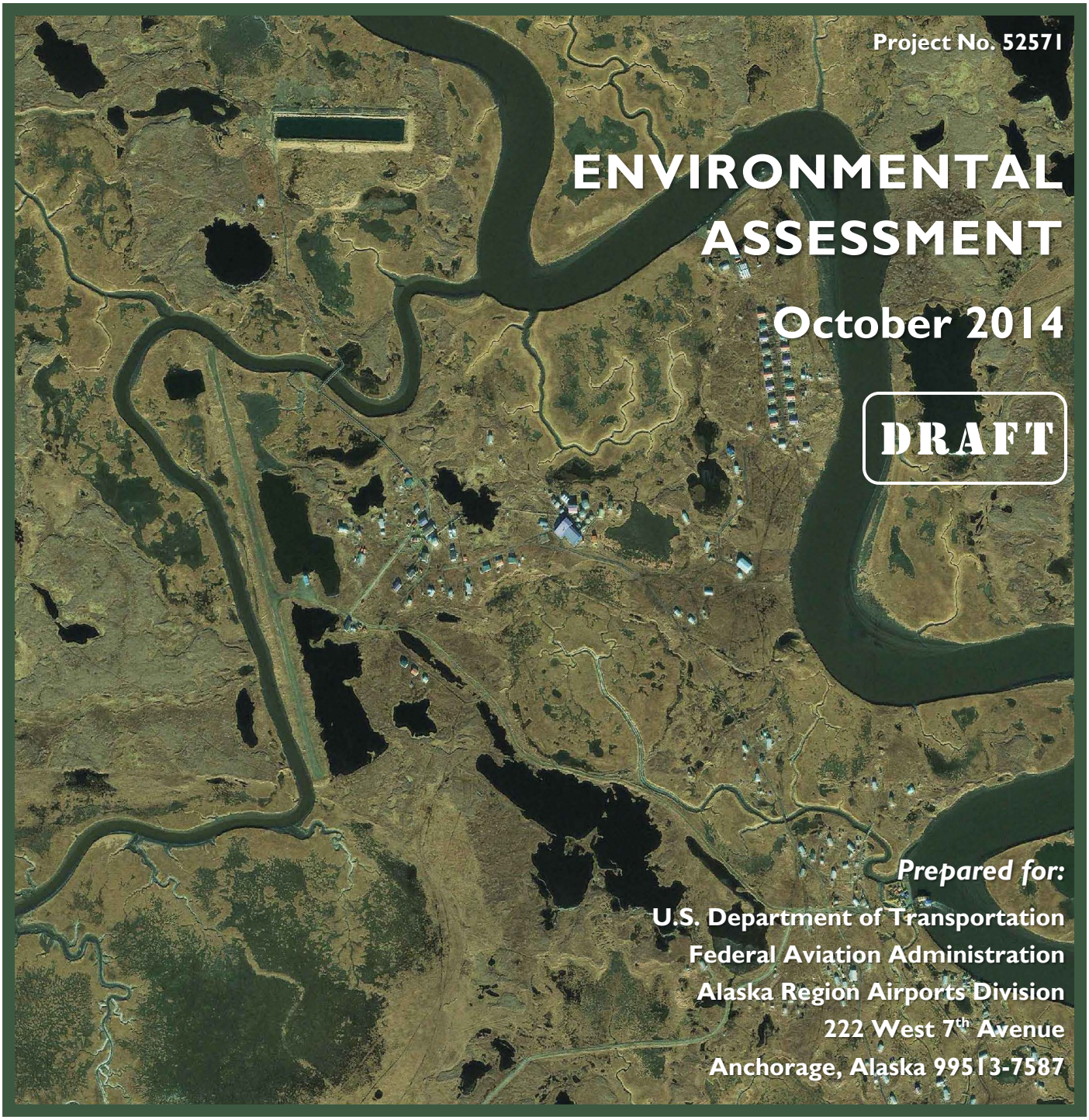
KWIGILLINGOK AIRPORT IMPROVEMENTS



Project No. 52571

ENVIRONMENTAL ASSESSMENT

October 2014

DRAFT

Prepared for:

U.S. Department of Transportation
Federal Aviation Administration
Alaska Region Airports Division
222 West 7th Avenue
Anchorage, Alaska 99513-7587

On Behalf of the Sponsor:

State of Alaska
Department of Transportation
and Public Facilities
Central Region
P.O. Box 196900
Anchorage, Alaska 99519-6900

Kwigillingok Airport Improvements
Draft Environmental Assessment
FINDING OF NO SIGNIFICANT IMPACT

59.874847° North Latitude and 163.167661° West Longitude (USGS Quad Map Kuskokwim Bay D-4),
in Sections 26, 27, 34, and 35, Township 3 South, Range 81 West, Seward Meridian,
and Section 3, Township 4 South, Range 81 West, Seward Meridian

October 2014

Project No. 52571

Prepared for
U.S. Department of Transportation
Federal Aviation Administration
Alaska Region Airports Division
222 West 7th Avenue
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On behalf of the Sponsor
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This environmental assessment becomes a Federal document when evaluated, signed, and dated by the Responsible FAA Official.

_____ _____

Responsible FAA Official Date

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List of Acronyms and Abbreviations

AAC	Alaska Administrative Code
AASP	Alaska Aviation System Plan
AC	[FAA] Advisory Circular
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
AFWFO	Anchorage Fish & Wildlife Field Office
AHRS	Alaska Historic Resources Survey
AIP	Airport Improvement Program
ALP	Airport Layout Plan
APDES	Alaska Pollutant Discharge Elimination System
APE	Area of Potential Effect
ASTM	American Society for Testing and Materials
ATV	All-Terrain Vehicle
bgs	below ground surface
BLM	U.S. Bureau of Land Management
BMPs	Best Management Practices
cfs	cubic feet per second
cy	cubic yards
DCCED	Alaska Department of Commerce, Community and Economic Development
DNR	Alaska Department of Natural Resources
DNR-MLW	DNR Division of Mining, Land, and Water
DOT&PF	Alaska Department of Transportation & Public Facilities
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HAPC	Habitat Area of Particular Concern
HMCP	Hazardous Materials Control Plan
HMM	Hydraulic Mapping and Modeling
ILMA	Interagency Land Management Agreement
M&O	Maintenance and Operations
medevac	medical evacuation
MIRL	Medium Intensity Runway Lighting
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priority List
NWI	National Wetlands Inventory
OHA	Office of History and Archaeology
PAPI	Precision Approach Path Indicators
PSI	Preliminary Site Investigation
REIL	Runway End Identifier Lights
RS	Revised Statute
sf	square foot/square feet
SHPO	State Historic Preservation Officer
SOA	State of Alaska
SREB	Snow Removal Equipment Building
SWPPP	Storm Water Pollution Prevention Plan
T&E	Threatened and Endangered
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
VFR	Visual Flight Rules
WRCC	Western Regional Climate Center
WS	[USDA] Wildlife Services Program
WSO	Bethel Airport (FAA designation)
Y-K	Yukon-Kuskokwim

1 INTRODUCTION AND PROJECT HISTORY

Kwigillingok is located in remote southwestern Alaska, approximately 77 miles southwest of Bethel and one mile from the western shore of Kuskokwim Bay. The town relies on its airport for essential services such as passenger transportation, bypass mail and cargo delivery, and medical evacuations (medevac). There are no roads connecting Kwigillingok to neighboring communities. Improvements to the Kwigillingok Airport were evaluated in an Environmental Assessment (EA) and a Supplemental EA that were completed in 1996 and 2004, respectively. Findings of No Significant Impact (FONSI) were issued on January 22, 1996, and May 11, 2004. Previously approved build alternatives faced land acquisition and funding challenges that delayed the project. Due to the severity of the airport deficiencies and community concerns, the project was re-initiated with community support and is now a high priority in the Department of Transportation and Public Facilities' (DOT&PF's) funding plan.

To secure the property identified in the Airport Layout Plan (ALP), this project includes acquiring the property for a proposed runway extension to 3,300 feet as well as for a future crosswind runway. This project does not include the construction of a crosswind runway; only the land acquisition is considered in this EA. Another environmental process would be completed prior to the construction of the crosswind runway.

2 PURPOSE AND NEED

The Alaska Department of Transportation and Public Facilities (DOT&PF) proposes to make improvements to the airport at Kwigillingok (Figure 1). The purpose of the project is to improve safety at the airport and correct the deficiencies of the existing airport by bringing the airport up to current standards for a Community Class Airport that meets criteria identified in the Yukon-Kuskokwim Delta Transportation Plan (Y-K Plan), the Alaska Statewide Transportation Plan, the Alaska Aviation System Plan (AASP), and Federal Aviation Administration (FAA) design standards. The improvements should meet the near term aviation demands and plan for future demand.

The existing runway at the Kwigillingok Airport is short (1,835 feet), narrow (40 feet), and unlit. Surfacing material is thin to nonexistent. The airport surface suffers from inadequate surfaces rutted by ponding, ruts, and unevenness. Present operational surfaces do not meet the design standards of Advisory Circular 150/5300-13A.The deficiencies of the existing airport are further described in Table 1 and Appendix A.

Table 1 – Facility Deficiencies and Requirements

Airport Component	Existing Facility	Facility Requirements (FAA or State of Alaska [SOA])	Deficiency
Runway Length	1,835 feet	3,300 feet (SOA)	1,465 feet
Runway Width	40 feet	60 feet (FAA)	20 feet
Runway Safety Area Width	100 feet	120 feet (FAA)	20 feet
Runway Safety Area Length	2,900 feet	3,780 feet (FAA+SOA)	880 feet
Taxiway Width	25 feet	35 feet (FAA)	10 feet
Taxiway Safety Area Width	40 feet	79 feet (FAA)	39 feet
Apron Area and Aviation Support Area	18,000 sf*	112,200 sf (FAA+SOA)	94,200 sf**
Lighting	Portable runway lighting available upon request for emergency use only	Medium Intensity Runway Lighting (MIRL) (SOA)	MIRL
Navigational Aids	Unreliable windsock, deteriorated segmented circle	Rotating beacon, wind cone and segmented circle (FAA)	Rotating beacon, wind cone and segmented circle

*sf = square feet

** The AASP lists a facility requirement of 60,000 sf for the apron. An aviation support area is needed to generate revenue and provide space for the Snow Removal Equipment Buildings.

3 PROPOSED ACTION

The proposed action consists of making improvements to the existing airport at Kwigillingok to bring the airport to the current State and FAA standards for a community-class airport. The runway would be designed and constructed to meet Runway Design Code (RDC) B-I-5000 standards. The taxiway would be increased to Taxiway Design Group 2 standards to provide additional maneuvering room for snow removal equipment and occasional use of larger aircraft. The project would include acquisition of approximately 285 acres from Kwik Incorporated, the Native Village of Kwigillingok, and Native allottees for improvements. Construction would include expanding the existing runway to a 3,300-foot-long by 60-foot-wide lighted primary runway with a taxiway and apron. Navigational aids would be installed, including a rotating beacon, wind cone, and segmented circle, and pads for future navigational aids.

The existing Snow Removal Equipment Building (SREB) would be demolished and two new SREBs (one heated, one unheated) would be constructed. An access road between the apron and the main road connecting to the community would be constructed.

Construction of the near-term improvements is planned to occur in stages, with the first stage to begin in 2016 or 2017 depending on funding availability and the timing of the land acquisition. The second stage is anticipated to begin around 2021; not only is this stage dependent upon

funding becoming available, but construction cannot begin until after the embankment placed in Stage I settles and is firm enough to place and compact additional surfacing.

3.1 Identification of Federal Action Requested

The federal actions requested of the FAA by DOT&PF are approval of the ALP, airport improvements, and land acquisition and participation in funding the Kwigillingok Airport Improvements project through the FAA's Airport Improvement Program (AIP).

4 ALTERNATIVES

4.1 Alternatives Dropped from Further Consideration

Previously studied alternatives and additional alternatives were developed, evaluated, and presented in an Engineering Scoping Report. Evaluations included safety, engineering, environmental, and fiscal considerations. All but one of the alternatives was dropped from further consideration. A summary of alternatives studied between 1996 and 2014 is provided in Appendix B.

4.2 Alternative 1: Proposed Action

The proposed action would improve the existing runway to ensure it meets DOT&PF and FAA standards for a community class airport. Approximately 285 acres of land need to be acquired for the runway improvements, future crosswind runway, and access road. This is expected to take approximately two years and must be completed to meet the proposed construction dates. The improved airport would include the following components, as illustrated in Figure 2:

- Expand the existing runway to 3,300 feet long and 60 feet wide. The total runway and safety area dimensions would be 3,780 feet by 120 feet (typical section illustrated on Figure 3).
- Build a new, 35-foot-wide taxiway to a new apron (typical section shown on Figure 4). The total width of the taxiway safety area would be 79 feet (Airplane Design Group II standard); the larger safety area allows for snow removal and occasional operations by larger aircraft.
- Construct a 374-foot by 300-foot new apron and aviation support area (typical section illustrated on Figure 5).
- Build two SREBs on the aviation support area (one heated and one for cold storage).
- Improve runway and taxiway lighting to include Medium Intensity Runway and Taxiway Lighting (MIRL), build a pad for the Automated Airport Weather Station (AWOS) site, two pads for the Precision Approach Path Indicator (PAPI) lights, two pads for the Runway End Identifier Lights (REIL), and a segmented circle.
- Install wind cones and a rotating beacon to aid navigation.
- Build a 24-foot-wide access road between the apron and the main road connecting to the community.
- Install an overhead power line to power the new SREB.
- Relocate the portion of the Kinak-Kipnuk trail, a RS2477 right of way that currently runs through the proposed runway extension.

Due to the short-term safety needs, geotechnical considerations, and funding constraints, construction for the project is anticipated to be staged. Construction is expected to take place over the course of five years. Stage I begins with acquiring land for the airport improvements and includes placing silt embankment materials and raising the grade of the existing runway. Proposed work for Stage I would include:

- Acquiring property for the airport improvements and the proposed crosswind runway.
- Barging in equipment and surface course material as no substitute is locally available.
- Improving the existing barge access trail as needed in order to provide a haul route for barged materials (Figure 8). The existing road is a 36-foot-wide 17(b) easement trail typically utilized by ATVs.
- Imported material may be staged along the haul route in a proposed staging area to be constructed approximately 300 feet from the existing barge landing.
- Developing one or more local borrow sources for embankment material (Figures 2 and 7) and establish a connecting access road from the runway area to the material sites.
- Placing embankment material for the proposed runway extension, new apron and taxiway, and access roads.
- Realigning a small channel which has been responsible for eroding the embankment parallel to the runway (Figure 6).
- Re-vegetating and reclaiming the work sites.

The new embankments would be allowed to consolidate and settle and the settling rate would inform when Stage II would occur. Stage II would place additional material on the new embankments and complete the proposed airport improvements. The existing runway surfacing would be completed with crushed aggregate surface course material barged into Kwigillingok. The timing of Stage II would be determined by the success of the first stage and the runway settlement and consolidation rates, funding, and updating of the environmental documentation. Stage II would complete the proposed improvements and includes:

- Barging in surface course material, as no suitable source is locally available.
- Improving the existing barge access trail as needed in order to provide a haul route for barged materials (Figure 8). The existing road is a 36-foot-wide 17(b) easement trail typically utilized by ATVs.
- Imported material may be staged along the haul route in a proposed staging area to be constructed approximately 300 feet from the existing barge landing.
- Placing surface course material on the runway extension, taxiway and apron, and airport access road.
- Construction of new SREBs on the new apron.
- Installing runway and taxiway lighting systems and navigational aids.
- Relocating an existing winter trail around the west end of the expanded airport property. This consists of moving the existing trail markers.
- Re-vegetating and reclaiming the work sites.

4.2.1 Permits or Approvals

The following permits and clearances would be necessary to complete the proposed action:

- U.S. Army Corps of Engineers (USACE) Section 404 individual permit for fill in wetlands A (Appendix C)
- Alaska Department of Environmental Conservation (ADEC) 401 Certificate of Reasonable Assurance for water quality
- ADEC Letter of Non-Objection for the proposed airport's change to the natural drainage movement
- Alaska Department of Natural Resources (DNR) Material Site Reclamation Plan approval (obtained by the construction contractor)
- DNR Temporary Water Use Permit for use of water from the Kwigillingok River in ice road construction and embankment material compaction
- Two Alaska Department of Fish & Game (ADF&G) Fish Habitat permits—one for realignment of the stream and one for withdrawing water from the Kwigillingok River to construct ice roads
- Section 106 consultation with the State Historic Preservation Office (SHPO)
- Section 7 Endangered Species Act (ESA) consultation with the U.S. Fish & Wildlife Service (USFWS)

Copies of the permit applications are provided in Appendix D. Copies of the Agency Scoping efforts are provided in Appendix E. Copies of the Section 106 SHPO consultation and the Endangered Species Act (ESA) Section 7 USFWS consultation are provided in Appendices F and G.

The project would involve more than one acre of ground disturbance from construction activities (as discussed in Section 6) and has a potential for storm water discharge to adjacent wetlands and waters. The construction contractor and DOT&PF would be required to conduct all construction activities in compliance with the ADEC Alaska Pollutant Discharge Elimination System (ADPES) General Permit for Construction Activities in Alaska. A Storm Water Pollution Prevention Plan (SWPPP) would be developed by the contractor, reviewed by DOT&PF, and submitted to ADEC for approval, and then implemented throughout construction.

4.3 Alternative 2: No Action

The No Action alternative would leave the Kwigillingok Airport in its current state without making improvements or addressing airport deficiencies. The No Action alternative would not bring this airport up to current standards. The runway is short, narrow, and unlit, with a soft, bumpy surface. Continued M&O efforts to address the deteriorating surface conditions, including grading the surface or applying additional surface material, would be required to keep the airport functional.

4.3.1 Permits or Approvals

No permits would be needed under the No Action alternative. DOT&PF would, however, be required to acquire right-of-way or land use agreements with the Native Village of Kwigillingok

for the existing airport. The No Action alternative would not meet the purpose and need of the proposed project and would not bring the airport up to current FAA and DOT&PF standards.

4.4 Alternatives Summary

The alternatives (proposed action and no action), are summarized in Table 2 below. A detailed discussion of the potential impacts associated with each alternative can be found in Section 6.

Table 2 – Comparison of Alternatives

	Proposed Action	No Action
Purpose and Need		
Compliance with Current State and FAA Airport Standards	The proposed action would meet purpose and need.	The No Action Alternative would not meet the purpose and need.
Environmental Impacts		
Air Quality	Non-issue	Non-issue
Coastal Resources	Non-issue	Non-issue
Compatible Land Use	The community supports the project.	
	Land would be acquired from Kwik Incorporated, the Native Village of Kwigillingok, Calista Corporation, DNR, and owners of two Native allotments.	For airport use, land would need to be acquired from Kwik Incorporated, the Native Village of Kwigillingok, Calista Corporation, DNR, and owners of two Native allotments.
	Landfill separation distance recommendations from FAA Advisory Circular (AC) guidance would be met. However, the U.S. Department of Agriculture (USDA) Wildlife Services (WS) Wildlife Hazard Evaluation recommendations would not be met. In addition, the separation distance requirement for the water reservoir and sewage lagoon would not be met.	The separation distance requirement for the water reservoir and sewage lagoon would not be met.
Construction Impacts	There would be temporary air quality impacts from equipment exhaust and disturbance of soils during construction. There would also be direct short-term effects to water quality due to ground disturbance and erosion from storm water runoff. Solid waste generation would temporarily increase. Use of heavy machinery would create temporary noise impacts limited to the project area. The proposed action would cause short-term impacts to streams during construction. These short-term impacts would be minimized as described in Section 6.3. All in-water work would occur in the winter and would follow stipulations to be specified in the ADF&G Title 16 Fish Habitat Permit.	No effect
Section 4(f)	Non-issue	Non-issue
Farmlands	Non-issue	Non-issue

	Proposed Action	No Action
Subsistence, Fish, Wildlife, and Plants	The proposed action is not anticipated to adversely affect threatened and endangered species. DOT&PF has determined that there would be no adverse effects to essential fish habitat from the proposed action.	No effect on threatened and endangered species or Essential Fish Habitat
Floodplains	The proposed action is not expected to result in considerable probability of loss of human life or extensive damage to airport facilities in the future because the project will be constructed to be above the floodplain.	No action may result in continued damage to the airport facilities because the infrastructure resides below the predicted floodplain elevation.
Hazardous Materials, Pollution Prevention, and Solid Waste	A temporary increase in solid waste will occur during construction. No long-term increase is anticipated. Short-term increases would not exceed the capacity of the existing community landfill.	No effect
Historical, Architectural, Archaeological, and Cultural Resources	On September 19, 2013, SHPO concurred with DOT&PF's determination that no historic properties would be affected by the proposed action.	No effect
Light Emissions and Visual Impacts	There would be increased lighting from the airport improvements with added runway MIRL and the rotating beacon.	No effect
Natural Resources and Energy Supply	Non-issue	Non-issue
Noise	Non-issue	Non-issue
Secondary (Induced) and Cumulative Impacts	The proposed action is not expected to cause shifts in population movement, growth or public service needs.	No action may result in negative impacts to the community through reduced airport capacity.
Socioeconomic Impacts, Environmental Justice, and Children's Health and Safety Risks	The health and safety of local residents would benefit, as this would improve air travel access for medevacs. Other socio-economic benefits are associated with more reliable air travel, mail, and cargo delivery.	Access to the community would remain unreliable.
Water Quality	The proposed action would not threaten the public drinking water supply. Short term adverse impacts to water quality will result during construction; however, the net impact results in no long-term change to water quality. The new channel will be offset from the runway, thus protecting the runway and safety area.	Erosion by tidal fluctuation and runoff would continue to cause a high sediment load in the water and would continue to impair the water quality.
Wetlands	The proposed action would impact 128 acres of wetlands.	No effect
Wild and Scenic Rivers	Non-issue	Non-issue
Regulatory Requirements		
Section 404 Permit for Wetlands Fill	Required	Not required

	Proposed Action	No Action
401 Certificate of Reasonable Assurance for Water Quality	Required	Not required
ADEC Letter of Non-Objection	Required	Not required
Mining and Reclamation Plan Approval	Required	Not required
ADF&G Fish Habitat Permit	Two Fish Habitat permits are required: one for ice road construction and one for channel realignment.	Not required
Temporary Water Use Permit	Required	Not required
Section 106 Consultation	Required	Not required
APDES SWPPP	Required	Not required
Section 7 ESA Consultation	Required	Not required

5 GENERAL SETTING

5.1 Climate

Kwigillingok is located in a marine climate area one mile from the western shore of Kuskokwim Bay. Based on data from the Western Regional Climate Center (WRCC) data, Bethel Airport (WSO) is the closest weather station. For the period of record from September 3, 1949, through December 31, 2005, Bethel has an annual precipitation average of 16.96 inches, with an average of 53.70 inches of snowfall.

5.2 Topography

The Kwigillingok area is an essentially flat and topographically featureless landscape of wet tundra that is devoid of plants larger than small shrubs and bushes.

5.3 Hydrology, Soils, and Geology

Kwigillingok sits in a vast expanse of wetlands that make up the Yukon-Kuskokwim (Y-K) Delta. The area surrounding Kwigillingok is dotted with countless tundra ponds and lakes, and numerous streams crisscross the region. The Kwigillingok River runs roughly north to south along the eastern edge of the community and is navigable (DNR, 2013).

The region consists of poorly drained interbedded marine and terrestrial deltaic and eolian deposits. Typical soils in the area are surface organics over layered organics, organic silts, and silts.

The area is discontinuous permafrost with thawed ground beneath lakes, sloughs, and river channels. Primarily, higher ground is frozen and lower subsurface thawed with temperatures increasing with depth. During a 2012 geotechnical investigation, groundwater was found to be zero to 20 feet below ground surface (bgs) in the proximity of the existing runway. The Geotechnical Report is available upon request and can be found at DOT&PF's Central Region.

During the 2012 geotechnical investigation for the project, 13 borings were drilled within the two proposed material sites. In general, borings indicate that the subsurface strata consist of:

- **0 to 1-4 feet:** Sandy silt with organics
- **1-4 feet to 14-20 feet:** Silt with sand or sandy silt
- **10 feet:** Evidence of seasonal frost

Thawed soils are prevalent within the proposed material sites, with six to ten feet of seasonally frozen soils. Bedrock and gravel are non-existent. For any construction requiring surface course, material must be imported and barged in on the Kuskokwim Bay to the Kwigillingok River.

6 IMPACT COMPARISON OF TWO ALTERNATIVES

This section analyzes the affected environment and the environmental consequences (per FAA Orders 1050.1E and 5050.4B) for the Proposed Action and the No Action Alternative. The purpose of the analysis is to determine whether each alternative would have a significant impact on any of the resources. The severities of impacts were measured against the significance thresholds as outlined in FAA guidance.

6.1 Categories of Non-Issue

The following impact categories have been determined to be non-issues. Temporary impacts related to construction may occur to those categories determined to be non-issues; these are discussed in Section 6.3. Justification for the determination of non-issue can be found in Appendix H.

- Air Quality
- Coastal Resources
- Department of Transportation Act: Section 4(f)
- Farmlands
- Natural Resources and Energy Supply
- Noise
- Wild and Scenic Rivers

6.2 Compatible Land Use

6.2.1 Affected Environment

Land use patterns in Kwigillingok have been influenced by the abundance of wetlands, the presence of permafrost, tidal fluctuations, wind direction, proximity to the Kwigillingok River, and various other physical, cultural, and historic factors. These factors would continue to

influence land use and development patterns well into the future. Outside the main community, the surrounding lands are used primarily for subsistence hunting and gathering.

There are no permanent roads connecting Kwigillingok to any surrounding communities. Residents travel within the community on boardwalks. An all-terrain vehicle (ATV) trail connects the airport to the community and barge landing area. This trail is a 17(b) trail within a 36-foot-wide easement. Winter trails provide overland access to the nearby villages of Kipnuk and Kongiganak when the ground is frozen.

The Village of Kwigillingok has no zoning laws. The Kinak-Kipnuk trail currently runs along the edge of the drained lake bed. DNR lists the trail as a RS2477 trail. Revised Statute (RS) 2477 granted states the right of way for the construction of highways over public lands not reserved for public uses. "Highways" referred to foot trails, pack trails, wagon roads, and other corridors for transportation. The trail between the barge landing and the airport is a 17(b) trail that serves as a public easement. Kwigillingok residents use the trail on a daily basis. These easements are 17(b) easements because Section 17(b) of the Alaska Native Claims Settlement Act (ANCSA) (Public Law 92-203) requires the U.S. Bureau of Land Management (BLM) to reserve these easements when conveying lands to the Native corporations.

6.2.1.1 Land Ownership

Kwigillingok Airport is located on lands owned by Kwik Incorporated, the Native Village of Kwigillingok, and Native allottees, and on waterways owned by the DNR. Subsurface rights to the land owned by Kwik Incorporated and the Native Village of Kwigillingok are owned by Calista Corporation. DOT&PF is the airport sponsor. The airport is located on land previously leased from the BLM. The land associated with the lease includes a 5,500-foot by 1,000-foot airport boundary (which includes the existing runway). The lease expired in 1999. BLM transferred the property to others. The project will acquire land interest from each grantee (Native allottees, Kwik Inc., the Village of Kwigillingok, and subsequent others).

6.2.1.2 Wildlife Attractants

FAA provides guidance on hazardous wildlife attractants in AC 150/5200-33B, recommending minimum separation distances between airports and attractants such as landfills, water reservoirs, and wastewater treatment facilities. For airports like Kwigillingok, the AC recommends a separation distance of 5,000 feet between the airport operations area and wildlife attractants. If the wildlife attractant could cause hazardous wildlife movement into or across the approach or departure airspace, the AC recommends increasing the separation distance to five miles.

Kwigillingok's existing and new landfills, described in Section 6.6 of this EA, meet the 5,000-foot separation distance. However, the wastewater treatment facility (sewage lagoon) and water reservoir do not meet the separation distance. The lagoon is approximately 3,600 feet from the south end of the runway and the reservoir is approximately 3,300 feet from the north end of the runway.

6.2.2 Environmental Consequences of Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Are there significant noise impacts related to the airport development?*

Factors to Consider from FAA Order 1050.1E

- *Are there any land uses on or near the proposed airport that attract wildlife?*
- *Have zoning laws been reviewed and suggestions made to appropriate agencies regarding compatible land use and development?*
- *Are there land use consequences such as community disruption or business relocation?*

Table 3 – Environmental Consequences: Compatible Land Use

Impact Category	Proposed Action	No Action
Noise	Aside from temporary impacts related to construction, **noise is determined to be a non-issue**. See Appendix H.	No change.
Land Use – Separation Distances	The proposed action would bring the runway closer to the existing and new landfills. Separation from the existing landfill would decrease from 1.5 miles to 1.4 miles. The proposed runway extension would be approximately 5,500 feet from the new landfill. **These distances still meet 5,000-foot separation guidelines.** USDA-WS prepared a Wildlife Hazard Evaluation (WHE) of Kwigillingok Airport (see Appendix I). The WHE report recommended 10,000 feet between the runway and landfill because turbine-powered aircraft (Piper Caravan) operate at Kwigillingok. The WHE also recommended monitoring bird activity at the landfills, water reservoir, and sewage lagoon and offered other recommendations to reduce wildlife hazards. The separation distances between the proposed runway and the water reservoir and sewage lagoon attractants would remain closer than the FAA recommended separation distance. The water reservoir would be approximately 1,800 feet and the lagoon would be about 2,665 feet from the improved runway. **For the proposed action, the FAA guidance recommending a 5,000-foot separation is appropriate.**	The runway would remain in its current location. While meeting the recommended separation distance set by the FAA for the landfills, the sewage lagoon and water reservoir would remain closer than FAA guidance recommends.
Land Use – Material Sites	It is anticipated that the excavation of the material source will result in a land depression after construction and reclamation efforts are complete. Depending on the depth of excavation, ponded water could accumulate in the depressed areas. This may be a bird attractant. However, **the effect is anticipated to be negligible due to the numerous natural waterbodies abundant in the watershed.**	

Impact Category	Proposed Action	No Action
Community Disruption	The airport is located on the west side of the community. The proposed action and expansion would not disrupt current or planned development. The Kinak-Kipnuk RS2477 trail that is currently used for travel would need to be relocated. This relocation will slightly lengthen travel distance but the relocation is minimal. Trail users would use the existing landfill access road to connect to the trail. The condition of the 17(b) trail from the barge landing to the airport would greatly benefit from the improvements needed for construction access. **The village of Kwigillingok has no zoning laws to follow.**	No action would result in no effect and no relocation of the Kinak-Kipnuk trail. No improvements to the 17(b) trail would result in no change to the current state of the trail.

6.2.3 Minimization and Mitigation

As no substantial change in compatible land use is anticipated, long-term mitigation will not be required. For construction-related mitigation, see Section 6.3.

6.3 Construction Impacts

6.3.1 Affected Environment

Due to funding constraints and poor soils requiring extended settlement time, construction would likely take place over the course of five years. Impact to the local community and environment would largely be minimized by conducting a large amount of the construction in the winter.

Long-term construction impacts to the community are positive and include the use of a safe and reliable airport, the use of a greatly improved trail from the Kwigillingok River to the community (proposed haul route), and use of an improved access road from the community to the airport. An additional positive impact from construction to the community is the development of the staging area near the existing barge landing. After construction, the staging area would likely be left in place for community use.

6.3.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *None established. See the significance threshold for the resources(s) construction would affect.*

Factors to Consider from FAA Order 1050.1E

- *Are any of the effects subject to local, state, or federal ordinances or regulations?*
- *Do any of the temporary effects meet or exceed the threshold for the individual resources?*

Table 4 – Environmental Consequences: Construction Impacts

Impact Category	Proposed Action	No Action
Air Quality	The operation of heavy equipment may cause temporary air quality impacts. In addition, the excavation, hauling, and placement of fill material can create airborne dust. However, **the air quality change is not expected to cause or contribute to an exceedance of the National Ambient Air Quality Standards** or exceed recommended exposure standards.	The No Action Alternative would not result in a change from current conditions in the area.
Fish, Wildlife, and Plants	**The construction of the proposed action is not anticipated to have an adverse effect on wildlife.** Construction noise should be consistent with the noise of airplanes landing and taking off from the airport and therefore not adversely affect wildlife. Impacts to migratory birds could result from summer construction activities, but these will be minimized by adhering to the USFWS and AFWFO recommendations. See Section 6.3.3. A November 7, 2013 letter from the USFWS indicates that increased barge traffic resulting from the proposed airport construction is unlikely to disturb or otherwise harm Steller's eiders or their critical habitat. Aside from the permanently impacted aquatic plants related to wetlands, it is anticipated that plants will be restored after reseeding and construction is completed. **Impacts to fish will likely result from construction, but these will be minimized** by adhering to the ADF&G Fish Habitat permit stipulations and the proper implementation of the contractor-provided SWPPP. See Section 6.3.3.	
Hazardous Materials	Demolition of the existing SREB is planned and would be included in the construction of Stage II of the proposed action. Further assessment for the existing SREB floor and surrounding area is warranted prior to demolition of the building. Construction contracts would include a provision that **if contaminated soil or groundwater is suspected or encountered during construction activities, the construction contractor will contact the DOT&PF Project Engineer and stop work** so that DOT&PF can coordinate with ADEC in accordance with 18 AAC 75.300. The proposed action is not anticipated to encounter the old dumping ground, and the project design avoids the area. If hazardous waste associated with the old dump area is encountered, work would stop and DOT&PF would be notified. A Phase II Environmental Site Assessment of the area was not completed, DOT&PF determined that the on-site contractor will handle clean-up if need be. The construction specifications will include a provision for handling potentially hazardous waste.	
Solid Waste	Construction would not generate more solid waste than the existing landfill can handle. The contractor would collect and make provisions for **legal disposal of all trash** before leaving the site at the end of the construction project, including but not limited to flagging, survey stakes and non-biodegradable erosion and pollution control materials.	

Impact Category	Proposed Action	No Action
Historical, Architectural, Archaeological, and Cultural Resources	It is not anticipated that cultural resources will be encountered during construction. **The risk of discovery is low** due to the treeless, wet nature of the environment. If cultural resources are encountered, mitigation will be as outlined in Section 6.12.3.	
Noise and Traffic Delays	The use of heavy machinery during construction would create temporary noise impacts. **Construction noise would be limited** primarily to the airport property, haul routes, material sites, and staging areas.	
Socioeconomic, Environmental Justice, and Children's Environmental Health and Safety Risks	The proposed action would have a beneficial effect on the residents, as it would bring construction jobs to Kwigillingok. Construction could also provide a short-term economic boom to the community, as the contractor would likely hire local residents.	
Water Quality	Construction activities could result in **direct, short-term effects on water quality** due to ground disturbance and erosion and sedimentation from storm water runoff. Winter construction of an ice road may be required for the channel realignment in order to mobilize needed heavy equipment. The ice road would melt in the spring; no water quality issues are expected.	
Wetlands	**Temporary wetland impacts are anticipated** within the 20-foot vegetative buffer around the construction footprint from activities including track walking and heavy equipment maneuvering. It is anticipated that disturbed areas would be restored after construction is complete. Nevertheless, this footprint will be included in the USACE 404 permit.	

6.3.3 Minimization and Mitigation

- In accordance with Section 401 of the Clean Water Act and the Alaska Water Quality Standards, the project will require a **Certificate of Reasonable Assurance from ADEC** prior to construction. Construction plans will include measures to control erosion and sedimentation.
- In accordance with the Alaska Pollutant Discharge Elimination System (APDES), **a SWPPP specific to the project area and local conditions will be prepared by the contractor** and approved prior to construction.
- DOT&PF will develop **an Erosion and Sediment Control Plan (ESCP)** to be used as guidance for the contractor to develop the SWPPP. Appropriate best management practices (BMPs) related to erosion and sediment controls, grading, fertilizing, and seeding for disturbed areas will be specified.
- **Dust will be controlled through watering or other appropriate means.**
- Wind erosion will be mitigated by **re-vegetating the embankment or implementing other appropriate stabilization BMPs** as soon as possible.
- All waste will be disposed of in accordance with State and federal regulations.

- If contaminated or hazardous materials are encountered during construction, all work in the vicinity of the contamination will be stopped until ADEC is contacted and a corrective action plan is approved and implemented by ADEC.
- If previously undiscovered cultural material is found during construction, all work in the area will be stopped and the SHPO will be notified immediately.
- When possible, **barging will occur after April and before August** to avoid direct impacts to migrating Steller's eiders. Dependent on weather barging activities may continue through the end of October.
- DOT&PF will comply with the **Migratory Bird Treaty Act by either adhering to the USFWS recommended timing window of May 5 to July 25 or by following the Anchorage Fish and Wildlife Field Office Nest Survey Guidelines**. Given the treeless environment, it is anticipated that vegetation clearing will be a minimal effort.
- **The construction contractor will be required to develop a Hazardous Materials Control Plan (HMCP)** in accordance with DOT&PF contract specifications.
- DOT&PF will comply with all federal, state, and local laws and regulations regarding invasive species during construction of the proposed project. Soil stabilization materials, top soils, and seed mixes that are free from noxious weeds will be used. If these materials are not available, locally produced products will be used to minimize potential importation of new weed propagules from outside Alaska. All disturbed areas will be reseeded with certified weed-free seed and vegetated in accordance with the DNR Alaska Coastal Revegetation and Erosion Control Guide.
- A Spill Prevention, Control, and Countermeasures (SPCC) plan may also be required to address storage of fuels and potential fuel spills.

6.3.4 Permits

Permits and/or clearances listed below would be obtained prior to construction to comply with all applicable federal, state, and local regulations. The Proposed Action would require the following permits:

- USACE Section 404 permit for fill in wetlands
- ADEC Division of Water 401 Certificate of Reasonable Assurance for fill in wetlands
- ADEC APDES General Permit for Discharges from Large and Small Construction Activities for ground disturbances equal to or greater than one acre.
- DNR Temporary Water Use Permit
- DNR Material Site Reclamation Permit
- ADF&G Title 16 Fish Habitat Permit

6.4 Subsistence, Fish, Wildlife, and Plants

6.4.1 Affected Environment

Kwigillingok is an active subsistence community. Most of the population participates in subsistence fishing, hunting, and gathering activities to supplement their income. The southeastern end of the project area is a popular berry picking spot, and the Kinak-Kipnuk trail used to access hunting grounds runs through the southern end of the project area.

Although sport fishing in Kwigillingok is limited, local residents use the Kuskokwim Bay and nearby anadromous streams to catch fish including halibut, herring, salmon, whitefish, and Alaska blackfish.

No marine species inhabit the project area, which is nearly two miles north of the Kuskokwim Bay shoreline. Construction would not extend into the marine environment. However, equipment and material import operations would involve temporary barging operations within the marine environment.

6.4.1.1 Essential Fish Habitat

Essential Fish Habitat (EFH) is defined by Congress in 16 U.S.C. 1802(10) as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity". Regulations for implementing the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) are at 50 CFR 600.905-930.

The *Anadromous Waters Catalog* shows the Kwigillingok River, located 0.36 miles east of the proposed project, listed as an anadromous fish stream (Stream No. 335-40-15950) (ADF&G, 2013). The unnamed tributary stream immediately adjacent to the airport is not listed as an anadromous fish stream on the online Atlas. However, ADF&G's response letter to the scoping letter indicates that the unnamed tributary "may also contain anadromous whitefish" (January 2012). ADF&G also commented that resident fish likely present in the slough and surrounding lakes include Alaska blackfish, stickleback, and possibly slimy sculpin.

The National Oceanic & Atmospheric Administration (NOAA) database does not designate Kwigillingok River as EFH (NMFS, 2013). In addition, no Habitat Areas of Particular Concern (HAPCs) were identified in or around Kwigillingok River. The Kuskokwim Bay is EFH, but barging is the only project activity to occur in the bay.

6.4.1.2 Threatened and Endangered Species

Per Section 7 of the ESA, DOT&PF initiated consultation with the USFWS and requested a list of wildlife species that may be affected by the proposed action.

On April 3, 2013, the USFWS indicated that the Alaska breeding population of Steller's eider (*Polysticta stelleri*) and the spectacled eider (*Somateria fischeri*) may be found in the project area. The letter also indicated:

- The intertidal and marine habitat near the project area is **critical habitat for Steller's eiders** (generally occurring in the nearshore marine waters in April, May, August, and September).
- The wetlands and uplands surrounding Kwigillingok are within the **breeding range of the spectacled eider** (generally occupied between May 5 and July 25 each year).

6.4.1.3 Migratory Birds and Eagles

The Y-K Delta is known to be an excellent habitat for migratory birds, especially waterfowl and shorebirds. The delta has abundant habitat to sustain large populations of non-listed migratory birds.

No bald eagle nests are known to exist in the vicinity of the proposed action. The treeless environment makes this area highly unlikely to have bald eagle nests.

6.4.1.4 Invasive Species

A review of the *Alaska Exotic Plants Information Clearinghouse* data portal and ADF&G *Nonnative Species* webpages indicated that there are no known or mapped invasive plant or animal species within the project vicinity. During a 2011 field trip by the DOT&PF and PDC project team, no invasive species were noted in the existing airport and proposed project areas.

6.4.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *For federally-listed species: Has the USFWS or the National Marine Fisheries Service (NMFS) determined the proposed action would likely jeopardize a species' continued existence or destroy or adversely affect a species' critical habitat?*
- *For non-listed species: consider information on population dynamics, sustainability, reproduction rates, natural and artificial mortality (aircraft strikes) and the minimum population size needed to maintain the affected population.*

Factors to Consider from FAA Order 1050.1E

- *Does the alternative risk a reduction of the quality or quantity of spawning, rearing, and migratory habitat for residential or anadromous fish species or Essential Fish Habitat?*
- *Have the appropriate agencies been consulted to determine if an area sufficient to sustain species commonly found in the affect area would remain if the alternative were implemented?*
- *Has coordination been completed with the USFWS and ADF&G to determine the presence of threatened or endangered (T&E) species?*
- *Are considerations given to migratory birds and eagles?*
- *Does the alternative risk introducing or spreading invasive species?*

Table 5 – Environmental Consequences: Subsistence, Fish, Wildlife, and Plants

Impact Category	Proposed Action	No Action
Subsistence	The area immediately surrounding the airport was not identified by the residents as an important subsistence area for hunting. In 2004, village elders stated that the area to the southeast of the runway (where a new apron would be constructed as part of the proposed action) was used for berry picking. But, during the 2011 public meeting, the proposed apron location was discussed and of the 63 attendees, **no residents expressed opposition to the proposed action**. The Kinak-Kipnuk trail will be re-aligned around the project as part of the proposed action.	The No Action Alternative not result in a change to existing subsistence, plant, fish and wildlife communities in the project area.

Impact Category	Proposed Action	No Action
Fish	No direct impacts to fish will likely result from the stream realignment. Because the existing channel is being replaced by a stream channel of equal capacity (merely offset by approximately 250 feet), **no permanent loss of habitat is expected.** The channel realignment will occur during winter and is therefore not expected to affect fish movement. There will be no adverse effect to EFH in the Kuskokwim Bay. Pursuant to Sections 305(b)(2) and 305(b)(4)(B) of the MSFCMA, there would be **no adverse effects to EFH** from the proposed action. See Section 6.3 for short-term impacts during construction. DOT&PF determined that the National Marine Fisheries Service (NMFS) does not need to be consulted because no potentially adverse effects were identified.	
Wildlife	On September 19, 2013, DOT&PF sent a letter to the USFWS including an evaluation of potential biological impacts. The letter concluded that the proposed project is not anticipated to cause direct or long term impacts on ESA-listed species or their critical habitat and the project **is not likely to adversely affect the Steller's eider of the spectacled eider** or their critical habitats. On November 7, 2013, the **USFWS concurred** with the decision that the project is not likely to adversely affect the listed species. **No permanent impacts to migratory birds or eagles** are anticipated as a result of the proposed action. Because of the abundance of habitat available in the Y-K Delta, the loss of 128 acres would have a negligible effect on the sustainability and production rates of migratory birds.	
Plants	Due to the treeless environment, any impact to plants would be limited to species associated with wetlands. Permanent loss of these plants will be, in part, replaced by grasses and sedges used to vegetate the embankment slopes. Thus, **the effect of the loss on wetland plants will be minimal.**	

6.4.3 Minimization and Mitigation

The majority of mitigation efforts need to be addressed during construction in order to prevent long-term impacts. These measures are outlined in Section 6.3.3 and include DNR revegetation guidelines, a safe barging window to protect migrating Steller's eiders, and USFWS guidelines for vegetation clearing to protect migratory waterfowl. Most of the construction will likely occur during winter when the ground is frozen enough to support heavy equipment, thereby reducing wildlife impacts. The stream channel realignment will occur in the winter to limit impacts to fish. The rerouting of the Kinak-Kipnuk trail will allow local residents to maintain vital access to hunting grounds and nearby villages.

6.5 Floodplains

6.5.1 Affected Environment

Kwigillingok is not one of the 32 communities currently participating in the National Flood Insurance Program. According to the Federal Emergency Management Agency (FEMA) online

Flood Insurance Rate Maps (FIRM), floodplains for the vicinity of Kwigillingok are not mapped. However, flooding is known to occur as a result of runoff from precipitation events and/or storm surges.

To determine the hydrologic characteristics of the Kwigillingok River and to study several design alternatives for protecting the runway embankment from erosion due to floods and tides, a hydrologic and hydraulic analysis was completed (Appendix I). The characteristics of the Kwigillingok River were modeled. Results included flood discharges based on precipitation events for both the tidally influenced channel adjacent to the runway and for the Kwigillingok River (see Table 6).

Table 6 – Kwigillingok Flood Discharges Based on Precipitation Events

Flood Recurrence Interval	Tidal Channel (cfs)	Kwigillingok River (cfs)
2 years	35	510
5 years	59	745
10 years	77	909
25 years	100	1120
50 years	119	1280
100 years	138	1440
200 years	158	1610

Source: DOT&PF Final Hydrologic and Hydraulic Report, 2014

Floods in the Kwigillingok area result from one of two causes: runoff from precipitation events or coastal storm surges. An analysis of both types of floods found that the dominant 100-year flood results from high tides and storm surges rather than precipitation runoff. The 100-year storm surge flood elevation is at 18.3 feet; the recommended minimum build elevation is 19.3 feet, allowing one foot of tolerance for freeboard. Though many coastal studies in the past have relied on the 1981 Wise report on storm surge forecasting, we utilized the most up-to-date storm surge prediction study for the western coast of Alaska (USACE, 2009) which incorporated a much newer storm data set. Flooding may become a greater issue for coastal communities like Kwigillingok due to sea level rise, decreased sea ice extent, and the increased intensity of storm surges and heavy precipitation as a result of climate change. Quantitative estimates of these future impacts are not readily available for most Alaska communities.

6.5.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Does the action have the potential to cause notable adverse impacts on natural and beneficial floodplain values as per US Department of Transportation (DOT) Order 5650.2, Floodplain Management and Protection*?

Factors to Consider from FAA Order 1050.1E

- *Does the proposed action have the potential to result in significant encroachment on the floodplain?*

Table 7 – Environmental Consequences: Floodplains

Impact Category	Proposed Action	No Action
Floodplains	**The proposed action includes design to raise the runway to a level above the 100-year flood elevation** of 18.3 feet. As a result, the runway would be available for evacuation or other uses during flood events. **The proposed action would not cause a change of the base flood elevation.**	The No Action Alternative would not result in a change from current conditions and flooding of the runway would result in loss of air access to the village. Runway flooding would also result in erosive losses of the embankment.

6.5.3 Minimization and Mitigation

According to the Alaska Department of Commerce Community and Economic Development (DCCED), no local flood hazard permit is required, as Kwigillingok does not participate in the National Flood Insurance Program.

6.6 Hazardous Materials, Pollution Prevention, and Solid Waste

6.6.1 Affected Environment

6.6.1.1 Hazardous Materials

A Phase I Preliminary Site Investigation (PSI) Report was completed for this project. The Phase I PSI report includes a site investigation, review of historical aerial photography, personal interviews, a review of land use records, and recommendations for further investigation. The Phase I PSI report is available at DOT&PF.

The site investigation and historic use review (including historic photos and interviews) indicated some potential for minor contaminated soils associated with the existing SREB. Soil staining and improper storage and disposal practices were identified.

As part of the PSI, a land use and record review was conducted. An Environmental Data Resources, Inc. (EDR) Report was acquired for the Kwigillingok area on July 22, 2011. The EDR report was designed to assist parties seeking to evaluate environmental risk and to meet the search requirements of 40 CFR 312 and the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments. The report concluded that no mapped hazardous material sites were located at the Kwigillingok Airport or within a two-mile search radius centered on the airport. A search of the ADEC Contaminated Sites Program database on February 22, 2013, indicates that there are four known contaminated sites in Open Status and one former contaminated site with a Cleanup Complete Status within the community of Kwigillingok. None of the five known sites is at the Kwigillingok airport. The closest contaminated site to the airport is a pipeline rupture near the washeteria, located approximately 1,000 feet from the nearest proposed construction. Further detail is provided in the Phase I PSI.

A known area of historic dumping is in the vicinity of the channel realignment. The presence of small scrap metal, domestic waste, glass bottles, and a rusted, dented 55-gallon drum have been documented. The presence of hazardous contamination is unknown and undetermined.

6.6.1.2 Solid Waste

Solid waste generated in Kwigillingok is currently disposed of at an ADEC-permitted Active Rural Class III landfill located approximately 1.5 miles southeast of the airport. A new landfill, currently under construction, is approximately 1.2 miles south of the airport.

6.6.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Does the action involve a property on or eligible for the National Priority List (NPL)?*

Factors to Consider from FAA Order 1050.1E

- *Would the airport-generated solid waste exceed available landfill or incineration capacities or require extraordinary effort to meet applicable solid waste permit conditions?*
- *Would the action generate, disturb, transport, treat, or dispose of hazardous wastes?*
- *Does the action have the potential to violate applicable Federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management?*
- *Does the action have the potential to adversely affect human health and the environment?*

Table 8 – Environmental Consequences:
Hazardous Materials, Pollution Prevention, and Solid Waste

Impact Category	Proposed Action	No Action
Hazardous Materials	The proposed action does not involve a property on the NPL, and **hazardous waste generation is not anticipated.** Based on the findings of the site visit, further examination of records, and the undeveloped nature of the land proposed for airport expansion, the risk of encountering environmental contamination (aside from the SREB materials) is low. The potential to encounter contamination in the historic dumping ground is likewise low. The channel realignment project has been designed to avoid the historic dumping ground.	The No Action Alternative would result in contamination still remaining within the SREB.
Solid Waste	No measurable increase in solid waste disposal is expected as a result of the proposed action. **The airport-generated solid waste is not expected to exceed available landfill capacities.** The proposed action will not generate any more solid waste than the existing airport. Temporary construction impacts are discussed in Section 6.3.	No change.

6.6.3 Minimization and Mitigation

The construction-related mitigation for hazardous materials and solid waste are discussed in Section 6.3.

6.7 Historical, Architectural, Archaeological, and Cultural Resources

6.7.1 Affected Environment

Yup'ik Eskimos have occupied the Kwigillingok region for thousands of years. The first record of a permanent village at Kwigillingok was in 1927 (DCCED, 2012).

The Area of Potential Effect (APE) defines the affected environment. It includes the construction footprint identified in Figure 2, the proposed airport boundary, and the proposed material sources.

No field investigations for cultural resources have been conducted. In accordance with Section 106 of the National Historic Preservation Act, DOT&PF initiated consultation with the State Historic Preservation Office as part of the identification efforts. The Alaska Heritage Resources Survey (AHRS) database was reviewed on August 28, 2013, to identify cultural resources in the project area. No known sites are located within Kwigillingok or the surrounding area. The area has a low potential for encountering cultural resources due to the flat, low, coastal topography and the numerous sloughs, lakes, and wetlands found throughout the surrounding area.

In addition to dialogue with the Office of History and Archaeology (OHA), government-to-government consultation with the Native Village of Kwigillingok, Kwik Incorporated, Calista Corporation, the Bureau of Indian Affairs, and the Association of Village Council Presidents in Bethel was initiated to determine the presence (if any) of significant cultural resources. No positive results were found.

Copies of correspondence are provided in Appendix F.

6.7.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Will the proposed action adversely affect a protected property? Is there information provided from SHPO or THPO that requires further study?*

Factors to Consider from FAA Order 1050.1E

- *Has coordination been completed with the SHPO and village and tribal organizations?*
- *Has information been made available that indicates significant scientific, prehistoric, historic, archeological, or paleontological resources would be lost or destroyed or that the qualities possessed by the property would be changed by the action?*

**Table 9 – Environmental Consequences:
Historical, Architectural, Archaeological, and Cultural Resources**

Impact Category	Proposed Action	No Action
Historical, Architectural, Archaeological, and Cultural Resources	Pursuant to 36 CFR 800.4(d)(1), DOT&PF, on behalf of FAA, determined that **no historic properties would be affected by the proposed action. SHPO concurred with this finding. This determination was achieved through the following correspondence:** • January 25, 2012 – DOT&PF, in cooperation with FAA, sent a "No Historic Properties Affected" letter to the SHPO • February 9, 2012 – SHPO sent DOT&PF a concurrence letter • March 22, 2013 – DOT&PF sent SHPO a project update identifying changes to the previously submitted project description; DOT&PF included a "No Historic Properties Affected" determination • April 5, 2013 – SHPO concurred with DOT&PF's finding • September 5, 2013 – DOT&PF sent a project update letter to SHPO outlining changes to the project since March 21, 2013 • September 19, 2013 – DOT&PF received **a concurrence letter from SHPO** stating that **no historic properties would be affected** by the updated project	The No Action Alternative would not directly affect historical, archaeological or cultural resources.

6.7.3 Minimization and Mitigation

No long-term mitigation for cultural resources is required. For construction-related mitigation, see Section 6.3.

6.8 Light Emissions and Visual Impacts

6.8.1 Affected Environment

Lighting at the airport is currently limited to portable runway lighting available only upon request for emergency use. Because the region is known for low cloud cover and fog conditions under visual flight rules (VFR), this lighting is deficient. The community is concerned about the limited value of the emergency lighting system and is ready for reliable runway lighting.

6.8.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Does the alternative risk creating an annoyance or interfere with normal activities?*
- *Have any agency representatives stated that the visual effect of the proposed action is objectionable?*

Factors to Consider from FAA Order 1050.1E

- *None established.*

Table 10 – Environmental Consequences: Light Emissions and Visual Impacts

Impact Category	Proposed Action	No Action
Light Emissions and Visual Impacts	The proposed action will appreciably improve the lighting by providing MIRL and a rotating beacon will have three lighting settings—off, on, and automatically on after dark—set by the airport operator. The new lights would be radio controlled and only on when planes are using the runway (unless otherwise set to full "on" position by the airport operator). The beacon would be mounted on top of the SREB and angled upward in such a manner that lights would not shine into residential windows. **The new lighting is not anticipated to create an annoyance to residents or interfere with normal airport activities.**	The No Action Alternative would not have light emissions or visual effects. The current deficiency of the runway lighting would still exist.

6.8.3 Minimization and Mitigation

No adverse impact is anticipated for light emissions; long-term mitigation will not be required. For construction-related mitigation, see Section 6.3.

6.9 Secondary (Induced) and Cumulative Impacts

6.9.1 Affected Environment

The nearest communities are Kipnuk (approximately 30 miles west of Kwigillingok) and Kongiganak (approximately 12 miles northeast of Kwigillingok). These villages are not accessible via road from Kwigillingok except by winter trail.

No sudden influx of funding or population increase is expected in the village. Each past, present, and future project is intended to benefit the entire community. For example, the community boardwalk was recently improved to benefit the community by providing safer access. In addition, construction is currently under way for the relocation of the community landfill. Future planning efforts and actions are expected to be similar to those in other communities that are not on the road system, e.g., airport upgrades, school and housing improvements, and community sanitation facility improvements necessary to support the community.

The physical environmental effects of development over time have incrementally affected the natural environment. Wetlands, floodplains, water quality, and wildlife are the primary affected resources.

6.9.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *None established.*

Factors to Consider from FAA Order 1050.1E

- *Does the potential exist for shifts in patterns of populations' movement and growth?*
- *Public service demands?*
- *Changes in business and economic activity due to the development?*

**Table 11 – Environmental Consequences:
Secondary (Induced) and Cumulative Impacts**

Impact Category	Proposed Action	No Action
Secondary and Cumulative Impacts	Airport improvements at Kwigillingok are not expected to cause shifts in population or community growth, as the neighboring communities have their own community-class airports. No significant changes to public services needs or changes in economic activities are foreseen from providing improvements to Kwigillingok Airport. **No significant cumulative impacts are expected to result from the proposed action.**	The No Action Alternative would have negative impacts on the community of Kwigillingok. The cost of air travel would rise due to the insufficient supply of aircraft capable of safely landing at the existing airport. Additional secondary impacts include an increase in transportation delays for patients who require emergency medical treatment not available in Kwigillingok. The No Action Alternative would have a cumulative impact to Kwigillingok due to the loss of investment from both the state and the community. Also, residents would continue to contend with the difficulties associated with a substandard airport. Lack of reasonably reliable air service can have a direct impact on population shift. "Out-migration" or "stunted growth" is reported in rural communities where unreliable and unsubstantial service exists.

6.9.3 Minimization and Mitigation

No mitigation or minimization is required for this impact category.

6.10 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

6.10.1 Affected Environment

Kwigillingok is an unincorporated Native village governed by a federally recognized village council. The village does not belong to a formal borough and does not have local taxes. Kwigillingok has a population of approximately 317, according to the 2012 Alaska Department of Labor estimate. It is a traditional Yup'ik Eskimo village, and according to the 2010 census approximately 95 percent of the population is Alaska Native. Employment is primarily with the school and commercial fishing. In 2010, the unemployment rate in Kwigillingok was nearly 23 percent and the percentage of workers not in the labor force was over 50 percent. More than 24 percent of residents had incomes below the poverty level (DCCED, 2013).

6.10.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Would the proposed action cause extensive relocation without sufficient replacement housing?*
- *Would the proposed action cause extensive relocation of community businesses that would cause severe economic hardship for affected communities?*

- *Would the action disrupt local traffic patterns that substantially reduced the Levels of Service of roads serving the airport and its surrounding communities*
- *Would the proposed action cause a substantial loss in community tax base?*
- *Would the action cause disproportionately high and adverse human health or environmental effects on minority and low-income populations?*
- *Would the action cause a disproportionately high risk to children?*

Factors to Consider from FAA Order 1050.1E

- *Does the alternative involve relocation of residences or businesses?*
- *Does the action alter surface transportation?*
- *Divide or disrupt established communities or planned development?*
- *Create a change in employment?*

Table 12 – Environmental Consequences: Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

Impact Category	Proposed Action	No Action
Socioeconomic, Environmental Justice, and Children's Environmental Health and Safety Risks	The proposed action is anticipated to have a positive socioeconomic impact on the community**.** Economic advantages would arise from real estate transactions. Approximately 39.7 acres will be needed for the material sites and their access. This is in addition to the approximately 285 acres of land needed for the airport. Some property will be purchased, while other land use authorization may take the form of easements or permits with a royalty paid to the landowner. **Property will be acquired in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.** **No relocations will be required.** The community tax base will not be affected. **No disproportionately high or adversely negative effects to low-income or minority populations are expected**. The proposed action would have a beneficial effect on the residents, who are primarily a minority race (95% of residents are Alaska Natives or part Native). A positive socioeconomic impact of the project is that the proposed action will bring safer travel and access to medical evacuation for all residents, including children and low-income minorities. The airport runway would remain open during construction but minor airport delays could occur during construction.	The No Action alternative would have a negative impact on Kwigillingok. Residents would continue to contend with the difficulties associated with a substandard airport, including limited opportunities for safe travel.

6.10.3 Minimization and Mitigation

See Section 6.3 for construction-related mitigation.

6.11 Water Quality

6.11.1 Affected Environment

The water quality around Kwigillingok is variable, as moving waters are tidally influenced and heavily laden with sediment from natural erosion.

The village of Kwigillingok derives domestic freshwater from local surface water. A storage water reservoir is located approximately 0.3 miles northeast of the airport. Piped surface water from the reservoir to the pumping stations provides the community with domestic water. Pumping stations are available at the washeteria and the school. No ADEC-registered groundwater wells exist in Kwigillingok. In addition, no ADEC-designated impaired water bodies exist in the project area.

No water quality standards or stormwater thresholds exist for the project area.

6.11.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Would the proposed action contaminate public drinking water supplies in a manner that public health may be adversely affected?*
- *Would the proposed action meet water quality standards?*

Factors to Consider from FAA Order 1050.1E

- *What features, mitigation, or controls are proposed to assure state/federal water quality standards are met?*
- *Has consultation with regulators taken place to identify the required permits?*
- *Are water resources, including wetlands, affected?*

Table 13 – Environmental Consequences: Water Quality

Impact Category	Proposed Action	No Action
Water Quality	**The proposed action would have no effect on the public drinking water supply or on a sole source aquifer.** The water quality of the receiving waters within the project area is expected to have a net-zero change after construction of the proposed action. The realignment of the stream will provide a drainage route farther away from the runway. The channel will be constructed using surface materials similar to those that make up the existing channel. The new stream would maintain similar flows and velocities as the previous channel; thus, similar sediment loads can be expected. Construction impacts to water quality are identified in Section 6.3. Wetlands impacts are addressed in Section 6.11. **Consultation with ADEC and USACE is ongoing (Appendices D and E).**	The No Action Alternative would result in the existing bank erosion. The effect on water quality would remain unchanged.

6.11.3 Minimization and Mitigation

Minimization and mitigation of temporary water quality impacts during construction are discussed in Section 6.3.

6.12 Wetlands

6.12.1 Affected Environment

Wetlands are widespread and common throughout the Kwigillingok area. The broad, flat Y-K Delta is dominated by wetlands, and few, if any, natural uplands occur in the Kwigillingok area.

The USFWS National Wetlands Inventory (NWI) mapper, reviewed on February 28, 2011, depicts wetlands within the proposed project area. The NWI data available for Kwigillingok is at a relatively low resolution and out of date. In May 2013, preliminary desk delineation was conducted using the most currently available aerial photography. According to the 2013 delineation, the most common wetland type found at Kwigillingok is palustrine emergent, primarily associated with low-lying flat areas surrounding rivers and open water. Most of these wetlands are seasonally flooded with snowmelt in the spring and during periods of regular rains. See Appendix C for further information on the NWI data and the 2013 delineation.

Wetlands surrounding Kwigillingok function to improve water quality in the Kwigillingok River because of their ability to retain sediments and pollutants. The wetlands also function as a habitat for birds.

6.12.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Would the action adversely affect a wetland's function to protect the public water supply? Protect the ability to retain floodwaters? Protect the wildlife and fish habitat?*

Factors to Consider from FAA Order 1050.1E

- *Does the alternative affect wetlands? Has the alternative avoided long and short term adverse impacts to the extent possible? Is there a practicable alternative?*

Table 14 – Environmental Consequences: Wetlands

Impact Category	Proposed Action	No Action
Wetlands	**Approximately 128 acres of wetlands would be needed** for fill and dredging activities under the Proposed Action. A summary of the proposed wetland fill is presented below in Tables 15 and 16. Some of those 128 acres would receive permanent fill, some would undergo a transfer of wetland type, and some would be subject to temporary impacts. Excavation at the proposed airport material site may convert some palustrine wetlands to open water, as water may fill the excavated site. The remaining portion of the material site would remain a wetland, albeit disturbed. In summary, wetlands impacts will include: • Loss (fill): **51.5 acres** • Conversion from PEM to PEM and/or OW: **40 acres** • Disturbed PEM (overburden stockpiles and reclaimed material sites): **16.8 acres** • Temporary impact (buffers): **19.7 acres** **The proposed action is not expected to change the drainage patterns' ability to affect or retain the floodwaters.**	The No Action Alternative would not result in a change from current conditions on wetlands in the area.

Table 15 – Wetlands Impacts – Proposed Action

	Project Component	Wetland Type	Area of Wetland Impact (ac)	Total Fill (cy)
Fill and Temporary Impact (Buffer)	**Primary Runway** *Including PAPI Pads*	OW PEM R	4.1 21.2 2.4	31,500 166,900 19,500
	Taxiway	OW PEM	0.1 1.6	300 10,200
	Apron *Including Segmented Circle*	OW PEM	0.1 6.1	1,100 50,600
	Haul Route	OW PEM R	0.9 8.2 0.1	3,300 27,600 300
	Access Road	OW PEM	0.2 1.6	1,100 4,600
	Staging	PEM	7.2	52,000
PEM to OW/PEM Conversion	**Material Sources A & B** *Excavation Impacts and Temporary Overburden Stockpile*	PEM	56.8	97,000
PEM/R to OW/PEM/R Conversion	**Fill Channel**	PEM R	4.0 4.1	40,000 41,000
	New Channel	OW PEM R	1.3 7.6 0.6	0 0 0
	TOTALS		**128**	**547,000**

OW = Open Water; PEM = Palustrine Emergent Wetlands; R = Riverine

Note: A uniform 20-foot buffer around the entire perimeter of impacted areas was included in the calculations to account for temporary impacts as a result of equipment maneuvering and sedimentation at the toe of the embankment.

Table 16 – Total Impacted Area by Wetland Type

PEM	Palustrine Emergent Wetlands	114.2 ac
OW	Open Water	6.7 ac
R	Riverine	7.2 ac
Total Impact (rounded)		**128.0 ac**

6.12.3 Minimization and Mitigation

It is not possible for the proposed project to avoid wetlands. Virtually the entire area and region are wetlands, with the exception of existing infrastructure such as the runway and barge landing. To minimize the extent of impacts to wetlands, at least 20 feet outside constructed embankments and stockpile toes would be permitted as a vegetative buffer. While wetlands in the buffer area would not be directly filled, adverse wetlands impacts are anticipated from incidental track walking on embankment slopes and installation of other BMPs for temporary and permanent erosion and sediment control. The 20-foot buffer would be retained for treating storm water runoff after the facility is operational. Sedimentation in the buffer area is expected to be minimal.

Approximately 19.7 acres would be permitted for the 20-foot buffer area; this is included in the total wetlands impacts in Table 16 above.

A USACE individual permit will be obtained for wetland fill. Concurrent with the Section 404 process, an ADEC Section 401 Water Quality Certification will also be obtained. All stipulations and special conditions of the permits will be followed.

Avoidance and minimization measures that have been incorporated into the design of this project include:

- Expansion of the existing airport embankments, as opposed to disturbing an entirely new site by relocating the airport
- Planning the shortest route possible to the airport from the community
- Use of the existing access road (already disturbed) for the proposed haul route
- The ESCP calls for specific construction timing which emphasizes winter earthwork on undisturbed sites
- Using the excavated material from the proposed channel realignment to fill the old channel, as opposed to leaving the old channel open
- Minimizing the potential for sediment transport off the project site by providing a vegetated buffer around the airport footprint and using appropriate BMPs that will be identified in the SWPPP
- Including a provision in the construction specifications requiring the contractor to re-vegetate side slopes during the first growing season after the embankment is placed

The total area of fill could not be minimized by steepening the side slopes. Due to the poor quality of local embankment material, constructing fill slopes steeper than normal to minimize impacts to wetlands is problematic. Previous DOT&PF experience has shown that using steeper side slopes with the type of material available in Kwigillingok and on soils similar to those in Kwigillingok would likely result in sloughing material, slope erosion, and embankment failure(s).

Compensation for unavoidable impacts to 128 acres of wetlands will be provided in accordance with USACE Regulatory Guidance Letter (RGL) ID No. 09-01, which requires a mitigation plan based on the functions and values of the affected wetlands, and compensatory mitigation for federally-funded projects. A compensatory mitigation plan will be established during the permitting process and may include an in-lieu fee. Other options for mitigation may include local efforts grouped with other projects going on in the community.

For example, discussions with local residents indicated that a community kayak pond has been established; its preservation is a local option for mitigation.

DOT&PF has examined other potential enhancement and protection options within the community. Another example of this is the mitigation option of improving the existing 17(b) trail from the barge landing to the airport. Presently, this trail is used by four-wheelers. As some areas of the trail become boggy, four-wheelers maneuver around the mud hole to new/undamaged

ground, thus impacting new wetlands. Further, the damaged areas are left unvegetated and unprotected from rain and stormwater, resulting in transport of sediment into surrounding wetlands. A gravel road for long-term community use will protect the wetlands from future damage of this type. Trail improvements are a potential mitigation option that will be considered during the USACE permitting process.

7 COORDINATION

Coordination and public involvement for the Kwigillingok Airport Improvements project has been ongoing since 1995. An environmental assessment (EA) and finding of no significant impact (FONSI) was completed in 1996 and 2004. Communications have included newsletters, community meetings, consultations with local, state, and federal agencies, and an agency scoping meeting to present the project and identify concerns. Specific scoping activities conducted for this EA are described below. Copies of meeting notes, the newsletters, public/agency comments, and correspondence related to develop this EA in accordance with the National Environmental Policy Act (NEPA) are presented in Appendix E.

7.1 Public Meeting Correspondence

A public meeting was held in the Albert Beaver Sr. Community Building in the village of Kwigillingok on June 7, 2011. DOT&PF, FAA, PDC, and public residents were in attendance. Sixty-three people signed the meeting roster. The meeting was announced and publicized with a newsletter sent to all boxholders of the community.

The community is in support of the airport improvements and the meeting was well received. See Appendix E for the meeting minutes and attendance comment sheets.

In February 2013 and June 2014, newsletters were sent to all box holders summarizing the project updates. These newsletters were also electronically distributed to community stakeholders.

7.2 Agency Correspondence

7.2.1 Scoping Letter

On December 12, 2011, DOT&PF, in cooperation with FAA, sent an agency scoping letter soliciting comments and information on the proposed action. The letter was sent to ADEC, ADF&G, DNR, SHPO, FAA, Air Carriers, BLM, USACE, USCG, USFWS, and local city, village, and borough entities. Four scoping letter responses were received from DNR-MLW Water Resources Section, BLM, Kwik Incorporated, and ADF&G representatives. None objected the proposed action.

On December 15, 2011, the **DNR-MLW Water Resources Section** responded with the following comments:

- Water Resources has no objection to the proposed project.

- A Temporary Water Use Permit will be required for the channel realignment work, construction activities, and dust control and compaction.

On January 7, 2012, the **BLM responded** with the following comment:

- "It is anticipated that the BLM will have few concerns and little input to your proposed project."

On January 23, 2012, **Kwik Incorporated responded** with full support of the project.

- "This project is one of the important projects needed for the community and we are willing to work with you in settling various factors that delayed the project in the past."

On January 23, 2012, **ADF&G responded** with the following comments:

- The Kwigillingok River has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 12.05.871(a). The river is known to support whitefish.
- The unnamed tributary adjacent to the airstrip may also contain anadromous whitefish.
- Resident fish that are likely present in the slough and surrounding lakes include Alaska blackfish, stickleback and slimy sculpin.
- Whitefish and blackfish may be used for subsistence.
- An ADF&G Fish Habitat Permit will be required for the channel realignment.

8 LIST OF PREPARERS

The people primarily responsible for development or review of this Environmental Assessment are listed below in Table 17.

Table 17 – List of Preparers

Name	Title and Role	Relevant Experience
Barbara Beaton, P.E.	DOT&PF Project Manager	16 years engineering experience
Brian Elliott	DOT&PF Environmental Manager	12 years environmental impact analysis experience
TaraLyn Stone	DOT&PF Environmental Impact Analyst II	3 years environmental impact analysis experience
Royce Conlon, P.E.	PDC, Inc. Engineers Project Manager	27 years airport planning and engineering experience
Ken Risse, P.E.	PDC, Inc. Engineers Design Engineer	20 years engineering experience
Valerie Webb, MS	PDC, Inc. Engineers Lead Environmental Analyst	13 years environmental analysis experience
Heather Dorsett	PDC Inc. Engineers Technical Editor	13 years technical editing experience

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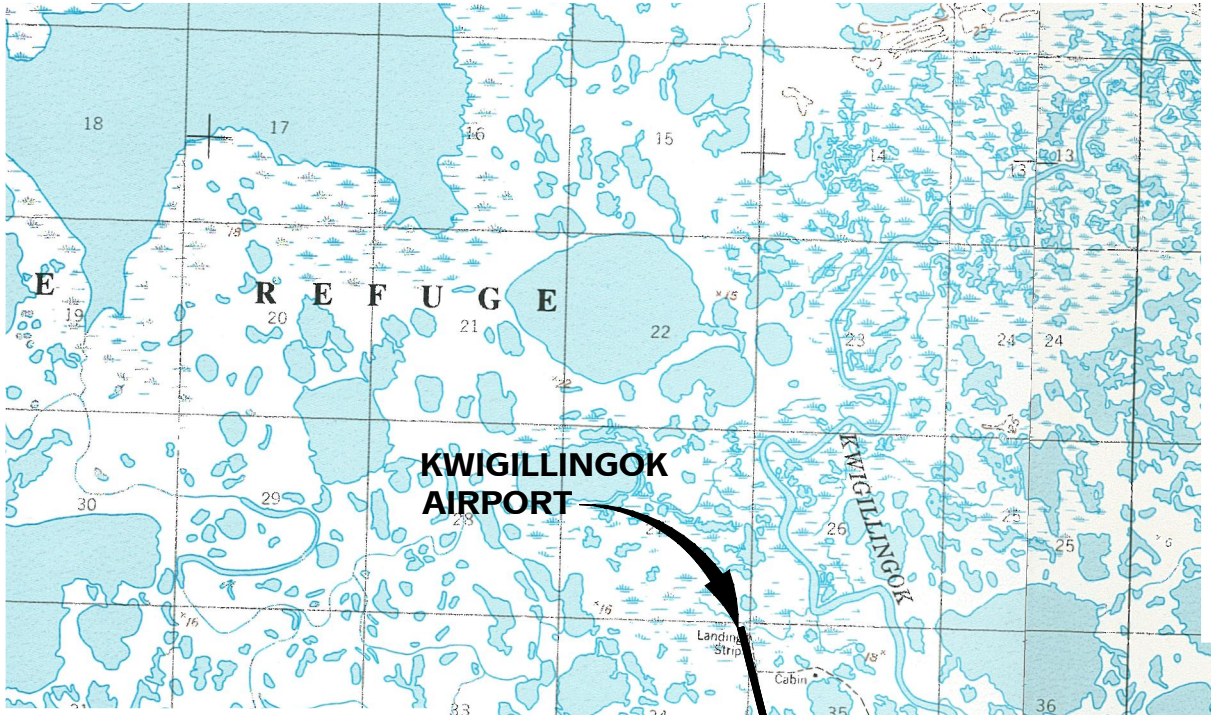
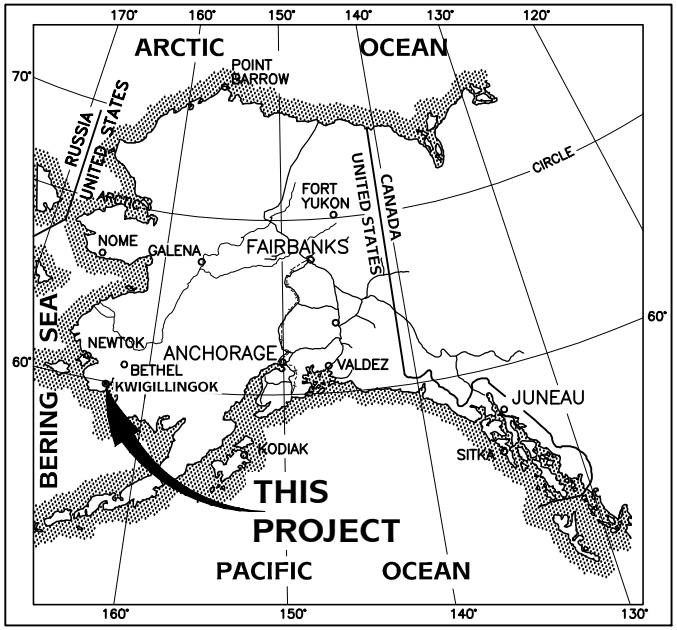
FIGURES





LOCATION MAP

EXISTING RUNWAY LOCATION

SEC 26, 27, 34, 35, T3S, R81W; SEWARD MERIDIAN

0 5280 10560
SCALE IN FEET

STATE OF ALASKA
Department of Transportation and Public Facilities
CENTRAL REGION

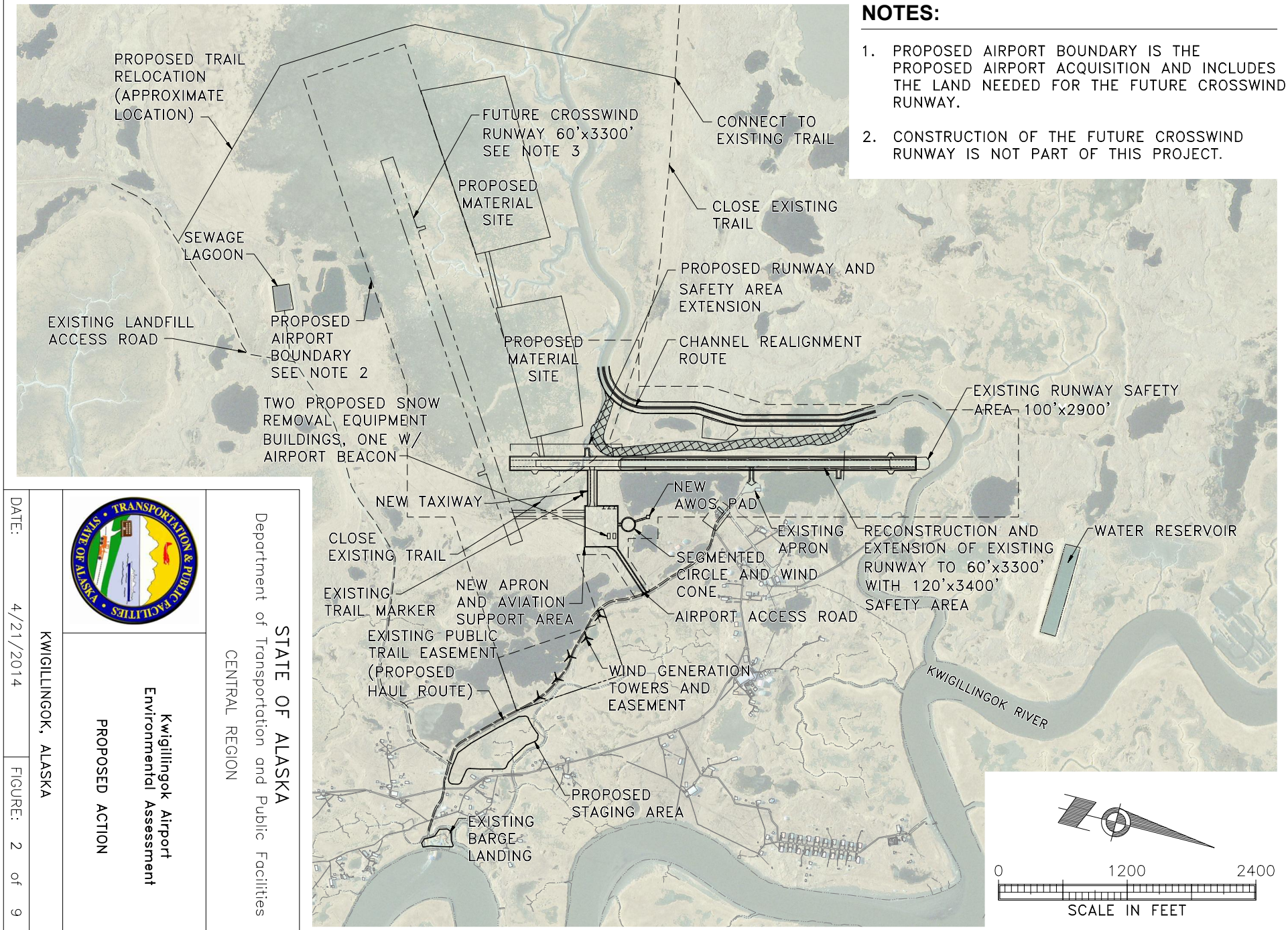
Kwigillingok Airport
Environmental Assessment

LOCATION & VICINITY MAP

KWIGILLINGOK, ALASKA

DATE: 4/21/2014

FIGURE: 1 of 9



NOTES:

1. PROPOSED AIRPORT BOUNDARY IS THE PROPOSED AIRPORT ACQUISITION AND INCLUDES THE LAND NEEDED FOR THE FUTURE CROSSWIND RUNWAY.
2. CONSTRUCTION OF THE FUTURE CROSSWIND RUNWAY IS NOT PART OF THIS PROJECT.

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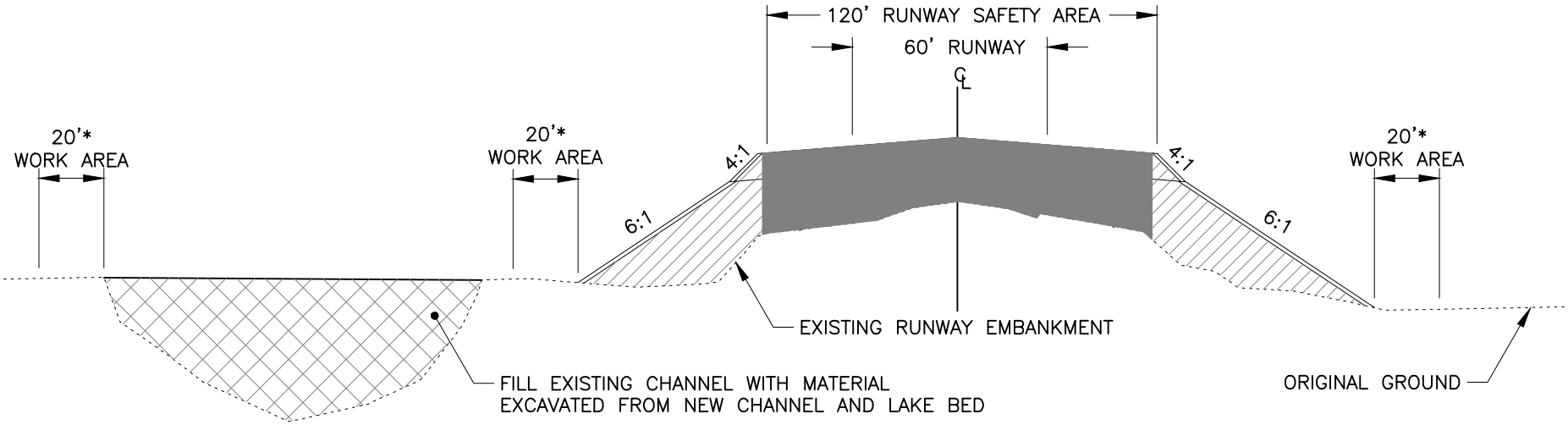
Kwigillingok Airport
Environmental Assessment

PROPOSED ACTION

KWIGILLINGOK, ALASKA

DATE: 4/21/2014

FIGURE: 2 of 9



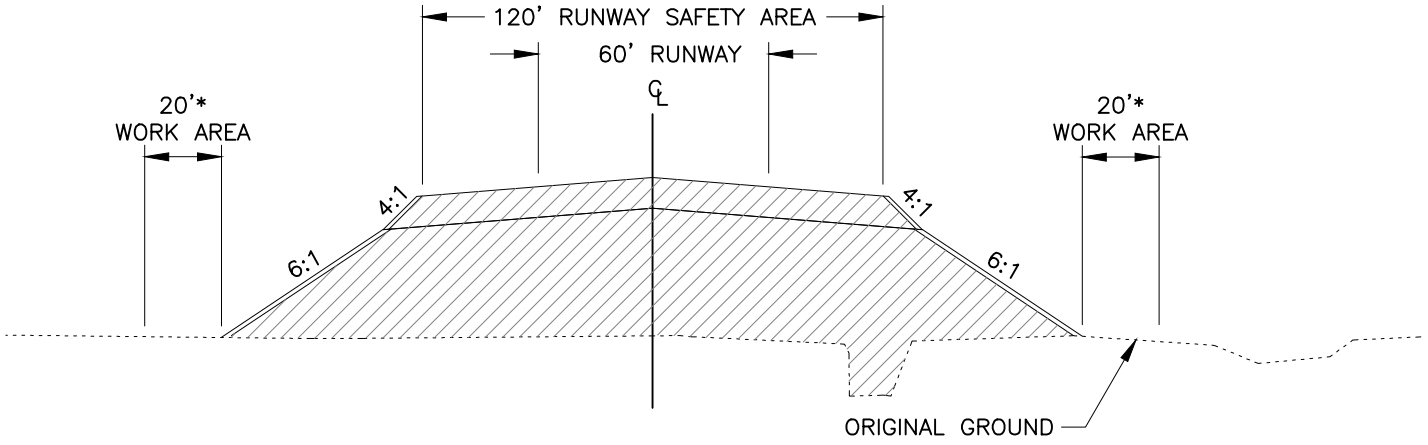
EXISTING RUNWAY RECONSTRUCTION TYPICAL SECTION

FILL IN CHANNEL

FILL IN WETLANDS

FILL IN UPLANDS

* WORK AREA 20' BEYOND FILL LIMITS IS FOR A VEGETATIVE BUFFER TO PROVIDE EROSION CONTROL.



RUNWAY EXTENSION TYPICAL SECTION

FILL IN WETLANDS

STATE OF ALASKA
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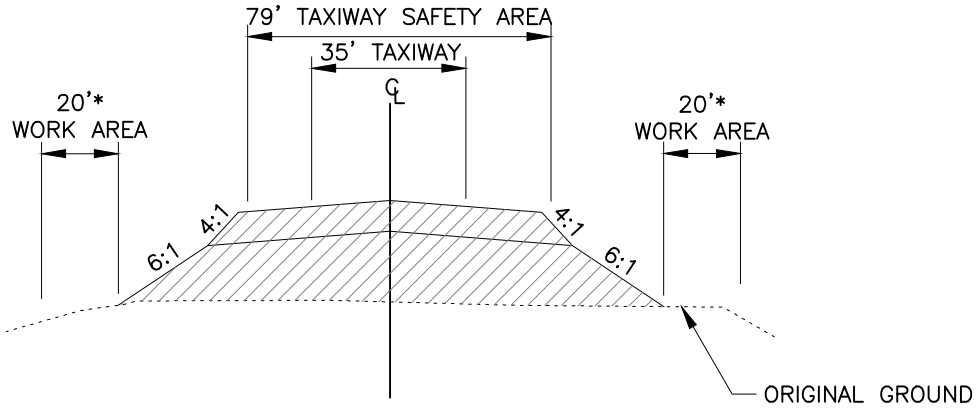
CENTRAL REGION

Kwigillingok Airport
Environmental Assessment
TYPICAL SECTION
RUNWAY

KWIGILLINGOK, ALASKA

DATE: 4/21/2014

FIGURE: 3 of 9



TAXIWAY TYPICAL SECTION

FILL IN WETLANDS

* WORK AREA 20' BEYOND FILL LIMITS IS FOR A VEGETATIVE BUFFER TO PROVIDE EROSION CONTROL.

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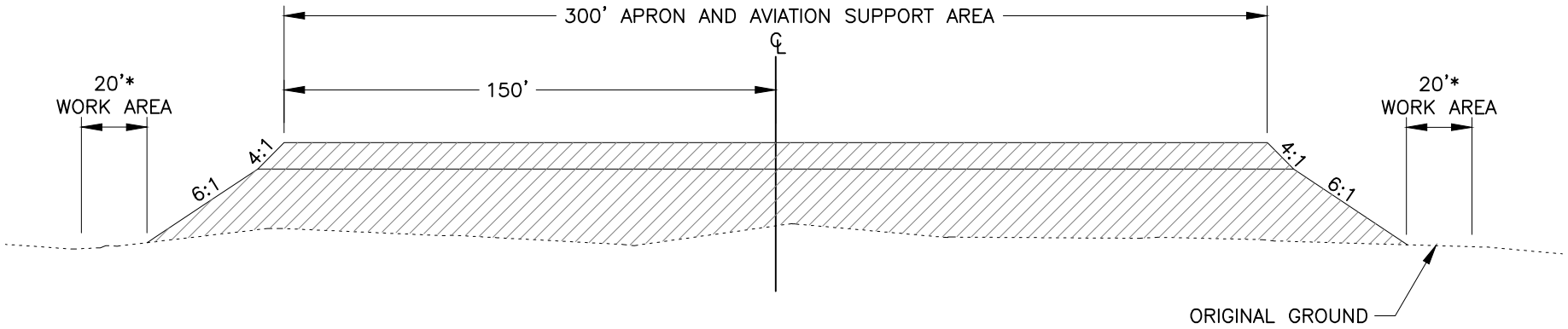
Kwigillingok Airport
Environmental Assessment

TYPICAL SECTION
TAXIWAY

KWIGILLINGOK, ALASKA

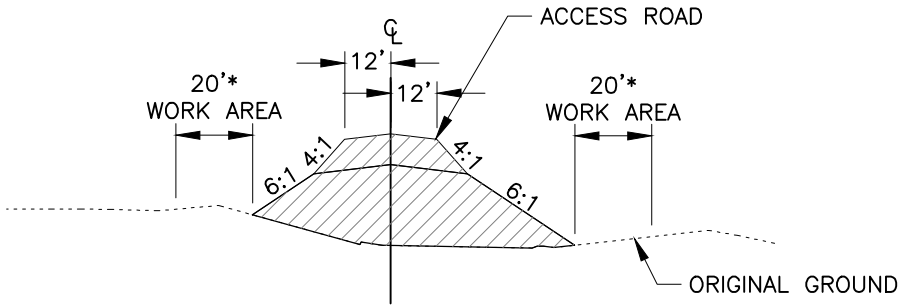
DATE: 4/21/2014 | FIGURE: 4 of 9



APRON TYPICAL SECTION

FILL IN WETLANDS

* WORK AREA 20' BEYOND FILL LIMITS IS FOR A VEGETATIVE BUFFER TO PROVIDE EROSION CONTROL.



AIRPORT ACCESS ROAD TYPICAL SECTION

FILL IN WETLANDS

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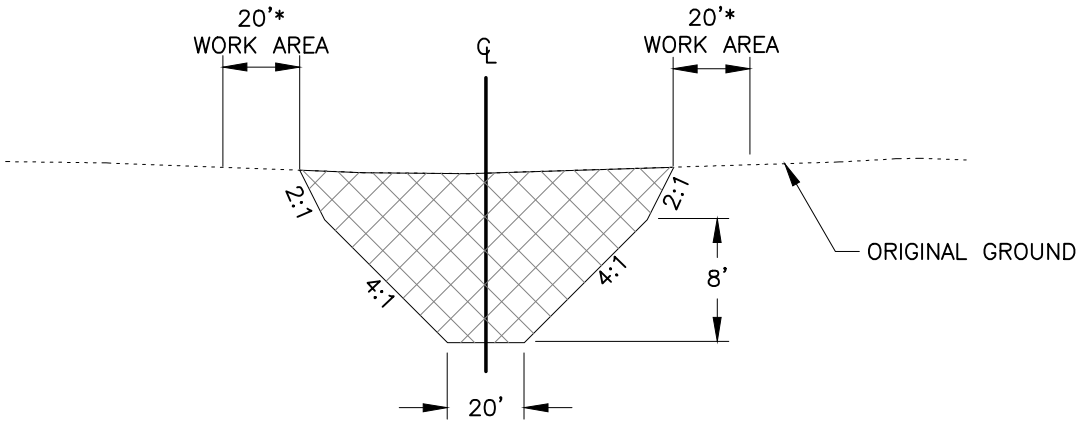
CENTRAL REGION

Kwigillingok Airport
Environmental Assessment
TYPICAL SECTION
APRON & ACCESS ROAD

KWIGILLINGOK, ALASKA

DATE: 4/21/2014

FIGURE: 5 of 9



CHANNEL TYPICAL SECTION

EXCAVATION

* WORK AREA 20' BEYOND EXCAVATION LIMIT IS FOR A VEGETATIVE BUFFER TO PROVIDE EROSION CONTROL.

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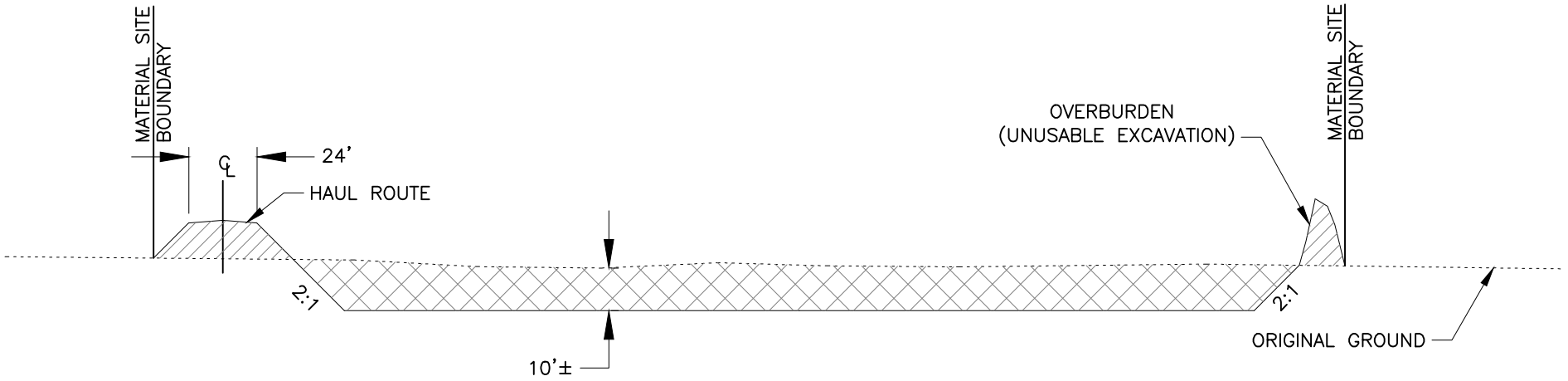
CENTRAL REGION

Kwigillingok Airport
Environmental Assessment

TYPICAL SECTION
CHANNEL RE-ROUTE

KWIGILLINGOK, ALASKA

DATE: 4/21/2014 | FIGURE: 6 of 9



MATERIAL SITE AND HAUL ROUTE TYPICAL SECTION

FILL IN WETLANDS

EXCAVATION IN WETLANDS

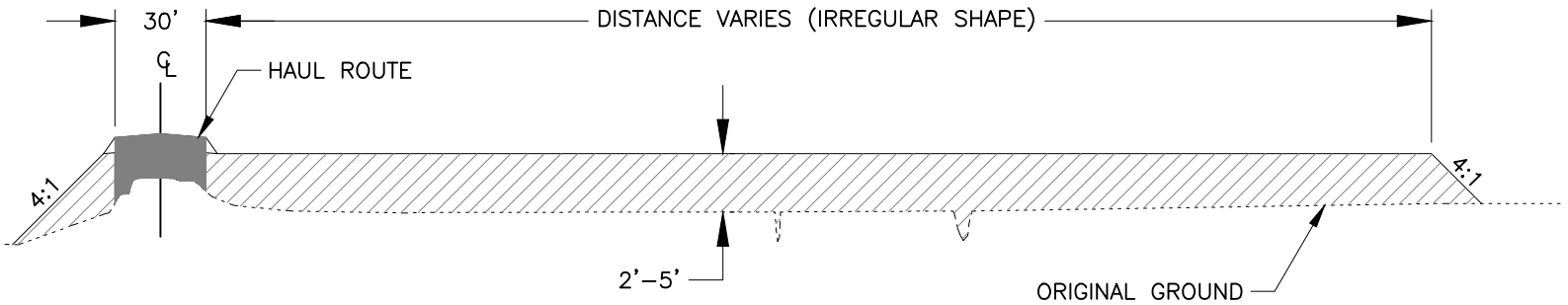
STATE OF ALASKA
Department of Transportation and Public Facilities
CENTRAL REGION

Kwigillingok Airport
Environmental Assessment
TYPICAL SECTION
MATERIAL SITES A & B

KWIGILLINGOK, ALASKA

DATE: 4/21/2014

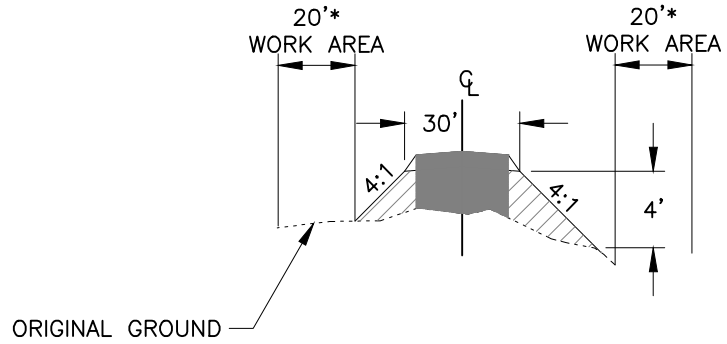
FIGURE: 7 of 9



HAUL ROUTE AND STAGING AREA TYPICAL SECTION

FILL IN WETLANDS

FILL IN UPLANDS



HAUL ROUTE TYPICAL SECTION

FILL IN WETLANDS

FILL IN UPLANDS

* WORK AREA 20' BEYOND FILL LIMITS IS FOR A VEGETATIVE BUFFER TO PROVIDE EROSION CONTROL.

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CENTRAL REGION

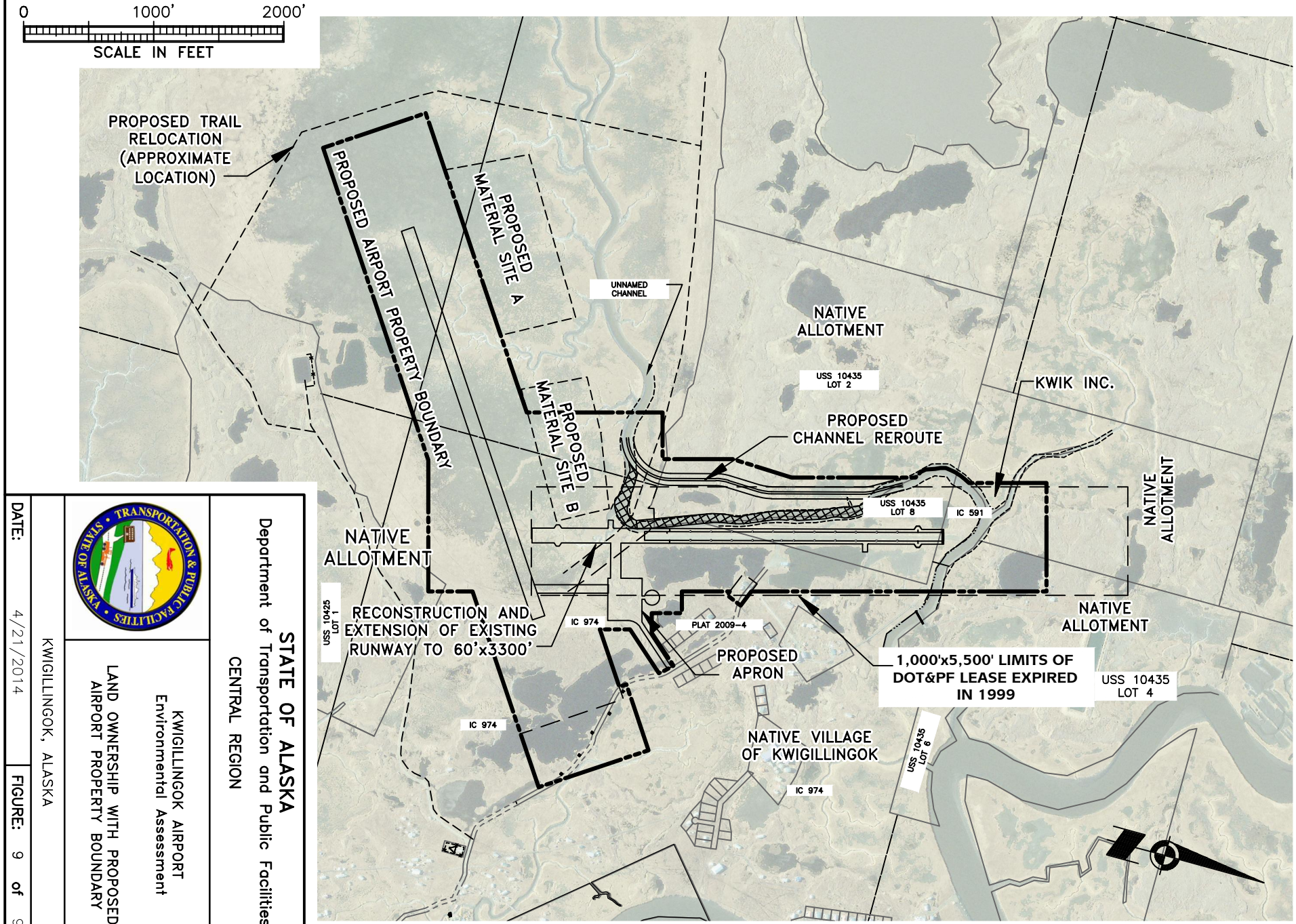
Kwigillingok Airport
Environmental Assessment
TYPICAL SECTION
MATERIAL HAUL ROUTE

KWIGILLINGOK, ALASKA

DATE: 4/21/2014

FIGURE: 8 of 9

P:\2010\F10101\N\N1001_ea_F10101: Land Ownership With Proposed Airport Property Boundary Mon, 12/May/14 09:59 AM



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KWIGILLINGOK AIRPORT
Environmental Assessment

LAND OWNERSHIP WITH PROPOSED AIRPORT PROPERTY BOUNDARY

KWIGILLINGOK, ALASKA

DATE: 4/21/2014

FIGURE: 9 of 9