). These operations refer to carriers that operate aircraft with 60 or fewer seats or cargo On-Demand Operations. Air taxi carriers are governed under FAR Part 135 (Operating Requirements: Commuter and on Demand Operations and Rules Governing Persons on Board Such Aircraft).
  - **Military** includes operations conducted by the nation's military forces.

Based aircraft and operations are classified into a fleet mix, which is a breakdown of aircraft by specific type. Aircraft fleet mix typically refers to the aircraft power plant, such as: single-engine piston; multi-engine piston; turboprop; jet; and rotorcraft/helicopter. In some analyses, it can also refer to an aircraft's Airport Reference Code (ARC) (e.g. B-I).

Additional operations forecasts conducted as part of this forecasting effort include local/itinerant operations, peak operating-hour, and annual instrument approaches. A forecast of the critical aircraft is also presented.

2.2 Impacts of COVID-19

In January of 2020, the COVID-19 virus pandemic began impacting the aerospace industry and air travel as a whole. According to FAA and industry sources, the impacts of COVID on the aerospace system have been split, in terms of types of users. Although impacted by the virus outbreak, GA users were not as impacted as commercial operators. While travel restrictions were placed on the commercial industry and routes, route restrictions were not placed on civil aviation.

Business and travel restrictions have had an impact on itinerant GA travel; however, recreational flying during the pandemic has been largely stable. In addition, during 2020, GA pilots began assisting with COVID-19 relief efforts by aiding in delivery of personal protective equipment to medical facilities.

General Aviation Aircraft Shipment Reports, published by the General Aviation Manufactures

Association (GAMA)[3&4], indicates aircraft shipments in the United States declined from 1,771 aircraft in 2019 to 1,552 aircraft in 2020; however, the number of single-engine piston aircraft remained relatively stable with approximately a 3.0 percent increase in shipments, showing the trend of stability amongst smaller aircraft users.

Due to the impacts of COVID-19 on the aviation industry, it was important to analyze and become familiar with historical activity trends at 6B0 prior to 2020 to determine the level of impact to the Airport's activity and to further determine recovery efforts. 6B0 does not have scheduled commercial service activity; therefore, the Airport was not as heavily impacted as commercial service airports. According to the Vermont Agency of Transportation (VTrans), airport operations remained relatively steady throughout the COVID period.

2.3 Applied Forecast Data

Aviation activity forecasting is not considered an exact science and, as such, it can be difficult to project future airport demand based on historic facility information alone. There are many uncontrollable variables that can affect the true outcome of activity levels throughout the forecast period. Therefore, several data resources were reviewed to ensure regional, national, and industry trends that can affect future activity at 6B0 were incorporated into the forecast methodologies. Guidance provided by the FAA in Advisory Circular (AC) 150-5070-6B, *Airport Master Plans*, was also used to identify suggested forecasting methodologies. The following provides a brief overview of each data resource used to develop the 6B0 forecasts:

- **The FAA Terminal Area Forecast (TAF)** is a detailed economic model, prepared by the FAA, which provides historical and projected growth of passenger enplanements, operations, and GA aircraft activity. The national level TAF is a cumulative total of all U.S. airport activity. These projections account for national economic conditions and trends within the aviation industry as a whole. From the national forecasts, airport specific projections are derived that reflect regional market and socioeconomic conditions and anticipated demand. In this relatively top-down approach, specific airport development and marketing actions do not influence FAA projections. The most recent TAF was published in March 2022.[5]

  Each airport's TAF is considered the benchmark by which Master Planning forecasts are measured. According to the FAA, forecasts that differ from the TAF by 10 percent within

[3] General Aviation Manufactures Association. "General Aviation Aircraft Shipment Report." 16 May 2020. https://gama.aero/wp-content/uploads/2019ShipmentReport03162020.pdf

[4] General Aviation Manufactures Association. "General Aviation Aircraft Shipment Report." 24 February 2021. https://gama.aero/wp-content/uploads/2020ShipmentReport-02242021.pdf

[5] The 'FAA 2021 TAF' was published in March 2022 and consists of historical data (1990 to 2020) and forecasted aviation activity levels (2021 to 2045). The forecasts provided in the 2021 TAF account for COVID-19.

a five-year planning period or 15 percent within a 10-year planning period must document the variance prior to FAA approval.

- **General Audio Recording Device (GARD)** is a data collection software utilizing aircraft radio calls as a method of interpreting airport operation counts. Reliable data is often scarce at non-towered, GA airports such as 6B0. The GARD data was used for this master plan to support the base year operation counts provided by the FAA TAF.

  The GARD software utilizes radio calls made from aircraft to the airport's radio frequency to extrapolate operation counts. For 6B0, it is assumed that three radio calls, is the equivalent of one operation: encompassing the pilot's calls of (1) downwind, (2) base, and (3) final for landing operations; and (1) on runway (2) clear of runway (3) exiting pattern. It is important to note that all radio calls transmitted to the airport are captured in the GARD calculations. As such, there is variance in the number of transmissions per operations. Additionally, there may be transmissions from overflights (i.e. radio calls that are not related to operations at the airport). However, given that radio transmission during takeoff and landing are not required by federal regulation, the aggregate of all radio calls received by the airport frequency at a ratio of three calls to one operation is an acceptable data resource. The GARD data can only provide the number of operations. The types of aircraft transmitting the calls are unknown, and as such, the GARD data is only used for operations forecasting and has no bearing on based aircraft or critical aircraft forecasts.

- **Vermont Airport System Plan (VASP**) is a 20-year statewide planning document developed for the Vermont Agency of Transportation's 16 public-use airports. In addition to inventorying the attributes of each airport, the VASP developed forecasts of aviation activity including based aircraft and operations and was published in August 2021. The forecasts developed for the plan were referenced and will serve as the basis in most forecasting scenarios.

- **Vermont Department of Health & United States Census Bureau** are two sources for acquiring historic and current econometric data by county in Vermont. Vermont Department of Health provides population counts, and household income data can be acquired from the US Census Bureau.

- **FAA Aerospace Forecast, Fiscal Years (FY) 2022-2042** is an annually issued document providing an overview of aviation industry trends and expected growth for each aviation market segment (e.g., GA activity, air taxi operations, commercial, etc.). The FAA Aerospace Forecast also provides projected fleet mix operations by aircraft by type (e.g., single- and multi-engine piston, turboprop, turbine, etc.). National growth rates are provided over a 20-year forecast horizon. For the purposes of this Master Plan, the FAA Aerospace Forecast will be referenced when determining potential fleet mix projections.

- **FAA Airport Master Record, Form 5010-1** is a document providing information of facilities and activity at airports, including based aircraft and operations numbers. Note that in conjunction with this Study an inventory of based aircraft was conducted to update the number of aircraft based at 6B0. The updated inventory was submitted to FAA and is used and for the master plan's based aircraft count for 2021.

2.4 Airport Catchment Area & Socioeconomic Data

An airport's catchment area, or market, is defined as the area in which an airport captures the majority percentage of airport users based on the proximity of the residencies in respect to other airports in the region, drive-time, and demographics. The primary catchment area for 6B0 users is Addison County, Vermont.

Socioeconomic data includes factors based on population and household income within the catchment area. Historic and projected trends of these factors can be relevant in predicting changes in airport activity within the forecast period, such as based aircraft ownership and overall itinerant users. For Addison County, 10-year historic household income data was gathered from the US Census Bureau and 10-year historic population data was gathered from the Vermont Department of Health..

Figure 2-1– 6B0 Catchment Area (Addison County, VT)

Source: CHA, 2021

2.5 Baseline Activity Data & 6B0 TAF

Prior to initiating each forecast, a baseline year must first be identified for both airport operations and aircraft based at the airport. Generally, the baseline year is the most recently recorded calendar or fiscal year of data and is the year from which subsequent forecasts are derived and carried forward throughout the 20-year planning horizon. At non-towered airports, such as 6B0, it is often challenging to identify baseline activity, particularly airport operations. Therefore, for the purposes of activity forecasting, data for the baseline year of 2020 is used from the 2021 TAF.

As shown on **Table 2-1**, the 2021 TAF lists airport operations and based aircraft at 6B0 remaining static throughout the forecast period.

Table 2-1 – Middlebury State Airport Terminal Area Forecast (2021)

Year	Itinerant Operations			Local Operations				Based Aircraft*
	GA Ops.	Military Ops.	Total	Civil Ops.	Military Ops.	Total	Total Ops.	
Historic:								
2010	2,900	800	3,700	7,200	0	7,200	10,900	46
2011	2,900	800	3,700	7,200	0	7,200	10,900	31
2012	2,900	800	3,700	7,200	0	7,200	10,900	32
2013	2,900	800	3,700	7,200	0	7,200	10,900	32
2014	2,900	800	3,700	7,200	0	7,200	10,900	32
2015	2,900	800	3,700	7,200	0	7,200	10,900	36
2016	2,900	800	3,700	7,200	0	7,200	10,900	37
2017	2,900	800	3,700	7,200	0	7,200	10,900	36
2018	2,900	800	3,700	7,200	0	7,200	10,900	29
2019	2,116	800	2,916	4,234	0	4,234	7,150	30
2020	2,116	800	2,916	4,234	0	4,234	7,150	30
Projected:								
2021	2,116	800	2,916	4,234	0	4,234	7,150	30
2026	2,116	800	2,916	4,234	0	4,234	7,150	30
2031	2,116	800	2,916	4,234	0	4,234	7,150	30
2036	2,116	800	2,916	4,234	0	4,234	7,150	30
2041	2,116	800	2,916	4,234	0	4,234	7,150	30
2021-2041 AAGR	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

*2019-2041 Based Aircraft Count updated to 30; based on FAA-verified based aircraft inventory survey
Source: FAA 2021 TAF, CHA, 2021.

2.5.1 Baseline Activity Summary

Table 2-2 and **Table 2-3** provide a summary of the 2020 airport operations and based aircraft. The 2020 baseline airport operations count are those, as reported in the 2021 TAF, which are used as the baseline data for subsequent forecasting activity. Note that baseline airport operations do not include military activity.

Table 2-2 – 6B0 Baseline Year 2020 Airport Operations

Operation Type	Total Operations
Itinerant	2,116
Local	4,234
Total	**6,350**

Source: FAA 2021 TAF, CHA, 2021.

Table 2-3 – 6B0 Baseline Year 2020 Based Aircraft

Aircraft Category	Aircraft Count
Single-Engine Piston	28
Multi-Engine Piston	0
Turboprop	0
Jet	1
Other	1
Total	**30**

Source: www.basedaircraft.com(5010-1), CHA, 2022.

The FAA TAF operation counts for non-towered GA airports are typically based on proprietary calculation methods based on various assumptions. This master plan, additionally, used the GARD data to compare tangible data via aircraft radio calls to further support the FAA TAF base year numbers. GARD data was provided for the years 2016 through 2020. Utilizing the aforementioned 3 to 1 ratio for radio transmission to operation counts, the annual operation counts ranged from 5,411 to 7,251, with an average of 6,846 annual operations over the five-year period. As such, it was concluded that the FAA TAF civilian aircraft operations of 6,350 for the base year of 2020 is accurate and responsible for forecasting purposes.

The total annual operations equate to an average of nine landings per day throughout the year. This number varies highly, where summer weekend days can easily include over 50 landings, including a larger number of training operations. In contrast, there may be no operations on snow winter days.

Additionally, a based aircraft inventory review was conducted during a site visit. VTrans collected all on-site aircraft registration numbers and submitted the data to the FAA Based Aircraft Registry. FAA has since confirmed that 6B0 has a total of 30 based aircraft.

2.6 Aviation Activity Forecasts

The forecast of aviation activity presented in this section consists of a projection of airport operations and based aircraft through the 2041 planning horizon. As discussed previously, the 2020 operations as well as the existing based aircraft information reported in the 2021 TAF for 6B0 were used as the baseline for this forecasting effort. Note that each forecast was developed assuming unconstrained conditions.

This section consists of an explanation and execution of the following data and forecast methodologies for based aircraft and aircraft operations:

- TAF Based Forecasts
- Vermont Airport System Plan Forecasts
- Econometric Forecasts
- Operations per Based Aircraft Forecasts

Alternate forecast scenarios to be discussed and evaluated include:

- Instrument Approach Procedure Scenario
- Hangar Development Scenario

After the various forecast methodologies were evaluated and a preferred forecast selected, projected operations were further categorized by type of operations (i.e., local vs. itinerant), the aircraft fleet mix, and peak activity levels.

2.6.1 TAF Based Forecasts

As 6B0 is a non-towered airport, baseline year (2020) operations are taken directly from the TAF.

6B0 TAF Scenarios

Projected Growth Forecast

The Projected Growth Forecast utilizes the percentage parameters set by the FAA as discussed earlier (i.e., within 10 percent of the five-year forecast period and within 15 percent of the 10-year forecast period). The five-year (2026) and 10-year (2031) TAF operations are assumed at 10 percent and 15 percent (respectively) higher than projections shown in the 6B0 TAF; and the remaining years were interpolated via a fixed-number average. The 10- (2031) through 20-year (2041) forecast period was then calculated using the Average Annual Growth Rate (AAGR) of the one- to 10-year (1.2 percent). As previously discussed, the FAA has validated 30 based aircraft (via www.basedaircraft.com) per a recent based aircraft survey. As such, the existing number of based aircraft does not currently reflect the current TAF or the Airport Master Record.

Historic Trend

The TAF historic trend analysis assumes that previous activity at 6B0 will predict future activity. This forecast calculated the AAGR of the previous 10-years of Airport's TAF data for both operations (-3.1 percent AAGR for itinerant operations and -5.2 percent AAGR for local operations) and based aircraft (-9.5 percent) and applied it to the respective baseline counts. Due to a historic decline in both based aircraft and total operations, the forecasted numbers resulted in an unlikely decline based on current demand and development plans according to VTrans.

Table 2-4 – 6B0 TAF Based Forecast Scenarios

Year	TAF		Projected Growth		Historic Trend	
	Based Aircraft*	Total Operations	Based Aircraft	Total Operations	Based Aircraft	Total Operations
2021	30	6,350	31	6,456	27	6,065
2026	30	6,350	33	6,985	17	4,830
2031	30	6,350	35	7,303	10	3,857
2036	30	6,350	37	7,671	6	3,089
2041	30	6,350	39	8,260	4	2,480
% AAGR	**0.0%**	**0.0%**	**1.2%**	**1.2%**	**-9.5%**	**-4.4%**
% Growth	**0.0%**	**0.0%**	**27.9%**	**27.9%**	**-86.3%**	**-59.1%**

*2019-2041 Based Aircraft Count updated to 30; based on FAA-verified based aircraft inventory survey
Source: FAA 2021 TAF, CHA, 2021.

Statewide TAF Scenarios

Projected Growth Forecast

In addition to forecasting activity for individual airports, the TAF issues a statewide forecast. In this scenario, the statewide projected average annual growth rate from 2021 through 2041 for itinerant and local operations, as well as based aircraft, were applied to the baseline conditions. Statewide, the TAF forecasts a 0.9 percent AAGR for itinerant operations, a 0.02 percent AAGR for local operations, and a 0.7 percent AAGR in based aircraft. It is important to note that the statewide forecasted total itinerant operations include air carrier, air taxi, general aviation, and military. The application of these rates to 6B0 is depicted in Table 2-5.

Table 2-5 – Sitewide TAF Based Projected Growth Forecast (All Users)

Year	Based Aircraft	Itinerant Operations	Local Operations	Total Operations
2021	30	2,135	4,235	6,370
2026	31	2,234	4,239	6,473
2031	32	2,338	4,243	6,581
2036	33	2,446	4,247	6,693
2041	34	2,559	4,251	6,810
% AAGR	**0.7%**	**0.9%**	**0.02%**	**0.3%**
% Growth	**13.8%**	**19.9%**	**0.4%**	**6.9%**

Source: FAA TAF, CHA, 2021.

Given that 6B0 is serves almost exclusively GA aircraft, an additional analysis was used with only itinerant GA and local civil projected average annual growth rates applied (0.1 percent and 0.02 percent, respectively), as shown in Table 2-6.

Table 2-6 – Statewide TAF Based Projected Growth Forecast (General Aviation)

Year	Itinerant Operations	Local Operations	Total Operations
2021	2,118	4,235	6,353
2026	2,128	4,239	6,367
2031	2,139	4,243	6,382
2036	2,149	4,247	6,397
2041	2,160	4,251	6,411
% AAGR	**0.1%**	**0.02%**	**0.05%**
% Growth	**2.0%**	**0.4%**	**0.9%**

Source: FAA TAF, CHA, 2021.

Historic Trend

In the Historic Trend analysis, the historic AAGRs (from 2010 through 2020), as detailed in the statewide TAF for itinerant operations (-2.9 percent), local operations (-3.6 percent), and based aircraft (0.1 percent), were applied to the respective baseline activity levels and projected at a static rate throughout the forecast horizon. See Table 2-7.

Table 2-7 – Statewide TAF Based Historic Trend Forecast (All Users)

Year	Based Aircraft	Itinerant Operations	Local Operations	Total Operations
2021	30	2,054	4,082	6,137
2026	30	1,772	3,401	5,174
2031	30	1,529	2,834	4,363
2036	30	1,319	2,361	3,681
2041	30	1,138	1,968	3,106
% AAGR	**0.1%**	**-2.9%**	**-3.6%**	**-3.3%**
% Growth	**1.3%**	**-44.6%**	**-51.8%**	**-49.4%**

Source: FAA TAF, CHA, 2021.

Similar to the previous statewide scenario, because 6B0 is predominately serves GA aircraft, the statewide historic AAGRs for only itinerant GA and local civil users were analyzed, as shown in Table 2-8.

Table 2-8 – Statewide TAF Based Historic Trend Forecast (General Aviation)

Year	Itinerant Operations	Local Operations	Total Operations
2021	2,082	4,086	6,168
2026	1,921	3,422	5,342
2031	1,772	2,865	4,637
2036	1,634	2,399	4,033
2041	1,508	2,009	3,517
% AAGR	**-1.6%**	**-3.5%**	**-2.8%**
% Growth	**-27.6%**	**-50.8%**	**-43.0%**

Source: FAA TAF, CHA, 2021.

2.6.2 Vermont Airport System Plan

As discussed earlier, the 2021 VASP is a 20-year planning document prepared by VTrans that details anticipated growth, challenges, and development for each airport under the agency's control, including 6B0, over a 20-year planning horizon. While the VASP has a forecast component, the master plan implements the VASP methodology for the current baseline data provided by the 2021 TAF and 2021 Form 5010-1, as the VASP was based on the 2017 TAF.

Operations

The most recent VASP draft outlines a low-growth, average-growth, and high-growth scenario and applies projected average annual growth rates at 5-year, 10-year, and 20-year intervals. Note, **Table 2-9** outlines the average annual growth rates and total operations projected for 6B0.

Table 2-9 – Vermont Airport System Plan Growth for Middlebury (Operations)

Scenario	5-Year	10-Year	20-Year
FAA TAF (2018)	10,900	10,900	10,900
Average Growth (.42%)	11,131	11,367	11,853
High Growth (.84%)	11,366	11,851	12,885
Low Growth (.21%)	11,015	11,131	11,367

Source: Vermont Airport System Plan (2020 DRAFT), CHA, 2021.

These growth rates were subsequently applied to the existing baseline operations data at the Airport and carried throughout the forecast horizon. **Table 2-10** depicts the total operations forecasts for the three scenarios.

Table 2-10 – Vermont Airport System Plan Scenarios (Operations)

Year	Average Growth	High Growth	Low Growth
2021	6,377	6,403	6,363
2026	6,512	6,677	6,430
2031	6,650	6,962	6,498
2036	6,790	7,259	6,567
2041	6,934	7,569	6,636
% AAGR	**0.4%**	**0.8%**	**0.2%**
% Growth	**8.7%**	**18.2%**	**4.3%**

Source: Vermont Airport System Plan (2020 DRAFT), CHA, 2021.

Based on the above figures, it was determined that the High Growth yielded the most feasible growth rates of the three forecasting scenarios.

Based Aircraft

The VASP draft also provides a low-growth, average-growth, and high-growth scenario for based aircraft, with the AAGRs being depicted in Table 2-11.

Table 2-11 – Vermont Airport System Plan Growth for Middlebury (Based Aircraft)

Scenario	5-Year	10-Year	20-Year
FAA TAF (2018)	36	36	36
Average Growth (-1.61%)	34	31	27
High Growth (1.20%)	39	42	47
Low Growth (-2.39%)	33	29	23

Source: Vermont Airport System Plan (2020 DRAFT), CHA, 2021.

Each AAGR was applied to the baseline count of based aircraft at 6B0 and assumed throughout the 20-year forecast horizon, as shown in **Table 2-12**.

Table 2-12 – Vermont Airport System Plan Scenarios (Based Aircraft)

Year	Average Growth	High Growth	Low Growth
2021	30	30	29
2026	27	32	26
2031	25	34	23
2036	23	36	20
2041	21	39	18
% AAGR	**-1.6%**	**1.2%**	**-2.4%**
% Growth	**-27.7%**	**26.9%**	**-38.4%**

Source: Vermont Airport System Plan (2020 DRAFT), CHA, 2021.

2.6.3 Econometric Forecasts

The socioeconomic outlook of an airport's catchment area can factor into the type and level of activity the facility may experience. Generally speaking, population and household income indicate potential levels of discretionary spending and the propensity of aviation users to utilize a local GA airport. As such, these two socioeconomic factors (e.g., population and household income) within the 6B0 catchment area were examined to develop the following two econometric forecast scenarios.

Population Econometric Forecast

The population econometric forecasts adjust the 6B0 TAF projections to account for population growth within the Airport's catchment area (e.g., Addison County). It is important to note that according to the Vermont Department of Health's population statistics, the population of the State of Vermont increased 2.8 percent over the past 10 years. The population of Addison County, however, declined by 0.12 percent during the same time period with an AAGR of -0.01 percent. As such, the population economic forecast indicates a decline in both aircraft operations and based aircraft when applying Addison County's population growth rate to the baseline operations and based aircraft counts.

Household Income Econometric Forecast

Similar to the Population Econometric Forecast, a Household Income Econometric Forecast uses projected change in household income over the forecast period as a metric for growth. Unlike population for Addison County, which is projected to decrease, household income has increased 2.5 percent annually over the past 10 years (adjusted for inflation) and is expected to continue trending upward at this rate according to 2020 U.S. Census data. In the case of airports such as 6B0, income is often a more accurate metric than population as most of the Airport's operators are individual aircraft owners. As such, the 2.5 percent AAGR was applied to the baseline operation and based aircraft counts, resulting in growth exceeding the FAA forecast parameters.

Table 2-13 provides a summary of the econometric forecasts.

Table 2-13 – TAF Based Econometric Forecasts

Year	Population Econometric		Household Income Econometric	
	Based Aircraft	Operations	Based Aircraft	Operations
2021	30	6,349	31	6,507
2026	30	6,345	35	7,352
2031	30	6,341	39	8,306
2036	30	6,337	44	9,385
2041	30	6,332	50	10,603
% AAGR	**-0.01%**	**-0.01%**	**2.5%**	**2.5%**
% Growth	**-0.3%**	**-0.3%**	**62.9%**	**62.9%**

Source: Vermont Department of Health, US Census Bureau, CHA, 2021.

2.6.4 Operations per Based Aircraft Forecasts

Operations per based aircraft (OPBA) forecasts involve a relatively straightforward forecasting methodology which assumes a total number of annual operations conducted by each aircraft based at the Airport. This methodology is often used at non-towered airports, such as 6B0, where historical annual operations are not as easily obtainable.

According to FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems*, guidance suggests using 250 OPBA for a typical GA airport, 350 OPBA for a busier GA airport with more itinerant traffic, and 450 OPBA for busy reliever airports.

To develop an OPBA forecast at 6B0, a preferred based aircraft forecast must first be selected. Four of the nine based aircraft forecasts projected a decline in based aircraft. However, local demand and interest in future hangar development indicates a likelihood for increased based aircraft throughout the forecast period. The projected based aircraft from the VASP High Growth forecast scenario was selected, as it showed modest growth in line with VTrans knowledge of local demand and potential development at 6B0.

As shown in the recommended based aircraft forecast, 6B0 is projected to have 39 based aircraft by 2041. Based on recommendations from the National Plan of Integrated Airport Systems (NPIAS), 250 operations per based aircraft were assumed and applied to the 2041 based aircraft count, thus resulting a projection of 12,523 operations at the end of the forecast period or

approximately 88.5 percent more GA operations. The operations from 2021 through 2040 are a result of a statistical interpolation using a compound annual growth rate (CAGR).

Table 2-14 – OPBA Forecast

Year	Based Aircraft*	Operations
2021	30	6,501
2026	32	7,256
2031	34	8,011
2036	36	8,766
2041	39	9,521
% AAGR	**1.2%**	**1.9%**
% Growth	**26.9%**	**46.5%**

Source: CHA, 2021.
*Based aircraft forecast derived using VASP High Growth Scenario (Section 2.6.2)

2.7 State Legislature Initiative

In addition to the quantitative forecasting methodologies depicted in the previous sections, regional and statewide factors were considered in choosing a preferred forecast. The responsibility of building hangars is often on the tenants, with VTrans leasing the land.

The Vermont Legislature approved an initiative intended to support activity and based aircraft at the existing state-owned airports, and thereby support the general aviation private and corporate activity. Specifically, the statewide initiative requires VTrans to undergo an Act 250 permitting process in which pre-selected locations on airport property can be leased with necessary permits in place, resulting in a more streamlined and easier approval and construction process for the prospective tenants. Thus, it is expected that the inclusion of pre-permitted sites would support the potential for additional based aircraft. As stated, this is a statewide required program and is not specific to Middlebury, with the goal to improve hangar development opportunities in throughout Vermont.

2.8 Summary of Forecast

The previously discussed operations and based aircrafts forecasts were derived using a variety of forecasting methodologies and incorporated various external data resources to further refine the projected activity data at 6B0. **Table 2-18** and **Table 2-19** present and summarize each operation and based aircraft forecast scenario, respectively.

2.9 Preferred Forecasts

Following a review of each of the based aircraft and operations scenarios, forecasts that did not appear plausible (i.e., too high or too low) were eliminated. Furthermore, given the qualitative factors of potential hangar development and activity patterns, those that showed negative growth were also eliminated. From there, a preferred Based Aircraft Forecast and Operations Forecast were selected.

Preferred Based Aircraft Forecast

The forecast from the TAF reflected a static, no-growth scenario and was removed from consideration. The VASP High Growth scenario projected an AAGR of 1.2 percent and 26.9 percent growth over the planning period. As VTrans has direct insight to the local market and demands, the VASP High Growth scenario was selected as the preferred based aircraft forecast scenario, shown in **Table 2-15**.

Table 2-15 – Preferred Based Aircraft Forecast

Year	Based Aircraft
2020	30
2021	30
2026	32
2031	34
2036	36
2041	39
% AAGR	**1.2%**
% Growth	**26.9%**

Source: US Census Bureau, CHA, 2021.

Preferred Operations Forecast

Much like the based aircraft forecast, the TAF yields static growth and was removed from consideration. While certain scenarios yielded negative growth, the three VASP scenarios projected positive growth rates, as did the Household Income Econometric. Household Income is considered a reliable metric of overall operations, though not as reliable as based aircraft. Given this, and that the VASP forecasts were uniquely calculated to 6B0, these were considered the most reasonable. As a result, the VASP High Growth scenario was selected as the preferred operations forecast scenario (**Table 2-16**). This yielded a modest annual growth rate of 0.8 percent and 18.2 percent growth in the forecast period. This level of activity would result in an average daily number of landings of 10 to 11, up for the current average of nine.

Table 2-16 – Preferred Operations Forecast

Year	Operations
2020	6,350
2021	6,403
2026	6,677
2031	6,962
2036	7,259
2041	7,569
% AAGR	**0.8%**
% Growth	**18.2%**

Source: Vermont Agency of Transportation, CHA, 2021.

Preferred Operations Forecast vs. FAA TAF

Table 2-17 details the recommended operations forecast for 6B0 in comparison to the FAA 2021 TAF forecast. The recommended forecast predicts operations to be approximately 5.1 percent higher than the TAF in five years and approximately 9.6 percent above the TAF in 10 years, both of which are within the acceptable ranges provided in AC 150/5070-6B*, Airport Master Plans*.

Table 2-17 – Preferred Operations Forecast vs. FAA TAF

Year	Operations		
	6B0 TAF	Preferred Forecast	Recommended Forecast vs. FAA TAF
2020	6,350	6,350	0.0%
2021	6,350	6,403	0.8%
2026	6,350	6,677	5.1%
2031	6,350	6,962	9.6%
2036	6,350	7,259	14.3%
2041	6,350	7,569	19.2%
% AAGR	**0.0%**	**0.8%**	-
% Growth	**0.0%**	**18.2%**	-

Source: FAA 2021 TAF, Vermont Agency of Transportation, CHA, 2021.

Table 2-18 – Operations Forecast Summary

Year	TAF	6B0 TAF Scenarios		Statewide TAF Scenarios				VASP Scenarios			Econometric Scenarios		OPBA
		Projected Growth	Historic Trend	Projected Growth (All Users)	Projected Growth (GA)	Historic Trend (All Users)	Historic Trend (GA)	Average Growth	High Growth	Low Growth	Population	Household Income	
2020	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350
2021	6,350	6,456	6,065	6,370	6,353	6,137	6,168	6,377	6,403	6,363	6,349	6,507	6,501
2026	6,350	6,985	4,830	6,473	6,367	5,174	5,342	6,512	6,677	6,430	6,345	7,352	7,256
2031	6,350	7,303	3,857	6,581	6,382	4,363	4,637	6,650	6,962	6,498	6,341	8,306	8,011
2036	6,350	7,767	3,089	6,693	6,397	3,681	4,033	6,790	7,259	6,567	6,337	9,385	8,766
2041	6,350	8,260	2,480	6,810	6,411	3,106	3,517	6,934	7,569	6,636	6,332	10,603	9,521
% AAGR	**0.0%**	**1.2%**	**-4.4%**	**0.3%**	**0.05%**	**-3.3%**	**-2.8%**	**0.4%**	**0.8%**	**0.2%**	**-0.01%**	**2.5%**	**0.5%**
% Growth	**0.0%**	**27.9%**	**-59.1%**	**6.9%**	**0.9%**	**-49.4%**	**-43.0%**	**8.7%**	**18.2%**	**4.3%**	**-0.3%**	**62.9%**	**11.1%**

Source: FAA 2021 TAF, Vermont Agency of Transportation, Vermont Department of Health, US Census Bureau, CHA, 2021.

Table 2-19 – Based Aircraft Forecast Summary

Year	TAF*	6B0 TAF Scenarios		Statewide TAF Scenarios		Vermont Airport System Plan			Econometric Scenarios	
		Projected Growth	Historic Trend	Projected Growth (All Users)	Historic Trend (All Users)	Average Growth	High Growth	Low Growth	Population	Household Income
2020	30	30	30	30	30	30	30	30	30	30
2021	30	31	27	30	30	30	30	29	30	31
2026	30	33	17	31	30	27	32	26	30	35
2031	30	35	10	32	30	25	34	23	30	39
2036	30	37	6	33	30	23	36	20	30	44
2041	30	39	4	34	30	21	39	18	30	50
% AAGR	**0.0%**	**1.2%**	**-9.5%**	**0.7%**	**0.1%**	**-1.6%**	**1.2%**	**-2.4%**	**0.0%**	**2.5%**
% Growth	**0.0%**	**27.9%**	**-86.3%**	**13.8%**	**1.3%**	**-27.7%**	**26.9%**	**-38.4%**	**-0.3%**	**62.9%**

*2019-2041 Based Aircraft Count updated to 30; based on FAA-verified based aircraft inventory survey

Source: FAA 2021 TAF, Vermont Agency of Transportation, Vermont Department of Health, US Census Bureau, CHA, 2021.

2.10 Local/Itinerant Operations

The percentage of local and itinerant operations at GA airports can vary greatly by airport location, size, and type of activity. Rural airports that mostly experience activity by based aircraft generally have a greater percentage of local operations, while airports nearby larger metropolitan areas or tourist destinations may have a greater percentage of itinerant operations.

According to the 6B0 TAF, the local/itinerant operations split at the Airport was historically 60/40 percent, respectively. However, the 2020 6B0 TAF reports the current spread of local/itinerant operations to be at a 67/33 split.

As such, it is assumed that the current split of local/itinerant operations at 6B0 is closer to its historically report spread (e.g., 60 percent local and 40 itinerant) with a gradual increase of itinerant operations throughout the forecast period. **Table 2-20** lists the projected local/itinerant forecast for 6B0.

Table 2-20 – Local/Itinerant Operations

Year	Local Operations	Local Percent	Itinerant Operations	Itinerant Percent	Total Operations
2021	2,134	33.3%	4,270	66.7%	6,403
2026	2,141	32.1%	4,536	67.9%	6,677
2031	2,145	30.8%	4,817	69.2%	6,962
2036	2,146	29.6%	5,114	70.4%	7,259
2041	2,142	28.3%	5,427	71.7%	7,569

Source: CHA, 2021.

2.11 Aircraft Fleet Mix Forecast

The FAA Aerospace Forecast is an annually issued document providing an overview of aviation industry trends and growth rates over a 20-year forecast horizon, including the breakdown of aircraft fleet mix by type. **Table 2-21** lists the percent makeup of fleet mix each, broken down by type of aircraft, as projected within the *FAA Aerospace Forecast, FY 2022 - 2042*.

Table 2-21 – FAA Fleet Mix Projection

Year	Single-Engine	Multi-Engine	Turboprop	Jet	Rotorcraft	Other	Total
2021	60.0%	6.0%	4.7%	7.5%	5.0%	17%	100%
2027	56.8%	5.6%	5.0%	9.2%	5.2%	18.3%	100%
2032	53.9%	5.5%	5.1%	10.5%	5.6%	19.4%	100%
2037	51.2%	5.4%	5.2%	11.8%	6.1%	20.3%	100%
2042	48.8%	5.3%	5.5%	12.9%	6.5%	21.1%	100%

Source: FAA Aerospace Forecast, *FY 2022 – 2042*

Note: Represents national projections

According to the Aerospace Forecast, the number of single-engine piston aircraft will decrease by 2042 with an increase of larger aircraft including turboprop and jet aircraft. It is important to note that the majority of aircraft activity at 6B0 is represented by single-engine piston aircraft,

which are expected to continue to encompass the majority of the Airport's operating aircraft fleet mix. As the FAA Aerospace Forecast presents national projections, the fleet mix growth rates would not reflect 6B0's local characteristics and GA demand. Therefore, a percentage breakdown using national based aircraft numbers as a baseline was utilized and adjusted for local considerations and demand. **Table 2-22** and **Table 2-23** lists the projected fleet mix for of airport operations and based aircraft at 6B0.

Table 2-22 – Operations Fleet Mix

Year	Single-Engine	Multi-Engine	Jet	Helicopters	Total Operations
2021	4,304	520	990	590	6,403
2026	4,488	542	1,032	615	6,677
2031	4,680	565	1,076	641	6,962
2036	4,879	589	1,122	669	7,259
2041	5,088	614	1,170	697	7,569
AAGR	**0.8%**	**0.8%**	**0.8%**	**0.8%**	**0.8%**
% Growth	**19.2%**	**19.2%**	**19.2%**	**19.2%**	**19.2%**

Source: CHA 2021.

Table 2-23 – Based Aircraft Fleet Mix

Year	Single-Engine	Multi-Engine	Turboprop	Jet	Helicopters	Based Aircraft
2020	28	0	0	1	1	30
2021	28	0	0	1	1	30
2026	29	1	0	1	1	32
2031	31	1	0	1	1	34
2036	31	1	1	2	1	36
2041	33	2	1	2	1	39

Source: CHA 2021.

2.12 Peak Activity

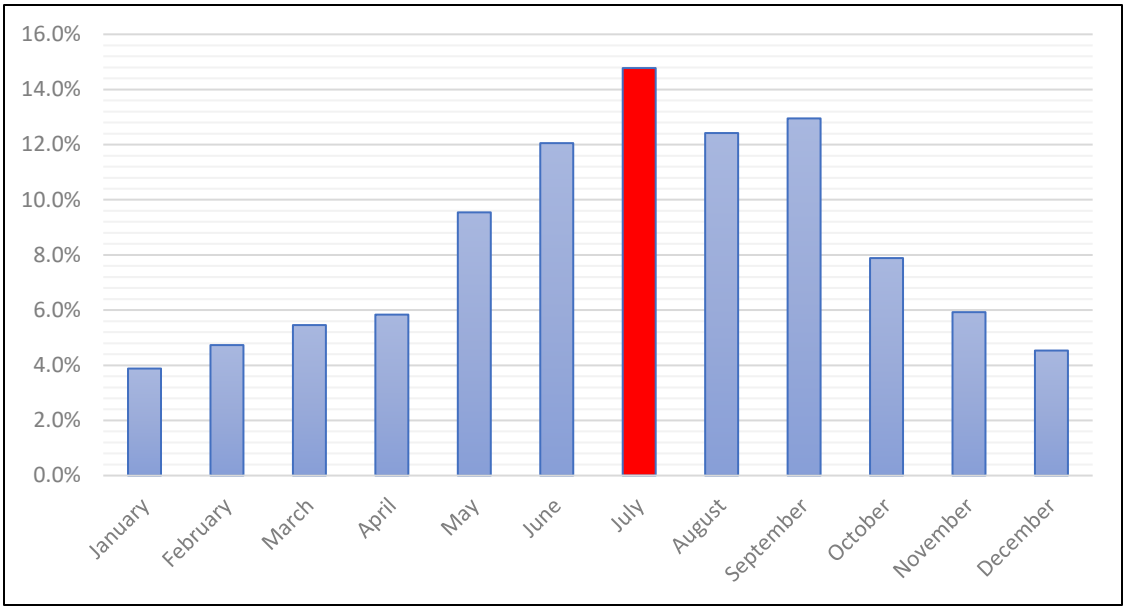
To ensure adequate apron and aircraft staging space is available at an airport, an understanding of the facility's most demanding (i.e., peak) period of activity is necessary. Peak Month and Peak Day forecasts guide future facility requirements needed to accommodate above average levels of utilization. The Peak Month is the calendar month of the year during which the highest level of aircraft operations typically occurs. Likewise, the Peak Day is the highest level of operations occurring within the Peak Month. At non-towered airports, tracking periods of peak activity can be challenging unless local observations are maintained.

VTrans utilizes a system that provides approximate aircraft operations data by recording the number of aircraft radio announcements on each airport's common traffic advisory frequency (CTAF). Although the number of operations reported through this system is not exact, the data provides valuable operational trend and peak activity levels.

As shown on **Figure 2-2**, according to historic (2015 – 2020) data recordings provided by VTrans, 6B0 experiences its Peak Month activity in July; approximately 14.8 percent of the total annual data for the year.

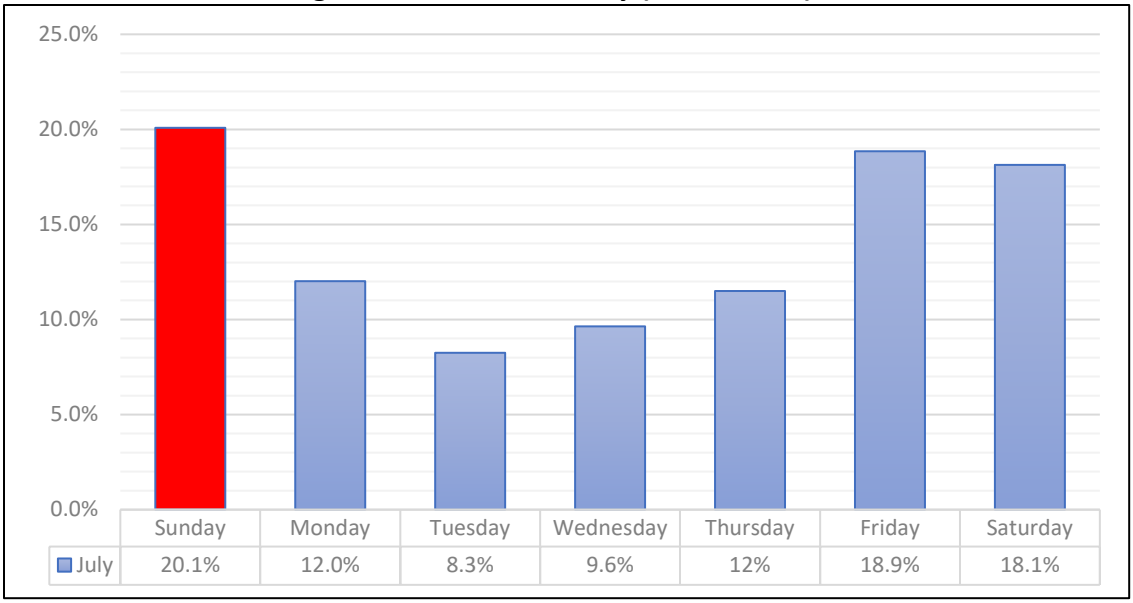
Furthermore, **Figure 2-3** shows that similar to many GA airports, 6B0 experiences its greatest volume of activity during the weekend (Friday through Sunday) with Sunday representing 20.1 percent of the week's average data recordings for the peak month of July.

Figure 2-2 – 6B0 Peak Month (2015 - 2020)



Source: VTrans (G.A.R.D.) data for 6B0, CHA, 2021

Figure 2-3 – 6B0 Peak Day (2015 - 2020)



Source: VTrans (G.A.R.D.) data for 6B0, CHA, 2021

Using the Peak Month and Peak Day percentages (14.8 and 20.1 percent, respectively), **Table 2-24** lists the projected number of Peak Month and Peak Day aircraft operations at 6B0 based on the preferred operations forecast. A Peak Day-Hour is also listed and represents the estimated heaviest volume of aircraft operations the airport may experience in the span of an hour, such as during an airport event or fly-in gathering.

Table 2-24 – 6B0 Peak Month, Day, Hour

Year	Peak Month	Peak Day	Peak Day-Hour
2020	938	47	7
2021	946	48	7
2026	987	50	7
2031	1,029	52	8
2036	1,073	54	8
2041	1,119	56	8

Source: CHA, 2021.

2.13 Critical Aircraft

The design, or critical, aircraft is defined as the largest or most demanding aircraft using or forecast to regularly use an airport (at least 500 annual itinerant operations). Operations by aircraft type is derived from the FAA Traffic Flow Management System Count (TFMSC). However, it should be noted that the TFMSC database only includes operation with filed flights plans; and as flight plans are not required (and often only filed by larger aircraft), the level of data is insufficient to confidently denote a critical aircraft using only the TFMSC. As such, the TFMSC was used as support for interviews with VTrans, airport tenants, and users. In the case of 6B0, the airport experiences regular use by A/B-I aircraft; common use by A-II aircraft; and occasional use

by B-II aircraft. Therefore, per the TFMSC and interviews, the Critical Aircraft is a family of light, multi-engine aircraft such as the twin Cessnas (310, 414). There is occasional use by large aircraft in the A-II (e.g. Pilatus PC-12) and B-II (e.g. Beechcraft King Air) family, based on interviews and the TFMSC database. However, these types of aircraft are not forecasted to reach 500 annual operations to reach the critical aircraft threshold.

3 Facility Requirements

This chapter analyzes the ability of the Middlebury State Airport (6B0) and its existing facilities to accommodate the current and anticipated levels of activity as described in **Chapter 2, *Forecast of Aviation Activity*.** The identified facilities include the following general categories:

- Airside Facility Requirements
- Landside Facility Requirements

The Facility Requirements analysis provide a basis for assessing the capability of existing Airport facilities to accommodate current and future levels of activity. The evaluation of this relationship frequently results in the identification of deficiencies that can be alleviated through planning and development activities. Analyses of various airside and landside functional areas were performed with the guidance of several publications, including:

- Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5300-13B, *Airport Design*
- AC 150/5060-5, *Airport Capacity and Delay*
- AC 150/5325-4B, *Runway Length Requirements for Airport Design*

The facility requirement calculations were developed for the planning period of 2021 through 2041 and were based on various forecast components and should be regarded as generalized planning tools. Should the forecast prove conservative, the schedule for proposed developments may be advanced. Likewise, if traffic growth does not materialize, deferral of additional facilities may be practical.

3.1 Forecast Summary

Table 3-1 provides a summary of the preferred forecasts presented in **Chapter 2**, which have been used to estimate when activity levels will trigger the need for various improvements. In addition, this table provides forecasted peak operations (with a peak month of July), by month, day, and hour. Note that some airfield facilities are recommended for safety improvements, and not dependent on a specific airport activity level.

Table 3-1 – Forecast Summary

	Planning Period (year)			
Activity	**2026**	**2031**	**2036**	**2041**
Annual Operations	6,677	6,962	7,259	7,569
Peak Operations				
Peak Month	987	1,029	1,073	1,119
Peak Day (PMAD)	50	52	54	56
Peak Hour	7	8	8	8
Based Aircraft	32	34	36	39

Source: CHA, 2022.

Note PMAD – Peak Month Average Day

3.2 Airside Facility Requirements

It is important for airports to assess their existing infrastructure to determine the need for future improvements and associated airfield requirements. The airside facility requirements analysis includes an examination and evaluation of:

- Design Aircraft
- Runway Design Standards
- Taxiway Design Standards
- Airfield Capacity
- Runway Length Analysis
- Wind Coverage
- Airfield Pavement
- Lighting and Visual Aids
- Instrument Approach Procedures

The following provides a description of each item and an evaluation of existing and future requirements according to current FAA and industry standards.

3.2.1 Design Aircraft

The design, or critical, aircraft is defined as the most demanding aircraft operating or projected to operate on the airport's runway, taxiway, or apron. According to the FAA, the design aircraft can be either a specific aircraft model or a composite of several aircraft and must account for a minimum of 500 annual itinerant operations (i.e., an average of five landings per week). As defined within the **Chapter 2**, the design aircraft is classified using three parameters:

- ***Aircraft Approach Category (AAC):*** Consists of a letter (e.g., A through E) corresponding to the design aircraft's approach speed in landing configuration.
- ***Airplane Design Group (ADG):*** Consists of a Roman numeral (e.g., I through VI) corresponding to the design aircraft's wingspan or tail height, whichever is most restrictive.
- ***Taxiway Design Group (TDG):*** Consists of a number (e.g., 1 through 7) corresponding to the Main Gear Width (MGW) and the Cockpit to Main Gear (CMG) distance.

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). Currently, Runway 1-19 is not equipped with a published instrument approach procedure (IAP). As the runway is classified as a visual only, the third RDC component is labeled as VIS.

As a single runway airport, the RDC for the runway is used to determine the 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.

As Runway 1-19 is classified with an RDC of B-I-VIS, the ARC for 6B0 is correspondingly B-I. As discussed in **Chapter 2**, the ADG class with the majority of operations at the Airport is A-I and A-II, however there is still consistent activity from aircraft as high as ADG B-II. Given this, and that the fleet mix consists of many older and out-of-production aircraft, there was not a specific critical aircraft applied. Rather, a grouping of light, multi-engine piston aircraft such as the Cessna 421; and light, turboprop aircraft such as the Piper Cheyanne. Additionally, it is important to note that the airport is limited to regular use by aircraft less than 12,500 pounds in weight. As such, all design standards referenced in this chapter moving forward will adhere to B-I Small Aircraft parameters published in the FAA AC 150/5300-13B, *Airport Design.* "B-I" and "B-I Small" will be used interchangeably throughout this chapter. As the fleet mix within the forecast period is not anticipated to substantially change, it is recommended that ARC B-I is maintained.

Note that occasional use by larger aircraft (e.g., Beech King Air, Citations) is permitted at the Airport and at the pilot's discretion, but these aircraft are not the intended user, and facilities will remain designed for small aircraft.

Table 3-2 summaries the classifications applicable to 6B0 throughout the planning period.

Table 3-2 – Runway Design Code Analysis Summary

Runway	AAC	ADG	RVR
1-19	B	I	VIS (i.e., Visual Approach)

Source: FAA AC 150/5300-13A, *Airport Design*

3.2.2 FAA Design Standards

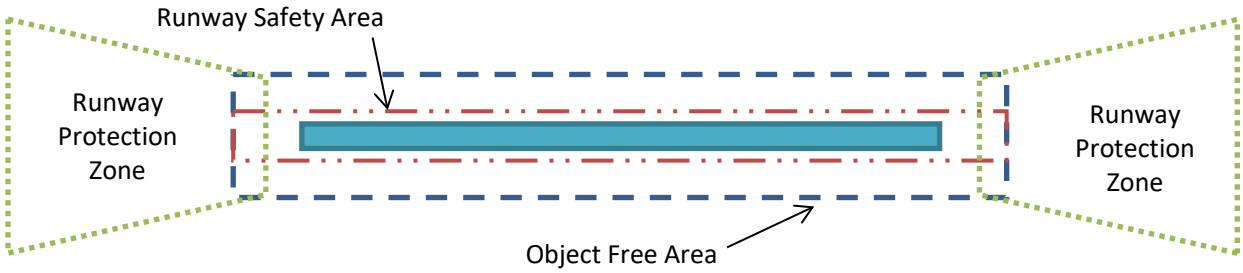
AC 150/5300-13B identifies safety areas and zones surrounding runways and taxiways that must be protected from objects, hazards, or obstacles that may impact safety. The key standards that protect the runway and taxiway areas consist of the following:

- ***Runway Safety Area (RSA) and Taxiway Safety Area (TSA):*** The RSA is a defined surface surrounding a runway prepared for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway. This area must also support snow removal, aircraft rescue, and firefighting vehicles/equipment. The RSA should be free of objects, except for those that must be located in the area because of their function. The TSA is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft deviating from the taxiway. RSA and TSA are graded, drained, and maintained, and typically consisted of a stabilized mowed grass area. Safety area enhancement projects are considered high priority by the FAA.

- ***Runway Object Free Area (ROFA) and Taxiway Object Free Area (TOFA):*** The ROFA and TOFA are areas centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by remaining clear of objects (e.g., roads, buildings, parked aircraft, etc.), except for those that need to be within the area due to their function. There are no surface requirements for an OFA.
- ***Runway Protection Zone (RPZ):*** The RPZ is a trapezoidal area generally offset 200 feet from each runway end that is used to enhance the protection of people and property on the ground. The FAA encourages airport property ownership and compatible land uses within each RPZ and clearing of all above ground objects. Homes, other buildings, and wildlife attractants are considered incompatible land uses within an RPZ. Trees are not specifically prohibited (if not an airspace penetration) but are discouraged within the RPZ.
- ***Runway Object Free Zone (ROFZ):*** The ROFZ is centered about the runway with an elevation the same as the nearest point on the runway centerline. Objects that are not fixed-by-function are not permissible within the ROFZ.

Figure 3-1 depicts the discussed FAA design standards.

Figure 3-1 – FAA Safety Areas and Runway Protection Zones



The spatial dimensions of the RSA/TSA, ROFA/TOFA, and RPZ are defined by the RDC. **Table 3-3** presents the current FAA design standards applicable to 6B0.

Table 3-3 – Runway and Taxiway Design Standards

Airfield Area	Runway 1-19 (RDC B-I-VIS – TDG 1)
Runway Width	60’
RSA	
• Width	120’
• Length Beyond Runway End	240’
• Length Prior to Threshold	240’
ROFA	
• Width	250’
• Length Beyond Runway End	240’
• Length Prior to Threshold	240’
ROFZ	
• Width	250’
• Length Beyond Runway End	200’
Approach RPZ	
• Length	1,000’
• Inner Width	250’
• Outer Width	450’
Departure RPZ	
• Length	1,000’
• Inner Width	250’
• Outer Width	450’
Taxiway Width	25’
Taxiway Centerline to	
• Fixed or Movable Object	44.5’
Taxilane Centerline to	39.5’
• Fixed or Movable Object	
TSA	49’
TOFA	89’
Taxilane OFA	79’

Source: FAA AC 150/5300-13B, *Airport Design*

Additionally, Runway 1-19 has published declared distances (**Table 3-4**), including a 141-foot displacement on the Runway 1 end, to accommodate non-standard terrain south of the runway.

Table 3-4 – Declared Distances

Declared Distance	Runway 1 End	Runway 19 End
Take Off Run Available (TORA)	3,206’	3,206’
Take Off Distance Available (TODA)	3,206’	3,206’
Accelerate Stop Distance Available (ASDA)	3,206’	3,065’
Landing Distances Available (LDA)	3,065’	3,065’

3.2.3 Runway Design Standards

Using the FAA design standards listed in **Table 3-3**, this section reviews the existing runway conditions at 6B0 and discusses any related deficiencies. **Figure 3-2** depicts Runway 1-19 safety and object free areas.

VERMONT
AGENCY OF TRANSPORTATION

MIDDLEBURRY STATE AIRPORT MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 200 400 800

LEGEND

- Airport Property Boundary
- ### Ground Contour (Feet MSL)
- ROFA Runway Object Free Area
- RSA Runway Safety Area
- TOFA Taxiway Object Free Area
- TSA Taxiway Safety Area
- OFZ Obstacle Free Zone
- RVZ Runway Visibility Zone
- Navaid Critical Area

Figure 3-2
6B0 Safety Areas

3.2.3.1 Runway Width

Prior to the 2017 runway reconstruction project (discussed within Chapter 1), Runway 1-19 was 50 feet in width. However, the reconstruction project widened the runway to the current width of 60 feet per RDC B-I-VIS standards, as listed on **Table 3-3**. As such, the current runway width is adequate and should be maintained throughout the planning period.

3.2.3.2 Runway Safety Area (RSA)

According to AC 150/5300-13B, the standard RDC B-I runway dimensions include a length beyond and prior to the runway end of 240 feet and may have a width as narrow as 120 feet. Additionally, the first 200 feet beyond the runway ends must have a grade between zero and three percent.

The north runway end contains standard RSA grading and remains free of all incompatible objects. However, the terrain approximately 100 feet south of the runway drops off beyond FAA design standards. As such, the Runway 1 threshold is displaced 141 feet and contains declared distances (Table 3-4) effectively providing 240 feet of standard RSA beyond the Runway 1 threshold.

3.2.3.3 Runway Object Free Area (ROFA)

The Runway 1-19 OFA is 250 feet in width and also extends 240 feet beyond each runway end. Although incompatible objects are not permitted within the ROFA, the terrain within the ROFA may decrease. The Runway 1-19 ROFA laterally and beyond the runway ends remains free of incompatible objects and obstructions, partially due to the aforementioned declared distances.

3.2.3.4 Runway Protection Zone (RPZ)

The Runway Protection Zones (RPZ) begins 200-feet from each runway end/threshold. Airport ownership and control of the RPZs, either through easement or acquisition, is desirable to ensure compatible land uses, airspace, and ground protection within the area. As the RPZs are primarily designated to protect people and property on the ground, the FAA considers the clearing of all objects within RPZs a safety benefit. **Figure 3-3** depicts the RWY 1-19 RPZs.

As Runway 1 has a has 141-foot displaced threshold, the Approach and Departure RPZ begin at different locations. The Runway 1 Approach RPZ begins 200 feet from the runway's displaced threshold whereas the Departure RPZ begins 200 feet from the end of the runway. The Runway 1 RPZs share the dimensions (e.g., 250-foot inner width, 450-foot outer width, and 1,000-foot length). Sections the RPZs beyond the airport property boundary containing portions of a private salvage yard and forested area. Easement acquisition should be considered for that area.

The Runway 19 RPZs dimensions are the same as Runway 1 and begin 200 feet from the runway end. The Runway 19 RPZs are entirely located within airport property and are free of incompatible objects.

VERMONT
AGENCY OF TRANSPORTATION

MIDDLEBURRY STATE AIRPORT MASTER PLAN UPDATE

Runway 19
Departure/Approach RPZ
1,000' x 250' x 450'

Runway 1
Departure/Approach RPZ
1,000' x 250' x 450'

GRAPHIC SCALE (FEET)

0 100 200 400

LEGEND

- Airport Property Boundary
- ### Ground Contour (Feet MSL)
- RPZ Runway Protection Zone

Figure 3-3
Runway Protection Zones

3.2.4 Taxiway Design Standards

The runway is equipped with a full parallel taxiway, with six designated stub segments as listed within **Table 3-5**. The current width of all taxiways at 6B0 is 25 feet per FAA TDG-1A and 1B design standards.

Table 3-5 - Taxiways

Taxiway	TDG	Width	Taxiway Safety Area	Taxiway Object Free Area
A	2	25 FT	49 FT	89 FT
A1	2	25 FT	49 FT	89 FT
A2	2	25 FT	49 FT	89 FT
A3	2	25 FT	49 FT	89 FT
A4	2	25 FT	49 FT	89 FT
A5	2	25 FT	49 FT	89 FT
A6	2	25 FT	49 FT	89 FT

Source: CHA, 2022

It is recommended this width be maintained through the forecast period unless aircraft activity by larger aircraft warrant. As the taxiway system was rehabilitated in 2017, all pavement geometry meets current FAA design standards.

Taxiway Safety Area (TSA) and Taxiway Object Free Area (TOFA) widths are based upon Airplane Design Group (ADG). As the 6B0 taxiway system is designated as Group I, the current TSA and TOFA widths are 49 feet and 89 feet, respectively. A review of site conditions determined that the TSA surface conditions satisfy the FAA standard to support both aircraft and vehicles within the area. All objects within the TOFA are fixed-by-function.

3.2.5 Airfield Capacity

Airfield capacity is defined as the maximum rate that aircraft can arrive at, or depart from, an airfield with an acceptable level of delay. It is a measure of the number of operations that can be accommodated at an airport during a given time period, which is determined based on the available airfield system (e.g., runways, taxiways, NAVAIDs, etc.) and airport activity characteristics.

The current guidance provided by the FAA to evaluate airfield capacity is described in AC 150/5060-5, *Airport Capacity and Delay*. The following provides a brief definition of the two key capacity parameters:

- ***Annual Service Volume (ASV):*** A reasonable estimate of the airport's annual maximum capacity, accounting for annual weather characteristics, runway use, aircraft fleet mix, and other conditions.
- ***Hourly Airfield Capacity:*** The maximum number of aircraft operations that can take place on the runway system in one hour. As airport activity occurs in certain peaks throughout the day, accommodating the peak hour activity is most critical.

AC 150/5060-5 provides the estimated ASV and hourly airfield capacity for VFR and IFR operations based on various runway configurations and the type of aircraft operating, or projected to operate, at the airport. **Table 3-6** presents the ASV and hourly airfield capacity for the single runway configuration and type of aircraft operating at 6B0. The table also list the forecast activity level. See **Appendix A** for the FAA AC 150/5060-5 Hourly Capacity Worksheet.

Table 3-6 – ASV and Hourly Capacity

ASV*	Hourly Operations (VFR)*	Hourly Operations (IFR)*	2041 Annual Operations	2041 Peak Hour Operations
>100,000	97	20	7,569	8

Source: AC 150/5060-5, *Airport Capacity and Delay*; CHA

*ASV based on runway configuration #1 with a mix index of 0-20 and a touch-and-go percentage of 25, modified per Table 4-26.

Based on the runway configuration and operating aircraft at 6B0, the ASV is over 100,000 operations and the hourly airfield capacity is 97 operations for VFR and 20 operations for IFR. A total of 7,569 annual operations and eight peak hour operations are projected at 6B0 by the end of the planning period. Therefore, the Airport has surplus airfield capacity to accommodate existing and projected growth in operations, including instrument operations. Airfield improvements are not needed to increase operational capacity.

3.2.6 Runway Length

Runway length requirements are based on a variety of conditions including: airport elevation, mean daily maximum air temperature, runway gradient, and the gross takeoff and landing weights of the design aircraft expected to regularly use the runway (i.e., at least 500 annual itinerant operations).

AC 150/5325-4B, *Runway Length Requirements for Airport Design*, outlines the process for determining recommended runway length at an airport. In summary, this process involves: identifying the design aircraft, or family of aircraft, and its maximum certified takeoff weight (MTOW); calculating the recommended runway length for the design aircraft based on the appropriate "runway length curves"; and, if appropriate, adjusting the recommended runway length for aircraft and runway characteristics (e.g., runway gradient, wet runway conditions).

Additionally, the AC 150-5323-4B also provides general guidelines of runway length requirements based on an airport's fleet mix. As such, utilizing the Advisory Circular's Figure 2-1, *Small Airplanes with Fewer than 10 Passenger Seats*, a runway length of 3,100 feet would provide sufficient length to 95% of this type of aircraft (AAC A-1 and B-1 - small aircraft) during the hot summer months when adjusted adjusting for the mean day maximum hot month temperature (85° Fahrenheit) and the airport elevation (~500 feet Mean Sea Level). However, to accommodate 100% of the fleet mix in average high temperature conditions throughout the year (59° Fahrenheit), the AC recommends a runway length of 3,400 feet.

For a more airport specific approach, the most demanding, regular use aircraft is utilized to determine runway length requirements. As discussed in **Chapter 2**, the design aircraft for 6B0

has been identified as a mix of ARC B-I aircraft currently. Based on historical activity data, the most demanding aircraft to use 6B0 on a non-regular basis is the Pilatus PC-12 (A-II), which is classified as a small aircraft (under 12,500 pounds) with an MTOW of 9,700 pounds. Runway length requirements for this particular aircraft is listed in **Table 3-7**.

Table 3-7 - Critical Aircraft Runway Length Requirements

Aircraft Type	Runway Length Requirements*	
	Takeoff	Landing
Pilatus PC-12	2,485 ft	2,170 ft
Cessna 421	2,320 ft	2,300 ft

S* = At Sea Level, International Standard Atmosphere, MTOW

Source: Manufacture published performance tables. Commercial use (i.e., Part 135) would be higher.

Runway 1-19 currently provides 3,206 feet of takeoff run, and 3,060 feet of landing run, due to the displaced threshold on the Runway 1 end, which is considered adequate for the planning period. While there is no significant change in the critical aircraft forecasted, it should be noted that limited jet and turboprop activity is projected within the forecast period. Although, some turbine and light jet operations may be hindered by the current runway length, such operations are not anticipated to exceed 500 annually within the planning forecast. Should the Airport experience increased aircraft operations by aircraft requiring additional runway length, additional study will be required.

3.2.7 Wind Coverage

Local wind conditions at an airport can have a significant role in runway use as aircraft operate most efficiently when landing and departing into the wind. Runways not oriented to take full advantage of the prevailing wind patterns are used infrequently. Pilots must ensure that the crosswind component, or wind component perpendicular to the direction of travel, is not beyond the limits of the aircraft. Crosswind components differ depending on the size of aircraft and the associated ARC for the runway. According to FAA criteria, an airport should provide at least 95 percent wind coverage for aircraft categories anticipated to use the airport regularly.

The 95 percent wind coverage is computed on the basis of a crosswind not exceeding 10.5 knots for ARC A-I and B-I, and 13 knots for ARC A-II and B-II. Given the ARC for 6B0 is not forecast to exceed ARC B-I, **Table 3-8** provides the coverage for the all-weather, VFR, and IFR weather wind conditions for a 10.5 and 13-knot crosswind for the Airport's runway.

Table 3-8 – Runway Wind Coverage

Weather Condition	10.5 Knots	13 Knots
All-Weather	99.86%	99.93%
VFR	99.85%	99.93%
IFR	99.98%	99.99%

Source: NOAA National Climatic Data Center
Middlebury State Airport 2014 – 2021

Table 3-8 shows that combined runway wind coverage at 6B0 for each weather condition (i.e., all-weather, VFR, and IFR) exceeds the 95 percent minimum wind coverage for each crosswind component. Therefore, adequate wind coverage is provided at 6B0 by the current runway configuration.

3.2.8 Airfield Pavement Strength

An important feature of airfield pavement is its ability to withstand repeated use by aircraft of significant weight. The design strength of the pavement at an airport is typically determined by the strength of both the pavement section and subgrade, the weight of the aircraft utilizing the airfield, and the number of operations from these aircraft.

Currently, Runway 1-19 provides adequate strength for unlimited use by small aircraft (under 12,500 lbs.). Thus, the current pavement section provided adequate weight bearing throughout the planning period.

3.2.9 Airfield Pavement Condition

All VTrans-maintained pavement areas (including all taxiways and Runway 1-19) were reconstructed during the 2017 runway extension project. As such, a surface rehabilitation of those pavement areas will likely be needed by the end of the forecasting period. The main tie-down ramp and fueling apron pavements were constructed in before 1995 and are recommended for rehabilitation in the short-term .

Maintenance of apron pavement connected to private hangars are under the responsibility of the tenant and/or leaseholder.

3.2.10 Airfield Lighting, Navigational Aids & Instrument Procedures

As previously discussed in **Chapter 1**, Runway 1-19 is not equipped with runway edge lighting, navigational approach aids, or published Instrument Approach Procedures (IAPs). Each of the following facilities were considered in this study:

- Medium Intensity Runway Lights (MIRL)
- Visual Glide Slope Indicators (VGSI)
- Instrument Approach Procedures

3.2.10.1 Medium Intensity Runway Lights (MIRL)

Middlebury Airport is the only state airport (with a paved runway) without runway edge lights. While it is not a requirement for an airport to have runway edge lights, lighting does improve the usability of the airport. Runway lights would allow aircraft to operate at the airport during the evening hours in the winter months, whereas presently they cannot operate during those times. As such, MIRLs may be considered as a medium or long-term improvement.


Runway Edge & Threshold Lights

- ***Visual Glide Slope Indicators***

Independent of airfield lighting, it is recommended that the airport install a 2-Box Precision Approach Path Indicator (PAPI-2) on both runway ends. This system aids pilots visually via red and white lights relaying the correct approach glide slope path. The installation of a PAPI-2 would provide additional safety and consistency in aircraft landing operations.

- ***Instrument Approach Procedures***

To increase availability of the runway during poor visibility weather conditions (i.e., low clouds, or hazy), it is recommended that non-precision IAPs are established on one or both runway ends. New procedure are now developed using GPS-based technology, and could enable landing when visibility is between 1 and 3 miles. The establishment of a GPS-based IAP does not require installation of ground-based equipment nor require the addition of airfield lighting. The master plan study has developed the data needed by FAA to design IAPs for the airport; which are recommended in the short term.

While the facilities listed above are recommended airfield improvements, they are not dependent on each other and thus can be pursued individually based on airport activity demand.

3.2.11 Airspace Obstructions

As Runway 1-19 is currently a visual approach runway, **Table 3-9** lists the existing airspace approach surfaces.

Table 3-9 – Existing Runway 1-19 Approach Surfaces

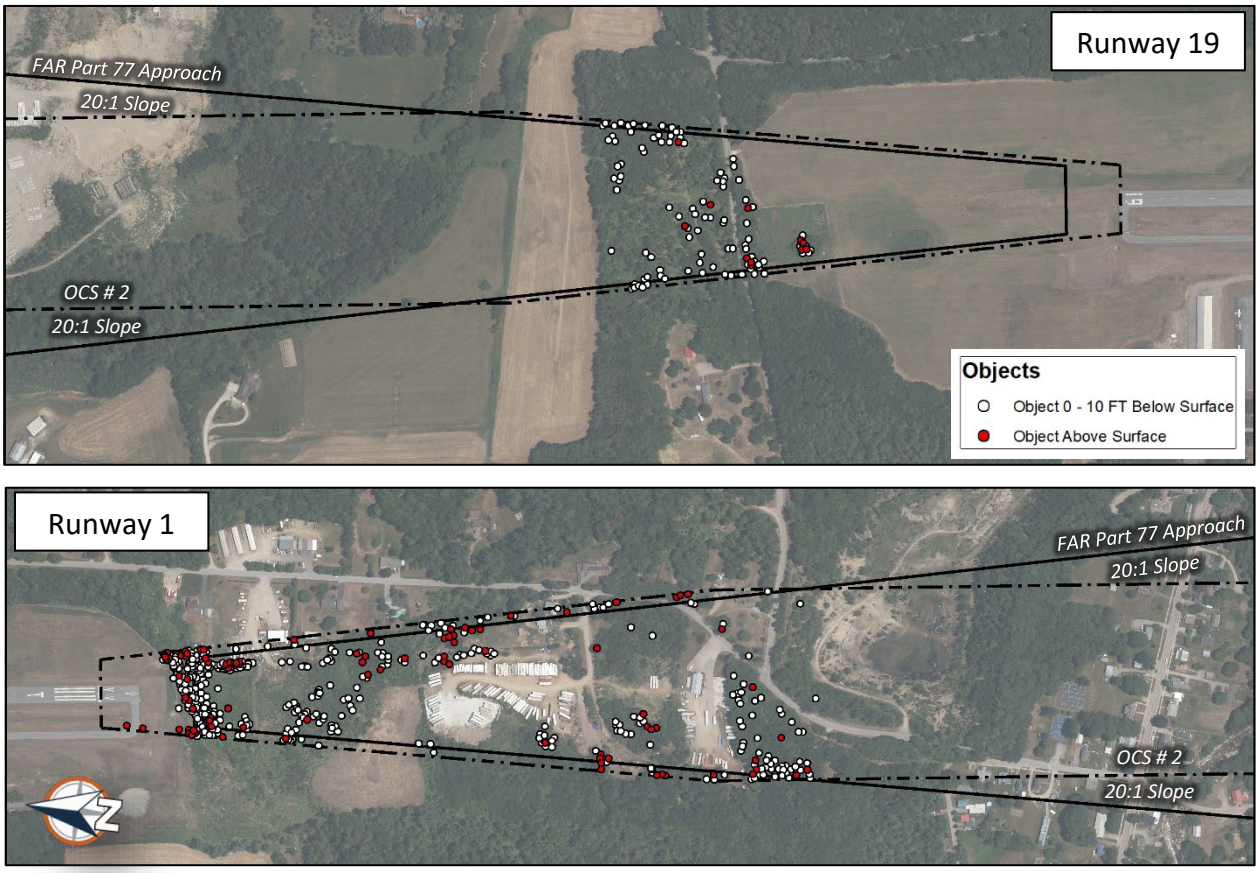
Runway 1-19	Type	Slope
FAR Part 77	Visual (A)*	20:1
Obstacle Clearance Surface**	#2	20:1

*Utility runway

**Table 3-2 of FAA Engineering Brief No. 99A

Figure 3-4 depicts the objects penetrating each existing approach surface along with the objects 10 feet below. It is important note that although several objects (mostly trees) penetrate each runway's 20:1 FAR Part 77 approach surface, each 20:1 Obstacle Clearance Surface (OCS) remains clear of all objects. It is recommended that objects penetrating the FAR Part 77 approach surfaces are cleared. Avigation easements over each of the areas beyond airport property are recommended.

Figure 3-4 – Runway 1-19 Existing Approach Surfaces



Source: NV5 & CHA, 2022
Note: No penetrations to the existing OCS # 2

As mentioned, non-precision IAPs are recommended for one or both ends of Runway 1-19. Upon establishing IAPs, the FAR Part 77 approach surface would widen but continue to slope upwards at a 20:1 slope. However, different OCSs would apply, including the potential introduction of a 30:1 sloped surface if the IAP provides vertical approach guidance. **Table 3-10** lists the potential future approach surfaces upon establishing IAPs. It is important to note that the future approach surfaces would only apply to the runway end with the IAP. For planning purposes, OCS #6 (30:1 slope) is listed to demonstrate the most restrictive scenario. If only lateral approach guidance is provided, only OCS #4 would apply.

Table 3-10 – Future Runway 1-19 Approach Surfaces

Runway 1-19	Type	Slope
FAR Part 77	Non-Precision (A)*	20:1
Obstacle Clearance	#4	20:1
Surface***	#6**	30:1

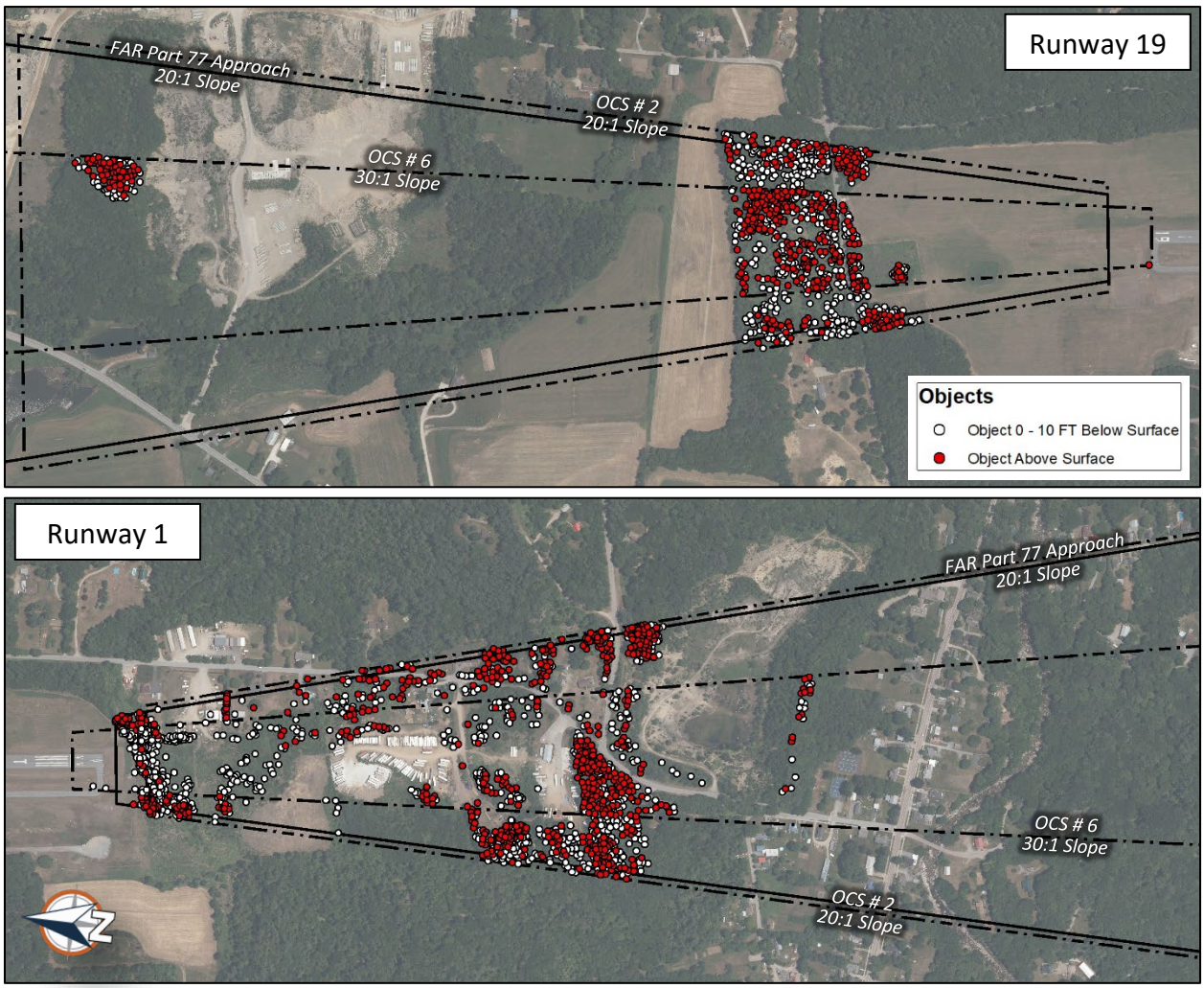
*Utility runway

**Only applicable if IAP provides vertical approach guidance

***Table 3-2 of FAA Engineering Brief No. 99A

Figure 3-5 depicts the objects penetrating each approach surface along with the objects 10 feet below. Due to the wider and more restrictive (i.e., lower) approach slopes, several objects (mostly trees) penetrate each surface. As with the existing surfaces, avigation easements are recommended for each area beyond the airport property. Additional depiction of the obstruction data pertaining to the existing and future surfaces is provided within the Airport Layout Plan.

Figure 3-5 – Runway 1-19 Future Approach Surfaces



Source: NV5 & CHA, 2022

3.3 Landside Facility Requirements

The landside facility requirements examine existing airport facilities and structures that accommodate the movement and storage of aircraft, and provide facilities to support pilots, passengers, and airport employees. The landside facility requirements analysis includes an examination and evaluation of:

- Aircraft Storage Space
- Fuel Storage Requirements
- Vehicle Parking Requirements
- Airport Security and Fencing

The following sections provides a description of each item and an evaluation of existing and future requirements according to current FAA and industry standards.

3.3.1 Aircraft Storage & Tie-Down Space

Due to various weather conditions, hangars are highly desirable in the State of Vermont as snowstorms, frost, and intense cold can cause icing on parked aircraft, which can be extremely disrupting to aircraft operations. Additionally, during warmer months, heat and sun exposure can damage avionics and fade paint, and thunderstorms and hail can cause considerable damage. For GA airports, while virtually all aircraft owners would prefer hangar storage over tie-downs, hangar requirements are generally a function of the number and type of based aircraft, hangar rental/construction costs, and area climate.

As discussed within **Chapter 2**, 6B0 is not forecasted to experience a significant growth in based aircraft. However, as shown on **Table 3-11,** the based aircraft fleet mix is anticipated to slightly change.

Table 3-11 – 6B0 Current and Forecasted Based Aircraft

Aircraft Type	2021	2026	2031	2036	2041
Single-Engine	28	29	31	31	33
Multi-Engine	0	1	1	1	2
Turboprop	0	0	0	1	1
Jet*	1	1	1	2	2
Rotor	1	1	1	1	1
Total	**30**	**32**	**34**	**36**	**39**

Source: CHA, 2022. *Includes an existing historic based jet aircraft

Based upon an on-airport site visits, it is estimated that in 2021, nine single-engine based aircraft and one based jet utilize tie-down space within the North Apron. It is assumed that the remaining 20 based aircraft utilize hangar storage. For planning purposes, it is also assumed that all future based aircraft will utilize hangar storage. Additionally, 13 tie-down spaces (equally approximately 58,500 square feet) within the southern portion of the North Apron are reserved for visiting aircraft or transient aircraft awaiting maintenance.

Therefore, using approximate aircraft storage area requirements by aircraft type (i.e., single-engine, multi-engine, etc.), general square footage requirements for the existing based aircraft (both hangar and tie-down storage) is listed within the tables below. **Table 3-12** and **Table 3-13**.

Table 3-12 – Estimated Aircraft Hangar Storage Area Requirements

Aircraft Type	Estimated Hangar Space Requirement (SF)	2021 Area (SF)	2026 Area (SF)	2031 Area (SF)	2036 Area (SF)	2041 Area (SF)
Single-Engine	1,600	32,000	33,600	36,800	36,800	40,000
Multi-Engine	2,000	0	2,000	2,000	2,000	4,000
Turboprop	3,000	0	0	0	3,000	3,000
Jet	4,400	0	0	0	4,400	4,400
Rotor	1,600	0	0	0	0	0
Total		**32,000**	**35,600**	**38,800**	**46,200**	**51,400**

Source: CHA, 2022.
Note: Assumes 20 existing aircraft utilize hangar storage with an additional nine aircraft requiring hangar storage by the end of the planning period.

Table 3-13 – Estimated Aircraft Tie-Down Area Requirements

Aircraft Type	Estimated Hangar Space Requirement (SF)	2021 Area (SF)	2026 Area (SF)	2031 Area (SF)	2036 Area (SF)	2041 Area (SF)
Single-Engine	2,700	37,800	37,800	37,800	37,800	37,800
Jet	4,500	4,500	4,500	4,500	4,500	4,500
Transient Aircraft	4,500	58,500	58,500	58,500	58,500	58,500
Total		**100,800**	**100,800**	**100,800**	**100,800**	**100,800**

Source: CHA, 2022.

As discussed within **Chapter 1**, there is approximately 33,200 square feet of existing hangar storage space at 6B0. Currently the Airport is at hangar capacity. With the additional aircraft anticipated throughout the forecast period, additional hangar demand is likely.

Additionally, the North Apron provides approximately 120,915 square feet of tie-down space. With the existing based aircraft along with space reserved for transient aircraft, the North Apron is anticipated to continue to provide adequate apron and tie-down space.

3.3.2 Fuel Storage Requirements

A 10,000 gallon 100 Low-Lead underground fuel storage tank is located on the western portion of the Fuel Apron. The fuel pump allows for 24-hour self-serve refueling. Jet-A fuel is not currently available at the Airport. The FBO may consider providing capacity for Jet-A fuel if they secure fueling contracts with based or itinerant aircraft users that require additional storage. However, currently capacity is adequate.

3.3.3 Vehicle Parking Requirements

Vehicle parking facilities are intended to provide space for design hour passengers/pilots, visitors, employees, etc. Consideration should also be made for off-peak passenger/pilots leaving a vehicle at the airport overnight or for an extend period of time. The existing airport parking lot accommodates approximately 15 vehicles and is often near capacity. No other formal parking facility is provided at the Airport. However, tenants generally park adjacent to, or within their hangars, throughout the terminal area. The following potential additional facilities should be considered, and integrated into the recommended plan:

- Terminal/FBO facilities: Provide 5-10 additional parking spaces at or adjacent to the existing parking lot. Alternatively, if a new general aviation terminal building can be provided in the short-term planning period, provide at least 10 parking space for the new facility, which will alleviate some of the parking demand at the existing lot.
- T-Hangar and North Apron: Provide a small, designated vehicle parking area between the T-Hangar and North Apron for approximately five vehicles. An asphalt or gravel surface may be provided. The goal is to discourage airport tenants and users from parking on the apron or taxilanes.
- New hangars: For medium or large new hangar developments, designated parking should be provided to reduce parking on aprons and taxilanes. Either individual or common lots can be provided.

3.3.4 Airport Security and Fencing

6B0 provides airport fencing throughout the airfield accessible by electronic keypads in key locations and locks in others. It is not expected that 6B0 will require additional security fencing throughout the planning period beyond regular maintenance.

3.4 Facility Requirements Summary

Table 3-14 provides a summary of the recommendations discussed within this chapter. These recommendations are carried forward to the Airfield Alternatives where, if applicable, solutions are presented.

Table 3-14 – Facility Recommendations

Facility	Recommendation
Navigational Aids	✈ Add Non-Precision Instrument Approaches to Runways 1 and 19 ✈ Install PAPI-2 to Runways 1 and 19
Hangar and Apron Parking	✈ Construct additional hangar space ✈ Construct additional apron space for transient aircraft
Terminal/FBO Building	✈ Comprehensive renovation of the existing passenger/pilot lounge ✈ Alternatively, construct standalone building offering amenities in line with an FBO. ✈ Construct additional vehicle parking lot
Airspace	✈ Acquire avigation easements for Runway RPZs & off-airport aircraft surfaces

Source: CHA, 2022

4 Development Alternatives

The primary focus of this element of the Master Plan Update for the Middlebury State Airport (6B0) is the identification and evaluation of development alternatives considered as key components of the overall Airport's improvement strategy. This chapter provides development strategies to accommodate future aviation demand identified in ***Chapter 2, Forecasts of Aviation Demand***, as well as the deficiencies and constraints identified in ***Chapter 3, Facility Requirements.*** The overall goal of this analysis, as stated in Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, is to:

- Identify alternative concepts to address previously identified facility requirements.
- Evaluate these alternatives, individually and collectively, so there is a clear understanding of strengths, weaknesses, and implications of each.
- Select a reasonable alternative.

Development alternatives, or concepts, may focus on demand/capacity relationships, operational safety, and/or improving the Airport's revenue stream. Additionally, it may be necessary to include development concepts for future years beyond the term of the planning period, in order to protect areas reserved for future runway or taxiway development, facility expansion, etc.

The development concepts presented in this chapter are organized based on specific areas at the Airport. From this effort, and using the previously determined facility requirements, the most reasonable and feasible alternative was identified for each area. The alternatives identified represent a level of detail consistent with FAA guidance for a master planning effort. The alternatives have been designed to address the airport facility deficits identified in ***Chapter 3*** and are presented as follows:

- Runway, Taxiways & Design Standards
- Navigation and Visual Aids
- Hangar & Terminal Development

The goal of this chapter is to identify a range of alternatives for airfield and landside development that are consistent with the FAA guidelines and standards and goals of 6B0. The alternatives are based on a review of the Airport's needs as well as current environmental, physical, and financial constraints. Note that prior to the development of any airport project, an environmental analysis and permitting may be required. The following sections summarize previous findings related to facility requirements and the objectives of the alternative development process.

4.1 Influencing Development Factors

There are several factors that influence the evaluation of the alternatives and determine the final recommended development plan. These factors include:

- **FAA Design Standards (i.e., safety)** – Airfield recommendations and designs consistent with the guidance provided by FAA AC 150/5300-13B, *Airport Design*. At 6B0, key considerations include navigational aids, taxiways, and required clearances from aprons and hangars.
- **Environmental Impacts** – Evaluation of the potential impacts on the environment, as Airport improvements may impact wetlands, water quality, and flooding.
- **Consistency with Master Plan Objectives**:
  - **Airfield Requirements** – Accommodating projected operations and design aircraft
  - **Apron Capacity** – Satisfying the projected needs and constraints of the apron area
  - **Hangar Layout** – Identifying areas for future hangar development
  - **Terminal Building** – Provides support space for pilots and passengers
- **Construction and Maintenance Costs** – The overall project feasibility, associated costs, constructability.

Table 4-1 summarizes the facility requirements identified in the previous chapter.

Table 4-1 – Summary of Facility Requirements

Facility	Recommendation
Airfield	Install a PAPI system on Runways 1 and 19 Publish Instrument Approaches Procedures to Runways 1 and 19 Potential Tree Removal for Obstructions
Hangar and Apron Parking	Construct additional hangars Construct additional apron space for transient aircraft
Passenger Terminal Building	Construct standalone passenger terminal building offering amenities. Include Itinerant aircraft apron and vehicle parking

4.2 Development Alternatives

4.2.1 Airfield Alternatives

4.2.1.1 *Runway, Taxiways & Design Standards*

The current airfield facilities are capable of accommodating the forecasted activity levels and Critical Aircraft. As such, expansion and development of the runway and taxiway system is not recommended during the planning period. Thus, the runway will remain at its current length of 3,200 feet and width of 60 feet. Additionally, review of the key FAA airfield design standard also found the existing runway/taxiway system to satisfy requirements, without upgrades. Therefore,

no development alternatives were identified or needed for the airfield at Middlebury State Airport.

4.2.1.2 *Navigation and Visual Aids*

Facility improvements to increase the accuracy of airplane approaches and landings were identified in Chapter 3; however, these improvements do not require the development of alternatives based on their limited nature.

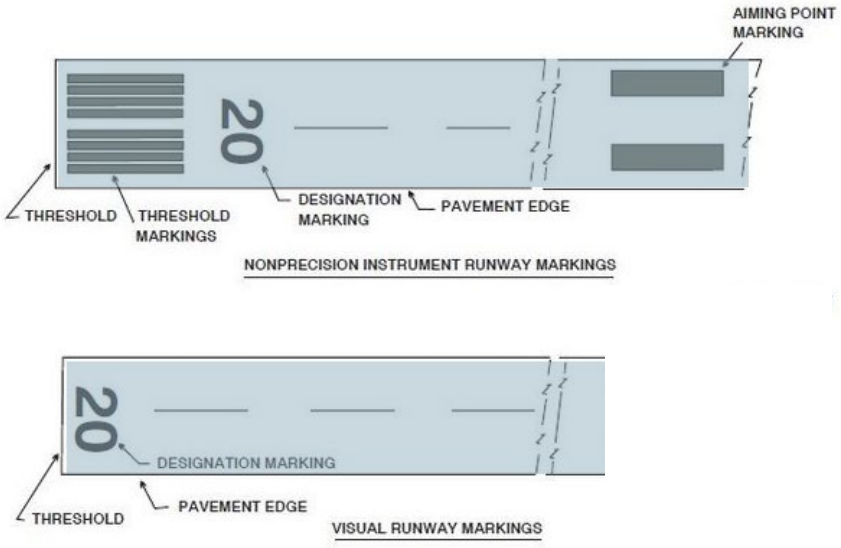
A 2-box Precision Approach Path Indicator (PAPI-2) system is a simple visual aid that indicates to the pilot if they are on the ideal glide path to the runway end. The PAPI units are installed on the sides of the runway near the landing threshold. The stationary units are aimed toward approaching aircraft and the pilot will see a red or white light that indicate if they are on the ideal glide path (or too high to low). The photo below is the existing PAPI system installed on Runway 19 at Morrisville-Stowe State Airport, with a closeup of the small 2 by 3 foot unit. These PAPI units are recommended on both ends of the runway at 6B0.

Sample PAPI Unit (Source Flight Light, Inc.)

To enhance operations during cloudy and low visibility conditions, Instrument Approach Procedures (IAPs) are also recommended to both runway ends. Currently, operations at the airport are permitted when weather conditions satisfy the required minimums to operate under Visual Flight Rules (VFR). One or more IAPs could allow for landings when visibility is lower (i.e., below 3-miles) and provide greater flexibility for airport users. However, due to the high terrain to the east of the airport, activity during very low visibility (i.e., ≤1-mile), may not be feasible.

For Middlebury Airport, such improvements would include the addition of non-precision IAPs, which would consist of a navigation procedure using the existing GPS system to guide aircraft toward the runway ends. This guidance can be both lateral and vertical and aligns inbound aircraft with the runway at a determined altitude.

In Vermont, there are nine State operated airports with paved runways; Middlebury is the only one of these without an IAP. Establishing non-precision IAPs at 6B0 would not include the addition of any lighting systems or other facilities. The only visible changes at the airport would be additional runway markings to provide greater visual contrast of the runway to the pilots. Below is an FAA illustration of visual vs non-precision instrument runway markings.



4.2.1.3 *Approach Obstructions*

With the recommendation of non-precision IAPs, the runway approach surface dimensions may change, based on the design and type of procedures established. This could result in the need for additional tree obstruction removal. **Table 4-2** lists the potential future approach surface standards upon establishing IAPs to either end of the runway.

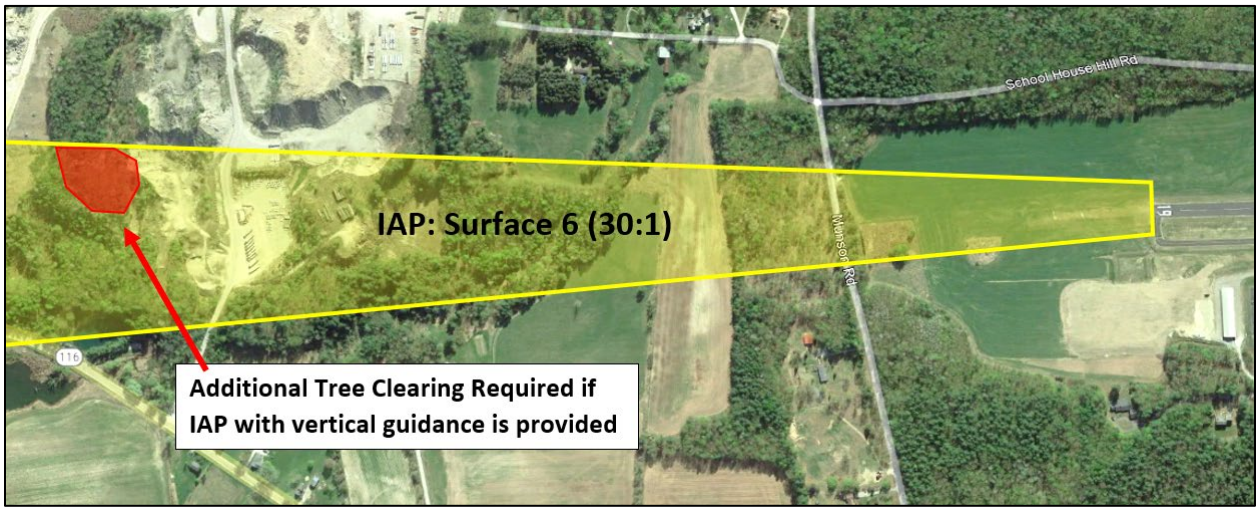
Currently, the visual approaches at 6B0 require clearing, at minimum, Approach Surface 2. If and when IAPs are published, the surface type would change to Surface 4, and potentially Surface 6. As only the FAA can develop and establish procedures, coordination will be conducted with FAA to plan for and incorporate any additional clearing into the recommended plan.

Table 4-2 – Future Runway 1-19 Approach Surfaces

Runway 1-19	Approach*	Start Location	Inner Width	Slope
Existing Conditions - Visual	Surface 2	Threshold	250’	20:1
IAP without vertical guidance	Surface 4	200’ Beyond Threshold	400’	20:1
IAP with vertical guidance*	Surface 6	Threshold	260’	30:1

*Per FAA Advisory Circular 150/5300-13B, and visibility ≥1 mile.

Due to the more restrictive (i.e., lower) approach slopes associated with adding IAPs, particularly for vertically-guided procedures, additional trees may penetrate each surface. The image below depicts a potential additional required area of tree removal with Surface 6. Avigation easements would be recommended for such additional areas beyond the airport property. Additional depiction of the obstruction data pertaining to the existing and future surfaces is provided within the Airport Layout Plan (ALP).



4.2.2 Hangar and Terminal Development

As discussed within ***Chapter 3,*** 6B0 is forecasted to experience a growth in based and itinerant aircraft, resulting in an associated increase in hangar demand. The following concepts depict potential areas for hangar development and expansion. It is noted that all development will be market-driven, based on the demands and funded by the aircraft owner or developer.

When determining potential hangar layouts, the Vermont Agency of Transportation (VTrans) planning standards were used, including a 20-foot hangar separation and typical dimensions for small, medium, and large corporate hangars:

- Small Hangar: 60’ x 60’
- Medium Hangar: 60’ x 80’
- Large Hangar: 120’ x 120’

4.2.2.1 *North Hangar Alternatives*

The North Hangar Development site makes use of undeveloped space immediately north of the existing T-Hangar and tiedown ramp. This site is generally graded adequately and allows approximately 4 to 5 acres of development space. A potential development layout (depicted in **Figure 4-1**) would allow a mix of Small and Medium box hangars in three rows, allowing for eight total. Additionally, there is sufficient space for a Large hangar on the northern end of the site. This would require an approximately 70,000 square foot (SF) expansion of apron pavement to allow for airside access, as well as additional pavement for automobile access and parking. In total, this alternative, if fully developed would increase hangar storage space by 46,800 SF, as

depicted in **Table 4-2**. This area would also allow space for a second detention pond and a potential leech field site for wastewater.

Table 4-3 – Hangar Expansion

Hangar Type	Count
Small Hangar (60' x 60' – 3,600 SF)	5 (18,000 SF)
Medium Hangar (60' x 80' – 4,800 SF)	3 (14,400 SF)
Large Hangar (120' x 120' – 14,400 SF)	1 (14,400 SF)
Total	**9 (46,800 SF)**

Source: CHA, 2021.

In parallel to this master plan effort, VTrans is advancing the required VTANR operational stormwater permit, an Act 250 Land Use Permit amendment, and other advanced development approvals that could improving feasible and foster private development of this alternative. For Middlebury, the North Hangar Alternative is included in this 'master permitting' program.

4.2.2.2 *South Hangar Development*

In addition to the large area available on the northern side of the Airport, there is a smaller two-acre area available on the southern side. This site would ideally be utilized for development of single-bay T-Hangars. There is sufficient space for at least 16 hangar bays, though, based on demand, only eight are recommended during the planning period. Alternatively, the site could be used for additional box hangar and transient apron development. These scenarios are depicted in **Figure 4-2**. It is important to consider that there is a significant grade change (drop-off) from the Airport's access road to the parallel taxiway. Development on sloping terrain is more costly, due to the need for cut or fill, additional grading/stabilizing, and storm drainage facilities. Large hangars are not considered feasible in the South Hangar Development alternative.

4.2.2.3 *Terminal and Itinerant Apron Development*

As identified in Chapter 3, the airport does not have a public terminal building, an identified facility requirement, which would include an itinerant aircraft apron and vehicle parking. Currently, the office portion of Building 8 is used as a makeshift terminal area providing minima amenities and a restroom. The development of a public terminal should provide paved ground access, be centrally located on the airport (where feasible), and in proximity to aircraft fueling. The building itself could range from 1,500 to 2,000 square feet and provide amenities typical of FBO terminals at small general aviation airports; such as a pilot lounge, restrooms, storage, office space, and meeting space.

Several locations and concepts are possible for a small terminal building; this section describes a few logical options:

- North Terminal Building Concept **(Figure 4-1)**: A small FBO Terminal with vehicle parking could be constructed adjacent to the existing tiedown apron, and just east of the fueling

apron. This layout avoids the need to build an apron for visiting aircraft, as there is adequate space on the existing apron. Vehicle parking and an improved driveway would be provided and connect to Airport Road. Also shown is a potential new taxilane, connecting the fueling and tiedown aprons.

- South Terminal Building Concept **(Figure 4-2)**: This layout would include the same amenities as above, but would require the construction of all facilities, would be located at the very end of Airport Road, and require more grading and sitework to provide the building a 20,000 SF itinerant apron.

- Central Terminal Building Concepts (A, B, C & D) **(Figure 4-3)**: These concepts are centralized on the airport with access via Airport Road. Located between two existing hangars the site is somewhat constrained; however, with only an additional ½ acre of aircraft apron, the terminal would connect with the existing itinerant apron and several existing hangars. Several variations on this concept are also possible. **Figure 4-4** depicts two additional options that require the relocation of an existing hangar, but enable a linear apron configuration, with 30,000 to 60,000 SF of new itinerant apron, and greater building separation from the Runway (i.e., if the hangar is relocated).

4.3 Recommended Plan

The Recommended Plan (**Figure 4-5**) depicts the alternatives recommended to be pursued as development projects in the future and lays the foundation for the Airport Layout Drawing (ALP). The following briefly summarizes recommended development and preferred concepts.

Navigation and Visual Aids

PAPIs are recommended on both runway ends to improve the safety and efficiency of landings. It is also recommended that VTrans pursue publication of GPS/RNAV instrument approach procedures (IAPs) on both runway ends. Note that FAA would determine the feasibility of one or both procedures.

Runway Lighting

In the mid or long-term, runway lighting was considered to provide better availability of the airport, particularly during the evenings between November and April where daylight is inadequate for operations. However, based on comments received from the local community, airfield lighting is not recommended in the master plan.

North Hangar Development

It is recommended that a mix of hangar be constructed on the site as depicted in **Figure 4-1**.

Central Terminal Building

This concept is recommended for the GA terminal building as the most prominent location at the airport, adjacent to the FBO facility, and close to fueling apron.

South Hangar Development

It is recommended that the south area be maintained for potential development of T-Hangar facilities, as depicted in **Figure 4-2**; allowing for eight bays in the near-term, with potential for future expansion.

VERMONT
AGENCY OF TRANSPORTATION

MIDDLEBURRY STATE AIRPORT MASTER PLAN UPDATE

N

GRAPHIC SCALE (FEET)

0 50 100 200

New Detention Pond

Medium Hangars (60' x 80')

±70,440 SF Apron

Large Hangar (120' x 120')

Auto Access/Parking

Potential Leech Field

Small Hangars (60' x 60')

New FBO Terminal

Existing Tiedown Apron

Remove Existing Tiedowns

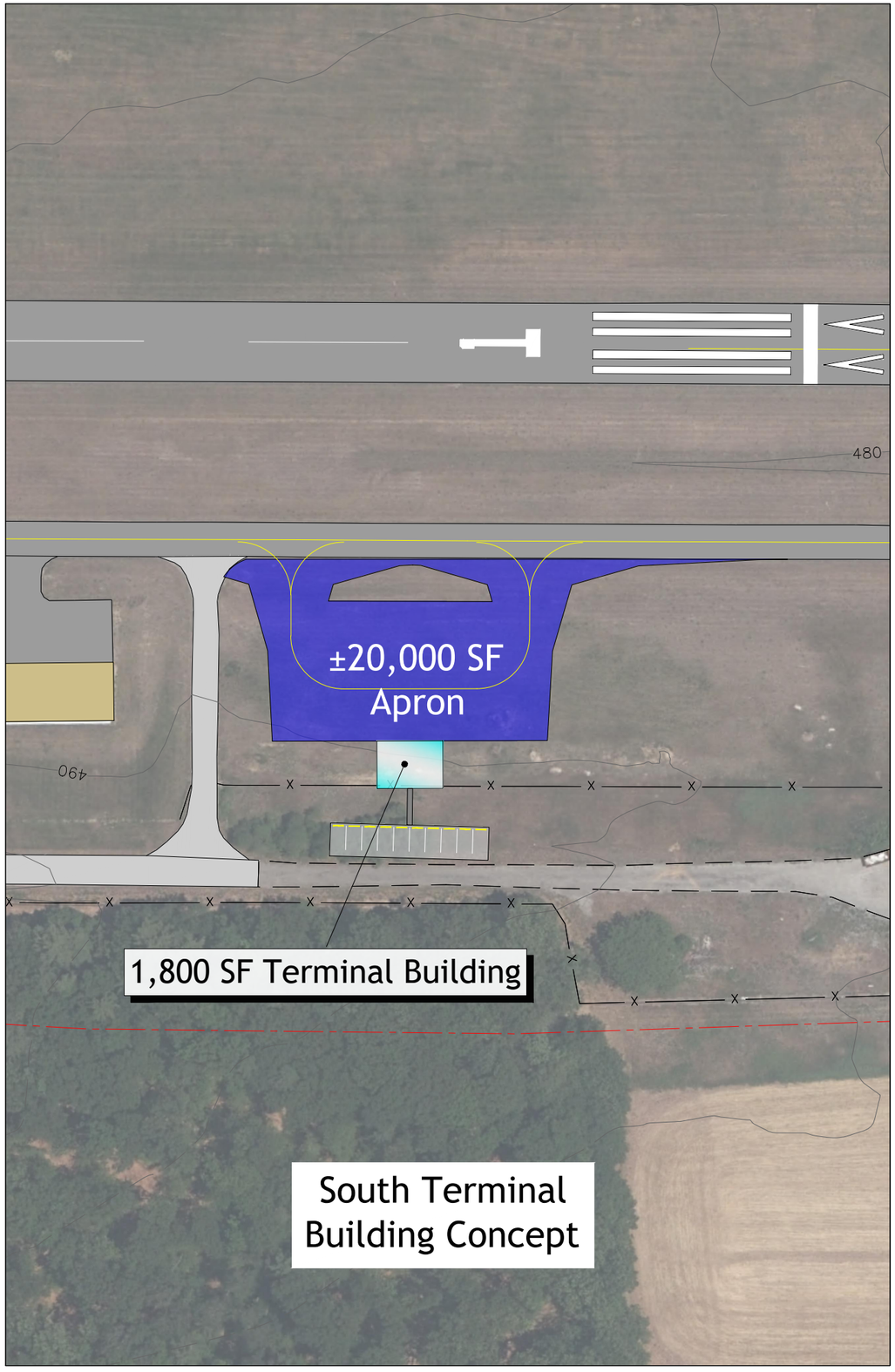
480

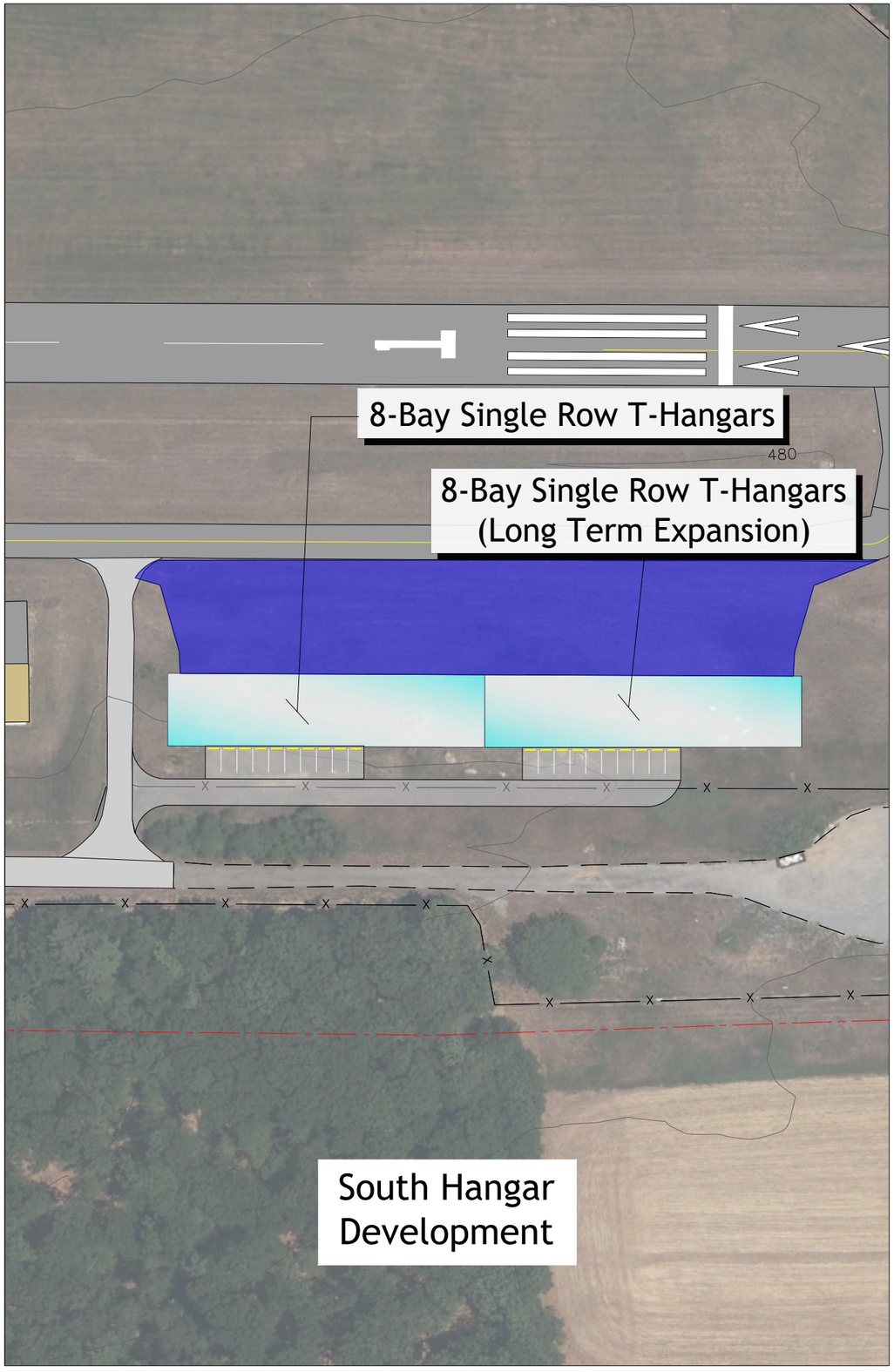
490

LEGEND

- Airport Property Boundary
- ### Ground Contour (Feet MSL)
- RPZ Runway Protection Zone
- New Buildings
- New Airside Pavement
- New Landside Pavement

Figure 4-1
North Development Area





VERMONT
AGENCY OF TRANSPORTATION

MIDDLEBURRY STATE AIRPORT MASTER PLAN UPDATE

N

GRAPHIC SCALE (FEET)

0 50 100 200

LEGEND

- Airport Property Boundary
- ### Ground Contour (Feet MSL)
- RPZ Runway Protection Zone
- New Buildings
- New Airside Pavement
- New Landside Pavement

Figure 4-2
South Development Area

VERMONT
AGENCY OF TRANSPORTATION

MIDDLEBURRY STATE AIRPORT MASTER PLAN UPDATE

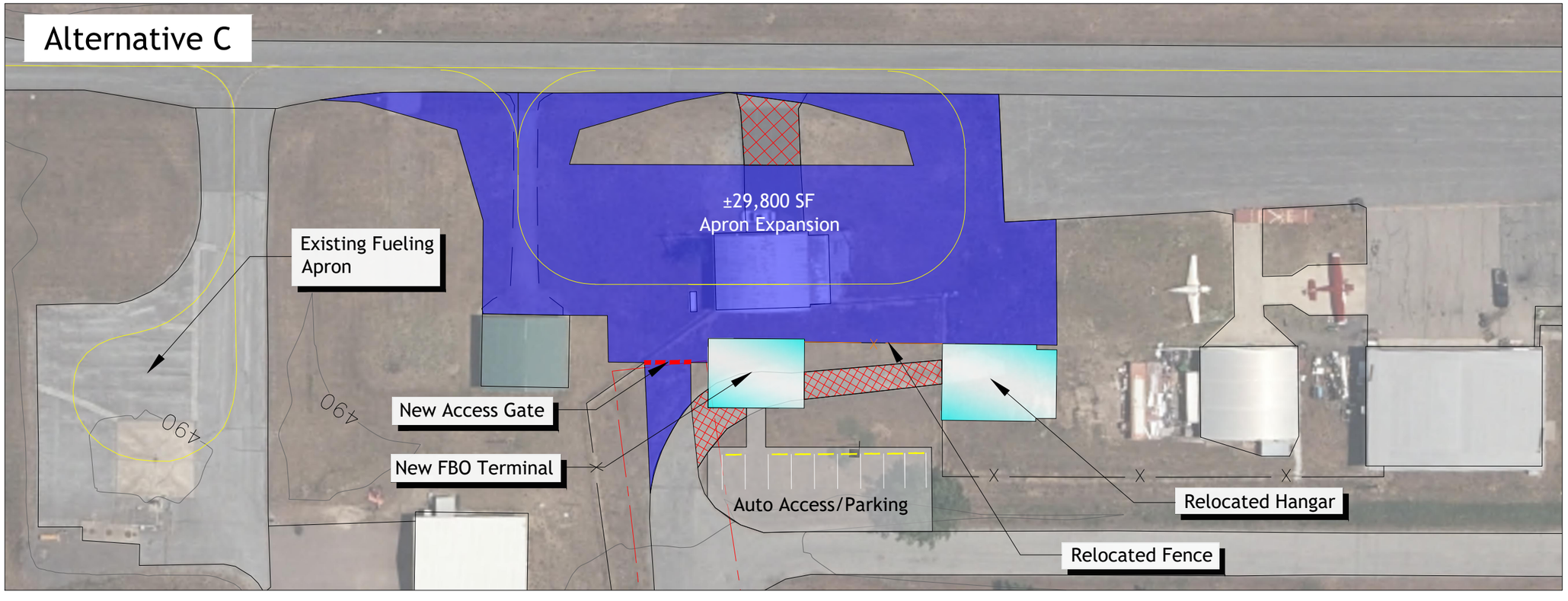
GRAPHIC SCALE (FEET)

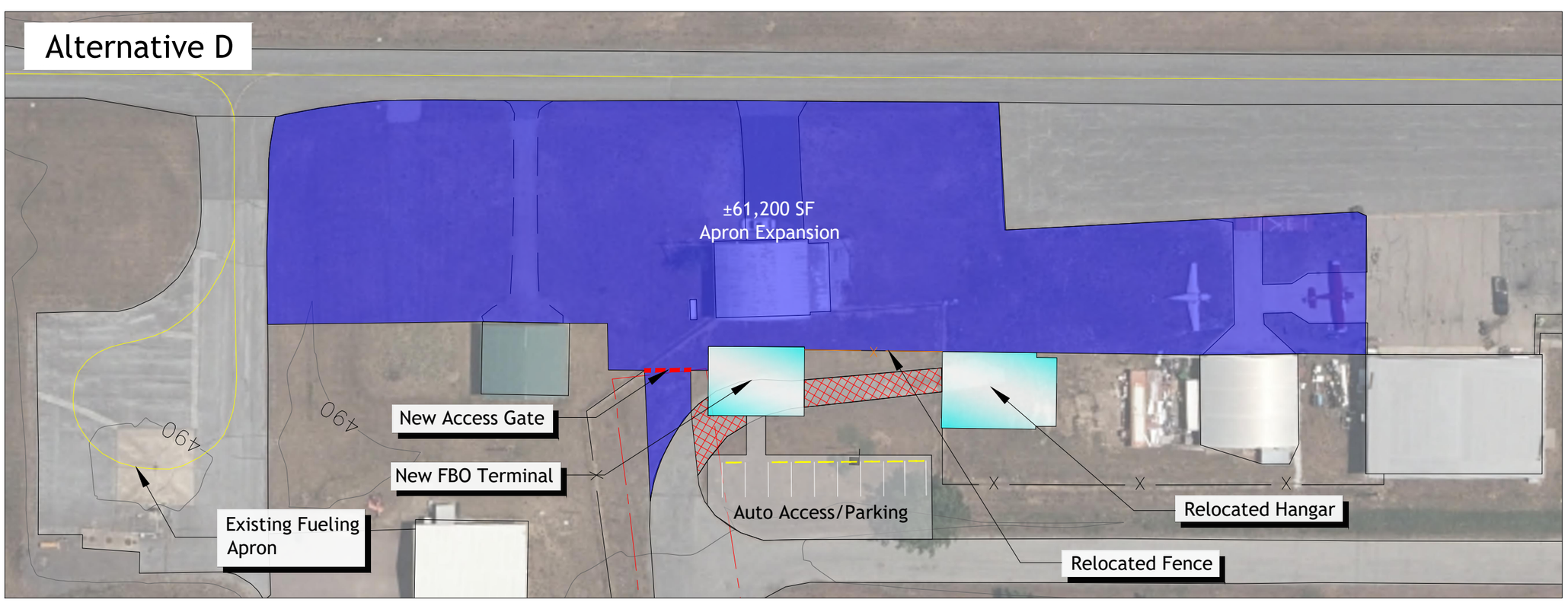
0 30 60 120

LEGEND

- Airport Property Boundary
- ### Ground Contour (Feet MSL)
- New Fence
- New Buildings
- New Airside Pavement
- New Landside Pavement

Figure 4-3
Central Terminal Building Concepts





VERMONT
AGENCY OF TRANSPORTATION

MIDDLEBURRY
STATE AIRPORT
MASTER PLAN UPDATE

N

GRAPHIC SCALE (FEET)

0 30 60 120

LEGEND

- Airport Property Boundary
- ### Ground Contour (Feet MSL)
- RPZ Runway Protection Zone
- New Fence
- New Buildings
- New Airside Pavement
- New Landside Pavement
- Pavement Removal

Figure 4-4
Central Terminal Concept Options
(Alternative Layouts)

VERMONT
AGENCY OF TRANSPORTATION

MIDDLEBURRY STATE AIRPORT MASTER PLAN UPDATE

Implement RNAV/GPS Instrument Approach

PAPI-2

Relocated Pavillion

Airport Road

PAPI-2

Terminal Building

Hangar Development

Hangar Development

Airport Road

Hangar Development

GRAPHIC SCALE (FEET)

0 150 300 600

LEGEND

- Airport Property Boundary
- ### Ground Contour (Feet MSL)
- New Fence
- New Buildings
- New Airside Pavement
- New Landside Pavement

Figure 4-5
Recommended Plan

5 Environmental Overview

Identifying the potential environmental impacts that could result from the implementation of an airport development program has become an integral part of the planning process. This environmental overview discussion was prepared to identify the potential environmental resources associated with the proposed development at the Middlebury State Airport (6B0). The overview will discuss potential impacts to the various resource categories identified in Federal Aviation Administration (FAA) Order 5050.4B: *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* and FAA Order 1050.1F: *Environmental Impacts: Policies and Procedures* as well as providing guidance/recommendations on the different types of NEPA processing requirements.

In 1969, U.S. Congress passed the National Environmental Policy Act (NEPA) with the purpose of protecting the natural and human environment and overall quality of life. NEPA requires all federal agencies to assess and disclose, to the public, significant environmental impacts relating to federally funded or federally approved actions. Due to the FAA's participation in airport planning and development projects, airport sponsors are obligated to incorporate the NEPA process into their development programs. The FAA provides guidance for such evaluation and integration through FAA Order 5050.4B: and FAA Order 1050.1F. As described in these orders, proposed airport development projects subject to NEPA guidelines are evaluated based on their potential to result in significant environmental impact. There are three levels of NEPA processing:

- **Categorical Exclusion (CatEx)** – for actions that have been found (under normal circumstances) to have no potential for significant environmental impact. Actions that are eligible for a CatEx are listed in Chapter 5 of FAA Order 1050.1F. CatEx documents can take anywhere from a few weeks to three months to prepare, depending on the level of agency coordination and what kind of documentation is required by the FAA to support the CatEx. For example, a runway reconstruction is an action that would qualify for a CatEx; however, a noise analysis could be required to demonstrate that there are no adverse impacts caused by flight pattern changes during construction. The FAA review time may take 30 to 60 days for a CatEx; however, it does not require a public notice of availability for the proposed action.
- **Environmental Assessment (EA)** – for actions that, based on past, similar projects, could have significant environmental impacts. The list of actions normally requiring an EA can be found in Chapter 6 of FAA Order 1050.1F. Upon review of the EA findings, the FAA issues project approval in the form of a Finding of No Significant Impact (FONSI) or decides to prepare an Environmental Impact Statement (EIS). An EA typically takes 12 months to obtain an FAA decision. Although public review and involvement (in the form of a meeting and/or workshop) are typical of the EA process, a public hearing is not required if not requested by the public or recommended by the FAA.

- **Environmental Impact Statement (EIS)** – for actions that have been found to normally have significant environmental impacts. An EIS is the most detailed level of environmental review requiring public scoping at the beginning of the process and multiple public meetings/hearings throughout the process. Executive Order (EO) 13807[6] requires federal agencies to process environmental reviews and authorization decisions for "major infrastructure projects" requiring an EIS. The EO sets a government-wide goal of reducing the average time to complete required environmental reviews and authorization decisions for major infrastructure projects to not more than two years from publication of a notice of intent to prepare an environmental impact statement (EIS) to issuance of a record of decision (ROD).

This section provides a preliminary review of the environmental conditions at the Airport and identifies potential environmental documentation necessary to implement the major development items identified in the development alternative section. This documentation does not replace the completion of an environmental analysis to conform to NEPA guidelines, but rather identifies the likely required studies. The resource categories that were reviewed are consistent with the Desk Reference accompanying FAA Order 1050.1F.

5.1 Air Quality

The Clean Air Act Amendments (CAAA) of 1990 requires the EPA to set National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants considered harmful to public health and the environment. The NAAQS identify two types of air quality standards: primary and secondary. Primary standards provide public health protection, including protecting the health of "sensitive" populations, such as asthmatics, children, and the elderly. Secondary standards were established to provide public welfare protection, including protection against impaired visibility and damage to animals, soils, crops, vegetation, and buildings. The six "criteria air pollutants" that have been established by the U.S. Environmental Protection Agency (EPA) to protect public health and welfare include:

- Ozone (O_3)
- Carbon monoxide (CO)
- Particulates (PM10 and PM2.5)
- Sulfur dioxide (SO_2)
- Nitrogen dioxide (NO_2)
- Lead (Pb)

The Vermont Agency of Natural Resources (ANR) has established rules to regulate air pollution, per Vermont Code Title 10 Conservation and Development, which in-turn, the Vermont ANR Department of Environmental Conservation, Air Quality and Climate Division administers. As of

[6] Executive Order (EO) 13807[6]: *Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure,* August 15, 2017

2021, Addison County in which the Airport is located, was in attainment with all six EPA criteria air pollutants.

No air quality modeling was conducted as part of this Study. If proposed developments require air quality modeling, it would be conducted during preparation of additional environmental documentation prior to construction. Since Addison County is in attainment for all criteria pollutants, future projects will not have to undertake construction emissions modeling.

5.2 Biotic Resources

Information regarding biotic communities in Addison County was obtained through a screening of the U.S. Fish & Wildlife Service's (USFWS) Information Planning and Conservation (IPaC) System and the Vermont ANR Natural Resources Atlas.

According to the Natural Resources Atlas, several habitat blocks lie adjacent to 6B0. A habitat block is defined as a contiguous area of natural cover with little or no permanent internal fragmentation from human development. Each habitat block is given a value between one (1) and ten (10) based on its biological and conservation values and potential for habitat fragmentation in relation to the following factors:

- Building density
- Average parcel size
- Population change
- Percent conserved
- Road (miles of road/square mile of habitat block)

The habitat block to the east of the Airport is of high statewide importance while the habitat blocks to the west are of moderate statewide importance. The habitat blocks to the west are partially located on Airport property. **Figure 5-1** depicts the location of surrounding habitat blocks and their value.

A large portion of the Airport consists of impervious surfaces such as asphalt, concrete, and buildings. Significant acreage within the Air Operations Area (AOA) is comprised of managed turf adjacent to runways, taxiways, and apron areas. These areas provide minimal ecological diversity and show extensive habitat fragmentation.

While no specific critical habitat designations are applicable for the Airport property, such habitats can support a range of wildlife, including reptiles, amphibians, mammals, songbirds, and wading birds. For both security purposes and to prevent large mammals, such as deer and coyote, from traversing the runways, the Airport maintains fencing around the airfield.

5.2.1 Threatened and Endangered Species

The Endangered Species Act of 1973 (ESA) provides for listing, conservation, and recovery of endangered and threatened species of plants and wildlife. Section 7(a)(2) of the ESA states that federal agencies shall ensure the actions it authorizes, funds, or carries out are not likely to jeopardize the continued existence of a listed species or result in destruction or adverse

modification of designated critical habitat. Section 9 of the ESA prohibits the take of listed species. Take is defined in the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect." The definition of harm also includes adverse habitat modifications. Federal actions that could result in a take must be coordinated under Section 7.

5.2.1.1 Federally Listed Species

The IPaC report prepared as part of this overview identified three species as potentially occurring at the Airport. The Indiana bat (*Myotis sodalis*) is listed as endangered, the northern long-eared bat (*Myotis septentrionalis*) is listed as threatened, and the monarch butterfly (*Danaus plexippus)* is listed as a candidate species. The IPaC report indicated that no critical habitat for these species is found at the Airport (see Appendix ? for the full report).

The Indiana bat typically hibernates in caves and mines, with summer roosting and foraging habitat occurring in wooded stream corridors and in bottomland and upland forests and woods. The northern long-eared bat also hibernates in caves and mines, but roots in upland forests and woods. Any project with the potential to clear trees would have to coordinate with the USFWS to satisfy Section 7 requirements. In respect to the northern long-eared bat, the Final 4(d) rule, issued on January 14, 2016, prohibits an incidental take that may occur from tree removal activities within 150 feet of known occupied maternity roost tree(s) during the "pup season" (generally June 1 to July 31). The 4(d) rule also prohibits an incidental take that may occur from tree removal activities within ¼ mile of a hibernation site, year-round. In respect to the Indiana bat, the Final 4(d) rule, issued September 22, 1977, prohibits the destruction or adverse modification of habit.

The monarch butterfly is a candidate species, not yet listed or proposed for listing as threatened or endangered. There are generally no Section 7 requirements for candidate species.

The IPaC report also identified the following 6 migratory birds as having distributional ranges that overlap the Airport:

- Bald Eagle (*Haliaeetus leucocephalus)*
- Black-billed Cuckoo (*Coccyzus erythropthalmus*)
- Bobolink (*Dolichonyx oryzivorus*)
- Canada Warbler (*cardellina canadensis*)
- Evening Grosbeak (*Coccothraustes vespertinus*)
- Wood Thrush (*Hylocichla mustelina*)

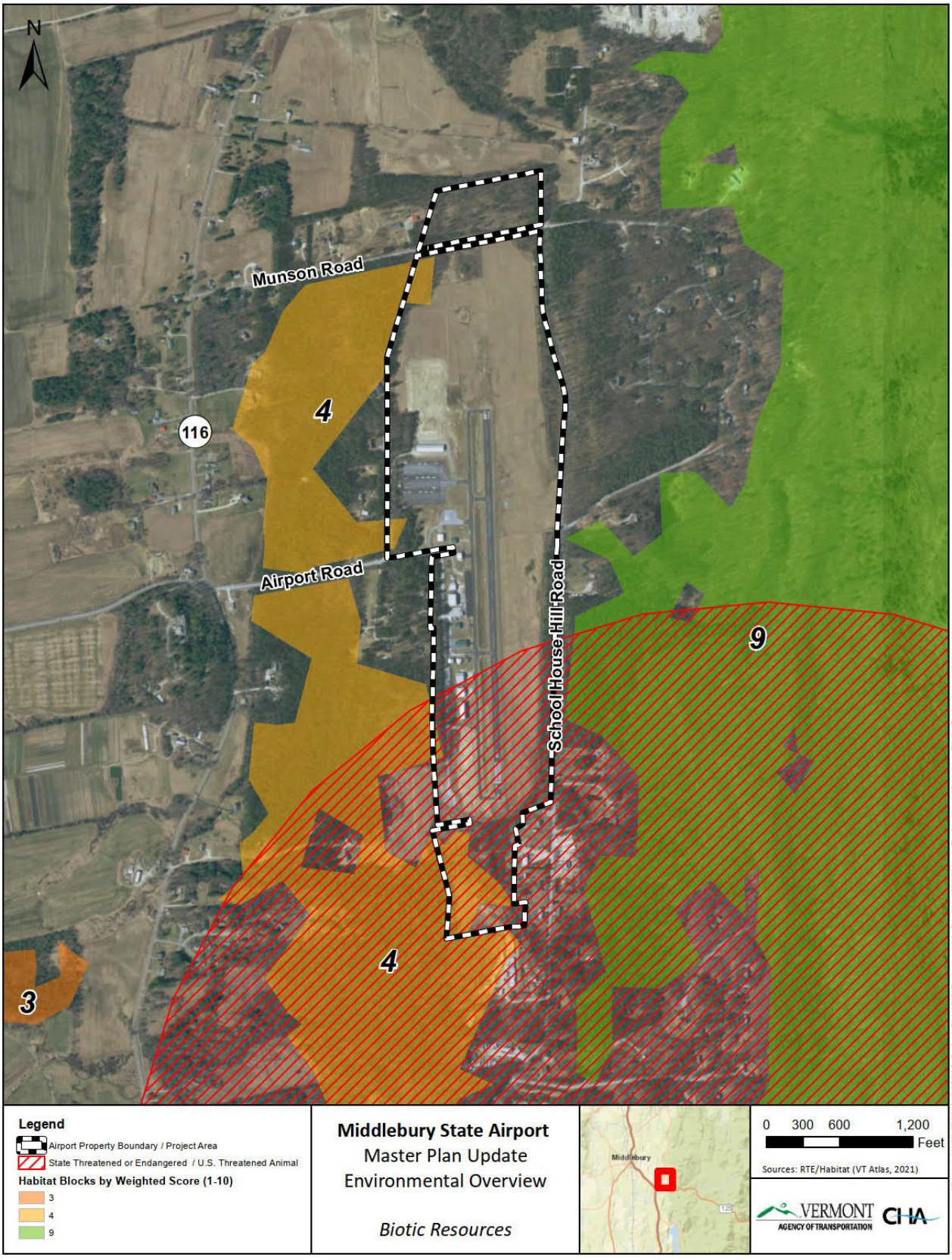
Closer to implementation of specific airfield recommendations, more detailed environmental analysis would be conducted including consultation with the USFWS, confirmation of existing species within the project area, an evaluation of potential impacts to those species and habitat areas, and, if appropriate, mitigation measures to address any potential adverse impacts.

5.2.1.2 State-Listed Species

There are 36 state-endangered and 16 state-threatened animals in Vermont. The Vermont ANR Natural Resources Atlas indicated the presence of a state-protected animal near the Runway 1 end. **Figure 5-1** displays the potential location of this species. Formal consultation with the Vermont ANR would be necessary to determine the exact species, but the Natural Resources Atlas indicates that it is also federally protected as a threatened species.

Additionally, the Natural Resources Atlas identified the entire Airport as part of the Indiana bat's summer range. A more detailed environmental analysis would be conducted prior to implementation of airfield recommendations, including formal consultation with the Vermont ANR, potential field surveys to determine the presence/absence of any listed species, and an evaluation of potential impacts to those species and habitat areas. If appropriate, mitigation measures to address adverse impacts would be pursued.

Figure 5-1: Vermont ANR Natural Resources Atlas Habitat Blocks



5.3 Climate

Based on FAA data, operations activity at 6B0 represents less than one percent of U.S. aviation activity; therefore, if greenhouse gases (GHGs) occur in proportion to the level of activity, GHG emissions associated with future aviation activity would be expected to represent less than 0.01 percent of U.S. based GHG.

5.4 Coastal Resources

The 1982 Coastal Barriers Resources Act (CBRA) governs Federal activities involving or affecting coastal resources, including the Great Lakes. Vermont has not developed a Coastal Zone Management Plan given that the state does not lie within a coastal zone. Actions proposed in the Master Plan would not impact coastal resources.

5.5 Department of Transportation Act, Section 303

Pursuant to Section 303 of the U.S. Department of Transportation [formerly Section 4(f)], projects requiring the use of any publicly-owned land, including public parks, recreation areas, wildlife or waterfowl refuge areas, and historic sites (including traditional cultural properties) of national, state, or local significance shall not be approved by the Secretary of Transportation unless there is no feasible and prudent alternative to the use of such land and such program includes all possible planning to minimize harm.

Based on a review of the surrounding area, there are no public parks, recreation areas, or wildlife/waterfowl refuge areas near 6B0. A review of the National Register of Historic Places (NRHP) indicated the presence of a historic district, the Fenn Farmstead, within the vicinity of the Airport. The Vermont Division for Historic Preservation's Online Resource Center also describes several state-listed historic properties in the vicinity of 6B0. These resources are discussed in further depth in a subsequent section.

Future projects at the Airport should be individually evaluated based on the Area of Potential Effect (APE) for impacts to these resource as part of the required environmental documentation under NEPA. Coordination with local and state historic preservation agencies will be required.

5.6 Prime and Unique Farmland

The Farmland Protection Policy Act (FPPA) limits the conversion of significant agricultural lands to non-agricultural uses as a result of federal actions [7 U.S. Code (USC) § 4201, et seq.]. The determination of whether farmlands are subject to FPPA requirements is based on soil type; the land does not have to be actively used for agriculture. Farmland subject to FPPA requirements can be pastureland, forested, or other land types, but not open water or developed urban or transportation areas. The FPPA regulates four types of farmland soils:

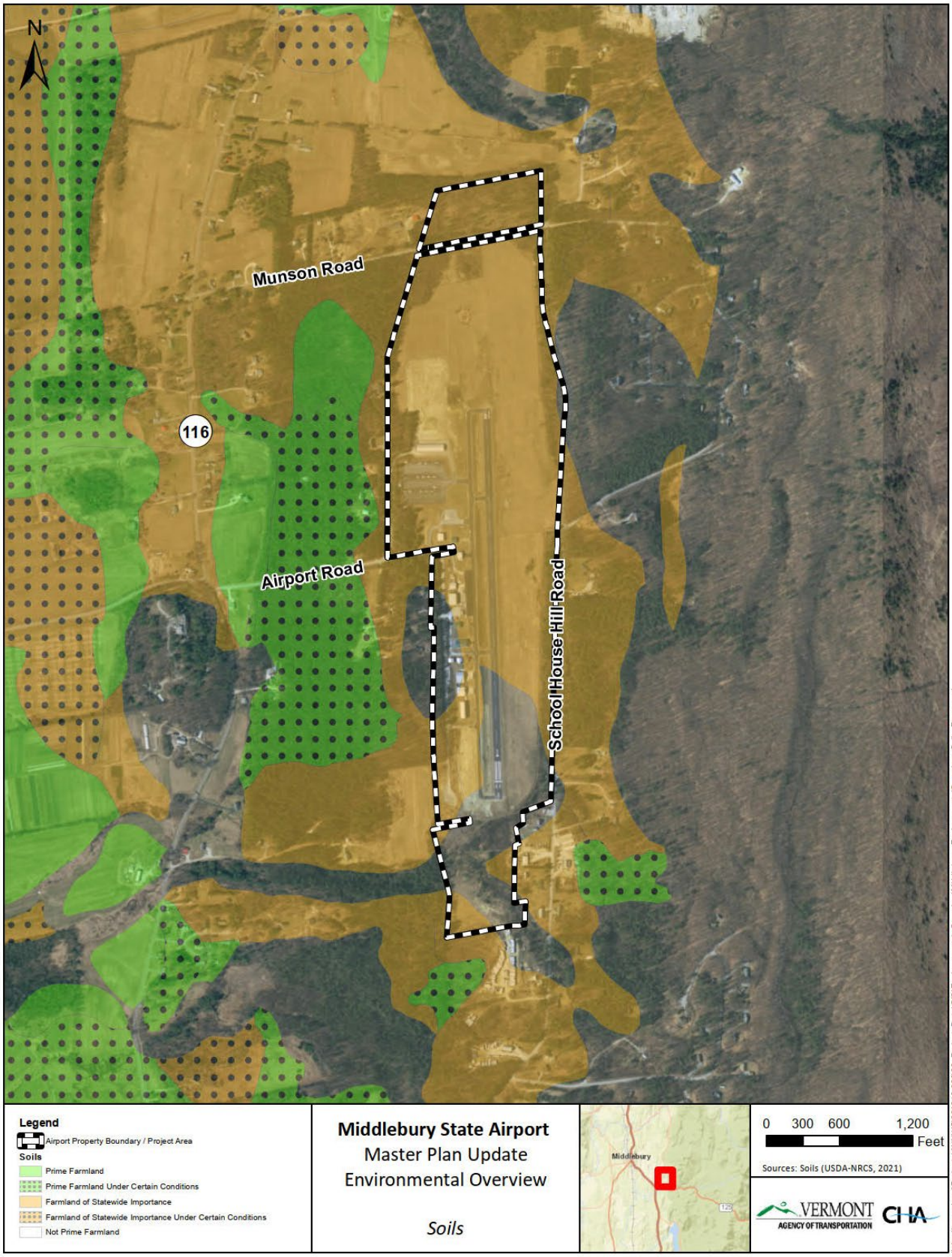
- Prime Farmland
- Unique Farmland
- Farmland of Statewide Importance

- Farmland of Local Importance

The evaluation is based upon soils identified by the Natural Resources Conservation Services (NRCS). Prime farmland is defined by the NRCS as "land that has the best combination of physical and chemical characteristics" for agriculture. This includes land with these characteristics used for livestock or timber production but not land that is already urbanized or used for water storage. Unique farmland is defined as "land other than prime farmland that is used for production of specific high-value food and fiber crops," with such crops defined by the Secretary of Agriculture. Farmland of statewide or local importance is farmland other than prime or unique farmland that "is used for the production of food, feed, fiber, forage or oilseed crops."

Based on review of NRCS soil data, approximately 79.8 percent of Airport property is considered farmland of statewide importance while the additional 20.2 percent is not prime farmland. **Figure 5-2** shows the location of prime and unique farmland at 6B0.

Figure 5-2: NRCS Soils Map Farmland Classification



5.7 Hazardous Materials

Based on available GIS data from the EPA, there are no sites on Airport property with an active National Pollutant Discharge Elimination System (NPDES) permit pursuant to the CWA.

There are no sites on the EPA National Priorities List (NPL) on or adjacent to 6B0. The NPL is a list of national priorities among the known releases of hazardous substances throughout the United States established by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The Resource Conservation and Recovery Act (RCRA) details the proper management of hazardous and non-hazardous solid waste. 6B0 is considered to be an active Very Small Quantity Generator (VSQG) RCRA site. There are no other active RCRA sites in the vicinity of the Airport.

Modifications to the existing airport facilities should be evaluated for the potential to generate additional hazardous materials; however, it is not expected that any recommended project would produce wastes that could not be properly mitigated and addressed.

5.8 Historic, Architectural, Archaeological, and Cultural Resources

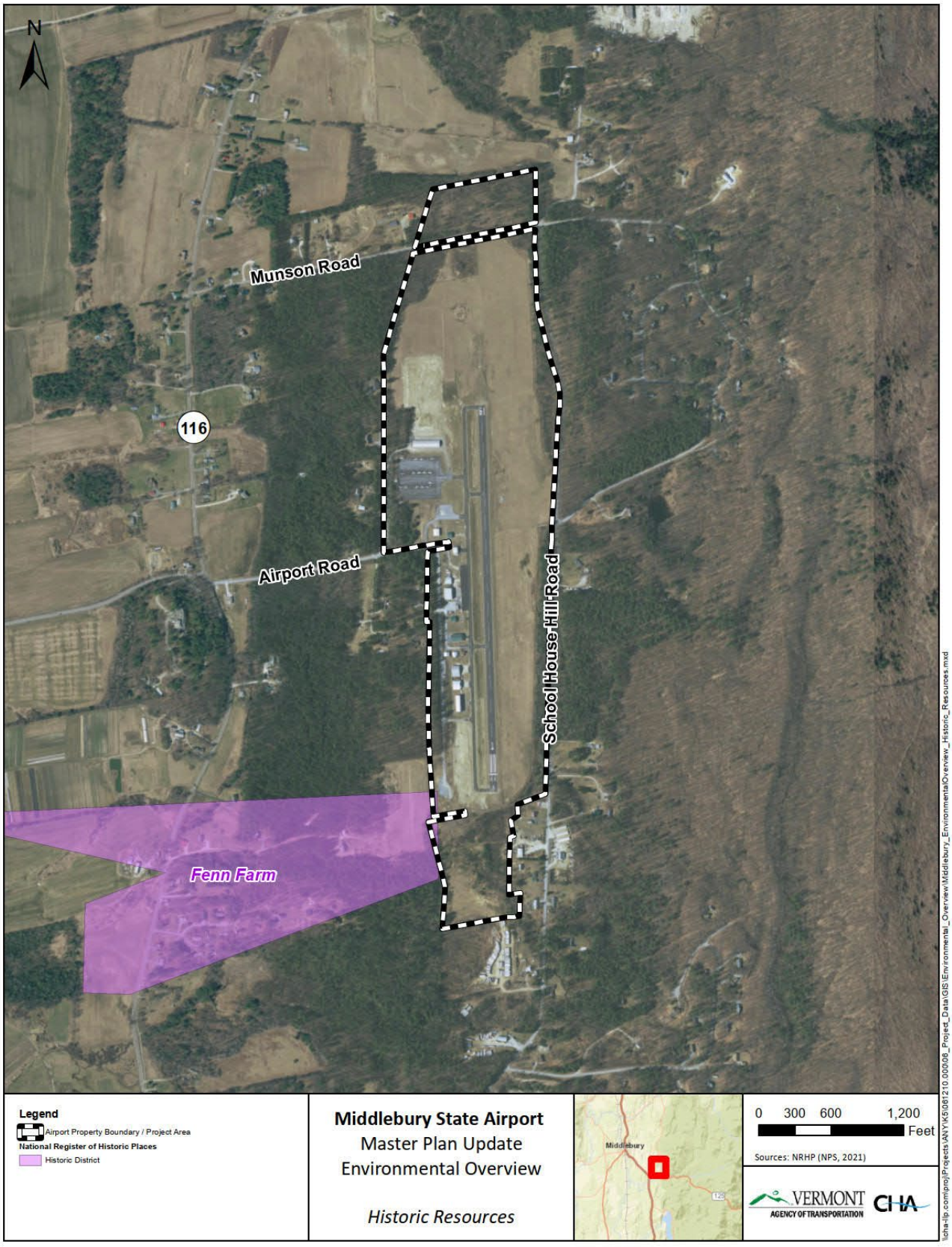
Under the National Historic Preservation Act of 1966 and the Archaeological and Historic Preservation Act of 1974, federal undertakings, such as the actions included in the Master Plan Update, are subject to Section 106 review to ensure that properties or data having historic, scientific, prehistoric, archaeological, or paleontological significance are surveyed, recovered, or preserved.

The Vermont Division for Historic Preservation (VDHP) Online Resource Center (ORC) was queried in order to identify resources in the project area. The ORC includes listings from the National Register of Historic Places, the State Register of Historic Places, the Vermont Archaeological Inventory (VAI), and any National Historic Landmarks.

There are no properties designated as National Historic Landmarks in the vicinity of the Airport. Fenn Farm, located southwest of the Airport, is listed in the National Register of Historic Places (NRHP). The Fenn Farmstead is classified as a historic district that includes seven contributing structures and an agricultural field. **Figure 5-3** displays the location of Fenn Farm. The Vermont Division for Historic Preservation's Online Resource Center describes several state-listed historic properties in the vicinity of 6B0. Agency coordination will be required to determine if actions carried out by the Airport will impact a state or locally significant property.

While the ORC includes archaeological inventories, there were no identified sites within Airport property. A more detailed environmental review, including consultation with the VDHP and state recognized Native American Tribes, would be conducted to confirm existing resources and assess any potential effects prior to implementation of specific airfield recommendations.

Figure 5-3: Historic Resources

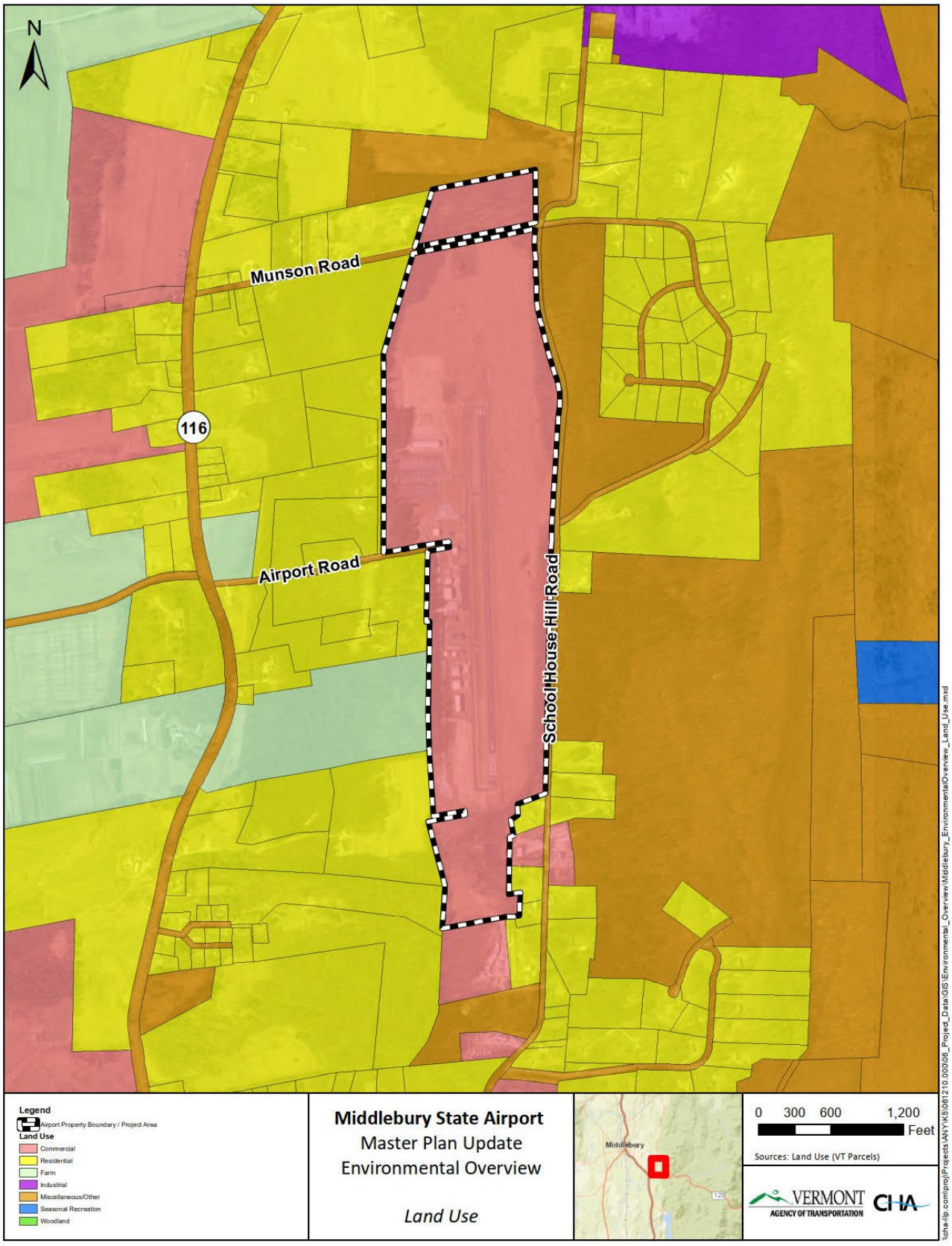


5.9 Land Use

The compatibility of existing and planned land uses with an airport action is usually associated with noise impacts; however, other potential impacts of FAA actions may also affect land use compatibility (e.g., disruption of communities, relocation, induced socioeconomic impacts, land uses protected under Section 4(f), etc). The impacts on land use, if any, should be analyzed and described under the appropriate impact category with any necessary cross-references to the Land Use section of the NEPA document to avoid duplication.

According to the town of Middlebury Planning/Zoning Map, Airport property is designated as Airport District (Commercial). The land west of the Airport is designated as Residential and Agricultural while the land east and south of the Airport is designated as Medium Density Residential. An area designated as Forest District is located to the north of the Airport. Land use surrounding 6B0 is shown in **Figure 5-4**.

Figure 5-4: Land Use



5.10 Natural Resource & Energy Supply

The effects of airport development on energy supply typically relate to the amount of energy required by stationary facilities (such as terminal building heating and cooling and airfield lighting) and movement of air and ground materials. The effects of airport development on natural resources typically relate to basic materials, such as gravel, fill dirt, etc., that are required for construction. Although aviation activity at 6B0 is anticipated to modestly increase over the coming years, the increase in energy consumption by aircraft and vehicles due to the proposed airport development projects would be minimal. The local power company should have no difficulty in meeting the energy demands of the proposed airport development. The anticipated increase in fuel consumption is not anticipated to be significant and the additional demand could be met by existing fuel supplies.

5.11 Noise & Compatible Land Use

Aircraft noise is often the most noticeable environmental effect that an airport imposes on its surrounding community. If the sound is sufficiently loud or frequent in occurrence, it may interfere with various activities or be considered a nuisance. Since 1972, the FAA has been developing and enforcing aircraft noise standards, which are based on cumulative day-night average noise levels (DNL). In simple terms, DNL is the average noise level over a 24-hour period, with noise occurring at night (defined as 10:00 p.m. through 7:00 a.m.), being artificially increased by 10 decibels (dB). The weighting reflects the added intrusiveness of nighttime noise events attributable to the fact that community background noise levels decrease at night. The use of DNL to assess aircraft noise exposure has proven to be an effective and appropriate device to determine the relative compatibility of noise-sensitive land uses adjacent to airports.

Normally, a noise analysis assesses the effects of airport development having the potential to cause aircraft noise outside the airport's boundaries. For most actions, if the DNL 65 decibel (dB) contour lies entirely within the airport boundaries, a noise analysis is not required; however, a proposed project and its effects should be considered when determining what analysis is appropriate. Based on FAA Order 1050.1F, Desk Reference, Chapter 11, Section 11.1.2, "*No noise analysis is needed for projects involving Design Group I and II airplanes (wingspan less than 79 feet) in Approach Categories A through D (landing speed less than 166 knots) operating at airports whose forecast operations in the period covered by the NEPA document do not exceed 90,000 annual propeller operations (247 average daily operations) or 700 annual jet operations (2 average daily operations). These numbers of propeller and jet operations result in DNL 60 dB contours of less than 1.1 square miles that extend no more than 12,500 feet from start of takeoff roll. The DNL 65 dB contour areas would be 0.5 square miles or less and extend no more than 10,000 feet from start of takeoff roll*". Although 6B0 is not anticipated to have more than 90,000 annual propeller operations in the planning period, the Airport is forecasted to have over 700 annual jet operations. Depending on the airport action, a noise analysis may be required should future airport expansion be warranted.

5.12 Environmental Justice

Environmental Justice laws, regulations, and policies are found in Title VI of the Civil Rights Act of 1964, the National Environmental Policy Act of 1969, Title 23 of the USC, Section 109(h), the Uniform Relocation, and Real Properties Acquisitions Policy Act of 1970, and most recently, Executive Order 12898: Federal Actions to Address Environmental Justice in Minority and Low Income Populations. Executive Order 12898 directs each federal agency to develop a strategy addressing environmental justice concerns in its programs, policies, and regulations. The purpose of this Order is to avoid disproportionately high and adverse human health or environmental impacts on minority and low-income populations. On July 16, 1997, the DOT issued its Final Order on Environmental Justice as Order 5610.2 To identify minority and low-income populations in the vicinity of 6B0, demographic data from the U.S. Census Bureau, 2019 American Community Survey 5-year Estimates was reviewed and compiled.

6B0 is located in Addison County. Addison County most accurately represents the geographic, social, and economic environment around 6B0 and is therefore considered the Community of Comparison (COC). The Affected Community is Census Tract 9607, as the entire airport and the surrounding area is included in this census tract. Census tract information is specific to the georeferenced demographics of the area in which 6B0 is located. Affected Communities that are more than 50% minority or low-income are automatically designated as EJ populations. This does not apply to Census Tract 9607. Affected Communities are also designated as an EJ population if the low-income or minority populations are equivalent to or greater than 125% of the COC. Based on this data, Census tract 9607 does contain an EJ population of low-income and minority status. Environmental Justice should be taken into consideration when moving forward on actions that could potentially impact this population.

Table 5-1: Minority & Low-Income Population Groups

	Addison County (COC)	Census Tract 9607
Total Survey Population Determined	36,882	3,652
Minority Persons	2,749	387
Percent Minority	7.5%	10.6%
125% COC	9.3%	
Potential Minority EJ Impact?		Yes
Total Survey Population Determined	33,888	3,632
Low Income	2,435	335
Percent Low Income	7.2%	9.2%
125% COC	9.0%	
Potential Low Income EJ Impact?		Yes

Source: U.S. Census, 2019 ACS Survey (5-year estimates)

5.13 Visual Effects

Some visual resources are protected under federal, state, or local regulations. According to FAA Order 1050.1F, these resources generally include, but are not limited to, federal, state, or local scenic roadways/byways; Wild and Scenic Rivers; National Scenic Areas; protected trails; and biological resources; and features protected under other federal, state, or local regulations. In addition to NEPA, laws protecting resources that may be affected by visual effects include Section 106 of the National Historic Preservation Act (NHPA), Section 4(f) of the DOT Act, the Wild and Scenic Rivers Act, and the Coastal Zone Management Act. In addition, there may be state and local regulations, policies, and zoning ordinances that apply to visual effects.

Visual resources and visual character impacts are normally related to a decrease in the aesthetic quality of an area resulting from development, construction, or demolition. Analysis of visual impacts considers whether the alternatives would affect, obstruct, alter, or remove visual resources including buildings, historic sites, or other landscape features, such as topography or vegetation, that are visually important or have unique characteristics. According to FAA Order 1050.1F Desk Reference, the significant determination is dependent on the criteria listed below. All future airport actions going through the NEPA process would be evaluated for visual impacts based on the following:

- Would the action have the potential to affect the visual character of the area, including the uniqueness and aesthetic value?
- Would the action have the potential to contrast with the visual resources in the area?
- Would the action have the potential to block or obstruct the views of visual resources?

5.14 Water Resources

Water quality standards applicable to the Airport are established under the federal Clean Water Act (CWA) and Vermont Code Title 10 Conservation and Development which is administered by the Vermont Department of Environmental Conservation. Together, these regulations include requirements for controlling discharges into surface water and groundwater, develop waste treatment management plans and practices, and establish federal permitting requirements for discharges (CWA Section 402) and dredged and fill materials (CWA Section 404). Existing surface water resources and groundwater quality at the Airport are described below.

5.14.1 Surface Water

Most of the Airport lies in the Middlebury River-Otter Creek watershed. The northern tip of the property is located in the New Haven River watershed. Surface water features on and in the immediate vicinity of the Airport are depicted in **Figure 5-5**. Beaver Brook, a perennial stream, is located south of the Airport. A sparse distribution of existing wetlands is described in subsequent sections.

The Vermont Water Quality Standards establish surface water classifications based on use, management objectives, and criteria met. There are four possible classifications for Vermont surface water: A(1) excellent, A(2) public water source, B(1) very good, or B(2) good. All waters at or below 2,500 feet are designated Class B(2) for all uses, unless specifically designated. A water way that fails to meet its classification is listed as impaired, and a restoration plan must be developed and implemented. Beaver Brook was not classified on the Vermont Natural Resources Atlas. With a topography below 2,500 feet, it is assumed that Beaver Brook is a Class (2) stream.

Any future projects that would potentially add additional impervious surface would increase the potential for runoff from the Airport into nearby surface water. Prior to implementation of these improvements, more detailed documentation would be required to specifically quantify the additional impervious surface area and assess resulting impacts to surface waters. Drainage improvements would be required to minimize stormwater runoff and associated potential for adverse impacts to surface waters. These improvements should be included in the project design and fully evaluated in the project-specific environmental documentation to be conducted closer to the time of construction. If such elements are incorporated, it is not anticipated that the proposed projects would result in adverse impacts to surface water quality.

5.14.2 Groundwater

Based on review of the US EPA website, there are no sole source aquifers in the vicinity of 6B0. The Vermont Natural Resources Atlas shows that the Airport is located within two groundwater source protection areas (SPA). The northern half of the Airport sits within the Middlebury Water Department SPA while the southern half of the Airport is located within the East Middlebury SPA. Moreover, at the level of effort for this overview, no specific information on groundwater quality in the immediate vicinity of the Airport was available. Any proposed projects would be evaluated closer to implementation, when more details are available, in a project-specific environmental document to determine potential impacts.

5.14.3 Stormwater

Stormwater at 6B0 is currently managed through a system of swales, catch basins, drains, and channels. Any modifications to the drainage system or modifications to physical facilities at the Airport which would result in a change to either the quantity or potential quality of stormwater discharge from the Airport should be evaluated. In general, new airfield or major terminal projects would trigger the need to address water quality and associated permitting. General maintenance and minor projects typically do not affect water quality.

5.14.4 Wild and Scenic Rivers

Through the National Wild and Scenic Rivers Act of 1968 (16 U.S.C 1271), rivers can be federally designated as wild and scenic if they contain remarkable scenic, recreational, or fish and wildlife related values. Such rivers are granted protection under the Act and must be evaluated as part of the NEPA process. Based upon a review of the National Wild and Scenic Rivers System, there are no designated Wild and Scenic Rivers near 6B0.

5.14.5 Wetlands

Wetlands at the Airport are regulated and protected under both federal and state regulatory programs. U.S. Department of Transportation Order 5660.1A, *Preservation of the Nation's Wetlands*, implements Executive Order 11990, *Protection of Wetlands*. The U.S. Army Corps of Engineers (USACE) administers Section 404 of the Clean Water Act (CWA) (33 CFR 320-332)[7] which regulates discharges of fill into wetlands and waters of the United States. Wetlands as defined in 33 CFR Part 328 are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." The Vermont ANR Department of Environmental Conservation serves as the state's Section 401 certification agency coinciding with any federal Section 404 permits issued by the USACE. Work occurring within designated wetlands will require securing appropriate permits from the USACE and the State which may include an ANR Act 250 permit depending on the airport action.

In order to identify wetlands occurring near 6B0, data available online through the National Wetlands Inventory (NWI) mapper and the Vermont Natural Resources Atlas (see **Figure 5-5**) were reviewed. Wetland boundaries were not formally delineated as part of this overview.

Based on available NWI data, two palustrine freshwater emergent (PEM) wetlands are located on the airfield, north of the Runway. These wetlands are estimated to be approximately 1.5 to 2 acres in size. The NWI map also shows freshwater forested/shrub (PFO) wetlands directly west of the Airport and southeast of the Runway. These wetlands are outside of Airport property.

The Vermont Natural Resources Atlas depicts all of the wetlands shown in the NWI mapper. Additionally, this state map shows small wetlands dispersed throughout the mowed grass directly east of the Runway and in the Runway Protection Zone (RPZ) at the south end of the Runway. All wetlands are identified as Class 2 wetlands.

It is anticipated that prior to initiating specific projects, a current wetland delineation would be required to determine federal and state regulated wetland boundaries within the project area.

5.14.6 Floodplains

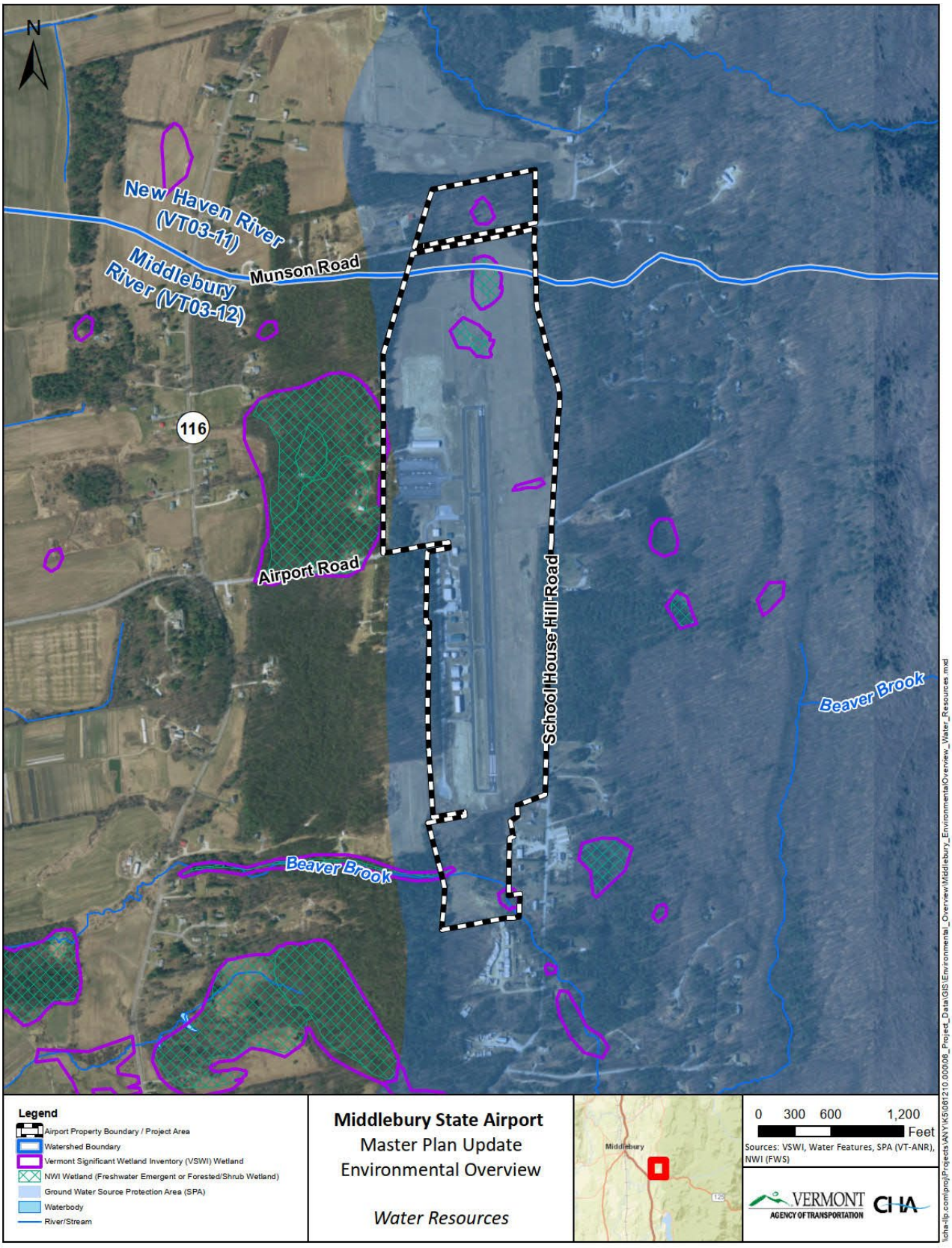
Executive Order 11988, *Floodplain Management*, defines floodplains as "the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands", including the area that would be inundated by a 100-year flood. A 100-year floodplain is an area that has a 1 percent chance of being flooded in any given year. A 500-year floodplain is an area that has a 0.2 percent chance of being flooded in any given year.

According to the FEMA Flood Insurance Rate Map (FIRM) for the town of Middlebury, effective February 3, 1985, the Panel covering 06B (Panel Numbers 5000080012) has not been printed due

[7] CFR: Code of Federal Regulations

to being outside of the flood boundary. Therefore, it can be concluded that 6B0 is not within the floodplain; the projects recommended in the Master Plan are not anticipated to impact floodplains. Prior to implementation of a proposed action, project-specific environmental documentation would be prepared to document existing floodplains in the project area and evaluate potential for impacts. If it is determined that a proposed action would occur within the 100-year floodplain, compliance with applicable state and federal flood and stormwater management standards must be demonstrated.

Figure 5-5: Water Resources



5.15 Summary

Projects recommended in the Master Plan are anticipated to have some impacts on the environment, with concerns generally focused on water quality, biotic communities, threatened and endangered species, and wetlands. As noted under each of the resource-specific sections, before implementation of the proposed development projects, further environmental documentation would be required to identify existing conditions at that time, determine impacts on each resource, and if appropriate, identity mitigation measures to address potential adverse impacts. Once project details are available, if appropriate under NEPA, Categorical Exclusion(s) or Environmental Assessment(s) will be prepared in accordance with FAA guidance. Based on past studies and the types of projects recommended in the Master Plan, it is anticipated that impacts can be successfully mitigated, allowing implementation of the recommended plan.

6 Implementation Plan

Chapter 4, *Development Alternatives* presented development alternatives and the recommended airport development plan (see **Figure 4-5** *Recommended Plan*) for the Middlebury State Airport (6B0). The plan includes modest improvements to both the airside and landside projects, which are further discussed in terms of two implementation phases during the 20-year planning period presented within the Airport Capital Improvement Plan (ACIP). This chapter also presents the Airport Layout Plan (ALP) associated with the recommended future development at 6B0. The ALP illustrates the proposed future airport layout and serves as the official planning document for the Airport. The ALP approval is an additional requirement for airport projects, in addition to the more focused environmental reviews, engineering design, and permitting activities.

6.1 Airport Capital Improvement Plan

The Airport Capital Improvement Plan (ACIP) lists the recommended projects and associated cost estimates for the 20-year planning period. Grant-eligible projects at 6B0 may receive 90 percent federal funding, with the Vermont Agency of Transportation (VTrans) responsible for the remaining share. Grant-eligible capital projects include planning and environmental studies, runway and taxiway development and rehabilitation, security enhancements, aircraft parking aprons, obstruction removal, land acquisition, and navigational aids. Projects that are typically ineligible for funding include those that generate revenue and do not directly benefit the public, such as hangars. A private entity or developer, such as a fixed base operator (FBO) or other corporation, may fund and construct grant-ineligible projects.

In addition to the new airport projects, the airport must also continually rehabilitate existing airfield facilities (e.g., pavement rehabilitation typically occurs every 20 years). As such, the ACIP includes these additional items. Although these items are not considered new capital developments, the associated costs can comprise the majority of an airport's annual capital investment. Runway & Taxiway Edge Lighting are common facilities at small general aviation airports. Such lighting was considered by VTrans but based on comments from airport users is not included in the master plan at this time.

Note that the ACIP does not constitute a commitment on behalf of the VTrans or FAA to fund any of the projects. In addition, the ACIP does not imply that the projects would receive environmental approvals. Thus, the ACIP serves as a planning document that must remain flexible. The ACIP should undergo regular updates as project priorities, demands, and funding indicate. It should also be noted that the costs are planning level estimates (in 2022 dollars) and will need to be refined prior to obtaining a grant.

Table 6-1 provides the 20-year ACIP for 6B0, organized into the following two phases:

- Short-Term (0 to 5 years)
- Long-Term (6 to 20 years)

Table 6-1 – 6B0 Airport Capital Improvement Plan (ACIP)

Project	Estimated	Federal (90%)	VTrans (10%)
Short-Term (0 - 5 Years)			
1 - North GA Development Area (Phase 1)		Privately Funded	
2- South GA Development Area		Privately Funded	
3 - Environmental Assessment (for Terminal Building)	$ 250,000	$ 225,000	$ 25,000
4 - Terminal Building & Vehicle Parking*	$ 800,000	$ 760,000	$ 40,000
5 - Terminal Apron Expansion (9,000 SF)	$ 564,000	$ 507,600	$ 56,400
6 - Install PAPIs (2-Box, Runway 1 & 19	$ 612,000	$ 550,800	$ 61,200
7 - Obstruction Removal	$ 350,000	$ 315,000	$ 35,000
8 - Fuel Farm (Tank Replacement)	$ 450,000	$ 405,000	$ 45,000
9 - Vegetation Monitoring/Maintenance	$ 90,000	$ 81,000	$ 9,000
10 - Establish Instrument Approach Procedures		No Cost	
Total	**$ 3,116,000**	**$ 2,844,400**	**$ 271,600**
Long-Term (6 - 20 Years)			
11 - Apron Pavement Rehabilitation			
Tie-Down (133,000 SF)	$ 1,290,000	$ 1,161,000	$ 129,000
Fuel Farm (21,000 SF)	$ 240,000	$ 216,000	$ 24,000
Itinerant (32,000 SF)	$ 310,000	$ 279,000	$ 31,000
12 - Airport Road Rehabilitation** (33,000SF)	$ 432,000	$ 388,800	$ 43,200
13 - North GA Development Area (Phase 2)		Privately Funded	
14 - Vegetation Monitoring/Maintenance (every 5 years)	$ 270,000	$ 243,000	$ 27,000
15 - SRE Building Rehabilitation	$ 150,000	$ 135,000	$ 15,000
16 - New SRE Equipment	$ 250,000	$ 225,000	$ 25,000
17 - North GA Development Area (Phase 3)		Privately Funded	
18 - Replace AWOS	$ 456,000	$ 410,400	$ 45,600
19 - Taxiway Pavement Rehabilitation (98,000 SF)	$ 1,464,000	$ 1,317,600	$ 146,400
20 - Runway Pavement Rehabilitation (193,000 SF)	$ 2,364,000	$ 2,127,600	$ 236,400
Total	**$ 7,226,000**	**$ 6,503,400**	**$ 722,600**
Grand Total	**$ 10,342,000**	**$ 9,347,800**	**$ 994,200**

*Terminal project is eligible for the Airport Terminal Program at 95/5

*Portion located on airport property

Note that all estimates include 20% Design/C&I cost

Source: CHA, 2022.

6.2 Airport Layout Plan

The ALP drawing set illustrates all development projects identified for 6B0 throughout the 20-year planning horizon. Upon approval by the FAA and VTrans, the ALP becomes the official document to be referenced for future development at the Airport. The FAA requires that the ALP be followed consistently regarding all new airport facilities. As such, keeping the drawings accurate and up to date is a high priority. FAA policy recommends that the ALP be updated at least every five years. Although the ALP is the only drawing that is signed by the FAA, it is part of a larger drawing set that includes the sheets listed in **Table 6-2**.

Table 6-2 – ALP Drawing Index

Sheet Title	Sheet No.
Title Sheet	1
Airport Data Sheet	2
Existing Airport Layout Plan	3
Future Airport Layout Plan	4
Airport Airspace Plan	5
Runway 1 Inner Portion of Approach	6
Runway 19 Inner Portion of Approach	7
Runway Obstruction Data Tables	8
Terminal Area Plan	9
Land Use Plan	10
Airport Property Map	11

6.2.1 Existing and Future ALP Sheets

The second sheet presents critical data of the Airport in general, its runway and taxiways, and other conditions, as they exist today (Existing) and as they are projected to change with the recommended improvements (Future). The third sheet of the drawing set illustrates the current airport layout. The drawing identifies key FAA airfield design standards (e.g., Runway Safety Area, Object Free Areas, and Runway Protection Zones) and illustrates existing landside facilities. Key information, such as runway end elevations and runway-taxiway offset, is also illustrated on Sheet 3. The proposed ALP (Sheet 4) includes all features of the Existing Airport Facilities sheet and illustrates each recommended facility for 6B0. Several offices within the FAA review this drawing for consistency with airport design standards, flight procedures, surrounding airspace, and environmental requirements. Sheet 9 (Terminal Area Plan) displays the terminal area in greater detail.

Approval of this plan represents the acceptance of the general location of future facilities. However, prior to the development phase of each project, VTrans is required to submit the final locations, heights, and exterior finish of each proposed structure for approval. ALP approval does not represent environmental clearance under the National Environmental Policy Act (NEPA), or compliance with permit requirements. Such approvals must be obtained prior to development and are not part of the ALP process.

It is also noted that ALP approval does not represent a commitment on behalf of the FAA, VTrans, or others to fund or pursue the projects depicted. Rather, this Master Plan and associated ALP represent the first products of the planning and development process and are intended to depict a broad and long-range view of the potential improvements to the Airport. The ALP drawings were prepared in accordance with FAA design standards for Airport Reference Code (ARC) B-I. Aircraft within ARC B-I (small) includes the Cessna 310 and 414. The following publications were used during the drawing preparation:

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

2. FAA Advisory Circular 150/5070-6B, *Airport Master Plans*
3. Federal Aviation Regulations, Part 77, S*afe, Efficient Use, and Preservation of the Navigable Airspace*

6.2.2 Airport Airspace

Sheets 5 through 8 of the ALP Drawing Set illustrate the airspace requirements associated with Title 14 of the Code of Federal Regulations (CFR); Federal Aviation Regulations (FAR) Part 77. FAR Part 77.23 identifies a series of geometric planes (i.e., imaginary surfaces) that extend outward and upward from an airport's runways to define obstruction clearing requirements. These surfaces identify the maximum acceptable height of objects by defining three dimensional surfaces surrounding all sides of the airfield. When an object penetrates an imaginary surface, it is considered an airspace obstruction and may present a hazard to air navigation.

Sheet 5, Airport Airspace Plan, illustrates the overall dimensions of the Part 77 surfaces, and highlights penetrations to the outer surfaces. Sheets 6 and 7, the Inner Approach Surface Drawings, provide greater detail regarding the close-in airspace obstructions at either runway end, particularly to the inner portions of each FAR Part 77 approach surface. For each obstruction, the height, penetration, ownership, and proposed action/disposition are indicated in the associated tables on Sheet 8.

6.2.3 Land Use Plan & Property Map

Sheets 10 and 11 depict the existing and proposed land uses within proximity to the airport along with associated land owners.

Appendix A – Recycling Plan

Appendix A – Recycling Plan

Sustainability and green initiatives are being encouraged in a variety of areas as communities expand. The FAA encourages airport sustainability planning efforts to identify sustainability objectives that reduce environmental impacts, realize economic benefits, and improve community relations. Although the FAA is beginning to develop comprehensive airport sustainability plans at several of the nation's commercial service airports, the FAA Modernization and Reform Act of 2012 requires all airport master plans to include a section that addresses potential recycling initiatives. Topics to be discussed may include the feasibility of solid waste recycling at the airport, minimizing the generation of solid waste, operations and maintenances requirements of the program, a review of current waste management contracts, and the potential for cost savings or revenue generation from recycling efforts.

The following information will identify common types and sources of waste generated by General Aviation (GA) airports, current waste disposal procedures, and a recommended plan for implementing recycling initiatives at Middlebury State Airport (6B0 or the Airport).

Types and Sources of Waste at 6B0

According to the 2013 FAA document *Recycling, Reuse, and Waste Reduction at Airports*, one of the key elements of developing a recycling plan is to identify the types and sources of waste at an airport. This varies depending upon the type of facility (e.g., GA or commercial service). A GA airport does not typically generate as much waste as that of a commercial service airport. Additionally, most waste generated by GA airport operations can be disposed of with normal trash collection.

The following, as defined in *Recycling, Reuse, and Waste Reduction at Airports*, presents the types of waste typically generated by activity at 6B0.

> **Municipal Solid Waste (MSW)** consists of everyday items that are used and then discarded, such as product packaging, bottles, containers, paper products, food scraps, etc. Every airport produces a certain amount of MSW. MSW at GA airports can usually be disposed of with normal trash collection.
>
> **Green Waste** is a type of MSW that includes yard waste, such as grass clippings, leaves, small branches, and similar debris generated by landscape maintenance activities. On-airport mowing and tree clearing activities produce green waste. Green waste can also include food that is not consumed or generated during food preparation activities but discarded. Green waste can be composted but is typically discarded as MSW.

Construction and Demolition Waste (C&D) is also generally categorized as MSW; it includes non-hazardous solid waste from land clearing, excavation, and/or the construction, demolition, renovation, or repair of structures, roads, and utilities. Although some special requirements may be placed on construction and demolition waste, such as tar, roofing materials, asbestos containing building materials, etc, C&D waste can be a major component of airport waste, especially during an airport improvement project. Airport improvement projects should identify proper disposal procedures for C&D waste.

Hazardous Waste includes waste that is ignitable, corrosive, toxic, or reactive. Hazardous waste must be handled in accordance with federal regulations outlining proper treatment and disposal. According to the FAA, examples of hazardous waste often found at an airport include, but are not limited to, solvents, caustic part washes, heavy metal paint waste and paint chips, waste fuels (e.g., sump fuels or tank sludge), unusable water conditioning chemicals, nickel-cadmium, and waste pesticides. Airport and aircraft maintenance operations can generate hazardous waste.

Universal Waste is a type of hazardous waste that has less stringent regulations. According to the U.S. Environmental Protection Agency (EPA), if handled in a responsible method prior to legal recycling, these wastes are less heavily regulated. Examples of universal waste include, but are not limited to, batteries, aerosol cans, certain pesticides, mercury-containing devices (e.g., thermostats and thermometers), mercury-containing lighting (e.g., florescent bulbs), and electronic devices. Various items located throughout an airport and within an aircraft may generate universal waste.

Current Waste Disposal Procedures

Municipal Solid Waste

Trash and recycling receptacles for MSW are available throughout 6B0. Each airport tenant is responsible for ensuring proper disposal of personal MSW into a receptacle. Tenants also collect the MSW from each receptacle and transports it to a dumpster. VTrans contracts with a third-party waste hauler to provide dumpsters and ensure proper disposal of trash and recyclables collected at the Airport.

Green Waste

Green waste is generated through mowing, landscaping, and tree clearing activity. Vegetation removed to protect runway approach surface clearance is usually hauled off airport property to be chipped, mulched, and/or composted.

Construction and Demolition Waste

Disposal for C&D waste at the Airport is dependent upon the type of associated activity. C&D waste is typically generated from airport sponsored activity and, thus, can be properly disposed.

Hazardous and Universal Waste

Small amounts of hazardous and universal waste are generated at 6B0 through airport and aircraft maintenance operations. Airport tenants have established procedures for the disposal of hazardous and universal waste that ensures collection and disposal separately from MSW. Green Mountain Avionics transports specialty waste items to the Middlebury Transfer Station.

Recycling Plan Development

Unlike many other GA airports, 6B0 does offer recycling. Review of the common types of waste discarded at 6B0 suggests that it would be beneficial to implement a recycling plan to increase the amount of materials diverted from a landfill. This can be done by formalizing a process for identifying , sorting, and collecting recyclable materials.

The following provides a recommended outline for the development of a recycling plan at 6B0. Information provided in the FAA's *Recycling, Reuse, and Waste Reduction at Airports* and the EPA's *Developing and Implementing an Airport Recycling Program* was used to develop the outline.

Step 1 – Identify a Waste Collector: Casella Waste Systems, Inc. (Casella) provides weekly trash and recycling pick-up for the Town of Middlebury. Casella operates recycling facilities in both Rutland and Williston. Casella's nearest landfill is much further away from the Airport in Bethlehem, NH. Casella recycling services include single stream MSW recycling, non-hazardous construction and demolition waste recycling, and organic waste recycling. These services are available for both residential and business customers. Organic waste must be collected separately.

Step 2 – Identify a Collection System: Casella provides "zero-sort" recycling, which is their form of single stream recycling that requires no sorting of recyclable materials upon initial collection because they sort the materials at their facility. This form of recycling allows all recyclables to be placed into a single recyclable dumpster. It is important to note that weekly recycling pick-up is typically only intended for recyclable materials associated with MSW. Special wastes, such as construction and demolition waste and hazardous and universal waste, must follow federal regulations for proper disposal and be coordinated with the waste collector. 6B0 already has recyclable dumpsters that are picked up regularly. To improve the use of dumpsters, confirm that recycling and trash signage on the dumpsters is clear and concise.

Step 3 – Identify Appropriate Location of Recycling Receptacles: Since Casella offers single stream recycling, only a single type of recycling receptacle is necessary. Although, multiple on-airport receptacles may be desired throughout the Airport. It is recommended that recycling receptacles be placed adjacent to trash receptacles and in common areas to ensure all airport tenants and visitors are aware that recycling is available at the Airport. Receptacles should be easy to distinguish from one another.

Step 4 – Educate Airport Tenants and Visitors: Given that effort has been made to introduce recycling at 6B0, it is recommended that both tenants and visitors are reminded that this option exists. This can be accomplished through face-to-face meetings, newsletters, emails, and airport signage. Information should identify the location of recycling receptacles, types of recyclable material allowed to be placed in the receptacles, and the importance of recycling within the community. Communications with Green Mountain Avionics indicated that Addison County Solid Waste recently came in to give a brief tutorial on what and how to recycle. Further communications can be a reminder of this tutorial.

Step 5 – Monitor and Refine the Plan: It is important to monitor and, if necessary, refine the recycling plan. A periodic check of the trash receptacles prior to trash collection should be conducted to determine the level of sorting of MSW versus recyclable materials. If adjustment is necessary, consideration should be given to the placement of receptacles, collection times, or if additional receptacles may be necessary. A potential cost benefit of implementing a recycling plan may be decreased waste within the trash receptacles and dumpsters and, thus, fewer required trash collections.

Recycling Plan Summary

As discussed, airports generate multiple types of waste. Fortunately, a large percentage of this waste is considered recyclable in one form or another. For construction and demolition waste and hazardous and universal waste, it is recommended that 6B0 continue to reuse or recycle material when practical or available. For MSW, it is recommended the aforementioned steps are implemented to establish a recycling program at the Airport. A recycling program has the potential to lessen the overall environmental impact of the airport, enhance the Airport's relationship with the community, and provide the Airport potential cost saving by reducing trash collection.

Appendix B - Master Plan Update Public Comment & Responses

Date/ Commentator	Comment	Response
A. 7/1/2022 Eugene Roy	Hope everybody had a good night sleep after the great meeting we had. Just for some history facts the town of East Middlebury was settled back 150 years ago. Take a look at the link and see the history of this place. If Someone says the airport was here before the residential neighborhood it would be 100% wrong. It was a residential and a farmer community with businesses near the river. So, we don't want to hear that the airport was there before us. The town is due south of the airport by less than a quarter mile. Check it out there's a lot of great history here in East Middlebury from farms, logging, glassmaking, the list goes on and on. Do check it out is so interesting how this place got developed. Sort of backup this is a residential neighborhood/town way way before anything to do with an airport.	The Master Plan considers existing land use and residents in the vicinity of the airport, regardless of whether they build before or after the airport. Historical aerial imagery clearly depicts homes in the East Middlebury community existed prior to the development of the airport, as well as many additionally homes constructed after the airport's development.
B. 7/6/2022 Eugene Roy	Questions that I have since the select board meeting we had. It was great meeting everyone that day. Some of my concerns that we talked about during the meeting I would like to know where we are on them. Question 1 The proposal of the replacement of a noise berm that used to be to the south end of the runway in front of my house to be replaced back the way it was. That was removed by a contractor stripping some of the topsoil ended going way down below for 3 feet that was proposed ended up well over 20 feet down. The state came over after I called and shut him down and have him bulldozed some of the dirt back into the hole. That berm did help alleviate a lot of the noise of the takeoffs at the south end. Question 2 Something we talked about with the pilots that day was a	1) The activity referenced appears to have occurred in the late 1970s. There are no State or Federal funds available to build a berm in this or other locations. 2) VTrans is discussing the potential to distribute engine runup to locations other than at the north and south end of the runways. Note that 'runup enclosures' are not practical or eligible for final departure checks. 3) Selection of the location of the future hangars considered a variety of operational factors and was identified as the most appropriate locations. In addition to the group of potential hangars at the north end of the airport, potential hangar locations are also identified in the center and southern locations on the airport. Note: VTrans does not build hangars; but does identify available locations that may be pursued by tenants under a site lease with VTrans.

	containment for takeoff I don't really know what the name is it's called but it is a spot where on airplane can rev up before takeoff and the noise stays right in that area that would really helps alleviate all the noise that we would normally hear which they thought was a great idea. To have that done at the same time. It's not asking for a lot in between the pilots, the select board and the residence of this area is something that needs to be done in order to move forward respectively and peacefully. Question 3 Would be the placement of the proposed hangers. There's a lot of space that's around the terminal now that can be used for that purpose. These are our larger concerns about the master plan is having that included into it. I wanna thank you guys in advance for considering adding this to the plan.	
C. 7/18/2022 Ross Conrad	These comments are primarily in regard to the proposed North Hanger Development area as described in the Draft Master Plan. At the public meeting held in Middlebury on June 30, 2022, it was stated by the managing consultant that the proposed North Hanger Development was included in the plan due to a current Act 250 permit application that is in process. I pointed out that this is not how the process is supposed to work. Our airport master plan should be guiding airport development efforts, not the other way around. In fact, by including the Act 250 application's proposal in the airport master plan, the state is stacking the deck against the community since the Act 250 board will simply look at the master plan, point to the fact that it calls for the North Hanger Development just as proposed by the Act 250 application and approve it.	While the Act 250 permitting process and the Master Plan Recommended Plan are interrelated, they are separate processes. The Act 250 board will **not** simply look at the master plan and approve the development. Rather, the Natural Resources Board is tasked with a comprehensive review of all developments. Note that the Hangar Permitting at Middlebury is a statewide effort initiated by the State Legislature through Act 78, with the goal of advancing the permitting process to foster private hangar development at all State airports. It is not specific to Middlebury. The Master Plan incorporates this effort, but also identified other locations throughout the airport for potential hangar

	One problem with the current North Hanger Development as proposed is that it is far from the other hangers. The most likely candidates for additional hanger space at the airport is from existing hangar tenants who run growing aviation related businesses. It is in their interest to have additional hanger space as close to their existing hanger operations as possible so they are not running all over the airport between hangers should they find the need to expand. Another issue is with the resident that lives at the North end of the airport abutting the airport property. As proposed, the new North Hanger Development area will substantially impact their view, and therefore their quality of life, in a negative manner. An alternative compromise proposal that would see the current existing tie-down apron moved to the north end of the airport development area in front of the residential neighbor, and the new hangers that are needed built in the current tie-down apron area along with an airport terminal. This proposal helps address both the above issues. VTrans constantly states that it wants to work constructively with the residents surrounding the airport. By listening to the residents and actually adjusting plans based upon what their needs are in addition to aviation needs, instead of consistently giving aviation needs priority over the surrounding community, VTrans will build a stronger more trusting relationship with the Middlebury Airport Neighborhood Association and the surrounding community which will be beneficial to all as we move into the future.	development. Its intent is to provide flexibility for airport users and distribute hangars in multiple locations. Development of the existing tiedown apron for hangars is not permittable as that apron was constructed with federal funds, which prohibits it use for hangars. Note that VTrans expects hangar construction to proceed slowly based on demand. It is not anticipated that all hangars shown would be developed. Rather, the goal is to provide options, and ensure any hangar development is conducted in a logical and feasible locations.
D. 7/28/2022 Alan Moore	As a citizen of Middlebury and a consumer of the water that is pumped from near or even under the airport, I am opposed to any expansion of airport activities there. I don't believe that	At small airports, the potential for ground water quality impacts is very low due to the lack of commercial or industrial activities that generate chemical waste, and due to

	the Town is taking the necessary precautions to safeguard the quality of the water supply. The airport and its operations are one of the major concerns that I and my family have. There are so many situations around the USA where chemicals and fuel leaks have caused once wonderful water sources to become undrinkable. I don't believe that the airport serves the average Middlebury citizen in any way and thus the costs/benefits to the airport expansion seem totally unnecessary.	very limited wastewater generation. The airport's aviation fuel tank is registered, inspected and operated by VTrans. Wastewater disposal is limited to a few restrooms located at the airport. The airport does not impact the local aquifer or associated drinking water. The proposed airport projects are modest, and primarily limited to unheated storage hangars and have little potential to impact local water supply. Note that the developed area of the airport covers less than 10% of the total airport property. The Airport requires large areas of open space for airspace protection, which ensures the vast majority of the property remains undeveloped. The large areas of open fields and wooded locations at the airport provide a benefit to the aquifer by providing permanent protected open space for water recharge and quality benefits. Established vegetation slows water movement, reduces soil erosion with roots holding soil in place, and filters pollutants. Well-established vegetation reduces erosion and allows for more of the water to infiltrate.
E. 7/28/2022 Corey Hendrickson	As a parent and homeowner in E. Middlebury I would like to register my concern at the proposed expansion plans for the E. Middlebury airport. The two primary reasons are noise levels (esp in regard to desired increases in turbine planes) and aquifer protection. Is there a public comment period or environmental impact assessment available?	With regard to 'expansion,' there is no plan to expand the runway, taxiways, or foster increased use by turbine airplanes. The airport's design aircraft and category are not forecasted to change at Middlebury Airport. The master plan does incorporate additional hangars, with the intent of supporting additional aircraft and operation; however, any increases are anticipated to be modest, with generally consistent noise levels over time. See Comment Response D. regarding aquifer protection. The official public comment period ran from 6/30/2022 thru 9/15/2022. However, any additional comments are welcomed throughout the master plan process.

		The master plan report includes an environmental overview section; however, an Environmental Impact Assessment, or similar, is not a component of the Master Plan. Detailed review and permitting is required to be conducted as part of any project implementation, following the master plan.
F. 7/29/2022 Brooke Holzhammer	I would like to take this opportunity to add my comments to the record re. East Middlebury Airport's recent proposals in the 2022 Master Plan Update: The effort to "pre-permit" hangar sites to foster private development comes at the risk of the health and safety of an entire community. The airport's location on the town's aquifer should be reason enough to slow down and involve the residents more in these decisions, rather than attempting to move forward under the assumption that this growth is what is best for the entire community, simply because it is what's best for the profits of a few. The VASP forecasts that were used to make these determinations are, at best, poorly analyzed, as well as obviously being conveniently exaggerated and manipulated to allow for the hurried approval of a project that has the potential to have a negative impact on the water, trees, and general peace of our neighborhoods. I strongly urge VTrans and the FAA to move forward with more transparency, better research, and honest attempts at public discourse if you hope to maintain a civil relationship with the community you are affecting. Simply inviting us to a presentation and celebration of your assumed upgrades, as if there are no other options, is just insulting and dismissive.	See Comment Response D. regarding aquifer protection. VTrans disagrees that permitted hangar development puts the community health and safety at risk. The VASP Forecast were **not** used to justify the hangar pre-permitting effort. The program is a statewide legislative initiative. See Comment Response C. Note that the Act 250 Pre-Permitting process does not guarantee hangar development will occur. VTrans reviews and considers every comment and publishes both comments and responses in the master plan. The master plan process only approves the general planning for project. Approvals do not occur until successful completion of the environmental review and permitting process.
G.	Rather than keep inspecting the fuel tank at the airport waiting for it to leak before removing it and replacing it with	VTrans is now planning a Fuel Farm upgrade project within the 5-year Airport Capital Improvement Program. Required

7/29/2022 Ross Conrad	an above ground tank, why not include a fuel tank replacement in the Master Plan? Such a measure would be a much safer for protecting the underground aquifer.	inspections will continue both prior to, and after, the fuel tank replacement.
H. 7/29/2022 Ronald Rucker	Given the proximity to Middlebury's water supply wells, there should be no expansion of any sort of the airport. All herbicide use should be immediately stopped. Airports in general range from a nuisance to just bad neighbors for areas adjacent to them. Having lived at one time closer than now to the Middlebury airport I can readily sympathize with people in the immediate area. When we so urgently need to curtail the consumption of fossil fuels, aircraft of all sorts are definitely part of the problem and their use should in no way be facilitated or encouraged.	See Comment Response D. Herbicide use at the Airport is limited to vegetation maintenance along security fence and on tree stumps of cut trees. All herbicide use is under permit with the VT Department of Agriculture, Foods, and Markets. The permitting process and approvals include application measures and volumes to prevent groundwater impacts. Herbicide application is conducted only by persons certified by the Department. VTrans is tasked with supporting all state transportation systems, including road, bridges, railroads, and airports. Note that similar to ground vehicles, aircraft developers are also working to create electric and alternative bio fuels that will reduce the use of fossil fuels and greenhouse gas emissions.
I. 7/29/2022 Louise Prescott	I'm writing to express my concerns regarding the Master Plan currently under development for the Middlebury State airport. Let me preface this by saying that while I have been privy to some of the communications among the Middlebury Airport Neighborhood Association (MANA), they do not speak for me, nor I for them. A little background: My husband and I bought a home at the corner of School House Hill and Burnham Drive in the spring of 2020. The runway is about 1500 feet from our front door, so clearly anything that happens at the airport matters a great deal to us. We knew the airport was there when we moved in. In truth, it's fun to watch the little planes come and go. Helicopters rattling the night are less pleasant, but operating under the presumption that these are emergency services or	**Activity Levels**: An additional review was conducted based on comments regarding the airport activity level, particular the existing level of annual operations. VTrans and FAA estimate is listed at 6,350 annual operations, or an average of nine (9) landings per day. This number varies highly, whereas summer weekend days can include dozens of operations, including training activity. In contrast, there may be no operations on snowy winter days. The additional review included using both aircraft radio transmissions and aircraft transponder data. General Audio Recording Device (GARD) is a data collection software utilizing aircraft radio calls as a method of interpreting airport operation counts. The GARD data was used for the master plan to estimate the base year operation

	military operations and being a soldier's daughter, I understand the value of preparedness and won't quibble over necessities. In short, we've had no real issues with the airport as it has been since we moved in. Last winter, we were approached by neighbors who alerted us to new developments, including Act 250 permit applications that were filed and approved after we moved in but for which we received no notice, as well as the pending Master Plan. The neighbor gave us some background information and suggested we send our questions and comments to various agencies involved. The responses we got were unhelpful at best. Since then, watching the master planning process unfold has given me grave concerns, both in the details and in the process itself. I went through the plan in some detail, comparing it to relevant Act 250 permits, early Master Plan documents, and FAA materials. The numbers just don't add up. I work from home where I can usually see and/or hear every single flight operation. Our home is closer than Ross Conrad's yurt, which he described at the June 30 meeting. His observation was correct that traffic at the airport is nothing like the numbers in the current draft of the Master Plan. Indeed, the busiest summer days seldom reach anything close to what's suggested as a daily average. As I understand it, the plan includes projections that derive from formulas that were based on estimates that have little basis in reality, past or future. There are no actual records of flight operations, based planes, parking fees, hangar rentals, but they're convinced we need more? How about hiring an intern to count the planes? Otherwise it's just making stuff up.	counts. The GARD software utilizes radio calls made from aircraft to the airport's radio frequency to extrapolate operation counts. The program estimates that three radio calls, is the equivalent of one operation: covering the pilot calls of (1) downwind, (2) base, and (3) final for landing operations; and (1) on runway (2) clear of runway (3) exiting pattern. As there is variance in the number of transmissions per operations the GARD data is an estimate. Transmissions from overflights are also recorded, which could overestimate activity. However, during training activity with an aircraft conducting touch & goes, the radio calls may be as little as one call per operation. In aggregate, the GARD operation data is considered a practical estimate. GARD data was provided for the years 2016 through 2020. Utilizing the aforementioned 3 to 1 ratio the annual operation counts ranged from 5,411 to 7,251, with an average of 6,846 annual operations over the five-year period. An additional source of activity data is a FlightAware, a company that collects and integrated multiple sources flight activity to provide flight tracking and activity data (https://flightaware.com). Unfortunately, many of the typical data sources are not available at small airports or by light aircraft. For example, unlike commercial airports such as Burlington International, air traffic control radar is not available at Middlebury, nor do light aircraft have datalinks that provide position reports. Thus, for Middlebury, the FlightAware data is mostly dependent on an aircraft's on-board transponders that broadcast an ADS-B signal. This refers to Automatic Dependent Surveillance-Broadcast, which is an enhanced method of aircraft surveillance aimed at improving information to pilots and Air Traffic Controllers (ATCs).

	Numbers in various parts of the plan never seem to agree with other sources either. When the models were questioned during the June 30 meeting – why pick this formula over that one? – one of the consultants called it a matter of "opinion." His analogy of "picking stocks" is a complete fallacy as most people would be looking for a return on their investment. The airport does not generate enough income to offset public cost, and there's no evidence that it ever will. A fundamental change suggested in the Master Plan draft would facilitate nighttime operations. We're told the PAPI lights would only be visible to pilots, which seems dubious, and what about lights on the planes, themselves? What about the noise? Expanding the airport facilities to encourage nighttime operations is a pretty radical change, especially given the cost, the lack of documented demand, the potential impact on the neighborhood, and the fact that the airport is right next to a mountain where any visually impaired flight is fundamentally dangerous. So who is all of this for? Why are so many public resources being poured into a facility that serves a very small number of people? Where's the cost benefit analysis? Why are taxpayers being expected to subsidize a facility that does not and probably never will cover the cost of its operation? We're told in one letter from VTrans that the airport provides dozens of jobs, and yet there are only 15 parking spaces? VTrans cited businesses that actually employ a small fraction of the numbers they mentioned. We're told the college and some of the local breweries "might" want to fly some dignitaries in for something, but none of those entities appear on the record as asking for any airport upgrades. Indeed, cavalier stewardship of the aquifer would pose a very real threat to their continued	For Middlebury, the ADS-B data became available in 2020 from FlightAware but is limited for Middlebury Airport. The use of such transponders is not required within 2,500' of the ground in the Middlebury Class E & G Airspace. Thus, some training activity may not be recorded and some light aircraft may not yet have these ADS-B transponders. Nevertheless, the FlightAware data indicate operations ranging from zero to 14 operations per day, with an average less than that of the GARD data. However, it is not known what percentage of the airport activity is being recorded through this new capability. In summary, it is acknowledged that the airport activity level is an estimate, and actual operations may be less than nine daily landings. However, it is also highlighted that the master plan recommendations are not dependent on any specific activity level or threshold. Projects include safety improvement, maintenance, and support facilities for light aircraft use. The study recommendations do not include airfield expansion or accommodation of larger aircraft. The low level of existing and projected operations did not result in additional recommended facilities. **Airport Lighting**: Airport lighting was considered as part of the planning process but was <u>not</u> recommended or included in the plan based on public comments. **Airport Justification**: This and other public comments question the need and purpose of the airport itself. Middlebury is one of the smallest public airports in Vermont, and it is fair for residents to be of the opinion that the airport is not needed or beneficial. Airports range in all sizes, and the smallest airports with low activity levels are often questioned for their need. However, it is noted the Master Plan does not attempt to justify or invalidate the need for the airport.

	operation here. In response to concerns about risk to the local water supply, we're repeatedly told, without any specifics, "that's not a problem," but when those reassurances come from the same people who used the phrase "tree trimming" to describe a clear cut that left not so much as a blade of grass standing while a one-time vernal pool at the southwest corner of Munson Rd and School House Hill is now a heap of wood chips and who mistook underground fuel tanks for surface ones, it's a little hard to find them credible. VTrans authorities also cited the Lemon Fair Insect Control District as an important user of the airport, yet by all reports, the Lemon Fair group ceased aerial spraying years ago. They don't even have a plane. Were they to recommence aerial spraying, it's unlikely they would ever do so at night. At best, we're looking at spending millions of tax dollars on the off chance that someday some unnamed person will, at some point, want to fly into town at night for what point and purpose no one can say. Seriously? In a logical world, we would all recognize that, being next to a mountain, this was a poor location for an airport in the first place. It may have been fine for a few small crop dusters back in the day, but the unwarranted creeping scope of the airport is incompatible with the neighborhood that surrounds it. Given that hundreds of people live here and pay taxes to town, state, and federal governments, it seems clear that residential concerns should take precedence over a facility that costs too much and contributes very little.	Rather, it accepts the fact that Middlebury Airport is an existing public airport and is federally-obligated to support small aircraft and operations indefinitely into the future. Per federal policy, 10 based aircraft is the threshold to enter into the National Plan of Integrated Airport Systems (NPIAS). VTrans will continue to maintain the airport and support projects applicable for small aircraft in a well-planned approach. That is the overall purpose of the master plan.
J. 8/25/2022 Michael Delaney	My name is Michael Delaney. I am writing in regard to the proposed upgrades to 6B0 Middlebury airport. My time at Middlebury airport started several years ago with Green Mountain Avionics. I worked there as an avionics technician, under the watch of Bill Hanf, looking to move into a new career after a decade as an architectural engineer. At	Comment Noted

	Middlebury airport I learned a unique and world respected trade as well as completed my hours required for not only my private license but my commercial and instructor certificates. After completing my instructor certificates, I went on to fly for Vermont Flight Academy in Burlington but continued to bring my students back to Middlebury for the unparalleled training environment. In a small sparsely populated state such as Vermont teaching the youth about the size and diversity of our world can be a challenge. Aviation has been and will always be a major key to solving that puzzle. The skills I gathered during my time at Middlebury Airport have taken me as far abroad as Japan. With my current position as a pilot with Endeavor air I cover everything from the east coast of the United States to the Rocky Mountains. There is no denying the lack of attention to the general aviation world moved aircraft out of the view of most children and has led us to a crippling pilot shortage. Upgrading the infrastructure of smaller airports such as Middlebury is exactly how we open the world up to the next generation of Vermonters and Vermont businesses alike.	
K. 8/29/2022 David Prescott	I'm writing to express my concerns regarding the in-development Master Plan currently for the Middlebury State airport. I am writing separately and independently from my occasional contacts with the Middlebury Area Neighborhood Association (MANA) and Louise Prescott, who has also written to you. As some of you know, My wife and I bought a home at the corner of School House Hill and Burnham Drive over two years ago. Although a Select Board member indicated to me that my opinion was that of someone from out of town (and therefore less deserving of his attention), my family roots in Vermont predate the American Revolution and I have lived	See Similar Comment and Response I. Additional responses are provided here (Response K). **General Comment**: VTrans (and FAA) considered all comments, regardless of whether residents/citizens are long-term or new to the area. **Based Aircraft**: During the master plan study, an inventory of based aircraft identified 30 based aircraft, with additional seasonal/part time aircraft. **Precision Approach Path Indicator (PAPI).** The PAPI units are angled outward and upward from the runway ends, in the

	nowhere else longer than I have here. I am only newer to East Middlebury. Nonetheless, I pay taxes here and have long considered this home, residing elsewhere only because of professional obligations. The Middlebury Airport runway is about 1500 feet from our front door; anything that happens at the airport matters a great deal to us. We knew the airport was there when we moved in. We have no problem with its current daytime traffic. The increasing presence of helicopters when we are trying to sleep will be the subject of a different letter. Watching the master planning process unfold has been deeply concerning, both in the details and in the process itself. I have gone through the plan in detail, comparing it to relevant Act 250 permits, early Master Plan documents, and FAA materials. As many others have already noted, the numbers simply don't add up. I work from home roughly half the week where I can usually see and/or hear every single flight operation. I also walk on Schoolhouse Hill and Munson roads every day. Others have already commented in the gaping disparities between the numbers of lights in reality compared to the guesstimates offered at public meetings. Likewise, the lack of clarity around the numbers of employees compared to the available parking spaces and the fact that no one really knows how many planes are stored at the airport should concern any sober citizen. In my field of forensic mental health, I would be laughed out of any courtroom and never allowed back if I had to testify to the kinds of data we have heard so far. Projections based on formulas taken from estimates that do not correlate to reality are an embarrassment to serious planning and constitute a threat to the neighborhood. There	direction of landing aircraft. At Middlebury Airport, once installed, you would be able to see the PAPI units from Munson Road when looking south towards the Runway end. PAPI systems help guides pilots along the accurate approach path to the runway. They operate during the day and consist of white and red directionally-shielded lights, similar in size and luminosity of a traffic signal. The PAPI will not operate at night. See Comment Response D & H. regarding aquifer protection and herbicide use. **Act 250 Hearing and Process**: The Act 250 process is administered by the Natural Resources Board (NRB), an entity of Vermont state government. The District 9 Environmental Commissions reviews Act 250 applications and issue decisions and permits. It is a separate process from the master plan, which outlines short and long-term planning activities, but does not include specific project approvals.

	are no actual records of flight operations, based planes, parking fees, hangar rentals, but they're convinced we need more. If this were a book, it would be found in the "fiction" section of the bookstore. Emphasizing what others have already said: in the June 30 meeting in which the Master Plan was rolled out, the question came up – why pick this formula over that one? One of the consultants called it a matter of "opinion." He referred to this like "picking stocks." He overlooked the fact that this is not simply about financial investments: Peoples' lives and homes are at stake. Further, history has shown that the airport does not generate enough income to offset costs (funded by the taxpayers), and there's no evidence that it ever will. A fundamental change suggested in the Master Plan draft would facilitate nighttime operations. We're told the PAPI lights would only be visible to pilots, which seems dubious, and what about lights on the planes, themselves? What about the noise? Expanding the airport facilities to encourage nighttime operations is a pretty radical change, especially given the cost, the lack of documented demand, the potential impact on the neighborhood, and the fact that the airport is right next to a mountain where any visually impaired flight is fundamentally dangerous. So who is all of this for? Why are so many public resources being poured into a facility that serves a very small number of people? Where's the cost benefit analysis? Why are taxpayers being expected to subsidize a facility that does not and probably never will cover the cost of its operation? Even more than the irresponsible accounting at play, I am concerned about the effect on the aquifer underneath the	

	airport. VTRANS continues to spread herbicides to keep the area by the fencing clear. I understand that this is a requirement (post-9/11) of all airports. Likewise, all kinds of fuel, oil, and other chemicals are handles and in use atop this aquifer. It is very easy for local water districts to sign off on practices in the short term, but it is insane to think that such chemicals leaching into the ground won't have an effect in the long-term. One need only look at the experiences of communities as nearby as New Hampshire and Maine to find water supplies fouled by chemicals and communities not sure what their next move is. And on top of that is the lack of reliability of all water supplies in the US; this is headline news worldwide outside of Vermont. The idea that our various forms of government are not taking our community's long-term wellbeing into account, in my view, is offensive and worthy of ongoing vigilance by the public. Important to note is that there has been no response to our expressed concerns that a wetland area, clearly visible on a map of wetlands provided by local authorities, was filled in with wood chips left over from the clearcut that was originally billed at a Middlebury Select Board meeting as "tree trimming." To date, it has been maddening trying to get onto the notifications list for Act 250 hearings. Even then, no meeting seems to allow a discussion of the broader concerns that effect the citizens of East Middlebury. We are constantly told what will be addressed in one meeting and our concerns raised for other meetings. Having meaningful conversations based on actual data has not occurred, leaving many of us with no choice but to do what we can to raise attention to this via local media. These are clear illustrations of why trust in government has waned during my lifetime; our concerns have been written off and referred elsewhere. In the end, it is clear that no one is looking after the long-term best interests	

	of the citizens of East Middlebury, a village that — contrary to what one hears in these meetings — existed before the airport. Because we are only at the start of this process, you can expect more from our neighborhood to come forward. You should know, however, that few of us believe we have been treated with respect as neighbors. The Middlebury Select Board, VTRANS, and the FAA still have the opportunity to negotiate in good faith. As one citizen, I highly recommend that you do that.	
L. 8/30/2022 Anne Christie	In follow-up to the Public Information Meeting #1 in Middlebury on June 30, 2022, I have some questions and comments re: VTRANS' draft Master Plan (MP) for the Middlebury State Airport. 1. Relative to clearing 'The Runway Protection Zone' and keeping it cleared: a. Does the FAA require that Clear Cutting be the method employed? b. We know that Clear Cutting at the Middlebury Airport has received neighbor's lawsuits (costly, including to our VTRANS tax dollars), and is a method known to not promote the health of, or cause harm to, groundwater and the plant and animal ecosystem. c. How does the Master Plan allow for and encourage a variety of possible ways besides Clear Cutting to maintain 'The Runway Protection Zone'? 2. On Hangers, and other airport uses: a. What are the FAA requirements regarding individuals' hanger space being utilized for Aviation Purposes? b. What kind of monitoring does the FAA allow or require for how hangar space is utilized?	1a: The FAA requires VTrans to maintain the final runway approach clear of tree penetrations and other obstructions. The FAA recommends that all objects, including trees, be removed within the Runway Protection Zone (RPZ). The FAA will only fund tree removal once in any given location, and therefore recommends clear cutting and converting the area to a maintainable open vegetative field (if feasible per local environmental conditions). 1b. With proper measures, converting a wooded area to an open field would not impact groundwater. Depending on local site conditions, plant and animal ecosystems could be harmed or benefited from tree clearing. 1c. The master plan includes an obstruction analysis, identifies tree obstructions, and recommends removal where appropriate. The method of removal is determined separately based on environmental review and conditions specific to the site. Selective thinning or topping of trees is generally not effective, as regrowth typically requires repetitive cutting activities on a regular basis. For safety reasons, the FAA recommends open field conditions within the RPZ.

	c. How can the MP include the maximum amount of possible monitoring of hanger space utilization, to most efficiently and effectively maximize the use of airport space and assess the need for building additional hangers? d. How can the MP include language that current hanger upkeep/ condition and considered new hanger placement decisions, as well as location of aircraft use and any other building plans, also address neighborly relations? The airport requires neighbors to accommodate for airport relations (need I add regarding noise, interruption, impact on the environment and ecosystem?). Middlebury State Airport especially is very close to "medium density residential district(s)". Peace between the airport and neighbors is created by good relations both ways, and is best to be addressed in the MP rather than just be left up to airport staff. 3. How can the MP address the consideration of 'gray-green ratio' information? 4. On keeping the fence lines cleared: How does the MP limit the use of Herbicides as a method of reducing the vegetation along fence lines? Any use of Herbicides over an aquifer has risks to residents' water quality.	2a: FAA requires hangars located on airport property to be used for aeronautical use (e.g., aircraft storage, aircraft maintenance, etc.). It is permissible for surplus space in a hangar is used for other storage (i.e., a personal automobile), as long as aeronautical use is the clear predominant use. 2b: Enforcement of the FAA policy is VTrans responsibility. If a hangar use policy complaint is filed with the FAA, the FAA will typically first ask VTrans to address the situation. However, on rare occasions the FAA can audit hangar use on a public airport if continued policy violation is suspected. 2c: Master planning does not include monitoring of the hangar use policy. However, public comments during the master plan can identify the concern and lead the airport to review local hangar use. 2d: Hangar upkeep is an airport maintenance consideration (not planning). The airport master plan reviewed all existing, planned, and additional proposed hangar sites for FAA design standards, airspace, and operational efficiency. Hangar locations and positions included in the master plan incorporate all such factors. The master plan at minimum should plan for hangar sites that can at minimum accommodate all anticipated demands. Additional site planning is recommended to provide for a variety of hangar sizes and location to serve potential future needs. 3. The master plan does not have a specific task to address ‘gray vs green infrastructure. However, ‘green’ infrastructure, as it relates to water quality, is now generally incorporated into the latest Vermont state stormwater permit requirements. With additional state requirements for runoff control and treatment, the best practices are now considered

		'green' infrastructure. The new permit requirements must now be address for each new project as part of the VTANR operational and construction permits. 4: See response to Comments D & H for use of herbicides.
M. 9/12/2022 Shawn Cook	My name is Shawn Cook, I am the co-founder of Middlebury Flying Club, the AOPA representative for 6B0 and live in the neighborhood on Burnham Drive. I was part of MANA for a week until they found out I was a pilot that owned an airplane at 6B0 then they kicked me out. I didn't agree with everything but I did provide another perspective to the members, I guess they didn't like that. My comments for the master plan are as follows: • We need additional hangar space, I personally just rent one but would like to own one in the near future. • A pilot lounge is needed that has facilities like bathrooms. I speak with transient pilots all the time that support the need and are surprised we don't have one. The current area is owned by a business that doesn't necessarily maintain it well nor should they be responsible for public access. • Pilot controlled lighting is also needed so pilots that are running late on trips can get back into Middlebury. There are lights at BTV, RUT and Ticonderoga so is bizarre there isn't lights in Middlebury. • PAPI lights would be helpful and allow for higher angles of approach which will result is less noise and loitering. • GPS approach for the same reason as the PAPI lights.	Comments Noted. The draft master plan includes all of the requested facilities in this comment, except for the lighting for nighttime use of the airport. Pilot controlled runway and taxiway edge lighting are common and standard airport facilities. Based on comments by residents, lighting is not included in the recommendations.
N. 9/12/2022 Peter Brown	Likely you've heard these before from others, but I would highly encourage the state to include an airport visitor / lobby / pilot briefing building. There are many regional airports to use as simple examples for this, with Claremont and Parlin NH both having a simple and effective building for this. With the	See response to Comments M **Turf Operations:** The draft Master Plan has not reviewed the turf area of the Runway Safety Area (RSA) for potential use for takeoffs and landings. The area will be reviewed based on

	amount of traffic that Middlebury college generates, they likely could fund the building from Alumni donations. With approach and lighting in the master plan, an item that needs to be considered with it is turf operations. The FAA has finally officially recognized the value and importance of turf operations, and 95% of airports west of the Mississippi have a grass runway, or a turf area within runway safety areas**. Vermont lags behind in this respect, with many airports only having pavement or grass, but not both. There is every reason to include both. Maine has many, and NH typically allows use beside the pavement. **See https://theraf.org/faa-acknowledges-turf-operations-after-collaborative-effort/ ** https://www.faa.gov/documentLibrary/media/Advisory_Circular/150-5300-13B-Airport-Design.pdf As a side note on this, Middlebury has historically had both of these features throughout the 70's and 80's, with 2500' of pavement, 1500' of grass/turf, and full pilot-controlled lighting along the paved section. We used both all the time. Having all that removed actually decreased safety instead of increasing it. (I understand water runoff was one of the hottest buzzwords in the last few years, but the 6' drainage ditches that were installed in a soil area that has never flooded or had a water drainage issue in its entire history is the largest danger to pilots landing at Middlebury currently) Thank you for all the consideration, and feel free to reach out if further discussion is warranted, or for contacts in the RAF or other airports.	FAA guidance in Advisory Circular 150/5300-13B, Section 2.10.6. Note that operations could only occur on the east side of the runway, based on the location of the parallel taxiway. Other considerations outlined by FAA can be reviewed for feasibility.

O. 9/12/2022 Bill Hanf	Being based there as both a business owner / operator and pilot I would submit that: * There is definitely a need for additional hangar space (for individual owners as well as business growth. GMA is currently maxed out on our facility capacity) * There is definitely a need for a Pilot Lounge / Terminal area. * In addition to the proposed PAPI lights I would highly recommend Pilot Controlled Lighting This would have a minimal impact on the neighbors but would increase safety greatly. * We also have a need for a GPS (LPV) Approach with lateral and vertical guidance This does not require the traditional installation of expensive ground based navigational aids (ILS/LOC/GS). The GPS Satellites are already in the sky. We just need the FAA to publish an approach. I understand the "minimums" would be high but WAY better than no approach at all. I currently need to fly my customers planes to different airports to flight test this after avionics upgrades	See response to Comments M
P. 9/12/2022 Jeff Wagner	I don't normally chime in, but as the owner of a plane hangared at 6B0, did want to add a few comments. I was born and raised in Addison county. Started flying at the age of 15 in the late 1980s at 6B0 in Eric Hanson's Citabria. When I came back to VT after college as a commercial pilot, I purchased a Cherokee, which has been at 6B0 since 2005. I've heard talk of additional hangars, lounge, lighting and approaches. It appears there's a significant shortage of hangar space in VT, or at least the Champlain valley in general. A	See response to Comments M

	friend of mine recently moved to the area and called every airport within 1 hour of BTV looking for a hangar for his aircraft that he was bringing up from Maryland and found nothing. Regarding access to 6B0, having an RNAV approach and pilot operated lighting would be most important to me as a pilot with a plane at the facility. Once the winter months hit, those of us that have to work 9-5 jobs during the week are only able to fly on weekends when it's VFR. Being able to land after sunset and during weather would allow exponentially more opportunities for those of us who are aviation enthusiasts. It would also be safer for pilots who are tempted to push themselves to get back to 6B0 close to sunset or during marginal VFR that may exceed their skills. While it doesn't relieve the pilot of using sound judgement and flying in accordance with regulations, having lights and a GPS approach would go a long way to reduce the chances of an incident.	
Q. 9/12/2022 Sean Flynn	I'm sure you're getting a boatload of similar requests but in terms of the master plan at 6b0, we are desperately in need of: An FBO/ lounge with facilities, lpv approach, pilot controlled lighting along with the proposed papi.	See response to Comments M
R. 9/12/2022 Kyle Clark	I understand that you are collecting input on the Middlebury Master Plan. As a business owner, pilot and Vermontor, I am thrilled you are establishing a master plan for this and other airports. The airports, quietly, provide an important link and opportunity to individual Vermontors, businesses, and schools. I have traveled the country to hundreds of airports, many that	See response to Comments M **Electric Charging:** Charging infrastructure can be consider in the master plan, for both vehicles and aircraft. **Flight School Facilities:** The terminal building recommended in the study is planned as a single level structure of up to 1,000 to 1,500 SF. The

	host vibrant communities of veterans, technologists and aviators. A common theme at these airports are quality facilities, and I think you should consider the following; in order of importance: 1. IFR approach and pilot-controlled lighting 2. FBO building, bathrooms, lounge and publicly accessible facilities 3. Transient aircraft parking, fuel and electric charging 4. Provisions for a flight school (classrooms and hangar) 5. Private hangars, leasable land for low-cost hangars and higher end hangars 6. Onsite car parking and charging With these upgrades, the airport will add further to the community and state.	building would have conference/training room that could accommodate such activities.
S. 9/13/2022 Douglas Gurnee	I am writing you today about the plans for Middlebury airport. I have flown in and out of Middlebury for more than 35 years. I am comfortable with the plans. Although I like to fly at night, I use a private strip. I consider the big advantage to be the safety issue should someone find themselves in a bind at night and have to put down or, a local who was out and got delayed can come back to his home base safely. I go to Ticonderoga and Rutland to practice where no one seems to be bothered by it. I don't think you will see much traffic from 6bo flying nights so the local community which Sen. Ruth Harding organized then stirred up, would see any increased	Comment noted

	activity. I enjoy giving free foliage rides in the fall and have participated in "Airport Day" events to get more folks on the field and meet the pilots to see what the activity is really about and not trust the hype they have heard. Last event, I logged over 7 hours in the air giving rides. There were many planes and a helicopter participating. These are on our time and fuel to help the event. The people who came and got a ride, left with a better understand of who we are and why we fly. I know there is opposition, especially about lighting the runway but I feel if you prevent one crash by someone in trouble, it is worth it. The PAPI landing assist lighting and, GPS will help folks navigating to ensure a safer landing during the day and especially in the dark in an emergency. 6bo is a very nice facility. The suggested pilot area with the computers, weather info etc., would be convenient, quiet area for the pilots. The airport would likely grow some and the plan suggests this. Contrary to what the local politicians suggest, the airport provides revenue for the town and the State. Everyone pays taxes on everything that is purchased which isn't considered by our reps. Building more (needed) hangars would be privately built and owned, and more taxes paid in. Businesses also need storage for airplanes in for repair so they won't be apart and outdoors.	
T. 9/13/2022 Glenn Symon	I would first like it to be known that I fully support all aspects of the draft. As an owner of a hanger at the airport and an active recreational pilot flying in and out of Middlebury it is my option that the safety of pilots and community comes first. The addition of a terminal is necessary, a clean, quiet environment where pilots could access weather and current flight information and have the ability to rest between flights	Comment noted

	keep them informed and sharp prior to taking off. Papi lighting and a instrument landing system which will help execute a more precision approach potential eliminating balked landings or go arounds which are typically more stressful to pilot and crew. Hanger expansion is critical in order to support this aviation community resulting in supporting businesses on the field, fuel sales and potential local home sales which strengthens support for the airport.	
U. 9/13/2022 David Bahnson	I am a hangar owner keeping my two airplanes (C206 and Piper Cub) in one of the south hangars at Middlebury State Airport, having sold my hangar in Rutland to move the aircraft to Middlebury. I am very much in favor of the upgrades to the airport as described in the current Master Plan, even though I will not benefit directly from the changes. Airport access is vitally important for any productive community, and Middlebury is no exception. I understand how people who have moved to the airport vicinity would have an interest in restricting or even eliminating the activities there. It's nice to think that the airport could just be built somewhere nearby and still satisfy the community needs, but it's easy to see how some objections would be raised at a new site as well. Such a move doesn't really solve any problems, except perhaps providing flatter terrain surrounding the airport, but that would also likely increase the number of neighbors impacted by airport activities. Much of the plan is directed at safety, which includes improved safety for adjacent properties and their inhabitants, but much of the plan also provides better functioning of the airport and improvement in the community's access to transportation, which is vital to the economic status to that community.	Comment noted

	Please help our neighbors focus on the positive benefit of the airport improvements rather than the minor impact it would have on their immediate community.	
V. 9/13/2022 Jim Meyersburg	I am writing in support of the Middlebury airport. My family has been a user of the airport for over 60 years, allowing us to commute from our home and jobs in Maryland. I decided to retire here and have lived here full time and built a house here. I still actively use the airport today. I keep a plane there. I've seen the airport languish and I've seen it grow. It is currently flourishing. I strongly support its future growth.	Comment noted
W. 9/13/2022 Keith Hendershot	A couple of items for 6B0 1. We need some type of Pilot Lounge/FBO 2. Pilot Controlled Lighting. 3. GPS (LPV) Approach with lateral and vertical guidance.	See response to Comments M
X. 9/13/2022 Jim Leavitt	Some of the neighbors of the Middlebury State Airport are on the record for having significant contempt for the area in proximity of the Airport. Specifically, in regard to excessive noise, possible pollution, and the lack of economic value realized via its operation. These same complaints could also exist in the areas of VT Route 116, VT Route 7, or even downtown Middlebury. I own an airplane which is based at the Middlebury State Airport and, I offer flight training lessons there as well. So, it would be easy to say that my opinion is swayed toward the favorable aspects of the Airport. I do not live near the airport, I only wish that I did. From my observation and experience at the Airport I can honestly say that the noise level and consistency is	Comment Noted

	considerably lower that one would experience when near a busy highway, like Rt 116 or Rt 7, with the combination of large trucks using engine brakes and motorcycles competing to see who can make the most exhaust noise. We as pilots make an effort to depart to the north, when possible, maintain at least one thousand feet above the ground when in the traffic pattern, and climb at the best rate on take-off. We make an effort during training to educate our students to be good neighbors to the greatest extent as possible. I can assure that surface pollution is minimal regarding fuel spills, fuel is too expensive a com with which to be careless. There are no de-icing operations at 6B0 so, no runoff of glycol, unlike the runoff from highway chemicals and salt. The notion of developing the one hundred fifty or so acres now occupied by the airport as an area for housing is not consistent with concern for the aquifer and water purity. Even if developed in five-acre parcels there would be the potential for thirty homes each requiring sewage disposal of some kind. The potential for any airport to enhance surrounding businesses is unlimited but, only if the community recognizes and exploits that potential. Enhancements at the Airport will only result in financial dividends. The need for hanger space exceeds demand at all airports in Vermont. That applies to private, public, and State-owned airports. Middlebury especially is in need of hanger space to accommodate aircraft already based there and for aircraft owners who might like to live in the area. Then, there is always the possibility of the need to move disaster related humanitarian or medical materials quickly into any area of the Country. A functional and well-equipped airport can save lives. Medical flights occur every day across	

	the Country to and from airport which can support medium sized turbo-prop and jet aircraft. The Middlebury State Airport is there, established, and well on the way to playing an important role in the development of mid-Vermont's economically in the tourist industry as well as business aspects. Why would there be even a remote thought of not supporting the Airport's potential.	
Y. 9/14/2022 Caroline Cating	My name is Caroline Cating, I am a CFI and got my start teaching at the Middlebury State Airport in 2020. That was a few years after I graduated from Middlebury College, during which time I hung out at the airport frequently because I worked for Bill Hanf at Green Mountain Avionics and was also active in the Middlebury Flying Club. Later, I worked for Vermont Skydiving Adventures as a pilot. Mike Vincent does their maintenance, so I have gotten to know him quite well over the years. I was really pleased to watch the slide show for the new master plan. I still work in the area and love this airport and think the aviation community would benefit wildly from having an RNAV approach, runway lights, and a little terminal building. This is specifically because, having taught members of the Middlebury Flying Club, there was not a great place to brief folks and meet. I would also love to see provisions for a flight school. I would also like to see an electric charging station for vehicles and aircraft included in the master plan so that Middlebury can be part of making aviation cleaner. Thanks for taking comments, and I am so excited to see future improvements at this wonderful airport!	Comment Noted

Z. 9/14/2022 Wes Greene	My name is Wesley Greene and I am a pilot with United Airlines. I also belonged to the Middlebury Flight Club and am a certified flight instructor. While I can understand the people that live around the airport being concerned that adding lights and a gps approach to the airport would make the airport more distracting and somehow disrupt their lifestyle. The truth simply is that it would not. Middlebury is a rather short and a very narrow runway so the thought that this would increase a lot of traffic especially more commercial traffic vs GA traffic is not valid. With Rutland being just down the road that's where people with bigger operations are going to go. So why do the upgrades. Simple to save lives and make the airport safer. As a flight instructor I have to teach students in night operations. That means now having to fly to another airport to do so or taking the risk of operating on a dark field with make do lighting from other means. I will not do the latter as I feel it is unsafe and I'm not willing to. Also the papi would be of great service to both students learning the proper approach path angle as well as to seasoned pilots who fly to Middlebury from other destinations and are unfamiliar with the airport. As I stated earlier 6B0 has a smaller narrow runway this would give a pilot used to flying from larger wider runways a conflicting sense of their approach angle as it looks different and could result in an accident that is preventable simply by having a papi on the field. Having a GPS approach available to the field extremely helps the pilots whether they are flying IFR or VFR. Having an approach available to back you up is something we as professional pilots always do. We never just fly a visual approach without having it backed up it just adds a layer of safety. So the reasons to do the upgrades are simple it's to make the flying safer and to save lives. Someone may feel that the lights could be pollution however they are pilot controlled and only on when needed, the papi and the gps approach help aid	See response to Comments M

	pilots to the ground safely and would not be a bother to anyone. However an accident that takes lives or destroys property with a fire resulting on the field or to places neighboring the field is a far worse scenario.	
AA. 9/14/2022 Colleen Brown	Written comment received in the mail. Copy attached.	See Comment Responses C, D, & I.
AB. 9/14/2022 Roger Teese	Thank you for taking comments about the future of Middlebury airport. I have owned a hangar there since about 2015. Previously I hangared at Shelburne. I also have a hangar at Sebastian Florida. Middlebury is a wonderful friendly airport. We should have fuel always available. I think the runway should be extended for safety Pilot controlled lighting. A larger parking area. I know at least one of the neighbors moved adjacent to the airport and enjoys it. Aviation is important to Vermont. Look what is happening at BTV We need a more comfortable and attractive Lounge area. I fly back and forth from Florida and airports along the way are much more attractive than 6B0. I always enjoy coming back to Vermont and flying from Middlebury.	Comment noted

AC. 9/14/2022 Bruce Catlin	I am writing in support of the Middlebury Airport and proposals in the current Master Plan. As a resident of Addison County for thirty years, an aircraft owner based at Middlebury for twenty-two years and a hangar owner for twenty, I have invested in and benefited from the airport. I have purchased fuel and maintenance services at the airport, paid rent to the state and taxes to the town for a three bay hangar I funded, selling two bays to other aviation enthusiasts who also contribute to the state and town. Although I believe Vtrans could do a much better job managing the airport, it is still a tremendous asset to the community, providing travel opportunities for out of state visitors, residents, emergency services, businesses and military training. The negative comments against the airport are disappointing. Those opposed seem to have decided to use the opportunity for public comment on the master plan to generate hysteria over supposed expansion. The airport has not changed much in the past twenty years and most likely won't change a whole lot more in the next twenty. Rather, the master plan proposals are geared toward safety and improving access for the community. The addition of an instrument approach, PAPI lighting and tree removal would certainly enhance safety. Additional hangar space has been needed for decades. Airplanes are similar to the investment in a car or other piece of machinery and survive longer if cared for and kept in a protected environment. And finally, the proposal of a visitor friendly terminal building with parking could go a long way toward opening the door for the community to learn more about the value and history of aviation in Vermont.	Comment noted

AD. 9/14/2022 David Cobb	I started flying at 6BO when I was 12 years old, loading stearman crop dusters to earn flying time. Life changes took me away from flying until the early 90's. I finished my private and bought a Cessna 150 1999. For many years my work in commercial satellite installation and service work took me to all of New England and upstate New York. Flying out of 6BO became a significant part of my income for many years. When I first flew out of 6BO it was a grass/sand strip and over the years many improvements made the airport safer. I see the airport as an important part of the Middlebury business environment . When the airport was moved to its present location in 1950 there were no homes near the airport so all of the people who are now complaining bought their house long after the airport was established, their choice. Over the years the improvements to 6BO have been a huge benefit to many people in Addison county. There is presently more than a dozen good paying jobs on site and an increasing use by charter services for local business, especially Middlebury college. The aircraft today are very quiet compared to years past when the crop duster leaving before dawn would shake the earth and many times come back after dark. The aircraft today are very quiet and more efficient. Any further improvements to the airport would benefit the	Comment noted

	entire community and the safety of all pilots. The people complaining have no idea of the value of GA in today's business world. The airport was there when they bought their homes and they knew it. I strongly support any further improvements to the airport especially extending the runway and more hangers. I presently own a hanger and plan on keeping it for a long time. Please feel free to contact me for any further discussion.	
AE. 9/14/2022 Selectboard	Written comment received in the mail. Copy attached.	Comment noted
AF. 9/14/2022 Dan Arensmeyer	First of all, I am HIGHLY in favor of all the proposals in the master plan. If I were to prioritize the items on the master plan, I would put additional hangar space at the top of the list. Ideally, this would be hangar space built by the state and then leased/rented to tenants. The reason I recommend state-built hangars has to do with the difficulty in obtaining financing for structures on leased property and the economies of scale related to site prep, design, permitting, and construction. It doesn't make sense for each individual to undertake the time-consuming and costly ordeal of getting a hangar through the design, permitting, and constructions phases. At least one of these hangars should be reserved for short-term use - things like annual inspections and maintenance for aircraft without permanent hangars. Hangar	Comment noted

	space should be a priority not only to allow on-field businesses to grow, but to enhance safety of the aircraft operating at the field - hangared aircraft are less susceptible to infestation (weather, bird nests, wasp nests, rodents damaging wiring, etc.). Also, not having access to suitable hangar facilities is a serious impediment to properly maintaining an aircraft. It's not hard to come up with a list of minor maintenance issues that would be easy to correct in a hangar, but not on the ramp - leading to those items not being corrected and a reduction in the safety of the aircraft. I would put airport lighting (pilot controlled) and PAPI next, followed by approval of GPS approaches (two preferably, but one with circling minimums would be better than nothing. These both have obvious safety benefits. A pilot lounge and terminal area would be nice, but at a minimum, some sort of conference room that could be used by flight instructors for ground training or others hosting meetings / training sessions.	
AG. 9/15/2022 John Rahill	I'm writing to express my support for the continued outstanding operation of the Middlebury airport, as well as the much-needed safety improvements (and of course we need to expedite getting aviation fuel back at the airport for sale). I am a retired Green Mountain Boy F-16 instructor pilot with 30.5 years of service to my country and state, as well as a current United Airlines 757 and 767 pilot, a flight instructor at BETA technologies, as well as a local CFII (flight instructor for other civilian pilots). Middlebury airport has tremendous value to the local community and is a very special place. I live in Burlington, but choose to get all the maintenance work done on my personal airplane at Middlebury because the shops there are the best	Comment noted

	there is. Mike Vincent and Peter Brown at J and M Aviation are the professionals I trust with the maintenance on my 1957 Cessna 180 Skywagon that carries me to and from work in Newark NJ and my family and friends all over the Americas. Bill Hanf at Green Mountain Avionics is who I trust and go to for all my avionics and radio work. I have personally spent over $5,000 per year for many years on maintenance and fuel at Middlebury airport. I recommend the airport to all my pilot friends and students as the best place to go for all their aviation needs. It also traditionally had the cheapest 100LL aviation fuel around, so many pilots from all over the state would fly there to fill up. Cisco Herrera does an amazing job managing the airport, he is an unsung here and fellow Veteran with more years of service than me. The airport is a state and even national treasure, valued by more than just all the pilots and locals who rely on it. Please lend your maximum support to the efforts to improve the utility and safety of the airport. Do not be swayed by NIMBYs who moved there long after the airport was in place and humming along who want to impede access to it for selfish reasons.	
AH. 9/15/2022 David Schmidt	My name is David Schmidt, I felt the need to comment in support of the Master Plan at the Middlebury State Airport. If you could forward this or let me know who else I can share it with to show support of Middlebury State Airport Master Plan that would be greatly appreciated.	Comment noted
AI. 9/15/2022 Beth Schiller	I am a 20+ year pilot in the Vermont area and having lights to land in the dark would be great and there are solar ones that I use on my runway what come on at night and off during the day. This means no wiring necessary - low cost! Also having an approach into the airport even with some high minimum due to terrain avoidance would be beneficial. Lake Placid as an example despite all the terrain, has an IFR approach.	Comment noted

	Also, who keeps making ditches at all of the state airports. Airplanes and ditches DO NOT go well together and it affords a pilot no exit ramp, so to speak, when you need to go off the runway. I'm shocked that aviators haven't sued the state for continuing to put ditches where clearly there is no drainage issues. Safety first and foremost. Aviation always can never have enough hanger space in our climate	

Comment Responses	Andrew Sambrook
Location	Middlebury, VT
Date	Following Public Meeting No. 1

Due to the large number of comments and questions from Mr. Sambrook, this individual response is provided. The corresponding responses can be found at the end of this questions/comments list.

Andrew Sambrook
287 Airport Road, Middlebury, VT 05753

Comments submitted for response during Public Comment period: DRAFT Middlebury State Airport Master Plan

Our names are Andrew and Andrea Sambrook. We're residents of the Town of Middlebury residing at 287 Airport Road in Middlebury. Our home is located on the Northwest Side of the end of Runway 19. You can see our home in Figure 4-1 of the draft Master Plan at bottom left. We have much to be concerned about with the Master Plan and wish to provide some comments on the drafts we have seen. We attended the public meeting on 6/30/22.

Attached are a set of questions that we wish to submit for VTrans response. We would also like to make some additional comments for the public record.

First, we have an initial observation about the process to date in relation to community participation. It's been 4 months since several community members asked for Middlebury Selectboard to support our airport neighborhood association (MANA) in achieving local community representation on the TAC (the Technical Advisory Committee for the Master Plan). The Master Plan was well under way. At that time, the TAC comprised VTrans employees, FAA representatives, Addison County Economic Development and 1 user of the Airport. There was no community involvement on TAC. It seemed to be a reasonable request to have either a Community Advisory Committee (as recommended by the FAA), or participation of a neighborhood association and/or a community member(s) on TAC. Indeed, this had been anticipated by the workplan of CHA (The Consultants engaged in writing the Master Plan – see section 9 of the scope of work dated June 2, 2020 by CHA). Unfortunately, neither the community (nor indeed the Town of Middlebury) were invited to participate in the TAC at the initial stage. That was unfortunate. Even after this was brought to their attention, VTrans did not volunteer to appoint a community member despite numerous requests. Finally after we drafted a letter to Governor Scott, the Town of Middlebury was invited to appoint both a Town representative and a neighborhood representative. **We appreciate that we can finally provide input into the Master Plan albeit at a fairly late stage.**

Second, we believe the timing of the filing of the Master Permitting application for the proposed new Hangars under Act 250, does a disservice to the community and the users of the airport. By filing BEFORE the Master plan is complete, it preempts the important work of the Master Plan and side steps any diligence work to provide a necessary case for what is a major proposed development – the North Hangars. According to the FAA, the goal of an Airport Master Plan, ***"to provide the framework needed to guide future airport development".*** The FAA also states that the Airport Sponsor should ensure that the Master Plan meets the objective to ***"justify the proposed development through the technical, economic and environmental investigation of concepts and alternatives"***. Further, an objective of the Master Plan ***"should be to provide sufficient project definition and detail for subsequent environmental evaluations that may be required before the project is approved."*** The

Master Permitting Act 250 application is based upon a site plan that was not disclosed in the previous Master Plan (2000) nor disclosed in the ALP (Airport Layout Plan) revision of 2003. As publicly stated at the 6/30/22 meeting by CHA, it was not adequately supported by any additional work as part of the current 2022 Master Plan update. Thus the North Hangar development has been incorporated into the Master Plan without any investigation of "concepts or alternatives" either now or in prior plans or ALP.. It's as if the Master Permitting site plan was *cut and pasted* into the Master Plan without any diligence performed.

Our third comment is to note the high level of community interest in the Master Plan. This is because the presence of the airport was and remains of considerable public interest and controversy. Not least because it sits on the Town of Middlebury aquifer. We think that is important in terms of further NEPA (National Environmental Policy Act) reviews that should be required for the adjustment to the Airport Layout Plan by the "approving FAA official". We'd urge either a full environmental assessment by VTrans – or an environmental impact statement by the FAA, under NEPA, when the ALP is finalized in the next stage of the Master Plan.

Why is development at Middlebury so controversial and community interest high?

1. By all accounts, it's a very difficult airport in which to fly safely – clearly it would never get approval to be built there today given the terrain and wooded nature of the approaches. In the very recent past there was a serious accident and a tragic pilot fatality.
2. It's surrounded by residential zoning and is very close to 60-70 homes.
3. It's also close to a beautiful historic Town of East Middlebury.
4. It's situated above the Town aquifer and within the wellhead protection zone, increasing the risk (albeit perhaps marginally small) of contamination of the Town Water supply.
5. Historically VTrans has not been the best steward of the asset it owns. You will see "hangars" that are not currently "fit for purpose". In particular properties marked #13, 14 and 15 on Slide 12 of the presentation are clearly unsafe and seem to be used for material storage not hangers. There is multiple aircraft debris, scrapped airplanes and refuse scattered around the fenceline. There are empty oil drums scattered between hangars.

Set out attached are questions relating to the Master Plan as presented at the June 30, 2022 public meeting. We respectfully ask that each of these is responded to *in full* as the VTrans Program Manager committed to do at the 6/30 meeting. The questions generally follow the order of the presentation at the Public Meeting on June 30, 2022.

Andrew Sambrook
287 Airport Road, Middlebury, VT 05753

Questions submitted for response during Public Comment period: DRAFT Middlebury State Airport Master Plan

1. **General Questions about the Master Planning process (Slides 1-9):**

    1.1. Please provide a list of airport users, airport business owners and community members (beyond the TAC members) that were interviewed during the course of the Master Plan work process in order to gather data and perspectives.
    1.2. Please provide the final and current list of TAC members.
    1.3. What were the specific community and Stakeholder engagements undertaken to provide the Inventory/Aviation Forecasts and Facility Requirements stages of the Master Planning Process?
    1.4. Why has the timeline shifted from an estimate of 12 months in the June 2, 2020 Scope of Work document to now requiring more than 30+ months?.
    1.5. Please confirm that the budgeted cost to VTrans of the Master Plan of $342,967 remains correct despite the delay.
    1.6. How much of the cost of the Master Plan is supported by FAA grants and how much by the State of Vermont?

2. **Airport Inventory (Slides 10 - 14)**

    2.1. Based Aircraft

    2.1.1. What changed the number of current (2022) "based aircraft" which was set out in the TAC #1 meeting on 07/15/2021 as 17, to 30 as set out in the current Master Plan draft as presented on 6/30/22?
    2.1.2. Please confirm that the FAA defines "based aircraft"as one that meets 4 criteria – i. that the owner has an agreement for storage with the airport sponsor; ii. that the aircraft is at the airport for "the majority of the year"; iii. that the aircraft is operational and iv.The aircraft has an airworthy certificate.
    2.1.3. Did the Master Plan use an alternative definition of "based aircraft" than the FAA definition in 2.1.2?
    2.1.4. In response to a Public Records request, VTrans Public Records Manager reported on 5/19/2022 that 18 planes have an *agreement for storage* thus meeting criteria i. above– (the report stated that 15 planes pay for a Hangar rental space; 3 pay for a tie down rental space and 3 planes are located at 6B0 but none of the 3 pay for rental nor tie down rental space). Therefore can you confirm that only 18 aircraft meet the FAA criteria for "based aircraft" in 2.1.2 above?
    2.1.5. How would VTrans reconcile the number of 30 used in the Master Plan as the "Based Aircraft" to the 18 aircraft that meet the FAA definition of "based aircraft"?

2.1.6. How does the number of aircraft of 16 planes in the FAA 5010 form (Airport Master Record) reconcile to the number of 30 that is used in the Master plan?

2.1.7. Can you provide the updated Aircraft Inventory and *N Numbers* for the additional 14 planes that you believe are now additional *"based aircraft"* at Middlebury.

2.1.8. Did VTrans provide CHA with the individual hangar and tie down lease agreements showing how the hangars and tie down space is currently used in order to show proof of *"based aircraft"*

2.1.9. What evidence did VTrans or Middlebury Airport staff provide to support the number of 30 *"based aircraft"?*

2.1.10. Has the FAA approved and reviewed the *"based aircraft"* analysis?

2.2. Aircraft Hangars and Tie-Down Positions

2.2.1. In the 2021 VASP (Vermont Airport System Plan) therein at Table 3-43 and Table 3-5, the *Aircraft Storage Available* analysis states that at Middlebury Airport there are 12 T-hangars and 11 Conventional Hangars (Total = 23) and 73 Tie Downs. How does this reconcile with the 13 total Aircraft Hangars and 40 Aircraft Tie Downs as presented in Slide 11 of the Master Plan document?

2.2.2. According to VTrans the current tie downs of *"based aircraft"* (those with a current leasing agreement) is 3 – If there are 40 tie downs available, then please confirm that the tie downs available for itinerant aircraft visiting 6BO is 37 based on the current Master Plan data presented on Slide 11?

2.2.3. Please confirm that the number of tie downs are sufficient under projections of future aircraft operations at Middlebury Airport.

2.3. Aviation Fuel Farm

2.3.1. Please confirm that this is a buried fuel tank at Middlebury and as of 7/14/22 it is contaminated and currently closed pending an inspection and cleaning.

2.3.2. Why is there no mention of upgrading the underground fuel farm tank or fuel facilities in the Master Plan given that the current tank is over 30 years old - installed in 1990.

2.3.3. Is the intent to replace the underground fuel tank within the time frame of the Master Plan? If so, why is this not included in the Master Plan?

2.4. Existing Facilities - current use

2.4.1. Are Hangars marked 13, 14 and 15, marked T Hangars totaling 4175 sq feet on slide 12 currently being used for the storage of aircraft? If not, what are these currently being used for?

2.4.2. In the CHA visit of 08/25/2021 did Consultant VHA inspect these hangar spaces (13-15)? Did they conclude that these are in a safe and suitable condition for the storage of aircraft and fit for purpose?

2.4.3. When did VTrans last do a Hangar inspection at Middlebury Airport to ensure that they are in a condition that they can be used and are being used for aviation purposes according to their leases?

2.4.4. Please provide the set of Meeting Minutes prepared by VTrans as part of the public record for the Master Plan of the Middlebury Site Visit by CHA on 8/25/2021.

2.4.5. Please provide any other Meeting Minutes for meetings to Middlebury Airport after 8/25/2021 by CHA for the purposes of drafting the Master Plan.

2.4.6. Does the current estimate of existing hangar space of 32,600 sq ft (page 3-17) and 13 Aircraft Hangars (Slide #11) include the 3 additional hangar spaces that are currently in private development (1 built in Winter 2021 - Spencer 40' x 41`, 1 currently in Act 250 application - Arnold - 60' x 60' , 1 additional in a pre Act 250 Application)?

3. Forecast of Aviation Demand (Slides 15 - 21)

3.1. Aircraft operations

3.1.1. In its Scope of Work, CHA states that "the general aviation demand forecasts will be developed using the FAA Terminal Area Forecasts, the VASP, and supported by local data and recorded flight plans". The Table 3.1 indicates that CHA is forecasting a 4.2% 5 year growth pattern for the 20 years in annual operations. How can this be reconciled with the FAA TAF showing 0% growth over the same period shown on slide 17?

3.1.2. How can the 4.2% growth shown in Table 3.1 be reconciled with the historical data in the VASP (2021) which shows that operations have declined from 10900 to 7150 (35% reduction) and what do you believe has happened that will reverse this negative trend at Middlebury Airport?

3.1.3. The 2008 Middlebury Airport Business Plan shows "current operations" to be 25000. Based on the 2022 estimates of 6500 – how do you reconcile a 75% reduction in activities with the 4.2% growth for the forecast period in operations projected in the current Master Plan draft?

3.1.4. How do you reconcile the growth estimates with those from a third party like *flightaware.com* that reports arrivals and departures running at about 4.3 per day from January thru June 2022 – an annualized total of closer to 1500.

3.1.5. What estimates did the airport manager or users of the airport provide when they were asked about the estimates of current aircraft activity at the airport?

3.2. Based Aircraft projections

3.2.1. In the CHA Scope of Work, it was stated that the *"based aircraft"* forecasts "may include up to three scenarios" What were the three scenarios? What was the rationale for the Master Plan scenario chosen as presented?

3.2.2. Why was the highest growth percentage for "*based aircraft*" (1.32%) chosen at an airport that was identified in the 2021 VASP as "low growth" historically and "average growth" for the purposes of the VASP forecast that was completed only in 2021? What has happened since VASP that

suggests the Middlebury forecasts should be classified as a high growth airport?

3.2.3. The VASP at page 5-21 uses an average declining rate of (-1.61%) of "based aircraft for the same period. How do you suggest these can be reconciled with the current Master Plan projections given they are for the same planning period?

3.2.4. At page 3-17, the Master Plan states that the Middlebury Airport is at hangar capacity. What is the current waitlist for hangars at Middlebury Airport?

3.2.5. In a public information request of May 19, 2022, VTrans stated that "there are 3 construction projects (presumably the three currently going through Act 250 process) and 1 inquiry about permitting" and that there are "0" on the waitlist for tie downs. How does this lead to the conclusion that there is a demand for additional hangar or tie down spaces?

3.2.6. The 2008 Business Plan and Airport Master Record of Jan 2008 shows "*based aircraft*" to be 50. Based on the current Airport Master Record of 16 "based aircraft" – how do you reconcile a 68% reduction in based aircraft with the growth projected in the current 2022 Master Plan ?

3.2.7. The prediction in the previous Master Plan (2000) for the "based aircraft" for 2019 at Middlebury was 55 versus 16 for actual per FAA filings – that is an error of 320%. Why do you think your 20 year estimate will be more accurate?

3.2.8. What would be the impact on the hangar need projections and the Master Plan recommendations for additional hangars if the number of "based aircraft" based at Middlebury today is adjusted down to 18 to those that meet the FAA definition of "based aircraft"?

3.3. Comparison to other proximate airport forecasts

3.3.1. The Rutland Airport Master Plan was completed by CHA in Feb 2022. This forecasts that Rutland "based aircraft" will remain the same (0% growth) during the 20 year forecast period based on Market Share, Socioeconomic, TAF, Trend etc. What differences does CHA believe exist at Middlebury Airport that makes a 30% growth over the forecast period as presented in the Master Plan draft, realistic compared to 0% for Rutland?

3.3.2. The Rutland Master Plan also forecasts that the Hangar space requirements at Rutland will be 53,400 sq feet at the end of the forecast period. How does this reconcile with the 51,400 sq foot forecast at a much less busy airport Middlebury than the Rutland Category 3 airport?

3.3.3. How does the Rutland Hangar needs of 53,400 reconcile with the hangar development plan at Middlebury which will result (if the proposed hangars are built per the Master Plan) in almost 41,200 additional sq feet of Hangar space at Middlebury than that compared to Rutland airport?

3.3.4. According to the FAA (registry.faa.gov) there are 53 airplanes registered in Rutland County versus 43 in Addison County. Based on this

information, why is the proposed new hangar space at Middlebury higher than that proposed at Rutland?

4. Airport Facility Development (Slides 22 - 34)

4.1. In the VASP dated 08/2021, Middlebury Airport is classified as a Category 2 Airport. This category has a MINIMUM Facility standard of Runway >=4000'. How is this VASP categorization reconciled with the Master Plan commentary at 4.2.1.1 of the draft Master Plan and Slide 23 that the runway will not be expanded during the Planning Period?

4.2. Is the VASP development objective of a 4000' runway at Middlebury no longer a VTrans objective for Middlebury Airport?

4.3. Is VTrans committed to no further runway expansion at Middlebury Airport?

4.4. Does the FAA require that the Airport have a Terminal Building? Will you be providing an estimate of the building cost, and annual operating cost (heat, utilities,etc) in the next phase of the Master Plan process?

4.5. Does the FAA require Middlebury to have runway lighting?

4.6. The FAA states that "The need for new or additional navigational aids (including runway lighting) is a function of the fleet mix, the percentage of time that poor weather conditions are present, and the cost to users of not being able to use the airport when it is not accessible". Please provide the analysis that was performed by CHA and VTrans which concluded that runway lighting to extend operating hours was recommended, needed or cost effective?

4.7. What is the estimate of the additional aircraft activity that would result from the addition of runway lighting to Middlebury State Airport?

4.8. At page 3-27 the Master Plan states that "with the existing based aircraft along with space reserved for transient aircraft, the North Apron is anticipated to continue to provide adequate apron and tie-down space" However, Table 4-1 states a recommendation to "construct additional apron space for transient aircraft". How are these two statements compatible?

5. Airport Development Concepts (Slides 35 - 49)

5.1. Figure 4-1 – the proposal for North Development – is the exact plan drawn up by Stantec (2019) and adopted by McFarland Johnson into the Act 250 Master Permitting application. It has also been incorporated *as is* into the Master Plan by CHA, a third consulting firm**.** What was the original rationale for the proposed layout by Stantec set out in Figure 4.1?

5.2. The North Development as designed was not in the Business Plan (2008) nor the ALP revision of 2003. Nor was it included in the last Master Plan. What analysis work was completed by Stantec to come up with this current configuration?

5.3. Did VTrans require CHA to incorporate the Stantec North Development hangars into the Master plan in the same location and same configuration as the Master Permitting without any further analysis by CHA?

5.4. Did CHA consult with current or prospective airport users/hangar owners as to the required North Development hangar configuration and location and what did they report?

5.5. The Agency of Natural Resources (then ANR Director Ms. Snelling) is quoted in an email from Ms Boomhower (VTrans) of 05/13/2021 that ANR had concerns with the North Development (Master Permitting plan) and had asked Ms Boomhower "why we (VTrans) aren't permitting areas where developers want to build". Can you confirm that this was ANR's concern and what work was completed by CHA or VTrans to mitigate this concern for the North Development?

5.6. Is the North Development hangar area an area where developers have indicated to VTrans that they wish to build?

5.7. Does the FAA require that any proposed development by an Airport Sponsor in the Master Plan be supported by a proven user demand/need for that development and in the location it is proposed?

5.8. *VTrans has stated that "there are three developers looking to construct hangars that have chosen to pursue their own permits at different locations on the airfield. There are none currently waiting to construct in the locations identified by VTrans"* Given this how does this reconcile with the FAA guide at 807 c in AC 150/5070-6B that "a useful barometer of facility needs, particularly short term needs, is the existence of a waitlist for hangars, T-hangars and aircraft tiedown positions"? Why would it be incorrect to assume that the lack of a waitlist shows that no further hangar development is required?

5.9. Did CHA look at the current hangar waitlist at the Airport and use that to guide the North Development Hangar configuration and location?

5.10. Given the Master Plan plan shows an actual forecasted need of 19400 sq feet of hangar space by 2041, how can this be reconciled with an additional 46800 sq feet planned in the North Development?

5.11. Based on Table 3-12 in the draft Master Plan, the additionally forecasted aircraft hangar storage area even with the anticipated growth in "based aircraft" is 19,400sq feet. (that is from 32,000 currently to 51,400 sq feet). The recommended hangar space adds an additional 46,800sq feet via the North Hangar proposal and an additional 16,000sq feet at the South Hangar proposal. This increases hangar space at Middlebury airport by 196% to 94,800 sq feet. This represents a tripling of the hangar capacity over the next 20 years and provides a surplus of 43,000 sq feet or enough for an additional 27 based aircraft over the forecast. How is this reflective of the growth in your forecasts for "based aircraft"?

5.12. The CHA Consultant presenting the Master Plan on 6/30/2022 said that he has no expectation that any or all of the hangars would be developed. Why is such an unrealistic plan included in the Master Plan?

5.13. What is the support that VTrans can provide that they believe the FAA requirement forecasting requirement for Master Plan (as set out in 701a of AC 150/5070-6B that "forecasts should be realistic, based upon the latest available

data, be supported by information in the study, and provide an adequate justification for airport planning and development") has been met?

5.14. Would CHA have recommended the North Hangar development in its current form and configuration if VTrans had not required them to incorporate this layout into the Master Plan by the terms of their RFP?

5.15. As part of the next stage of the Master Plan, we urge you to look at alternative sites for the hangars set out in the North Development.

5.15.1. Did CHA work include a review of the 2008 Middlebury Airport Business Plan?. At page 43, the Business Plan recommended "one method of increasing revenues without having to rely on increases in aviation activity is to offer existing based aircraft users to upgrade to aircraft hangar space" – it continues, "if a portion of this area can be converted into hangar storage the Airport can offer ready sites for developers which will reduce construction costs, while maintaining adequate space for tie down storage". Is this something VTrans and CHA will look at?

5.15.2. Alternatively, has CHA considered an alternative of switching the current area for tie downs (marked as "North Apron" on Slide 12 "Existing Facilities") with the Hangars for the North Development? Most of the taxiway and apron infrastructure already exists and this would be a considerable saving in infrastructure costs and the environmental impact far less.

5.15.3. What impacts are CHA using to compare the "environmental impacts" and "construction and maintenance costs" against each of the alternative options in the evaluation of the hangar alternatives?

5.15.4. At para 4.2.2.1 in the Master Plan draft, it states that the North Hangar alternative would require:i. 70,000 square feet expansion of apron pavements ii. Additional pavement for automobile access and parking. iii. second detention pond iv. Leach field for wastewater. Will these ancillary infrastructure costs of this alternative be fully set out in the next phase of the Master Plan?

5.15.5. Will the FAA fund these ancillary costs(i-iv) mentioned in 5.13.4 above or will this be required to be paid by the private hangar developers?

5.15.6. At 4.2.2.1 it states that the master permitting for the North Development is "in parallel" with the Master Plan. This is incorrect. The Master permitting was commenced in 2019 and VTrans submitted plans before the Master Plan was begun in 2021. The Master Permitting hangar configuration was completed before the Master Plan was initially drafted. Given that the inclusion of the Master permitting plan for the North Development was required to be in the CHA Scope of Work, how was the North Development plan vetted or adequate needs based due diligence performed on this proposal as required by the FAA in its guide to Master Planning?

6. Environmental Considerations and NEPA review

6.1. Order 5050.4B defines a Federal action as including “9.g (3) Conditional, unconditional, or mixed approval of a first time or changed airport layout plan (ALP)” . In addition, Table 6-3 states that “Water Quality – an impact on water quality, a sole source aquifer, a public water supply system” qualifies as an “extraordinary circumstance” and would not qualify as a categorical exclusion from NEPA’s EIS requirements. Given this, do you believe that a NEPA review of the changes to the Airport Layout Plan will be required?

Responses to Numbered Comments and Questions:

1.1 & 1.3: During the master plan process, VTrans spoke with representatives from Airport Operations, the commercial business tenants located at the Airport, the Town of Middlebury, and the FAA. Additionally, three Technical Advisory Committee (TAC) meetings were held to gather data and perspectives.

1.2: The list of the current/final TAC members is as follows:

Master Plan Technical Advisory Committee (December 2022)

Name	Title	Organization
Bill Hanf	Owner	Green Mountain Avionics
Nick Artim	Representative	Town of Middlebury
Mike Winslow	Transportation Planner	Addison County Regional Planning Commission
Rob Carter	Executive Director	Addison County Chamber of Commerce
Jaqueline DeMent	Transportation Planning Coordinator	VTrans
Rollin Tebbetts	Operations & Maintenance Manage	VTrans
Shaun Corbett	Project Manager	VTrans
Jason Owen	Project Manager	VTrans
Cisco Herrera	Airport Operations and Maintenance	VTrans
Christopher Beitzel	State Airport Manager	VTrans
John Carli	Community Planner	FAA
Lisa Lesperance	Lead Community Planner	FAA
John Kirkendall	Civil Engineer	FAA
Eugene Roy	Representative	Middlebury Neighborhood Association

1.4: The study timeline was delayed by several factors, including COVID-19 and associated meeting/travel restrictions, the high degree of interest and comments expressed by community members, the additional meeting activities that added to the study (i.e., one additional TAC and Public Meeting), staffing changes at VTrans and the Consultant, and the review periods of the FAA.

1.5 & 1.6: No additional budget has been added to the master plan work authorization. The study is funded 90% by the Federal Aviation Administration (FAA), Airport Improvement Program (AIP). The remaining 10% is funded by the State of Vermont.

2.1.1, 2.1.6, 2.1.9 & 2.1.10: The FAA has an internal process that identified the base location of registered aircraft that was developed in the past few years. During the onset of the study, the FAA listed 17 as the number of aircraft based at Middlebury. It became clear that the FAA's official number of based aircraft that appears in multiple FAA documents, was not correct. As part of the master plan, a full inventory of based aircraft was conducted and determined to be 30, with additional aircraft seasonally based at the airport. VTrans has provided the inventory data to FAA, which is reviewing and will processing an update as appropriate.

As aircraft are mobile by nature, and may be owned by individuals, companies, and clubs/cooperatives, it has always been a challenge to determine which aircraft are "based aircraft" at any given airport, and furthermore, the number regularly changes.

2.1.2 & 2.1.3: The working definition of based aircraft include the following four criteria:

- An aircraft based on the airport (has an agreement with the airport for storage)
- An aircraft that spends a majority of the year at the facility (greater than 6 months)
- An aircraft that is operational (capable of performing takeoff and landings)
- An aircraft that is airworthy (has a valid/current FAA airworthiness certificate)

2.1.4. This is the general definition used in the Master Plan. As such, the 30 based aircraft do not include aircraft that are not operational nor airworthy. However, at State Airports, where sites are leased to hangar owners, and owners may store multiple aircraft within a hangar, the master plan used the inventory of aircraft in the planning for this study.

2.1.5: At State airports, as aircraft owners typically do not have an agreement for specific individual aircraft, it is more appropriate to count based aircraft by their physical presence, rather than through written agreements for individual aircraft. The approach used in the master plan ensures adequate planning and reservation of space for hangars.

Note: The recommendations of this master plan would not change if VTrans considered the formal number of based aircraft to be only 17, as facilities are planned to accommodate the use of the airport regardless of any specific definition of based aircraft. The study confirmed 30 aircraft regularly on the field.

Furthermore, as the study is not recommending any change in the airport category or the design aircraft, the master plan does not recommend any airfield expansion. Finally, the number of based aircraft (17 vs 30) does not change the federal eligibility or funding level for the airport. The airport is included in the National Plan of Integrated Airport Systems (NPIAS); entry requires a public airport to have 10 or more based aircraft.

2.1.7 & 2.1.8: The based aircraft inventory will become public once published by the FAA. The inventory was conducted by VTrans, with CHA's assistance, and included a physical inspection of the aircraft onsite. Also see 2.1.4 above.

2.2.1: In the VASP study, the reference to T-hangars refers to the one T-hangar building with 12 individual hangar bays. At the time the VASP was completed, there were also an additional 11 smaller conventional hangars. In 2022, the number of conventional hangars increase to 12. As such, the master plan identifies a total of 13 hangars.

For aircraft tiedowns, the master plan listed the 40 paved tiedown positions provide on the based aircraft apron operated by VTrans. The VASP also counted apron space used by visiting aircraft, tiedown locations in turf areas, and within leased areas. As such, the total capacity for aircraft tiedowns is well above 40.

2.2.2 & 2.2.3: The 40 tiedowns are available for based aircraft, seasonal aircraft, and itinerant/visiting aircraft. The 40 available positions are more than needed currently and are adequate to accommodate additional based aircraft included in the forecasts. In other words, the number of existing available tiedowns is sufficient throughout the 20-year master plan.

2.3.1: The existing fuel farm at the airport includes one registered and inspected underground double walled storage tank. A recent inspection found particulates in the fuel, which resulted in the ceasing use of the tank.

2.3.2 & 2.3.3: The master plan discusses the existing fuel farm and apron in Chapters 1, 3, 4, 5 and 6. In Chapter 3, the study concludes that existing capacity is adequate. In Chapter 6 (Table 6-1), it is recommended that the tank is replaced in the short-term due to its age.

2.4.1: Building 13 is a sand storage shed, the label has been corrected in the Draft Report. Building 14 and 15 are small private hangars.

2.4.2 & 2.4.3: CHA conducted an airfield inspection on 8/25/2021 to review FAA airfield design standards. Airfield pavement conditions were also reviewed as part of the study. The master plan does not include a building condition inspection, but did include a limited review of hangar use to confirm that they are in aeronautical use.

2.4.4 & 2.4.5: Minutes of the four formal study meetings are included in the draft Master Plan Report (TAC meeting 1-3, and Public Meeting 1). Also see response 2.4.2.

2.4.6: The current estimate of 32,600 SF of hangar space is as of the end of 2021. It does not yet include the small 1,600 SF hangar built in 2022 or other hangars that are in the planning, design, or permitting stage. Upon publication of the final report, the hangar space will be updated and will be based on conditions at the time of the report's release.

3.1.1 & 3.1.2: The FAA's Terminal Area Forecast (TAF) program is mostly focus on commercial airports and some large general aviation airports. For many years, the FAA has simply shown both based aircraft and operations to be stagnant. Frankly, this FAA practice for small airports is related to the limited impact of activity forecasts on FAA facility planning or funding. At small airports, the FAA primarily funds airfield facilities, which is based on the "critical aircraft" (which is forecast to remain the same at Middlebury). Facilities needs such has hangars and fuel farms are depending on the number of based aircraft and operations, but providing those facilities is the responsibility of the airport tenant or VTrans.

The stagnant TAF for Middlebury is consistent with the FAA TAF prepared for over a thousand other general aviation airports in the Country. Ironically, whether Middlebury Airport has 16, 30, or 50 based aircraft in the future, will not change the airport category or the federal funding available. The master plan and the VASP provide a more detailed review of based aircraft and activity with a goal of ensuring that adequate space is available for hangars and support facilities, in the event that such potential demand is realized.

The master plan forecast is intentionally optimistic or aggressive. It's an 'unconstrained' forecast intended to consider the potential maximum future use, but with retaining the existing airport category. It is acknowledged that the forecast may certainly be high, but still reasonable, and intended to ensure the airport can accommodate growth in a logical and planned manner. The master plan provides a comparison to the FAA's TAF and VASP forecasts, but there is no attempt to 'reconcile' the differences.

3.1.3: It is likely that activity was higher in 2008 at the airport than currently. Training and recreational activity has decreased nationwide, and is related to significantly higher cost of aircraft (acquisition, operation, and maintenance) and an aging population. However, it is also believed that the 2008 operational activity estimate was overstated. VTrans now has a system to estimate operations, which was used to reduce the estimated operations in the past 10+ years.

3.1.4: FlightAware.com is a company that provides aircraft operations data using multiple sources including radar flight tracks, filed flight plans, and new sources including aircraft transponder data. Their data can be quite detailed, but remain incomplete, particularly as small airports with a predominance of light aircraft, without local surveillance radar, or a control tower. For Middlebury, it is likely that the FlightAware operations data do not include training activity, where aircraft remain in the traffic pattern at low altitude, or by some light aircraft that are not equipped with modern transponders.

The activity data from VTrans G.A.R.D. system is believed to be more accurate as it is based on recorded aeronautical radio calls at Middlebury airport. However, as noted previously, the master plan does not recommend any additional airfield facilities, as activity at the airport is low, is anticipated to remain low, with no forecast change to the Critical Aircraft. Thus, whether the existing or future activity was 1,000 or 10,000 annual operations, the master plan recommendations would remain the same.

3.1.5: The primary source of operations data for the master plan is the VTrans G.A.R.D. system data, as actual activity counts by airport management or airport users were not conducted or required for the Master Plan or by FAA. As stated above, it is the determination of the existing and future Critical Aircraft that drives the need for airfield expansion, and no such expansion is needed or included in the master plan.

3.2.1, 3.2.2, 3.2.3 & 3.2.7: The Based Aircraft projections are provided in Section 2.6 of the master plan. The forecast scenarios are detailed in the draft report, as is the rational for the recommended forecast. The master plan "high" growth scenario was chosen based on qualitative factors, including

that all 13 hangars at the airport are full, one new hangar was built in 2022, and there remains interest by individuals and developers to construct additional hangars in the short-term period.

The "high" growth scenario includes nine additional based aircraft over a 20-year planning period, or about one additional aircraft (net) every two years. Nevertheless, it is acknowledged that forecasts are speculative by nature, and the FAA's TAF forecast (with no growth) is also reasonable. The master plan forecast is intended to be an optimistic scenario and ensure that the planning can accommodate a reasonable level of based aircraft growth. The master plan provides a comparison to the TAF, so that the differences can be understood. There was no attempt to reconcile the TAF, VASP, or other forecasts.

3.2.4: Unlike municipal airports or airports in other states, VTrans (the airport owner/operator) does not build, own, or rent the hangars. As such, VTrans executes lease agreements for property to build hangars, but does not manage the tenant aircraft or keep a waiting list for hangar occupancy. At the State airports in Vermont, hangars are owned by individuals or companies that are responsible for the aircraft that are stored.

3.2.5: The Master Plan concluded that, unlike hangars, existing tiedown space is not at capacity, and no additional tiedowns are needed. Some additional apron space is recommended associated with providing a small general aviation terminal building, and to support visiting aircraft.

3.2.6: VTrans has determined that a reasonable estimate of the current based aircraft is 30 from the inventory conducted in 2021. Previous estimates have been reduced since the 2008 Business Plan. Observations on the field determine that the 16 aircraft listed in the FAA master record is understated; VTrans is working with FAA to update the data.

3.2.8. The Master Plan recommendation for reserving sites for additional hangars would be included regardless of the number of based aircraft. See answer to **2.1.5**. The Master Plan inventory confirmed 30 based aircraft. It would be inappropriate to reduce the number to 18.

As VTrans does not build hangars, the master plan hangar recommendation is limited to reserving locations for potential future hangars to be provided by others. This is a nuance at VTrans airports in that the actual hangars to be constructed is not determined; only the potential hangar sites are pre-determined.

3.3: The Rutland-Southern Vermont Regional Airport Master Plan was prepared independently from the Middlebury Master Plan. Questions regarding the Rutland study are not addressed herein.

4.1, 4.2 & 4.3: The VASP is a more generalized study than an individual master plan. The VASP provided system wide goals, whereas the master plan reviews in greater detail local community consideration and site conditions, as well as overall need. Early in the master plan process, the potential for expanding the airport, providing a longer runway, and upgrading the category of aircraft served were reviewed. However, based on the aircraft types operating at Middlebury, and the

availability of larger airports nearby (Rutland and Burlington), the airfield facility goals of the VASP were not advanced in this master plan. No runway extension or expansion is planned for Middlebury State Airport, and it is not an objective of the master plan.

4.4: The FAA recommends that general aviation airports have a small administration (or terminal) building for use by pilots and passenger. The building provides restrooms, a waiting area, flight planning/briefing, an administration area, etc., but is not an FAA requirement. The draft master provides a recommended location for a small 1,500 square foot (e.g., 30' x 50') terminal building and an estimate total cost. VTrans intends to apply for FAA funding to cover a majority of the construction costs. The Master Plan does not include an estimate of annual operating costs of the building. This building would not be designed or equipped to accommodate commercial airlines, such as that provided at Rutland and Burlington Airports.

4.5: Runway lighting is recommended at public use general aviation airports but is not an FAA requirement. Of the nine state airports within the NPIAS, all but Middlebury State Airport have runway lighting. At the small airports in Vermont, very little activity occurs after 9 PM. Where provided, runway lighting is mostly used during the months of November through March when short days create the need for runway lighting for operations during the evening between sunset and 9 PM.

4.6 & 4.7: It is estimate that lighting would support approximately 500 annual operations, as well as enable primary and recurrence training, and a safety benefit to the state transportation system. However, due to comments from the community, VTrans has not included runway lighting in the master plan recommendations.

4.8: The additional apron area would be located adjacent to a potential future small terminal building to support visiting pilots and transient aircraft. Additional aircraft apron is not needed for based aircraft tiedowns.

5.1, 5.2, 5.3 & 5.14, 5.15.6: The North Development area recommended in the Master Plan pre-dates the Airport Master Plan as it was prepared to satisfy a 2019 statewide initiative of the Vermont State Legislature. The Legislative goal and requirement is to foster private hangar development at all State airports by aiding with the required stormwater, water, wastewater, and land use permitting requirements. As VTrans does not build hangars at its airports, it is a cumbersome process for individuals to satisfy the permit requirements for private development located on public property. The Legislative program requires VTrans to complete advance permitting for potential hangar developments to support potential private investment. As such, this effort commenced in 2019.

The North Development is the execution of this state requirement and includes the planning, design, and permitting of the hangars, but not the construction itself. At each state airport, including Middlebury, VTrans has planned the location and layout for small (60' x 60'), medium (60' x 80') and large (120' x 120') hangars in location(s) that can accommodate a number of each size of hangar.

Although the North Development hangar layout was initially prepared in 2019, it was reviewed by the master plan consultant and determine to satisfy general requirements including:

- Proximity and access to the airfield
- FAA design standards for taxiways, offsets, and clearances
- Airspace considerations (i.e., heights and setbacks)
- Appropriate hangar types (e.g., predominately small hangars, some medium, and limited large hangars as consistent with the airport category)
- Site environmental conditions

The master plan evaluation determined the layout to be appropriate, as initially planned, and incorporate the layout in the master plan. The number and layout of the hangars is intended to provide flexibility for airport users. VTrans expects hangar construction to proceed slowly based on demand. It is not anticipated that all hangars shown would be developed. Rather, the goal is to provide options, and ensure hangar development is conducted in a logical and feasible locations.

5.4 & 5.6: The North Development area was selected as it is the only remaining large area of the airport located with proximity to the existing runway and taxiway. The few remaining smaller sites along the taxiway are already leased or in negotiation for leases with developers. Based on discussion with airport operations, it is anticipated to those other locations would likely be developed before the north development area.

5.5: Comments by VTANR and the Act 250 process are provided separately from the master plan. The master plan study does not include permitting or development approvals.

5.7: For private development at the airport, as well as for VTrans projects that are not seeking federal funding, the FAA does not require there to be documented demand. In these cases, the FAA's role is limited to ensuring that FAA safety standards, airspace, and airport security are satisfied, and that the development is including on the Airport Layout Plan (ALP).

5.8, 5.9 & 5.12: As discussed above in response 5.1, VTrans is <u>not</u> constructing, and will not construct any of the hangars planned and illustrated in the master plan. Furthermore, VTrans is not claiming there is a waitlist or current documented demand. Rather, the north development layout is intended to support potential demand that may or may not occur over the next 20-years and beyond, in a logical layout that satisfies standards. It was initiated to satisfy 2019 requirements of the state legislature.

5.10 & 5.11: The number and size of hangars illustrated in the recommended plan exceeds the anticipated (forecast) demand. VTrans has stated that it does not anticipate all the hangar sites to be developed. The number and layout of the hangars is intended to provide flexibility for airport users, and to satisfy the state legislative requirements discuss above.

5.13: The FAA is being provided with all comments received (and VTrans' responses) on the Draft Master Plan for their review. The FAA will review the forecasts, findings, recommendations, as well as the input provided by the public, and provide their comments to VTrans. Thereafter, VTrans will address FAA's comments on the forecasts and recommendations, and conduct appropriate revisions, prior to development of the final report. If the final report is deemed reasonable and adequate, FAA will approve for the forecasts and final document.

VTrans does not presume what FAA's comments will be or presume its approval of the document. FAA comments and VTrans responses, and edits, will be provided with the final documents.

5.15.1 & 5.15.2: The existing Tiedown Apron was reviewed and determined to have been constructed with federal funds and provides a lower cost option for aircraft. Leasing the apron for private development would not be permitted by FAA policy. This option could be further reviewed in consultation with the FAA.

5.15.3, 5.15.4 & 5.15.5: The draft master plan includes an Environmental Overview chapter that reviews each key impact category. In general, all of the hangar locations were reviewed, and found to be reasonable locations for development. As hangars are privately developed and maintained, costs for construction and maintenance costs are not included in the study.

6.1: Based on FAA practice, the FAA's ALP approval will be a Conditional Approval, and will specially state that it does not include NEPA approval of the recommendations. NEPA approval, where necessary, would be pursued following the master plan.

Additionally, note that hangar development will require stormwater and general construction permitting. Meeting permit conditions will avoid impacts by specifically providing adequate protections to water quality, the aquifer, and the public water supply. As such, permitting hangars have not generally qualified as an 'extraordinary circumstance' under FAA Order 5050.4B.

Comments on Proposed Master Plan for the Middlebury Airport

To: Vermont Agency of Transportation and Middlebury Select Board Sent by email
Date: September 14, 2022

My husband (Douglas Richards) and I own the house and 21 acres on Munson Road that abuts the State of Vermont property on which the Middlebury Airport is located. We are quite content having the airport – as it is currently configured and developed – as our neighbor. We have reviewed the Proposed Master Plan for the Middlebury Airport and oppose several of the changes it proposes. Therefore, we ask that it not be approved, for five reasons:

(1) expansions and modifications contained in the Proposed Master Plan are not consistent with the State's prior representations as to the scope, size, and operation of the airport;
(2) the proposed substantial investment of taxpayer dollars in the Middlebury Airport, given the limitations of the airport's location and the dearth of evidence showing any real benefit to the public, cannot be justified;
(3) Vtrans has failed to present any hard data to support several of the key premises and projections of the Proposed Master Plan;
(4) VTrans' simultaneous pursuit of the Master Planning process and an Act250 Master Permitting process risks complicating the Master Plan process and reducing the public's opportunity for meaningful input – and transparency – in questions regarding the future of the Middlebury Airport; and
(5) VTrans has failed to show how the Proposed Master Plan will actually accomplish economic growth, or how the non-monetary costs of such growth, namely putting the Town's aquifer, property values, and local flora and fauna at risk, is warranted.

By way of background and for some context, when we purchased our home plus 4.5 acres in 2000, we inquired about noise and disruption from the airport and were told by the then airport manager and our attorney that (a) it was a small airport without lights that accommodated only small planes, (b) there would never be any lights or night flights at the airport, and (c) the runway could not ever get much longer because there wasn't room for that. We relied on that information in deciding to purchase our property. A few years later we purchased the 16.5 acre wooded lot between our home and the airport, and again got the same assurances about the size, lighting, operations, and limitations on development of the airport. In fact, over the years, whenever we have spoken to anyone at the state about the airport, they have repeated these assurances.

Our first objection to the Proposed Master Plan is that the changes it proposes directly contradict the representations the State has made for several years about the size, use, nature, operations and lighting of the Middlebury Airport. We relied on those representations.

Before turning to our other objections, we want to voice our support for the State Legislature's efforts to streamline development at the Vermont airports, as part of its program to improve the state's transportation sector. It is clear to us that an improved transportation network is essential to retaining and attracting young talent and new business to the state, and to the State's overall economic vitality. We do not believe, however, that one size fits all when it comes to airport development, or that what might be appropriate in Rutland, for example, is necessarily well suited to the circumstances of the Middlebury airport – or likely to spur economic growth in Addison County.

The Middlebury Airport was not sited on the current parcel with economic development in mind. Rather, it is, as Angelo Lynn pointed out in his recent op-ed piece, located where a farmer put it, for his use, about 70 years ago. Unlike many of the state's other airports, the Middlebury Airport is located in a rural, wooded, residential neighborhood – a neighborhood that pre-dates the airport. It seems evident to us that for any airport to be a viable economic driver, it needs adequate space for business expansion, easy access to highways, and flexibility around noise and lighting. In its current location, Middlebury Airport has none of these attributes. And it never will, in its current location. These realities call into question the soundness of expending substantial state and federal taxpayer funds under the Master Plan, if the Middlebury Airport is going to remain in its current location. Moreover, the State has yet to demonstrate how further development at the airport will benefit the public – a key consideration for the expenditure of public funds.

Third, we contend that the lack of data to support the Master Plan is reason enough to deny approval of the Proposed Master Plan for the Middlebury Airport at this time. Neither VTrans nor the State's consultants have produced or presented actual data to support the Master Plan projections. If VTrans cannot substantiate these projections with confirmable data, VTrans cannot justify expansion of the Middlebury Airport footprint, new buildings, or the addition of lights on the runway – all of which threaten to have a palpable impact on the neighborhood in which it is situated. As a participant in the group that is known as the Middlebury Airport Neighbors' Association ("MANA"), I am aware of several questions neighbors have posed to VTrans for the actual data underlying the projections of increased number of flights, increased number of employees at the airport businesses, and overall need for an expanded airport in Middlebury. Additionally, despite requests, VTrans has not yet produced the studies it is relying on (from a prior consultant) to demonstrate that the expansions of the runway's length and width, the additional buildings, and the new lighting the Master Plan proposes will not cause significant increase in noise, endanger the safety of the aquifer, or put the habitat of bats and birds in the area at risk. The burden is on VTrans to prove the need for the development set out in the Proposed Master Plan.

Fourth, VTrans' process of initiating an Act250 Master Permitting Plan process, to get partial findings that would facilitate construction of nine (9) buildings on the north end of the airport property, before these structures have been approved through the Master Plan process, is unnecessarily complicating and obfuscating the process. The Act250 Master Permitting Plan and the FAA Master Plan process are distinct and procedurally independent of each other. However, in the absence of some urgent or exigent circumstances – neither of which VTrans has demonstrated – we cannot help but question Vtrans' intentions in moving forward with the partial findings under the permitting process prior to knowing what the Master Plan will call for. This issue is salient because the application for an Act250 permit seeks approval to build nine buildings (one of which could measure as large as 120' x120'), and only identifies them as buildings "to be used in connection with the airport." Thus, based on that permit application, it appears those buildings could be used for anything from warehouse space to businesses that generate health-threatening noise or fumes, to businesses such as UPS that would dramatically increase vehicular traffic, as well as hangars. The Act250 permitting process is quite expedited, invites primarily the input of abutting property owners only, and is not structured to focus on input from the public at large. By contrast, the Master Planning process requires several public hearings and is the process in which these questions of location, lighting, operations, and size can be described, debated and most open to the sunlight of democracy. It is troubling that VTrans is pushing to get even partial findings under Act250 in place before the broader input on the Master Plan can be considered and the questions about lighting, size, operations and location can be fully aired and answered. It essentially locks in partial authorization for the new nine buildings, in designated spots, before the more global Master Plan, which creates the context for those buildings, is approved. It prompts us to ask how this approach benefits the public or promotes transparency in government proceedings.

This complication of the process is further aggravated by VTrans' failure to explain it. In our opinion, the proposed new buildings are a central component of the Master Plan as they would significantly increase the footprint of the Middlebury Airport and could have a consequential impact on the neighborhood in the form of noise, traffic and overall quality of life. The neighbors have raised these issues with VTrans several times and have not gotten any explanation for VTrans' decision to pursue the two processes simultaneously or why they would not defer the Act250 process until after the Master Plan process concludes. In a formal inquiry, the neighbor who lives directly in front of the proposed site for these buildings, Andrew Sambrook, posed the question this way: "Would AOT be willing to postpone the final Master Permitting Act250 application at Middlebury until the Airport Master Plan at Middlebury is complete in 2022, and the 5-10-20 year demand for hangars and other infrastructure is clear?" On February 26, 2022, the AOT Division Director (Michelle Boomhower) responded in writing, with a one word answer: "No."

Fifth, and perhaps most fundamentally, VTrans has failed to clearly and specifically articulate the goal of the Proposed Master Plan for Middlebury Airport and how pursuit of that goal will impact other public priorities. Economic growth was the goal of the State's legislation, but it is not at all clear that purpose is served when the legislation is applied to the Middlebury Airport. There is no data to support an assertion that it will. We assert that the proposed expansion of the Middlebury Airport may actually undercut economic goals by reducing the property values of the homes around the airport, thus reducing property tax income for the Town of Middlebury. Research shows that there is a 9-12% reduction in property values within a 4 mile radius of expanded small airports.* If one approaches the question conservatively, and examines just the 2 miles or so of neighborhood in East Middlebury – specifically census tracts 9607 Block Group 4 and Block Group 1 – there are 785 homes "close to the airport." The average price of middle tier homes in this area is $355k according to Zillow, as of July 2022. If the academic studies are correct, these homes will be 9-12% lower in market value as a result of their proximity to the airport. That equates to a loss in tax revenue to the town of $600K-800K per year (at current tax rates). There is nothing that VTrans or any governmental entity has produced to show economic development of a magnitude sufficient to offset this loss of tax income. As MANA has recently conveyed to the Middlebury Select Board, families have already begun to sell homes on School House Road explicitly because of increasing airport noise and uncertainty around further growth of the airport. These factors cause us to suspect that if the Proposed Master Plan is implemented, it will reduce the value of our home, and have a marked, negative impact on the Town's property tax income allocable to the homes in East Middlebury. How does this sizeable monetary outlay benefit the public?

Moreover, as many have eloquently explained, there are serious potential impacts water, wildlife, plant, and air quality that must be fully understood and carefully weighed when examining the merits of further development of the Middlebury Airport, to determine if the non-monetary costs of such development can be justified.

In sum, we do not believe the current airport is well situated to serve as an economic driver for the Town of Middlebury, nor that the development proposed in the Master Plan will convert the airport into an economic driver, and that further development of that airport at its current site, and may have a negative impact on property values and property tax income. We also believe the burden is on VTrans to demonstrate the purpose of the Master Plan and how it will accomplish that purpose, with real data to support its premises and position, and it has failed to meet this burden. Additionally, we question VTrans' decision to pursue the Act250 permit prior to approval of the Master Plan because it hinders public input, and VTrans' failure to explain why it is engaging in this two-track approach raises transparency concerns.

Finally, VTrans has not offered the data necessary to demonstrate that approval of the Proposed Master Plan will yield any real public benefit or that the development it proposes will not pose significant risk to the neighbors and public in the form of disturbing the Town aquifer, increasing noise, and damaging the flora and fauna of the area all around the Airport. For these reasons, we oppose approval of the Proposed Master Plan for the Middlebury Airport.

We support the comments that Louise and David Prescott, and Andrew and Andrea Sambrook, and our elected officials (Ruth Hardy, Amy Sheldon, Farhad Khan, and Lindsey Fuentes-George) have submitted, as well as the Addison Independent op-ed of Angelo Lynn, and ask that their comments be deemed incorporated into our comments; we do not articulate them all here, in the interest of brevity.

I thank you for considering these comments. I will continue to attend the public hearings, review additional filings, and read any responses VTrans' posts. I ask that the Middlebury Select Board and VTrans take time necessary to take into account all of the input they receive, assess the soundness of investing in the Middlebury Airport in its current location, and delay action on the Act250 permit until the Proposed Master Plan for the Middlebury Airport is final.

Sincerely,

Colleen A. Brown

108 Munson Road
Middlebury, VT 05753

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* See
"Aircraft Noise and Residential Property Values: An Artificial Neural Network Approach," Journal of Transport Economics and Policy (May, 1994): Alan Collins and Alec Evans
"The Impact of Airport Noise on Residential Real Estate", The Appraisal Journal (2001) : Bell, R (https://nqsc.org/downloads/REALESTATE.pdf)
"The Announcement effect of an airport expansion on Housing Prices Journal of Real Estate Finance and Economics", (2006) GD Jud and DT Winkler (https://libres.uncg.edu/ir/uncg/f/D_Winkler_Announcement_2006.pdf)

Town of Middlebury
77 Main Street
Middlebury, VT 05753

September 13, 2022

Shaun Corbett, Project Manager
Rail & Aviation
Vermont Agency of Transportation
1 National Life Drive
Montpelier, Vermont 05633-5001
shaun.corbett@vermont.gov

Dear Mr. Corbett,

We write with regard to the draft Master Plan update for the Middlebury Airport.

We have reviewed the proposed draft update and respectfully request that the State of Vermont Agency of Transportation incorporate the following concepts into the final Master Plan:

- **Protection of environmental resources**, including the Town's water source protection area;
- **Location of airport hangar building envelopes** to minimize impact to airport neighbors, and, specifically, to arrange the largest hangar such that it doesn't shadow the airport's closest neighbor, if possible; and
- **Improvements to Airport Road** to maximize safety for Airport Road residents and users of the airport if vehicle counts are increased. The Town is open to discussing cost-sharing for improvements to the road.
- **Integration of a better communication and neighbor participation process into airport plans.**

Thank you for your consideration of our comments on the Master Plan Update for the Middlebury Airport. Please do not hesitate to contact us through Town Manager Kathleen Ramsay, 802-458-8000 or kramsay@townofmiddlebury.org, if you have any questions or need any additional information about our input.

Sincerely,

Middlebury Selectboard

Brian Carpenter, Chair Lindsey Fuentes-George, Vice Chair Heather Seeley

Farhad Khan Dan Brown Andy Hooper

Cc: Joe Flynn, State of Vermont Secretary of Transportation
Michele Boomhower, Division Director, Policy, Planning & Intermodal Development (Aviation, Rail and Public Transit) Division

Meeting	Technical Advisory Committee Meeting #1
Location	Virtual Microsoft Teams Meeting
Date	Thursday, July 15, 2021
Time	3:00 PM – 5:00 PM

The first Middlebury State Airport (6B0) Master Plan Update Technical Advisory Committee (TAC) meeting was held virtually via Microsoft Teams on Thursday, July 15, 2021 at 3:00 PM. The meeting kicked off with welcoming and opening remarks by Alan Legacy, VTrans Project Manager, and Paul McDonnell, CHA Consulting's Lead Planner. Jason Owen, VTrans, announced the attendees and the agency or organization they were representing.

Point of Contact for the study: For any questions or comments, the team encourages contacting Alan Legacy at Alan.Legacy@vermont.gov

The technical presentation was given by Paul McDonnell and Calvin Kuang, CHA. The presentation gave participants an introduction to the Master Plan process as well as initial findings (i.e. airport inventory and forecast).

The following questions/comments were raised during the TAC meeting:

1. Question: With concerns to the Critical Aircraft and Airport Reference Code (ARC), 6B0 experienced regular activity from Group II aircraft. Would it be feasible to bring the airport up to ARC B-II in order to attract Group II aircraft, rather than be reactionary after the fact?

    a. FAA guidance dictates that the Critical Aircraft, and subsequently the ARC, needs to be an aircraft with "regular use" at the airport (defined as 500 annual operations, or one takeoff and one landing every business day). 6B0 does not currently meet the operational threshold for an ARC B-II designation. However, if an individual or party were to express interest in operating higher ARC aircraft at 6B0, it may be documented and sent to the FAA for consideration in planning for a higher ARC.

2. Comment: The Automated Weather Observing System (AWOS) is aging and needs to be replaced.

    a. The Facility Requirements portion of the Master Plan will examine existing airport infrastructure, including the AWOS. If it is determined that the unit requires maintenance or replacement, such action will be documented for potential future funding/planning.

3. Comment: The current forecast baseline number of 17 based aircraft is low.

    a. Agreed. CHA has been investigating this number and is coordinating with VTrans and the FAA to get a more accurate count of the current number of aircraft based at 6B0. The publicly available data for 6B0 is scarce and incomplete. However, CHA will attempt to either validate or count aircraft during an upcoming airport visit.

4. Comment: The airport would benefit from having a Fixed Based Operator (FBO) from an operations and a data collection standpoint. Many FBOs require pilots to sign in, thus having a more accurate airport operations activity level counts. Additionally, many transient aircraft taxi around the airfield not knowing where to park their aircraft. A dedicated FBO building and apron would mitigate this issue.

    a. Agreed. However, while the Master Plan can recommend an FBO presence, there is no guarantee of interest from current airport tenants and/or potential FBO providers. It is recommended that VTrans seeks parties interested providing FBO services and maintains the existing building for such services.

5. Question: There is currently interest in developing hangars on the south end of the airfield. Is this a part of the Act 250 Master Permitting Effort?

    a. The Act 250 Master Permitting Effort is a concurrent but separate project. The goal is to provide a more streamlined process for individuals to build hangars at all VTrans airports. The interest of developing hangars on the south end of 6B0 is by a private party separate from the Master Permitting Effort.

6. Question: Are there any efforts in addressing water access at the airport? Currently, it is more efficient to drive the ARFF vehicles into the city to be refilled than to be refilled at the airport.

    a. Yes. While water access may not be the main focus, improvements to utility infrastructure is a component of the Master Plan.

Meeting	Technical Advisory Committee Meeting #2
Location	Town of Middlebury Office 77 Main Street Middlebury, VT 05753 & Virtual via Microsoft Teams Meeting
Date	Tuesday, June 7, 2022
Time	1:00 PM – 3:00 PM

The second Middlebury State Airport (6B0) Master Plan Update Technical Advisory Committee (TAC) meeting was held in person and virtually on Tuesday, June 7, 2022 at 1:00 PM. The meeting kicked off with welcoming and opening remarks by Shaun Corbett, VTrans Project Manager, and Paul McDonnell, CHA Consulting's Lead Planner.

Point of Contact for the study: For any questions or comments, the team encourages contacting Shaun Corbett at Shaun.Corbett@vermont.gov

The technical presentation was given by Paul McDonnell and Calvin Kuang, CHA. The presentation gave participants an update to the Master Plan process, including review of the initial findings (i.e. airport inventory and forecast) and the new study content since the first TAC meeting (i.e., airport facility requirements and development alternatives).

The following questions/comments were raised during the TAC meeting:

1. Question: With concerns to the Critical Aircraft and Airport Reference Code (ARC), who provides the data for operational counts?

    - Response: As a non-towered small airport, there is no formal activity count. FAA provides a breakdown of operations by aircraft type via the Traffic Flow Management Systems Count (TFMSC) database, but that only includes filed flight plans. FAA and VTrans are discussing the recommended critical aircraft, which will remain a light single or twin-engine aircraft.

2. Question: The number of hangars proposed on the development concepts seem excessive. Is it possible to scale back the number of hangars to be developed?

    - Response: The number of hangars and their respective layouts are only representative of pre-permitted hangar locations that have been vetted through the State of Vermont Act 250 Stormwater Permitting process. Construction of a hangar would only occur if

an interested private party signs a lease agreement with VTrans; at which point, the responsibility of constructing said hangar would fall on the private party. As such, the number of hangars shown in the development concepts does not reflect what may occur at the airport during the planning period, but rather the potential location available, with various sizes and configurations.

3. Question: Terminals at GA airports have historically not been funded by the State of Vermont, is this still the case?

    - Response: There is potential for a GA Terminal to be funded with the recently approved federal infrastructure bill. Additional funding may be available. The master plan is recommending a new centralized terminal building. The small building of 1,800 square feet would accommodate flight planning, offices, restrooms, waiting area, etc.

4. Question: Would relocating the hangars within the FAR Part 77 Primary Surface be FAA-eligible?

    - Response: A relocation of the existing structure would be eligible. However, replacement in kind (i.e., tearing it down and constructing a new hangar elsewhere) may not. VTrans will discuss this further with the FAA.

5. Question: Would the light beam of the Precision Approach Path Indicator (PAPI) be visible to the residents surrounding the airport?

    - The PAPI lights are angled, baffled, and point to the incoming aircraft to guide incoming pilots on a correct approach path to the runway landing threshold. The light can be seen from the ground if you are positioned beyond the end of the runway. PAPIs are similar to a traffic light, in that the light is visible in the day. Given that the residential areas are primarily on the sides of the runway, it is expected that residents will not be impacted by the PAPI light beam.

6. Question: Can VTrans build a berm along the sides of the runway in selected locations to provide a noise and visual separation from homes?
    - VTrans will review that option, however, it does not appear that a berm could be funded by the FAA as they are not 'eligible'. Berms only help for noise when the aircraft are on the ground.

Meeting	Master Plan – Public Meeting #1
Location	Town of Middlebury Office 77 Main Street Middlebury, VT 05753 & Virtual via Microsoft Teams Meeting
Date	Thursday, June 30, 2022
Time	6:30 PM – 8:00 PM (meeting ended after 9 PM)

The first Middlebury State Airport (6B0) Master Plan Update Public Information Meeting was held in person and virtually on Thursday June 30, 2022, at 6:30 PM. The meeting kicked off with welcoming and opening remarks by Shaun Corbett, VTrans Project Manager, and Paul McDonnell, CHA Consulting's Lead Planner. A second public meeting is planned once the full Draft Master Plan is completed and available for public review.

Point of Contact for the study for questions or comments:

- Shaun Corbett at Shaun.Corbett@vermont.gov

The technical presentation was given by Paul McDonnell and Calvin Kuang of CHA. The presentation gave participants an introduction to the Master Plan process, as well as the findings and content in Working Paper #1 (i.e., airport inventory and forecast) and Working Paper #2 (i.e., airport facility requirements and development alternatives).

Approximately 50 persons were in attendance, with several additional virtual attendees, including the Federal Aviation Administration (FAA). The presentation slides and recording of the meeting is available for review online at: https://vtrans.vermont.gov/aviation/airports/middlebury

A summary of verbal questions/comments raised during the meeting is listed below, with Responses provided. The public comment period extended to September 15. VTrans received several dozen written comments (primarily email). These comments and responses are attached, in the order received.

1. **Question**: How does the number of based aircraft effect the master plan recommendations?

   Response: A based aircraft inventory was conducted as part of the master plan and identified 30 existing based aircraft, with additional seasonal aircraft. The 20-year forecast included the potential for nine additional aircraft. If this forecast is obtained the level of based aircraft would still be considered low to modest and does not result in the need for airfield expansion (i.e., runway or taxiway facilities). Thus, no airfield expansion is recommended.

Additional hangars are recommended based on the current number of aircraft, as hangars are at capacity currently and are the preferred method of aircraft storage. The master plan recommendations also include planned locations for hangars to accommodate the forecast growth in based aircraft. However, as stated at the public meeting, VTrans identifies locations for hangars but does not fund or construct hangars. Hangar construction remains the responsibility of the tenant/user, under a lease agreement with VTrans.

2. **Question**: Given that the airport is classified as a low growth airport in the Vermont Airport System Plan (VASP), why was the VASP high growth forecast scenario chosen?

   Response: The low growth scenario in the VASP included declining activity. The selection of the high growth was purposeful to ensure adequate planning for potential future users. Note that the high growth forecast does not result in any recommended airfield expansion or changes in the size of aircraft using the airport. It is not known if the forecast growth will be achieved, but the planning was conducted so that additional aircraft could be accommodated in a logical configuration, as needed.

3. **Question**: Can an accurate determination be made on the number of based aircraft at the airport? VTrans claimed there were 18 based aircraft on a public information request. However, the report claims 30 based aircraft.

   Response: The number of aircraft at airports changes regularly, and aircraft may also change location seasonally. The FAA database included 16 to 18 based aircraft listed at the airport. It was known that FAA's number was inaccurate due to informal counts of aircraft on the field. As such, a formal based aircraft inventory was conducted as part of the master plan and identified 30 existing based aircraft, which was then used in the master plan. Addition seasonal aircraft are also common at Middlebury but were not included in the planning.

4. **Question:** Why is there a lack of activity data after a year into the master plan process in regard to the forecasting process? Is there a logbook or record of flight frequency?

   Response: Small airports without Control Towers do not record takeoffs or landings. The master plan did not require or include a formal operations counting program, as no airfield expansion or upgrades are planned in the study. Aircraft operations are relatively low at the airport, and significant growth in not anticipated. If additional runways or other new airfield facilities were planned, a counting program and assessment of aircraft types could be needed. However, no such expansion is planned at Middlebury.

5. **Question**: Clarify the estimated number of yearly flight operations. What is the accuracy of the total number of aircraft operations? The listed activity level is overstated. Is there currently a way to track flight activity levels at the airport?

Response: Small airports without Control Towers do not record takeoff or landings, and thus the operation numbers are always an estimate. This is the case for every airport in Vermont, with the exception of Burlington International. However, based on public comments, an additional review was conducted regarding the Middlebury State Airport activity level, particular the existing level of annual operations. The VTrans and FAA estimate is listed as 6,350 annual operations, which amounts to an average of nine (9) landings per day. The daily number of landings varies highly, whereas summer weekend days may include dozens of operations, including training activity. In contrast, there may be zero operations on snowy winter days. The additional review below included using both aircraft radio transmissions and aircraft transponder data.

General Audio Recording Device (GARD) is a data collection software utilizing aircraft radio calls as a method of interpreting airport operation levels. The GARD data was used for the master plan to estimate the base year operations. The GARD software utilizes radio calls made from aircraft to the airport's radio frequency to extrapolate operation counts. The program estimates that three radio calls, is the equivalent of one operation: covering the pilot calls of (1) downwind, (2) base, and (3) final for landing operations; and (1) on runway (2) clear of runway (3) exiting pattern. As there is variance in the number of transmissions per operations the GARD data is an estimate. Transmissions from some overflights may also recorded, which could overestimate activity. However, during training activity with an aircraft conducting touch & goes, the radio calls may be as little as one call per operation. In aggregate, the GARD operation data is considered a practical estimate for use in this study. GARD data was provided for the years 2016 through 2020. Utilizing the aforementioned 3 to 1 ratio the annual operation estimate ranged from 5,411 to 7,251, with an average of 6,846 annual operations over the five-year period. The 6,350 estimate falls within this range.

An additional source of activity data is FlightAware, a company that collects and integrated multiple sources flight activity to provide flight tracking and activity data, see https://flightaware.com. Unfortunately, many of the typical data sources they use are not available at small airports or by light aircraft. For example, unlike commercial airports such as Burlington International, air traffic control radar data is not available at Middlebury, nor are light aircraft equipped with datalinks that provide position reports. Thus, for Middlebury, the FlightAware data is mostly dependent on an aircraft's on-board transponders that broadcast an ADS-B signal. This refers to Automatic Dependent Surveillance-Broadcast, which is an enhanced method of aircraft surveillance aimed at improving information to pilots and Air Traffic Controllers (ATCs).

For Middlebury, the ADS-B data became available in 2020 from FlightAware but is limited. The use of such transponders is not required within 2,500' of the ground in the Class E & G Airspace surrounding the airport. Thus, much of the training activity may not be recorded and some light aircraft may not yet have ADS-B transponders. Nevertheless, the FlightAware data indicate operations ranging from zero to 14 operations per day, which is lower than that of the GARD

data. Unfortunately, it could not be determined what percentage of operations are being recorded through this new capability.

In summary, it is acknowledged that the airport activity level is an estimate, and actually operations may be less than the average of nine daily landings. However, it is also highlighted that the master plan recommendations are not dependent on any specific activity level or threshold, as no airfield expansion is planned. The airfield projects are limited to safety improvement, maintenance, and support facilities (hangars) for light aircraft use. The study recommendations also do not include any facilities for accommodation of larger aircraft.

6. **Question**: When did Airport Reference Code (ARC) B-II aircraft start landing at 6B0, and is this related to the runway extension that was completed in 2017? Have B-II aircraft always been able to land at the airport?

   Response: FAA flight plan data is available back to the year 2000. Unlike light aircraft, most larger aircraft file flight plan. Based on the FAA flight plan data, there were some ARC A-II and B-II aircraft flights back in 2000. The data also indicated that for the four years before 2017 there were 240 total operations by A-II and B-II aircraft, and 130 total operations in the four years since 2017. However, activity by these generally turbine-powered aircraft (e.g., Pilatus PT-12, Beech King Air) remain very low. The Jet-A fuel type and other facilities to support them are not provided or planned in the study.

   - 2013-2016: 242 total recorded Group II operations (about 5 monthly landings)
   - 2019-2022: 120 Total recorded Group II operations (about 3 monthly landings)

   Flight plan data provides a good estimate for larger aircraft, but is not a formal count

7. **Question**: What is the funding source for the construction of a terminal building at the airport?

   Response: Currently, VTrans has not secured the funding for the terminal building but intends to apply for FAA / federal funding through the Airport Improvement Plan (AIP). That program may fund 90% of the eligible public portions of the building. In consideration of the overall size of building (under 1,500 SF) and associated site costs, it is anticipated that the FAA may fund up to two-thirds of the total costs, with VTrans funding the remaining third. It is hoped that this project could be funded (and constructed) within the next five years.

8. **Question**: Would a Fixed Based Operator (FBO) and airport manager help to gather better data on flight frequency/activity through the use of a voluntary logbook?

   Response: That is possible if additional staffing (and budget) was available. However, because the recommended airfield projects in the master plan are not based on growth, there is no requirement to determine the specific activity level. In other words, as activity levels at the

airport are low, the publicly-funded project recommendations are limited to safety improvements and maintenance projects (i.e., PAPIs, pavement rehabilitation).

9. **Question**: Could berms be constructed at parts of the airport close to residences in order to reduce noise?

   Response: VTrans reviewed this request and determined that berms are not eligible for funding. Noise mitigation funding is provided at many busy airports with significant jet traffic. Per federal regulations, noise levels at smalls airport do not approach the level where mitigation is eligible (i.e., an average aircraft noise level of 65 dB DNL). In Vermont, only Burlington International is eligible and has receive public funding for noise mitigation.

10. **Question**: In the opinion of CHA, are there more hangars recommended in the master plan than what would be anticipated to fulfill the forecasted demand?

    Response: The answer to this question is not straight forward. Numerous hangars are intentionally incorporate into the airport's plan, in multiple locations and sizes, in order to accommodate flexibility for a variety of existing and potential future users. It is not expected that all identified hangar sites would be developed over the 20-year planning period. The ongoing hangar permitting program at Middlebury is part of a statewide effort initiated by the State Legislature, with the goal of fostering private hangar development at all State airports. It is not specific to Middlebury. VTrans expects hangar construction to proceed slowly at the airport based on demand and available private resources. This planning approach ensures that any successful hangar development is conducted in logical and feasible locations.

    From this respect, VTrans believes that not all the depicted hangars will be constructed. Nevertheless, the State's goal is to retain all the depicted hangars on the Plan.

11. **Question**: Would VTrans consider scaling back the number of hangar sites in the master plan?

    Response: The States' goal is to have several available sites for small hangars, plus two options from medium, and two options for large hangars to provide flexibility long into the future. To provide this, several hangar sites should be permitted and available for lease. As such, VTrans intends to retain the number of hangar sites in the permitting effort. Note that permitted sites does not ensure that development will occur. Rather, it is anticipated that demand and development costs will result in construction on only a portion of the sites.

12. **Question**: Is it a feasible option to build hangars on the existing aircraft tie-down apron?

    Response: In this case it is not possible to build hangars on the existing tiedown apron as the apron was constructed with federal funds for rental on both short and long-term basis. Construction of privately-owned hangars is not permitted per federal policy.

13. **Question**: Are there rules/regulations that ensure the efficient usage of hangar space for aviation-related purposes?

    Response: Yes. FAA policy requires hangars located on airport property to be used for aeronautical use (e.g., aircraft storage, aircraft maintenance, etc.). It is permissible for surplus space in a hangar to be used for other incidental storage (i.e., a personal automobile), as long as aeronautical use is the clear predominant use.

14. **Comment**: It seems that the North Hangar development project and associated permitting activities will make it easier for that project to be successfully implemented.

    Response: It is the goal of the permitting program to make hangar development easier, as well as more consistent and efficiently planned. With the State advancing the permitting effort, there is greater control of environmental adherence and transparency. The permitting is a statewide effort initiated by the State Legislature, with the goal of advancing the permitting process for multiple hangar sites, and multiply hangar sizes together for an efficient layout, and ultimately to foster private hangar development at all State airports. The program is not specific to Middlebury.

15. **Comment**: Additional hangar development would have a significant positive impact on the on-airport businesses.

    Response: VTrans has received numerous comments on this general subject from airport users, indicating a demand for hangars, the lack of any available existing hangars for lease/sale, and the positive benefits of improving the facility to be a more vibrant small airport serving the region.

16. **Question**: Does the master plan greenlight projects to bypass the federal National Environmental Policy Act (NEPA) review and the Vermont Act 250 process?

    Response: No. The master plan is a long-term FAA-required planning document. It does not include or bypass any other requirement, such as the National Environmental Policy Act (NEPA) or the Vermont Act 250 process.

17. **Comment**: Please investigate the feasibility of planting low level vegetation in places where trees were removed in the approach/departure safety zones. This could address groundwater penetration and biodiversity concerns while also ensuring the safety of pilots.

    Response: Form an aviation standpoint, any low-level vegetation (including native grasses) would be appropriate to protect against erosion, support groundwater infiltration, and habit. The seeding is eligible as part of the federal/state tree obstruction removal projects. However, replanting with low growing trees is not eligible by the FAA, as the preferred land use beyond runway ends is open fields.

18. **Question**: Is the airport located on a protected wetland/water source protection area?

    Response: All development and land use in this general area (including the airport) is located over the aquifer that provides local drinking water supply. At small airports, the potential for ground water quality impacts is very low, due to the lack of commercial or industrial activities that generate chemical waste, and due to very limited wastewater generation. Middlebury Airport only contains one aviation fuel tank, that is registered, inspected and operated by VTrans. Wastewater disposal is limited to a few restrooms located at the airport. Furthermore, the airport does not provide deicing of aircraft or chemical deicing of the airfield, and there is no use of fire-fighting foams. Furthermore, the developed area of the airport covers less than 10% of the total airport property. The Airport requires large areas of open space for airspace protection, which ensures the vast majority of the property remains undeveloped. The proposed airport projects are modest, and primarily limited to unheated storage hangars, which have little potential to impact local water supply.

19. **Question**: Does the spraying of pesticides have an effect on the water supply and are there alternative solutions to using these chemicals?

    Response: Herbicide use at the Airport is limited to vegetation maintenance along the perimeter security fence and on stumps of cut trees. All herbicide use is under permit with the VT Department of Agriculture, Foods, and Markets. The permitting process and approvals include application measures and limited volumes to prevent groundwater impacts. Herbicide application is conducted only by persons certified by the Department. Herbicides and fertilizers are not used in the large grass areas surrounding the runway that comprise the majority of the airport property. Manual cutting of vegetation is possible, but typically not as affective as immediate regrowth occurs.

20. **Question**: What is the ratio of green to gray infrastructure? Are there plans to put green infrastructure (i.e., green roofing) on future building developments?

    Response The master plan does not have a specific task to address 'gray vs green' infrastructure. However, 'green' infrastructure, as it relates to water quality is now generally incorporated into the latest Vermont stormwater permit requirements. With new requirements for runoff control and treatment, the best practices now being employed are considered 'green' infrastructure. The new permit requirements must be addressed for each new project as part of the VTANR operational and construction permits. With regard to hangars and buildings, there is no requirement for green roofing; however, the act 250 process will determine any specific requirements for hangars and green infrastructure.

21. **Question:** Do increases in airport activity and infrastructure present an increased risk of catastrophic fuel/chemical spills?

Response: The forecast activity does not require any increase in the size or number of aviation fuel tanks. No other fueling systems or chemical storage facilities are located on the airport. The hangars included in the master plan are for additional storage of small aircraft. Most hangars will be unheated, although some tenants may choose to heat with propane. VTrans does not believe that there is a significant current or future risk of catastrophic spills at Middlebury Airport.

22. **Question**: Is there dedicated staff or a phone number to call for urgent noise complaints or emergencies, such as late-night repeated touch-and-go operations?

    Response: The Study does not recommend lighting that would enable late-night repeated touch-and-go operations. For noise complaints, contacts are listed on the VTrans website: https://vtrans.vermont.gov/sites/aot/files/aviation/Airport_Complaints_2022.pdf

23. **Question**: Is there a plan to implement a GPS approach system in order to streamline flight paths and reduce the time aircraft are generating noise in the vicinity of the airport? Do instrument approaches require the construction of runway lighting?

    Response: Yes, the master plan recommends GPS guided instrument approach procedures for the existing runway. The master plan included the necessary imagery and obstruction data for the FAA to evaluated future instrument procedure(s). It appears that a GPS procedure(s) is feasible, but that decent minimums will likely remain high due to surrounding terrain. Lighting is not necessary for instrument approaches, and use will be restricted to daytime only.

24. **Comment**: There is an interest in adding 'pilot activated' runway lighting.

    Responses: Several written comments were provided to VTrans requesting the addition of pilot-activated runway & taxiway edge lighting to enable operations at night (i.e., after sunset). Based on the comments received by the general public, the master plan has not recommended the addition of runway lighting.

Appendix C – IPaC Resource List

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Middleburry Airport

LOCATION

Addison County, Vermont

DESCRIPTION

Some(two)

Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

http://www.fws.gov/newengland

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. http://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. http://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. http://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. http://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. http://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Canada Warbler *Cardellina canadensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10

Evening Grosbeak Coccothraustes vespertinus — Breeds May 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

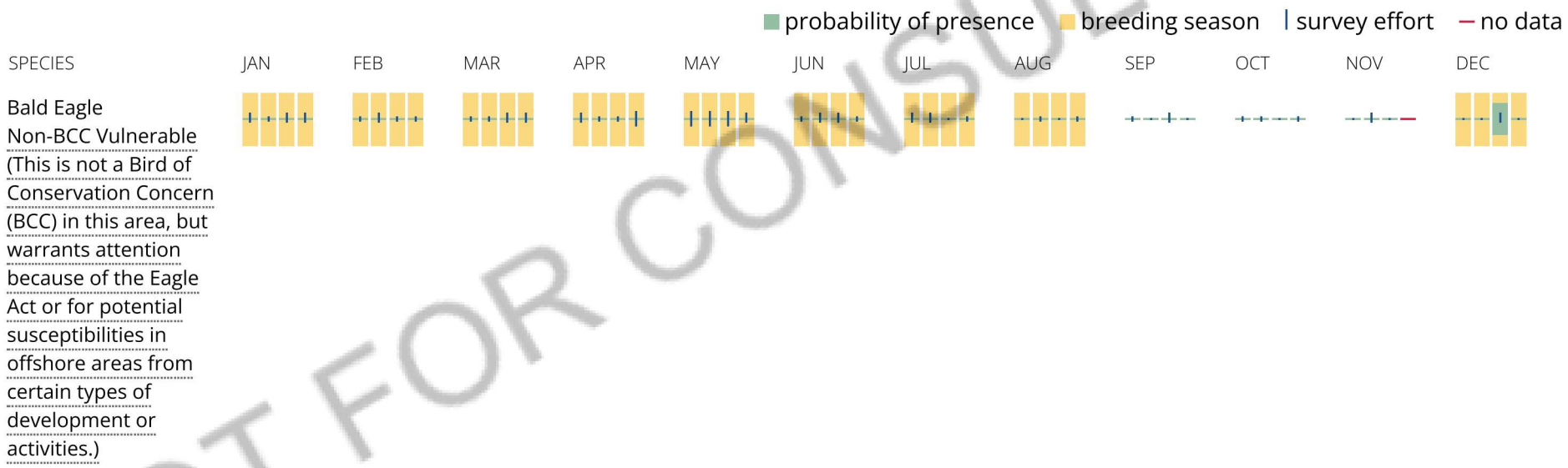
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

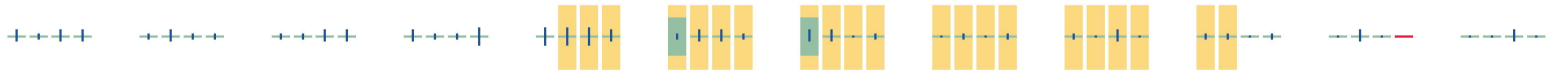
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

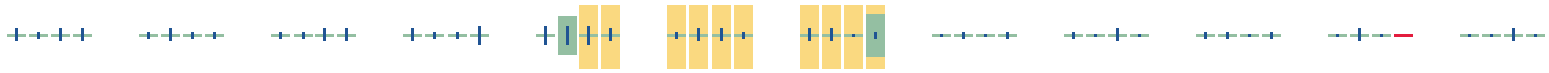
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



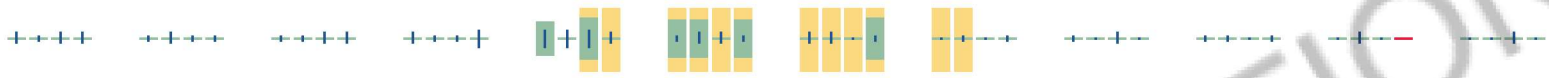
Black-billed Cuckoo BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



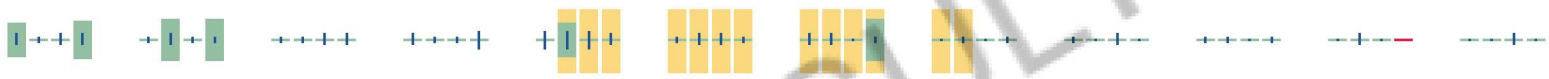
Bobolink BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



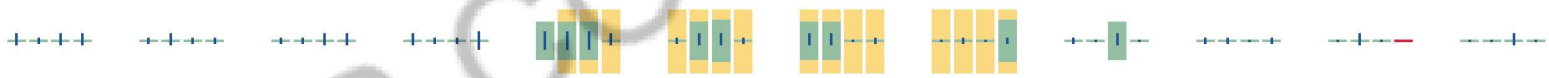
Canada Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Evening Grosbeak BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wood Thrush BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is

not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

PEM1F

FRESHWATER FORESTED/SHRUB WETLAND

PFO1/4B
PFO4/1B
PFO4A

FRESHWATER POND

PUBHx
PUBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal

zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.