

Photo 5. KM16 — Cover vegetation at KM16-C0, -C75 and -C150 (a-c) and KM16-0, -75 and -150 (d-f).



Table 4. KM16 — Summary of landscape, terrain and soil attributes.

Survey Area	KM16 — Disturbed	KM16 — Control
Survey Marker ID	KM16-0, -75, -100	KM16-C0, -C75, -C100
<b>Landscape Attributes</b>		
Geomorphological Process	Glaciation and Cryoturbation	
Parent Material	Morainal	
Surface Expression	Level	
Slope Class Description	Nearly Level (Class 2: 0.5–2%)	
Aspect	West-Southwest	
Drainage	Moderately Well Drained	
Soil Moisture Regime	Subxeric (Dry)	
<b>Soil Attributes</b>		
* Organic Matter Content	3.9% ( $\pm 1.8$ SD)	6.1% ( $\pm 3.8$ SD)
* pH	7.2 ( $\pm 0.4$ SD)	7.4 ( $\pm 0.5$ SD)
* Texture/Particle Size	Sandy Loam	Sandy Loam
Surface Organic Depth	<Discontinuous>	Om/Oh = 4-6 cm
Rooting Depth	13–17 cm	12-14 cm
Restrictive Layer	15–23 cm (Till)	26 cm (Till)
<b>Nutritional Profile</b>		
* Available Nitrate -N	1.4 ppm ( $\pm 0.4$ SD)	1.3 ppm ( $\pm 0.6$ SD)
* Available Phosphate-P	<Below Detection Limit>	<Below Detection Limit>
* Available Potassium-K	25.0 ppm ( $\pm 2.6$ SD)	29.3 ppm ( $\pm 9.7$ SD)
* Available Sulfate-S	<Below Detection Limit>	<Below Detection Limit>
* Electrical Conductivity	1.1 dS/m ( $\pm 0.4$ SD)	0.4 dS/m ( $\pm 0.2$ SD)
* Sodium Adsorption Ratio	0.2 ( $\pm 0.0$ SD)	0.2 ( $\pm 0.0$ SD)
* Saline Classification	Non-Saline	Non-Saline

SD: Standard Deviation

dS/m: deciSiemens per metre

Om: Organic-mesic; Oh: Organic-humic.

\*Mean values; Based on laboratory analyses of soil samples



Table 5. KM16 — Summary of observed vegetation.

Growth Form	Taxon	Common Name	Control	Disturbed	Environs*
Graminoid	<i>Carex membranacea</i>	Membranous Sedge	✓	✓	
	<i>Carex fuliginosa</i> subsp. <i>misandra</i>	Short-Leaved Sedge	✓	✓	
Forb/ Perennial Herb	<i>Bistorta vivipara</i>	Alpine Bistort		✓	
	<b><i>Dryas integrifolia</i></b>	Mountain Avens	✓	✓	
	<i>Pedicularis lanata</i>	Woolly Lousewort			✓
	<b><i>Chamerion latifolium</i></b>	Dwarf Fireweed			✓
	<b><i>Oxytropis maydelliana</i></b> subsp. <i>melanocephala</i>	Yellow Oxytropis	✓	✓	
	<i>Saxifraga oppositifolia</i>	Purple Saxifrage	✓	✓	
	<i>Saxifraga aizoides</i>	Yellow Saxifrage	✓	✓	
	<i>Potentilla hyparctica</i>	Arctic Cinquefoil		✓	
Shrub/ Ericaceae	<b><i>Vaccinium uliginosum</i></b> subsp. <i>microphyllum</i>	Arctic Blueberry	✓	✓	
	<b><i>Salix reticulata</i></b>	Net-Veined Willow	✓		
	<b><i>Cassiope tetragona</i></b>	White Mountain Heather	✓		
Exotic Weeds	—	—	<None Recorded>		

\*Recorded adjacent to study areas // **Bold**> Refers to high/predominant abundance.

Table 6. KM16 — Mean surface projective cover (%) within vegetation quadrats.

Survey Area (Survey Marker ID)	KM16 — Disturbed (KM16-0, -75, -100)	KM16 — Control (KM16-C0, -C75, -C100)
*Bare Soil/Rock	60.3% (±5.0 SD)	8.1% (±4.7 SD)
*Bryophytes/Lichen	2.3% (±3.2 SD)	54.1% (±7.7 SD)
*Litter	3.3% (±1.5 SD)	2.7% (±3.0 SD)
*Graminoids	20.0% (±5.3 SD)	12.9% (±8.9 SD)
*Forbs	10.0% (±1.7 SD)	14.0% (±7.9 SD)
*Shrubs/Ericaceae	4.0% (±2.0 SD)	8.3% (±10.5 SD)

\*Mean values; SD: Standard Deviation

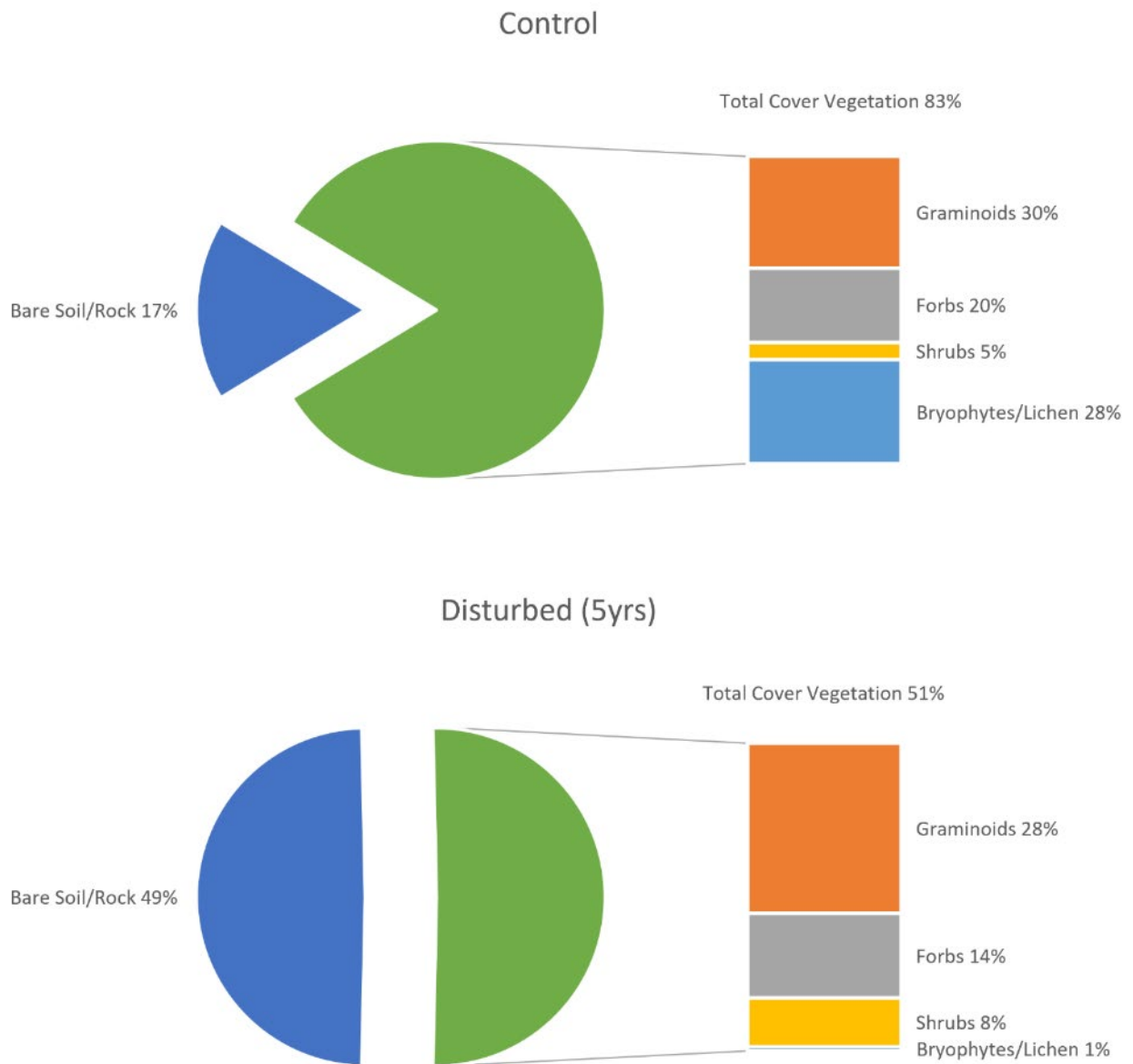


Figure 3. KM16 — Surface projective cover (%) along vegetation transect.



## 2.4 2021 SURVEY | RESULTS

### KM18 — 1–3 YEARS POST DISTURBANCE

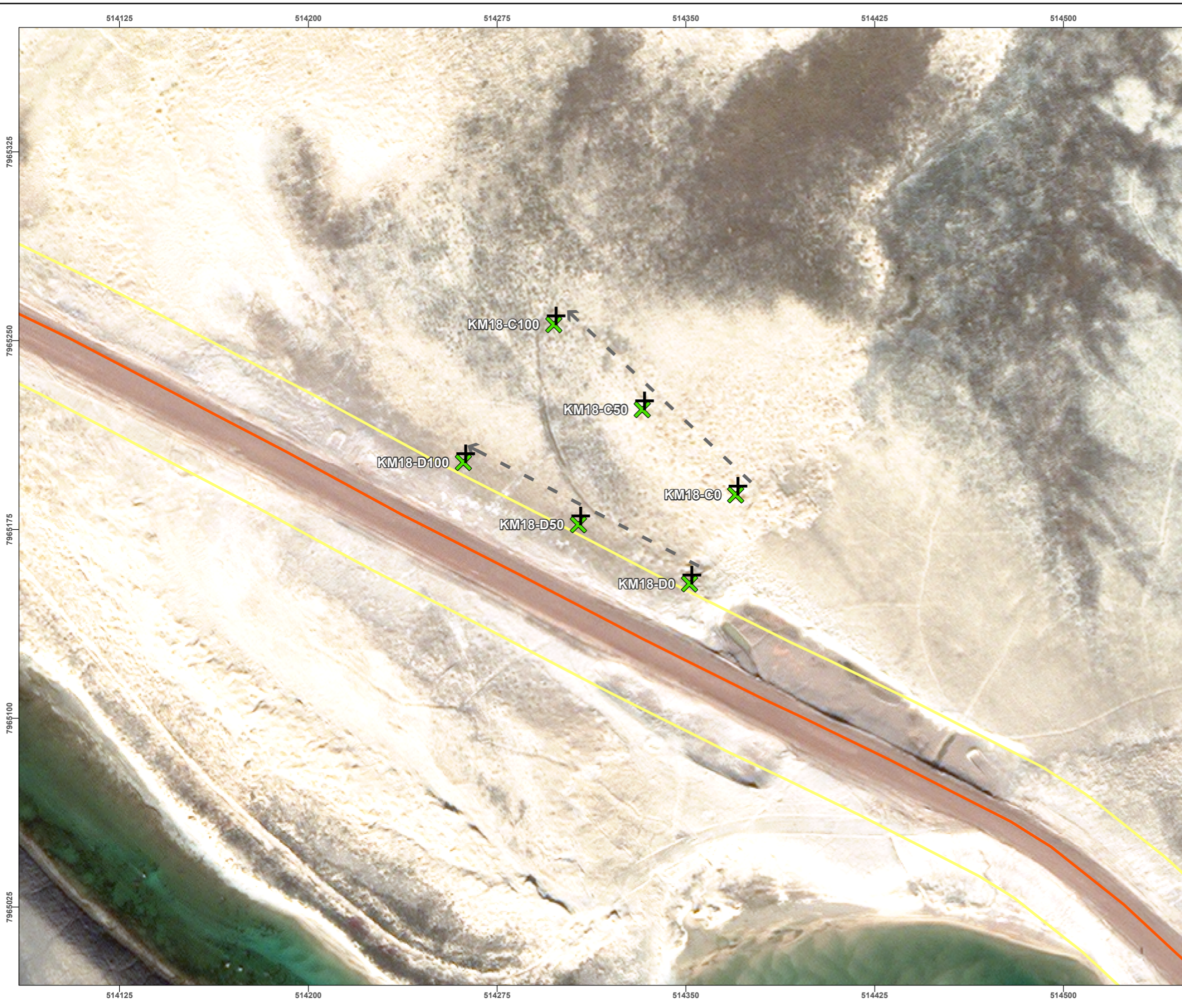
Map 5 shows the sampling layout at KM18. Table 7 summarizes landscape, terrain and soil attributes. Table 8 lists observed vegetation species within and adjacent to the study area. Table 9 summarizes mean surface projective cover within the vegetation quadrats. Figure 4 shows total projective cover along the survey transect. Supporting information (e.g., geo-referencing and lab analysis) is provided in Appendix B3.

**Landscape, Terrain and Soil**— Located along Phillips Creek, the survey transects occur on a sandy terrace with level slopes that are characterized by generally loose, well-drained and unconsolidated surficial geology, and no apparent bedrock (Photo 6a–b). Although terrain within the study area was homogenous and had little micro-topographical variations, the broader landscape indicated ground patterning associated with permafrost. Therefore, native (control) soils likely refer to Brunisolic Turbic Cryosols. Soil profiles at the control (KM18-C0, -C75, -C150) and disturbed locations (KM18-D0, -D75, -D150) were similarly characterized by a discontinuous surface organic layer followed by a sand textured B horizon. Little-to-no coarse parent materials (i.e., till) were observed. The restrictive layer (assumed to be permafrost) was not encountered. The soil moisture regime was xeric (dry); no mottling was observed in the soil profile.

Laboratory analysis determined that both control and disturbed soils had poor fertility [as indicated by low available nutrients, low EC and adsorption potential] and little-to-no incorporated organic matter.

**Vegetation Surface Cover and Composition**— Vegetation cover in control areas was characterized by a discontinuous vegetative mat (40% along the transect; 90% within quadrats) with representation by graminoids, forbs/perennial herbs, shrubs, and bryophytes (Photo 7a–b), but no lichen. Disturbed areas were also characterized by a discontinuous and uneven (i.e., patchy) vegetative cover (43% along the transect; 2% within quadrats) that was primarily composed of graminoids and forbs/perennial herbs (Photo 7c–d), but no shrubs, bryophytes or lichen.

Short-leaved sedge, mountain avens, yellow oxytropis, alpine (Arctic) willow (*S. arctica*), alpine fescue (*Fescue brachyphylla*), and white Arctic Whitlow-grass (*Drabas* sp) were commonly observed within survey plots both in control and disturbed areas. No exotic and/or non-native species were recorded.

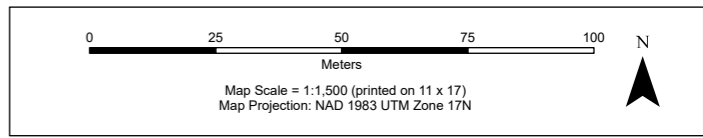


**KM18**  
Vegetation and Soil Sampling Sites



**Legend**

- Tote Road
- Tote Road (25m Buffer)
- + Soil
- x Vegetation
- - - - - → Cover Transect



**Data Sources**

- Main map, Baffinland Iron Mines Corporation Imagery, 2020
- Inset map, National Geographic World Map, National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

**Disclaimer**  
EDI Environmental Dynamics Inc. has made every effort to ensure this map is free of errors. Data has been derived from a variety of digital sources and, as such, EDI does not warrant the accuracy, completeness, or reliability of this map or its data.

Drawn: Y. Navarro	Checked: P. Audet	<b>Map 5</b>	Date: 2021-10-08
----------------------	----------------------	--------------	------------------



Path: L:\PROJECTS\Baffinland\_Spatial\2021\_SpatialData\Baffinland2021.mxd



(a) Landscape Overview — Northwest



(b) Landscape Overview — South-Southwest

Photo 6. KM18 — Landscape overview at -C50 (a) and -D0 (b).



Photo 7. KM18 — Cover vegetation and soil profile at -C50 (a-b) and -D100 (c-d)



Table 7. KM18 — Summary of landscape, terrain and soil attributes.

Survey Area	KM18 — Disturbed	KM18 — Control
Survey Marker ID	KM18-0, -75, -100	KM18-C0, -C75, -C100
<b>Landscape Attributes</b>		
Geomorphological Process	Glaciation and Cryoturbation	
Parent Material	Morainal	
Surface Expression	Level	
Slope Class Description	Level (Class 1: 0-0.5%)	
Aspect	No Predominant Aspect	
Drainage	Moderately Well Drained	
Soil Moisture Regime	Xeric (Dry)	
<b>Soil Attributes</b>		
* Organic Matter Content	<1.0%	<1.0-1.7%
* pH	7.0 (±0.1 SD)	6.7 (±0.3 SD)
* Texture/Particle Size	Sand	Sand
Surface Organic Depth	<Discontinuous>	<Discontinuous>
Rooting Depth	10 cm	10 cm
Restrictive Layer	<None Detected — Assumed Permafrost>	<None Detected — Assumed Permafrost>
<b>Nutritional Profile</b>		
* Available Nitrate -N	<Below Detection Limit>	<Below Detection Limit>
* Available Phosphate-P	<Below Detection Limit>	<Below Detection Limit>
* Available Potassium-K	<Below Detection Limit>	<Below Detection Limit>
* Available Sulfate-S	<Below Detection Limit>	<Below Detection Limit>
* Electrical Conductivity	2.2 dS/m (±0.07 SD)	2.2 dS/m (±0.07 SD)
* Sodium Adsorption Ratio	<Below Detection Limit>	<Below Detection Limit>
* Saline Classification	Non-Saline	Non-Saline

SD: Standard Deviation

dS/m: deciSiemens per metre

\*Mean values; Based on laboratory analyses of soil samples



Table 8. KM18 — Summary of observed vegetation.

Growth Form	Taxon	Common Name	Control	Disturbed	Environs*
Graminoid	<b><i>Festuca brachyphylla</i></b>	Alpine Fescue	✓	✓	
	<i>Trisetum spicatum</i>	Spike Trisetum	✓		
	<b><i>Carex fuliginosa</i> subsp. <i>misandra</i></b>	Short-Leaved Sedge	✓	✓	
Forb/ Perennial Herb	<i>Papaver radicatum</i>	Arctic Poppy	✓		
	<b><i>Dryas integrifolia</i></b>	Mountain Avens	✓	✓	
	<b><i>Drabas sp.</i></b>	White Arctic Whitlow-Grass	✓	✓	
	<i>Chamerion latifolium</i>	Dwarf Fireweed		✓	
	<b><i>Oxytropis maydelliana</i> subsp. <i>melanocephala</i></b>	Yellow Oxytropis	✓	✓	
	<i>Saxifraga oppositifolia</i>	Purple Saxifrage		✓	
	<i>Chamerion latifolium</i>	Dwarf Fireweed		✓	
	<i>Physaria arctica</i>	Arctic Bladderpod		✓	
Shrub/ Ericaceae	<b><i>Salix arctica</i></b>	Alpine (Arctic) Willow	✓	✓	
	<i>Salix reticulata</i>	Net-Veined Willow	✓		
Exotic Weeds	—	—	<None Recorded>		

\*Only recorded adjacent/outside of the study areas // **Bold**> Refers to high/predominant abundance.

Table 9. KM18 — Mean surface projective cover (%) within vegetation quadrats.

Survey Area (Survey Marker ID)	KM18 — Disturbed (-0, -75, -150)	KM18 — Control (-C0, -C75, -C150)
*Bare Soil	98.7% (±1.5 SD)	10.7% (±7.2 SD)
*Bryophytes	<None>	18.7% (±12.7 SD)
*Lichen	<None>	<None>
*Litter	<None>	0.3% (±0.6 SD)
*Graminoids	0.3% (±0.6 SD)	13.0% (±2.6 SD)
*Forbs	1.0% (±1.0 SD)	37.7% (±1.5 SD)
*Shrubs/Ericaceae	<None>	15.0% (±3.5 SD)

\*Mean values; SD: Standard Deviation.

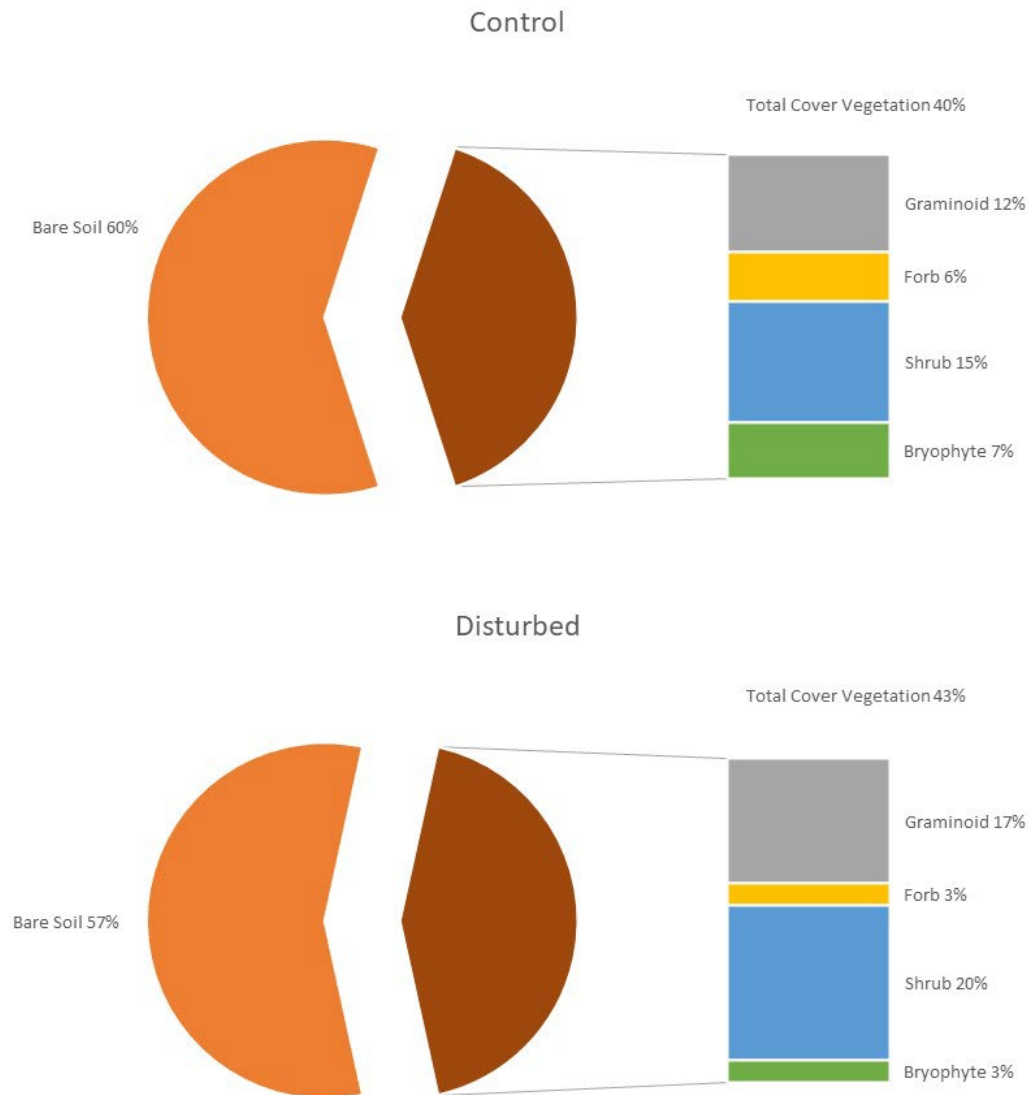


Figure 4. KM18 — Surface projective cover (%) along vegetation transect.



---

## KM58 — >40 YEARS POST-DISTURBANCE

Map 6 shows the sampling layout at the KM58 Airstrip. Table 10 summarizes landscape, terrain and soil attributes. Table 11 lists observed vegetation species within and adjacent to the study area. Table 12 summarizes mean surface projective cover within the vegetation quadrats. Figure 5 shows the total projective cover along the survey transect. Supporting information (e.g., geo-referencing and lab analysis) is provided in Appendix B4.

**Landscape, Terrain and Soil**— Located south of Katitkok Lake, the survey transects occur on an upland plateau with near-level slopes (Photo 8a–b). Similar to the study site at KM16, the landscape is characterized by low-centred polygons resulting in an abundance of small hummocks and shallow depressions. Native (control) soils were deemed to be Brunisolic Turbic Cryosols as defined by an Om and Bm/Bmy sequence. Soil profiles (KM58-C0, -C75, -C150, Areas 1-3) were characterized by a thin surface organic layer (Om, 1–3 cm in depth) followed by a sand or sandy loam textured Ah or Bm horizon. Disturbed areas (KM58-D0, -D75, -D150, Areas 1-3) were otherwise characterized by a discontinuous surface organic layer followed by a sand or sandy loam textured Ae or Bm horizon; the disturbance footprint was clearly delineated by surface soil compaction. Little-to-no coarse parent materials (i.e., till) were observed and the restrictive layer (assumed to be permafrost) was not encountered. The soil moisture regime was xeric (dry); no mottling was observed in the soil profile.

Laboratory analysis determined that both control and disturbed soils had poor fertility [as indicated by low available nutrients, low EC and adsorption potential] and little incorporated organic matter.

**Vegetation Surface Cover and Composition**— Vegetation cover in control areas was abundant (90–97% along the transects; 93–99% within quadrats) with representation by graminoids, forbs/perennial herbs, shrubs, bryophytes and lichen (Photo 9a–b). Disturbed areas were characterized by a discontinuous but still moderately abundant vegetation cover (56–69% along the transects; 61–73% within quadrats) that was primarily composed of graminoids and forbs/perennial herbs and few or no bryophytes or lichen species (Photo 9 c–d).

Short-leaved sedge, membranous sedge, Arctic fescue, white Arctic Whitlow-grass, moss campion, snow-bed willow (*S. herbacea*), Arctic willow (*S. arctica*) and white mountain heather were commonly observed within the control and disturbed areas. No exotic or non-native species were recorded.