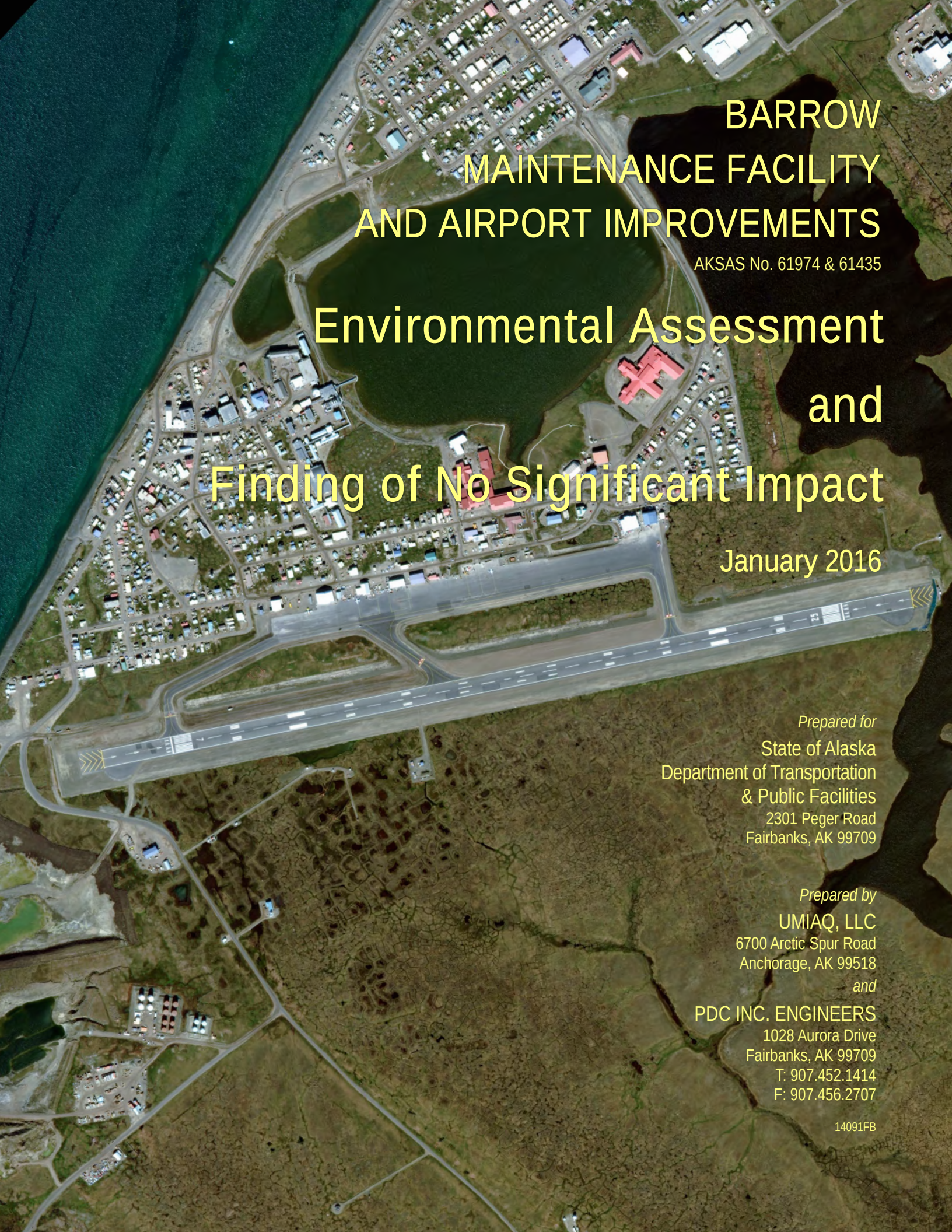

BARROW MAINTENANCE FACILITY AND AIRPORT IMPROVEMENTS

AKSAS No. 61974 & 61435

Environmental Assessment and Finding of No Significant Impact

January 2016

Prepared for

State of Alaska
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Department of Transportation
Federal Aviation Administration

FINDING OF NO SIGNIFICANT IMPACT
FOR
BARROW MAINTENANCE FACILITY & AIRPORT IMPROVEMENTS
DOT&PF Project No. Z623780000, Z617060000 & Z614350000
Barrow, Alaska

PURPOSE AND NEED

Purpose
The purpose of the project is to improve safety and correct the deficiencies of the existing airport apron and Maintenance and Operation (M&O) facilities.

Need
The recently completed Wiley Post/Will Rogers Memorial Airport Master Plan identified deficiencies in the existing airport infrastructure and highlighted current and anticipated needs. Cargo staging and vehicular traffic for airport service and loading operations on the apron, along with the proximity of the major support buildings to the apron and to each other, all contribute to apron congestion. Forecast additional aviation activity would generate more congestion and increase maintenance needs, which would accentuate the current deficiencies as well as require storage for additional maintenance equipment.

REQUESTED FEDERAL ACTION

DOT&PF requests that FAA participate in funding the M&O facility and access roads, the North Apron expansion, and decommissioning of the existing M&O facility.

PROPOSED ACTION (EA Sections 3.0 and 4.2)

DOT&PF, in cooperation with the Federal Aviation Administration (FAA), proposes to construct additional north apron space and M&O infrastructure at the Barrow Airport. Civil work would include the following components, as illustrated in EA Figures 2 and 3:

- Shift or relocate the taxilane centerline 20 feet to the south to accommodate wingtip clearance for ADG III aircraft. No expansion of the apron embankment is needed, only reshaping of the surface.
- Relocate taxilane edge lighting.
- Extend the north airport apron 400 feet to the east to provide apron space in front of an existing undeveloped lease lot east of the North Slope Borough (NSB) Search and Rescue facility. No development of the lease lot will occur under this project; lease lot development will be the responsibility of the lessee.
- Construct an approximately 400-foot by 500-foot (4.6-acre) gravel pad on the south side of the runway to accommodate the new building, vehicle parking, fuel tanks, emergency generators, sand storage, equipment parts, and storage (conex) containers.

- Construct a new approximately 100-foot by 225-foot combined M&O facility incorporating the ARFF and SREB; a sand storage facility; a deicing chemical storage space capable of accommodating a 1500-gallon chemical storage tank, dispensing vehicle, and other associated chemical handling equipment; and living quarters for DOT&PF emergency response personnel. These facilities may be housed in a single structure or constructed as multiple structures. The conceptual building floor plans developed for this report are based on a custom engineered structural-steel-framed building founded on a passively refrigerated concrete foundation system.
- Construct security fence separating secure and non-secure areas as needed to meet Transportation Safety Administration requirements.
- Install a new 24-foot-wide, two-lane access road connecting the new M&O facility pad to Emaiksoun Road. The new road would be centered between the existing lease lots in the 100-foot-wide corridor reserved for roadways, approximately 1,400 feet to the right of the runway centerline. It is expected to be gravel-surfaced.
- Construct a 44-foot-wide, gravel-surfaced access road in front of the ARFF bay in the M&O Facility to provide direct access to the runway for the firefighting vehicle as well as other M&O equipment.
- Construct a short north-south segment of road between the M&O pad and the access road. The road will be designed as a rural industrial commercial access road. It is expected to be gravel-surfaced, with a top width of 20 feet.

The existing Barrow Airport Material Site contains the gravel necessary for this project and will be made available for the contractor's use (EA Figure 7). In order to extract the amount of gravel needed for this project, the material site will need to be expanded to the north and east by approximately 15 acres.

Construction of the improvements is planned to occur in stages, with the first stage is anticipated to begin in 2016. The second stage is anticipated to begin around 2019.

REASONABLE ALTERNATIVES (EA Section 4.0)

Previously studied alternatives and additional alternatives were developed, and evaluated for safety, engineering, environmental, and fiscal considerations. All but one of the alternatives was dropped from further consideration. EA Section 4.1 and Appendix A includes descriptions and figures of the alternatives that were dropped from further consideration.

No Action Alternative

Taking no action at the Barrow airport would result in the continued use of the undersized M&O facility and deficient airport apron. The airport would remain out of compliance with FAA wingtip clearance requirements and EPA deicing regulations.

Projected increase in aviation activity forecast in the AMP will cause the apron to become more congested and require additional maintenance equipment and storage, which will exacerbate the problem of a cramped apron and M&O Facility.

IMPACT ASSESSMENT

The EA analysis determined that the Proposed Action would not have significant adverse effects on any environmental resource. Section 6.0 of the EA details the environmental consequences of the proposed project and Table 1 of the EA provides an overview of these impacts.

The proposed project would impact 32.16 acres of wetlands. Mitigation for these unavoidable impacts will be provided in accordance with the USACE Regulatory Guidance Letter (RGL) ID No. 09-01.

MITIGATION AND ENVIRONMENTAL COMMITMENTS

Specific avoidance and minimization measures that have been incorporated into the design of this project are listed below. All additional minimization and mitigation measures outlined in Section 6.12.3 of the EA will be followed, as well as the stipulations and conditions to the environmental permits.

Wetland Mitigation

Work within wetlands would result in permanent placement of fill material on wetlands under jurisdiction of the USACE. A Section 404 Individual Permit will be obtained for impacts to Waters of the US from the proposed project. Other minimization measures include reducing the potential for sediment transport offsite by providing a vegetated buffer around the airport footprint and using appropriate BMPs that will be identified in the SWPPP.

Compensation for unavoidable impacts to 32.16 acres of wetlands will be provided in accordance with USACE Regulatory Guidance Letter (RGL) ID No. 09-01. A detailed mitigation plan will be developed during the permit phase in consultation with USACE. Mitigation for unavoidable impacts may include the following or other agency recommended proposal:

- A tundra garden project that involves rehabilitating degraded or destroyed wetlands within Barrow using tundra sod and native plants.
- Design and installation of signs around the lagoon boardwalk educating community members about various aspects of the wetland environment.
- Support of Ilisagvik College to develop programming to train more Citizen Scientists with a focus on wetlands including contracting a Community Educator with a background in ethno-botany and experience working in/with wetlands, particularly tundra and Arctic biology.

Threatened and Endangered Species

The Proposed Action will result in a loss of 32.16 acres of freshwater wetland habitat for Steller's eider (*Polysticta stelleri*) and Spectacled eider (*Somateria fischeri*). The USFWS has no objection to the purpose and need or the preferred alternative, and is preparing a Section 7 Biological

Opinion that will be finalized during the permitting process. Wetland mitigation will ensure that wetland habitat is restored or conserved for Steller's and Spectacled eiders.

DOT&PF will comply with the Migratory Bird Treaty Act and ensure that on-tundra construction activities will not occur during the bird nesting window if June 1 to July 21. Any active nests encountered will be undisturbed and left in place until young hatch and depart.

Water Quality

The Proposed Action was designed to ensure the longest possible drainage path through wetland prior to reaching Isatkoak Lagoon, and as such no impact to water quality is anticipated.

The current APDES MSGP for the Barrow Airport contains provisions to implement control measures. The MSGP will be modified to include additional operations necessary as a result of the Proposed Action. A site-specific SWPPP will be prepared prior to construction to ensure compliance with water quality standards.

Temporary construction impacts will be minimized via the following measures:

Air Quality

- 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.

Fish, Wildlife, and Plants

- 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.
- 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.
- Much of the construction will likely occur during winter when the ground is frozen enough to support heavy equipment, thereby reducing wildlife impacts.

Hazardous Materials and Solid Waste

- 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.

- The construction contractor will be required to develop a Hazardous Materials Control Plan (HMCP) in accordance with DOT&PF contract specifications.
- A Spill Prevention, Control, and Countermeasures (SPCC) plan may also be required to address storage of fuels and potential fuel spills.

Historical, Architectural, Archaeological, and Cultural Resources

- If previously undiscovered cultural material is found during construction, all work in the area will be stopped and the SHPO will be notified immediately.
- An avoidance boundary will be maintained around the cultural site near the southern border of excavation at the material site. Excavation near this site will not be required.

Water Quality

- 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.

PERMITS AND APPROVALS

The following permits and clearances will be obtained prior to construction:

- U.S. Army Corps of Engineers (USACE) Section 404 individual permit for fill in wetlands (Appendix C – Initial Draft Permit Application)
- Alaska Department of Environmental Conservation (ADEC) 401 Certificate of Reasonable Assurance for water quality
- ADEC APDES General Permit for Discharges from Large and Small Construction Activities (obtained by contractor)
- Alaska Department of Natural Resources (DNR) Material Site Reclamation Plan approval (obtained by the construction contractor)
- 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)
- North Slope Borough (NSB) Permit Application for the City of Barrow
- NSB Traditional Land Use Inventory Clearance
- FAA Notice of Proposed Construction of Alteration Form 7460-1

Copies of the permit applications are provided in EA Appendix C.

FEDERAL FINDING AND APPROVAL

I have carefully and thoroughly considered the facts contained in the attached EA. Based on that information, I find the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in Section 101(a) of the National Environmental Policy Act of 1969 (NEPA) and other applicable environmental requirements. I also find the proposed Federal action will not significantly affect the quality of the human environment or include any condition requiring consultation pursuant to Section 102(2)(c) of NEPA. As a result, FAA will not prepare an Environmental Impact Statement (EIS) for this action.

Approved: _____ 2/8/2016

Kristi A. Warden, Acting Division Manager, Airports Division, FAA Alaska Region *Date*

OPPORTUNITY FOR PUBLIC HEARING AND COMMENTS

BARROW MAINTENANCE FACILITY & AIRPORT IMPROVEMENTS

IRIS # Z614350000, Z617060000, and Z623780000

PUBLIC MEETINGS AND COMMENTS

The State of Alaska Department of Transportation and Public Facilities (ADOT&PF) held two public meetings for the Barrow Maintenance Facility and Airport Improvements project, as listed below. The first meeting is summarized in Section 7 of the Draft Environmental Assessment (EA) document and the second meeting is summarized below.

Meeting Date	Purpose
January 14, 2015	Introduce the project to the community and get public input on the project scope
July 9, 2015	Present the draft environmental document to the community and provide an update on the project

Notice of EA Availability

Notice of availability of the EA and public meeting announcement was published several ways. The meeting notice was advertised in the local *Arctic Sounder* as a display advertisement. Postcards were mailed to all box holders in Barrow in addition to elected officials, agencies, and tribal entities. Other outreach included a State of Alaska Online Notice, an email notice and reminder, Twitter and Facebook posts on the ADOT&PF accounts, a Facebook advertisement, a public service announcement run on the local radio stations, and fliers posted around town. A copy of the outreach can be found in Appendix H.

The draft Environmental Assessment was available for review at http://dot.alaska.gov/nreg/barrowaip/documents.shtml. Paper copies were delivered to the Borough's Planning Department, UIC, and the public library in Barrow.No additional paper copies of the EA were requested during the public comment period.

Public Meeting

The preferred alternative and EA findings were presented at the meeting in Barrow on July 9, 2015. Twenty people signed in and asked questions about the project.

Public Comments

Only verbal comments were received at the meeting and they are summarized in the meeting notes (Appendix H). The verbal comments received had already been considered and none resulted in changes to the EA. All comments received for the duration of the project and the corresponding team responses are summarized Appendix H.

Federal and State Agencies

Agencies received notice of the availability of the EA in the email sent to all stakeholders on June 25, 2015 and in a reminder email on July 8, 2015 (Appendix H). All agencies were provided with the web address for downloading the EA and team contact information to submit comments. The email was distributed to ADEC, ADF&G, ADNR/SHPO, ADOT&PF, FAA, USACE, BLM,

USFWS, USCG, EPA, USACE, National Park Service, Transportation Security Administration, Department of Homeland Security, US Department of Commerce, US Department of Interior, Bureau of Land Management, US Fish and Wildlife Department Services, US Natural Resources Conservation Service, Arctic Slope Native Association, Arctic Slope Regional Corp., Eskimos Inc., Inuit Circumpolar Council, Tagiugmiullu Nunamiullu Housing Authority, Ukpeagvik Inupiat Corporation, North Slope Borough, City of Barrow, and legislative representatives. No responses were received.

RECOMMENDATIONS

The ADOT&PF recommends that the project as presented in the May 2015 EA, with the changes referenced herein, be advanced. The project to be advanced is that identified as the Proposed Action (Alternative 1).

FINAL ENVIRONMENTAL ASSESSMENT

Barrow Maintenance Facility & Airport Improvements
AKSAS No. 61974 & 61435

Prepared for:

United States Department of Transportation
Federal Aviation Administration
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On behalf of the sponsor:

State of Alaska
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This Environmental Assessment becomes a Federal document when evaluated, signed, and dated by the Responsible FAA Official.

2/8/2016

Responsible FAA Official — Date

Kristi A. Warden, Acting Division Manager

The following individuals may be contacted for additional information concerning this document:

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List of Acronyms and Abbreviations

AC	Advisory Circular
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADG	Aircraft Design Group
ADNR	Alaska Department of Natural Resources
AMP	Wiley Post/Will Rogers Memorial Airport Master Plan
APDES	Alaska Pollutant Discharge Elimination System
AHRS	Alaska Heritage Resources Survey
ARFF	Aircraft Rescue and Firefighting
BLM	Bureau of Land Management
BMP	Best Management Practices
BRL	Building Restriction Line
BUECI	Barrow Utilities and Electric Cooperative, Inc
CWA	Clean Water Act
cy	cubic yards
dB	decibel
DNL	Day-Night Average Sound Level
DOT&PF	Alaska Department of Transportation and Public Facilities
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
FAA	Federal Aviation Administration
M&O	Maintenance and Operations
MBTA	Migratory Bird Treaty Act
MSGP	Multi-Sector General Permit
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NLURA	Northern Land Use Research of Alaska, LLC
NPL	National Priority List
NRHP	National Register of Historic Places
NSB	North Slope Borough
OHA	Office of History and Archeology
OSHA	Occupational Safety and Health Administration
SHPO	State Historic Preservation Office
sq. ft.	square feet
SREB	Snow Removal Equipment Building
SWPPP	Storm Water Pollution Prevention Plan
T&ES	Threatened and Endangered Species
UIC	Ukpeaġvik Iñupiat Corporation
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WHMP	Wildlife Hazard Management Plan

1 Introduction and Project History

The Wiley Post/Will Rogers Memorial Airport (Barrow Airport; FAA designation BRW) in Barrow, Alaska, is a state-owned, public-use airport that functions as a critical element of the transportation system of the North Slope. Barrow Airport provides regularly scheduled passenger air service to communities throughout the region, as well as the only regional connection to Ted Stevens Anchorage International Airport.

In January 2014, the Alaska Department of Transportation and Public Facilities (DOT&PF) finalized the Wiley Post/Will Rogers Memorial Airport Master Plan (AMP) Update. The Master Plan provides the framework needed to guide future airport development and describes the short- (5-year), medium- (10-year), and long-term (20-year) development plans to meet current and future aviation demand.

Short- or near-term projects are the highest priority needs, recommended for implementation within five years of the AMP. Five near-term projects are noted in the Master Plan, including a runway repair to be completed in the summer of 2015, new Maintenance and Operations (M&O) facilities, apron expansion on the north side of the airport, a stormwater management plan, and a parallel taxilane on the south side of the runway.

The M&O facilities and the north side apron expansion projects are the focus of this Environmental Assessment (EA).

2 Purpose and Need

The recently completed Master Plan identified deficiencies in the existing airport infrastructure and highlighted current and anticipated needs. Cargo staging and vehicular traffic for airport service and loading operations on the apron, along with the proximity of the major support buildings to the apron and to each other, all contribute to apron congestion. Forecast additional aviation activity would generate more congestion and increase maintenance needs, which would accentuate the current deficiencies as well as require storage for additional maintenance equipment.

2.1 M&O Facility

Barrow Airport's existing M&O building, built in 1992 and expanded in 1998, is at maximum capacity and undersized for the airport's current and anticipated needs. This will be made worse by future increase of aviation activity forecast in the AMP. The building is situated on a parcel that does not allow for expansion.

The existing facility does not have sufficient space to house all of the equipment necessary. M&O parts, equipment, and materials are currently stored at a number of different locations around the airport, making it more difficult for M&O personnel to perform their duties efficiently.

As a result of deicing regulations (40 CFR 449) issued by the Environmental Protection Agency (EPA) in 2013, DOT&PF must now store a non-urea-containing liquid deicing agent, as well as specialized equipment for applying the new agent. In addition, there is no heated sand storage building; the sand that is used for the runway is stored outside in bags and rotated in and out of the heated M&O building. Maintaining a clear runway surface for the design aircraft during inclement weather will require additional snow removal equipment along with warm storage for sand and the deicing chemical.

A new facility would provide space for sand, deicing chemical, and equipment for near-term needs. The gravel pad is sized to accommodate necessary outdoor storage of equipment and materials. Should future expansion of the M&O building be required, the gravel pad constructed by this project will provide a stable pad for the building expansion; at that time, an extension of the gravel pad would likely be needed to accommodate outdoor storage.

Aircraft rescue and firefighting equipment will be housed at the M&O facility. The facility's location will affect emergency response time. The proposed M&O facility must be centrally located with direct access to the center of the runway.

2.2 North Apron Expansion

Within the Barrow airport property, there are a number of lots leased to private companies and to government agencies for aviation-related activities. With the exception of those reserved by DOT&PF and one small lot near DOT&PF's connex storage area, all lease lots with apron frontage are currently leased, and there is additional demand for apron-front lease space.

The existing apron does not have the frontage for additional lease lots to support current or future demand anticipated in the AMP. In addition, the apron and taxilane on the north side of the runway do not provide sufficient wingtip clearance for two 737 aircraft to pass, causing restricted jet operations.

The purpose of this project is to extend the apron southward to accommodate wingtip clearance and eastward to provide access to a new lease lot.

3 Proposed Action

DOT&PF, in cooperation with the Federal Aviation Administration (FAA), proposes to construct additional north apron space and M&O infrastructure at the Barrow Airport. The project area and associated material site are both located in United States Geological Survey (USGS) Barrow Quadrangle (see Figure 1).

3.1 M&O Facility

The proposed M&O Facility will be located on a 4.6-acre gravel pad on the south side of the runway, with an access road to the runway and from Emaiksoun Road. The M&O building will include an Aircraft Rescue and Firefighting (ARFF) facility as well as a Snow Removal Equipment Building (SREB), sand and deicing chemical storage, and living quarters for DOT&PF emergency response personnel.

The facility will require approximately 13,700 square feet (sq. ft.) for equipment response and storage; 6,000 sq. ft. for sand and chemical storage; 1,250 sq. ft. for administration and training office space; 3,400 sq. ft. for utility rooms including electrical, fire suppression, and janitorial rooms; and 3,300 sq. ft. for the residential facilities. Overall dimensions of the M&O Facility will be approximately 100 feet by 262 feet plus the vestibule, and approximately 28 feet high, with a top elevation of 80 feet. Dimensions of each use area as well as overall building dimensions will be refined as design progresses. The M&O Facility will be located as shown on Figure 2, with the north face offset 850 feet from the runway.

Once the new M&O Facility is complete and all M&O activities have been moved, the existing M&O Facility will likely be disposed of either through transfer to another entity or by removal of the building. Buildings left unmaintained quickly fall into disrepair in Barrow's extreme arctic climate.

3.2 North Apron Expansion

Additional apron space will provide sufficient wingtip clearance for two 737 aircraft to pass. As outlined in the AMP, the Boeing 737-700 is currently the most demanding aircraft with over 500 annual operations at Barrow, although occasional operations by larger aircraft do occur. Alaska Airlines plans to being phasing in the 737-800 over the long term (AMP, 2014). Both the 737-700 and the 737-800 are Aircraft Design Group (ADG) III aircraft.

Air carrier and air taxi gates and apron space requirements were assessed based on FAA Advisory Circulars (AC) 150/5360-9, 150/5360-13, and 150/5300-13A, and through discussions with airport tenants.

Civil work consists of extending the apron on the north side of the airport approximately 400 feet to the east to support the development of a new lease lot and 230 feet south to provide wingtip clearance between parked aircraft and aircraft on the taxilane south of the apron. See Figure 3.

The area available for lease lot development will be 300 feet by 400 feet (120,000 sq. ft.) directly north of the apron expansion. The new taxilane will be 50 feet wide with a 20-foot-wide paved shoulder and 3,900 feet long. The taxilane centerline will be moved 20 feet south, and the existing edge lights will be relocated. The area of the completed taxilane will be approximately 195,000 sq. ft. Because the apron

already has a wide unpaved shoulder, additional embankment is not needed to accomplish the widening. Instead, the existing shoulder will be reconstructed and paved to accommodate airplane loads.

3.3 Identification of Federal Action Requested

DOT&PF requests that FAA participate in funding the M&O facility and access roads, the North Apron expansion, and decommissioning of the existing M&O facility.

4 Alternatives

4.1 Alternatives Dropped from Further Consideration

Eliminated alternatives are described below and not analyzed further in this document. Figures are provided in Appendix A.

4.1.1 M&O Facility

Alternative locations considered for the M&O gravel pad and facility included the eastern end of the apron where the proposed apron expansion is planned as well as a site just southwest of the proposed location (see Appendix A). These options were dismissed in part due to the longer time for emergency response to reach the most distant points on the runway. Ideally, the emergency crash and fire response equipment should be housed in the most central location with direct access to the runway.

The proposed location of the M&O pad and facility required an access road south of the runway. One option would have followed the southern boundary of the airport to serve both the airport lease holders and the property owners to the south of the airport. This option was dropped because the roads would not be for the sole purpose of serving the airport and thus would be ineligible for FAA funding.

4.1.2 North Apron Expansion

One alternative for the apron extension is to accommodate occasional use of ADG IV aircraft (wingspan from 118 feet up to but not including 171 feet) such as the C-130, which is occasionally operated by the United States Coast Guard (USCG) and Lynden Air Transport. This would require extending the apron embankment shoulder approximately 26 feet past the existing shoulder. Another option was to shift the taxilane to provide for the full ADG IV safety area and wingtip clearance. This would require extending the apron embankment shoulder approximately 53 feet past the existing shoulder (see Appendix A).

Both alternatives were dismissed during early design due to the fact that BRW plans to maintain an ADG III (79 feet up to but not including 118 feet) designation in the long term. In addition, the extension of the shoulder embankment would require a large amount of gravel, a limited resource in Barrow. The costs and the potential for greater environmental impacts were not warranted by the infrequent use of the larger aircraft.

Alaska Airlines recently constructed a concrete hardstand to allow a 737 to park parallel to the taxilane facing east or west. Alternatives assume the parking location and orientation of the Alaska Airlines 737 hardstand are fixed. An additional option would be to park the aircraft closer to the terminal and/or park it at an angle so that ADG III wingtip clearance could be achieved without making changes to the taxilane. Parking the 737 at an angle would require a tug to move it out away from the terminal.

Moving the hardstand north, closer to the Alaska Airlines terminal, was undesirable, as the long-term plan is to relocate the Building Restriction Line (BRL) to the south to allow leaseholders such as Alaska Airlines to expand their buildings to the south. Currently the lease areas on the north side are very constrained (as documented in the AMP). The Alaska Airlines hardstand's current position would allow

the BRL to move 35 feet south, an incremental change toward the ultimate 110-foot shift in the BRL that will be possible once a full-length parallel taxilane is constructed.

4.2 Alternative 1: Proposed Action

The proposed action is shown on Figures 2 through 7 and described below. Construction is anticipated to begin as early as Summer 2016.

4.2.1 M&O Facility

- Construct an approximately 400-foot by 500-foot (4.6-acre) gravel pad on the south side of the runway to accommodate the new building, vehicle parking, fuel tanks, emergency generators, sand storage, equipment parts, and storage (conex) containers.
- Construct a new approximately 100-foot by 225-foot combined M&O facility incorporating the ARFF and SREB; a sand storage facility; a deicing chemical storage space capable of accommodating a 1,500-gallon chemical storage tank, dispensing vehicle, and other associated chemical handling equipment; and living quarters for DOT&PF emergency response personnel. These facilities may be housed in a single structure or constructed as multiple structures. The conceptual building floor plans developed for this report are based on a custom engineered structural-steel-framed building founded on a passively refrigerated concrete foundation system.
- Construct security fence separating secure and non-secure areas as needed to meet Transportation Safety Administration requirements.
- Install a new 24-foot-wide, two-lane access road connecting the new M&O facility pad to Emaiksoun Road. The new road would be centered between the existing lease lots in the 100-foot-wide corridor reserved for roadways, approximately 1,400 feet to the right of the runway centerline. It is expected to be gravel-surfaced.
- Construct a 44-foot-wide, gravel-surfaced access road in front of the ARFF bay in the M&O Facility to provide direct access to the runway for the firefighting vehicle as well as other M&O equipment.
- Construct a short north-south segment of road between the M&O pad and the access road. The road will be designed as a rural industrial commercial access road. It is expected to be gravel-surfaced, with a top width of 20 feet.

4.2.2 North Apron Expansion

- Shift or relocate the taxilane centerline 20 feet to the south to accommodate wingtip clearance for ADG III aircraft. No expansion of the apron embankment is needed, only reshaping of the surface.
- Relocate taxilane edge lighting.
- Extend the north airport apron 400 feet to the east to provide apron space in front of an existing undeveloped lease lot east of the North Slope Borough (NSB) Search and Rescue facility. No development of the lease lot will occur under this project; lease lot development will be the responsibility of the lessee.

4.2.3 Material Source

The existing Barrow Airport Material Site contains the gravel necessary for this project and will be made available for the contractor's use (Figure 7). In order to extract the amount of gravel needed for this project, the material site will need to be expanded to the north and east by approximately 15 acres. A Mining and Reclamation Plan must be approved by the Alaska Department of Natural Resources (ADNR) before gravel haul begins.

4.2.4 Decommission Existing M&O Facility

The existing M&O Facility is not fit for purpose and will be decommissioned by DOT&PF after construction of the proposed M&O facility is complete.

Due to remote location and high cost of construction in Barrow, the existing facility has value as a building and will likely be acquired by another user and repurposed. Alternatively, the structure may be disassembled and reassembled elsewhere. In either case, prior to DOT&PF relinquishing ownership, a pre-disposal assessment of the building will be completed.

4.2.5 Permits or Approvals

- US Army Corps of Engineers (USACE) Section 404/Alaska Department of Environmental Conservation (ADEC) 401 (see Appendix C)
- ADEC Construction General Permit (obtained by construction contractor)
- ADNR Temporary Water Use Permit (obtained by construction contractor)
- NSB Permit Application for the City of Barrow
- NSB Traditional Land Use Inventory Clearance
- US Fish and Wildlife Service (USFWS) – Section 7 Consultation (see Appendix F)
- State Historic Preservation Officer (SHPO) Section 106 Clearance (see Appendix E)
- ADNR Material Site Reclamation Plan (obtained by construction contractor)
- FAA Notice of Proposed Construction or Alteration Form 7460-1 (see Appendix C)

4.3 Alternative 2: No Action

Taking no action at the Barrow airport would result in the continued use of the undersized M&O facility and deficient airport apron. The airport would remain out of compliance with FAA wingtip clearance requirements and EPA deicing regulations.

Projected increase in aviation activity forecast in the AMP will cause the apron to become more congested and require additional maintenance equipment and storage, which will exacerbate the problem of a cramped apron and M&O Facility.

4.3.1 Permits or Approvals

No permits would be needed if no action is chosen. The no-action alternative would not meet the purpose and need and would not bring the airport up to current FAA and EPA standards.

4.4 Alternatives Summary

The alternatives (proposed action and no action) are summarized in Table 1 below. A detailed discussion of the potential impacts associated with each alternative can be found in Section 6.

Table 1 – Comparison of Alternatives

	Proposed Action	No Action
Purpose and Need		
Compliance with Current State and FAA Airport Standards	The proposed action will 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 proposed action will not require changes to zoning or land use designations. Development on the south side of the airport will not be altered by the proposed M&O Facility and North Apron expansion. The AMP and airport improvements are aligned with the Barrow Comprehensive Plan (2015).	No effect
Construction Impacts	The proposed action is anticipated to result in short-term air quality impacts, including emissions from construction vehicles, airborne dust during construction, and summer vehicle travel over unpaved roads. Water quality may be temporarily impacted from ground disturbance, erosion, and sedimentation from stormwater runoff. There would be minimal and temporary noise impacts to residential areas resulting from increased levels of construction traffic and gravel removal activities. These short-term impacts would be minimized as described in Section 6.3.	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 will cause the loss of 32.15 acres of freshwater wetland habitat. DOT&PF will ensure that on-tundra construction activities will not occur during the bird nesting window of June 1 to July 31. Wetland mitigation detailed in Section 6.12.3 will mitigate loss of habitat for threatened Steller's and spectacled eiders. If required, additional mitigation for threatened and endangered species impacts will be determined during consultation with USFWS. Impacts are further minimized as described in Section 6.4.	No effect
Floodplains	Non-issue	Non-issue
Hazardous Materials, Pollution Prevention, and Solid Waste	Hazardous materials used for maintenance that are stored in the existing M&O facility will be transferred to the new facility when constructed. Hazardous waste streams at the proposed M&O facility will remain the same. Solid waste that may be generated after DOT&PF relinquishes ownership of the existing M&O facility will not exceed available landfill capacities.	No effect
Historical, Architectural, Archaeological, and Cultural Resources	DOT&PF has submitted Section 106 findings letter noting "no historic properties affected" to SHPO for concurrence (May 11, 2015).	No effect
Light Emissions and Visual Impacts	Non-issue	Non-issue
Natural Resources and Energy Supply	Powering the M&O facility through diesel generators is planned for the short term. Existing natural gas networks will require upgrades to incorporate the new M&O facility.	No effect
Noise	No effect	No effect
Secondary (Induced) and Cumulative Impacts	The proposed action has the potential to create a shift in energy need and eventually require extension of the utility system in Barrow south of the airport. The USFWS is taking into account all upcoming projects in Barrow in order to measure cumulative impacts to threatened and endangered species.	Air emissions may increase if facilities must rely on diesel generators. Per the AMP, increased demand for passenger flights due to proposed oil and gas activities in the Arctic will accentuate the need for appropriate ARFF facilities, which will remain undersized if no action is taken.

	Proposed Action	No Action
Socioeconomic Impacts, Environmental Justice, and Children's Health and Safety Risks	The proposed action supports the sustainability of airport operations, which residents rely on for delivery of mail, food, and goods; travel to neighboring villages, Fairbanks, and Anchorage; and medevac and rescue operations.	No effect
Water Quality	The airport apron was designed to ensure the longest possible drainage path through wetlands prior to reaching the Isatkoak Lagoon. Airport operators are responsible for all aircraft deicing and discharge. The change from use of urea to potassium acetate was required to comply with EPA regulations. The Barrow airport currently operates under an Alaska Pollution Discharge Elimination System (APDES) Multi-Sector General Permit (MSGP) for Storm Water Pollution Prevention. No changes in water quality are anticipated as a result of the apron expansion. Short-term impacts to water quality may occur during construction; these are identified in Section 6.3.	No effect
Wetlands	The proposed action would directly impact approximately 32.15 acres of wetlands.	No effect
Wild and Scenic Rivers	Non-issue	Non-issue

5 General Setting

5.1 Climate

Barrow's climate is cold and arid. The community lies within the Arctic coastal plain ecoregion, which is characterized by an arctic climate and is underlain by thick, continuous permafrost. Barrow averages 4.5 inches of rainfall and 39 inches of snowfall annually (U.S. Climate Data). July and August are the wettest months, and although snow may fall any time of year, October is the snowiest.

5.2 Topography

The Barrow Airport property comprises approximately 770 acres, with elevations ranging from sea level to 48 feet at the high point of the airport embankment. Continuing eastward from the high point, the ground gently slopes to 30 feet at the eastern edge of the embankment, then drops into a ravine, with the surface of Isatkoak Lagoon at 16 feet above sea level.

The surrounding landscape is generally characterized by low elevations and low topographical relief. Thaw lakes and drained thaw lake basins cover over 60 percent of the Barrow Peninsula (Golder, 2015). Polygonal ground is characteristic of Arctic lowlands, and the Barrow area abounds in low and high-centered polygons formed from thermal contraction (USACE, 2014).

5.3 Hydrology, Soils, and Geology

The Barrow airport is surrounded by surface water. The Chukchi Sea is approximately 1,400 feet west of the runway, and Isatkoak Lagoon lies immediately east of the runway, bending around to a point approximately 2,000 feet north of the runway. Numerous small lakes dot the tundra, which is comprised of marine/coastal sand and gravel, with some bedrock exposures. The average depth of bedrock in the Barrow area is approximately 72 feet.

Permafrost is found approximately 1,000 feet inland from the beach in Barrow, and may be several hundred feet deep. Tundra vegetation covers the ice-rich frozen soils.

During most of the year, the tundra surface is completely frozen. After breakup, the surficial active layer will thaw, resulting in a soft, marshy surface. There is minimal ground water flow due to the presence of permafrost.

Drainage in the project area does not have a clearly defined singular exit channel, but rather a nearly flat but slightly sloping plain with several areas of standing water. In developed areas, culverts are used to avoid ponding. The Barrow airport property is not within flood hazard boundaries identified for the area.

6 Impact Comparison of Two Alternatives

This section analyzes the affected environment and 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 severity of the impacts was 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 deemed to be non-issues; these are discussed in Section 6.3. Justification for the determination of non-issue can be found in Appendix G.

- Air Quality
- Coastal Resources
- Department of Transportation Act: Section 4(f)
- Farmlands
- Floodplains
- Light Emissions and Visual Impacts
- Wild and Scenic Rivers

6.2 Compatible Land Use

6.2.1 Affected Environment

The NSB Barrow Zoning Committee has developed zoning laws and a comprehensive plan for Barrow. Four distinct zoning districts have been established to accommodate Barrow's unique land use practices. These districts are the Barrow Mixed Use District, Barrow Suburban (Residential) District, Barrow Industrial District, and Barrow Reserve District. The airport property is zoned Industrial, and all four zoning districts are represented in the land immediately surrounding the airport property (see Figure 8).

DOT&PF manages the airport property, which was conveyed to the State of Alaska from the U.S. Bureau of Land Management (BLM) on February 13, 1968, pursuant to Section 16 of the Federal Airport Act of 1946.

Within the Barrow airport property, there are a number of lots leased to private companies and to government agencies for aviation-related activities. With the exception of those reserved by DOT&PF and one small lot near DOT&PF's connex storage area, all lease lots with apron frontage are currently leased, and there is additional demand for apron-front lease space.

North of Ahkovak Street, on the northern edge of the airport boundary, there are suburban (residential) and multi-use lease lots used for a variety of purposes, including airport parking and government operations.

Land south of the runway within the airport boundary is primarily undeveloped wetlands. The FAA maintains a facility that includes a generator to provide power to navigational facilities that are crucial to safe air travel. The National Weather Service also maintains a facility on the south end of the airport property, which has a dedicated access road off of the immediately adjacent Emaiksoun Road.

Lands south of the airport property are primarily owned by Ukpeaġvik Iñupiat Corporation (UIC). UIC anticipates developing property directly south of the airport to support oil and gas and other industrial activities.

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 such as Barrow, AC 150.5200-33B recommends a separation distance of 10,000 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 5 miles. Both the wastewater facility and the drinking water intake are within the 10,000-foot separation distance. A Wildlife Hazard Management Plan (WHMP) has been drafted, and adoption of the WHMP following FAA approval is anticipated in the second quarter of 2015.

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?*

Neither the proposed action nor the no action alternative will require changes to zoning or land use designations. Development on the south side of the airport will not be altered by the proposed M&O Facility and North Apron expansion. The AMP and airport improvements are aligned with the Barrow Comprehensive Plan (2015). Construction of the M&O Facility and North Apron Expansion can be achieved using the existing material site, minimizing land disturbance.

No permanent noise impact is anticipated to result from selection of either the proposed action or the no-action alternative. Per FAA Order 1050.1, if the noise analysis concludes there is no significant impact, a similar conclusion may be drawn with respect to compatible land use. Noise impacts are evaluated in Section 6.8. Noise and compatible land use were evaluated in this EA due to the potential for impact, although after evaluation no impacts are anticipated.

Wildlife Attractants

The wastewater treatment facility and water reservoir will remain inside the FAA's recommended 10,000-foot separation distance, whether no action or the proposed action is selected. Placement of fill into designated wetlands will reduce the attractiveness of the area to wildlife, reducing the potential for wildlife-human and wildlife-aviation encounters and increasing overall aviation safety for airport operations. It is in the best interest of DOT&PF that wildlife and available wildlife habitat are minimized to avoid the potential for a damaging collision. When finalized, the WHMP will provide guidance for managing habitat and wildlife on the airport property.

6.2.3 Minimization and Mitigation

All applicable NSB, state, and federal permits will be applied for. Mitigation details required for applicable permits will be included in the application packages and provided to appropriate agencies through established communication and application review processes. The WHMP will be observed to maintain aviation safety and reduce wildlife encounters.

As no substantial change in land use is anticipated, long-term mitigation will not be required. For construction-related mitigation, see Section 6.3.6. No change in land use will occur if no action is taken.

6.3 Construction Impacts

6.3.1 Affected Environment

All construction impacts will occur on DOT&PF-managed properties, which are generally closed to the public unless entering for aviation use through an approved lease lot.

The gravel source and M&O facility pad and access roads are surrounded by industrial land managed by DOT&PF. The North Apron expansion is separated from residential lots by airport lease lots, security fencing, and Ahkovak Street.

National Ambient Air Quality Standards (NAAQS) for "Criteria Pollutants" are established under the Clean Air Act. Barrow has not been identified as an area that has regularly exceeded or is nearing violation of any of the health-based NAAQS. However, the ADEC Division of Air Quality has received complaints from the Barrow community regarding air quality related to dust. Airborne road dust is a health issue contributing to chronic respiratory problems such as bronchitis, asthma, and a high incidence of sinus infection among residents (NSB 2005). In the summer, regular watering of roadways is practiced in Barrow to help keep dust from becoming airborne. However, the runway, taxilanes, and apron at the Barrow airport are paved, making dust a non-issue.

The Occupational Safety and Health Administration (OSHA) details time-weighted permissible noise exposure limits to which workers (construction workers, truck drivers, etc.) may be exposed for a specific duration of time without the need for auditory protection. An example of such permissible noise exposure limits is an 8-hour continuous exposure to 85 decibels. Exceedance of such exposure limits requires the use or implementation of noise mitigation measures.

Barrow Airport currently operates under an APDES MSGP for Storm Water Pollution Prevention.

6.3.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *None established. See the significance threshold for the resource(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?*

Construction is planned to begin in Summer 2015 with the expansion of the existing DOT&PF gravel source to the west of the runway. Temporary noise impacts associated with increased levels of construction traffic and gravel removal activities are expected to occur during construction operations. Following these activities, no permanent noise level increases are anticipated. The OSHA permissible noise exposure limits are not anticipated to be exceeded during construction activities. Employees or workers involved in construction activities will be provided with auditory protection as required by regulation. Noise impacts to residential areas resulting from the construction and operation of the proposed infrastructure are anticipated to be minimal and temporary.

A portion of the airport apron will be closed during construction. Flights are expected to remain on schedule, although planes may have to back-taxi on the runway instead of on the apron to get into parking position. Vehicular traffic would not be re-routed, although some traffic control may be necessary to temporarily stop traffic while haul trucks cross or travel roadways used by the public.

It is anticipated that the proposed action will result in direct, short-term air quality impacts, including emissions from construction vehicles, airborne dust during construction, and summer vehicle travel over unpaved roads. Air quality impacts are not expected to cause or contribute to an exceedance of the NAAQS or to exceed exposure standards. Impacts to residents will be minimal due to the separation from residential areas. The project area is zoned industrial and already affected by baseline air quality and noise impacts from the operating airport.

Gravel roads in Barrow are routinely watered to prevent airborne dust, and watering trucks will likely be utilized during gravel haul and construction. Dust and emissions are minimized due to the proximity of the gravel source to the project area, as the short turnaround time means the contractor may use fewer trucks to haul material.

Water quality may be temporarily impacted from ground disturbance, erosion, and sedimentation from stormwater runoff. Erosion and sediment control measures under an approved Storm Water Pollution Prevention Plan (SWPPP) will control potential pollutants and protect adjacent wetlands.

6.3.3 Minimization and Mitigation

Impacts from construction will be temporary and minimal.

A Certificate of Reasonable Assurance will be obtained from ADEC prior to construction. In accordance with the APDES, a SWPPP specific to the project area will be prepared by the contractor. DOT&PF will develop an Erosion and Sedimentation Control Plan (ESCP) to be used as guidance for the contractor in developing the SWPPP. Appropriate Best Management Practices (BMPs) will be specified in the ESCP. Gravel roadways will be watered during construction to control airborne dust.

All waste will be disposed of in accordance with state and federal regulations. Food waste will be disposed of indoors to ensure there are no wildlife attractants. If any contaminated materials are encountered all work in the vicinity of the project will be stopped until ADEC is contacted and a corrective action plan is approved and implemented by ADEC. If any cultural or archeological material is found during construction, all work in the area will be stopped and both SHPO and the NSB Iñupiat History, Language, and Culture office will be notified.

DOT&PF will comply with the Migratory Bird Treaty Act (MBTA) and ensure that on-tundra construction activities will not occur during the bird nesting window of June 1 to July 31. Any active nests encountered during construction will be left in place and undisturbed until young hatch and depart.

6.4 Fish, Wildlife, and Plants

6.4.1 Affected Environment

The North Slope of Alaska is filled with an abundant and diverse array of fish, wildlife, and plants, which support the subsistence lifestyle of the Iñupiaq culture. Notable terrestrial species known to inhabit the North Slope include musk ox, caribou, polar and brown bear, wolverine, and arctic fox. Marine mammals include ringed, bearded, and spotted seals and bowhead and beluga whales. Migratory birds also play an important role on the North Slope during nesting and migration seasons.

The *Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* (ADF&G, 2014) documents no presence of Essential Fish Habitat on Barrow Airport property. Anadromous populations of sockeye salmon, broad whitefish, and least cisco have been documented nine miles south of Barrow in Ikroavik Lake.

Much of the Barrow area and surrounding lands are considered high-density nesting and staging habitat for shorebirds and passerine birds. The lakes, freshwater ponds, and freshwater emergent wetlands, including Isatkoak Lagoon, are used for breeding by tundra swans and molting and staging waterfowl. The dominant vegetation type in Barrow is wet tundra grasses. Moss, lichens, sedges, and small willows are also found in the undeveloped tundra that surrounds the community.

Migratory Birds

The MBTA (16 U.S.C. 703) prohibits "take" of migratory birds, their eggs, feathers, or nests. “Take” includes hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof. The MBTA does not distinguish between intentional and unintentional take. In Alaska, all native birds except grouse and ptarmigan (which are protected by the State of Alaska) are protected under the MBTA.

The FAA recommends that airports that have hazardous wildlife attractants nearby, such as in Barrow, prepare a WHMP to mitigate the public safety problem caused by aircraft collisions with birds and other wildlife. The Barrow airport has two such wildlife attractants nearby (see Section 6.2), and a draft WHMP presents measures that aim to reduce wildlife hazards on and near the airport. Per the draft WHMP, the elimination of birds nesting on airports is an important hazard management consideration since fledgling birds are a common hazard to aircraft. The WHMP indicates nest searches will be conducted annually during May and June. Discovered nests will be destroyed to encourage adult birds to reinitiate nesting activities off-site. If Threatened and Endangered Species (T&ES) nests are identified on or near the

airport, BRW will consult with the USFWS Endangered Species Branch for available management options. Nest and egg removal, other than T&ES, will be approved methods of depredation under an Airport Depredation Permit (USFWS) and Public Safety Permit (ADF&G), which will be acquired before these activities commence.

Threatened and Endangered Species

The purpose of the Endangered Species Act (ESA) is to protect and recover imperiled species and the ecosystems on which they depend. Spectacled eiders (*Somateria fischeri*), Steller's eiders *(Polysticta stelleri)*, and polar bear (*Ursus maritimus*), all listed as Threatened on the EPA's T&ES List, are known to exist in the Barrow area. Under provisions of Section 7(a)(2) of the ESA, a federal agency that carries out, permits, licenses, funds, or otherwise authorizes activities that may affect a listed species must consult with the USFWS to ensure that its actions are not likely to jeopardize the continued existence of any listed species (USFWS, 2013). Although several threatened species frequent the area, this project is not within critical habitat of any species listed in the T&ES List.

- **Spectacled Eider *(Somateria fischeri)*:**

  According to the USFWS, there are three breeding populations of spectacled eider, two in Alaska and one in Russia. Before nesting, the eiders occupy a variety of wetland and aquatic habitats. Observations have shown the species to make limited use of areas of meltwater overflow off river deltas, and likely move over land from the Chukchi Sea. The migration route of the spectacled eiders are not well known but generally, they have been recorded passing Nuvuk (Point Barrow) and/or arriving at the breeding areas in late May to early June.

  USFWS aerial surveys from 1998-2001 found that the highest densities were within 37 miles off the coast between Barrow and Wainwright, and within smaller areas northeast of Teshekpuk Lake, approximately 90 miles from Barrow. Within approximately 43 miles of the coast, spectacled eider nests were dispersed at low density (USFWS, 2012). Nesting habitats are most often in extensive grasses and vegetated islands within the tundra.

  Brood rearing occurs primarily in water bodies along the edge of emergent grasses and sedges, basin wetlands, and deeper lakes. After nesting, spectacled eider females and their broods leave coastal rearing sites for marine areas, typically in late August. It is believed that eiders nest inland, but feed out on the ocean, causing birds near Barrow to frequently fly over human-populated areas. As a result of this feeding behavior, the birds often collide with power lines and the mortality rate is high. Flocks of spectacled eiders staging before their southward migration are observed in offshore waters beyond the barrier islands from late June to September.

  On May 10, 1993, the spectacled eider was listed as Threatened under the ESA because of significant declines in the Alaska population. Consultation with USFWS is required to ensure the preferred action will not jeopardize the existence of spectacled eiders.

- **Steller's Eider *(Polysticta stelleri):***

  There are three populations of Steller's eiders, two in Arctic Russia and one in Alaska. Steller's eiders breed on the western Arctic Coastal Plain in northern Alaska, primarily on the northern half of the National Petroleum Reserve Alaska and on private land near Barrow. The area near

Barrow has prime nesting habitat consisting of numerous lakes, ponds and small streams with arctophila[1] and carex[2] vegetation. According to the USFWS Steller's eider information database, Barrow is a primary breeding ground for several dozen pairs. The incubation period lasts about 25 days, with hatching in late June as the males depart. Females will remain near the wetlands with their brood to feed on aquatic insects and plants until they are capable of flight at about 40 days. Once the breeding season is concluded, Steller's eiders move to marine waters to molt, generally in lagoons on the north side of the Alaska Peninsula. The molt period for the species lasts from late July to late October. After molting, many Steller's eiders migrate to the Aleutian Islands, southern portion of the Alaska Peninsula, Kodiak Island, and as far east as the shallow marine waters of Cook Inlet. However, thousands of the species may remain in the lagoons used for molting if freezing conditions do not force them to move to warmer areas. In spring, en route to nesting grounds, up to tens of thousands of individuals stop over in Alaska Peninsula lagoons to feed in Kuskokwim Bay. During their time in southwest Alaska, the Alaska breeding population intermixes with the Russian Pacific population. The two populations are visually indistinguishable; specific areas for concentration of the Alaska populations are unknown.

On June 11, 1997, the Alaska population of Steller's eider was listed as Threatened under the ESA because of the substantial decrease in the species' breeding range and a population decline of about 50 percent from the early 1970's.

As part of the DOT&PF Barrow Runway and Apron Paving project, ABR, Inc. was commissioned to survey pre-breeding eiders and eider nests on the airport property during 2004–2008. According to data from the ABR annual reports, no nests were found within the survey area, which extended 400 meters from the runway. According to the USFWS, both spectacled and Steller's eiders were known to nest on airport property before 2004.

- **Polar Bear *(Ursus maritimus)***

Polar bears are distributed throughout the drifting ice zone in the Beaufort and Chukchi seas off the coast of northern Alaska and frequently occur in Barrow, especially around the area of Nuvuk (Point Barrow) in the fall and more occasionally in the winter and spring (ABR, 2013). Polar bears' main source of food is ringed seals; they also hunt bearded seals, walrus, and beluga whales and will scavenge on remains of whale, walrus, and seal (USFWS, 2014). Barrow and other NSB communities purposely leave behind whale carcasses on certain areas of the coast after a hunt for the bears to scavenge.

Conservation efforts for the polar bear began with the Marine Mammal Protection Act of 1972. On May 15, 2008, the polar bear was listed as Threatened under the ESA because of the increasing loss of its habitat as sea ice declines throughout the species' range. This decline is expected to continue in the future and threatens the entire species (USFWS, 2014).

[1] A perennial grass native to Alaska, in the Poaceae family of grasses.
[2] A sedge in the Cyperaceae family.

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 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

- *Has coordination been completed with the USFWS and ADF&G to determine the presence of T&E species?*

According to ABR's 2013 Fish and Wildlife Resources report for the Barrow Airport Master Plan Update, most mammals that might be resident on the airport property are not considered to be species of concern. Use of the airport property by wildlife is not expected to increase as a result of the proposed action.

Migratory Birds

The proposed action will cause the loss of freshwater wetland habitat. However, this habitat harbors migratory birds and other wildlife that pose risks to aircraft and public safety. The draft WHMP outlines management procedures that aim to avoid catastrophic wildlife strike. Upon adoption of the WHMP, the Barrow airport will require coverage under a USFWS Bird Depredation Permit and/or an ADF&G Public Safety Permit to actively haze birds and manage nesting habitat.

Threatened and Endangered Species

Consultation with USFWS is ongoing in accordance with Section 7 of the ESA. An initiation of consultation letter was sent to USFWS on February 23, 2015.

- **Spectacled Eider *(Somateria fischeri)***

  Spectacled eiders will be directly impacted by the loss of freshwater wetland habitat; however a nest has not been identified in the project area in more than 10 years. Indirect impacts include potential changes to habitat caused by future development south of the airport. The proposed M&O facility is expected to use diesel generators in the short-term, although the incorporation of the M&O facility into the existing electric network is preferred. Overhead power lines have the potential to cause eider mortality due to collision. Consultation with USFWS will ensure all impacts are closely studied and mitigated when possible.

- **Steller's Eider *(Polysticta stelleri)***

  Because spectacled and Steller's eiders occur in the same area (NSB & USFWS 2004), impacts caused by the proposed action are expected to be similar to both species.

The USFWS is reviewing this project as one of the suite of airport improvements forecast in the AMP and taking into account all upcoming projects in Barrow in order measure cumulative impacts and prescribe appropriate mitigation measures.

- **Polar Bear *(Ursus maritimus)***

  Polar bears do occur in Barrow. However, the proposed action is not expected to have direct impacts to the species or their habitat due to proximity of the proposed M&O facility and apron expansion to existing airport infrastructure.

  An approved Polar Bear/Human Interaction Plan will be finalized during USFWS consultation and implemented during construction to minimize encounters and prevent undesirable results from unavoidable encounters.

6.4.3 Minimization and Mitigation

At this time, the WHMP has not been adopted, and as such the DOT&PF will comply with the MBTA and ensure that on-tundra construction activities will not occur during the bird nesting window of June 1 to July 31. Any active nests encountered will be undisturbed and left in place until young hatch and depart.

Wetland mitigation detailed in Section 6.12.3 will ensure that wetland habitat is preserved for threatened Steller's and spectacled eiders. If required, additional mitigation for T&ES impacts will be determined during consultation with USFWS.

6.5 Hazardous Materials, Pollution Prevention, and Solid Waste

6.5.1 Affected Environment

Hazardous Materials

The Barrow Airport property is largely undeveloped. A February 2015 search of the ADEC Contaminated Sites database indicated that there are no existing sites with "Open" status within the airport boundary (see Figure 9).

There are two former contaminated sites which have been deemed "Cleanup Complete" within the airport property. Both of these sites are on the north side of the airport.

The nearest "Active" contaminated site is the NSB South Pad, which is approximately 1.1 mile south of the western end of the runway. A 2011 inspection of this site found more than 350 drums of unknown material and 34 leaking aboveground storage tanks, with evidence of contaminant migration off the pad. The NSB South Pad site was the subject of a Phase II Environmental Site Assessment in 2002 that was reviewed for this Environmental Assessment. There is no documentation in this report of any recognized environmental conditions that have the potential to migrate from the NSB South Pad to impact the airport property. Table 2 lists all of the ADEC-tracked contaminated sites discussed in this section.

Table 2 – ADEC-Listed Contaminated Sites in the Vicinity of Barrow Airport

Site ID	Site Name	Status
310.38.009	FAA Barrow Vortac Facility	Cleanup complete – Institutional controls
310.38.010	MarkAir – Barrow	Cleanup complete – Institutional controls
310.38.018	Barrow Airport Lease Lot 2A Block 300	Cleanup complete
310.38.028	NSB South Pad	Open

In September 2012, the Office of History and Archaeology (OHA) conducted a cultural resource investigation on the airport property. One new site was identified (BAR-120) which contained debris from the 1940s. However, the report concludes that the small amount of debris is not associated with any permanent land use of waste disposal. See Section 6.6 for a detailed description.

A detailed wetlands mapping and delineation of Barrow Airport was conducted by HDR in 2012 and field-verified by ABR, Inc. in 2014. Both studies involved traversing the entire airport property. No instances of visible contamination or recognized environmental conditions were recorded during either study.

Solid Waste

Solid waste generated in Barrow is currently disposed of at an ADEC-permitted Class II Municipal Solid Waste Landfill located approximately 6 miles east of the airport. The landfill is permitted to accept municipal solid waste, non-radioactive materials, inert wastes, construction and demolition debris, ash, and sludge. The NSB provides refuse service to commercial businesses and households. Trash bins located throughout the community are picked up by refuse trucks and dumped at the landfill.

The landfill was opened in 2008 and permitted in 2009. It will ultimately have 11 cells, with an average storage volume capacity of about 81,000 cy per cell. Currently, the first cell is full of debris and the second cell is open and receiving waste.

6.5.2 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 action generate, disturb, transport, treat, or dispose of hazardous wastes?*

The proposed action does not involve any property listed in the ADEC Contaminated Sites database or the EPA's National Priority List.

Hazardous materials used for maintenance that are stored in the existing M&O facility will be transferred to the new facility when constructed. Proper controls will be used to ensure safe keeping and handling. The new M&O facility will provide proper indoor storage of chemicals used for airport maintenance. The new storage area will be less susceptible to leaks or spills associated with outdoor storage and handling and/or vandalism.

The existing M&O Facility will be decommissioned by DOT&PF after construction of the proposed M&O facility is complete. The entity who acquires the building may disassemble and reassemble it elsewhere in Barrow, in which case approximately 20 tons of concrete and interior building rubble would require disposal in the landfill. In addition, the new owner would need to drain the subgrade cooling system of the hazardous chemical used for passive refrigeration and clean the pipes. Sampling of the subgrade materials would be required to assure none of the chemicals used had leaked since installation. The hazardous material from draining the passive refrigerant system would be shipped out of state for disposal.

Hazardous waste streams at the proposed M&O facility will remain the same. Solid waste that may be generated after DOT&PF relinquishes ownership of the existing M&O facility will not exceed available landfill capacities.

6.5.3 Minimization and Mitigation

The construction-related mitigation for hazardous materials and solid waste are discussed in Section 6.3.3; no long-term mitigation is necessary.

6.6 Historical, Architectural, Archaeological, and Cultural Resources

6.6.1 Affected Environment

Under the requirements of Section 106 of the National Historic Preservation Act of 1966, the National Environmental Policy Act of 1969 (NEPA), the Archaeological and Historic Preservation Act of 1974, the Archaeological Resource Protection Act of 1979, the Native American Graves Protection and Repatriation Act of 1990, and Executive Order 11593, investigations for archaeological and cultural resources within the project area were conducted to support this Environmental Assessment.

DOT&PF commissioned Molly E. Conley and Alan D. DePew of the ADNR OHA to conduct cultural resource investigations of the Barrow airport. Following this investigation, DOT&PF commissioned Northern Land Use Research of Alaska, LLC (NLURA) to conduct a Cultural Resources Data Gap Analysis, which is dated December 2013. See Appendix E for Section 106 correspondence and reports.

The OHA Report 147 included a literature review of the records of the Alaska Heritage Resources Survey (AHRS), a pedestrian survey of the airport property focusing on the proposed location for the M&O facility, and a preliminary study of buildings associated with the runway and buildings adjacent to the north side of the airport. The pedestrian survey consisted of walking in sections spaced approximately 15 meters apart parallel to the runway. No test excavations were conducted due to generally wet conditions and a lack of evidence that would warrant excavation. The NLURA Data Gap Analysis was a desktop study that included review of the AHRS, National Register of Historic Places (NRHP), previous OHA reports on file, the NLURA library, and the Alaska Resources Library and Information System.

Notable within the project area is a grave site on the southern border of excavation of DOT&PF's material site. This site has been marked, and DOT&PF is maintaining an avoidance boundary around it. This project will not require excavation on the southern end of the material site near the grave site. Both the OHA Report 147 and the NLUR Data Gap Analysis identified several other sites within the airport boundary but outside of the project footprint, none of which had a determination of eligibility completed.

The OHA Report 147 identified one new site that lies partially within the project footprint. This site was recognized as "a dispersed area of historic debris representing two different time periods of disposal." The debris consisted of various beverage cans, a metal bucket, a boiler, and pieces of Marston Matting. Given the dispersed nature of the various debris items, an exact distance from the current airport runway was not noted in the report. The debris scatter is not recommended for inclusion in the NRHP.

6.6.2 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 Tribal Historic Preservation Office 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 will be lost or destroyed or that the qualities possessed by the property would be changed by the action?*

The cultural resource investigations located no significant cultural resources or known sacred or traditional cultural properties in the footprint of the proposed action. An initial scoping letter to SHPO was mailed in December 2014 (see Appendix E). The subsequent findings letter noting "no historic properties affected" has been sent to SHPO for concurrence (May 11, 2015).

A NSB Traditional Land Use Inventory Clearance will be obtained for project construction as a part of the NSB permitting process. Neither the proposed action nor the no action alternative would impact cultural resources that are known to exist in the project area.

6.6.3 Minimization and Mitigation

Should any cultural, archeological, or paleontological resources be found during the course of construction activities, work will be stopped, the site will not be disturbed, and both SHPO and the NSB Iñupiat History, Language, and Culture office will be notified. No long-term mitigation is necessary.

6.7 Natural Resources and Energy Supply

6.7.1 Affected Environment

Utilities servicing the Barrow airport include water, sewer, electricity, telephone, natural gas, and solid waste disposal. The airport's drinking water supply is obtained from the lower Isatkoak Lagoon reservoir and treated at the existing Barrow Utilities and Electric Cooperative, Inc. (BUECI) water treatment plant. BUECI has a 345,000 gallon/day processing capacity and can store up to 1.5 million gallons of water.

Natural gas is available to residential, commercial, and industrial development on the north side of the airport along Ahkovak Street, Okpik Street, and D Street. Existing developments south of the airport are serviced through BUECI's feeder line #3, which was last upgraded roughly 20 years ago. This natural gas

line is being reported as "at capacity." Investigations to expand the natural gas supply to the south of the airport are in progress.

Construction of the proposed infrastructure will require additional gravel, a limited resource in Barrow. In May 2013 new gravel sources were investigated with the resulting decision to expand the existing DOT&PF gravel source north and east to the extent possible. The existing material source is nearing the end of available gravel supply, and it is estimated that approximately two-thirds of the remaining gravel will be utilized for this project. Future airport projects will likely require a new source of gravel. Potential gravel sources for future projects outlined in the AMP are being identified by DOT&PF.

6.7.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Will the proposed action's construction, operation, or maintenance cause demands that would exceed available or future natural resource or energy supplies?*

Factors to Consider from FAA Order 1050.1E

- *Are there any major changes in stationary facilities (e.g., airfield lighting) which would have a measurable effect on local supplies?*
- *Will there be an increased consumption of fuel by aircraft due to substantial ground movement or increase in run-up times?*
- *Will there be use of materials in short supply?*

Extending the airport apron southward will require relocation of taxiway edge lighting, but no additional power will be needed to use the wider apron. Apron expansion to the east will open a new lease lot, which will need power upon development. Future development of this lease lot will likely utilize BUECI's existing electric and natural gas systems and a pump-and-haul water and wastewater system. It is anticipated that existing electric, natural gas, and water treatment systems can easily serve the lease lot.

Powering the M&O facility through use of diesel generators has been considered as a short-term measure. However, generating power through this means on a long-term basis is cost-prohibitive and may result in air emission increases, as well as increasing the risk for fuel spills resulting from diesel transfer activities. The incorporation of the M&O facility into the existing Feeder 3 natural gas network is preferred. Additional discussion between the airport authority and BUECI will be required, and upgrades to that network may be necessary. Such upgrades are being evaluated for other development south of the airport as well and are beyond the scope of this EA.

Telephone service will need to be provided at the M&O facility following construction. Wastewater will likely be collected in tanks, pumped out, and hauled to the wastewater treatment facility.

Expansion of the existing gravel source for provision of construction material is both the most cost-effective option and the least impactful to wetlands and habitat. During construction, planes will have to back-taxi some distance on the runway instead of on the apron. Increased consumption of fuel is not anticipated, as the planes will still travel the same distance to park.

6.7.3 Minimization and Mitigation

A minimum 50-foot setback from the centerline of Emaiksoun Road will be maintained during gravel pit expansion to reduce the extent of ground disturbance. This setback was chosen so that Emaiksoun Road remains eligible to be platted as a public right-of-way, which has been voiced as a priority by the community although the road will remain in DOT&PF's possession and on airport property (see Appendix D). No further mitigation and minimization actions are anticipated.

6.8 Noise

6.8.1 Affected Environment

All activity has an associated noise level and threshold tolerance associated with it. The FAA has adopted the Day Night Average Sound Level (DNL) as the standard metric for determining cumulative exposure of individuals to noise due to airport activities. DNL is the 24-hour average sound level in decibels (dB), with an additional 10 dB being applied to each nighttime (10:00pm to 7:00am) activity to account for increased "annoyance" to people during this period. The FAA has established DNL 65 dB as the threshold above which aircraft noise is considered to be incompatible with residential areas.

The DOT&PF commissioned a noise study related to expanding aircraft operations at the Barrow airport. The findings of this report, released in May 2014, are specific to aircraft utilization of the Barrow airport. The noise report finds that current (2012 data) aircraft operation noise levels exceed the DNL 65 dB for 16.3 acres of land outside of the airport property. Of these 16.3 acres of land, 7.9 acres are vacant and 7.2 acres are residential. The airport property is zoned industrial (see Section 6.2, Compatible Land Use), with residential properties to the north.

6.8.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Does the action, compared to the no-action alternative, cause noise-sensitive areas located at or above DNL 65 dB to experience a noise increase of at least DNL 1.5 dB?*
- *Does the area include national parks, national wildlife refuges, and historic sites, including traditional cultural properties? If so, do the projected noise levels of the proposed action require further study?*

Factors to Consider from FAA Order 1050.1E

- *Does the action change runway configurations, aircraft operations and/or movements, aircraft types using the airport, or aircraft flight characteristics that may affect existing and future noise levels?*

No national parks, wildlife refuges and sanctuaries, or traditional cultural properties exist nearby. The proposed action will not change the runway configuration, aircraft operations, aircraft types using the airport, or aircraft flight characteristics. The north apron expansion will result in a minor change in aircraft movements as aircraft will be maneuvering over an area not previously accessible. These movements will be approximately 450 feet from the nearest residential property. This movement is anticipated to be occasional in use and will occur at taxi speeds which cause minimal noise impacts as compared to takeoff noise levels.

6.8.3 Minimization and Mitigation

Operation of the preferred alternative's infrastructure is not anticipated to cause an increase in overall noise limits at the Barrow airport. Any permanently installed equipment or equipment that uses the M&O facility will be equipped with the appropriate noise-dampening components (e.g., mufflers) as required by manufacturer specifications to help mitigate any transient sources of noise.

6.9 Secondary (Induced) and Cumulative Impacts

6.9.1 Affected Environment

The AMP presents an implementation plan which consists of short- (5-year), medium- (10-year), and long-term (20-year) development plans to meet current and future aviation demand. Phase I includes all short-term projects, Phase II is medium-term projects, and Phase III is long-term projects. Project phases and status are detailed in Table 3 below.

Table 3 – Project Phase and Status

Phase	Project	Status
I	Runway Repair	Current
I	M&O Facilities	This project
I	Apron Expansion	This project
I	Stormwater Management Plan	This project
I	South Side Parallel Taxilane	Scoping
II	South Side Apron and Access Road	Future
II	Airport Master Plan and Airport Layout Plan Update	Future
II	ARFF/SREB Expansion	Future
II	Runway Repaving	Future
III	South Side Apron Expansion	Future
III	North Side Parallel Taxilane	Future

In addition to the developments planned on airport property, the City of Barrow is anticipating many other projects and community changes.

At this time, Royal Dutch Shell is anticipating a 2015 drilling season in the Chukchi Sea. If oil and gas activities commence, it is likely that demand for passenger flights to Barrow will increase, along with the need for temporary housing and other facilities. In the past, Royal Dutch Shell has chartered a Boeing 737-400 from Anchorage to Barrow, used the airport to transport crew to offshore exploratory drilling platforms, and staged helicopters in Barrow to support crew changes and search-and-rescue operations.

UIC anticipates developing an industrial park directly south of the airport to support oil and gas and other industrial activities. UIC has recently constructed two building pads which are expected to be used for camp development. The USCG has the potential to have a sizable presence in Barrow, as mentioned in its 2013 Arctic Strategy. The USCG foresees the need to increase regulatory oversight if increased energy exploration is to occur in the Arctic.

The 2015 Barrow Comprehensive Plan highlights overcrowding as a problem in Barrow. At least two residential projects are underway to alleviate this, including a subdivision roads project just across Isatkoak Lagoon from the airport that is slated for construction beginning in the summer of 2015.

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 population movement and growth?*
- *Public service demands?*
- *Changes in business and economic activity due to the development?*

Although a few facilities do exist south of the airport (see Section 6.2), the M&O facility would represent the first of multiple sizable developments proposed by DOT&PF and UIC. As the existing utilities do not have capacity to support proposed development, the proposed action has the potential to create a shift in energy need and eventually require extension of the utility system south of the airport. Powering the M&O facility through the use of diesel generators is proposed as a short-term measure (see Section 6.7). Further analysis in coordination with BUECI is needed to determine impacts to the existing utilities and appropriately size the infrastructure upgrades.

Selection of the no-action alternative would slow the need for power south of the airport and create obstacles for future projects, potentially resulting in air emissions increases if all facilities are expected to rely on diesel generators for power. Per the AMP, increased demand for passenger flights due to proposed oil and gas activities in the Arctic will accentuate the need for appropriate aircraft rescue and firefighting facilities, which will remain undersized if no action is taken.

6.9.3 Minimization and Mitigation

Barrow is a growing community, and the need for infrastructure and utilities south of the airport has been affirmed in the 2015 Barrow Comprehensive Plan. Each airport development outlined in the AMP will comply with state, federal, and local permit requirements, which may result in project specific mitigation requirements. Due to geography and surrounding land uses, the only option that exists for the Barrow airport is to develop wetlands to the south. Minimization efforts are taking place during the planning process, and impact will be minimized through design for future developments as it was for the proposed action.

The USFWS is reviewing this project as one of the suite of airport improvements forecast in the AMP and taking into account all upcoming projects in Barrow in order measure cumulative impacts and prescribe appropriate mitigation measures. No other mitigation measures are proposed for secondary and cumulative impacts.

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

6.10.1 Affected Environment

Barrow is the largest City in the NSB and serves as a center for regional government, transportation, communications, education, economic development, and health. Barrow's population is the largest of all the communities in the North Slope and has the most ethnic diversity. The current population of Barrow (NSB 2010) is 4,974 people. The majority (65 percent) of Barrow residents are Iñupiat and the remaining 35 percent are a mix of Caucasian, Asian, South Pacific Islander, Hispanic, and African-American. Since 2008, the Barrow population has grown by an average of slightly over 1 percent per year.

Although Barrow is a modern community, subsistence hunting, fishing, and whaling are still very important to the local culture and economy. Transporting food to the city is very expensive, and subsistence hunting has been a way of life for generations. Many residents who work full or part time continue to hunt and fish for much of their food and depend on subsistence food sources.

The Barrow airport is a public use airport. Residents rely on a wide range of services provided by the airport, including delivery of mail, food, and goods; travel to neighboring villages, Fairbanks, and Anchorage; and medevac and rescue operations.

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?*

During construction, the airport would remain open for public use. Flight schedules are expected to remain the same. Vehicular traffic would not be re-routed.

Both the proposed and no-action alternatives are consistent with Executive Order 12898 and would not disproportionately affect minority or disadvantaged populations. This project is in alignment with the AMP and the Barrow Comprehensive Plan, both of which had a significant public process consisting of

multiple public meetings where comments were gathered. Neither alternative would displace residents, result in residential or business relocation, or cause loss of employment. The proposed action would not disproportionately impact the low-income population or children.

6.10.3 Minimization and Mitigation

No adverse socioeconomic impact is anticipated from the proposed project; therefore, mitigation will not be required.

6.11 Water Quality

6.11.1 Affected Environment

The State of Alaska, through ADEC, maintains a list of impaired waterbodies, in accordance with the Clean Water Act (CWA). The closest impaired water body is south of the Brooks Range, approximately 500 miles from the project area.

Drinking water is provided to Barrow from the Lower Isatkoak Lagoon, which lies approximately 2,000 feet north of the runway. Water is pumped from the reservoir into the BUECI water treatment plant and distributed through the community. ADEC has delineated a Drinking Water Protection Area that extends one mile from the shore of the lagoon, encompassing about half of the runway's length. The need to protect Isatkoak Lagoon as a freshwater source was brought up during a public presentation held in Barrow in preparation for this Environmental Assessment (see Appendix D).

The Barrow Airport currently operates under an APDES MSGP for Storm Water Pollution Prevention. Airport operators are responsible for all aircraft deicing and discharge. Monitoring of wastewater discharge associated with deicing activities is not required at the Barrow airport. Runway deicing is achieved by using potassium acetate, an EPA-approved liquid non-urea-containing chemical which is applied with a tanker truck with a spray bar.

6.11.2 Environmental Consequences of the Alternatives

Significance Thresholds from FAA Order 1050.1E

- *Would the proposed action meet water quality standards?*
- *Is there potential difficulty in obtaining a permit or authorization?*

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?*

The portion of the apron expansion that is intended to develop a new lease lot is the closest to the lagoon and warranted additional hydrological research. The existing ground drains northeast, towards the lagoon (see Figure 10). The pad was designed to drain to its center, from which a single drainage channel exits to the south of the pad. The pathway from the apron's drainage point to the lagoon was designed to follow

the longest practical route. The drainage path is over 1,800 feet long and traverses wetlands that are categorized as having moderate filtration value. It is anticipated that the proposed action would have no effect on the public drinking water supply. ADEC-mandated ongoing testing of the drinking water source is performed by BUECI, and it is anticipated that no changes in water quality will occur as a result of the apron expansion.

Chemicals used for runway deicing and general maintenance will be stored in appropriate containment inside the proposed M&O Facility. A 401 Water Quality Certification will be obtained prior to construction to ensure that any potential discharge to waters of the United States will comply with the CWA. Construction impacts to water quality are identified in Section 6.3.2. Selection of the no action alternative will not result in changes to water quality.

6.11.3 Minimization and Mitigation

The current APDES MSGP for the Barrow Airport will be modified to include additional operations as a result of the proposed action. The MSGP contains provisions that implement control measures.

A site-specific SWPPP will be prepared prior to construction to ensure compliance with water quality standards established by the CWA. DOT&PF will develop an ESCP to be used as guidance for the contractor in developing the SWPPP. Appropriate BMPs will be specified in the ESCP. Minimization and mitigation of temporary water quality impacts during construction are discussed in Section 6.3.3.

6.12 Wetlands

6.12.1 Affected Environment

The USACE and the EPA define wetlands as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands are included in the definition of "Waters of the United States."

DOT&PF commissioned a 2015 Wetland Mapping Review, Aquatic Site Assessment, and Wildlife Habitat Evaluation in which wetlands were identified using field surveys and digitized image signatures (see Appendix B). Results of these efforts were used to create a wetlands map of the project area (Figure 11).

The project area generally consists of Palustrine Emergent Wetlands, containing a combination of Permanently Flooded Non-Persistent Emergent, Semi-Permanently Flooded Persistent Emergent, Seasonally Flooded/Saturated Persistent Emergent, Seasonally Flooded/Saturated Persistent Emergent, Saturated Persistent Emergent, and Saturated Persistent Emergent/Deciduous Scrub-Shrub wetlands. The Palustrine System is defined as all non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 percent. The Emergent Wetland Class is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens (USFWS, 1992). See the Aquatic Site Assessment for full descriptions of the wetland functional classes.

Wetland functional classes were evaluated using hydrogeomorphic principles specific to wetlands in the Arctic coastal plain of Alaska and developed in consultation with USACE. Hydrogeomorphic principles include geomorphic setting, water source and transport, and direction and strength of ground water

discharge. Using the USACE and USFWS wetland guidelines, each wetland functional class mapped in the project area was placed into one of three categories according to its capacity. Category I wetlands are of high quality, unique to the area, and provide habitat for threatened or endangered species. Category II wetlands are of good quality and more common, providing for a variety of wildlife habitat that is not considered critical. Category III wetlands are usually plentiful and tend to support the least biodiversity.

The habitats assessed in the project area are not considered critical habitat for listed T&ES. While historically there were Steller's eider nests in the area, none have been observed in the Barrow airport study area since 2007 (ABR 2015). Upon approval of the WHMP anticipated in the second quarter of 2015, and after obtaining an Airport Depredation Permit (USFWS) and Public Safety Permit (ADF&G), the Barrow airport will actively haze wildlife away from the runway for safety reasons, thus reducing the likelihood of use by all wildlife. See Section 6.4 for a discussion of wildlife impacts.

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?*

The proposed action would directly impact approximately 32.15 acres of wetlands. Table 4 shows approximate wetland impacts by project component.

Table 4 – Proposed Wetland Impacts

Project Component	Category I	Category II	Category III	Total Acres (approx.)
M&O Facility Pad	3.69	3.05	0.89	7.63
Access Road	3.77	0	1.43	5.2
Apron Expansion	0.13	0	2.84	2.97
Runway Access	0.52	0.49	0	1.01
Material Site Expansion	1.66	0	13.69	15.35

Note: A uniform 10-foot buffer around the perimeter of the constructed embankments was included in the calculations as a storm water vegetative buffer to account for temporary impacts that may result from sedimentation at the toe of the embankment.

There is minimal groundwater flow due to the presence of permafrost, and the proposed action is not expected to reduce the surrounding wetland's function to protect Isatkoak Lagoon. Relatively high ground at the airport in comparison to surrounding land ensures that the wetlands in the proposed action footprint do not retain floodwaters.

Due to the abundance of freshwater emergent wetlands in the greater Barrow area, the impact of the loss of wetlands is not expected to be significant to wildlife or wildlife habitat. If no action is chosen, no loss of wetlands as defined by USACE will occur.

6.12.3 Minimization and Mitigation

Minimization of wetlands impact occurred during early apron expansion design, when the concept of widening the apron a minimum of 26 feet to accommodate ADG IV aircraft was dismissed due to infrequent use by these aircraft. As proposed, no expansion of the apron embankment is needed, reducing the potential footprint by approximately 2.5 acres.

In accordance with the CWA, a USACE Section 404 permit would be required for discharging fill material into wetlands. A scoping letter was sent to the USACE on October 29, 2014. Part of the Section 404 permitting process includes providing information regarding mitigation and compensatory activities associated with the proposed project. Currently, several compensation options are currently being considered. The preferred mitigation option is to support work by UIC to develop a mitigation bank in the Barrow area. UIC has selected 3,000 acres within the Barrow Environmental Observatory, which includes important Steller's eider (*Polysticta stelleri*) nesting habitat and Spectacled eider (*Somateria fischeri*) breeding habitat. Both species are listed as Threatened under the ESA and are State of Alaska species of special concern. This parcel is highly susceptible to development in the future as Barrow grows. As compensatory mitigation for this project, DOT&PF proposes to pay for an Aquatic Site Assessment of this area by a qualified consultant. An Aquatic Site Assessment is required in order for UIC to submit a prospectus to the USACE for the development of a wetlands mitigation bank. To set aside these 3,000 acres of prime eider habitat would guarantee that vital nesting areas are protected, and the establishment of a mitigation bank near Barrow would allow the City and Village of Barrow to grow and develop while ensuring that important local resources are preserved. DOT&PF's involvement to help facilitate development of this mitigation bank through financial and administrative support is a substantial step forward.

Other options that were considered included:

- Removing power lines along Cakeatter Road, which will reduce Spectacled eider mortality.
- Setting aside land within the airport boundary adjacent to Isatkoak Lagoon for conservation. This land would then be off limits to development, thereby protecting the lagoon for water quality benefits. DOT&PF is evaluating this option with the FAA.
- Purchasing additional land along the eastern portion of the airport property for the same purposes as stated above. This area is important eider use area and is slated for potential future development by the City of Barrow.
- Funding other initiatives identified by the community that would result in an improvement to water quality. These may include:
  - Building a boardwalk around portions of the lagoon to prevent off-road vehicle traffic and degradation of the tundra.
  - Restoration of areas where degradation has occurred, such as the culvert between the airport and the lagoon or areas around the snow fence to the northeast of the airport.

7 Coordination

Barrow residents have been involved in the AMP update since early 2013. Specific scoping activities conducted for this EA are described below. Copies of communication materials and public/agency comments and correspondence related to development of this EA in accordance with NEPA are included in Appendix D.

7.1 Public Meeting Correspondence

A public meeting was held at the NSB Assembly Chambers in the city of Barrow on January 15, 2015. Postcards were mailed to all box holders in Barrow including elected officials, agencies, and tribal entities, and an ad was published in the local *Arctic Sounder* announcing the meeting. DOT&PF, FAA, and public residents were in attendance, with a total of 31 people recorded. The meeting was well received and the community provided useful comments. See Appendix D for the meeting minutes, attendance, and comment sheets.

The DOT&PF project website (http://dot.alaska.gov/nreg/barrowaip/) provides public access to project information including schedule, documents, meeting notifications, and meeting summaries.

7.2 Agency Correspondence

Consultation with USACE, SHPO, USFWS, and the NSB will be ongoing throughout the permitting process.

7.2.1 Scoping Letter

On October 29, 2014, DOT&PF, in cooperation with FAA, sent an agency scoping letter soliciting comments on the proposed action. The letter was distributed to ADEC, ADF&G, ADNR/SHPO, FAA, the National Park Service, the Transportation Security Administration, USACE, BLM, USFWS, USCG, and local city, tribal, and borough entities. The scoping letter is attached in Appendix D. No responses were received.

8 List of Preparers

Table 5 – List of Preparers

Name	Title and Role	Relevant Experience
Christopher Johnston	DOT&PF Project Manager	9 years engineering design and NEPA compliance
Owen Coskey	DOT&PF Environmental Analyst	9 years land management and NEPA compliance
Royce L Conlon, PE	PDC Inc. Engineers Project Manager	27 years engineering design and NEPA compliance
Erica Betts	PDC Inc. Engineers Environmental Analyst	3 years NEPA planning and documentation
Terri Mitchell	UMIAQ, LLC Environmental Manager	15 years NEPA planning and compliance
Emily Smyth	UMIAQ, LLC Environmental Specialist II	5 years NEPA compliance and documentation

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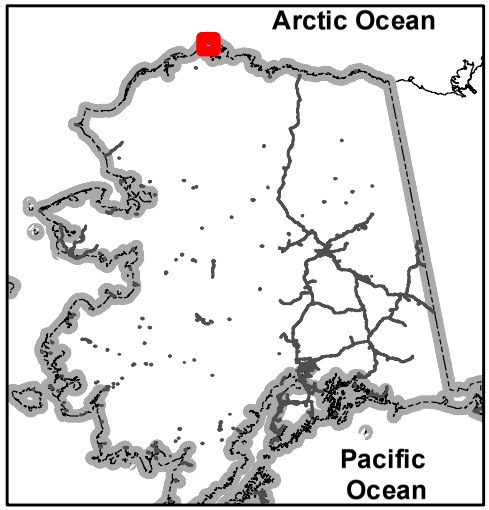
FIGURES



Legend

- Barrow Airport
- Incorporated City Boundary

0 2 4 8 Miles

Location

Section: 4-8
Township: 22N
Range: 18W
Meridian: Umiat

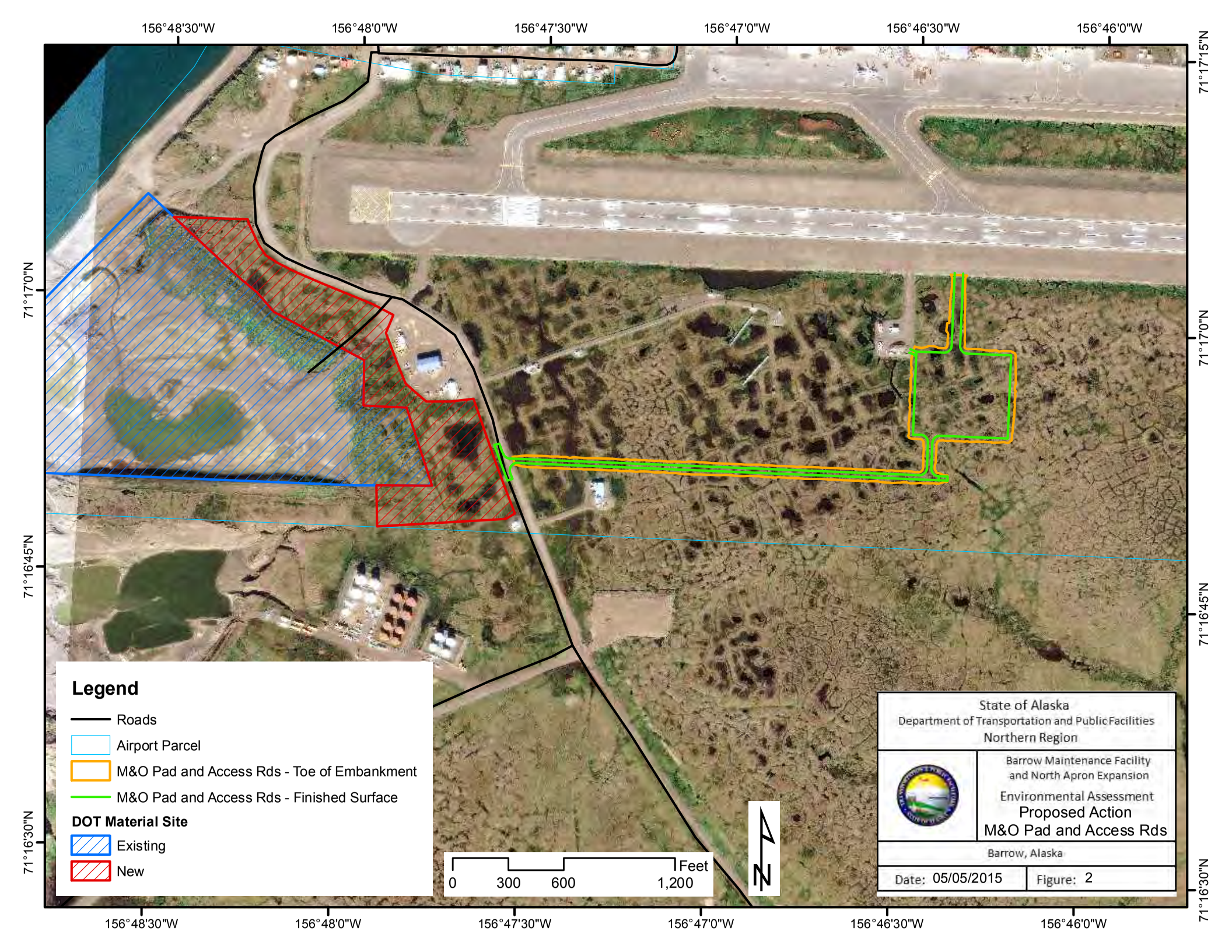
N

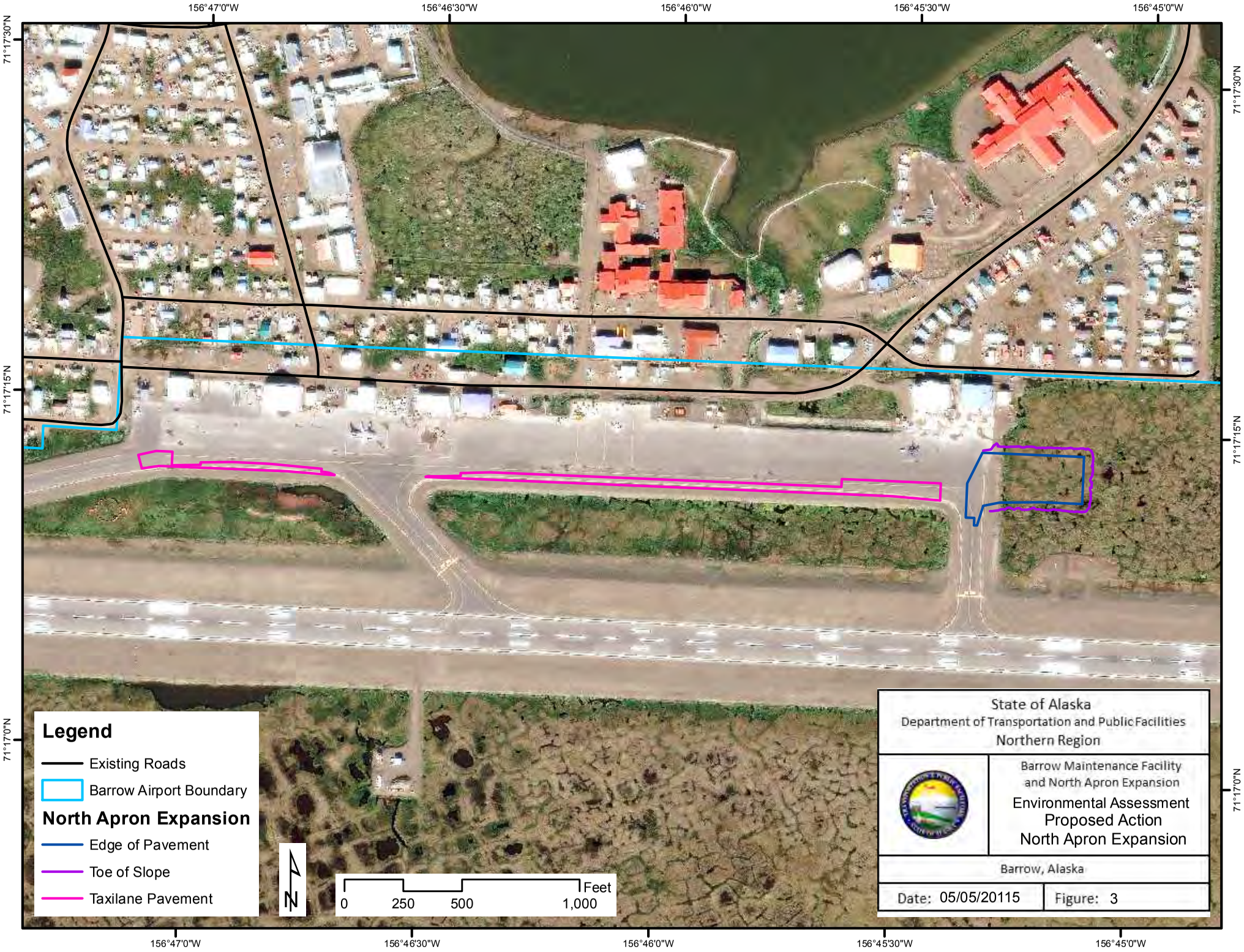
State of Alaska
Department of Transportation and Public Facilities
Northern Region

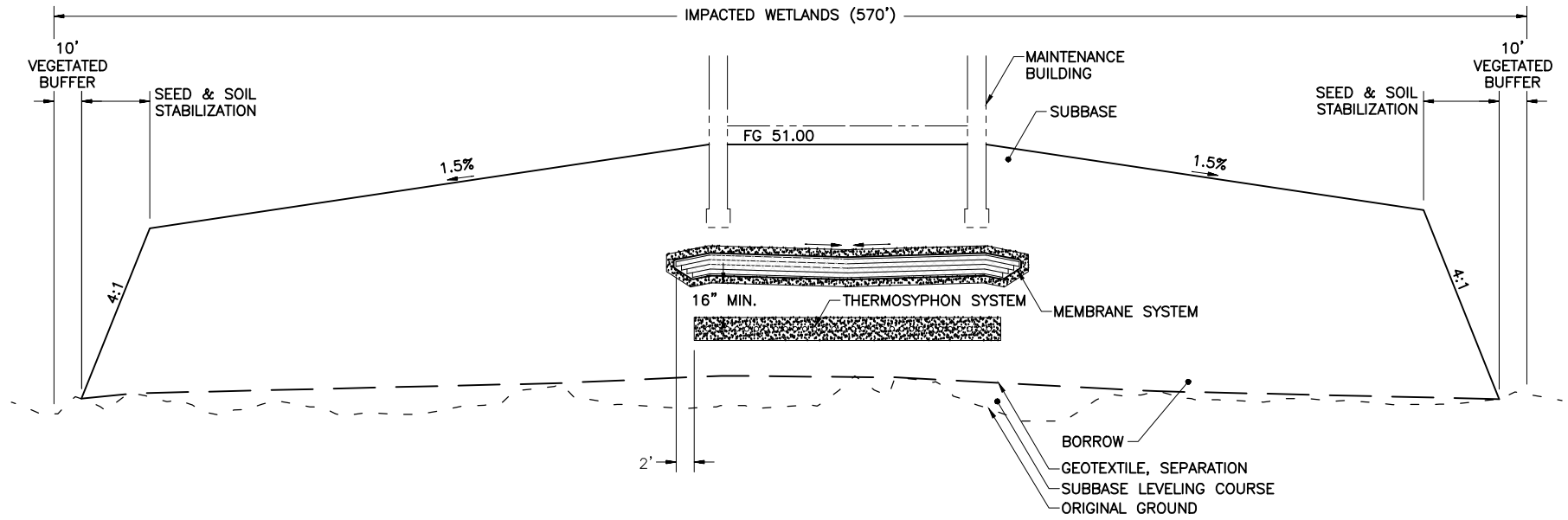
Barrow Maintenance Facility
and North Apron Expansion
Environmental Assessment
Location & Vicinity Map

Barrow, Alaska

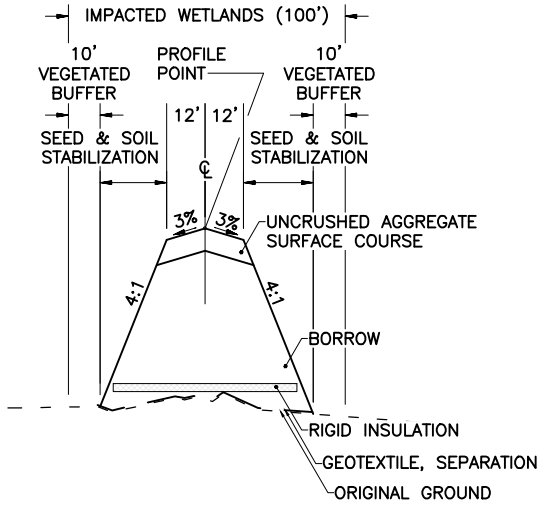
Date: 05/05/2015 Figure: 1


156°48'30"W
156°48'0"W
156°47'30"W
156°47'0"W
156°46'30"W
156°46'0"W
71°17'15"N
71°17'0"N
71°16'45"N
71°16'30"N
Legend
Roads
Airport Parcel
M&O Pad and Access Rds - Toe of Embankment
M&O Pad and Access Rds - Finished Surface
DOT Material Site
Existing
New
0
300
600
1,200
Feet
N
State of Alaska
Department of Transportation and Public Facilities
Northern Region
Barrow Maintenance Facility
and North Apron Expansion
Environmental Assessment
Proposed Action
M&O Pad and Access Rds
Barrow, Alaska
Date: 05/05/2015
Figure: 2

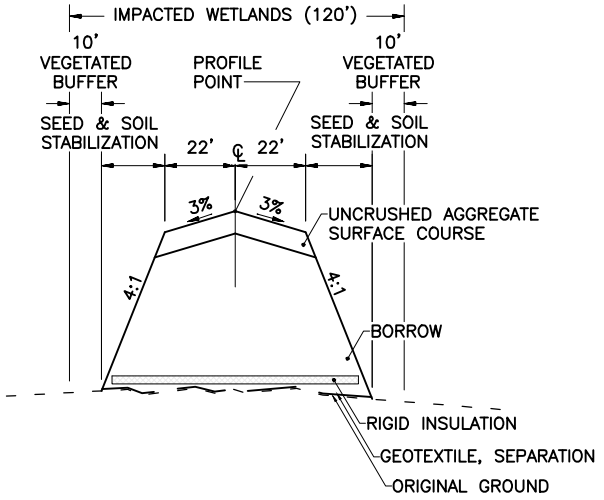

156°47'0"W
156°46'30"W
156°46'0"W
156°45'30"W
156°45'0"W
71°17'30"N
71°17'15"N
71°17'0"N
Legend
Existing Roads
Barrow Airport Boundary
North Apron Expansion
Edge of Pavement
Toe of Slope
Taxilane Pavement
N
0
250
500
1,000
Feet
State of Alaska
Department of Transportation and Public Facilities
Northern Region
Barrow Maintenance Facility
and North Apron Expansion
Environmental Assessment
Proposed Action
North Apron Expansion
Barrow, Alaska
Date: 05/05/20115
Figure: 3



M&O PAD–TYPICAL SECTION



ACCESS ROAD–TYPICAL SECTION



ARFF RUNWAY ACCESS TYPICAL SECTION

STATE OF ALASKA
Department of Transportation and Public Facilities
NORTHERN REGION

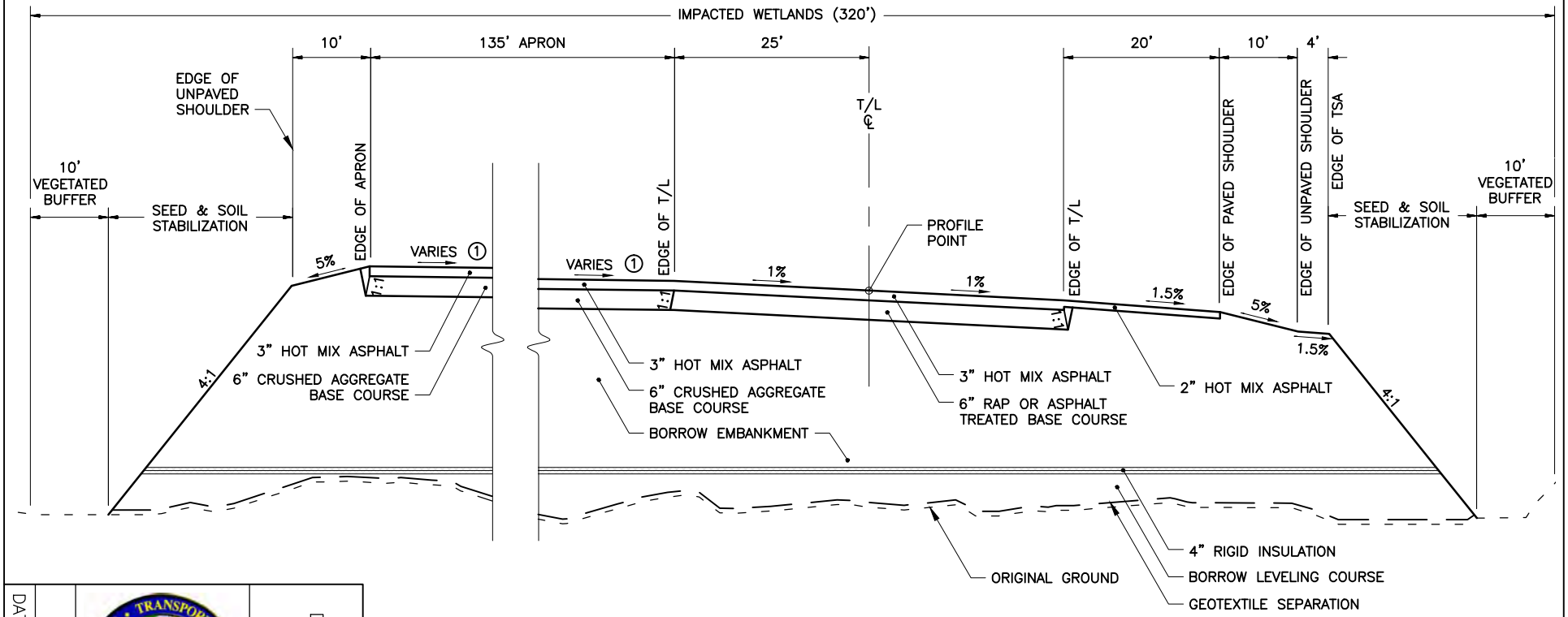
Barrow Maintenance Facility
and North Apron Expansion
Environmental Assessment

Typical Sections: M&O Pad,
Access Road, and Runway Access

Barrow, Alaska

DATE: 03/30/2015

FIGURE: 4



NORTH APRON EXPANSION
TYPICAL SECTION

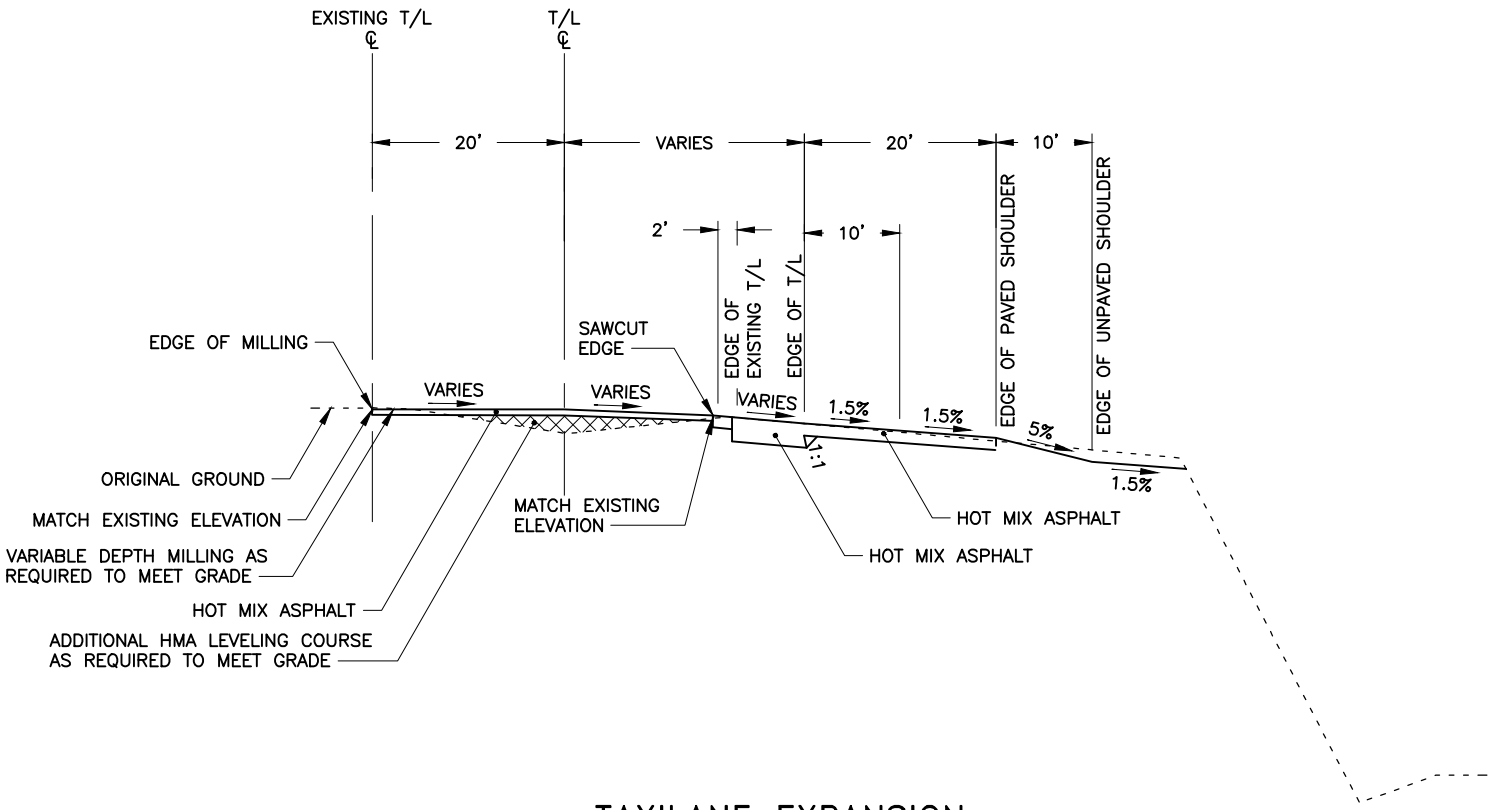
STATE OF ALASKA
Department of Transportation and Public Facilities
NORTHERN REGION

Barrow Maintenance Facility
and North Apron Expansion
Environmental Assessment
Typical Section:
North Apron Expansion

Barrow, Alaska

DATE: 03/30/2015

FIGURE: 5



TAXILANE EXPANSION
TYPICAL SECTION

STATE OF ALASKA
Department of Transportation and Public Facilities
NORTHERN REGION

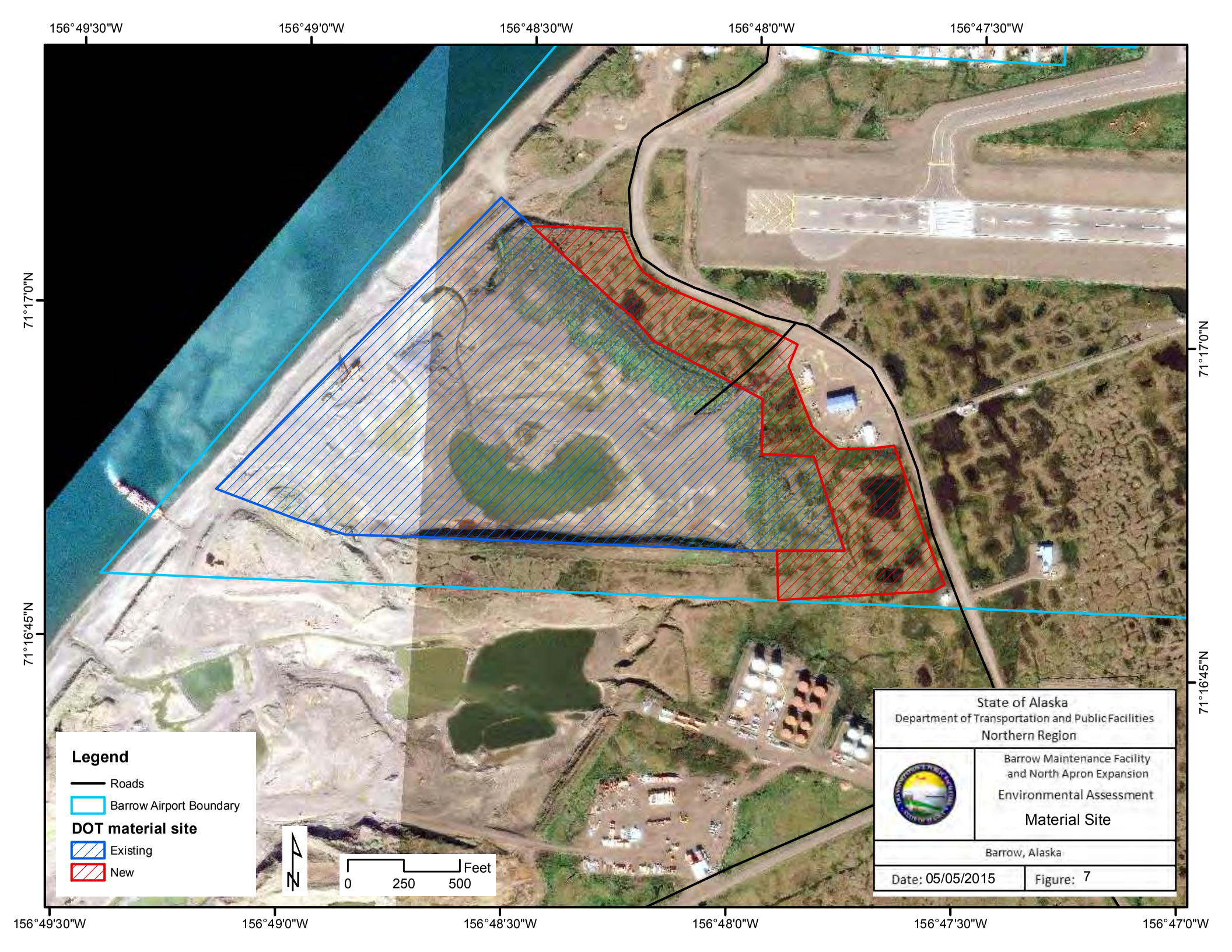
Barrow Maintenance Facility
and North Apron Expansion

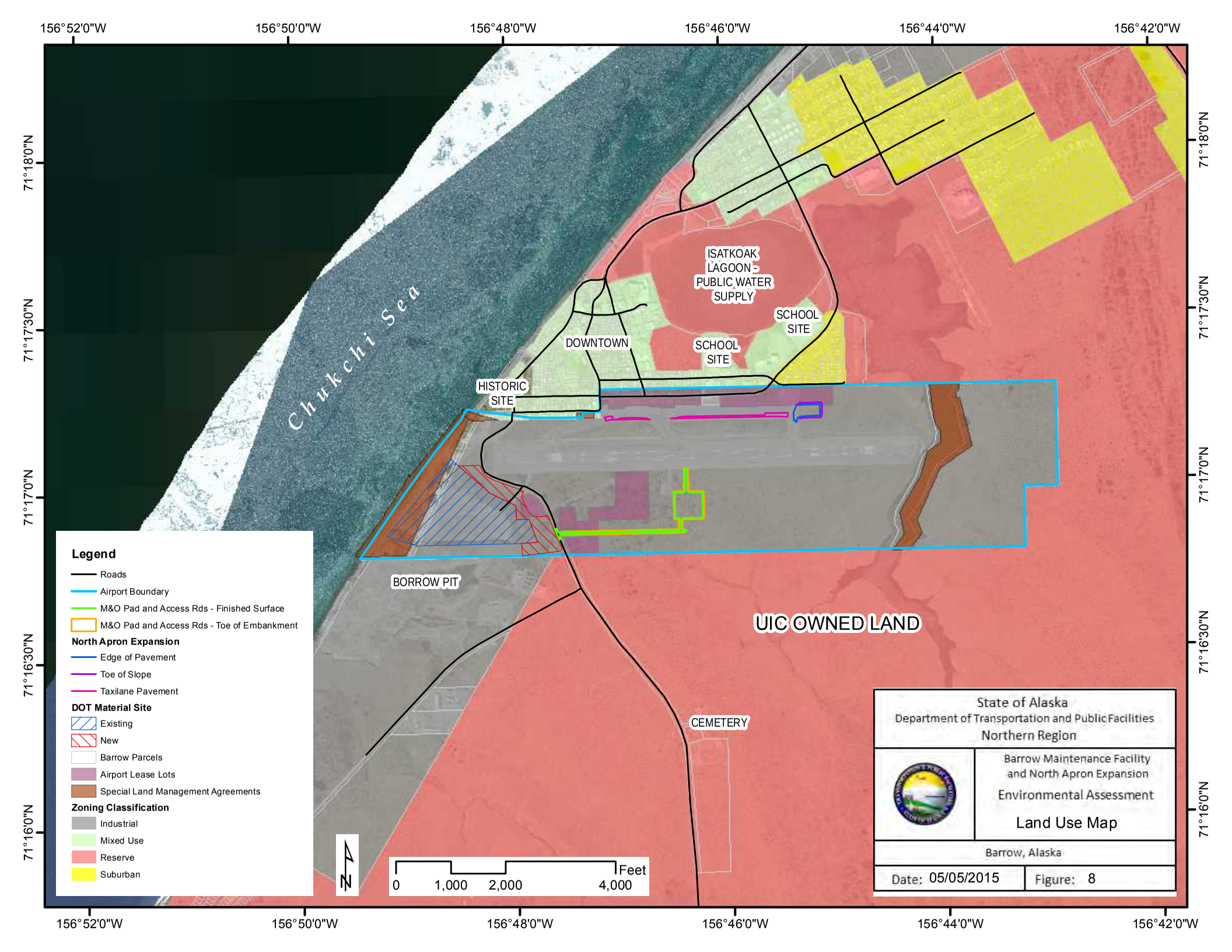
Environmental Assessment

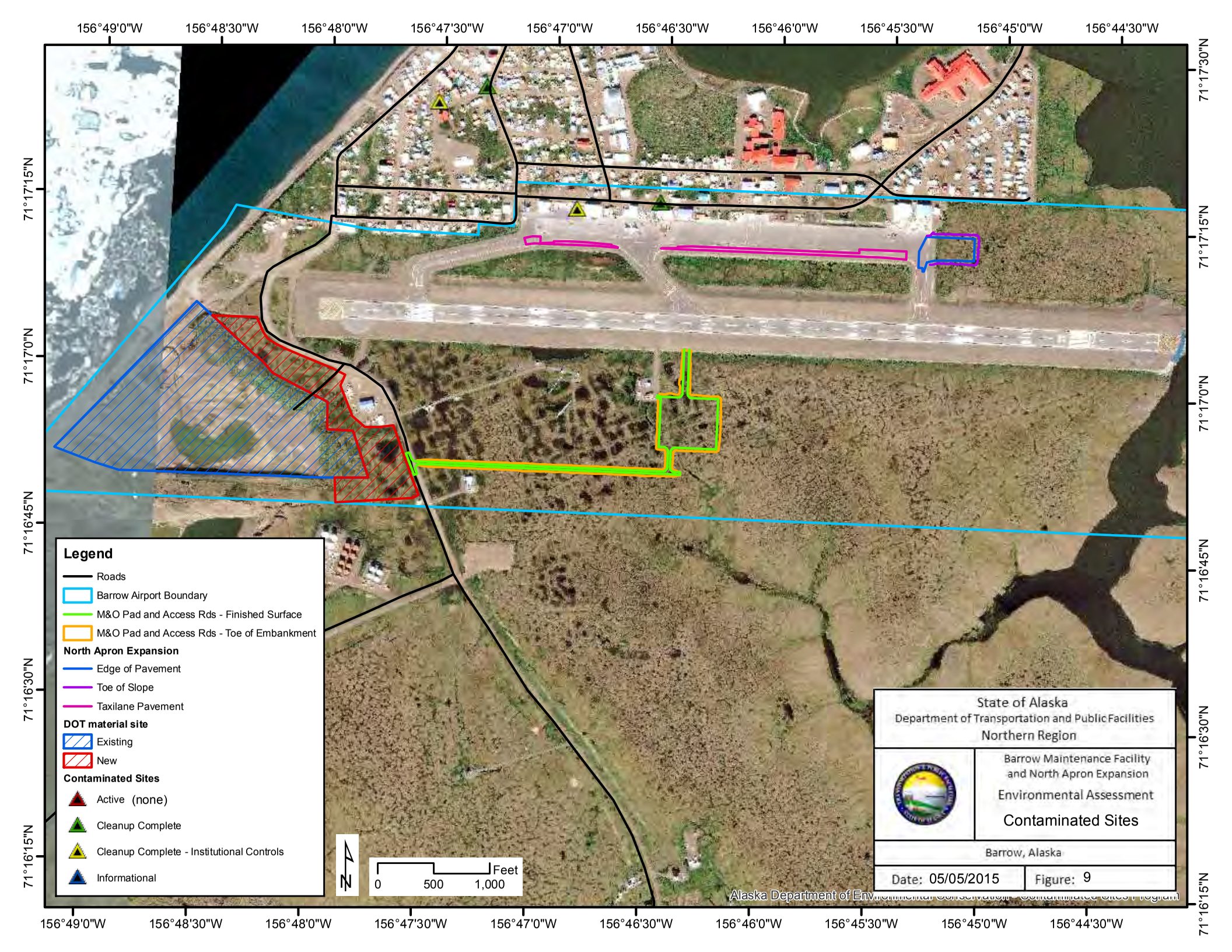
Typical Sections: M&O Pad, Access Road, & Runway Access

BARROW, ALASKA

DATE: 05/04/2015 | FIGURE: 6


156°49'30"W
156°49'0"W
156°48'30"W
156°48'0"W
156°47'30"W
71°17'0"N
71°16'45"N
Legend
Roads
Barrow Airport Boundary
DOT material site
Existing
New
N
0
250
500
Feet
State of Alaska
Department of Transportation and Public Facilities
Northern Region
Barrow Maintenance Facility
and North Apron Expansion
Environmental Assessment
Material Site
Barrow, Alaska
Date: 05/05/2015
Figure: 7
156°47'0"W


156°52'0"W
156°50'0"W
156°48'0"W
156°46'0"W
156°44'0"W
156°42'0"W
71°18'0"N
71°17'30"N
71°17'0"N
71°16'30"N
71°16'0"N
Chukchi Sea
ISATKOAK LAGOON - PUBLIC WATER SUPPLY
SCHOOL SITE
SCHOOL SITE
DOWNTOWN
HISTORIC SITE
BORROW PIT
UIC OWNED LAND
CEMETERY
Legend
Roads
Airport Boundary
M&O Pad and Access Rds - Finished Surface
M&O Pad and Access Rds - Toe of Embankment
North Apron Expansion
Edge of Pavement
Toe of Slope
Taxilane Pavement
DOT Material Site
Existing
New
Barrow Parcels
Airport Lease Lots
Special Land Management Agreements
Zoning Classification
Industrial
Mixed Use
Reserve
Suburban
N
0 1,000 2,000 4,000 Feet
State of Alaska
Department of Transportation and Public Facilities
Northern Region
Barrow Maintenance Facility and North Apron Expansion
Environmental Assessment
Land Use Map
Barrow, Alaska
Date: 05/05/2015
Figure: 8


156°49'0"W
156°48'30"W
156°48'0"W
156°47'30"W
156°47'0"W
156°46'30"W
156°46'0"W
156°45'30"W
156°45'0"W
156°44'30"W
71°17'30"N
71°17'15"N
71°17'0"N
71°16'45"N
71°16'30"N
71°16'15"N
Legend
Roads
Barrow Airport Boundary
M&O Pad and Access Rds - Finished Surface
M&O Pad and Access Rds - Toe of Embankment
North Apron Expansion
Edge of Pavement
Toe of Slope
Taxilane Pavement
DOT material site
Existing
New
Contaminated Sites
Active (none)
Cleanup Complete
Cleanup Complete - Institutional Controls
Informational
N
0
500
1,000
Feet
State of Alaska
Department of Transportation and Public Facilities
Northern Region
Barrow Maintenance Facility
and North Apron Expansion
Environmental Assessment
Contaminated Sites
Barrow, Alaska
Date: 05/05/2015
Figure: 9
Alaska Department of Environmental Conservation - Contaminated Sites Program

ISATKOAK LAGOON

NSB
HANGAR

NORTH ARPON
EXPANSION

TAXIWAY C

1,000FT DRAINAGE PATH

1,800FT DRAINAGE PATH

EXISTING GROUND
ELEVATION (FEET)

42.000
39.000
36.000
33.000
30.000
27.000
24.000

FEET
60 30 0 60 120

State of Alaska
Department of Transportation and Public Facilities
Northern Region

Barrow Maintenance Facility
and North Apron Expansion

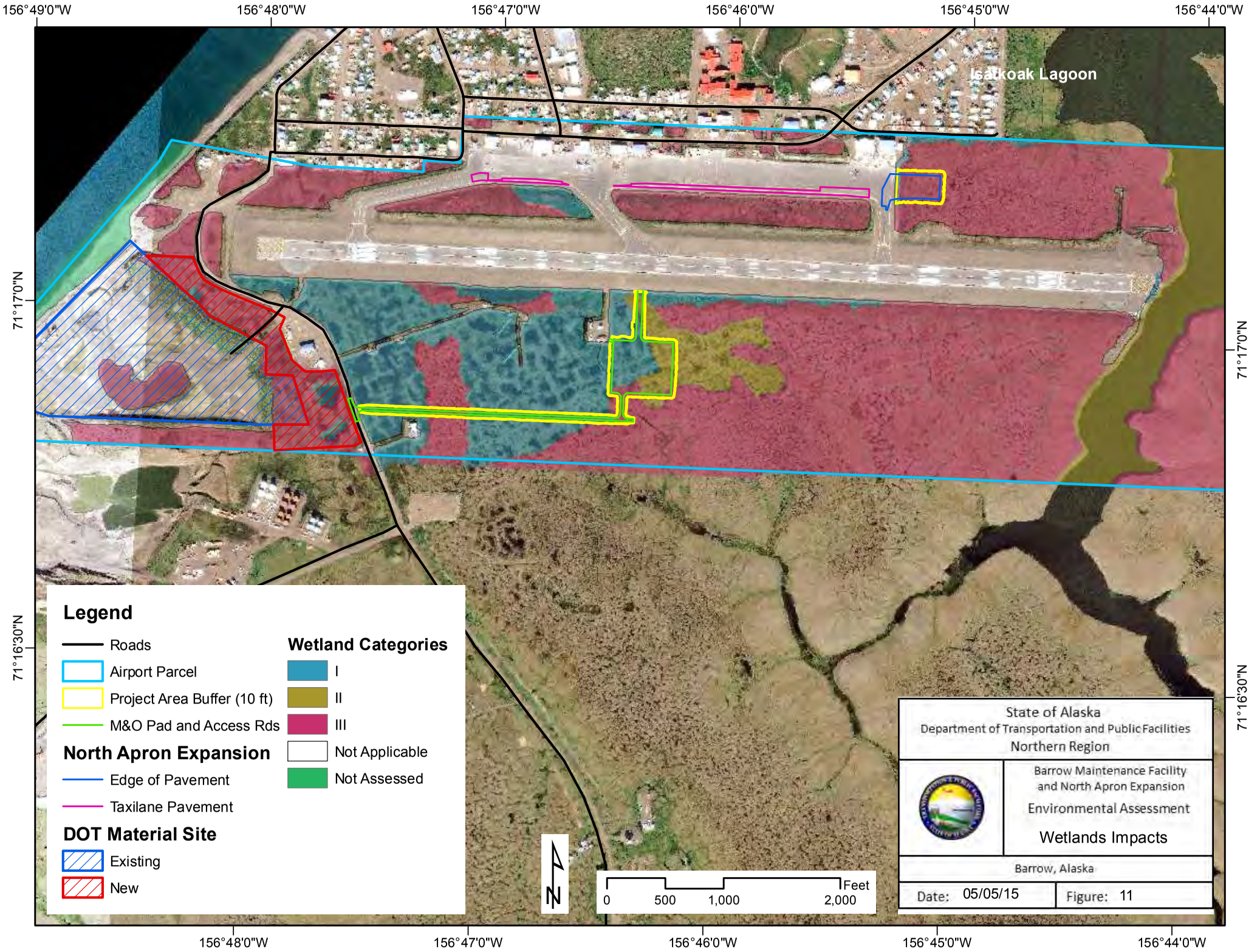
Environmental Assessment

Apron Grading and Drainage Plan

Barrow, Alaska

Date: 05/05/2015

Figure: 10


156°49'0"W
156°48'0"W
156°47'0"W
156°46'0"W
156°45'0"W
156°44'0"W
71°17'0"N
71°16'30"N
Isatkoak Lagoon
Legend
Roads
Airport Parcel
Project Area Buffer (10 ft)
M&O Pad and Access Rds
North Apron Expansion
Edge of Pavement
Taxilane Pavement
DOT Material Site
Existing
New
Wetland Categories
I
II
III
Not Applicable
Not Assessed
N
0
500
1,000
2,000
Feet
State of Alaska
Department of Transportation and Public Facilities
Northern Region
Barrow Maintenance Facility
and North Apron Expansion
Environmental Assessment
Wetlands Impacts
Barrow, Alaska
Date: 05/05/15
Figure: 11