



SUSITNA-WATANA HYDRO

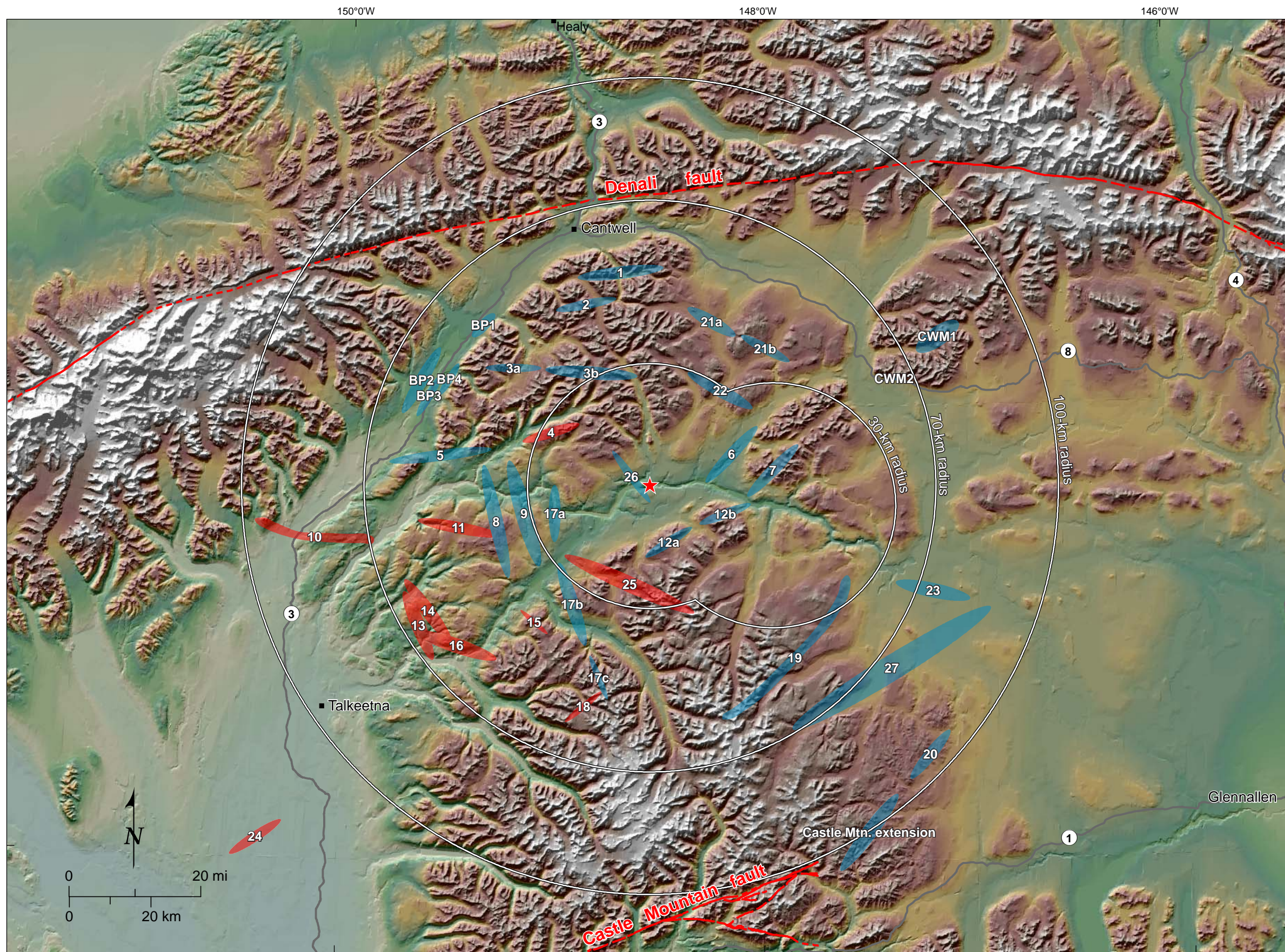
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ALASKA ENERGY AUTHORITY

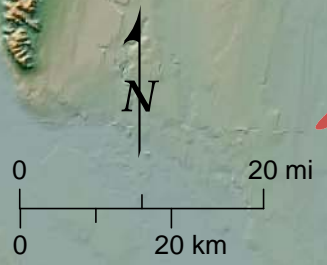
AEA11-022

16-1401-TM-012014

Figures



- Explanation**
- - - Quaternary fault, solid where well constrained, long dashed line where moderately constrained, short dashed line where inferred (Alaska Division of Geological and Geophysical Surveys, 2012)
 - Field work planned in 2013 based on results of TM-8 (FCL, 2013)
 - No field work planned in 2013 based on results of TM-8 (FCL, 2013)
 - ★ Proposed Watana site



79_218900_Alaska_Railbelt/2189_Lineament Report October 2013, modified 12.02.13

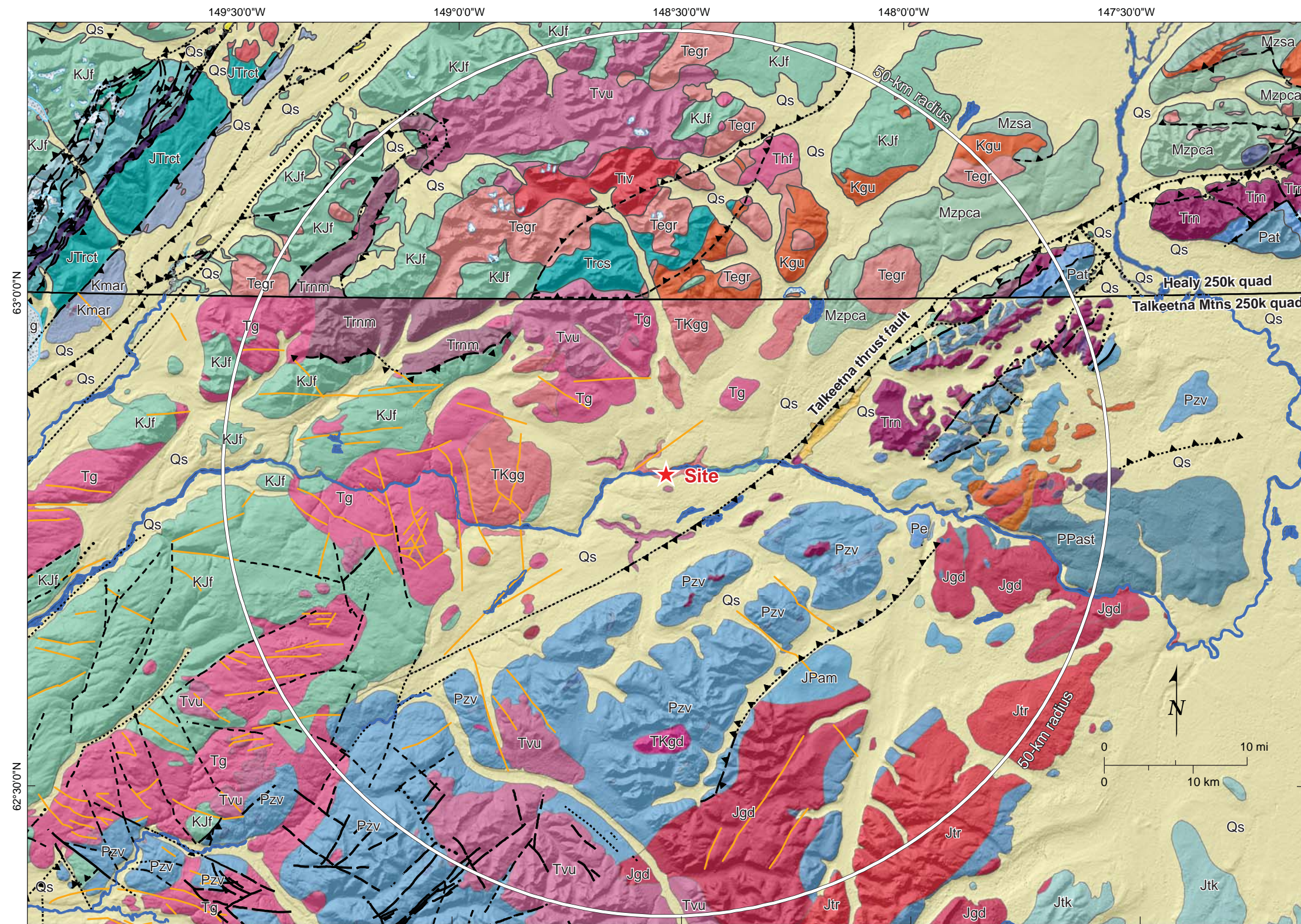
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FUGRO
Date 12/02/13

STATE OF ALASKA
ALASKA ENERGY AUTHORITY
ALASKA
ENERGY AUTHORITY

SUSITNA-WATANA HYDROELECTRIC PROJECT
LOCATION MAP

FIGURE
1-1



Geology from Wilson et al., 1998 (USGS Open-file Report 98-133 Healy and Talkeetna Mountains 250,000 quadrangles)

See Figure 1-2B for map legend

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 Ice fields or glaciers


QUATERNARY DESPOSITS


 Surficial deposits, undifferentiated

**TERTIARY ROCKS
Sedimentary Rocks**

 Sedimentary rocks, undivided


 Nenana Gravel

 Coal-bearing rocks

 Fluvial sedimentary rocks and subordinate volcanic rocks

**Igneous Rocks
Volcanic and Hypabyssal Rocks**

 Tertiary volcanic rocks, undivided


 Hypabyssal felsic and intermediate intrusions

 Hypabyssal mafic intrusions

Intrusive Rocks

 Granite and volcanic rocks, undivided

EOCENE

 Granite and granodiorite


PALEOCENE

 Granitic rocks


TERTIARY AND/OR CRETACEOUS

**Igneous Rocks
Intrusive Rocks**


 Granitic rocks


 Granodiorite, tonalite and monzonite dikes, and stocks

Metamorphic Rocks

 Gneissose granitic rocks


**UNDIVIDED MESOZOIC ROCKS
METAMORPHIC ROCKS**

 Schist and amphibolite

 Phyllite, pelitic schist, calc-schist, and amphibolite of the McClaren metamorphic belt

CRETACEOUS


Melange

 Melanges of the Alaska Range

 Limestone blocks

Igneous Rocks

Volcanic and hypabyssal rocks

 Andesite subvolcanic rocks

Intrusive Rocks


 Granitic rocks


 Granitic rocks younger than 85 Ma


 Ultramafic rocks

CRETACEOUS AND/OR JURASSIC

Sedimentary Rocks


 Argillite, chert, sandstone, and limestone

 Kahiltna flysch sequence

 Conglomerate, sandstone, siltstone, shale, and volcanic rocks


JURASSIC

Igneous Rocks

 Mafic and ultramafic rocks

 Alaska-Aleutian Range and Chitina Valley batholiths, undifferentiated

Metamorphic Rocks

 Uranatina metaplutonic complex


Sedimentary Rocks

 Limestone and marble

 Talkeetna Formation

TRIASSIC

Sedimentary Rocks


 Calcareous sedimentary rocks

 Kamishak limestone


Plutonic Rocks

 Gabbro, diabase, and metagabbro

Volcanic Rocks


 Nikolai Greenstone and related similar rocks

Metamorphic Rocks


 Metavolcanics and associated metasedimentary rocks


**MESOZOIC AND PALEOZOIC
Assemblages and Sequences**

 Red and brown sedimentary rocks and basalt


 Crystal tuff, argillite, chert, graywacke, and limestone


 Red beds

 Volcanic and sedimentary rocks



 Serpentinite, basalt, chert and gabbro


**PALEOZOIC
Assemblages and Sequences
(Skolai Group)**

 Eagle Creek Formation

 Station Creek and Slana Spur Fm., and equivalent rocks

 Teteina Volcanics


 Streina metamorphic complex

 Marble

— Stratigraphic contact

— Shoreline or riverbank

— Ice contact (glacier limit)

— Lineament

— Fault - certain

- - - Fault - approximate

- - - - Fault - inferred

..... Fault - concealed

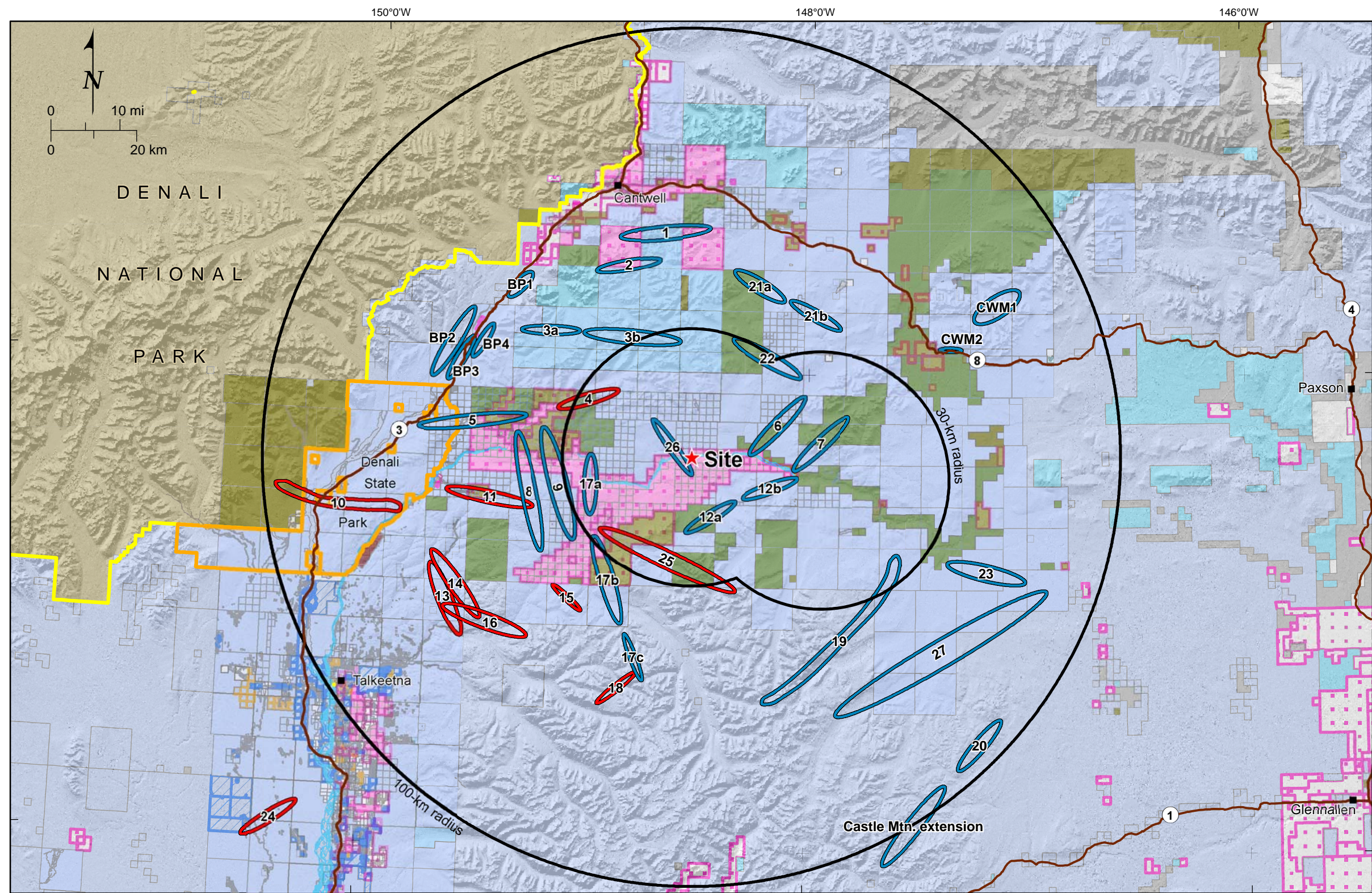
▲▲▲ Thrust fault - certain

▲▲▲ Thrust fault - approximate

▲▲▲ Thrust fault - inferred

..▲▲▲ Thrust fault - concealed

Geology from Wilson et al., 1998 (USGS Open-file Report 98-133)



Explanation

Lineament Groups

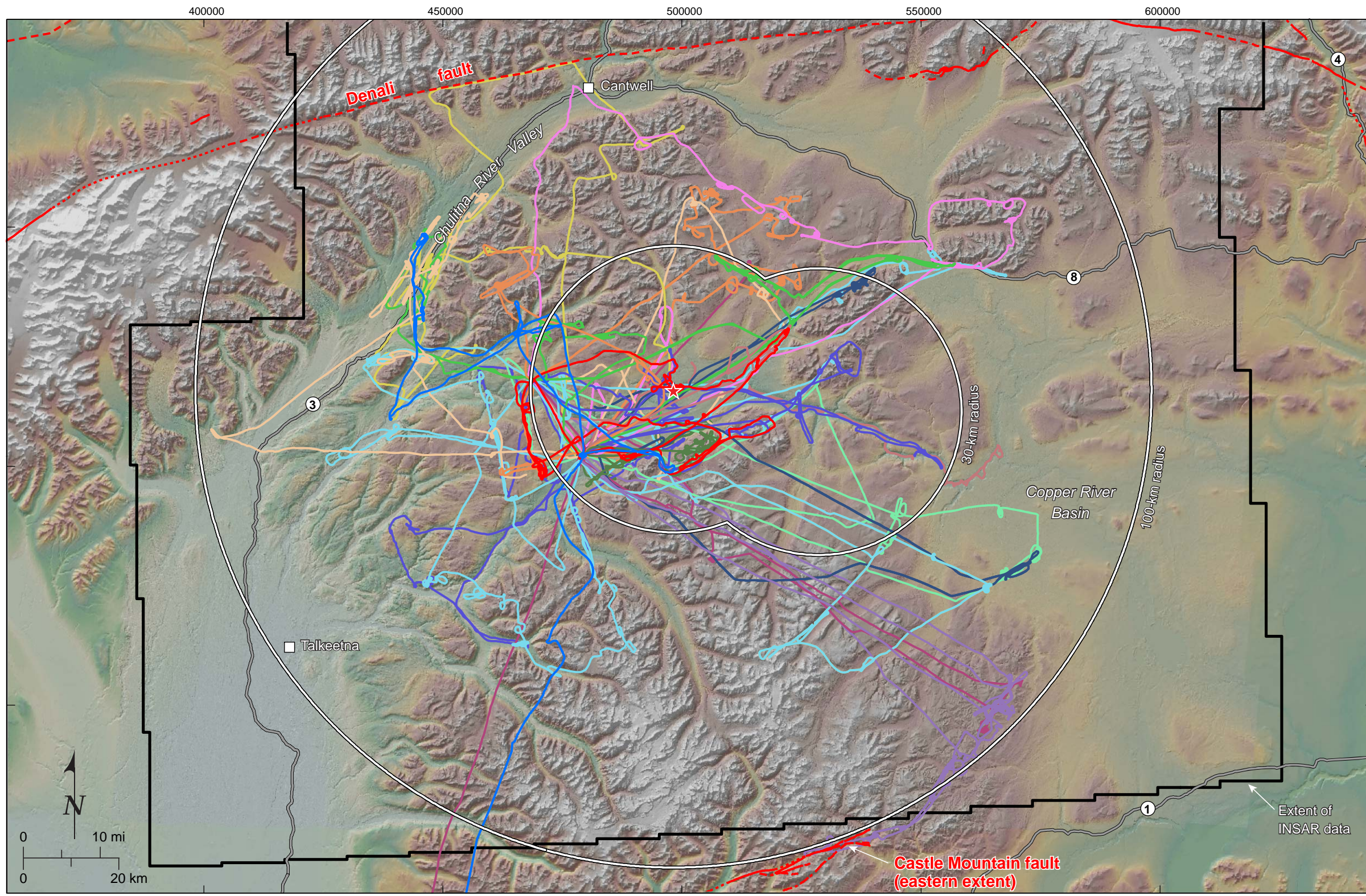
- No field work planned in 2013 based on results of TM-8 (FCL, 2013)
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Land Ownership

- Denali National Park
- Denali State Park
- Not identified
- ANCSA Corporation land
- Alaska Mental Health Land Trust
- Alaska Railroad Corporation land
- Federal land
- Municipal land
- Native allotment
- Private land
- State land
- State land - navigable waterway
- University land
- Bureau of Land Management
- Fish and Wildlife Service
- Forest Service
- National Park Service

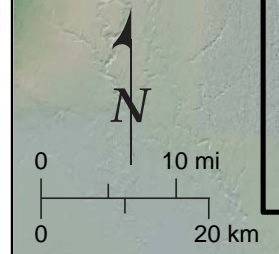
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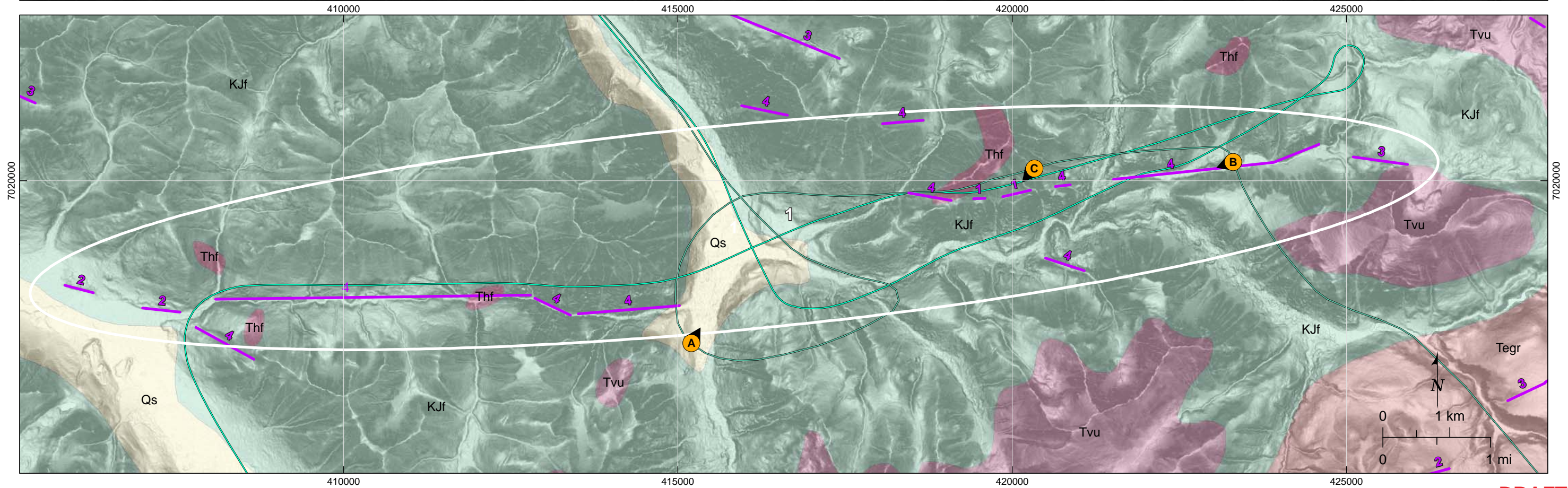
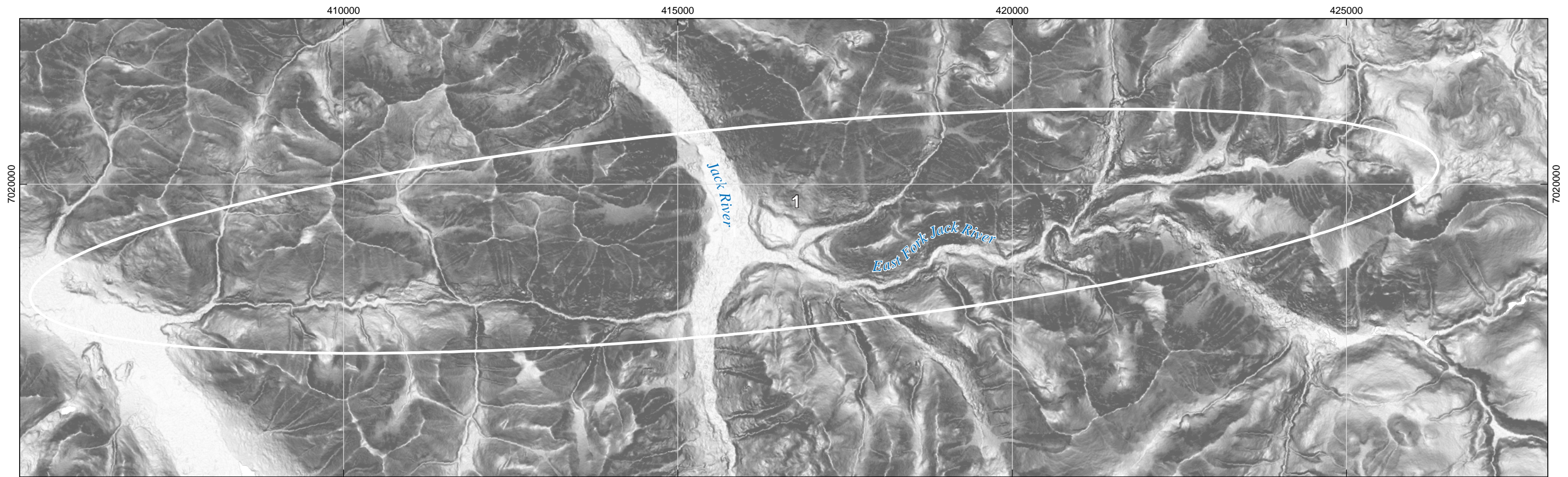
- Explanation**
- - - - - Quaternary fault, solid where well constrained, long dash where moderately constrained, short dash where inferred (Koehler et al., 2012)
 - ★ Proposed Watana site
- GPS Tracks
(by reconnaissance date)**
- | | |
|--|--|
| — 7/11/2013 | — 7/19/2013 |
| — 7/12/2013 | — 7/21/2013 |
| — 7/13/2013 | — 7/22/2013 |
| — 7/14/2013 | — 7/23/2013 |
| — 7/15/2013 | — 7/24/2013 |
| — 7/16/2013 | — 9/4/2013 |
| — 7/17/2013 | — 9/5/2013 |
| — 7/18/2013 | |

Coordinates on NAD83 UTM 6 North.
Elevation from INSAR data and USGS SRTM data.



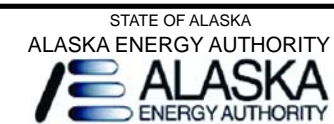
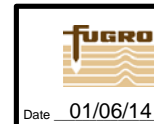
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Notes: 1. See Figures A0.2, A0.3, A0.4, and A0.5 for explanation.
 2. Geology by Wilson et al., 1998

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SUSITNA-WATANA HYDROELECTRIC PROJECT
 EXAMPLE OF
 LINEAMENT GROUP
 MAP DATA

FIGURE
 2-2