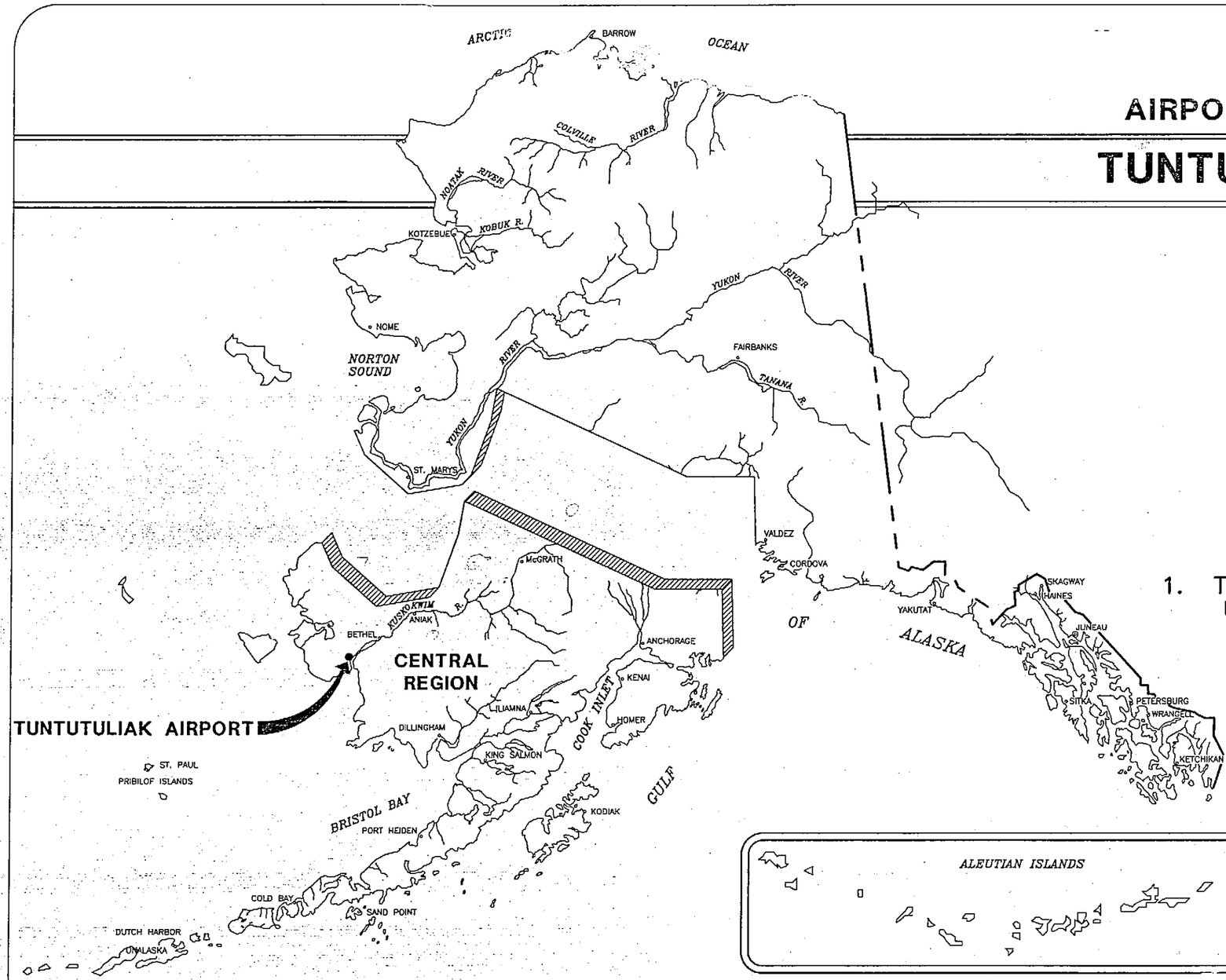
# AIRPORT LAYOUT PLAN FOR

# TUNTUTULIAK AIRPORT

## 1998




## DRAWING INDEX


1 – COVER SHEET AND INDEX
2 – VICINITY MAP AND DATA TABLES
3 – AIRPORT INTERIM DEVELOPMENT PLAN
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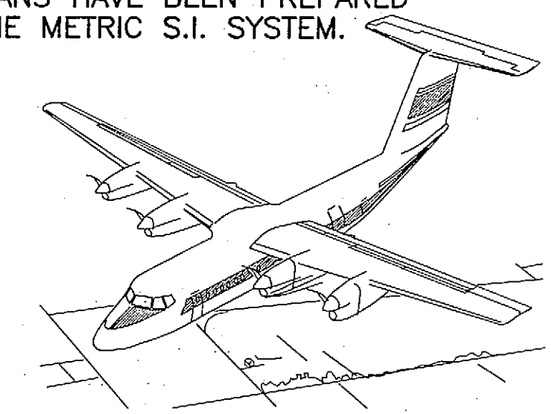
5 – RUNWAY 2/20 PLAN & PROFILE & INNER PORTIONS OF APPROACH SURFACE
6 – RUNWAY 11/29 PLAN & PROFILE & INNER PORTIONS OF APPROACH SURFACE
7 – F.A.R. PART 77 SURFACES
8 – AIRPORT PROPERTY PLAN
9 – AIRPORT PROPERTY PLAN
10 – NARRATIVE REPORT


## NOTES:

1. THESE PLANS HAVE BEEN PREPARED USING THE METRIC S.I. SYSTEM.



FAA AIRSPACE REVIEW #:98AAL-043NRA

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

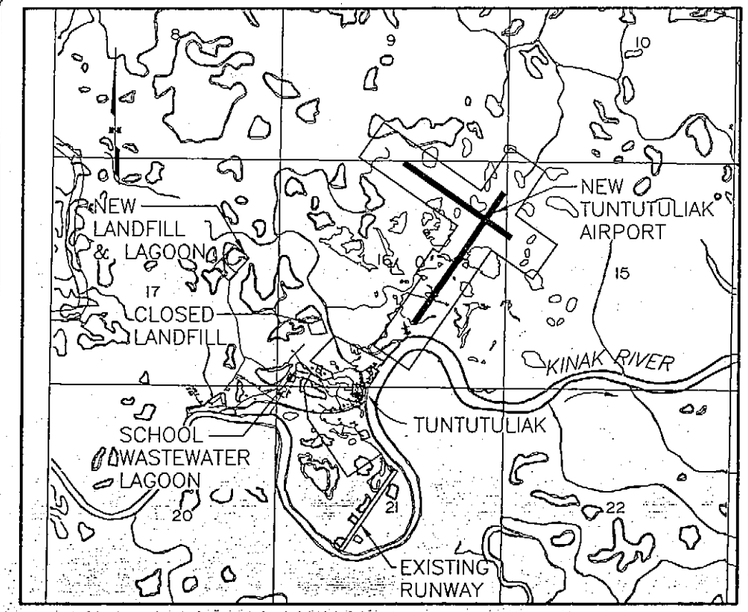
APPROVED _____ DATE 9.1.98
STEVE RYAN, P.E. — DESIGN SECTION CHIEF

APPROVED _____ DATE 9.1.98
VICTOR WINTERS, P.E. — PROJECT MANAGER

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
Subject to ALP Approval letter date September 18, 1998
By: _____
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 9/18/98

**TUNTUTULIAK AIRPORT**
**AIRPORT LAYOUT PLAN**

**SHEET 1 OF 10**

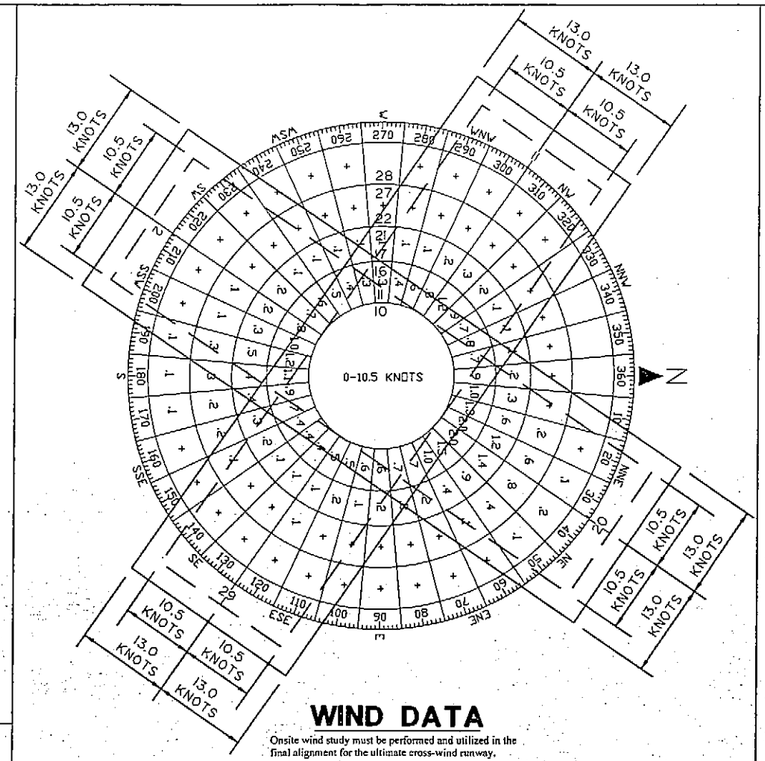



## VICINITY MAP

SCALE: NTS
U.S.G.S. BAIRD INLET (B-2) 1954
T3N, R77W, SECTION 16, SEWARD MERIDIAN
BETHEL RECORDING DIST.

## CONVERSION FACTORS FROM SI UNITS

| TO CONVERT FROM | TO | MULTIPLY BY |
|---|---|---|
| STATION (1000 METERS (M)) | FEET | 3280.84 |
| KILOMETER (KM) | MILE | 0.6214 |
| METER (M) | MILE | 0.00062137 |
| METER (M) | FOOT | 3.28084 |
| CENTIMETER (CM) | FOOT | 0.0328084 |
| CENTIMETER (CM) | INCH | 0.3937008 |
| SQUARE METER ($M^2$) | SQUARE FOOT | 10.76391042 |
| SQUARE METER ($M^2$) | SQUARE YARD | 1.19599 |
| SQUARE METER ($M^2$) | ACRE | 0.00024711 |
| CUBIC METER ($M^3$) | CUBIC FOOT | 35.3146667 |
| CUBIC METER ($M^3$) | CUBIC YARD | 1.3079506 |
| CUBIC METER ($M^3$) | GALLON (US LIQUID) | 264.17204 |
| CUBIC METER ($M^3$) | M. GAL. | 0.26417204 |
| KILOGRAM (KG) | POUND-MASS (LBF) | 2.2046225 |
| KILOGRAM (KG) | TON (SHORT) | 0.00110231 |
| NEWTON (N) | POUND-FORCE (LBF) | 0.2248089 |
| LUX (LX) | FOOTCANDLE | 0.092903 |
| DEGREE CELSIUS (°C) | DEGREE FAHRENHEIT | TF=(1.8 x TC)+32 |




## WIND DATA

Onsite wind study must be performed and utilized in the final alignment for the ultimate cross-wind runway.

| | 10.5 KNOTS | 13 KNOTS |
|---|---|---|
| RW 2/20 WIND COVERAGE: | 84.97% | 91.15% |
| RW 11/29 WIND COVERAGE: | 71.48% | 80.08% |
| COMBINED COVERAGE: | 96.31% | 98.53% |

SOURCE: BETHEL WIND DATA, 1 JAN., 84 TO 31 DEC., 93. CONDUCTED BY ENRI, UAA-ALASKA CLIMATE CENTER, FOR ADOT & PF. TUNTUTULIAK ALASKA IS LOCATED 73 KILOMETERS SOUTHWEST OF BETHEL.

## MODIFICATION OF STANDARDS

| ITEM | EXISTING | STANDARD | FUTURE |
|---|---|---|---|
| WIND COVERAGE (10.5 KNOTS) PRIMARY RUNWAY | 84.97% | 95.0% | 84.97% |
| WIND COVERAGE (13.0 KNOTS) PRIMARY RUNWAY | | 95.0% | 91.15% |
| WIND COVERAGE (10.5 KNOTS) CROSSWIND RUNWAY | N/A | 95.0% | 71.48% |
| WIND COVERAGE (13.0 KNOTS) CROSSWIND RUNWAY | | 95.0% | 80.08% |
| WIND COVERAGE (10.5 KNOTS) COMBINED | N/A | 95.0% | 96.31% |
| WIND COVERAGE (13.0 KNOTS) COMBINED | | 95.0% | 98.53% |
| RUNWAY 2/20 WIDTH | 13m | 18m | 23m |
| | 42.7' | 59.1' | 75.5' |
| LANDFILL SEPARATION | 1200m | 1524m | 1200m |
| | 3937.0' | 5000.0' | 3937.0' |
| WASTEWATER LAGOON | 1000m | 1524m | 1200m |
| | 3280.8' | 5000.0' | 3937.0' |

## BASIC DATA TABLE

### RUNWAY DATA

| ITEM | | EXISTING | 2/20 INTERIM | 11/29 FUTURE |
|---|---|---|---|---|
| EFFECTIVE GRADE | | 0.12% | 0.08% | 0.00% |
| % WIND COVERAGE | | 85.48% | 84.97% | 71.48% |
| INSTRUMENT RUNWAY | | U-VFR | U-NPI >1 MILE | U-NPI >1 MILE |
| RUNWAY SURFACE | | GRAVEL | GRAVEL | GRAVEL |
| PAVEMENT STRENGTH (LBS.) | | N/A | N/A | N/A |
| APPROACH SURFACES | | 20:1 | 20:1 | 20:1 |
| VISIBILITY MINIMUM | | 1600m | 1600m | 1600m |
| | | 5249.3' | 5249.3' | 5249.3' |
| RUNWAY LIGHTING | | NONE | M.I. | M.I. |
| RUNWAY MARKING | | NONE | NONE | NONE |
| NAVIGATION AIDS | | NONE | GPS | GPS |
| RUNWAY DIMENSION | | 13m x 548m | 23m x 943m | 18m x 780m |
| | | 42.7' x 1797.9' | 75.6' x 3093.8' | 59.1' x 2559.1' |
| RUNWAY SAFETY AREA DIMENSION | | 24m x 412m | 36m x 1087m | 36m x 924m |
| | | 78.7' x 1351.7' | 118.1' x 3566.3' | 118.1' x 3031.5' |
| RUNWAY OBJECT FREE AREA DIMENSION | | 14m x 412m | 120m x 1087m | 120m x 924m |
| | | 45.9' x 1351.7' | 393.7' x 3566.3' | 393.7' x 3031.5' |
| RUNWAY OBSTACLE FREE ZONE DIMENSION | | 24m x 412m | 75m x 1063m | 75m x 900m |
| | | 78.7' x 1351.7' | 246.1' x 3487.5' | 246.1' x 2952.8' |
| GEODETIC POSITIONS (N.A.D. 83) | | | | |
| THRESHOLD 2 | LAT. | | 60°20'50.77"N | |
| | LONG. | | 162°39'34.41"W | |
| THRESHOLD 20 | LAT. | | 60°21'16.98"N | |
| | LONG. | | 162°38'59.12"W | |
| THRESHOLD 11 | LAT. | | | 60°21'24.26"N |
| | LONG. | | | 162°39'38.83"W |
| THRESHOLD 29 | LAT. | | | 60°21'10.05"N |
| | LONG. | | | 162°38'56.80"W |
| RUNWAY PROTECTION ZONE DIMENSIONS | | | | |
| INNER WIDTH | | 76m | 150m | 150m |
| OUTER WIDTH | | 137m | 210m | 210m |
| LENGTH | | 305m | 300m | 300m |

## BASIC DATA TABLE

### AIRPORT DATA

| ITEM | | EXISTING | INTERIM | FUTURE |
|---|---|---|---|---|
| AIRPORT ELEVATION (M.S.L.) | | 4.88m | 6.33m | 6.33m |
| | | 16.0' | 20.8' | 20.8' |
| TAXIWAY LIGHTING | | NONE | M.I. | M.I. |
| RAMP LIGHTING | | NONE | FLOODLIGHTS | FLOODLIGHTS |
| MEAN MAX. TEMPERATURE, HOTTEST MONTH (JULY) | | 16°C (60°F) | 16°C (60°F) | 16°C (60°F) |
| MAGNETIC DECLINATION, YEAR | | 18°10'E,1985 | 16°40'E, 12/97 | 16°40'E, 12/97 |
| AIRPORT REFERENCE POINT | LAT. | N/A | | 60°21'10.12N |
| | LONG. | N/A | | 162°39'16.92"W |
| AIRPORT CATEGORY | | A-I | B-I | B-I |
| AIRPORT AND TERMINAL NAVIGATION AIDS | | NONE | NONE | NONE |

## BASIC DATA TABLE

### AIRPORT STRUCTURES

| STRUCTURE | TOP ELEV EXISTING | TOP ELEV INTERIM | TOP ELEV FUTURE |
|---|---|---|---|
| SNOW REMOVAL EQUIPMENT BUILDING (SREB) | N/A | 11.0m | 11.0m |
| | | 36.1' | 36.1' |
| ROOF MOUNTED SREB BEACON | N/A | 12.1m | 12.1m |
| | | 39.7' | 39.7' |
| LIGHTED WINDCONE | N/A | 8.3m | 8.3m |
| | | 27.2' | 27.2' |

## LEGEND

| ITEM | EXISTING | INTERIM | FUTURE |
|---|---|---|---|
| PROPERTY LINE | N/A | | |
| BUILDING RESTRICTION LINE | N/A | BRL | BRL |
| CONTOURS | | 0.5 | 0.5 |
| BOARDWALK ROW | N/A | | |
| BUILDINGS | | | |
| ROTATING BEACON | N/A | | |
| SHORELINE | N/A | | |
| THRESHOLD LIGHTS | N/A | | |
| AIRPORT REFERENCE POINT (A.R.P.) | N/A | | |
| BRUSH LINE | | | |
| WIND CONE AND SEGMENTED CIRCLE | N/A | | |
| MONUMENT | | | |
| WATER SURFACE | | | |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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
Subject to ALP Approval letter date September 23, 1998
By: Fairbanks Johnson
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 9/18/98

| BY | DATE | REVISIONS |
|---|---|---|
| | | |

STATE OF ALASKA
**DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES**
CENTRAL REGION-DESIGN AND CONSTRUCTION-AVIATION

APPROVED: STEVE RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: VIC WINTERS, P.E. — PROJECT MANAGER

DATE 4/98
DESIGN CAB
DRAWN DES
CHECKED FDR

**TUNTUTULIAK AIRPORT**

AIRPORT LAYOUT PLAN

VICINITY MAP AND DATA TABLES

SHEET 2 OF 10

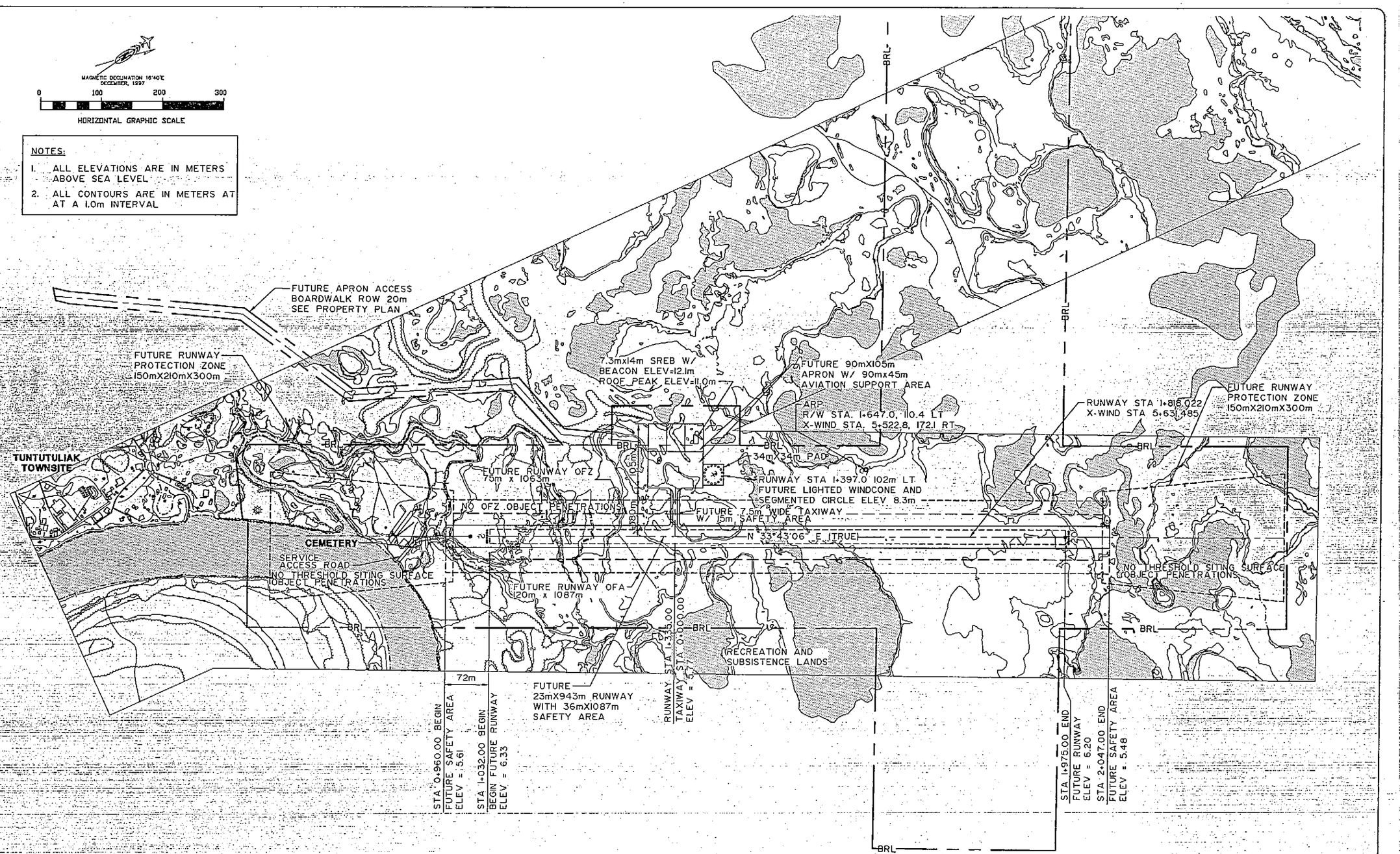
p:\dist\5506\5\6023\002, Loc. 02/20/98 at 08:05 by ds
XREF: MAIN, BORDER, TUN-VIN
XREF: ADD: 2LOD

MAGNETIC DECLINATION 16°40'E
DECEMBER, 1997

0 100 200 300
HORIZONTAL GRAPHIC SCALE

NOTES:

1. ALL ELEVATIONS ARE IN METERS ABOVE SEA LEVEL
2. ALL CONTOURS ARE IN METERS AT AT A 1.0m INTERVAL




Project 1650063.60L, Z, 1:3000, 08/29/98 at 08:09 by des
WEVE: 633MAS, MAL-PBDR
WEVE: A03, A105

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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
Subject to ALP Approval letter date September 28, 1998
By: Barbara Johnson
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 9/18/98

| BY | DATE | REVISIONS |
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STATE OF ALASKA
**DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES**
CENTRAL REGION–DESIGN AND CONSTRUCTION–AVIATION

APPROVED: STEVE RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: VIC WINTERS, P.E. — PROJECT MANAGER

DATE 4/98
DESIGN CAB
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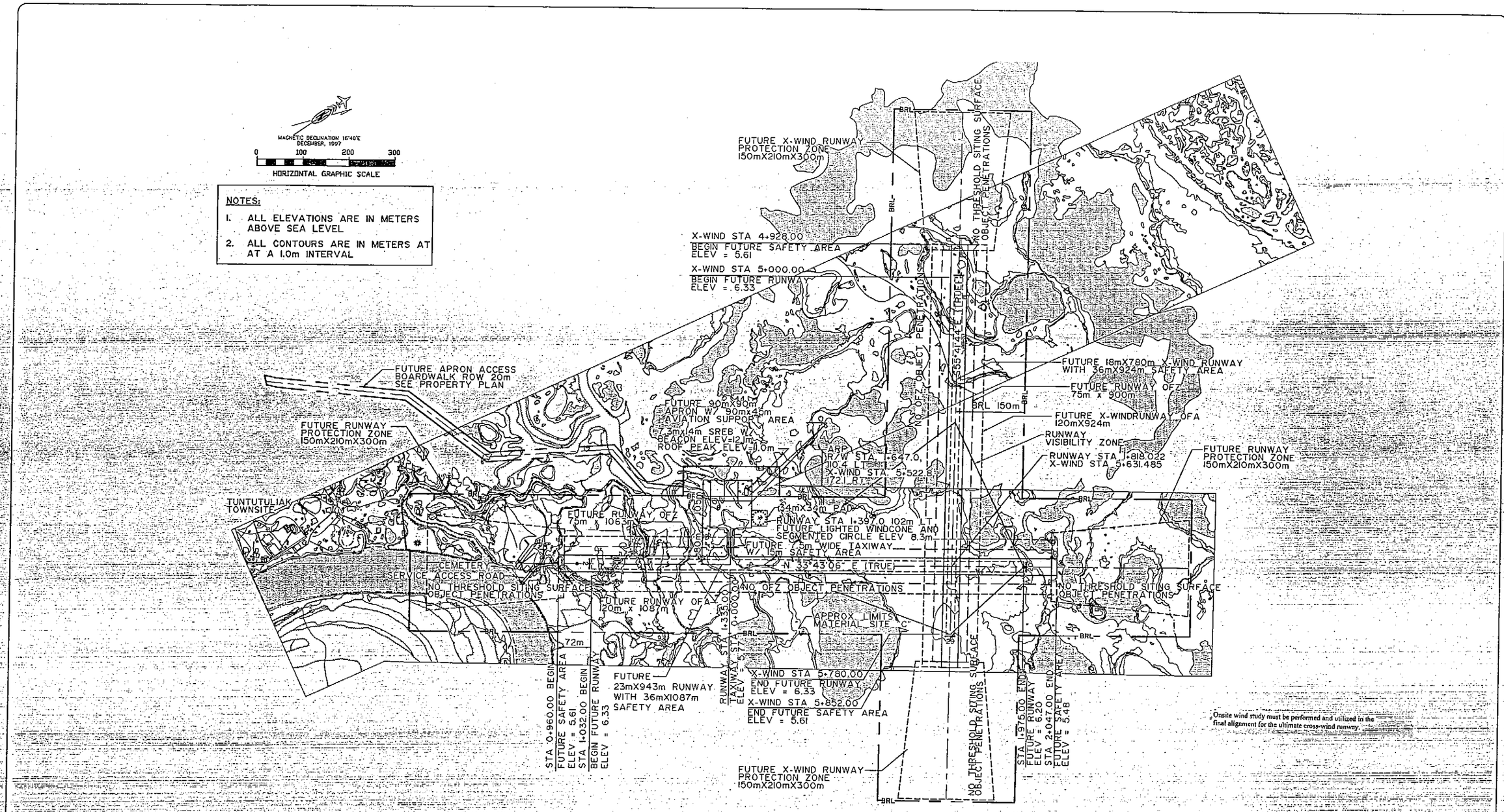
CHECKED FDR

# TUNTUTULIAK AIRPORT

AIRPORT LAYOUT PLAN

AIRPORT INTERIM DEVELOPMENT PLAN

SHEET 3 OF 10

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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
Subject to ALP Approval letter date September 28, 1998
By: Barbara J. Johnson
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 9/15/98

| BY | DATE | REVISIONS |
|---|---|---|

STATE OF ALASKA
**DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES**
CENTRAL REGION–DESIGN AND CONSTRUCTION–AVIATION

APPROVED: STEVE RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: VIC WINTERS, P.E. — PROJECT MANAGER

DATE 4/98
DESIGN CAB
DRAWN DES
CHECKED FDR

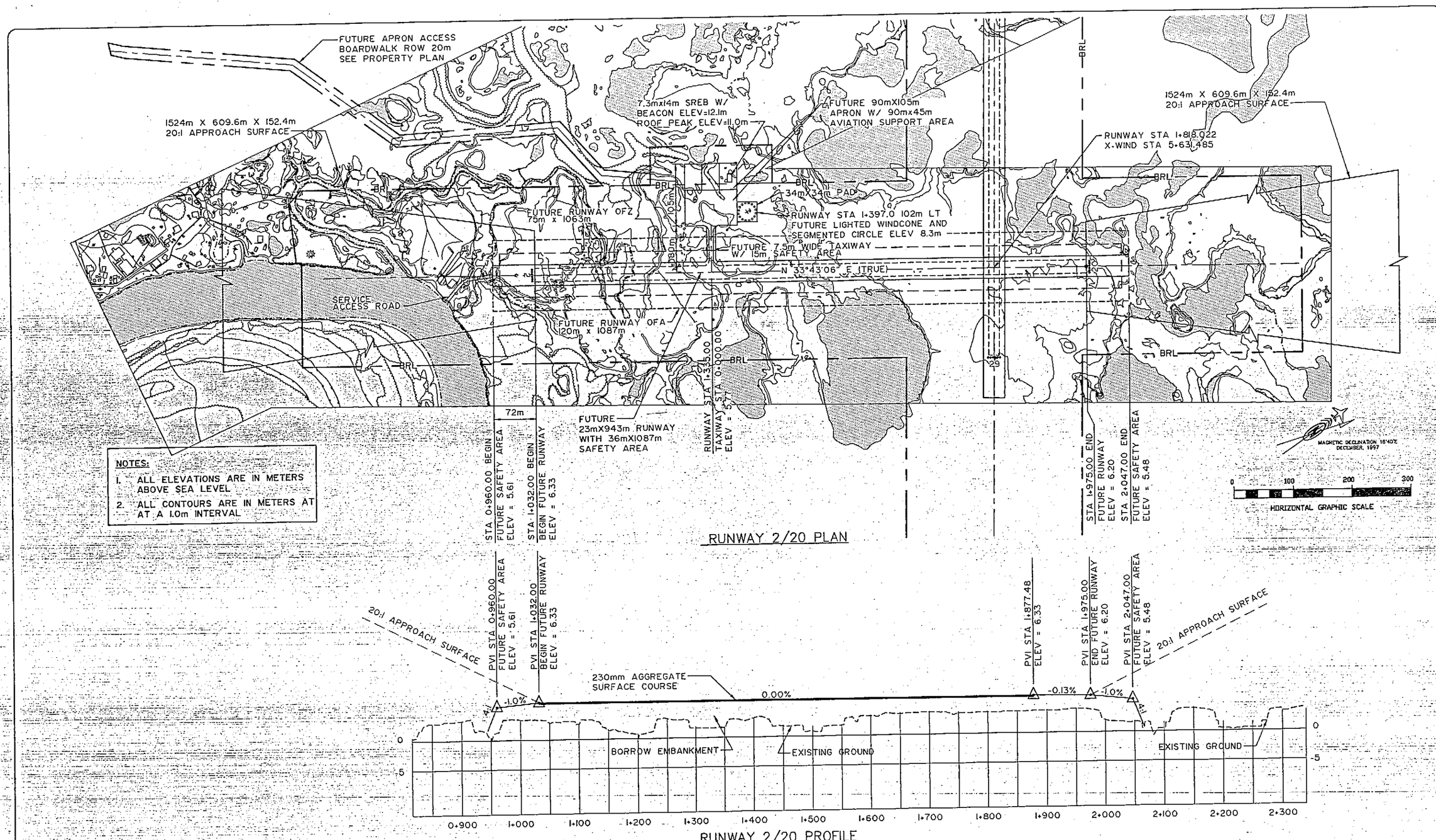
# TUNTUTULIAK AIRPORT

AIRPORT LAYOUT PLAN

AIRPORT ULTIMATE DEVELOPMENT PLAN

SHEET 4 OF 10

Project\65063\ Jip04, l=4000, 08/29/98 at 08:09 by des
XREF: 65063-MAS, VIEW: 4063-MAS, MALPBRDR

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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
Subject to ALP Approval letter date September 28, 1998
By: Barbara Thompson
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 9/28/98

| BY | DATE | REVISIONS |
|---|---|---|

STATE OF ALASKA
**DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES**
CENTRAL REGION–DESIGN AND CONSTRUCTION–AVIATION

APPROVED: STEVE RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: VIC WINTERS, P.E. — PROJECT MANAGER

DATE 4/98
DESIGN CAB
DRAWN DES
CHECKED FDR

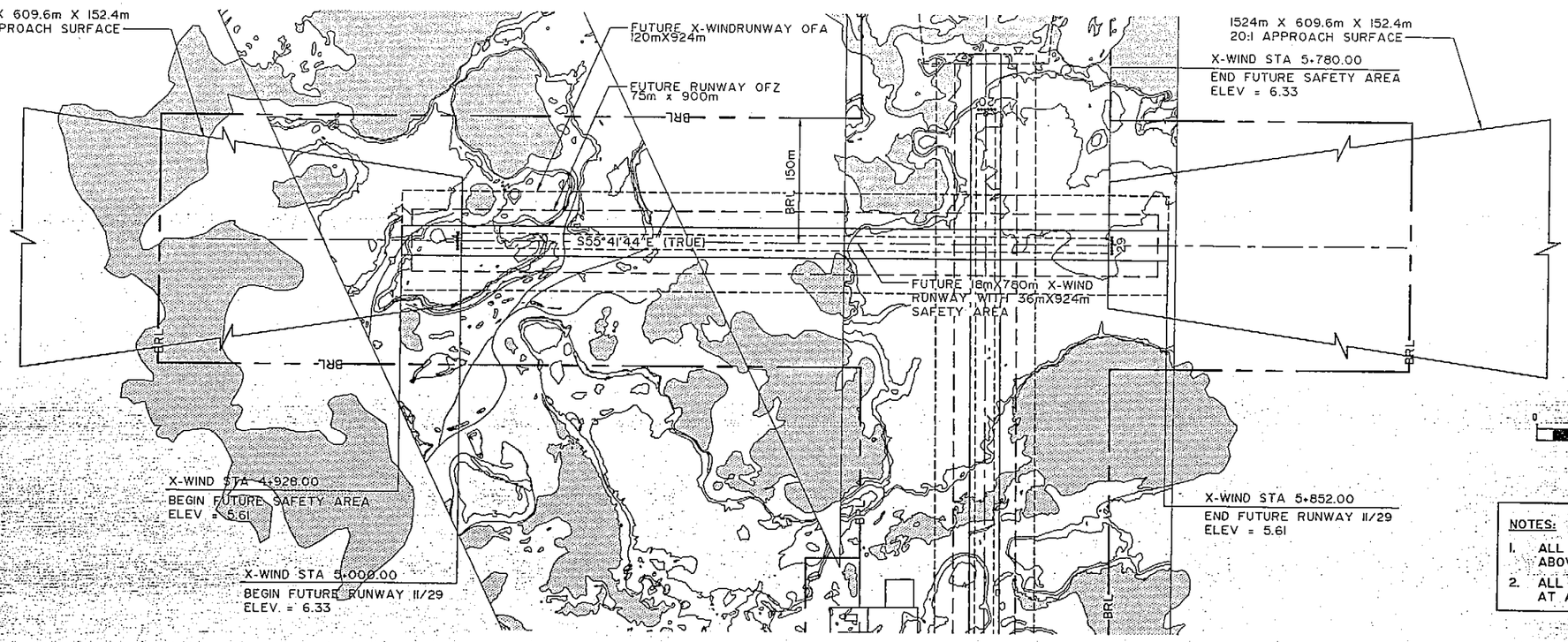
# TUNTUTULIAK AIRPORT

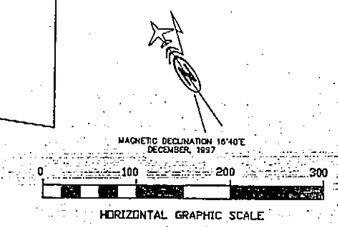
AIRPORT LAYOUT PLAN

RUNWAY 2/20 PLAN & PROFILE AND
INNER PORTION OF APPROACH SURFACE

SHEET 5 OF 10

project \65163\65163dp05, 1:3000, 04/21/98 at 11:10 by des
XREF: 65163MAS, MALPBRDR
VIEW: AL05, AL05

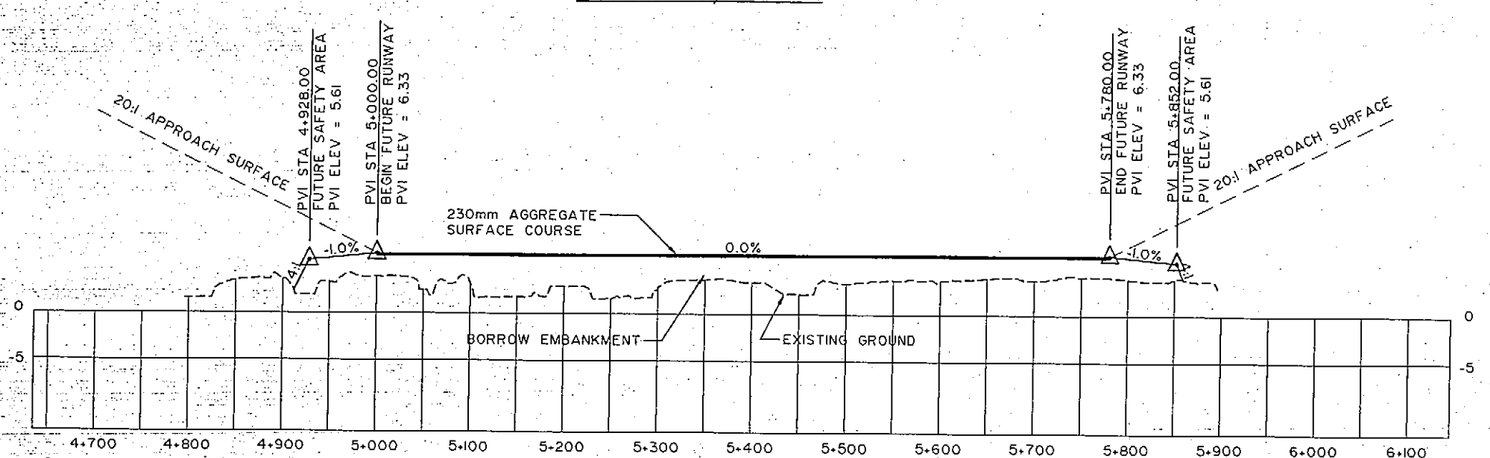



NOTES:

1. ALL ELEVATIONS ARE IN METERS ABOVE SEA LEVEL
2. ALL CONTOURS ARE IN METERS AT AT A 1.0m INTERVAL

RUNWAY 11/29 PLAN




RUNWAY 11/29 PROFILE

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Subject to ALP Approval letter date September 28, 1998
By: Barbara A. Holman
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 9/28/98

| BY | DATE | REVISIONS |
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| | | |

STATE OF ALASKA
**DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES**
CENTRAL REGION—DESIGN AND CONSTRUCTION—AVIATION

APPROVED: STEVE RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: VIC WINTERS, P.E. — PROJECT MANAGER

DATE 4/98
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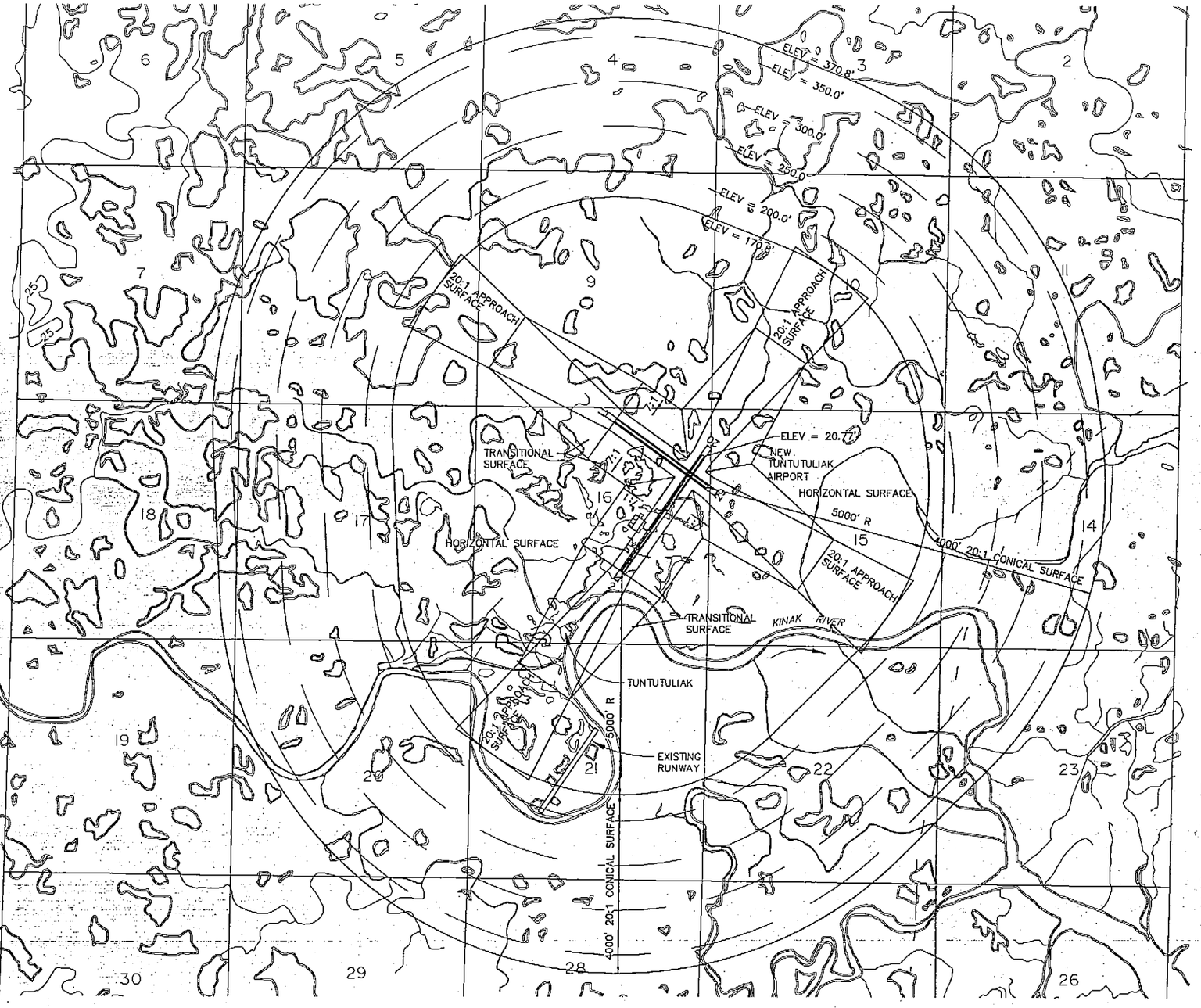
**TUNTUTULIAK AIRPORT**

AIRPORT LAYOUT PLAN

RUNWAY 11/29 PLAN & PROFILE AND INNER PORTION OF APPROACH SURFCE

SHEET 6 OF 10

project 65063.1 J06, ls3000, 08/29/96 at 08:25 by des
XREF: 6063MAS, f---FBRDR
VIEW: ADE, ALO6



MAGNETIC DECLINATION 16°40'E
DECEMBER 1997

0 1500 3000 4500
HORIZONTAL GRAPHIC SCALE

NOTES:

Onsite wind study must be performed and utilized in the final alignment for the ultimate cross-wind runway.

1. THIS DRAWING WAS DRAWN USING FEET AS F.A.R. PART 77 HAS NOT BEEN REVISED WITH METRIC CONVERSIONS.
2. DESIGNATED AIRPORT ELEVATION IS 20.77' (6.33m).
3. ALL CONTOURS ARE IN FEET.
4. THERE ARE NO OBSTRUCTIONS IN THE F.A.R PART 77 IMAGINARY SURFACES.

project\65I063\6063apo7, ia5000, 08/29/98 at 08:25 by des
XREF: MALPBRDR, TUN-VIN2
VIEW: A07, AL07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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
Subject to ALP Approval letter date September 28, 1998
By: Barbara Molenaar
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 9/28/98

| BY | DATE | REVISIONS |
|---|---|---|
| | | |

STATE OF ALASKA
**DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES**
CENTRAL REGION—DESIGN AND CONSTRUCTION—AVIATION

APPROVED: STEVE RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: VIC WINTERS, P.E. — PROJECT MANAGER

DATE 1/98
DESIGN CAB
DRAWN DES
CHECKED FDR

# TUNTUTULIAK AIRPORT

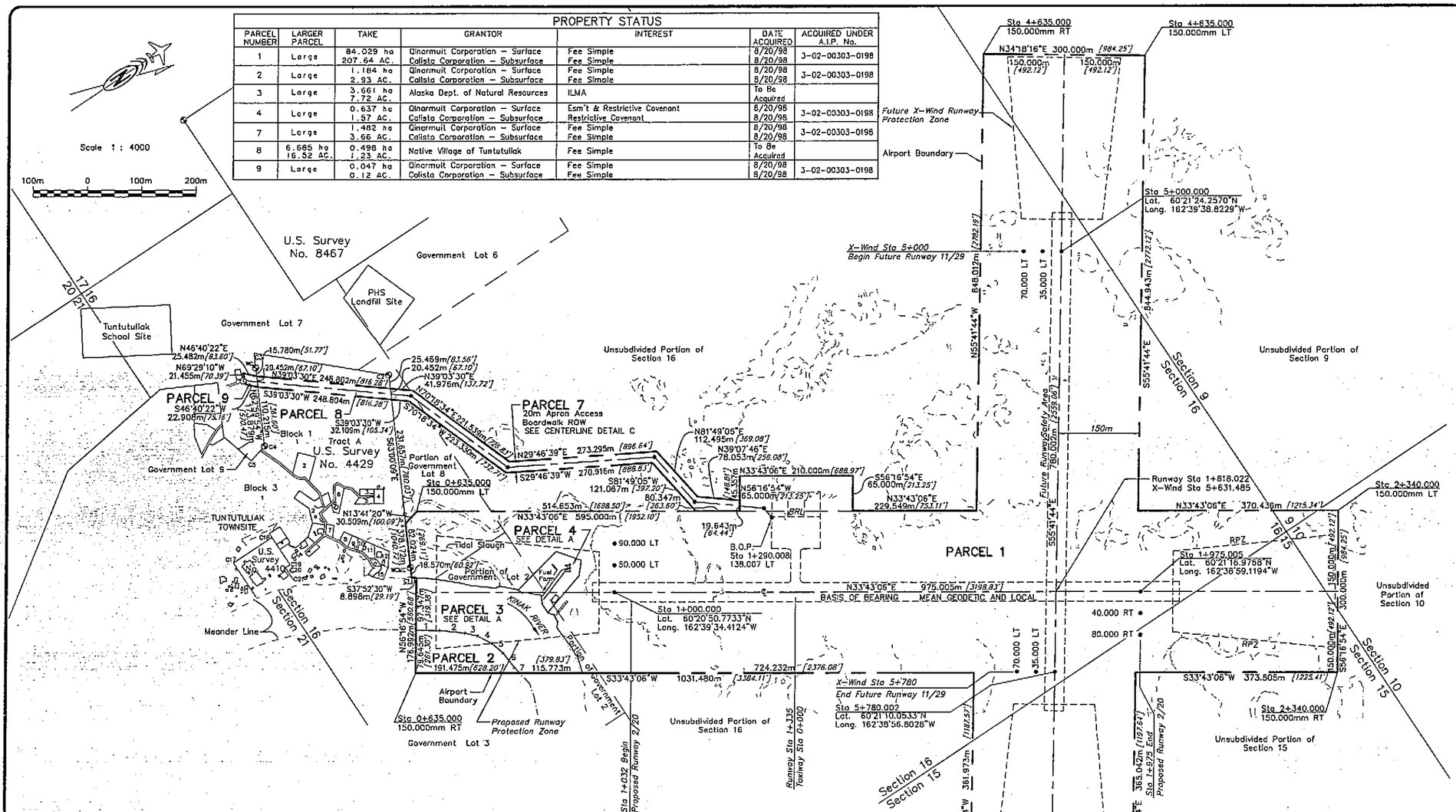
AIRPORT LAYOUT PLAN

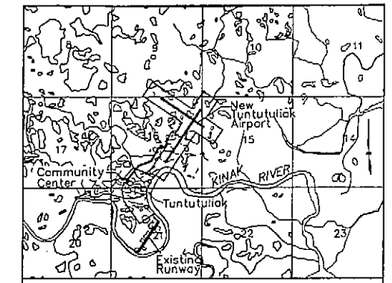
F.A.R. PART 77 SURFACES

SHEET 7 OF 10

## PROPERTY STATUS

| PARCEL NUMBER | LARGER PARCEL | TAKE | GRANTOR | INTEREST | DATE ACQUIRED | ACQUIRED UNDER A.I.P. No. |
|---|---|---|---|---|---|---|
| 1 | Large | 84.029 ha<br>207.64 AC. | Qinarmuit Corporation – Surface<br>Calista Corporation – Subsurface | Fee Simple<br>Fee Simple | 8/20/98<br>8/20/98 | 3-02-00303-0198 |
| 2 | Large | 1.184 ha<br>2.93 AC. | Qinarmuit Corporation – Surface<br>Calista Corporation – Subsurface | Fee Simple<br>Fee Simple | 8/20/98<br>8/20/98 | 3-02-00303-0198 |
| 3 | Large | 3.661 ha<br>7.72 AC. | Alaska Dept. of Natural Resources | ILMA | To Be Acquired | |
| 4 | Large | 0.637 ha<br>1.57 AC. | Qinarmuit Corporation – Surface<br>Calista Corporation – Subsurface | Esm't & Restrictive Covenant<br>Restrictive Covenant | 8/20/98<br>8/20/98 | 3-02-00303-0198 |
| 7 | Large | 1.482 ha<br>3.66 AC. | Qinarmuit Corporation – Surface<br>Calista Corporation – Subsurface | Fee Simple<br>Fee Simple | 8/20/98<br>8/20/98 | 3-02-00303-0198 |
| 8 | 6.685 ha<br>16.52 AC. | 0.498 ha<br>1.23 AC. | Native Village of Tuntutuliak | Fee Simple | To Be Acquired | |
| 9 | Large | 0.047 ha<br>0.12 AC. | Qinarmuit Corporation – Surface<br>Calista Corporation – Subsurface | Fee Simple<br>Fee Simple | 8/20/98<br>8/20/98 | 3-02-00303-0198 |




VICINITY MAP
Scale 1:50000 Source U.S.G.S. Baird Inlet
Located within
Surveyed Township T3N, R77W, Seward Meridian
Bethel Recording District

LEGEND

- Recovered existing aluminum cap monument
- Set 50mm alcap on 16mm x 765mm rebar
- Set mag nail in boardwalk
- Exterior airport property boundary
- Interior airport parcel boundary
- [688.98'] Distance in Feet

## MEANDER TABLE PARCELS 2 AND 3

| COURSE | DIRECTION | DISTANCE |
|---|---|---|
| 1 | N 34°18'46" E | 43.786 m [143.66'] |
| 2 | N 40°02'02" E | 46.369 m [152.13'] |
| 3 | N 45°45'18" E | 24.592 m [80.68'] |
| 4 | N 61°58'55" E | 29.322 m [96.20'] |
| 5 | N 74°42'21" E | 26.796 m [87.91'] |
| 6 | N 85°17'46" E | 33.994 m [111.53'] |
| 7 | N 80°03'16" E | 15.025 m [49.29'] |

## NOTES

1. The information shown is based on field surveys performed by R&M Consultants, Inc. during September 1996 and October 1997. The September 1996 survey was performed in order to position photogrammetric control points, and collect selected property corners in conjunction with the ADOT&PF Tuntutuliak Airport Master Plan. The October 1997 survey was performed to collect additional property ties, establish and monument project horizontal and vertical control, establish and monument the main runway, crosswind runway, and access road centerline, and to collect topographic, planimetric and profile information along both runways and access road.
2. Project bearings are local grid bearings oriented to the NAD83 geodetic mean bearing of Runway 2/20. The mean geodetic bearing of Runway 2/20 was determined from ties to runway stations 0+36, 10+30, and 44+64.40, shown on the drawing titled "State of Alaska, Department of Public Works, Division of Aviation, Tuntutuliak, Survey Control Sheet" dated 9/24/73. The NAD27 values shown on said drawing were rotated and translated to NAD83 values based on the published positions of NGS triangulation stations "NAPA" and "BIVOUAC". The geographic positions shown are based on NAD83 values.
3. The project coordinates are referenced to a local datum based on an assumed coordinate value (N 10000.000, E 50000.000) at Runway 2/20 centerline station 1+487.500. A combined scale factor of 1.00008438 was applied to obtain ground distances.
4. The vertical datum is based on the published elevation of the ADA brass cap monument located at the existing runway centerline station 0+36 as shown on the drawing recited in note 2. The published elevation for said centerline monument is 14.0 feet.
5. The field survey data was adjusted horizontally and vertically using simultaneous least-squares and compass rule adjustment techniques. Standard errors, root mean square (RMS) values and traverse closures from the adjustments indicate the observation closures exceed Third Order accuracies. Full report information of the observation adjustments are on file at R&M Consultants, Inc. The minimum closure of all traverses, meets or exceeds 1:10000.
6. The rectangular boundary lines shown hereon are based on protracted values determined from ties to existing monumentation and dimensional information provided by the BLM for the survey of Township 3 North, Range 77 West of the Seward Meridian, Alaska.
7. The natural meanders of the mean high water line of the Kinak River forms the property boundary as applicable.
8. All distances are ground distances reduced to horizontal in meters. Meter to feet conversion factor is 3937/1200.
9. Refer to the 1997 Tuntutuliak Airport Survey Control Drawing, Project No. 51793 for additional survey control information.

This plan supersedes the 8/18/75 Airport Property Plan.

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DATE: 9/16/98

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
Subject to ALP Approval letter date September 28, 1998
By: Fabian Nelson
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 9/18/98
FAA AIRSPACE REVIEW NUMBER:

| BY | DATE | REVISIONS |
|---|---|---|
| | | |

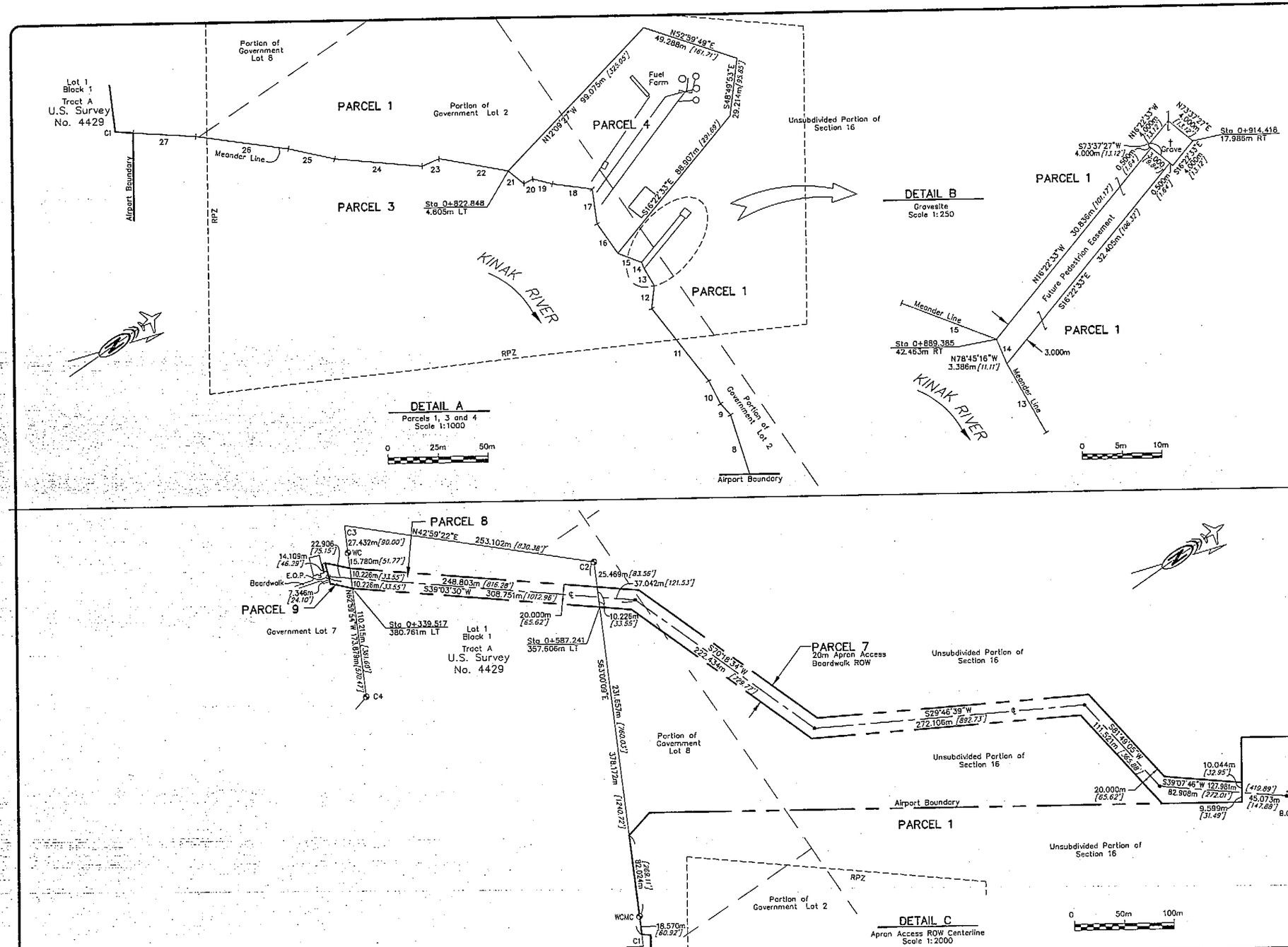
STATE OF ALASKA
**DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES**
CENTRAL REGION
APPROVED: STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: VICTOR WINTERS, P.E. — PROJECT MANAGER

DATE 8/98
DESIGN RPB
DRAWN NFD
CHECKED LCS

# TUNTUTULIAK AIRPORT

AIRPORT PROPERTY PLAN
ALP SHEET 8 of 10

SHEET 1 OF 2







| MEANDER TABLE | | |
|---|---|---|
| COURSE | DIRECTION | DISTANCE |
| 8 | N 73°24'15"W | 31.446 m [103.17'] |
| 9 | S 82°30'11"W | 7.545 m [24.75'] |
| 10 | N 83°11'26"W | 12.987 m [42.61'] |
| 11 | S 86°37'13"W | 46.372 m [152.14'] |
| 12 | N 49°25'55"W | 11.499 m [37.73'] |
| 13 | N 85°29'28"W | 9.963 m [32.69'] |
| 14 | N 78°45'16"W | 3.386 m [11.11'] |
| 15 | S 55°32'01"W | 12.774 m [41.91'] |
| 16 | S 89°12'16"W | 18.152 m [59.56'] |
| 17 | N 63°45'00"W | 17.694 m [58.05'] |
| 18 | S 41°51'55"W | 20.173 m [66.18'] |
| 19 | S 49°05'21"W | 10.189 m [33.43'] |
| 20 | S 06°11'21"W | 4.973 m [16.32'] |
| 21 | S 73°27'28"W | 10.259 m [33.66'] |
| 22 | S 44°43'26"W | 35.292 m [115.79'] |
| 23 | S 10°43'59"W | 9.252 m [30.35'] |
| 24 | S 39°31'03"W | 44.163 m [144.89'] |
| 25 | S 47°11'57"W | 23.826 m [78.18'] |
| 26 | S 42°16'51"W | 46.837 m [153.65'] |
| 27 | S 37°52'30"W | 31.347 m [102.84'] |

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DATE: 9/16/98

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
Subject to ALP Approval letter date September 28, 1998
By: Barbara Johnson
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 9/8/98
FAA AIRSPACE REVIEW NUMBER:

| BY | DATE | REVISIONS |
|---|---|---|

STATE OF ALASKA
**DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES**
CENTRAL REGION
APPROVED: STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: VICTOR WINTERS, P.E. — PROJECT MANAGER

DATE 8/98
DESIGN RPB
DRAWN NFD
CHECKED LCS

**TUNTUTULIAK AIRPORT**

AIRPORT PROPERTY PLAN
ALP SHEET 9 of 10

SHEET 2 OF 2

PURPOSE
This narrative report is included with the airport layout plan for Tuntutuliak, Alaska in accordance with Federal Aviation Administration (FAA) advisory circular 150/5300-13, Appendix 7. The design of this project is being completed in SI (metric) units and all measurements and limits are in accordance with ASTM E 380-93. The rationale for improvements on the Tuntutuliak airport are outlined in this report.

INTRODUCTION
Tuntutuliak is located on the Kinak River approximately 5 kilometers from its confluence with the Kuskokwim River, about 73 kilometers southwest of Bethel. The village is located within the Kuskokwim River drainage, the topography is extremely flat with standing bodies of water and numerous small meandering streams. Subsurface conditions are categorized as thaw unstable discontinuous permafrost.

The community relies heavily on air transportation for passenger, mail and cargo services. Barge services deliver supplies approximately six times a year, with boats, all terrain vehicles (ATV'S) and snow machines being used for local transportation. Due to the wet terrain a series of boardwalks are used to interconnect the village and provide access to the airport.

The community is predominantly Yupik speaking Alaska Native, with an approximate population of 300 persons. Subsistence hunting and gathering is important, and fishing is the main subsistence and cash-economy activity. There is no projected economic activity that would impact the number of aircraft operations to Tuntutuliak. Based on interviews and the public meetings, increased population growth is the only factor determined that would effect aircraft operations.

The existing runway is approximately 548m long and 13m wide, and is oriented in a north/south direction within an oxbow of the Kinak River. A 30m x 61m apron abuts the north end of the runway. Airport maintenance reports the existing runway embankment is sinking into the tundra and the surfacing is poor. Soft runway conditions develop in the spring during runoff.

The runway at Tuntutuliak has several deficiencies that do not conform to the safety and design standards established by the Federal Aviation Administration (FAA) and Alaska Aviation System Plan (AASP) for community class airports. Problems identified with the existing airport are: 1) runway and safety areas are deficient in length and width, 2) the parking apron is deficient in size, 3) the runway lighting has deteriorated and requires excessive maintenance, 4) no lease lots are available, 5) surface course material is deficient, 6) the existing snow removal equipment is at the end of its useful life, 7) a segmented circle and windcone are needed, 8) the existing embankment has settled.

Air carriers currently serving Tuntutuliak are: Arctic Circle Air, Ryan Air, Hagelund Air, Craig Air, Yute Air, Ram Aviation, Bush Air Inc., Kusko Aviation, Fox Airways, Camai Air, Grant Aviation, Yukon Aviation and Era Aviation. Mail and light freight is delivered by all the air carriers currently serving Tuntutuliak. The medical clinic at Tuntutuliak contracts with Camai Air for emergency evacuations.

AIRPORT USAGE AND FORECASTS
The Alaska Aviation System Plan (AASP) classifies Tuntutuliak as a community class airport. A community class airport is defined as the primary access to a small rural community with a minimum of 25 year round residents.

Local air taxi operators based in Bethel are the source of most of the aviation operations. Based on the current air taxi schedule, and estimated nonscheduled flights, no more than 4000 aircraft operations occur at Tuntutuliak annually. No economic development which would cause a significant increase in aircraft operations is foreseen. FAA reported enplanments for the year ending 1996 at 3,450. Actual enplanements are likely to be higher as air taxi operators are not required to report enplanements. Increases in enplanements are expected to follow population increases of approximately 3% annually. Predicted aircraft operations in the year 2018 are between 4,500 operations (slight increase using large airplanes) to 7,200 operations (no change in fleet mix).

There is one permanently based private aircraft at Tuntutuliak. No additional based aircraft are expected in the near future. The airport is currently served by single engine design aircraft A-I, such as the Cessna 206 or 207. Air taxi operators indicated a future fleet mix of larger single engine aircraft such as the Cessna Caravan and Piper Cherokee Six, to light twin aircraft such as the Cessna 402, Casa 212, up to the DeHaviland Twin Otter. Based on the projected aviation demand and usersurveys the ultimate air side facility at Tuntutuliak should meet FAA Approach Category B Design Group I. Planning for a non precision instrument approach is recommended due to anticipated future use of Global Positioning System (G.P.S.) navigation. The critical aircraft will be the Piper Navajo, 100 knot approach speed, 40.7 foot wingspan, 6,200 pound maximum gross weight.

STAGE DEVELOPMENT Due to physical limitations (Kinak River), extension of the existing runway is not practical. An alternate site was selected for a new airport, approximately 1,100m northeast of the community center. Due to wet site conditions and lack of a locally available aggregate source construction will be in two phases, with long term future development in Phase III.

PHASE I (0-3 YEARS)
Since existing or potential sources of local sands and gravels are not known near Tuntutuliak, construction of the new runway embankment will be with locally available organic and ice rich silts. The first phase of construction will include:

1. Acquire approximately 91 hectares of land from the Qinarmiut Village Corporation, and native allotment owners. (crosswind runway acreage included)

2. Construct a new primary runway, and runway safety area embankment with silt.

3. Construct an aircraft parking apron and aviation support area embankment with silt.

4. Construct the taxiway embankment with silt.

The silts used for embankment material have a high water and ice content, and it is estimated that the embankments will require a minimum period of 3 years to drain and thaw stabilize depending upon percentage of organics and water content.

Estimated construction cost is $4,800,000.

PHASE II (3-5 YEARS)

After the embankments have drained and stabilized, the final airport improvements will be completed. These improvements include:

1. Place 230mm of imported aggregate surface course on the primary runway, taxi, apron, and aircraft tie down areas. The runway will be placed to a 23m width (B-II Standard) centered on the safety area to increase wind tolerance.
2. Construct a 1.1 kilometer long by 3.6m wide airport access boardwalk.
3. Install Medium Intensity Runway Lighting (MIRL) on the runway, and taxiway. Power will be supplied by the Tuntutuliak Community Service Association.
4. Install a segmented circle and lighted windcone and permanent reflective threshold markers.
5. Install a 7.3mx14m heated snow removal equipment building within the aviation support area.
6. Purchase new snow removal equipment and decommission the existing equipment.
7. Upon completion of the new runway, taxiway and apron construction , the existing airport will be decommissioned.

Estimated construction cost is $1,300,000.

PHASE III (5-20 YEARS)
Once all rural Alaskan airports have been improved to the point they meet FAA design standards to the extent possible with one runway, ADOT & PF will prioritize funding for the construction of crosswind runways. At this time, the future crosswind runway will be constructed. Onsite wind study must be performed and utilized in the final alignment for the ultimate cross-wind runway.

DESIGN RATIONALE
The primary objective of this airport development is to decommission the existing substandard airport and construct a new airport to current FAA standards. The airport development will meet the forecasted future needs of the village of Tuntutuliak, and increase the safety of operations at the airport.

AIRPORT REFERENCE
The existing airport is a substandard A-I facility which will be decommissioned and replaced by an airport meeting FAA Approach Category B, Design Group I, standards.

WIND COVERAGE
Wind data for Tuntutuliak is unavailable, the closest community for which wind data is available is Bethel. Bethel wind data was collected by University of Alaska Anchorage (UAA) Environmental and Natural Resources Institute (ENRI) from January of 1984 to December of 1993. The optimum primary runway alignment was determined to be a true North azimuth of 34.29 degrees. The optimum crosswind alignment was determined to be a true North azimuth of 304.29 degrees. Wind coverage was calculated at 84.9% for the primary runway, 71.5% for the crosswind runway and 96.31% for the combined runway coverages, based upon a 10.5 knot crosswind. Initial primary runway construction will be to a BII standard to increase wind tolerance. Primary runway wind coverage will be 91.15% based on a 13.0 knot crosswind. Air taxi pilots indicate wind conditions at Tuntutuliak are similar to Bethel.

RUNWAY
The new primary runway heading designation is 2/20, the new crosswind designation is 11/29. Runway construction will consist of a borrowed silt embankment capped with a 230mm imported aggregate surface course. A medium intensity runway lighting system (MIRL) will be installed on the runway and taxiway.

TAXIWAY APRON AND AIRCRAFT PARKING
The new exit taxiway and apron will be located as near as practical to Tuntutuliak between the primary runway and future crosswind runway. The apron area will be constructed to meet the guidelines of the (AASP) for Community Class Airports, with 4 aircraft tiedowns. Taxiway and apron embankments will be constructed of borrowed silts, and capped with 230mm of imported aggregated surface course.

AIRPORT ACCESS BOARDWALK
1.1 km of 3.6m wide access boardwalk will be constructed to connect the new airport with the existing village center. The boardwalk will be constructed to match the existing boardwalks in Tuntutuliak.

## TUNTUTULIAK AIRPORT DESIGN STANDARDS

| ITEM | EXISTING | 2/20 INTERIM | 11/29 FUTURE |
|---|---|---|---|
| RUNWAY DIMENSION | 13m x 548m | 23m x 943m | 18m x 780m |
| | 42.7' x 1797.9' | 75.6' x 3093.8' | 59.1' x 2559.1' |
| RUNWAY SAFETY AREA DIMENSION | 24m x 412m | 36m x 1087m | 36m x 924m |
| | 78.7' x 1351.7' | 118.1' x 3566.3' | 118.1' x 3031.5' |
| RUNWAY OBJECT FREE AREA DIMENSION | N/A | 120m x 1087m | 120m x 924m |
| | | 393.7' x 3566.3' | 393.7' x 3031.5' |
| RUNWAY OBSTACLE FREE ZONE DIMENSION | N/A | 75m x 1063m | 75m x 900m |
| | | 246.1' x 3487.5' | 246.1' x 2952.8' |
| TAXIWAY DIMENSION | N/A | 7.5m x 80m | 7.5m x 80m |
| | | 24.6' x 262.5' | 24.6' x 262.5' |
| TAXIWAY SAFETY AREA DIMENSION | N/A | 15m x 80m | 15m x 80m |
| | | 49.2' x 262.5' | 49.2' x 262.5' |
| TAXIWAY OFA DIMENSIONS | N/A | 27m x 80m | 27m x 80m |
| | | 88.6' x 262.5' | 88.6' x 262.5' |
| APRON SETBACK DIST (FROM RUNWAY CENTERLINE) | 18m | 80m | 80m |
| | 59.1' | 262.5' | 262.5' |
| PARKING APRON | 15m x 46m | 60m x 90m | 60m x 90m |
| | 49.2' x 150.9' | 196.9' x 295.3' | 196.9' x 295.3' |
| AVIATION SUPPORT AREA | N/A | 30m x 90m | 30m x 90m |
| | | 98.4' x 295.3' | 98.4' x 295.3' |
| APPROACH SLOPE | 20:1 | 20:1 | 20:1 |

PROPERTY STATUS
The existing Tuntutuliak Airport property boundary is located within Section 21 and consists of Tracts I through Tract VI. Tract I is operated by the State of Alaska under a lease from lands administered by the U.S. Fish and Wildlife, the lease expires 6/5/1999. Tract II and Tract IV are aviation and hazard easements within lands administered by the U.S. Fish and Wildlife.

The relocated Tuntutuliak Airport property line will be located within Section 9 and Section 16, T3N, R77W, Seward Meridian on lands owned by Qinarmiut Village Corporation. Costs for the new airport land and access are estimated to be $325/hectare. Acquisition will require about 91 hectares for airport property and access.

COMMUNITY INVOLVEMENT
The residents of the village have participated in the planning of the new airport relocation through public meetings and user surveys, and support relocation of the airport to the new site.

MODIFICATIONS TO STANDARDS

DESIGN STANDARDS
The existing runway does not meet the standards for an A-I airport. The new airport will eliminate these deviations. The entire airport will be relocated and reconstructed to meet B-I airport category classifications.

LANDFILL AND WASTEWATER LAGOON SEPARATION
FAA standards recommend 1524m separation from landfills and wastewater lagoons for piston powered aircraft. There are no practical relocation alternatives that meet this separation requirement. The existing airport is 1200m from the old landfill. The new airport will be 1200m from the new landfill and sewage lagoon. A USDA Site Assessment Summary of Wildlife Hazards was conducted to determine what can be done to mitigate wildlife hazards. The survey identified various wildlife hazards in addition to the landfill. The recommended mitigation will require coordination between the Department and various state and federal agencies. Mitigation options will be evaluated prior to Phase II of this project.

The USDA made several recommendations to minimize wildlife attractants at the landfill. Proper management of the landfill will require cooperation between the Department, Village Safe Water and the community. Educational programs will be initiated by the Department to make residents aware of proper wildlife management practices around the airport.

ENCROACHMENTS INTO F.A.R. PART 77 SURFACES
There are no obstructions penetrating the Part 77 Imaginary Surfaces. The existing fuel farm in the south runway protection zone is schedule to be removed prior to commissioning the airport.

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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
Subject to ALP Approval letter date September 28, 1998
By: Barbara Johnson
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 9/18/98

| BY | DATE | REVISIONS |
|---|---|---|

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION DESIGN AND CONSTRUCTION—AVIATION
APPROVED: STEVE RYAN, P.E. DESIGN SECTION CHIEF
APPROVED: Vic Winters VIC WINTERS, P.E. PROJECT MANAGER

DATE 1/98
DESIGN CAB
DRAWN DES
CHECKED FDR

TUNTUTULIAK AIRPORT
AIRPORT LAYOUT PLAN
NARRATIVE REPORT

SHEET 10 OF 10