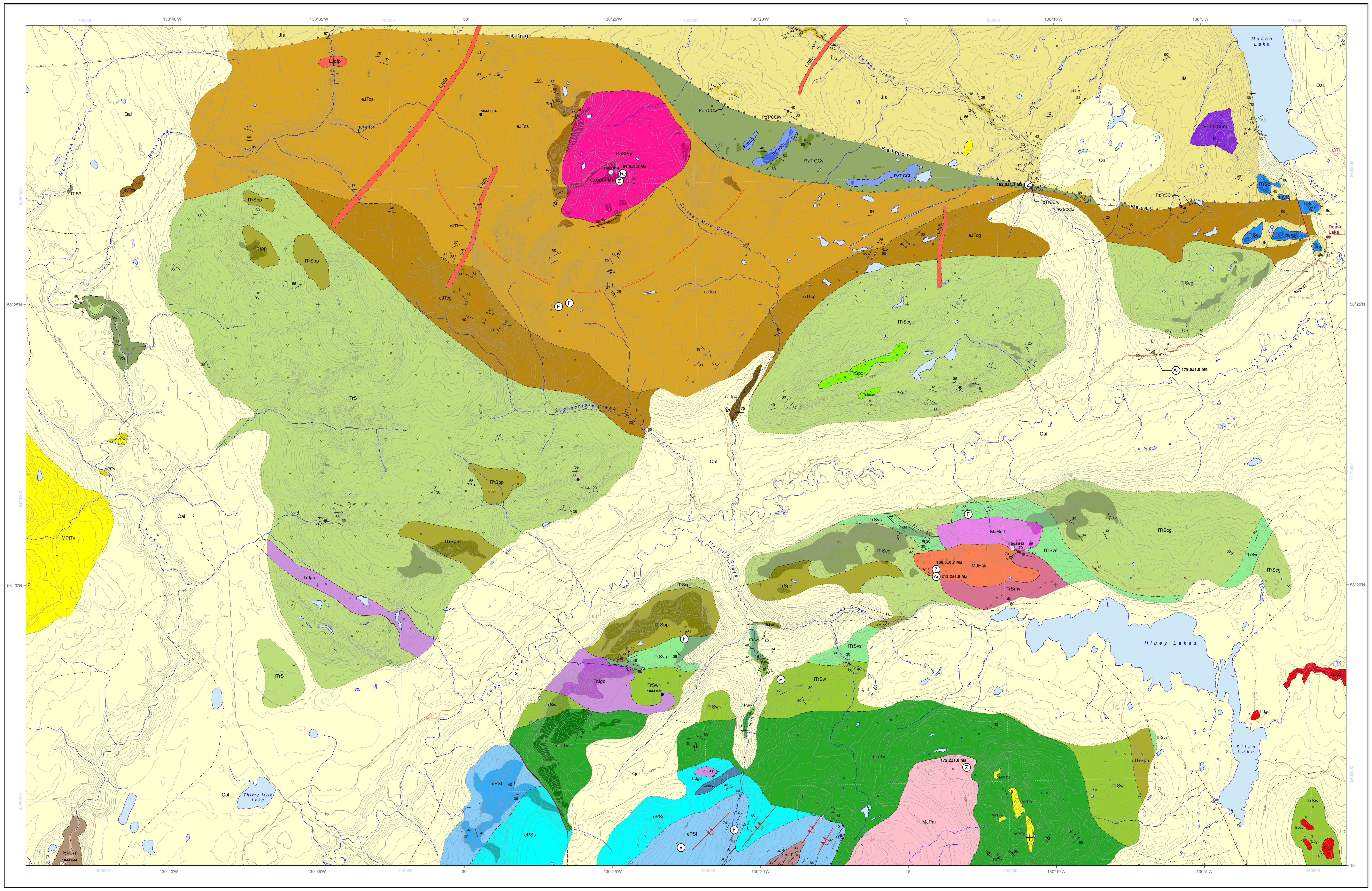
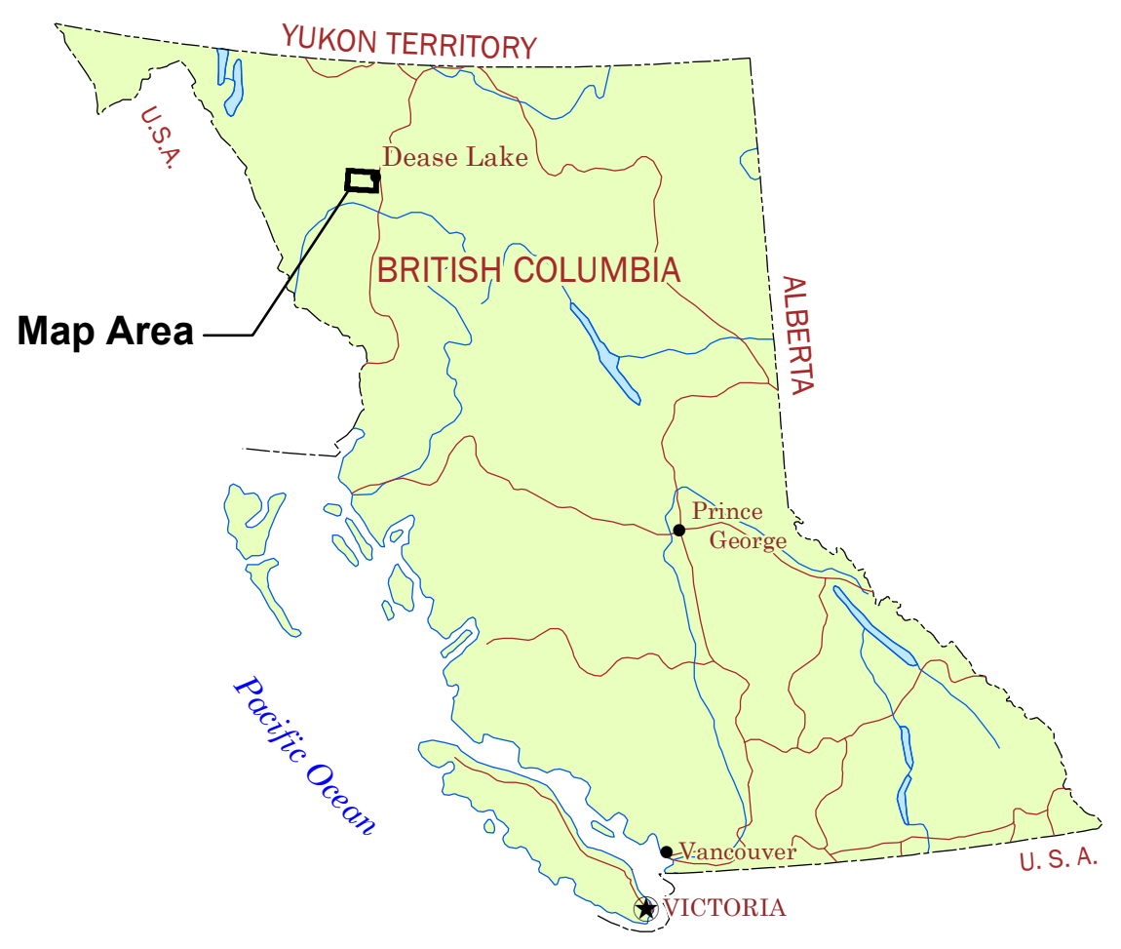
Disclaimer: While every effort has been taken to ensure the accuracy of the information in this map, the data are provided on an 'as-is' basis, without any warranty, guarantee or representation of any kind, whether expressed or implied. It is the responsibility of the user to check the facts before entering any financial or other commitment based upon this information.

QUEST-NORTHWEST PROJECT



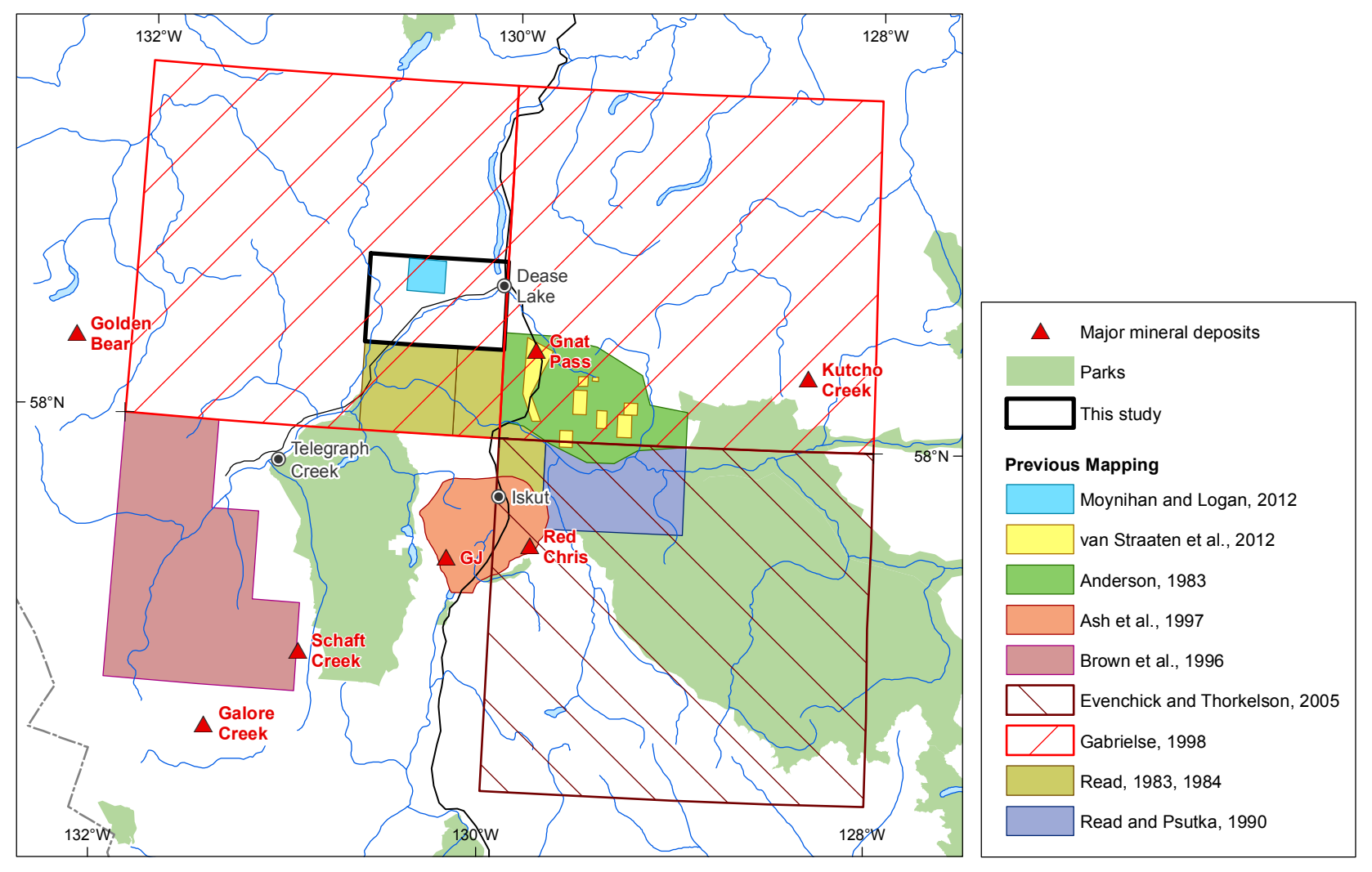
130°40'W
130°35'W
30'
130°25'W
130°20'W
15'
130°10'W
130°5'W
400000
410000
420000
430000
440000
6480000
6470000
6460000
58°25'N
58°20'N
15'
King Salmon Fault
Dease Lake
Dease Lake
Tatsho Creek
Mckessock Creek
Ross Creek
Sixteen Mile Creek
Auguschidle Creek
Tuya River
Tanzilla River
Itsllitu Creek
Hluey Creek
Hluey Lakes
Sitsa Lake
Thirty Mile Lake
Hotte Creek
Airport
37
Qal
Jls
eJTcs
eJTcg
eJTl
LJqfp
PaSPgd
PzTrCClw
PzTrCCv
PzTrCCl
PzTrCCum
lTrSc
lTrS
lTrS?
lTrSpp
lTrScg
lTrSpx
lTrSvs
lTrSw
lTrSmv
MJHgd
MJHsy
MJPm
TrJgb
TrJgd
mTrTv
emTrTa
ePSl
ePSs
ePSv
MPlTv
ETCcg
104J 064
104K 154
104J 014
104J 013
104J 036
104J 044
64.5±0.3 Ma
63.5±0.4 Ma
152.0±1.1 Ma
179.5±1.8 Ma
166.5±0.7 Ma
212.2±1.8 Ma
172.2±1.0 Ma

Location Map



YUKON TERRITORY
U.S.A.
Dease Lake
Map Area
BRITISH COLUMBIA
ALBERTA
Prince George
Pacific Ocean
Vancouver
VICTORIA
U. S. A.

Previous Mapping in the Region



132°W
130°W
128°W
58°N
Dease Lake
Golden Bear
Gnat Pass
Kutcho Creek
Telegraph Creek
Iskut
GJ
Red Chris
Schaft Creek
Galore Creek
Major mineral deposits
Parks
This study
Previous Mapping
Moynihan and Logan, 2012
van Straaten et al., 2012
Anderson, 1983
Ash et al., 1997
Brown et al., 1996
Evenchick and Thorkelson, 2005
Gabrielse, 1998
Read, 1983, 1984
Read and Psutka, 1990

Note: Outcrops are shown with a darker shade

PLEISTOCENE AND RECENT

Qal	Unconsolidated glacial, lacustrian, alluvial and colluvial material.

MIOCENE TO PLEISTOCENE
Tuya Formation

MPlTv	Alkali olivine basalt; grey to brown coloured, columnar-jointed. Yellowish green, mm-size phenocrysts of olivine and vitreous plagioclase in a fine grained groundmass.

EOCENE
Tanzilla Canyon Formation

ETCcg	Poorly consolidated conglomerate, sandstone and mudstone; marl and lenses of high-volatile B bituminous coal.

PALEOCENE
Snow Peak pluton

PaSPgd	Biotite-K-feldspar plagioclase monzonite to syenite; pink weathering, equigranular to porphyritic Laser ablation U-Pb zircon crystallization age of 63.5±0.4 Ma; Re-Os molybdenite age for mineralization of 64.5±0.3 Ma.

LATE JURASSIC

LJqfp	Dikes and sills of quartz-hornblende-plagioclase porphyry (QFP); cross cut folded and foliated sedimentary rocks of the Takwahoni Formation, the King Salmon Fault and mafic volcanic rocks of Cache Creek Terrane. Laser ablation U-Pb zircon crystallization age of 152.0±1.1 Ma.

STIKINE TERRANE

MIDDLE JURASSIC
Hluey Lake pluton

MJHsy	Biotite-K-feldspar-plagioclase monzonite to syenite; pink weathering, equigranular to porphyritic. Laser ablation U-Pb zircon crystallization age of 166.5±0.7 Ma and an incongruous older Ar-Ar biotite cooling age of 212.2±1.8 Ma.
MJHgd	Biotite-hornblende granodiorite; medium grained, equigranular to weakly foliated at eastern margin.

Pallen Creek pluton

MJPm	Biotite-hornblende quartz monzonite to monzodiorite; equigranular to locally K-feldspar megacrystic. Laser ablation U-Pb zircon crystallization age of 172.2±1.0 Ma.

EARLY JURASSIC
Takwahoni Formation

eJTcs	Undivided sandstone, siltstone, mudstone, greywacke and conglomerate; dark grey to orange weathering, calcareous matrix.
eJTl	Limestone, sandy limestone. The mapped occurrence of this unit is too small to be visible at this scale. The occurrence is denoted by outcrop location (x).
eJTcg	Basal unit of coarse polylithic conglomerate, coarse sandstone and lesser siltstone.

TRIASSIC TO JURASSIC

TrJgd	White weathering, equigranular to porphyritic hornblende-plagioclase monzodiorite to granodiorite; acicular 1-8 mm hornblende crystals±biotite in a fine grained feldspar matrix.
TrJgb	Pyroxenite, hornblende gabbro, diorite and monzodiorite intrusive complex; high magnetite content of intrusions is reflected by high magnetic susceptibility and corresponding high aeromagnetic signature.

LATE TRIASSIC
Stuhini Group

lTrS	Undivided coherent volcanic flows, clastic and sedimentary rocks.
lTrScg	Mafic volcanic-dominated polylithic conglomerate, sandstone and greywacke; massive, rarely bedded, weathers orange and includes rare augite phyric basalt flows.
lTrSpx	Augite±plagioclase phyric basalt; primarily thick monomict breccias, massive coherent flows and rare pillowed forms, 4-10 mm euhedral black augite phenocrysts in a pale green finer grained groundmass.
lTrSmv	Latite, K-feldspar phyric trachyte, vesicular pyroxene basalt and minor volcanic sandstone; maroon to purple, friable.
lTrSpp	Plagioclase±augite phyric basalt flows; green, grey and massive, 2-8 mm white plagioclase phenocrysts, often glomeroporphyritic in a fine grained green groundmass.
lTrSvs	Well-bedded, volcanic sandstone, siliceous siltstone and subordinate conglomerate; pale green, grey and orange, contains Upper Triassic bivalves and conodonts (M. Orchard pers comm., 2012).
lTrSw	Volcanic clast-dominated conglomerate; contains horizons with limestone, chert and siltstone clasts, chaotic, massive to weakly bedded and internally graded.

EARLY-MIDDLE TRIASSIC
Tsaybahe 'group'

mTrTv	Coarse augite±plagioclase phyric basalt breccias and flows; orange to grey-green weathering.
emTrTa	Well-bedded, siliceous siltstone, argillite and limestone. Correlative rocks south of map area contain Middle and Early Triassic conodonts (Read, 1984).

PERMIAN
Stikine Assemblage

ePSl	Limestone; cream to grey coloured, well-bedded and interlayered with irregular black and grey chert nodules and layers.
ePSs	Siliceous siltstone; green and buff coloured, interlayered and gradational into grey and maroon chert.
ePSv	Plagioclase phyric lapilli tuff and breccia; penetratively foliated, maroon and green, carbonate altered.

CACHE CREEK TERRANE

EARLY JURASSIC
Inklin Formation

Jls	Phyllite, phyllitic greywacke, siltstone with minor limestone and conglomerate; grey-green and calcareous. Possibly lateral fine grained equivalent to coarser Takwahoni Formation overlying Stikine Terrane.

LATE TRIASSIC
Sinwa Formation

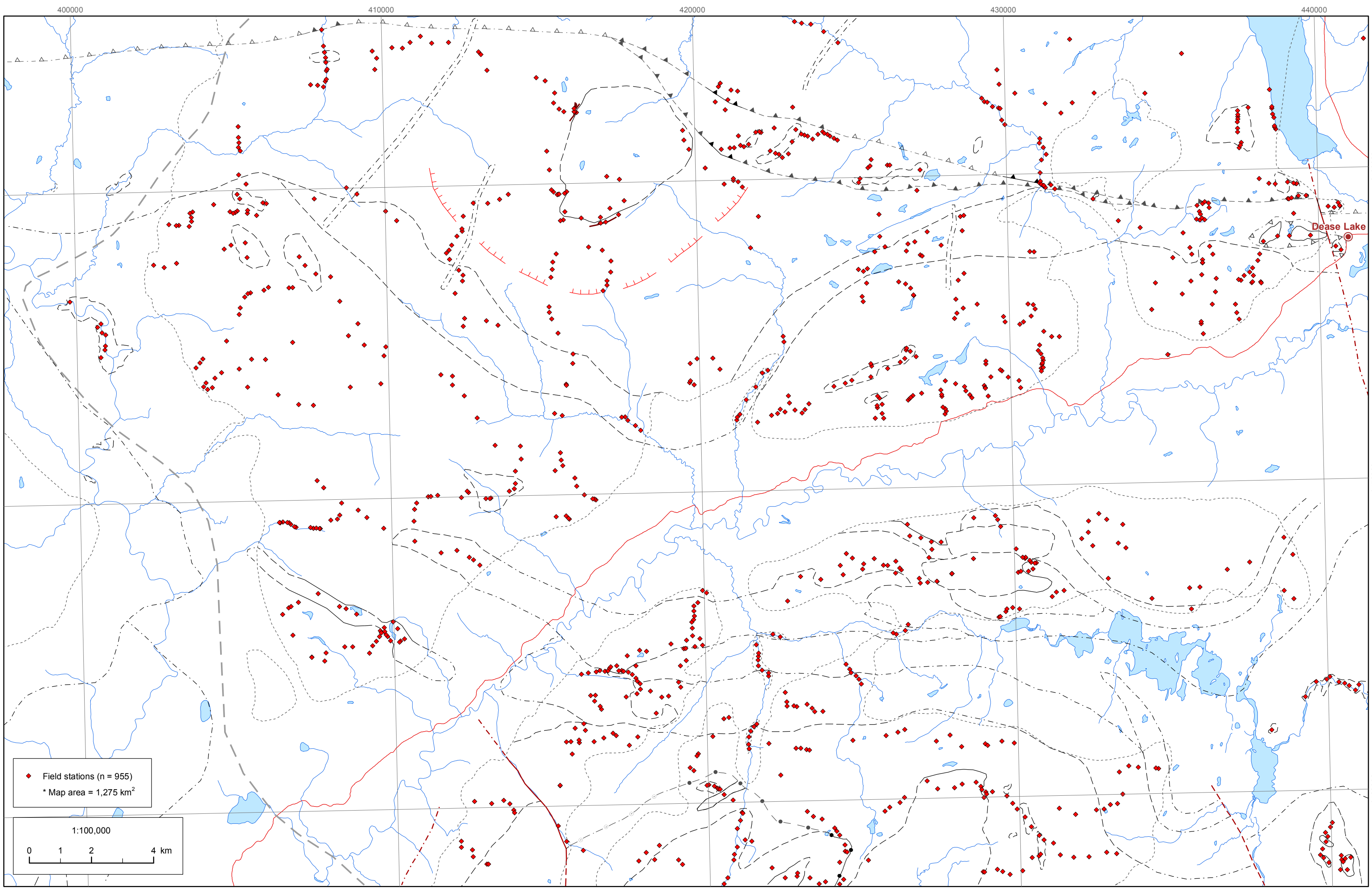
lTrSc	Marble; grey, white and massive, forms structureless isolated exposures, locally foliated and rarely fossiliferous. Typically a light brown amorphous rock cut by a dense stockwork of white calcite veins.

MISSISSIPPIAN TO TRIASSIC
Cache Creek Complex

PzTrCCl	Marble; white, grey and black, medium bedded; thinly foliated, locally interlayered with yellowish chert and tuffaceous beds.
PzTrCCv	Meta-basalt; dark green, aphyric to fine pyroxene porphyry, pervasively fractured and penetratively foliated; metamorphic assemblage includes epidote, chlorite, calcite and pyrite.
PzTrCCum	Peridotite; dun-weathering, variably serpentinized chrome spinel-bearing; a probable serpentinized dunite(?) at the southern margin is thoroughly serpentinized and highly magnetic.
PzTrCClw	Listwanite altered ultramafic rocks comprised of quartz-talc-carbonate-chrome mica and locally pyrite. The unit crops out along trace of King Salmon Fault. For those mapped occurrences of this unit that are too small to be visible at this scale, the occurrences are denoted by outcrop location (x).

Populated place (unclassified) ◉
MinFile (labelled by MinFile number): Prospect, Showing, Anomaly ☒ ● +
Altered / mineralized rock samples ●
Sample: fossil, isotopic dating method (U-Pb, Ar-Ar, Re-Os) labelled by preliminary date Ⓕ Ⓩ (Ar) (Re)
Outcrop location ×
Bedding: tops indicated, inclined, vertical, horizontal
Fabric: slaty cleavage or schistosity (inclined, vertical, second phase inclined, second phase vertical)
Fold axis: first phase, second phase
Lineation: bedding/cleavage intersection, stretching lineation
Fabric: trachytic flow, brittle fracture/joint
Brittle shear: inclined, vertical
Dike: inclined, vertical
Vein: inclined, vertical
Geological contact: defined, approximate, inferred
Inferred quaternary cover contact
Unconformity: defined, approximate, inferred
Fault: defined, approximate, inferred
Thrust fault: defined, approximate, inferred
Axial trace of overturned regional fold: antiform, synform
Contact metamorphic isograd: biotite in, cordierite in
Limit of mapping
Roads: Highway 37, Telegraph Creek, Hluey Lake
Elevation contours (20 m intervals): Major, Minor

Station Distribution with Geological Line Features



400000
410000
420000
430000
440000
6480000
6470000
6460000
Dease Lake
Field stations (n = 955)
* Map area = 1,275 km^2
1:100,000
0 1 2 4 km

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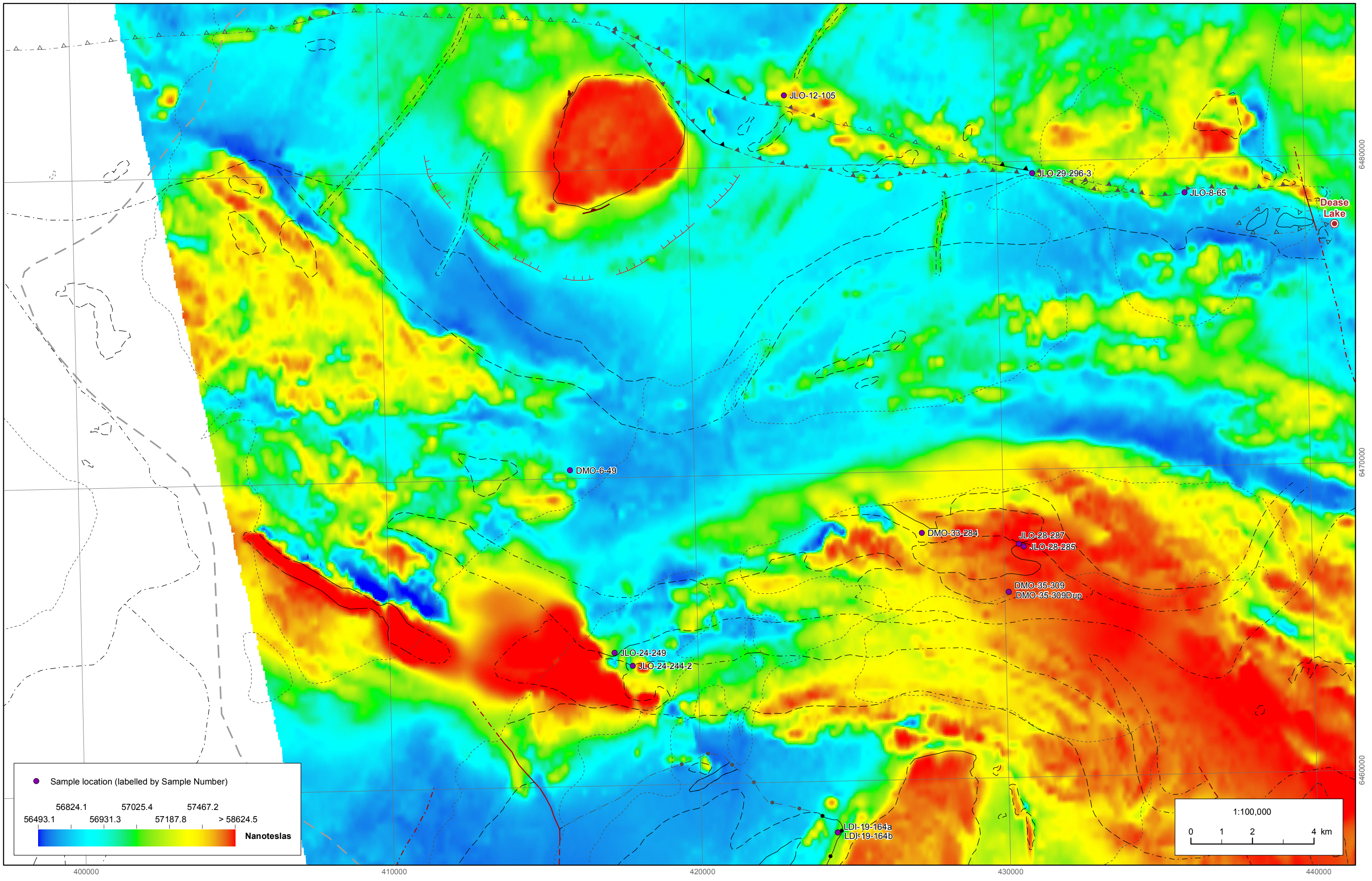
QUEST-Northwest Total Field Magnetics (Aeroquest Airborne, 2012) with Geological Line Features and Altered/Mineralized Rock Sample Locations



400000
410000
420000
430000
440000
6480000
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JLO-12-105
JLO-29-296-3
JLO-8-65
Dease Lake
DMO-6-49
DMO-33-284
JLO-28-287
JLO-28-285
DMO-35-309
DMO-35-309Dup
JLO-24-249
JLO-24-244-2
LDI-19-164a
LDI-19-164b
Sample location (labelled by Sample Number)
56824.1
57025.4
57467.2
56493.1
56931.3
57187.8
> 58624.5
Nanoteslas
1:100,000
0 1 2 4 km

Altered / Mineralized Rock Samples (ICP-MS)

SampleNumber	UTM	ZONE10	Unit	LabNo	Ag	As	Au	Ba	Bi	Cd	Ce
	Easting	Northing		Detection	0.1	1	2	1	0.1	0.1	1
				Units	PPM	PPM	PPB	PPM	PPM	PPM	PPM
DMO-33-284	427351	6467996	lTrSvs	62159	0.3	81	10	18	0.3	<0.1	7
DMO-35-309	430125	6466026	lTrSmv	62160	<0.1	7	7	338	0.5	<0.1	30
DMO-35-309Dup	430125	6466026	lTrSmv	62155	<0.1	9	9	192	0.6	<0.1	28
DMO-6-49	415975	6470269	lTrS	62157	0.1	26	<2	20	<0.1	0.1	5
JLO-12-105	423171	6482300	PzTrCClw	62146	0.2	64	4	87	<0.1	0.2	<1
JLO-24-244-2	417876	6463877	lTrSpp	62150	<0.1	3	7	566	<0.1	<0.1	11
JLO-24-249	417295	6464315	lTrSw	62151	<0.1	7	<2	170	<0.1	0.2	14
JLO-28-285	430650	6467484	MJHsy	62152	<0.1	10	21	1490	0.1	0.2	84
JLO-28-287	430492	6467572	MJHgd	62153	<0.1	13	4	199	0.1	0.1	65
JLO-29-296-3	431174	6479608	PzTrCClw	62154	<0.1	108	<2	47	<0.1	0.1	<1
JLO32-319	451832	6457090	TrJgd	62156	0.6	5	41	510	0.1	0.2	16
JLO50-501 (BLK)	-	-	silica blank	62158	<0.1	<1	<2	3	0.1	<0.1	<1
JLO-8-65	436103	6478873	PzTrCClw	62145	<0.1	82	<2	7	<0.1	<0.1	<1
LDI-19-164a	424421	6458324	emTrTa	62147	<0.1	31	21	64	0.2	0.2	70
LDI-19-164b	424421	6458324	emTrTa	62148	<0.1	3	14	141	0.2	0.3	80
OIV-3-38	428828	6454076	MJPm	62149	<0.1	2	3	308	<0.1	0.2	10

Data Sources

MinFile data

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Acknowledgments

Cartography by James M. Logan from British Columbia Geological Survey and Fion Ma from Geoscience BC

BC Geological Survey Open File 2012-04
Geoscience BC Map 2012-08-1

Dease Lake - Little Tuya River Geology

NTS Sheets 104J/08, 07E

James M. Logan, David P. Moynihan, Larry J. Diakow
and Bram I. van Straaten

1 : 50,000

0 1 2 4 km

Universal Transverse Mercator Projection, Zone 9
Horizontal Datum: North American Datum 1983

April 2012

Suggested Reference:
Logan, J.M., Moynihan, D.P., Diakow, L.J. and van Straaten, B. (2012): Dease Lake - Little Tuya River Geology (NTS 104J/08, 07E); BC Ministry of Energy and Mines, Open File 2012-04 and Geoscience BC Map 2012-08-1, 1:50,000 scale.