MEMORANDUM

TO:	Maryellen Tuttell, AICP
FROM:	Adam Morrill
DATE:	December 7, 2018
SUBJECT:	Wetland Classification for the Communities Route and the AIDEA Preferred Alternatives

This memo describes the proposed approach and methods to provide the EIS team with wetland information sufficient for alternatives analysis of the Communities Route Alternative and the AIDEA Preferred Alternative.

DOWL routinely performs mapping from aerial imagery as the first step of a wetland delineation process. The attached examples illustrate the preliminary aerial interpretation for the Sterling Highway MP 58-79 corridor prior to field work being conducted. For the Sterling Highway, the imagery was better resolution, with aerial pixels of approximately 0.7 foot by 0.7 foot. Polygons were created at 1 inch equals 400 feet scale, with minimum size of 0.1 acre. Since the aerials available for the Communities Route Alternative are not at this level of detail, the mapping will be somewhat coarser – but the same principles apply.

Step 1: Create Delineation Boundaries

DOWL will take the Communities Route provided by HDR in June of 2018 and create a 2,000-foot-wide corridor in GIS. The AIDEA Preferred corridor has already been created and is 2,000-foot-wide.

Step 2: Use Alaska State Mapping Service Aerial Imagery

DOWL will use the publicly available aerial imagery services to delineate habitat types based on landscape position, water sources, vegetation structure, and topography. Imagery pixels are anticipated to be 8 foot by 8 foot or less. Creation of habitat boundary polygons would be at 1 inch equals 1,000 feet. This will create polygons at a minimum of 0.25 acre in size. Other resources used for aerial interpretation of wetlands include:

• National Wetland Inventory maps, and

• United States Geological Survey (USGS) National Hydrography Dataset (NHD).

Imagery quality changes throughout the corridor, the delineation will use the best available from multiple publicly available sources, including ESRI World Imagery, Bing, and Alaska DNR. The attached overview map (Figure 1) shows the quality of imagery throughout the corridor. The associated figures show the level of imagery quality (Figures 2-5) that was found while completing a scan of the corridor.

This table shows the breakdown in imagery quality for the entire corridor.

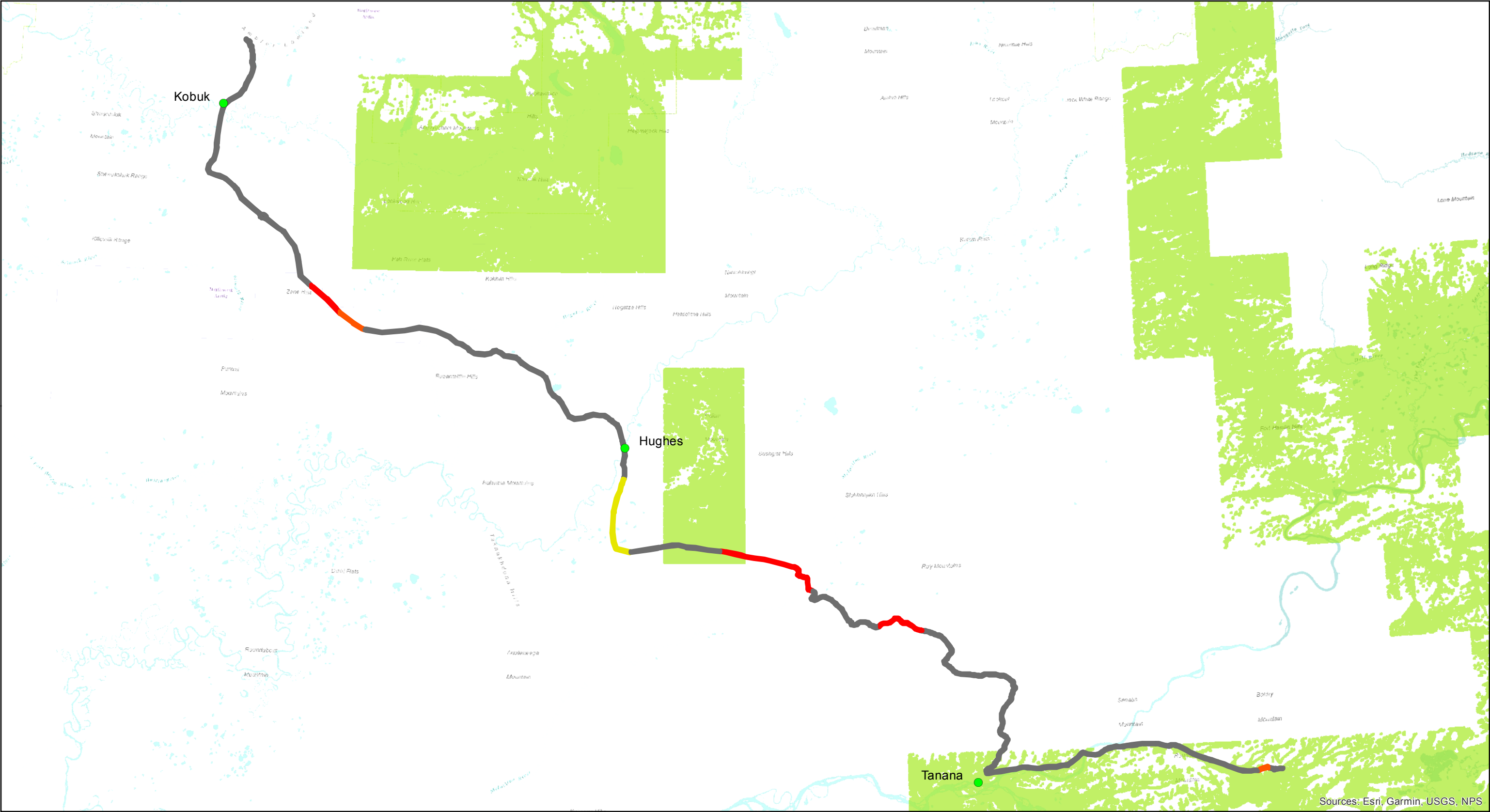| Imagery Quality	Acres
Good	60393
OK	1829
Poor	8612
Snow	3765
Total	74600

The Proposed Corridor had high quality imagery and LiDAR to help distinguish upland and wetland boundaries. LiDAR shows slope transitions from upland to wetlands and riparian areas and distinguish hydrogeomorphic position. The Communities Corridor is primarily "Good" imagery covers approximately 80% of the corridor and can be delineated like the Kobuk and Hughes (Figures 6 and 7) examples used during the October 15 meeting and attached to this memo. As the imagery gets more pixelated the line work will become coarse.

Other data sources that DOWL is planning on using is the Alaska DNR Hydrology 63,360 and National Wetland Inventory (NWI) data. The Hydrology 63,360 will be used to identify streams that might be too small to map. The stream is measured and buffered if possible to create a stream polygon. If the stream is too small to measure, then it will be buffered to create a 3-foot wide polygon. NWI data is very sparse in the Communities Corridor area. DOWL will use NWI as a reference when lower quality imagery is only available.

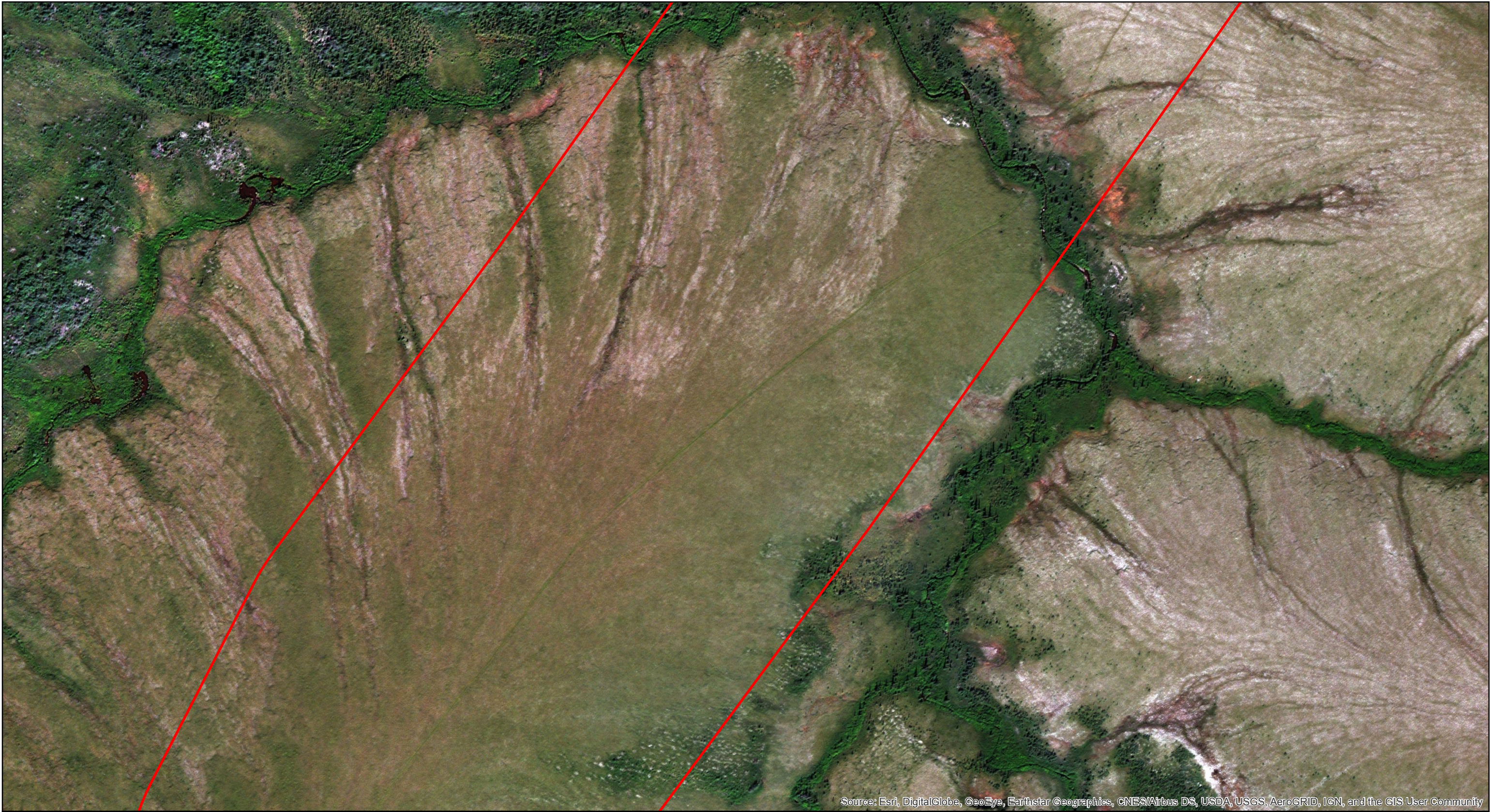**Step 3: Code Polygons Based on Cowardin Codes**

Polygons will be coded as wetland or upland and provided a Cowardin Classification based on information evaluated in Step 2 (e.g. NHD mapped features, landscape position, and vegetation).

The result of this effort would be similar to the mapping shown in figures 3 and 4 attached.
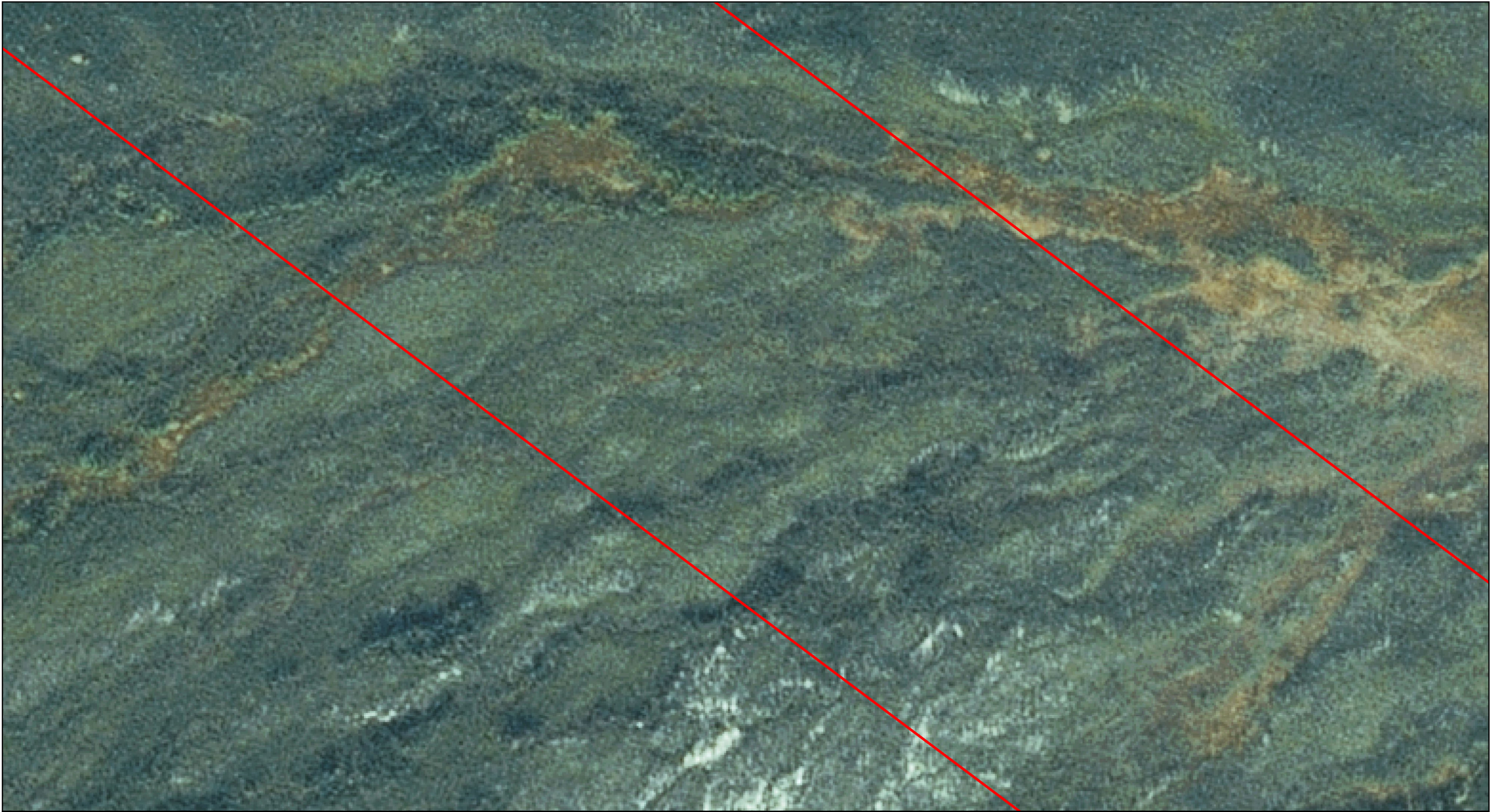
Kobuk

Hughes

Tanana

Communities

Aerial Quality

NWI Wetlands

Good

OK

Poor

Snow

N

0   10   20
Miles

Kobuk

Hughes

Tanana

AMBLER
MINING DISTRICT
INDUSTRIAL ACCESS ROAD

DOWL

AIDEA
Alaska Industrial Development
and Export Authority

**Aerial Imagery Quality and
NWI Availability**

**Ambler Mining District
Industrial Access Road**

December 07, 2018

Figure 1

Legend

Communities Corridor

0 200 400 Feet

N

Kobuk
Hughes
Tanana

AMBLER
MINING DISTRICT
INDUSTRIAL ACCESS ROAD

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Aerial Imagery Examples

**Ambler Mining District
Industrial Access Road**

December 04, 2018   Figure 2

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
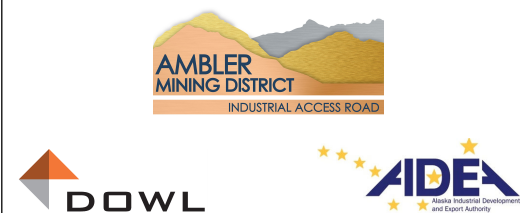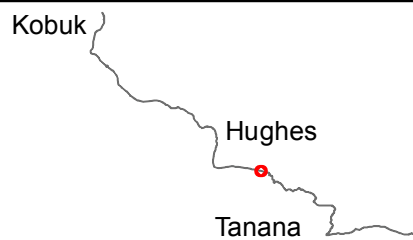
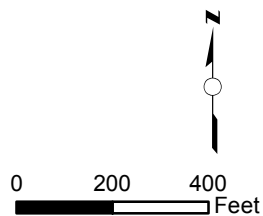Q:\33\60693-10\60GIS\Communities\Aerial samples.mxd

Communities Corridor

0 200 400 Feet

N

Kobuk

Hughes

Tanana

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Aerial Imagery Examples

**Ambler Mining District
Industrial Access Road**

December 04, 2018

Figure 3

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Communities Corridor

0   200   400
Feet

Kobuk

Hughes

Tanana

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AIDEA
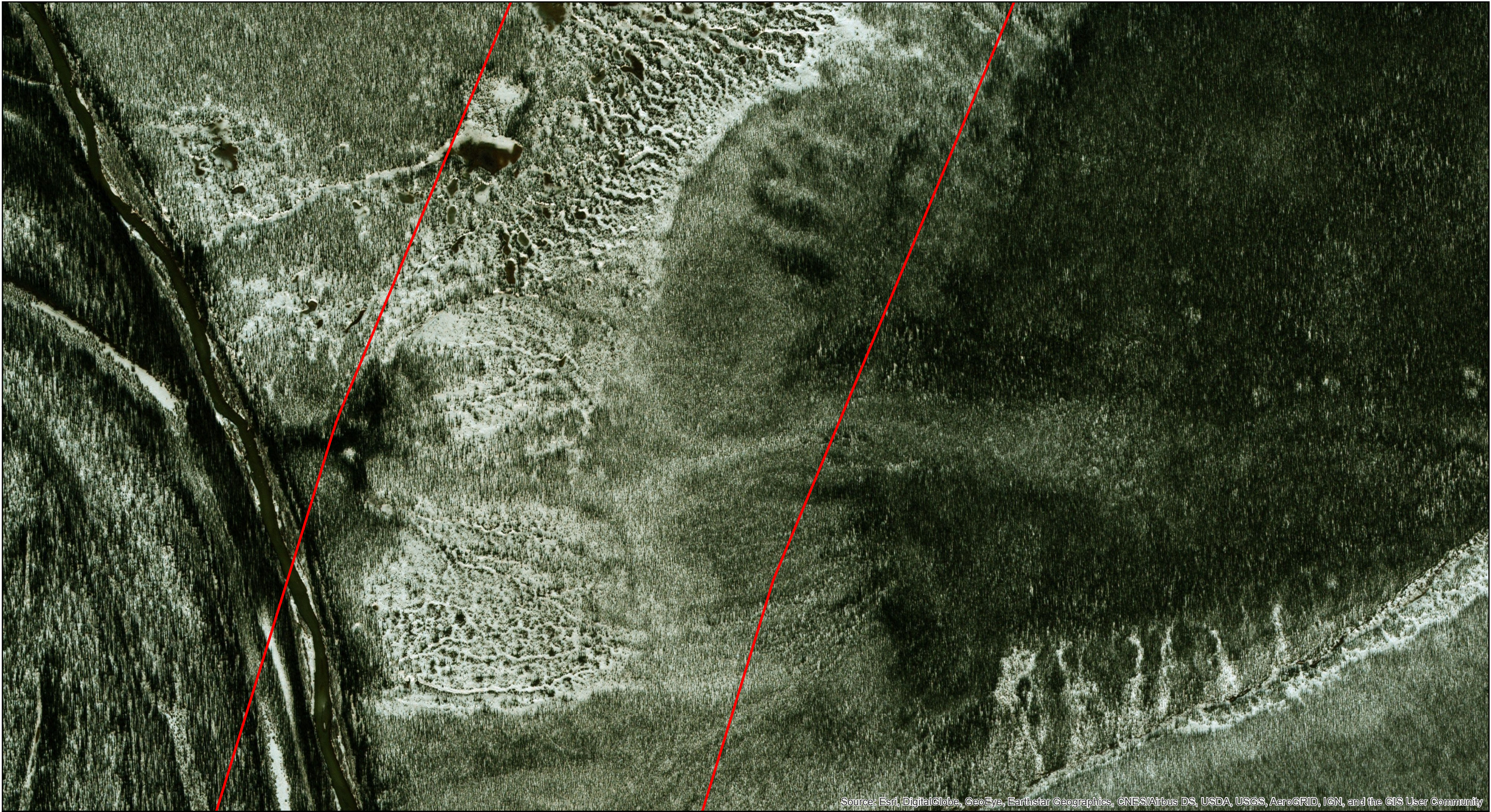Alaska Industrial Development
and Export Authority

Aerial Imagery Examples

**Ambler Mining District
Industrial Access Road**

December 04, 2018   Figure 4

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Communities Corridor

N

0   200   400
Feet

Kobuk

Hughes

Tanana

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Aerial Imagery Examples

**Ambler Mining District
Industrial Access Road**

December 04, 2018   Figure 5

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Legend:

Communities Corridor

Cowardin

PEM1C	PFO4/SS1B	PSS4/1C
PEM1F	PFO4/SS1C	PUB
PEM1H	PSS1/EM1C	R3UB
	PSS1C	UPLAND
	PSS4/1B	

0 200 400 Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Kobuk
Hughes
Tanana

AMBLER MINING DISTRICT
INDUSTRIAL ACCESS ROAD

DOWL

AIDEA

Hughes Delineation Sample

Ambler Mining District
Industrial Access Road

December 04, 2018   Figure 6

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Legend:

Communities Corridor

Cowardin

- PEM1C
- PFO4/SS1B
- PSS1/EM1B
- PSS1/EM1C
- PSS1/FO4B
- PSS1C
- PSS4/1B
- PUB
- R3UB
- UPLAND

N

0 200 400 Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Kobuk

Hughes

Tanana

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Kobuk Delineation Sample

Ambler Mining District Industrial Access Road

December 04, 2018   Figure 7

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