Valdez Pioneer Field Airport
Master Plan Update

September 2021
State Program Number NFAPT00291

Prepared for:

State of Alaska
Department of Transportation & Public Facilities, Northern Region
2301 Peger Road
Fairbanks, Alaska 99709

Prepared by:

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EXECUTIVE SUMMARY

The Alaska Department of Transportation and Public Facilities (DOT&PF) is completing an Airport Master Plan Update for their Valdez Pioneer Field (VDZ), in Valdez Alaska. The last Master Plan was completed in 2004, and triggered construction projects that improved the airport to meet Airport Reference Code (ARC) C-III standards. This Master Plan Update spans between 2018 – 2021, with chapters completed in series over these years. As such, some sections completed in 2018 may not reflect current 2021 conditions at the publication of the final Master Plan.

Valdez and its airport are of strategic and economic importance to the State of Alaska. The airport serves the Trans-Alaska Pipeline System (TAPS), Valdez Marine Terminal, City of Valdez, and the Greater Copper Valley basin. The airport has provided critical infrastructure during periods of industrial development and disasters, such as the Exxon Valdez Oil Spill and 1964 Earthquake.

The Federal Aviation Administration (FAA) has approved an existing and future critical aircraft designation at VDZ of B-III. Between 2009 and 2017, only two aircraft have had more than 500 annual operations at the airport, the De Havilland Dash-8 (B-III) and Beech 200 (B-II). The De Havilland Dash 8 is currently used for regularly scheduled commuter service by Ravn Alaska. No change in forecasted operations is expected to the critical aircraft regularly using the airport. The FAA can justify Airport Improvement Program (AIP) funding for the *reconstruction* of the airport to B-III standards. Until reconstruction is needed, the FAA may choose to participate in funding the *rehabilitation* of the airport to the current C-III standards.

Alternatives (Table ES-1) were developed to address issues identified during the master planning process. They were screened through operational, economic, implementation, and public involvement criteria. The selected Preferred Alternatives provide for future operations at VDZ that are financially feasible and improve the quality of service at the airport.

Table ES-1. Alternative Evaluation

Project	Operational Possible?	Economic?	Implementation Practical?	Preferred Alternative?
Runway				
Runway Alt 1A: C-III (Rehabilitation)	*Yes*	*$5,310,000*	*Yes*	*Yes*
Runway Alt 1B: C-III (Reconstruction)	Yes	No funding	Yes	No
Runway Alt 2A: B-III (Rehabilitation)	Yes	$7,980,000	Yes	No
Runway Alt 2B: B-III (Reconstruction)	*Yes*	*$10,100,000*	*Yes*	*Yes*
Taxiway				
Taxiway Alt 1: No Action	No	$0	Yes	No
Taxiway Alt 2: Abandon Taxiway C	No	$130,000	Yes	No
Taxiway Alt 3: Shift Taxiway C East	Yes	$2,390,000	Yes	No
Taxiway Alt 4: Relocate Taxiway C and Add New Taxiway	*Yes*	*$4,360,000*	*Yes*	*Yes*
Taxiway Alt 5: Reconstruct Apron Taxiway as Parallel Taxiway	Yes	$16,610,000	Yes	No
Airfield Improvements				
Improve Wind Sensor	*Yes*	*$25,000*	*Yes*	*Yes*
Sand and Urea Storage	*Yes*	*$2,000,000*	*Yes*	*Yes*
Snow Removal Equipment Building (SREB)	*Yes*	*$4,000,000*	*Yes*	*Yes*
Improve Tie-Down System	*Yes*	*N/A*	*Yes*	*Yes*
Airport Fencing	*Yes*	*$1,820,000*	*Yes*	*Yes*
Land Use				
Smaller Lease Lot Size	No	N/A	No	No
Lease Lots – New Hangers	*Yes*	*N/A*	*Yes*	*Yes*
Campground	*Yes*	*N/A*	*Yes*	*Yes*
Aleutian Village: Retain	*Yes*	*N/A*	*Yes*	*Yes*
Robe Lake				
Improve Facilities	*Yes*	*No AIP or DOT&PF Funding*	*Yes*	*Independent Effort Required*
Thompson Pass Airport				
Recommend Continued Maintenance	*Yes*	*No AIP or DOT&PF Funding*	*Yes*	*Independent Effort Required*
Instrument Approach				
Develop Better IFR Approaches	*Yes*	*No AIP or DOT&PF Funding*	*Yes*	*Independent Effort Required*

Key:
Preferred Alternative – *ITALICS*
AIP – Airport Improvement Program
Alt – Alternative
DOT&PF – Alaska Department of Transportation and Public Facilities
IFR – Instrument Flight Rules

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Appendix A

Appendix B

LIST OF ACRONYMS

AC ..... Advisory Circular
ADCCED ..... Alaska Department of Commerce, Community, and Economic Development
ADEC ..... Alaska Department of Environmental Conservation
ADF ..... Automatic Direction Finder
ADF&G ..... Alaska Department of Fish and Game
ADG ..... Airplane Design Groups
ADOLWD ..... Alaska Department of Labor and Workforce Development
AFFF ..... Aqueous Film Forming Foam
AIP ..... Airport Improvement Program
ALP ..... Airport Layout Plan
ALS ..... Approach Lighting System
APEB ..... Aviation Project Evaluation Board
ARC ..... Airport Reference Code
ARFF ..... Airport Rescue and Fire Fighting
ARTCC ..... Air Route Traffic Control Center
AST ..... Aboveground Storage Tank
ATCT ..... Air Traffic Control Tower
AWOS ..... Automated Weather Observation System
CAA ..... Controlled Activity Area
CFEC ..... Alaska Commercial Fisheries Entry Commission
CFR ..... Code of Federal Regulations
CMG ..... Cockpit to Main Gear Distance
CTAF ..... Common Traffic Advisory Frequency
CVEA ..... Copper Valley Electric Association, Inc.
DME ..... Distance Measuring Equipment
DME-G ..... DME instrument approach into the Valdez Airport only for qualified air carriers and pilots.
DME-H ..... DME instrument approach into the Valdez Airport available to the public.
DNR ..... Department of Natural Resources
DOT&PF ..... Alaska Department of Transportation and Public Facilities
EAS ..... Essential Air Service
FAA ..... Federal Aviation Administration
FAR ..... Federal Aviation Regulation
FATO ..... Final Approach and Takeoff Area
FEMA ..... Federal Emergency Management Agency
FHWA ..... Federal Highway Administration
FSS ..... Flight Service Station
ft. ..... Feet
GA ..... General Aircraft
GPS ..... Global Positioning System
HIRLs ..... High Intensity Runway Light
IFR ..... Instrument Flight Rules
ILS ..... Instrument Landing System
IPaC ..... Information for Planning and Consultation
K55 ..... Thompson Pass Airport
LDA ..... Localizer Type Directional Aid
lf. ..... linear footage
LP ..... Localizer Performance without Vertical Guidance
LPV ..... Localizer Performance with Vertical Guidance
L93 ..... Robe Lake Airport
M&O ..... Maintenance and Operations
MALSR ..... Medium Intensity Approach Lighting System with runway Alignment
MGW ..... Main Gear Width
MHz ..... Mega-Hertz

MITL ..... Medium Intensity Taxiway Lights
MLS ..... Microwave Landing System
nm ..... nautical mile
MSL ..... Mean Sea Level
MTOW ..... Maximum Take Off Weight
NAVAID ..... Navigational Aid
NDB ..... Non-Directional Beacon
NOTAM ..... Notices to Airmen
NPIAS ..... National Plan of Integrated Airport Systems
NTSB ..... National Transportation Safety Board
NWI ..... National Wetland Inventory
OFZ ..... Object Free Zone
PAPI ..... Precision Approach Path Indicator
PAWR ..... Whittier Airport
PBR ..... Plane, Boat, Recreational
PCI ..... Pavement Condition Index
PCN ..... Pavement Classification Number
PFAS ..... Per-and polyfluoroalkyl substances
PFC ..... Passenger Facility Charge
PPP ..... Public Private Partnership
RAP ..... Recycled Asphalt Pavement
RCO ..... Remote Communications Outlet
RDC ..... Runway Design Code
REIL ..... Runway End Identification Light
RNAV ..... Area Navigation
RNP ..... Required Navigation Performance
ROFA ..... Runway Object Free Area
ROFZ ..... Runway Object Free Zone
RPZ ..... Runway Protection Zone
RSA ..... Runway Safety Area
RVR ..... Runway Visual Range
RW ..... Runway
sf ..... square foot
SREB ..... Snow Removal Equipment Building
STOL ..... Short Takeoff and Landing
TAF ..... Terminal Area Forecast
TAPS ..... Trans Alaska Pipeline System
TCH ..... Threshold Crossing Height
TDG ..... Taxiway Design Group
TOFA ..... Taxiway Object Free Area
TSA ..... Transportation Security Agency
TW ..... Taxiway
USBLS ..... U.S. Bureau of Labor Statistics
USBTS ..... U.S. Bureau of Transportation Statistics
USDOT ..... U.S. Department of Transportation
USFWS ..... US Fish and Wildlife Service
UST ..... Underground Storage Tank
VASI ..... Visual Approach Slope Indicator
VDZ ..... Valdez Pioneer Field
VFR ..... Visual Flight Rules
VHF ..... Very High Frequency
VOR ..... VHF Omnidirectional Range
WAAS ..... Wide Area Augmentation System

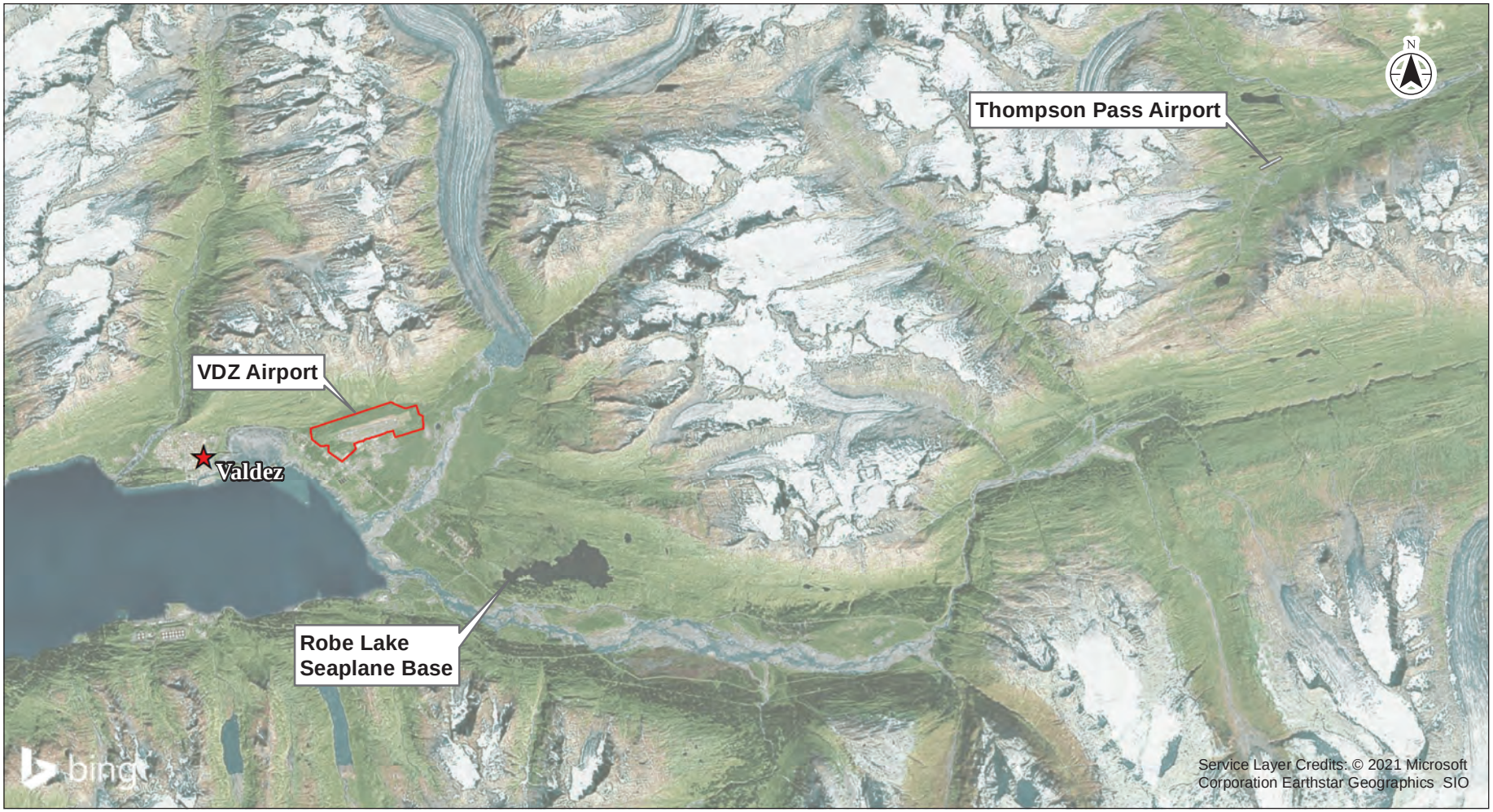
1 INTRODUCTION

The Alaska Department of Transportation and Public Facilities (DOT&PF) and the Federal Aviation Administration (FAA) have conducted an Airport Master Plan Update for the Valdez Pioneer Field (VDZ) (Figure 1-1, 1-2). Supporting airports include Robe Lake (L93), Thompson Pass Airport (K55) and Whittier (PAWR) (Figure 1-1, 1-3, 1-4, 1-5). This Master Plan Update adheres to requirements set out in FAA Advisory Circular (AC) 150/5070-6B, Changes 1 and 2, Airport Master Plans.

The last VDZ Airport Master Plan was completed in 2004. An Airport Master Plan is a comprehensive study of an airport and describes the development plans to meet future aviation demand. Master Plans support the modernization or expansion of existing airports. The goal is to provide the framework needed to guide future airport investment over the next 20 years that will cost-effectively satisfy current and future aviation demand, while considering potential environmental and socioeconomic impacts.

VDZ is of strategic and economic importance to the State of Alaska. The airport serves the Trans-Alaska Pipeline System (TAPS), Valdez Marine Terminal, City of Valdez, and the Greater Copper Valley basin.

In the event of the construction of an Alaska natural gas pipeline or an event like the Exxon Valdez Oil Spill of 1989, the airport must handle a large amount of heavy payload aircraft. Accordingly, the airport is kept in an advanced state of readiness, and a Master Plan Update is needed to evaluate issues associated with such events.



0 2 4 8
Miles

Project Origin: Valdez, Alaska
Township 8S, Range 6W
Section 35, and 36
Copper River Meridian
Valdez Airport
USGS: VALDEZ (A-7, A-6) ALASKA
61.1342 N -146.2447 W

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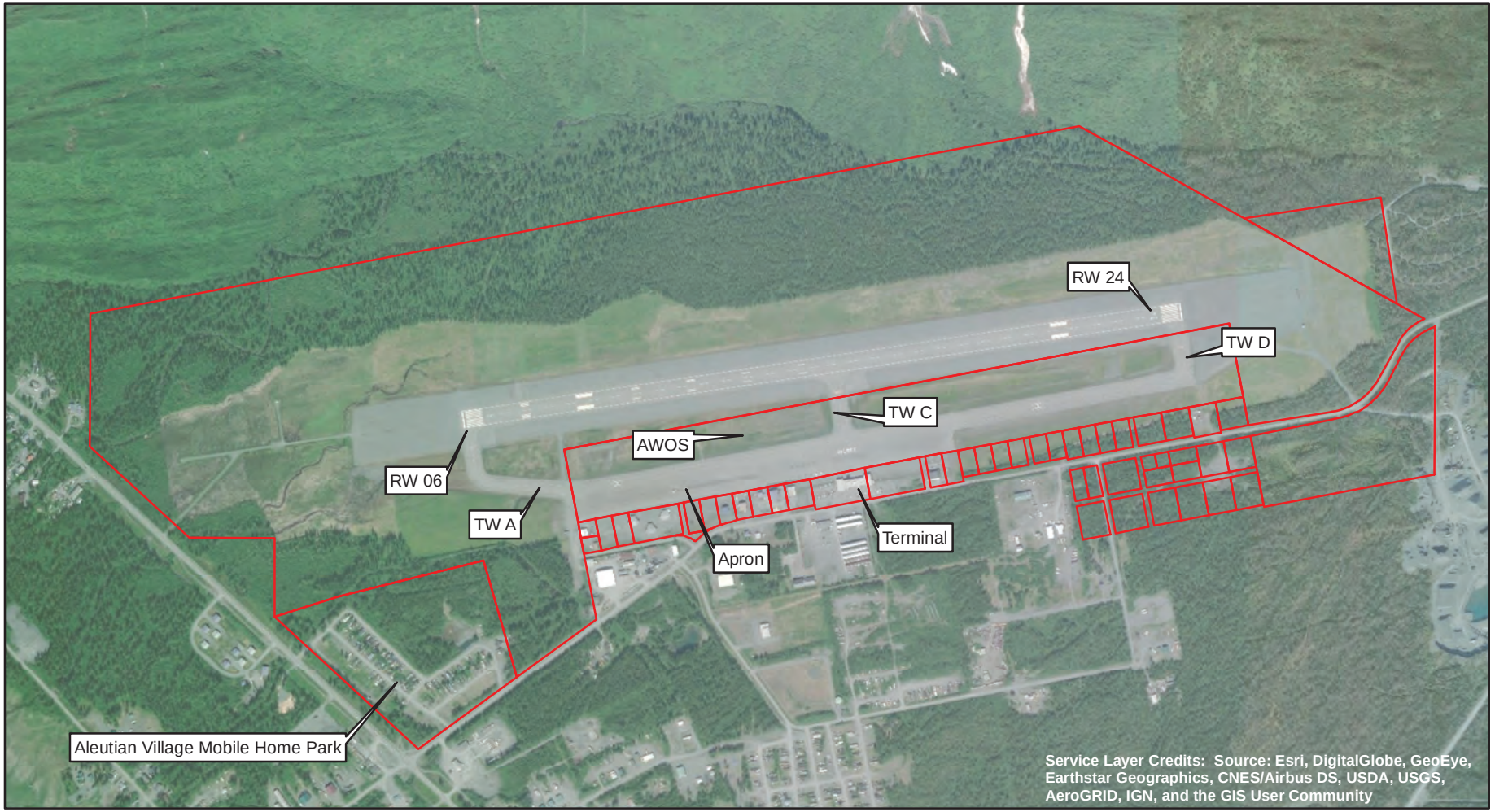
VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

Airport Master Plan Update
Location & Vicinity Map

DATE: April, 2021

FIGURE **1-1**



0 600 1,200 2,400 Feet

Airport Property

TW = Taxiway
RW = Runway

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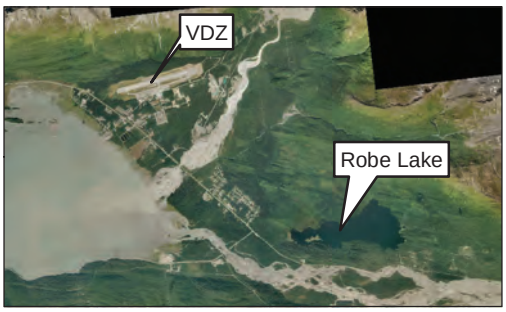
VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

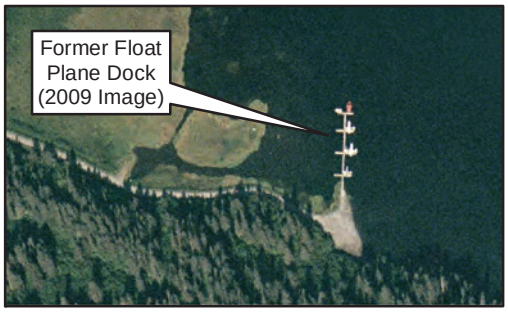
Airport Master Plan Update
Study Area

DATE: April, 2021

FIGURE **1-2**

U:\20470637001\GIS\mxd\Figures\airport_master_plan_complete\20470637001_amp_fig_1-2_Study Area.mxd Revised: 2021-04-19 By: cpannone





0 0.25 0.5 1
Miles

Robe Lake Map Series:
Vicinity (Upper Left), Detail (Upper Right), and Overview (center)
Note: This is a 2009 Image,
Currently there are no facilities at Robe Lake

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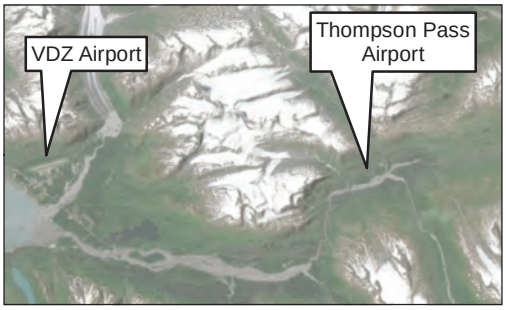
VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

Airport Master Plan Update
Robe Lake Map

DATE: April, 2021

FIGURE **1-3**



0 300 600 1,200
Feet

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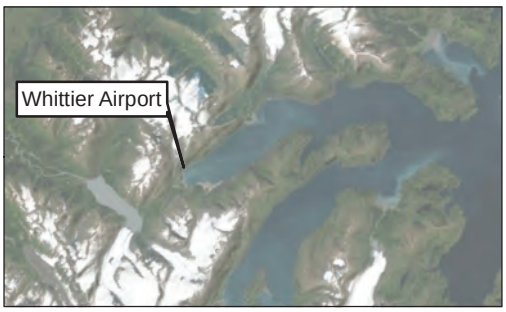
VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

Airport Master Plan Update
Thompson Pass Airport

DATE: April, 2021

FIGURE **1-4**



0 300 600 1,200
Feet

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VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

Airport Master Plan Update
Whittier Airport

DATE: April, 2021

FIGURE **1-5**

2 INVENTORY

VDZ is a regional Part 139 airport that supports regularly scheduled commuter service from Anchorage, Alaska. VDZ has a single, asphalt concrete paved, 6,500-foot-long, 150-foot-wide runway. It has one public instrument approach with a 5-mile visibility minimum due to surrounding topography. The aircraft with the most operations in 2017 was the De Havilland Dash 8, although larger aircraft can use it to respond to industrial requirements.

This Master Plan Update includes an inventory of the current airport conditions. The inventory was conducted from May to July 2018 to provide for identification of needs, development of alternatives, and publication of the final Master Plan. As such, some sections may not reflect current conditions at the publication of the final Master Plan.

2.1 Background

The first airstrip in Valdez was built near the center of Old Valdez in the mid-1920s. The runway was about 1,200 feet long, narrow, rough, and gravel surfaced. Airfield facilities were not greatly improved until 1951, when the federal government recognized that the airfield was barely usable. A new site (the present site) was selected on public domain land, and in 1952, the State of Alaska Department of Aviation constructed a gravel-surfaced 4,400-foot-long by 150-foot-wide runway and apron.

The second largest earthquake ever recorded in the world struck a few miles west of Valdez in 1964. Tsunamis generated by the earthquake destroyed Old Valdez, and the community was rebuilt in a more sheltered location, four miles to the west.

In 1969, Valdez was selected for the construction of the TAPS terminal. This construction effort dramatically increased airport operations. In 1973, the State built a new 5,000-foot-long by 150-foot-wide runway, incorporated the existing runway into an apron and parallel taxiway, constructed three connecting taxiways, and expanded the apron. The FAA installed an air traffic control tower (ATCT) and flight service station (FSS) in 1974. A new terminal building was constructed with private funds in 1975.

In 1981 the DOT&PF lengthened the runway to 6,500 feet, constructed a taxiway connecting the west end of the runway with the parallel taxiway, and installed runway and taxiway lights. During this time, three air taxi operators and one air carrier (flying Boeing-727 jet aircraft) provided commercial service.

After the completion of the pipeline, the number of operations fell dramatically. The ATCT was decommissioned, and the City of Valdez purchased the Airport Terminal Building.

The Exxon Valdez Oil Spill in March 1989 had a dramatic effect on the airport and the City of Valdez. The airport was a crucial transportation link during the cleanup effort. The apron was at capacity within two days of the spill. The ATCT was re-opened by FAA, operational within days, and remained operational until the cleanup effort traffic subsided. The airport is maintained in a continued state of readiness to respond to a similar event.

Weather minimums are an issue, due to confining terrain. A microwave landing system (MLS) was commissioned in May 1994. The MLS provided precision navigation guidance for exact alignment and descent of aircraft on approach. The system required aircraft to be specially equipped and pilots to be specially trained. The system was decommissioned on August 23, 2000.

The 2004 Runway Safety Area (RSA) and Runway Extension project improved the RSA to 500 feet wide and 1,000 feet beyond the thresholds to meet Airport Reference Code (ARC) C-III standards. This was accomplished by shifting the runway east to avoid impacts to Loop Road No 2 Creek, which is an anadromous fish stream. Taxiway (TW) A was relocated to the new Runway (RW) 06 threshold, TW B was removed, all pavements at the airport resurfaced, and new airfield lighting installed.

A 2007 RSA extension project resurfaced the new RSA, extended the RW 24 RSA to accommodate grading requirements for the localizer antenna, relocated TW D to the RW 24 threshold, and improved the security perimeter fencing.

In 2014, VDZ played a critical role in responding to the Keystone Canyon Avalanche Dam, which blocked the only road connecting Valdez to the highway system for 12 days. As a result, the airport and harbor were the only transportation links for essential community supplies. VDZ saw a 15 percent increase in annual operations that year for its primary aircraft (De Havilland Dash-8) and a 9 percent increase in total passengers. This was despite a local economic slowdown, which decreased overall airport activity and caused the exit of an air carrier who had recently entered the local market (see Chapter 3.0: Forecast and Aviation Activity).

2.1.1 Role in National Aviation System

VDZ is listed as a regional airport in the Alaska Aviation System Plan. It is a primary, non-hub airport in the National Plan of Integrated Airport Systems (NPIAS). It is owned by the DOT&PF, which provides Maintenance and Operations (M&O) and Airport Rescue and Fire Fighting (ARFF) service. The terminal is owned and operated by the City of Valdez.

2.1.2 Role in Community

VDZ is located on the north shore of Valdez Arm, a deep-water fjord in Prince William Sound, with 807 acres of land at 61° 07′ N Latitude and 146° 14′ W Longitude. It lies 305 road miles east of Anchorage, and 364 road miles south of Fairbanks. The Port of Valdez lies a mile to the southwest, and the City of Valdez is 3.5 miles west of the airport.

The rugged Chugach Mountains rise sharply along the northern property line and less than two miles from the eastern boundary of the airport. The topography restricts potential approach and departure minimums.

The City of Valdez hosts the Valdez Fly-In and Air Show every May. This is the premier bush flying event in Alaska demonstrating Alaskan bush flying skills, including Short Takeoff and Landings (STOL). This event was created by the City of Valdez to boost economic activity during the slow spring shoulder season and requires a collaborative effort between the local community and regional DOT&PF resources.

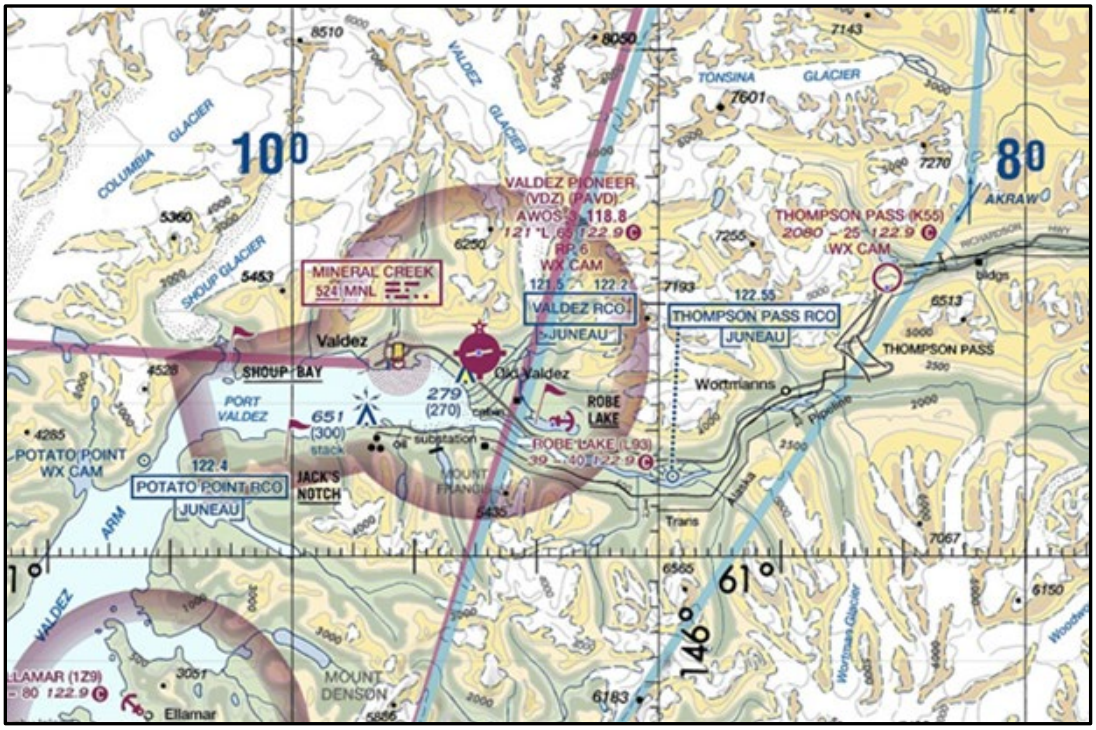
2.2 Airfield/Airspace

2.2.1 Runways

VDZ has a single, asphalt-concrete-paved runway 6,500 feet long and 150 feet wide (Figure 2-1). The runway lies within 10 degrees magnetic alignment of 60/240 degrees and is designated RW 06/24. Aircraft approaching from the west are said to be using RW 06 and RW 24 from the east.

The runway has an effective gradient of 1.09 percent and a strength of 200,000 pounds for dual wheel aircraft. The 2020 Pavement Classification Number (PCN) is 54/F/B/X/T. The approach surface for RW 06 is 34:1 and 20:1 for RW 24. According to the 2019 Alaska Airport Pavement Inspection Report, RW 06/24 has a weighted average Pavement Condition Index (PCI) of 61.00, which indicates rehabilitation is needed. The center third of the runway was given a PCI of 48 indicating reconstruction.

Figure 2-1 VDZ Sectional



2.2.2 Taxiways

The airport has three taxiways, A, C, and D. The taxiways are in good condition. TWs C and D, originally constructed in 1974, are oriented approximately north to south, and lead from the parallel TW A to the runway. TW C is 698 feet long and 90 feet wide, with 30-foot-wide paved shoulders. TW D was relocated in 2007 and is 612 feet long and 90 feet wide, with 30-foot-wide paved shoulders.

Beginning at TW D, TW A is parallel and adjacent to the apron for 5,484 feet, it angles toward the runway for 875 feet and is perpendicular for 550 feet, where it ends at the RW6 threshold. Its width varies between 75 and 90 feet with 30-to-37.5-foot paved shoulders.

The 2019 Pavement Inspection Report lists a weighted average PCI of 85.70 for the taxiways, with TW C having the lowest PCI at 72. Preventative or corrective maintenance of the taxiways is recommended.

2.2.3 Aprons

VDZ has one large terminal apron of 740,760 square feet. This serves the main terminal and the developed lease lots. The weighted average PCI for apron areas is in preventative maintenance level with

a PCI of 87.65. Although, individual sections of the apron are listed as requiring corrective maintenance or rehabilitation.

2.2.4 Safety Areas

An RSA is a graded area surrounding the runway serving a function like that of a highway shoulder. Under dry conditions, the RSA must be capable of supporting the occasional passage of aircraft, thereby reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway. It also provides accessibility for ARFF equipment during such incidents. FAA standards require the RSA be cleared, graded, and drained. In accordance with FAA 150/5300-13A, Change 1, *Airport Design*, for a Runway Design Code (RDC) of B-III-5000, the RSA is to extend 600 feet beyond the runway threshold and be 300 feet wide (FAA 2014). The RSA width and length meet standards.

The runway object free area (ROFA) provides a clear area around the runway to protect aircraft during landing and takeoff. The ROFA should be clear of all aboveground objects protruding above the RSA edge elevation. Objects required for air navigation or aircraft maneuvering may be in the ROFA, provided they are constructed on frangible (breakable) mounted supports. The ROFA extends 600 feet beyond each runway threshold (but never longer than the existing RSA) and is 800 feet wide. The ROFA complies with FAA standards.

The runway object-free zone (ROFZ) is designed to provide protection to aircraft landing and takeoff. The ROFZ is a volume of airspace centered on the runway centerline, with elevations matching the nearest point on the runway at any point. The ROFZ extends 200 feet beyond each runway threshold and is 400 feet wide. The ROFZ complies with FAA standards.

The inner-approach object-free zone (OFZ) is a volume of airspace centered on the approach area and applies to runway ends with approach lighting system (ALS) (see Section 2.2.7). It applies only to RW 06, which has an ALS. The Inner-approach OFZ begins 200 feet from the runway threshold at the same elevation as the runway threshold and extends 200 feet beyond the last light unit of the ALS. It is 400 feet wide and rises at a slope of 50 horizontal to 1 vertical.

2.2.5 Lightings, Marking, and Signing

The runway is lighted with high intensity runway lights (HIRLs) installed in 2004. The HIRLs outline the edges of the runway during periods of darkness or low visibility.

There are medium intensity taxiway lights (MITLs) that line both sides of taxiways A, C, and D. MITLs are only on the north side of TW A along the apron. These lights were also installed in 2004. TW D lights were installed in 2007. Hold position markings include enhanced taxiway centerlines and surface painted holding position signs indicating the runway designations. The hold positions do not have runway guard lights.

RW 06 has precision instrument markings and RW 24 has non-precision instrument markings, which are in good condition.

Illuminated signs were installed throughout the airport in 2007.

2.2.6 Navigational Aids

The Juneau Flight Service Station (Juneau FSS) provides service to aircraft operating within the Valdez area using the Valdez Remote Communications Outlet (RCO). Pilots communicate with other pilots and advise their intentions on the Common Traffic Advisory Frequency (CTAF) frequency 122.9 mega-hertz (MHz). The automated weather observation system (AWOS) reports are broadcast on frequency 118.8 MHz. The Mineral Creek Non-Directional Beacon (NDB) is in the town of Valdez, and the Johnstone Point Very High Frequency (VHF) Omnidirectional Range (VOR) is located in Prince William Sound.

VDZ is served by the Anchorage Center Air Route Traffic Control Center (ARTCC). The controllers are primarily concerned with aircraft operating under instrument flight rules (IFR) at an altitude over 18,000 feet but Anchorage Center typically provides approach vectors into VDZ for IFR traffic prior to approving a frequency change to the CTAF. An ATCT building exists; however, it is no longer operational.

VDZ is serviced by a localizer type directional aid (LDA) and Distance Measuring Equipment (DME) antenna at the RW 24 end, providing azimuth and distance instrument. The LDA is approximately five degrees west of the runway alignment. There is no glideslope antenna at VDZ to make the system a full instrument landing system (ILS).

2.2.7 Visual Approach Aids

RW 06 has a Precision Approach Path Indicator (PAPI) with a 3-degree visual glide angle and a 29-foot threshold crossing height (TCH). The PAPI system consists of four equally spaced light units color-coded

to provide a visual indication of an aircraft's position relative to the designated glide slope for the runway. RW 24 does not currently have a PAPI or Visual Approach Slope Indicator (VASI).

A medium intensity approach lighting system with runway alignment (MALSR) serves RW 06. This system was installed in 1999 and modified in 2004.

Runway end identification lights (REILs) are present on RW 24. This system provides rapid and positive identification of the runway during periods of reduced visibility. RW 06 is not equipped with REILs since they are not compatible with the MALSR system. Lights are pilot activated by the CTAF.

2.2.8 Instrument Approach Procedures

VDZ has a straight-in LDA/DME-H approach. This approach is not aligned with the runway. The approach utilizes the LDA and DME to provide pilots with azimuth and distance data to align with the RW 06, as well as the Mineral Creek NDB. The published minimums are 4,460-foot ceiling and 5-mile visibility (Figure 2-2).

Valdez also has a special LDA-G that is open to qualified users of the public. This provides a minimum 1,340-foot ceiling with a 1.5-mile visibility and requires the Johnstone Point VOR to be operational. When the Johnstone Point VOR is inoperable, the approach is not available.

The "Naked Six" departure procedure uses the Johnstone Point VOR (Figure 2-3). This RW 06 departure requires a minimum 2,000-foot ceiling with 3-mile visibility.

Valdez also has an established departure procedure for obstacle clearance (Figure 2-4). The "JMAAL Three Departure (Obstacle)" procedure requires a 1,200-foot ceiling with 3-mile visibility minimum for RW 06 and standard takeoff minimums for RW 24. Aircraft are required to be equipped with an automatic direction finder (ADF) and DME. As with the Naked Six procedure, JMAAL Three uses the Johnstone Point VOR and neither departure is applicable at night.

Figure 2-2 Instrument Approach to VDZ (LDA/DME-H)

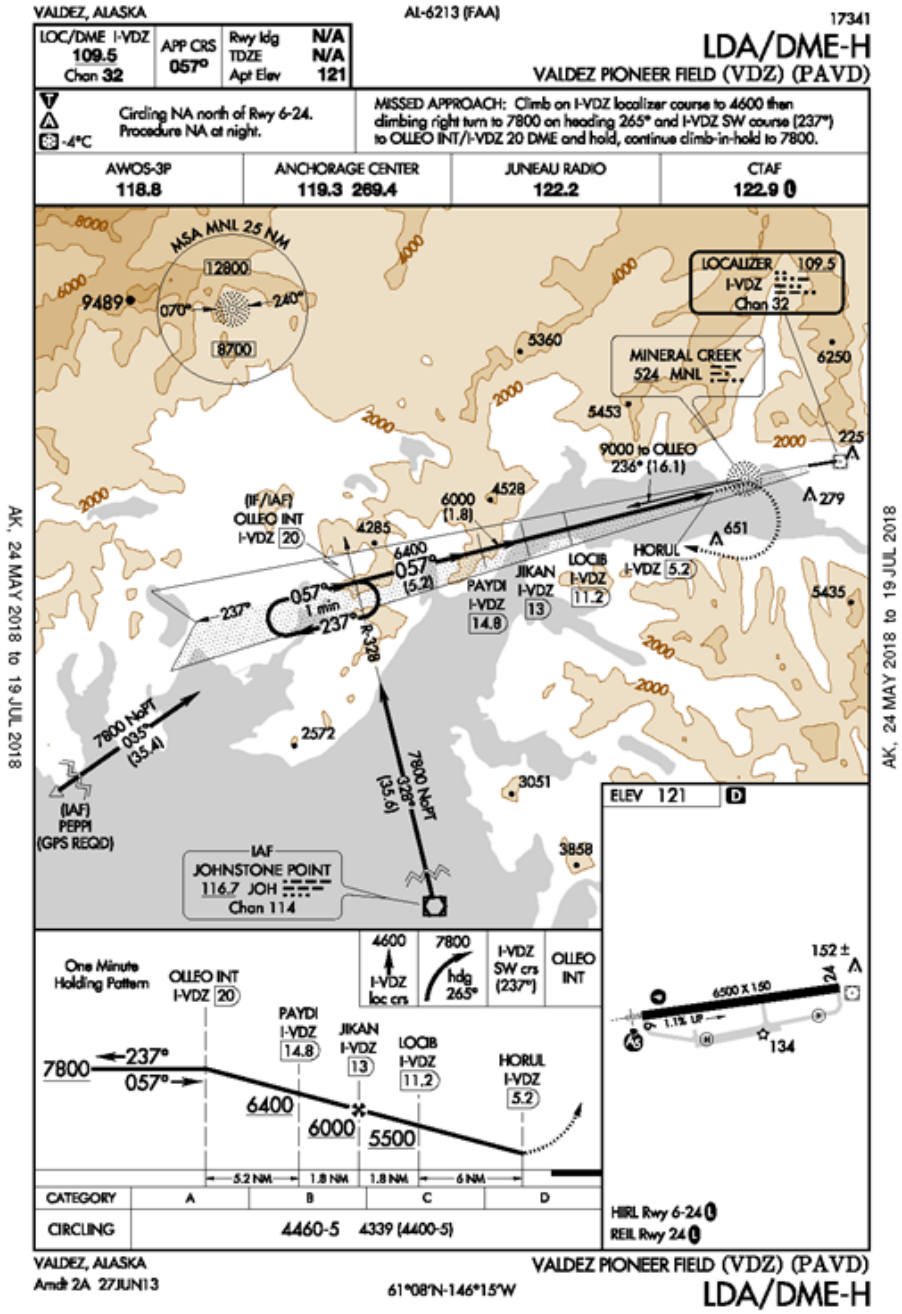


Figure 2-3 Instrument Departure from VDZ (Naked Six)

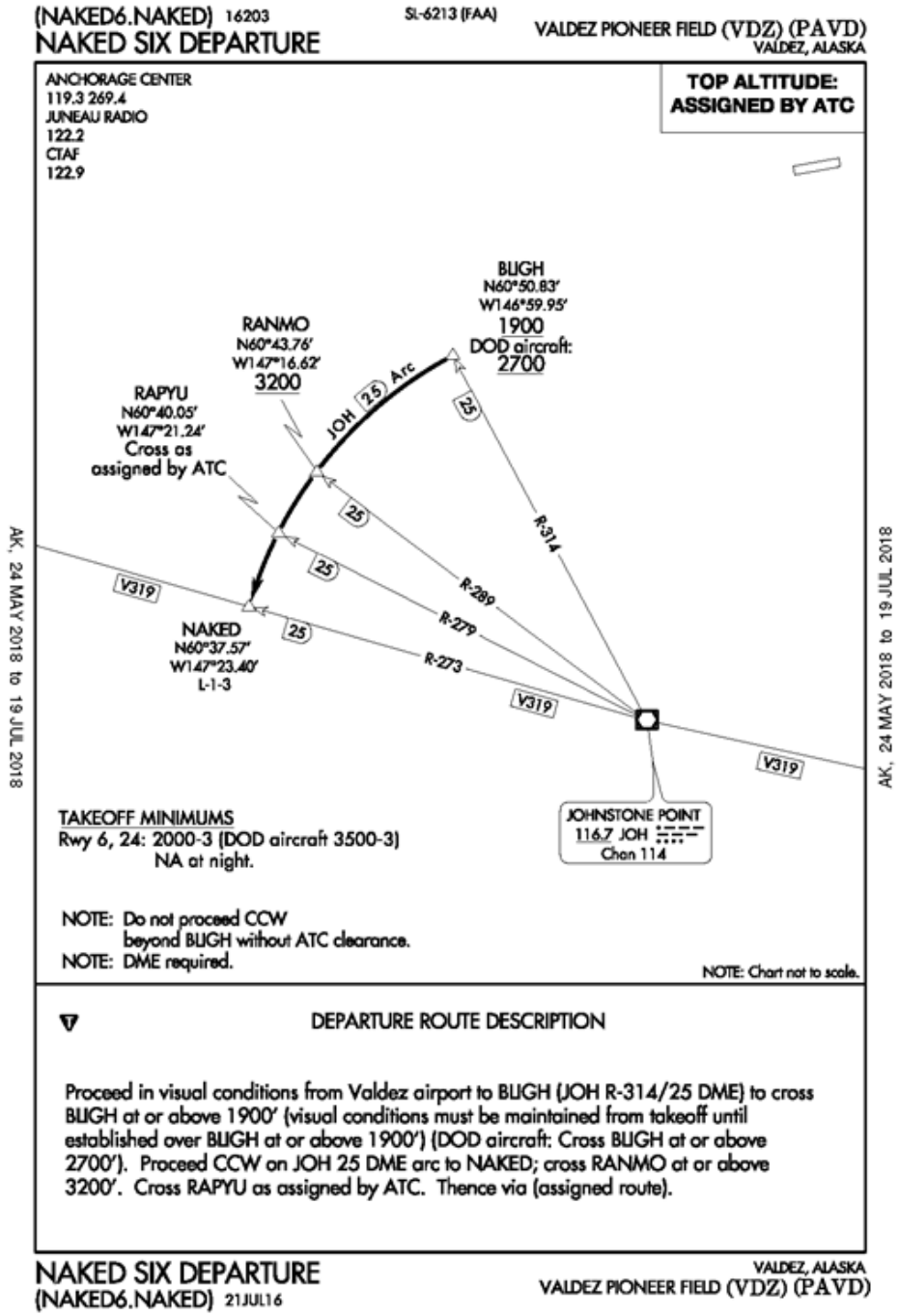
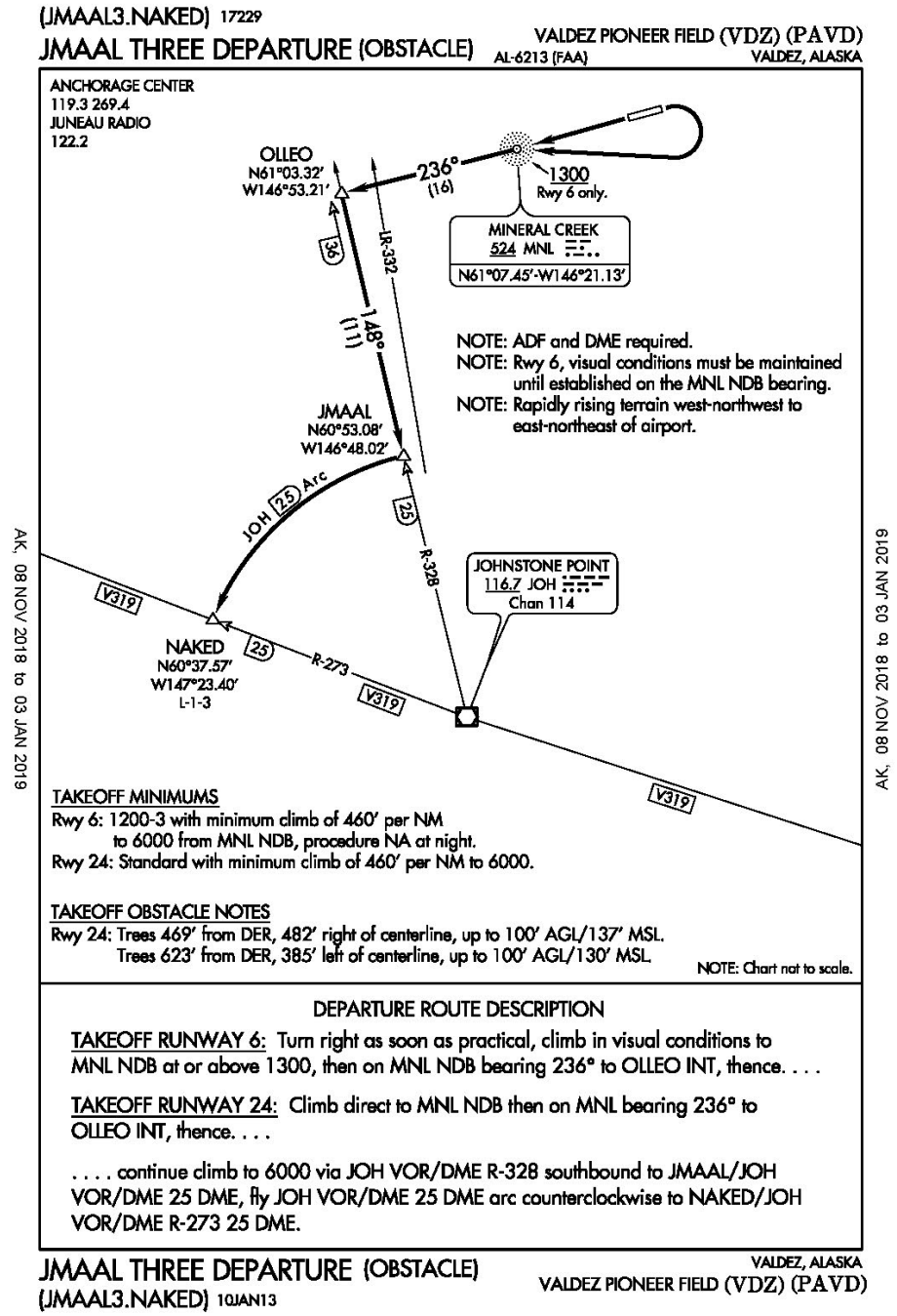


Figure 2-4 Instrument Departure from VDZ (JMAAL Three)



2.2.9 Airspace and Air Traffic Management

Title 14 Code of Federal Regulations (CFR) Federal Aviation Regulation (FAR) Part 77 establishes standards for determining obstructions to air navigation. It applies to existing and proposed manmade objects, objects of natural growth, and terrain. To determine whether an object is an obstruction to air navigation, several imaginary surfaces are established with relation to the airport and to each runway end. The dimensions of the imaginary surfaces depend on the category of the runway and the type of approach the runway uses.

In 2021, airspace can support a non-straight in, non-precision instrument approach with visibility minimum not lower than one-statute-mile for RW 06, and visual approaches for RWs 06 and 24. The ultimate approach for RW 24 is a non-precision instrument approach with visibility minimum not lower than one-statute-mile. Except for the RW 24 approach surface (as noted below), the existing and ultimate imaginary surfaces are the same. The appropriate standards applicable to the VDZ Part 77 surfaces are as follows:

- Primary Surface: The primary surface is longitudinally centered on the runway. It is 500 feet wide and extends 200 feet beyond each runway end. The elevation of the primary surface is identical to the elevation of the nearest corresponding point on the runway centerline.
- Horizontal Surface: The horizontal surface is a horizontal plane 150 feet above the established airport elevation, the perimeter of which is established by swinging 10,000-foot radius arcs from the center of each end of the primary surface and connecting each arc with lines tangent to those arcs.
- Conical Surface: The conical surface is a surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 horizontal to 1 vertical for a horizontal distance of 4,000 feet.
- Approach Surface: The approach surface is longitudinally centered on the extended runway centerline and extends outward and upward from each end of the primary surface. The approach surface to RW 06 extends outward and upward at a slope of 34 horizontal to 1 vertical, for a horizontal distance of 10,000 feet with an outer edge of 3,500 feet. The existing approach surface to RW 24 extends outward and upward at a slope of 20 horizontal to 1 vertical, for a horizontal distance of 5,000 feet with an outer edge of 1,500 feet. The 2021 ultimate approach surface dimensions to RW

24 match RW 06. The surface extends outward and upward at a slope of 34 horizontal to 1 vertical, for a horizontal distance of 10,000 feet with an outer edge of 3,500 feet.

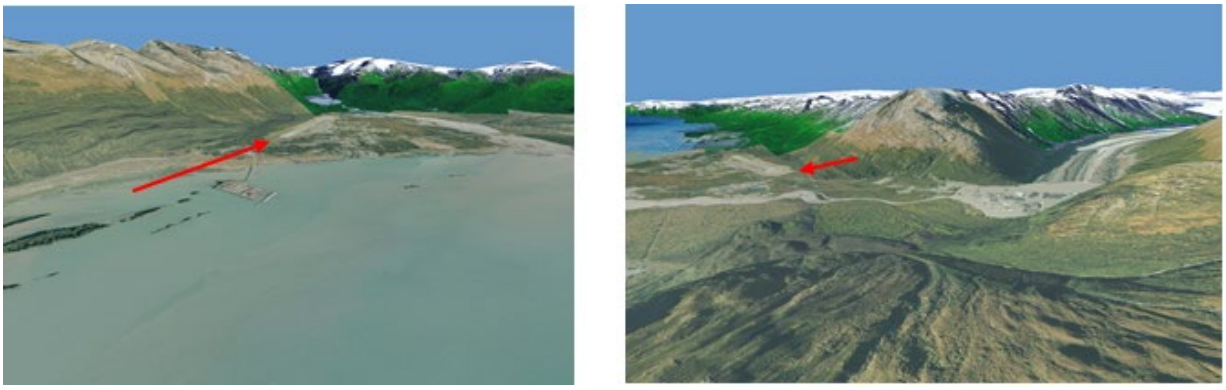
- Transitional Surface: The transitional surfaces extend outward and upward at right angles to the runway centerline and the extended runway centerline at a slope of 7 horizontal to 1 vertical from the sides of the primary and approach surfaces to the horizontal surface.

The imaginary surfaces described above are penetrated by the Chugach Mountains, with nearly the entire transitional, horizontal, and conical surfaces penetrated north, east, and southeast of the airport. The 2021 existing approach surfaces for RWs 06 and 24, and ultimate RW 24 approach surface, are penetrated by vegetation. The ultimate RW 24 approach surface is obstructed by existing ground and trees. No objects are known to penetrate either the primary surface or the imaginary surfaces south of the airport.

Figure 2-5 East and West (right) Views from the Airport (FAA, 2018b)

Note the visible shoulder of the large approximately 5,000-foot confining mountains immediately north of the runway. Also note the high mountains directly off the east end of the runway.

Figure 2-6 East and Northwest (right) Views of Terrain Surrounding Airport.



Note the confining valley at the east end of the airport. This restricts missed approaches when on approach for RW06 and restricts approaches from RW24. Airport is at red arrows.

2.2.10 Weather

The airfield is equipped with an AWOS-3P observation system located in the infield between the runway, TWs A and C, and the apron. This measures precipitation in addition to visibility, cloud, and ceiling data.

A primary wind cone and segmented circle are located near the AWOS. Both were previously within the ROFA and have since been relocated outside the ROFA. A secondary wind cone is in the infield between the runway, TWs C and D, and the apron. It is also located within the ROFA and will be relocated.

VDZ has terrain that produces strong local weather and climate. Prince William Sound and the Pacific Ocean push humid air up the Valdez Arm into Valdez. The airport is bounded on three sides by steep mountains and glaciers, providing cold air, lifting force, and strong katabatic winds against the warm, humid, marine air. Table 2-1 shows the average weather. Reports from the airport include regular winter winds of more than 100 knots, capable of flipping airplanes.

The wind speed and direction can often surprise pilots approaching RW 24. The winds over the entire length of the airfield can differ from the AWOS, due to terrain. This can lead to strength and direction wind changes over the length of the runway that the pilots are unaware of (personal communication Harold Townsend, 2018). During strong northerly winds, the winds at midfield and at the east end of the runway may be significantly higher, and in opposite direction, than the winds detected at the AWOS.

Table 2-1 Valdez Weather Data Period of Record: 2/01/2002 to 03/6/2013

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (° F)	24.9	29.4	32.9	42.6	51.9	58.6	60.2	59.1	53	43.3	31	26.8	42.8
Average Min. Temperature (° F)	12	16	18.2	28.4	36.8	43.9	46.6	44.9	39.6	31.8	21.1	15.6	29.6
Average Total Precipitation (in.)	5.41	5	3.47	3.15	2.66	2.59	4.55	5.97	9.01	7.62	6.02	5.97	61.43
Average Total Snow Fall (in.)	50.2	46.6	26	12.3	1	0	0	0	0.3	7.9	25.9	52.6	223
Average Snow Depth (in.)	61	86	86	60	10	0	0	0	0	1	7	28	28

Source: Western Regional Climate Center, www.wrcc.dri.edu.

Wind data collected at VDZ from 2008 to 2017 indicate that 91 percent of the observations had velocities lower than 6 knots (FAA, 2018a). Winds that exceeded 13 knots predominantly came from the northeast quadrant. All winds exceeding 27 knots come from the northeast. Wind coverage for the appropriate

crosswind (16-knots) at the airport is 99.81 percent, indicating the runway is appropriately aligned with the prevailing winds.

Weather greatly affects VDZ operations. For example, the primary air service operator reported both 2017 and 2018 had an 81 percent completion rate (personal communication Harold Townsend, 2018). For example, in 2017 there were 149 flights canceled and 20 flights diverted due to weather.

2.3 Passenger Terminal Facilities

The city manages the building and leases the land from the State. The building was constructed to serve multiple purposes, including passenger service, light cargo operations, office space, and a multipurpose room. The lower-level hosts airline offices, ticket counters, a gift shop, a restaurant and bar, arrival and departure areas, and a baggage claim area. The second-floor hosts office space. Figure 2-7 shows the airport terminal floor plan. Table 2-2 lists the lease holders. Table 2-3 lists the square or linear footage (sf or lf) of facilities in the terminal building.

Several tenants occupying the terminal are non-aeronautical leases. The terminal was built with private money and is owned privately by the City of Valdez. Lessees should at least pay fair market rent based on appraisals.

There is one rental car company located at VDZ. There is no city bus. Private tour companies and some hotels provide shuttles to and from the airport. Visitor information, brochures, and direct connections to some hotels are provided at the airport.

Table 2-2 Valdez Airport Terminal Subleases

Lessee	Location	Date Expires
City of Valdez Finance Dept.	1,778 sf office (Rooms 205, 26, 207A, 211, 212, 213, 213B, 214, 215)	
City of Valdez Engineering Dept.	2,326 sf office (Rooms 201, 202, 203, 204, 216, 217)	
Civil Air Patrol	1,029.6 sf office space in tower	12/31/2018
Dean Cummings' H2O Guides	615 sf office space (Room 122 & 123)	12/31/2018
ERA Aviation, Inc.	2,912 sf - 576 sf counter/1,400 sf freight (Room 111) /936 sf cargo	12/31/2018
FAA	18 sf tower, ERA ticket counter, roof antenna	12/31/2019
FAA	271 sf office (Room 207B)	12/31/2019
Jeff Johnson & Linda Brandenburg	184 sf office (Room 104) gift shop	12/31/2018
The Landing Lights	478 sf concourse	12/31/2018
Seed Media	30 sf ground floor wall space	12/31/2018
Valdez Expediting, Inc.	176 sf office (Room 105) storage/ATM	12/31/2018
Valdez U-Drive	184 sf office (Room 103)	12/31/2018
Vertical Solutions LLC	265 sf garage space	12/31/2019
Vertical Solutions LLC	456 sf - 170 sf counter/286 sf office (Rooms 114 & 115)	12/31/2019
Wrangell Mountain Technical Services	10 sf tower, antenna space	12/31/2018

Figure 2-7 Terminal Floor Plan

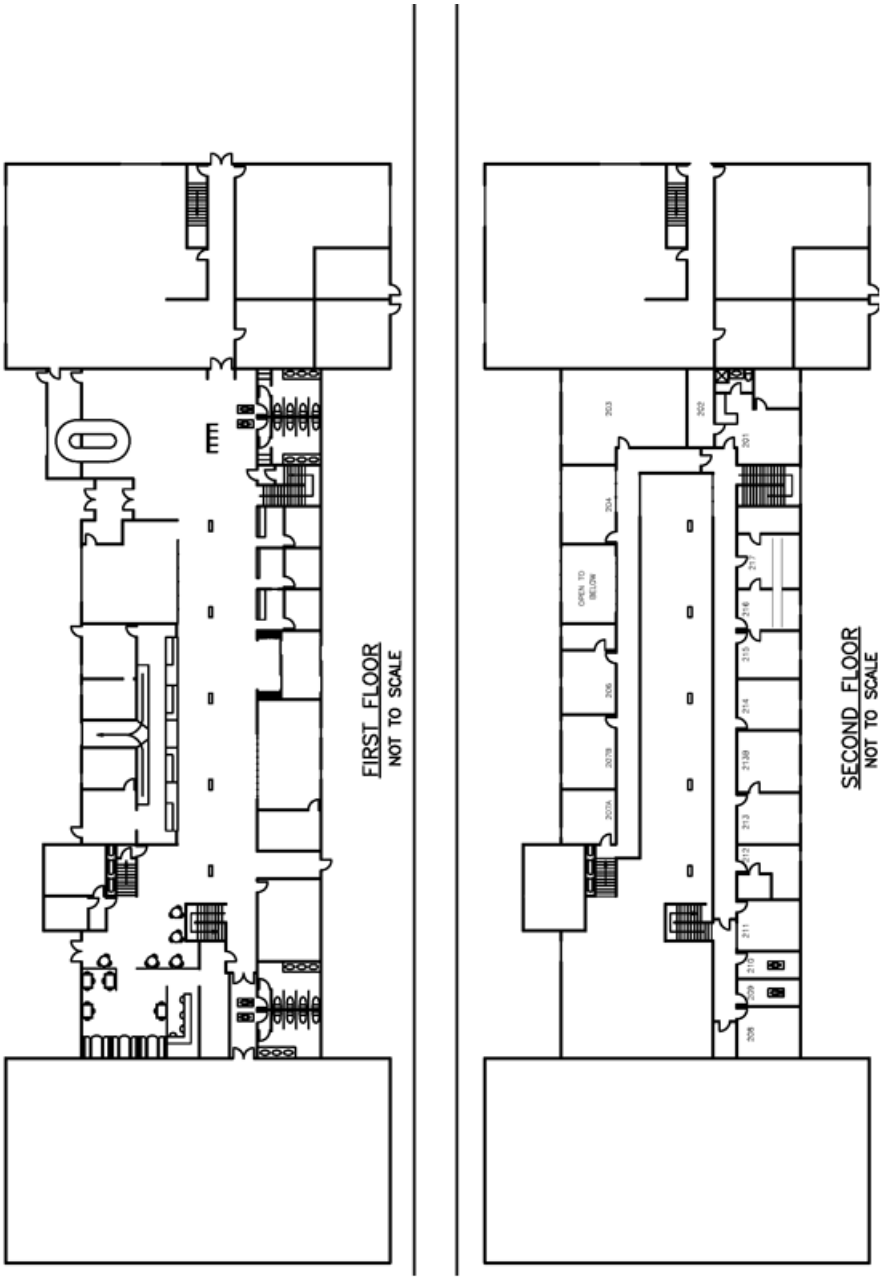


Table 2-3. Terminal Facility Space

Facility	Space
Bag Belt	38 lf
Baggage Area	1,020 sf
Boarding Area	644 sf
Concession Counters	25 sf
Rental Car Counter	21 sf
Air Carrier Counter	28 lf

2.4 General Aviation Facilities

2018 VDZ operators and leaseholders include:

- Ravn Alaska: Scheduled commercial passenger service to Anchorage, Alaska
- Vertical Solutions, Inc
- Maritime Helicopters
- Hard Luck Aviation
- Civil Air Patrol
- Aleut Real Estate LLC
- Harris Sand and Gravel, Inc.
- William Stevenson
- FAA
- Valdez Airmen's Association, Inc
- General Aircraft (GA) Operations

The approximate number of based aircraft include:

- 25 single engine aircraft
- 1 multi-engine aircraft
- 7 helicopters
- 2 ultralights

There are 28 aircraft registered with a Valdez mailing address in mid-2018 (FAA 2018b). This differs slightly due to the difference in owners mailing addresses and physical location of airplanes.

2.5 Cargo Facilities

Basic cargo handling occurs at the airport. Most of the packages handled are either ultimately destined for or originate in Valdez. Freight is not repacked or palletized; each item is individually loaded onto the aircraft. Freight is not trucked to Valdez to be loaded onto aircraft. Cargo facilities are located at the eastern part of the terminal building.

2.6 Supporting Airports

Supporting airports are a key component of the regional general aviation air system. VDZ is isolated from other communities by Prince William Sound's mountains and ocean. Accidents occur from aircraft navigating this geography. Aircraft from Anchorage must fly through Portage Pass or Thompson Pass, both of which are notorious for quickly changing, poor weather. Supporting airports are strategically positioned to alleviate these risks. Robe Lake provides floatplane operations in Valdez, Thompson Pass Airport serves traffic in its namesake pass, and Whittier serves Portage Pass. This important infrastructure increases safety by allowing pilots to refuge from bad weather.

2.6.1 Robe Lake (L93)

Historically, floatplane operations have been supported at Robe Lake, five road-miles southeast of the airport on the Richardson Highway. Robe Lake is owned by the Alaska Department of Natural Resources (DNR). The surrounding land is owned by the City of Valdez. A wooden dock built to support the response to the Exxon Valdez Oil Spill had been used to support floatplane operations. There were significant security issues, with vandalism of floatplanes being common. The dock was removed at the request of DNR, and floatplane operations are no longer supported. There are currently no based aircraft, utilities, lighting, signage, or Navigational Aids (NAVAIDs) at Robe Lake. Aircraft that do use Robe Lake undergo float/wheel conversions to operate seasonally at either VDZ or Robe Lake.

There is a strong history of local volunteers working on airport issues in Valdez. This support has been formally organized around the Valdez Airmen's Association, which is a hangar/tenant association for the hexagon hangars at VDZ. The Valdez Airmen's Association is leading an effort to see if there is interest in reorganizing a seaplane base at Robe Lake. There may be a commercial operator that currently flies into Robe Lake, and there are historic ties of flying sea planes from Fairbanks and Anchorage into the facility.

Stakeholders expressed that seaplane bases may be better facilitated on property owned or leased by the DOT&PF. Further discussion of issues and potential Robe Lake alternatives are discussed in the respective sections of the Master Plan.

2.6.2 Thompson Pass Airport (K55)

Thompson Pass Airport is a backcountry airstrip used for an emergency landing strip when the pass is closed for aircraft flying from the North. It is also used on a regular basis for heliskiing operations and to practice backcountry flying for fixed wing aircraft. The airport is on DNR lands.

2.6.3 Whittier Airport (PAWR)

Whittier's airport is located across Prince William Sound at Portage Pass. Portage Pass is a key geographic route for general aviation aircraft. PAWR is the only viable airstrip in the vicinity when the pass is closed. This is an important emergency alternative for small aircraft transiting to/from Valdez. PAWR is on Alaska Railroad Corporation lands, but has historically been managed by DOT&PF.

2.7 Support Facilities

2.7.1 Airport Administration

Airport administration offices are located inside the terminal and the ARFF and Snow Removal Equipment Building (SREB). These facilities house the airport manager, M&O staff, and associated administration staff. Standard airport maintenance duty hours are November – April: 0600 – 1600 hours Monday – Saturday, 0600 – 1500 hours Sunday; May – October: 0700 – 1730 hours Friday – Saturday, 0900 – 1700 hours Sunday.

2.7.2 Aircraft Rescue and Fire Fighting (ARFF)

VDZ operates an Index A ARFF facility with prior arrangement. The airport has a 2015 Rosenbauer Panther 6x6. The vehicle has the capacity of 3,000 gallons of water, 400 gallons of aircraft fire fighting foam (AFFF), and 500 pounds of dry chemical. The city provides police and additional fire protection on an as-needed basis.

2.7.3 Hangars

Currently, there are three private hexagonal hangars, managed by the Valdez Airmen's Association, each with six spaces. There are also five private hangars (See Table 2-4).

Table 2-4 Structures at the Airport

 **Alaskan NAS Interfacility Communications System** **Block 600, Lot 3**	 **DOT&PF Snow Removal Equipment Building (SREB)** **Block 200, Lot 6**	 **Hexagonal Hangars (3)** **Block 100, Lot 2C**
 **"Era Helicopters" Hangar** **Block 400, Lot 1**	 **DOT&PF Sand Storage Shed** **Block 200, Lot 5**	 **Maritime Helicopters Hangar** **Block 100, Lot 1B**
 **City of Valdez Terminal** **Block 300, Lot 2&3**	 **Vertical Solutions Hangar** **Block 200, Lot 4**	 **Hard Luck Aviation Hangar** **Block 100, Lot 1B**
 **DOT&PF Maintenance Shop** **Block 200, Lot 6**	 **Civil Air Patrol Hangar** **Block 200, Lot 3**	 **Aleutian Mobile Home Park** **Aleut Real Estate LLC, Parcel E**

2.7.4 Fuel Storage

DOT&PF has:

- 2,000 gallons, Double Walled, Combination, adjacent to Sand Shed
- 1,000 gallons, Double Walled, behind old SREB
- 2,000 gallons, Double Walled, Equipment Fuel, next to Urea Shed

There are two abandoned underground storage tanks (USTs) at VDZ.

- 2,000 gallons, adjacent to old SREB
- 2,000 gallons, adjacent to new SREB

Aboveground storage tanks (ASTs) are also located adjacent to the Terminal, Era Helicopters facility, and the Vertical Solutions facility. Fuel is also stored in a tanker truck (1,000-gallon nominal capacity).

2.7.5 Chemical Materials

A 10,000-gallon single walled AST located behind the SREB contains liquid de-icing fluids (potassium acetate).

2.8 Maintenance and Operations

Airport maintenance facilities are necessary to house airport equipment (Table 2-5) and personnel required to provide operation of the airport. Maintenance personnel are responsible for all airfield facilities; terminal and general aviation parking aprons; access roadways; terminal area parking lots; and ARFF, maintenance, and snow removal equipment.

Table 2-5 Valdez Airport Equipment List

ID	Status	Year	Description
35021	WN	2004	Chevrolet Utility Wagon Mid 4X4
50329	WN	2003	Triton Trailer/Cargo
38102	W07	2011	Ford Crew Cab 4X4 3/4 Ton
39633	WN	2015	Rose ARFF Vehicle
39538	WN	2015	OKH Okiw ARPT 4 x 4
34887	W15	2003	Case Tractor W/Shultz Mower
39368	WN	2011	Case Loader Whl 4.5-5 C
34608	WN	2003	Caterpillar 160H Grader
6512	WX	1983	Rex SP15T Roller SP1100B Roller
37316	WN	2009	MBB Broom Runway Towed
10426	WN	1995	MB Push Broom 7618MP
50803	WN	2011	FRR Travel TRLR
50355	N10	2003	Findlay Trailer
36550	WN	2008	Oshkosh Rotary Plow 5000
39877	WN	2016	MB2 Plow Truck
11748	NN	2017	Passenger Ramp TW3025

VDZ M&O mows the vegetation to a height of about 6 to 10 inches. This length deters birds from congregating in the mowed areas and reduces the overall maintenance effort. All areas that have been cleared of trees, and heavy brush are mowed.

Snow removal and deicing is a large maintenance effort due to the region's heavy snowfalls. Snow is plowed into and stored on vacant lease lots. Lessees are responsible for clearing snow on their own lease lot. Primary snow storage areas are between the DOT&PF shop and terminal, terminal and Era Aviation hangar, airfield outfields, west of TW A, and off the ends of the runway thresholds.

Runway friction can be increased by using deicing fluid. A small amount of sand is used in front of the terminal building to minimize icy conditions on the walkways; but it is not used on the runway, taxiway, or aircraft parking aprons.

2.9 Access, Circulation, and Parking

Airport Road provides access to the airport and the airport terminal. Hangar Way provides access to the western hangars, with a gate at the Maritime Helicopter hangar.

Parking is provided on the south side of the terminal (Table 2-6). VDZ appears to qualify for grandfather protection for the 1991 American with Disabilities Act requirements, which requires 1 space for every 8 parking spaces. VDZ satisfies those requirements for the marked stalls.

Table 2-6 Parking Facilities

Type	Space
15-day	14,000 sf unpaved, unmarked
72-hour	50 stalls, paved, marked
1-hour	12 stalls, paved, marked
Accessible	2 stalls, paved, marked
20-min	4 stalls, paved, marked
Rental Cars	30,000 sf unpaved, unmarked

VDZ's fence borders the east, west, and south sides of the airport. The fence is in good condition. There is no northern fence, due to maintenance difficulties. Fencing does not provide adequate security in the winter because the snow gets so high that fences can be easily traversed. Also, snow load and snow removal activities put loads and stressed on the fencing. However, a new northern fence will need to be constructed to meet wildlife hazard management requirements.

A limited number of gates provide access into the airfield, for discussion purposes we have labeled only commonly used gates (Figure 2-8). Other gates are for emergency access to the runway. Not shown in Figure 2-8 is a gate off the Richardson Highway that provides direct emergency access to the runway.

Figure 2-8 Commonly Used Gates

Key:
Maritime (Red), Hexagon Hangars (Yellow), Civil Air Patrol (Black), Vertical Solutions (Orange), DOT&PF (Green)

2.10 Utilities

VDZ is connected to the municipal water and sewer systems. The sewage treatment plant is located 0.8 miles from the runway. This is closer than the FAA recommended distance of 5 miles and mandated 10,000 feet (AC 150/5200-33C).

The Copper Valley Electric Association, Inc. (CVEA), supplies power to the airport. There are emergency generators for the ARFF building and NAVAIDs.

Individual lease holders are responsible for extending utilities to their lots if desired. Unimproved lots do not have utility service.

2.11 Land Use

Aeronautical land is land that involves, makes possible, or supports the operation of aircraft or contributes to or is required for the safety of such operations (Figure 2-9). Land acquisition and retention should consider planning for the future of the airport. Land use planning also includes providing the means (e.g., buffer zones) to minimize negative externalities (e.g., noise, traffic) to the local community. Land disposal can be used to allow lands unlikely to be used for aeronautical purposes to be used by the community.

Airports reserve land for planned aeronautical use related to operations. This includes primary infrastructure (e.g., runways, taxiways, and aprons); and indirect use (e.g., parking, access roads, snow storage, and future improvements).

Land use should be planned to prevent negative impacts to the community. Unique to Alaska, many communities have grown up immediately adjacent to, and surrounding their airports. In these towns, residential and community buildings may tightly surround the runway and airport facilities (e.g., Aniak and Kotzebue). For Valdez, the Aleutian Mobile Home Park, residences, a campground, and recreational trails surround the airport or are under the primary/departure routes. The negative effect of this occurs when landowners prioritize non-aviation uses for aeronautical land. For example, no additional land may be available for aviation facilities (e.g., runways, safety areas, parking, hangars). This can create safety risks and noise complaints.

2.11.1 VDZ Zoning

Planning by the City of Valdez has prioritized a variety of compatible land uses (Figure 2-9). The city has introduced a new zoning effort, supporting "PBR" (Plane, Boat, Recreation) use. This is to encourage compatible land use development, supporting commercial, residential, and light industrial uses.

The airport land is on a 1964 Interagency Land Management Transfer to the DOT&PF from the DNR.

2.11.2 VDZ Land Use

While land use around VDZ is not congested, the community does utilize adjacent areas for residential, commercial, and industrial purposes. Most development is centered along the southern boundary of the airport. Additional land use is summarized as follows:

- The northern boundary has no development and is constrained by mountains and streams.
- The eastern boundary hosts the Glacier Campground, a facility owned by the City of Valdez. The campground is not located on the airport. Approximately three campsites appear to abut the fence line and may encroach on the airport property under the miss-assumption that the fence line marks the airport property boundary. The status and potential permitting of these sites should be investigated.
- A glacier lake recreation area is located 1.7 miles east of the runway.
- The western boundary (located 3,000 feet west of the RW 06 threshold) is zoned as commercial/residential. This area is under the approach airspace, but far enough off the end of the runway to not hamper future runway extensions.
- The southwestern corner of airport property is owned by the State of Alaska and was leased to the Aleut Corporation (Parcel E, 27.7 acres) as the Aleutian Mobile Home Park, residential non-aeronautical land use, 2,000 feet from the runway. It contains approximately 68 households and up to 200 Valdez residents. In 2015, the Aleut Corporation began efforts to close the property, which involved removing the mobile homes to return the land to the State of Alaska. The City intervened to work on the issue. By 2021, the parcel was under new ownership and is anticipated to remain a mobile home park.
- The informal trail network on airport property, east and north of the runway, is not recognized by the city. The land is zoned by the city for airport use.

2.11.3 Aviation Lease Lots

The southern boundary has lease lots adjoining aprons (approximately 0.8 million sf), the terminal, and parking (Figure 2-10). Lease lots are about 240 feet deep and 150 feet wide. There are currently three empty lease lots with apron access.

If additional lease lots are needed, there is room for expansion on airport property. East of the apron, there is more than 2,000 linear feet of undeveloped lease lots adjoining TW A. West of the apron, there is at least 500 linear feet of suitable land, accessible via Hangar Way.

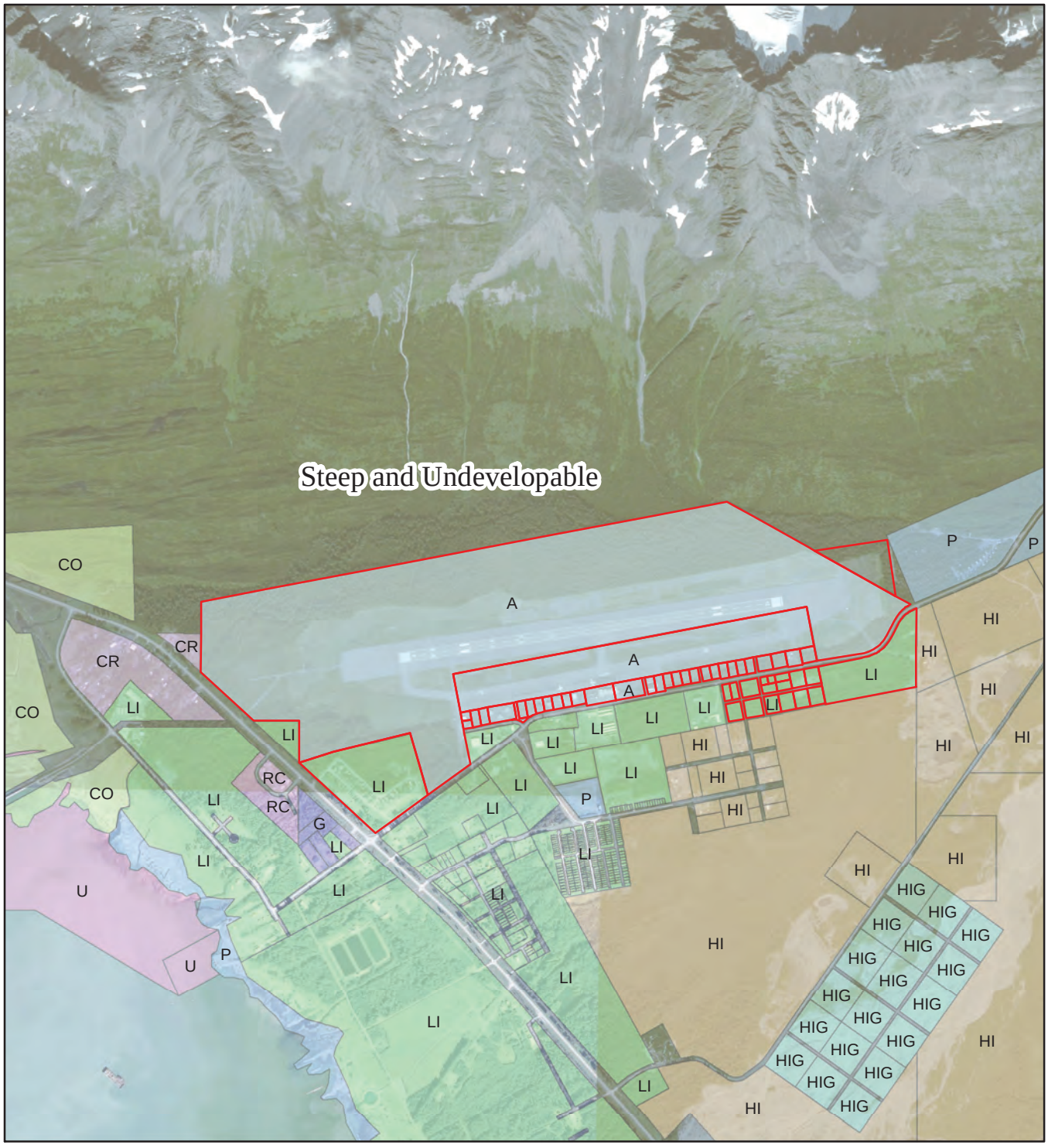
Table 2-7 Valdez Airport Lease Lots

Lease Lot Holder	Property	Term End
Alaska Wing Civil Air Patrol	Block 0200 Lot 003	09/30/21
Aleut Real Estate LLC	Parcel E	09/15/60
City of Valdez	Block 300 Lot 2 & 3	01/01/21
Hard Luck Aviation	Block 100 Lot 1A	07/01/20
Harris Sand and Gravel, Inc.	Parcel F	05/01/22
	Item 15	05/01/22
Maritime Helicopters	Block 100 Lot 1B	01/01/44
William Stevenson	Block 400 Lot 1 & 2	04/01/36
FAA	Block 600 Lot 3	09/30/32
	Item 6, 7, 9, 11, 12, 14	09/30/32
Valdez Airmen's Association, Inc.	Block 100 Lot 2C	6/20/22
Vertical Solutions, Inc	Block 200 Lot 4	11/15/36

2.11.4 Support Airports

Robe Lake and Thompson Pass airports are on lands currently owned by the DNR:

- State Tentatively Approved or Patented
    - Robe Lake: DNR File Number: GS 1164
    - Thompson Pass: DNR File Number: GS 1515
- The lands surrounding Robe Lake Seaplane Base are Municipal Entitlement to the City of Valdez:
    - Robe Lake: DNR File Number: ADL 225451



Legend

Airport Property

Zoning

- A: Airport District
- CR: Commercial Residential
- CO: Conservation Zone
- G: General Commercial
- HI: Heavy Industrial
- HIG: Heavy Industrial Gravel
- LI: Light Industrial
- RC: Multiple-Family Residential
- P: Public Lands
- U: Unclassified Lands

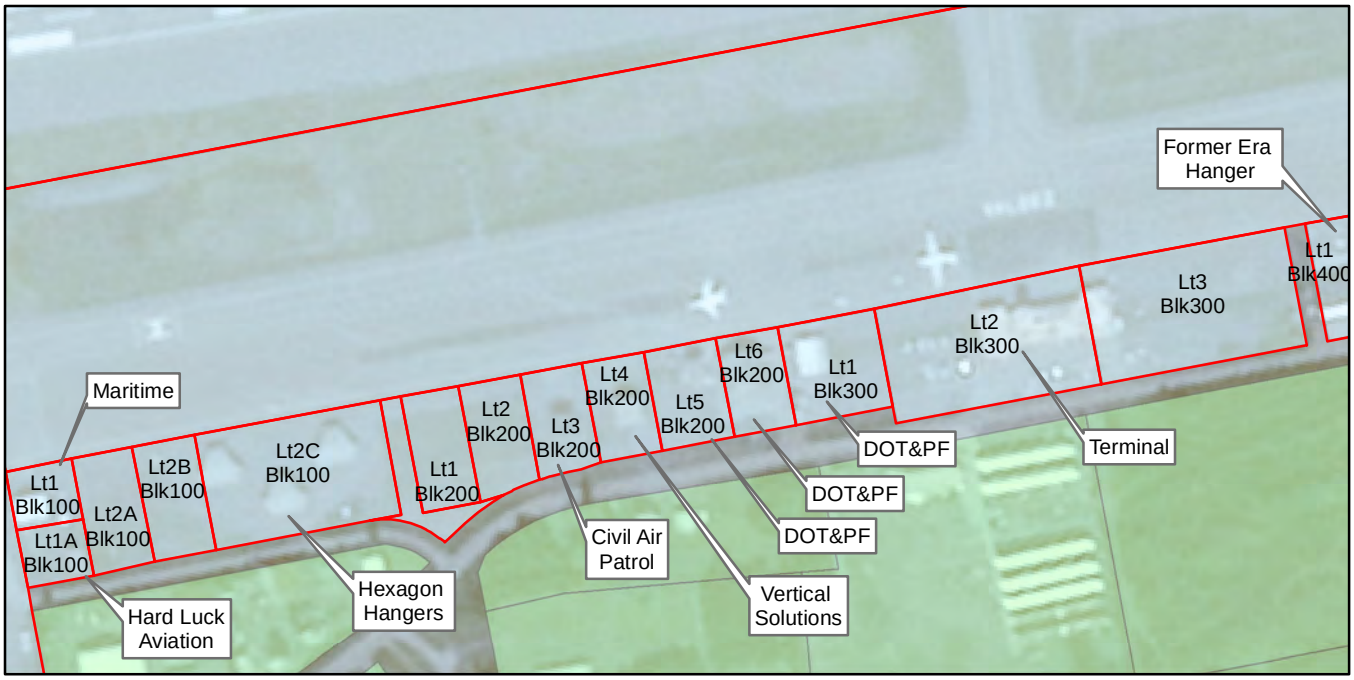
STATE OF ALASKA
Department of Transportation and Public Facilities
Northern Region - Aviation
2301 Peger Road Fairbanks, AK 99709

VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

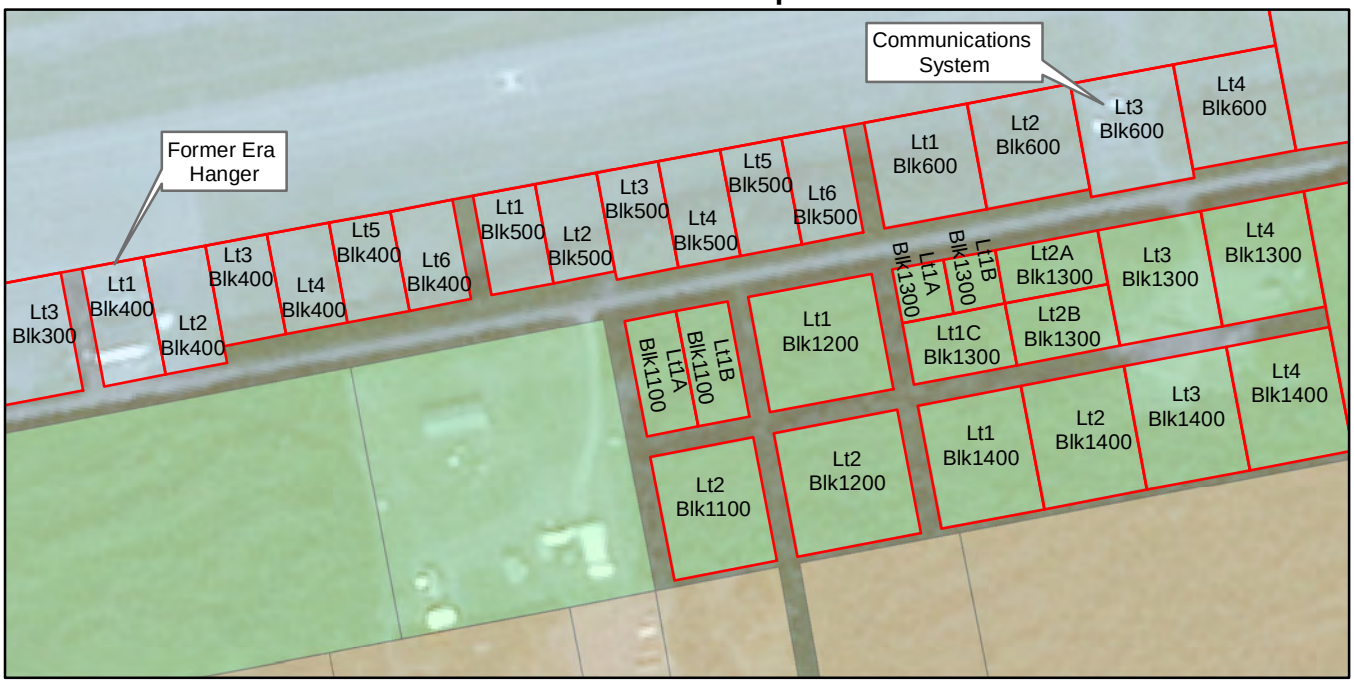
Airport Master Plan Update
Land Use

DATE: April, 2021

FIGURE **2-9**



West End Airport



East End Airport

STATE OF ALASKA
Department of Transportation and Public Facilities
Northern Region - Aviation
2301 Peger Road Fairbanks, AK 99709

VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

Airport Master Plan Update
Airport Lease Lots

DATE: April, 2021

FIGURE **2.10**

3 FORECAST AND AVIATION ACTIVITY

3.1 Characteristics of Valdez

Valdez is situated in Prince William Sound at the end of the TAPS and the Richardson Highway. Valdez experienced large population increases during military activity in the 1940s and 1950s and the construction of TAPS in the 1970s (Alaska Department of Labor and Workforce Development [ADOLWD] 2016). Today, TAPS plays an important role in Valdez's economy, employing many residents and bringing in out of town workers who use the airport and other local services. Almost half of those employed in the census area live outside of it (Rodrigues 2016). Many of the non-resident employees work for the Alyeska Pipeline Service Company and work on a bi-weekly schedule. Additionally, the summer fishing season brings in non-local employees as deck hands and fish processors (Ables and Talbott 2018). These employees are unaccounted for by community population statistics but contribute to the number of airport operations and the region's economic activity. The tourism industry also plays an important role in Valdez's economy and employs seasonal summer workers. Tourists arrive mostly by road or ship including small cruise ships out of Whittier and tour buses out of Anchorage (Ables and Talbott 2018).

Weather is a major limiting factor in airport activity. Valdez receives an average of 27 feet of snow every winter and 5 feet of rain every summer (U.S. Climate Data 2018). When the weather is bad, departing flights are grounded and incoming flights canceled. Bad weather makes flying unreliable and expensive, so locals usually drive when traveling for shopping or appointments (Dunning 2018). The FAA recently changed its weather decision matrix, resulting in an increased frequency of flights limited by conditions and an increase in canceled flights (Dunning 2018).

See Attachment A for a detailed economics analysis of the region, which drives our Airport Forecast projection (below).

3.2 Airport Operations Forecast

Currently, the only commercial airline operating at the airport is Ravn Alaska, which has flights to and from Anchorage (Ravn Alaska 2018). To reach smaller communities around Valdez such as Tatitlek or Cordova, residents must use a private plane or air taxi. In this section, airport activity level is measured in the number of commercial, private, and military flights and the number of passengers traveling in and out of the airport each a year. Passengers include those that depart from or arrive in Valdez, rather than making connecting flights through Valdez.

3.2.1 Commercial Operations Profile

Pipeline, seafood processing, and other non-resident employees rely on the airport to arrive to and get home from their rotational shifts. As a result, airport operations increase when there is more activity for pipeline and fishing workers. In 2006, flooding in Valdez caused damage to the highway and the pipeline requiring extensive repairs that continued through 2007 (Alyeska Pipeline Service Company 2016). This increase in activity explains the increase in airport operations during those years. Since a significant part of airport activity is driven by the oil and fishing industries, future activity will depend on the health of these industries in the community.

Currently, Ravn Alaska is the only commercial airline operating in Valdez, but from May 2010 to March 2013 Grant Aviation provided service to Valdez. While Grant was operating in Valdez, the number of flights nearly doubled while the number of passengers increased only slightly. When Grant stopped operation in 2013, the number of flights returned to 2009 levels.

Helicopter operations represent a significant component of airport activity at VDZ and provide a variety of services in the region, including heli-skiing. These are not incorporated in FAA or U.S. Bureau of Transportation Statistics (USBTS) databases. In 2017, helicopter operators report that they collectively accounted for approximately 2,000 additional airport operations (takeoffs and landings) with 3,000 additional passengers. While they are not reflected in the following tables and figures (similar to GA and military flights), they do contribute to increased aviation activity.

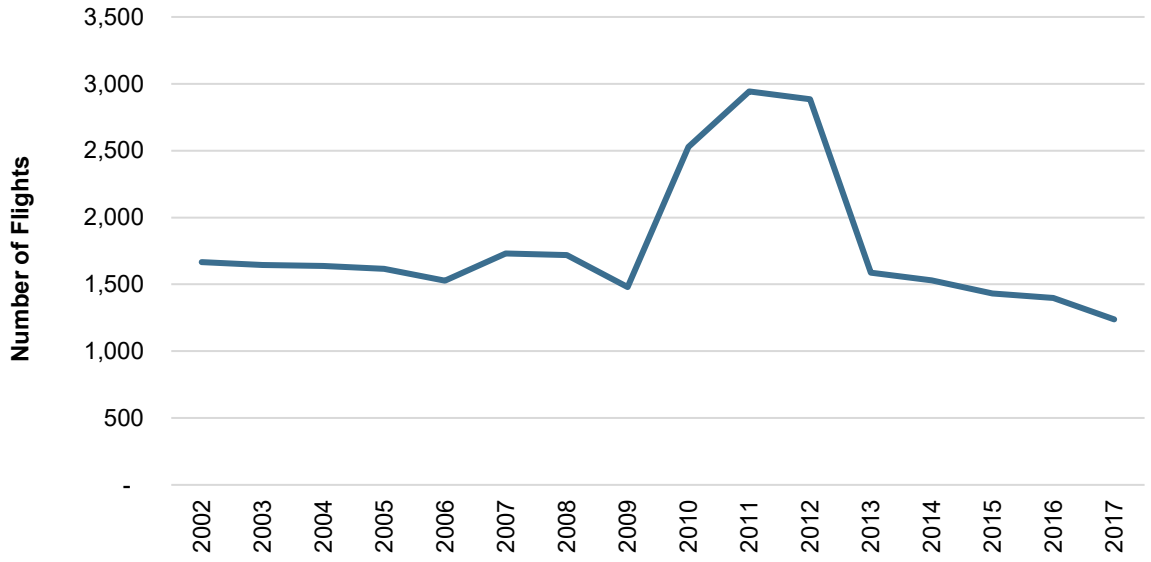
The number of commercial flights, passengers, and passengers per flight are presented in Table 3-1 and Figures 3-1 through 3-3. The number of passengers per flight noticeably decreased when Grant Aviation was competing with Ravn Alaska, and this decrease is visible in Figure 3-2.

Table 3-1 Number of Commercial Flights, Passengers, and Passengers per Flight, 2002–2017

Year	Total Commercial Flights	Total Passengers	Passengers Per Flight
2002	1,666	36,479	21.9
2003	1,644	32,753	19.9
2004	1,637	34,441	21.0
2005	1,617	31,190	19.3
2006	1,528	30,724	20.1
2007	1,731	32,043	18.5
2008	1,718	29,487	17.2
2009	1,479	28,362	19.2
2010	2,528	30,829	12.2
2011	2,943	31,941	10.9
2012	2,884	31,884	11.1
2013	1,588	26,571	16.7
2014	1,530	28,996	19.0
2015	1,431	27,617	19.3
2016	1,399	25,326	18.1
2017	1,238	22,583	18.2

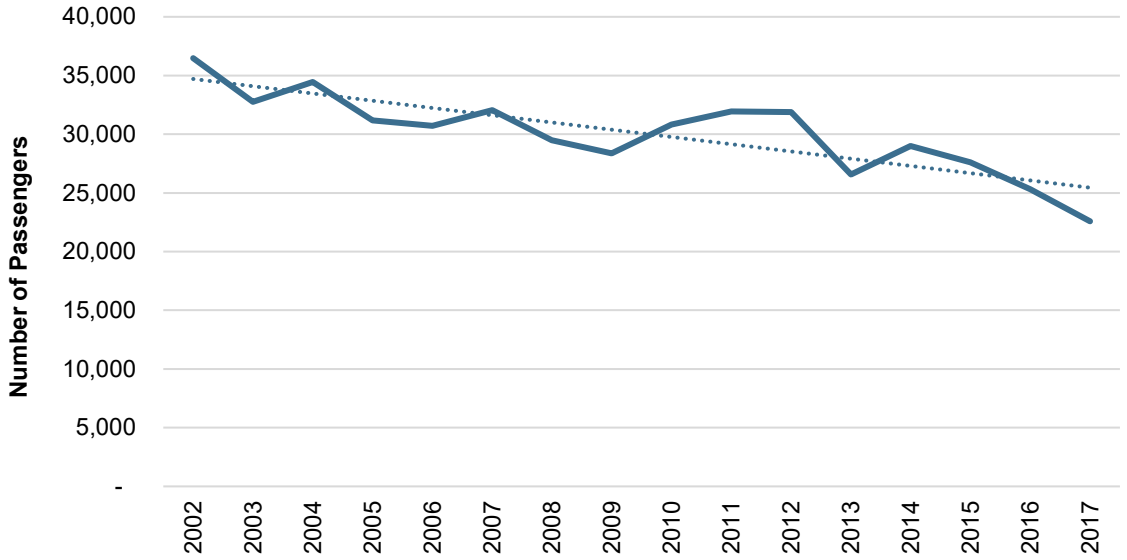
Source: U.S. Bureau of Transportation Statistics (USBTS) (2018), Northern Economics, Inc. Analysis, and ADOLWD (2017).

Figure 3-1 Number of Commercial Flights at Valdez Airport, 2002–2017



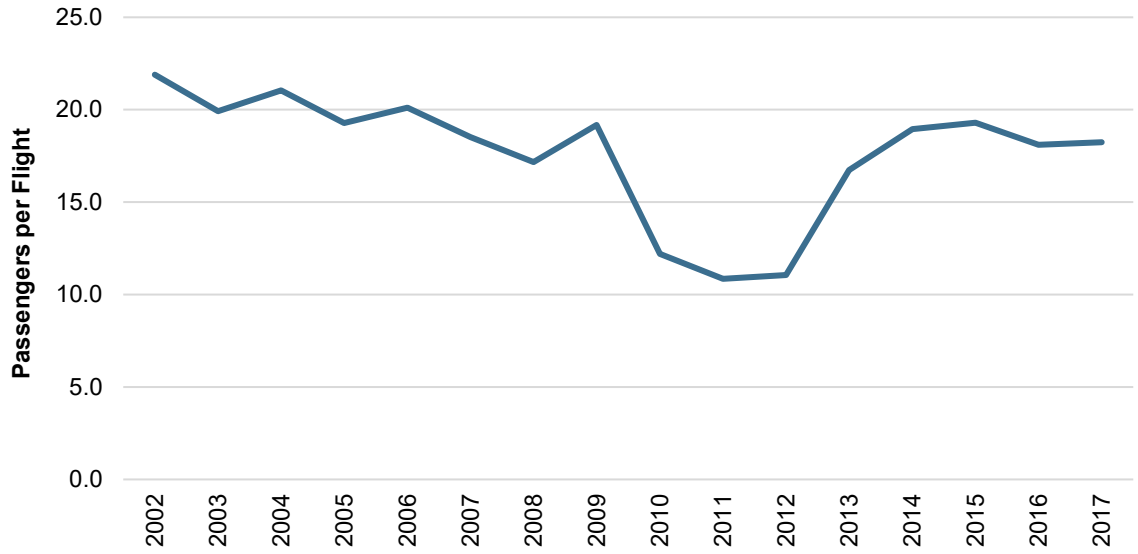
Source: USBTS (2018).

Figure 3-2 Number of Passengers at Valdez Airport, 2002–2017



Source: USBTS (2018).

Figure 3-3 Average Passengers per Flight at Valdez Airport, 2002–2017



Source: USBTS (2018).

3.2.2 General Aviation and Military Operations

Valdez has fewer local aircraft owners on a per capita basis than other communities in the state, with just 28 aircraft registered with a Valdez mailing address in mid-2018 (FAA 2018b). The City of Valdez Ports and Harbor Director suggested that Valdez would have more locally registered aircraft if there were more

hangar space available. (J. Talbott, personal communication, June 18, 2018). Additionally, he suggested that more readily available fuel would encourage more residents to own an aircraft, and that a connection directly from the airport to the adjacent camping area could increase fly-in camping use.

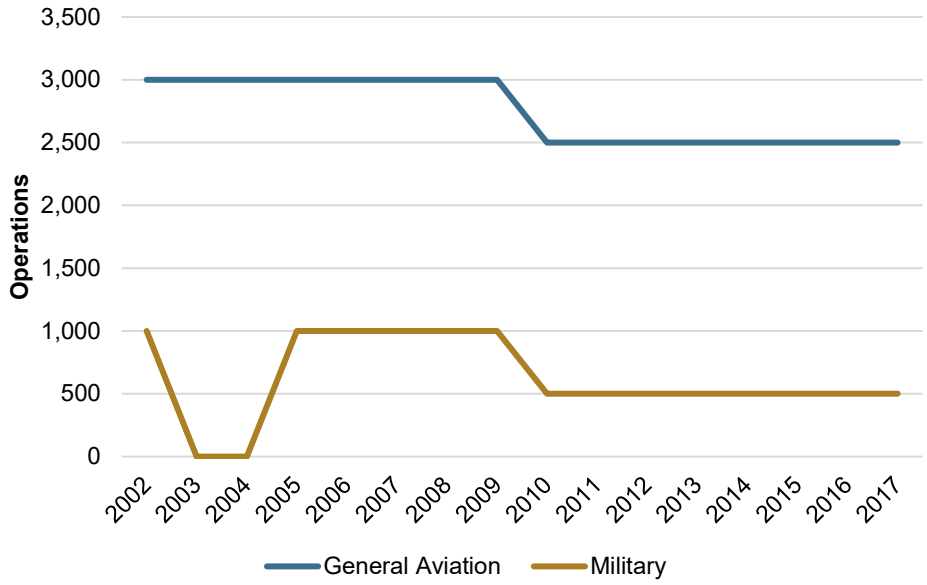
The FAA periodically publishes estimates of general aviation and military operations at U.S. airports. General aviation operations include privately owned aircraft arriving and departing from Valdez. Pilots from around Alaska fly private planes into and out of Valdez for recreation and for visiting friends and relatives. Additionally, the Valdez Fly-In and Airshow brings up to 200 planes to Valdez every May, accounting for about 400 annual General Aviation operations (Prax 2017). Military operations are driven by military trainings and exercises in Valdez and a small US Coast Guard station. The FAA estimates suggest that about 46 percent of airport operations are general aviation, 44 percent are commercial aviation, and 10 percent are military. Table 3-2 shows the FAA estimates for general aviation and military operations and Figure 3-4 presents the information in a graph. The estimates do not include detailed information but suggest that the number of both military and general aviation operations has been steady since 2010. Military and general aviation operations are expected to remain steady and make up about the same proportion of airport operations in the future.

Table 3-2 Estimated General Aviation and Military Operations, 2002-2017

Fiscal Year	General Aviation	Military
2002	3,000	1,000
2003	3,000	0
2004	3,000	0
2005	3,000	1,000
206	3,000	1,000
2007	3,000	1,000
2008	3,000	1,000
2009	3,000	1,000
2010	2,500	500
2011	2,500	500
2012	2,500	500
2013	2,500	500
2014	2,500	500
2015	2,500	500
2016	2,500	500
2017	2,500	500

Source: FAA (2017)

Figure 3-4 Estimated General Aviation and Military Operations, 2002–2017



Source: FAA (2017)

3.2.3 Critical Aircraft

Critical aircraft are the most demanding aircraft types, or grouping of aircraft with similar characteristics, that make regular use of the airport. Per AC 150/5000-17 regular use is defined as at least 500 annual operations, including both itinerant and local operations but excluding touch-and-go operations (FAA 2017a). The ARC (Table 3-3) categorizes aircraft by aircraft design requirements, specifically approach speed and wingspan. Between 2009 and 2017, only two aircraft have had more than 500 annual operations, the De Havilland Dash 8 (B-III) and Beech 200 (B-II). Table 3-4 shows the number of operations by each aircraft type since 2009. The De Havilland Dash 8 is currently used for regularly scheduled commuter service by Ravn Alaska. The Beech 200 was used by Grant Aviation when they operated into Valdez between 2010 and 2013. No change in forecasted operations is expected to change the critical aircraft regularly using the airport in the short, medium, or long term, nor is there expected to be a change in the relative future number of and type of based aircraft.

Based on current VDZ aeronautical use, forecast, and consultation with FAA, the existing and future ARC for VDZ is B-III and designated critical aircraft is the De Havilland Dash 8. This is the design standard the FAA can justify for funding the *reconstruction* of the airport in the Airport Improvement Program. Until reconstruction is needed, the FAA may choose to participate in *rehabilitation* of the airport for the current infrastructure to the current C-III standards the airport meets.

An ARC of C-III, based on the Boeing 737 during times of emergency (2004 Valdez Airport Master Plan), exceeds the current forecasted critical aircraft (See Section 3.2.4, below).

Table 3-3 Airport Reference Code

Category	Approach Speed (knots)	Design Group	Wingspan (feet)
A	less than 90	I	To 48
B	91-120	II	49-78
C	121-140	III	79-117
D	141-165	IV	118-170
E	166 or more	V	171-213
		VI	214-262

Source: USBTS (2018)

Table 3-4 Valdez Airport Commercial Operations by Type of Aircraft, 2009-2017

Aircraft	2009	2010	2011	2012	2013	2014	2015	2016	2017
De Havilland DHC8-100 Dash-8	1,206	1,127	1,133	1,042	1,083	1,247	1,214	1,361	1,247
Beech 200 Super Kingair	-	952	1,496	1,429	176	2	-	-	-
Beech 1900 A/B/C/D	303	474	350	422	333	313	237	44	3
Cessna 208 Caravan	-	3	-	-	26	-	4	-	-
Pilatus PC-12	-	-	4	2	-	-	-	12	2
Beechcraft Beech 18 C-185	-	-	-	-	-	9	2	-	-
Piper PA-31 (Navajo)/T-1020	4	-	-	4	-	-	-	-	-
Saab-Fairchild 340/B	-	-	-	4	-	2	-	2	-
Shorts 330	4	-	-	-	-	4	-	-	-
Lockheed L100-30/L-382E	4	2	-	-	-	-	-	-	-
Helio H-250/295/395	2	1	2	-	-	-	-	-	-
McDonnell Douglas DC-8-72	-	-	-	2	-	-	-	-	-
Cessna C26/207/209/210	-	1	-	-	-	-	-	-	-

Source: USBTS (2018)
Note: This table does not include operations that are not reported in USBTS data.

3.2.4 Evaluation of Airport Master Plans

Section 47106 of Title 49, United States Code addresses when the Secretary of Transportation may approve a project grant for airport improvements. The FAA Reauthorization Act of 2018 amends this Section by adding at the end, the following (115th Congress 2018):

> "(h) Evaluation of Airport Master Plans.— When evaluating the master plan of an airport for purposes of this subchapter, the Secretary shall take into account—
>
> "(1) the role the airport plays with respect to medical emergencies and evacuations; and
>
> "(2) the role the airport plays in emergency or disaster preparedness in the community served by the airport."

VDZ is essential for medical emergencies and evacuations. While emergency aircraft are likely to meet a B-III standard, the poor instrument approaches prevent service in poor weather. The public DME-H requires a 4,460-foot ceiling and 5 miles visibility (which is greater than VFR requirements). The special DME-G allows 1,340-foot ceiling with a 1.5-mile visibility for qualified users. The Corvus Airlines Vice President of Operations has stated that the regularly scheduled air carrier who is qualified for the DME-G is able to provide service approximately 80 percent of the time due to frequent weather cancelations (H. Townsend, personal communication, 2018). Improving the instrument approaches would increase the level of service for medical emergencies and evacuations.

VDZ is also essential for disaster preparedness for the community. Ground transportation is often not available during emergencies due to the conditions in Thompson Pass and Keystone Canyon. Maintaining access is important, given the economic importance of the Valdez Marine Terminal for the State of Alaska. As outlined in Section 2.1; VDZ has been essential to the survival of the community during the:

- 1964 Earthquake
- 1969-1986 Trans Alaska Pipeline System construction
- 1989 Exxon Valdez Oil Spill
- 2014 Keystone Canyon Avalanche Dam

In the event of an emergency, higher approach speed C-III aircraft such as a Boeing 737 and McDonnell Douglas DC-9 will be required to land at the airport. C-III-capable runways and taxiways, along with the apron space to conduct cargo handling, are needed for emergency events. During the Exxon Valdez Oil

Spill, Boeing 737 and McDonnell Douglas DC-9 were brought into the airport to support response operations (2004 Valdez Airport Master Plan).

For the purpose of disaster preparedness, this Master Plan recommends consideration of planning for a critical aircraft designation of C-III. At this time, the FAA can only participate in funding a B-III standard through the Airport Improvement Program, but the C-III allows the airport to plan and protect for C-III standards.

3.2.5 Regression Analysis of Commercial Airport Operations

A regression analysis was used to estimate how closely the population of Valdez and surrounding communities predicts the number of commercial flights at the airport each year. Since pipeline and fishing activity are inherently volatile and difficult to predict, population is the only readily available predictor of airport activity. Interviews with stakeholders (Hunsinger 2018, Dunning 2018, Ables and Talbott 2018) suggested that half of aviation activity is related to employment or construction projects, which are less-predictable and subject to greater fluctuation from year to year.

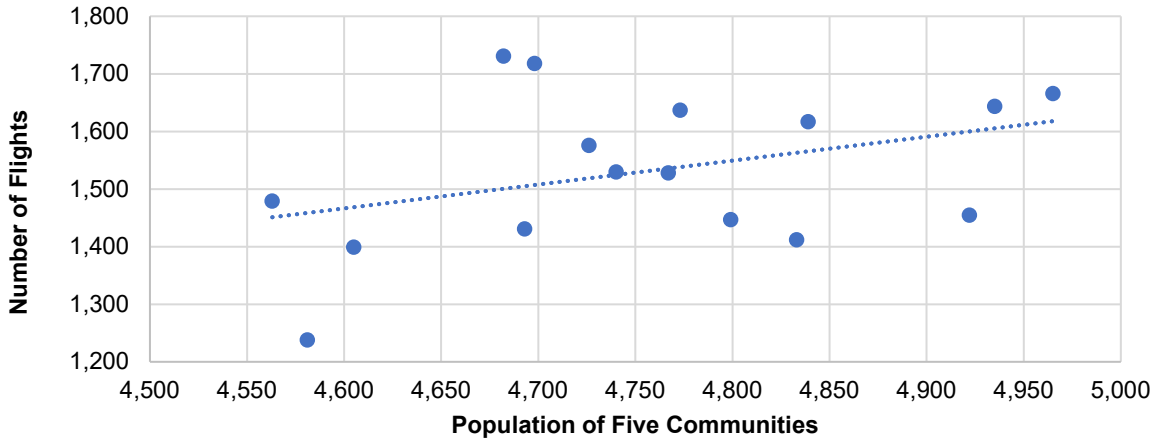
Grant Aviation flights present an anomaly in the data, so they were omitted from the regression in order to estimate future airport operations more accurately. Data on the number of commercial flights from 2010 to 2013 include all commercial and private carriers that arrived at the airport, excluding Grant Aviation. Table 3-5 and Figure 3-5 show the number of flights each year compared to the population for that year.

Table 3-5 Commercial Flights Excluding Grant Aviation and Population of Five Communities, 2002–2017

Year	Total Flights Excluding Grant Aviation	Population of Five Communities
2002	1,666	4,965
2003	1,644	4,935
2004	1,637	4,773
2005	1,617	4,839
2006	1,528	4,767
2007	1,731	4,682
2008	1,718	4,698
2009	1,479	4,563
2010	1,576	4,726
2011	1,447	4,799
2012	1,455	4,922
2013	1,412	4,833
2014	1,530	4,740
2015	1,431	4,693
2016	1,399	4,605
2017	1,238	4,581

Source: USBTS (2018) and ADOLWD (2017)

Figure 3-5 Annual Number of Flights, Excluding Grant Aviation Flights, and Population of Five Communities



Source: USBTS (2018) and ADOLWD (2017).

A regression analysis indicates that population does not explain much of the variation in airport activity from year to year. The R-Square value in Table 3-6 indicates that only about 14 percent of variation in the number of flights can be attributed to changes in population. Population and the number of flights move

in the same direction, both decreasing over time, but otherwise they are not highly correlated. The Valdez District Manager for the DOT&PF, Robert Dunning, estimated that half of airport operations are crew changeouts for pipeline and fishing employees. Since these employees are not included in population statistics, they likely account for a large amount of the remaining variation in airport operations.

Table 3-6 Regression Statistics

Regression Statistics	
R Square	0.14
Standard Error	128.51
Observations	16

Source: Northern Economics, Inc. Analysis (2018).

Table 3-7 Regression Estimates

	Coefficients	Standard Error	P-value
Intercept	-442.116	1295.24	0.74
Population of Five Communities	0.41489	0.27	0.15

Source: Northern Economics, Inc. Analysis (2018).

3.2.6 Airport Operations Forecast

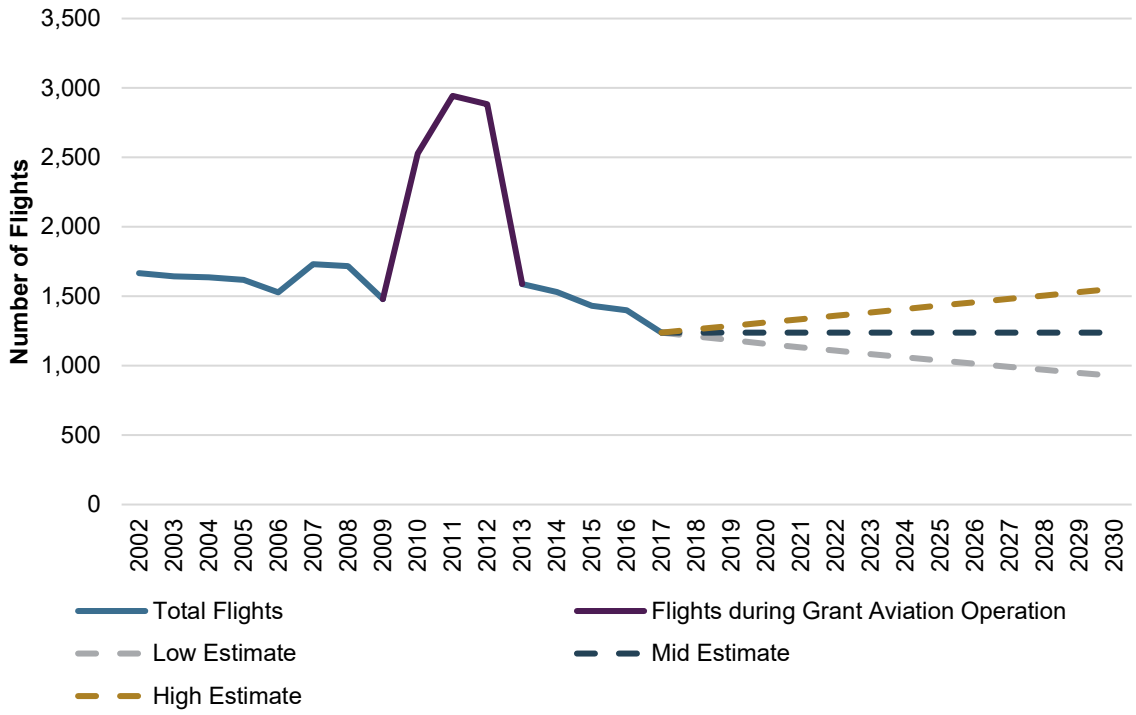
Since the population of Valdez and its surrounding communities is not a good predictor of commercial airport operations, projections for airport activity are based on past trends for the number of flights and number of passengers per flight. Three projections—low (-2 percent), middle (0 percent), and high (2 percent)—are presented in Table 3-8 and Figure 3-6. The low projection is based on the annual rate of change from 2002 to 2017, excluding Grant Aviation years, and predicts that airport operations will continue to decrease at the same rate. The middle projection predicts that airport operations will remain steady from their 2017 levels. The high projection predicts that airport operations will return to their average level over the last 15 years, excluding Grant Aviation years. The number of flights, passengers, and passengers per flight from 2002 to 2017 can be found in Table 3-1. General aviation and military operations are expected to remain steady and make up about the same proportion of airport operations based on the FAA estimates presented in Table 3-2.

Table 3-8 Projected Number of Commercial Flights, 2018–2030

Year	Low Projection	Middle Projection	High Projection
2018	1,211	1,238	1,262
2019	1,184	1,238	1,287
2020	1,158	1,238	1,311
2021	1,133	1,238	1,335
2022	1,108	1,238	1,360
2023	1,083	1,238	1,384
2024	1,059	1,238	1,408
2025	1,036	1,238	1,432
2026	1,013	1,238	1,457
2027	991	1,238	1,481
2028	969	1,238	1,505
2029	948	1,238	1,530
2030	927	1,238	1,554

Source: Northern Economics, Inc. analysis

Figure 3-6 Number of Commercial Flights History and Projections, 2002–2030



Source: USBTS (2018) and Northern Economics, Inc. analysis

The same projections for flights were used to create projections for the number of passengers and enplanements[1]. The average number of passengers per flight in 2017 (18.2) was applied to the low, middle, and high flight projection estimates to project the number of passengers at the same rates of change as the flight projections. The projections for the number of passengers are presented in Table 3-9 and Figure 3-7. Table 3-10 shows the projected number of enplanements.

[1]The number of passengers includes both passengers flying to (deplaning) in Valdez as well as passengers flying out (enplaning). Since there are multiple ways to Valdez, enplanements are close to but not exactly one-half of the number of passengers.

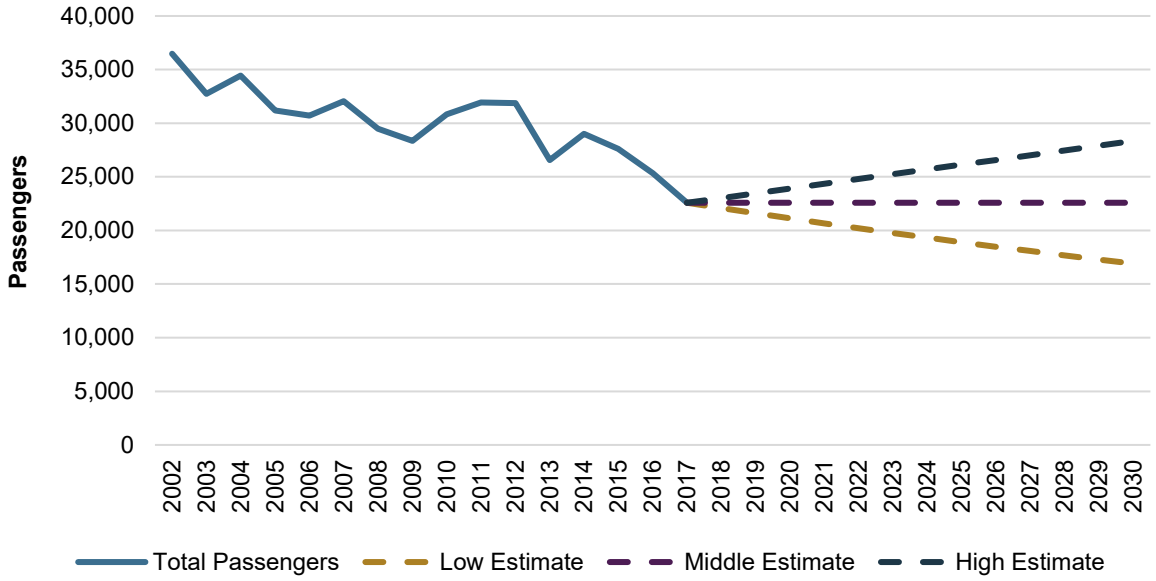
Table 3-9 Projected Number of Commercial Passengers and Commercial Flights, 2018–2030

Year	Total Commercial Flights			Total Passengers		
2002	1,666			36,479		
2003	1,644			32,753		
2004	1,637			34,441		
2005	1,617			31,190		
206	1,528			30,724		
2007	1,731			32,043		
2008	1,718			29,487		
2009	1,479			28,362		
2010	2,528			30,829		
2011	2,943			31,941		
2012	2,884			31,884		
2013	1,588			26,571		
2014	1,530			28,996		
2015	1,431			27,617		
2016	1,399			25,326		
2017	1,238			22,583		
Projection	Low (-2%)	Middle (0%)	High (2%)	Low (-2%)	Middle (0%)	High (2%)
2018	1,211	1,238	1,262	22,086	22,583	23,026
2019	1,184	1,238	1,287	21,600	22,583	23,470
2020	1,158	1,238	1,311	21,125	22,583	23,913
2021	1,133	1,238	1,335	20,660	22,583	24,357
2022	1,108	1,238	1,360	20,26	22,583	24,800
2023	1,083	1,238	1,384	19,761	22,583	25,243
2024	1,059	1,238	1,408	19,327	22,583	25,687
2025	1,036	1,238	1,432	18,901	22,583	26,130
2026	1,013	1,238	1,457	18,486	22,583	26,574
2027	991	1,238	1,481	18,079	22,583	27,017
2028	969	1,238	1,505	17,681	22,583	27,461
2029	948	1,238	1,530	17,292	22,583	27,904
2030	927	1,238	1,554	16,912	22,583	28,347

Note: Does not include helicopter (2017: 3,000 passengers with 2,000 operations), General Aircraft (2017: 2,500 operations), or military (2017: 500 operations) data.

Source: Northern Economics, Inc. analysis.

Figure 3-7 Number of Passengers History and Projections, 2002–2030



Source: USBTS (2018) and Northern Economics, Inc. analysis

Note: Does not include helicopter (2017: 3,000 passengers with 2,000 operations), GA (2017: 2,500 operations), or military (2017: 500 operations).

Table 3-10 Projected Number of Enplanements, 2018–2030

Year	Low Projection	Middle Projection	High Projection
2018	11,059	11,240	11,530
2019	10,815	11,240	11,752
2020	10,577	11,240	11,974
2021	10,345	11,240	12,196
2022	10,117	11,240	12,418
2023	9,895	11,240	12,640
2024	9,677	11,240	12,862
2025	9,464	11,240	13,084
2026	9,256	11,240	13,36
2027	9,052	11,240	13,528
2028	8,853	11,240	13,750
2029	8,658	11,240	13,972
2030	8,468	11,240	14,194

Source: Northern Economics, Inc. analysis

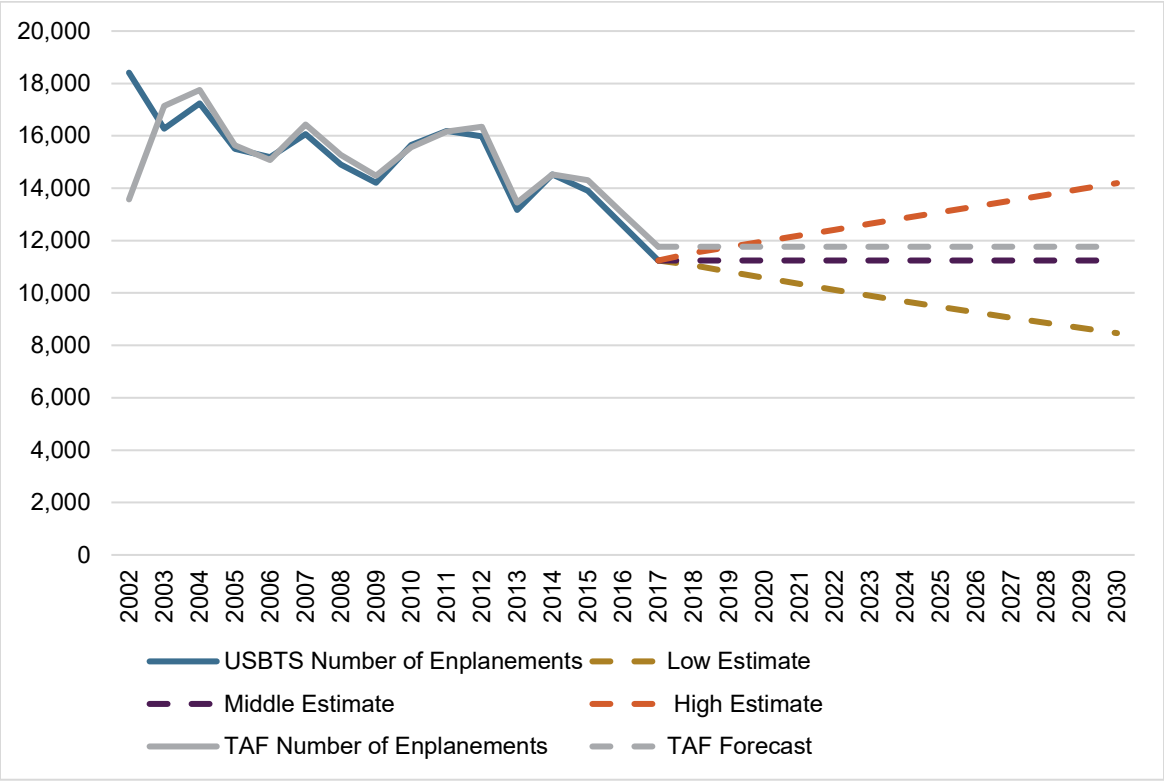
Note: Does not include helicopter (2017: 1,500), General Aircraft, or military data.

3.2.7 Comparison with Federal Aviation Administration Forecast

The FAA publishes a forecast of aviation activity for U.S. airports called the Terminal Area Forecast (TAF) (FAA 2017c). The most recent TAF was published in 2017 and predicts that Valdez airport operations will be flat with no major increases or decreases over the next thirty years. The TAF report includes historic and forecasted data of total enplanements, or passengers departing from Valdez. Our forecast of total enplanements is based on data from the USBTS T-100 records, which are slightly different from but follow roughly with the TAF.

Figure 3-8 compares our forecast for enplanements to the TAF forecast for enplanements. A comparison of our middle estimate forecast and the TAF shows that both predict a flat level of enplanements over the next decade. Since industry factors such as oil output and fishery activity both affect the airport, there are some unknowns about its future. Both the TAF and our analysis conclude that the best prediction is that there will be no major change in airport operations over the next decade, though we have also added high and low estimates to account for uncertainty in the economic drivers of airport demand.

Figure 3-8 Comparison of Historic and Forecast Enplanements from Northern Economics and TAF, 2002-2030



Source: USBTS (2018), FAA (2017), and Northern Economics, Inc. Analysis (2018)

Note: Does not include helicopter, General Aircraft, or military data

4 ISSUES

The following is a summary of opinions voiced during the inventory and scoping:

1. **Leasing**
    a. Maintain affordable leasing rates
    b. Develop smaller lease lots (e.g., 100-foot by 100-foot plots)
    c. Plan for additional hangar facilities
2. **Land Use**
    a. Consider the future of Aleutian Village Mobile Home Park parcel
    b. In general, divest airport property for private development
    c. Incorporate City Zoning efforts (Plane/Boat/Recreation Zoning)
    d. Determine the status, and permitting, of the campground encroaching on airport property
3. **Approach**
    a. Improve/develop better instrument approach
    b. Remove fix "RUNOC" on the LDA DME-G for safety
4. **Weather Reporting**
    a. Improve wind sensors to account for wind shear across the runway
5. **Support Valdez Fly-In Event**
    a. Allow camping and recreation use of apron during Fly-In
    b. Improve tie down system
6. **Robe Lake (L93)**
    a. Investigate land use agreement with DNR to allow facilities at Robe Lake
    b. Promote volunteer led effort to provide dock facilities
7. **Thompson Pass Airport (K55)**
    a. Support the maintenance of Thompson Pass Airport
8. **Increased Aircraft Demands**
    a. Maintain facilities which can accommodate increased/larger aircraft
9. **Infrastructure**
    a. Improve fencing and gates while maintaining access
    b. Off-asphalt operations
        i. Provide location for operations, if possible
    c. New SREB
    d. New sand and urea shed
    e. Runway resurfacing

f. Shift segmented circle and wind cone (as of 2021, has been completed)
g. Address lighting/electrical issues in next runway construction project
h. Facilitate STOL practice
i. Update taxiway alignment and location for safety
    i. TWs Bravo and Charlie
j. Increase runway length to 7,500 feet

5 FACILITY REQUIREMENTS

5.1 Airfield Capacity

Facility requirements, including the number of runways, boarding gates, and/or tiedowns, are driven by the amount of activity projected to occur. The high forecast at VDZ is 6,554 annual operations in 2030 (1,554 commercial + 2,000 helicopter + 2,500 GA + 500 military) (See Table 3-5).

Using that forecast, the FAA provides guidance on how many flights a runway can safely handle. For a runway of VDZ's configuration, the FAA estimates that it has an hourly capacity of 98 VFR/59 IFR flights, resulting in 230,000 operations per year (FAA 1983).

Since the projected number of annual operations for VDZ is much less than runway capacity (6,554 is less than 230,000), there are no expected runway capacity or delay issues FAA (1983). Any proposed alternative that maintains the current infrastructure of at least a single runway is expected to exceed the required runway capacity during regular operations.

5.1.1 Other Measures of Capacity

Beyond runway capacity, there are other requirements placed on an airport. These focus on how many people the airport must accommodate for things such as check in, security, boarding, and baggage handling. Two other measures of capacity are the "peak-hour activity" and the "average day-peak month" (FAA 2018c).

The peak-hour activity recognizes that most activity is concentrated into short time periods. For VDZ, this peak occurs during the twice daily regularly scheduled commuter service. The aircraft used to provide this service is the 29 or 37 passenger De Havilland Dash 8 (or similar). In 2030, the projected 28,347 passengers average out to 78 passengers per day. The 78 passengers are expected to be split over a morning and an evening regularly scheduled commuter flight, indicating approximately 38 passengers (1/2 arrivals, 1/2 departures) during peak-hour activity for the airport.

The average day-peak month helps to account for the seasonal activity at an airport (FAA 2018c). Twice as many passengers travel during the summer months (March – August), when compared to winter months (USBTS 2018). Given this distribution, in 2030, 28,347 passengers average out to 101 average day-peak-month passengers (March – August).

All of these measures are used throughout the Facility Requirements chapter to recommend what VDZ may need to meet the forecasted demand over the next 20 years.

5.2 Security

In addition to being an important aspect of safety, FAA funding for airport improvements is contingent upon maintaining security. The airport is fenced on the east, west, and south sides of the airport. Yearly snowfalls overtop the level of fencing, and/or snow weight causes holes in fencing. This can damage infrastructure or airfield property. Additional design and implementation projects are required to resolve the fence issues.

There are no natural barriers to deter wildlife from accessing the airport from the north side. Installation of fencing on the north side has not been done previously due to the difficulty in maintaining the fence during winter operations. FAA completed an inspection of the airport in June of 2021, and found the airport needed a perimeter fence along the north side of the airport to comply with wildlife hazard management requirements.

A limited number of gates are present for regular and emergency access to the airport. The gates experience regular failure due to the extreme weather conditions at VDZ (i.e., snow load, wind stress). Additional design and implementation projects are required to resolve the gate issues.

5.3 Design Standards

Important factors in the design and planning of an airport include the role of the airport, as well as the operating requirements of the critical aircraft that use that facility. The FAA provides guidance for planning and design through FAA ACs which promote airport safety, economy, efficiency, and longevity of various airport facilities.

The ARC coding system relates airport design criteria to the operational and physical characteristics of aircraft that are intended to operate at an airport. For planning and design purposes, it is necessary to establish design standards that would be applicable to future development at the airport. Information from FAA AC 150/5300-13A, Change 1, *Airport Design* (FAA 2014), was used to determine the ARC for the airport.

The ARC has two components related to an airport's design aircraft. The first component, depicted by a letter, represents the aircraft approach category, as defined by the aircraft approach speed (Table 5-1). The second component, depicted by a roman numeral, is the airplane design group determined by aircraft

wingspan (Table 5-2). Generally, aircraft approach speed is related to runways and runway-related facilities, while aircraft wingspan relates primarily to separation criteria involving taxiways, runways, and taxilanes.

Table 5-1 FAA Approach Category Classifications and Aircraft Classifications

Approach Category	Approach Speed (knots)	Typical Aircraft
A	<90	Cessna 172
B	91-120	Beech 1900, De Havilland Dash 8
C	121-140	Lockheed C-130, Boeing 737
D	141-165	Boeing 777, MD-11

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

Table 5-2 FAA Aircraft Design Group Classifications and Aircraft Classifications

Approach Category	Wingspan (feet)	Typical Aircraft
I	To 48	Cessna 172
II	49-78	Beech 1900
III	79-117	Boeing 737, De Havilland Dash 8
IV	118-170	Lockheed C-130, Boeing 757, DC-10
V	171-213	Boeing 747
VI	214-262	Lockheed C-5B

Source: FAA AC 150/5300-13A, Change 1, *Airport Design*

Currently, Ravn Alaska provides scheduled air service to VDZ using large turboprop aircraft, such as the De Havilland Dash 8 and Beech 1900. Larger commercial transport aircraft, such as the Boeing 737-200 and 737-400 series, were brought in for support during the Exxon Valdez Oil Spill of 1989 and could possibly serve the airport in the future. The existing critical aircraft per FAA AC150/5000-17, *Critical Aircraft and Regular Use Determination* (FAA 2017), is the Dash 8, with an approach speed of 100 knots and wingspan of 85 feet, making the ARC for VDZ a B-III. The 2010 Airport Layout Plan (ALP) for VDZ used the Boeing 737 for facility planning in case of another Exxon Valdez level event, elevating the ARC for VDZ to C-III. Current surfaces at VDZ meet C-III requirements even though the existing and future ARC is B-III.

5.4 Runway Requirements

5.4.1 Dimensional Criteria

The runways are designed in accordance with the standards developed by the FAA using the RDC system, which is the ARC plus a given visibility minimum as reported in Runway Visibility Range (RVR). The 2010 ALP states the visibility minimum at VDZ is not lower than one statute mile or RVR 5,000, resulting in an RDC for RW 06/24 of B-III-5000. Actual public visibility minimums at VDZ are "not lower than 5 statute miles," which results in VFR conditions. The LDA/DME-G approach has visibility minimums of "not lower than 1-1/2 statute miles," which justifies maintaining the RDC of B-III-5000 for RW 06/24.

Table 5-3 shows the FAA design criteria for RW 06/24 comparing both RDCs of B-III-5000 and C-III-5000. As shown in Table 5.4.1-1, the runway conforms to the current C-III-5000 design criteria except for the RSA and ROFA beyond the end of the RW 06 end but complies with the B-III-5000 requirements for the regular use aircraft. The RSA and ROFA at this end are limited by the Loop Road Creek to 945 feet.

Stakeholders requested 600-foot runway marks or similar markings to be installed on the runway. These could be used by pilots to practice STOL operations and would increase safety by providing pilots a controlled environment to learn and continually refresh their skills.

Table 5-3 Runway Design Standards

Airport Feature	FAA Requirements		
	Runway 06/24 (Existing)	B-III-5000 Standard	C-III-5000 Standard
Runway Length	6,500 ft	--	--
Runway Width	150 ft	100 ft	150 ft
RSA Width	500 ft	300 ft	500 ft
RSA Length (beyond runway threshold)	945/1000 ft	600 ft	1,000 ft
ROFZ Width	400 ft	400 ft	400 ft
ROFZ Length (beyond runway threshold)	200 ft	200 ft	200 ft
ROFA Width	800 ft	800 ft	800 ft
ROFA Length (beyond runway threshold)	945/1000 ft	600 ft	1,000 ft

5.4.2 Orientation

The runway orientation is restricted by the available topography, as the airport is surrounded by steep mountains. These mountains funnel winds down and across the airport. Wind coverage for the runway is

99.81 percent, indicating the runway is appropriately aligned with the prevailing winds (See Section 2.2.10). While the runway is aligned properly, topography restricts departures to the east, which can force departures to the west, with the potential of strong tailwinds necessitating flight cancelations.

Wind speed and direction can vary dramatically across the runway. This leads to dangerous changes in relative airspeed when aircraft are most vulnerable (low altitude, low airspeed, and increased drag). There are two wind cones installed at the airport, but only one AWOS wind reporting location, near the midfield. Wind sensors need to be improved to allow pilots to understand the differences in wind along the airfield.

5.4.3 Length

Runway length requirements are determined by analyzing the needs of the airport's existing and projected critical aircraft. The recommended length for the primary runway is determined by considering a specific airplane type that is forecast to use the runway on a regular basis or by considering a family of aircraft with similar performance characteristics. FAA AC 150/5325-4B *Runway Length Requirements for Airport Design* (FAA 2005), considers the threshold to be at least 500 itinerant operations per year. Departures are considered in the runway length analysis since they typically require more runway length than landings.

To identify the runway length needed to accommodate aircraft operating, aircraft manufacturers' data for several aircraft were obtained and analyzed. Runway length requirements are determined based on several variables, including the airport's mean high temperature for the hottest month of the year, July (54° F), elevation (120 feet mean seal level [MSL]), and the length of the haul performed by aircraft operating on that runway.

It is assumed that the farthest destination for commercial aircraft departing the airport will generally be Anchorage, Alaska. For this reason, the takeoff weight is based on a range of 200 miles for commercial aircraft and a maximum of 4,000 miles for corporate and some cargo aircraft. Runway length requirements for some air carrier aircraft that could potentially operate at the airport in the future are presented in Table 5-4, Figure 5-1, and Figure 5-2.

Based on the analysis of runway length requirements by the current and projected air carrier fleet, it is determined that RW 06/24, with an existing length of 6,500 feet, is adequate to accommodate operations by the critical aircraft in the projected fleet. Furthermore, the full length of RW 06/24 would allow the greatest degree of safety and maximum flexibility with respect to accommodating aircraft under

contingency or emergency scenarios. *Ravn Alaska pilots have indicated that the full runway length is required for arriving aircraft, based on diminished braking and friction parameters during wet and icy conditions.*

Some stakeholders requested the runway length be increased to 7,500 feet. This would primarily be for encouraging larger military aircraft to use VDZ for practice. Modeling of climbout and missed approach would be needed prior to lengthening the runway due to the constraints of the valley the runway is located in. Lengthening would also increase infrastructure for future commercial aircraft. Federal law (AC 150/5000-17) does not allow FAA to fund projects that solely benefit another federal agency (FAA 2017a). Given the current forecast, competitive FAA funding is not likely to be awarded for runway expansion to this length, given VDZ's number of operations.

Table 5-4 Runway Takeoff Length Requirements at Valdez Airport

Aircraft	Engine	Required Runway Length
B737–200 (Combination)	JT8D-15A	5,000 ft
B737–300	CFM56-3B1	5,800 ft
B737-400	CFM56-3C1	7,000 ft
B757-200	PW 2040	7,000 ft
C-130 Hercules	All. 501-D22A	7,200 ft
Bombardier Dash 8 Q400	PW150A	4,300 ft
DC–6	PW R-2800-CA15	6,900 ft
DC-9 (VC-9C)	PW JT8D-9	7,500 ft
Gulfstream IV	Tay Mk 611-8	6,300 ft
Metroliner III	ASE TPE 331-11U-612G	5,300 ft
Saab 340B Plus	GE CT7-9B2	5,700 ft
Saab 2000	All. AE2100A	5,700 ft

Notes: Runway length requirements are based on the following:
- 120 ft MSL Airport Elevation.
- Standard Day + 27°F (Hot Day of 86°F).
- Zero wind.
- 1.25% runway gradient.
- Commercial aircraft takeoff weight based on 200-mile stage length.
- Payload includes maximum allowed with full flaps.
- Aircraft takeoff weight based on maximum stage length.

Sources: Boeing Airplane Co., Airplane Characteristics for Airport Planning.
Bombardier Aerospace, Airport Planning for Dash 8 – 400 Series, 2014.
Gulfstream Aerospace Corporation, Gulfstream IV General Specifications, March 2000.
Aviation Week & Space Technology, Aerospace Source Book, January 2001.
Mead & Hunt, Inc., 2001.

Figure 5-1 Bombardier Dash 8 Q400 Take-Off Runway Length Requirement (Std + 27° F)

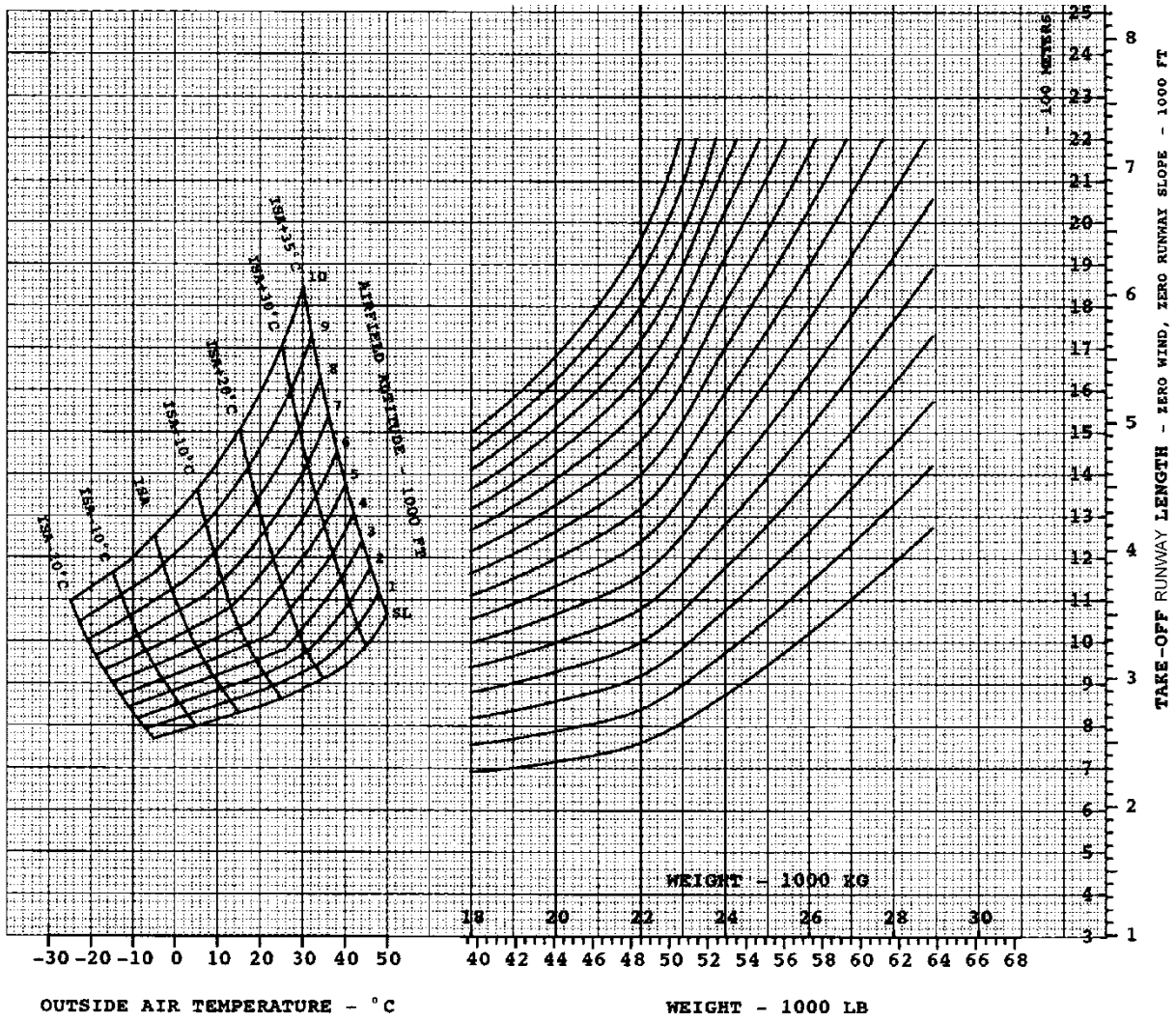
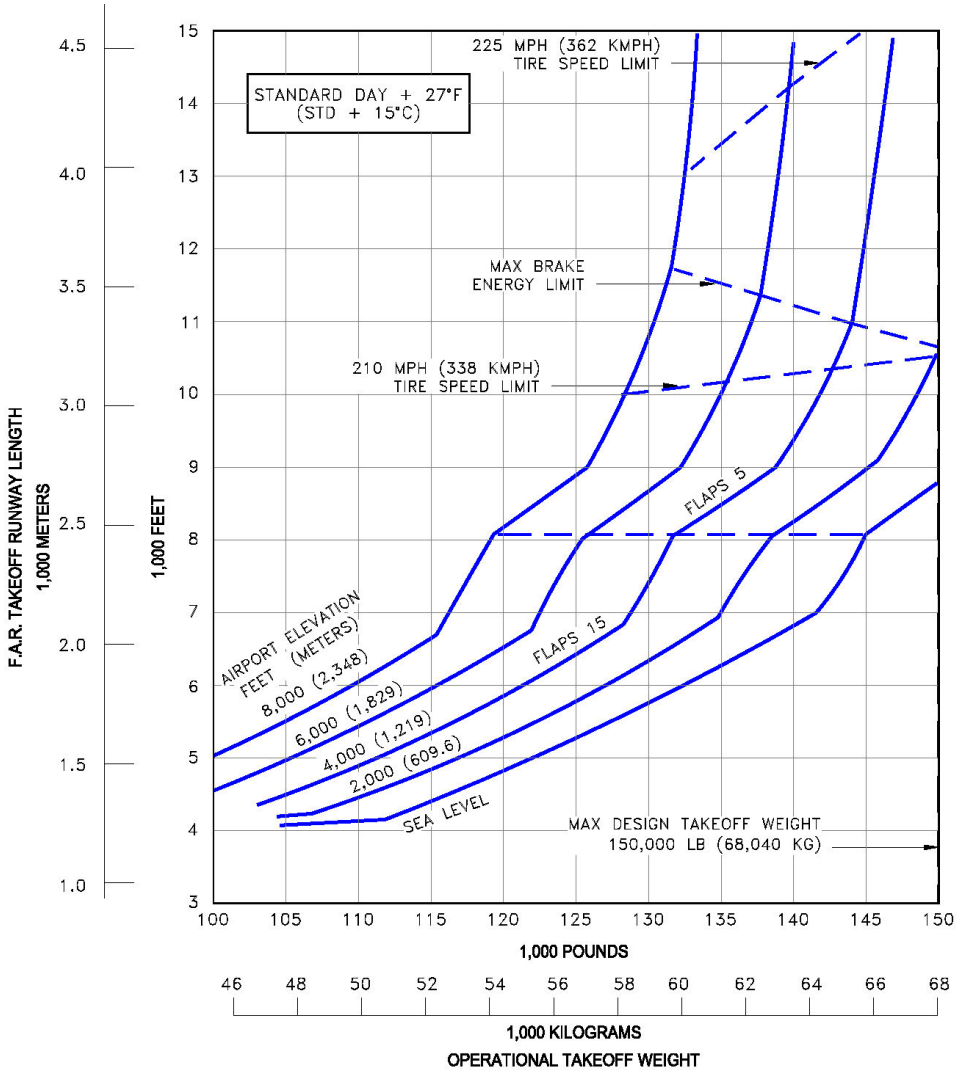


Figure 5-2 Boeing 737-400 Take-Off Runway Length Requirement (Std + 27° F)



5.4.4 Width

FAA AC 150/5300-13A, Change 1, *Airport Design*, recommends that runways serving B-III aircraft have a width of 100 feet (FAA 2014).

5.4.5 Pavement Design Strength

The gear type and configuration of an aircraft dictates how that aircraft's weight is distributed to the pavement and determines pavement response to loading. Examination of gear configuration, tire contact areas, and tire pressure as well as the aircraft's maximum takeoff weight (MTOW) is necessary in determining what strength of pavement is required for that specific aircraft. Pavement characteristics and strength for the runway is represented by a PCN as well as gross weight. The PCN is calculated by examining the fleet mix operating at the airport, the number of departures, projected growth over 20 years, pavement type, subgrade bearing capacity, and highest tire pressure in the fleet mix. The 2020 PCN for Runway 06/24 is 54/F/B/X/T.

Pavement strength can be reported in gross weight per axle configuration. RW 06/24 is currently rated at 200,000 pounds for dual wheel aircraft. This rating indicates that the runway is capable of handling dual gear aircraft with a maximum takeoff weight of 200,000 pounds or less on a regular basis without danger of structural damage to the pavement. Dual wheel aircraft with an MTOW higher than 200,000 pounds can still utilize the runway on an infrequent basis without causing pavement damage.

The runway pavement requires resurfacing. Operations and maintenance continue to request regular resurfacing to maintain the quality of the pavement.

5.4.6 Off Asphalt Operations

Stakeholders request off asphalt operations (e.g., snow) to be supported for their specialized aircraft.

Stakeholders also requested a location for summer gravel operations. Many pilots prefer large diameter Tundra Tires, which are not well suited for landing on asphalt. Such operations have been linked to accidents and excessive wear on equipment. These types of operations are not formally sanctioned at VDZ, although at some airports in Alaska the gravel along the edge of runways serves as a landing area.

The number of operations at VDZ do not support FAA funding for the construction of additional runways at this time.

5.4.7 Airfield Safety Areas

This section presents FAA design standards for various airfield safety areas, as they relate to Valdez Airport. The following airfield safety areas are reviewed in this section:

- Runway Protection Zone (RPZ)
  - Central Portion
  - Controlled Activity Area (CAA)
- Runway Object Free Area (ROFA)
- Runway Safety Area (RSA)
- Obstacle Free Zone (OFZ)
  - Runway OFZ
  - Inner Approach OFZ

Runway Protection Zone. The RPZ is a two-dimensional, trapezoidal surface that is centered on the extended runway centerline. The function of the RPZ is to enhance the protection of people and property on the ground, typically achieved by airport control through land acquisition. The RPZ is primarily a land-use planning tool. The RPZ begins 200 feet past the end of the runway pavement that is useable for takeoffs and landings. The actual dimensions of the RPZ, length and width, are contingent on the type of aircraft operating on the runway, as well as the type of approach available. Generally, as the aircraft size increases and the type of approach becomes more precise, the dimensions of the RPZ increase. The existing and ultimate RPZs for Runways 06 and 24 are 500 feet by 700 feet by 1,000 feet long. It is not anticipated that the dimensional requirements of the airport's existing RPZs will change.

The RPZ contains two subareas, the central portion, and the CAA. The central portion of the RPZ is the same width of the ROFA and extends to the end of the RPZ. The CAA is the portion of the RPZ beyond and to the sides of the ROFA. It is recommended that the airport own the CAA. This area should be free of land uses that create glare and smoke. The construction of residences, fuel-handling facilities, churches, schools, and offices is not recommended in the controlled activity area. While it is desirable to clear all uses from this area, some uses are permitted; provided they do not attract wildlife, are outside of the ROFA, are below the approach surface, and do not interfere with the airport NAVAIDs. No major impacts or obstructions were identified in the analysis of the existing or proposed controlled activity areas at the airport.

Runway Object Free Area. The ROFA is a two-dimensional ground area that surrounds the runway. FAA standards prohibit parked aircraft and objects from residing in the ROFA, except NAVAIDs or

objects that are frangibly (low-impact resistant) mounted. At an airport with an ARC of B-III, FAA requirements for the ROFA are 600 feet beyond each end of the runway and 800 feet wide. At a C-III Airport, FAA requirements for the OFA are 1,000 feet beyond each end of the runway and 800 feet wide. The ROFA at VDZ extends 1,000 feet past each end of the runway and is 800 feet wide, thereby meeting FAA design criteria for airports with an ARC of B-III or C-III.

Runway Safety Area. The RSA is a critical two-dimensional area surrounding the runway. Based on FAA criteria for B-III airports, the RSA for RW 06/24 is 300 feet wide centered on the runway centerline and extends 600 feet beyond each runway end. C-III airports require the RSA to be 500 feet wide centered on the runway centerline and extend 1,000 feet beyond each runway end.

The RSAs should be:

- cleared, graded, and free of potentially hazardous surface variations
- properly drained
- capable of supporting snow removal equipment, ARFF equipment, and aircraft (without causing damage to the aircraft)
- free of objects except those mounted on low-impact resistant (frangible) supports and whose location is fixed by function.

The current 2021 B-III RSA for RW 06/24 is 300 feet wide centered on the runway centerline and extends 600 feet beyond the ends of the runway.

Obstacle Free Zone. The OFZ is a three-dimensional volume of airspace that supports the transition of ground to airborne operations or vice versa. The OFZ clearing standards prohibit airplanes from taxiing and parking in the OFZ during operations. Also, only objects that are frangibly mounted and needed for the safe movement of aircraft operations are allowed to penetrate the OFZ. For RW 06/24, the OFZ comprises the Runway OFZ and the inner approach OFZ.

Runway OFZ. As defined by the FAA, the Runway OFZ is an area of airspace centered above the runway centerline. The Runway OFZ clearing standards prohibit taxiing, parking airplanes, and objects from penetrating the OFZ. The only objects allowed are NAVAIDs that are frangibly mounted and fixed by location. At B-III and C-III airports, the FAA requirements for the OFZ are 200 feet beyond each end of the runway and 400 feet wide for runways that serve large aircraft. The Runway OFZs for RW 06/24 are 400 feet wide and extend 200 feet beyond each end of the runway, therefore RW 06/24 is compliant with required FAA design criteria.

Inner-Approach OFZ. The inner-approach OFZ is a defined volume of airspace centered on the runway centerline, on the approach area that applies only to runways with approach lighting. The inner-approach OFZ only applies to RW 06. The inner-approach OFZ begins 200 feet from the runway threshold, at the same elevation as the runway threshold, and extends 200 feet beyond the last light in the approach lighting system. Its width is the same as the runway OFZ and rises at a slope of 50 to 1 from its beginning. Examination of the current ALP for the airport indicates that no obstructions penetrate the inner-approach OFZ.

5.5 Taxiway Requirements

5.5.1 Taxiway Design Group

Previous guidance on taxiway design was based only on Airplane Design Groups (ADG) or the second number in the ARC for the airport. ADGs are based on wingspan and tail height, they do not take into consideration undercarriage dimensions. Thus, the FAA established new guidelines for determining Taxiway Design Groups (TDG), designing taxiways using a combination of the ADG and TDG. TDGs are based on the overall Main Gear Width (MGW) and the Cockpit to Main Gear Distance (CMG), while the ADG determines taxiway safety area (TSA) and taxiway object free area (TOFA) widths.

The De Havilland Dash 8 is currently the critical aircraft at VDZ, which yields an ADG-III and TDG 3 determination. According to FAA AC 150/5300-13A, Change 1, *Airport Design,* TDG 3 airports require 50-foot-wide taxiways with 20-foot shoulders (FAA 2014). ADG-III airports require 118-foot-wide TSAs and 186-foot-wide TOFA. These dimensions also meet the requirements of the Boeing 737-400.

VDZ's taxiways are generally 90 feet wide, with 30-foot shoulders and meet the 50-foot-wide criteria but are oversized. The taxiways were last modified in 2004 and taxiway fillet design does not meet the new layout requirements per FAA AC 150/5300-13A. This does not hinder free movement of the critical aircraft around the airport but is out of compliance with the standards and should be corrected at during the next project at VDZ per FAA requirements.

5.5.2 Geometry

TW B has not been completely obliterated. This taxiway was designed to be removed during previous airport improvement projects. A solution should be designed to encourage proper use.

TW C is currently in the inner third, high activity portion of the runway. This encourages rapid breaking and high-speed exit from the runway. It also encourages entry onto the runway in a high energy zone.

Alternatives for the redesign of TW C should resolve the direct access to apron as well as high energy entry position.

5.6 Aids to Navigation

The currently installed NAVAIDs and public approach procedures (DME-H) result in 4,460-foot ceiling and 5-mile visibility minimums. There is also an LDA approach (DME-G) that is a public-special, available to qualified carriers. This approach has an approximate 1,340-foot ceiling and 1.5-mile visibility minimum for Category B aircraft.

The approaches are based on the Johnstone Point NAVAID, which was reported by stakeholders as being partially or completely inoperable most of the year. Remote NAVAID equipment, such as Johnstone Point, often have maintenance and operation issues due to the high cost to access and maintain the equipment. This can make the approaches inoperable and transform the airport into requiring VFR conditions.

As a result, there are a high number of flights canceled. The primary air service operator reported that both 2017 and 2018 had only an 81 percent completion rate due to weather cancelations (H. Townsend, personal communication, 2018). Local air taxis report that they rely on ground transportation instead of air service for their logistics, due to the weather cancelations. The Master Plan team regularly drove the six hours to Valdez, instead of taking the one-hour flight, due to weather driven flight cancelations. The difficulty of terrain and missed approach procedures were elements in a 1994 crash at VDZ that resulted in four fatalities (National Travel Safety Board [NTSB], 2018, Accident Number ANC95FA086).

Improvements to NAVAIDs and approaches are required to decrease weather-based flight cancelations and improve service to the community.

A Wide Area Augmentation System (WAAS)-style approach has been suggested as a solution for Valdez. These use Global Positioning System (GPS)-style equipment installed on aircraft to develop more accurate approaches. These can include an LPV (localizer performance with vertical guidance) and LP (localizer performance without vertical guidance) approach. The LPV approach will not work for VDZ's topography. FAA also explored an eastern departure procedure and determined that the topography prevents a safe procedure from being designed.

An LP approach is possible for VDZ. This GPS-based approach would eliminate the need for NAVAID equipment, such as Johnstone Point. An LP would require special equipment and training requirements on the air carrier. It would also not significantly change minimums required for the DME-G; but would act as

a backup for when Johnstone Point in inoperable. This would improve the service to the community of Valdez.

The first major obstacle to developing an LP approach is an aeronautical survey. This has been funded by the FAA and conducted by the Master Plan team. From the survey, obstructions to new approaches need can be promptly identified and mitigated. Common obstructions are tall trees, towers, and buildings.

The next major obstacle is funding for the equipment and training for an air carrier to be equipped for an LP approach. Currently, the airlines serving VDZ do not have the equipment for an LP approach. This might require a financial commitment by the local community or may need to wait until there are fleet upgrades by an air carrier. Investment in this equipment likely will not occur until an LP approach is established at VDZ, and other airports, on a more consistent basis.

Once those obstacles are passed, FAA can start to design an approach. There are a limited number of approaches that can be designed by FAA resources, and there is a competitive national screening process. Historically, Alaska had U.S. Senate political power to adjust FAA priorities, and the process was only competitive on a West Coast basis. The new national priorities will make it difficult for Valdez to compete with other airports with more activity across the nation.

5.6.1 Other Improvements for NAVAIDs

The DME-G currently requires pilots to fix "RUNOC" prior to landing. Local pilots request the removal of this fix, as they do not have enough time to focus on it while concentrating on landing and preparing missed approach procedures.

5.7 Airspace

Growth at VDZ or surrounding airports is not expected to require changes to the current Class E airspace (above 700 feet from the surface).

5.7.1 FAR Part 77 Surfaces

FAR Part 77, Objects Affecting Navigable Airspace, establishes standards for determining which structures pose potential obstructions to air navigation. This is accomplished by defining specific airspace areas in the environs of an airport that cannot contain any protruding objects. These airspace areas are referred to as "imaginary surfaces." Objects affected include existing or proposed objects of natural

growth, terrain, or permanent or temporary construction, including equipment that is permanent or temporary in nature.

Imaginary surfaces outlined in FAR Part 77 include:

- Primary Surface
- Transitional Surface
- Horizontal Surface
- Conical Surface
- Approach Surface

Like the RPZs, the dimensions of FAR Part 77 surfaces vary depending on the type of runway approach. Valdez Airport's existing Part 77 surfaces for RW 06/24 are established for non-precision instrument approaches.

Although the FAA can determine which structures are obstructions to air navigation, the FAA is not authorized to regulate tall structures. Under Part 77, an aeronautical study can be undertaken by the FAA to determine whether the structure in question would be a hazard to air navigation. There is no specific authorization in any statute that permits the FAA to limit structure heights or determine which structures should be lighted or marked. In every aeronautical study determination, the FAA acknowledges that state or local officials have control over appropriate use of property beneath an airport's airspace. The airport does not enforce specific building codes for structures constructed, thus it is possible that structures could penetrate FAR Part 77 surfaces.

Definitions of key FAR Part 77 surfaces are as follows:

Primary Surface. The primary surface is a surface longitudinally centered on a runway. A runway with a hard surface has a primary surface extending 200 feet beyond each end of the runway. The width of the primary surface ranges from 250 feet to 1,000 feet depending on the existing or planned approach (visual, non-precision, or precision). At Valdez Airport, the primary surface for RW 06/24 extends 200 feet beyond each runway end and is currently 500 feet wide because it is a non-precision instrument runway with visibility minimums greater than one-statute-mile. According to the airport's most recent FAR Part 77 Airspace Drawing, completed in 2021, it is indicated at this time that there are no noticeable obstructions located within the primary surface.

Transitional Surface. The transitional surface extends outward and upward at right angles to the runway centerline at a slope of seven feet horizontally for each foot vertically (7:1) from the sides of the primary and approach surfaces. The transitional surfaces extend to where they intercept the horizontal surfaces at a height of 150 feet above the runway elevation. According to the airport's most recent 2021 FAR Part 77 Airspace Drawing, it is indicated at this time that there are several tree obstructions located in the transitional surface to the north of the runway.

Horizontal Surface. The horizontal surface is a horizontal plane located 150 feet above the established airport elevation, covering an area from the transitional surface to the conical surface. The perimeter is constructed by swinging arcs from the center of each end of the primary surface and connecting the adjacent arcs by lines tangent to those arcs. The radii of the arcs are 10,000 feet for all runway ends designated for approaches that serve larger than utility type aircraft. According to the airport's most recent 2021 FAR Part 77 Airspace Drawing, it is indicated at this time that there are several obstructions, mostly trees and ground, located in the horizontal surface.

Conical Surface. The conical surface extends outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet. According to the airport's most recent 2021 FAR Part 77 Airspace Drawing, it is indicated at this time that the ground obstructs the majority of conical surface to the north of the airport.

Approach Surface. The approach surface is longitudinally centered on the extended runway centerline and extends outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based on the type of approach NAVAIDs. At Valdez Airport, the approach slope for RW 06 is 34:1, and for RW 24 it is 20:1.

The inner edge of the RW 06 approach surface is 500 feet wide, the same width as the primary surface. It expands uniformly in width to 3,500 feet for non-precision instrument runways other than utility, having visibility minimums greater than one-statute-mile. This approach surface extends for a horizontal distance of 10,000 feet. Runway 24's inner edge of the approach surface, also 500 feet wide, is the same width as the primary surface and it expands uniformly in width to 1,500 feet. This approach surface extends for a horizontal distance of 5,000 feet. To allow for the height of vehicles on roadways, the approach surface must clear rail lines by 23 feet, interstate highways by 17 feet, public roads by 15 feet, and private roads by 10 feet.

An aeronautical survey was conducted as part of this Master Plan and has been approved by the FAA. Periodic maintenance should be conducted to control the height of the trees identified as obstructions to limit obstructions to the airport's airspace.

5.7.2 Helicopter Landing Areas

Helicopter operations at the airport typically occur on the apron at the eastern end of the airport, in front of the Era Helicopters building. The taxiway is currently marked with an "H" to indicate that it is a helicopter final approach and takeoff area (FATO). The space available for helicopter operations is currently adequate and will most likely remain adequate in the long-term.

Airport management has indicated that there are approximately 12 helicopter tiedowns located on the apron east of the terminal building. This area is adequate for current transient helicopter operations and will remain adequate in the long-term based on projected demand.

5.7.3 Surface Pavements

VDZ's pavements were last reconstructed in 2004 and 2007. Pavements are showing signs of age, ranging from simple surface wear from snow removal operations, to cracking, raveling, and other defects. The average runway PCI for VDZ in 61, indicating rehabilitation is required. The average PCI for taxiways and apron areas are in Preventative/Corrective Maintenance level with a PCI of 72 or greater. One section of the apron is listed as requiring rehabilitation.

5.8 Terminal

5.8.1 Airside Requirements

Currently gate parking procedures use taxi-in, taxi-out parking. This makes use of the available apron space and requires less support equipment. This also increases the aircraft clearance from buildings (much greater than the 20 feet recommended in AC/5360-13A [FAA 2018c]), although it requires passengers to walk a longer distance to the terminal.

A large apron area is required to support disaster response. During the Exxon Valdez Oil Spill, the ramp at the airport was at capacity within two days of the spill. This similar level of activity has been experienced during the other critical events. Maintaining this apron capacity is of strategic importance for the Copper Valley region.

Utilities are not typically provided to aircraft, although fuel is available for purchase. Economics encourage regularly scheduled commuter flights to purchase fuel elsewhere.

5.8.2 Passenger Terminal

A rule of thumb to estimate the required terminal area is 150 square feet per peak-hour passenger (FAA 2018c). For the 2030 forecasted 38 peak-hour passengers, this is equivalent to 5,700 square feet. The first floor of the terminal exceeds this demand (Table 2-2), and the second floor is also used to support aeronautical activity. The west multi-purpose rooms can also be repurposed to support future activity, if required. The ticketing counters and lobby configuration is deep enough to accommodate queuing space and circulation. The current terminal area is expected to meet the forecasted passenger demands of the airport. No comments were received during public scoping about congestion at the terminal.

Waiting areas are recommended to have seating for 70 percent of the 38 peak-hour passengers (or 26 seats) (FAA 2018c). The remaining 30 percent of seating is recommended throughout the terminal (FAA 2018c). The waiting area has approximately 25 seats, with additional seats available in the café and standing area available around the baggage claims.

The baggage claim is recommended to have 15-20 feet of space surrounding the area for circulation (FAA 2018c). The current 1,020-square-foot arrangement appears sufficient for peak use. The geometry for the baggage claim does encourage the use of the same doors for arrivals and departures. If demand significantly increases, this could cause congestion during peak demand.

VDZ has one ground level gate. Based on the high forecast projected enplanements, one gate is expected to be adequate for the airport (FAA 2018c).

FAA AC 150/5360-13A recommends airline operations support space to have at least 500 square feet per peak-hour aircraft departure (FAA 2018c). For the one aircraft peak-hour departure estimate, the terminal provides adequate space to support these activities.

There is currently no security screening conducted at the airport. If required, this could be located in the current waiting area, with additional un-secure waiting areas near the baggage claim. Another option would be to use the west multi-purpose room as a combined security screening area, secured departure lounge, and second gate.

The City of Valdez owns the terminal. If a replacement is required for the more than 40-year-old terminal, it may be appropriate to complete a separate study to inform terminal design. One important design element would be to include a location for temporary air traffic control tower services, similar to the current facilities. These are used during the Valdez Fly-In event and in response to disasters.

5.8.3 Landside Requirements

The terminal and parking are co-located adjacent to Airport Road. Traffic circulation is normally counterclockwise to facilitate right-side passenger service. There is no dedicated terminal access road, and there is an insufficient loading/unloading zone. The one circulation lane for curb drop off/pickup in front of the terminal is not formally designated, but is greater than 20 feet wide, allowing vehicles to pass waiting vehicles (FAA 2018c). The majority of people arriving and departing park and walk into the terminal, lessening the need for a dedicated arrival/departure traffic pattern.

Parking is available immediately adjacent to the terminal, or in lots east and west of the terminal. All areas are less than 1,000 feet from the terminal (FAA 2018c). There are no designated walkways with proper signing and striping from the terminal to parking.

FAA guidance recommends that parking should equal approximately 1.5 times the number of peak passengers (FAA 2018c). Assuming the high forecast of 38 peak passengers, there is demand for at least 57 parking spots. The paved and marked stalls satisfy this demand, and there is an additional 44,000 square feet of unpaved, unmarked marking available (for approximately an additional 109-124 vehicles [FAA 2018c]). The parking facilities should be adequate for normal operations.

Parking is deficient during the Valdez Fly-In. During this event, the number of parking spaces required increases, as participants park and camp at the airport for the extended weekend. The alternatives need to consider additional designated areas for Fly-In parking/camping. One option would be to use a shuttle bus service to provide transportation from more distant areas.

5.8.4 Passenger Convenience and Access to Airport Facilities

Passenger convenience and access to airport facilities is high for Valdez. Parking is available close to the terminal, and the terminal is a simple design, facilitating arrivals and departures. Access to aircraft from the terminal requires walking outside, which could be improved with a sheltered walkway. This would have to be balanced with cost, number of enplanements, and operations and maintenance (particularly snow removal).

5.9 General Aviation Requirements

5.9.1 Aircraft Storage Facilities

There are three private hexagonal hangars (18 units), and five private hangers. During public scoping, the master planning team often heard that there is occasional demand for a limited number of additional hangers. There is not a formal waiting list maintained to judge demand, but participants in the public meeting thought the demand would be fewer than 20 additional hangers. Alternative analysis should include areas designated for hanger construction. Hangers must not be located in areas required for snow storage.

There is a desire to test smaller lease lots, to allow stakeholders to pursue economic opportunities which do not require a large footprint. These may include GA operations, hangers, commercial operations, or other facilities. Other airports in the region (i.e., Cordova) have experimented with subdividing lease lots to approximately 100-foot by 100-foot plots. These have been found to be too small to meet legal building codes, but 150-foot by 150-foot plots have worked. The alternatives should explore this option and recommend locations as a trial basis.

5.9.2 Transient Aircraft Parking Aprons

There are currently 23 tiedown locations on the apron; 20 sized for small GA aircraft and 3 for medium sized aircraft. Tiedowns are particularly important for protecting transient aircraft from VDZ's high winds.

There is a large demand for additional tiedowns during the short Valdez Fly-In. This event attracts up to 100 airplanes, which all require tiedowns. The current number of permanent tiedowns do not meet this demand. Currently aircraft are secured to seasonally installed above-ground cables which are weighed down with Jersey barriers. These barriers are not heavy enough to secure the aircraft during high winds. Aircraft (particularly tail draggers) are regularly damaged by colliding with the barriers. A new system of securing transient aircraft is required.

5.10 Air Cargo Requirements

Air cargo is primarily brought in on regularly scheduled passenger service. In 2017, an average of 275 pounds of freight and 4 pounds of mail were handled a day (USBTS 2018), with 75 percent of the cargo inbound on arrivals and 25 percent outbound on departures. Most of the handled packages are either ultimately destined for or originate in Valdez. Cargo facilities are located in the eastern part of the

terminal building. Cargo facilities appear to be adequate for current operations but could use upgrades (e.g., cold storage, direct access to the airfield). These would be the responsibility of the terminal owner (City of Valdez).

5.11 Support Facilities

5.11.1 Aircraft Rescue and Firefighting

VDZ operates an Index A ARFF response for qualifying flights that have made prior arrangement. This service is to assist aircraft less than 90 feet in length. The ARFF is stationed inside a well maintained ARFF building. The only expected future needs are regular maintenance and replacement of the ARFF vehicle and building. If the ARFF index needs to size up to an Index B, additional storage is likely to be needed.

5.11.2 Airport Maintenance

The SREB requires replacement. The SREB is one of the low points on the airfield and has a history of flooding during storms. The issue is currently being managed through the construction of drainage ditches, but this is not a long-term solution. It is particularly important to have a functioning SREB given the high levels of snowfall that require a high level of runway maintenance by snow removal equipment. Alternatives need to propose the construction of a new SREB.

The Sand/Urea Building also needs replacement. These materials must be maintained in a state of readiness during winter storms. Frozen or difficult to access product slows down operations and increases maintenance workload and costs.

The lighting systems continue to experience electrical issues. Water enters components, which freeze and break, and a large number of bulbs must typically be tested prior to finding the faulty equipment. The electrical system needs to be updated to decrease the amount of maintenance effort spent to replace broken equipment.

The west end of the runway has a stream and wetland complex immediately adjacent to the embankment. An FAA maintenance access road also crosses the stream and wetlands, connecting RW 06 to the Richardson Highway. Both the access road and runway embankment experience seasonal erosion and/or flooding. Design and installation of adequate drainage and embankment protections are required for these areas.

The airport fence borders the east, west, and south sides of the airport. There is no northern fence, due to maintenance difficulties. Constructing a fence around the full airport would meet wildlife hazard management requirements and increase security.

5.12 Utilities

VDZ is connected to the municipal water system and sewer system. The sewage treatment plant is located near the center of the Old Valdez Townsite, 0.8 miles from the runway. This is closer than the FAA recommended distance of five miles.

Individual lease holders are responsible for extending utilities to their own lots. Lots that are unimproved do not have utility service.

5.13 Land Use

5.13.1 City of Valdez: Plane, Boat, Recreation Zoning

The City of Valdez is working towards designating City lands adjacent to the airport a "Plane, Boat, Recreation" (PBR) Zone. This is to encourage the development of parcels with space to accommodate recreational investment that are not adjacent to residences. Due to the proximity to VDZ, these parcels also are viewed as being able to host aircraft and support aeronautical use.

"Through-the-fence" operations consist of activities that are located off airport property but use the airport's runway or taxiway. Through-the-fence operations receive the benefit of federally supported airfields, without contributing to support of the airport through fees and other charges. Federal guidelines state that airports that do not prevent through-the-fence operations can have their federal grants withheld or denied (FAA Order 5190.6B [FAA 2009]). Airports can be directed to develop a corrective action plan to resolve these land use issues. In some cases, through-the-fence operations can be permitted with a fee schedule and agreement being established with the airport that meets FAA guidelines.

5.13.2 Campground

The campground located east of the airport is generally not located on airport property. Approximately three campsites appear to abut the airport fence line and may encroach on the airport property. This may have taken place under the assumption that the fence line marks the airport property boundary. The status and permitting of these sites should be investigated.

5.13.3 Recreational Trails

There is an informal trail network on airport property east and north of the runway. These are not maintained nor recognized by the City of Valdez or the airport. A local effort has been in progress to designate and expand the trails (Valdez Community Trails Plan 2018).

The master planning process must work to protect the airport from incompatible land use development (FAA 2015a). The recreational trails may affect the safe operation of the airport. Trails adjacent to the runway can have an increased safety risk for the trail users during aircraft incidents.

The trails may also restrict the future development of the airport. The western end of the runway is limited from expansion by a stream/wetland complex. This increases the value of the eastern end of the runway for future airport expansion. If allowed to have continued use, the trails at the eastern end of the runway may restrict airport expansion.

DOT&PF leasing has been known to charge fees for these types of uses at other airports.

5.13.4 Aleutian Village Mobile Home Park Parcel: Comparison to Similar Airports

The community is interested in exploring land disposal options related to the Aleutian Village Mobile Home Park. This non-aeronautical use of airport property provides some of the only affordable housing in Valdez. It is proposed that this facility be closed or have a change in management. Plans being developed by the City of Valdez and private parties depend on this Master Plan's determination of whether the parcel can be sold.

Prior to aeronautical land being disposed of, a determination should be developed regarding its potential to be required for future aeronautical use. To estimate potential aeronautical land use requirements, we have used two similar airports (Deadhorse and Nome) to compare lease lot size, lease lot dimensions, and residential land use. They serve similar communities, have development focused on one side of a runway, and have similar land use characteristics. This comparison allows us to understand if VDZ may need to use the Aleutian Village Mobile Home Park parcel for future aeronautical uses.

If the parcel is sold, the other concern is anticipating negative externalities to the residences from the airport operations. The parcel lies directly under the main approach and departure path for the airport. Residents are subject to noise impacts from airplanes; and may view the airport as liable for such impacts. Anticipating and limiting liability from future complaints is an important element when contemplating

land transfer. Deadhorse and Nome also have residences close to the airports, which we use to compare and contrast with VDZ's situation.

Deadhorse

Deadhorse supports a larger, but similar, oil and gas industrial complex than that found at Valdez. Deadhorse has a 6,500-foot runway, and a large terminal apron to support aviation activities. The total area of lease lots adjoining aprons is more than three times the size of VDZ's current aprons, allowing for increased operations and better support for larger aircraft. The lots are about 300 feet wide and 375 feet deep, supporting a substantial depth for buildings (150 feet) and a large parking/landside operation (225 feet). The deeper lots allow support activity to take place without creating congestion or blocking snow storage areas.

Deadhorse has similar residential facilities to the Aleutian Village Mobile Home Park. There are a series of mobile home personnel camps located in a similar geometric position; 1,000 to 3,000 feet from the runway. While the Aleutian Village Mobile Home Park is a residential, permanent setting, the Deadhorse camps are industrial, with transitory workers who are unlikely to remain long enough to lodge complaints at the airport. Deadhorse's residents likely have a different perspective of noise impacts from airport operations, namely, as a source of employment rather than an impact to residential life.

Nome

Nome has a similar population to Valdez but has more aviation activity since it serves as a regional commuter hub. Nome has two intersecting runways (6,175 feet and 6,000 feet), with land use constrained by a river. The crosswind runway divides and establishes the two primary aprons, one for cargo and one for passengers. Together both aprons have roughly 25 percent more developed lease lot area than VDZ. These serve a variety of aeronautical and non-aeronautical uses (e.g., utilities, government services). Lease lots are about 150 to 200 feet wide and 225 to 250 feet deep, similar to VDZ. Many leaseholders occupy multiple lease lots. When attempting to fit buildings, parking/landside operations, and aviation activity onto these smaller leases, the lots have become congested.

The City of Nome is located about 3,000 feet from the runway, and slightly south of the approach and departure routes. In Nome, when aircraft depart or approach over town, the noise impacts the majority of town. This can lead to a more uniform perception of negative impact to residences, with the impact being shared by all. This differs from VDZ, where the majority of the noise impacts a few low-income residents rather than the entire town.

Summary

In summary, VDZ has less activity than Deadhorse or Nome. As such, these two airports serve as a good example for the demands of a future, expanded VDZ. Both Deadhorse and Nome have larger aprons than VDZ currently has developed. Nome's apron congestion emphasizes the needs for long-term land use retention for future airport growth. Despite this, VDZ has considerable undeveloped deep lease lots (more than 2,000 feet adjoining the parallel taxiway). This acreage is anticipated to accommodate future demands for VDZ. The Aleutian Village Mobile Home Park parcel is not included in these potential undeveloped lease lots, as its location (across a stream and at the end of the runway) makes it a low-quality area for future aeronautical land use.

Land disposal must also appreciate the liability from potential negative impacts from airport operations. The Aleutian Village Mobile Home Park parcel is located directly off the end of the primary approach and departure runway. As a result, residents are subject to negative impacts. These residents are likely to be more sensitive to these impacts than the temporary industrial workers at Deadhorse and town of Nome. Both of these communities have different views of aviation noise; either as a source of employment or equally shared by all community members. At VDZ the impacts are directed towards one of the few low-income residential facilities in Valdez, and not shared amongst the community at large.

5.14 Robe Lake

Robe Lake requires additional infrastructure to become a functional seaplane base. The Alaska DNR owns Robe Lake and requested that the originally installed seaplane docks be removed. Now there are no docks. The public desires that docks be installed to facilitate use of the seaplane base. DOT&PF is often better suited to administrating a seaplane base than DNR. DOT&PF explored an inter-agency land transfer agreement from DNR for Robe Lake. This has previously been done for the Gold King Airport. This type of agreement was not practicable for DOT&PF to take on in the current budget environment. Since Robe Lake is owned by the DNR and is not part of VDZ, improvements are outside of the scope of DOT&PF's actions and this Master Plan.

Security concerns must also be addressed for aircraft at the remote facility. This could include providing a gate on the aviation dock, along with a second non-aviation dock for public use. Security cameras would also provide deterrence to crime.

5.15 Thompson Pass Airport

Thompson Pass requires a minimal level of maintenance to be a functional backcountry airstrip. DNR also owns Thompson Pass. Continuing the agreement between DNR and DOT&PF to maintain the airstrip will increase the safety of the airstrip for backcountry users.

6 ENVIRONMENTAL OVERVIEW

This environmental section of the inventory highlights the environmental considerations that should be considered during analysis of alternatives. This section has been included to address considerations of environmental consequences prior to alternative selection. This section is limited to brief topics that are most likely to impact alternative development. Full evaluation of environmental topics will take place during project development and permitting (FAA Order 1050 [FAA 2015b]). 1F topics that are not expected to be issues for alternative evaluation include: Farmlands, Lighting, Resources and Energy Use, Visual Impact, and Traffic.

6.1 Air Quality

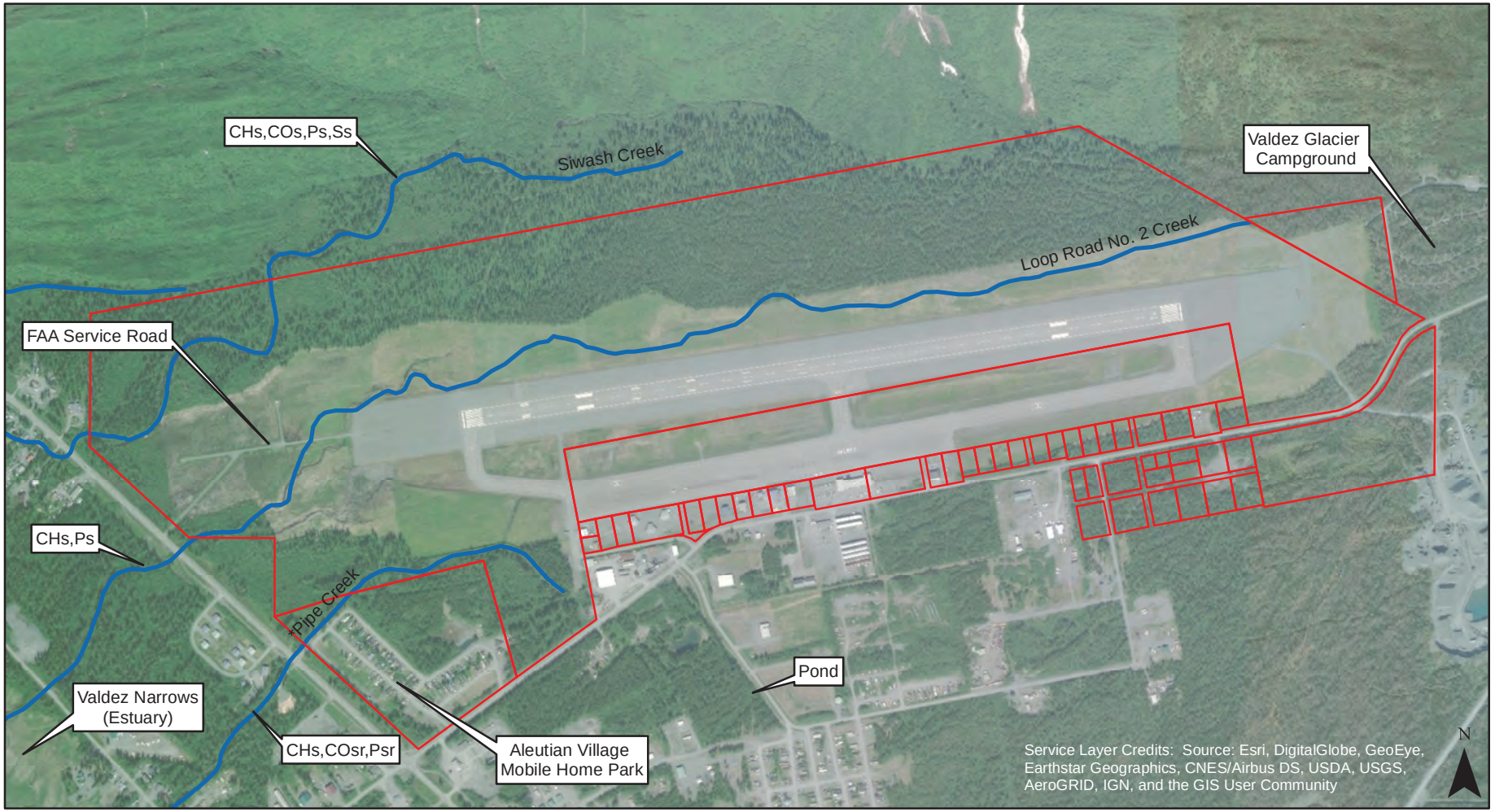
The Alaska Department of Environmental Conservation (ADEC) Air Non-Point Mobile Source website (ADEC 2018) indicates Valdez is not in an air quality maintenance nor a non-attainment area for National Ambient Air Quality Standards. None of the regulations appear to have a significant impact in alternative consideration.

6.2 Wetlands

Wetlands and streams are present on the airport. Wetlands delineated by aerial photography from the National Wetlands Inventory are depicted on Figure 6-1. During the inventory, onsite inspection indicated a much greater extent of wetlands spread over the west and northern portions of the airport than indicated on the 1978 National Wetlands Inventory (NWI 1978).

Three streams are present. The Loop Road No. 2 Creek and associated habitat parallels the runway's northern border and directly abuts the western embankment. Pipe Creek drains the southwest end of the runway. Siwash Creek drains the far northwest corner of the property.

Projects requiring fill to the north and west of the current embankment will require wetland delineation and permitting. US Army Corps of Engineers permitting will require the avoidance, minimization, and mitigation of wetlands impacts. Further field investigations may reveal additional wetlands.



Airport Property

Anadromous Stream

Fish Stream Abbreviations:

CH: Chum Salmon
CO: Coho Salmon
P: Pink Salmon
S: Sockeye Salmon
r: Rearing Life Stage
s: Spawning Life Stage

Aerial Photography: GeoNorth Best Data Layer

STATE OF ALASKA
Department of Transportation and Public Facilities
Northern Region - Aviation
2301 Peger Road Fairbanks, AK 99709

VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

Airport Master Plan Update
VDZ Environmental Overview

DATE: April, 2021

FIGURE **6-2**

6.3 Anadromous Fish Streams

According to the Alaska Department of Fish and Game (ADF&G) Anadromous Waters Catalog, Loop Road No. 2 Creek (#221-60-11420), Pipe Creek (#221-60-11410), and Siwash Creek (#221-60-11425) (Figure 6-2) are on airport property. These streams are documented to have anadromous chum, coho, pink, and sockeye salmon habitat. Development in these waterways requires permitting and approvals with the ADF&G and the National Marine Fisheries Service.

Loop Road No. 2 Creek has the most pressing concerns. It has a high potential to cause erosion along the runway safety areas and the FAA access road. Erosion could also impede fish passage. Any lengthening of the runway or facilities to the west will require wetland fill and alteration of the streambed.

6.4 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Map Service Center was consulted for floodplain mapping (Firm Maps: 0200940027C, 0200940029C, 0200940031C, 0200940033C; effective 12/1/1983). No floodplains are mapped within the airport property.

6.5 Threatened and Endangered Species

The US Fish and Wildlife Service (USFWS) IPaC: (Information for Planning and Consultation) was consulted for Threatened and Endangered Species presence. No Threatened or Endangered Species or their critical habitat was identified in the area (USFWS 2018).

6.6 Avalanche Risk

The City of Valdez mapped the avalanche paths that occurred during the spring of 2000 (Fesler 2000). The airport is not included in any of those areas but is adjacent to slopes similar to those near the Valdez Duck Flats which had a moderate avalanche risk within 2,000 feet of the mountain. The airport is within 2,000 feet of the similar slope, and although there is a likely high risk within 1,000 feet of the mountain, there are no developed facilities within 1,000 feet. The base of the mountains along the airport is densely vegetated, which indicates that an avalanche has not occurred recently.

6.7 Tsunami Risk

Valdez lies in an earthquake prone region, and the second largest earthquake ever recorded struck in 1964, with its epicenter approximately 50 miles west of Valdez. This earthquake and subsequent waves destroyed the town. Bays near Valdez were scoured up to 170 feet above mean low water (Pflaker et al.

1969). In the aftermath of the earthquake, Valdez relocated to a new townsite four miles away from the old site when the ground was determined to be unstable.

The City of Valdez has mapped a tsunami inundation zone, which does not reach into airport property. The City has also identified that potential maximum permanent flooding does not reach the runway, although it does overlap the western access road and wetlands on airport property.

6.8 Parklands and Recreational Areas

The Valdez Glacier Campground is adjacent to airport property, under the eastern flight path. This may be considered a Section 4(f) property under the U.S. Department of Transportation (USDOT) Act of 1966. If the campground is determined to be a 4(f) property, any impacts to this campground can only be allowed if there is no feasible and prudent alternative that avoids the property and if the project includes all possible planning to minimize the impacts. A "use" can also be found to be *de minimis* by the agency.

A Section 4(f) property typically has the following four criteria (Federal Highway Administration [FHWA], 2018):

1. Publicly Owned: The campground is publicly owned.
2. Open to the Public: The campground is open to the public.
3. The major purpose of the property is a park, recreation, or refuge: The campground's major purpose is recreation.
4. Is Significant: Properties are generally presumed significant, although final determinations are made by the FAA. This property has elements of a non-significant property due to being on the periphery of the city, being established after the airport was constructed, and having a history of aircraft operations over it. The campground is also not mentioned in the *Community of Valdez Strategic Plan 2013-2018,* and the community does not appear to have considered it significant enough to include it in planning efforts.

In addition to the Valdez Glacier Campground, there are a series of unauthorized, informal trails on the north side of the runway, following the stream corridor. These trails are not official City trails; and have not been designed or maintained by the City of Valdez. They are not included in the City of Valdez's mapping for trails. These informal trails are partially on airport property and include old jeep trails and walking paths. There is a level of interest by community groups to continue to use these trails, and to build and expand the trail system for motorized and non-motorized recreation. This expansion is described in the community group's *Draft Valdez Community Trails Plan* (2018).

6.9 Historic, Architectural, Archaeological, and Cultural Resources

The Alaska Historical Resources Survey maintained by the State Historical Preservation Officer was consulted on November 14, 2018 for the presence of known cultural resource sites on and in the vicinity of airport property. No such sites were identified, although this cannot be taken as confirmation that no such sites exist.

6.10 Noise

No noise analysis is required for airports with the forecasted activity levels of VDZ (FAA 2015b). Residents at the Aleutian Village Mobile Home Park (on airport property and zoned by the City of Valdez as Light Industrial), and properties adjacent to Mineral Creek Loop Road may experience noise from airport operations, but noise levels are not anticipated to increase significantly.

6.11 Socioeconomic and Environmental Justice

6.11.1 Socioeconomic

Valdez has a 2016 population estimate of 3,862 people (US Census 2017). The median age is 34 years; 84 percent of the population is white, and 97 percent of the population has a high school diploma or higher. The median household income is $80,357, with 7 percent of the population living below the poverty level. There are 1,342 housing units.

One factor to consider during the master planning process is the potential for impacts to housing where sufficient replacement housing is unavailable (FAA 2015b). The Aleutian Village Mobile Home Park is located on airport property and is leased to the Aleut Corporation (City of Valdez, 2018). It houses approximately 68 households and up to 200 Valdez residents. Many of the homes are the most affordable options in Valdez, and residents may not have another housing option. Lots are rented to residents who own the trailers (many of which are immobile). On September 9, 2015, the Aleut Corporation began efforts to close the property. The City of Valdez has been working since that time to facilitate buying the land and additional acreage from the State of Alaska, subdividing it, installing utilities, and selling the lots for residential purposes. Recently, a private individual bought the park from Aleut Corporation and appears to plan on continuing to run it as a mobile home park.

Master Plan alternatives have included recommendations for the Aleutian Village Mobile Home Park. Removing the homes may cause a socioeconomic impact to the community, especially since sufficient replacement housing is not available. This housing is subject to disproportionate noise impacts, as it is

located directly under the primary approach/takeoff flight path. From an airport expansion perspective, the parcel is separated from the runway and developed apron by wetlands, which would be more expensive to permit than development in uplands.

6.11.2 Environmental Justice

Airport improvement may pose potential impacts to an environmental justice population (i.e., a low-income or minority population). The Aleutian Village Mobile Home Park is some of the most affordable low-income property available in Valdez. Minority population numbers are not available for the neighborhood. Recommendations for the future of the parcel must take into the account potential impacts to this population.

6.12 Hazardous Materials and Storage

There are four known contaminated sites listed in the DEC Contaminated Sites Database.

- Snow Removal Equipment Building (SREB)

The SREB hosts two closed contaminated sites, a Class V Injection Well (File Number 2264.38.041) and multiple tanks (File Number 2264.26.004). In DEC files, this is referred to the Airport Operations and Maintenance Building.

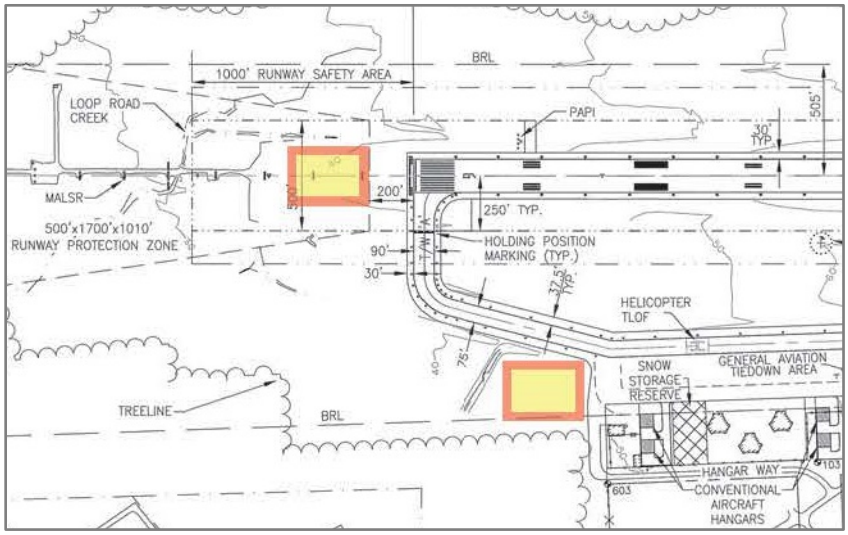
- Former Era Aviation Hangar

The former Era Aviation Hangar hosts one closed contaminated site, which was a leaking underground storage tank.

- Per-and polyfluoroalkyl substances (PFAS)

PFAS, a family of manmade chemicals found in a wide variety of residential, commercial, and industrial uses, are commonly found in AFFF. The use of AFFF during aircraft rescue and firefighting activities near Part 139 certificated airports and military installations has prompted investigations worldwide to identify potential impacts to soil and groundwater resources. Discharge areas at Valdez have been limited to the firefighting training areas near the west side of the airport (outlined in Figure 6-2). Groundwater generally flows from east to west (right to left of Figure 6-2), which would indicate that ground disturbing activities may have to mitigate PFAS contamination. Regulations and delineation of PFAS at VDZ continues to develop as this emerging issue evolves.

Figure 6-2 PFAS Discharge Locations



6.13 Landfills

FAA AC 150/5200-34A recommends that landfills be separated by at least six miles, to minimize wildlife hazards to aircraft (FAA 2006).

The City of Valdez Landfill is located directly adjacent to the airport, just to the southeast of the runway end. Due to the position of the runway in the valley, aircraft typically overfly this facility while at low altitudes during approach and takeoff.

During the writing of this Master Plan, the City contracted with the US Department of Agriculture to develop a wildlife evaluation for the facility. Subsequently, the FAA approved an expansion of the landfill in the same location.

6.14 Local Regulations

The City of Valdez requires local permits for a variety of actions. None of the regulations are anticipated to provide a significant difference in alternative consideration.

The Aleutian Village Mobile Home Park is currently zoned by the City as Light Industrial. If the Master Plan recommends the use remain residential, a local zoning change to Residential may be appropriate.

6.15 Environmental Considerations - Robe Lake

Due to the community's interest in the separate seaplane base at Robe Lake, we evaluated the environmental considerations for this facility.

6.15.1 Wetlands

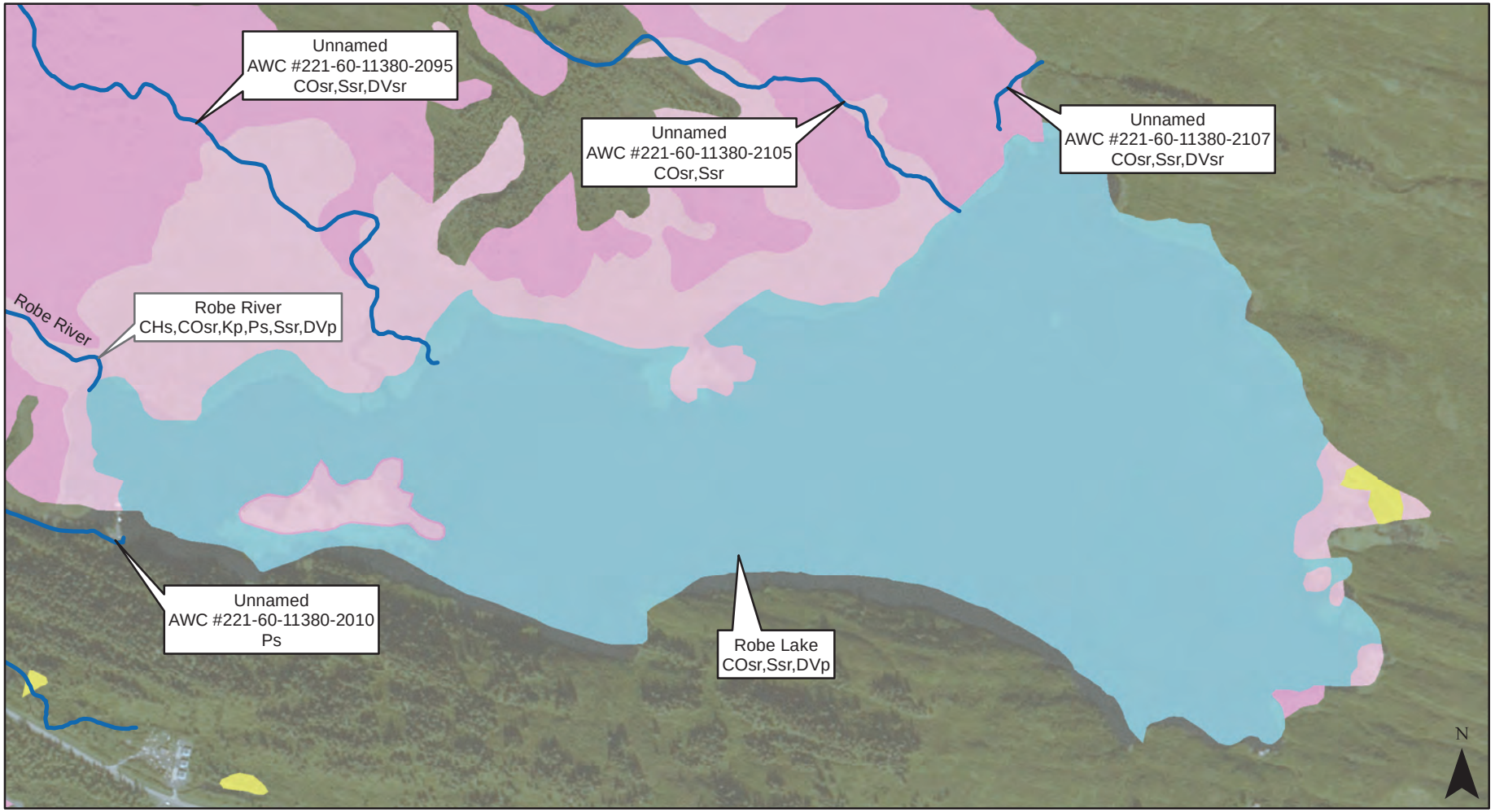
Facility development on or adjacent to Robe Lake is likely to impact wetlands and Waters of the United States (Figure 6-3). Permitting would need to take place with the US Army Corps of Engineers to minimize impacts to these resources.

6.15.2 Anadromous Fish Streams

Robe Lake is an Anadromous Water, and hosts coho salmon, sockeye salmon, and Dolly Varden. There are also a number of anadromous fish streams in the vicinity (Figure 6-3). Facility development would need to incorporate permitting with the ADF&G.

6.15.3 Park and Recreational Areas

Robe Lake is not a park but is a designated seaplane base. The lake is also a recreational area used by multiple user groups (e.g., recreational boaters, fishers, local residents). While the area might be considered a Section 4(f) property, the major purpose of the seaplane base would be to facilitate seaplane use. Even if it is not a Section 4(f) property, development of floatplane facilities would need to incorporate the other user groups and not provide preferential access to one user group. For example, a float plane dock could be paired with a second boat/fishing dock to improve access for other users.



0 600 1,200 2,400 Feet

Anadromous Stream

Wetlands (1978)
- Emergent Wetland
- Shrub Wetland
- Pond
- Lake

Fish Stream Abbreviations:

DV: Dolly Varden
CH: Chum Salmon
CO: Coho Salmon
K: King Salmon
P: Pink Salmon
S: Sockeye Salmon
p: Present Life Stage
r: Rearing Life Stage
s: Spawning Life Stage

Aerial Photography: GeoNorth Best Data Layer

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VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

Airport Master Plan Update
Robe Lake Environmental Overview

DATE: April, 2021

FIGURE **6-3**

U:\20470637001\GIS\mxd\Figures\airport_master_plan_complete\20470637001_amp_fig_6-3_Robe_Enviro.mxd Revised: 2021-04-19 By: cpannone

6.16 Issues Matrix

Each issue identified during public scoping was reviewed for how environmental factors may affect alternative design (Table 6-1). Issues without anticipated significant environmental differences for alternative design were not included.

Table 6-1 Environmental Issues Matrix

Leasing	Hangar Facilities	Minimize impacts to wetlands and other environmental resources
Land Use	Aleutian Village Mobile Home Park	Minimize Environmental Justice Impacts Minimize Socioeconomic Impacts Minimize Noise Impacts
	Recreational Trail Network	Anticipate Section 4(f) Impacts
Wetlands	Airport Fencing	Minimize impacts to wetlands and other environmental resources
Robe Lake	Land Use Agreement Facilities Improvements	Minimize impacts to wetlands, fish, and other environmental resources Minimize impacts to other parks and recreational land users
Infrastructure	Alter Runway/Taxiways SREB	Anticipate Section 4(f) Impacts Minimize impacts to wetlands and other environmental resources Minimize impacts to other user groups Contaminated Sites

7 ALTERNATIVES

To facilitate decision making for future development at Valdez Pioneer Field Airport (VDZ), several potential development alternatives were identified and evaluated for implementation. The alternatives were developed by identifying issues, facility requirements, and environmental factors to fully understand the current design before identifying potential ways to meet VDZ's needs using FAA design criteria. Through a technical and public review process, strengths and weaknesses were identified for each alternative. A preferred alternative was identified for implementation in the ALP after a thorough public involvement process.

7.1 Alternatives Overview

This Master Plan evaluated alternatives associated with the elements shown in Figures 7-1 and 7-2 and are listed below:

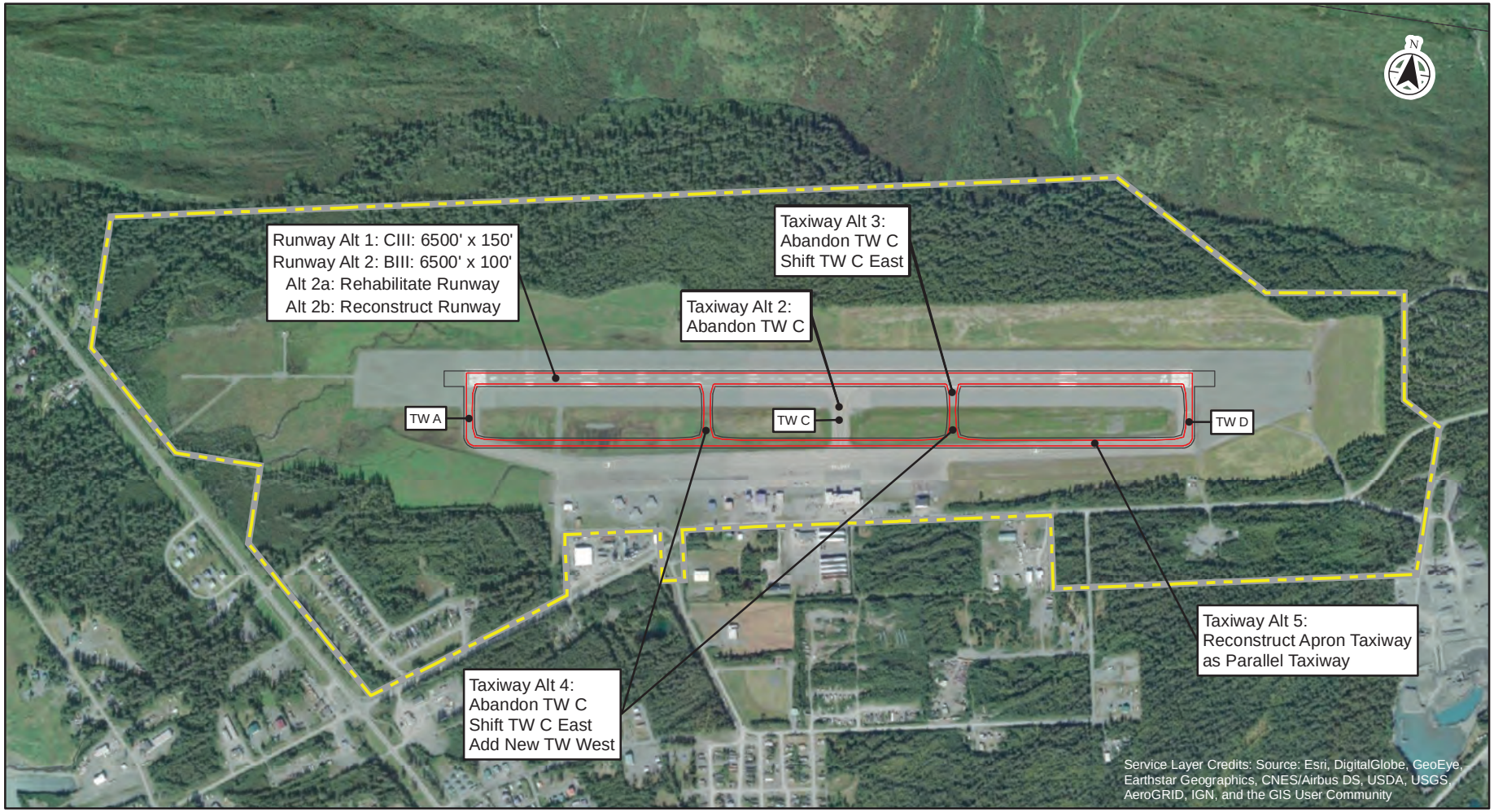
1. Runway (includes Runway Construction Considerations)
2. Taxiway
3. Airfield Improvements
4. Land Use
5. Robe Lake
6. Thompson Pass
7. Instrument Approach

7.2 Runway Alternatives

A primary consideration of this Master Plan is the reduction of the ARC at VDZ from C-III to B-III (Table 7-1). The FAA is the primary source of funding for construction at the airport. Given the forecasted aircraft traffic, the FAA can no longer participate in funding reconstruction of VDZ at a C-III design standard. This necessitates the consideration of a B-III design alternative, as per current FAA design guidance AC 150\5300-13A, Change 1 (FAA 2014).

The requirements of B-III standards are generally lesser than those of C-III. As a result, the runway width, runway shoulder width, and RSA width and length beyond the runway end are reduced. This decreases the amount of pavement surface to be maintained. The ROFA length and RPZ are also reduced. This decreases the amount of vegetation clearing needed. Existing runway markings will need to be obliterated and repainted to B-III standards, and the airfield lighting system will need to be relocated to accommodate the modified runway width. The runway remains the same length (6,500 feet).

The condition of the existing pavement was also considered during the development of the runway alternatives. DOT&PF performed a pavement inspection in 2019. The age of the pavement was 13 years old at that time. The PCI values for the runway were 48 for the mainline portion, 64 for the north edge, and 71 for the south edge. Recommended corrective actions associated with these PCI values are reconstruction for the mainline pavement, rehabilitation for the north edge, and preventative maintenance for the south edge (DOT&PF 2019). Review of the detailed inspection report shows the pavement is in good condition with no signs of structural deterioration. The distresses observed were predominantly of low severity and are mostly caused by environmental factors of the pavement surface (e.g. weathering, aging, snow removal operations).



0 600 1,200 2,400 Feet

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Airport Property

Alternative Alignments

Taxiway Alt 1: No Action

STATE OF ALASKA
Department of Transportation and Public Facilities
Northern Region - Aviation
2301 Peger Road Fairbanks, AK 99709

VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

Airport Master Plan Update
Runway and Taxiway Alternatives

DATE: April, 2021

FIGURE **7-1**

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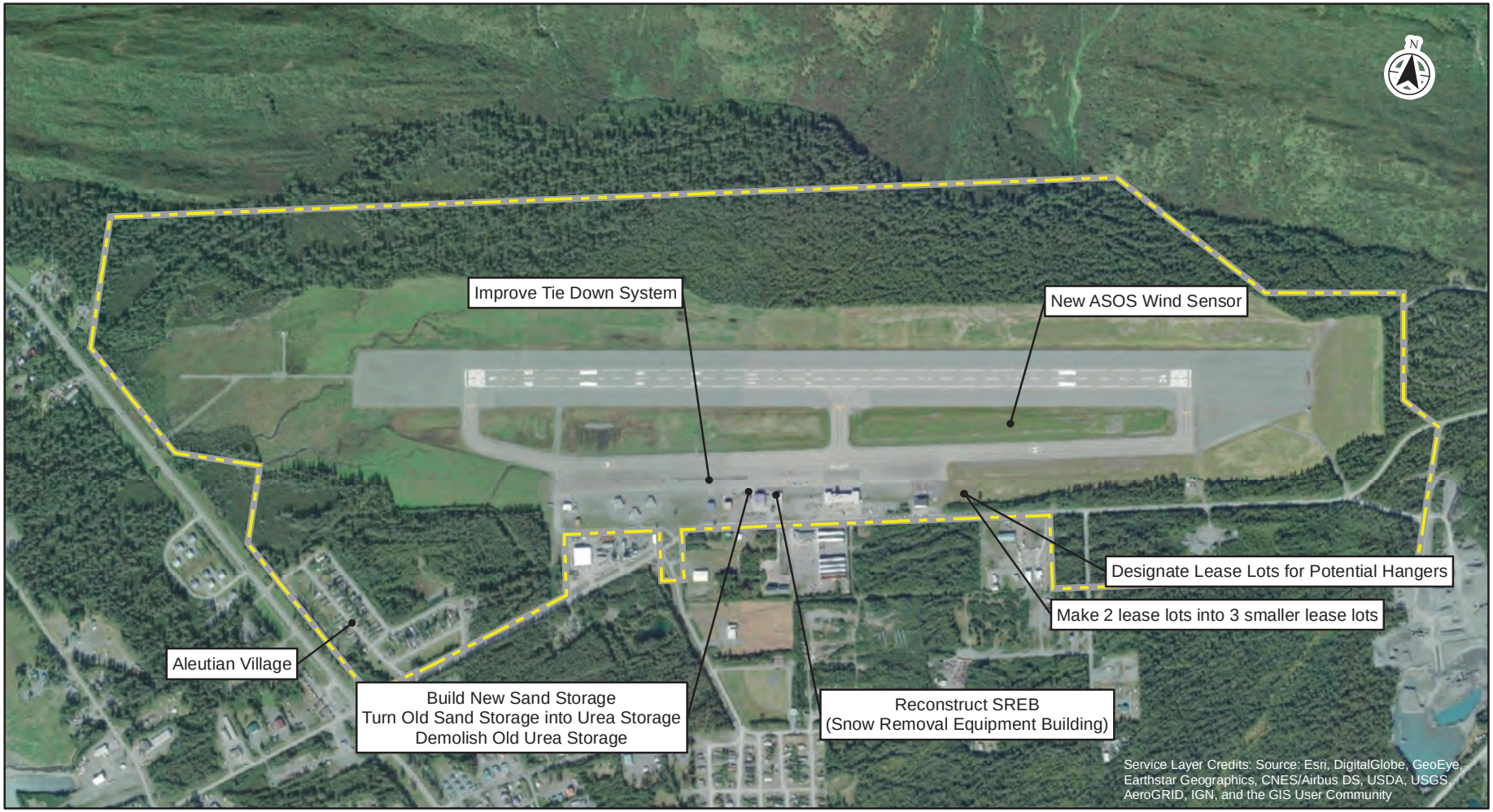

0 600 1,200 2,400
Feet

Legend

Airport Property

STATE OF ALASKA
Department of Transportation and Public Facilities
Northern Region - Aviation
2301 Peger Road Fairbanks, AK 99709

VALDEZ PIONEER FIELD AIRPORT
VALDEZ, ALASKA

Airport Master Plan Update
Other Airport Improvement Options

DATE: April, 2021

FIGURE **7-2**

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Table 7-1 Runway Design Standards Comparison.

Design	Existing[1] (feet)	Alternative 1: C-III[2] (feet)	Alternative 2: B-III[2] (feet)
Runway			
Length	6,500	6,500	6,500
Width	150	150	100
Shoulder Width	30	25	20
Runway Safety Area (RSA)			
Length Beyond Runway End	1,000	1,000	600
Width	500	500	300
Runway Object Free Area (ROFA)			
Length Beyond Runway End	1,000	1,000	600
Width	800	800	800
Runway Object Free Zone (ROFZ)			
Length Beyond Runway End	200	200	200
Width	400	400	400
Runway Protection Zone (RPZ)			
Length	1,700	1,700	1,000
Inner Width	500	500	500
Outer Width	1,010	1,010	700

[1] Existing Runway Design Standards AC 150/5300-13, Change 6
[2] Proposed Alternatives Runway Design Standards AC 150/5300-13A, Change 1
Source: Valdez Pioneer Field Airport Layout Plan, (DOT&PF, 2010).
Runway Design Matrix, Appendix 7, (FAA, 2014).

7.2.1 Runway Alternative 1 – Maintain Runway at ARC C-III Standards

Runway Alternative 1 would maintain the airport in the previous C-III configuration, as described in Chapter 2: Inventory, with rehabilitation as required for maintenance. Development of this alternative may require consideration of potential PFAS contamination on the west side of the airport.

Alternative 1A: Rehabilitate to C-III

If existing PCI data confirms rehabilitation as the proper treatment, the FAA may choose to participate in milling and overlaying the runway to C-III width. This exceeds B-III standards and will require discussion with and approval by the FAA prior to developing the project.

Alternative 1B: Reconstruct to C-III

If a reconstruction project is confirmed as necessary, DOT&PF may choose to reconstruct the runway beyond B-III standards to C-III standards with state or local funds. The FAA has indicated that reconstruction of the airport to B-III standards is preferred and would be eligible for FAA funding, and work beyond B-III standards to the extents of previous C-III configuration would be ineligible. Maintaining the airport in the previous C-III configuration long term is improbable.

7.2.2 Runway Alternative 2 – Maintain Runway at ARC B-III Standards

Runway Alternative 2 proposes maintaining the airport at current B-III standards (FAA 2014). The FAA has indicated that reconstruction and rehabilitation of the airport to B-III would be eligible for funding.

The previous airport configuration had a wider RSA to meet C-III standards. The excess area of the RSA would be allowed to remain since it is already present and easily maintained. It would provide additional safety area during a runway excursion. Similarly, excess runway and shoulder pavement resulting from the change from C-III to B-III would need to be removed.

Development of this alternative may encounter potential PFAS contamination on the west side of the airport.

Two potential scenarios are possible for this alternative. The scenario that is ultimately selected is dependent upon the age of the pavement and corresponding PCI results at that time of project development and design.

Alternative 2A: Rehabilitate to B-III

If existing PCI data confirms rehabilitation as the proper treatment, milling and overlaying the existing pavement to meet B-III dimensions will occur. This would be completed in conjunction with the light relocation, application of new runway markings, and pavement removal.

Alternative 2B: Reconstruct to B-III

If the pavement reaches the point that it needs reconstruction, existing asphalt pavement will be removed, base course thickness will be increased to meet current standards, and new asphalt pavement will be placed to meet the B-III standard dimensions.

7.2.3 Runway Construction Considerations

Rehabilitation or reconstruction of the VDZ runway may have a large impact on the community, including potentially shutting down the airport's services to the community during construction. The City of Valdez is accessible not only by the airport, but also by the Richardson Highway and the Alaska Marine Highway System. This accessibility lends itself to multiple options for construction phasing with varying degrees of impact on airport operations. The construction phasing options are outlined below, ordered from least construction effort to most construction effort.

Full Runway Closure

A full runway closure would require the airport to be non-operational for the duration of construction. This would have the largest impact on the community and is the least preferred of the options provided.

Half-Width Runway Closure

Traditionally, communities in Alaska with access to the road system are not allowed to conduct half-width runway closures. An exception may be negotiated with the FAA, if the agency agrees with the undue hardship of the long road travel required to Anchorage.

A half-width runway closure would result in the runway width being reduced during the first half of runway construction. The De Havilland Dash 8 has the most operations at VDZ. The Dash 8 has a wingspan of approximately 85 feet and a main gear width of approximately 28 feet. A half-width runway closure would not affect Dash 8 operations. This option would close the airport to larger aircraft, which visit VDZ less frequently.

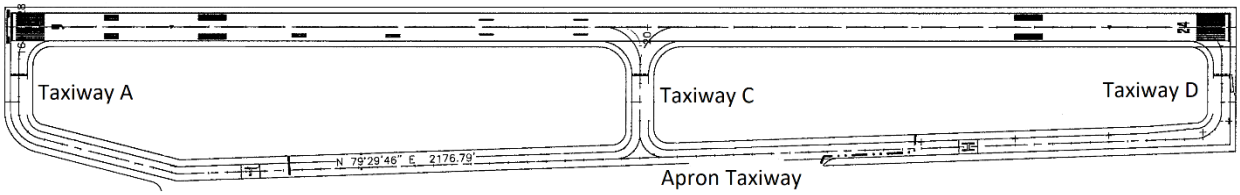
Temporary Runway

The use of a temporary runway would allow a full closure of RW 06/24 while maintaining aircraft access to the airport. The Apron Taxiway runs generally parallel with the runway and has been used as a temporary runway in the past. This option would likely eliminate the use of apron space outside of the hangers or terminal to any activities, including parking of aircraft, vehicles, or material storage. Further discussion of expanding and realigning the Apron Taxiway is provided in Section 7.3.5, *Taxiway Alternative 5 – Realign Apron Taxiway*.

7.3 Taxiway Alternatives

VDZ currently has four taxiways: Taxiways A, C, D, and the Apron Taxiway (Figure 7-3). Taxiways A and D intersect the runway at either end, while Taxiway C intersects at the middle. Taxiways A and D transition into the Apron Taxiway, which runs along the apron.

Figure 7-3 Existing Runway 06/24 and Taxiway Layout



The previous C-III airfield configuration and geometry are reflective of AC 150\5300-13 design guidance (FAA 1989). That guidance has since been updated and issued as AC 150\5300-13A, and subsequently updated to Change 1 (FAA 2014). Generally, under the new standard, design criteria for taxiway operating areas decrease or shift toward the respective taxiway, and intersection configurations differ.

All existing taxiways are at least 75 feet wide, thereby exceeding FAA design criteria (FAA 2014), and will remain the same for all alternatives. Current taxiway geometry at the intersections is not in conformance with current standards, as FAA taxiway design standards are now governed by "fillet design" and no longer support radii at intersections.

Table 7-2 Taxiway Design Standards Comparison

Design	Existing Taxiway[1] (Feet)		Proposed Taxiway[2] (Feet)
	A/C/D	Apron	A/C/D/Apron
Taxiway			
Width	90	75	50
Shoulder Width	30	37.5	30
Taxiway Safety Area (TSA)			
Width	150		118
Taxiway Object Free Area (TOFA)			
Width	186		186

[1] Existing Runway Design Standards AC 150/5300-13, Change 6
[2] Proposed Alternatives Runway Design Standards AC 150/5300-13A, Change 1

Source: Valdez Pioneer Field Airport Layout Plan, (DOT&PF, 2010).
Table 4-1. Design standards based on Airplane Design Group (ADG), (FAA, 2014).
Table 4-2. Design standards based on Taxiway Design Group (TDG), (FAA, 2014).

Current FAA design guidance prohibits any direct connection between the apron and the runway, without first requiring a turn onto a taxiway. This currently takes place at TW C. The simplest solution is to paint a no-taxi marking at any location on the apron that fits this designation. All the considered taxiway alternatives incorporate this update.

TW C intersects the runway at station 55+00. TW C intersects the middle third of the runway and is therefore a "high energy" intersection. The current location of TW C encourages landing aircraft to either make a high-speed exit at TW C or continue to the end of the runway to exit, increasing the time spent on the runway. According to FAA standards, this intersection is nonstandard and should be corrected as soon as practicable (FAA 2014).

The following sections present alternatives to address the nonstandard TW C and continue the discussion started for the runway alternatives regarding a parallel taxiway alternative.

7.3.1 Taxiway Alternative 1 – Maintain Taxiway Infrastructure

Taxiway Alternative 1 would maintain the current taxiway infrastructure, but it would add a no-taxi marking between the apron and TW C. Rehabilitation would take place in the current alignment. TW C's location and the runway/taxiway high-energy intersections would not be compliant with FAA guidance.

7.3.2 Taxiway Alternative 2 – Abandon Taxiway C

Taxiway Alternative 2 would abandon TW C in place.

Landing aircraft would be required to traverse the entire length of the runway to exit. This would create operational delays since many aircraft using VDZ use TW C, as they do not require the full runway length. The abandoned taxiway pavement could be left in place to be available to snow removal equipment and for aircraft rescue and firefighting activities.

7.3.3 Taxiway Alternative 3 – Shift Taxiway C East

Most landings currently occur on RW 06. Taxiway Alternative 3 would shift TW C to the east. This would move TW C out of the middle third (high energy area) of the runway. A no-taxi marking would be painted if the new taxiway offered direct access to the apron.

This would allow landing aircraft to exit the runway safely without the need to traverse the entire length of the runway. Aircraft landing on RW 24 would still be required to traverse the entirety of the runway to exit.

7.3.4 Taxiway Alternative 4 – Relocate Taxiway C and Construct New Taxiway

Taxiway Alternative 4 would relocate TW C to the outer third of the runway, similar to Taxiway Alternative 3. This alternative would also construct a new taxiway on the opposite outer third. This alternative allows landing aircraft to exit either approach end of the runway sooner, increasing the safety of the runway. No-taxi markings would be painted where the new taxiways offered direct access to the apron.

The relocation of TW C and construction of an additional taxiway would require a significant amount of earthwork, as new embankments would need to be constructed for both taxiways over the existing infield, reducing the infield area available to storm water runoff and snow storage.

7.3.5 Taxiway Alternative 5 – Realign Apron Taxiway

Taxiway Alternative 5 would realign the Apron Taxiway to be truly parallel with the runway. The need for a parallel taxiway is currently met by a series of taxiways generally parallel to the runway (Taxiway A and Apron Taxiway); however, a single, truly parallel taxiway would standardize the layout of the airport and increase safety.

The ROFA requirements of using the current parallel taxiway as a temporary runway would extend to the airport terminal, rendering most of the apron unusable during operations. A realignment of the Apron Taxiway would alleviate this issue. This alternative would allow VDZ to serve larger aircraft during runway construction.

This alternative would create more pavement surface area to maintain. It would also involve relocation of lighting systems and potentially the heliport, resulting in a significant amount of excavation, fill, drainage consideration, and other construction related work.

Development of this alternative may encounter PFAS contamination on the west side of the airport.

7.4 Airfield Improvements

7.4.1 Improving Wind Sensors

VDZ has a primary wind cone (in the segmented circle), and a supplemental wind cone on the east infield. Improved wind sensors are required due to the high degree of wind shear that can be present along the runway. Pilots report that the two wind cones are accurate and helpful, as wind shear can be so large as to point the wind cones in opposite directions.

VDZ has a single AWOS which provides automated wind readings to pilots over the radio. VDZ needs improved wind sensors, to report wind shear from the east side of the airfield. This will allow pilots to better anticipate winds during landings, taxiing, and takeoffs.

7.4.2 Sand and Urea Storage

The current sand storage building is too small for the operation and maintenance needs of the airport.

The Airport Project Evaluation Board (APEB) recommended deconstruction of the current urea storage building (July 11, 2006). The door no longer functions, water pools in the urea, and the lack of climate control makes the urea unusable.

In 2010 DOT&PF designed a project to construct a new standalone sand storage building adjacent to the current sand storage building. The urea could then be moved into the current sand storage building, and the current urea storage could be demolished.

This design is preferred by the airport operations staff. By collocating the buildings, trucks being loaded with sand and urea can mix the product according to the conditions of the day. It also allows urea storage to be accessible from inside the gates, instead of maintenance vehicles needing to exit the airfield.

This alternative would maintain the same general concept of the 2010 project, allowing its design to be updated to be compliant with current code and facility needs. The new SREB would fit on the current lot.

Figure 7-4 Sand and Urea Storage

7.4.3 Snow Removal Equipment Building (SREB)

The APEB recognized the need for the VDZ SREB to be reconstructed (September 7, 2017). It was built in the 1970s and last improved in 1994. The building is in poor condition and no longer accommodates the snow removal equipment being used for the airport.

Airport operations staff would prefer a new building in the same location. The concept is to demolish the current building, and reconstruct an updated building designed to accommodate current equipment while remaining eligible for FAA funding.

The building has historic contaminated sites that are considered closed by the ADEC.

7.4.4 Tie-Down System

VDZ has a series of tie downs embedded into the pavement. During the Valdez Fly In event, additional tie downs are required, and "Jersey Barriers" are used to anchor cables along the apron (Figure 7-5).

Figure 7-5 Current Jersey Barrier Tie-Down System Used During the Fly-In

An alternative tie down system that allows cables to be anchored to an embedded engineered system would be beneficial. This alternative would remove the Jersey Barrier hazard to taxiing aircraft.

7.4.5 Airport Fencing

VDZ's fence borders the east, west, and south sides of the airport. There is no northern fence, due to maintenance difficulties. FAA has determined the airport needs a full perimeter fence to meet wildlife hazard management requirements. Constructing a fence around the full airport would also increase security. Fencing design would need to consider that snow gets so high that fences can be easily traversed. Also, snow load and snow removal activities load and stress the fencing, which significantly reduces their useful life.

7.5 Land Use

7.5.1 Lease Lot Size

There were requests from stakeholders to develop smaller lease lots (e.g., 100 feet by 100 feet) at VDZ. This was motivated by the interest to make lease lots more affordable, encouraging on-airport development. Current lease lots are about 150 feet wide and 230 to 270 feet deep.

DOT&PF has designated smaller lease lots at other airports, with poor results. DOT&PF has found that too small lease lots do not meet fire code setback standards, which is required to obtain financing to build structures (e.g., hangars). Lease lots of 150-foot-width are about as small as can be allowed.

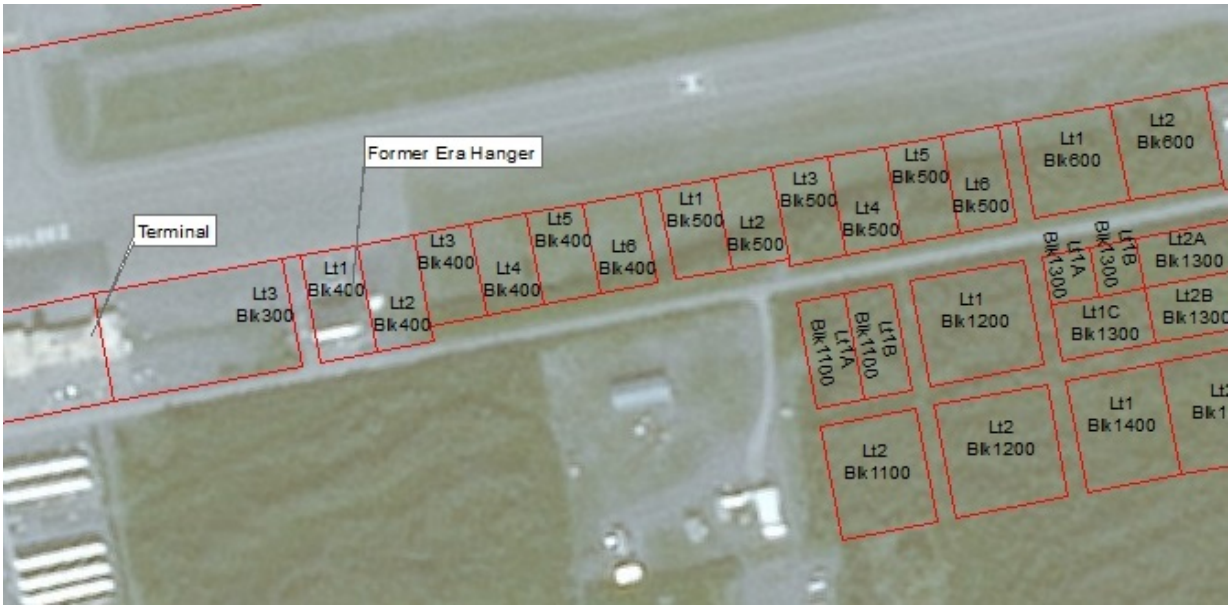
7.5.2 Lease Lots: New Hangers

During the development of the Master Plan, numerous requests were received to designate the most suitable lots for additional hanger construction. Current development focused on the west side of the terminal, but further construction of hangers on vacant lease lots in this area would significantly increase the cost of winter snow removal from the apron and taxiways.

Expansion and development of future hangers would be best suited east of the terminal, where there are several undeveloped lease lots and extensive areas for snow storage. The most valuable lease lots for future development would likely be Lot 3 Block 400, Lot 4 Block 400, Lot 5 Block 400, and Lot 6 Block 400 (Figure 7-6). Other lots suitable for hanger development include Block 500 (Lots 1-6), and Block 600 (Lots 1-2). Development of hangers may require construction of taxiways and aprons to serve the facilities.

The neighboring former Era Hanger is a historic contaminated site, which is considered closed by the ADEC.

Figure 7-6 Lease Lots East of the Terminal



7.5.3 Campground

The campground located east of the airport is generally not located on airport property. Approximately three campsites appear to abut the airport fence line and may encroach on the airport property. This may

have taken place under the assumption that the fence line marks the airport property boundary. The status and permitting of these sites should be investigated.

7.5.4 Aleutian Village

The Aleutian Village (Parcel E, Figure 7-7) is VDZ property and is leased to a third party. It is currently used for residential housing. Early in the development of the Master Plan, the leaseholder wanted to terminate the lease, with a potential sale to the City of Valdez. As such, the Master Plan had begun to evaluate if the parcel should remain part of the airport, or if it should be recommended for release from VDZ ownership.

Figure 7-7 Aleutian Village, separated from the main airport by Pipe Creek (blue)

Ultimately, the City of Valdez decided not to buy the parcel, and a new leaseholder bought the lease (which expires in 2060). The new leaseholder currently plans to continue to lease the parcel from the airport.

Given these developments, the Master Plan no longer needs to evaluate the potential sale of the parcel.

7.6 Robe Lake

Robe Lake is not part of VDZ and is not part of the FAA Grant Obligations for VDZ. This Master Plan is focused on analysis and recommendations for VDZ, and it is outside of the scope to provide design or permitting for Robe Lake facilities.

Robe Lake is an important float plane facility to the community of Valdez. This alternative would recommend that the float planes users and the City of Valdez work to establish infrastructure at Robe Lake to improve access for all users, including aviation stakeholders.

7.7 Thompson Pass Airport

Thompson Pass Airport is an important weather alternative for pilots and hosts a large amount of winter heli-skiing activity. It is recommended that the State of Alaska continues to maintain the airport as a safe backcountry location, and that any improvements to the facility conform to FAA design standards.

7.8 VDZ Instrument Approach

This alternative would recommend improving instrument approaches into Valdez. See Attachment B: Instrument Approach Briefing.

Two general options are considered:

- Improve funding for maintaining the Johnstone Point VOR radio navigational aid.
- Develop a new Area Navigation (RNAV) approach.

A new RNAV approach is specifically tailored to the equipment in the aircraft. As a result, this option requires close coordination with the business that provides regularly scheduled air service into Valdez. Twice, in 1994 and 2000, improved approaches at Valdez have been stopped because the aircraft did not have the instruments installed to use the approaches. This Master Plan's analysis encountered the same issues in recommending a new instrument approach. As a result, it is recommended that this alternative be carried forward and addressed in the future.

7.9 Evaluation Criteria

The criteria outlined below were used to measure the effectiveness and feasibility of various alternatives for VDZ (Table 7-3). Alternatives developed as part of this study were evaluated based on the following factors:

- ***Operational Factors:*** Each alternative was evaluated on its ability to accommodate safe aircraft ground and flight operations. An alternative passed this criterion if it did not compromise operations.

- ***Economic Factors:*** Alternatives may result in excessive costs based on construction, acquisition, or other development requirements. A planning level cost estimate was developed to allow the magnitude of project costs to be compared (Appendix D).
- ***Implementation Factors:*** Often, certain factors, both tangible and intangible, affect the ability of the airport to implement development alternatives. Community and political acceptance and feasibility of land acquisition is an example. An alternative passed this criterion if it could be practicably implemented.
- ***Environmental Factors:*** Alternatives were also evaluated on the potential environmental impact for each proposed alternative.

Table 7-3 Alternative Evaluation

Project	Operate?	Economic?	Implement?	Environmental?
Runway				
Runway Alt 1a: C-III (Rehabilitation)	Yes	$5,310,000	Yes	Potential PFAS Contamination
Runway Alt 1a: C-III (Reconstruction)	Yes	No Funding Available	Yes	Potential PFAS Contamination
Runway Alt 2a: B-III (Rehabilitation)	Yes	$7,980,000	Yes	Potential PFAS Contamination
Runway Alt 2a: B-III (Reconstruction)	Yes	$10,100,000	Yes	Potential PFAS Contamination
Runway Construction Consideration				
Full Runway Closure	Airport Closed	N/A	Yes	N/A
Half-Width Runway Closure	Yes	N/A	Yes	N/A
Temporary Runway	Yes	N/A	Yes	N/A
Taxiway				
Taxiway Alt 1: No Action	No	$0	Yes	N/A
Taxiway Alt 2: Abandon Taxiway C	No	$130,000	Yes	N/A
Taxiway Alt 3: Shift Taxiway C East	Yes	$2,390,000	Yes	N/A
Taxiway Alt 4: Relocate Taxiway C and Add New Taxiway	Yes	$4,360,000	Yes	N/A
Taxiway Alt 5: Reconstruct Apron Taxiway as Parallel Taxiway	Yes	$16,610,000	Yes	Potential PFAS Contamination
Airfield Improvements				
Improve Wind Sensor	Yes	$25,000	Yes	N/A
Sand and Urea Storage	Yes	$2,000,000	Yes	N/A
SREB	Yes	$4,000,000	Yes	Closed Contaminated Sites
Improve Tie-Down System	Yes	N/A	Yes	N/A
Airport Fencing	Yes	$1,820,000	Yes	Yes
Land Use				
Smaller Lease Lot Size	No	N/A	No	N/A
Lease Lots: New Hangers	Yes	N/A	Yes	Closed Contaminated Sites
Campground Encroachment	Yes	$0	Yes	N/A
Aleutian Village: Retain	Yes	N/A	Yes	N/A
Robe Lake				
Improve Facilities	Yes	N/A	Independent Effort	N/A
Thompson Pass Airport				
Recommend Continued Maintenance	Yes	N/A	Independent Effort	N/A
Instrument Approach				
Develop Better IFR Approaches	Yes	N/A	Independent Effort	N/A

Alt. – Alternative
ARFF – Airport Rescue and Fire Fighting
IFR – Instrument Flight Rules
PFAS – Per-and polyfluoroalkyl substances
SREB – Snow Removal Equipment Building
STOL – Short Takeoff and Landing

7.10 Public Comments

The Master Plan team presented the alternatives to the Valdez City Council on January 5, 2021, and held a separate public meeting on January 7, 2021. These meetings kicked off a 30-day public comment period to gain the community's perspectives on the project. A virtual public meeting was hosted on the project website throughout the 30-day public comment period to allow the public to review the alternatives.

Public comments focused on the desire to:

- Maintain the current C-III runway width (150 feet), and
- Improve the instrument approaches available at the airport.

City Council comments focused on the desire to:

- Improve the instrument approaches available at the airport,
- Investigate if the B-III runway width (100 feet) would restrict use by the US Coast Guard, and
- Advocate for infrastructure improvements at Robe Lake.

The US Coast Guard provided written comments that stated a 150-foot-wide runway is preferred for operations of the C-130 aircraft (their primary aircraft using Valdez). They also stated that a 100-foot-wide runway can still be used, but would be more challenging, especially in poor weather.

7.11 Preferred Alternative

DOT&PF selected the preferred alternative by considering the public comments, operation, finances, implementation, and environmental impacts of each alternative.

7.11.1 Runway Alternative

FAA funding remains the only viable option to financially support the airport. While the airport's stakeholders would prefer to maintain a C-III facility, the FAA will only fund a B-III airport in the long term. Because of this, the Preferred Alternative is split between Rehabilitation and Reconstruction Alternatives:

- Rehabilitation:
    - If the FAA will provide project funding for work beyond B-III standards, Runway Alternative 1A is selected as the preferred alternative, with rehabilitation to the previous C-III configuration.
    - If the FAA will only provide project funding for work to B-III standards, Runway Alternative 2A is selected as the preferred alternative, with rehabilitation to B-III standards.
- Reconstruction: Runway Alternative 2B is chosen as the preferred alternative for reconstruction to the B-III standards. This is the only financially viable option, since it is the only alternative FAA will fund at the current level of aircraft operations.
- Half-width runway closure, and/or use of the existing parallel taxiway for temporary operations, is recommended for implementing construction. This will allow continued operation of passenger service aircraft (Dash 8), without shutting down the airport.
- Operations do not currently justify the FAA funding of a new gravel runway.

7.11.2 Taxiway Alternative

Taxiway Alternative 4 allows for full runway operations and has the least negative impact on the airport. According to FAA guidance, TW C must not remain in the high energy area associated with RW 06/24. Valdez's unique mix of private bush planes and commercial aircraft requires dramatically different requirements in runway use.

The two midfield taxiways will encourage pilots to safely enter and exit the runway, without time-consuming full-length runway taxiing.

7.11.3 Airfield Improvements

All the proposed airfield improvements are recommended, including Improve Wind Sensor, Sand and Urea Storage, SREB, Tie-Down System, and Airport Fencing. None require major airport reconfiguration, and all would address the safety and operational needs of VDZ.

The Master Plan also recommends that normal operations and maintenance activity continue, including maintaining the fencing and gates, and addressing lighting/electrical issues.

7.11.4 Land Use

Lease Lot Size

Lease lot size reductions are not recommended. Smaller lease lots would have more difficult development due to fire code requirements. This would decrease the value of the lease lots, potentially making them unusable.

Lease Lots: New Hangers

Lot 3 Block 400, Lot 4 Block 400, Lot 5 Block 400, and Lot 6 Block 400 are recommended to be prioritized for future hanger construction (in no particular order). Other lots suitable for hanger development include Block 500 (Lots 1-6), and Block 600 (Lots 1-2).

The key consideration in hanger development is to maintain vacant space along hangers for winter snow storage.

The Master Plan did not produce cost estimates for new hangers, due to the variability a new hanger may have in square footage, design, and required apron/taxiway. We did receive a estimate of $200/square feet for a pre-fabricated building, including foundation; but not including insulation, utilities, or apron/taxiway development.

Campground

The status and permitting of the campground sites which may encroach on airport property should be investigated.

Aleutian Village

The Master Plan recommends retaining the parcel in its current status. Other alternatives can be considered by airport management as they develop.

Robe Lake

Airports owned by the Alaska DNR at Robe Lake and Thompson Pass are not part of VDZ and are not obligated by FAA grant assurances to the airport. The DOT&PF does not own or have the financial capacity to improve or maintain these facilities.

Robe Lake stakeholders and the local government should work together to improve the facilities at Robe Lake. Improvements at Robe Lake may be easiest to accomplish by the City of Valdez applying for the appropriate permits from DNR, who owns the lake. Interested aviation stakeholders could collaborate with the City to provide needed operations and maintenance support for the facility. Improvements will be easier to permit with the creation/design of infrastructure that benefits all potential stakeholders, including floatplanes, boats, and other recreational activities.

7.11.5 Thompson Pass

DNR's Thompson Pass Airport should continue to be maintained as a safe backcountry airstrip. It is an important safety alternative during bad weather in the region. It is also a popular winter heli-skiing facility. DOT&PF will continue coordinating with DNR to ensure the facility is maintained as an airport and that any improvements, if implemented, conform to FAA design standards for an A-1 airport.

7.11.6 Instrument Approach

The Master Plan recommends that the FAA examine the removal and replacement of the "RUNOC" fix on the LDA/DME-G with another strategy to increase the safety of the approach, if possible. Pilots report that it is currently distracting to hit the fix while trying to land the aircraft, and they request examination of new alternatives to balance safety and cockpit workload.

The Master Plan recommends further work to improve instrument approaches to VDZ. Potential improvements include better maintenance for existing equipment and/or establishing more advanced instrument approaches for Valdez.

Establishing more advanced approaches at Valdez is popular but will not work if the aircraft using the airport do not have the instruments to read the advanced approaches. At least twice in the past, improvements to Valdez's instrument approaches did not provide benefits because of this gap. This is detailed in the attached *Instrument Approach Briefing*.

Equipping aircraft with instruments is expensive and there would need to be an economic incentive for the air carrier to upgrade the fleets' equipment. Otherwise, an air carrier may not be able to afford an investment in upgrading their instruments to provide this increased level of service to the community.

8 FACILITIES IMPLEMENTATION PLAN

8.1 Implementation Plan

This chapter provides important guidance on how to implement the recommendations of the Master Plan.

First, the recommended projects were split into Near Term (0-5 years) and Ultimate (more than 5 years). Most of the recommended improvements can be implemented in the near term, directly addressing the current safety and operational needs of the facility.

The following is presented in Table 8-1:

- Preparatory Actions: Some projects require actions to take place prior to being implemented (e.g., environmental, design, and/or funding).
- Interrelationship Between Projects: Some of the projects impact other projects.
    - The taxiway projects and runway projects are interconnected. Either can be completed independently, or they can be sequenced in order. No matter what the sequence, adequate taxiways must serve the runway at each stage of development.
- Operational Issues: Projects may restrict airport operations.
    - Rehabilitation or reconstruction of the runway may result in Valdez not having a functional airport during construction. This could take place for an extended period. The project implementation plan may be able to mitigate this impact using half-width runway operations and/or using the parallel taxiway as a temporary runway.
    - Any improvements to the facility must consider the Spring Mother's Day Valdez Fly-In. This is a period of unusual activity at the airport, and facilities are often operating at capacity. This event is of unique economic importance to the community.

Table 8-1 Facilities Implementation Plan

Project	Near/ Future?	Preparatory Actions	Interrelationship Between Projects	Operational Issues
Runway				
Rehabilitate to C-III 6,500 feet x 150 feet	Near	Ensure FAA will participate. Prioritize, design, fund.	Coordinate with taxiway project.	Implement half width runway ops or use parallel taxiway as runway. Ensure functionality for annual Fly-In
Reconstruct to B-III 6,500 feet x 100 feet	Future	Prioritize, design, fund. Coordinate with FAA to alter ancillary facilities (e.g., NAVAIDs)	Coordinate with taxiway project.	Implement half width runway ops or use parallel taxiway as runway. Ensure functionality for annual Fly-In.
Taxiway				
Relocate Taxiway C and Add New Taxiway	Near	Prioritize, design, fund.	Coordinate with runway rehabilitation and reconstruction	Ensure functionality for annual Fly-In
Airfield Improvements				
Improve Wind Sensor	Near	Coordinate with FAA. Prioritize, design, fund.	Coordinate location with other airfield projects.	None
Sand and Urea Storage	Near	Prioritize, design, fund.	None	None
SREB	Near	Prioritize, design, fund.	None	None
Improve tie downs	Near	Prioritize, design, fund.	None	Ensure functionality for annual Fly-In
Airport Fencing	Near	Prioritize, design, fund.	None	None
Land Use				
Maintain Lease Lot Size	Near	None	None	None
Lease Lots - New Hanger	Near	None	None	None
Campground	Near	None	None	None
Aleutian Village: No Action	Near	None	None	None
Encourage Non-DOT&PF Improvements				
Robe Lake	N/A	N/A	N/A	N/A
Thompson Pass Airport	N/A	N/A	N/A	N/A
Instrument Approach	N/A	N/A	N/A	N/A

Key: DOT&PF – Alaska Dept. of Transportation and Public Facilities FAA – Federal Aviation Administration
NAVAIDs – navigational aids SREB – Snow Removal Equipment Building

8.2 Environmental Considerations

The environmental overview (Chapter 6) provides a planning level review of environmental factors at the Valdez Airport. Table 8-2 provides a review of the potential environmental concerns for the Master Plan's preferred alternative.

The appropriate environmental documents and permitting will need to be completed prior to construction of the projects.

Table 8-2 Environmental Considerations

	Air Quality	Wetlands	Fish	Floodplains	Endangered Species	Avalanche Risk	Tsunami Risk	Parks / Recreation	Historic, Cultural	Noise	Socioeconomic, Environmental Justice	Contamination	NEPA
Runway													
Rehabilitate to C-III 6,500 ft x 150 ft	m	A	A	A	m	m	m	m	m	m	m	A	CE/ EA
Reconstruct to B-III 6,500 ft x 100 ft	m	A	A	A	m	m	m	m	m	m	m	A	CE/ EA
Taxiway													
Relocate Taxiway C and Add New Taxiway	m	A	m	m	m	m	m	m	m	m	m	m	CE
Airfield Improvements													
Improve Wind Sensor	m	m	m	m	m	m	m	m	m	m	m	m	CE
Sand and Urea Storage	m	m	m	m	m	m	m	m	m	m	m	A	CE
SREB	m	m	m	m	m	m	m	m	m	m	m	A	CE
Improve tie downs	m	m	m	m	m	m	m	m	m	m	m	m	CE
Airport Fencing	m	m	m	m	m	m	m	m	m	m	m	m	CE
Land Use													
Maintain Lease Lot Size	m	m	m	m	m	m	m	m	m	m	m	m	CE
Lease Lots – New Hangers	m	m	m	m	m	m	m	m	m	m	m	m	CE
Campground	m	m	m	m	m	m	m	m	m	m	m	m	CE
Aleutian Village: No Action	m	m	m	m	m	m	m	m	m	m	m	m	CE

Key:
A – Additional research needed
m – negligible to minor
CE – Categorical Exclusion or less
EA – Environmental Assessment

8.2.1 Runway and/or Taxiway

If runway and/or taxiway projects require disturbance outside of the current fill footprint, there is the potential for impact to wetlands, fish, and/or floodplain resources. Three streams are present on the airport.

- Loop Road No. 2 Creek and the associated wetlands parallel the runway's northern border and directly abuts the western embankment.
- Pipe Creek drains the southwest end of the runway.
- Siwash Creek drains the far northwest corner of the property.

These streams may contain fish species, and in some cases appear to be eroding the current embankment.

Wetlands are likely present to the north and west of the current embankment. It is unknown if wetlands are present inside the low areas between the runway and taxiways. A wetland delineation may be required for work outside of the current fill footprint.

Design should also consider potential contamination on the airfield (e.g., PFAS discharge locations).

8.2.2 SREB and Sand and Urea Storage Projects

The SREB, Sand and Urea Storage projects are located on or adjacent to sites with histories of contamination. Each project will need to evaluate the site-specific contamination risks to incorporate mitigation strategies into the proposed project.

8.3 Airport Capital Improvement Plan

Table 8-3 lists the Airport Capital Improvement Plan. In the near term, the runway is anticipated to be rehabilitated to C-III standards, pending FAA approval to participate in the project. The taxiway relocation and additional airport improvements are also anticipated to be implemented to improve safety and operations at the airport.

In the long term, the runway is anticipated to be reconstructed to a B-III standard.

Table 8-3 Airport Capital Improvement Plan

Project	Cost	AIP Eligible?
Near Term		
Rehabilitate to C-III 6,500 feet x 150 feet	$5,310,000	Yes
Relocate Taxiway C and Add New Taxiway	$4,360,000	Yes
Improve Wind Sensor	$25,000	Yes
Sand and Urea Storage	$2,000,000	Yes
SREB	$4,000,000	Yes
Improve tie downs	N/A	Yes
Airport Fencing	$1,820,000	Yes
Maintain Lease Lot Size	N/A	No Anticipated Cost
Lease Lots - New Hangers	N/A	Yes
Long Term		
Reconstruct to B-III 6,500 feet x 100 feet	$10,100,000	Yes

8.4 Implementation Process

Projects can take many years to prioritize, fund, and construct. Airport management needs to maintain an active approach to pursuing and maintaining project eligibility. An abbreviated list of the implementation process is outlined below.

- Construction + 2 (or more) Years
    - Begin project design
    - Coordinate with FAA to ensure eligibility and funding
    - Rank project through DOT&PF's Aviation Project Evaluation Review Board
    - Coordinate with community stakeholders on potential impacts and local support
    - Begin project environmental documentation.
- Construction + 1 Year
    - Complete project design, prepare bid package
    - Complete project environmental documentation
    - Complete construction safety phasing plan
    - Receive FAA approval
    - Continue to coordinate with local stakeholders on mitigation of potential impacts

- Construction
    - Advertise bids, select contractor
    - Continue to coordinate with local stakeholders on mitigation of potential impacts.
- Post Construction
    - Complete final reports
    - Update the ALP
    - Maintain eligibility with grant stipulations.

8.5 Runway Rehabilitation or Reconstruction

Implementation of runway work may cause impacts to the community of Valdez. The community relies on the airport as a reliable means of transportation. There are only two other methods to reach Valdez: road and ferry. The road requires a 6-hour drive to Anchorage, over Thompson Pass – subject to avalanches, heavy snow, fog, and flooding from Keystone Canyon.

During the summer, the Alaska Marine Highway System operates a ferry between Valdez, Cordova, and Whittier. Its funding and future operations are uncertain, particularly during the current pandemic. The standard fast ferry service has been canceled and replaced by the slower Marine Vessel Aurora, based in Cordova. The Aurora's service, as of April 2021, includes:

- From mid-April to June, and mid-September to end-September:
    - Sunday: Valdez to Whittier.
    - Thursday: Whittier to Valdez.
    - Thursday: Valdez to Cordova (overnight), Cordova to Whittier (Friday).
- From late-May – mid-September:
    - Monday, Friday: Whitter to Valdez.
    - Tuesday, every other week: Valdez to Whitter.
    - Wednesday, every other week: Whittier to Valdez.
    - Thursday, Saturday: Valdez to Whittier.

If the airport is shut down during construction, the road and ferry alternatives would impose negative impacts on the community of Valdez.

Two alternatives to closing the airport include: completing work on a half-width runway or reconfiguring TW A into a temporary runway. The three alternatives are considered below.

8.5.1 Airport Closure

If neither half-width runway operations nor the temporary runway are acceptable alternatives to the FAA, the airport will be required to close during the duration of construction according to FAA AC 150/5370-2, Operational Safety on Airports During Construction (FAA 2017b). The traveling public would rely on the ferry or the Richardson Highway. Medevac operations could be supported via helicopter to Anchorage or Cordova for transfer to hospitals or faster fixed winged transportation. Fixed wing medevac options out of Valdez would not be possible.

8.5.2 Half-Width Runway Operations

In Alaska, half-width operations are considered by the FAA on a case-by-case basis in response to the following questions (FAA 2012):

1. *Does the airport have another runway of sufficient capability?*
2. *Does the Airport have a taxiway of sufficient length and configuration to be used as a temporary runway?*
3. *Are there any other viable transportation modes available (year-round road or frequent ferries)?*

If the answer is no to all three questions, half-width operations are generally warranted. If the answer is yes to any the questions, further considerations (below) are required to determine if half-width operations are an acceptable means to maintaining airport operations.

4. *Does closing the runway have unacceptable impacts on the community?*
5. *Can emergency medevac flights be accommodated?*
6. *Are there published terminal procedures or Required Navigation Performance (RNP) procedures that would be impacted?*

If the FAA concurs that half-width operations are warranted, the runway will be split into 75-foot-wide halves. The portion of the runway to be in operation in off-work periods will be required to have temporary runway lights. The LDA/DME antenna, PAPI, and MALSR lighting system can likely stay in operation when the runway is open, but coordination with FAA needs to occur during the development of the Construction Safety and Phasing Plan to confirm which NAVAIDs can remain in service.

8.5.3 Temporary Runway

At VDZ, the apron taxiway could be reconfigured into a temporary runway. The temporary runway would be sufficient to service the operations of the Dash 8-100, B-III commuter aircraft, while maintaining a one statute-mile visibility minimum. Dimensions of the temporary runway are listed in Table 8-4.

Table 8-4 Temporary Runway Dimensions

Runway Dimension	Temporary Runway	Standard B-III, 1 Statute Mile Visibility
Runway Width	75 feet	100 feet
Runway Length	5,580 feet	6,500 feet
Runway Safety Area	118 feet	300 feet
Runway Object Free Area	618 feet	800 feet
Runway Obstacle Free Zone	400 feet	400 feet

To implement the temporary runway:

- Runway width and safety area will be the width of the taxiway and taxiway safety area.
    - These areas are physical dimensions of pavement and embankment designed to support an aircraft in case of an aircraft deviation from the paved surface.
- Since the temporary runway safety area is reduced, the temporary runway object free area is reduced by the change in width of the required safety area and the temporary runway safety area width.
    - The runway object free area protects aircraft components that may project from an aircraft beyond the edge of the runway safety area. This requires clearance of non-frangible items over three inches tall, parked vehicles, and structures.
- The taxiway lights will be refitted with white runway lens instead of the standard blue taxiway lens.
- Temporary runway lights will be installed along the portion of the apron taxiway that runs along the apron where no current lights exist. The lighting conductors and conduits will be trenched in so aircraft can taxi off the temporary runway on the pavement without being impeded by temporary circuits laying on the surface.
- Runway markings will match non-precision instrument markings and be sized appropriately for the reduced runway width per FAA AC 150/5340-1M, Standards for Airport Markings

(FAA 2019). The difference between the runway and the temporary runway is only 2 degrees, so the runway designations will remain Runway 06 and Runway 24.

- Valdez has two non-precision instrument approach procedures supported by a MASLR and PAPI supporting visibility minimums to not lower than 1 statute mile. These may be affected by development of a temporary taxiway. The approaches rely on an LDA/DME. To maintain the lower visibility minimums, a temporary MALSR system for Runway 06 must be installed. Analysis by FAA Flight Procedures Office will need to determine if the localizer antenna can remain in operation or be modified to provide approach guidance to the current visibility minimums.
- Due to the significant impacts to the airport operations during the implementation of the temporary runway alternative, a safety risk mitigation meeting will likely be required after the Construction Safety and Phasing Plan is completed. Early coordination with the FAA Alaska Region Airport District Office is recommended to determine if the safety risk mitigation meeting is needed and which FAA lines of business need to be involved in addition to airlines and airport stakeholders.

8.6 Relocate Taxiway C and Add New Taxiway

Work outside of the runway safety area and taxiway object free area can be completed with minimal restrictions to the airport. To implement the work:

- Haul routes must be defined across the apron and TW A from an appropriate airfield access gate to the work area.
- Pilots must be alerted to the uncommon activity through a Notice to Airmen (NOTAM).
- During active hauling, the contractor must have two vacuum sweeper trucks (one in operation and one on backup) to pick up any foreign object debris on the airport pavements to prevent aircraft ingestion. Sweepers must be actively sweeping during hauling.

While taxiway work is being performed within the runway safety area, RW 06/24 will be closed to all traffic.

- Work can be completed at night, outside of normal airport operations, and reopened in the morning.

  - Open excavations are not allowed within the runway safety area during aircraft operations. This will require any open excavations to be restored nightly with grades that meet runway safety area grading requirements.

- To minimize impacts to airport operations, taxiway construction could be programmed with runway construction. For example, the dead-end interlinks can be marked closed with a painted yellow X, with no permanent markings identifying it as an active taxiway. Then the remaining portions of the taxiway can be constructed during the same project, or a separate project while avoiding impacts to runway operations.
- Work within the taxilane object free area will require closure of the taxiway for 81 feet, half the width of a ADG III taxilane object free area, from the edge of the excavation area. Traffic on the taxilane will be rerouted onto the apron around the closed portion. For TW B demolition work, the closure will occur across from the airport terminal, which may interfere with aircraft parking of the Dash 8 or Beech 1900 daily flight.

9 FINANCIAL FEASABILITY

This chapter reviews the potential funding sources available for improvements at the Valdez Airport and then pairs each recommended improvement with potential funding.

9.1 Federal Airport Improvement Program (AIP)

Historically, the federal Airport Improvement Program (AIP) provides most funds for Alaskan airport projects ($217 million in pre-COVID 2019). The AIP is administered by the FAA, and provides federal funds from national sources, such as ticket taxes, to public agencies such as DOT&PF. These funds can be used for the planning and development of public-use airports. The funds usually require a non-federal match.

Table 9-1 Past VDZ Airport Improvement Program (AIP) Grants

Fiscal Year	AIP Federal Funds	Project
2007	$3,310,359	Extend Runway Safety Area - 06/24, Install Perimeter Fencing
2014	$696,387	Acquire Aircraft Rescue and Fire Fighting Vehicle
2017	$609,375	Update Airport Master Plan Study
2018	$279,711	Conduct Aeronautical Survey for RNAV Approach

Airports that are eligible for AIP funds are listed in the National Plan of Integrate Airport Systems (NPIAS). Valdez Pioneer Field Airport (VDZ) is listed in the NPIAS, as a "Primary Airport: Commercial Service;" in "non-hub" status (greater than 10,000 enplaned passengers per year but less than 0.05 percent of all passenger enplanements). The Master Plan's forecast supports VDZ maintaining this status. As a result, VDZ will continue to be eligible for AIP funding.

AIP funds are split between entitlements and discretionary. Entitlement funds are based on enplanements, and discretionary are based on FAA priorities (e.g., safety). The prioritization of projects is based on the justified needs of the airport and its role in the aviation system. Projects are ranked on 10 project purposes (e.g., safety, security, reconstruction, standards, environmental, noise, capacity, terminal, access, and new airport).

Primary airports also receive passenger entitlement funds. Those are calculated as approximately $7.80 for the first 50,000 passengers. VDZ received 18,690 passengers (arrivals plus departures) in pre-COVID 2019 and was therefore eligible to receive approximately $145,782 in passenger entitlement funds.

9.2 State Funding

The State of Alaska awards airports state funding through its own AIP program. This contribution is very small; virtually all of Alaska's CIP is funded through the federal AIP program.

9.3 Leasing Fees

DOT&PF collects leasing fees from approximately 12 airport tenants. Fees are subject to regular review and changes to ensure they continue to match market conditions. Leasing fee revenues are small in comparison to federal funding and are used to directly fund costs related to the daily operation of the airport.

9.4 Local Bonds, Taxes, and/or Private Expenditures

The City of Valdez, industry, and/or other stakeholders could establish local revenue sources to fund improvements at the airport. The most direct methods to fund airport improvements are tax increases and private donations.

Bonds are also an option to fund airport projects, particularly for elements that are not likely to receive federal AIP funding. General obligation bonds are issued by the city, with voter approval, to raise funds backed by the government's ability to tax. Revenue bonds are issued generally without voter approval and are backed by fees paid by the constructed facility (e.g., terminal rental fees). Bonds would need a feasibility study to be conducted to evaluate the potential revenue and viability of the proposed project. At this time local funding for airport improvements does not appear to be likely.

9.5 Passenger Facility Charges (PFCs)

Passenger Facility Charges (PFCs) fees can be collected for every eligible passenger at commercial airports. PFC charges generally replace AIP eligible projects. They also can fund some types of AIP-ineligible projects, like gate improvements. In general, a project is PFC eligible if it will:

(1) preserve or enhance safety, security, or capacity of the national air transportation system;

(2) reduce noise or mitigate noise impacts resulting from an airport; or

(3) furnish opportunities for enhanced competition between or among air carriers.

PFCs can be set at a maximum of $4.50 per passenger. VDZ received 18,690 passengers (arrivals plus departures) in pre-COVID 2019 and was therefore eligible to receive approximately $84,105 in passenger entitlement funds. This amount would need to be verified with the FAA.

For large airports, PFCs are seen as the primary way to raise revenue for infrastructure improvements beyond federal AIP funds. For more moderate sized airports like VDZ, PFCs provide relatively more modest funding opportunities and can have a significant paperwork burden. Airports generally require higher passenger rates to justify the reduction in AIP funding.

9.6 Public Private Partnerships (PPPs)

Public Private Partnerships (PPPs) have recently gained interest in their potential to fund improvements at Alaska's airports. PPPs are useful when traditional federal funding sources do not meet the demand of customers who are willing to contribute extra revenue for extra services. This is an unlikely route for funding at Valdez but might take place of if industry has specific infrastructure needs at the airport.

There are basically two versions of PPPs available to airports:

- Tax-Free Bonds: The first type of PPP takes advantage of tax-exempt financing, specifically government bonding. This allows non-profit corporations to be established to develop tax-free debt, at lower rates than available to private corporations.
- Concessionaire: The second type of PPP focuses on building and renting infrastructure. Private equity is raised to build public infrastructure. Once the infrastructure is constructed, the private partner is awarded a long-term concessionaire agreement to run the facility and receive regular payments. This works best for something like a terminal or hanger, where fees can be charged to the portion of airport using the facility's services.

All PPPs are more expensive than traditional public funding or federal AIP grants because they must include a return on investment (e.g., profit) for the private partner. Concessionaire PPPs are more expensive than tax-free bond PPPs, due to the inability to avoid taxes.

9.7 Project Specific Financing

The Master Plan reviewed the preferred alternatives and compiled a list of the most likely funding sources (Table 9-2).

Table 9-2 Project Specific Financing

Project	Financing
Runway	
Rehabilitate to C-III 6,500 feet x 150 feet	AIP (with FAA approval)
Reconstruct to B-III 6,500 ft x 100 ft	AIP
Taxiway	
Relocate Taxiway C and Add New Taxiway	AIP
Airfield Improvements	
Improve Wind Sensor	AIP
Sand and Urea Storage	AIP
SREB	AIP
Improve tie downs	AIP
Airport Fencing	AIP
Land Use	
Maintain Lease Lot Size	No Anticipated Cost
Lease Lots: New Hangers	AIP or Private
Campground	No Anticipated Cost
Aleutian Village: No Action	No Anticipated Cost
Other Projects	
Robe Lake	Local Bonds, Taxes, and/or Private Expenditures
Thompson Pass Airport	DNR/DOT&PF Maintenance
Instrument Approach	Local Bonds, Taxes, and/or Private Expenditures PFCs (pending FAA approval)

Key:
AIP – Airport Improvement Program
FAA – Federal Aviation Administration
SREB – snow removal equipment building
DNR – Department of Natural Resources
PFC – Passenger Facility Charge

9.7.1 Financing Discussion

Below, projects were reviewed that would likely need to find financing beyond federal AIP money and instead raise funding from a combination of local bonds, taxes, private expenditures, PFCs, and/or PPPs.

9.7.1.1 Maintaining 150 feet Runway Width

FAA can only participate in funding reconstruction of the Valdez airport for a smaller design criterion, with a runway reduced to 100-foot width.

If Valdez stakeholders place sufficient value on maintaining the currently sized 6,500-foot-long by 150-foot-wide runway, the stakeholders will need to raise additional funds to support this infrastructure. This is particularly relevant if the local industry wants to maintain Valdez's larger infrastructure to

respond to potential emergencies or large-scale construction projects. The construction, and additional maintenance, of the larger facility would have to be funded through non-federal/state funds.

Maintaining a wider runway is not likely to be a viable candidate for a PPP. This option works best when the facility can charge users for a service which users demand, such as an upgraded terminal. The current aviation users flying into Valdez do not require a 150-foot-wide runway. They would likely be unwilling to pay to maintain it.

Other funding options which could be explored include local bonding and corporate industry investments.

9.7.1.2 Robe Lake

The floatplane stakeholders using DNR owned Robe Lake have voiced support for improving the floatplane facilities. The most likely path toward financing infrastructure is through local funding or through floatplane stakeholders self-financing improvements. Installation of floatplane facilities may increase tourist traffic through Robe Lake, as floatplane users from Cordova, Anchorage, or Fairbanks would have an easier way to visit Valdez. Improvements at Robe Lake may also increase fuel sales from local aviation businesses, who could deliver aviation fuel to floatplanes using the lake.

9.7.1.3 Instrument Approaches

Any improvements in instrument approaches at VDZ would be difficult to fund. First, the air carrier(s) serving Valdez would need to invest in upgrading their aircraft instruments to fly the more advanced instrument approaches. Given the annual passenger revenue at Valdez, this becomes difficult for an air carrier to justify. PFCs are unlikely to be effective, since the investment is in private assets, which are not committed to serving the public good.

After the aircraft instruments are installed, a new instrument approach would need to be designed. The FAA will complete this for free but would likely have a significant time delay (e.g., years). Instrument approaches can also be designed by FAA approved private contractors. If stakeholders view that this improvement is valuable enough, they can raise the funding to hire private contractors to create the new instrument approach.

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ATTACHMENT A: ECONOMICS ANALYSIS

1 DEMOGRAPHIC PROFILE

1.1 Population Characteristics

Five communities (Valdez, Chitina, Kenny Lake, Tonsina, and Willow Creek) were reviewed due to the regional nature of Valdez, and the number of residents who work in Valdez and live-in surrounding communities.

Over the last 10 years the populations of Valdez and Willow Creek have remained relatively stable. Meanwhile, Chitina and Kenny Lake experienced decreases of over 20 percent, and Tonsina experienced a population increase of 18 percent. The decreasing populations of Chitina and Kenny Lake are consistent with that of the Copper River region, which has consistently negative levels of net migration and a decreasing population (Hunsinger 2018). Tonsina has the smallest population of the five communities, so an increase of a dozen people looks like a large change, but it may not be reflective of the community's long-term trajectory. Valdez has the largest population in the census area and follows a pattern closer to the state as a whole than to the Copper River region. During the national economic recession, Alaska's population increased due to the relative availability of jobs compared to other states (Hunsinger 2018). This increased in-migration lasted from about 2009 to 2012. The statewide increase in population is consistent with Valdez's population, which peaked in 2012 and has since decreased.

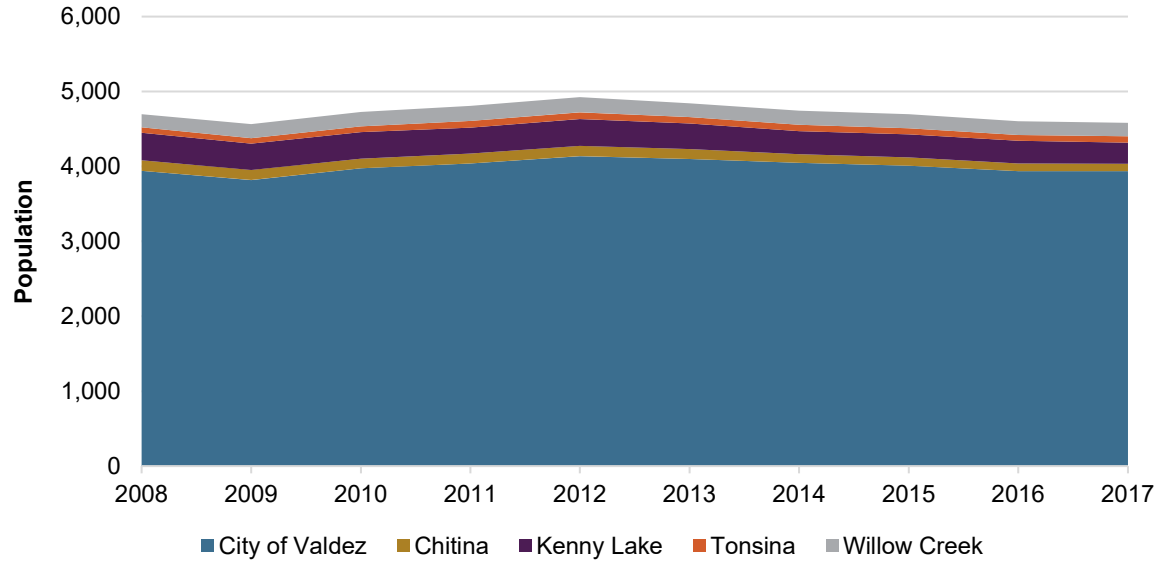
Subsequently, the state recession, which began in 2015, led to a decrease in jobs and negative net migration into the state (Hunsinger 2018). Valdez has had a decreasing population since 2012, but it may be somewhat sheltered from the full effects of the state's recession. Employees that do not live in a community year-round are not included in the population statistics. If temporary residents were included, population statistics would be higher, and might experience more fluctuations reflecting the volatile fish harvest and oil production levels. Table A-1.1-1 and Figure A-1.1-1 show the estimated year-round population for each community over the last 10 years.

Table A-1.1-1. Estimated Population of Valdez Area Communities, 2008–2017

	Year									
Place	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
City of Valdez	3,941	3,819	3,976	4,039	4,136	4,101	4,046	4,011	3,937	3,937
Chitina	140	133	126	131	139	132	118	108	104	97
Kenny Lake	370	352	355	349	357	341	308	310	301	284
Tonsina	71	73	78	89	89	86	85	82	76	84
Willow Creek	176	186	191	199	204	182	187	186	187	179

Source: ADOLWD (2017)

Figure A-1.1-1. Population Trends in Valdez Area Communities, 2008–2017



Source: ADOLWD (2017)

The age range in each community reflects historic economic activity and continuing population changes. The median age varies widely between communities, with an older population in Kenny Lake, Tonsina, Willow Creek, and Valdez and a younger population in Chitina. Kenny Lake, Willow Creek, and Tonsina each have lower economic activity today than they did in the past, which contributes to their aging populations. Valdez also has an aging population, although to a lesser extent. Valdez currently has an estimated 220 people over the age of 65, but that number will increase as the population ages. Chitina has a larger proportion of people under the age of 18 as well as more seasonal fishing activity, which may bring more young people to the community. Except for Chitina, all communities have more men than women. Table A-1.1-2 shows the population by age group and gender where age ranges approximately correspond to people who are young and not working (under 18), working (18–64), and retired (65 and over).

Table A-1.1-2. Age and Gender Groups in Valdez and Surrounding Communities, 2010

Community	Median Age	Under 18	18 to 64 Years	65 Years and Over	Male Population	Female Population
Valdez	36.7	1,004	2,752	220	2,120	1,856
Kenny Lake	44.5	90	218	47	186	169
Tonsina	49.3	12	59	7	44	34
Willow Creek	49.3	34	125	32	102	89
Chitina	28	48	72	6	61	65

Source: U.S. Census Bureau (2010)

1.2 Housing

Table A-1.2-1 shows the average household and average family size in each community based on 2010 census data. Tonsina, Willow Creek, and Valdez tend to have fewer people in a family, while Chitina tends to have more. Notably Chitina also has a younger population and more people under the age of 18 Valdez's smaller household size is reflective of its aging population and lower birth rate (Hunsinger 2018).

Table A-1.2-1. Average Household and Family Size, 2010

Community	Average household size	Average family size
Chitina	2.42	3.45
Kenny Lake	2.45	3.16
Tonsina	2	3.6
Valdez	2.43	3.04
Willow Creek	2.08	2.72

Source: U.S. Census Bureau (2010)

In Valdez about 90 percent of housing units are occupied, and about 70 percent of those are owned by the occupant. The occupancy rate in Valdez is much higher than in the surrounding communities, in which less than 60 percent of housing units are occupied. Valdez's high occupancy rate reflects the fact that its population today is like what it was in 2008. If the population of Valdez and surrounding communities decreases as expected, more housing units will become vacant. Table A-1.2-2 shows the status of housing units in 2010 including if they were occupied, and if they were rented or owned.

Table A-1.2-2. Housing Units Occupancy Status, 2010

Community	Total Housing Units	Occupied Housing	Vacant Housing	Vacant Due to Seasonal Use	Owner-Occupied	Renter-Occupied
Chitina	96	52	44	27	27	25
Kenny Lake	258	145	113	70	105	40
Tonsina	79	39	40	21	33	6
Valdez	1,763	1,573	190	50	1,080	493
Willow Creek	152	92	60	32	80	12

Source: U.S. Census Bureau (2010)

1.3 Employment and Income

Valdez has a higher rate of labor force participation among the population 16 years old and over compared to the surrounding communities. However, Valdez and Chitina both had unemployment rates well above the national average in 2016, which was four to five percent (U.S. Bureau of Labor Statistics [USBLS] 2016). An estimated one in three people in Chitina were unemployed when the survey was

conducted. The two communities' high unemployment rates suggest that their economies are weaker than the national average and provide relatively fewer jobs. However, Valdez's unemployment rate is not unusual for towns in Alaska; in 2016, 40 percent of Alaska's organized boroughs had unemployment rates above 10 percent (USBLS 2016). Table A-1.3-1 shows the estimated rates of labor force participation and unemployment for Valdez, Chitina, and Kenny Lake based on the 2016 American Communities Survey.

Table A-1.3-1. Estimated Labor Force Participation and Employment, 2016

Community	Labor Force Participation Rate; Population 16 years and over	Unemployment rate; Population 16 years and over
Valdez	68.2	10.7
Chitina	42.0	33.3
Kenny Lake	42.7	-

Source: U.S. Census Bureau (2016)

Table A-1.3-2 presents the primary industries in which people are employed in the City of Valdez. While there is a wide range of industries, public administration employs the most with about 25 percent in this category. The category "professional, scientific, and management, and administrative and waste management services" includes many of the workers who service the TAPS but may not include those who reside outside the census area and fly in for work. Some of the other industries in the city are also supported by pipeline activity including transportation and food services while tourism supports industries such as recreation and accommodation.

Table A-1.3-2. Estimated Number of People Employed by Industry in the City of Valdez, 2016

Industry	Number of Employees	Percent of Total
Transportation and warehousing, and utilities	195	12
Professional, scientific, and management, and administrative and waste management services	299	18
Educational services, and health care and social assistance	236	14
Arts, entertainment, and recreation, and accommodation and food services	127	8
Public administration	407	24
Other	411	25

Source: U.S. Census Bureau (2016)

Table A-1.3-3 shows the total personal income for the entire Valdez-Cordova Census Area from 2010 to 2016. During this period the real value of personal income increased by about 5 percent. Even though Valdez's unemployment rate is higher than the national average, it still had a growing amount of personal income during this period, which may have been driven by increased migration to the area between 2010 and 2012.

Table A-1.3-3. Sum of Real Personal Income in Valdez-Cordova Census Area, 2010–2016

Year	2010	2011	2012	2013	2014	2015	2016
Sum of Personal Income							($ millions)
	575.7	598.2	556.7	579.3	610.2	629.5	66.8

Source: Federal Reserve Economic Data (2018) and U.S. Bureau of Labor Statistics (2018)

2 ECONOMIC INDICATORS

The best available economic indicators are reported by a census area (i.e., Valdez-Cordova Census Area), which is a larger area than the five communities. Between 2002 and 2012, the number of establishments in the Valdez-Cordova Census Area generally declined across industries but the real value of services and the number of employees generally increased. These data come from the U.S. Economic Census and are presented in Table A-2-1 and broken down in the figures that follow. While more recent data from the Census have yet to be released, the information gives a general sense that over a 10-year period the region's economy grew and added more jobs.

Table A-2-1. Number of Establishments, Value of Services, and Number of Employees in Valdez-Cordova Census Area, 2002 and 2012

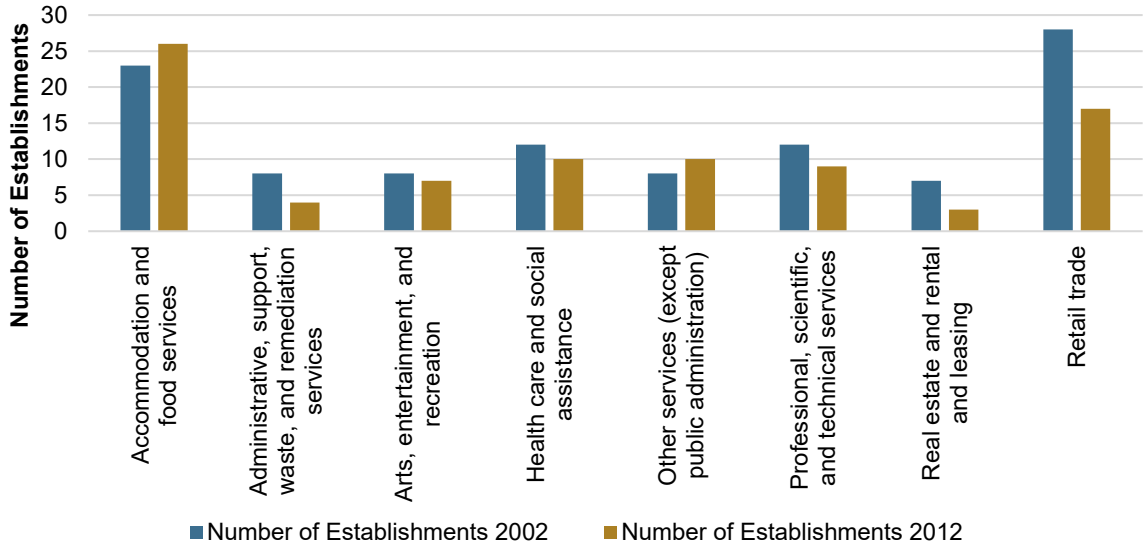
	Number of Establishments		Real Value of Services ($ thousands)		Number of Employees	
Industry	2002	2012	2002	2012	2002	2012
Accommodation and food services	23	26	14,382	21,574	163	213
Administrative, support, waste, and remediation services	8	4	3,973	1,155	34	7
Arts, entertainment, and recreation	8	7	2,326	2,704	26	22
Health care and social assistance	12	10	12,983	26,496	140	508
Other services (except public administration)	8	10	-	-	-	-
Professional, scientific, and technical services	12	9	14,339	12,565	55	59
Real estate, rental, and leasing	7	3	2,909	2,764	15	17
Retail trade	28	17	43,586	46,707	156	165

Source: U.S. Census Bureau (2002, 2012) and U.S. Bureau of Labor Statistics (2018)
Note: Real value adjusted to 2018 dollars

The number of establishments indicates how many businesses are operating in the census area. For accommodation, food service, and establishments listed as "other," there was an increase in the number of establishments, but for all other industries there was a decrease. Accommodations and food service are tied to both the tourism industry and spending by pipeline employees. An increase in the number of pipeline employees or an increase in tourism would explain the increase in the number of establishments in accommodations and food service in this period. Overall, the number of establishments in the census

area decreased from 16 in 2002 to 86 in 2012. A decrease in the number of establishments does not necessarily indicate a weak economy but may instead suggest that more people are employed by larger companies such as the Alyeska Pipeline Service Company. Figure A-2-1 presents the change in the number of establishments in the census area between 2002 and 2012.

Figure A-2-1. Number of Establishments by Industry in Valdez-Cordova Census Area, 2002 and 2012



Source: U.S. Census Bureau (2002, 2012)

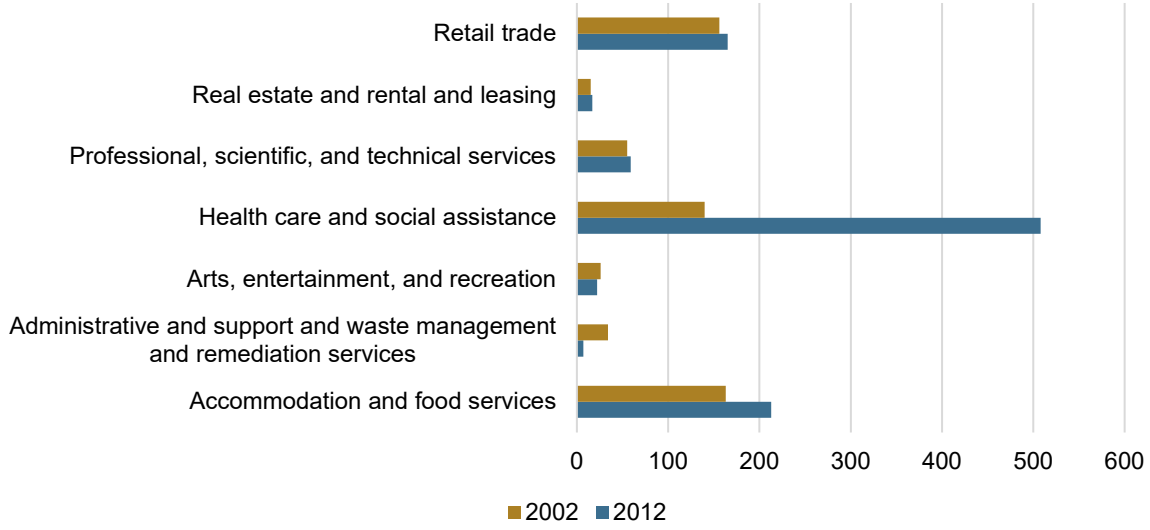
Figure A-2-2 shows the change in the real value of services in the census area, adjusted to 2018 dollars. Overall, the real value of services increased from $94 million in 2002 to $113 million in 2012. Most of the growth occurred in retail trade, health care and social assistance, and accommodation and food services. Growth in health care and social assistance may be driven by the region's aging population (ADOLWD 2016). Additionally, growth in retail, food service, and accommodations may be driven by an increase in tourism. Statewide, the number of visitors to Alaska increased by 21 percent between 2002 and 2012 (Alaska Department of Commerce, Community, and Economic Development [ADCCED] 2012). Tourism is expected to grow in Valdez with hotels adding more rooms and more cruise ships are scheduled for summer 2019 (Ables and Talbott 2018).

Figure A-2-2. Real Value of Services by Industry in Valdez-Cordova Census Area, 2002 and 2012

Source: U.S. Census Bureau (2002, 2012) and U.S. Bureau of Labor Statistics (2018)
Note: Real value adjusted to 2018 dollars

Figure A-2-3 depicts the change in the number of employees in each industry across the census area. There are no data for the number of the employees in the "other" category and some employees are likely unaccounted for in the data. While these data may not represent the whole labor force, they do suggest that there was an increase in the number of people employed in health care and social assistance, and in accommodation and food services. These figures are consistent with the data for the number of establishments that experienced increases in health care and social assistance and accommodation and food services as well. These figures may reflect an increase in tourism and an aging population (Hunsinger 2018).

Figure A-2-3. Number of Employees by Industry in Valdez-Cordova Census Area, 2002 and 2012



Source: U.S. Census Bureau (2002, 2012)

Table A-2-3 lists several economic indicators across the Valdez-Cordova Census Area from 2010 to 2017. The indicators suggest that the region has experienced economic growth over the seven-year period marked by an increase in the civilian labor force, a decrease in the unemployment rate, and an increase in the number of private establishments. These indicators are further analyzed in Figure A-2-4 through Figure A-2-6.

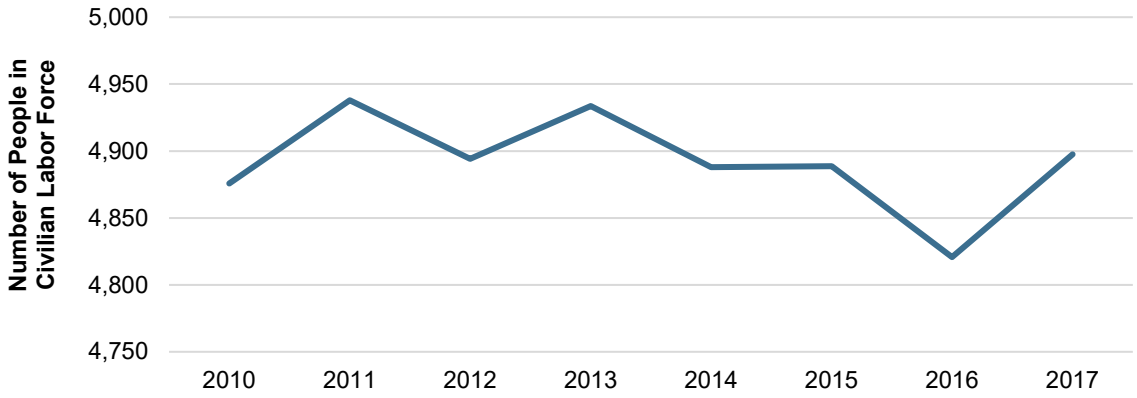
Table A-2-3. Trends in Economic Indicators for Valdez-Cordova Census Area, 2010–2017

Indicator	2010	2011	2012	2013	2014	2015	2016	2017
Number of People in Civilian Labor Force	4,876	4,938	4,894	4,934	4,888	4,889	4,821	4,897
Unemployment Rate (%)	9.6	10.2	10.0	10.2	9.9	9.0	8.9	8.3
Number of Private Establishments for All Industries	426	440	445	454	456	462	458	461

Source: Federal Reserve Economic Data (2018)

The size of the labor force reflects the region's population and its age structure. Additionally, the labor force may decrease during times of economic recession because discouraged workers stop looking for jobs and are no longer included in unemployment numbers. The number of civilians in the labor force has remained at about 4,900 people for the entire census area. These numbers show that there was little change in the civilian labor force despite the national and state recessions. The size of the labor force is consistent with population statistics, which were also relatively stable during this time. Figure A-2-4 shows the number of people in the civilian labor force in the census area, which has fluctuated but overall increased since 2010.

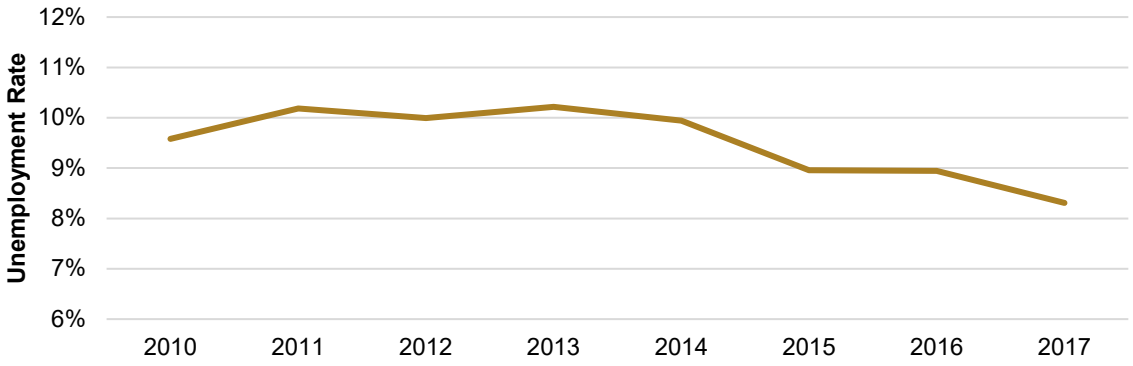
Figure A-2-4. Number of People in Civilian Labor Force in Valdez-Cordova Census Area, 2010–2017



Source: Federal Reserve Economic Data (2018)

The unemployment rate reflects the availability of jobs in the region and its overall economic health. The unemployment rate in the census area is similar to that of the City of Valdez at around 10 percent, but has decreased since 2014, reflecting an increase in jobs and a stronger economy. The unemployment rate actually fell during the first three years of the State of Alaska recession, which began in 2015. This suggests that unlike most of the rest of the state, the Valdez-Cordova Census Area employment rate has not been negatively affected by the decrease in oil prices or the decrease in state funding. It is possible that Valdez has yet to feel the effects of less oil running through the pipeline or that layoffs affected more out of state workers who are not counted by the census area (Hunsinger 2018). Figure A-2-5 shows the change in the unemployment rate for the Valdez-Cordova Census Area since 2010.

Figure A-2-5. Unemployment Rate for Valdez-Cordova Census Area, 2010–2017

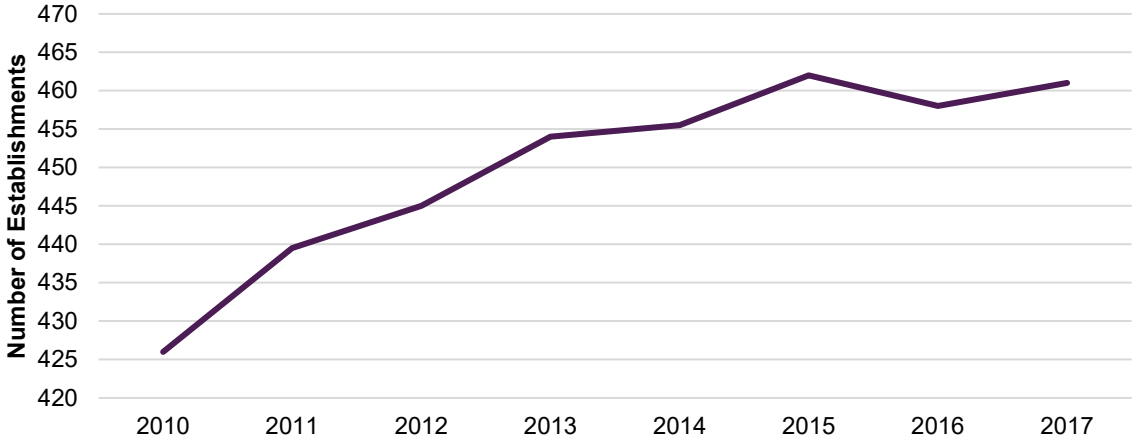


Source: Federal Reserve Economic Data (2018)

Figure A-2-6 shows the number of private establishments in the Valdez-Cordova Census Area, which have been gradually increasing since 2010. The increase in the number of private establishments is

contrary to the decreasing trend observed between 2002 and 2012. Both tourism and spending by out of state workers present business opportunities for those wishing to start new establishments in the region.

Figure A-2-6. Number of Private Establishments for All Industries in Valdez-Cordova Census Area, 2010–2017



Source: Federal Reserve Economic Data (2018)

2.1 Fisheries

The best data on how fisheries impact the airport is for the City of Valdez, which is the largest fishing community in the study area and the only one for which non-confidential commercial permit records are available. Cordova fisheries are served by the Cordova Airport.

The species harvested by boats based in Valdez include salmon, sablefish, halibut, herring, and shrimp; salmon and sablefish are the most profitable and have the most participation. Both species are affected by environmental factors from season to season and their catch limits are regulated through permits allotted by the Alaska Commercial Fisheries Entry Commission (CFEC 2017). The fishing industry employs many people on fishing boats and at fish-processing facilities. The largest fish processor in the city, Peter Pan Seafoods, recently expanded its operations from approximately 200 employees in 2017 to approximately 400 in 2018 (Peter Pan Seafoods 2018 and Ables and Talbott 2018).

Table A-2.1-1 shows trends in commercial fishery participation in Valdez over the last eight years, including the number of people who fished, the estimated gross earnings, and estimated pounds of fish landed. These estimates are based on the earnings per person and pounds per person who fished in the entire Valdez-Cordova Census Area. The records are for commercial fishers based in Valdez and do not include recreational fishing or commercial fishers that live elsewhere but land their fish in Valdez.

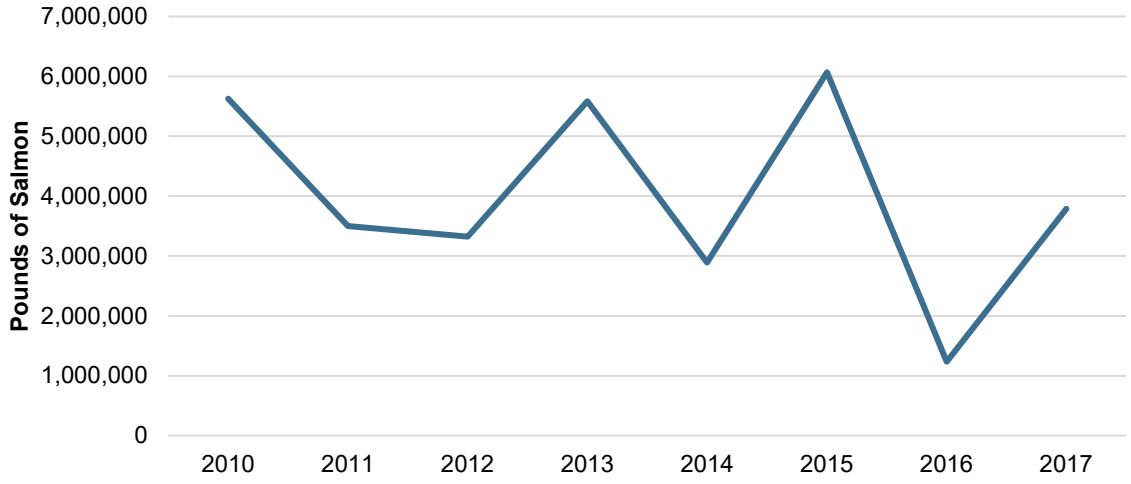
Table A-2.1-1. Participation of Commercial Fishers Based in Valdez, 2010–2017

Year	Number of People Who Fished for Salmon	Estimated Earnings from Salmon ($)	Estimated Pounds of Salmon Landed
2010	18	2,945,216	5,625,568
2011	23	2,969,570	3,497,265
2012	21	2,96,725	3,325,943
2013	18	3,378,292	5,583,783
2014	18	2,176,628	2,888,973
2015	18	2,173,244	6,66,982
2016	17	1,211,852	1,234,558
2017	16	2,156,673	3,789,410

Source: CFEC (2017) and Northern Economics, Inc. analysis

The catch fluctuates widely from year to year but does not appear to be measurably decreasing or increasing over time. While the catch in 2016 was markedly smaller than the previous year's, the numbers seem to recover in 2017. An Alaska Department of Fish and Game (ADF&G) report for Prince William Sound noted that in 2016 "*runs of sockeye, coho, and pink salmon were well below forecast*," which matches the low number of pounds landed for that year (ADF&G 2017). Figure A-2.1-1 presents the estimated pounds of salmon landed over the eight-year period.

Figure A-2.1-1. Estimated Pounds of Salmon Landed by Commercial Fishers Based in Valdez, 2010–2017



Source: CFEC (2017) and Northern Economics, Inc. analysis

The sablefish fishery is much smaller than the salmon fishery, with gross annual earnings under $500,000. There are typically only a few people who fish for sablefish each year. Table A-2.1-2 shows the trends in the sablefish fishery in Valdez from 2010 to 2017.

Table A-2.1-2. Sablefish Records for Commercial Fishers Based in Valdez, 2010–2017

Year	Number of People Who Fished for Sablefish	Estimated Earnings from Sablefish ($)	Estimated Pounds of Sablefish Landed
2010	5	36,412	88,176
2012	4	291,486	75,092
2013	3	141,329	51,524
2014	4	238,930	73,218
2015	2	183,541	51,154
2016	3	268,825	70,015
2017	3	315,708	71,953

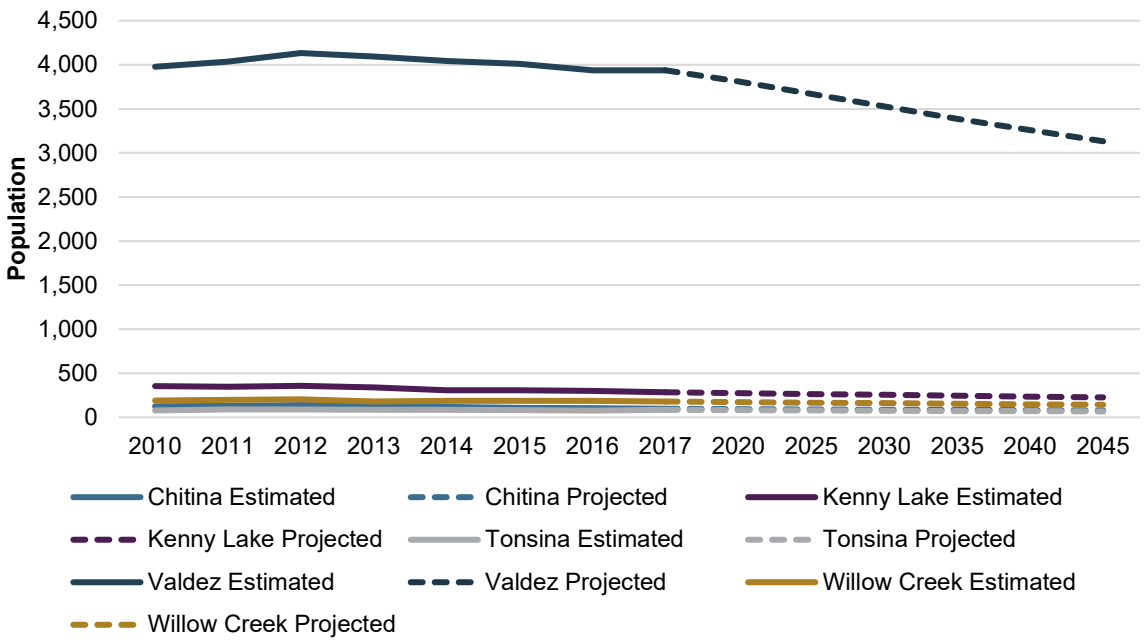
Source: CFEC (2017) and Northern Economics, Inc. analysis
Note: Data is unavailable for 2011 due to confidentiality.

3 DEMOGRAPHICS-BASED POPULATION PROJECTION

Based on ADOLWD's projections, the population of the Valdez-Cordova Census Area is expected to decrease over the next 30 years. Every two years, ADOLWD creates population projections at the census-area level based on birth rates, death rates, and net migration rates. The projections shown in Figure A-3-1 are based on these projections, but with the growth rate from the census area projection applied to the 2017 population of each of the five communities in the study area. The death rate in the census area is expected to increase while the birth rate is expected to decrease, reflecting an aging population and a national trend of lower birth rates (Hunsinger 2018).

Currently, the census area has a high level of migration with between 8 and 10 percent of the population arriving and leaving every year (Hunsinger 2018). This high level of turnover may be due to economic trends like the national and state recessions or shifting levels of output in the fishing and oil industries. The number of people leaving the census area is expected to be high over the next three years, especially in the Copper Valley (Hunsinger 2018). The state recession and low oil flow through the pipeline are contributing to high levels of migration in the region. Between 2020 and 2045 the rate of net migration is expected to slow but remain negative for the census area. This continued decrease in population reflects fewer economic opportunities in the region and the process of urbanization, as more people move to larger cities in search of opportunities. Figure A-3-1 shows the estimated population of Valdez and surrounding communities since 2010 and the projected population through 2045. Since the projections are only available at the census-area level, other communities in the census area (e.g., Tatitlek, Chenega, Whittier, Cordova, Glennallen) are anticipated to experience a similar trend.

Figure A-3-1. Estimated and Projected Populations for Valdez and Surrounding Communities, 2010–2045



Source: ADOLWD (2018), and Northern Economics, Inc. analysis

Note: Projected population is calculated from ADOLWD projected growth rate for the Valdez-Cordova Census Area applied to the estimated population of each community in 2017

ATTACHMENT B: INSTRUMENT APPROACH BRIEFING

1 INTRODUCTION

During the Valdez Pioneer Field Airport Master Plan process, the most common comment involved the number of flights that do not make it into Valdez because of weather. Due to the level of public interest, we have prepared this briefing to provide background on the issue and outline potential alternatives.

Aircraft can fly under Visual Flight Rules (VFR) and Instrument Flight Rules (IFR). Under VFR, pilots are responsible for navigation by looking out the window and avoiding clouds, mountains, and other traffic. Under IFR, pilots use a network of instruments to know where their aircraft is and where they are traveling. This allows IFR flights to occur in worse weather than VFR flights, and have greater chances of on-time arrival. Most commercial flights operate under IFR conditions.

For the Valdez airport, one of the key elements of the IFR system are the instrument approaches which guide aircraft into the runway.

2 WHAT ARE INSTRUMENT APPROACHES?

Instrument approaches guide aircraft to airports during bad weather. Approaches generally require long, gradually declining flight corridors. The Valdez Airport is surrounded by mountainous terrain. Flights must approach Valdez from the west while maintaining altitude over the mountains of Valdez Arm and the Port of Valdez, then steeply descend to the airport. Safe, reliable landings at Valdez currently requires relatively good weather (e.g., 1.5 to 5 statute-miles visibility with a 1,340- to 4,460-foot ceiling). Safe flight at other airports without the surrounding mountains typically can take place in worse weather (e.g., 3 statute-miles visibility, with a 1,000-foot ceiling).

Instrument approaches also require a “missed approach” procedure to be in place. This allows an aircraft to abort a landing, transition out of the airspace, and return to safe flight conditions. The mountains immediately to the north, east, and south of the Valdez airport force aircraft to turn 180 degrees inside the valley. Success of this tight turn is limited by airplane performance, accuracy of navigation equipment, and pilot reaction time. The ability to safely execute a missed approach also factors into the required weather.

3 HOW MANY FLIGHTS ARE CANCELED BY WEATHER?

RavnAir has been the only commercial air carrier providing public service into Valdez. They have flown into Valdez 1 to 2 times per day. In 2017, 19 percent of their Anchorage to Valdez flights were diverted or canceled due to weather. Bad weather often happens over a period of multiple days, so bad weather canceling a flight often leads to a chain reaction of significant delays on air service into Valdez.

4 WHAT ARE THE CURRENT APPROACHES FOR VALDEZ?

Valdez Airport currently has one (1) VFR and two (2) IFR approaches (Table B-1).

Table B-1 Valdez Airport Approaches (Existing)

Item		VFR	DME-H (IFR)	DME-G (IFR)
Who can fly?		Public	Public	Qualified Air Carriers
Must Maintain Distance from Clouds?		Yes	No	No
Airport Ceiling Minimum		1,000 feet	4,460 feet	1,340 feet
Airport Visibility Minimum		3 miles	5 miles	1.5 miles
Special Equipment		None	Working Johnstone Point VOR	Working Johnstone Point VOR
Valdez Airport Weather Meets Minimums[1]	2017	58%	42%	93%
	2018	90%	71%	91%
	2019	91%	70%	92%

Key:
[1] Valdez Pioneer Field Airport Weather from: https://mesonet.agron.iastate.edu/request/download.phtml?network=AK_ASOS.
% – percent
DME – Distance Measuring Equipment
DME-G – An IFR is only available to qualified air carriers and pilots.
DME-H – An IFR that is available to the public.
IFR – Instrument Flight Rules
VFR – Visual Flight Rules
VOR – Very High Frequency Omni-Directional Range

4.1 Visual Flight Rules (VFR) Approach

The VFR approach is available to any pilot and requires no special equipment. Pilots must maintain separation from clouds (500 to 1,000 feet vertical, 1.5 miles horizontal). At the airport, the weather must maintain a minimum 1,000-foot ceiling with 3 miles of visibility.

4.2 Distance Measuring Equipment (DME)-H Approach

The “DME-H” is the first of two IFR approaches at the Valdez Airport. The IFR approaches allow aircraft to fly through relatively bad weather in Prince William Sound. Aircraft then can land when the weather at the Valdez Airport meets the minimum requirements.

The DME-H approach is available to the public. This approach minimums are a 4,460-foot ceiling and 5 miles of visibility. This requires better weather than the VFR approach. The minimums for an IFR approach are determined by the level of certainty the instruments installed in the public's aircraft can provide.

4.3 DME-G Approach

The "DME-G" approach is only available to qualified air carriers and pilots (such as RavnAir). The special equipment in the aircraft and additional pilot training allow aircraft to fly with greater accuracy. The DME-G minimums are a 1,340-foot ceiling and 1.5 miles of visibility. This allows flights to land in worse weather than the VFR approach.

5 ALTERNATIVES

The Valdez Airport Master Plan reviewed a series of alternatives to improve the instrument approaches into Valdez. Three are discussed below.

5.1 Alternative 1: No Action Alternative

The first alternative is to conduct No Action. Air service would remain the same to Valdez, and no additional costs will be incurred.

5.2 Alternative 2: Repair Johnstone Point VOR

Alternative 2 focuses on providing private funding to improve maintenance to equipment on Hinchinbrook Island. Both instrument approaches (DME-H and DME-G) rely on signals from the Johnstone Point Very High Frequency (VHF) Omni-Directional Range (VOR) radio navigational aid (NAVAID). This NAVAID is located on Hinchinbrook Island. It is reported by stakeholders as periodically being inoperable throughout the year. When this VOR is inoperable, instrument approaches are not available, and the Valdez Airport becomes a VFR-only airport.

The Federal Aviation Administration (FAA) can have a difficult time funding repairs to this NAVAID due to the high costs to access and maintain the equipment.

Alternative 2 would have the City of Valdez and/or other funding source privately contribute to maintaining Johnstone Point VOR. By keeping the VOR in good repair, it would increase the amount of time the current instrument approaches are operational, increasing the percentage of completed flights.

5.3 Alternative 3: New IFR Approach

Alternative 3 focuses on eliminating the reliance on ground-based equipment. This alternative would create instrument approaches that are more technologically modern, accurate, and costly. The instrument approach must be designed by technical specialists. In some cases, air carriers may need to upgrade the instruments in their cockpits to use the approach.

5.3.1 Types of Approaches

There are many different types of IFR approaches, three are discussed below.

Area Navigation (RNAV) Approach

RNAV approaches allow aircraft with specialized equipment to use Global Positioning System (GPS) and/or ground-based NAVAIDs to have a better understanding of aircraft location. The specific equipment installed in the cockpit comes with accuracy statements in nautical miles (nm):0.5 nm, 1 nm, 3 nm. This greater accuracy allows better flight corridors to be designed to fly aircraft to the runway. One type of approach RNAV approach that may work in Valdez is the *Localizer Performance (LP)* Approach. This approach has previously been evaluated by the FAA as practical at Valdez, if the air carriers have equipment in the cockpits that can use LP approaches.

A more advanced *LP approach that provides vertical guidance (LPV)* has been studied by the FAA. When the FAA last studied the approach, they found local topography at Valdez likely makes it too difficult to implement.

RavnAir reports that their aircraft are currently equipped with the Universal Avionics UNS-1Lw flight system. The manufacturer reports that only some versions of that flight system is capable of flying LP approaches. Detailed software specifications and instrument versions will have to be researched on the individual aircraft to determine if the plane has this capability.

The manufacturer reports all aircraft with the Universal Avionics UNS-1Lw flight system can fly LPV approaches.

Required Navigation Performance (RNP) Approaches

RNP approaches are the most accurate and most costly approaches. RNPs require the most expensive equipment to be installed on individual airplanes. Not only do they offer the services of an RNAV

approach, but they provide feedback to the aircraft, alerting the pilot if the aircraft leaves the flight path. This accuracy allows a high degree of customization to a particular flightpath.

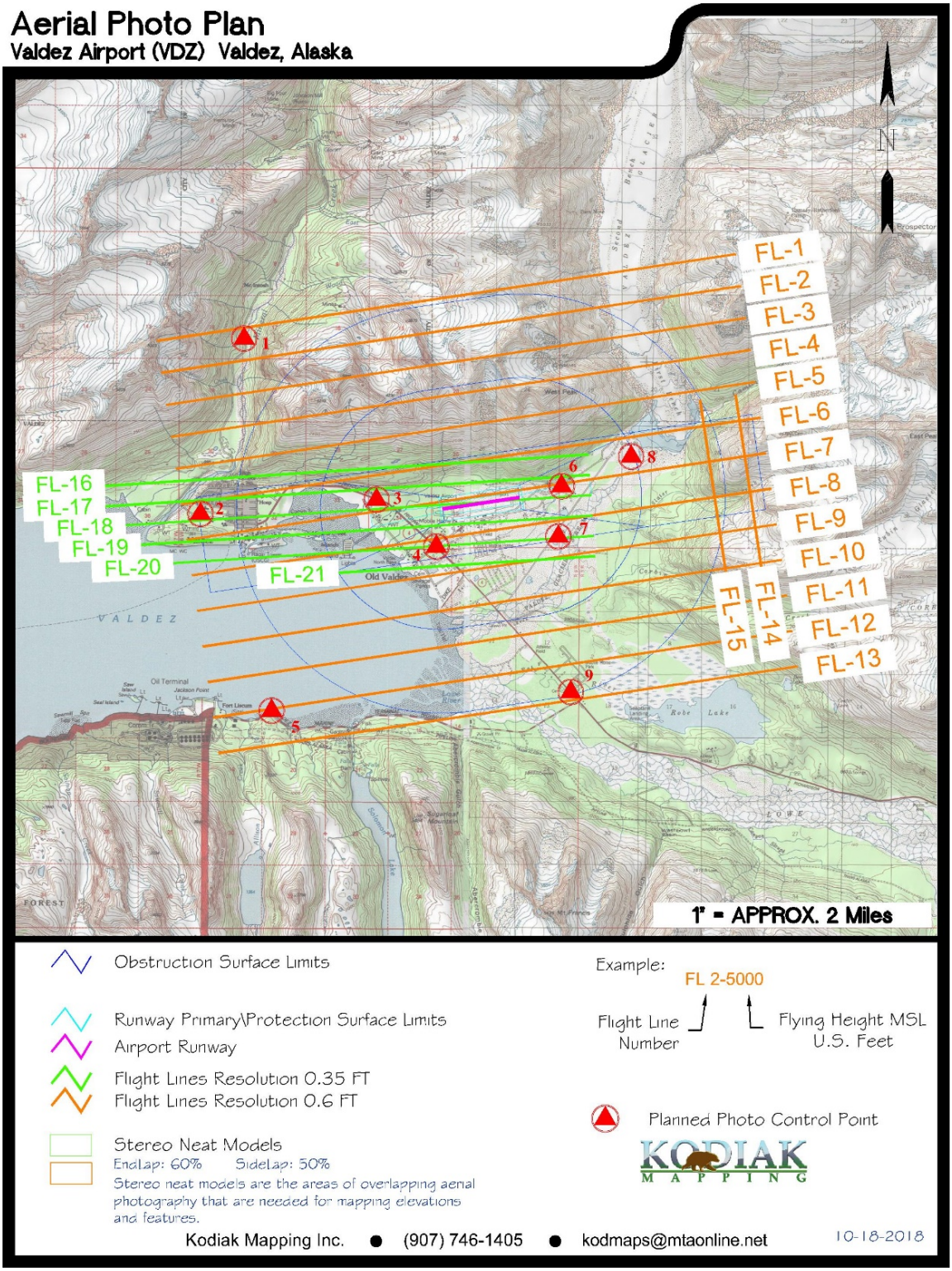
Only Alaska Airlines currently has the equipment installed to fly RNP approaches. The high cost of the system makes it unlikely that a smaller airline (like RavnAir) would find it economical to equip their planes to fly RNP approaches.

5.3.2 Steps to build a new approach

There are three steps to develop a new IFR approach:

- Aeronautical Survey: IFR approaches require a high accuracy topography of the area. This was required for other airport tasks, and was funded by the FAA (Figure B-1). This survey would need to be reviewed to see if it covered a large enough area to also be used for approach design.
- Develop Approach: After the aeronautical survey is finalized, an approach needs to be developed. This can be developed by the FAA or a private contractor, as follows:
    - FAA: The FAA develops approaches for airports. Priority is evaluated nationally, based on the number of passengers that use the airport. Due to Valdez airport's small number of passengers, this means that there could be a substantial time delay in developing an approach (i.e., years to decades). There is a possibility that it may never happen.
    - Private Contractor: The City of Valdez or another private party may also hire a private contractor to develop an approach. This would be more expensive but would take place in a timely fashion. The FAA provides a list of approved private contractors at the following link: https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs400/afs420/media/Non-FAA_IFP_Service_Provider_List.pdf
- Equip Aircraft and Train Pilots: A new IFR approach may require installing special equipment on aircraft, with regular pilot training. If an air carrier does not have the required equipment, they may need to receive private funding to install the equipment. An air carrier would likely need to equip a majority of their airplane fleet, as any particular airplane flies many different routes. This may require a financial incentive if an air carrier needs to invest significant resources.

Figure B-5-1 Area of Aeronautical Survey Completed at Valdez



6 STEPS FORWARD

An Airport Master Plan's role is to identify if the need for new instrument approaches exists. This Master Plan has gone a step further and provided an aeronautical survey. The Master Plan does not have the funds to implement the actual instrument approach design.

The next step is for a private party to commission an instrument approach feasibility study. This study would need to:

- Compare the potential instrument approaches, costs, and weather minimums.
- Determine if the aeronautical survey meets the potential instrument approach needs.
- Evaluate the operating conditions and reliability of the Johnstone Point VOR. Determine the potential cost to provide ongoing maintenance, and if a contracting mechanism exists with the FAA for private funding of facility maintenance.

This type of study can be conducted by the companies listed at the FAA-Approved List. After that study is completed, the City of Valdez would have a better understanding of the costs and methods to improve air service at Valdez.

7 PAST EXPERIENCE AT VALDEZ

The Valdez Airport had an advanced IFR approach system, based on microwave signals installed in 1994. Similar to an LP, LPV, or RNP approach, it required specialized equipment to be installed on the aircraft. Aircraft flying into Valdez ended up not having the equipment to use the approach; therefore, the system was not used, and was dismantled in 2000.

A few years ago, there was also an effort to design an LP approach into Valdez. This effort was stopped when it was discovered that no aircraft flying into the Valdez Airport had the equipment to use the approach. It is still unclear if any aircraft flying into Valdez have the equipment to utilize an LP approach. Prior to designing an approach, it is important to work with the local air carrier to ensure that they will use the new approach.

8 SUMMARY

The mountains surrounding the Valdez Airport require good weather to fly into the airport. Improving instrument approaches may provide more reliable air service into the airport. There are three main alternatives when evaluating improved instrument approaches at Valdez:

- No Action.
- Improve maintenance of the Johnstone Point VOR.
- Create a new more accurate instrument approach.

The City of Valdez can commission a feasibility study to determine the potential costs and benefits for choosing a course of action to pursue.

9 FREQUENTLY ASKED QUESTIONS (FAQS)

This briefing also takes the opportunity to respond to Frequently Asked Questions (FAQs) that have been asked about improving air service to Valdez.

FAQ 1: Why do other communities have better approaches?

Other communities near Valdez receive regular air carrier service from Alaska Airlines, whose planes are equipped with the expensive Required Navigation Performance (RNP) navigation equipment. In some cases, these communities have fewer passengers than Valdez. Why do these communities receive this service when Valdez does not?

There are two primary economic reasons: Essential Air Service (EAS), and passenger revenues.

EAS is a program run by the U.S. Department of Transportation. It provides direct subsidies to airlines to serve specific communities (Table B-2). The list of communities was developed as a direct result of the 1978 Airline Deregulation Act. The concern was that roadless communities would not have transportation options without direct subsidies to airlines. Communities which do have road access (e.g., Haines, Valdez) do not receive EAS funds. In many cases, EAS funds have provided the dependable, annual subsidy for air carriers like Alaska Airlines to invest in developing an RNP for that community.

Table B-2 Regional Communities, EAS, and RNP Approaches

Community	2017 Passengers[1]	Road Access?	2019 EAS Subsidy[2]	RNP Approach?
Valdez	21,902	Yes	None	No
Haines	15,297	Yes	None	No
Gustavus	19,676	No	$776,790	Yes
Yakutat	51,308	No	$3,107,161	Yes
Cordova	66,466	No	$3,107,161	Yes
Wrangell	85,389	No	$470,525	Yes
Juneau	808,785	No	None	Yes

Key:
[1] Number of Passenger Departures + Passenger Arrivals from: https://www.transtats.bts.gov/Fields.asp?Table_ID=293
[2] https://cms.dot.gov/sites/dot.gov/files/docs/mission/office-policy/aviation-policy/328826/subsidized-eas-report-communities-alaskafebruary-2019.pdf
EAS – Essential Air Service
RNP – Required Navigation Performance

The other source of revenue to fund better approaches is large volumes of passengers. For example, Juneau does not receive EAS funds, but has a large volume of passengers (Table B-2), with their associated ticket revenue. Valdez Airport's number of passengers does not generate large enough revenue for an air carrier to make this investment.

FAQ 2: Why does Valdez only have one air carrier providing regularly scheduled passenger service? Can we induce other air carriers to provide Valdez service?

RavnAir is the only air carrier providing regularly scheduled passenger service to Valdez. Questions often develop about the potential benefits for inducing multiple air carriers to serve Valdez.

Grant Aviation provided a second commercial service to Valdez from 2010 to 2013. During this time, the number of flights doubled, while the number of passengers increased only slightly (Figures B-2,3,4).

Essentially, the same revenue that had been supporting one airline was being split between two airlines. The fixed costs for an airline to serve a community are relatively high (i.e., terminal lease, local staff, and local equipment). This was financially untenable and led to Grant Aviation's exit from the market.

Figures B-2, B-3, and B-4 show the increase of flights, number of passengers, and number of passengers per flight, respectively. This clearly demonstrates the impact Grant Aviation's extra flights had on the market in 2010-2013. Air carriers likely need increased revenue to justify sharing the Valdez the market.

Figure B-2 Number of Commercial Flights at Valdez Airport, 2002–2017

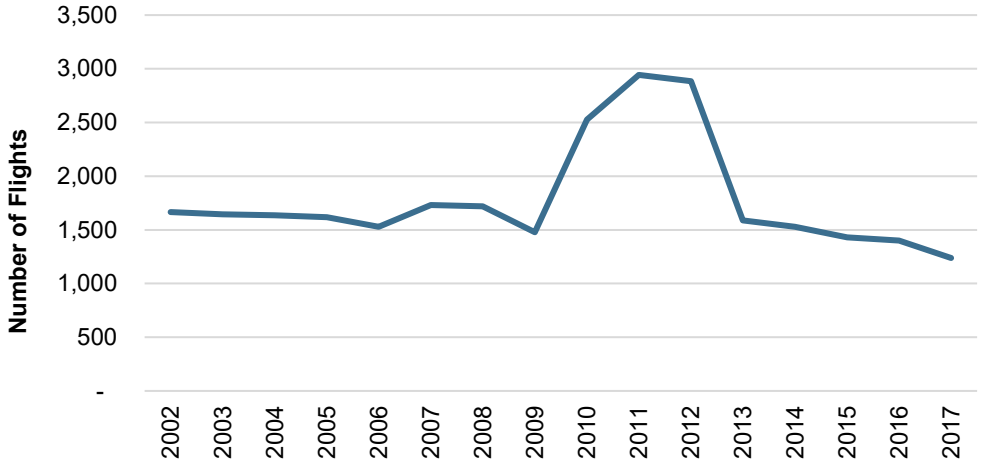


Figure B-3 Number of Passengers at Valdez Airport, 2002–2017

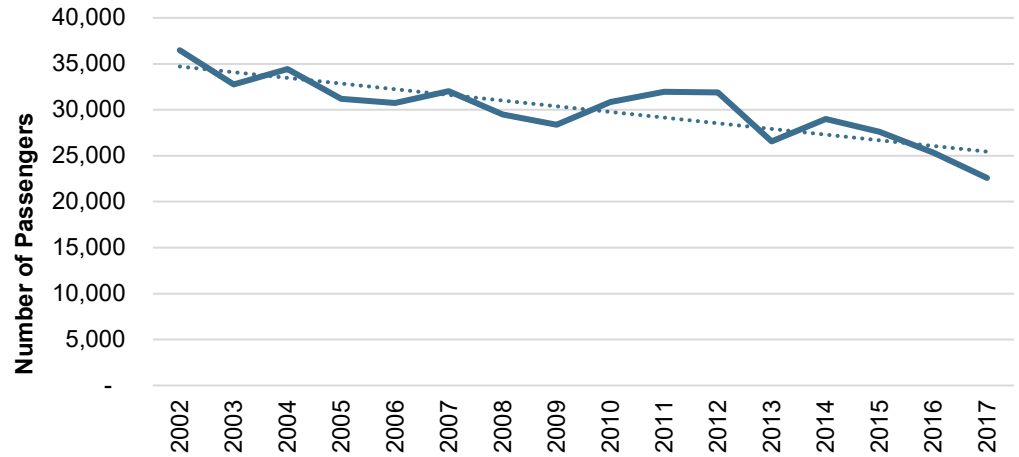
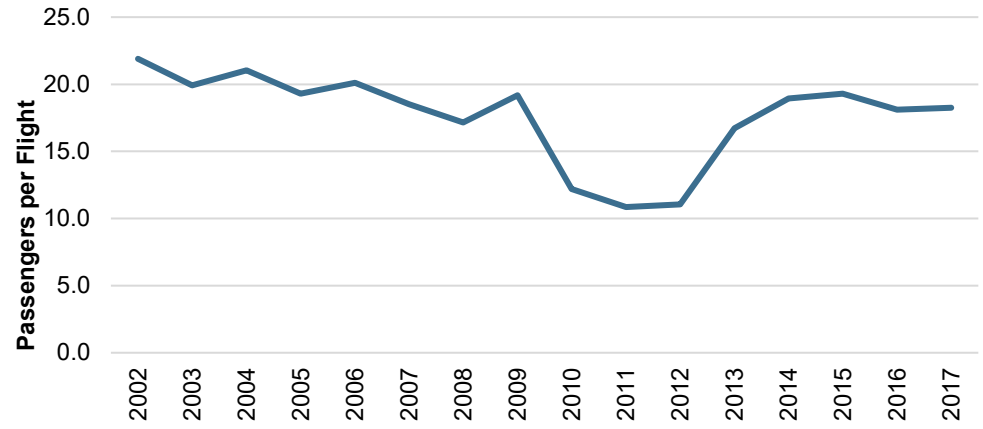


Figure B-4 Average Passengers per Flight at Valdez Airport, 2002–2017



ATTACHMENT C: PUBLIC INVOLVEMENT

1. Public Involvement Plan, May 2018
2. Notes from Public Involvement during the Valdez Fly In, May 12-13, 2018
3. Sign In Sheet from Public Involvement during the Valdez Fly In, May 12-13, 2018
4. Notes from the Public Meeting and City Council Meeting, October 16, 2018
5. Sign In Sheet from the Public Meeting and City Council Meeting, October 16, 2018
6. Notes from the Public Meeting and City Council Meeting, March 21, 2019
7. Sign In Sheet from the Public Meeting and City Council Meeting, March 21, 2019
8. Notes from Public Involvement during Valdez Fly In, May 10-12, 2019
9. Sign In Sheet from the Public Involvement January 5-7, 2021
10. Notes from the City Council Meeting, January 5, 2021
11. Notes from the Public Meeting, January 7, 2021
12. Virtual Public Meeting Website Snapshot, January 7, 2021
13. Follow Up with the City of Valdez, January 12, 2021
14. Website Snapshot, November 5, 2018
15. Website Snapshot, February 23, 2021

1. Public Involvement Plan, May 2018

Public Involvement Plan
Valdez Pioneer Field Airport Master Plan Update

May 2018
State Program Number NFAPT00291

Prepared for:

State of Alaska
Department of Transportation & Public Facilities, Northern Region
2301 Peger Road
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Prepared by:

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TABLE OF CONTENTS

1 INTRODUCTION

The Alaska Department of Transportation and Public Facilities Northern Region (DOT&PF) and the Federal Aviation Administration (FAA) are conducting an Airport Master Plan Update to the Valdez Pioneer Field. An Airport Master Plan is a comprehensive study of an airport and describes the development plans to meet future aviation demand.

The purpose of the Public Involvement Plan (PIP) is to encourage dialogue and sufficiently inform the public, airport users, and resource agencies during the planning process. Objectives include providing an early opportunity to comment about potential issues and before any major decisions are made. This is being done through a combined effort of public meetings, a website, mailing lists, and outreach at significant airport events.

2 PUBLIC OUTREACH

2.1 Valdez Fly-In

The Master Planning team will conduct public outreach at the 2018 Valdez Fly-In. This is the premier annual event at the airport; bringing together diverse stakeholders for a celebration of Valdez and Alaskan aviation. The team will actively reach out to members of the public; and solicit their ideas for needs at the airport. This will allow resident and visiting pilots, community leaders, operators, airport users, and the general public to provide input into the Master Plan. It will also allow the Master Plan team understand how the airport puts on its premier event.

2.2 Public Meetings

Two public meetings will be held at the (a) Needs Assessment and (b) Alternative stages of the Master Plan. These meetings will be to update the public on the project, field questions, and receive feedback on the project.

The first meeting will be held in May/June 2018. This meeting will focus on collecting needs for the airport. The meeting will first describe what a Master Plan is; including its purpose, primary components, and schedule. Then the meeting will provide a brief history of improvements at the airport, demonstrating how past master plans have led to the current airport. The majority of the

meeting will be an interactive format, focusing on allowing the public to provide input on airport needs. This will be done through informal discussions in front of diagrams of the airport and formal question and answer sessions. Comment forms will also be available for the public to fill out and submit during the meeting or by mail.

The second public meeting will be held in the Fall/Winter of 2018. This meeting will focus on presenting alternatives which address the needs identified in the Master Plan. The meeting will review what a Master Plan is and review the efforts of the current Master Plan. It will recap the identified needs at the airport. The majority of the meeting will be spent on introducing the alternatives which address the needs identified at the airport. The meeting will allow for informal discussion and formal comments to be documented from community members. Community members will be able to evaluate and voice support or concern about alternatives; and suggest improvements to the process.

2.3 Website

A public website will be hosted on the DOT&PF projects webpage to inform the public about the Master Plan. This webpage will serve as a repository for documents, newsletters, and notifications about the Master Plan. Contact information for project leaders will allow the public to directly participate in the plan.

2.4 Mailing List

A Master Plan mailing list will be maintained throughout the project. This live document will include all of those people who have self-identified interest in the project, and any additional stakeholders who have been identified through scoping. The mailing list will be used to update interested stakeholders about project updates, open houses, and other appropriate events.

2.5 Informational and Educational Materials: Newsletters, Emails, and Fact Sheets

These materials will be published on the project website, sent in mailings, and/or be available as handouts at the open house. These are used to provide the public key information about the project, schedule, needs, and alternatives. The local Valdez radio station (KCHU) will also be contacted to run notifications about the open houses. If feasible, a short interview may serve as the notification, providing a richer media experience to increase public awareness of the project.

2.6 Advertisement

Project meetings will be advertised to the project mailing list. Advertisements for open houses will be run in the local newspaper, the Valdez Star.

2.7 Comment Collection

Summaries of open house meeting records, including documentation of comments received during open format discussions will be completed and appended to the Master Plan. Individual comments received through comment forms, emails, and webpage outreach will be collected and saved in the project records. Relevant comments and responses will be summarized in tabular form and included in the Master Plan.

3 INITIAL MASTER PLAN TIMELINE

May 9, 2018: Notice to Proceed
May 12-13, 2018: Valdez Fly-In
May 9, 2018 – June 20, 2018: Public Involvement Plan
May 15, 2018 – August 15, 2018: Conditions and Needs Assessment
June 1, 2018 – September 31, 2018: Land Use Assessment
Fall 2018: Public Open House
July 15, 2018 – October 15, 2018: Alternatives Analysis
Fall/Winter 2018: Public Open House
September 1, 2018 – December 31, 2018: Airport Layout Plan
December 31, 2018: Draft Master Plan
March 15, 2019: Final Master Plan

4 POTENTIAL STAKEHOLDERS

Valdez Pioneer Field is an important component of the Valdez economy and transportation infrastructure. As a result, there are many interested parties which have been identified (below). Additional parties will be added through the outreach efforts identified above.

- City of Valdez
    - Valdez City Council

  - Valdez Planning Commission
  - Adjacent Property Owners
- Valdez Pioneer Field Leaseholders, including:
  - Operators (e.g. Ravn Alaska)
  - Aleutian Village Trailer Park
  - Hanger tenants
- State/Federal Agencies
  - FAA Airport Division
  - FAA Flight Service
  - FAA Runway Safety
- Community Organizations
  - Valdez Airmen's Association
  - Valdez Parks and Trails Organizations
  - Aircraft Owners and Pilots Association

5 PROJECT CONTACTS

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2. Notes from Public Involvement during the Valdez Fly In, May 12-13, 2018

ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

Valdez Pioneer Field
Airport Master Plan Update

May 12-13, 2018: Fly In Notes

Public Comments:

- Land Use
  - Aleutian Village Trailer Park
    - Are not in line with aeronautical purposes
    - Should be removed
    - Resident commented on the noise and activity impacts to their residence from the aircraft activity
  - Neighboring Zoning Efforts
    - City has worked to develop a PBR (Plane, Boat, Recreation) zoning on lands adjacent to the airport to encourage development
  - Recreation and Trails
    - High levels of interest by recreation users supporting use of stream corridor north side of airport
      - Trails on and off Airport Property
      - Jeep trails and walking, biking paths
      - Desire to expand trail systems and make greater use of area for motorized and non-motorized recreation
      - Desire for series of expanding loop trails
      - Seen as value for local neighborhood recreation, and a key element in a regional trail system connecting down to Crooked Creek.
- Approach
  - Need to design approaches with better minimums
  - Large problem on cargo and passenger delays due to weather minimums
- Terminal
  - Current terminal roof leaks into the building
- Runway
  - Add 600 foot marks to facilitate STOL practice
- Fencing
  - A bear was seen inside airport property, and the lack of fencing on the North allowed wildlife to move through the area, rather than trapping them on the airport.
- Taxiway
  - Currently can directly enter the middle of the runway. Needs updated.
  - Move taxiway further down the runway to allow ¾ runway exit, without encouraging too rapid braking
- Grass strip
  - Should be added to facilitate bush plane usage
  - Decrease wear on tires
  - Aircraft currently landing on RSA

- Snow strip
    - Usually built each winter on the edge of the apron
    - Should be continued to facilitate ski usage
- More Hangers
    - More public or private hangers built
    - Current ones are ageing out, full
    - Airplanes tied down outside often flip due to winds
- Build a wind block for tie down locations
    - Airplanes tied down outside often flip due to winds
- NOTAMs about potential wind shear should be implemented
- Outdoor bathrooms and camping (similar to Fairbanks or Merrill) to facilitate regional use from neighboring towns
- Air Show
    - Tie downs
        - Current system is rope and cable with jersey barriers
            - Concern about potential risk of jersey barriers to aircraft
            - Desire to design a better system
    - Traffic Control is currently conducted with 4 contracted Air Bosses with previous air show experience
    - FAA and DOT review a Safety Plan which Valdez submits for the event
- Float Plane Facility
    - There are no longer docks on Robe Lake
    - Alaska Department of Natural Resources had Valdez Airmen's Association remove the docks
    - Desire for floatplane facilities from a few pilots (2)
    - Other pilots recognized floatplane usage was very limited
    - Robe Lake has severe problems with vandalism, local parties
    - One brainstorm included building a floatplane lane at the Valdez Airport
        - Perhaps City funded
- Public Involvement
    - Tom George with AOPA can probably not be involved full time with the Master Plan, but is looking for a local liaison
    - Jess Gondek, City of Valdez Planning & Zoning Commission requested presentations to his organization
        - Second and fourth Wednesdays of each month at 7:00 p.m. in City Council Chambers.
    - City Council meets First and third Tuesday of each month at 7:00 p.m. in City Council Chambers.
    - Ravn operates scheduled flights out of the terminal
    - Vertical Solutions is a helicopter user of the airport, with a booth in the terminal
    - Liz, a National Weather Service Contract Weather Observer, informed us that there are 4 hired observers based at the terminal. They operate 16 hrs a day, 7 days a week
    - Dan Brady, FAA Runway Safety, should be included in outreach

3. Sign In Sheet from Public Involvement during the Valdez Fly In, May 12-13, 2018

ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

Valdez Pioneer Field Airport Master Plan Update

Mailing List Sign Up Sheet

PROJECT NAME: Valdez Pioneer Field Airport Master Plan Update **DATE: May 11-13 2018**
Project No. 25181023

NAME (PLEASE PRINT)	MAILING ADDRESS and *EMAIL	PHONE	*GENDER (M/F)	*RACE (see below)
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effective: December 2004

PROJECT NAME: Valdez Pioneer Field Airport Master Plan Update **DATE: May 11-13 2018**

Project No. 25181023

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4. Notes from the Public Meeting and City Council Meeting, October 16, 2018

ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

Valdez Pioneer Field

1st Public Meeting

DOT&PF: Judy Chapman, Daniel Phillips, Jennifer Anderson
Stantec: Johnathan Limb, Ryan Cooper
October 16, 2018

The first Valdez Master Plan Public Meeting was held from 7-9pm at the Valdez Civic Center on October 16, 2018. A simultaneous presentation was made to the Valdez City Council at 7pm. Both efforts focused on informing the public of what a Master Plan was and how it can benefit the community. The focus of the meetings was collecting the needs of the airport to assist in alternative development.

Public outreach was conducted to raise awareness for the meeting. An email and mailing list distributed a flyer to parties which had been identified as potentially interested stakeholders. The local public radio station ran a public service message 1 week prior to the meeting and the day of the meeting to raise interest. Flyers were posted around the airport terminal. There were multiple attempts to contact the local newspaper to run an advertisement, but the newspaper was not in business. There were also multiple attempts to set up a live interview on the local radio, but the radio station's staffing was not large enough to allow such an event to take place.

The Master Planning team had planned on flying into Valdez; but the required weather minimums required all but one team member to drive to the community. This highlighted the most commonly voiced issue during the meetings. The airport continues to be impacted by approaches that require good weather.

The Public Meeting gave a short presentation explaining what a Master Plan was. Then the meeting opened into an open house format where stakeholders voiced their opinions. In the future the format of the meeting might be improved by doing a circle of extended introductions, including the public, allowing a more inclusive approach.

Below is a summary, organized by topic, of the issues discussed.

Leasing
There was concern about how to keep leasing rates affordable. There was a desire not to have any improvements to the airport carry into higher lease rates. There is also the view that using comparable market analysis from more expensive markets (i.e. Anchorage) to set rates inhibits economic development in Valdez. This is viewed as one of the prime reasons there is not more development of the available lease lots.

There is a concern about lease lots currently being to large for some stakeholders to afford. Stakeholders related that in the 1990's there was an initiative by the State to divide lease lots to

100'x100' plots, allowing cheaper leasing for smaller stakeholders. It was also believed that Cordova had similar lots. The Master Plan team committed to researching the issue.

There is a concern about some level of unmet demand for aircraft hangers. The primary concern for unhangered aircraft is the extreme snow load in Valdez. The high winds are also reported to flip tied down aircraft. The discussion focused that there is some variable unmet demand for hangers. The group voiced support for additional hangers (e.g. T-hangers or similar) but only a limited number. 20 additional hangers were stated as too many.

There was conversation about if there were possibilities for leasing sections of Robe Lake for facilities.

DOT&PF committed to bringing a leasing officer to the next meeting.

Land Use
There was some desire for the State of Alaska to divest of airport property to allow additional private development. This was desired by local developers to support economic opportunities.

It also was discussed that the primary reason the Aleutian Village land transfer encountered difficulty was that it was not incorporated into the Valdez Master Plan. There was a desire to incorporate the Aleutian Village land transfer into our alternative analysis.

Approach
There is a strong desire for better instrument approaches to be developed. Current approaches require a 4,460-foot ceiling and 5 miles visibility. The primary air service operator reports that 19% of their flights are canceled due to not being able to make the minimums for the approach. This data is supported by the experiences of all the members present at the meeting. The current approaches are based on:

- the NAVAID equipment installed in the area,
- the quality of the aeronautical survey, and
- the topography of the area (steep surrounding terrain confines a missed approach, particularly for fast aircraft)

There is a desire for a GPS/LPV (localizer performance with vertical guidance) approach. This would be to serve both regularly scheduled air service and local aviation stakeholders (e.g. commercial and general aviation users).

It was reported that the community has approached FAA and been told that Valdez does not rank as a priority for improved approaches. The Master Planning team discussed that we will work with FAA to discuss how their prioritization works, and what information they may need to increase Valdez's priority.

Another contributing factor was that the Johnston Point NAVAID was reported as being partially or completely inoperable most of the year. This makes even the current approach inoperable and transforms the airport into a VFR airport. Remote NAVAID equipment, such as Johnston Point, often have maintenance and operation issues due to the high cost to run and maintain the equipment.

Wind Reporting
There is a strong safety concern about variable wind direction over the airport. There are two wind cones at the airport due to wind direction and strength changing over the runway. But inbound aircraft who do not circle the airport do not view the wind cones. The AWOS only reports one wind

direction. Many stakeholders voiced a desire to add a sensor to the AWOS at another location at the airfield to allow a second automated wind statement to be broadcast, alerting pilots to current conditions.

Valdez Fly-In
There were multiple issues related to improving the Valdez Fly In. The event was strongly supported as an important airport activity. In general, the sense was that there continues to be push back from the State and FAA from the Fly In from happening. Particular issues were in discouraging camping under the wings and discouraging recreational vehicles. The view was that many of these activities are essential characteristics attracting participation of the Fly In.

There was also strong concern about the collection of vendor information about the Fly In. There has been a vendor's fee implemented, including requiring vendors to report on sales receipts. This is seen as a competitive disadvantage, as the organizer of the Fly In is a competitor to some of the vendors. This situation allows that competitor unfair access to the other business' books.

Public Outreach
There was a strong opinion to hard mail out the flyer to everyone, instead of using a combination of hard mail and email. The team committed to using both methods, even if some individuals may be notified twice.

The City Council expressed a strong desire to have additional, regular meetings on the Master Plan. This would be in addition to the 2 meetings regularly scheduled for the plan. An advisory board might be an avenue to provide additional community engagement.

Fencing and Gates
There is a general frustration with fencing and gates. There are maintenance and operational issues in the severe Valdez winters.

- Leaseholders are tired of having to jerry rig solutions to keep fencing up.
- Leaseholders are unhappy with gates that break and are either stuck open or stuck closed.
- There were reports solutions being implemented to solve gate/fence failures as generating additional operational concerns (maintaining Jersey Barriers).
- There is a strong desire not to install gates that prevents access from the general region of the Maritime Helicopter's parking lot. This access is an important part of their business, which allows customers and businesses (mail, fuel) to access the hanger. A gate cutting off access would cause an increase in their costs due to needing to maintain staffing to open/close the gate for any potential business needs.

There was a long general discussion on gates and what are potential solutions. Three main gates were discussed; here termed the DOT&PF gate, Hexagon Hanger gate, and Maritime Hanger gate. The general conclusion was that an automatic gate is greatly preferred to a manual gate. There was the viewpoint that the Hexagon Hanger gate could be permanently closed, as long as the other gates were operational.

The Maritime Hanger gate is currently very large, and this size is needed to accommodate float/wheel transitions through the fence line. The discussion focused that this large size is only needed in the spring/summer/fall. A smaller gate could be used in the winter. One solution to this gate may be a summer only manual gate for the majority of the large opening, and a smaller automated gate that also supported winter operations. This smaller gate would need to fit emergency equipment and things like a plow or double tanker truck.

DOT&PF communicated that this is one of their highest priorities, and that they are currently engineering a project to try and address these issues. It was also emphasized that fencing and gates were required for a regulatory compliant airfield.

Gravel Operations
There is strong support for a gravel landing/takeoff location. Many of the General Aviation users have aircraft that are specialized for gravel operations. The community would like to see gravel areas be available for use in flying.

Snow Operations
There is strong support for a snow operational location. During the winter, many users have aircraft that are equipped with ski landing equipment. They require an unmaintained area in order to conduct operations. This is an essential component for them to be able to continue to have operations at VDZ.

Robe Lake
There was strong support for providing additional infrastructure at Robe Lake to support it as a seaplane base. Robe Lake is listed as a seaplane base and has been equipped with a dock in the past. The State Department of Natural Resources issued a letter to the pilots that they were required to pay 20 years back rent on the docks and would be charged for removal of the docks. Volunteers removed the docks, and the seaplane base has been largely unused since, as there is no place to keep aircraft docked.

The interest from stakeholders did not include requesting funding for projects for Robe Lake. They stated that they had the funding and volunteers to procure and install equipment, along with being responsible for operations and maintenance and any liability issues. They just require permission to be able to install a dock and use the lake for sea plane operations.

Currently the lake is owned by DNR, who is not in the business of operating sea plane bases. The brainstorming for the project focused on having DOT&PF facilitate an inter-agency land transfer agreement to themselves, and then DOT&PF could facilitate transfer to a local entity. Depending on the specific legal requirements, that entity could be the City of Valdez or a local non-profit developed for this specific purpose. The stakeholders expressed strong support for this course of action, and the desire the participate in moving this project forward.

There is a paired security concern with vandalism of the float planes. This in the past has been a problem as the spot can be a source for local vandalism. It was reported that this was solved by putting a gate on the dock, which eliminated most of the problems. Remote security cameras would also be a proactive security measure. It was also voiced that a second non-aviation dock could be installed to facilitate non-aviation uses.

The access road is owned and maintained by DOT.

Thompson Pass Airport (K55)
Thompson Pass Airport was stressed as an important backcountry airport supporting VDZ. It is used for an emergency landing strip for when the pass is closed for aircraft flying from the North. It is also used on a regular basis for heliski operations and to practice backcountry flying for fixed wing aircraft. There is some need to maintain the airport, which has run into resistance since the DNR owns the land.

Whittier is viewed as a similar alternative as Thompson Pass Airport.

Increased Commercial Air Service
There was a discussion about the desire for Valdez to have an increased level of service by regularly scheduled commercial air service. This focused on the desire to have less flights canceled by weather, additional schedule options, and lower prices.

Discussion focused on the Essential Air Service (EAS) program, and contrasted Valdez's level of service with Cordova's and Yakutat's, which receive large aircraft by EAS. We reviewed how the EAS program was based on historical levels of service and is a competitively bid process; both of which impact the level of support for Valdez.

Discussion also focused on the high minimums for the current approaches. Potential fixes included efforts currently underway to design better approaches. We reviewed that some commercial airlines have independently funded Required Navigation Performance (RNP) approach systems, which allow some of the best approaches into communities. These are often proprietary, and require specialized equipment. As such they do not assist all aircraft. One idea may be to approach commercial airlines about establishing such approaches. Another approach may be developing local partners such as the City of Valdez to pursue investment. The Master Plan committed to a very basic level of costing options to inform this discussion.

The stakeholders emphasized how they would like to ensure that the Airport Layout Plan anticipate and/or accommodate regular service by large aircraft.

Recording Operations to FAA
Discussion focused on how the FAA obtains operation and enplanement numbers for Valdez. It was recognized that these numbers have a direct impact on funding levels available from the FAA. Typically, numbers are reported by regularly scheduled commercial operators. It was a surprise to stakeholders that flight plan 'souls on board' and number of flight plans filed are not incorporated into these forecasts. For an Valdez this could be a large portion of operations. The Master Plan committed to following up with stakeholders on how they can report operation-type numbers to FAA.

5. Sign In Sheet from the Public Meeting and City Council Meeting, October 16, 2018

ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

Valdez Pioneer Field Airport Master Plan Update

Mailing List Sign Up Sheet

PROJECT NAME: Valdez Pioneer Field Airport Master Plan Update
Project No. 25181023

DATE: Oct 16, 2018

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effective: December 2004

PROJECT NAME: Valdez Pioneer Field Airport Master Plan Update **DATE: Oct 16, 2018**

Project No. 25181023

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DATE: Oct 16, 2018

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effective: December 2004

6. Notes from the Public Meeting and City Council Meeting, March 21, 2019

ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

Valdez Pioneer Field

2nd Public Meeting at City Council Office

DOT&PF: Judy Chapman
Stantec: Ryan Cooper
March 21, 2019

The second Valdez Master Plan Public Meeting was held at 6pm at the Valdez City Council chambers on March 22, 2019. It was originally scheduled to be a special session of the Valdez City Council, but a quorum was not reached so an open public meeting was held instead.

The Valdez City Council had voiced their desire to be more involved in the Master Plan, and so Judy and Ryan traveled to Valdez to make additional outreach efforts. The focus of the meetings was collecting the City's airport needs to assist in alternative development.

Public outreach was conducted to raise awareness for the time, date, and agenda of the meeting. A flyer was distributed to parties which had been identified as potentially interested stakeholders on our current email and mailing lists.

The meeting consisted of a slideshow presentation with an open ongoing questions and answer session to talk about the topics of interest to the public.

Below is a summary, organized by topic, of the issues discussed.

Instrument Approach Procedures
Most of the comments from the public focused on the number of flights that do not make it into Valdez. RavnAlaska (Ravn) is the local air carrier and has told the Master Planning team that they are able to make about 81% of the flights into Valdez. Flights are primarily not completed due to weather not meeting approach visibility and ceiling minimums.

Valdez currently has an Instrument Flight Rules (IFR) LDA (Localizer Type Directional Aid) approach (named DME-G) only available to qualified pilots/ air carriers qualified such as Ravn. An LDA (named DME-H) is publicly available from FAA but has greater minimums than the LDA/DME-G. Both approaches are based on the Johnston Point Very High Frequency (VHF) Omni-Directional Range (VOR) NAVAID for an initial approach fix (IAF). This NAVAID is reported by stakeholders as being partially or completely inoperable most of the year. Remote NAVAID equipment, such as Johnston Point, often have maintenance and operation issues due to the high cost to access and maintain the equipment. This can make the approaches inoperable and transform the airport into requiring VFR conditions.

When the equipment is working, the approach has ~1,340-foot ceiling and 1.5-mile visibility minimums for Category B aircraft. Valdez weather meets these conditions ~93% of the time. When

the equipment is not working, the approach requires ~4,460-foot ceiling and 3-5-miles of visibility. Valdez weather meets these conditions ~86% of the time.

One solution is to try and establish an Area navigation (RNAV) LP (Localizer Performance) approach based on GPS. This would eliminate the need to rely on the Johnston Point NAVAID. Minimums would remain about the same (~1,340-foot ceiling and 1.5-mile visibility) but reliability of those minimums would increase.

There are three components to developing this approach.

1. An aeronautical survey needs to be completed to determine accurate topography of the area. This has been funded by the FAA and is being completed now.
2. An approach needs to be developed. The FAA may develop the approach; which is currently being evaluated but may not be high priority. Valdez may also hire a private contractor, which a rough order of magnitude cost might be $125,000.
3. Equipment to fly the approach needs to be bought and installed on the airplanes using Valdez. A fleet of airplanes and pilots likely need the equipment; as any particular airplane flies many different routes. The pilots also need recurrent training to stay certified.

The participants in the meeting voiced that they would like the Master Plan to conduct further investigation on items 2 and 3; and for the results to be presented to the community council. Valdez appeared to be interested in the potential to consider funding strategic items.

A public comment suggested investigation into using Tatitlek's GPS approach as a strategy to not rely on Johnstone Point. The Master Planning team will work with FAA to investigate these options.

Robe Lake
There continues to be strong interest in providing infrastructure at Robe Lake to support it as a seaplane base. Robe Lake is listed as a seaplane base and had been equipped with a dock in the past. There is now an effort to replace the docks.

The State of Alaska Department of Natural Resources (DNR) owns the lake. The land is being transferred by municipal entitlement to the City of Valdez.

There is interest in either installing docks or creating a gravel embankment with finger embankments or docks off the central gravel embankment to provide better access. A dike would eliminate the rocking that can cause damage.

There is also interest in expanding the pad, and establishing restrooms and trash service at the pad.

The Master Plan will explore the permitting options and practicability for a dike or dock designs in the alternatives.

Aleutian Village Mobile Home Park
The Aleutian Village Mobile Home is located on Airport Property, under a current lease to the Aleut Corporation. The Master Plan team asked if the park should continue to be a part of the airport. Residential areas on and surrounding airports are generally not encouraged by FAA. Airport land disposal for residential purposes is generally not preferred by FAA.

The public opinion at the meeting is that City should not take on ownership of the Aleutian Village Mobile Home Park. The public also voiced that the Aleut Corporation should be required to finish out their 40 year contract.

Through the Fence Operations
The concept of Through the Fence (TTF) Operations was reviewed. These are activities that use the airport, but access airport facilities from properties off the airport. This may include housing an airplane off airport property, and then driving it through the fence to use the runway.

Valdez is going through a Comprehensive Plan, which may include some zoning. The discussion focused on how airport users need to pay fees, which help support the airport. Through the Fence operations are allowed, if fees are attached.

As the TSA security program changes for Valdez, controlled access may cause Through the Fence operations to be not allowed.

It was also mentioned that recreational trails on the back side of the airport are not an aeronautical use, and a pay station might be an option to collect fees.

Runway
The comment was made that the runway needs to expand to 7,500 feet length (another 1,000 feet). This would allow more aircraft to use the runway. The new Runway Condition Assessment Matrix (RCAM) reporting system will also allow planes to come in when surface conditions are not perfect. The Master Plan would need to document aircraft demand for the increased runway length, and will include analysis in the Master Plan.

Terminal
The City of Valdez owns and operates the terminal. No major needs were identified for the terminal. A new security program may require some changes. The terminal also might be too large for the current need.

Grass Airstrip
The comment was made that a grass airstrip may be appropriate.

A related comment was that many of the potential users for a grass airstrip simply use the gravel on each side of the runway.

Ski Strip
There is the practice of not maintaining a portion of the apron, to allow for ski operations.

A comment was made that as lease lots are developed, the location for this strip will need to change because it will block access to the highest value lease lots.

Taxiway Alignment
The Master Plan team presented that the taxiways may need to be realigned to be moved from the 'high energy' middle portion of the runway. No comments were received on the topic.

Gates and Fences
DOT&PF is working on what improvements to make to gates and fences.

A comment was made that the best place for a General Aviation gate is just to the east of access to the octagon hangers. All other manual roller gates on the lease lots are not being leased, and so there is no sense in doing anything with them.

The comment was also made that the DOT&PF Maintenance Gate is likely large enough for any required equipment to move through the gate. Another large gate may not be required.

Valdez Fly-In
The team presented that a new tie-down system was going to be presented in the alternatives; to allow the current cable/Jersey barrier system to be replaced.

The team also discussed how the City might have a better role in reporting the vendor revenues to DOT&PF. Currently there may be the appearance of a conflict of interest by one vendor compiling all the vendors' information.

The comment was made that the revenue quantities might be too small to qualify for FAA reporting requirements. The Master Plan team will investigate the concern.

Campground
A comment was made about if there was a way to better connect the campground to the airport (i.e. allow planes to park near, or pull in). Conversation focused on adding the alternative to the Master Plan. Related comments focused on the concern about the security program, and Through the Fence operations.

Hangers
The comment was made that the hexagon hangers were reported as full, but that there is not a great amount of unmet demand.

The comment was made that the large orange hanger has been empty for years.

Triangle of Land
The comment was made that there is a City of Valdez triangle of land on the west of the airport property and east of the highway that should be evaluated for purchase by DOT&PF (1655 Richardson Highway; Tract A USS 455). This property appears to be in a position off the runway which may be important for the airport, and will be evaluated in the Master Plan.

Thompson Pass Airport
The team observed an extensive weather port camp and heliski operations at Thompson Pass Airport.

7. Sign In Sheet from the Public Meeting and City Council Meeting, March 21, 2019

ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

Valdez Pioneer Field Airport Master Plan Update

Mailing List Sign Up Sheet

PROJECT NAME: Valdez Pioneer Field Airport Master Plan Update **DATE: March 21, 2019**
Project No. 25181023

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8. Notes from Public Involvement during Valdez Fly In, May 10-12, 2019

ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

Valdez Pioneer Field
Airport Master Plan Update

May 10-12, 2019: Fly In Notes

Discussion:

- **Reduction in Airport Reference Code**

We communicated with Fly-In Participants that given the number and types of flights into VDZ; when the airport needs to be reconstructed in 10-20 years; the FAA may only fund a smaller runway. Without another revenue source, this might mean smaller infrastructure for the airport in the future.

We also mentioned that the FAA may continue to fund rehabilitation of the runway at its current size; until reconstruction is required.

The general reaction from Fly-In Participants was that policy made sense, and the airport was too large for their requirements.

We only had one pilot who expressed support for a larger runway; and his comment focused on that in general it was unfortunate to reduce the size of infrastructure, but he wasn't going to be flying in 10 years, so it didn't really matter.

It is important to note, that the stakeholders we talked to were largely general aviation pilots; who only require a few thousand feet for their runway. Important stakeholders that we were not able to engage with were City Council members, air carriers, and Alyeska pipeline.

- **Robe Lake**

Tom George with AOPA and the Master Plan team worked on Sunday to put Robe Lake plan together.

Our site investigation at Robe Lake found that there is one old concrete/rebar airplane tiedown along the bank; and what appears to be a good location for 2-3 airplanes to nose into the shoreline and tiedown. Instead of a full dock or gravel causeway; an incremental development strategy may be installing a few aircraft tiedowns.

We brainstormed with Jeremy Talbott, the Valdez Ports and Harbor Director (who is also the primary point of contact on airports). He indicated that they will support development at Robe Lake, but any specifics will need to be reviewed and approved.

We found that Vertical Solutions has a 100LL gas delivery truck that they will deliver fuel to Robe Lake on request. Their contact number and a note that fuel is available with prior arraignment should be updated on the 5010/Alaska Supplement.

Next action items will be engaging with the DNR for leasing; the City and/or airmen's non-profit for lease application (including fees); and pilots on if this is an appropriate alternative.

- **Instrument Approach**

The other primary comment was how can we improve regularly scheduled passenger service to the airport. This focused on how to reduce the number of weather cancelations.

We were able to provide the public with economic analysis explaining the investment air carriers would need to make in equipment; and the relatively few numbers of VDZ enplanements and thus VDZ revenue.

Innovative financing ideas included:

  - Local Investment: Approach the City about investing in an air carrier (with a ticket surcharge to pay back the City).
  - System Approach: We found that the FAA is developing a series of GPS RNAV flyways across the entire State of Alaska. Specifics were not available; but brainstorming indicated that a system wide approach might make sense. An air carrier's investment might work if the equipment cost is spread over not just VDZ revenues; but other airports and flyways.
  - Competition: We can also contact other air carriers to encourage competition to improve service. These conversations should take place; and be informed by the attempt Grant Aviation made to compete with Ravn at VDZ 2010-2013. At the end of the day, the two air carriers split the same amount of revenue; and Grant left the market.

- **Camping**

A few comments focused on facilitating camping on the airport. The most common preference was to turn one of the unused lease lots into a few camping spots.

Pilots generally did not like the idea of utilizing the existing campground on the eastern part of the runway due to the geometry and distance from parking.

9. Sign In Sheet from the Public Involvement January 5-7, 2021

Meeting Participant List

	NAME	AFFILIATION	EMAIL	PHONE	ADDRESS	GENDER	RACE	REMARKS
1	RYAN COOPER	STANTEC	ryan.cooper@stantec.com	907 343 5241	725 E Fireweed Ln #200, Anchorage, AK 99503	M		
2	ANDREW NIEMIEC	STANTEC	andrew.niemiec@stantec.com	907 343 5263	725 E Fireweed Ln #200, Anchorage, AK 99503	M		
3	MICHAEL HANSMEYER	STANTEC	michael.hansmeyer@stantec.com	907 343 5283	725 E Fireweed Ln #200, Anchorage, AK 99503	M		
4	JUDY CHAPMAN	DOT	judy.chapman@alaska.gov	907 451 5150	2301 Peger Rd Fairbanks, AK 99709	F		Regional Planning
5	JENNIFER KELLER	DOT	jennifer.keller@alaska.gov	907 451 2385	2301 Peger Rd Fairbanks, AK 99709	F		Regional Planning
6	DANIEL PHILLIPS	DOT	daniel.phillips@alaska.gov	907 451 2926	2301 Peger Rd Fairbanks, AK 99709	M		H&A Admin
7	ROBERT DUNNING	DOT	robert.dunning@alaska.gov	907 834 1039	PO Box 507 Valdez, AK 99686	M		Airport M&O Superintendent
8	KATE HUBER	CITY OF VALDEZ	khuber@valdezak.gov	907 834 3401	212 Chenega Ave. P.O. Box 307 Valdez, AK 99686	F		City Planning Department; Planning Director
9	BRUCE WALL	CITY OF VALDEZ	bwall@valdezak.gov	907 834 3451	213 Chenega Ave. P.O. Box 307 Valdez, AK 99686	M		City Planning Department; Senior Planning Technician
10	JAMES M MCINTYRE	VALDEZ CIVIL AIR PATROL				M		Squadron Commander Civil Air Patrol
11	JEREMY TALBOTT	CITY OF VALDEZ	jtalbott@valdezak.gov	907 835 4564	300 N. Harbor Dr. Valdez, AK 99686	M		Ports & Harbors Director
12	NICOLE LEROY	CITY OF VALDEZ	nleroy@valdezak.gov	1 845 616 2217 907 834 3427	213 Chenega Ave. P.O. Box 307 Valdez, AK 99686	F		City Planning Department; Planning Technician
13	TOM GEORGE					M		
14	MARK DETTER	CITY OF VALDEZ	mdetter@valdezak.gov	907 835 4313	213 Chenega Ave. P.O. Box 307 Valdez, AK 99686	M		City Manager
15								

10. Notes from the City Council Meeting, January 5, 2021

ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

Valdez Pioneer Field

Valdez City Council Meeting

DOT&PF: Judy Chapman, Jennifer Keller, Daniel Phillips, Robert Dunning
Stantec: Ryan Cooper, Michael Hansmeyer, Andrew Niemiec
January 5, 2021

The Valdez City Council Meeting was held from 7-9pm in Valdez on January 5th, 2021. A brief presentation was given, by DOT&PF and Stantec, to the Valdez City Council to introduce and solicit comments on the proposed alternatives for the Master Plan. A more detailed version of the presentation will also be given to the wider community on January 7th, 2021.

This presentation was given virtually due to COVID restrictions. The presentation focused on the Master Plan process, current issues at the airport, and alternatives for airport improvements to address those issues. City Council members were asked to provide feedback and ask questions throughout the presentation. Their remarks are summarized below.

A member of the council was interested in whether the project had engaged industry and general aviation users at the airport regarding the proposed runway alternatives. There was a concern that narrowing of the runway from 150 feet to 100 feet could affect operations. The project team reassured that pertinent airport users had been consulted and that a narrowing of the runway would not affect regular operations. Allowing the runway to remain at the current width was also discussed as a potential incentive to industry in the future (e.g. Boeing 737s). Currently the airport does not regularly have flights from larger aircraft, such as Boeing 737s. The runway should still be capable of hosting emergency/disaster response from aircraft such as C-130s at the narrower dimension.

There was a question about if there could be difficulty in widening the runway in the future, and what the time and cost delays might be. If the airport begins to see regular use for larger sized aircraft (e.g. >500 operations per year), the airport can update the Master Plan's forecast and engineering design for the wider runway. This would lead to a time lag in processing the plans, and it is difficult to say how long the time lag would be. The current plan has worked to minimize the construction cost by leaving much of the embankment in place that would be needed for a wider runway. It was made clear to the Council that the issue is the FAA will not participate with funding the runway at its current dimensions given current predominant use (Dash-8), but that this reduced investment is not perpetual and could be reversed in the future if larger aircraft begin making regular use of the airfield.

A member was interested if any military organizations (i.e. Coast Guard, National Guard) that use the airport were consulted on the alternatives presented. They had not been contacted directly however; military operations had been a topic of discussion with airport users during visits by the

project staff to the local fly-in events. The project staff agreed their input would be valuable and committed to reaching out to them. Also discussed were the fact that FAA does not factor military operations into their funding decisions (expecting the Department of Defense/military to invest in the facilities it uses), and that the military have independent criteria for deciding which airfields to use for practice.

The community has expressed interest in floatplane infrastructure improvements taking place at Robe Lake. The lake is owned by the Alaska Department of Natural Resources, and is not a DOT&PF facility. It was introduced to the council that the best path forward appears to be a collaboration between the City of Valdez and the Valdez Airmen's Association. Where the City of Valdez can hold the permit and be responsible for the facility, and the Valdez Airmen's Association can provide valuable support to the effort. A member of the council wanted to know the results of this discussion and the Master Plan committed to reporting back to the City Council with those results.

After the discussion of the instrument approach limitations at Valdez, a member was interested in seeing the costs associated with implementing better approaches. The project staff explained the team has been unsuccessful in obtaining accurate costs due to the difficulty and complexity of coordinating with the air carriers and manufacturers. The reported high costs of using a better approach is upgrading aircraft avionics, and FAA's cost to establish the approach. Additional cost estimates are outside of the scope of the current Master Plan, and would need to be followed up with the air carriers.

11. Notes from the Public Meeting, January 7, 2021

ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

Valdez Pioneer Field

Public Meeting

DOT&PF: Judy Chapman, Jennifer Keller, Daniel Phillips, Robert Dunning
Stantec: Ryan Cooper, Michael Hansmeyer, Andrew Niemiec
City of Valdez: Kate Huber, Bruce Wall, Jeremy Talbott, Mark Detter, Nicole Leroy
AOPA: Tom George
Valdez Civil Air Patrol: James McIntyre
January 7, 2021

A Valdez Master Plan Public meeting was held from 7-9pm on January 7th, 2020. A presentation on the airport master plan alternatives. It was given by DOT&PF and Stantec to community members and airport stakeholders to introduce and solicit comments on the proposed alternatives for the Master Plan. A condensed version of the presentation had been given to the Valdez City Council on January 5th, 2020.

This presentation was given virtually due to COVID restrictions. The presentation was attended by members of the Aircraft Owners and Pilots Association (AOPA), City of Valdez Planning Department, Valdez Ports & Harbor, and Valdez Civil Air Patrol. The presentation focused on the Master Plan process, current issues at the airport, and alternatives for airport improvements to address those issues. Community members were asked to provide feedback and ask questions throughout the presentation. Their remarks are summarized below.

When discussing the narrower runway alternative, a community member was interested in what the largest aircraft able to land on the runway would then be. For instance, could a C-130 or C-17. The project team was unsure what the "largest" aircraft would be but explained that the aircraft used for design was determined based on operational use and that the 'design airport' does not restrict what aircraft can land at the airport. That is a decision that would need to be made by the operator. The team further explained that the C-130 used by the Coast Guard should be able to use the facility, but the C-17 had not been examined.

There was a question from the City regarding the timeline and process to identify project funding needs. This is concerning the possibility of the City contributing for the gap in FAA funding to allow reconstruction of the airport at the current size. The project team explained the earliest time to construction would be three years, and that prior to going to the project evaluation board, the DOT would want to have a letter from the city expressing interest in partnering in the costs for construction. It was stressed to the project team that the City was not committing to provide funding, and if they did, they would need ample time ahead of this step to make a decision. The City also stated that smaller incremental bonds leading up to the project, as opposed to a single large bond at the end, may be beneficial to the process of acquiring funding from the City. The

project team confirmed that the DOT would be reaching out to the City Council at the onset of any projects at the airport.

There were no comments regarding the remainder of the presentation.

The project team reiterated the need for comments to select the preferred alternative for the Master Plan.

In closing, a question was brought up regarding ownership of the handicap ramp being stored at the Civil Air Patrol's hangar at the airport. It is a state-owned ramp issued to RAVN who was responsible for storage due to DOT having a lack of indoor storage. RAVN had a previous agreement with a different hangar, and that agreement is now canceled. The Civil Air Patrol agreed to store the ramp but only temporarily.

There was interest in how a summary of the meeting would be made available to the City Council. It was agreed that a summary would be drafted and sent to Jeremy Talbott with Ports & Harbors, who would then disseminate the information throughout the City as appropriate.

12. Virtual Public Meeting Website Snapshot, January 7, 2021

Alaska Department of Transportation and Public Facilities
NORTHERN REGION

Valdez Pioneer Field Airport Master Plan Update

State Program Number NFAPT00291 / Federal Program Number 3-02-0311-020-2017

Virtual Public Meeting

Comments due February 7, 2021

Welcome! Due to Covid-19, we are hosting an innovative virtual public meeting for the Alternative Evaluation phase of the Valdez Airport Master Plan.

First, please consider attending the live virtual public meeting. This will be conducted in a virtual format on Thursday, January 7, 2021 at 7pm.

There will be a PowerPoint presentation on the potential alternatives being considered for future development at the airport. There will also be a time for a 'town hall' style discussion, allowing the public to ask questions of the project team, and provide public input.

Unable to attend the live event? Not a problem!

We have set up this webpage to provide a virtual public meeting experience.

We have posted a link to the PowerPoint presentation and accompanying factsheet that will be given at the live meeting. These summarize the alternatives in an easy to digest format. This is a great place to start.

Your comments are very important!

They help the project team evaluate the alternatives under consideration and select a final Preferred Alternative for engineering and design.

You can provide comments to the team by emailing valdezmasterplan@stantec.com. You can also call, email, and/or write any one of the team members listed under "Project Team".

All comments are due by February 7, 2021. Then we will analyze the input, and select a Preferred Alternative.

13. Follow Up with the City of Valdez, January 12, 2021

Stantec Consulting Services Inc.
725 East Fireweed Lane Suite 200, Anchorage AK 99503-2245

January 12, 2021
File: 2047063700

Attention: Jeremy Talbott
Ports and Harbor Director
City of Valdez
(907) 835-4564
jtalbott@valdezak.gov

Dear City of Valdez,

Reference: Valdez Pioneer Field Airport Master Plan
Public Meeting Follow-up

The State of Alaska Department of Transportation and Public Facilities (DOT&PF) is completing an Airport Master Plan for the Valdez Pioneer Field. During this effort, DOT&PF conducted a virtual briefing to the Valdez City Council on January 5, 2021 and held a virtual public meeting on January 7, 2021. The participants at the public meeting included the City of Valdez Planning and Ports & Harbor Departments, the Civil Air Patrol, the Aircraft Owners and Pilots Association, and the local and regional DOT&PF. These meetings presented a series of alternatives for development and management of the airport. After the public comment period closes on February 7, 2021, the Master Plan will select a preferred alternative, and work to finalize the Airport Master Plan and Airport Layout Plan. During the public meetings, the Master Planning team committed to following up with the City of Valdez on instrument approaches, airport funding, and improving Robe Lake.

INSTRUMENT APPROACHES

Throughout the master planning process, there has been discussion on how to improve the instrument approaches at the Valdez airport. This issue is detailed in an appendix to the "Alternatives" chapter of the Master Plan, available at the Project's website: http://dot.alaska.gov/nreg/valdez-airport/ The Master Plan team had been working with the Federal Aviation Administration (FAA) and the local air carrier (Ravn) to start a conversation on improving the instrument approaches at the airport. This conversation was just beginning to make progress, with relationships starting to be built to understand the types of instruments in Ravn's aircraft, and the potential cost to improve them (if necessary). This effort was halted, without tangible results, when Ravn discontinued service to Valdez. No further research is planned at this time.

AIRPORT FUNDING

The FAA is the primary source of revenue for airport improvements in Alaska. Given the current aircraft activity at the airport, the FAA will only fund reconstruction of the airport with a narrower runway. DOT&PF does not have the resources to make up the funding difference to reconstruct the runway at the current size. There were public comments inquiring as to the timeline to investigate arranging alternative funding for reconstruction of the current runway. If the local community, industry, or other stakeholders desire for

Reference: **Valdez Pioneer Field Airport Master Plan Public Meeting Follow-up**

the runway to remain the same size, funding would need to be developed from other sources. The presence or lack of funding for the wider runway would not delay reconstruction of the narrower runway.

Airport improvements in Alaska are evaluated through the DOT&PF's Aviation Project Evaluation Board (APEB). Projects throughout the State are evaluated and ranked for competitive funding. The funding cycles mean that construction would not occur for at least three years from now. The actual date of construction may be later, depending on available funding and the funding priorities for airport projects across the entire state. DOT&PF has committed to consult with the City of Valdez on the potential for alternative revenue sources prior to bringing any project to the APEB. Local participation would likely be viewed very favorably by the Evaluation Board.

ROBE LAKE

Robe Lake is a historical floatplane base serving the community of Valdez. It is owned by the Alaska Department of Natural Resources (DNR), and currently does not have any floats, dock, or other infrastructure to facilitate floatplane operations. Throughout the Valdez Pioneer Field Master Planning process, community members regularly requested improvements to be made to Robe Lake. Funding requires work on the Pioneer Field Master Plan stay focused on Pioneer Field, but the planning team has worked to advance the conversation on how to improve Robe Lake. The master plan team investigated whether it was possible to enter into an interagency land management agreement (ILMA) with DNR, and work with the City of Valdez through a Memorandum of Understanding for the City of Valdez to manage the facility. DNR indicated this would not be possible using an ILMA, but that one pathway forward is for a collaboration to take place between the City of Valdez and the Valdez Airmen's Association. The concept would be for the City of Valdez to apply for the DNR permit and be responsible to build and improve facilities at Robe Lake. The Valdez Airmen's Association may be able to provide support (e.g. funding, manpower, volunteer hours, ideas).

Regards,

Stantec Consulting Services Inc.

Ryan Cooper

Ryan Cooper
Environmental Scientist
Phone: 907 343 5241
Fax: 907 258 4653
Ryan.Cooper@stantec.com

14. Website Snapshot, November 5, 2018

Alaska Department of Transportation and Public Facilities
NORTHERN REGION

Valdez Pioneer Field Airport Master Plan Update

State Program Number NFAPT00291 / Federal Program Number 3-02-0311-020-2017

Welcome

The Alaska Department of Transportation and Public Facilities (DOT&PF) and the Federal Aviation Administration (FAA) are conducting an Airport Master Plan Update to the Valdez Pioneer Field (VDZ). A Master Plan guides how investment will be made in the airport over the next 20 years. The last Airport Master Plan was 2004. An airport Master Plan is a comprehensive study of an airport and describes the development plans to meet future aviation demand.

Valdez Pioneer Field is of strategic and economic importance to the State of Alaska. The airport serves the Trans Alaska Pipeline System (TAPS) Valdez Marine Terminal, City of Valdez, and the Greater Copper Valley basin. In the event of economic activity along the pipeline corridor or Prince William Sound, the airport is a key transportation hub.

Email is the best method for communication about the project. To join the email list, simply send a note to: valdezmasterplan@stantec.com

Meetings

Two public meetings will be held at the (a) Needs Assessment and (b) Alternative Assessment stages of the Master Plan. These meetings will be to update the public on the project, field questions, and solicit feedback. Meeting notices will be emailed to the project email list and announced on this webpage.

The first meeting was held on October 16, 2018 in Valdez. This meeting focused on informing the public about what a Master Plan is and soliciting feedback on needs to be solved for the airport.

The second public meeting is scheduled to be held in the Winter of 2018/19. This meeting will focus on presenting alternatives to solve identified needs and soliciting feedback on the alternatives proposed under the Master Plan.

Comments

To submit a comment about the Valdez Pioneer Field Airport Master Plan Update, please send an email to valdezmasterplan@stantec.com or call one of the team members listed under “Project Team”.

Project Information

- Home
- Schedule
- Project Team
- Public Involvement Plan

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Alaska Department of Transportation and Public Facilities
NORTHERN REGION

Valdez Pioneer Field Airport Master Plan Update

State Program Number NFAPT00291 / Federal Program Number 3-02-0311-020-2017

Master Plan Timeline (Subject to Change)

May 9, 2018	Project Kickoff
May 12-13, 2018	Valdez Fly-In
May 9, 2018 – June 20, 2018	Public Involvement Plan
May 15, 2018 – October 15, 2018	Conditions and Needs Assessment
June 1, 2018 – October 31, 2018	Land Use Assessment
Fall 2018	Public Open House
October 15, 2018 – December 15, 2018	Alternatives Analysis
Winter 2018/19	Public Open House
September 1, 2018 – December 31, 2018	Airport Layout Plan
December 31, 2018	Draft Master Plan
March 15, 2019	Final Master Plan

Project Information

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Alaska Department of Transportation and Public Facilities
NORTHERN REGION

Valdez Pioneer Field Airport Master Plan Update

State Program Number NFAPT00291 / Federal Program Number 3-02-0311-020-2017

Project Team

The best method to contact the project team is by email: valdezmasterplan@stantec.com

You can also reach out specifically to key team members:

DOT&PF – Northern Region

Judy Chapman
2301 Peger Rd
Fairbanks, AK 99709
Judy.Chapman@alaska.gov
907-451-5150

Daniel Phillips
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Stantec

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John.Limb@stantec.com
907-343-5238

Ryan Cooper
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907-258-5241

Project Information

- Home
- Schedule
- Project Team
- Public Involvement Plan

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15. Website Snapshot, February 23, 2021

Alaska Department of Transportation and Public Facilities
NORTHERN REGION

Valdez Pioneer Field Airport Master Plan Update

State Program Number NFAPT00291 / Federal Program Number 3-02-0311-020-2017

January 2021 Announcement:
A virtual public meeting is scheduled to take place Thursday January 7, 2021 at 7:00 pm. All are welcome to attend! You can either attend the live hosted event (via phone and/or website) or view the virtual meeting webpage. Comments are due by February 7, 2021. See the links to the right for more information.

Also: The 'Alternatives' Chapters of the Valdez Airport Master Plan has been posted to the website. See the links to review and feel free to submit comments.

Welcome

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Comments

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ATTACHMENT D: COST ESTIMATE

Engineer's Estimate

Project Name: Valdez Master Plan - RW Alternative 1 "Rehab C-III"

Project Number: 2047063700

Item No	Pay Item	Pay Unit	Quantity	Unit Price	Amount
G100.010.0000	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D	$250,000	$250,000
G115.010.0000	WORKER MEALS AND LODGING, OR PER DIEM	LS	ALL REQ'D	$200,000	$200,000
G130.000.0000	CONTRACTOR FURNISHED ITEMS	LS	ALL REQ'D	$250,000	$250,000
G700.030.0000	AIRPORT TRAFFIC MAINTENANCE	LS	ALL REQ'D	$50,000	$50,000
G710.010.0000	HIGHWAY TRAFFIC MAINTENANCE	LS	ALL REQ'D	$50,000	$50,000
P162.010.0000	PAVEMENT COLD PLANING	SY	73,000	$5	$365,000
P401.010.0040	HOT MIX ASPHALT TYPE II, CLASS B	TON	8,300	$252	$2,091,600
P620.020.0000	RUNWAY AND TAXIWAY PAINTING	LS	ALL REQ'D	$300,000	$300,000
P641.000.0000	ESCP ITEMS	LS	ALL REQ'D	$150,000	$150,000
				Subtotal:	$3,706,600
	CONSTRUCTION ENGINEERING			20.00%	$741,320
	DESIGN CONTINGENCY			10.00%	$370,660
				Subtotal:	$4,818,580
	ICAP (Assumed rate for unknown year of construction)			10.00%	$481,858
				Subtotal	$5,300,438
				Total	$5,310,000

Engineer's Estimate

Project Name: Valdez Master Plan - RW Alternative 2a "Rehab to B-III; Near-term"

Project Number: 2047063700

Item No	Pay Item	Pay Unit	Quantity	Unit Price	Amount
G100.010.0000	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D	$300,000	$300,000
G115.010.0000	WORKER MEALS AND LODGING, OR PER DIEM	LS	ALL REQ'D	$200,000	$200,000
G130.000.0000	CONTRACTOR FURNISHED ITEMS	LS	ALL REQ'D	$250,000	$250,000
G700.030.0000	AIRPORT TRAFFIC MAINTENANCE	LS	ALL REQ'D	$50,000	$50,000
G710.010.0000	HIGHWAY TRAFFIC MAINTENANCE	LS	ALL REQ'D	$50,000	$50,000
L125.010.0000	AIRPORT LIGHTING	LS	ALL REQ'D	$750,000	$750,000
P161.010.0000	RECYCLED ASPHALT PAVEMENT	SY	360,000	$3.00	$1,080,000
P162.010.0000	PAVEMENT COLD PLANING	SY	73,000	$3.50	$255,500
P401.010.0040	HOT MIX ASPHALT TYPE II, CLASS B	TON	8,300	$252	$2,091,600
P620.020.0000	RUNWAY AND TAXIWAY PAINTING	LS	ALL REQ'D	$275,000	$275,000
P641.000.0000	ESCP ITEMS	LS	ALL REQ'D	$275,000	$275,000
				Subtotal:	$5,577,100
	CONSTRUCTION ENGINEERING			20.00%	$1,115,420
	DESIGN CONTINGENCY			10.00%	$557,710
				Subtotal:	$7,250,230
	ICAP (Assumed rate for unknown year of construction)			10.00%	$725,023
				Subtotal	$7,975,253
				Total	$7,980,000

Engineer's Estimate

Project Name: Valdez Master Plan - RW Alternative 2b "Reconstruct to B-III; Long-term"

Project Number: 2047063700

Item No	Pay Item	Pay Unit	Quantity	Unit Price	Amount
G100.010.0000	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D	$450,000	$450,000
G115.010.0000	WORKER MEALS AND LODGING, OR PER DIEM	LS	ALL REQ'D	$200,000	$200,000
G130.000.0000	CONTRACTOR FURNISHED ITEMS	LS	ALL REQ'D	$250,000	$250,000
G700.030.0000	AIRPORT TRAFFIC MAINTENANCE	LS	ALL REQ'D	$50,000	$50,000
G710.010.0000	HIGHWAY TRAFFIC MAINTENANCE	LS	ALL REQ'D	$50,000	$50,000
L125.010.0000	AIRPORT LIGHTING	LS	ALL REQ'D	$750,000	$750,000
P160.010.0000	EXCAVATION OF PAVEMENT, AC	SY	73,000	$2.50	$182,500
P161.010.0000	RECYCLED ASPHALT PAVEMENT	SY	360,000	$2.00	$720,000
P401.010.0030	HOT MIX ASPHALT TYPE II, CLASS A	TON	8,300	$216	$1,792,800
P401.010.0040	HOT MIX ASPHALT TYPE II, CLASS B	TON	8,300	$252	$2,091,600
P620.020.0000	RUNWAY AND TAXIWAY PAINTING	LS	ALL REQ'D	$250,000	$250,000
P641.000.0000	ESCP ITEMS	LS	ALL REQ'D	$275,000	$275,000
				Subtotal:	$7,061,900
	CONSTRUCTION ENGINEERING			20.00%	$1,412,380
	DESIGN CONTINGENCY			10.00%	$706,190
				Subtotal:	$9,180,470
	ICAP (Assumed rate for unknown year of construction)			10.00%	$918,047
				Subtotal	$10,098,517
				Total	$10,100,000

Engineer's Estimate

Project Name: Valdez Master Plan - TW Alternative 2 "Abandon TW C"

Project Number: 2047063700

Item No	Pay Item	Pay Unit	Quantity	Unit Price	Amount
L125.010.0000	AIRPORT LIGHTING	LS	ALL REQ'D	$25,000	$25,000
P620.020.0000	RUNWAY AND TAXIWAY PAINTING	LS	ALL REQ'D	$10,000	$10,000
P620.060.0000	PAINTED MARKING REMOVAL	LS	ALL REQ'D	$50,000	$50,000
					$0
					$0
				Subtotal:	**$85,000**
	CONSTRUCTION ENGINEERING			20.00%	$17,000
	DESIGN CONTINGENCY			10.00%	$8,500
				Subtotal:	**$110,500**
	ICAP			10.00%	$11,050
				Subtotal	**$121,550**
				Total	**$130,000**

Engineer's Estimate

Project Name: Valdez Master Plan - TW Alternative 3 "Shift TW C"

Project Number: 2047063700

Item No	Pay Item	Pay Unit	Quantity	Unit Price	Amount
D701.010.0036	CS PIPE, 36-INCH	LF	200	$190	$38,000
G100.010.0000	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D	$100,000	$100,000
G115.010.0000	WORKER MEALS AND LODGING, OR PER DIEM	LS	ALL REQ'D	$65,000	$65,000
G130.000.0000	CONTRACTOR FURNISHED ITEMS	LS	ALL REQ'D	$100,000	$100,000
G700.030.0000	AIRPORT TRAFFIC MAINTENANCE	LS	ALL REQ'D	$50,000	$50,000
G710.010.0000	HIGHWAY TRAFFIC MAINTENANCE	LS	ALL REQ'D	$50,000	$50,000
L125.010.0000	AIRPORT LIGHTING	LS	ALL REQ'D	$180,000	$180,000
P152.010.0000	UNCLASSIFIED EXCAVATION	CY	6,000	$18	$108,000
P152.200.0000	BORROW	TON	22,000	$18	$396,000
P160.010.0000	EXCAVATION OF PAVEMENT, AC	SY	7,300	$3.00	$21,900
P209.020.0000	CRUSHED AGGREGATE BASE COURSE	TON	2,600	$35	$91,000
P401.010.0030	HOT MIX ASPHALT TYPE II, CLASS A	TON	700	$216	$151,200
P401.010.0040	HOT MIX ASPHALT TYPE II, CLASS B	TON	1,000	$252	$252,000
P620.020.0000	RUNWAY AND TAXIWAY PAINTING	LS	ALL REQ'D	$15,000	$15,000
P641.000.0000	ESCP ITEMS	LS	ALL REQ'D	$50,000	$50,000
					$0
					$0
				Subtotal:	$1,668,100
	CONSTRUCTION ENGINEERING			20.00%	$333,620
	DESIGN CONTINGENCY			10.00%	$166,810
				Subtotal:	$2,168,530
	ICAP			10.00%	$216,853
				Subtotal	$2,385,383
				Total	$2,390,000

Engineer's Estimate

Project Name: Valdez Master Plan - TW Alternative 4 "Shift TW C and Construct New TV

Project Number: 2047063700

Item No	Pay Item	Pay Unit	Quantity	Unit Price	Amount
D701.010.0036	CS PIPE, 36-INCH	LF	400	$190	$76,000
G100.010.0000	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D	$200,000	$200,000
G115.010.0000	WORKER MEALS AND LODGING, OR PER DIEM	LS	ALL REQ'D	$85,000	$85,000
G130.000.0000	CONTRACTOR FURNISHED ITEMS	LS	ALL REQ'D	$125,000	$125,000
G700.030.0000	AIRPORT TRAFFIC MAINTENANCE	LS	ALL REQ'D	$50	$50
G710.010.0000	HIGHWAY TRAFFIC MAINTENANCE	LS	ALL REQ'D	$50	$50
L125.010.0000	AIRPORT LIGHTING	LS	ALL REQ'D	$385,000	$385,000
P152.010.0000	UNCLASSIFIED EXCAVATION	CY	13,000	$18	$234,000
P152.200.0000	BORROW	TON	40,000	$18	$720,000
P160.010.0000	EXCAVATION OF PAVEMENT, AC	SY	7,300	$3.00	$21,900
P209.020.0000	CRUSHED AGGREGATE BASE COURSE	TON	5,600	$35	$196,000
P401.010.0030	HOT MIX ASPHALT TYPE II, CLASS A	TON	1,500	$216	$324,000
P401.010.0040	HOT MIX ASPHALT TYPE II, CLASS B	TON	2,000	$252	$504,000
P620.020.0000	RUNWAY AND TAXIWAY PAINTING	LS	ALL REQ'D	$25,000	$25,000
P641.000.0000	ESCP ITEMS	LS	ALL REQ'D	$150,000	$150,000
					$0
					$0
				Subtotal:	$3,046,000
	CONSTRUCTION ENGINEERING			20.00%	$609,200
	DESIGN CONTINGENCY			10.00%	$304,600
				Subtotal:	$3,959,800
	ICAP			10.00%	$395,980
				Subtotal	$4,355,780
				Total	$4,360,000

Engineer's Estimate

Project Name: Valdez Master Plan - TW Alternative 5 "Realign Apron Taxiway"

Project Number: 2047063700

Item No	Pay Item	Pay Unit	Quantity	Unit Price	Amount
D701.010.0036	CS PIPE, 36-INCH	LF	500	$190	$95,000
G100.010.0000	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D	$500,000	$500,000
G115.010.0000	WORKER MEALS AND LODGING, OR PER DIEM	LS	ALL REQ'D	$200,000	$200,000
G130.000.0000	CONTRACTOR FURNISHED ITEMS	LS	ALL REQ'D	$350,000	$350,000
G700.030.0000	AIRPORT TRAFFIC MAINTENANCE	LS	ALL REQ'D	$75,000	$75,000
G710.010.0000	HIGHWAY TRAFFIC MAINTENANCE	LS	ALL REQ'D	$75,000	$75,000
L125.010.0000	AIRPORT LIGHTING	LS	ALL REQ'D	$1,100,000	$1,100,000
P152.010.0000	UNCLASSIFIED EXCAVATION	CY	70,000	$18	$1,260,000
P152.200.0000	BORROW	TON	195,400	$18	$3,517,200
P160.010.0000	EXCAVATION OF PAVEMENT, AC	SY	60,000	$3.00	$180,000
P162.010.0000	PAVEMENT COLD PLANING	SY	10,000	$5.00	$50,000
P209.020.0000	CRUSHED AGGREGATE BASE COURSE	TON	19,300	$35	$675,500
P401.010.0030	HOT MIX ASPHALT TYPE II, CLASS A	TON	5,400	$216	$1,166,400
P401.010.0040	HOT MIX ASPHALT TYPE II, CLASS B	TON	8,300	$252	$2,091,600
P620.020.0000	RUNWAY AND TAXIWAY PAINTING	LS	ALL REQ'D	$50,000	$50,000
P620.060.0000	PAINTED MARKING REMOVAL	LS	ALL REQ'D	$75,000	$75,000
P641.000.0000	ESCP ITEMS	LS	ALL REQ'D	$150,000	$150,000
					$0
					$0
				Subtotal:	$11,610,700
	CONSTRUCTION ENGINEERING			20.00%	$2,322,140
	DESIGN CONTINGENCY			10.00%	$1,161,070
				Subtotal:	$15,093,910
	ICAP			10.00%	$1,509,391
				Subtotal	$16,603,301
				Total	$16,610,000