

# Chapter Two – Inventory of Existing Conditions

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### 2 | Section 1 – Existing Conditions Inventory

This chapter provides an overview of existing conditions at Elbow Lake Airport. Sources of information referenced for this chapter include, but are not limited to:

- 2004 ALP-Master Plan
- U.S. Census Bureau
- MnDOT Pavement Condition and Analysis
- Elbow Lake Historical Society
- Airport Master Record 5010
- Previous construction project plans and specifications
- Municipal plans and ordinances
- County plans and ordinances
- Y63 Airport Records
- On-site visusal inspection of Y63

### 2 | Section 2 – Airport Background

#### 2.2.1 Airport Role and Classification

The Elbow Lake Airport is a non-certificated General Aviation airport serving the aviation needs of Grant County and the municipalities of Wendell, Barrett, Hoffman, and other surrounding communities. Y63 (the FAA's 3-letter identifier for the Elbow Lake Municipal Airport) serves its communities by providing quality airside and landside facilities, FBO services, and private and public aircraft storage facilities.

Y63 is not a 14 CFR Part 139-certificated airport. Certification through 14 CFR Part 139 is required for airports that host scheduled passenger-carrying operations using aircraft originally designed with more than nine passenger seats, or an unscheduled passenger-carrying operation using an aircraft originally designed with more than 30 passenger seats.

Y63 is classified as a non-certificated Local General Aviation Airport according to the National Plan of Integrated Airport Systems. For the purpose of defining Y63's role in the context of the national aviation systems, the 2017-2021 National Plan of Integrated Airport Systems (NPIAS) Report lists the airport as a *Local General Aviation Airport*. This is unchanged from the previous Report, spanning 2015-2019. These airports have moderate levels of activity with some multi-engine propeller aircraft, averaging about 33 based propeller-driven aircraft and no jets. The current report states, "Local airports are a critical component of our general aviation system, providing communities with access to local and regional markets.... These airports account for 38 percent of all NPIAS airports and have moderate levels of activity with some multiengine propeller aircraft." As a "General Aviation" airport, Y63 does not receive scheduled commercial service, nor does it meet the criteria for a commercial service airport.

MnDOT classifies Y63 as an Intermediate Airport. As of 2012, there were 135 publicly-funded airports in the state of Minnesota. MnDOT classifies Y63 as an "Intermediate" Airport because it has a paved runway of less than 5,000 feet in length, one of 83 in the state. An "Intermediate" classification indicates that the airport facility meets certain criteria, including characteristics of the runways and taxiways, NAVAIDS and lighting, weather reporting, hangars and aprons, terminals, parking, fencing and fueling facilities.

A copy of the 2016 Airport Master Record for Elbow Lake Municipal Airport is included in the Appendix.

#### Understanding Airport Classifications Federal airport classifications are published Commercial Service - Primary within the National Plan of Integrated • Airports that enplane less than 0.05 percent of all Airport Systems (NPIAS) as required by the commercial passenger enplanements but have more than 10,000 annual enplanements. Airport and Airways Improvement Act of 1982. This FAA planning document is Commercial Service - Non-primary updated biannually in an effort to identify • Airport that have between 2,500 and 10,000 the nation's airport needs over a 10-year annual passenger enplanements. planning period and classify airports based Cargo Airport on their significance to the air transportation system. • Served by aircraft providing air transportation of only cargo with a total annual landed weight of more than 100 million pounds. Only those airports within the NPIAS are eligible to receive federal Airport **Reliever Airport** Improvement Program (AIP) funding. High-capacity general avaiation airports in major According to the 2011-2015 NPIAS, there are metropolitan areas that are open to the public, 5,179 public-use airports in the United have 100 or more based aircraft, or have 25,000 annual itinerant operations. States. Of these airports, 3,332 have been deemed significant to air transportation and **General Aviation Airport** therefore have been included in the NPIAS. • Do not receive scheduled commercial service or The State of Minnesota also classifies the do not meet the criteria for commercial service airport. Classification in the NPIAS typically role of airports within the State Aviation requires at least 10 based aircraft and at least 20 System Plan (SASP). miles from the nearest NPIAS airport.

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#### 2.2.2 Airport Location

The City of Elbow Lake is part of Grant County, located in West Central Minnesota, approximately 160 miles northwest of the Twin Cities metropolitan area and 80 miles southeast of Fargo, North Dakota. Elbow Lake is the County seat and the most populous city in Grant County at 1,176 residents according to the 2010 U.S. Census. The airport is located approximately one mile southwest of downtown Elbow Lake.

US Highway 59 and State Highways 54, 55, and 79 run through the city, which is located just 12 miles south of Interstate Highway 94. County Roads 1 and 25 are to the west and south of the airport, respectively. The Canadian Pacific Railway line runs between the main body of the city and the airport. These well-used routes make Y63 easily accessible to the public and connect Elbow Lake to regions throughout the State of Minnesota. Elbow Lake is the County seat and the most populous city in Grant County.



Figure 2-1: Airport Location in State; Source: Minnesota-map.org



Figure 2-2: Airport Location in Region; Source: Google Earth

The airport's topography is relatively flat, with gently sloped terrain to the surrounding wetlands and Flekkefjord (Worm) Lake.

### 2.2.3 Airport History

In the early 1940s, an adventurous barnstormer flew over farm fields of Elbow Lake drawing the attention of high school buddies Orv Amundson and Harold Fjoslien. The ride they took in the open cockpit aircraft that day impacted the boys, and the future of aviation in Elbow Lake.



Orv Amundson as a Young Pilot

After graduation, during World War II, Amundson, Fjoslien, and several other area residents, including Ronny Nelson, joined the military service where they became pilots. Upon returning home, the young men found local farmers engaged in flying small aircraft for aerial crop spraying, fox and wolf hunting, and even a few who flew personal aircraft just for the adventure of it.

In the early days, aircraft commonly landed in farmers' fields and were kept in barns. However, as aviation developed, the need for an airport became apparent. By 1960, the village of Elbow Lake set aside land for an airport with a grass runway. Private hangars were built. A group of farmers incorporated into Elbow Lake Aviation. An old Dairy Queen building was purchased, moved to the airport, and designated the Arrival and Departure building. These modest efforts attracted entrepreneurs who developed businesses in the area. Local residents Billy and Ronny Nelson created an agricultural services business, seeding acreage from the air and aerial application of pesticide for invasive insects. Elbow Lake Aviation pilots flew doctors in from as far away as Canada to interview for positions at the hospital. Some doctors elected to stay, even learning how to fly themselves. Business developers flew into the airport to explore the possibilities for expansion in Elbow Lake.

According to Paul Brutlag, president of the current Airport Board of Directors, in the 1970s the pro-aviation business community developed a "mutually respectful operations and development relationship" with the Minnesota Department of Transportation Office of Aeronautics and the Federal Aviation Administration.

Improvements were made to the airport including a paved runway, GPS instrument approaches, automated weather station, a new Arrival and Departure building, a Fixed Base Operations (FBO) hangar, a new multi-aircraft storage hangar, two Thangars, new private hangars, and development of a seaplane base.

Prairie Air, the FBO owned and operated by Joe and Laura LaRue, employs six fulltime mechanics, two general laborers, and a part time second bookkeeper. Originally from Elbow Lake, Joe's experience working for nationally renowned Columbia Helicopters brought him around the globe engaging in aircraft maintenance and repair. It was the growing energy and opportunities in aviation in Elbow Lake that brought LaRue home. That level of expertise, now available at Elbow Lake Airport, has brought increased air traffic to the airport, additional cash flow to area business, and increased vibrancy to the community.

Orv Amundson has two sons, two grandsons, and two nephews in aviation, all having first experienced flight at Elbow Lake. At 91 years of age, and as one of the airport's original supporters, he rightly states, "It makes me feel like I started something."

Passing the torch to the next generation brings the elders comfort. In the words of Billy Nelson, 84-year-old airport supporter, as he looks to the future of Elbow Lake Municipal Airport, "I see expansion, more success, more business, more flying."



Back row: Laura and Joe LaRue, Paul Brutlag Front row: Billy Nelson and Orv Amundson

#### Chapter Two | Existing Conditions

Over 50 years of growth at Y63.











Source: Google Earth

- Early 1940s 1950s: Elbow Lake residents and farmers begin using aircraft, landing in their own fields, for hunting, aerial application, and recreation.
- 1960: Several tracts of land are deeded, sold, or swapped to the Village of Elbow Lake for an airport.
- 1961: Land was acquired and grass runway was constructed.
- Early 1960s: An informal group of farmer-pilots incorporate to form Elbow Lake Aviation.
- 1974: Airport zoning ordinance is passed allowing Airport to receive State aid.
- 1976: An eight-stall T-hangar was built.
- 1977: The apron area site preparation began and was paved in 1978, fuel facility installed.
- 1991: First Airport Planning Study.
- Mid-1990s: Formation of Lake Area Pilot's Association (LAPA) to promote aviation and support improvements at the airport.
- 1993: 10,000 gallon underground fuel tank installed.
- 1998: Airport signs and beacon are installed, first annual Fly-In Event hosted by LAPA is held.
- 1999: New arrival and departure building was built with conference room, pilot's lounge, restrooms and offices. Self-serve computerized fuel station was installed.
- 2002: T-hangar ownership transferred to the City of Elbow Lake now a source of revenue.
- 2004: Three new private hangars were built; first ALP is completed.
- 2006: FBO hangar is constructed and leased to Prairie Air, Inc, offering a full-service fixed base operation.
- 2007: Construction of new paved runway, runway lighting, ramp, and access road completed. Airport was formally dedicated, with Elbow Lake Mayor Ed Williams and State Legislators in attendance.
- 2008: AWOS is installed.
- 2011: Construction of new eight-stall T-hangar.
- 2012: Seaplane base is established.
- 2016: Construction of new 120'x120' Public Storage Hangar.

Figure 2-3: Timeline of airport history shows steady growth at Y63

#### 2.2.4 Summary of Commercial Service

Elbow Lake does not currently support commercial airline service.

#### 2.2.5 Ownership and Management

The Elbow Lake Airport is owned and operated by the City of Elbow Lake. The City Administrator acts as the liaison between the City Council and the Airport Board, sitting in on the monthly Board meetings, and acting as the Board Secretary. The members of the Airport Board are appointed by the sitting Mayor and approved by the City Council. The City Council has ultimate authority over all decisions regarding the airport finances and management, but the Board plays a strong advisory role to the Council.

The FBO building is owned by the City, but the FBO business, Prairie Air, has a 45year lease. The FAA recommends leases of a 20-year duration with 5-year renewal intervals; however, as verified by FAA in May 2017, since the current building lease has only 35 years remaining, no further action is required to update the lease. The Airport Manager, who in this case happens to be the same person as the FBO Manager, is hired directly by the City, but is responsible to both the City and the Airport Board.



Figure 2-4: Organizational Chart

The Airport Board is currently working on completing a Minimum Standards and General Operation document for the airport, which will be included in this Master Plan's Appendix when completed.

### 2 | Section 3 – Regional Context

#### 2.3.1 Surrounding Airports

Within the state of Minnesota, there are 97 public use airports included in the federal National Plan of Integrated Airport Systems. Of these, seven are Reliever airports, eight are Primary Commercial Service airports, and the remainder are considered General Aviation airports. As can be seen in the following figure, several General Aviation airports are located within close proximity to Y63. The city of Herman, also in Grant County and southwest of Elbow Lake, has its own municipal airport. Herman's airport includes one paved runway, also 14/32, a hangar, and a

small service building with restrooms. This airport is not listed in the NPIAS and is designated as an "Intermediate Airport" in the current Minnesota SASP.

Airports in adjacent counties are found in Fergus Falls, Alexandria, Morris, and Glenwood. Fergus Falls and Alexandria's airports are larger than Y63, with multiple runways, taxiways, and more hangars, while Morris and Glenwood's airports are more comparable in size and services. Alexandria (AXN) is the nearest "Regional" airport and includes its own fixed base operator (FBO), offers instrument approach procedures, and provides landside facilities.

The nearest commercial services airports are found in St. Cloud Regional Airport in St. Cloud, MN; Brainerd Lakes Regional Airport in Brainerd, MN; and Hector International Airport in Fargo, ND. All three are considered "Primary" Airports in the NPIAS Report, with St. Cloud and Brainerd designated as Nonhub Primary airports, and Fargo as a Small Hub Primary airport. Only Brainerd is considered eligible for the Essential Air Service Program (EAS).



Fergus Falls Municipal - Einar Mickelson Field (KFFM)	Wheaton Municipal Airport (KETH)
Longest Runway: 5639 x 100 ft, asphalt	Longest Runway: 3298 x 75 ft, asphalt
Lighting/NAVAIDS: MIRL / Beacon, Lighted wind indicator, PAPI, MALSR, REIL	Lighting/NAVAIDS: MIRL / Beacon, Lighted wind indicator, PAPI
Instrument Approaches: RNAV(GPS), VOR, LOC	Instrument Approaches: RNAV (GPS)
Fuel: 100LL, Jet-A	Fuel: None
Total Based Aircraft/Operations: 48 / 8,500	Total Based Aircraft/Operations: 11 / 3,900
Morris Municipal - Charlie Schmidt Field (KMOX)	Harry Stern Airport - Wahpeton, ND (KBWP)
Longest Runway: 4007 x 75 ft, asphalt	Longest Runway: 5100 x 75 ft, concrete
Lighting/NAVAIDS: MIRL / Beacon, Lighted wind indicator, PAPI, REIL	Lighting/NAVAIDS: MIRL / Beacon, Lighted wind indicator, PAPI, REIL
Instrument Approaches: RNAV (GPS), VOR	Instrument Approaches: RNAV (GPS)
Fuel: 100LL, Jet-A	Fuel: 100LL, Jet-A
Total Based Aircraft/Operations: 20 / 5,906	Total Based Aircraft/Operations: 56 / 13,100
Chandler Field Airport - Alexandria, MN (KAXN)	Glenwood Municipal Airport (KGHW)
Longest Runway: 5099 x 100 ft, asphalt	Longest Runway: 4500 x 75 ft, asphalt
Lighting/NAVAIDS: MIRL / Beacon, Lighted wind indicator, PAPI, REIL, ODALS	Lighting/NAVAIDS: MIRL / Beacon, Lighted wind indicator, PAPI
Instrument Approaches: RNAV (GPS), VOR, LOC	Instrument Approaches: RNAV (GPS)
Fuel: 100LL, Jet-A	Fuel: 100LL
Total Based Aircraft/Operations: 50 / 25,500	Total Based Aircraft/Operations: 12 / 4,900
Figure and Table 2. E. Surrounding Airporto with instrum	ant procedures pear V/2. Course, Clumester som

Figure and Table 2-5: Surrounding Airports with instrument procedures near Y63; Source: Skyvector.com Notes: LIRL/MIRL/HIRL = Low/Medium/High Intensity Runway Light LOC = Localizer RNAV = Area Naviaation REIL = Runway End Identifier Light

NIVAV – Alca Naviyalion	KLIL – KUHWAY LIIU IUCHUHEI LIYI
PAPI = Precision Approach Path Indicator	ILS = Instrument Landing System

#### 2.3.2 Climate and Topography

Y63 is located on the plains of Minnesota among rivers, lakes and wetlands, and at an elevation of 1206 feet above mean sea level. Its reference point is 45° 59' 05"N and 95° 59' 31"W.

The surrounding topography is comprised of rolling hills, crop fields, and grassy meadows, with numerous lakes and wetlands present at lower elevations. The airport is not sheltered by its surrounding topography, and average wind speeds are variable, up to 20 miles per hour, gusting higher. According to the Monthly Normals Report for 1971-2000 from the National Oceanographic and Atmospheric Association (NOAA), the station at Y63 averages 23.36 inches of precipitation per year. Elbow Lake has a humid continental climate with warm summers and cold winters. The lowest temperatures are seen in January, with an average low of 0°F, and the highest temperatures occur in July, with an average high of 81°F.



**Elbow Lake Climate** 

Figure 2-6: Average Monthly Precipitation and Temps in Elbow Lake Area Source: Midwestern Regional Climate Center

### Chapter Two | Existing Conditions



Source: Google Earth



Figure 2-7: Aerial Photographs of Topography; Source: Joe LaRue, Prairie Air, Inc.

#### 2.3.3 Service Area and Demographic Profile

Elbow Lake Municipal Airport's service area includes all of Grant County.

#### 2.3.3.1 Population, Employment, and Income

According to the Minnesota State Demographic Center, Grant County's population is expected to decline slightly over the next 30 years. Employment rates have risen slightly and then fallen in the past few years, while median incomes have slowly and steadily grown.



### Population (2000-2045)

Figure 2-8: Population Growth/Forecast Source: Factfinder.census.gov, US Census Bureau



Figure 2-9: Employment Growth/Forecast Source: Factfinder.census.gov, US Census Bureau



### Median Income for all households (2000-2035)

Figure 2-10: Per Capita Personal Income Growth/Forecast Source: Factfinder.census.gov, US Census Bureau

Year	Population	Employment	Median Income
2010	6,018	4,928	\$41,697
2011	6,067	4,931	\$43,777
2012	6,116	4,888	\$47,333
2013	6,165	4,862	\$50,030
2014	6,214	4,850	\$49,632
2015	6,262	4,814	\$50,174
CAGR	0.8%	-0.47%	3.77%

Table 2-11: Socioeconomic Trends within Y63 Service Area/Grant CountyNote: CAGR-Compound Annual Growth Rate

#### 2.3.3.2 Local Economy

A busy manufacturing, business, and agricultural climate sustains the local economy. According to the US Census Bureau's *2012 Survey of Business Owners*, there are 456 businesses in Grant County, down slightly from 2007's total of 476. The majority of Grant County's residents are employed in agricultural industries, the construction industry, in manufacturing, in retail trade, and in Educational or healthcare and social assistance services (*Factfinder.census.gov, 2010-2014 American Community Survey 5-year estimates*). Collectively, these indicators provide the basis for strong demand for air travel at Y63 into the future. Consumers have more discretionary income to travel as household incomes increase. Likewise, business and educational institutions demand higher levels of air service as they expand and increase their mission.

The Y63 market area supports a diversified array of agricultural, business, governmental, health care, and small business interests. Its history, cultural and

recreational amenities, natural beauty, and proximity to regional shopping and business hubs drive transportation needs as well. Major employers in the service area include Elbow Lake Co-op Grain, Prairie Ridge Hospital and Health Services, and West Central Area Schools (Table 2-12).

Business	Industry
Elbow Lake Co-op Grain	Agriculture
Prairie Ridge Hospital and Health Services	Health Care
Renewtech LLC	Renewable Energy
Amerifab Industries	Agriculture
Barrett Farm Supply	Agriculture
West Central Area Schools	Education

Table 2-12: Major Employers within Y63 Service Area

#### 2.3.4 Surrounding Land Use

Airport operations often impact adjoining properties and land uses, so it is important to integrate Airport Master Plans with local land use development plans. Due to its location in Elbow Lake and Grant County, any City or County zoning ordinances or comprehensive plans must be considered. Some airport property falls outside of Elbow Lake city limits. The airport property is currently unzoned.



Figure 2-13 is an illustrative representation of the land use zoning within the airport vicinity. The City has a zoning ordinance which was adopted in 1974, but a detailed zoning map has not been created. Grant County has not been zoned county-wide. The ordinances and regulations currently in effect regarding land use and influencing future work at the airport include:

- Grant County Comprehensive Plan (1998)
- Shoreland Management Ordinance of Grant County (2008)
- Wind Energy Conversion System Ordinance of Grant County (2009)
- Grant County Tower Ordinance
- Elbow Lake City Zoning Ordinance (1974)
  - o Chapter 151: Shoreland Management
  - o Chapter 152: Airport Zoning
  - o Chapter 153: Zoning

Airport access roads are lined with industrial, commercial, and some residential properties. Consideration must be made of the residential properties nearest the airport and Sealane 11/29, which are located on a peninsula extending into Worm (Flekkefjord) Lake from the north.

Grant County Comprehensive Plan. A Comprehensive Plan helps the County to prevent the development of incompatible land uses. This kind of management plan could encourage the viability, development and growth of the Elbow Lake Municipal Airport, including the coordination of adjacent land uses and transportation improvements to best facilitate the full use of the airport. At this time, land uses around the airport are primarily agricultural, with limited areas of residential, commercial, and industrial development to the north and east. Grant County's Conceptual Plan is set forth as a conceptual idea for planning plus a list of Goals and Objectives for economic development, housing, solid waste, vehicular transportation, environmental issues, and land use. The "Overall Concept" section of the document states:

It is understood that the County is very different from East to West. While farming is the primary land use, there are lakes and wooded areas that can provide residential use. There are also recognized sensitive areas. With this in mind, the planning program of Grant County is based on the following goals: Allow for agricultural, commercial, and industrial growth and versatility, provide for rural residential development, and maintain and promote our existing quality of life in an environmentally friendly way. Our future land use decisions should be based on a foundation of facts, supported by facts, science, and current technology.

It does not contain a prescriptive list of requirements to follow, nor does it specifically address development near airports. In the Land Use section, the Plan's goals primarily address the preservation of prime agricultural land and rural housing, encouraging development to occur within city boundaries, and

preservation of natural resources such as shorelands. Per Figure 2-14 below, the Airport property is wholly contained within the "City Growth" zone and is not considered Agricultural land by this Plan, though agricultural activities are actually occurring all around the airport.



Figure 2-14: Grant County Comprehensive Plan Map

"City Growth" areas are defined as "Areas immediately adjacent to city boundaries where anticipated or planned growth is to occur. This may be in the form of residential, commercial, or industrial expansion. There should be no new feedlots and dwellings will only be allowed using a siting criteria of one home per 2.5 acres."

Shoreland Management Ordinance of Grant County. The purpose of the ordinance is to regulate "the use and orderly development of shorelands in Grant County, to prevent and eliminate pollution of public waters and to maintain historic values of significant historic sites in the unincorporated areas of Grant County, and to preserve and enhance our natural resources as provided in the Environmental Rights Act, Minnesota Statues 116B." The ordinance contains many rules regarding the use and treatments of lakes and shorelands which should be considered in the day-to-day operations of any user of a shoreline property. Setbacks are measured from the Ordinary High Water Mark (OHWM), which will be discussed in greater detail in Section 2.6.13.3 Surface Waters, later in this chapter. Flekkefjord Lake is designated a "General Development" lake, and Commercial uses (such as an airport) are conditionally permitted. Required setbacks from General Development lakes are:

Condition	Requirement
Structure Height above Ordinary High Water Mark (Vertical Separation)	3 feet (lowest floor)
Structure Setback from Ordinary High Water Mark (Horizontal Separation)	75 feet
Structure Setback from Wetlands	50 feet
Maximum Height of Non-Dwelling Structure	18 feet
Accessory Structure Setback from OHWM	20 feet
Accessory Structure Maximum Height	10 feet

Table 2-15: County Shoreland Management Requirements

Wind Energy Conversion System Ordinance. This ordinance was adopted to regulate the installation and operation of wind turbines that were not already otherwise subject to siting and oversight by the State of Minnesota, and applies to the unincorporated areas of Grant County. It contains setback requirements for various types of properties and rights-of-way, structures, and property lines. It does not specifically address airports other than to state that "All Wind Energy Conservation Systems shall comply with FAA standards and permits."

Grant County Tower Ordinance. This ordinance was adopted to regulate wireless communication tower design, siting, construction and security. In regards to requirements near airports, a person applying to build such a tower must provide proof of filing an application with the FAA or an Engineer's statement showing that filing with the FAA is unnecessary. Lighting of the tower is not mandatory unless FAA requires it. It does not specifically address construction near airports.

Elbow Lake City Zoning, Ch. 151: Shoreland Management. Similar to the County's Shoreland Management ordinance, this document sets forth limitations to development around the City's lakes and rivers. In this case, the City ordinance's setbacks for structures around Flekkefjord Lake are more restrictive, with a 75-foot setback from the OHWM (referred to in this document as the Ordinary High Water Level) for all Unsewered (septic system) structures. Only agricultural and residential uses are permitted within the designated Shoreland Management Areas.

Elbow Lake City Zoning, Ch. 152: Airport Zoning. This chapter deals largely with airport hazards, noting that such hazards endanger the lives and property of airport users and the property or occupants of the land in its vicinity. Such hazards may also destroy or impair the utility of the airport. Thus, the chapter endeavors to prevent the creation or establishment of airport hazards, and the elimination, removal, alteration, mitigation or marking and lighting of existing airport hazards.

Structures such as cell towers, wind turbines, vegetation, terrain, and tall buildings can inhibit airport operations and pose a safety concern. This chapter protects the safety and utility of the airport, the safety of the public and property, and prohibits hazards in certain areas by establishing Safety Zones A, B, and C centered around the runway centerline. The designated Safety Zones have guidelines for land use and building or structure construction for each zone to prevent the development of obstructions which are a hazard to air navigation.

The Safety Zones are superimposed over specific areas of airspace, defined in the ordinance, which impose height limitations according to the airspace being protected. It delineates the scope of the ordinance in relation to existing conditions or structures (meaning that they may be "grandfathered in") though they are nonconforming uses. Hazards must be marked and lighted. The ordinance does not explicitly address light or lighting devices, glare, or dust which may also restrict visibility in the Safety Zones.

While the City does have an Airport Zoning ordinance as part of their larger Zoning document, MnDOT has not approved this ordinance. An effort was made in the 1980's to update the zoning, but it was never completed. Elbow Lake received a grant from MnDOT in 2007 for this work, but it was also not completed. Another push was made in 2013 to update the zoning to include the paved runway (rather than the original grass airstrip), and it is currently not known how far along the City is in that process. It is vitally important that the Airport Zoning ordinance and associated map be completed to reflect the desired Ultimate Facility in order to protect the area surrounding the airport for future development by Y63. Representatives of MnDOT are prepared to assist Y63 in the completion of this document and expect the adoption of an updated ordinance and map upon completion of the Master Plan.

It is vitally important that the Airport Zoning ordinance and associated map be completed to reflect the desired Ultimate Facility in order to protect the area surrounding the airport for future development by Y63. Elbow Lake City Zoning, Ch. 153: Zoning. This chapter regulates the use and development of the incorporated area and shorelands of public waters of the City to promote the health, safety, and general welfare of its people. The City's Zoning ordinance classifies City properties both within and outside the previously described Shoreland Management Areas.

Outside Shoreland Management Area		Within Shoreland Management Area		
Agricultural	А	Agricultural	AS	
Residence A	RA	Residence A	RAS	
Commercial A	СА	Residence B	RBS	
Commercial B	СВ			
Industrial	1			
Commercial-Industrial	CI			

Table 2-16: City of Elbow Lake Zoning Use Districts.

There is currently no zoning designation specifically for the Airport. At this time, the City's ordinance does not include an accurate or detailed map showing the zoning or use of the land around the airport, some of which falls outside of the city limits of Elbow Lake. The City is currently working to remedy this. Anecdotally, most of the landing surrounding the airport would be considered "agricultural."

Sanford Township has not created Comprehensive Plans or future land use plans to guide development and growth in the Township.

Taken overall, there is little in any of these documents described above that limits development around the airport. Adjacent land development could impact current or future planned expansion of airport surfaces unless the proper zoning documents are put in place to protect MnDOT safety zones or FAR Part 77 surfaces.

### 2 | Section 4 – Description of Existing Facilities



2.4.1 Existing Airport Layout

Figure 2-17: Aerial View of Existing Facilities; Source: Woolpert, Inc.

The Elbow Lake Airport property consists of approximately 217 acres. The key elements and current amenities include:

- Paved runway 14/32
- Sealane 11/29 with pier, dock, and anchorage facilities
- Taxiway and apron areas
- Aircraft tie-downs
- Fixed Base Operator facility
- Multi-use Public Storage Hangar and T-hangars
- Private Hangar facilities
- Arrival/departure building
- Fuel facilities
- Navigational aids
- Automobile parking areas

These features are depicted in the Airport Layout Drawing (Figure 2-18).



Figure 2-18: Airport Layout Drawing of Existing Facilities

Elbow Lake Airport Master Plan



#### 2.4.2 Existing Design Criteria

#### 2.4.2.1 Existing Conditions

The current aircraft using Runway 14/32 are a mix of single-engine and multiengine aircraft such as the Piper PA18 and PA28 Cherokee; Cessna 150M, 177, 182P and 337G; and other similarly-sized craft. The largest aircraft known to land at Y63 is the Beechcraft Super King Air, with a wingspan of 54'-6", height of 15'-0", and a maximum takeoff weight of 10,100 pounds.

The most demanding aircraft currently using the Sealane 11/29 is the DeHavilland DHC-2 Beaver, with a wingspan of 48'-0", height of 9'-0", and an approach speed of 50 knots.

Airfield design standards are based upon an Airport Reference Code (ARC) for the most demanding aircraft with greater than or equal to 500 annual operations currently using or forecasted to use the airport. The type of approaches offered at the airport (in this case, visual and non-precision instrument) also affect design criteria. The ARC is used for planning only and does not limit the aircraft that may be able to operate safely on the airport.

A review of the existing facility indicates that Y63 is currently designed to accommodate aircraft in Approach Category "A/B Small Aircraft" and Aircraft Design Group "I," resulting in an ARC of *A/B-I (Small)* A great majority of the aircraft that use the airport include those with an approach speed of less than 91 knots, wingspans less than 49 feet, and tail heights of less than 20 feet.



Source: Joe LaRue, Prairie Air, Inc.

A review of the existing facility indicates that Y63 is currently designed to accommodate aircraft in Approach Category "A/B Small Aircraft" and Aircraft Design Group "I," resulting in an ARC of A/B-I (Small).

The Airport Reference Code (ARC) is used for<br/>planning and design. Unlike the Runway Design<br/>Code (RDC), it does not limit the aircraft that<br/>may be able to operate safely on an airport.Approx<br/>A<br/>B

The ARC consists of two components. The first component is the Aircraft Approach Category (AAC) which relates to approach speed of the aircraft. The second relates to either the aircraft wingspan and/or tail height and is known as the Airplane Design Group (ADG). According to the FAA AC 150/5300-13A, *Airport Design*, the following criteria determine the AAC and ADG.

Aircraft Approach Category (AAC):			
Approach	Speed (V <sub>REF</sub> )	_	
A Less t	A Less than 91 knots		
B 91 kn	ots - 120 knots		
C 121 k	nots - 140 knots	_	
D 141 k	nots - 165 knots		
E 166 k	nots or more		
Air	plane Design Grou	p (ADG):	
	Tail Height (feet)	Wingspan (feet)	
Group I	Less than 20	Less than 49	
Group II	20 - 30	49 - 79	
Group III	30 – 45	79 - 118	
Group IV	45-60	118 - 171	
Group V	60-66	171 - 214	
Group VI	66-80	214 - 262	
Elbow Lake's Current			
ARC: A/B-I (Small)			

The following table describes the typical aircraft based at Y63 and their associated ARC.

Aircraft	ARC	Approach Speed (knots)	Wingspan (feet)	Max. Takeoff Weight (lbs)
Aeronca 7AC Champion	A-I	43	35	1,220
Aeronca 7CCM Champion	A-I	48	35	1,350
Beech A36 Bonanza	A-I	77	33.5	3,650
Bellanca 17-31A Super Viking	A-I	80	34	3,325
Cessna 150M Commuter II	A-I	55	33.5	1,500
Cessna 150B	A-I	55	33.5	1,600
Cessna 177 Cardinal	A-I	60	35.5	2,350
Cessna 182D Skylane	A-I	72	36	2,650
Cessna 182P Skylane	A-I	65	36	2,950
Cessna 182R Skylane	A-I	64	36	3,100
Cessna 337G Super Skymaster	A-I	79	38	4,630
ERCO Ercoupe 415-C	A-I	56	30	1,260
North American T-6G Texan	B-I	90+	42	5,600
Piper PA-18 Super Cub	A-I	48	35.5	1,750
Piper PA-22 Tri-Pacer	A-I	55	29	2,000
Piper PA-28 Cherokee Archer	A-I	64	35.5	2,550
Piper PA-32RT-300T	A-I	79	33	3,600
Rockwell Int'l 114 Commander	A-I	69	32.75	3,250
Van's RV-8	A-I	65	24	1,800
Zenith STOL CH 701	A-I	34	27	1,100

 Table 2-19: Typical Based Aircraft Operating at Y63

If a third component, the Visibility Minimum (RVR), is added to the ARC, the code then becomes a Runway Design Code (RDC), which signifies the design standards to which a runway is to be built. These RVR values are expressed in feet as noted in the table below. Runways designed for visual approach only are designated "VIS." In the case of Runway 14/32, the Visibility Minimum is 5000, or not lower than one mile. Sealane 11/29 is a Visual Approach only.

Instrument Flight Visibility Category (statue mile)
Not lower than 1 mile
Lower than 1 mile but not lower than 34 mile
Lower than ¾ mile but not lower than ½ mile
Lower than ½ mile but not lower than ¼ mile
Lower than ¼ mile
Visual approach only

Table 2-20: FAA Visibility Minimums; Source: AC 150/5300-13A

In addition, the Taxiway Design Group (TDG) must be considered. The TDG is used to determine taxiway width, shoulder width, fillets, and in some cases, taxiway to taxiway separation. The TDG is based on the outer-to-outer main gear width (MGW) and the cockpit to main gear distance (CMG). The existing taxiway, at 25 feet wide, conforms to a TDG-1A standard.

2.4.2.2 Airport Operating Certificate

Elbow Lake is not a commercial airport and does not have a Part 139 Airport Operating Certificate, though it is a licensed public airport through MnDOT.

#### 2.4.2.3 Wind Analysis

Winds are the traditional factor in determining runway orientation, generally aligning with the direction of the prevailing wind.

Wind data analysis considers wind speed and direction related to the existing and forecasted operations, both during VFR and IFR weather conditions. An ideal runway is aligned with the prevailing wind for the greatest percentage of time. A crosswind runway is recommended by the FAA when the primary runway orientation provides less than 95% wind coverage. In this case, a crosswind runway may be justified and eligible for Federal funding.

Wind coverage is the percent of time that crosswind components are below an acceptable velocity in a certain direction. This coverage is calculated based on the crosswind component not exceeding the allowable value listed in Table 3-1 of AC 150/5300-13A. Appropriate application of data from the wind analysis will enhance the safety and utility of the airport.

The crosswind component of wind direction and velocity is defined as the resultant vector which acts at a right angle to the runway centerline, and is equal to the wind velocity multiplied by the sine of the angle between the wind direction and the runway direction.

The existing taxiway, at 25 feet wide, conforms to a TDG-1A standard. Runway 14/32 provides sufficient wind coverage in a 10.5 knot, 13 knot, and 16 knot crosswind 95 to 99% of the time.

Sealane 11/29 does not provide sufficient coverage at 10.5 and 13 knot crosswinds, but is more than 96% covered at 16 knot crosswinds. The existing Runway Design Code for Runway 14/32 is currently A/B-I (Small)-1 Mile; therefore, based on FAA standards for this classification, the allowable crosswind component for this runway is 10.5 knots. Generally, smaller aircraft are more affected by wind conditions, contributing to accidents, but given the significant number of slightly larger aircraft (B-II (Small)) anticipated to visit Y63 in the future, the runway has been evaluated for 10.5, 13, and 16 knot crosswind components.

Based on this analysis, the orientation of Runway 14/32 provides sufficient wind coverage in a 10.5 knot, 13 knot, and 16 knot crosswind 95 to 99% of the time during all weather conditions. Anecdotally, the runway orientation is reported to serve pilot's needs very well. The orientation of Sealane 11/29 does not provide sufficient coverage at 10.5 and 13 knot crosswinds, but is more than 96% covered at 16 knot crosswinds.

The FAA considers the National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC) as the best source of wind data for these calculations. Wind data is not collected at Elbow Lake, but is collected nearby at Fergus Falls Airport, approximately 19 nautical miles northeast of Y63. In order to conduct wind analysis at airports where data is not collected by NOAA, it is acceptable to use wind data from the nearest airport with available wind data.

2007-2016 Wind Data	10.5 knots	13 knots	16 knots
	Sealane 11/29		
IFR	82.28%	90.1%	96.12%
VFR	86.28%	92.91%	97.84%
All Weather	85.76%	92.54%	97.62%
	Runway 14/32		
IFR	94.78%	97.89%	99.39%
VFR	95.24%	97.94%	99.39%
All Weather	95.17%	97.92%	99.38%

Table 2-21: Wind Coverage; Source: National Climatic Data Center FAA Standard wind analysis tool. Wind data from Fergus Falls Airport, February 2017.

#### 2.4.2.4 Approach Procedures

In a Visual Flight Rules (VFR) approach, the pilot is responsible for maintaining aircraft separation, navigation, and choosing the arrival and departure flight paths to and from and airport. The results of individual pilot navigation for sequencing and collision avoidance are that aircraft do not fly a precise flight path to and from the airport. Therefore, aircraft can be found flying over a wide area around the airport for sequencing and safety reasons.

While aircraft can be expected to operate over most areas of the airport, the density of aircraft operations is higher near the airport. This is the result of aircraft following the established traffic patterns for the airport. The traffic pattern is the traffic flow that is prescribed for aircraft landing or taking off from

an airport. The components of a typical traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach, which essentially define which side of the runway aircraft will operate.

- Upwind Leg: A flight path parallel to the landing runway in the direction of the landing.
- Crosswind Leg: A flight path at right angles to the landing runway off its departure end.
- Downwind Leg: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg.
- Base Leg: A flight path at right angles to the landing runway at its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.
- Final Approach: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway.

Under VFR conditions, pilots may approach Runway 14/32 from any direction, using a standard left visual pattern with an altitude of 2000 feet above mean sea level.

In the case of Sealane 11/29, pilots must observe several rules, as documented in the *2016 Airport Directory and Travel Guide* issued by the MnDOT Office of Aeronautics:

- Seaplane traffic will monitor and make traffic calls on the Elbow Lake Airport CTAF and give way to aircraft landing on Runway 14/32.
- Aircraft using Waterway 29 shall make right traffic.
- Aircraft using Waterway 11 shall make left traffic and avoid the final approach course to Runway 14.
- The seaplane landing traffic pattern shall be 2000' (795' AGL).
- Seaplane takeoffs and landings shall be between 7:00AM and sunset.
- Avoid takeoffs and landings over shoreland noise sensitive areas.
- No pilot training is permitted; only certificated pilots with a seaplane rating may operate on this lake.

While the traffic pattern defines the direction of turns that an aircraft will follow on landing or departure, it does not define how far from the runway an aircraft will operate. The distance laterally from the runway centerline an aircraft operates or the distance from the end of the runway is at the discretion of the pilot, based on the operating characteristics of the aircraft, number of aircraft in the traffic pattern, and meteorological conditions. The actual ground location of each leg of the traffic pattern varies from the aircraft operation to aircraft operation for reasons of safety, navigation and the sequencing described above. The distance that the downwind leg is located laterally from the runway will vary based mostly on the speed of the aircraft. Slower aircraft can operate closer to the runway as their turn radius is smaller.

The direction in which aircraft approach and depart is generally dependent on wind conditions. Both approaches and departures should be performed into the predominant wind direction. When wind is not a factor, approach and departure runways are typically at the discretion of the pilot unless there are local flight regulations prescribing otherwise.

Instrument Flight Rules (IFR) for Elbow Lake will be discussed in Section 2.4.4.7, *Navigational Aids.* 

#### 2.4.3 Airspace

#### 2.4.3.1 Airspace Description

The Federal Aviation Administration Act of 1958 established the FAA as the responsible agency for the control and use of navigable airspace within the United States. The FAA established the National Airspace System (NAS) to protect people and property on the ground and establish a safe and efficient airspace environment for civil, commercial, and military aviation. This includes the network of airspace such as air navigation facilities, airports and landing areas, aeronautical charts, associated rules, regulations and procedures, and technical information.

Airspace is broadly classified as "controlled" or "uncontrolled," the difference being primarily related to requirements for pilot qualifications, ground-to-air communications, navigation and air traffic services, and weather conditions. See Figure 2-23: *Understanding Airspace* for a description of the five classes of "controlled" airspace, A-E. Class G airspace is considered "uncontrolled."

According to the Federal Register (<u>www.federalregister.gov</u>) Class E Airspace was established at Y63 per 14 CFR part 71 standards, effective October 17, 2013. Controlled airspace is necessary to accommodate Area Navigation (RNAV) Standard Instrument Approach Procedures at the airport, enhancing the safety and management of Instrument Flight Rule (IFR) operations. The controlled airspace area extends upward from 700 feet above the surface within a 6.5-mile radius of the airport.

Class E airspace includes airspace corridors identified as federal airways, or which accommodate jet traffic at low altitudes. The Class E controlled airspace around Y63 starts at 700 feet Above Ground Level (AGL) and extends vertically to 18,000 Means Sea Level (MSL) when it reaches Class A airspace. Figure 2-24 depicts the Class E airspace surrounding Y63. Established IFR, en route airways and associated reporting points near the airport can be seen in Figure 2-25.

Class E Airspace was established at Y63 per 14 CFR part 71 standards, effective October 17, 2013. Victor airways are low-altitude airways, defined in straight-line segments, each of which is based on a straight line between either two VHF omnidirectional range (VOR) stations or a VOR and a VOR intersection. The nearby Victor airways can be seen in Figure 2-25.

#### 2.4.3.2 Air Traffic Control (ATC) Procedures and Communications

The Pride of the Prairie airport does not have an FAA Air Traffic Control Tower (ATCT), therefore approach and departure service is provided by the Minneapolis Air Route Traffic Control Center via the Alexandria Remote Center Air/Ground Communications facility. The service provides radar separation on all aircraft operating on IFR fight plans within controlled airspace, and principally during the en route phase of flight to and from Y63. Ground control and separation of the VFR aircraft operating near Y63 is performed by the pilot under visual flight rules, who states his or her intentions via the CTAF.

Airport Communications	Frequencies
CTAF	122.9
Minneapolis ARTCC	126.1/269.2
AWOS-3	118.075
AWOS-3 at FFM (Fergus Falls)	110.4
AWOS-3 at MOX (Morris)	109.6
AWOS-3 at AXN (Alexandria)	118.375

Table 2-22: Airport Communications

Notes: CTAF-Common Traffic Advisory Frequency ARTCC-Air Route Traffic Control Center AWOS-Automated Weather Advisory System

## Understanding Airspace

The airspace over the United States, to an altitude of approximately 60,000 feet MSL (Flight Level – FL600), is separated into two parts, terminal and en route airspace. Terminal airspace is that area around the nation's major airports extending to a specified altitude that may encompass an area of 60 miles in diameter and include several airports. En route airspace is the area within which aircraft transit from one terminal airspace to another. There is no specified bottom altitude for en route airspace and the top extends to the upper performance limits of civil aircraft. U.S. airspace is further divided into several different categories, each with its own rules and regulations.

The airspace categories are designated Class A, B, C, D, E, and G, transition areas and continental control area. The Class B, C, and D areas are ascribed to Airport Traffic Areas (ATA). Each class of ATA has a given radius, with Classes B and C having extensions (transition areas) to encompass the final portion of an instrument approach procedure.

Victor airways are low altitude airways, used by both VFR and IFR aircraft traffic, defined in straight line segments between either two very high frequency omnidirectional range (VOR) stations, or a VOR and a VOR intersection. Victor airways have a floor of 1,200 feet above ground level (AGL) and a ceiling of 17,999 feet MSL. They are normally eight nautical miles wide.





Figure 2-24: VFR Airspace and Class "E" Airspace surrounding Y63; Source: vfrmaps.com



Figure 2-25: IFR Airspace and Air Traffic Control around Y63; Source: Skyvector.com

#### 2.4.3.3 FAR Part 77 Imaginary Surfaces

The FAA has established standards for determining obstructions to airports in Part 77 of the Federal Aviation Regulations. These standards identify "civil imaginary surfaces" which are described below.

Primary Surface. The Primary Surface is a surface longitudinally centered on the runway. When the runway has a specially-prepared hard surface, the primary surface extends 200 feet beyond either end of the runway, but when the runway has no specially-prepared surface, the primary surface ends at the physical end of the runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. Primary surface widths vary with the classification of the runway; however the width is uniform throughout and is based on the most precise approach existing or planned for either end of that runway.

Approach Surfaces. Approach Surfaces extend outward from the primary surface at each end of the runway. The visual approach surfaces for Runways 11/29 and 14/32 extend outward and upward at a 20:1 slope from a point which is located 200 feet beyond the threshold and at the same elevation as the threshold. This means that for every 20 feet measured outward (horizontally), the Approach Surface slopes upward (vertically) one foot. The surface expands outward from an inner width of 250 feet to a width of 1,250 feet at a distance of 5,000 feet. The Approach Surfaces of Runways 14 and 32 have an inner width of 500 feet with an outer width of 2,000 feet.

Horizontal Surface. A horizontal plane 150 feet above the established Airport Elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the Primary Surface of each runway. Tangents then connect the adjacent arcs. Size of arcs are as follows: For all runways designed Visual or Utility, the radius of each arc is 5,000 feet. For PIR and Non-Precision Instrument runways, the radius of each arc is 10,000 feet. The radius of the arcs specified for each end of a runway will have the same numerical value, that value being the highest determined for either end of the runway. When a 5,000 foot arc is encompassed by tangents connecting two adjacent 10,0000 arcs, it shall be disregarded.

Conical Surface. This surface extends upward and outward from the outer limits of the Horizontal Surface for a horizontal distance of 4,000 feet. The slope of the conical surface is 20:1 measured in a vertical plane.

Transitional Surfaces. Surfaces extending outward and upward, at right angles to the runway centerline, from the sides of the primary surface and the approach surfaces. The slopes of the transitional surfaces are 7:1 and the surface extends until it intersects the Horizontal or Conical Surface. A PIR Approach Surface projects beyond the limits of the Conical Surface and extends a distance of 5,000 feet measured horizontally from the edge of the Approach Surface, sloping at 7:1.

Fixed or mobile objects which are of greater height than the surfaces described in FAR Part 77 are considered "obstructions to navigation" until they have been reviewed by the FAA, and which may be required to be removed or marked and lighted, depending on the nature of the obstruction and the feasibility of its removal. To fully protect Y63 from these potential hazards to air navigation, an obstruction analysis will be conducted to evaluate penetrations based on Part 77 Imaginary Surfaces. This analysis will be performed as part of the Master Planning effort.

### Understanding FAR Part 77 Imaginary Surfaces

#### FAR Part 77:

- 1. Establishes standards for determining obstructions in navigable airspace.
- 2. Sets forth the requirements for notice to the Administrator of certain proposed construction or alteration.
- 3. Provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace.
- 4. Provides for public hearings on the hazardous effect of proposed construction or alteration on air navigation.
- 5. Provides standards for establishing antenna farm areas.

Obstructions to air navigation are any existing or proposed objects, fixed or mobile. In greater height than the imaginary surfaces outlined within FAR Part 77.23. Civil airport imaginary surfaces established under FAR Part 77 for each runway include:

- Primary SurfaceApproach Surface
- Horizontal Surface
- Conical Surface
- Transitional Surface

Existing penetrations to the FAR Part 77 surfaces are considered hazards unless they have been studied by FAA and determined not to be hazards. The determination of whether a proposed obstruction is a hazard is accomplished through an aeronautical study. The standards apply to all objects, whether manufactured, natural growth, or terrain.



Dimensional criteria related to the imaginary surfaces can vary depending on the critical aircraft (weight and approach speed) using the airport. Sealane 11/29 is considered a Visual Runway, while Runway 14/32 is an IFR Runway.

	ІТЕМ	DIMENSIONAL STANDARDS (FEET)					
DIM		VISUAL RUNWAY		NON	- PREC STRUMI RUNWA	PRECISION	
		Α		А	В		RUNWAY
		11/29	в	14/32	С	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL		NON - PRECISION INSTRUMENT APPROACH		PRECISION	
		A		Α	A		APPROACH
		11/29	В	14/32	С	D	1
С	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	•
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	

**OBSTRUCTION IDENTIFICATION SURFACES** 

UTILITY RUNWAYS

B - RUNWAYS LARGER THAN UTILITY
 C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
 D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE

- PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET

Figure 2-26: Dimensional Standards for Obstruction Identification Surfaces Source: www.ngs.noaa.gov/AERO/oisspec.html

According to FAR Section 77.2, Runway 14/32 is a Non-Precision Instrument Runway:

"... A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved, or planned, and for which no precision approach facilities are planned, or indicated on an FAA planning document or military service military airport planning document."

It is also considered a Utility Runway:

"... A runway constructed for and intended to be used by propeller-driven aircraft of 12,500 pounds maximum gross weight and less."

Sealane 11/29 would be considered both a Utility Runway and a Visual Runway:

"... A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA approved airport layout plan, a military service approved military airport layout plan, or by any planning document submitted to the FAA by competent authority."

Each runway has its own set of surfaces with unique dimensions which will be examined in greater detail later in this document.

#### 2.4.3.4 Runway Protection Zones

Runway Protection Zones (RPZs) are airfield design elements intended to protect airspace, prevent incompatible land uses, and protect people and property on the ground within the vicinity of a runway end. These zones are trapezoidal areas located at both the approach and departure ends of the runway within the innermost portion of the FAR Part 77 Approach Surface. The dimensions of these areas are based upon the types of aircraft expected to use a runway and its approach visibility minimums. The FAA requires airports to control, to the greatest extent possible, the land within the RPZs to prevent the creation of hazards to arriving and departing aircraft in the future. Per AC 150/300-13A, "control" is procured through the acquisition of property interests, as well as the clearing and maintaining of RPZ areas of incompatible objects and activities.

The RPZs for Runways 14 and 32 are controlled through fee simple title. There are no requirements for RPZs for sealanes.

The FAA issued a Memorandum on September 27, 2012 titled *Interim Guidance on Land Uses within a Runway Protection Zone*. It was issued to help clarify issues raised with the new Airport Design Advisory Circular (150/5300-13A) regarding new guidance on runway protection zones. The memorandum discusses land use with respect to existing conditions verses proposed or modified conditions. Referring to this memorandum, there are no incompatible land uses within the RPZs of Runway 14/32.

The memorandum notes that the FAA will work with the airport sponsor to remove or mitigate the existing incompatible land uses where practical. Any proposed changes to the RPZs must consider the incompatible land uses outlined in the memorandum.

The RPZs for Runways 14 and 32 are controlled through fee simple title. There are no requirements for RPZs for sealanes.



Figure 2-27: Existing Runway Protection Zones

Runway End	Length (ft)	Inner Width (ft)	Outer Width (ft)	<b>RPZ-Acres</b>
Runway 14	1,000	250	450	8.035
Runway 32	1,000	250	450	8.035

Table 2-28: Existing Runway Protection Zones





#### 2.4.4 Airside Facilities

Airside Facilities at Elbow Lake include:

- Sealane 11/29
- Runway 14/32
- Taxiway A and Taxilanes
- Airfield Markings
- Aprons
- Airfield electrical and lighting components
- NAVAIDs

In this section, each of these components have been inventoried and assessed for the existing condition using Good, Fair, or Poor condition designations. A facility rated as "Good" may be assumed to be substantially adequate throughout the planning period, with normal maintenance. A "Fair" rating means the item will likely

require major upgrades or replacement sometime during the period, and a "Poor" rating indicates the item is not adequate for its intended use at the present time.

Existing Condition:





#### 2.4.4.1 Seaplane Base

Elbow Lake's seaplane base, Sealane 11/29, is 4,125 feet long and 130 feet wide. It is oriented in a northwest-southeast direction and its characteristics are listed in Table 2-30.

Runway numerals for each runway end are determined from the approach direction to the runway end and should be equal to one-tenth the magnetic azimuth of the runway centerline, measured in the clockwise direction from magnetic north. Although the true bearing of the runway will not change over time, the magnetic bearing will change as the location of magnetic north shifts.

Table 2-30 provides a summary of the true (geographic) compass readings for each runway end and notes the magnetic declination required to adjust to the magnetic compass readings. According to the National Geophysical Data Center, the rate of change to the magnetic declination in this area is 0° 5′ W per year. At this rate, Y63's runway designation will remain stable into the foreseeable future.

	Sealane 11	Sealane 29		
Length x Width	4,125 feet x 130 feet			
Surface	Water			
Displaced Threshold	None			
Elevation (MSL)	1185	1185		
Runway End - Elevation (MSL)	1185	1185		
Runway End - Latitude	45.9891	45.98544		
Runway End - Longitude	-95.98839	-95.97303		
Lighting	None			
Marking	None			
Visual Aid	None			
RDC	A/B-I (Small)-VIS			
Magnetic Declination	2°24′E	2°24′E		
Magnetic Heading	108°	288°		
Approach Surface Slope	20:1	20:1		
Approach Type	VFR	VFR		

Table 2-30: Existing Sealane 11/29 Data

At this time, float planes do not have easy access to the FBO for repairs, and must be trailered from the water's edge, up the shore, and across the apron to the FBO. Y63 has expressed interest in improving this procedure through future development of the seaplane base and its access to the airport proper.

The dock for float aircraft is approximately 180 feet long, and there are six landbased moorings available. A tow boat operated by the FBO can be used if needed, and fueling of float planes is completed with a fuel truck owned and operated by the FBO.
#### Elbow Lake Airport Master Plan

#### 2.4.4.2 Runway

Elbow Lake's Runway 14/32 is 3,400 feet long and 60 feet wide. It is oriented in a northwest-southeast direction and its characteristics are listed in Table 2-31. The runway is open all year long and is plowed in the winter months. Approaches for this runway are both VFR and non-precision IFR.

Runway numerals for each runway end are determined from the approach direction to the runway end and should be equal to one-tenth the magnetic azimuth of the runway centerline, measured in the clockwise direction from magnetic north. Although the true bearing of the runway will not change over time, the magnetic bearing will change as the location of magnetic north shifts.

Table 2-31 provides a summary of the true (geographic) compass readings for each runway end and notes the magnetic declination required to adjust to the magnetic compass readings. Based on this analysis, the designations remain unchanged from the 2004 Airport Layout Plan. According to the National Geophysical Data Center, the rate of change to the magnetic declination in this area is 0° 5'W per year. At this rate, Y63's runway designation will remain stable into the foreseeable future.

	Runway 14	Runway 32
Length x Width	3,400 feet	t x 60 feet
Surface	Asphalt, <12,	500 lbs SWG
Displaced Threshold	No	ne
Elevation (MSL)	1204	1200
Runway End - Elevation (MSL)	1203.7	1200.4
Runway End - Latitude	45.98843	45.98124
Runway End - Longitude	-95.99611	-95.98759
Lighting	MI	RL
Marking	Non-Precision	Non-Precision
Visual Aid	PAPI, REIL	PAPI, REIL
RDC	A/B-1 (Sm	all)-1 Mile
Magnetic Declination	2°24′E	2°24′E
Magnetic Heading	140°	320°
Approach Surface Slope	20:1	20:1
Approach Type	IFR/VFR	IFR/VFR

Table 2-31: Existing Runway 14/32 Data





#### 2.4.4.3 **Taxiways and Taxilanes**

Runway 14/32 is accessed by a single taxiway (Taxiway A) which is located approximately 930 feet from the north (14) end of the runway and is 25 feet wide. It connects to taxilanes which provide access to the private hangars, T-hangars, and the airport's fuel and FBO services. The taxiway has minimal lighting and the pavement is in good condition.

#### 2.4.4.4 **Airfield Markings**



#### 2.4.4.5 Aprons



The apron is that part of the airport intended to accommodate the loading and unloading of passengers and cargo, refueling, servicing, maintenance, and parking of aircraft, and any movement of associated aircraft, vehicles, and pedestrians.

There is one main apron area at Y63 equaling approximately 89,300 square feet, and providing access to the FBO, multi-use hangar, and the Arrival/Departure building. The two public T-hangars and multiple private hangars are accessed from taxilanes. This apron includes space for taxiing, parking, and contains eight tie-down spaces. Aircraft may temporarily park in front of the FBO or multi-use hangar as needed. The fueling station is on the east side of the apron near the Arrival/Departure building.



Figure 2-32 depicts the apron, taxiway, and taxilanes as identified by the 2014 Pavement Condition Report.

Figure 2-32: Existing Aprons, Taxiways, and Taxilanes Source: Y63 2014 Pavement Condition Report

#### 2.4.4.6 Airfield Electrical and Lighting

Airfield electrical and lighting systems at the Pride of the Prairie Airport aid the pilot in locating and operating on the airport. All airport lighting should be inspected on a daily and monthly basis. Please see the following descriptions of commonly used airfield electrical and lighting components.

# Understanding Electrical and Lighting

- Runway Lighting: Outline the edges of runways during periods of darkness or restricted visibility conditions. These light systems are classified according to the intensity or brightness they can produce, and are identified as High Intensity Runway Lights (HIRL), Medium Intensity Runway Lights (MIRL), or Low Intensity Runway Lights (LIRL).
- Taxiway Lighting: Outline the edges of taxiways during periods of darkness or restricted visibility conditions.
- Airfield Signage: Not typically associated as a NAVAID but serves as an important navigational element for movement of aircraft on the ground. Airfield signage indicates distance remaining on a runway, and identifies the location of runways, taxiways, aprons, and other airfield destinations.
- Segmented Circle: A ground based marking indication the traffic pattern, wind direction, and wind strength to pilots en route. A segmented circle features a series of white or orange markings arranged in a circle with traffic pattern indicators protruding from the circle to specify the direction of the traffic pattern. A lighted wind indicator is placed inside the segmented circle markings to indicate the direction and intensity of the wind.
- Wind Cone: Orange fabric cones that indicate the strength and direction of the wind. These NAVAIDs assist pilots in making navigational corrections to adjust for surface prevailing winds moments before touchdown or prior to departure.
- Rotating Beacon: A high-intensity light that rotates 360 degrees and is operated at night and in inclement weather conditions to assist pilots in identifying the location of an airport from a distance in the air. The beacon is equipped with a green and a white lens separated 180 degrees from one another that emits alternating white and green flashes indicating an airport is available for public use.
- MALSR: A 2,400-foot approach lighting system that provides visual reference to the runway end. The first 1,400 feet are steady burning lights and the last 1,000 feet are synchronized flashing lights.
- Runway End Identifier Lights (REIL): A pair of synchronized flashing lights located on each side of the runway threshold. REILs provide a rapid and positive identification of the approach end of a particular runway. REILs may be either omnidirectional or unidirectional.
- Precision Approach Path Indicator (PAPI): A system of lights arranged to provide visual descent guidance information during the approach to a runway. These lights are visible from three to five miles during the day and up to 20 miles at night. The visual glide path of the PAPI provides safe obstruction clearance within plus or minus 10 degrees of the extended runway centerline and to 4 nautical miles for the runway threshold. The basic principle of the PAPI is that of color differentiation between red and white. Each light unit projects a beam of light having a white segment in the upper part of the beam and a red segment in the lower part of the beam. The light units are arranged so that the pilot using the PAPIs during an approach will see a combination of the red and white light segments to determine the glide slope the aircraft is flying.



a. Runway Edge Lighting (2007)



Runway 14/32 is equipped with white-yellow bi-directional Medium Intensity Runway Lighting (MIRL) with frangible connections at its edges. This lighting is preset on Low Intensity, but intensity can be increased and Runway End Identifier Lighting activated by pilots using the Common Traffic Advisory Frequency (CTAF) at Y63 (122.9Mhz). The runway lighting system is in good condition.

Sealane 11/29 has no runway lighting.

b. Taxiway Lighting (2007)

The Taxiway A accessing Runway 14/32 has blue omnidirectional MIRL lighting with frangible connections. The taxiway lighting system is in good condition.

Sealane 11/29 has no taxiway lighting.

c. Airfield Signage (2007)

Y63 has installed lighted signs identifying Runway 14/32 at the hold position for the taxiway/runway intersection and the direction of Taxiway A. Y63 does not have an FAA-approved Signage Plan at this time. These signs have frangible connections and are in good condition.

d. Segmented Circle

Y63 currently does not have a segmented circle.

e. Wind Cone (2016)





The primary wind cone, which is lighted, along with the Automated Weather Observing System (AWOS), has been recently moved to a more favorable location near the north end of Runway 14/32. A smaller, unlighted supplemental wind cone has been provided near the dock for Sealane 11/29. The wind cones are in good condition.

f. Rotating Beacon (1998)

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The rotating beacon, alternating clear-green, is mounted atop a pole near the Arrival/Departure building. The beacon operates from sunset to sunrise and is in fair condition.





g. Runway End Identifier Lights (REIL) (2007)

Flashing REILs are found at each of the four corners of Runway 14/32 to aid pilots in identifying the runway location. These units have frangible connections and are in good condition.

h. Threshold Lighting (2007)

Runway 14/32 has a set of eight threshold lights at each end. The green-red REILs are bidirectional, are powered from the Runway 14/32 lighting circuit and tied to the lighting control system for the runway. These units have frangible connections and are in good condition.

i. Precision Approach Path Indicator (PAPI) (2007)

Both ends of runway 14/32 are served by four-box PAPI systems set for a 3° glide path angle. Both sets of PAPIs have frangible connections and are in good condition.

j. Airfield Electrical Vault (2007)

The airport's electrical systems are fed from an electrical vault building located adjacent to the public storage hangar. The vault uses constant current regulators (CCRs) that power the runway lights, taxiway lights, airfield signs, and PAPIs. There is no backup generator system for the airport. The vault building is in good condition.









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#### 2.4.4.7 Navigational Aids

Elbow Lake's navigational aids, other than lighting, are minimal and are related to the RNAV/GPS non-precision approach procedures at the airport. Y63 does not provide a localizer, glide scope, or non-directional beacon. Runway 14/32's approach plates are included here. There are no approach plates or departure procedures for Sealane 11/29.

# Understanding NAVAIDS

Navigational aids (NAVAIDs) are designed to assist pilots in identifying and navigating to an airport. NAVAIDs are most useful in nighttime conditions or when a pilot's visibility is limited. While most NAVAIDs are ground-based equipment that are installed on an airfield, some are satellite-based that provide navigational signals for properly equipped aircraft.

- Instrument Landing System/Localizer (ILS): a precision approach landing system designed to provide an approach path for exact alignment with the runway and a vertical guidance system to provide descent information for an aircraft on final approach to a runway. The ILS is used when instrument meteorological conditions (IMC) require the pilot to employ instrument flying rules (IFR).
- The Non-direction Beacon (NDB): the least complicated and least expensive of the types of electronic NAVAIDs available. The NDB antenna radiates a "non-directional" signal similar to that of a commercial AM radio station. This signal is received by the automatic direction finder (ADF) indicator on the aircraft which has a needle pointing toward the NDB station.
- Global Positioning System (GPS): a space-based radio-navigation system. It consists of 24 satellites, which orbit the earth at 12,500 miles, as well as ground stations. GPS provides users with accurate information on position, velocity, and time anywhere and in all weather conditions. There are three GPS airport instrument approach procedures: the overlay approach, the GPS-only approach, and the Area-Navigation (RNAV) approach.
- Area Navigation (RNAV): is used to fly point to point and on non-precision approaches. An onboard navigation data base and a flight management system are required to use this approach. This method of navigation allows the pilot to choose any path within a network of navigation beacons, rather than navigating to and from them directly, conserving flight distance, reducing congestion, and allowing flights into airports without beacons.
- Wide Area Augmentation System (WAAS): developed by the FAA to augment GPS navigation to improve its accuracy, integrity, and availability, and enabling pilots to reply on GPS for all phases of flight, including approaches. It uses a network of ground-based and satellite stations to measure small variations in the GPS satellites' signals, make corrections in that data, and transmit the corrected data to WAAS-enabled GPS receivers. These receivers then use the corrections while computing their positions to improve accuracy of the data provided to pilots.



Figure 2-33: RNAV/GPS Approach Procedure, Runway 14

#### Chapter Two | Existing Conditions



Figure 2-34: RNAV/GPS Approach Procedure, Runway 32

NAVAID	Year	Condition	Owner
AWOS	2015	Good	MnDOT
Beacon	2006	Fair	Y63
PAPI	2006	Good	Y63
REIL	2006	Good	Y63
Runway Lighting	2006	Good	Y63
Taxiway Lighting	2006	Good	Y63
Threshold Lighting	2006	Good	Y63
Signage	2006	Good	Y63
Wind Cone at 14/32	2015	Good	Y63
Wind Cone at Seaplane Base	2017	Good	Y63

Figure 2-35: NAVAIDs Age, Condition, and Ownership

#### 2.4.4.8 Instrument Approaches

Instrument Approach Procedures are a series of predetermined maneuvers established by the FAA, using electronic navigational aids that assist pilots in locating and landing at an airport, especially during instrument flight conditions. The capability of an instrument approach is defined by the visibility and cloud ceiling minimums associated with the approach. Visibility minimums define the horizontal distance the pilot must be able to see in order to complete the approach. Cloud ceilings define the lowest height a cloud layer (defined in feet above ground) can be for a pilot to complete the approach. Y63's Runway 14/32 includes IFR procedures using RNAV/GPS.

The Global Positioning System (GPS) was initially developed by the United States Department of Defense for military navigation around the world, but is now used extensively for a wide variety of civilian uses, including civil aircraft navigation. GPS uses satellites placed in orbit around the globe to transmit electronic signals, which pilots with properly-equipped aircraft can use to determine their altitude, speed, and other navigational information. This tool allows the pilot more freedom in flight planning and more direct routing from one place to another.

The FAA has augmented the GPS signal to improve accuracy, coverage, availability, and integrity. This includes the development of the Wide Area Augmentation System (WAAS), instituted in 2003. WAAS uses a system of reference stations to fine-tune signals from GPS satellites for improved navigation and approach capabilities, including en route navigation and instrument approaches with course and vertical navigation. The WAAS system allows for approaches with lower cloud ceilings and visibilities restricted to  $\frac{3}{4}$  mile.

As noted above, Y63 does not employ an instrument landing system/localizer or a non-directional beacon. Instead, Area Navigation (RNAV) in conjunction with GPS and the FAA's WAAS is used to navigate.

Area Navigation (RNAV) in conjunction with GPS and the FAA's WAAS is used to navigate. The most recent study in Elbow Lake was conducted in 2014.

#### 2.4.4.9 Pavement Condition

Airfield pavements are designed, constructed, and maintained to support the critical loads imposed on them and produce a smooth and skid-resistant riding surface necessary for the safe operation of aircraft in all weather conditions. Immediately after construction, these pavements begin to gradually degrade over time due to surface weathering, fatigue effects, and differential movement in the underlying sub-base. With this in mind, pavements require continual routine maintenance, rehabilitation, and reconstruction. The FAA has issued Advisory Circular AC 150/5380-7B, *Airport Pavement Management Program (PMP)*, in October 2014 to guide pavement management planning.

The PMP serves as a quantifiable basis to guide the formation and implementation of programs aimed at effectively and efficiently maintaining and preserving airfield pavement. The Minnesota Department of Transportation Office of Aeronautics requires pavement condition studies for Minnesota's airports. The most recent study in Elbow Lake was conducted in 2014 by Applied Research Associates, Inc. (ARA). The paving surfaces were visually inspected in May of that year, with distress type, severity, and quantity recorded for each of the sample units. The data was then entered into the MicroPAVER database and a Pavement Condition Index (PCI) calculated for various locations around the airfield, ultimately determining overall pavement grades for specific pavement areas of the airport. This 2014 Pavement Condition Report is included as an Appendix to the Master Plan document.

Per the PMP criteria, pavement condition is assessed using the PCI, a value range from 0 (Failed) to 100 (Excellent). If a PCI rating for a particular area of pavement falls below 60, routine crack sealing and patching may no longer be adequate. Between the ratings of 40 and 60, major repairs such as overlays are needed, while below 40, reconstruction is typically the required activity.



Reviewed pavement areas included Runway 14/32, the connector Taxiway A, Apron A, and two Taxilanes equaling 357,775 square feet. An additional 3,600 square feet of apron was added in 2015 during construction of the Public Storage Hangar. Each of these areas was considered one "section," which is the smallest management unit used for maintenance and rehabilitation. Table 2-37 illustrates the various pavement branches with their area and the number of sections in each branch.

The largest pavement area at Y63 is Runway 14/32 at 210,000 square feet. Taxilane B was determined to be in Excellent condition, with the remainder of the paving considered as being in Very Good condition.

All pavement evaluated at Y63 is either asphalt cement (AC) or asphalt cement overlaid with asphalt (AAC). AAC makes up the largest portion of pavement at 312,375 square feet, with AC comprising the remainder of 45,400 square feet of surface area.



Figure 2-36: PCI Map; Source: 2014 Pavement Condition Report by ARA, Inc.

Branch ID	Name	Surface Type	Number of Sections	Area (SF)
APA	Apron A	AAC	1	89,300
CTA	Connecting Taxiway A	AC	1	13,050
RY1432	Runway 14-32	AAC	1	210,075
TLA	Taxilane A	AAC	1	13,000
TLB	Taxilane B	AC	1	32,350
			Airport Total	357,775

Table 2-37: Pavement Area, Type, and Number of Sections by BranchSource: Y63 2014 Pavement Condition Report

Table 2-38 illustrates the age of the last construction date of pavement sections and indicates the overall percentage of pavement within a given age range. All pavements at Y63 are 10 years old or less.

Age (Years)	No. of Sections	Percent of Total Area	Area (SF)
0-5	1	9	32,350
6-10	4	91	325,425
More than 10	0	0	0

Table 2-38: Pavement Area by Age, Source: Y63 2014 Pavement Condition Report

According to the 2014 Pavement Condition Report, Runway 14/32 has a PCI of 74, the Apron a PCI of 83, the connecting Taxiway A a PCI of 76, Taxilane A a PCI of 75, and Taxilane B a PCI of 97, being the newest area of pavement. All of these are therefore considered to be in Very Good condition, with the exception of Taxilane B, which is considered to be Excellent. However, PCI ratings for specific samples within each paving area vary anywhere from 61 in the Runway up to 100 in Taxilane B. While the Report states that no pavement sections at Y63 are predicted to need major rehabilitation or reconstruction prior to 2019, regular maintenance such as crack sealing and patching are recommended to maintain the highest quality pavement possible and prevent major repairs or reconstruction in the near future.

#### Overall pavement condition at Y63 is Very Good with a PCI of 78.

The overall area-weighted PCI for Y63 is 78, which indicates that most airfield pavement at Y63 is in Very Good condition. Taxilane B, which makes up 9 percent of the pavement area, is in Excellent condition. There are no areas which are in Good, Fair, Poor, or Very Poor condition, and there is no Failed pavement. The PCI ratings for individual sections of pavement are illustrated below in Figure 2-39.



Figure 2-39: Pavement Condition Index

To ensure that Y63's pavement investment remains in the best condition for as long as possible, near term maintenance is needed as recommended in the Pavement Condition Report. This maintenance includes crack sealing and deep patching. As deterioration continues and repairs are made, pavements should be routinely inspected and the maintenance plan re-evaluated. Major rehabilitation is not expected prior to 2019 as long as the recommended maintenance plan is followed.

Minnesota's Department of Transportation *2012 State Aviation System Plan* Airport Project Needs Summary for Elbow Lake has provided the following cost estimates for maintenance of the Apron, Runway, and Taxiway.

Pavement Maintenance	2016-2020	2021-2030	Total
Apron	\$25,663	\$133,295	\$158,958
Runway	\$64,988	\$189,711	\$254,699
Taxiway	\$3,046	\$11,360	\$14,406

Table 2-40: Minnesota State Aviation System Plan, Projected Costs for Y63

#### 2.4.4.10 Non-Standard Conditions

FAA Advisory Circular 150/5300-13A, *Airport Design*, provides design standards for airport geometrical layout, runway and taxiway/taxilane design, and associated elements. The guidance provided by this AC references many other AC documents for specific applications and is complemented by FAR Part 77, which establishes standards for determining obstructions in navigable airspace and provides for aeronautical studies of potential hazards to air navigation. As part of the master planning process, non-standard conditions will be reviewed for recommendations to bring the elements into compliance with FAA standards.

The FAA does not currently report any document non-standard conditions at Y63. Any non-standard conditions discovered during the course of this study will be documented and addressed later in this plan.

#### 2.4.4.11 Weather Equipment (2007)

Elbow Lake has a Vaisala Level III P/T (Present Weather/Thunderstorm) Automated Weather Observation System (AWOS). The system reports present weather such as current wind data, temperature, dew point, density altitude/barometric pressure, visibility, cloud/ceiling data, type of precipitation, and lightning strike data. This system was installed 2007 and moved to its current location near the north end of Runway 14/32 at the wind cone site in 2015. It provides real-time weather data to pilots via a recorded message accessed by a specified radio frequency or telephone number. This information is also available on a display in the pilot's lounge. The AWOS is inspected three times a year by a MnDOT contractor and is currently in good condition.

#### 2.4.5 Landside Facilities

Airside facilities at Elbow Lake Airport include:

- Arrival/Departure Building
- Aircraft Storage

Within this section, each of these components has been inventoried and assessed for the existing condition as Good, Fair, or Poor condition designations.



*Figure 2-41: Existing Landside Facilities* 







#### 2.4.5.1 Arrival/Departure Building (1999)

The Arrival/Departure building is located on the north side of the apron and includes a conference room, office, restrooms, pilot information bulletin board, mechanical room, and pilot's lounge. The one-story building is adequate to serve current demand at approximately 1,500 square feet.

The building is in fair condition. Our assessment is that the roof shingles, gutters and downspouts are in need of replacement, as well as the siding, soffit and fascia. On the interior, carpet replacement is recommended. Mechanical systems within the building, such as the water heater and furnace, should be upgraded. Moisture damage from window condensation is seen on the window sills.

#### 2.4.5.2 Aircraft Storage

a. T-Hangars



ID #1.

Y63 includes two T-hangars, which are nested aircraft storage buildings, capable of accommodating one aircraft per T-shaped unit. These hangars can house single engine and small twin-engine aircraft only, while larger aircraft are usually stored in conventional hangars. T-hangars are usually simple steel structures that may not even have its own floor or perimeter foundation system.

The first T-hangar at Y63, built by Erect-A-Tube, is one of these simpler hangars. It was built in 1976 directly on the existing bituminous apron of the airport, which is still seen inside the hangar today, and accommodates eight aircraft in 10,070 square feet. While the staff at Y63 has worked diligently to maintain this building, it is in poor condition. The finish on the steel cladding has failed and there is significant damage to the steel panels around the perimeter of the building. Daylight can be seen through the roof panels in some areas, and gutters and downspouts have not been provided. There are no dividing walls between spaces within the hangar. Lighting on the interior is minimal and there are no windows for natural light. Electrical systems within the building are minimal and in need of an upgrade.

The second T-hangar at Y63 was built in 2011, is capable of housing eight aircraft in 10,400 square feet, and is in good condition. Prefinished steel dividing walls separate the T-hangar spaces, which are lit with jelly-jar type fixtures in each space. The floor is concrete and in good condition. One space within the hangar is used to store grounds maintenance equipment, while another space is used as the FBO's machine shop. Insulation is provided in the roof of the entire building and in the walls of the machine shop only. Each space has its own loadcenter panel and multiple power receptacles mounted at working height.





Hangar	ID	Area (SF)	No. of Units
1976 Hangar	7	10,070	8
2011 Hangar	8	10,400	8

Table 2-42: Size and Description of T-Hangars

#### b. Private Hangars (1960, 2004)

There are four privately-owned hangars at Y63, all similar in construction, with a concrete slab-on-grade floor, exposed steel structure, and prefinished steel walls and roof. Overall, the buildings are in good condition, but there is significant damage to some floor slabs with exposed steel reinforcing at the perimeter of each building and severe slab settling and cracking in one case. Some of the slabs include epoxy floor finishes, while others are unfinished. Walls and roofs are in generally good condition. All hangars are heated and include electric service and lighting.



Hangar	ID	Area (SF)	No. of Units
Myron	4	3,500	1
Rapp	5	3,500	1
Ag Resource Intelligence	6	3,000	1
Jelly	3	3,000	1

Table 2-43: Size and Description of Private Hangars

The Public Storage Hangar, completed in 2016, is a multi-use hangar enclosing 14,400 square feet of aircraft storage space. The largest hangar in the airport, this new building is equipped with in-floor heating and LED lighting and is available for public use. It can accommodate any aircraft likely to use Y63 with an 18' high x 80' wide hydraulic door. The building is in good condition.

c. Public Storage Hangar (2016)

### ID #2: 🔍 🔘



d. Tie-Downs

ID #9:

Eight aircraft tie-down locations on the aircraft parking apron are provided at Y63 for temporary use. The location of these tie-downs is shown in Figure 2-41.



#### 2.4.6 Support Facilities and Services

Support Facilities and Services at Elbow Lake include:

- Fuel Storage and Dispensing
- Aircraft Maintenance
- Snow Removal
- Ground Support
- Security
- Ground Access
- Parking

Within this section, each of these components has been inventoried and assessed for the existing condition as Good, Fair, and Poor condition designations.



Figure 2-44: Existing Support Facilities

2.4.6.1 Fuel Storage and Dispensing

Underground Fuel Tank:

Payment Machine:

Fuel Pump and Reel:



Y63's 24-hour self-service fuel station is located adjacent to the A/D building, on the north side of the apron. This facility is owned and operated by the City of Elbow Lake. A fuel truck is used to re-fuel aircraft at the seaplane base. The 10,000-gallon 100LL underground tank is double-walled with an interstitial space monitor which is read in the A/D building. Given its age, it may be a candidate for replacement. There are no additional containment measures. Staff check the fuel tank monitor daily. The fuel facility is inspected by MnDOT for conformance to 14CFR Part 139 for safe handling, storage, and dispensing of aviation fuel and by the Minnesota Pollution Control Agency. The fuel is delivered to Y63 via bulk container vehicles. A staff member remains with the fuel delivery personnel while the product is being offloaded into the fuel tank. Pilots purchase fuel from the 24-hour pump with a credit card. The payment machine with receipt printer was new in 2010 and remains in good condition. A marked emergency shut-off button is located nearby on the wall of the AD building.

The fuel station equipment is in good condition other than the fuel pump and fuel hose reel, both of which often fail and require regular repair. Some of the signage and the fire extinguisher cabinet need replacement due to weathering.

Equipment	Condition
Fuel Truck	Good
Underground Fuel Tank (1993)	Fair
Fuel Pump (2011)	Poor
Fuel Hose Reel	Poor
Portable Stairs	Fair
Payment Machine with Printer (2010)	Good
Emergency Shutoff (1999)	Good

Table 2-45: Fuel Storage and Dispensing Equipment

#### 2.4.6.2 Air Rescue and Fire Fighting (ARFF)

Y63 does not currently have air rescue or firefighting equipment. Fire protection service is provided by the city of Elbow Lake's Fire Department, stationed approximately one mile from the airport.

### 2.4.6.3 Maintenance/Snow Removal Equipment (2004, 2007)

The airport has a small inventory of equipment to maintain the airport grounds and facilities. Due to the climate and geographic location of Y63, the City of Elbow Lake has purchased snow removal equipment, a loader with a blade, to aid in the removal of snow and ice from airfield surfaces. This equipment is exclusively for airport use and is stored at the Elbow Lake City Shed. A 24' gang mower is used and stored in the newer T-hangar. Both the mower and loader are in good condition. This equipment was purchased with both state and federal funds.

An FAA-approved Snow Removal Plan is not required at Y63 because it is not a Part 139 certificated airport and does not accommodate passenger service. Snow Removal Plans guide the use of personnel, equipment and supplies in removing snow and ice from airfield surfaces. These plans prioritize areas for removal of snow, assignment of personnel, and use of equipment and apparatus during snow removal operations.

#### 2.4.6.4 Ground Support Equipment and Storage

Y63 owns two multi-use tugs that serve many purposes at the airport. They are used for mowing, snow removal, and moving both float planes and standard aircraft from place to place. In addition, the airport uses a Polaris Ranger for snow removal and for getting from place to place quickly on the airport grounds.

#### 2.4.6.5 Airport Board Meeting Space (1999)

There are no designated Airport Board Offices at Y63. The conference table in the Pilot's Lounge is used for monthly Airport Board meetings. An adjacent, currently unused, office is available as needed. The meeting and office spaces are in good condition. Board records and files are stored in the City Administrator's office.

#### 2.4.6.6 Airfield Security (2007)

Airfield Security is minimal. A short length of chain link fence is present at the A/D building, but does not prevent any member of the public from walking or driving on to the apron. While the condition of the fence is good, the level of security provided by the fencing is fair to poor. The addition of secure perimeter fencing will be studied in this Master Plan document.

Access to the A/D building on the apron side is provided by a door that is unlocked at the beginning of the day and locked at night. Entry on the public side of the building is provided by a keypad for 24/7 access to pilot support facilities.

#### 2.4.6.7 Fixed Base Operation Hangar (2006)

The airport's FBO building was completed in 2006 and is in good condition. The building is occupied by Prairie Air, whose owner-operator, Joe LaRue, also serves as the Airport Manager. At 80 x 80 feet and with a 65-foot-wide x 15-foot-high door, this hangar accommodates the repair of several aircraft at one time. The FBO includes space for an office, storage, mechanical/electrical needs, tool crib, and a restroom.

#### 2.4.6.8 Ground Access

US Highway 59 and State Highways 54, 55, and 79 run through Elbow Lake, which is located just 12 miles south of Interstate Highway 94. County Roads 1 and 25 are to the west and south of the airport, respectively. The Canadian Pacific Railway line runs between the main body of the city and the airport. These well-used routes make Y63 easily accessible to the public and connect Elbow Lake to regions throughout the State of Minnesota. The airport has only one point of access from these roads and additional access points should be considered in the future.

#### 2.4.6.9 Parking (2007)

Six parking spaces are provided on a bituminous surface adjacent to the A/D building, including one van-accessible handicapped space. Parking for approximately 10 is provided on a gravel surface on the north side of the FBO building for staff and clients. The gravel from this lot ends up on the apron, requiring regular removal. Bituminous paving in this lot is recommended. There is no charge for the use of these parking areas.





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ID	Component	No. of Spaces
1	Public Parking	2
	Accessible Parking	1
2	Public Parking	3
3	FBO Parking	10

Figure 2-46: Existing Automobile Parking

#### 2.4.7 Utilities

#### 2.4.7.1 Electrical Power

120/240v single-phase electrical power to the Airport is supplied by Elbow Lake Municipal Power and its supplemental power supplier, Missouri River Energy Services. The airport does not have an emergency generator in case of power outages.

Electrical power to the airport comes via underground lines along Airport Road.

#### 2.4.7.2 Propane

Y63 uses propane, supplied by Lucky's Propane, Inc., for heating needs at all airport hangars, FBO, and the A/D building. There are no natural gas lines serving the airport.

#### 2.4.7.3 Telephone and Internet

Internet and telephone served are provided to the airport by Runestone Telecom based in Hoffman, MN.

#### 2.4.7.4 Potable Water

Potable water for the airport is from an on-site well, located between the FBO and A/D buildings. The above-ground structure has been subject to damage over the years due to its close proximity to the FBO driveway and apron. A separate well pump has been provided on the north side of the A/D building.

#### 2.4.7.5 Sewer

Sewage disposal is provided for using septic tanks and drainfields for each building on the site.



#### 2.4.7.6 Solid Waste and Recycling

The airport has one dumpster which is picked up weekly, as well as recycling for metal and cardboard. Hazardous substances, such as waste oil and filters are collected quarterly. Flammable waste is pumped from flammable waste traps as needed, approximately once every five years. If needed, the airport has a burn pile location that is used on average once a year. Without passenger service at Y63, the creation of solid waste is low and easily manageable.

## 2 | Section 5 – Historic Levels and Trends of Aviation Demand

In order to accurately predict the future demand at Elbow Lake Municipal Airport, it is useful to review the number of enplanements, based aircraft, and operations counts during the life of the airport. This information will be briefly summarized here, with greater detail provided in Chapter 3, *Aviation Demand Forecast*.



Figure 2-47: Aerial View of Y63 in Local Context; Source: Google Earth

#### 2.5.1 Enplanements

Enplanements are passenger boardings of commercial service aircraft for both scheduled and unscheduled service. Elbow Lake does not accommodate any regular commercial service, therefore has no enplanement counts to report.

#### 2.5.2 Based Aircraft

General Aviation capacity demand is most often determined by aircraft storage space for based aircraft. A based aircraft is an aircraft that is operational and air worthy, which is typically based at a facility for the majority of the year. In 2016, there were 25 based aircraft reported at Elbow Lake as reported on the basedaircraft.com website. For additional information related to historic rates of based aircraft at Y63, please see Chapter 3, *Aviation Demand Forecast*.

#### 2.5.3 Operations

Because there is no control tower or reliable operations record keeping at Y63, counts must be estimated. In the absence of this sort of direct counting method, the number of operations occurring on a yearly basis must be calculated using information gathered from the airport manager, sponsor, tenants, fuel sales, and other sources of state and federal documentation. Section 3.2.1 of Chapter 3 investigates historic operations at Y63 in great detail.

## 2 | Section 6 – Environmental Review

This section provides an overview of environmental baseline conditions at Y63. It identifies existing environmental sensitivities, provides a benchmark of existing environmental impacts, and will inform potential environmental considerations during the creation of the proposed development alternatives during the master planning effort.

A review of publicly available data and previous environmental analyses serves as the source of information used in this section. No environmental field studies were conducted during this master planning effort. This section includes a review of each of the environmental impact categories included in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* which are listed below. While the thresholds which determine whether an impact is considered significant are discussed in this section, the assessment of impacts is not included here.

#### 2.6.1 Air Quality

Significance Threshold: The action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the Environmental Protection Agency under the Clean Air Act, for any of the time period analyzed, or to increase the frequency or severity of any such existing violations.

The U.S. Environmental Protection Agency (EPA) has established two primary laws that apply to air quality: The Clean Air Act (CAA) and the National Environmental Policy Act (NEPA). At this time, no known air quality studies have been conducted in the Elbow Lake or Grant County area.

# Understanding Air Quality

The National Ambient Air Quality Standards (NAAQS) has six air pollutant criteria:

- Carbon Monoxide (CO)
- Ozone (O3)
- Lead (PB)

• Nitrogen Dioxide (NO2)

Particulate Matter (PM)

• Sulfur Dioxide (SO2)

Geographical areas are classified as attainment, non-attainment, and maintenance areas based on whether they are meeting, above, or have recently-improved to within the NAAQS standards respectively. Federal agencies cannot fund or approve projects within nonattainment and maintenance areas unless they demonstrate general conformity with the State Improvement Plan (SIP).

#### 2.6.1.1 Clean Air Act

In accordance with the CAA, Grant County meets the levels of the six criteria air pollutants (Ozone, Particulate Matter, Sulfur Dioxide, Lead, Carbon Monoxide, and Nitrogen Dioxide) which make up the National Ambient Air Quality Standards (NAAQS). Being located within Grant County, Y63 is within an attainment area, and therefore is not subject to further demonstration of general conformity with the Minnesota State Implementation Plan (SIP) in order to be eligible for federal funding and approval.

#### 2.6.1.2 National Environmental Policy Act (NEPA)



The National Environmental Policy Act (NEPA) of 1969 was one of the first laws to establish the national framework for protecting the environment. Through NEPA, congress has required federal agencies to consider the environmental effects of airport projects using Environmental Assessments or Environmental Impact Statements to assess alternative courses of action. There are also public involvement requirements prescribed in the document. NEPA requires consideration of air quality impacts for reasonable alternatives throughout the planning period. According to the FAA Aviation Emissions and Air Quality Handbook, NAAQS analysis would be required if Y63's proposed project required FAA involvement, if the project would cause or create a foreseeable increase in air emissions, if the area is considered Non-attainment or Maintenance Status, and if there are any agency or public concerns regarding air quality. A search of the EPA's EnviroMapper database in January 2017 indicated that Grant County is not in Non-attainment or Maintenance Status for the six criteria air pollutants. Since the airport is within an attainment area, no further analysis is required.

#### 2.6.2 Biological Resources: Fish, Wildlife, and Plants

Significance Threshold: The U.S. Fish and Wildlife Service or the National Marine Fisheries Service determines that the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species, or would result in the destruction or adverse modification of a federally designated critical habitat.

Section 7 of the Endangered Species Act requires federal agencies to ensure that any proposed action does not jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of associated habitat.

A data search conducted in January 2017 on the USFWS Information, Planning, and Conservation (IPaC) system listed one endangered species that could be potentially affected by development at the airport: the Northern Long-eared Bat (Myotis septentrionalis). In addition, the IPaC search also produced a list of 16 migratory birds which could be impacted. The search did not identify any critical habitats within the vicinity of the airport.

A Wildlife Hazard Site Visit was completed at Y63 in November 2016 by Michael McGraw, a Qualified Airport Wildlife Biologist of Applied Ecological Services, Inc. In the resulting report, Mr. McGraw made several recommendations regarding mitigation practices that Y63 can employ in order to make the airport and the flying public safer and more secure. These include, but are not limited to:

- Cutting the grass on the airport property to the recommended 6-12" in height to discourage small foraging birds;
- Providing a buffer between the runway and agricultural crops that are attractants to wildlife, or disallowing crops on airport property altogether;
- Repair or minimize bare, gravel areas on airport property;
- Ensure adequate stormwater drainage from the airfield;
- Provide security fencing at airport property perimeter;





- Minimize trees and landscaping that provide habitats and cover for birds and other wildlife;
- Eliminate perch and nest sites as much as possible;
- Remove wildlife attractants food, cover, nesting sites, water as much as possible.

The final Wildlife Hazard Site Visit Report with complete analysis and recommendations will be included in the Appendix of this document. Active steps such as harassment, pest management, invertebrate control, waterfowl control, and waste management (both food and mulch waste) are recommended. As a last resort, depredation and controlled hunting can be employed. Coordination with the appropriate agencies (including the USFWS and Mn DNR) should be conducted before any proposed development takes place.

A Wildlife Hazard Management Plan, created collaboratively by Y63, Applied Ecological Services, Inc, and Bollig Inc will also be completed in the Master Plan process and will be included in the Appendix.

#### 2.6.3 Coastal Resources

#### Significance Threshold: None established.

Federal activities involving or affecting coastal resources are governed by the Coastal Barriers Resources Act (CBRA), the Coastal Zone Management Act (CZMA), and Environmental Order (EO) 13089, *Coral Reef Protection*. Grant County is not located within any coastal zone, therefore future development on the airport is not anticipated to affect federally or state-protected coastal areas.

#### 2.6.4 Department of Transportation Act: Section 4(f)

Significance Threshold: The action involves more than a minimum physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource.

The resources that are protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance; and publicly or privately owned land form an historic site of national, state, or local significance. Substantial impairment occurs when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished.

Elbow Lake's City Park, the Waterfowl Production Area, and a pond being used for fish breeding by the Minnesota Department of Natural Resources (DNR) are all within the immediate vicinity of the airport. Additional County Waterfowl Production Areas exist just west of airport property. The United States Fish and Wildlife Service (USFWS) lists 20 Wildlife Refuges and Wetland Management Districts within the state of Minnesota, none of which are in Grant County.

# Understanding DOT Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966 states that a federallyfunded project requiring the use of land from:

- A publicly-owned land from a public park or recreation area
- A national or state wildlife or waterfowl refuge
- A historic site of national state, or local significance

...Shall not be approved unless there is no feasible and prudent alternative for the use of such land. A significant impact would occur pursuant to NEPA when a proposed project either involves more than a minimal physical use of a Section 4(f) property or is deemed a "constructive use" substantially impairing the 4(f) property.

The state of Minnesota also maintains waterfowl refuges and sanctuaries, which were established to:

- Protect production, migration, and wintering habitats;
- Provide security, feeding, and resting areas;
- Maintain traditions of bird use;
- Distribute bird, hunters, and harvest; and
- Support limited forms of public use compatible with the primary purpose of the refuge.



Figure 2-48: Nearby Section 4(f) Properties



According to the state DNR website, a 1985 inventory of all refuge types in Minnesota documented 116 waterfowl refuges totaling slightly over one million acres, or 2% of land in the state. A new inventory is currently ongoing. These include State Game Refuges, Migratory Waterfowl Refuges, State Duck Refuges, and State Wildlife Sanctuaries.

There are 1,656 Wildlife Management Areas in

Minnesota. Grant County includes several of these, but the previously-mentioned Waterfowl Production Area is the site most likely to be impacted by any future development at Y63.

#### 2.6.5 Farmlands

*Significance Threshold: The total combined score on Form AD-1006, "Farmland Conversion Impact Rating," ranges between 200 and 260 points.* 

The Farmland Protection Policy Act (FPPA) of 1981 regulates federal actions with the potential to convert farmland to non-agricultural uses. While the Airport property does not meet the definition of farmland contained in the FPPA, there are prime farmlands near the airport property. Coordination with the US Department of Agriculture (USDA) may be necessary for any development proposed on farmlands adjacent to the airport.

# 2.6.6 Hazardous Materials, Solid Waste, and Pollution Prevention

Significance Threshold: None established.

#### 2.6.6.1 Airport Property

Hazardous substances on the airport property include aircraft fuel, ground equipment fuel and oil. Fuel is transported to the site by mobile tankers. The airport's fuel truck is filled at the fuel tanks and then transported to the seaplane base dock for fueling of seaplanes. Waste oil is properly collected and removed by the City or its contractor. Floor drains in the FBO and public storage hangar run through a flammable waste trap.

Y63 was the site of an aviation fuel tank leak, or release of petroleum products, for which a warning citation was issued in 1992. Another leak was discovered in 2009. Both cases are now considered closed by the Minnesota Pollution Control Agency.

#### 2.6.6.2 Airport Vicinity

A search of the EPA's EnviroMapper database conducted in January 2017 indicated that there are 17 facilities in the Elbow Lake area reporting to the EPA. Minnesota's MPCA "What's In My Neighborhood" website indicates there are no Superfund sites in the area, but there is one designated Petroleum Brownfield related to the reconstruction of Division Street. There are a number of facilities generating small amounts of hazardous waste, such as gas stations, industrial sites, and medical/dental centers. An Air Permit has been issued to Elbow Lake Coop Grain Company, helping to minimize pollutants by establishing limits, operating requirements, and monitoring.

There are two small solid waste dump sites, to the east and west of the airport, which have Permit by Rule status, meaning that they are used for a short term or with limited volume, less than 15,000 cy per year. They appear to be private sites used by the landowners.

Other permitted sites which may be affected by future airport development are the Elbow Lake wastewater treatment ponds which are southwest of the airport.

# **2.6.7** Historical, Architectural, Archaeological and Cultural Resources Significance Threshold: None established.

The National Historic Preservation Act of 1966, as amended, and the Archeological and Historic Preservation Act of 1974 are the two laws that establish the requirements for determining historic, architectural, archaeological, and cultural resource significance within the airport vicinity.

Two properties in Elbow Lake are listed on the National Register of Historic Places. The first is the Grant County Courthouse (GR-ELB-009), listed on September 5, 1985, located approximately 1.25 miles from the airport, and built in 1905. It is one of Minnesota's few "monumental" Victorian courthouses that still stand, and is Grant County's most prominent turn-ofthe-century building.

The second property is the Anna J. Scofield Memorial Auditorium and Harold E. Thorson Memorial Library, listed May 11, 2015, originally built in 1934 as a dual-purpose municipal faculty. It was the first building project in Minnesota funded by the Public Works Administration. It is adjacent to the Grant County Courthouse and slightly closer to the airport.

Neither of these properties are expected to be adversely affected by any future development at the airport.





Other historic structures in the airport area are listed in the following table. None of these properties have been evaluated for listing in the National Register of Historic Places.

Property Name	Address	Twp-Range-Sec	ID#
Elbow Lake Cooperative Creamery	1st Ave. SE	129-42-16	GR-ELB-002
Botchdering House	23 1st Ave. SE	129-42-16	GR-ELB-003
Christenson House	22 1st Ave. SE	129-42-17	GR-ELB-004
Hauge House	410 1st Ave. SE	129-42-16	GR-ELB-006
Bethlehem Lutheran Church	SE corner 2nd Ave. SE & Division St.	129-42-16	GR-ELB-007

#### Chapter Two | Existing Conditions

Property Name	Address	Twp-Range-Sec	ID#
Scofield House	SW corner 2nd Ave. SE & Division St.	129-42-16	GR-ELB-008
Hermes House	15 3rd Ave. SE	129-42-16	GR-ELB-012
Elbow Lake School	SW corner 4th Ave. SE & 1st St. SE	129-42-16	GR-ELB-014
Sanford Farmstead	Off Mn. Hwy. 54	129-42-17	GR-SAN-001
Grain Elevator	Off Co. Rd. 1	129-42-18	GR-SAN-002

Table 2-49: Historic Properties in Airport Vicinity not listed in NRHP Source: MN State Historical Society

The first runway at the airport, a grass strip, was built in 1961. Depending on the type of projects in the future, particularly if there is ground disturbance in a new area, a cultural resources survey may need to be completed prior to construction.

#### 2.6.8 Land Use

Significance Threshold: None established.

#### 2.6.8.1 Public Safety and Noise Compatibility

As summarized within the Airport Background and Regional Context, Section 2.3.4, *Surrounding Land Use*, the land uses around the airport are for the most part Agricultural, with smaller areas zoned for Business, Residential, and Industrial. See Figure 2-13. Except for Residential, the above-mentioned land uses are generally considered to be compatible with airport operations. The presence of Residential uses can create a conflict with noise impacts which will be further investigated in Section 2.6.10, *Noise and Noise-Compatible Land Use*.

The Runway Protection Zones (RPZs) off the ends of Runway 14/32 are both controlled by the airport through fee-simple acquisition per FAA guidelines. There are no requirements for RPZs for sealanes.

The state of Minnesota has adopted aeronautics Statues and Rules regarding the safety of the public and property on the ground.

MN Statues – Chapter 360, Airports and Aeronautics. This Chapter describes the prevention of Airport Hazards, "which endanger the lives and property of users of the airport and of occupants of land in its vicinity, and may reduce the size of the area available for the landing, takeoff, and maneuvering of aircraft, thereby impairing the utility of the airport and the public investment therein. It is also found that the social and financial cost of disrupting existing land uses around airports in built up urban areas, particularly established residential neighborhoods, often outweigh the benefits of a reduction in airport hazards that might result from the elimination or removal of those uses." It further gives authority to create airport zoning boards who are granted the ability to establish rules to prevent airport hazards in the zoning areas while working to ensure the minimum disruption of existing land uses to the extent consistent with reasonable standards of safety. It describes the required conditions for the issue of permits

and of variances, as well as hazard marking and lighting, and the conditions for the acquisitions of air rights as a means to prevent airport hazards.

MN Administrative Rules – Chapter 8800, Aeronautics. Section 8800.1200, *Criteria for Determining Air Navigation Obstructions*, describes in a prescriptive way how obstructions to navigation are identified in relation to the Primary Surface, Horizontal Surface, Conical Surface, Approach Surfaces, and Transitional Surfaces, as well as marking and lighting of those items deemed obstructions that cannot be removed. Section 8800.2400, *Airport Zoning Standards*, describes both Airspace Zones and Land Use Safety Zones A, B, and C. Each of these safety zones includes corresponding land use restrictions, creating sufficient open space so as to protect life and property in case of an accident, and to prevent land uses which create or cause interference with the safe communications and operation of an aircraft during landing, taking off, or maneuvering of the aircraft. This section also addresses the establishment of noise sensitivity zones when requested by the commissioner or governmental unit having airport zoning powers.

The chapter also includes rules for seaplane operations, Section 8800.2700, *Approaches and Takeoffs.* "All approaches to and takeoffs from the water area shall be made in such a manner as to clear all structures on the land by at least 100 feet, and wherever the area of the body of water will permit, such landing and takeoffs shall be made at a distance of not less than 300 feet, both laterally, and vertically, from any boat or person on the surface of the water, or as near to 300 feet as the area of the water will permit."

#### 2.6.8.2 Operational Safety

Wildlife and bird attractants, such as wetlands, bodies of open water, waste disposal sites, and certain crops, can cause safety hazards at airports.



Figure 2-50: Grant County Waterfowl Production Area; Source: Grant County GIS

The National Wetlands Inventory (NWI) data indicates that Y63 is immediately surrounded by wetlands of varying types – lakes, ponds, emergent wetlands, and riverine areas. In addition, Grant County's Waterfowl Production Area is located just south and east of Runway 14/32 (Figure 2-50), and the City of Elbow Lake's water treatment ponds are to the south and west of the runway. Each of these are significant attractants to wildlife, especially birds, at all times of the year. At this time, there is also a City Brush Dump site located on airport property which is known to attract mammals to the grounds. Greater detail regarding attractants and mitigation solutions are discussed in the Wildlife Hazard Site Visit Report, found in the Appendix of this document.

#### 2.6.9 Natural Resources and Energy Supply

Significance Threshold: None established.

Executive Order 13123, *Greening the Government through Efficient Energy Management*, encourages federal agencies to expand the use of renewable energy within its facilities and in their activities and to encourage the development of facilities that exemplify the highest standards of design including the principles of sustainability. Any proposed development at Y63 should be examined to identify any proposed major changes in stationary facilities or the movement of aircraft and ground vehicles that would have a measurable effect on local supplies of energy or natural resources. Current sustainable design efforts by the airport include the use of light-emitting diode (LED) interior and exterior lighting on its recently-constructed public storage hangar, and ongoing replacement of incandescent lighting with LED lighting as fixtures need to be replaced. At this time, almost all lighting on building exteriors are LED, and lighting is in the process of being replaced with LED in the newer T-hangar and FBO. The electrical utility encourages the replacement of incandescent and fluorescent lighting with LED lighting by offering generous rebates to the consumer for each installation, which has been put to extensive use by Y63.

The on-airport electrical vault supplies the electricity needed for airport lighting and operations. Sustainable measures will be further discussed within the proposed alternatives described in Chapter 5, *Identification and Evaluation of Alternatives*.

#### 2.6.10 Noise and Noise-Compatible Land Use

Significance Threshold: The action would increase noise by Day-Night Average Sound Level (DNL) 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no-action alternative for the same timeframe.

Generally, the FAA considers DNL 75 and higher to be incompatible with most land uses, while below 65 is compatible with most land uses. Above 65 DNL, noise sensitive land uses (such as residential, schools, churches, and hospitals) are typically discouraged. At this time, there have been no Noise Impact studies conducted at the airport. Noise impacts to surrounding agricultural and commercial properties are minimal and there should not be any issues with non-compatible land use. The small area of residential housing on the north side of Flekkefjord Lake should be considered in any future airport development.

The FAA's 1050.1F Desk Reference indicates no noise analysis is required for projects involving Design Group I and II aircraft in Approach Categories A through D, operating at airports whose forecast operations do not exceed 90,000 annual propeller operations. This number well exceeds any expected future number of operations at Y63, thus a noise analysis is not required at this time.

Noise is typically the most significant off-	Acceptable Sound Threshold by Land Use
airport environmental impact associated with aircraft operations. Noise is measured in decibels (dB). The Day Night Average Sound Level (DNL or Ldn) is an average cumulative sound level that provides a measure of the total sound energy during a 24-hour period.	Decibels  65  70  75  80  85    Residential
	L

## Understanding Noise Impacts

#### 2.6.11 Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

Significance Threshold: None established.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and the accompanying Presidential Memorandum, and Order DOT 5610.2, Environmental Justice, require the FAA to provide for meaningful public involvement by minority and low-income populations, and analysis that identifies and addresses potential impacts on these populations which may be disproportionately high and adverse. In addition, pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed as appropriate to prioritize environmental health risks which may disproportionately affect children. Any proposed development at Y63 must be analyzed to assess impacts to low-income or minority populations, or to children's health and safety.

The USEPA EJSCREEN tool was used to determine detailed information about the area within a one-mile buffer around the airport in January 2017. The EJSCREEN tool combines and displays demographic indicators with a single environmental indicator using publicly available data, including US Census Bureau Data from 2010-2014.

The demographic indicators studied with this tool include:

- Percent low-income,
- Percent minority,
- Less than high school education,
- Linguistic isolation,
- Individuals under age 5, and
- Individuals over age 64.

The population within this one-mile buffer is reported to be 271 people, of which 3% are determined to be of a minority group, and 29% are considered low-income. 71% of the housing units in the area are owner-occupied, with 41% reporting a yearly base income of \$50,000 or more. This data suggests that minority and low-income households may not be disproportionately affected by any proposed development at the airport.

# **2.6.12 Visual Effects: Light Emissions and Visual Resources/Visual Character** *Significance Threshold: None established.*

Larger airports emit a significant amount of light, especially the approach lighting systems. Visual impacts are difficult to assess due to their subjectivity and may be annoying to people in the vicinity or interfere with their normal activities. The airport property is immediately surrounded by agricultural and industrial land uses, which are generally considered compatible with airport operations involving lighting. There are residences to the north of the Sealane 11/29 which should be

considered during any future development at the airport. Any project involving installation, replacement, or relocation of airfield lighting should be evaluated for adverse light emissions and visual impacts to the surrounding community.

#### 2.6.13 Water Resources: Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers

The Clean Water Act provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, and prevent or minimize the loss of wetlands. Water quality regulations and the issuance of permits before construction projects at Y63 will normally identify any deficiencies in the proposed development with regard to water quality or any additional information necessary to make judgments on the significance of impacts.

#### 2.6.13.1 Wetlands

Significance Threshold: The action would:

- Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies, including surface waters, and sole source and other aquifers;
- Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected;
- Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public);
- Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands;
- Promote development of secondary activities or services that would cause the circumstances listed above to occur; or
- Be inconsistent with applicable state wetland strategies.

The USFWS National Wetland Inventory (NWI) data consulted in January 2017 reports numerous wetland areas on airport property and within the airport vicinity. There are lakes and freshwater ponds of varying quality and size encircling the airport, some which are associated with Freshwater Emergent wetland areas, as well as a Riverine wetland which crosses the south end of Runway 14/32. The most recent Wetland Delineation was performed in 2003. An updated delineation to ascertain current wetland location and extents is recommended before any airport construction begins.

The 2003 Delineation identified six wetland basins in the 2004 project planning area, summarized as follows.



Figure 2-51: Wetlands near Y63 Source: USFWS National Wetlands Inventory Mapper, January 2017

ID Size (acres)	Cowardin Classification	Circular 39 Classification	Comments	
1 2	PEMC	Туре 3		
2 300	PEMC	Туре 5	Fringe of Island Lake	
3 3	PEMC	Туре 3		
4 6	PEMF	Type 4		
5 160	PEMC	Type 5	Fringe of Worm Lake	
6 2	PEMC	Туре 3		

Table 2-52: 2003 Final Federal Environmental Assessment

There are several MnDNR Protected Waters in the areas around the airport. Trisko Lake (141W) and Elbow Lake (140P) are located northwest of the airport. Island Lake (147P) is located southeast of the airport. An unnamed basin southeast of the airport (146P) is located within the Elbow Lake WPA. Worm Lake (142P) is located east of the airport.

The City of Elbow Lake has adopted and abides by the Minnesota Wetland Conservation Act for all new construction.

The City of Elbow Lake has adopted and abides by the Minnesota Wetland Conservation Act for all new construction.

#### 2.6.13.2 Floodplains

*Significance Threshold: The action would cause notable adverse impacts on natural and beneficial floodplain values.* 

Executive Order 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains. As of February 2017, there have been no studies by FEMA to determine flood hazards for the City of Elbow Lake. The FEMA map 2705490002B (May 1998) for the unincorporated areas of Grant County, south of Elbow Lake and near the airport, does not include any Special Flood Hazard Areas. At this time, the 100-year floodplain boundary for this area has not been determined.

#### 2.6.13.3 Surface Waters

*Significance Threshold: The action would:* 

- Exceed water quality standards established by Federal, state, local, and tribal regulatory agencies; or
- Contaminate public drinking water supply such that public health may be adversely affected.

The City of Elbow Lake has adopted a Shoreland Ordinance that places restrictions on land use and construction on or near shorelines for Lakes and Rivers. This document was an adoption of the recommended state model ordinance and was not modified by the City.

Flekkefjord Lake, which borders the apron and hangar area to the north and east, is classified by the ordinance as a "General Development" lake. In Section 151.36, *Placement, Design, and Height of Structures*, setbacks for development are defined according to the type of lake and the type of on-site sewage system for the proposed development.

The setback is measured from the Ordinary High Water Level of the water feature, defined as, "The boundary of public waters and wetlands and shall be an elevation delineating the highest water level which has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly that point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. For watercourses, the Ordinary High Water Level is the elevation of the top of the bank of the channel. For reservoirs and flowages, the Ordinary High Water Level is the operating elevation of the normal summer pool."

In this case, buildings which are sewered (having connection to the municipal sewage system) must be set back from the Ordinary High Water Level of the lake by a minimum of 50 feet. Those with septic systems, as is the current system for all buildings on the airport, must be set back a minimum of 75 feet.

The City of Elbow Lake has adopted a Shoreland Ordinance that places restrictions on land use and construction on or near shorelines for Lakes and Rivers.

Classes of Public Waters	Unsewered Structure	Sewered Structure	Sewage Treatment System
Lakes			
Natural Environment	150	150	150
Recreational Development	100	75	75
General Development	75	50	50
Rivers			
Remote	200	200	
Forested and Transition	150	150	
Agriculture, Urban and Tributary	100	50	

Table 2-53: Structure and On-site Sewage System Setbacks from Ordinary High Water Level; Source: City of Elbow Lake Shoreland Management Ordinance

The official Ordinary High Water Level has not yet been determined for Flekkefjord Lake. Upon the recommendation of the Minnesota Department of Natural Resources (DNR) Area Hydrologist for Douglas, Grant, Pope and Stevens Counties, Emily Siira, in April 2017, the setback required by the shoreland ordinance shall be measured from an elevation of 1187 feet (NGVD 29). The highest known water level at this lake is 1186.61 NGVD 29.

#### 2.6.13.4 Ground Water

Significance Threshold: The action would:

- Exceed groundwater quality standards established by Federal, state, local, and tribal regulatory agencies; or
- Contaminate an aquifer used for public water supply such that public health may be adversely affected.

A review of the Minnesota Pollution Control Agency's groundwater data in April 2017 revealed that Elbow Lake's Drinking Water Supply Management Area is remotely located from Elbow Lake, just south of the Pomme de Terre Lake. The nearest border of this area is at least 4 miles east of the airport. The nearest border of the City of Barrett's Drinking Water Supply Management Area is 3 miles southeast of the airport. The MPCA maintains groundwater monitoring stations in three locations near Elbow Lake, each being approximately 4 to 6 miles away from the airport.

Future construction at the airport is not expected to impact the drinking water of Elbow Lake or any other municipality. Grant County's Area Hydrologist remarked in April 2017 that while the aquafer is shallow in this area, construction work at Y63 would likely be approved if drain-downs of wetlands or other surface waters are not required.

Future construction at the airport is not expected to impact the drinking water of Elbow Lake or any other municipality.


*Figure 2-54: Drinking Water Supply Management Areas Source: MPCA Groundwater Monitoring Data* 

### 2.6.13.5 Wild and Scenic Rivers

Significance Threshold: None established.

The Minnesota State Wild and Scenic Rivers Program was established in 1973 to protect rivers which have outstanding natural, scenic, geographic, historic, cultural, and recreational value. The six rivers currently designated in Minnesota are the Minnesota, North Fork Crow, Mississippi, Rum, Kettle, St. Croix, and Cannon Rivers. There are no designated Minnesota State Wild and Scenic rivers in Grant County. The St. Croix River also carries a National Wild and Scenic Rivers designation, but it is not located in Grant County.

Projects at Elbow Lake Airport are not anticipated to impact any Wild and Scenic rivers, or other federally-listed river segment.

# 2.6.14 Other Construction Impacts

Airport construction may cause various environmental effects primarily due to dust, aircraft, and heavy equipment emissions, storm water runoff containing sediment and/or spilled or leaking petroleum product, among other impacts. Significant construction impacts would most likely occur when unusual circumstances exist (e.g., excavating environmentally sensitive areas, construction-induced traffic congestion that would substantially degrade air quality). A significant impact would occur when the severity of construction impacts cannot be mitigated below FAA's threshold levels for the affected resource (i.e., air quality, water quality, etc.). The anticipated construction impacts of the proposed development must be considered during the environmental effort.

### 2.6.15 Secondary (Induced) Impacts

Major development proposals can involve the potential for induced or secondary impacts on surrounding communities. Examples of these impacts include shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity to the extent influenced by airport development. The nature of expected projects at Y63 are not anticipated to create secondary impacts on nearby communities.

# 2 | Section 7 – Financial Data, Businesses, and Tenants

Elbow Lake's City Administrator, under the supervision of the Elbow Lake City Council, acts as the fiscal agent for the airport and is responsible for maintaining it's budgetary as well as revenue and expenditure accounts. This position further coordinates preparation of the Annual Financial Report on the airport's financial condition by the City Council's independent auditor. The designated Airport Board offers guidance to the City Council in financial and management matters.

Each year, the City Administrator prepares an annual budget for consideration and ultimate adoption by the City Council. The Airport Board is reliant on fund transfers from the City (\$7,500 in FY2017) in addition to other revenue sources to support operation, maintenance, and development of the airport. The City budgets additional funds for airport operations and maintenance, and discrete financial records are maintained to account for the itemized revenues and expenses of the airport. Using this form of accounting, the City Council conducts its affairs in a similar manner to a private business. Specifically, it sets fees, rates, and charges for services and space in a manner to seek to achieve financial self-sufficiency and recover its costs for delivery of the services.

Businesses engage in aviation and related activities at the airport. The Board maintains lease and operating agreements that provide these entities the right to occupy and maintain space on the airport and/or offer services to the public. The Board ensures the airport charges market-based fees and rental rates to its users and tenants by comparing the rates of 12 other area airports, which enables it to provide aviation services and amenities in the most cost-effective and self-sufficient basis possible. At this time, commercial tenants at Y63 include Freedom Sky Tours, Hawkeye Helicopter, Agricultural Resource Intelligence and the Lakes Area Pilot's Association.

Current Hangar Monthly Rental Rates			
Old/bulk T-Hangar	\$55-\$65		
New T-Hangar	\$110		
MASH Hangar (King)	\$250-\$400		
MASH Hangar (Reg)	\$200		
Seasonal (Winter)	\$250		
Seasonal (Summer)	\$200		
Overnight	\$25-\$75		

Table 2-55: Hangar Rental Rages; Source: Y64 hangar rental data

To provide a full complement of general aviation services to the public, the City Council has entered into lease and operating agreements with Prairie Air for aircraft maintenance services.

The City offers private T-hangar space for rental as well as multi-use storage space in the new Public Storage Hangar. Private hangars have also been built on the airport site, in which the property is owned by the City but the building is owned privately. The airport also manages the Arrival/Departure Building.

The City also holds land leases which allow agricultural activity meeting FAA guidance for land use to be conducted on airport property.

This analysis offers the airport a baseline evaluation of revenues and expenses in order to provide a framework for understanding future expenditure and revenue streams. It is not intended to serve as a true airport profit and loss statement; instead, it offers insight to emerging trends that could impact the future financial performance of Y63. The techniques utilized in this analysis are consistent with industry practices for similar studies. While it is believed that the approaches and assumptions are reasonable, it should be recognized that some assumptions regarding future trends and events may not come to pass.

### 2.7.1 Historical Airport Revenues

Elbow Lake is part of the National Plan of Integrated Airport Systems (NPIAS) and is eligible to receive Federal grants under the Airport Improvement Program (AIP). It also includes estimates of the amount of AIP money needed to fund infrastructure development projects that will bring the included airports up to current design standards and add capacity to congested airports. The FAA is required to provide Congress with a five-year estimate of AIP eligible development every two years.

Elbow Lake is currently categorized as a Local General Aviation Airport which is eligible for up to \$150,000 in entitlements each fiscal year between 2013 and 2017. This number could change in the future depending on Congress action. Under the Entitlement Program, Elbow Lake can obtain more grant allocation if other airports do not use their funding in each of the Fiscal Years.

Y63 is also eligible for State Grants through the Minnesota Department of Transportation including the Airport Construction Grant Program, the Airport Maintenance and operation Program, and the Hangar Loan Revolving Account Program. The programs are described below.

Airport Construction Grant Program. The State Construction Grant Program funds most capital improvements at state system airports based on a determination that the improvement is a justifiable benefit to the air-traveling public. State funding participation may vary from year to year.

The Construction Grant Program funds projects such as airport infrastructure, revenue-generating facilities, fencing, obstruction removal, land purchase for clear zones, and some utilities.

Airport Maintenance and Operation Program. The State Airport Maintenance and Operation Grant Program has in the past provided 2/3 State reimbursement to the state system airports for their documented, routine maintenance expenses up to a certain ceiling amount that is categorized by airport infrastructure. This amount has been increased to 75% for FY2017. The day-to-day labor, material, equipment, and utility expenses of maintaining airport pavements, airport grounds, lighting systems, buildings, and maintenance equipment are eligible costs.

Hangar Loan Revolving Account Program. The State Hangar Loan Revolving Account Program provides an 80% interest-free loan to state system airports for building new hangars. The loans are paid back in equal monthly installments over 20 years. Payment receipts, as they become available, are then loaned out again to other airports needing hangars. The hangar loan may be used to fund hangar site prep as well as the hangar building. Hangar site prep, including the hangar floor, may also be funded with a state grant at current participation rates, if funds are available. However, for site prep to be considered for a state grant, it must be shown as a proposed project in the Sponsor's Airport CIP in the state fiscal year of proposed construction.

Year	MnDOT Grant Description
1961	Engineering of Landing Strip
1961	Grading of Landing Strip
1962	Reseeding
1977	Hangar Site Preparation
1978	Apron Site Preparation
1978	Apron Paving and Fuel Facility
1981	Planning Study
1985	Seal Coat of Apron
1993	Underground Fuel Tank
1993	Seal Coat of Apron
1998	Airport Beacon and Signage
1999	A/D Building and Fuel Facility Card Reader
2003	Airport Layout Plan
2004	Purchase Snow Removal Equipment, EA Ph. 1
2004	Survey, EA Ph. 2, Preliminary Design
2004	Hangar Site Preparation
2006	Land Acquisition
2006	Construction of FBO Facility
2007	Construct, Pave, and Light Ry 14/32
2007	Zoning
2007	Purchase Snow Blower Attachment
2010	Construct T-Hangar
2015	Obstruction Removal - Trees
2015	Obstruction Removal - Hillside
2016	Construct Public Storage Hangar, Expand Apron, Relocate Electrical Vault
2017	Master Plan Update

Table 2-56: MnDOT Grant History; Source: MnDOT Office of Aeronautics

Each year the MnDOT Office of Aeronautics establishes the Grant Rates at which it will offer funding for the year. Please see an excerpt of the current letter, shown below in Figure 2-57.

# Fiscal Year 2017 State Airport Fund Grant Rates

Effective July 1, 2016 to June 30, 2017

PROJECT TYPE	NPIAS		NON-NPIAS	
	FY 2014	FY 2017	FY 2014	FY 2017
General	70	80	80	90
Revenue Generating (except Fuel Systems)	50	80	50	90
FBO	50	80	50	90
Fuel Systems including Fuel Trucks	50	60	50	60
Equipment	2/3	80	2/3	80
M & O	2/3	75	2/3	75

#### STATE GRANT, STATE SHARE PERCENTAGE

#### FEDERAL GRANT, STATE SHARE PERCENTAGE

PROJECT TYPE	FY 2014	FY 2017*
General with 90% Federal	0	5*
Participation		1920°
General with 95% Federal	0	2.5*
Participation		C S S S S S
Equipment	0	5*

\* State Airport Funds matching FAA Airport Improvement Program (AIP) grant dollars will be **capped at the pre-application dollar amount**.

*Figure 2-57: Airport Funding Rates letter; Source: Minnesota Department of Transportation; Office of Aeronautics and Aviation, dated May 31, 2016* 

Elbow Lake has been the recipient of several grants from the FAA to be used for airport development, maintenance, and planning. The following table outlines these grants from FAA.

Grant Number/Year	FAA Grant Description	Amount
001-2002	Initial Master Plan Study	\$24,483
002-2003	Master Plan Study and Snow Removal Equipment	\$125,066
003-2005	Acquire Land for Runway 14/32	\$351,795
004-2006	Construct Runway - 14/32	\$1,430,303
005-2007	Acquire Snow Removal Equipment	\$106,001
006-2009	Construct Building - T-Hangar	\$483,896
007-2015	Construct Building - Public Storage Hangar	\$908,141
008-2016	Update Master Plan Study	\$356,670

Table 2-58: FAA Grant History; Source: FAA

Other sources of revenue for the airport include leases for hangar storage space, land leases, and a 5-cent profit on each gallon of aviation fuel sold at the airport, which is in addition to the previously-mentioned grants from the MnDOT and the FAA. As demonstrated in Table 2-59 below, fuel sales are growing overall, contributing a small but steady source of income to the airport.

Year	Quantity (gallons)	Avg. Price/gallon
2007	7,143	\$3.99
2008	9,264	\$4.76
2009	8,692	\$4.13
2010	7,573	\$4.71
2011	8,883	\$5.04
2012	9,123	\$5.29
2013	11,250	\$5.45
2014	11,805	\$5.21
2015	11,319	\$4.47
2016	11,660	\$4.44

Table 2-59: Fuel Sales; Source: Y63 fuel sales data

Maintenance and operations money from State of Minnesota equaled \$17,800 for FY2017. Improvements are reimbursed by State Airport Fund (SAF) to 75%, to be matched 25% by the City. New state match rates maximized the use of FAA AIP dollars at federally eligible airports in MN in FY2016. In addition, Minnesota airports not eligible for federal funds also experienced rate increases for their projects.

The FAA's Airport Improvement Program (AIP) covers 90% to 95% of eligible costs, with a 5% match from the City.

Source of Revenue	Comments	Amount
City of Elbow Lake	Annual Distribution	\$7,500
Hangar Rental	20 Units	\$14,000
FBO	Prairie Air lease of hangar	\$50
Land Leases	Leased to individuals for crops	\$11,000
Fuel Sales	5-cent profit per gallon sold	\$57,000
MnDOT	Maintenance Grant	\$17,800
	Total Revenues	\$107,350

Table 2-60: Historic Airport Revenue Sources

The recently-constructed MASH hangar is expected to generate approximately \$33,000 in lease fees per year for the airport, but is not included above in the airport's historic revenue sources. In addition, the airport usually receives \$150,000 in entitlements each year from the FAA through the Airport Improvement Program.





# 2.7.2 Historical Operating Expenses

The City of Elbow Lake budgets for airport needs within their General Budget each year. These expenditures include all necessary maintenance activities, utilities, outside contracted labor, legal expenses, fuel purchases, and annual grant matches.

Maintenance needs for the seaplane base facility is included in the overall maintenance budget noted below. Y63 does not receive additional funds from MnDOT specifically for maintenance and upkeep of docks, ramps, or moorings.

Source of Expense	Comments	Amount
Repairs and Maintenance	Annual City Budget	\$7,200
Utilities	Annual City Budget	\$9,500
Contracted Labor	Annual City Budget	\$3,500
License, Fees, Permits	Annual City Budget	\$1,000
Real Estate Taxes	Annual City Budget	\$3,900
Lease Purchase Principal	Annual City Budget	\$10,000
Fuel Purchases		\$56,400
MnDOT	Maintenance Grant Match	\$5,000
	Total Expenditures	\$96,500

Table 2-62: Historic Airport Operating Expenses

Not included in the table above is the expected maintenance and operation costs for the new MASH hangar, which should equal approximately \$9,400 per year.



 Table 2-63: Airport Operating Expenses by Category (Projected 2017)

# 2 | Section 8 – Summary of Existing Conditions

Information collected during the inventory effort of the master planning process provides a method to evaluate the conditions of existing airport facilities and provide a baseline to measure how well current infrastructure will be able to accommodate future aviation demand. Through a review of the inventory information presented in this Chapter, subsequent study tasks can be conducted to determine what improvements will be necessary at Y63 to meet the air transportation requirements of the region over the next 20 years. In comparison with future aviation demand projection and demand/capacity analyses, alternatives can be developed to identify a plan for how Y63 will address the required improvements. This study effort will help direct the prospective growth and expansion of existing facilities at Y63 to meet future aviation needs.