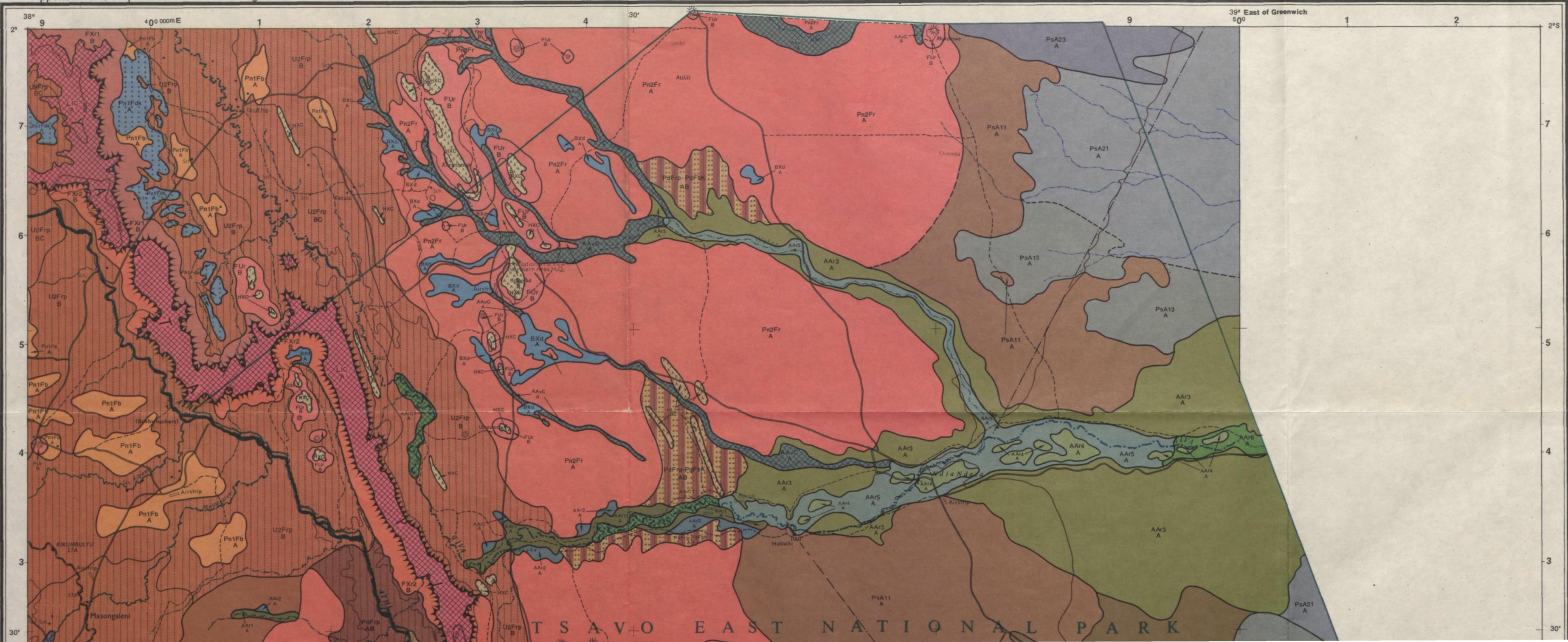


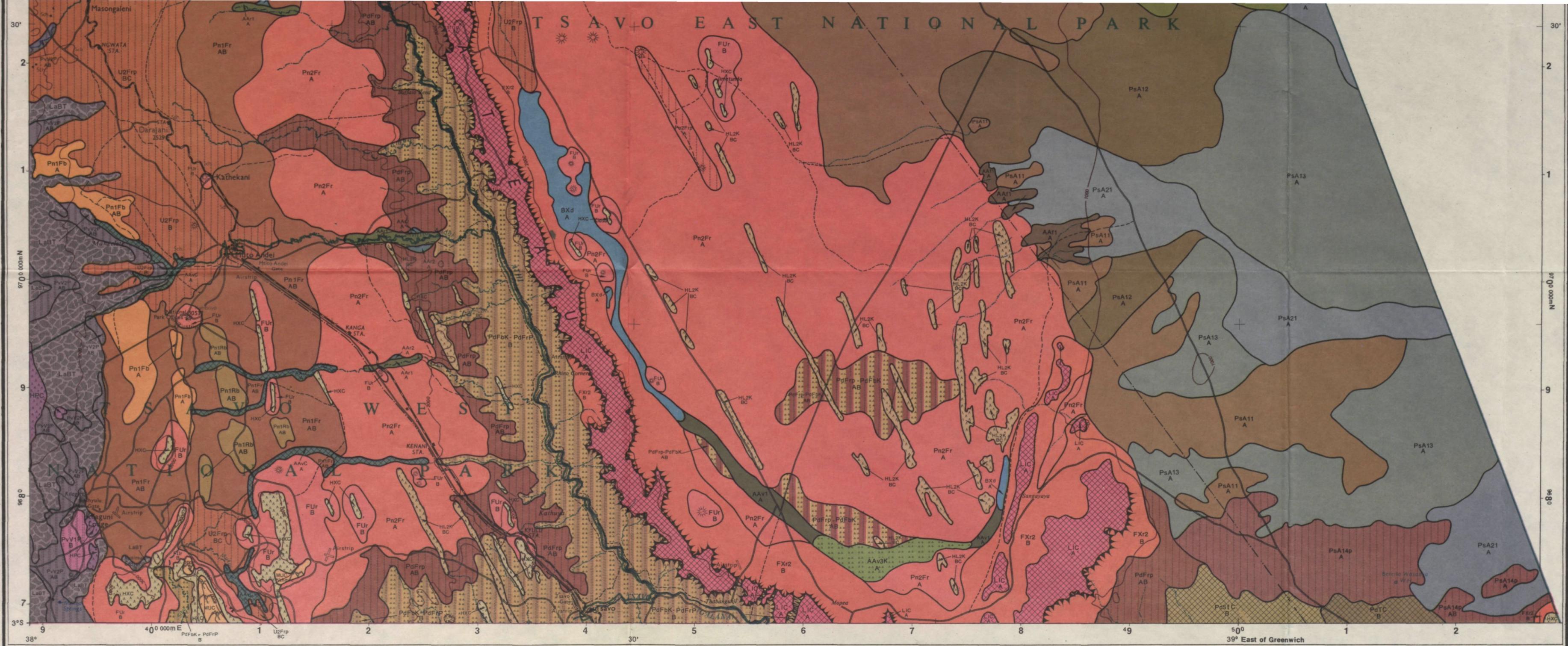
MAP SHEETS 175, 176, 183 and 184

Appendix 1a to Report No.7 "Soils and vegetation of the Tsavo area."

RECONNAISSANCE SOIL MAP OF THE MTITO ANDEI AREA

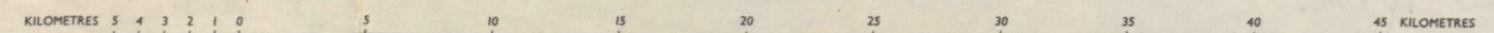
Ministry of Agriculture - Kenya Soil Survey
Ministry of Tourism and Wildlife - Tsavo Research Station - WOTRO*





* Netherlands Foundation for the Advancement of Tropical Research
 Printed by Printing and Packaging Corporation Limited, Likoni Road, P.O. Box 30157, Nairobi.

Scale 1:250,000



Base map compiled and simplified from parts of Survey of Kenya topographical map sheets SA-37-10 and SA-37-11 scale 1:250,000

LEGEND⁺

MOUNTAINS (relief intensity 300–1200m, slopes over 16%)

MU Soils developed on various gneisses

MUC  complex of somewhat excessively drained, shallow to moderately deep, reddish brown to light red, rocky and stony soils of varying texture; in places with humic topsoil
(eutric REGOSOLS, lithic phase and humic CAMBISOLS)

HILLS AND LOW RIDGES (relief intensity 10–300m, slopes from 5% to over 16%)

HX Soils developed on various parent materials

HXC  complex of somewhat excessively drained, shallow, reddish brown to greyish brown, rocky and stony soils of varying texture
(eutric and dystic REGOSOLS, lithic and stony phase)

HL Soils developed on crystalline limestone

HL2K  well drained, shallow to moderately deep, dark greyish brown to dark yellowish brown, calcareous, very stony, gravelly sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

HP Soils developed on pyroclastic deposits (Quaternary volcanics)

HPC  complex of well drained, shallow to moderately deep, dark greyish brown to black, very friable, calcareous, gravelly soils of varying texture, in places rocky and stony

FOOTSLOPES (at the foot of mountains, hills and plateaus, slopes 2–6%)

FU Soils developed on colluvium derived from various gneisses

FUr  well drained, very deep, dark red, friable, sandy clay loam to sandy clay
(rhodic FERRALSOLS and FERRAL ± chromic LUVISOLS)

FX Soils developed on colluvium derived from various parent materials

FXr1  well drained, very deep, dark red, friable, sandy clay to clay
(rhodic FERRALSOLS)

FXr2  well drained, deep to very deep, dark red to reddish brown, friable to firm, sandy clay loam to sandy clay
(chromic LUVISOLS)

PLATEAUS (slopes less than 2%)

LI Soils developed on phonolite (Tertiary volcanics)

LIC  complex of:
–well drained, moderately deep to very deep, dark red, friable clay; in places bouldery
(rhodic FERRALSOLS)
–well drained, shallow to moderately deep, dark red, friable, rocky, bouldery clay
(ferralic CAMBISOLS, lithic and stony phase)

UPLANDS (major rivers deeply incised, slopes 2–8%)

KITHIOKO–MULANGO LEVEL (altitude 700–900m, slopes less than 4%)

U2F Soils developed on gneisses rich in ferromagnesian minerals

U2Frp  well drained, moderately deep to deep, dark red to dark reddish brown, friable to firm, sandy clay to clay, over quartz gravel
(chromic LUVISOLS, petric phase)

PLAINS

NON-DISSECTED EROSIONAL PLAINS

KITHIOKO–MULANGO LEVEL (altitude 700–900m, slopes less than 4%)

Pn1F Soils developed on gneisses rich in ferromagnesian minerals

Pn1Fb  well drained, very deep, light brown to strong brown, very friable clay
(xanthic and orthic FERRALSOLS)

Pn1Fr  well drained, deep to very deep, dark red, friable to firm, sandy to clay
(FERRAL ± chromic LUVISOLS)

Pn1Fdk  poorly drained, moderately deep, dark greyish brown to black, very firm, saline and sodic, cracking clay, over pisocalcic material
(pellic VERTISOLS, saline–sodic and petric phase)

Pn1R Soils developed on quartz–feldspar gneisses

Pn1Rb  well drained, very deep, reddish brown to yellowish red, firm, sandy clay loam to sandy clay, with topsoil of

PdFrp-PdFbk 

complex of:
–soils of unit PdFrp
–well drained, shallow, yellowish brown, calcareous, gravelly sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

PdFbk-PdFrp 

complex of:
–soils of unit PdFbk (see second component of previous complex)
–well drained, shallow, dark reddish brown to dark red, stony, gravelly, sandy clay loam, over quartz gravel
(ferralic CAMBISOLS and chromic LUVISOLS, paralithic or petric phase)

PdSt Soils developed on fine to coarse-grained sandstones and arkoses (Taru grits)

PdStC 

complex of:
–well drained, shallow, dark reddish brown, stony, gravelly, sandy clay loam
(chromic CAMBISOLS and chromic LUVISOLS, paralithic phase)

–well drained, shallow, yellowish brown, calcareous, stony, gravelly, sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

PdT Soils developed on carbonaceous shales (Maji-ya-Chumvi beds)

PdTc 

complex of:
–well drained, shallow, strong brown, slightly stony, sandy clay
(orthic LUVISOLS, lithic phase)

–well drained, shallow, yellowish brown, calcareous, gravelly loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

SEDIMENTARY PLAINS (Nyika level: altitude 200–500m, slopes less than 2%)

PsA1 Soils developed on unconsolidated, sandy sediments (Quaternary superficial deposits)

PsA11 

well drained, deep to very deep, dark reddish brown to dark red, firm sandy clay, with sodic deeper subsoil
(ferric LUVISOLS, sodic phase)

PsA12 

well drained, very deep, dark brown to reddish brown, friable, sandy clay loam to sandy clay
(orthic LUVISOLS)

PsA13 

imperfectly drained, very deep, red to reddish brown, firm sandy clay, with calcareous, saline and sodic, deeper subsoil; abruptly underlying a topsoil of loamy sand
(solodic PLANOSOLS and orthic SOLONETZ, saline phase)

PsA14P 

well drained, moderately deep to deep, dark red, friable sandy loam to sandy clay, over quartz gravel
(rhodic FERRALSOLS, petric phase)

PsA2 Soils developed on unconsolidated, clayey sediments (Plio-Pleistocene bay deposits)

PsA21 

poorly drained, very deep, brown to dark brown, very firm, calcareous, saline and sodic clay, with topsoil of loamy sand to sandy loam; in places mottled
(orthic and gleyic SOLONETZ, saline phase)

PsA23 

very poorly drained, very deep, dark greyish brown to black, very firm, calcareous, saline and sodic clay; in places cracking
(pellic VERTISOLS, saline–sodic phase and vertic SOLO–NETZ, saline phase)

VOLCANIC PLAINS (slopes less than 5%)

PvV Soils developed on pyroclastic deposits and olivine basalts (Quaternary volcanics)

PvV1P 

well drained, shallow to moderately deep, dark greyish brown, friable, calcareous, gravelly sandy loam
(mollic ANDOSOLS, stony and petric phase)

PvV2P 

well drained, shallow to moderately deep, greyish brown to black, friable, clay loam to clay
(LITHOSOLS and haplic CHERNOZEMS, partly lithic phase)

FLOODPLAINS AND ALLUVIAL VALLEYS (slopes less than 2%)

AAf Soils developed on alluvial fan deposits

AAf1 

well drained, very deep, red to dark red, firm, sandy clay loam to clay
(chromic LUVISOLS)

AAr Soils developed on recent to subrecent river deposits

AArC1 

complex of very deep, brown to very dark brown, stratified soils of varying drainage, consistence and texture
(eutric and vertic⁺ FLUVISOLS)

AAv Soils developed on subrecent deposits in broad alluvial valleys

AAv1 

well drained, deep, dark reddish brown to red, friable to firm, sandy clay to clay, over petrocalcic material
(chromic LUVISOLS, petrocalcic phase)

AAv3K 

moderately well drained, shallow, calcareous, sandy clay to clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

AAvC 

complex of moderately well drained to poorly drained, very deep, dark brown to dark reddish brown, firm to very firm, sandy clay to clay; in places calcareous, saline and/or sodic
(orthic LUVISOLS, sodic phase and orthic SOLONETZ, saline phase)

BOTTOMLANDS (slopes less than 2%)

BX Soils developed on various parent materials

BXd 

very poorly drained, very deep, dark greyish brown to black, very firm, calcareous, cracking clay, with saline and sodic deeper subsoil
(chromic and pellic VERTISOLS, saline-sodic phase)

LAVAFLOWS (slopes less than 5%)

LaB Soils developed on olivine basalts (Quaternary volcanics)

LaBT 

excessively drained, exceedingly stony to bouldery, rocky land with infills of humic soil material

⁺ For the Mito Andei and Voi sheets one combined legend was prepared. The legend of this sheet however describes only the mapping units occurring on this sheet.

The descriptions denote the characteristics of the subsoil (usually the B–horizon). Where the topsoil differs from this subsoil by two or more textural classes, it is also described.

All gneisses and crystalline limestone mentioned in the legend belong to the Basement System rocks

The names between brackets reflect the soil classification according to the 1974 FAO/UNESCO legend for their "Soil Map of The World". Prefixes marked with * are tentative terms awaiting international agreement on nomenclature.

KEY TO SLOPE CLASSES

slope %	slope class symbol ⁺	name of macrorelief
0-2	A	flat to very gently undulating
2-5	B	gently undulating
5-8	C	undulating
8-16	D	rolling
16-30	E	hilly

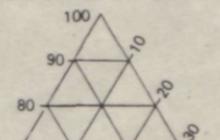
⁺ not indicated for mountains, hills, minor scarps and lava flows

KEY TO DEPTH CLASSES

thickness soil in cm	symbol ⁺		name
	over rock or quartz gravel	over petrocalcic/pisocalcic material	
0-50			shallow
50-80			moderately deep
80-120			deep
more than 120			very deep

⁺ if a complex of depth class occurs within one unit, only the symbol of the shallowest depth class is indicated

TEXTURAL CLASSES



L1 Soils developed on phonolite (Tertiary volcanics)

- complex of:
 LIC  well drained, moderately deep to very deep, dark red, friable clay; in places bouldery (rhodic FERRALSOLS)
 —well drained, shallow to moderately deep, dark red, friable, rocky, bouldery clay (ferralic CAMBISOLS, lithic and stony phase)

UPLANDS (major rivers deeply incised, slopes 2–8%)

KITHIOKO–MULANGO LEVEL (altitude 700–900m, slopes less than 4%)

- U2F Soils developed on gneisses rich in ferromagnesian minerals**
 U2Frp  well drained, moderately deep to deep, dark red to dark reddish brown, friable to firm, sandy clay to clay, over quartz gravel (chromic LUVISOLS, petric phase)

PLAINS

NON-DISSECTED EROSIONAL PLAINS

KITHIOKO-MULANGO LEVEL (altitude 700-900m, slopes less than 4%)

- Pn1F Soils developed on gneisses rich in ferromagnesian minerals**
 Pn1Fb  well drained, very deep, light brown to strong brown, very friable clay (xanthic and orthic FERRALSOLS)
 Pn1Fr  well drained, deep to very deep, dark red, friable to firm, sandy to clay (FERRAL ± chromic LUVISOLS)
 Pn1Fdk  poorly drained, moderately deep, dark greyish brown to black, very firm, saline and sodic, cracking clay, over pisocalcic material (pellic VERTISOLS, saline-sodic and petric phase)

Pn1R Soils developed on quartz-feldspar gneisses

- Pn1Rb  well drained, very deep, reddish brown to yellowish red, firm, sandy clay loam to sandy clay, with topsoil of sandy loam (orthic ACRISSOLS)

NYIKA LEVEL (altitude 200–600m, slopes less than 2%)

- Pn2F Soils developed on gneisses rich in ferromagnesian minerals**
 Pn2Fr  well drained, deep to very deep, dark red to dusky red, friable sandy clay (rhodic FERRALSOLS)
 Pn2Frp  like Pn2Fr, but moderately deep over quartz gravel (rhodic FERRALSOLS, petric phase)

DISSECTED EROSIONAL PLAINS (Nyika level: altitude 200–600m, slopes 1–5%)

- PdF Soils developed on gneisses rich in ferromagnesian minerals**
 PdFrp  well drained, moderately deep, dark red, friable to firm, sandy clay loam to sandy clay, over quartz gravel (chromic LUVISOLS, petric phase)

- PsA14p**  well drained, moderately deep to deep, dark red, friable sandy loam to sandy clay, over quartz gravel (solodic PLANOSOLS and orthic SOLONETZ, saline phase)
PsA2 Soils developed on unconsolidated, clayey sediments (Plio-Pleistocene bay deposits)
 PsA21  poorly drained, very deep, brown to dark brown, very firm, calcareous, saline and sodic clay, with topsoil of loamy sand to sandy loam; in places mottled (orthic and gleyic SOLONETZ, saline phase)
 PsA23  very poorly drained, very deep, dark greyish brown to black, very firm, calcareous, saline and sodic clay; in places cracking (pellic VERTISOLS, saline-sodic phase and vertic SOLO-NETZ, saline phase)

VOLCANIC PLAINS (slopes less than 5%)

- PvV Soils developed on pyroclastic deposits and olivine basalts (Quaternary volcanics)**
 PvV1P  well drained, shallow to moderately deep, dark greyish brown, friable, calcareous, gravelly sandy loam (mollic ANDOSOLS, stony and petric phase)
 PvV2P  well drained, shallow to moderately deep, greyish brown to black, friable, clay loam to clay (LITHOSOLS and haplic CHERNOZEMS, partly lithic phase)

FLOODPLAINS AND ALLUVIAL VALLEYS (slopes less than 2%)

- AAf Soils developed on alluvial fan deposits**
 AAf1  well drained, very deep, red to dark red, firm, sandy clay loam to clay (chromic LUVISOLS)
AAr Soils developed on recent to subrecent river deposits
 AAr1  well drained, deep, dark reddish brown to dark red, firm, sandy clay (chromic LUVISOLS)
 AAr2  poorly drained, deep, dark brown to very dark grey, very firm, saline and sodic, cracking clay (pellic and chromic VERTISOLS, saline-sodic phase)
 AAr3  well drained, deep, reddish brown to dark reddish brown, friable, sandy clay loam to sandy clay, over pisocalcic material (calcic LUVISOLS, petric phase)
 AAr4  well drained, very deep, dark yellowish brown, very friable, sandy loam to sandy clay loam (eutric CAMBISOLS)
 AAr5  poorly drained, very deep, brown to very dark brown, very firm, cracking clay (chromic VERTISOLS)
 AAr6  poorly drained, very deep, brown to very dark brown, very firm, stratified clay (eutric FLUVISOLS)

KEY TO SLOPE CLASSES

slope %	slope class symbol ⁺	name of macrorelief
0-2	flat to very gently undulating
2-5	A	gently undulating
5-8	B	undulating
8-16	C	rolling
16-30	D	hilly

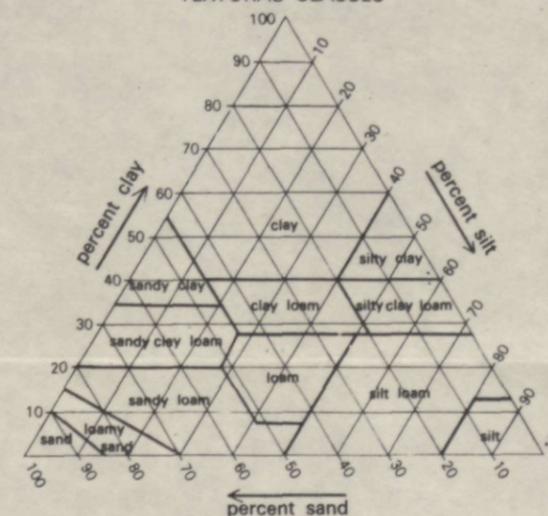
⁺ not indicated for mountains, hills, minor scarps and lava flows

KEY TO DEPTH CLASSES

thickness soil in cm	symbol ⁺		name
	over rock or quartz gravel	over petrocalcic/pisocalcic material	
0 - 50			shallow
50 - 80			moderately deep
80 - 120			deep
more than 120			very deep

⁺ if a complex of depth class occurs within one unit, only the symbol of the shallowest depth class is indicated

TEXTURAL CLASSES



KEY

- soil mapping symbol
- depth class symbol
- slope class symbol
- soil boundary
- soil boundary (uncertain)
- slope class boundary

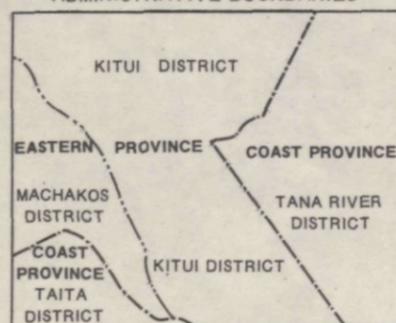


625 ha

- all weather road
- railway
- railway station
- bridge
- motorable track
- provincial boundary
- district boundary
- park boundary
- building
- school
- river
- water hole
- contours V.I. 1000 ft.
- scarp
- hill top
- crater



ADMINISTRATIVE BOUNDARIES

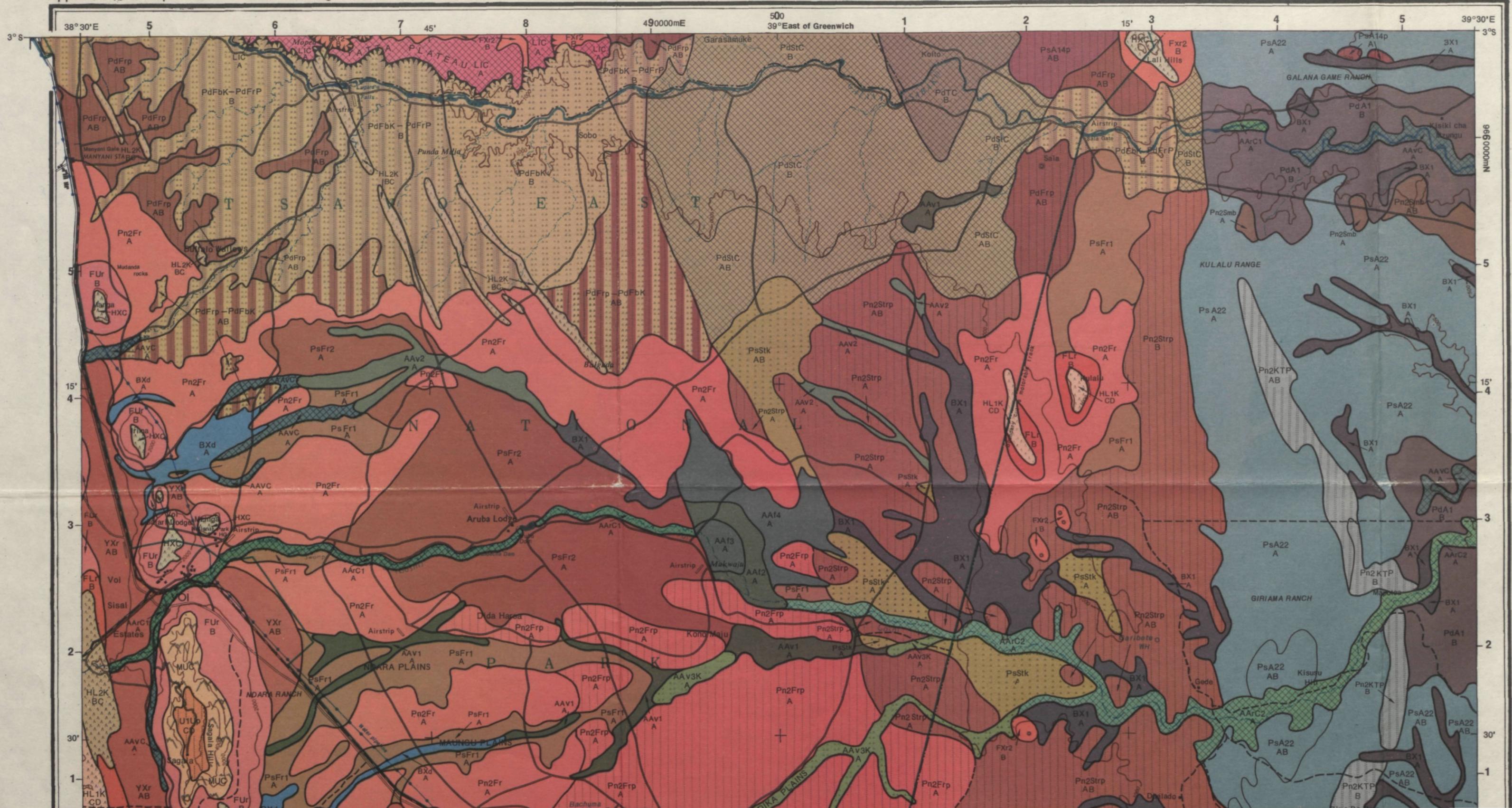


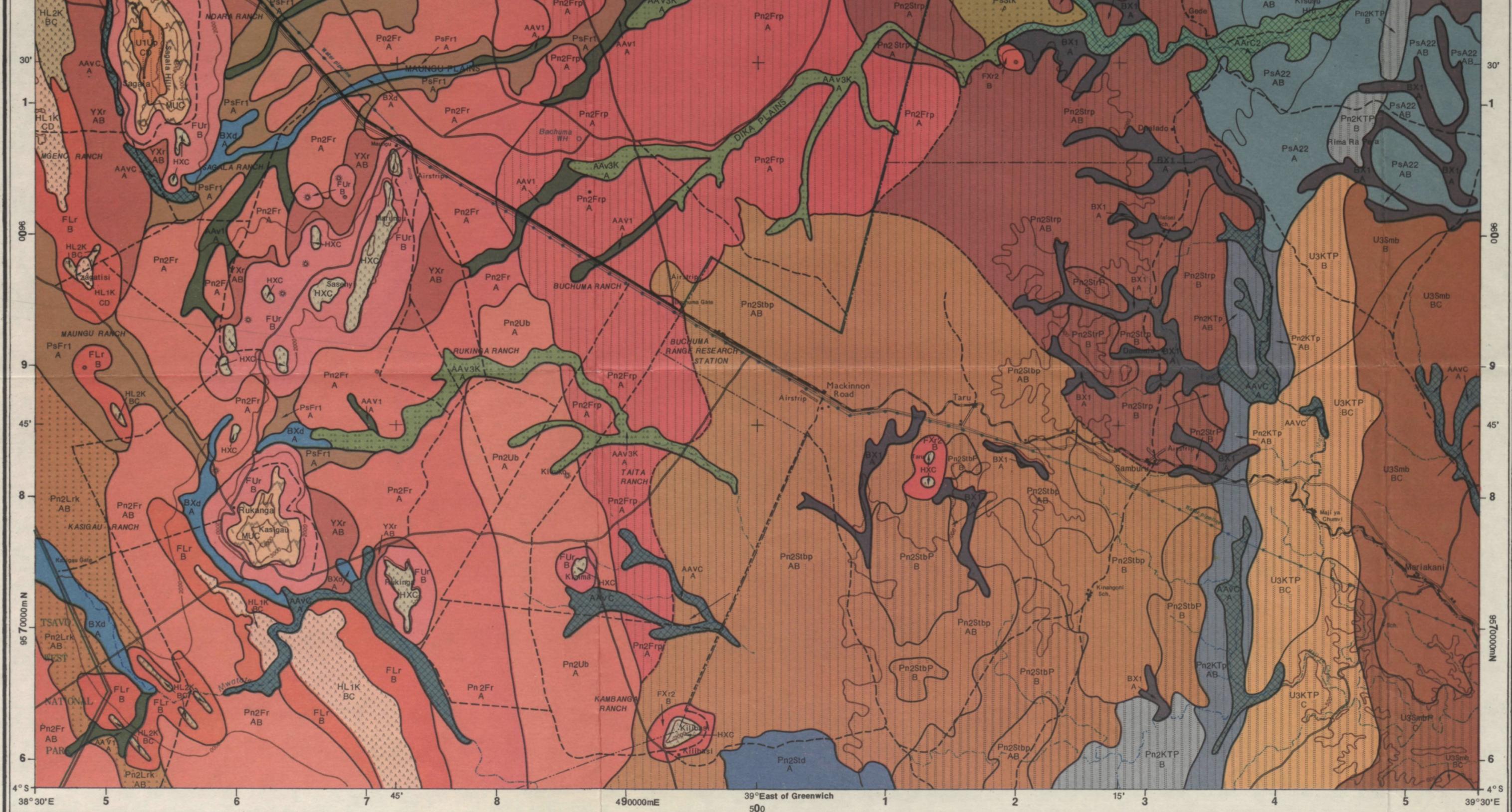
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SOIL SURVEY AND MAP PREPARATION

- soil survey and map compilation (1975 – 1978) W. van Wijngaarden¹⁾
- soil correlation W.G. Sombroek²⁾
- map correlation B.J.A. van der Pouw²⁾
- cartography D.M. Oluo²⁾
- 1) Tsavo Research Project – WOTRO
- 2) Kenya Soil Survey

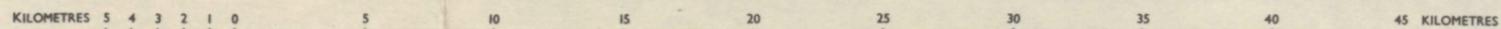




*Netherlands Foundation for the Advancement of Tropical Research
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Base map compiled and simplified from parts of Survey of Kenya topographical map sheets SA-37-14 and SA-37-15 scale 1:250,000

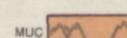
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LEGEND⁺

MOUNTAINS (relief intensity 300–1200m, slopes over 16%)

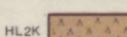
MU Soils developed on various gneisses

MUC  complex of somewhat excessively drained, shallow to moderately deep, reddish brown to light red, rocky and stony soils of varying texture; in places with humic topsoil
(eutric REGOSOLS, lithic phase and humic CAMBISOLS)

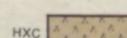
HILLS, MINOR SCARPS AND LOW RIDGES (relief intensity 10–300m, slopes from 5% to over 16%)

HL Soils developed on crystalline limestone

HL1K  well drained, shallow, black, gravelly loam, over petrocalcic material or rock
(orthic RENDZINAS)

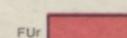
HL2K  well drained, shallow to moderately deep, dark greyish brown to dark yellowish brown, calcareous, very stony, gravelly sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

HX Soils developed on various parent materials

HXC  complex of somewhat excessively drained, shallow, reddish brown to greyish brown, rocky and stony soils of varying texture
(eutric and dystic REGOSOLS, lithic and stony phase)

FOOTSLOPES (at the foot of mountains and hills, slopes 2–6%)

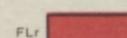
FU Soils developed on colluvium derived from various gneisses

FUR  well drained, very deep, dark red, friable, sandy clay loam to sandy clay
(rhodic FERRALSOLS and FERRAL*- chromic LUVISOLS)

FX Soils developed on colluvium derived from various parent materials

FXr2  well drained, deep to very deep, dark red to reddish brown, friable to firm, sandy clay loam to sandy clay
(chromic LUVISOLS)

FL Soils developed on colluvium derived from crystalline limestone

FLr  well drained, deep to very deep, dark red to dark reddish brown, friable to firm, sandy clay
(chromic LUVISOLS)

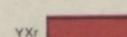
PLATEAUS (slopes less than 2%)

LI Soils developed on phonolite (Tertiary volcanics)

LIC  complex of:
– well drained, moderately deep to very deep, dark red, friable clay; in places bouldery
(rhodic FERRALSOLS)
– well drained, shallow to moderately deep, dark red, friable, rocky and bouldery clay
(ferralic CAMBISOLS, lithic and stony phase)

PIEDMONT PLAINS (long slopes, 1–3%)

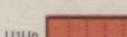
YX Soils developed on alluvium derived from undifferentiated gneisses and crystalline limestone

YXr  well drained, very deep, dark red, friable, sandy clay to clay
(FERRAL*- chromic LUVISOLS)

UPLANDS (major rivers deeply incised)

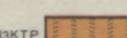
SAGALA LEVEL (altitude approximately 1300m, slopes 5–16%)

U1U Soils developed on undifferentiated gneisses

U1UP  well drained, moderately deep to very deep, dark red to dark reddish brown, firm clay
(chromic* ACRISOLS)

NYIKA LEVEL (altitude 150–250m, slopes 2–8%)

U3KT Soils developed on siltstones and shales (Maji-ya-Chumvi beds)

U3KTP  well drained, shallow, dark reddish brown to very dark brown, sandy clay loam
(eutric CAMBISOLS, lithic phase)

U3Sm Soils developed on fine-grained sandstones (Mariakani sandstone)

U3Smb  well drained, deep to very deep, dark brown to yellowish brown, firm, sandy clay loam to clay, with topsoil of sandy loam
(orthic LUVISOLS)

U3SmbP  like U3Smb, but shallow to moderately deep, fairly rocky and fairly stony

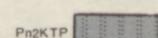
PLAINS

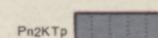
NON-DISSECTED EROSIONAL PLAINS

NYIKA LEVEL (altitude 200–600m, slopes less than 2%)

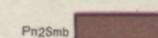
Pn2F Soils developed on gneisses rich in ferromagnesian minerals

Pn2KT Soils developed on siltstones and shales (Maji-ya-Chumvi beds)

Pn2KTP  well drained, shallow, dark reddish brown to very dark brown, sandy clay loam to clay
(eutric CAMBISOLS, lithic phase)

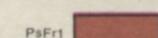
Pn2KTp  imperfectly drained, moderately deep to deep, dark greyish brown, very firm, cracking, sandy clay to clay, with calcareous and sodic deeper subsoil
(vertic* PHAEZEMES, sodic phase)

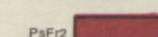
Pn2Sm Soils developed on fine-grained sandstones (Mariakani sandstone)

Pn2Smb  well drained, very deep, brown, friable to firm, sandy clay loam to sandy clay, with sodic deeper subsoil
(orthic LUVISOLS, sodic phase)

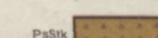
SEDIMENTARY PLAINS (Nyika level; altitude 200–500m, slopes less than 2%)

PsF Soils developed on material derived from gneisses rich in ferromagnesian minerals

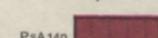
PsFr1  well drained, deep to very deep, red to dark red, friable to firm, sandy clay to clay
(ferric LUVISOLS)

PsFr2  well drained, very deep, dark red to dark reddish brown, friable to firm, sandy clay
(chromic LUVISOLS)

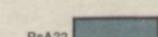
PsSt Soils developed on material derived from fine to coarse-grained sandstones and arkoses (Taru grits)

PsStK  well drained, moderately deep to deep, dark reddish brown, firm, sandy clay to clay, over pisocalcic material
(calcic LUVISOLS, petric phase)

PsA1 Soils developed on unconsolidated sandy sediments (Quaternary superficial deposits)

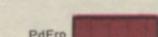
PsA1dP  well drained, moderately deep to deep, dark red, friable, sandy loam to sandy clay, over quartz gravel
(rhodic FERRALSOLS, petric phase)

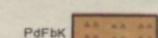
PsA2 Soils developed on unconsolidated clayey sediments (Plio-Pleistocene bay deposits)

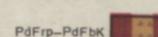
PsA2Z  poorly drained, very deep, dark greyish brown to black, very firm, calcareous, sodic clay; in places saline and/or cracking
(orthic and vertic* SOLONETZ, partly saline phase)

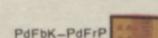
DISSECTED EROSIONAL/SEDIMENTARY PLAINS (Nyika level; altitude 200–600m, slopes 1–5%)

PdF Soils developed on gneisses rich in ferromagnesian minerals

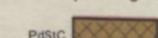
PdFrp  well drained, moderately deep, dark red, friable to firm, sandy clay loam to sandy clay, over quartz gravel
(chromic LUVISOLS, petric phase)

PdFbK  well drained, shallow, yellowish brown, calcareous, gravelly sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

PdFrp–PdFbK  complex of soils of units PdFrp and PdFbK

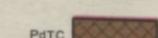
PdFbK–PdFrp  complex of:
– soils of unit PdFbK
– well drained, shallow, dark reddish brown to dark red, stony and gravelly sandy clay loam, over quartz gravel
(ferralic CAMBISOLS and chromic LUVISOLS, paralithic or petric phase)

PdSt Soils developed on fine to coarse-grained sandstones and arkoses (Taru grits)

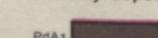
PdStC  complex of:
– well drained, shallow, dark reddish brown, stony, gravelly sandy clay loam
(chromic CAMBISOLS and chromic LUVISOLS, paralithic phase)

– well drained, shallow, yellowish brown, calcareous, stony and gravelly sandy clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

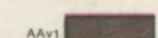
PdT Soils developed on carbonaceous shales (Maji-ya-Chumvi beds)

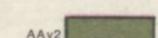
PdTc  complex of:
– well drained, shallow, strong brown, slightly stony, sandy clay
(orthic LUVISOLS, lithic phase)
– well drained, shallow, yellowish brown, calcareous, gravelly loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

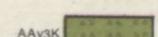
PdA Soils developed on unconsolidated clayey sediments (Plio-Pleistocene bay deposits)

PdA1  imperfectly drained, very deep, strong brown to greyish brown, firm to very firm, sodic, sandy clay to clay; in places saline
(orthic SOLONETZ, partly saline phase)

AAv Soils developed on subrecent deposits in broad alluvial valleys

AAv1  well drained, deep, red to dark reddish brown, friable to firm, sandy clay to clay, over petrocalcic material
(chromic LUVISOLS, petrocalcic phase)

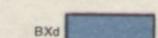
AAv2  moderately well drained, very deep, dark brown, friable, calcareous, sandy clay to clay
(calcic CAMBISOLS)

AAv3K  moderately well drained, shallow, calcareous, sandy clay to clay loam, over petrocalcic material
(calcic CAMBISOLS, petrocalcic phase)

AAvC  complex of moderately well drained to poorly drained, very deep, dark reddish brown to dark brown, firm to very firm, sandy clay to clay; in places calcareous, saline and/or sodic
(orthic LUVISOLS, sodic phase and orthic SOLONETZ, saline phase)

BOTTOMLANDS (slopes less than 2%)

BX Soils developed on various parent materials

BXd  very poorly drained, very deep, dark greyish brown to black, very firm, calcareous, cracking clay, with saline and sodic deeper subsoil
(chromic and pellic VERTISOLS, saline-sodic phase)

BX1  very poorly drained, very deep, dark brown to dark grey, firm to very firm, sodic clay, with calcareous and saline deeper subsoil
(orthic SOLONETZ, saline phase)

⁺ For the Mtito Andei and Voi sheets one combined legend was prepared. The legend of this sheet however describes only the mapping units occurring on this sheet.

The descriptions denote the characteristics of the subsoil (usually the B-horizon) where the topsoil differs from this subsoil by two or more textural classes, it is also described.

All gneisses and crystalline limestone mentioned in the legend belong to the Basement System rocks

The names between brackets reflect the soil classification according to the 1974 FAO/UNESCO legend for their "Soil Map of The World". Prefixes marked with * are tentative terms awaiting international agreement on nomenclature.

KEY TO SLOPE CLASSES

slope %	slope class symbol ⁺	name of the macrorelief
0-2	A	flat to very gently undulating
2-5	B	gently undulating
5-8	C	undulating
8-16	D	rolling
16-30	E	hilly

⁺ not indicated for mountains, hills and minor scarps

KEY TO DEPTH CLASSES

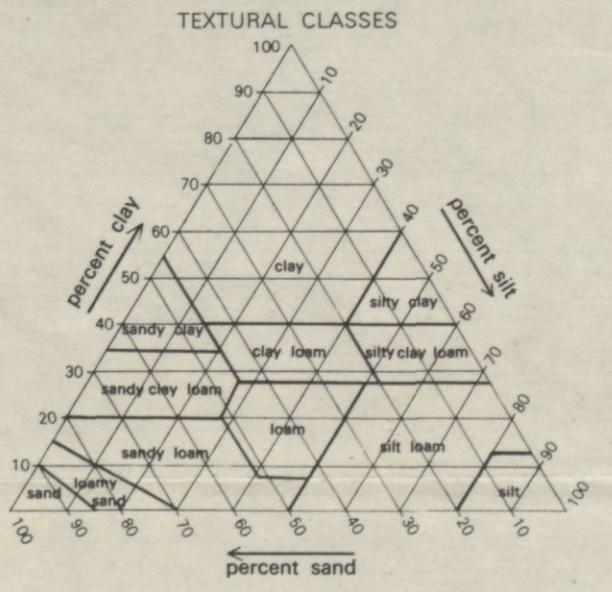
thickness soil in cm	symbol ⁺		name
	over rock or quartz gravel	over petrocalcic/pisocalcic material	
0-50	P	K	shallow
50-80	P	k	moderately deep
80-120			deep
more than 120			very deep

⁺ if a complex of depth classes occurs within one unit, only the symbol of the shallowest depth class is indicated

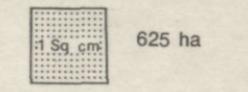
- Pn2F Soils developed on gneisses rich in ferromagnesian minerals**
- Pn2Fr well drained, deep to very deep, dark red to dusky red, friable sandy clay (rhodic FERRALSOLS)
- Pn2Frp like Pn2Fr, but moderately deep over quartz gravel (rhodic FERRALSOLS, petric phase)
- Pn2U Soils developed on undifferentiated gneisses**
- Pn2Ub well drained, deep to very deep, yellowish red, very friable, sandy clay to clay (orthic FERRALSOLS)
- Pn2L Soils developed on crystalline limestone**
- Pn2Lrk well drained, moderately deep to very deep, dark red to dark reddish brown, firm, sandy clay to clay, over petrocalcic material (calcic and chromic LUVISOLS, petrocalcic phase)
- Pn2St Soils developed on fine to coarse - grained sandstones and arkoses (Taru grits)**
- Pn2Strp well drained, moderately deep to deep, red to dark red, friable sandy clay, over quartz gravel (chromic LUVISOLS, petric phase)
- Pn2StrP like Pn2Strp, but shallow to moderately deep
- Pn2Stbp well drained, moderately deep to deep, dark reddish brown to dark brown, firm, sandy clay to clay, over quartz gravel or pisolitic material (orthic and chromic* ACRISOLS, petric or pisolitic phase)
- Pn2StbP like Pn2Stbp, but shallow to moderately deep
- Pn2Std poorly drained, very deep, black, very firm, calcareous, cracking clay, with saline and sodic deeper subsoil (pellic VERTISOLS, saline-sodic phase)

FLOODPLAINS AND ALLUVIAL VALLEYS (slopes less than 2%)

- AAf Soils developed on alluvial fan deposits**
- AAf2 moderately well drained, very deep, dark brown, firm sandy clay, with sodic deeper subsoil (orthic LUVISOLS, sodic phase)
- AAf3 imperfectly drained, very deep, dark brown, very firm, sandy clay to clay, with saline deeper subsoil (orthic LUVISOLS, saline phase)
- AAf4 poorly drained, very deep, dark greyish brown, very firm, calcareous, saline and sodic clay (orthic SOLONETZ, saline phase)
- AAr Soils developed on subrecent to recent river deposits**
- AArC1 complex of very deep, brown to very dark brown, stratified soils of varying drainage condition, consistence and texture (eutric and vertic* FLUVISOLS)
- AArC2 complex of very deep, brown to very dark brown soils of varying drainage condition, consistence and texture; in places saline and sodic

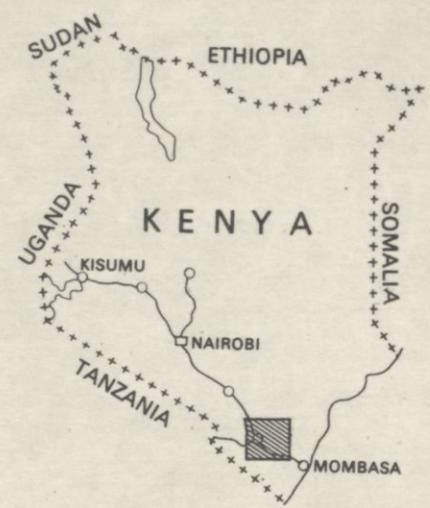


- KEY**
- soil mapping symbol
 - depth class symbol
 - slope class symbol
 - soil boundary
 - soil boundary (uncertain)
 - slope class boundary

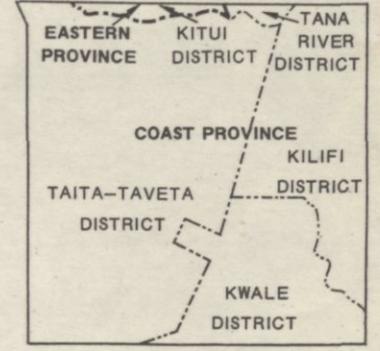


- all weather road
- track
- railway
- railway station
- international boundary
- provincial boundary
- district boundary
- building
- school
- bridge
- river
- pipeline
- contours V.I. 1000 ft.
- hill top
- scarp
- park boundary

NB. Most of the roads and tracks are in approximate alignment.



ADMINISTRATIVE BOUNDARIES



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KEN. 199W/2 TANZANIA	199	200	201

SOIL SURVEY AND MAP PREPARATION

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