APPENDIX F

WETLANDS

State of Alaska
Department of Transportation
& Public Facilities
Statewide Design &
Engineering Services

Wetland Avoidance and Minimization Checklist

Project Name: Ekwok Airport Rehabilitation
Project Number: 55377

I. Project Scope: Provide a brief description of and reason for the project.

Improvements will include a new 3,300' x 75' runway with a 3,900 x 150' safety area, a 200'x300' apron, and connecting taxiway. Other airport features to be construction include

- Medium intensity runway and taxiway lighting
- New culvert through the under the runway
- Pads for airport navigation systems, such as segmented circle and AWOS.

Material is anticipated to come from an inland source north of the Airport.

II. Avoidance Measures:

1. Can the proposed project or project components be located in a non-wetland area? ☒ Yes ☐ No
If not, explain in detail why not? (Refer to preliminary jurisdictional wetland determination.)

Preferred Alternative B avoids all wetlands involvement.

1.a. If yes, does this non-wetland area provide unique habitat to the area or contain other protected resources (e.g., cultural resource, federally listed or candidate species, bald eagles or other raptors)? Consult with the agency with jurisdiction or expertise if appropriate, e.g., Corps, FWS, NMFS, ADF&G. ☐ Yes ☒ No

1.b. Are there other project related impacts to the non-wetland area that are considered substantial (e.g., subsistence use or other socio-economic factors)? Consult with the agency with jurisdiction or expertise if appropriate, e.g., Corps, FWS, NMFS, ADF&G. ☒ Yes ☐ No

Native allotment land was avoided to the extent possible due to potential for substantial impacts.

2. In consideration of forecast changes in aircraft use, future airport projects, expected community growth and maintenance considerations, have facilities been sited to avoid wetland impacts? ☐ Yes ☐ No N/A all wetland areas were avoided Has this been applied to all individual components of the airport (e.g., the runway, taxiways, aprons, lease lots, navigational aids)? ☐ Yes ☐ No N/A all wetland areas were avoided

2.a. Can dimensions of facilities be traded off; i.e., length vs. width of the apron in order to lessen impacts? ☐ Yes ☐ No N/A all wetland areas were avoided

2.b. Can the footprint of specific project components be reduced to avoid wetlands i.e., steeper side slopes on support facilities? ☐ Yes ☐ No N/A all wetland areas were avoided

2.c. Can Facilities be consolidated to avoid impacts? ☐ Yes ☐ No N/A all wetland areas were avoided

2.d. Have existing roads, pads, runways and other facilities been incorporated into the design of the proposed project to avoid wetland impacts? ☐ Yes ☐ No N/A all wetland areas were avoided

3. Have crossings of fish streams been avoided? (Consult the Anadromous Fish Catalog or contact ADF&G for information on fish bearing waters.) ☒ Yes ☐ No

4. If the Regional Environmental Coordinator has determined that the project may adversely affect Essential Fish Habitat (EFH) list the preliminary EFH conversation measures.

5. Are bald eagle nest trees at least 330 feet from the project? ☒ Yes ☐ No If not, consult FWS.

6. Have abandoned pads, roads, runways and other fills associated with the airport project been considered for gravel re-use, rehabilitation, and/or restoration? ☒ Yes ☐ No

Wetlands were avoided; therefore, Section III was not completed.

III. Minimization Measures (If the impacts can't be avoided continue):

1. Can the proposed project or project components be located in a lower value wetland area? ☐ Yes ☐ No If not, explain in detail why not? (Refer to appropriate resource mapping or functional value assessment.)

1.a. If yes, would construction affect other protected resources (e.g., cultural resource, federally listed or candidate species, bald eagles or other raptors)? ☐ Yes ☐ No Consult with the agency with jurisdiction or expertise if appropriate e.g., Corps, FWS, NMFS, ADF&G and SHPO.

1.b. Are there other project related impacts to this lower value wetland considered substantial (e.g., cultural resource, subsistence use or other socio-economic factors)? ☐ Yes ☐ No Consult with the agency with jurisdiction or expertise if appropriate.

2. In consideration of forecast changes in aircraft use, future airport projects, expected community growth and maintenance considerations, have facilities been sited to minimize wetland impacts? ☐ Yes ☐ No Has this been applied to all individual components of the airport (e.g., the runway, taxiways, aprons, lease lots, navigational aids)? ☐ Yes ☐ No

2.a. Can dimensions of facilities be traded off; i.e., length vs. width of the apron in order to lessen impacts? ☐ Yes ☐ No

2.b. Can the footprint of specific project components be a reduced i.e., steeper side slope on support facilities? ☐ Yes ☐ No

2.c. Can facilities be consolidated to minimize impacts? ☐ Yes ☐ No

2.d. Have existing roads, pads, runways and other facilities been incorporated into the design of the proposed project to minimize wetland impacts? ☐ Yes ☐ No

3. Have crossings of fish streams been located to minimize adverse impacts to the extent practicable? (Contact agencies with jurisdiction or special expertise as appropriate.) ☐ Yes ☐ No

3.a. Have adverse affects to fish spawning habitat been minimized? ☐ Yes ☐ No

3.b. Have stream crossings been designed in accordance with the ADOT&PF/ADF&G culvert design and construction memorandum of agreement? ☐ Yes ☐ No

4. If the Regional Environmental Coordinator has determined that the project may adversely affect Essential Fish Habitat (EFH) list the preliminary EFH conservation measures.

5. Have abandoned pads, roads, runways and other fills associated with the airport project been considered for gravel re-use, rehabilitation, and/or restoration? ☐ Yes ☐ No

IV. Material Site Considerations:
Contractor supplied and commercial material sites are not subject to an avoidance and minimization review.

1. Has a material site been designated for the project? ☐ Yes ☒ No If yes continue, if no go to V.
No material site has been designated, but an existing inland material site will be made available for contractor use, or the contractor may excavate from the sides of the runway area to provide the needed subbase material.

1.a. If a new material site is required, have you considered locating and accessing material an adequate distance from the airport so that it can be reclaimed as wetlands or other wildlife habitat? ☐ Yes ☐ No

1.b. Would a new site, located a safe distance from the airport, require a new road, resulting in additional wetland resource or community use impacts? ☐ Yes ☐ No Are there means to avoid a new access road? ☐ Yes ☐ No Would development of this new site result in more or less wetland impacts than a new or existing material site located closer to the airport? ☐ Yes ☐ No

1.c. If a new or existing material site has been selected that would be located a safe distance from the airport and requires minimal additional road building, has a mine reclamation plan been developed? ☐ Yes ☐ No If located an appropriate distance from the airport, can the material site be reclaimed to provide open water habitat such as shallows, islands, and irregular shorelines? (Consult agencies with jurisdiction or special expertise.) ☐ Yes ☐ No

1.d. Has geotechnical and hydrological information been collected and used to maximize gravel exploitation while minimizing wetland impacts (e.g., mining deeper, adjusting material site boundaries, and using portions of the pit for temporary stockpiling of material)?
☐ Yes ☐ No

1.e. Has a long-term material site been considered? ☐ Yes ☐ No If so, can a portion of the site be closed and reclaimed at the end of this project? ☐ Yes ☐ No

V. Additional Material Site Considerations:

1. Will project overburden be stockpiled (preferably in uplands) for use as “top soil” or in reclamation of material sites or previously disturbed areas?
Yes, but the existing pit has been determined to be non-wetlands.

2. How will access roads and other fills associated with the material site be restored upon project completion?
Existing road will remain.

3. Can development of the material site be timed to avoid or minimize affects during spawning, migration and nesting periods? (Consult agencies with jurisdiction or special expertise.)
☐ Yes ☐ No N/A The pit is in uplands with no fishery or eagle nesting concerns.

EKWOK AIRPORT REHABILITATION

ADOT&PF Project No. 55377

Wetlands Delineation Report

September 2002

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Ekwok Airport Rehabilitation
Wetlands Delineation
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EXECUTIVE SUMMARY

The Alaska Department of Transportation and Public Facilities and the Federal Aviation Administration are proposing to make improvements to the existing airport in the City of Ekwok. Construction during airport improvements may require the discharge of dredged material or placement of fill in wetlands, requiring a permit from the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act.

Aerial photography of the Ekwok area was reviewed to identify potential wetlands that may be impacted by the proposed Ekwok Airport Alternatives. A "ground-truthing" wetlands survey was conducted to verify the aerial photograph delineation following U.S. Army Corps of Engineers methods. Two wetlands were delineated in the project area: one large wetland on the northern edge of the airport property (greater than 130 acres) and one small wetland area adjacent to the airport runway (1.4 acres).

Physical functions of flood attenuation, sediment entrapment, and groundwater recharge were the most important functions of the wetlands in the survey area. Wildlife habitat and sociological values were moderately important functions of the wetlands.

1.0 INTRODUCTION

The Alaska Department of Transportation and Public Facilities (ADOT&PF) and the Federal Aviation Administration (FAA) are proposing to improve the existing airport in the City of Ekwok. The ADOT&PF has retained PDC Inc. Consulting Engineers as the project design consultant. Harding ESE is providing the natural resources/biological assessment for the project, including a wetlands delineation.

The goal of the proposed project is to provide safe aircraft access to Ekwok and plan for future needs. There are currently four alternatives being considered, one of which is the no-build alternative.

In general, the proposed project includes the following:

- Lengthening and widening the runway to 75 feet by 3,300 feet, with safety areas 150 feet by 3,900, feet, bringing the runway up to current FAA design standards
- Providing adequate drainage, either by ditching or elevating the runway. New drainage structures would be installed as needed.
- Relocating the apron to meet separation standards
- Installing new Medium Intensity Runway Lights
- Clearing vegetation from the runway and approach zones

Section 404 of the Clean Water Act, United States Code Title 33, Section 1344, authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge

of dredged or fill material into the waters of the United States, including wetlands (Environmental Laboratory, 1987). The discharge of dredged material and placement of fill into wetlands may be necessary while improving the Ekwok Airport, indicating the need to identify jurisdictional wetlands for permitting. The wetlands delineation was based on true color aerial photography from 1996. A "ground-truthing" survey was conducted on August 28, 2002, to verify the delineation of wetlands that lie within the proposed airport boundaries. This report presents the results of the wetlands survey.

2.0 WETLANDS SURVEY AREA

The survey area is in the City of Ekwok. Ekwok, Alaska, is in the Bristol Bay area, approximately 43 miles northeast of Dillingham and 285 miles southwest of Anchorage (Figure 1). Ekwok is a Yup'ik Eskimo community adjacent to the Nushagak River. It lies at approximately 59°20'59.0" north latitude and 157°28'31.0" west longitude (Sections 35 and 36, Township 9 South, Range 49 West, Seward Meridian).

Ekwok is on the border of the Kuskokwim Highlands (north of Ekwok) and the Western Alaska Coastal Plains and Deltas (south of Ekwok) (Rieger et al., 1979). Hills and low mountains characterize the Kuskokwim Highlands. The Western Alaska Coastal Plains and Deltas are characterized by a highly irregular surface with very little relief.

Based on the Alaska vegetation classification system in Viereck et al. (1992), the location of the City of Ekwok is described as mixed woodland forest with dominant trees consisting of black spruce (*Picea mariana*), paper birch (*Betula papyrifera*), and quaking aspen (*Populus tremuloides*). Typical understory vegetation includes low shrubs such as bog blueberry (*Vaccinium uliginosum*) and dwarf arctic birch (*Betula nana*) and herbaceous plants such as crowberry (*Empetrum nigrum*) and lowbush cranberry (*Vaccinium vitis-idaea*).

Spring flooding from the Nushagak River is common in Ekwok. Ekwok was most recently flooded in May 2002. Generally, soils around Ekwok have been described as typic cryofluvents, typic cryaquents, sphagnic borofibrists, dystric cryandepts, histic pergelic cryanquepts, and pergelic cryofibrists (Rieger et al., 1979).

The climate of the area is a transition zone. The primary influence is maritime, although a continental climate also affects the weather. Average summer temperatures range from 30 to

66 degrees Fahrenheit (°F) and winter temperatures average from 4°F to 30°F. The growing season (mean minimum temperature above 28°F) is from May through September, based on temperature data for Dillingham, the closet city with recorded data. Precipitation averages 20 to 35 inches each year. Strong winds are common during the winter months, and fog is prevalent during the summer. The Nushagak River is ice free from June through mid-November (Western Region Climate Center, 2001).

3.0 AIRPORT ALTERNATIVES

The following preliminary alternatives have been developed to meet the project's purpose and need. Alternative C is the ADOT&PF's preferred alternative.

3.1 Alternative A – Extend Existing Alignment

This alternative is along the same alignment as the existing airport, but the runway would be shifted northeast 350 feet and lengthened to 3,300 feet (Figure 2). The apron area would be moved to the northwest side of the runway to provide the required separation distance. Lease lots would be provided behind the new apron. New access to the landfill and realignment of the existing road to the property on the north end of the airport would be required. Property would need to be acquired for clearing trees from the airspace.

3.2 Alternative A-1 – Extend Existing Alignment – Visual, Utility Runway

This alternative was developed to reduce the right-of-way requirements and would exclusively serve small aircraft (less than 12,500 pounds) with a visual approach. The apron and adjacent lease lot areas would be relocated beside the existing runway apron (Figure 3). Property would be acquired for the runway extension and tree clearing from the airspace. This alternative is the least costly, but does not provide for large aircraft or instrument approaches.

3.3 Alternative B – Move Northeast and Rotate 6 Degrees Counterclockwise

Alternative B would shift the runway alignment northeast approximately 350 feet and 6 degrees counterclockwise from the existing alignment (Figure 4). The runway would be lengthened to 3,300 feet. The apron and adjacent lease lots would be located on the east side of the runway on the existing airport property. Property would need to be acquired for the new runway and for

clearing trees from the airspace. The access road to the landfill would have to be relocated to meet the airspace clearance requirements.

3.4 Alternative C – Move Northeast and Rotate as Required

Alternative C would shift the runway approximately 2,000 feet and 12 degrees counterclockwise to avoid platted residential lots (Figure 5). The final orientation will be adjusted as more wind information is acquired. The runway would be lengthened to 3,300 feet. The apron would be on the east side of the runway, with lease lots behind the apron. Access to the landfill from the south end of the existing runway would remain as it is. Property would need to be acquired for the new runway, taxiway, and for clearing trees from the airspace.

3.5 Alternative D – No-Build

Alternative D is the no-build alternative (Figure 6). The airport would be left as it currently exists.

4.0 METHODS

4.1 Aerial Photograph Delineation

Aerial photography of the Ekwok area (1:800 true color, 1996) and the Exploratory Soil Survey of Alaska for the project area (Rieger et al., 1979) were reviewed to identify potential wetlands that may be impacted by the proposed Ekwok Airport alternatives. No National Wetland Inventory maps or regional soil surveys are available for the project area.

From the aerial photograph review, Harding ESE delineated one large wetland (W-1) on the northern edge of the airport property. Two other areas were identified as possible wetlands (U-2 and U-3), but the identification needed to be confirmed by a site visit.

4.2 Ground-Truthing Survey

A "ground-truthing" wetland survey was conducted on August 27 and 28, 2002, to verify the aerial photograph delineation.

Harding ESE personnel trained in U.S. Army Corps of Engineers (USACE) routine wetland survey procedures (Environmental Laboratory, 1987) used an all-terrain vehicle to conduct a "ground-truthing" survey of the project area. At each possible wetland location identified by the aerial photograph delineation, a preliminary visual survey was performed and, if applicable, a representative site was selected for close evaluation of vegetation, hydrology, and soils using USACE methods (Environmental Laboratory, 1987).

The dominant plant species in tree, shrub, and herbaceous layers were recorded at each representative site. Plant taxonomy followed Viereck and Little (1972) for trees and shrubs and Hultén (1968) for other vascular species. Each recorded species was assigned a wetland

indicator status code based on Reed (1988) as obligate wetland plants (OBL), facultative wetland plants (FACW), facultative plants equally likely to occur in wetlands or nonwetlands (FAC), facultative upland plants (FACU), and obligate upland plants (UPL). The USACE considers a site to have wetland vegetation when greater than 50 percent of the plants are OBL, FACW, or FAC species (Environmental Laboratory, 1987).

At each sample site where plant communities were dominated by wetland plants, the site was further examined for wetland hydrology and soils by using indicators listed in the USACE wetlands manual (Environmental Laboratory, 1987). Primary wetland hydrology indicators include visual observation of inundation or soil saturation, watermarks, drift lines, sediment deposits, and drainage patterns.

A pit was dug at each sample site dominated by wetland plants to examine a soil profile. Soil matrix and mottle colors within each exposed horizon were compared to a Munsell soil color chart (Munsell Color, 1998), soil texture was identified, and soil features were recorded on data sheets. Wetland soil indicators include organic soils (histisols and histic epipedons), sulfidic materials, aquic or peraquic moisture regimes, reducing soil conditions, gleyed or low chroma soil colors, soils appearing on a hydric soils list for the area, and iron and manganese concretions (Environmental Laboratory, 1987). In this survey, soils could not be compared to the hydric soil list because there is no detailed soil survey of the area**.**

Finally, each community was given a wetland determination (wetland or nonwetland). A jurisdictional wetland must have positive wetland indicators for each of the three parameters (vegetation, hydrology, and soil).

Sample point locations were marked by using a Garmin 12 Global Positioning System (GPS) or indicated on a field map. The wetland boundaries were delineated by aerial photography review.

5.0 WETLAND DELINEATION/SURVEY RESULTS

A total of five sites were sampled in the project area (W-1, W-2, U-1, U-2, and G-1). Figures 2 through 6 show the sample sites and the delineated wetland boundaries in relation to the four proposed alternatives and the no-build alternative.

Two of the sample points were determined to be situated in wetlands (W-1 and W-2). W-1 is a large wetland (greater than 30 acres) on the northern edge of the airport property. W-2 is a small wetland (approximately 1.4 acres) adjacent to the airstrip that was not clearly evident on the aerial photography because of a line created by airport tree-clearing activities, but was identified during the ground-truthing survey. Based on the Cowardin et al. (1979) wetland classification system, W-1 is a palustrine, semipermanently flooded, moss-dominated, persistent emergent marsh transitioning into a broad-leaved deciduous shrub marsh. W-2 is a palustrine, saturated, broad-leaved deciduous shrub bog. The dominant vegetation at sample point W-1 included Scheuchzer's cottongrass (*Eriophorum Scheuchzeri*), dwarf arctic birch, and bog cranberry (*Oxycoccos microcarpus*). The dominant vegetation at sample point W-2 included black spruce, dwarf arctic birch, diamondleaf willow (*Salix planifolia*), bog blueberry, Labrador-tea (*Ledum palustre*), and crowberry (Tables 1 and 2). Wetland delineation data sheets completed during the survey are included in Appendix 1. Appendix 2 contains survey photographs.

Hydrology at W-1 ranged from inundated (term flooded used in Cowardin et al., 1979) to saturated (Table 1). No hydrology was observed at W-2 during this site visit, but it is likely that the wetland was saturated earlier in the growing season. Soil profiles of W-1 and W-2 were composed of varying degrees of decomposing organic matter in the upper 15 to 16 inches (Table 1).

Two upland sites (U-1 and U-2) were examined for vegetation, hydrology, and soils (Table 1). Sample point U-1 was located near the upland boundary of wetland W-1 and was examined as a comparison and to aid in identifying the wetland boundary. Sample point U-2 was located in one of the possible wetland sites identified during the aerial photograph delineation (see Section 4.1). This area stood out on the aerial photography because it had previously been logged. The vegetation that was growing back was primarily young quaking aspen trees. The other possible wetland area identified during the aerial photograph review (U-3) was another previously logged area similar to U-2. U-3 was not examined for vegetation, hydrology, and soils. The dominant vegetation at sample point U-1 included paper birch, black spruce, quaking aspen, bog blueberry, and crowberry. The dominant vegetation at sample point U-2 included black spruce, quaking aspen, paper birch, diamondleaf willow, bog blueberry, Labrador-tea, and crowberry (Tables 1 and 2).

No hydrologic indicators were observed at U-1 and U-2. Soil profiles of U-1 and U-2 were very similar, with a thin organic layer above friable silt loam soil (Table 1).

During the survey, wetland vegetation was observed growing in portions of a man-made gravel pit. A representative area was chosen to further examine the vegetation, hydrology, and soils (G-1). Sample point G-1 had hydrophytic plants and wetland hydrology but lacked hydric soils (Table 1). The wet conditions at this site likely developed after the materials were excavated and the ground water table was exposed. This site is an atypical (disturbed) site and would not be considered a jurisdictional wetland by the USACE because it does not have positive wetland indicators for each of the three parameters (vegetation, hydrology, and soil).

6.0 WETLAND FUNCTIONS AND VALUES

Wetland functions involve the performance or execution of changes within the wetland ecosystem, including biological, physical, and chemical transformations in the diversity of forms and substances within the wetland (Reimold, 1994). Biological functions include, but are not limited to, providing wildlife and fish habitat for feeding, reproduction, resting, and growth. Physical functions include, but are not limited to, flood attenuation, groundwater recharge and discharge, shoreline anchoring and dissipation of erosive forces, erosion control, and sediment entrapment. Chemical functions include, but are not limited to, nutrient cycling, food chain support at an elemental level, and toxics decontamination.

Wetland values are sociological, cultural, and economic uses of wetlands that are often difficult to quantify (Reimold, 1994). Wetland values include, but are not limited to, passive uses such as aesthetics (such as photography, preservation of open space), education (such as research, nature study), and recreation (such as canoeing, birdwatching, sightseeing). Commercial or consumptive values include, but are not limited to, timber harvest, furbearer harvest, aquaculture, and hunting.

The two wetlands (W-1 and W-2) in the survey area were qualitatively evaluated for biological, physical, and chemical functions and sociological/cultural and economic values (Table 3). The qualitative approach was based on field observations during the wetland survey and followed guidances outlined and discussed in Adamus and Stockwell (1983), Adamus et al. (1987), and Reimold (1994). Factors in the evaluation included wetland size, location relative to the Nushagak River and Klutuk Creek, water depth and flow, and vegetation types. Each wetland was given a rating from 1 to 5 for each function and value (Table 3). A rating of 1 indicates that

the wetland provided minimal contribution to that function or value; a rating of 5 indicates a high or critical contribution.

6.1 Functions of Wetlands in Survey Area

Biological Functions

The biological functions of the wetlands sampled in the project area were rated as minimal to moderate (Table 3). No critical habitat areas or sanctuaries are found in the project vicinity (Dolezal, 2002). Passerine birds were observed occasionally throughout the survey area. No mammals were observed; however, moose scat was observed throughout the survey area. The Nushagak River is an important migration and spawning river for king, sockeye, and coho salmon and Arctic char. Klutuk Creek is an important spawning stream for Arctic char and coho, sockeye, and king salmon.

Biological functions observed for wetland W-1 included providing nesting, rearing, and/or feeding habitat for birds and mammals and food chain support (Adamus and Stockwell, 1983; Reimold, 1994). The wildlife habitat of W-1 would be restricted to snow-free periods because most birds are migratory and the wetland plants are low growing and would be covered by snow (therefore providing no winter browse). However, small mammal populations (voles, shrews, lemmings) may thrive in these habitats under sufficient snow cover. Food chain support, which has a biological and chemical function in wetland systems, refers to the movement of nutrients (particularly carbon, phosphates, and nitrates) through the wetland into the Nushagak River and Klutuk Creek, where the nutrients may be used to support the aquatic system.

Because of the location of wetland W-2 in relation to the airstrip, biological functions, such as providing nesting, rearing, and/or feeding habitat for birds and mammals, would be minimal if

any. W-2 also would provide minimal food chain support because of the small size of the wetland and its location between the airstrip and community housing.

Physical Functions

The physical functions of the wetlands sampled in the project area were rated as minimal to critical (Table 3).

Physical functions observed for wetland W-1 included flood attenuation, sediment entrapment, and groundwater recharge (Adamus and Stockwell, 1983; Reimold, 1994). Wetlands that provide flood attenuation hold rain or snowmelt water and slowly release the water into the surrounding area. Wetlands that trap sediments retain inorganic particulate matter and serve to "clean" the water before it moves into the groundwater or downstream. Wetlands that hold water and filter water into the groundwater provide groundwater recharge. Wetland W-1 functions to maintain the quality of water in the Nushagak River and Klutuk Creek, and the associated fish habitat, through floodwater attenuation and sediment entrapment.

Wetland W-2 contributes to groundwater recharge and flood attenuation for the surrounding uplands.

Chemical Functions

The chemical functions of the wetlands sampled in the project area were rated as minimal to moderate (Table 3).

Chemical functions of wetland W-1 include nutrient cycling and food chain support (Adamus and Stockwell, 1983; Reimold, 1994). Nutrient cycling involves the retention and dissipation of nitrogen and phosphorus within the substrate or vegetation.

Wetland W-2 contributes to some nutrient cycling.

6.2 Values of Wetlands in Survey Area

Sociological and/or cultural values identified for wetlands in the survey area include passive recreational activities. Wetland W-1 provides berry picking for bog blueberries and other species and scenic views of the surrounding terrain. Wetland W-2 also produces berries for picking; however, it would not be considered a prime area because of the proximity to the airstrip.

Economic values of wetlands in the project area would be limited but may possibly include the value of products made from berries.

7.0 CONCLUSIONS

Overall, the potential project impacts to wetlands would be minimal. No direct fill of the wetlands in the project area will be required by any of the proposed alternatives.

The large wetland (W-1) north of the airstrip is not likely to be affected by any of the proposed alternatives. The airport boundary of Alternative C overlaps the southern edge of this wetland, and any tree clearing within the boundary would need to be accomplished in a way that would avoid impacts to the wetland. It is not likely that the USACE would require a Section 404 permit if avoidance measures are included in the project design.

The small wetland (W-2) adjacent to the airstrip will be equally affected by all proposed alternatives during construction and clearing of trees within the property boundaries. None of the proposed alternatives would require direct fill of this wetland. The USACE may require a Department of the Army permit under Section 404 of the Clean Water Act for the potential impacts from construction and regular tree clearing activities.

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TABLES

TABLE 1. Location, Vegetation, Hydrology, and Soils Observed at Ekwok Airport Sample Sites

Sample Site	Sample Site Center Latitude/Longitude	Field Classification[a]	Dominant Plants Recorded	Hydrology Recorded	Soil Recorded	Comments
W-1	59°16'5.2" N 158°36'52.7" W	PML1/EM1F, PSS1/EM1F	Cottongrass, dwarf arctic birch, bog cranberry	Soil saturated at surface, free water at surface	0–16 in. – organic soil developing from decomposing moss	Large emergent/dwarf shrub wetland complex; sampled at the southern edge where it is closest to the proposed airport property (Alternative C); wetland much larger than area delineated. Open water was observed in portions of the wetland.
U-1	59°21'54.3" N 157°27'48.2" W	UPL	Paper birch, black spruce, quaking aspen, bog blueberry, crowberry	None	0-3.5 in. – organic; 3.5-5.5 in. – low chroma silt loam, 5.5-16 in. – higher chroma silt to sandy loam with mottles from 12.5-15 in.	Upland paper birch-spruce/aspen woodland that covers most of the landscape.
W-2	See Figures 2-6 for sample location	PSS1B	Black spruce, dwarf arctic birch, diamondleaf willow, bog blueberry, Labrador-tea, crowberry	None	0-15 in. – organic soil developing from decomposing moss; 15-18 in. – silt loam with mottles	Small dwarf shrub wetland adjacent to airport runway. No hydrology was recorded during the August 2002 site visit, but the area is likely to be saturated earlier during the growing season.
U-2	59°21'35.4" N 157°28'10.5" W	UPL	Black spruce, quaking aspen, paper birch, diamondleaf willow, bog blueberry, crowberry, Labrador-tea	None	0-3.5 in. – organic; 3.5-5.5 in. – low chroma silt loam, 5.5-15 in. – higher chroma silt loam with mottles	Young (previously logged) upland aspen-spruce/paper birch woodland. This area shows up as an opening on the aerial photo.
G-1	See Figures 2-6 for sample location	NA - disturbed	Cottongrass, water sedge	Water 0-1 in. above ground surface, soil saturated at surface, free water 8 in. deep in pit	0-8 in. – silt loam mixed with gravel; >8 in. – large rocks.	Gravel pit – last known use in 1980s. May also be used periodically for local road maintenance. No clear signs of drainage to/from the gravel pit was evident. The wet conditions likely developed after the materials were excavated, exposing the groundwater table.

ft foot
in. inch
NA Not Applicable

a. Field Classification based on Cowardin et al. (1979) Classification. No National Wetland Inventory maps for the Ekwok area are available.

PML1/EM1F Semipermanently flooded, moss dominated, persistent emergent bog
PSS1/EM1F Semipermanently flooded, broad-leaved deciduous shrub marsh with persistent emergents
PSS1B Saturated, broad-leaved deciduous shrub bog
UPL Upland

TABLE 2. Common and Scientific Names and Wetland Indicator Categories for Plants Recorded

Common Name	Scientific Name	Indicator[a]
Wetland Plants		
Dwarf arctic birch	*Betula nana*	FAC
Water sedge	*Carex aquatilis*	OBL
Crowberry	*Empetrum nigrum*	FAC
Scheuchzer's cottongrass	*Eriophorum Scheuchzeri*	OBL
Labrador-tea	*Ledum palustre decumbens*	FACW
Bog cranberry	*Oxycoccos microcarpus*	OBL
Black spruce	*Picea mariana*	FACW
Diamondleaf willow	*Salix planifolia*	FACW
Bog blueberry	*Vaccinium uliginosum*	FAC
Low bush cranberry	*Vaccinium vitis-idaea*	FAC
Upland Plants		
Paper birch	*Betula papyrifera*	FACU
Quaking aspen	*Populus tremuloides*	FACU

a. Wetland Indicator Categories (Reed, 1988)

FAC	Facultative; species equally likely to occur in wetlands and nonwetlands
FACU	Facultative upland; species usually occurs in nonwetlands
FACW	Facultative wet; species usually occurs in wetlands
OBL	Obligate wetland species

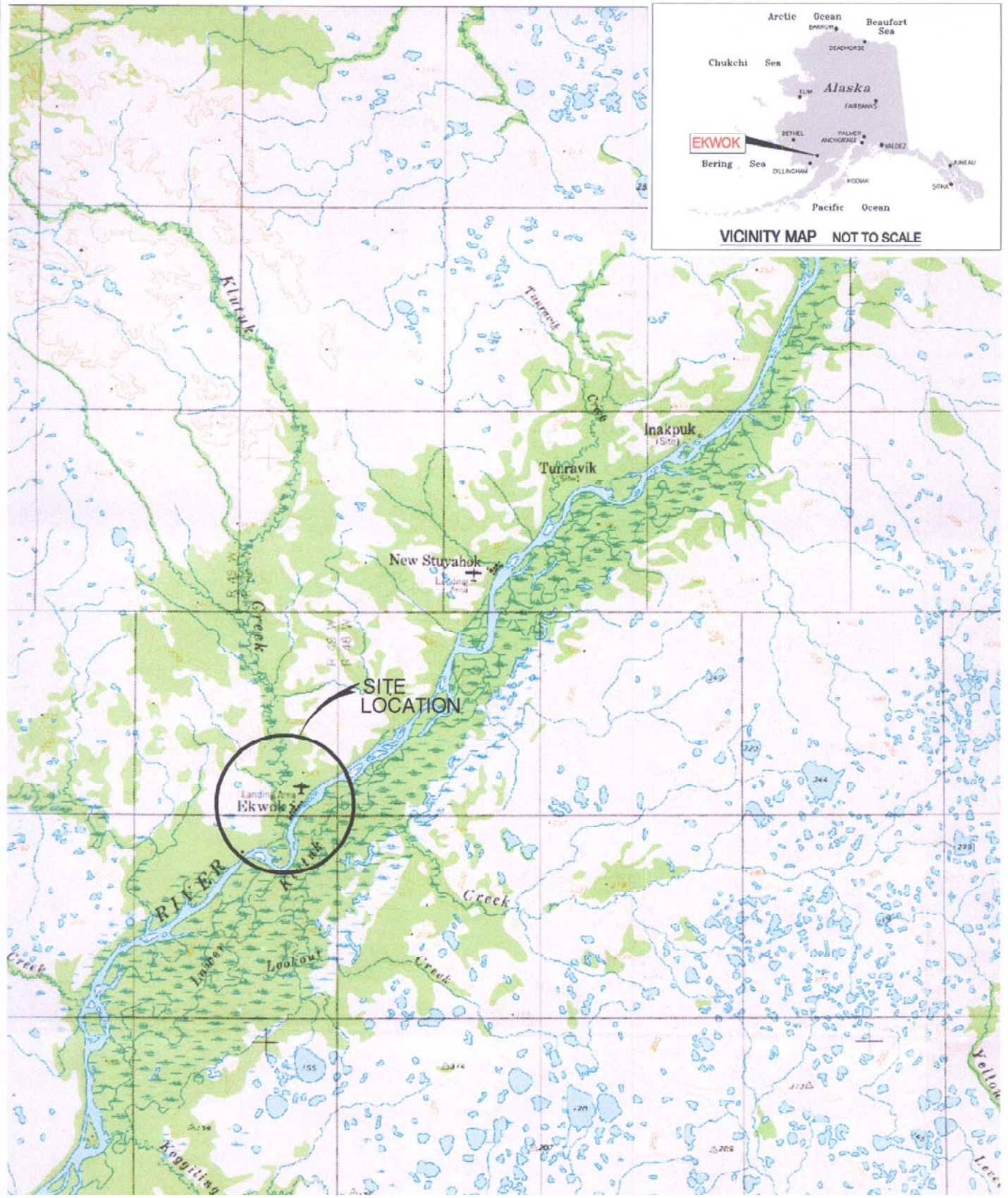
TABLE 3. Functions and Values of the Ekwok Airport Wetlands

Wetland Number	Functions			Values	
	Biological	**Physical**	**Chemical**	**Sociological/Cultural**	**Economic**
W-1	3[a] Nesting/rearing Feeding	5 Flood attenuation Sediment entrapment Shoreline erosion control	2 Nutrient cycling	3 Berry picking Scenic viewing Other recreation	1
W-2	1 Nesting/rearing Feeding	1 Flood attenuation Sediment entrapment	1 Nutrient cycling	1 Berry picking	1

a. The following list defines the qualitative ratings for functions and values:

Rating	Functions: Biological	Functions: Physical/Chemical	Values: Sociological/Cultural	Values: Economic
1	Minimal use by small number/diversity of biological species	Minor physical or chemical functions easily replaced by other wetlands in or near the project area	Minimal sociological and/or cultural values	Minimal or no known economic value
2	Minimal to moderate use by small to moderate number/diversity of biological species			
3	Moderate use by moderate to high number/diversity of biological species. Important for one or more species			
4	High use by high number/diversity of species. Important to critical for one or more species			
5	Critical for a species, limited distribution of wetland type increases function	Critical physical or chemical functions not easily replaced by other wetlands in or near the project area	Critical single sociological or cultural value, or moderate to high value for more than one sociological and/or cultural issue	High economic value within wetland, or wetland functions produce high economic value outside the wetland (e.g., salmon)

FIGURES



1:250 000
U.S.G.S.
DILLINGHAM AK, QUADRANGLE

NORTH

0 5
KILOMETERS

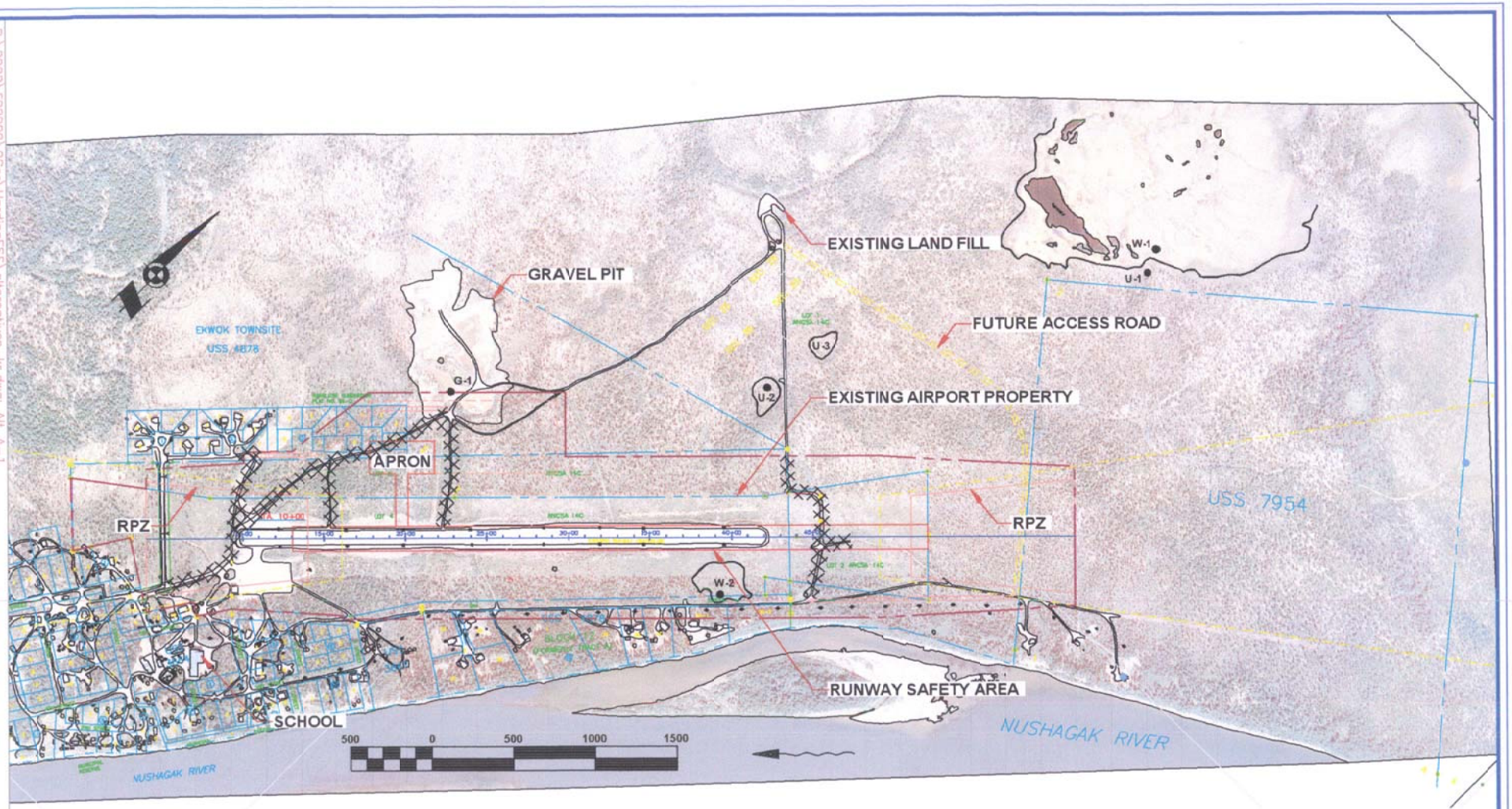
0 5
MILES

Ekwok Airport Rehabilitation
ADOT&PF Project No. 55377

SITE LOCATION AND VICINITY MAP

FIGURE 1

File: 55343d2.dwg
Path: P:\CAD\55343_Ekwok\
Date_Time: 10/15/02 15:09:31



LEGEND:

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

FIGURE 2

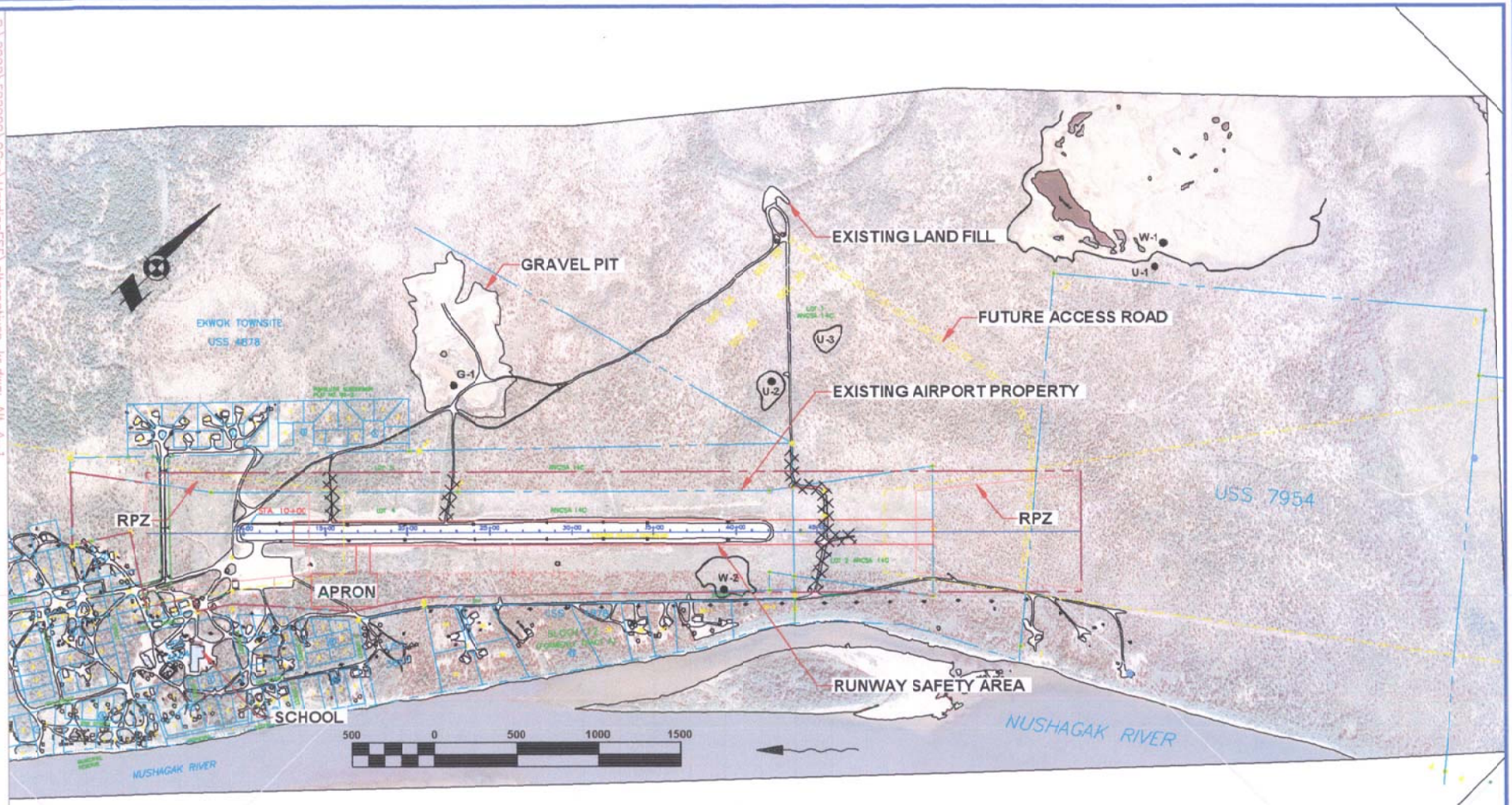
PROJ. No. 02009.00

JULY 2002

DESIGN: KAR
DRAWN: KAR/RJP
CHECK:

EKWOK AIRPORT
ALTERNATIVE A
EXTEND EXISTING ALIGNMENT

P:\2002\F02009\00cor\HardingESE\alternatives-kr.dwg, Alt_A-1



LEGEND:

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

FIGURE 3

PROJ. No. F02009.02

JULY 2002

DESIGN: KAR

DRAWN: KAR/RJP

CHECK:

EKWOK AIRPORT
ALTERNATIVE A-1
EXTEND EXISTING ALIGNMENT - VISUAL, UTILITY RUNWAY

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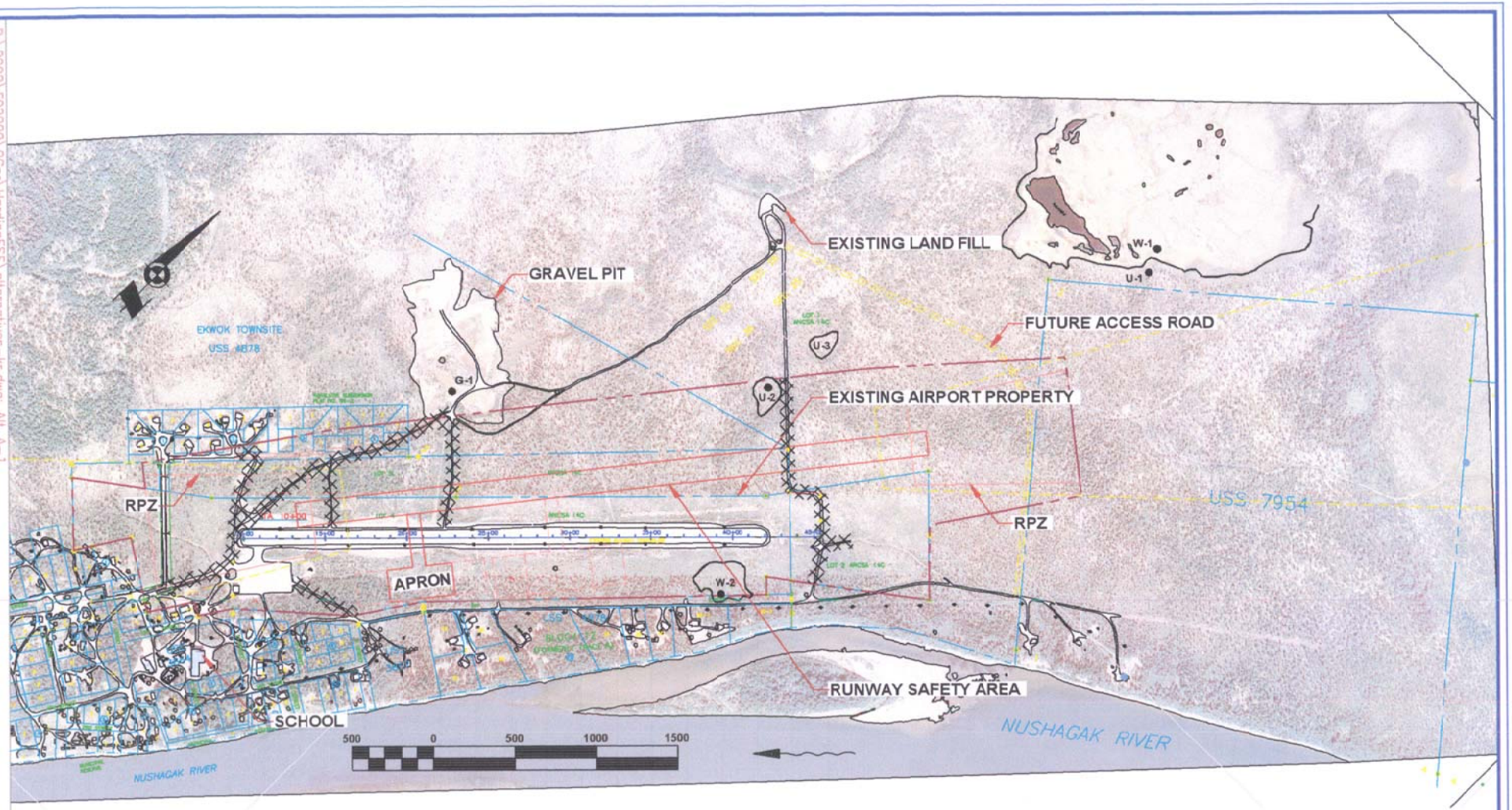


LEGEND:

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

FIGURE 4

PROJ. No: F02009.02

JULY 2002

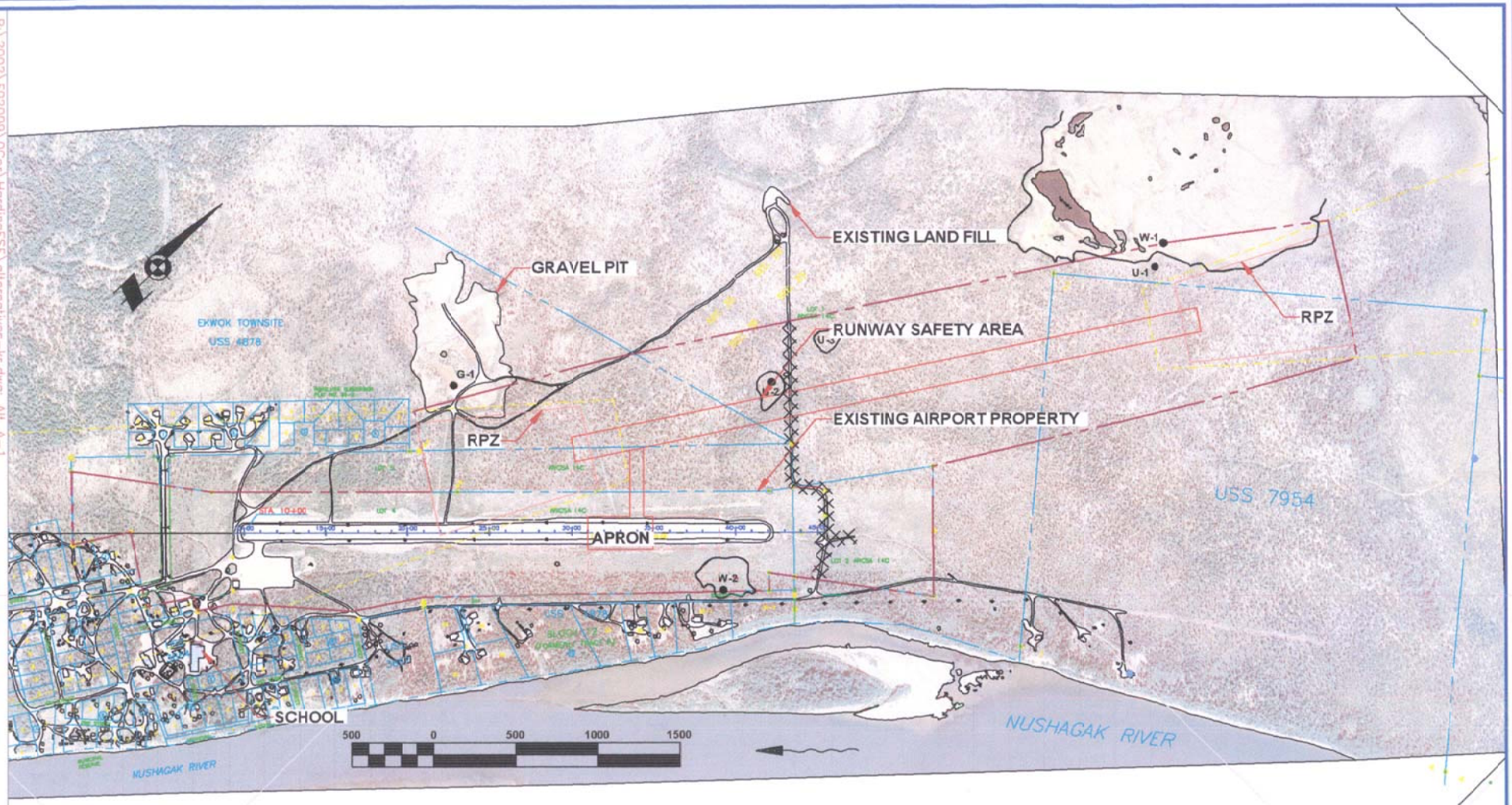
DESIGN: KAR

DRAWN: KAR/RJP

CHECK:

EKWOK AIRPORT
ALTERNATIVE B
MOVE NORTH AND ROTATE ~ 6 DEGREES CCW

P:\2002\F02009\00cor\HardingESE\alternatives-kr.dwg; Alt_A-1



LEGEND:

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

FIGURE 5

PROJ. No. F02009.01

JULY 2002

DESIGN: KAR
DRAWN: KAR/RJP
CHECK:

EKWOK AIRPORT
ALTERNATIVE C
MOVE NORTH AND ROTATE AS REQUIRED

P:\2002\F02009\Dcor\HardingESE\alternatives-kr.dwg: Alt_A-1

P:\2002\F02009\Occr\HardingESE\alternatives-kr.dwg: Alt_A-1

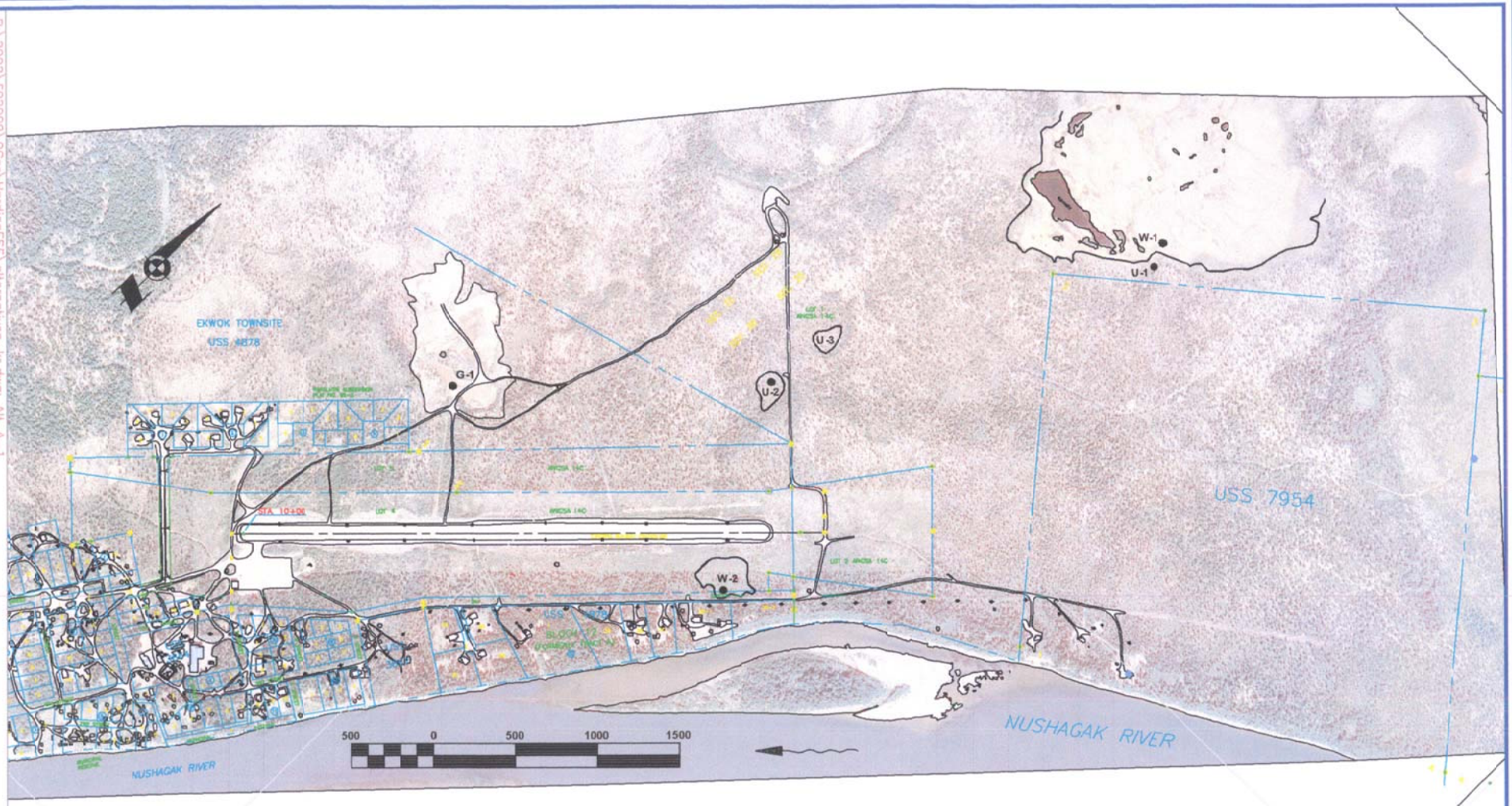


FIGURE 9	PROJ. No. F02009	JULY 2002	DESIGN: KAR DRAWN: KAR/RJP CHECK:

EKWOK AIRPORT
ALTERNATIVE D
NO-BUILD

APPENDIX A

WETLAND DELINEATION DATA SHEETS

DOT

Site/Owner: Erwood Airport Improvements Date: 8/27/02
Investigators: Sasha Forland / Wade Ellis Plot: W-1
Location: large wetland Community: cottongrass
Normal: Y Atypical (disturbed): N Problem Area: N

VEGETATION

Dominant Plant Species	Stratum	Rating
1. Eriophrum Scheuchzeri	H	OBL
2. Betula nana	H	FAC
3. Oxycoccus microcarpus	H	OBL
4.		
5. 100% moss mat		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 3/3 = 100% %

Remarks: cottongrass community surrounded by dwarf shrub community.

HYDROLOGY

X Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photos
- ___ Other

___ No Recorded Data

Field Observations:

Depth of Surface Water none (in.)

Depth to Free Water cut surface (in.)

Depth to Saturated Soil at surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated (Upper 12 in.)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns

Secondary Indicators:
- ___ Oxidized Root Channels (Upper 12 in.)
- ___ Water Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: Open water can be seen in the aerial photography & was observed during the site visit (in portions of the wetland)

SOILS

Map Unit Name (Series and Phase): _____ Drainage Class: _____

Field Observations

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color	Mottle Color	Mottle Size, Abundance, Contrast	Texture, etc.
1-9"	___	decomposing organic			
9-16"	___	10YR 2/2	___	___	mucky peat
16"	=	bottom of pit			

Hydric Soil Indicators:
- X Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	(Circle)	
Hydrophytic Vegetation Present?	(Yes)	No
Wetland Hydrology Present?	(Yes)	No
Hydric Soils Present?	(Yes)	No

Sample point within a wetland? (Circle) (Yes) No

Sasha Forland

Remarks:

Site/Owner/location: EKWOK Airport Improvement Date: 8/27/02
Investigators: Sasha Forland/Wade Ellis DOT Plot: W-2
Location: open woodland adjacent to airstrip Community: hummocky
Normal: Y Atypical (disturbed): N Problem Area: N

VEGETATION

Dominant Plant Species	% Cover	Stratum	Rating	Relative % Cover
1. Picea mariana	5-10%	T	FACW	100
2. Betula nana	80	S	FAC	80
3. Salix planifolia	5/as	S	FACW	20
4. Vaccinium uliginosum	40	H	FACW	33
5. ledum palustre decumbens	30	H	FAC	30
6. betula nana	30	H	FAC	30
7. Empetrum nigrum	90/100	H	FAC	33
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 7/7 = 100% %

Remarks: Some of the area is disturbed due to airport brushing.

HYDROLOGY

- X Recorded Data (Describe in Remarks):
  - ___ Stream, Lake, or Tide Gauge
  - X Aerial Photos
  - ___ Other
- ___ No Recorded Data

Field Observations:

- Depth of Surface Water none (in.)
- Depth to Free Water none (in.)
- Depth to Saturated Soil none (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated (Upper 12 in.)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns

Secondary Indicators:
- ___ Oxidized Root Channels (Upper 12 in.)
- ___ Water Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): _____ Drainage Class: _____

Field Observations

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color	Mottle Color	Mottle Size, Abundance, Contrast	Texture, etc.
0-15"		—	—	organic	—
15-18"		10YR 4/3	7.5YR 2.5/1 many course, prominent 7.5YR 4/6 few fine, distinct		silt loam
18" =		bottom of pit			

Hydric Soil Indicators:
- X Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed ou Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: 15-18" horizon contains 2 diff. colored mottles

WETLAND DETERMINATION

	(Circle)	
Hydrophytic Vegetation Present?	(Yes)	No
Wetland Hydrology Present?	Yes	(No)
Hydric Soils Present?	(Yes)	No

Sample point within a wetland? (Circle) (Yes) No

Sasha Forland

Remarks: This wetland is a small area that is not very evident on the aerial photo. Differs from the surrounding landscape by the lack of ~~paper~~ birch & aspen tree cover. The spruce trees were also sparse.

DOT –

Site/Owner/location: EKWOK Airport Improvements Date: 8/27/02
Investigators: Sasha Forland / Wade Ellis Plot: U-1
Location: PP birch-Spruce/aspen woodland Community:
Normal: Y Atypical (disturbed): N Problem Area: N

VEGETATION

Dominant Plant Species	% cover	Stratum	Rating	Relative % cover
1. Betula papyrifera	15	T	FACU	60 %
2. Picea mariana	10/25	T	FACW	40 %
3. Betula papyrifera	5	S	FACU	33 %
4. Populus tremuloides	10/15	S	FACU	67 %
5. ~~Vaccinium vitis-idaea~~	15	H	FAC	~~13~~ %
6. Empetrum nigrum	60	H	FAC	50 %
7. Vaccinium uliginosum	30	H	FAC	25%
8. ~~Betula nana~~	15	H	FAC	13%
9.	120			
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 3/6 = 50 % %

Remarks: paperbirch-Spruce/aspen woodland. Vaccinium vitis-idaea and Betula nana were not dominant, and were excluded from evaluation.

HYDROLOGY

☒ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ☒ Aerial Photos
- ___ Other

___ No Recorded Data

Field Observations:

Depth of Surface Water none (in.)

Depth to Free Water none (in.)

Depth to Saturated Soil none (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated (Upper 12 in.)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns

Secondary Indicators:
- ___ Oxidized Root Channels (Upper 12 in.)
- ___ Water Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____
Field Observations
Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes No
Profile Description:

Depth (inches)	Horizon	Matrix Color	Mottle Color	Mottle Size, Abundance, Contrast	Texture, etc.
0-3,5"	___	decompossing		organic	___
3,5-5,5"	___	7.5YR 2.5/1	—	—	silt loam
5,5-12,5"	___	7.5YR 3/3	—	—	silt loam
12,5-15"	___	10YR 4/4	7.5YR 4/6	few, medium, distinct	silt loam
15-16"	___	7.5YR 3/3	—	—	sandy loam
16"	=	bottom of pit			

Hydric Soil Indicators:
- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

		(Circle)
Hydrophytic Vegetation Present?	Yes	(No)
Wetland Hydrology Present?	Yes	(No)
Hydric Soils Present?	Yes	(No)

Sample point within a wetland? (Circle) Yes (No)

Sasha Forland

Remarks:

Vegetation was borderline.

Site/Owner/location: EKWOK airport - DOT Date: 8/28/02
Investigators: Sasha Forland + wade Ellis Plot: U-2
Location: opening on aerial photo (logged area) Community:
Normal: Y Atypical (disturbed): N Problem Area: N

VEGETATION

Dominant Plant Species	% cover	Stratum	Rating	Relative % cover
1. Picea mariana	5	T	FACW	33
2. Populus tremuloides	10/15	T	FACU	67
3. Betula papyrifera	10	S	FACU	67
4. Salix planifolia	5/15	S	FACW	33
5. Vaccinium uliginosum	40	H	FAC	33
6. Empetrum nigrum	50	H	FAC	42
7. Ledum palustre decumbens	30/120	H	FACW	25
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 5/7 = (71) %

Remarks:

HYDROLOGY

- X Recorded Data (Describe in Remarks):
  - ___ Stream, Lake, or Tide Gauge
  - X Aerial Photos
  - ___ Other
- ___ No Recorded Data

Field Observations:

- Depth of Surface Water: none (in.)
- Depth to Free Water: none (in.)
- Depth to Saturated Soil: none (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ___ Inundated
- ___ Saturated (Upper 12 in.)
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns

Secondary Indicators:
- ___ Oxidized Root Channels (Upper 12 in.)
- ___ Water Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): _____ Drainage Class: _____
Field Observations
Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes No
Profile Description:

Depth (inches)	Horizon	Matrix Color	Mottle Color	Mottle Size, Abundance, Contrast	Texture, etc.
0-3.5"		organic	—	—	—
3.5-4.5"		7.5YR 2.5/2	—	—	silt loam
4.5-5.5"		7.5YR 2.5/1	—	—	silt loam
5.5-15"		2.5Y 4/4 7.5YR 4/6	common, medium, distinct		silt loam
15" =		bottom of pit			

Hydric Soil Indicators:
- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	(Circle)	
Hydrophytic Vegetation Present?	(Yes) No	Sample point within a wetland? (Circle) Yes (No)
Wetland Hydrology Present?	Yes (No)	
Hydric Soils Present?	Yes (No)	Sasha Forland

Remarks:
Area shows as opening on aerial photo — previously logged area w/ young aspen & spruce.

Site/Owner/location: DOT - Ekwok Airport Improvements Date: 8/28/02
Investigators: Sasha Forland / Wade Ellis Plot: G-1
Location: Gravel Pit Community: Gravel pit
Normal: N Atypical (disturbed): Y Problem Area: Y

VEGETATION

Dominant Plant Species	Stratum	Rating
1. Eriophorum scheuchzeri	H	OBL
2. Carex aquatilis	H	OBL
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 2/2 = 100% %

Remarks:

HYDROLOGY

X Recorded Data (Describe in Remarks):
___ Stream, Lake, or Tide Gauge
X Aerial Photos
___ Other
___ No Recorded Data

Field Observations:
Depth of Surface Water 0 - 1 (in.)
Depth to Free Water 8" deep in pit (in.)
Depth to Saturated Soil at surface (in.)

Wetland Hydrology Indicators:
Primary Indicators:
X Inundated
X Saturated (Upper 12 in.)
___ Water Marks
___ Drift Lines
___ Sediment Deposits
___ Drainage Patterns
Secondary Indicators:
___ Oxidized Root Channels (Upper 12 in.)
___ Water Stained Leaves
___ Local Soil Survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): _____ Drainage Class: _____
Taxonomy (Subgroup): _____ Field Observations Confirm Mapped Type? Yes No
Profile Description:

Depth (inches)	Horizon	Matrix Color	Mottle Color	Mottle Size, Abundance, Contrast	Texture, etc.
0-8"	___	2.5Y 4/2	—	—	silt loam
8"	=	bottom of pit			

Hydric Soil Indicators:
___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer in Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks: Could only dig ~8" before hitting large rocks. Profile mixed w/ large gravel

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Circle) Yes No
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

Sample point within a wetland? (Circle) Yes (No) *

Sasha Forland

Remarks: Gravel pit - from ~~the original airport or from~~ airport improvements ~ 1980's. No clear drainage to/from gravel pit.

* Upper 8" of soil didn't indicate hydric soils. Possibility that low chroma soils with mottles are present in the lower horizons, however, because there is no clear drainage to/from the gravel pit, the site would be considered an isolated wetland even if it had hydric soils.

APPENDIX B

PHOTOGRAPHS

Sample Point W-1

Sample Point W-1 Soil Profile

Sample Point U-1

Sample Point U-1 Soil Profile

U-2 Soil Profile

Sample Point G-1, in Gravel Pit

DISTRIBUTION

Ekwok Airport Rehabilitation
ADOT&PF Project No. 55377
Wetlands Delineation Report

September 30, 2002

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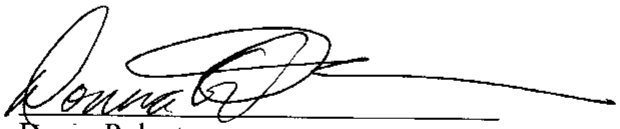

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TE/jm/A0074R