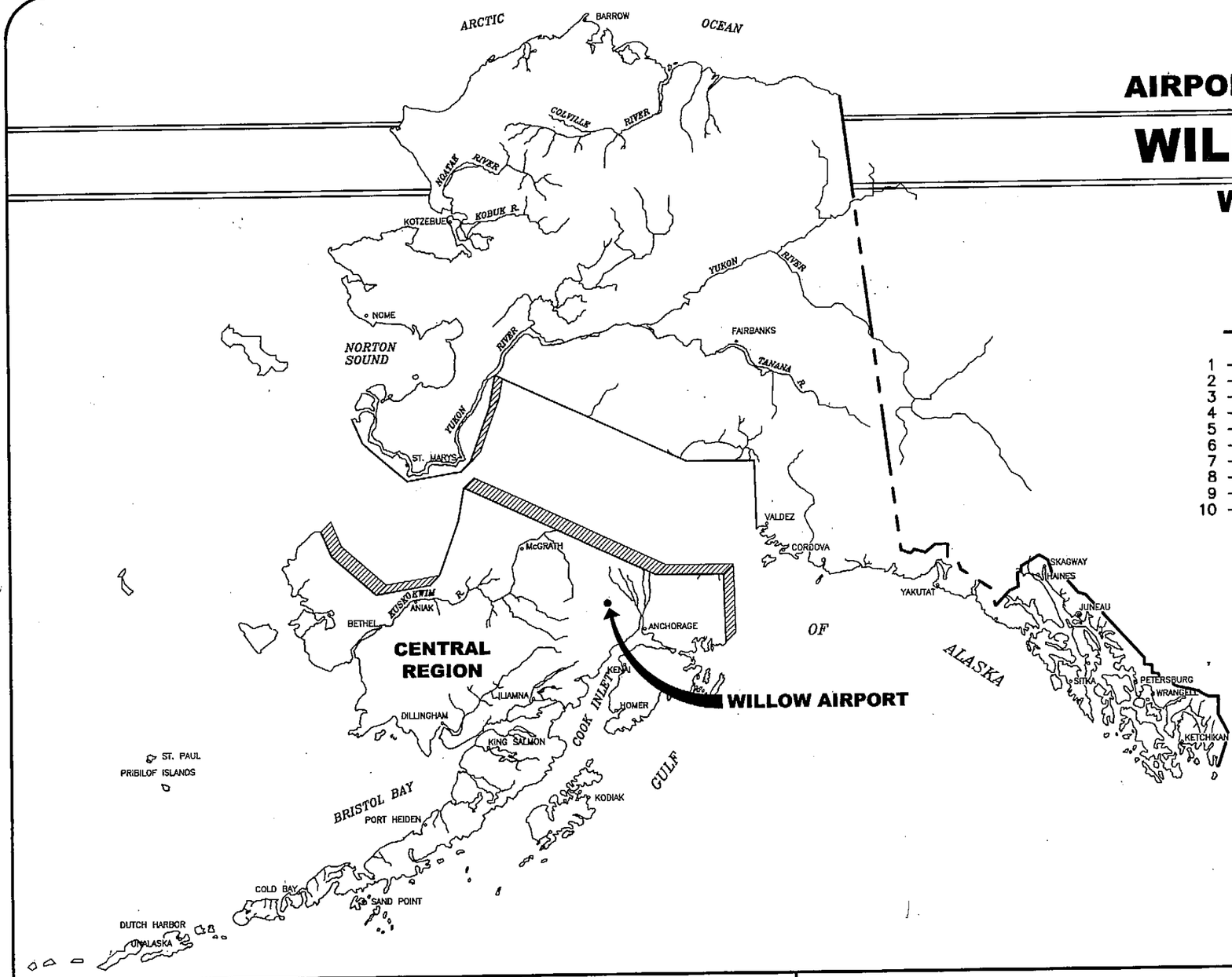
AIRPORT LAYOUT PLAN FOR

WILLOW AIRPORT

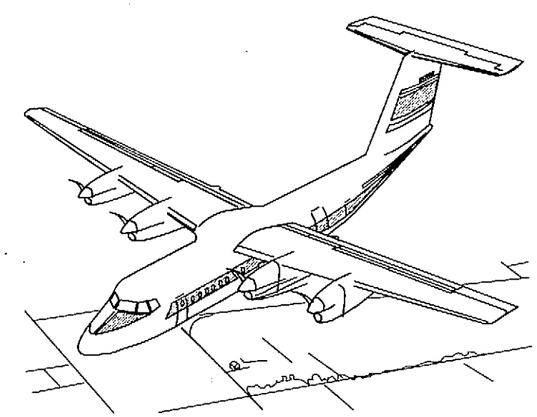
WILLOW, ALASKA

2003



DRAWING INDEX

1 – COVER SHEET AND INDEX
2 – VICINITY MAP AND DATA TABLES
3 – EXISTING LAYOUT PLAN
4 – ULTIMATE LAYOUT PLAN
5 – RUNWAY 13–31 PLAN & PROFILE
6 – RUNWAY 13–31 INNER PORTION OF THE APPROACH SURFACES
7 – SKI RUNWAY/HELIPORT INNER APPROACH SURFACE PLAN & PROFILE
8 – AIRPORT AIRSPACE
9 – PROPERTY PLAN
10 – NARRATIVE REPORT



SPONSORED BY
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES
CENTRAL REGION

CONCUR Gordon C. Keith DATE 2/19/03
GORDON C. KEITH, P.E. DIRECTOR OF CONSTRUCTION AND OPERATIONS

APPROVED Steven R. Horn DATE 2/19/03
STEVEN R. HORN, P.E. REGIONAL PRECONSTRUCTION ENGINEER

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 4/10/03
By: [illegible] DATE: 4/11/03
FAA AIRPORTS DIVISION
ALASKAN REGION, AAL-601

FAA AIRSPACE REVIEW NUMBER
02-AAL-033-NRA

WILLOW AIRPORT
WILLOW, ALASKA
AIRPORT LAYOUT PLAN

SHEET 1 OF 10

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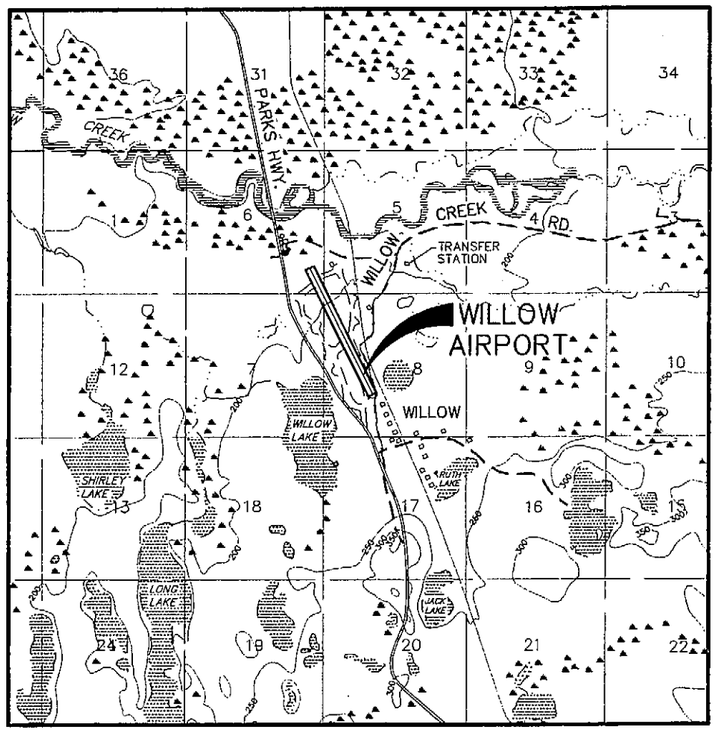
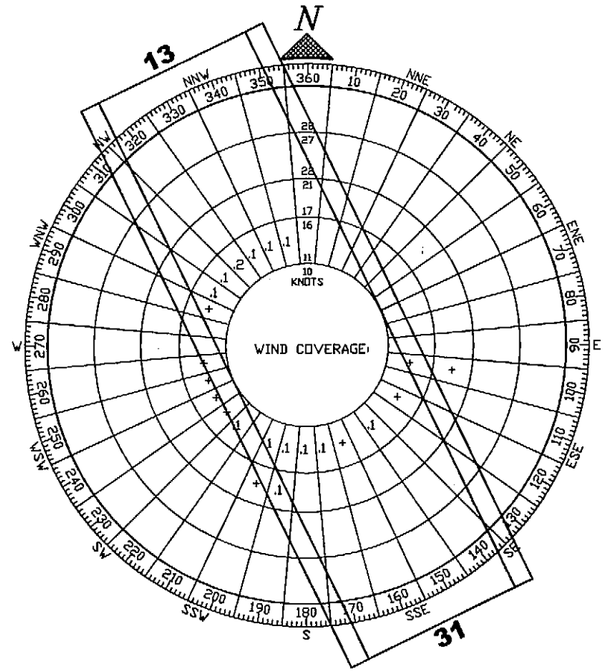


VICINITY MAP

1:1/2 MILE
T 19 N, R 04 W, SEC. 5-8, 17, 18
SEWARD MERIDIAN
U.S.G.S. TYONEK (C-1), (D-1), ALASKA



WIND DATA

WIND COVERAGE 99.56% WITH 10.5 KNOT CROSSWIND COMPONENT – B-I AIRPORT REFERENCE CODE
WIND COVERAGE 99.77 % WITH 13 KNOT CROSSWIND COMPONENT – B-II AIRPORT REFERENCE CODE
TRUE BEARING 154 – 334
WILLOW AIRPORT RUNWAY ALIGNMENT

SOURCE: ALASKA STATE CLIMATE CENTER, ENVIRONMENT AND RESOURCES INSTITUTE, UNIVERSITY OF ALASKA ANCHORAGE

PERIOD: 5/31/1986 – 2/28/1989

NON-STANDARD CONDITIONS

ITEM	EXISTING	STANDARD	ULTIMATE
RUNWAY SEPARATION	N/A	700'	250'
OBSTRUCTIONS (TREES)	NUMEROUS	NONE	REMOVE
OBSTRUCTIONS (RAILROAD)	0' – 10'	NONE	REMOVE

BASIC DATA TABLE

RUNWAY DATA

ITEM		13 / 31 EXISTING	13 / 31 ULTIMATE	SKI RUNWAY PROPOSED
EFFECTIVE GRADE		0.34%	0.27%	0.27%
% WIND COVERAGE	10.5 KNOTS	99.56	99.56	99.56
	13 KNOTS	99.77	99.77	99.77
INSTRUMENT RUNWAY		NONE	NONE	NONE
RUNWAY SURFACE		GRAVEL	ASPHALT PVMT.	GRAVEL
PAVEMENT STRENGTH		N/A	N/A	N/A
APPROACH SURFACES		20:1	34:1 – 20:1	20:1
VISIBILITY MINIMUM		[1 MILE]	[1 MILE]	[1 MILE]
RUNWAY LIGHTING		MIRL	MIRL	NONE
RUNWAY MARKING		NONE	VISUAL	REFL. CONES
RUNWAY NAVIGATION AIDS		NONE	NONE	NONE
RUNWAY PROTECTION ZONES		500'X700'X1000'	500'X700'X1000'	250'X450'X1000'
AIRCRAFT APPROACH CATAGORY		B	B	A
AIRCRAFT DESIGN GROUP		II	II	I
RUNWAY TYPE		>UTILITY	>UTILITY	UTILITY
RUNWAY SAFETY AREA DIMENSION		150' x 5000'	150' x 4600'	120' x 2480'
RUNWAY DIMENSION		75' x 4400'	75' x 4000'	60' x 2000'
RUNWAY OBJECT FREE AREA DIMENSION		500' x 5000'	500' x 4600'	250' x 2480'
RUNWAY OBSTACLE FREE ZONE DIMENSION		250' x 4800'	250' x 4400'	250' x 2400'
GEODETIC POSITIONS (N.A.D. 83)				
NORTH THRESHOLD	LAT.	61°45'35.44"N	61°45'35.44"N	61°45'33.47"N
	LONG.	150°03'26.46"W	150°03'28.46"W	150°03'30.19"W
DISPLACED THRESHOLD 31	LAT.	61°45'00.14"N	ABANDONED	N/A
	LONG.	150°02'49.60"W	ABANDONED	N/A
SOUTH THRESHOLD	LAT.	61°44'56.61"N	61°45'00.14"N	61°45'15.82"N
	LONG.	150°02'45.91"W	150°02'49.60"W	150°03'11.76"W

AIRPORT DATA

ITEM		EXISTING	ULTIMATE
AIRPORT ELEVATION (M.S.L.)		215.3'	214.0'
AIRPORT REFERENCE POINT (A.R.P.) (NAD 83)	LAT.	61°45'16.03"N	61°45'20.67"N
	LONG.	150°03'06.18"W	150°03'12.95"W
TAXIWAY LIGHTING		MITL	MITL
RAMP LIGHTING		NONE	NONE
MEAN MAX. TEMPERATURE, HOTTEST MONTH (JULY)		68°F	
MAGNETIC DECLINATION, YEAR		21°40'E,2002	
AIRPORT REFERENCE CODE		B-II	B-II
AIRPORT AND TERMINAL NAVIGATION AIDS		NONE	NONE
AIRPORT NAVIGATION AIDS		ROT. BEACON	ROT. BEACON

LEGEND

ITEM	EXISTING	ULTIMATE
PROPERTY LINE		
BUILDING RESTRICTION LINE		
AVIGATION & HAZARD EASEMENT		
AIRPORT REFERENCE POINT (A.R.P.)		
WIND CONE AND SEGMENTED CIRCLE		
CONTOURS	100	100
ROADWAYS		
BUILDINGS		
ROTATING BEACON		
SHORELINE		
ANTENNA		
VASI		
BLUFF		
FENCE		
MALSF		
REIL		
THRESHOLD		
TREES		
RUNWAY SAFETY AREA		
OBSTACLE FREE ZONE	OFZ	OFZ
OBJECT FREE AREA	OFA	OFA

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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 4/16/03
By: [signature] DATE: 4/16/03
FAA AIRPORTS DIVISION
ALASKAN REGION, AAL-601

FAA AIRSPACE REVIEW NUMBER: 02-AAL-033-NRA

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: [signature] STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: [signature] HARVEY M. DOUTHIT, P.E. — PROJECT MANAGER

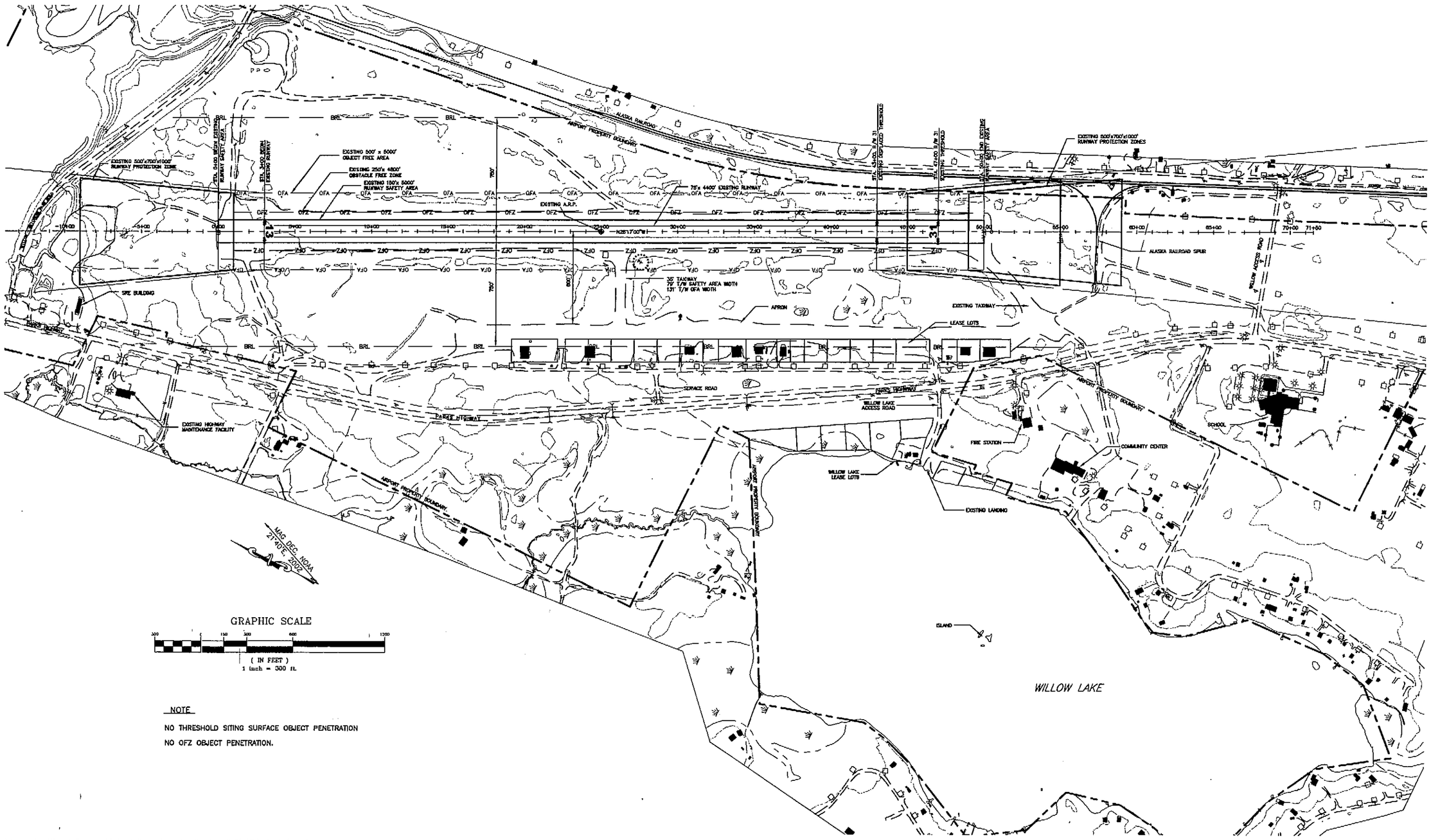
DATE 2/19/03
DESIGN BRH
DRAWN MGT
CHECKED TJS

WILLOW AIRPORT
WILLOW, ALASKA

AIRPORT LAYOUT PLAN

VICINITY MAP AND DATA TABLES

SHEET 2 OF 10



NOTE

NO THRESHOLD SITING SURFACE OBJECT PENETRATION

NO OFZ OBJECT PENETRATION.

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DATE:

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 4/16/03

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ALASKAN REGION, AAL-601

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APPROVED: [signature]
HARVEY M. DOUTHIT, P.E. — PROJECT MANAGER

DATE 2/17/03
DESIGN BRH
DRAWN MGT
CHECKED TJS

WILLOW AIRPORT
WILLOW, ALASKA

AIRPORT LAYOUT PLAN
EXISTING LAYOUT PLAN
RUNWAY 13 – 31

SHEET 3 OF 10

GRAPHIC SCALE

(IN FEET)
1 inch = 300 ft.

NOTE

NO THRESHOLD SITING SURFACE OBJECT PENETRATION

NO OFZ OBJECT PENETRATION.

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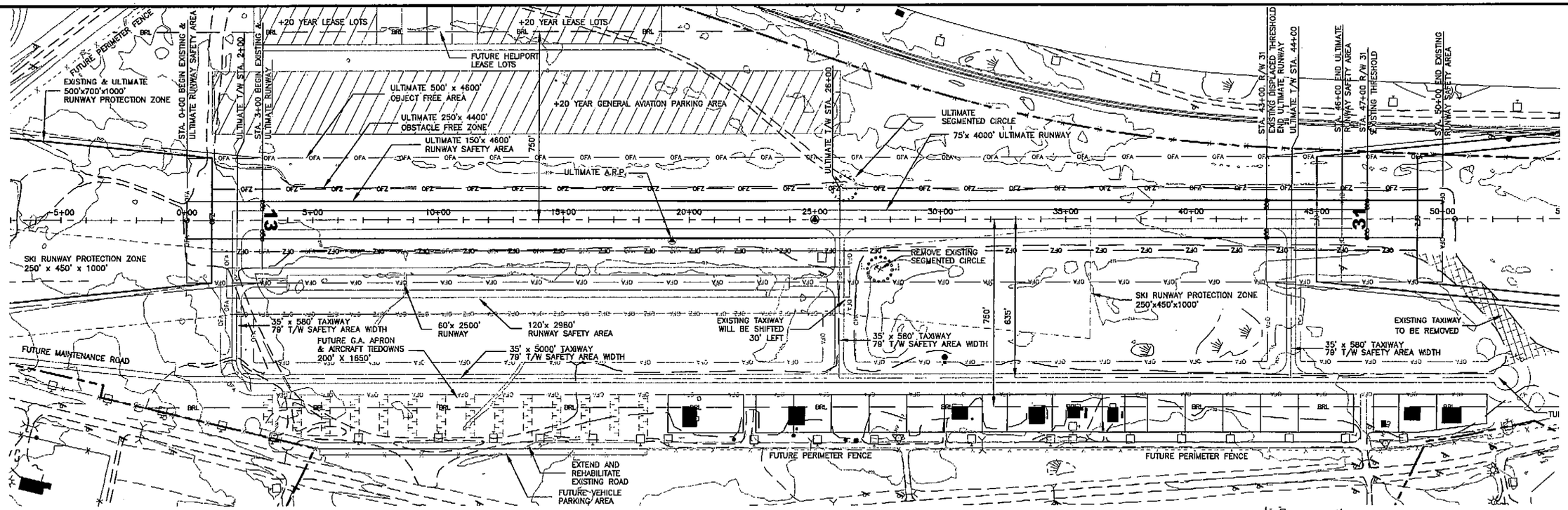
FILE:	AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 4/16/03			STATE OF ALASKA **DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES** CENTRAL REGION
DATE:	By: [signature] DATE: 4/16/03 FAA, AIRPORTS DIVISION ALASKAN REGION, AAL-601			APPROVED: [signature] STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
	FAA AIRSPACE REVIEW NUMBER: 02-AAL-033-NRA	BY	DATE	REVISIONS
				APPROVED: [signature] HARVEY M. DOUTHIT, P.E. — PROJECT MANAGER

DATE 2/13/03
DESIGN BRH
DRAWN MGT
CHECKED TJS

WILLOW AIRPORT
WILLOW, ALASKA

AIRPORT LAYOUT PLAN
ULTIMATE LAYOUT PLAN

SHEET 4 OF 10



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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 4/16/03

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FAA AIRPORTS DIVISION
ALASKAN REGION, AAL-601

FAA AIRSPACE REVIEW NUMBER: 02-AAL-033-NRA

FILE:
DATE:

BY	DATE	REVISIONS

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DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

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DATE 2/19/03
DESIGN BRH
DRAWN MGT
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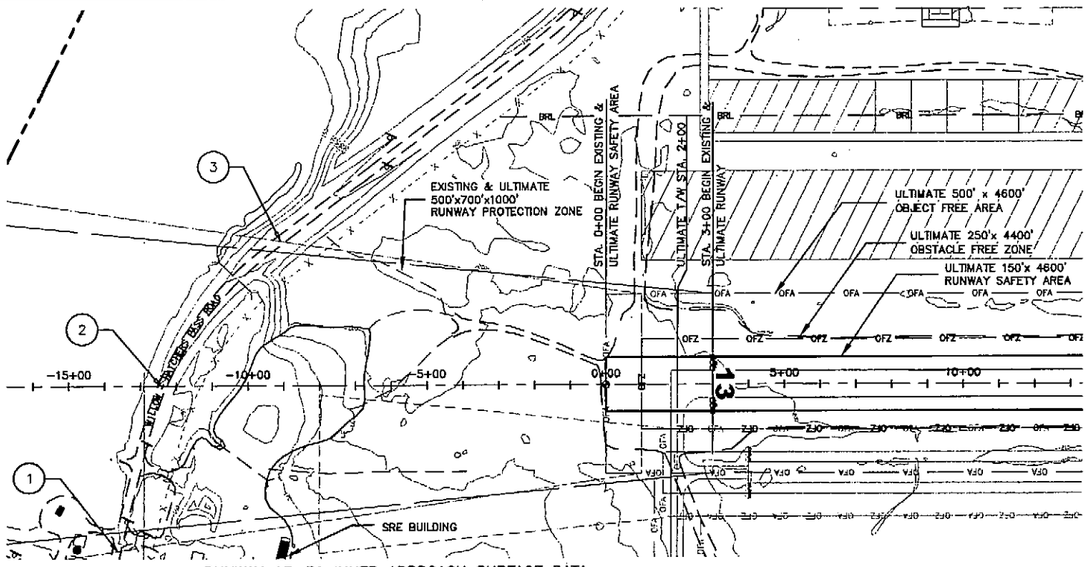
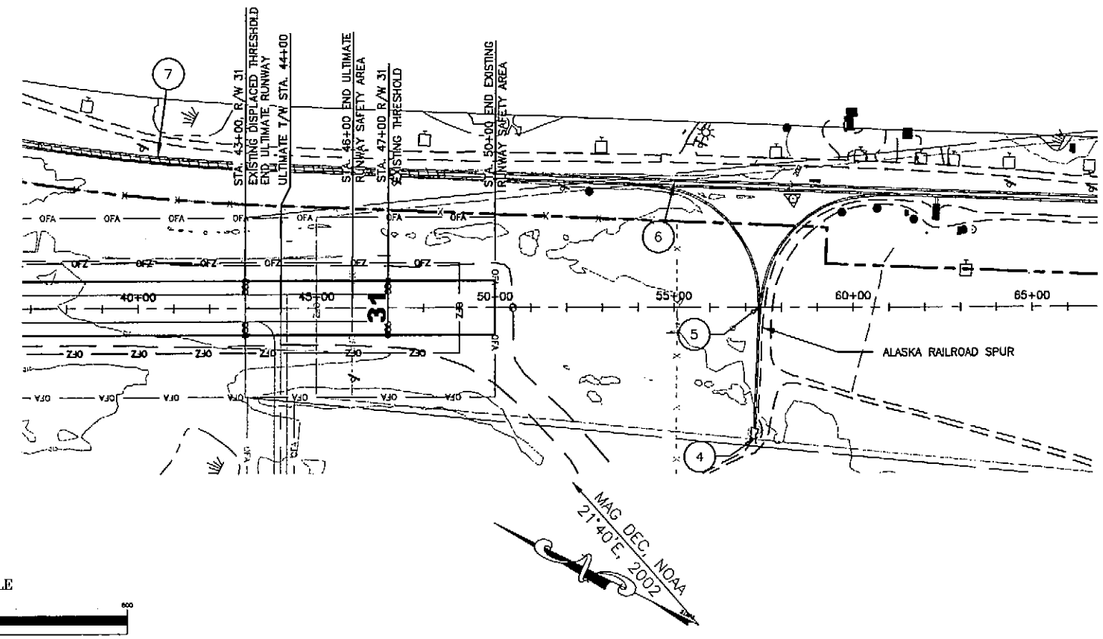
WILLOW AIRPORT
WILLOW, ALASKA

AIRPORT LAYOUT PLAN
PLAN & PROFILE
RUNWAY 13 – 31

SHEET 5 OF 10





RUNWAY 13-31 INNER APPROACH SURFACE DATA

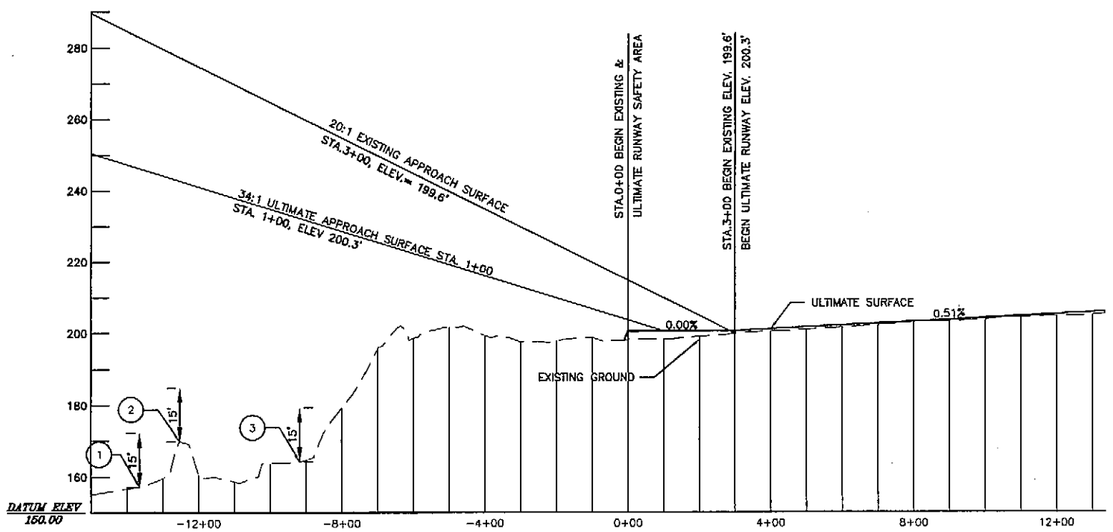
No.	STATION	OFFSET	OBJECT	OBJECT ELEVATION	PART 77 ELEVATION	VERTICAL CLEARANCE	AMOUNT OF PENETRATION
1	-13+63	469' R	ROAD	175'	241'	66'	NONE
2	-12+42	0	ROAD	185'	237'	52'	
3	-9+10	403' L	ROAD	200'	228'	28'	
4	57+24	373' R	ROAD	235'	274'	39'	
5	57+39	0	RAILROAD	246'	275'	29'	
6	55+00	349' L	RAILROAD	243'	264'	21'	
7	37+30-48+50	350'-425' L	RAILROAD	240' - 244'	VARIES	VARIES	0' - 10'

VERTICAL CLEARANCES ARE BASED ON ULTIMATE APPROACH SURFACES

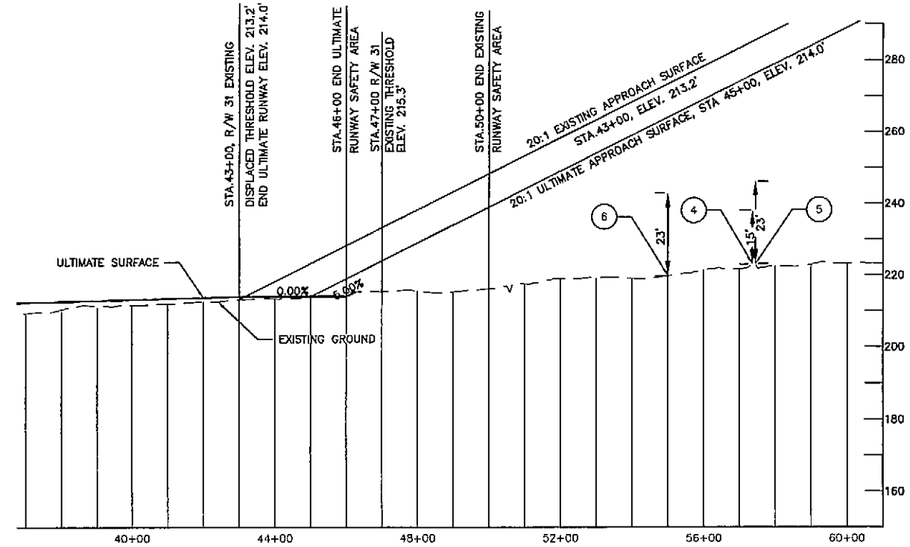
GRAPHIC SCALE

200 0 100 200 400 600

(IN FEET)
1 inch = 200 ft.



RUNWAY 13 INNER APPROACH



RUNWAY 31 INNER APPROACH

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DATE:

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 4/11/03

By: [signature] DATE: 4/11/03
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-601

FAA AIRSPACE REVIEW NUMBER: 02-AAL-033-NRA

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: [signature]
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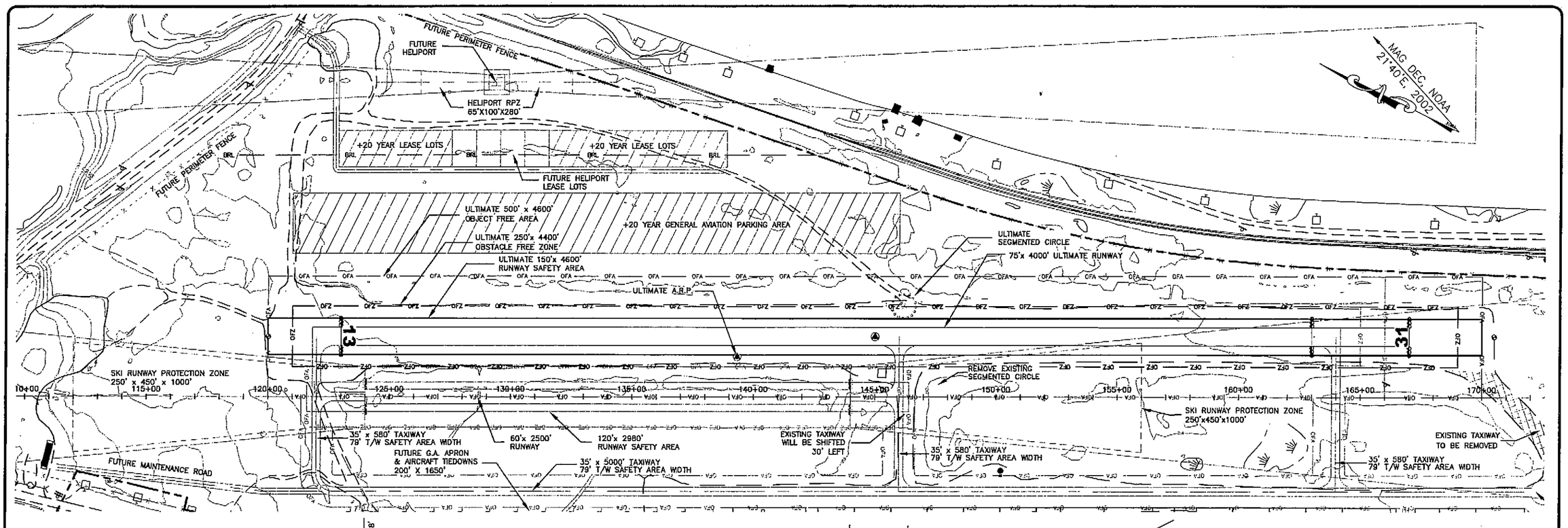
APPROVED: [signature]
HARVEY W. DOUTHIT, P.E. — PROJECT MANAGER

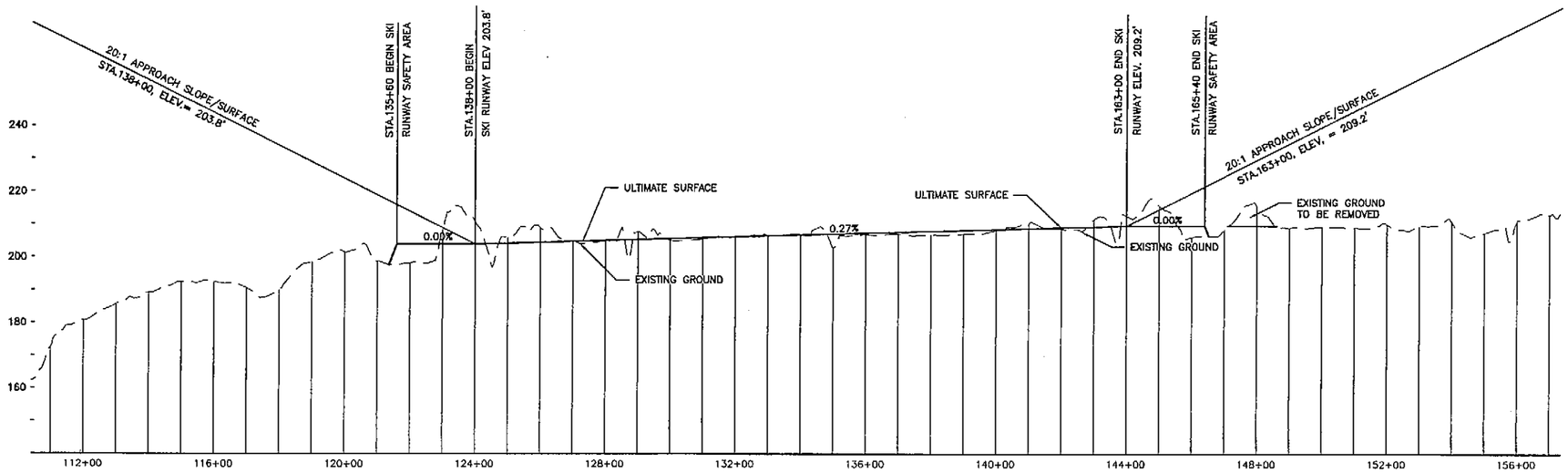
DATE 2/19/03
DESIGN BRH
DRAWN MGT
CHECKED TJS

WILLOW AIRPORT
WILLOW, ALASKA

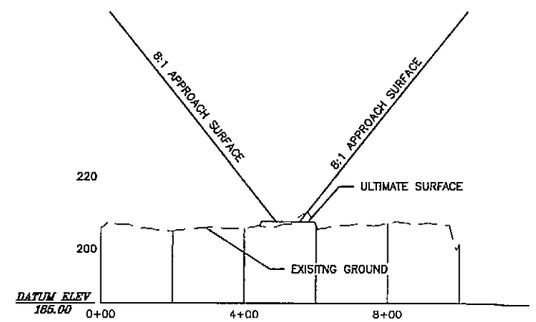
AIRPORT LAYOUT PLAN
RUNWAY 13 - 31
INNER PORTION OF THE APPROACH SURFACES

SHEET 6 OF 10





SKI RUNWAY INNER APPROACH



HELIPORT INNER APPROACH

NOTE:

THERE ARE NO THRESHOLD SITING SURFACE OBJECT PENETRATIONS

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

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DATE: 02/20/02

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By: [signature] DATE: 4/16/03
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ALASKAN REGION, AAL-601

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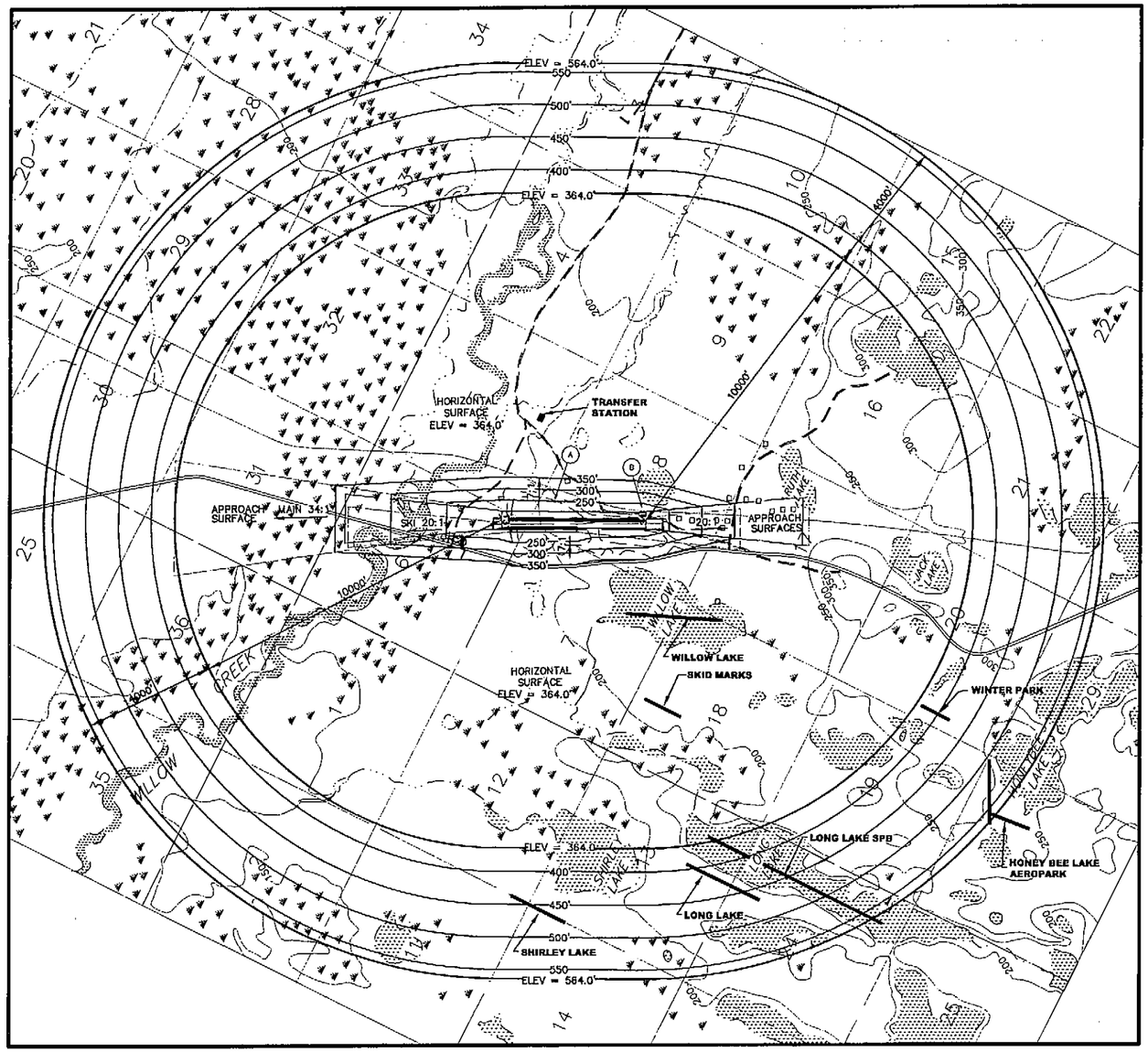
WILLOW AIRPORT
WILLOW, ALASKA

AIRPORT LAYOUT PLAN
SKI RUNWAY / HELIPORT
INNER APPROACH SURFACE PLAN & PROFILE

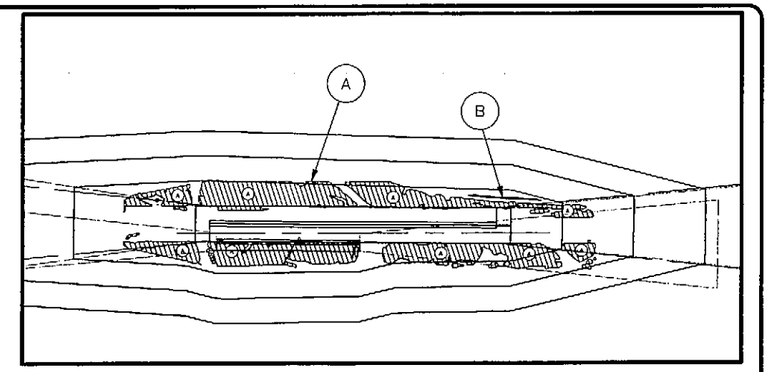
SHEET 7 OF 10



GRAPHIC SCALE

2000 0 1000 2000 4000 8000

(IN FEET)
1 inch = 2000ft.



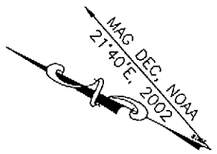
F.A.R. PART 77 IMAGINARY SURFACE
OBSTRUCTION DETAILS
SCALE – 1":1000'

F.A.R. PART 77 IMAGINARY SURFACE OBSTRUCTION TABLE

Obstruction ID	Description	Obstruction Elevation	Surface Penetrated	Part 77 Surface Elevation	Max. Amount of Penetration	Disposition	Stage
A	TREES	210'–260'	TRANSITIONAL	210' – 365'	50'	REMOVAL	NEAR–TERM
B	RAILROAD	240'–244'	TRANSITIONAL	210' – 365'	10'	REMOVAL	>LONG–TERM

NOTES:

1. OBSTRUCTION ELEVATIONS ARE ESTIMATED FROM PHOTO–BASED MAPPING TECHNICS.
2. ULTIMATE AIRPORT ELEVATION IS 214.0'
3. USGS QUADRANGLE MAPS TYONEK C–1, D–1 AND ANCHORAGE C–8, D–8 ALONG WITH YEAR 2000 PHOTO–BASED MAPPING WERE USED FOR THE BASE MAP.
4. THE LOCATION AND SIZE OF ALL PRIVATE AIRPORTS ARE APPROXIMATE.
5. THE LOCATION OF THE TRANSFER STATION ARE APPROXIMATED FROM AERIAL PHOTOGRAPHY.



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SUBJECT TO ALP APPROVAL LETTER DATED 4/14/03
By: [signature] DATE: 4/14/03
FAA AIRPORTS DIVISION
ALASKAN REGION, AAL–601

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DATE 2/19/03
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DRAWN MGT
CHECKED TJS

WILLOW AIRPORT
WILLOW, ALASKA

AIRPORT LAYOUT PLAN
AIRPORT AIRSPACE

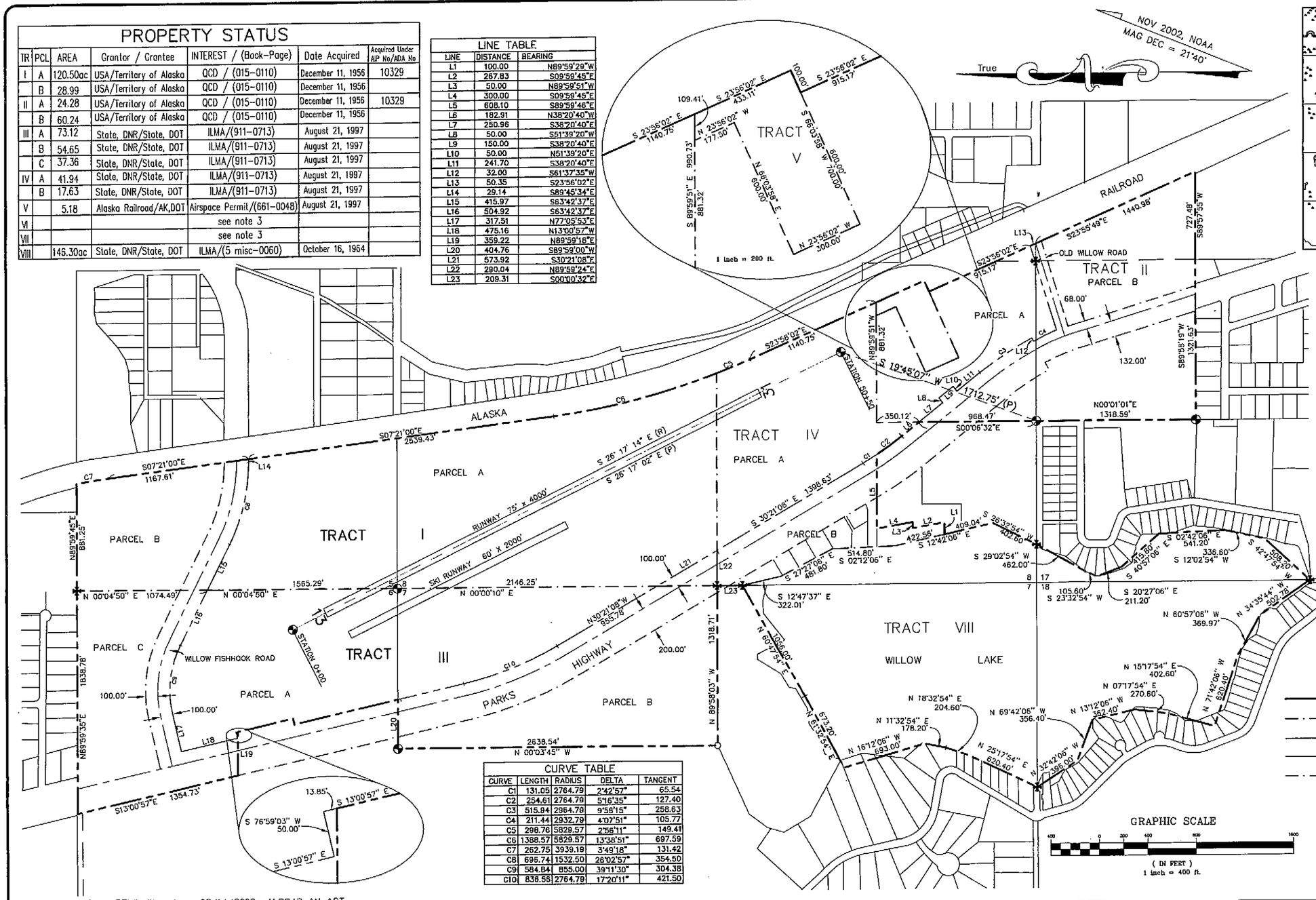
SHEET 8 OF 10

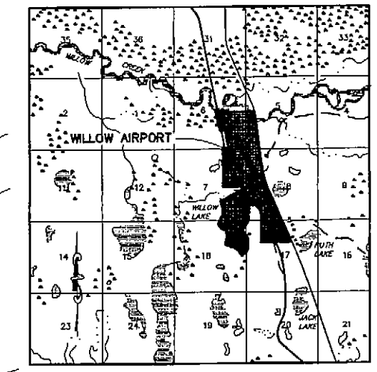
PROPERTY STATUS

TR	PCL	AREA	Grantor / Grantee	INTEREST / (Book-Page)	Date Acquired	Acquired Under AIP No/ADA No
I	A	120.50ac	USA/Territory of Alaska	QCD / (015-0110)	December 11, 1956	10329
	B	28.99	USA/Territory of Alaska	QCD / (015-0110)	December 11, 1956	
II	A	24.28	USA/Territory of Alaska	QCD / (015-0110)	December 11, 1956	10329
	B	60.24	USA/Territory of Alaska	QCD / (015-0110)	December 11, 1956	
III	A	73.12	State, DNR/State, DOT	ILMA/(911-0713)	August 21, 1997	
	B	54.65	State, DNR/State, DOT	ILMA/(911-0713)	August 21, 1997	
	C	37.36	State, DNR/State, DOT	ILMA/(911-0713)	August 21, 1997	
IV	A	41.94	State, DNR/State, DOT	ILMA/(911-0713)	August 21, 1997	
	B	17.63	State, DNR/State, DOT	ILMA/(911-0713)	August 21, 1997	
V		5.18	Alaska Railroad/AK,DOT	Airspace Permit/(661-0048)	August 21, 1997	
VI				see note 3		
VII				see note 3		
VIII		146.30ac	State, DNR/State, DOT	ILMA/(5 misc-0060)	October 16, 1964	

LINE TABLE

LINE	DISTANCE	BEARING
L1	100.00	N89°59'29"W
L2	267.83	S09°59'45"E
L3	50.00	N89°59'51"W
L4	300.00	S09°59'45"E
L5	608.10	S89°59'46"E
L6	182.91	N38°20'40"W
L7	250.96	S38°20'40"E
L8	50.00	S61°39'20"W
L9	150.00	S38°20'40"E
L10	50.00	N51°39'20"E
L11	241.70	S38°20'40"E
L12	32.00	S61°37'35"W
L13	50.35	S23°56'02"E
L14	29.14	S89°45'34"E
L15	415.97	S63°42'37"E
L16	504.92	S63°42'37"E
L17	317.51	N77°05'53"E
L18	475.16	N13°00'57"W
L19	359.22	N89°59'18"E
L20	404.76	S89°59'00"W
L21	573.92	S30°21'08"E
L22	290.04	N89°59'24"E
L23	209.31	S00°00'32"E





VICINITY MAP

U.S.G.S. QUAD. TYONEK (C-1, D-1)
T19N, R4W, SEWARD MERIDIAN, AK
PALMER RECORDING DISTRICT
1" = 1 MILE

NOTES:

1. All bearings shown are grid bearings based on the Willow Airport Boundary Survey dated August 8, 1977 and are adjusted to the Alaska State Plane coordinate system, zone 4. Multiply measured ground distances by a scale factor of 0.9998902 to reduce to grid distances.
2. Parcel descriptions are based on the following:
   a. State of Alaska, Dept of Public Works, Div of Aviation Willow Airport Boundary Survey, Dated August 8, 1977 and recorded with the Palmer Recording District (plat 77-79)
   b. State of Alaska, Dept of Public Works, Div of Highways, Right of Way Plats, Projects F-035-1 (Feb 8, 1961) and S-0580 (July 15, 1964)
3. Tract VI and VII no longer shown on property plan. Tracts relinquished by State.
4. This property plan supersedes Willow Property Plan dated September 16, 1991.
5. Meander lines are for computational purposes only. The true property boundary is the ordinary high water line.

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	131.05	2764.79	2°42'57"	65.54
C2	254.61	2764.79	5°16'35"	127.40
C3	515.94	2964.79	9°58'15"	258.63
C4	211.44	2932.79	4°07'51"	105.77
C5	298.76	5829.57	2°56'11"	149.41
C6	1388.57	5829.57	13°38'51"	697.59
C7	262.75	3939.19	3°49'18"	131.42
C8	695.74	1532.50	26°02'57"	354.50
C9	584.84	855.00	39°11'30"	304.38
C10	838.55	2764.79	17°20'11"	421.50

LEGEND

- PROPERTY BOUNDARY
- TRACT BOUNDARY
- PARCEL BOUNDARY
- CENTERLINE
- RIGHT OF WAY
- ADA/DOT&PF MONUMENT
- GLO/BLM MONUMENT
- IRON PIPE
- (P) FROM PAUL PILCH SURVEY, 2000

H:\cad\data\Willow\ROW\willap.dwg 02/14/2003 11:38:12 AM AST

FILE: g:\data\willow\row\willap.dwg
DATE: 12-10-02

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 4/16/03
By: [signature] DATE: 4/16/03
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-601

F.A.A. AIRSPACE REVIEW NUMBER: 02-AAL-033-NRA

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: [signature]
STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: [signature]
HARVEY M. BOUTHIT, P.E. — PROJECT MANAGER

DATE 2/19/03
DESIGN TS
DRAWN MES
CHECKED PLH

WILLOW AIRPORT

AIRPORT PROPERTY PLAN

SHEET 9 OF 10

WILLOW AIRPORT
AIRPORT LAYOUT PLAN NARRATIVE

A. PURPOSE

This Airport Layout Plan Narrative Report is included with the Airport Layout Plan according to Federal Aviation Administration (FAA) Airport Design Advisory Circular 150/5300-13, Appendix 7. Dimensions for future construction items are according to FAA AC 150/5300-13, Change 6. This report describes the existing facilities and the design rationale for future upgrades to the Willow Airport.

B. INTRODUCTION

This Airport Layout Plan supersedes the Willow ALP approved by the FAA January 19, 1999. The community of Willow is located north of Anchorage in the Mat-Su Borough, between mile 60 and 80.7 of the George Parks Highway. The Willow airport is located East of the Parks Highway at approximately mile 70 and 61° 44' N Latitude, 150° 02' W Longitude (Sec. 08, T019N, R004W, Seward Meridian).

Float plane facilities are located on Willow Lake across the Parks Highway from the Willow Airport. The Float plane facilities are located on State Land and are connected by an access road that crosses the Parks Highway. Other air facilities that serve this area include a public airstrip at Deshka Landing owned by the Department of Natural Resources, float plane facilities at Kashwitna Lake, and five private airstrips.

The Alaska Department of Community and Regional Affairs (DCRA) documents a 2000 Census population of 1,658 persons at Willow. Population records indicate an average annual growth rate of 7.9% between 1960 and 2000.

POPULATION HISTORY:	1950	0
	1960	78
	1970	38
	1980	139
	1990	285
	2000	1,658

C. AIRPORT USAGE AND FORECASTS

Since there is no tower at the Willow Airport, estimates of aircraft operations are based on the fleet of current users and current schedules and the Airport Master Record (FAA Form 5010). The FAA Form 5010 reports the following data for annual aircraft operations:

Air Taxi	1,500
GA Local	1,500
GA Itinerant	4,500
Military	200
Total	7,700

The FAA reports 1,595 enplanements at Willow for 1999.

Commercial Operators and Aircraft using Willow Airport

Operator	Aircraft	Design Group
CPA Air Service	Maule	A-I
Denali Flying Service	Maule	A-I
Denali Flying Service	Cessna 206	A-I
Willow Air Service	Piper Super Cub	A-I
Willow Air Service	Dehavilland Beaver	A-I

Historically, the correlation between population growth and the growth in enplaned passengers and number of operations has been closely correlated. The Community of Willow covers a significant area and contains several small private airstrips and lakes as well as other public airstrips that are utilized by the population. The future operations will be based on a growth rate of approximately half the average community growth rate for the last 50 years. Forecast of future operations at the Willow Airport will be made based on an annual approximate growth rate of 4.0 percent (1.04^n where n equals the number of years).

FORECAST OF FUTURE OPERATIONS

Item	1998	2002	2007	2012	2020
Total Annual Operations	7700	9000	10950	13330	19730
Annual Local Operations	1500	1750	2130	2590	3840
Annual Itinerant Operations	4500	5260	6400	7790	11530
Annual Enplanements	1594	1860	2260	2760	4080
Based Aircraft	67	78	95	116	171

D. EXISTING FACILITIES

Runways – The Willow Airport has one lighted gravel runway. Runway 13-31 meets the requirements for ADG II. The runway is 75 feet x 4400 feet with a 400 feet displaced threshold on the south end.

Apron – The existing apron is approximately 20 acres and has 20 lease lots located on the west side of the main runway.

There is one lighted taxiway leading from the middle of the runway to the apron area and an unlighted taxiway located at the south end of the apron leading to runway 31.

Other improvements include a one bay Snow Removal Equipment Building, a rotating beacon and a segmented circle.

Airport Reference Code – The Airport Reference Code for the airport is currently B-II.

Airport Wind Coverage – Runway 13-31 wind data analysis produces 99.56% wind coverage with a 10.5 knot crosswind and 99.77% wind coverage with a 13 knot crosswind.

Runway Width – The runway currently meets the minimum requirements for Airplane Design Group (ADG) II. The runway width is 75 feet.

Safety Area – The runway currently meets the minimum requirements for Airplane Design Group (ADG) II. The safety area width is 150 feet and 300 feet beyond the runway ends.

E. STAGE DEVELOPMENT

The development of the Willow Airport will be accomplished in staged increments of Near-Term (0-5 Years), Mid-Term (6-10 Years) and Long-Term (11-20 Years).

Near-Term (0-5 Years) Development

Near-Term development will consist of removal of the displaced threshold on the existing runway and shortening the runway to 4000 feet. The existing taxiway will be rehabilitated and two new taxiways will be constructed to connect the runway to the new apron. The existing south taxiway will be obliterated. Perimeter fencing will be installed surrounding the airport to reduce vandalism and unauthorized access on the runway, apron and other airport property. Signage will be installed around the airport. Drainage around the airport will be upgraded to accommodate spring runoff. The apron will be expanded to allow for aircraft tiedowns. The existing access road will be rehabilitated and lengthened. Clearing of approximately 80 acres will be undertaken to remove Part 77 obstructions. The near term improvements are estimated to cost approximately $2,000,000 in 2002 dollars.

Mid-Term (6-10 Years) Development

There are no Mid-Term development plans for the Willow Airport.

Long-Term (11-20 Years) Development

Long-term development will include paving the main runway, taxiways and apron at the Willow Airport. A new lighting system will be installed. An embankment for a Ski Runway will be constructed. The ski runway will be left as a gravel surface for tundra tire and ski equipped aircraft. If demand warrants the heliport and lease lots will be constructed. The long-term improvements are estimated to cost approximately $3,500,000 in 2002 dollars.

F. DESIGN RATIONALE

1. Airport Reference Code (ARC)

The existing runway is designed to B-II standards. There are a Category A-I, A-II and B-I aircraft operating on a regular basis at this facility. Category B-II aircraft do operate on a limited basis from this airport. The operations at the Willow Airport are expected to increase at a significant rate and justify leaving the Willow Airport as a B-II category airport.

2. Wind Coverage

The existing runway 13-31 alignment provides 99.77% coverage for 13-knot crosswind component and 99.56% coverage for 10.5-knot crosswind component. The future ski runway would be aligned parallel to the existing runway and have the same wind coverage.

The runway provides a greater than 95% wind coverage and therefore a crosswind runway would likely not be considered as necessary in the future.

3. Runway and Taxiway

The main runway length 4400 ft exceeds the minimum recommended length of 2900 ft according to FAA AC 150/5325-4A for Willow Airport. The existing runway and taxiway were designed in accordance with AC 150/5300-13 and meet all the requirements for design group B-II aircraft.

The main runway length will be reduced to 4000 feet and the displaced threshold will be eliminated.

The ski runway will be utility runway, 60 feet x 2500 feet and designed according to FAA AC 150/5300-13 for design Category A-I aircraft. The ski runway will be offset 250 ft from the main runway centerline. Simultaneous operations on runways are prohibited and both runways will utilize the same traffic pattern.

4. Apron

The existing apron is approximately 20 acres and has 20 lease lots. Currently there is no dedicated aircraft tiedown area, several of the lease lots are being utilized for airplane tiedowns. There are currently 37 aircraft that require tiedown spaces at the Willow Airport. The future project will create a new 7.5 acre apron on the north end of the lease lots and provide approximately 100 aircraft tiedowns. The proposed apron setback is 617 ft form the main runway and 367 ft from the ski runway. The existing and future building restriction line will remain at 750 ft form the main runway or 500 feet from the Ski Runway. Should the growth rate at the Willow Airport continue at current levels a separate G.A. apron on the east side of the airport is proposed to be developed. The need for this apron is likely to occur past the long-term development plans.

5. Heliport

A heliport will be constructed on the east side of the airport away from the G.A. apron activities to reduce foreign object debris. Four additional lease lots (100 feet x 150 feet ea.) will be constructed to support heliport operations, additional lease lots will be constructed adjacent to the heliport lots for G.A. use. Currently there are no helicopters based at the Willow or using the airport on a regular basis and none are anticipated within the near or mid term. Development of a heliport and associated lease lots are considered to be a long term or greater need.

6. Airport Access Road & Fencing

The existing access road will be upgraded and extended to the end of the future apron. A new access road from the existing SRE Building to the airport will be constructed. Vandalism of the lighting system and unauthorized access mainly by off road vehicles is a significant problem at the airport. Approximately 15,800 feet of perimeter fencing along with access gates will greatly reduce unauthorized access on the runway, apron and other airport property.

G. PROPERTY STATUS

The existing Willow Airport is operated by DOT&PF and is located on approximately 464 acres of land and 146 acres of water. The State of Alaska currently holds all the lands necessary to complete the long-term development plans at the Willow Airport.

H. COMMUNITY INVOLVEMENT

The Alaska Department of Transportation and Public Facilities (DOT&PF) Design personnel have solicited comments from the users and the public regarding development for the Willow Airport. Letters from interested parties regarding Willow are on file at DOT, Central Region offices. A Public meeting was held in Willow with airport users, local residents, agencies, and governments in January of 2002 to address concerns related to airport development.

I. HAZARDS TO NAVIGATION

No sanitary treatment areas are within 5,000 feet of the runways. The community transfer station is located approximately 3100 feet northeast of the main runway. The facility is located within the recommended minimum distance of 5000 feet. The transfer station does not create any known hazards to airport operations existing or future.

A crane is occasionally used to unload and load railroad cars on the Alaska Railroad Spur located approximately 1440 feet from the Ultimate 31 Threshold. There is 53 feet of clearance between the railroad tracks and the Ultimate Approach Surface. The crane could potentially be an obstruction on a very limited basis.

J. MODIFICATIONS TO STANDARDS

The Ski Runway will be offset 250 feet from the main runway centerline. The minimum recommended separation for simultaneous operations is 700 feet. Simultaneous operations will not be permitted.

K. PART 77

1. Runway 13/31

Trees on both sides of the main runway penetrate the Part 77 transitional surfaces. The trees are located along the entire length of the runway and the penetration extends out to a distance of 600 feet from the main runway centerline on both sides. The trees cover an area of approximately 80 acres and are to be removed as part of the near term development plans at the Willow Airport.

The Alaska Railroad penetrates the Part 77 transitional surface from approximately Sta. 37+30 – Sta. 48+50. The maximum penetration height for the Railroad is 10 feet. To eliminate the obstruction the runway threshold would need to be moved approximately 800 feet to the north, or the railroad tracks would need to relocated. Long term development will analyze removal of the obstruction.

2. Private use airports

Five land based airports and two seaplane bases are located within the PART 77 surfaces of Willow Airport.

L. WILLOW LAKE

The Department has determined that Willow Lake should not be established as a Seaplane Base or shown in the Alaska Supplement at this time.

Willow Lake is located inside the Willow Airport Property Boundary, it is approximately 1500 feet wide by 4000 feet long and covers an area of 146 acres. There are no existing designated waterways on the lake. There are 10 lease lots on the northwest edge of the lake of which 3 are currently developed for use and a public ramp that is utilized by floatplane operators for float changeovers. Willow Lake is currently not listed in the Alaska Supplement or on Aeronautical charts as a Seaplane Facility. Approximately 85 Private lakeshore lots surround the lake. The trees surrounding the lake are predominantly Birch and Spruce that reach 60 feet in height. The water level is uncontrolled and the lake is predominantly shallow. The island located in the middle of the lake is composed of grasses that protrude above the water surface. The lake is home to waterfowl, beaver and other wildlife. The public primarily uses the lake for recreational purposes. There is one commercial aircraft operator that currently utilizes the lake for floatplane operations. There are several private aircraft operators that use the lake periodically.

Operational and safety concerns including lake size, obstructions, water level and comments from aircraft operators indicate Willow Lake is not a suitable for operations by aircraft that are not considered high performance. Obstructions within the lake include the island and underwater obstructions located mainly on the north end of the lake. Obstructions surrounding the lake include structures and trees located on private land. Comments from the public indicate that the current lake level is approximately 2 feet below historic levels. The community is currently working with several agencies to try and raise the level of the lake to historic levels. It is not anticipated the water level in the lake is going to be restored to historic levels in the near future.

The majority of property owners surrounding the lake were against any further development due to low water levels, removal of obstructions on private property and increased operations that could potentially occur. The aircraft operators that utilize the Lake are satisfied with the current level of service that is available, with the exception of the water level.

Due to present safety concerns and public comments the designation of a Seaplane Facility at the Willow Lake is not included in this Airport Layout Plan. This however does not preclude designation of Willow Lake as a Seaplane Facility in the future if or when the need may arise.

Willow Airport Design Standards Runway 13/31 and Proposed Ski Runway

Item	13/31 Existing	13/31 Proposed	Standard B-II	Ski Runway Proposed	Standard A-I
Runway Length	4400'	4000'	2900'	2500'	2500'
Runway Width	75'	75'	75'	60'	60'
Runway Safety Area Length	5000'	5000'	3500'	2980'	2980'
Runway Safety Area Width	150'	150'	150'	120'	120'
Taxiway Width	35'	35'	35'	35'	25'
Taxiway Safety Area Width	79'	79'	79'	79'	49'
RPZ Length	1000'	1000'	1000'	1000'	1000'
RPZ Inner Width	500'	500'	500'	250'	250'
RPZ Outer Width	700'	700'	700'	450'	450'
Runway Centerline to Apron	600'	600'	250'	350'	350'
Approach Slope	20:1	34:1/20:1	20:1	20:1	20:1

FILE:
DATE:

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 4/26/03
By: [signature] DATE: 4/26/03
FAA AIRPORTS DIVISION
ALASKAN REGION, AAL-601

FAA AIRSPACE REVIEW NUMBER: 02-AAL-033-NRA

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: [signature] STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: [signature] HARVEY M. DOUTHIT, P.E. — PROJECT MANAGER

DATE 2/19/03
DESIGN BRH
DRAWN MGT
CHECKED TJS

WILLOW AIRPORT
WILLOW, ALASKA

AIRPORT LAYOUT PLAN
NARRATIVE REPORT

SHEET 10 OF 10