GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

96E/7 1:50,000 EDITION 2 96 E/7

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NORMAN WELLS

DISTRICT OF MACKENZIE
NORTHWEST TERRITORIES

SCALE 1:50,000 ÉCHELLE

Miles 1 0 1 2 3 Milles
Metres 1000 500 0 1000 2000 3000 4000 Mètres
Yards 1000 500 0 1000 2000 3000 4000 Verges

CONTOUR INTERVAL 50 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927 (1953)

Transverse Mercator Projection
MAGNETIC DECLINATION 38°00' EAST
AT CENTRE OF MAP 1960
Annual change (decreasing): 7.5'

ÉQUIDISTANCE DES COURBES 50 PIEDS
Élévations en pieds au-dessus du niveau moyen de la mer
Réseau géodésique nord-américain unifié 1927 (1953)

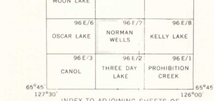
Projection transverse de Mercator
DÉCLINAISON MAGNÉTIQUE AU CENTRE
DE LA FEUILLE EN 1960 : 38°00' EST
Variation annuelle : décroissante: 7.5'

Roads / Routes
hard surface, all weather ... pavée, toute saison
hard surface, all weather ... pavée, toute saison
loose surface, all weather ... de gravier, toute saison
loose surface, dry weather ... de gravier, période sèche
cart track ... de terre
trail or portage ... sentier ou portage
Railway, normal gauge, single track ... Chemin de fer,voie unique (écartement normal)
Horizontal control point, with elevation ... Point géodésique avec cote ... 454 △
Bench mark, with elevation ... Repère de nivellement avec cote ... BM 157 +

Building ... Bâtiment
School ... École
Church ... Église
Mine or Open cut ... Mine ou fosse à ciel ouvert
Lighthouse ... Phare
Power transmission line ... Ligne de transport d'énergie
River with bridge ... Rivière avec pont
Stream, intermittent or dry ... Cours d'eau intermittent, ou à sec
Lake intermittent, indefinite ... Lac intermittent, nive imprécise
Marsh or Swamp ... Marais ou marécage
Depression contours ... Courbes de cuvette
Barn ... Grange
Post Office ... Bureau de poste
Cemetery ... Cimetière

Établi et imprimée par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DES MINES ET DES RELEVÉS TECHNIQUES en 1960, d'après les photographies aériennes prises en 1950.
Ces cartes sont en vente au Bureau de distribution des cartes, ministère des Mines et des Relevés techniques, Ottawa. Prix de l'exemplaire: 25 cents.

TABLEAU D'ASSEMBLAGE DU SYSTÈME DE RÉFÉRENCE CARTOGRAPHIQUE NATIONAL



INDEX TO ADJOINING SHEETS OF THE NATIONAL TOPOGRAPHIC SYSTEM

NORMAN WELLS
96 E/7
EDITION 2

LEGEND

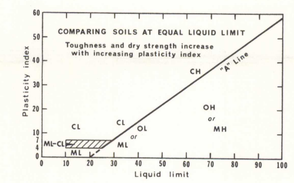
INCREASING TERRAIN SUSCEPTIBILITY TO DISTURBANCE

Susceptibility rank	Map Unit	Soil type symbol	General description	Comments
I			Bedrock - shales, sandstones, carbonates and siltstones. Very low ice content except in shale where fractures are filled with ice to depth of 100-150 ft.	Competent carbonates and sandstones can be used as source of granular material. Rock falls and slides occur on steep slopes, rotational slumps common on high cliffs of shale. No changes caused by disturbance except on steep slopes of frozen shale.
II		GP	Gravel - medium to coarse, poorly graded, high permeability. Low ice content in coarse materials, locally ice lenses in finer sediments. Ground ice generally absent in beach sediments.	Good source of granular material. Locally minor ground ice slumping and thermokarst subsidence can be caused by disturbance.
		SP	Sand - fine to medium, poorly graded, moderate to high permeability. Low to moderate ice content, seams of segregated ice.	Suitable as source of granular material. Minor ground ice slumping and thermokarst subsidence can be caused by disturbance.
		SM	Silty sand, sandy silt-fine, poorly graded, low permeability, on slopes <5°. Moderate to high ice content, locally with thin lenses of segregated ice. Discontinuous organic cover up to 10 ft.	Poor source of borrow material, can be improved by artificial drying. Minor ground ice slumping, gullying, and thermokarst subsidence can be caused by disturbance.
III		CL	Clayey to silty till - fine, low to medium plasticity, low permeability, on slopes <5°. Moderate ice content with thin seams and locally thicker lenses of segregated ice. Discontinuous organic cover up to 10 ft.	Suitable as borrow material (fill) only where ice content is low. Low to moderate susceptibility to thermokarst subsidence, gullying and ground ice slumping due to disturbance.
		SM, ML	Silty sand, sandy silt - fine, poorly graded, low permeability, on slopes >5°. Moderate to high ice content, locally with thin lenses of segregated ice. Locally overlain by patches of organic cover.	Poor source of borrow material, can be improved by artificial drying. Moderate susceptibility to thermokarst subsidence; gullying and ground ice slumping due to disturbance.
IV		Pt	Peat and fen complex - porous, high compressibility, extremely high moisture content. Peat - moderate to high ice content, up to 50% of segregated ice, locally unfrozen from 1 to 3 ft. Fen - commonly unfrozen to depth of 6 ft., locally some segregated ice at greater depths.	Unfavorable for construction purposes. High susceptibility to terrain subsidence due to disturbance.
		CL	Clayey to silty till - fine, low to medium plasticity, low permeability, on slopes >5°. Moderate ice content with thin seams and locally thicker lenses of segregated ice. Irregular patches of organic cover.	Suitable as borrow material (fill) only where ice content is low. Moderate to high susceptibility to thermokarst subsidence, gullying and ground ice slumping due to disturbance; locally superficial mudflows and flow slides.
V		OH, CH	Orgmic and inorganic clay, clayey silt - very fine, low permeability, high plasticity, on slopes <5°. Moderate to high ice content. Up to 10% of segregated ice as thin seams in upper layers, tabular ice bodies at greater depths. Discontinuous organic cover up to 10 ft.	Very poor source of fill material. High susceptibility to major thermokarst slumping and rapid gullying due to disturbance.
VI		OH, CH	Organic and inorganic clay, clayey silt - very fine, low permeability, high plasticity, on slopes >5°. Moderate to high ice content. Up to 10% of segregated ice as thin seams in upper layers, tabular ice bodies at greater depths. Irregular patches of organic cover.	Very poor source of fill material. High susceptibility to major thermokarst slumping and rapid gullying due to disturbance; large detachment slides and retrogressive flow slides common.

Note: Soil symbols according to Unified Soil Classification System.

UNIFIED SOIL CLASSIFICATION

FIELD IDENTIFICATION PROCEDURES			GROUP SYMBOLS	TYPICAL NAMES	LABORATORY CLASSIFICATION CRITERIA	
COARSE GRAINED SOILS More than half of material is larger than No. 200 sieve size	GRAVELS More than half of coarse fraction is larger than No.4 sieve size	CLEAN GRAVELS	GW	Well graded gravels, gravel-sand mixtures; little or no fines	Depending on percentage of fines coarse grained soils are classified as follows: Less than 5% GW, GP, SW, SP; More than 12% GM, GC, SM, SC; 5% to 12% Borderline cases requiring use of dual symbols	
			GP	Poorly graded gravels, gravel-sand mixtures; little or no fines		
		GRAVELS WITH FINES	GM	Silty gravels, poorly graded gravel-sand-silt mixtures	Atterberg limits below "A" line, or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols
			GC	Clayey gravels, poorly graded gravel-sand-clay mixtures	Atterberg limits above "A" line, with PI greater than 7	
	SANDS More than half of coarse fraction is smaller than No. 4 sieve size	CLEAN SANDS	SW	Well graded sands, gravelly sands; little or no fines		
			SP	Poorly graded sands, gravelly sands; little or no fines		
		SANDS WITH FINES	SM	Silty sands, poorly graded sand-silt mixtures	Atterberg limits below "A" line, or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols
			SC	Clayey sands, poorly graded sand-clay mixtures	Atterberg limits above "A" line, with PI greater than 7	
FINE GRAINED SOILS More than half of material is smaller than No. 200 sieve size	SILTS AND CLAYS Liquid limit less than 50		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity		
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
			OL	Organic silts and organic silt-clays of low plasticity		
	SILTS AND CLAYS Liquid limit greater than 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
			CH	Inorganic clays of high plasticity, fat clays		
			OH	Organic clays of medium to high plasticity		
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils		



PLASTICITY CHART

For laboratory classification of fine grained soils

MAP 22 - 1973

TERRAIN DISTURBANCE SUSCEPTIBILITY MAPS

by P.J. Kurfurst, 1973

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