

FIGURE 2.2-4A

PIPELINE CORRIDOR REVISIONS -
FROTH TO FINN CREEK

TRANS MOUNTAIN
EXPANSION PROJECT

- Alternative Corridors**
- Proposed Pipeline Corridor
 - Proposed Alternative Pipeline Corridor (TMPL)

- Reference Kilometre Post (RK)
- Alternate Kilometre Post (AK)
- TMPL Kilometre Post (KP)
- TMEP Mapping Reference Line (New Alignment)
- Trans Mountain Pipeline (TMPL)
- Highway
- Paved Road
- Resource Road
- Railway
- Transmission Line
- Fiber-Optic Transmission System
- City / Town / District Municipality
- Park / Protected Area
- Indian Reserve / Métis Settlement

Projection: NAD 1983 UTM Zone 10N. Routing: Baseline TMPL & Facilities: provided by KMC, 2012; Proposed Corridors provided by UPI, August 23, 2013 and June 5, 2014. Reference Line & RK/AK provided by UPI, March 25 & 28, 2014; Additional Routing Alternatives provided by UPI 2013-2014; Transportation: IHS Inc., 2013; Natural Resources Canada, 2012; Geopolitical Boundaries: Natural Resources Canada, 2003, AltaLIS, 2013, IHS Inc., 2011, BC FLNRO, 2007 & ESRI, 2005; First Nation Lands: Government of Canada, 2014, AltaLIS, 2010 & IHS Inc., 2011; Hydrology: Natural Resources Canada, 2007-11 & BC FLNRO, 2008; Parks and Protected Areas: Natural Resources Canada, 2014, AltaLIS, 2012 & BC FLNRO, 2008; B/W & Colour Imagery: 2008-2011: Provided by KMC, 2012, NASA Geospatial Interoperability Program, 2005.

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MAP NUMBER 201406_MAP_TERA_RT_00589_13a_FROTHFINN1		PAGE SHEET 1 OF 3
DATE July 2014	TERA REF. 496781	REVISION 0
SCALE 1:15,000	PAGE SIZE 11x17	DISCIPLINE RT
DRAWN AJS	CHECKED TGG	DESIGN TGG



ALL LOCATIONS APPROXIMATE

DRAFT

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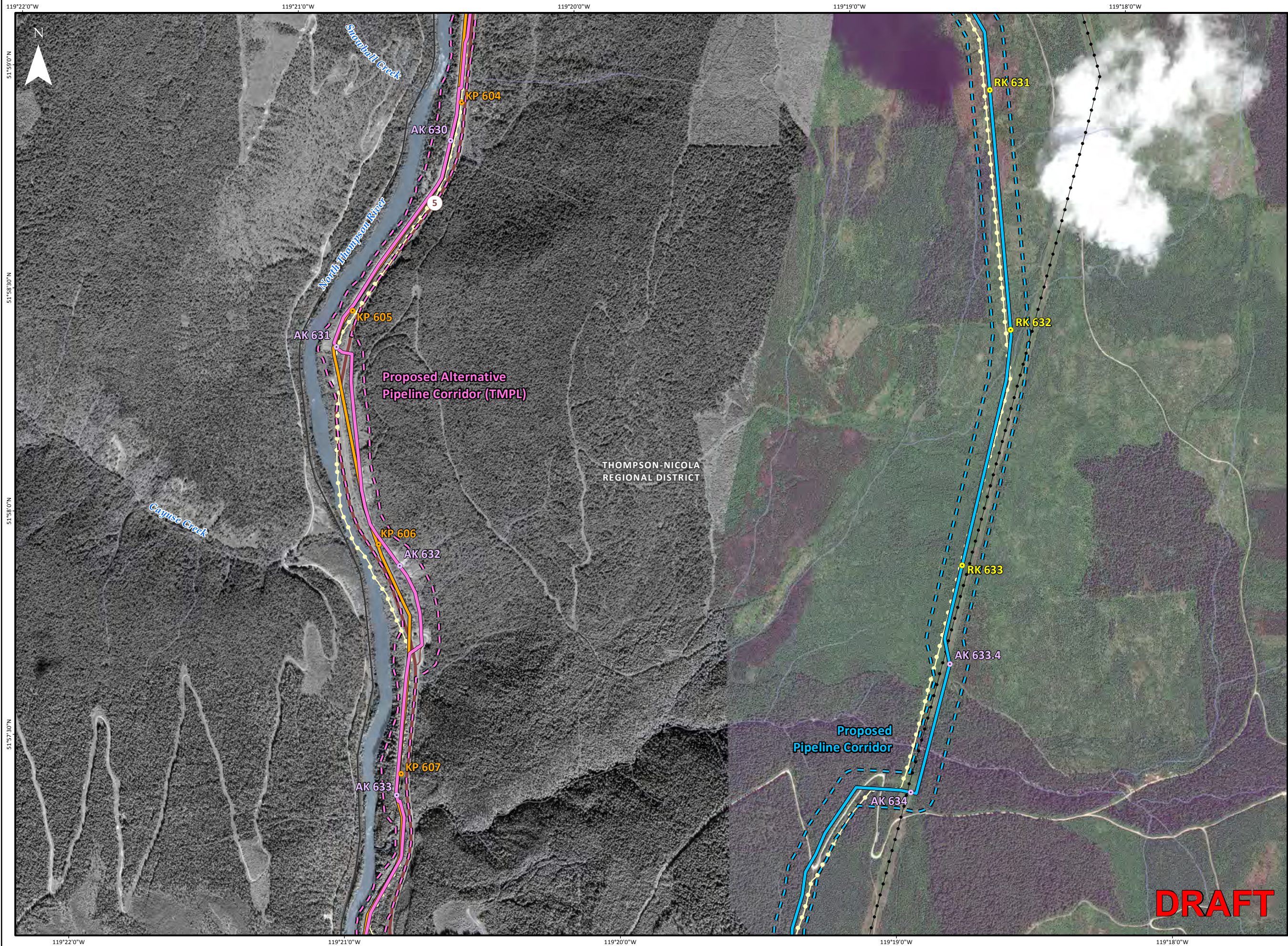


FIGURE 2.2-4B

PIPELINE CORRIDOR REVISIONS -
FROTH TO FINN CREEK

TRANS MOUNTAIN
EXPANSION PROJECT

Alternative Corridors

- Proposed Pipeline Corridor
- Proposed Alternative Pipeline Corridor (TMPL)

- Reference Kilometre Post (RK)
- Alternate Kilometre Post (AK)
- TMPL Kilometre Post (KP)
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- Trans Mountain Pipeline (TMPL)
- Highway
- Paved Road
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- Transmission Line
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Projection: NAD 1983 UTM Zone 10N. Routing: Baseline TMPL & Facilities: provided by KMC, 2012; Proposed Corridors provided by UPI, August 23, 2013 and June 5, 2014. Reference Line & RK/AK VF provided by UPI, March 25 & 28, 2014; Additional Routing Alternatives provided by UPI 2013-2014; Transportation: IHS Inc., 2013; Natural Resources Canada, 2012; Geopolitical Boundaries: Natural Resources Canada, 2003, AltaLIS, 2013, IHS Inc., 2011; BC FLNRO, 2007 & ESRI, 2005; First Nation Lands: Government of Canada, 2014, AltaLIS, 2010 & IHS Inc., 2011; Hydrology: Natural Resources Canada, 2007-11 & BC FLNRO, 2008; Parks and Protected Areas: Natural Resources Canada, 2014, AltaLIS, 2012 & BC FLNRO, 2008; B/W & Colour Imagery: 2008-2011: Provided by KMC, 2012, NASA Geospatial Interoperability Program, 2005.

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MAP NUMBER 201406_MAP_TERA_RT_00589_13b_FROTHFINN2		PAGE SHEET 2 OF 3
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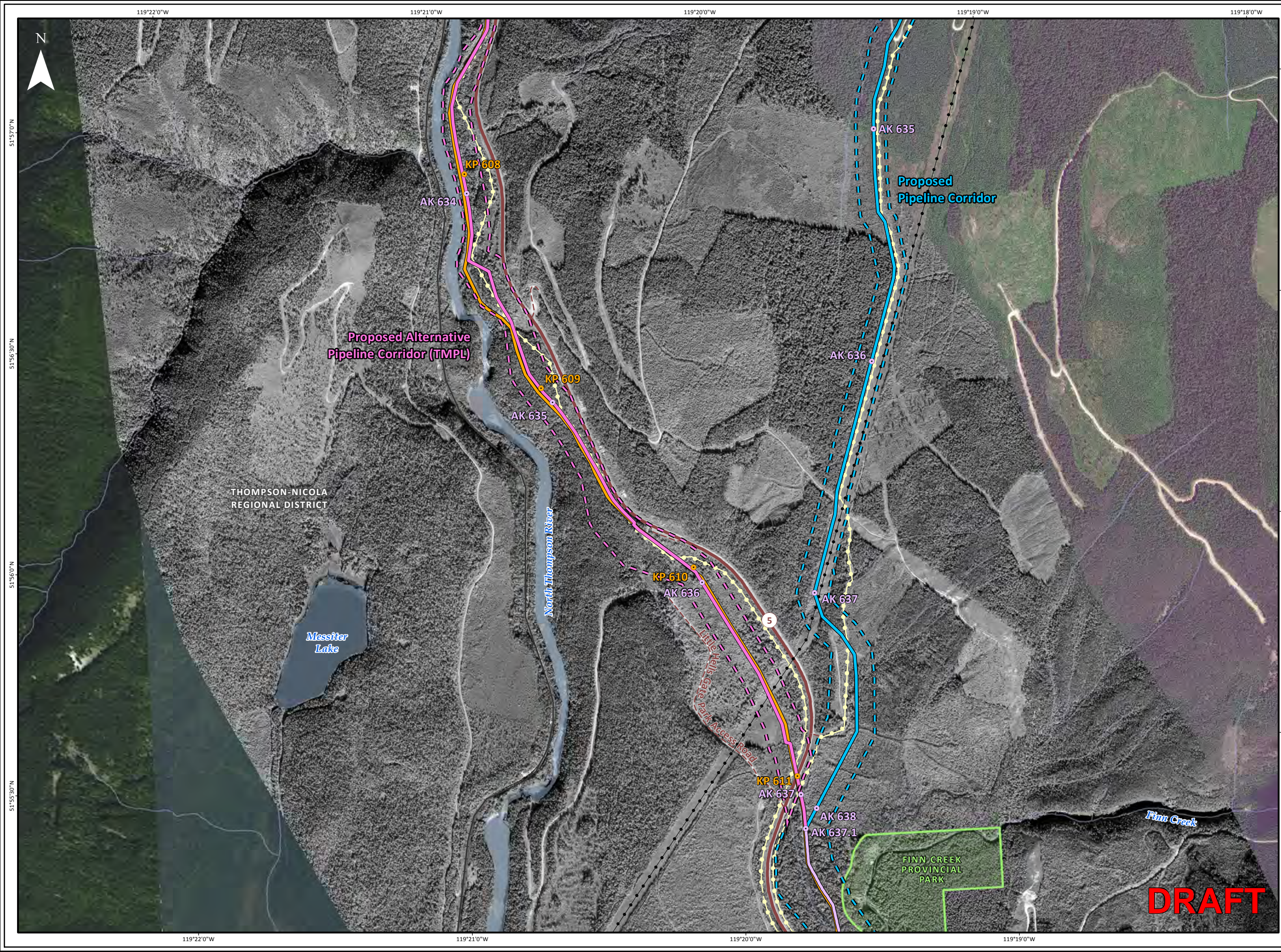


FIGURE 2.2-4C
PIPELINE CORRIDOR REVISIONS -
FROTH TO FINN CREEK

TRANS MOUNTAIN
EXPANSION PROJECT

- Alternative Corridors**
- Proposed Pipeline Corridor
 - Proposed Alternative Pipeline Corridor (TMPL)
- Reference Kilometre Post (RK)
Alternate Kilometre Post (AK)
TMPL Kilometre Post (KP)
TMEP Mapping Reference Line (New Alignment)
Trans Mountain Pipeline (TMPL)
Highway
Paved Road
Resource Road
Railway
Transmission Line
Fiber-Optic Transmission System
City / Town / District Municipality
Park / Protected Area
Indian Reserve / Métis Settlement

Projection: NAD 1983 UTM Zone 10N. Routing: Baseline TMPL & Facilities: provided by KMC, 2012; Proposed Corridors provided by UPI, August 23, 2013 and June 5, 2014. Reference Line & RK/AK VF provided by UPI, March 25 & 28, 2014; Additional Routing Alternatives provided by UPI 2013-2014; Transportation: IHS Inc., 2013; Natural Resources Canada, 2012; Geopolitical Boundaries: Natural Resources Canada, 2003; AltaLIS, 2013; IHS Inc., 2011; BC FLNRO, 2007 & ESRI, 2005; First Nation Lands: Government of Canada, 2014; AltaLIS, 2010 & IHS Inc., 2011; Hydrology: Natural Resources Canada, 2007-11 & BC FLNRO, 2008; Parks and Protected Areas: Natural Resources Canada, 2014; AltaLIS, 2012 & BC FLNRO, 2008; B/W & Colour Imagery: 2008-2011: Provided by KMC, 2012; NASA Geospatial Interoperability Program, 2005; ESRI, 2005 (Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community).

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MAP NUMBER 201406_MAP_TERA_RT_00589_13c_FrothFinn3		PAGE SHEET 3 OF 3
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TABLE 2.2-5

STUDY OF ALTERNATIVE CORRIDORS – FROTH CREEK TO FINN CREEK (RK 626.8 TO RK 637.2)

Factors	Proposed Pipeline Corridor	Proposed Alternative Pipeline Corridor (TMPL)
LENGTHS		
Length of pipeline corridor (km)	11.2	10.5
Length following existing TMPL right-of-way (km)	0	9.4
Length following other linear features (other pipelines, power lines, highways, roads, fibre-optic lines, railways, etc.) (km)	9.3	1.1
Length of "new" corridor (km)	1.9	0
Total parallels (km)	9.3	10.5
CROSSINGS		
No. of highway crossings (No.)	1	3
No. of road (arterial, collector, local, forestry) crossings (No.)	17	3
No. of TMPL crossings (No.)	0	8
No. of foreign line crossings (No.)	0	0
No. of fibre-optic/other cable crossings (No.)	6	0
No. of main power line crossings (No.)	3	1
No. of distribution power line crossings (No.)	0	0
No. of railway crossings (No.)	0	0
Crossings of named rivers (No.)	0	0
Crossings of named creeks (No.)	1	1
Crossings of other watercourses (No.)	8	14
Total watercourses (No.)	8	14
GEOTECHNICAL		
Length crossing slopes > 50% on the fall line (km)	0	0
Length crossing slopes > 50% on sidehill (km)	0	0.8
Natural hazard potential (km)	High: 0 Medium: 0.2 Low: 11.0	High: 0.7 Medium: 0.9 Low: 8.9
Length of thin veneer of overburden or exposed bedrock (km)	3.4	2.0
HYDRAULICS		
Minimum elevation (m)	668.8	621
Maximum elevation (m)	1245.6	767.6
Acceptability	No	Yes
LAND		
Indian Reserve (km)(name)	0	0
Provincial Crown (km)	11.2	7.0
Private (km)	0	0
Unknown Parcels (km)	0	3.5
No. of private parcels (No.)	0	0
ENVIRONMENT		
Length within Riparian Reserve Zone (km)	0	2.5
Wetlands crossed (km)	0.4	0.2
Old Growth Management Area (legal) (km)	0.1	0.6
Late winter or early winter habitat for mountain caribou (km) (Wells Gray or Groundhog)	4.9 (Groundhog)	0
Community forests crossed (km), woodlots crossed (km), Wildlife Habitat Areas (km) (species), designated Ungulate Winter Range (km) and Old Growth Management Area (non-legal)(km)	0	0
SOCIO-ECONOMIC		
Parks and protected areas (km)(name)	0	0
Agricultural Land Reserve (km)	0	0
Community Watersheds (No.)	0	0
Municipalities crossed (km)(name)	0	0
Land and Resource Management Plan (LRMP) area (km) (name)	11.2 (Kamloops LRMP)	10.5 (Kamloops LRMP)

TABLE 2.2-5 Cont'd

Factors	Proposed Pipeline Corridor	Proposed Alternative Pipeline Corridor (TMPL)
CONSTRUCTABILITY AND COST		
Constructability	Parallels a fibre-optic and/or BC Hydro rights-of-way for majority of its length. One crossing of Highway 5. Very steep 200 m climb will require specialized construction techniques. Extensive grading associated with crossing of Foam Creek (deeply incised). Approximately 1.5 km of sidehill.	Follows existing TMPL right-of-way with a few minor deviations to avoid congested areas between Highway 5 and North Thompson River. Follows old Highway 5 alignment for approximately 1.4 km. Trenchless or other specialized construction may be required to address known geotechnical issues and/or congested areas between the North Thompson River and Highway 5. Steep sidehill restricts options for the construction right-of-way resulting in impacts to the Riparian Reserve Zone. A retaining wall would be required along Highway 5 near Foam Creek. Three crossings of Highway 5, one being more difficult due to terrain and constricted workspace.
Estimated Construction Cost (\$ millions)	28.8	28.3

The proposed alternative pipeline corridor (TMPL) in the Froth Creek to Finn Creek area is 10.5 km in length and follows the existing TMPL right-of-way for 9.4 km whereas the proposed pipeline corridor is 11.2 km in length and does not follow the existing TMPL right-of-way for any of its length. The proposed alternative pipeline corridor (TMPL) avoids late winter or early winter habitat for mountain caribou and traverses the riparian reserve zone of the North Thompson River for 2.5 km while the proposed pipeline corridor traverses 4.9 km of late winter or early winter habitat for mountain caribou (Groundhog herd) and avoids the riparian reserve zone. The proposed pipeline corridor avoids the Messiter Hill (a potentially geotechnically hazardous area) from approximately AK 633 to AK 637 while the proposed alternative pipeline corridor (TMPL) does not avoid Messiter Hill.

Trans Mountain has consulted stakeholders, Aboriginal communities and landowners on the proposed pipeline corridor following the fibre-optic or BC Hydro rights-of-way between Froth Creek and Finn Creek. Feedback to date has not identified any specific concerns in this area, although a general concern has been raised about impacts to caribou habitat in sections of the North Thompson River valley. Trans Mountain's engagement is ongoing and will consult on the alternative proposed pipeline corridor in the Froth Creek and Finn Creek area in Q4 of 2014.

Trans Mountain's currently proposed pipeline corridor is located along the existing fibre-optic telecommunication line right-of-way up the slope and away from the existing TMPL right-of-way and the North Thompson River. However, given the results of the hydraulic analysis that has been conducted, it is likely that the proposed alternative pipeline corridor that follows the existing TMPL right-of-way from Froth Creek to Finn Creek will become the proposed revised pipeline corridor. Environmental field studies will be conducted along the proposed revised pipeline corridor during Q3 2014.

North Thompson River Provincial Park (RK 725.1 to RK 728.1)

The proposed revised pipeline corridor encounters two portions of North Thompson River Provincial Park (NTRPP), a Class A Provincial Park that was designated in 1967. In its Application to the NEB, Trans Mountain had designated the previously proposed pipeline corridor that avoids the southern extent of NTRPP as the proposed pipeline corridor. However, as indicated in its response to NEB IR 1.84 (Filing ID A3W9H9), Trans Mountain has changed the status of the pipeline corridors in the vicinity of NTRPP to have the proposed revised pipeline corridor traverse the NTRPP adjacent to the existing TMPL right-of-way, which is located outside of the Park boundaries, and a proposed alternative pipeline corridor that avoids the Park by routing to the west of Highway 5.

Two alternative corridors as well as an alternative that involves an open cut contingency crossing method of the North Thompson River were studied and evaluated from an environmental and socio-economic perspective (see Figure 2.2-5 and Table 2.2-6). An engagement summary regarding the NTRPP pipeline corridor selection process is provided in Table 2.2-7.