Yukon Permafrost Database

The Yukon Permafrost Database is a compilation of ground thermal and geotechnical data in Yukon, including related reports. Further background and details on the database structure and its contents will be available in January 2022 (Lipovsky *et al.*, 2022).

In referring to information included in this download please use the following citation:
Yukon Geological Survey, current year. Yukon permafrost geotechnical data. *In:* Yukon Permafrost Database. Government of Yukon, https://service.yukon.ca/permafrost, accessed [month day, year].

Geotechnical data

Geotechnical data are from investigations, typically performed by geotechnical engineers and consultants. Information includes physical properties of soil, rock and ice underlying a site. Test pits, trenching and drilling data may be included. Subsurface sampling and laboratory testing of the soil samples retrieved may also be included.

Geotechnical data are relevant to the permafrost database as they contains logs of ground conditions and ice encountered at various depths, providing information about the distribution, and often, characteristics of ground ice. Additionally, the geotechnical properties of the materials at site are an important control on the effects of permafrost thaw.

In the Yukon Permafrost Database, geotechnical data may be stored in 13 related tables that accommodate the wide range of geotechnical data commonly collected. All tables are described in the following pages. Five of them (PF_SURFACE_DESC, PF_BACKFILL, PF_ENVIRONMENTAL, PF_PERMAFROST_TESTING and PF_GEOTECH_PRODUCTS) contain no records as of November 2021, but are available to be populated with future data submissions. The five most commonly used tables to date are PF_LOCATIONS, PF_SOIL DESC, PF_PERMAFROST DESC, PF_SAMPLE and PF_GEOTECH TESTING.

As of November 2021 there are approximately 15000 sites with associated geotechnical data in the database. The sources of geotechnical data are provided in Table 1. The locations of the sites are illustrated in Figure 1.

Table 1. *Sources of geotechnical data, as of November 2021.*

Source	Number of Sites
HPW - Alaska Highway Borehole Database	8818
HPW - Transportation Engineering Branch	1743
Tetra Tech EBA gINT database (NCE & YG-CS)	4408
Assessment and Abandoned Mines (YG)	36 (Clinton Creek Mine)
Mineral Industry	344

HPW–Highways and Public Works NCE– Yukon College Northern Climate ExChange YG–Government of Yukon
CS–Community Services

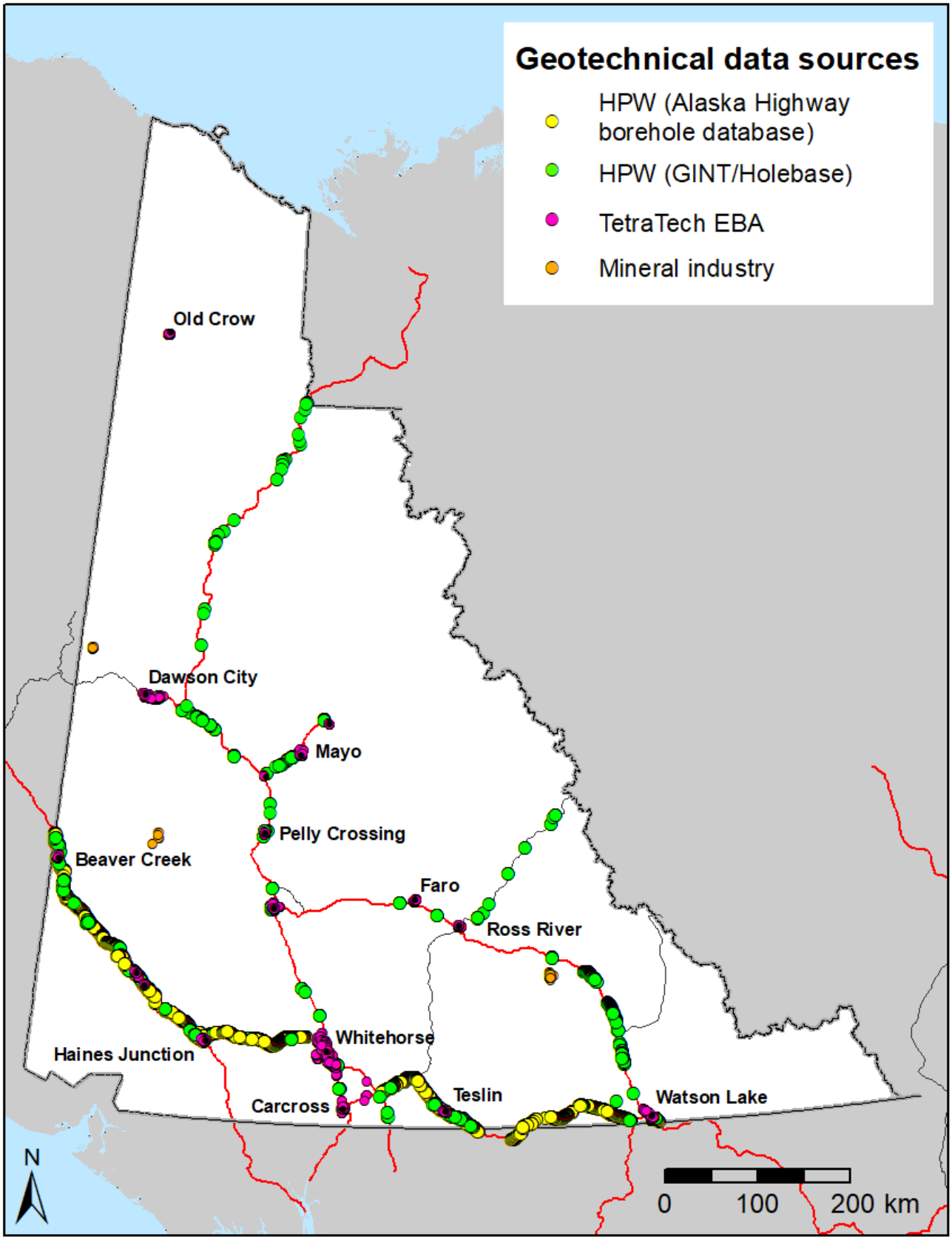

Figure 1. *Locations and primary sources of geotechnical data in the Yukon Permafrost Database, as of November 2021.*

Description of tables and fields

PF_LOCATIONS

Primary geotechnical database table. Contains essential information on the location, position and context of a geotechnical site. Each Site ID correlates to one location where observations were taken.

FIELD (UNIT IF APPLICABLE)	DESCRIPTION	DATA TYPE[1]	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	A unique identifier assigned to each site. Similar to a consultant's borehole ID, however, can refer to other types of geotechnical observations. Each *Site ID* correlates to one location where geotechnical observations (*e.g.,* borehole, test pit, surface observation, active layer measurement, *etc.)* were taken. The suggested naming convention is a project number or description combined with a site identifier (such as BH02), *e.g.,* U1209-BH01; MooseLakePermafrost-AL034; and C3241800-01.	varchar2	100
PROJECT NUMBER	An identifier associated with the project, often the consultant's job number, *e.g.,* C00054, 879, W1410234.	varchar2	100
PROJECT NAME	Name associated with the project, *e.g.,* Takhini Slide Geotechnical Investigation, Beaver Creek Active Layer Monitoring.	varchar2	150
LOCATION DESC	Other relevant information in regards to project location, *e.g.,* SW corner of school footprint.	varchar2	100
ELEVATION (M)	Elevation of the site in metres, *e.g.,* 101.	float	126
HOLE DEPTH (M)	Total depth of the borehole in metres, *e.g.,* 14.5.	float	126
START DATE	Date the geotechnical investigation (*e.g.,* borehole drilling) began, recorded in the format: YYYY-MM-DD HH24:MI:SS.FF.	timestamp	0
END DATE	Date when the geotechnical investigation (*e.g.,* borehole drilling) concluded, recorded in the format: YYYY-MM-DD HH24:MI:SS.FF.	timestamp	0
CONSULTANT	The full name of geotechnical consultant or contractor who collected data on the client's behalf.	varchar2	500
CLIENT	The full name of client for whom the information was collected and the project completed.	varchar2	500
CONTRACTOR	The full name of contractor hired to provide equipment and labour for acquiring data (*e.g.,* soil observations and samples; drilling).	varchar2	500
EQUIPMENT	Type of equipment or drill(s) used, *e.g.,* Excavator, Dozer, Solid stem, Hollow stem, Diamond drill, Sonic drill, ODEX, Excavator, Shovel, Hand auger.	varchar2	500
CORE DIAMETER (MM)	Diameter of the coring barrel in millimetres, *e.g.,* 150.	varchar2	20
FLUSH	Material with which the borehole was flushed, *e.g.,* Air, Mist, Water, Brine, Grout, Bentonite mud.	varchar2	20
PLUNGE	Inclination (plunge) of the borehole, where -90 is a borehole drilled straight down and +90 is drilled straight up.	varchar2	20

AZIMUTH (°)	Borehole direction in the horizontal plane in degrees, where an azimuth of 0 degrees describes an inclined borehole drilled towards True North, and an azimuth of 90 degrees describes an inclined borehole drilled towards the East.	varchar2	20
PROJECT ENGINEER	Full name of the primary engineer or scientist associated with the project.	varchar2	20
HOLE TYPE	One of four hole types used for geotechnical investigations: Borehole (B), Probe hole (P), Testpit (T), and Testhole (TH). A borehole refers to a narrow hole of variable depth drilled manually or mechanically; a probe hole is a shallow hole made with a manual probe to explore ground conditions; a testpit refers to a shallow pit excavated manually or mechanically to look at ground conditions; and a testhole is a shallow borehole.	varchar2	20
ROCK DEPTH (M)	Depth from ground surface to the top of the bedrock, in metres.	float	126
COORDINATE ACQ	Coordinate Acquisition Method, *e.g.,* GPS Surveys, Google Maps, scaled drawing.	varchar2	20
UTM ZONE (UTM ZONE NAD83)	UTM Zone wherein the site is located (do not include letters), *e.g.,* 8.	varchar2	20
NORTHING (UTM ZONE NAD83)	UTM Northing of the site with a minimum of one decimal place, *e.g.,* 7721308.14.	float	126
EASTING (UTM ZONE NAD83)	UTM Easting of the site with a minimum of one decimal place, *e.g.,* 574511.92.	float	126
LATITUDE (DECIMAL DEGREES)	Latitude of the site reported in decimal degrees with a minimum of six decimal places, *e.g.,* 69.592925.	float	126
LONGITUDE (DECIMAL DEGREES)	Longitude of site reported in decimal degrees with a minimum of six decimal places, *e.g.,* -139.086391.	float	126
GW TABLE (M)	Inferred ground water table in metres, *i.e.,* depth from ground surface to the top of the ground water table, *e.g.,* 12.	float	126
COMMENTS	Any information on the observation sites not captured by other fields of this table, *e.g.,* completed as part of a groundwater study.	varchar2	500

[1]**DATA TYPE notes:**

varchar2 = variable length character string (with maximum number of characters specified)

number fields may be constrained using the optional parameters (p,s) where p = precision (maximum number of digits up to 38) and s = scale (number of decimal places).

float is a type of number field, with optional precision (up to a maximum of 126) but no scale

* indicates parameters unspecified.

PF_SURFACE_DESC

Contains information on immediate surroundings at each site. Multiple observations per site can be made over time.

Note that this table does not currently contain any records as of November 2021 because these data were not available for the sites loaded to date; it is hoped, however, that the table will become populated as new data is loaded in the future.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
SURFACE DESC NUMBER	Allows for multiple observations within the immediate vicinity of the study site such as notes on two types of vegetation, or two separate drainage systems, *e.g.,* Mayo2019-SD01, Mayo2019-SD02.	number	*,*
OBSERVATION DATE	Timestamp when surface observations were made, recorded in the format: YYYY-MM-DD HH24:MI:SS.	timestamp	0
VEG TYPE	Vegetation type and canopy at time of investigation, *e.g.,* trees, shrubs, forbs, mosses, *etc.*	varchar2	256
VEG HEIGHT (CM)	Average vegetation height at the time of observation in centimetres, *e.g.,* 20.0.	number	*,0
VEG DENSITY	Vegetation density and methods used to determine the value, *e.g.,* 40 plants/m^2, and 1 tree/m^2, determined from 3 ×1 m^2 plots.	varchar2	200
ORGANIC THICKNESS (MM)	Depth in millimetres from the ground surface to the bottom of the organic layer, *i.e.,* the uppermost soil horizon rich in organic materials, *e.g.,* 240.	number	*,0
TOPOGRAPHY	Surface configuration and the relations among its man-made and natural features, *e.g.,* karst topography, steep escarpment, undulating tundra, flood plain, alpine ridge, wetland, coastal plain, *etc*.	varchar2	500
DRAINAGE	Drainage features within the project area, *e.g.,* swale draining gentle slope is oriented 45° NE.	varchar2	256
SURFICIAL GEOLOGY	Surficial geology, if known, *e.g.,* glaciofluvial, glaciolacustrine, morainal, *etc.*	varchar2	500
TERRAIN FEATURES	Terrain features, *e.g.,* hummocky, small thermokarst 500 m north.	varchar2	500
SNOW DEPTH	Snow depth and methods used to determine the value, *e.g.,* 40 cm average within one metre of the site, taken from 10 depth measurements.	varchar2	200
SNOW DENSITY	Snow density and methods used to determine the value, *e.g.,* average total snowpack density is 210 kg/m^3, determined from 1 snowpit following the methods of BC Snow survey Sampling Guide.	varchar2	200
SNOW THERMAL CONDUCT	Snow thermal conductivity and methods used to determine the value, *e.g.,* 0.12 W/mK, determined from one measurement using a thermal conductivity meter, or 0.21 W/mK calculated from snow density using methods in Calonne *et al.,* 2011.	varchar2	200
SLOPE ANGLE (º)	Steepness of the slope, in degrees, *e.g.,* 10.	number	*,0

SLOPE ASPECT (º)	Orientation of the slope, measured in degrees clockwise from true North, *e.g.,* 90.	number	*,0
DISTURBANCE	Ground disturbances, human made or naturally occurring within the project area, *e.g.,* thermokarst pond 15 m North, or all shrubs and vegetation cleared within 10 m of site.	varchar2	1024
ECO-REGION	Ecoregion according to Smith *et al.,* 2004, and Government of Yukon, 2014, *e.g.,* Yukon Coastal Plain.	varchar2	500

PF_SOIL_DESC

Contains information on the borehole stratigraphy including soil classification and drilling observation notes made in the field.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
TOP DEPTH (M)	The depth to the top of the soil interval/unit, in metres, *e.g.,* 3.25.	number	10,2
BOT DEPTH (M)	The depth to the bottom of the soil interval/unit, in metres, *e.g.,* 8.5.	number	10,2
BOUNDARY	The nature of the lower boundary of the horizon, *i.e.,* how distinct or gradual it is, select from: ‘solid’, ‘dashed’ or ‘dotted’*, e.g.,* solid.	varchar2	20
SOIL DESC	Soil descriptions for each interval, *e.g.,* CLAY – silty, sandy, trace gravel, moist, stiff, medium plastic, brown, organic inclusions.	varchar2	500
CLASS	Soil characterization practice that was followed *e.g.,* USCS. This should be based on field and laboratory descriptions using the Unified Soil Classification System (USCS; ASTM 2487-17e1) or equivalent.	varchar2	20
USC CODE	Code for the material type of the soil unit/interval based on the Unified Soil Classification found in ASTM 2487-17e1 and 2488-17e1, and provided in the table PF_USC_DATA.	varchar2	50
COMMENTS	Any information on the borehole lithology not captured in other fields of this table, such as drilling notes *e.g.,* 'hard drilling, tight and grinding’, or Unit B (regional stratigraphy analysis).	varchar2	500

PF_PERMAFROST_DESC

Contains frozen ground observations made during the geotechnical investigation or field data collection. Frozen ground not related to permafrost (*e.g.*, seasonal frost) may still be included here. Surface thaw depths and ground temperatures recorded within this table are values recorded at the time of investigation; surface thaw depths may not necessarily correspond to active layer thickness unless the observation was made in late summer or early fall. Temperatures are stored within the PFT temperature tables.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
TOP DEPTH (M)	The depth to the top of the cryostructure encountered, in metres, *e.g.,* 0.5.	number	10,2
BOT DEPTH (M)	The depth to the bottom of the cryostructure encountered, in metres, *e.g.,* 1.5.	number	10,2
TEMPERATURE (°C)	Temperature measurement at the time of investigation, in degrees Celsius, *e.g.,* -0.5.	number	20,2
SURFACE THAW (M)	Thaw depth in metres – depth below ground where frozen ground is first encountered at the time of investigation, *e.g.,* 0.6.	number	20,2
PERMAFROST DESC	Description of the cryostructure of permafrost, preferably based on a classification system such as ASTM D4083-89(2016), *e.g.,* Massive ICE – Clear, blue, or 0.3 – 5.5 m poorly bonded to friable ice lenses 1 – 2 mm thick. Specify the chosen classification system used in the field CLASS from PF PERMAFROST DESC.	varchar2	500
ICE CODE	Code for the ground ice description given in the table PF GR ICE DESC. When multiple types are present they are separated by commas (*e.g.,* Vs, Vc).	varchar2	15
CLASS	Which permafrost classification system was used, *e.g.,* ASTM D4083-89(2016), or other academic cryostructure classification systems.	varchar2	256
PERCENT ICE	Visual estimate of ice content, recorded in percent by volume, *e.g.,* 15.	number	26,0
COMMENTS	Any information on permafrost and frozen ground conditions not captured in other fields of this table, *e.g.,* slight organic odour.	varchar2	500

PF_GR_ICE_DESC

Lookup table containing ground ice description codes based on Pihlainen and Johnston (1963), and ASTM 4083-89(2016). These codes are used in the ICE_CODE field within the PF_PERMAFROST_DESC table.

CODE	DESCRIPTION
X	Material not frozen
F	Material frozen - type unknown
Fx	Material partially frozen - type unknown
N	Ice not visible
Nf	Ice not visible - poorly bonded
Nb	Ice not visible - well bonded
Nbn	Ice not visible - well bonded - no excess ice
Nbe	Ice not visible - well bonded - excess ice
V	Visible ice
Vx	Visible ice - individual ice crystals or inclusions
Vc	Visible ice - ice coating on particles
Vr	Visible ice - Random or irregular orientations
Vs	Visible ice - stratified or oriented ice
ICE	Ice

PF_RECOVERY

Contains information on borehole sample recovery and quality.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
TOP DEPTH (M)	The depth to the top of the drill run, in metres, *e.g.,* 0.	number	10,2
BOT DEPTH M)	The depth to the bottom of the drill run, in metres, *e.g.,* 1.5.	number	10,2
RQD (%)	Rock Quality Designation in percent. Measure of the degree of jointing or fracture in a rock mass, as per ASTM D6032/D6032M-17.	number	10,2
RECOVERY (%)	The total recovery in percent, *i.e.,* the material recovered calculated over the sample depth range, *e.g.,* 80.	number	10,2
FRACTURE FREQUENCY (/M)	The number of fractures per metre, as per ASTM D5434-12, *e.g.,* 3.	number	10,2
SOLID CORE (%)	The solid core recovery in percent, *i.e.,* the proportion of a drilled rock column recovered as core in the drilling process, as per ASTM D5434-12, *e.g.,* 1.2.	number	10,2
COMMENTS	Any information on borehole recovery not captured in other fields of this table, *e.g.,* sample washed away with drill fluid.	varchar2	500

PF_INSITU

Contains information on the in situ testing completed at a site.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
TOP DEPTH (M)	The depth to the top of the test interval in metres, *e.g.,* 0.5.	number	10,2
BOT DEPTH (M)	The depth to the bottom of the test interval in metres, *e.g.,* 0.6.	number	10,2
HYDRAULIC CON (CM/S)	Hydraulic conductivity in centimetres per second, *e.g.,* 0.7.	number	10,10
TORVANE (KPA)	The approximate shear strength, from a pocket shear device (*i.e.,* Torvane test), in kilopascals, *e.g.,* 60. Determined from measurement of the peak shearing resistance at failure.	number	*,0
TORVANE PP (KPA)	The approximate residual (post-peak) shear strength using a pocket shear device (*i.e.,* Torvane test) in kilopascals, *e.g.,* 29. Determined from measurement of the post-peak shearing resistance.	number	*,0
INSITU SHEAR (KPA)	*In situ* shear strength, in kilopascals, *e.g.,* 60.	number	*,0
INSITU SHEAR PP (KPA)	The post-peak or residual shear strength in kilopascals, *e.g.,* 29.	varchar2	20
SHEAR VELOCITY (M/S)	Shear wave velocity in metres per second, *e.g.,* 173.	number	*,0
DCPT	Penetration resistance of the soil using the Dynamic Cone Penetration Test, recorded in blows per 300 mm, *e.g.,* 15.	number	*,0
SCALA	Penetration resistance of the soil using the SCALA (*i.e.,* Dynamic Cone) Penetrometer Penetration Test, recorded in blows per 50 mm, *e.g.,* 4.	number	*,0
BECKER	Penetration resistance of the soil using the Becker Penetration Test, recorded in blows per 300 mm, *e.g.,* 21.	number	*,0
BOUNCE (KPA)	Pressure of the diesel hammer within the bounce chamber, using a Becker rig, in kilopascals, *e.g.,* 94.	number	*,0
POCKET PEN (KPA)	Approximate unconfined compressive strength of a soil using a pocket penetrometer, in kilopascals, *e.g.,* 19.	varchar2	20
FIELD VANE PEAK (KPA)	The undrained shear strength using a field vane (field vane shear test), in kilopascals, *.e.g.,* 60. Determined from measurement of the peak shearing resistance.	number	*,0
FIELD VANE POST (KPA)	The residual (post-peak) shear strength using a field vane, in kilopascals, *e.g.,* 29. Determined from measurement of the post-peak shearing resistance.	number	*,0
STRENGTH TYPE	Type of strength test completed, such as: BB = Becker blows; DC = Dynamic cone; PL = Point load index; PP = Pocket penetrometer; SO4 = Soluble sulphates; S = Salinity; UNC = Unconfined; UU = Undraine; or O = Other.	varchar2	100
STRENGTH (KPA)	The strength reading at failure, *i.e.,* when the core breaks, in kilopascals.	number	*,0
STRESS (KPA)	The results of the stress test, in kilopascals.	number	*,0

PF_SAMPLE

Contains information on the soil and material samples collected including the depth and material type.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
SAMPLE NUMBER	Unique sample numbers for each sample collected within this specific site, *e.g.,* SA01.	varchar2	20
TOP DEPTH (M)	The depth to the top of the sample in metres, *e.g.,* 0.2.	number	*,2
BOT DEPTH (M)	The depth to the bottom of the sample in metres, *e.g.,* 0.3.	number	*,2
CORE DIA (MM)	Diameter of the core in millimetres, *e.g.,* 114.	number	*,0
USC CODE	Code for the material type of the soil unit/interval based on the Unified Soil Classification found in ASTM 2487-17e1 and 2488-17e1, given in PF USC_DATA	varchar2	20
TYPE	Sample type, e.g., A–A= casing; S = Split spoon (SPT); T = Shelby tube. Full list of codes in PF_METHOD table.	varchar2	100
N VALUES	The results of the Standard Penetration Test (SPT; N value), using a split spoon sampler and recorded as blows in the second and third 150 mm interval, *e.g.,* 26.	number	10,*
LPT N	The results of the Large Penetration Test (LPT), in blows per 300 mm, *e.g.,* 34.	varchar2	20
COMMENTS	Any information on soil and material samples not captured other fields of this table.	varchar2	500

PF_USC

Lookup table containing soil and ground material codes. The system codes for soils are from the ASTM version of the Unified Soil Classification System found in ASTM 2487-17e1 and 2488-17e1. The codes from this table are used in the USC_CODE column within both the PF_SAMPLE and PF_SOIL_DESC tables.

GENERAL TYPE	CODE	MATERIAL TYPE
ROCK AND OTHER MATERIAL	WRCK	Waste Rock
	ASPH	Asphalt
	TAIL	Tailings
	BR	Bedrock
	BLDR	Boulder
	BTTM	Bottom
	CBBL	Cobble
	COAL	Coal
	DLMT	Dolomite

	FILL	Fill
	GARB	Garbage
	ICE	Ice
	LMSN	Limestone
	MDSN	Mudstone
	MOSS	Moss
	OB, OV	Overburden
	QRTZ	Quartz
	RBLE	Rubble
	ROCK	Rock
	SH	Shale
	SI	Siltstone
	SNDS	Sandstone
	TILL	Till
	UNSP	Unspecified
	VGTN	Vegetation
	WATR	Water
SOILS	G	Gravel (unclassified)
	GW	Well graded gravels
	GP	Poorly-graded gravels
	GM	Silty gravels
	GC	Clayey gravels
	SW	Well-graded sands
	S	Sand (unclassified)
	SP	Poorly-graded sands
	SM	Silty sands
	SC	Clayey sands
	ML	Inorganic silts and very fine sands
	CL	Inorganic clays of low to medium plasticity
	OL	Organic silts and organic clays of low plasticity
	MH	Inorganic silts
	CH	Inorganic clays
	OH	Organic clays
	PT	Peat and other highly organic soils

PF_METHOD

Lookup table containing codes for different sample methods. Used in the TYPE field within the PF_SAMPLE table; note that some codes in the current PF_SAMPLE table have no matching description in the PF_METHOD table as no definitions were provided in the submitted data.

CODE	SAMPLE TYPE
A-A	Casing
AU	Auger
B	Barrel sample
BULK	Bulk
C	Core
CBR	CBR mould
CC	CRREL core
D	Disturbed
GB	Grab bag
HQ	HQ core
J	Jar
JB	Jar and bag
L	LASKEY
NQ	NQ core
PP	Undisturbed pushed piston
RC	Rock core
S	Split spoon (SPT)
T	Shelby tube
W	Water
O	Other

PF_INSTALL_DESC

Contains information on instrumentation installed at a given site. If instrumentation is installed it is mandatory to report it. Not all sites have instrumentation installed.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
INSTALL ID	Name given to the installation. Naming convention should reference the *Site ID*, *e.g.,* BH01-SI1 for Slope Indicator 1 installed in borehole 01 or BH1289-MW2 for Monitoring Well 2.	varchar2	20
INSTALL TYPE	Description of instrument type installed: Monitoring well; Slotted piezometer; Instrumented (vibrating wire, pressure transducer, *etc*.) piezometer; Inclinometer; Angle slotted piezometer; Ground temperature thermistor or temperature cable; Vapour well; Water supply well; In-place Geophysical instrumentation, *e.g.,* Thermistor inside 27 mm electrical conduit. Infilled with silica sand.	varchar2	200
INSTALL DEPTH (M)	For conduit – Base depth of the installation in metres. For all other instruments, depth below ground (height above in negative metres) to the location of the instrument in metres, *.e.g.,* 10. Enter 'N/A' if not applicable.	number	*,2
TOP DEPTH (M)	The depth to the top of the instrument range (*e.g.,* top of slotted pipe or top of in-place inclinometer string) in metres *e.g.,* 0. Enter 'N/A' if no pipe was used.	number	10,2
BOT DEPTH (M)	The depth to the bottom of the instrument range (*e.g.,* bottom of slotted pipe or bottom of in-place inclinometer string) in metres, *.e.g.,* 10. Enter 'N/A' if no pipe was used.	number	10,2
CAP HEIGHT (M)	Capped height of instrument (stickup) in metres, *e.g.,* 0.6.	number	10,2
PROTECTOR	If a protector was used, what type, *e.g.,* above ground red painted steel protector.	varchar2	100
COMMENTS	Any information on instrumentation installation not captured by other fields of this table, *e.g.,* marked with pink survey tape, labelled on inside of lid.	varchar2	500

PF_BACKFILL

Contains each unit of backfill by depth (*e.g.*, sand around slotted, bentonite plug above top of screen, cuttings, asphalt cap, bentonite slurry or grout, etc.).

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
INSTALL ID	Unique ID for each backfill stratum within the hole, *e.g.,* TH01.	varchar2	20
TOP DEPTH (M)	The depth to the top of the backfill in metres, *e.g.,* 0.	number	*,2
BOT DEPTH (M)	The depth to the bottom of the backfill in metres, *e.g.,* 10.	number	*,2
BACKFILL	Type of backfill: BE= Bentonite; SA= Sand; DC= Drill cuttings; SL= Slough; AS= Asphalt; CE= Cement; GR= Grout; PG= Pea Gravel; T= Topsoil; O= Other; *e.g.,* BE – bentonite slurry.	varchar2	100
COMMENTS	Any information on backfill not captured by other fields of this table, *e.g.,* drill cuttings were unusable.	varchar2	500

PF_GEOTECH_TESTING

Contains laboratory test results completed on soil samples. Not all tests are necessary to complete for all programs, however, if the test has been completed then it is mandatory to report in this table.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
SAMPLE NUMBER	Unique sample number for each sample collected within this particular site, *e.g.,* SA02.	varchar2	20
TOP DEPTH (M)	The depth to the top of the sample in metres, *e.g.,* 0.2.	number	10,2
BULK DENSITY (KG/M³)	Density of the sample at *in situ* (natural) moisture content, in kg/m^3, *e.g.,* 1800.	number	10,2
DRY DENSITY (KG/M³)	Density of the sample after drying, in kg/m^3, *e.g.,* 1600.	number	10,2
GS	Specific gravity of the sample, *e.g.,* 1.9.	number	10,2
MOISTURE (%)	The gravimetric moisture content expressed as a percent of the dry weight, *e.g.,* 29.	number	10,2
LL	The liquid limit, based on Atterberg limits testing, is the water content at which soil starts to exhibit plastic behaviour, *e.g.,* 43.	number	10,1
PL	The plastic limit, based on Atterberg limits testing, is the water content at which a soil starts to break apart and crumble when rolled, *.e.g.,* 22.	number	10,1
PI	The plasticity index (liquid limit - plastic limit) is the water content range over which soil exhibits plastic behaviour (or the ability of soil to undergo unrecoverable deformation without cracking or crumbling), *e.g.,* 21.	number	10,1

GRAVEL (%)	Record of results from sieve testing in percent; Gravel + Sand + Silt + Clay (or Fines) should total 100 %. If hydrometers have not been completed on the sample, then % Fines should be reported instead of % Silt, since % Clay is not measured during the sieving process. Percent gravel by weight of specimen (greater than #4 size sieve or 4 mm), *e.g.,* 0.	number	5,1
SAND (%)	Percent sand by weight of specimen (from #4 to #200 size sieve or from 4 to 0.075 mm), *e.g.,* 20.	number	5,1
FINES (%)	If hydrometers have not been completed on the sample, then % Fines should be reported instead of % Silt, since % Clay is not measured during the sieving process.	number	5,1
SILT (%)	Percent silt by weight of specimen (from #200 to 2µ sieve or from 0.075 to 0.002 mm), *e.g.,* 52.	number	5,1
CLAY (%)	Percent clay by weight of specimen (less than 2µ sieve or 0.002 mm), *e.g.,* 28.	number	5,1
D50 (MM)	Diameter of the particle where 50% of the sample is larger and 50% of the sample is smaller, *.e.g.,* 0.06.	number	10,2
ORGANICS (%)	Percent organic matter content, *.e.g.,* 20.	number	5,2
SOLUBLE SULPH (%)	Percent soluble sulphate content by dry weight, *e.g.,* 0.3.	number	5,2
SALINITY (%)	The total of all mineral constituents dissolved in the specimen porewater, expressed in % as parts per thousand by weight, *e.g.,* 2.	number	5,2
COMMENTS	Any information on geotechnical testing not captured by other fields of this table, *e.g.,* Completed at Whitehorse Lab.	varchar2	500

PF_IND_PLAS

Lookup table containing codes for different plasticity index values.

CODE	DESCRIPTION
H	High plasticity
M	Medium plasticity
L	Low plasticity
N	Non-plastic

PF_ENVIRONMENTAL

Contains environmental test results. Not all programs will require environmental testing, however, if the tests are completed it is mandatory to report results this table.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
SAMPLE NUMBER	Unique sample numbers for each sample collected within this specific site, *.e.g.,* SA01.	varchar2	20
TOP DEPTH (M)	The depth to the top of the test interval in metres, *e.g.,* 0.1.	number	10,2
BOT DEPTH M)	The depth to the bottom of the test interval in metres, *e.g.,* 0.15.	number	10,2
HYDROCARBON (PPM)	Hydrocarbon vapour in parts per million, *e.g.,* 100.	varchar2	20
LEL (%)	Lower Explosive Limit. Minimum concentration of a vapour necessary to support its combustion in air, in percent, e.g., 1.4.	number	10,2
PID (PPM)	Soil vapour concentration of volatile organic compounds, measured with a photoionization detector in parts per million, *e.g.,* 150.	number	10,2
ELECTRICAL CONDUCTIVITY (DS/M)	The ability of a material to conduct electrical current in deciSiemens per metre, *e.g.,* 4.	number	10,2
CHLORIDE (MG/L)	Chloride content in milligrams per litre, *e.g.,* 0.1.	number	10,2
METHANE	Methane content or Production Rate measured in % or rate nmol/hg, noting the units in comments, *e.g.,* 40 nmol/hg.	number	10,2
COMMENTS	Any information on environmental testing not captured by other fields of this table, *e.g.,* Gasoline #1 detected PID, methane production measured in nmol/hg.	varchar2	500

PF_PERMAFROST_TESTING

Contains permafrost-specific test results. If a specific test is not captured within this table, it may be recorded within the comments fields.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
SAMPLE NUMBER	Unique sample numbers for each sample collected within this specific site, *e.g.,* SA03.	varchar2	20
TOP DEPTH (M)	The depth to the top of the test interval in metres, *e.g.,* 0.5.	number	20,2
BOT DEPTH (M)	The depth to the bottom of the test interval in metres, *e.g.,* 0.5.	number	20,2
THAW WEAKEN	Thaw weakening susceptibility, according to ASTM D5918-13e1.	number	20,2
THAW STRAIN	Thaw strain consolidation, *e.g.,* 0.179. See Hanna *et al.,* (1983), Morgenstern and Nixon (1971), Morgenstern and Smith (1973).	number	20,2
UNFROZEN WATER (%)	Unfrozen water content *e.g.,* 10. See Patterson and Smith (1981), Smith and Tice (1988), Tice, Anderson and Banin (1976) and Watanabe and Wake (2009). Note: for analyses of thawed samples, this is equivalent to gravimetric ice content, expressed as percent of dry soil weight, e.g., 53. Values > 100% indicates that more ice was present than soil.	number	20,2
CREEP	Creep properties *e.g.*, n = 3.3, $\dot{\varepsilon}$ = 0.9. See ASTM D5520-18.	number	20,2
ADFREEZE (KPA)	Adfreeze strength, τf, in kilopascals, *e.g.,* 1000. See Weaver and Morgenstern (1981), Ladanyi and Theriault (1990).	number	20,2
THERMAL COND (W/MK)	Thermal conductivity k, in watts per metre kelvin, *e.g.,* 2.23. See ASTM D5334-14, Harlan and Nixon (1978).	number	20,2
LATENT HEAT FUSION (KJ/KG)	Latent heat of fusion, L, in kilojoules per kilogram, *e.g.,* 336.	number	20,2
COMMENTS	Any information on permafrost testing not captured by other fields of this table, *e.g.,* creep rate normalized to -10 °C, with Q = 134 kJ mole-1. Creep rate is for the equivalent of a longitudinal strain rate under a uniaxial compressive or tensile stress of 0.1 MPa.	varchar2	500

PF_GEOTECH_PRODUCTS

Contains metadata for documents (*e.g.*, drill logs, reports, journal articles) that describe a site.

Note that this table does not currently contain any records because these data were not available for the sites loaded to date; it is hoped, however, that the table will become populated as new data is loaded in the future.

FIELD (UNIT, IF APPLICABLE)	DESCRIPTION	DATA TYPE	
ID	A unique identifier automatically assigned to each record in the table by the database during upload.	number	38,*
SITE ID	An identifier that refers to a unique record (*Site ID)* from PF LOCATIONS.	varchar2	100
TYPE	Type of document, *e.g.,* report, drill log, academic thesis or journal article.	varchar2	50
URL	Web page address of the document.	varchar2	500

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