APPENDIX B

ELIMINATED ALTERNATIVES

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Relocation of Ekwok Airport was evaluated by a review of U.S. Geological Survey (USGS) topographical maps, aerial photography, and through a community meeting. No other nearby location proved viable, and the community overwhelmingly supported keeping the runway in its current location with some adjustment to allow airport components to avoid development.

Initially four build alternatives were developed (Alternatives A, A-1, B, and C). Alternatives A and A-1 were eliminated from further evaluation. The process used for evaluation and selection of the engineering preferred alternative included engineering reviews, environmental scoping, and input from the community of Ekwok. The process is fully documented in the final scoping report (PDC, March 2003).

Additionally, ADOT&PF completed an initial evaluation to determine if a road connection to New Stuyahok was a practical alternative. This evaluation determined that this alternative was not a viable alternative for evaluation under this project, as its cost was higher and its potential for environmental impacts greater. See the attached letter.

Alternative A

Key Reason for Elimination: Would require substantial property acquisition, including a large portion of a Native allotment.

Alternative A (Figure B-1) proposed shifting the entire runway approximately 350 feet northeast and extending the existing alignment north to obtain 3,300 feet of runway length with the apron relocated to the other side of the runway. The shift was needed so that the RPZ would not encompass the residential properties at the southwest end.

Advantages:

- Reuse of existing area and nearly the entire embankment.
- Smallest footprint of the alternatives that support GPS approaches: 145 acres are shown within airport boundary, including the 79 acres of existing airport property.
- Pilots have described existing orientation as "okay" for winds, although they did mention experiencing crosswinds.
- Estimated to have the lowest cost of the alternatives that support GPS approaches.

Disadvantages:

- Property acquisitions for the boundary shown will affect about 21 separate properties, including a large portion of a Native allotment.
- Apron is on opposite side of runway from most of the community; encourages unsafe crossing of the runway.
- Drainage from the southwest end of the runway may require ditching back to the existing ditch system to the old borrow pit. No clear drainage pattern flowing toward the Nushagak River was apparent in the topographic mapping. A culvert crossing under the runway would be required for drainage.

- Rerouting the access roads to the existing landfill and to the properties on the north end of the airport would be necessary to provide the required airspace clearance.
- Possible airspace penetrations by power poles.

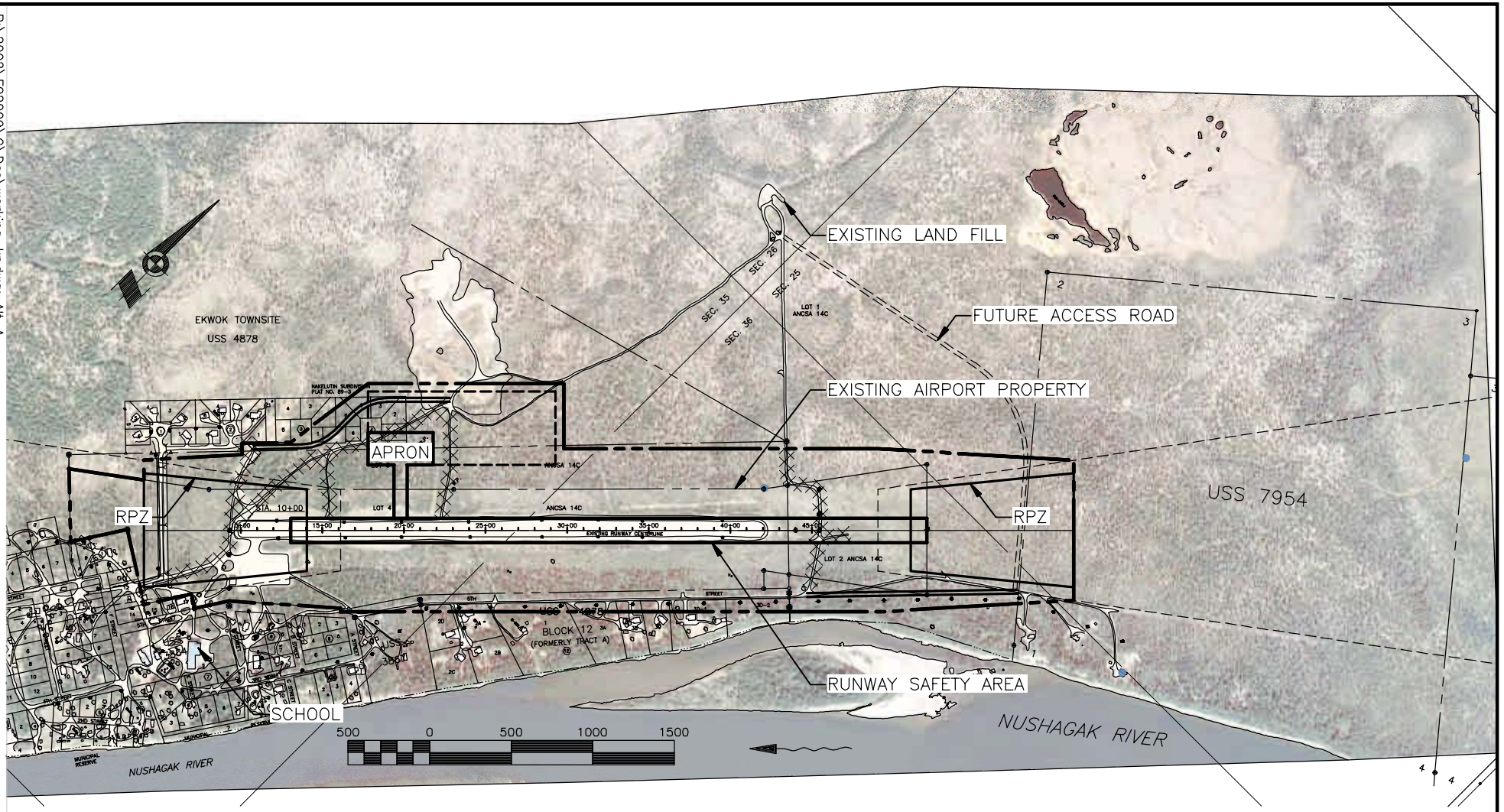
Alternative A-1

Key Reason for Elimination: Would not support a Non-Precision Instrument (NPI) approach; thus, did not meet the project purpose and need.

Alternative A-1's runway configuration (Figure B-2) was identical to Alternative A. The layout of the taxiway and apron was established based on a visual, utility runway (250-foot apron offset), which allowed placement of the apron on the side of the runway where most of the community development resides.

Advantages:
- Reuse of existing area and nearly the entire embankment.
- Smallest footprint of the alternatives: 105 acres are shown within the airport boundary of this alternative, including the 79 acres of existing airport property.
- The lower clearing requirements of the visual, utility runway reduce tree-clearing width by about 125 feet on each side of the runway.
- Pilots have described existing orientation as "okay" for winds, although they did mention experiencing crosswinds.
- Estimated to have the lowest cost of all the build alternatives.

Disadvantages:
- Does not support Non-Precision Instrument GPS approaches, which will limit pilots' ability to land at Ekwok. As such this alternative does not fully meet the needs of the community.
- Not designed for planes larger than 12,500 pounds gross weight.
- The smaller airport property requirements will limit the opportunity to expand the airport in the future.
- Limited room for apron expansion. With adjacent lease lots, apron expansion will require an additional taxiway.
- Drainage from the southwest end of the runway may require ditching back to the existing ditch system to the old borrow pit. No clear drainage pattern flowing toward the Nushagak River was apparent in the mapping. A culvert crossing under the runway would be required for drainage.



LEGEND:

- REMOVE OR BLOCK
- AIRPORT BOUNDARY (THIS ALTERNATIVE)
- EXISTING PROPERTY LINES
- FUTURE DEVELOPMENT OF APRON, LEASE LOTS AND AVIATION SUPPORT AREA.

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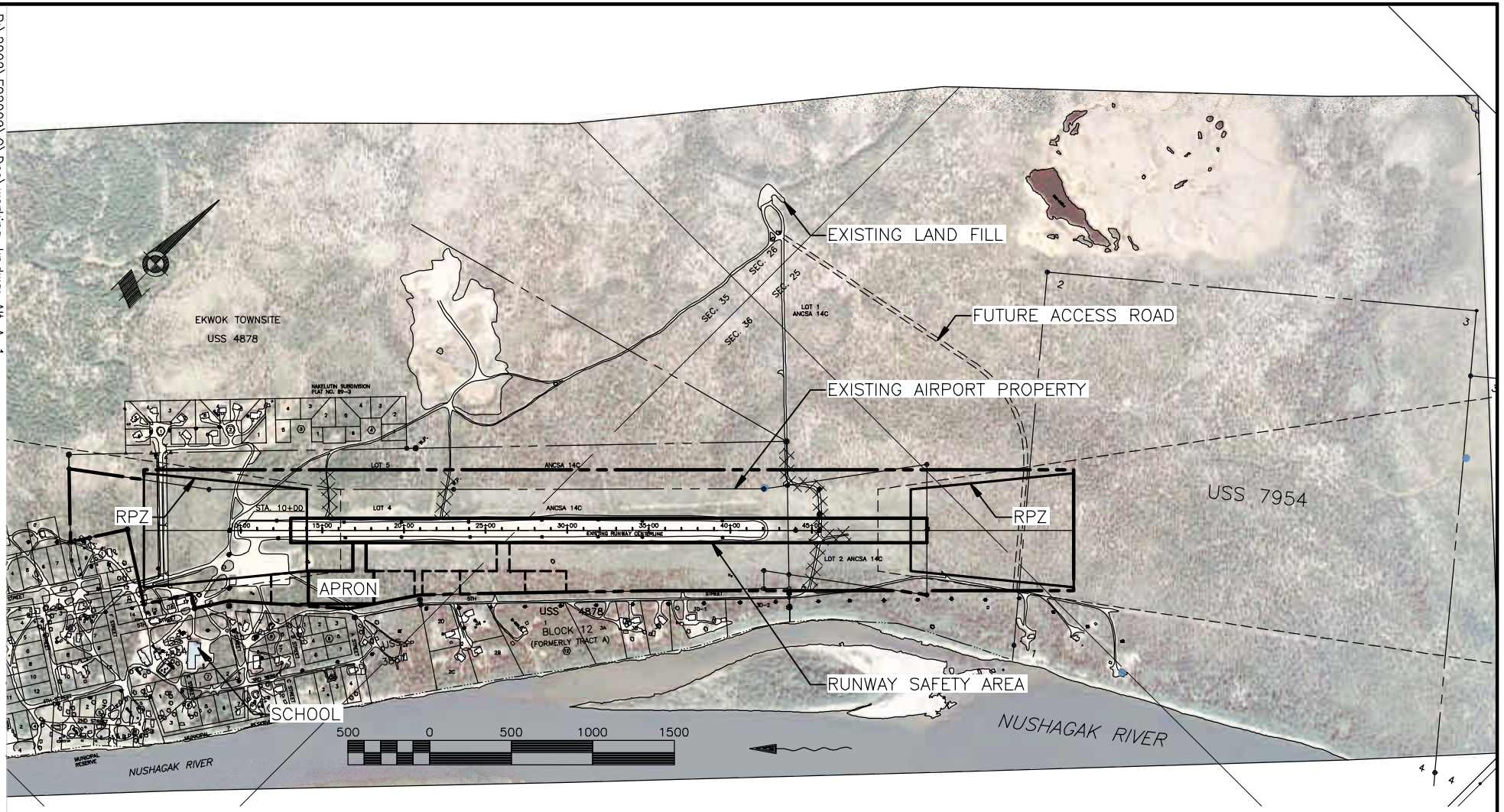
B-1 FIGURE

PROJ. No. F02009

JULY 2002

DESIGN: KAR
DRAWN: KAR/RJP
CHECK:

EKWOK AIRPORT
ALTERNATIVE A
EXISTING ORIENTATION



LEGEND:

- REMOVE OR BLOCK
- AIRPORT BOUNDARY (THIS ALTERNATIVE)
- EXISTING PROPERTY LINES
- FUTURE DEVELOPMENT OF APRON, LEASE LOTS AND AVIATION SUPPORT AREA.

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FIGURE B-2

PROJ. No. F02009

JULY 2002

DESIGN: KAR
DRAWN: KAR/RJP
CHECK:

EKWOK AIRPORT
ALTERNATIVE A-1
EXISTING ORIENTATION, UTILITY RUNWAY

State of Alaska
Dept. of Transportation & Public Facilities
Central Region – Highway & Aviation Design
4111 Aviation Avenue
Anchorage, AK 99502
(907)269-0590
Highway FAX: 243-4409/Aviation FAX: 269-0620

LETTER OF TRANSMITTAL

TO:	Royce Conlon	**DATE:**	March 5, 2002
AGENCY:	PDC, Inc. Consulting Engineers 1028 Aurora Drive Fairbanks, AK 99709-5529	**RE:**	Ekwok Airport Rehabilitation Project

ATTACHED IS: A cost estimate for a road connecting Ekwok with New Stuyahok.

NO. OF
COPIES: 1

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REMARKS: As you recall, we need this estimate for our analysis of airport alternatives at Ekwok, and DOT/PF agreed to provide it. New Stuyahok is located only nine miles from Ekwok, and DOT/PF is in the process of building a new airport there. Our PD&E section was unable to prepare the estimate as they had promised, so I prepared it myself after consulting with several in-house experts. I welcome any comments, but believe the estimate to be accurate enough for its intended use, that is to demonstrate that the road is not cost effective. The bottom line is that the road will cost considerably more than our airport project, would be more expensive and labor intense to maintain, and would involve crossing wetands and several anadramous fish streams.

SIGNED: Donald W. Baxter

Donald W. Baxter, P.E.
Project Manager
269-0610

RECEIVED
MAR – 7 2002

COST ESTIMATE FOR ROAD BETWEEN EKWOK AND NEW STUYAHOK

March 4, 2002

Prepared by Don Baxter

Costs are based upon USGS Map Dillingham B-4, Scale 1:63,360 (1" = 1 Mile) and discussion with John Wahl who is familiar with the area. Length of road is 9 miles as the crow flies, based upon scaling from USGS map. Add an additional 20 percent to the road length to allow for curves and bends in the final roadway alignment. This results in a design length of 9 X 1.2 = 10.8 miles, say 11 miles. There is one larger stream crossing and a maximum four smaller stream crossings required for the project, depending upon the routing of the road. Paul Janke recommended that one 100' long bridge and four large culverts (estimated to cost $50,000 each) be considered in the estimate. He indicated that the crossings probably involve anadramous fish streams.

In talking with John Wahl who is familiar with the area, and designing a new airport at New Stuyahok, the road between the villages would traverse wetlands. John indicated that the terrain between the two villages is similar to that for a new road that will connect the new airport with the village of New Stuyahok. He indicated that he is figuring five feet of embankment fill for the road, 4:1 side slopes, and six-inches of crushed gravel. He recommended the same design for this project. He estimates the cost of fill to be $7.00 per yard, and the cost of gravel surfacing to be $35.00 per yard. Assuming the same configuration for the road between the two villages as the road to the new airport at New Stuyahok, with a 24' wide embankment at the top, results in the following quantity calculations:

Roadway length: 11 mi X 5,280 ft/mi = 58,080 feet.

Cost of Roadway Embankment:

Roadway embankment cross sectional area = 5 X 24 + (5 X 4 X 5) = 120 sq ft + 100 sq ft = 220 sq ft.

(220 sq ft X 58,080 ft)/(27 cu ft/cu yd) = 473,245 cy yd.

473,245 cy yd X $7.00 = $3,312,715

Cost of Crushed Gravel Surfacing Material

(58,080 ft X 0.5 ft X 24 ft) / (27 cu ft/cu yd) = 25,814 cu yd

25,814 cu yd X $35.00 = $903,490

Cost of Bridge & Culverts

According to a list of "Estimating Factors" for structures provided by Miriam Tanaka, the cost of a new bridge in an outlying area is about $165.00 per sq ft. Assuming a 22' wide by 100' long bridge the cost would be:

22' X 100' X $165.00 = $363,000

Cost of Four Culvert Crossings = 4 X $50,000 = $200,000

Total Cost of Bridge and Culvert Crossings = $363,000 + $200,000 = $563,000

Mobilization & Demobilization

Lump Sum at $600,000

Miscellaneous Incidental Construction Costs & Contingency

Additional Embankment Fill for Low Areas, Wetlands Mitigation, Pollution Control, Safety Plan, Etc.

Figure 20% of Sum of Other Construction Costs

$3,312,715 + $903,490 + $563,000 + $600,000 = $5,379,205, Say $5,380,000

$5,380,000 X 0.20 = $1,076,000

Total Construction Contract Cost

$3,312,715 + $903,490 + $563,000 + $600,000 + $1,076,000 = $6,455,205,

Say $6,460,000

Cost of ROW

Roadway Embankment is 24' + 20' + 20' = 64', John Whal Recommends 100'

100' X 58,080' / 43,560 sq ft/acre = 134 acres

Cost of ROW is typically $1,500/Acre (this cost was previously recommended by Sam Bacino as a good typical cost figure rural Alaskan real estate). Use $2000 per acre to be safe.

134 Acres X $2,000/Acre = $268,000

Figure this same amount of money for the acquisition costs for the ROW.

Therefore the total ROW cost is $268,000 + $268,000 = $536,000

Other Costs

Design Cost, Figure 15% of Construction Cost

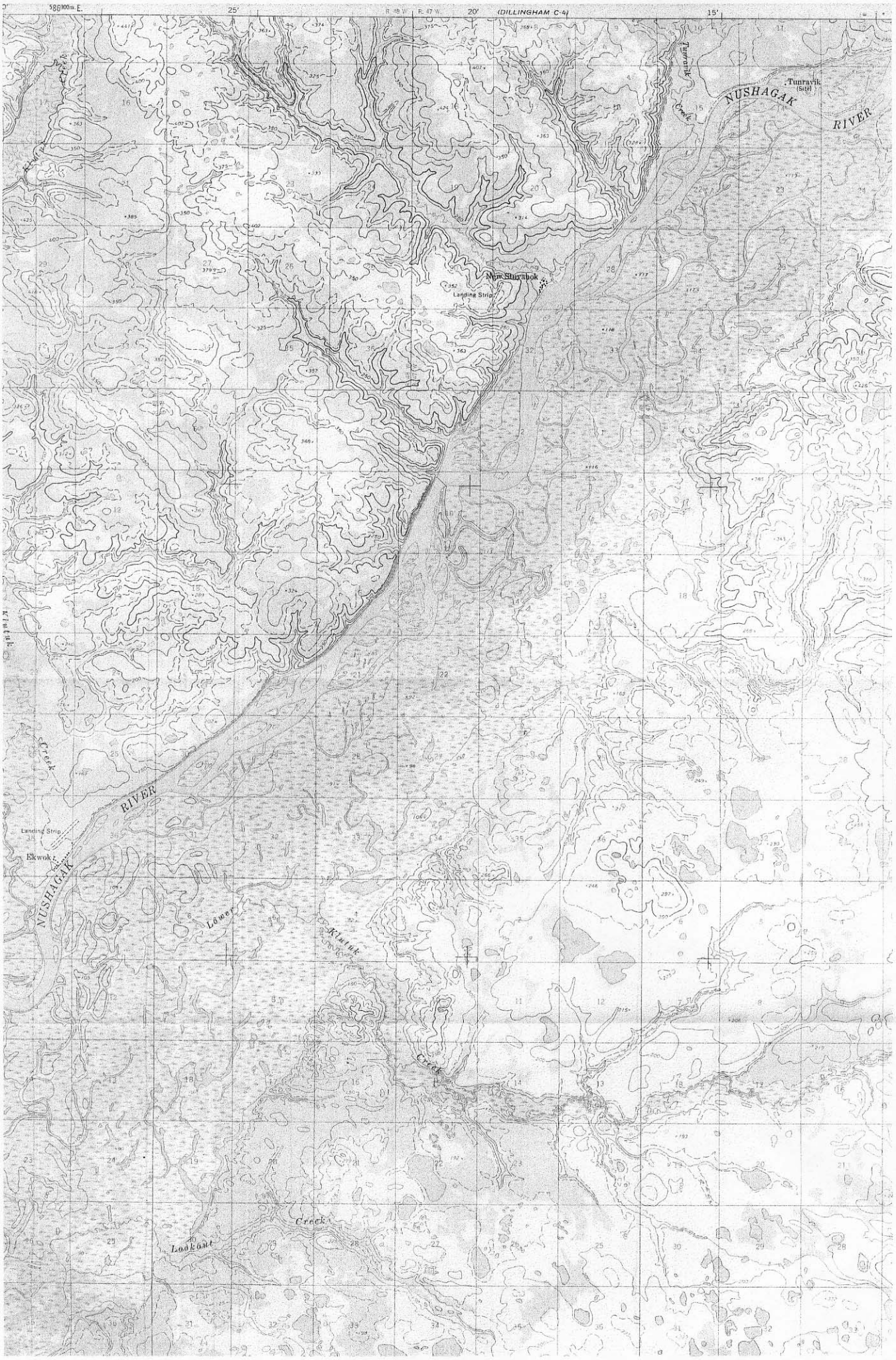
$6,460,000 X 0.15 = $969,000

Construction Engineering & Admin., Figure 15% of Construction Cost

$6,460,000 X 0.15 = $969,000

Total Project Cost Summary

Design Cost	$ 969,000
ROW Cost	536,000
Construction Contract Cost	6,460,000
Construction Engr & Admin Cost	969,000
Total Project Cost	$ 8,934,000


586000m E.
25'
R. 48 W.
R. 47 W.
20'
(DILLINGHAM C-4)
15'
Tunravik Creek
Tunravik (Site)
NUSHAGAK RIVER
New Stuyahok
Landing Strip
Creek
RIVER
Landing Strip
Ekwok
NUSHAGAK
Lower
Klutuk
Creek
Lookout
Creek