BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD

Record 1981/47

McKINLAY RIVER 1:100 000 SHEET AREA, NORTHERN TERRITORY

DATA RECORD

D.A. WALLACE, R.S. NEEDHAM, P.G. STUART-SMITH,
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ABSTRACT

This Record summarises the major results of the 1979 fieldwork of the Pine Creek Geological Party (BMR and NTGS), presenting 1:100 000-scale reductions of the photo-scale compilation sheets for the McKinlay River 1:100 000 Sheet area, and an outline of the revised stratigraphy. Petrographic descriptions are appended. The area includes Early Proterozoic metasediments of the Masson Formation, Mundogie Sandstone, Wildman Siltstone, Koolpin Formation, Gerowie Tuff, Mount Bonnie Formation, and Burrell Creek Formation. These units are intruded by pre-orogenic Zamu Dolerite and are hornfelsed by Carpentarian granites. Three separate intrusions of Carpentarian granite are present - Cullen Granite, Prices Springs Granite, and Margaret Granite.

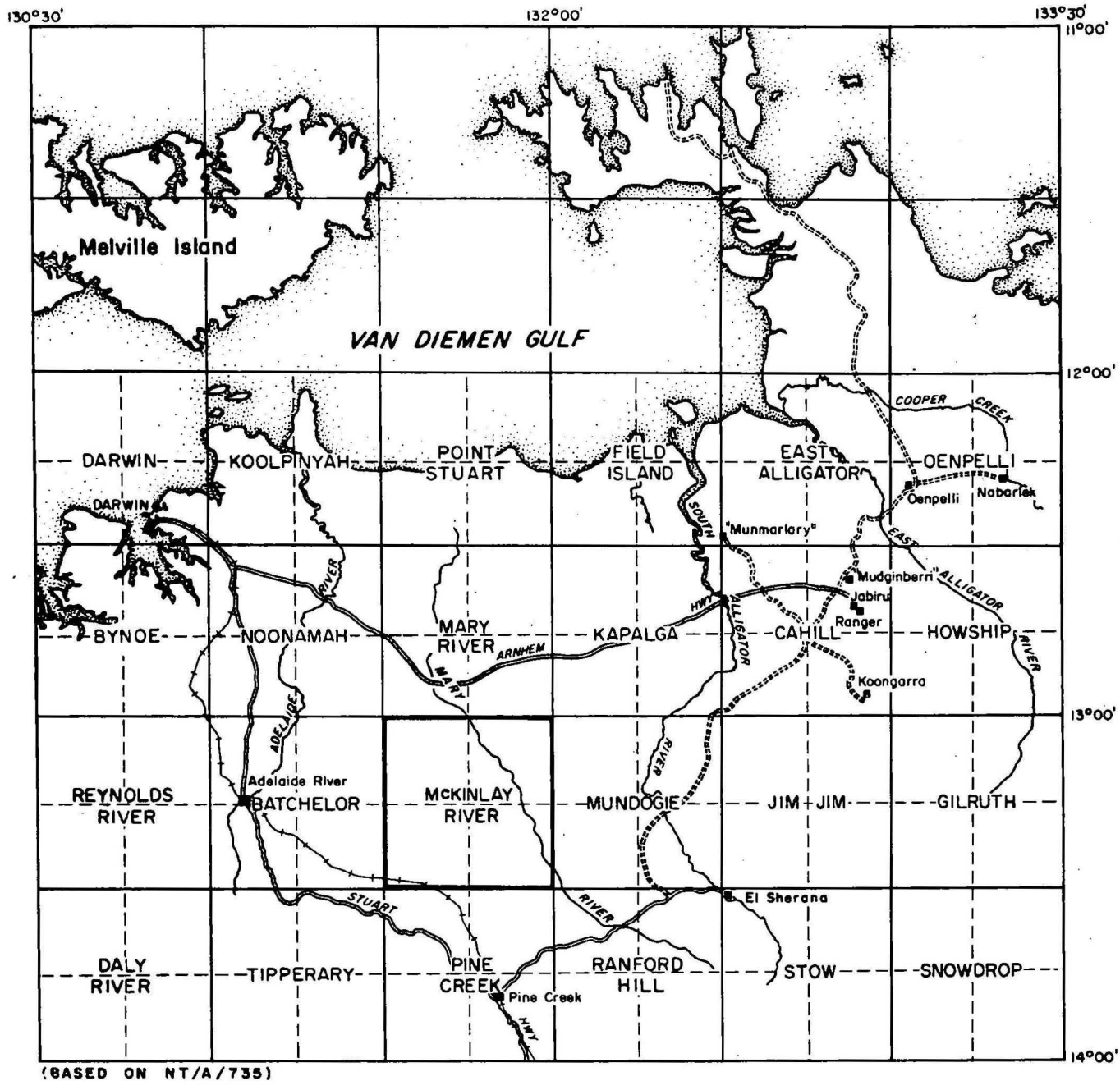

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Figure 1. Locality map

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INTRODUCTION

This Record summarises the major results of the 1979 field work of the Pine Creek Geosyncline Geological Party of the Bureau of Mineral Resources (BMR) and the Northern Territory Geological Survey (NTGS) in the McKinlay River 1:100 000 Sheet area. The work was a continuation of geological field work in the Pine Creek Geosyncline, as part of the Pine Creek Project, whose overall objective is to study the geology, geophysics, and mineralisation of the geosyncline; an important subsidiary objective is to produce 1:100 000-scale geological maps of the region. A detailed account of the geology of the McKinlay River Sheet area is in preparation.

This Record presents 1:100 000-scale reductions (Figures 4-15) of the 1:25 000-scale compilation sheets, and an outline of the stratigraphy as revised in the light of recent work in the geosyncline. Petrographic descriptions are appended.

The location of the area is shown in Figure 1. Colour airphotos at 1:25 000-scale were used, in conjunction with 1:89 000-scale panchromatic airphotos. Figure 3 contains the geological reference and an index to the compilation sheets. Copies of the compilation sheets at 1:25 000 original photo-scale can be obtained from the Copy Service, Australian Government Printer (Production), P.O. Box 84, Canberra, ACT 2600 - price on application.

The field positions of specimens described petrographically are indicated on Figure 3 and on the compilation sheets by 8-digit BMR sample submission numbers.

GEOLOGY

The generalised geology of the McKinlay River Sheet area is shown in Figure 2, and summarised in the Table.

A northerly-trending sequence of Early Proterozoic metasediments, which is tightly to isoclinally folded, youngs westwards over most of the area and forms the eastern limb of a broad synclinorium that extends to

Rum Jungle. The sequence contains units of the Namoona, Mount Partridge, South Alligator, and Finniss River Groups and is intruded by Zamu Dolerite dykes and sills and by three Carpentarian granites - the Cullen Granite Complex and the Margaret and Prices Springs Granites. In the west, doming associated with the Margaret and Prices Springs Granites exposes inliers of South Alligator Group rocks surrounded by the Finniss River Group unit (Fig. 2).

An isolated, elongate outlier of Carpentarian Kombolgie Formation sandstone unconformably overlies the metasediments in the centre of the Sheet area. Alluvium of the McKinlay River floodplain covers much of the northern and central parts of the Sheet area, and Cainozoic lateritic sands and minor, Cretaceous sandstone overlie most of the Early Proterozoic strata east of the Mary River.

The major significant revision of previous work is a re-interpretation of Early Proterozoic geology and extension of the stratigraphy recently established in other parts of the Pine Creek Geosyncline (Needham & others, 1980).

Ferruginous shale, siltstone, and minor quartzite of the Masson Formation crop out in the cores of northwesterly-plunging anticlines, two east of the Mary River and another in the southeastern part of the Sheet area. These are unconformably overlain by quartz-rich psammites and conglomerates of the Mundogie Sandstone. This comprises about 950 metres of coarse arkose, quartzite, quartz arenite, and minor siltstone and shale. In the southeast, two lenses up to 150 metres thick of colour-banded shale, siltstone and minor fine quartzite extend for 20 km southwest of Mount Harris and for 8 km along the Cullen Granite Complex north of Halfway Peak.

These rocks are overlain conformably by the Wildman Siltstone, which, west of the Cullen Granite Complex, may be divided into two members:

The lower member is slightly thicker (400 m) and consists of siltstone, sandy siltstone, shale and minor quartzite. The pelitic rocks are typically colour-banded in places and contain two ironstone

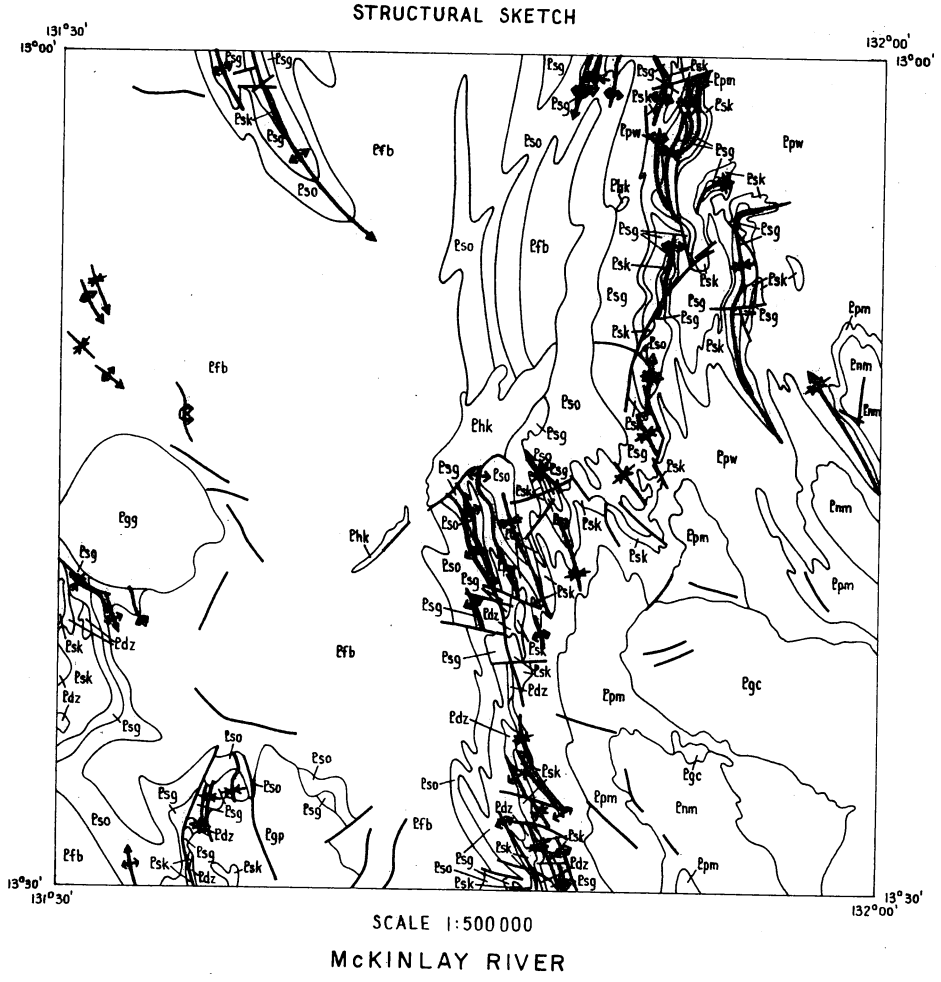

Figure 2. Generalised geology McKinlay River 1:100000 Sheet area, Pine Creek Geosyncline

TABLE : SUMMARY OF STRATIGRAPHY OF THE McKINLAY RIVER 1:100 000 SHEET AREA (CAINOZOIC UNITS OMITTED).

	Unit	Description	Field relations	Thickness (m)
MESO-ZOIC	PETREL FORMATION Kp	Ferruginous coarse to medium friable sandstone and conglomerate with shale clasts	Forms mesas and flat-lying outliers; unconformably overlies older units	2-10
		UNCONFORMITY		
CARPENTARIAN	KOMBOLGIE FORMATION Ehk	Medium to coarse quartz sandstone, clayey or pebbly in places; minor siltstone beds, rare basal breccia-conglomerate; extensively ripple-marked and cross-bedded	Forms large outlier (Mount Douglas) and several smaller outliers; unconformably overlies Burrell Creek Formation and South Alligator Group metasediments	500
		UNCONFORMITY		
	MARGARET GRANITE Pgg	Coarse porphyritic granite and adamellite	Intrudes Early Proterozoic units	
	PRICES SPRINGS GRANITE Pgp	Coarse pink and green porphyritic adamellite	Intrudes Early Proterozoic units	
	CULLEN GRANITE COMPLEX Pgc	Fine even-grained grey leucocratic granite; coarse porphyritic pink and green adamellite	Intrudes Early Proterozoic units	
	ZAMU DOLERITE Pdz	Massive chloritised quartz dolerite	Intrudes the Masson Formation, Wildman Siltstone, Koolpin Formation, and Gerowie Tuff; intruded by Carpentarian granites	
FINNISS RIVER GROUP	BURRELL CREEK FORMATION Pfb	Interlayered shale, siltstone, phyllite, massive quartzose, feldspathic and calcareous tombstone greywacke; minor white sandy siltstone, quartz sandstone and conglomerate	Youngest Early Proterozoic unit; conformably overlies the Mount Bonnie Formation; intruded and hornfelsed by Carpentarian granites	Indeterminate 2000+
SOUTH ALLIGATOR GROUP	MOUNT BONNIE FORMATION Pso	Laminated reddish brown shale and siltstone with minor laminated black chert bands, lenses, and nodules; minor pyritic banded iron formation, argillite, crystal tuff, tuffaceous chert, massive medium feldspathic greywacke	Conformably overlies the Gerowie Tuff and underlies the Burrell Creek Formation; intruded and hornfelsed by Carpentarian Granites	700
	GEROWIE TUFF Psg	Laminated grey, brown, and red silicified siltstone; blue-grey and brown argillite; siliceous siltstone and shale; glassy black spotted crystal tuff and tuffaceous chert; minor tuffaceous greywacke and arenite	Conformably overlies the Koolpin Formation and underlies the Mount Bonnie Formation; intruded and hornfelsed by Carpentarian Granites and Zamu Dolerite	350
	KOOLPIN FORMATION Psk	Ferruginous siltstone and shale with chert bands, lenses, and nodules; silicified dolomite and massive magnesite lenses; ferruginous, siliceous, and silty chert breccias commonly at base; pale green, grey, or white massive claystone; minor laminated quartz sandstone, sandy siltstone, and limonitic coarse-grained quartz sandstone near base in Mount Masson area; massive hematitic and limonitic ironstone in places	Unconformably overlies the Wildman Siltstone; conformably overlain by the Gerowie Tuff; intruded and hornfelsed by Carpentarian Granites and Zamu Dolerite	100-250
		UNCONFORMITY		
EARLY PROTEROZOIC MOUNT PARTRIDGE GROUP	WILDMAN SILTSTONE Ppw	Upper member: Laminated feldspathic sandstone and quartzite with minor pebbly conglomerate; grey, brown, and yellow cross-bedded quartz sandstone; grey quartzite, sandy siltstone, phyllite, slate, and shale; calcareous quartz sandstone	Conformably overlies the lower member; overlain unconformably by the Koolpin Formation; hornfelsed and intruded by the Cullen Granite Complex and Zamu Dolerite not present east of the Cullen Granite Complex	350+
		Lower member: Red and white banded laminated sandy siltstone; red, brown, and grey massive siltstone; mauve, cream, and grey siliceous phyllite; white claystone, carbonaceous at depth; massive hematite and limonite ironstone	Conformably overlies the Mundogie Sandstone and underlies the upper member; intruded and hornfelsed by the Cullen Granite Complex and Zamu Dolerite	400
	MUNDOGIE SANDSTONE Ppm	Fine to coarse quartz sandstone, quartzite, and arkose; minor pebble conglomerate; graded bedding, cross-bedding, and scour structures in places; laminated brown and white shale, siltstone, and sandy siltstone; massive brown micaceous siltstone and sandy siltstone; colour banded (red and white) siltstone; phyllite; minor brown or grey quartzite; pelites, probably carbonaceous at depth	Unconformably overlies Masson Formation; conformably overlain by the Wildman Siltstone; intruded and hornfelsed by the Cullen Granite Complex and by Zamu Dolerite	950
		UNCONFORMITY		
NAMOONA GROUP	MASSON FORMATION Pnm	Ferruginous shale (probably carbonaceous at depth); brown micaceous siltstone, slate, and phyllite; minor sandy siltstone; feldspathic quartzite	Oldest formation in the area, overlain by the Mundogie Sandstone; intruded and hornfelsed by the Cullen Granite Complex and Zamu Dolerite	Indeterminate 1000+

horizons, the lower of which has been exploited commercially at Frances Creek. Within contact-metamorphic aureoles the carbonaceous character of the generally deeply-weathered colour-banded pelites is preserved; the rocks are graphitic, and commonly contain andalusite, cordierite, and mica.

The upper member consists of a 350+ m thick sequence of siltstone, thinly interbedded fine quartzite, limonitic sandstone, shales, and minor coarse quartzite.

East of the Cullen Granite Complex the upper member is not present.

Unconformably overlying the Wildman Siltstone is a narrow but continuous unit of highly ferruginised chert-nodular shale, siltstone, and localised limonitic sandstone, which forms the Koolpin Formation. It is 100-250 m thick, and generally thins southwards in common with the other units of the South Alligator Group in the area. Banded ironstone occurs patchily. Massive silicified dolomite is commonly present at the base, together with rare, fresh, dolomitic carbonate.

The ferruginous sediments of the Koolpin Formation are overlain by a 350-m thick sequence of black crystal tuff, shale, and quartz argillite of the Gerowie Tuff. This boundary is typically a few metres wide and consists of interbedded, slightly ferruginous sediments of both units. The Gerowie Tuff is distinguished by its bleached rubbly outcrop, sparse vegetation, and high topographic relief.

The Gerowie Tuff is overlain transitionally by the Mount Bonnie Formation (informal name), which is characterised by a progressive decrease in crystal tuff up-sequence, and the presence of greywacke (feldspathic litharenite) interbedded with slate, black chert nodules, laminated black and green chert, and minor argillite. The formation is distinguished photogeologically from the Gerowie Tuff by a darker, reddish photo-tone, lower relief, and poorer exposure.

The Burrell Creek Formation is the youngest and most extensive Early Proterozoic unit and crops out over most of the western half of the sheet area. It is conformable on the Mount Bonnie Formation and consists of interlayered slate, phyllite, siltstone, feldspathic litharenite, and lenses of 'tombstone' greywacke. Fine to medium-grained rocks, constituting about 80 percent of the unit, are strongly cleaved, and weathered to a russet colour. The rocks are cut by numerous quartz reefs. Despite its thickness, estimated at more than 2000 m, the lack of continuous marker horizons or significant lithological variation preclude any subdivision.

Dolerite sills and dykes of Zamu Dolerite intrude the Early Proterozoic strata throughout the area. The intrusives are most common within South Alligator Group sediments, especially in the Koolpin Formation. The dolerite is usually dark green due to extensive chloritisation of clinopyroxene. A rare dioritic differentiate intrudes Burrell Creek Formation siltstone near the centre of the Sheet area.

The Prices Springs Granite and the Margaret Granite are homogeneous plutons composed, respectively, of porphyritic adamellite, and coarse porphyritic granite and adamellite. The lobe of Cullen Granite Complex consists of a northwesterly elongate pluton of porphyritic adamellite which appears to post-date fine, leucocratic granite further south. Contact aureoles in Early Proterozoic country rocks extend up to 14 km from the outcrops of the granite margins. Cordierite hornfels is limited in pelitic rocks to within 3 km of the granite.

Carpentarian sandstone, siltstone, and conglomerate of the Kombolgie Formation form the prominent 250-m high Mount Douglas outlier and several smaller outliers. The Carpentarian rocks unconformably overlie Burrell Creek Formation and rocks of the South Alligator Group, and are in faulted contact with them along parts of the southeastern side of the outliers.

Tin, gold, and minor copper mineralisation occurs within the Early Proterozoic sequence, commonly occurring in or associated with quartz lodes filling shears and fractures. Tin mineralisation is also contained in a number of alteration pipes, particularly in the Gerowie Tuff and Mount Bonnie Formation.

Paraconformable bodies of massive haematite and minor limonite up to 50 m thick are extensive in the lower member of the Wildman Siltstone. They are narrow extensions of the Frances Creek orebodies, which lie along a paraconformable fault (Nisbet, 1980) that probably developed before regional deformation as a low-angle thrust. Iron-enriched horizons also occur within the Koolpin Formation.

Mesozoic ferruginous, coarse to medium sandstone and conglomerate of the Petrel Formation, forming mesas and flat-lying outliers, overlie the Proterozoic rocks in places.

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APPENDIX

PETROGRAPHIC DESCRIPTIONS

MASSON FORMATION

79126000 ALTERED VOLCANIC(?)

massive rock composed of brown iron oxides and minor quartz. Appears to be relict volcanic texture. Interlocking lath shapes in iron oxides; quartz is interstitial. Possibly altered volcanic or dolerite.

79126089 PSAMMITE

quartz, biotite, muscovite psammite with schistose texture; micas tend to be segregated as discrete bands. Minor albite laths scattered throughout.

79126150 SILTSTONE

fine sericite, quartz, and discrete lenses of carbonaceous material streaked out in well-defined foliations.

79126151 SILTSTONE

well sorted fine-grained recrystallised quartz grains with peripheral overgrowths, forming a tightly packed fabric with minor interstitial sericite and opaques.

79126154 QUARTZ ARENITE

poorly sorted fabric of fine to medium, rounded and embayed quartz grains with minor interstitial muscovite and opaques.

79126185 FELSITE

fine to medium-grained rock of anhedral K feldspar, muscovite, and opaques in a sericite groundmass.
Small vein of K feldspar. Large embayed recrystallised quartz aggregate indicative of igneous origin.

79126186 CARBONACEOUS SILTSTONE

quartzose sericitic fabric streaked by carbonaceous laminae. Contains recrystallised quartz pebbles and is veined by hematite and limonite.

MASSON FORMATION (contd)

79126316 AMPHIBOLE-CARBONATE-DIOPSIDE HORNFELS
patchy fine to coarse diopside, carbonate, and acicular pale to dark-green amphibole, and trace quartz and epidote.

MUNDOGIE SANDSTONE

79126001 QUARTZ SANDSTONE
medium-grained poorly sorted quartz, minor chert grains, and trace detrital tourmaline and muscovite flakes, cemented by recrystallised, interlocking quartz rims and granular iron oxides. Relict well-rounded grain boundaries. Most grains have undulose extinction.

79126002 QUARTZ SANDSTONE
very coarse, poorly sorted quartz, minor chert, and probably feldspar grains (plucked out of thin section) with interlocking recrystallised granoblastic quartz rims with minor sericite; relict, well-rounded grain boundaries.

79126003 CHERT AND QUARTZ PEBBLE CONGLOMERATE
subrounded pebbles and grains of quartz, chert, quartz-sericite rock (after feldspar?), and rare ferruginous volcanic(?) rock (tuff?) in a coarse, poorly sorted recrystallised sandy matrix of quartz, sericite, and opaques.

79126004 QUARTZITE
coarse, poorly sorted quartz and minor chert grains with recrystallised granoblastic quartz rims, containing opaques and muscovite. Probably hornfelsed. Relict well-rounded grain boundaries.

79126005 MUSCOVITE-QUARTZ HORNFELS
(meta siltstone)
very fine granuloblastic quartz and sericite and opaques with coarse poikilitic muscovite porphyroblasts.

MUNDOGIE SANDSTONE (contd)

79126006 META-SANDY SILTSTONE
graded laminae of fine-grained sericite, patchy muscovite, and poorly sorted subrounded sandy quartz grains (up to .25 mm across) and fine-grained opaques (possibly carbonaceous). Recrystallised, randomly oriented muscovite suggests hornfels.

79126007 MUSCOVITE-BIOTITE-FELDSPAR-QUARTZ HORNFELS
(meta pebble arkose, e.g. very poorly sorted)
relict coarse, poorly sorted subangular quartz and minor feldspar grains (with sutured recrystallised grain boundaries) in a granoblastic mosaic of quartz, feldspar, fine-grained biotite, and muscovite; minor opaques.
Metamict halo in biotite - surrounding monazite or zircon grain.

79126009 FINE-GRAINED QUARTZITE
similar to 79126017.

79126010 MUSCOVITE-CORDIERITE-BIOTITE-QUARTZ HORNFELS
fine-grained biotite, minor muscovite and opaques, granoblastic quartz, and poikilitic cordierite porphyroblasts less than 2 cm across.

79126011 MUSCOVITE-QUARTZ HORNFELS
(meta arkose?)
coarse sutured irregular quartz grains, with sericite and minor feldspar, poikilitic muscovite, chlorite, and opaques.

79126012 MUSCOVITE-CHIASTOLITE-CARBONACEOUS HORNFELS
similar to 79126037.
Microcrystalline carbonaceous matter with 'spots' of very fine muscovite (possibly after cordierite) and idiomorphic chiastolite porphyroblasts - mostly altered to sericite with remnant andalusite cores.

79126013 ARKOSE
similar to 79126016.

79126014 ARKOSE
similar to 79126016.

MUNDOGIE SANDSTONE (contd)

79126015 QUARTZ AND CHERT PEBBLE CONGLOMERATE
similar to 79126003.

79126016 ARKOSE
very coarse, poorly sorted angular grains of quartz, sericitised feldspar (25%), and minor chert in a finer recrystallised matrix of the same composition. Minor opaques and trace detrital zircon(?).

79126017 FINE-GRAINED QUARTZITE
fine-grained poorly sorted angular and recrystallised interlocking quartz grains; minor sericite, opaques, and trace detrital tourmaline, monazite(?). Minor patches of sericite may be altered feldspar grains.

79126025 TOURMALINISED SILTSTONE
bands of aligned fine-grained pale yellowish-green prismatic tourmaline crystals and opaques alternating with microcrystalline granoblastic quartz bands.

79126026 QUARTZ-TOURMALINE ROCK
fine-grained pale-yellow subprismatic tourmaline and minor quartz.

79126027 MUSCOVITE-QUARTZITE HORNFELS
fine-grained granoblastic quartz and minor muscovite with trace secondary tourmaline.

79126028 QUARTZITE
coarse, poorly sorted angular quartz and minor chert grains, sericitised feldspar in a finer sandy matrix of recrystallised quartz, opaques, and muscovite; trace secondary tourmaline possibly hornfels.

79126029 QUARTZITE
very coarse, poorly sorted, subrounded grains of quartz, minor chert and sericitised feldspar rimmed by optically continuous interlocking quartz and sericite.

MUNDOGIE SANDSTONE (contd)

79126030 PEBBLY QUARTZITE
similar to 79126024.

79126036 ANDALUSITE(?)-MUSCOVITE-QUARTZ HORNFELS
subangular, mostly recrystallised poorly sorted medium quartz grains in a recrystallised matrix of sericite, muscovite, opaques, minor tourmaline and andalusite(?) - possibly a meta arkose.

79126092 METAQUARTZITE
well-sorted, rounded, medium-grained granoblastic quartz fabric with interstitial opaques.

79126093 META ARKOSE
poorly sorted recrystallised quartz and feldspar grains and abundant groundmass biotite, muscovite, and fine-grained quartz. Feldspar is twinned (albite) and untwinned.

79126095 QUARTZ-MUSCOVITE HORNFELS
coarse poikilitic muscovite with microcrystalline quartz-hematite mosaic. Irregular patches of fine muscovite after andalusite.

79126096 QUARTZ-MUSCOVITE HORNFELS
segregated lenticular muscovite, quartz, and opaques forming a foliated pelitic fabric. Interspersed clots of quartz and rare tiny green-brown hornblende grains.

79126096 BANDED SILTY SHALE
fine sericite and quartz bands with alternating bands and laminae containing finely disseminated carbonaceous material.

79126103 QUARTZ ARENITE
poorly sorted, rounded and embayed quartz grains (rimmed by sericite and opaques) and small recrystallised quartz pebbles. Groundmass opaques, sericite, and fine quartz.

MUNDOGIE SANDSTONE (contd)

79126141 QUARTZ-MUSCOVITE HORNFELS
foliated quartz muscovite fabric with sericitic patches after cordierite.

79126143 MUSCOVITE HORNFELS
lenticular decussate framework of muscovite containing rounded recrystallised quartz and opaques.

79126145 BIOTITE META ARKOSE
poorly sorted aggregate of recrystallised embayed quartz and feldspar. Groundmass of randomly orientated lenticular biotite, muscovite, and fine, recrystallised quartz.

79126146 QUARTZ CONGLOMERATE
quartz pebbles and rounded strained recrystallised quartz grains. Fine-grained quartz and minor interstitial sericite.

79126148 ARKOSE
rounded to embayed quartz grains and angular grains of sericitised albite in a groundmass of biotite, muscovite, finely aggregated quartz, and calcite.

79126149 SANDSTONE
well-sorted rounded quartz grains with interstitial sericite and minor opaques.

79126153 QUARTZITE
strained, rounded quartz and small quartz pebbles forming a tightly packed, interlocking framework. Minor interstitial sericite.

79126157 SANDSTONE
loosely packed, angular quartz grains enclosed by sericite. Quartz grains show alignment of long axes. Sericite forms 50% of the rock.

MUNDOGIE SANDSTONE (contd)

79126158 SANDSTONE
rounded and angular quartz grains and small pebbles enclosed by sericite and opaques. Opaques tend to rim quartz grains. Minor feldspar.

79126159 SANDSTONE
as for 79126158.

79126160 SANDSTONE
as for 79126158.

79126161 SPOTTED QUARTZ-MUSCOVITE HORNFELS
foliated quartz and lenticular muscovite with numerous sericite patches (formerly cordierite or andalusite).

79126183 SANDSTONE
as for 79126158.

79126184 QUARTZITE
interlocking granoblastic quartz with scattered opaques.

79126187 QUARTZ PEBBLE CONGLOMERATE
recrystallised rounded quartz pebbles within a hematite matrix of fine-grained angular strained quartz and minor sericite.

79126209 FINE-GRAINED QUARTZITE
similar to 79126017.

79126210 QUARTZ AND CHERT PEBBLE CONGLOMERATE
poorly sorted subrounded pebble of quartz and chert (< 2 cm across) in a dominantly sericitic (in places, to coarse muscovite) matrix containing granoblastic quartz and minor opaques. Matrix probably originally clay and/or feldspar.

79126211 ARKOSE
similar to 79126016.

MUNDOGIE SANDSTONE (contd)

79126212 QUARTZITE
similar to 79126029.
+ detrital tourmaline and monazite(?).

79126215 FINE-GRAINED QUARTZITE
weak foliation formed by alignment of sericite and minor, coarser muscovite.

79126261 PEBBLY QUARTZITE
recrystallised, very coarse to pebbly (< 0.4 mm) subrounded quartz; minor chert and fine-grained iron oxide (stained biotite?). Quartz grains surrounded by iron oxides and biotite(?).

79126262 FELDSPATHIC QUARTZITE
medium-grained quartz and sericitised feldspar grains with interlocking sutured boundaries. Sericite is recrystallised in places to coarser muscovite patches.
Probably a hornfels as rock is strongly recrystallised.
Quartz grains show normal extinction.

79126263 MUSCOVITE HORNFELS
massive aggregate of coarse muscovite, minor opaques, and minor tourmaline crystals.

79126264 PEBBLY QUARTZITE HORNFELS
similar to 79126024.
Very coarse to pebbly, poorly sorted granuloblastic quartz; minor muscovite and opaques - unstrained and smooth polygonal grain boundaries, and patches of coarser muscovite suggest hornfelsing. Ghost subangular pebbles < ½ cm.

79126265 CORDIERITE(?)-MUSCOVITE-BIOTITE-FELDSPAR-QUARTZ HORNFELS
(meta pebbly arkose) similar to 79126007.
Relict coarse, poorly sorted subangular grains (< 0.5 cm) of quartz and feldspar (mostly K) in a recrystallised granoblastic base of quartz feldspar biotite, poikilitic muscovite, and possibly cordierite; scattered opaques.

MUNDOGIE SANDSTONE (contd)

79126266 BIOTITE-ANDALUSITE-QUARTZ-MUSCOVITE HORNFELS
(meta shale).
Fine-grained muscovite, opaques (brown iron oxides), andalusite, porphyroblasts, minor quartz, biotite, and circular to square clots of sericite, commonly containing unaltered cores of andalusite.

79126267 QUARTZITE
very coarse poorly sorted strained quartz and minor chert grains in a recrystallised granoblastic quartz matrix, with minor patches of muscovite (after feldspar) and fine-grained opaques. Opaques commonly outline well rounded grain boundaries. Possibly a hornfelsed quartz sandstone.

79126268 CHIASTOLITE-MUSCOVITE-QUARTZ-CARBONACEOUS(?) HORNFELS
very fine weakly foliated and crenulated muscovite, with fine dessiminated carbonaceous(?) matter. Opaques, granoblastic quartz, and sericitised chiastolite with relict unaltered andalusite cores.
Probably hornfelsed carbonaceous siltstone.
Trace secondary prismatic tourmaline.

79126277 SHALE
laminated microcrystalline sericite, iron oxides, and scattered silty quartz grains.

79126278 SILTY SHALE
laminated microcrystalline sericite, opaques, minor laminated silty quartz grains with sericite and opaques.

79126279 FINE-GRAINED QUARTZITE
similar to 79126017.

79126289 PEBBLY QUARTZITE
very coarse to pebbly, poorly sorted, rounded quartz grains (up to 5 mm) with coarser subangular pebbles (< 1 cm), brown chert (quartz mosaic with secondary crystalline iron oxides, showing concentric growth in places). Chert grains have been recrystallised and have concave grain boundaries adjacent to quartz. Mosaic of sericite, quartz, and iron oxide.
Minor apatite and biotite inclusions in quartz grains.

WILDMAN SILTSTONE

79126018 PHYLLITE

foliated and microcrystalline. Opaques, sericite, and possibly chlorite with irregular to elliptical 'spots' of quartz ringed by iron oxides. 'Spots' are mostly crosscut, rarely deflect main foliation, and are possibly replacements of a low-grade metamorphic mineral.

79126019 PHYLLITE

foliated microcrystalline sericite and opaques. Original bedding laminae defined by variation in opaque content.

79126020 SHALE

microcrystalline sericite, chlorite(?), opaques, and quartz, with minor scattered quartz grains.

79126021 FELDSPATHIC QUARTZITE

very coarse grained, poorly sorted, angular to well-rounded quartz, chert, and minor sericitised feldspar. Grains rimmed by granoblastic quartz, sericite, and very minor opaques.

79126022 FINE-GRAINED QUARTZITE

similar to 79126017.

79126023 CALCAREOUS QUARTZ SANDSTONE

fine-grained poorly sorted subrounded quartz (minor curved splinters) (30%); carbonate, chert, and minor feldspar in a chloritic matrix with scattered iron oxides.
Carbonate, although mostly recrystallised as rhombs, appears to be detrital rather than orthogenic.
Minor well-rounded detrital monazite(?).

79126024 PEBBLY QUARTZITE

recrystallised poorly sorted, very coarse to pebbly quartz and minor chert grains with sutured interlocking boundaries. Relict rounded grain boundaries outlined by iron oxides and minor sericite.

WILDMAN SILTSTONE (contd)

79126031 QUARTZITE
similar to 79126029.

79126032 SPOTTED MUSCOVITE-CARBONACEOUS HORNFELS
microcrystalline foliated carbonaceous matter and muscovite with coarser irregular patches of muscovite, opaques, and minor quartz (patches may be an alteration product of metamorphic mineral i.e. cordierite(?)). Quartz veined.

79126033 BANDED CHIASTOLITE-MUSCOVITE-CARBONACEOUS HORNFELS
fine-grained muscovite, minor opaques and quartz with laminae up to 1 cm thick of microcrystalline carbonaceous matter, muscovite, and altered (muscovite), chiastolite porphyroblasts. Probably a metamorphosed equivalent of colour-banded shales, i.e. banded shale with alternating carbonaceous and non-carbonaceous bands

79126034 BIOTITE-MUSCOVITE-QUARTZ HORNFELS (META ARKOSE)
fine-grained recrystallised quartz and sericitic grains (altered feldspar), with coarse intergranular muscovite, minor biotite, opaques, and tourmaline.

79126035 VERY FINE QUARTZITE
laminated, very fine grained cloudy granoblastic quartz, opaques, and minor sericite. Trace, well-rounded detrital monazite(?).

79126037 CHIASTOLITE-MUSCOVITE-CARBONACEOUS HORNFELS
very fine laminated carbonaceous matter with coarser recrystallised patches of muscovite and scattered idioblastic chiastolite porphyroblasts.

79126038 LAMINATED MUSCOVITE-CARBONACEOUS-QUARTZ HORNFELS
laminated microcrystalline carbonaceous(?) matter, sericite, muscovite, and quartz; sericitic 'spots' (< ½ mm) which crosscut laminae. Extensively veined and brecciated by quartz.

79126099 SILTSTONE
fine quartz and sericite with rare pyritic patches.

WILDMAN SILTSTONE (contd)

79126100 CARBONACEOUS SHALE
strongly colour-banded carbonaceous shales with prominent cleavage almost at right angles to banding.

79126101 CARBONACEOUS SILTSTONE
finely laminated sericite and quartz with disseminated carbonaceous material.

79126102 SANDSTONE
well-sorted subangular quartz grains with minor interstitial opaques and sericite.

79126109 SANDSTONE
as for 79126102.

79126110 SANDSTONE
fine to medium, angular to rounded quartz grains showing bedding alignment. Interstitial opaques.

79126155 SANDSTONE
medium, angular, embayed quartz grains. Interstitial muscovite, sericite, and opaques.

79126156 QUARTZITE
mosaic of granoblastic quartz and minor mica.

79126208 VERY FINE QUARTZITE
laminated, very fine grained; recrystallised granuloblastic, smooth, polygonal quartz grains and minor iron oxides. One thin silty laminae composed of quartz + sericite.

79126213 CLAYSTONE
massive white rock consisting of microcrystalline sericite with circular, coarser 'spots' in places and scattered silty quartz grains.

79126224 FINE-GRAINED QUARTZITE
similar to 79126017.

WILDMAN SILTSTONE (contd)

79126271 SPOTTED MUSCOVITE-CHIASTOLITE-CARBONACEOUS HORNFELS
similar to 79126012.

79126272 FINE-GRAINED QUARTZITE
similar to 79126017.

79126273 FINE-GRAINED QUARTZITE
similar to 79126017.
Laminated.

79126274 CALCAREOUS QUARTZ SANDSTONE
similar to 79126023.
Very fine grained, poorly sorted quartz, carbonate, and minor feldspar grains with wavy sericite folia. Carbonate may be authigenic scattered opaques.

79126275 PEBBLY QUARTZITE
very coarse to pebbly, poorly sorted, rounded grains of quartz, minor white chert, kaolinised feldspar (plucked out of thin section). Chloritic(?)-iron oxide-quartz rock, cemented by recrystallised, sericite, chlorite, quartz, and iron oxides.

79126286 PEBBLY QUARTZITE
similar to 79126275.

79126287 BANDED SHALE
pink and grey laminae up to 1 cm thick of microcrystalline sericite and minor iron oxides. Weak phyllitic foliation.

KOOLPIN FORMATION

79126039 ARGILLITE
grey siliceous rock. Massive microcrystalline granoblastic sericite-quartz mosaic, minor scattered opaque granules.

KOOLPIN FORMATION (contd)

79126040 TOURMALINE-GRAPHITE(?) HORNFELS
massive black glassy rock containing fine dark-green needles (almost igneous texture).
Mostly opaque mineral (carbonaceous(?) matter) with colourless to dark-yellow prismatic tourmaline crystals (up to 1 mm long, commonly forming radiating aggregates), minor quartz.
Possibly a hornfelsed carbonaceous shale.

79126041 AMPHIBOLITE
(tremolite hornfels)
Randomly oriented, subprismatic to fibrous colourless amphibole (tremolite) with minor scattered irregular opaque grains and reddish-brown grain. Possibly a calc-silicate hornfels.

79126042 TOURMALINE-GRAPHITE(?) HORNFELS
similar to 79126040.

79126043 VERY FINE LIMONITIC QUARTZ SANDSTONE
poorly sorted, subangular quartz grains cemented by recrystallised quartz rims, brown iron oxide, rarely well-rounded grain boundaries preserved by thin lines of oxide granules.
Trace, well-rounded detrital tourmaline and monazite.

79126044 CARBONACEOUS(?) HORNFELS(?)
porous massive black rock; 90% opaque minerals (carbonaceous?) with stout prismatic inclusions of fine-grained sericite and chlorite, probably replacement products of some metamorphic mineral such as andalusite(?).

79126045 CARBONACEOUS(?) HORNFELS
very fine to microcrystalline quartz, muscovite(?), and carbonaceous(?) matter; weak foliation marked by concentration of opaque matter around quartz-rich knots. Probably carbonaceous shale hornfels. Massive black schistose rock.

79126108 SILTSTONE
fine sericite quartz matrix with scattered pyrite. Spotted effect after cordierite.

KOOLPIN FORMATION (contd)

79126163 BANDED CARBONACEOUS CHERT
fine quartz mica with discrete bands of lenticular, streaked carbonaceous matter.

79126164 CARBONATE
fine granoblastic carbonate with minor scattered cubic opaques (pyrite?).

79126165 DOLOMITE
polyhedral mosaic of large carbonate grains. Minor interstitial quartz.

79126166 CARBONACEOUS SHALE
banded lenticular carbonaceous material. Minor hematite.

79126169 CARBONACEOUS SHALE
as for 79126166.

79126201 SILICIFIED MARL
massive pink siliceous rock.
Crudely laminated microcrystalline quartz, opaques, and possibly some chlorite; minor relict shards. Probably silicified carbonaceous marl - possible tuffaceous component?

79126202 FERRUGINOUS SHALE
microcrystalline quartz and rounded granular iron oxides; massive.

79126222 SILICIFIED MARL(?)
microcrystalline quartz and sericite with laminae rich in coarser rhombs of iron oxide, individual rhombs made of granular iron oxide - suggests may be secondary replacement (i.e. after carbonate?). Rock may be silicified marl.

79126223 FERRUGINOUS SHALE
weakly crenulated, microcrystalline sericite and quartz with wavy fine laminae of granular iron oxides.

KOOLPIN FORMATION (contd)

79126225 SILTSTONE

laminated angular silty quartz, sericite, and iron oxides in rich bands. Trace amounts of subrounded detrital monazite(?) and tourmaline.

79126259 PHYLLITE

foliated microcrystalline sericite, quartz, and minor opaques.

79126311 BIOTITE-FELDSPAR-QUARTZ HORNFELS

irregular coarse-grained, interlocking sutured grains of quartz, K feldspar, and plagioclase with minor biotite, muscovite, and opaques. Relict coarse, rounded quartz grains recrystallised to a finer grained mosaic. Probably hornfelsed feldspathic greywacke.

79126330 SILTSTONE

foliated fine-grained sericite, chlorite, recrystallised quartz, and granular iron oxides. Probably meta siltstone.

79126329 KNOTTED QUARTZ-MICA SCHIST

fine-grained foliated muscovite and granuloblastic quartz, folia wrap around 'knots' consisting of granuloblastic quartz and iron oxides, obviously replacing pre or syn-deformational porphyroblast. Cordierite(?).

79126328 MICA-QUARTZ SCHIST

coarse, poorly sorted, angular quartz grains in a foliated matrix of muscovite, quartz, iron oxides, and minor secondary tourmaline. Probably meta-sandy siltstone.

79126327 QUARTZ-TOURMALINE(?) HORNFELS

fine-grained randomly oriented prismatic colourless to pale greenish-brown to pale blue crystals of tourmaline(?); granuloblastic quartz; minor irregular grains of sphene.

79126326 QUARTZ-TOURMALINE(?) HORNFELS?

similar to 79126327.
Fine-grained randomly oriented acicular to prismatic tourmaline(?) (colourless to pale greenish or bluish brown), minor granuloblastic quartz and opaques.

KOOLPIN FORMATION (contd)

79126325 SANDY SILTSTONE
poorly sorted, angular to subrounded, very fine quartz and rare K feldspar grains in a partly recrystallised granuloblastic matrix of quartz, sericite, and pale greenish-brown chlorite; minor fine-grained opaques in the matrix and coarser secondary patches.

GEROWIE TUFF

79126046 CRYSTAL TUFF HORNFELS
granuloblastic mosaic of K feldspar, quartz, and minor plagioclase, curved angular quartz and feldspar crystal fragments and irregular grains of biotite.
Hornfelsed and finer grained version of 79126206.

79126107 PHYLLITE
lenticular sericite, quartz and opaque minerals forming a strongly cleaved, banded fabric.

79126111 LITHIC CHERT
fine homogeneous granoblastic quartz fabric enclosing rare angular grains of quartz, feldspar, opaque minerals, and lithic fragments of carbonaceous shale. Darker undulose streaked lenses of sericite impart a tuffaceous texture to the rock.

79126112 ARGILLITE
fine holocrystalline quartz matrix enclosing small angular quartz, sericite, and rare feldspar grains. Scattered carbonate patches.

79126135 SPOTTED HORNFELS
patches of sericite (after cordierite), quartz, feldspar, and muscovite set in fine opaque matrix.

79126136 SPOTTED HORNFELS
as for 79126135.

GEROWIE TUFF (contd)

79126162 CARBONACEOUS PHYLLITE
lenticular quartz; sericite studded with carbonaceous clots.

79126167 CARBONACEOUS PHYLLITE
lenticular discrete carbonaceous lenses forming prominent interlayered fabric with fine quartz and sericite.

79126179 BANDED CHERT
as for 79126170.

79126206 CRYSTAL TUFF
massive black glassy rock with white spots.
Curved, angular, and rarely euhedral crystals (< ½ mm) of quartz and alkali feldspar in a base of devitrified glass (now microcrystalline oxides, chlorite, and quartz) with rare shards, and coarse recrystallised patches of subhedral K feldspar and rare Na feldspar. Trace zircon(?) and biotite fragments, and minor patches of carbonate (pseudomorphing plagioclase(?) crystal fragments).

79126214 VITRIC TUFF
massive devitrified welded glassy shards, with a eutaxitic fabric and scattered quartz crystal fragments and rounded shale(?) clasts; sericite; opaques.

79126216 ARGILLITE
laminated to thinly bedded, microcrystalline mosaic of quartz, sericite, and minor opaques.

79126217 ARGILLITE
similar to 79126216.

79126218 ARGILLITE
similar to 79126216.

79126219 ARGILLITE
similar to 79126216.
Graded opaque-rich laminae.

GEROWIE TUFF (contd)

79126258 VITRIC TUFF
altered mass of minute glassy shards that show a weak eutaxitic structure; appears to be altered to microcrystalline quartz, chlorite and opaques; minor crystal fragments of quartz, sphene, and zircon(?).

79126285 SHEARED VITRIC TUFF
sheared version of 79126214.
Minor patchy carbonate (may be replaced feldspar fragments).

79126336 TUFFACEOUS CHERT
massive black glassy rock.
Mosaic of microcrystalline quartz, minor chlorite, and opaques with patches of carbonate (after feldspar fragments) and scattered angular quartz crystal fragments (curved splinters).
Laminated - opaque rich rather than carbonate bearing.

79126344 CARBONATE-GARNET-MUSCOVITE-BIOTITE-QUARTZ HORNFELS
massive black glassy rock.
Fine-grained granoblastic mosaic of quartz with minor biotite, muscovite, and scattered subidiomorphic garnet.
Muscovite forms larger poikilitic grains.
Patchy carbonate and opaques.

79126345 GARNET-ANDALUSITE-QUARTZ-BIOTITE-MUSCOVITE HORNFELS
banded fine-grained biotite-quartz-muscovite and opaques layers (quartz-rich layers contain small garnet porphyroblasts; mica-rich layers contain elliptical coarse-grained patches of muscovite up to ½ cm across with a core of corroded andalusite or finer grained muscovite).

79126346 GARNET-BIOTITE-MUSCOVITE-QUARTZ HORNFELS
fine-grained granoblastic mosaic of quartz, biotite, and muscovite, with scattered subidiomorphic garnet and poikilitic muscovite porphyroblasts.

KAPALGA FORMATION

79126047 LITHIC VITRIC TUFF

scattered curved and angular crystal fragments of quartz, and rounded carbonate-feldspar rock fragments (i.e. same as base in crystal tuff 79126206) in a base of microcrystalline quartz, sericite, chlorite(?), carbonate, opaques, and devitrified glass shards. Weak eutaxitic structure.
Base of rock is similar to 79126258.

79126048 GREYWACKE

medium to coarse, poorly sorted, angular grains of quartz, K feldspar, plagioclase, micro-perthite, volcanic rock fragments, and minor chlorite aggregates (probably altered mafic mineral) in an altered matrix of a similar composition (mostly sericite); chlorite and opaques; trace zircon(?) grains; and minor secondary unstrained muscovite.
Volcanic rock fragments consist mainly of crystal tuff (similar to 79126206) and a minor porphyritic felsic component consisting of quartz phenocrysts in interlocking feldspathic lath groundmass.

79126049 GREYWACKE HORNFELS

poorly sorted irregular recrystallised medium-grained quartz, alkali feldspar, and minor plagioclase in a finer-grained base of the same composition (plus biotite, muscovite, and trace tourmaline). Muscovite forms coarse randomly oriented poikilitic grains. Probably a hornfelsed greywacke.

79126126 HORNFELS

lenticular yellow-green amphibolite forms alternating bands with fine quartz and sericite.

79126127 HEMATITE QUARTZ BRECCIA

colloidal hematite enclosing lithic ferruginised siltstone and volcanic fragments.

79126132 SPOTTED HORNFELS

fine quartz and sericite fabric with sericite patches after cordierite.

KAPALGA FORMATION (contd)

79126133 HORNFELS
granuloblastic actinolite, quartz, sericite, and rare andalusite.

79126134 HORNFELSED CONGLOMERATE
poorly sorted assemblage of quartz pebbles, angular sericitised feldspar, quartz, and actinolite.

79126176 CARBONACEOUS SHALE
lenticular patches of carbonaceous material interlayered with fine quartz and sericite.

79126177 CARBONACEOUS SHALE
as for 79126176.

79126180 SILTSTONE
rounded quartz and feldspar and lithic fragments in sericitic matrix.

79126203 CRYSTAL VITRIC(?) TUFF
curved and angular crystal fragments of quartz and altered biotite(?) (now opaques + muscovite) and altered feldspar(?) (completely sericitised), in a base of microcrystalline quartz, sericite, opaques, and chlorite(?). Weak eutaxitic structure alignment of crystal fragments, especially biotite, parallels laminations in hand specimen.

79126204 ARGILLITE
massive microcrystalline quartz, sericite, minor chlorite(?), and opaques.

79126205 GREYWACKE
similar to 79126048.

79126256 TUFFACEOUS(?) ARGILLITE
mosaic of microcrystalline quartz, sericite, and chlorite(?) containing scattered angular quartz, sericite aggregates (after feldspar?), and rare zircon(?).

79126257 ARGILLITE
similar to 79126204.

BURRELL CREEK FORMATION

79126050 SPOTTED PHYLLITE
similar to 79126239.
Slightly weathered with brown secondary iron oxides in matrix and porphyroblast rims.

79126051 QUARTZ GREYWACKE
similar to 79126252.

79126052 SPOTTED SHALE
similar to 79126239.
Fine-grained sericite and chlorite mosaic containing coarser, irregular patches of chlorite and quartz.

79126053 QUARTZ GREYWACKE
very coarse grained, poorly sorted, angular grains of quartz, chert, jasper, and quartz-sericite mosaic in a matrix of predominantly sericite, opaques, and quartz.
Minor sericite-opaque grains with igneous texture (altered volcanic?).

79126054 ALTERED VOLCANIC
dark greenish-grey medium-grained hackly rock. Massive.
Consists dominantly of carbonate, pale-green chlorite, quartz, and minor opaque minerals and an acicular mineral.
Rare relict plagioclase and K feldspar laths; carbonate forms lath like shapes - probably pseudomorphing feldspar. Quartz occurs as 'interstices' with acicular mineral (apatite?).
Opaques occur with chlorite possibly as alteration product - elongation and parallelism of grains suggests may be biotite.
Appears to be porphyritic carbonate pseudomorphs < 1 mm in groundmass of < $\frac{1}{4}$ mm.

79126055 ALTERED VOLCANIC
similar to 79126054.
Relict zoning in altered feldspar(?) phenocrysts and hematite(?) plates.

BURRELL CREEK FORMATION (contd)

79126056 QUARTZ GREYWACKE

very fine to fine-grained, poorly sorted, rounded to angular grains of quartz, minor feldspar and monazite(?) in a microcrystalline matrix of sericite and opaques - laminated and graded, with microlenticular cross-bedding.

79126057 QUARTZ_TOURMALINE ROCK

coarse granuloblastic quartz containing slender pale brown to greenish-blue tourmaline prisms and veined by two separate monomineralic veins of tourmaline and quartz.
Probably a vein rock - no evidence for relict sediment composition or structures.

79126058 MUSCOVITE-QUARTZ-TOURMALINE ROCK

laminated microcrystalline quartz and muscovite with coarser patches, scattered grains, and laminae of stubby tourmaline crystals (laminae marked by varying grainsize and proportion of quartz, tourmaline, and muscovite).
Tourmaline is secondary and the rock is totally recrystallised (originally a shale?).

79126059 TOURMALINISED PHYLLITE

foliated sericite; minor opaques with crosscutting tourmaline crystals; thin band of carbonaceous(?) material, probably tourmalinised; thinly bedded shale with carbonaceous beds.

79126060 ANDALUSITE-MUSCOVITE-BIOTITE-CORDIERITE HORNFELS

granuloblastic mosaic of cordierite (~ 75%), minor quartz, feldspar, biotite, muscovite, and opaques, trace tourmaline.
Andalusite occurs as pleochroic rose-pink poikilitic prisms weathering out as white needles up to 2 cm long in outcrop.

79126061 GREYWACKE HORNFELS

similar to 79126246.
Fine-grained.

BURRELL CREEK FORMATION (contd)

79126062 QUARTZ-MUSCOVITE-BIOTITE HORNFELS
(meta-silty shale)
patchy fine-grained muscovite, biotite, quartz, and opaques with minor biotite and muscovite porphyroblasts. Rock has a spotted appearance due to patches of muscovite-quartz, possibly after cordierite(?). Thin laminae of recrystallised very fine sand or silty quartz, and biotite.

79126063 GREYWACKE HORNFELS
similar to 79126246.

79126064 MUSCOVITE-BIOTITE-CORDIERITE HORNFELS
(meta siltstone?)
similar to 79126065.
Cordierite mostly altered to sericite.

79126065 MUSCOVITE-BIOTITE-CORDIERITE HORNFELS
(meta siltstone?).
Long ovoid poikilitic porphyroblasts of cordierite (< 0.5 cm) containing numerous inclusions of muscovite, biotite, and quartz in a fine-grained mosaic of quartz, muscovite, and biotite, cordierite. Minor opaques and tourmaline bands of recrystallised fine-grained quartz, biotite and minor muscovite are probably remanent fine sandy laminae.

79126066 MAGNETITE ANDALUSITE MUSCOVITE-BIOTITE-CORDIERITE HORNFELS
fine-grained granuloblastic mosaic of cordierite and quartz, with minor muscovite, magnetite, and trace tourmaline, with scattered coarser poikilitic biotite and andalusite porphyroblasts.
Patchy appearance - black spots (< 1 cm) in pink base.

79126067 ALTERED VOLCANIC
similar to 79126054.
Mostly chlorite, quartz, and muscovite.

79126068 ALTERED BIOTITE-QUARTZ-MUSCOVITE-CORDIERITE(?) HORNFELS
poorly sorted, angular, medium quartz grains and coarse poikilitic muscovite grains in a fine-grained recrystallised matrix of biotite, muscovite, and minor quartz, opaques, and tourmaline.
Fine-grained muscovite (after cordierite?).

BURRELL CREEK FORMATION (contd)

79126069 QUARTZ GREYWACKE
coarse-grained, poorly sorted, angular grains of quartz and chert. Quartz-sericite rock; graphically intergrown quartz-feldspar, sericitised feldspar; opaque rich fragments (altered volcanic rock fragment) in a finer grained foliated matrix of same composition (containing foliated sericite) which forms beards on coarser grains (which show undulose extinction).

79126104 SILTSTONE
well-sorted fine quartz grains with numerous opaques in sericitic matrix.

79126113 SILTSTONE
as for 79126104.

79126114 GREYWACKE
poorly sorted quartz pebbles, angular to round quartz and feldspar grains, and clasts of lithic siltstone enclosed in quartz sericite matrix.

79126115 SILTSTONE
fine quartz sericite matrix with scattered laminae and spots of carbonaceous material.

79126116 GREYWACKE
fine to medium, angular to rounded quartz, feldspar, and lithic fragments. Sericitic quartzose matrix.

79126117 FERRUGINOUS PHYLLITE
laminated iron oxide lenses within cleaved quartzose matrix.

79126118 SILTSTONE
50% iron oxide; remainder is quartz-sericite.

79126119 SILTSTONE
laminated quartz-sericite.

BURRELL CREEK FORMATION (contd)

79126120 SANDSTONE
angular quartz and feldspar fragments enclosed within a matrix of muscovite, sericite, and quartz.

79126123 HORNFELSED SILTSTONE
decussate biotite and muscovite enclosing recrystallised quartz and sericite.

79126124 SILTSTONE
laminated fine sericitic quartz with small scattered patches of pyrite.

79126125 SILTSTONE
fine-grained homogeneous quartz and sericite with scattered opaques.

79126128 SANDSTONE
as for 79126120.

79126172 GREYWACKE
quartz pebbles, quartz clasts, and angular feldspars enclosed within a quartz-sericite matrix.

79126173 HORNFELSED SILTSTONE
segregated amphibole bands, quartz-sericite, and sericite after cordierite.

79126174 GREYWACKE
angular quartz, albitic feldspar, lithic clasts, and quartz pebbles enclosed in quartz and sericite matrix.

79126175 SPOTTED HORNFELS
foliated sericite and quartz with undulose laminae of muscovite, enclosing patches of sericite after cordierite.

79126181 BIOTITE HORNFELS
numerous random biotite flakes enclosed within recrystallised quartz and sericitic matrix.

BURRELL CREEK FORMATION (contd)

79126182 CORDIERITE HORNFELS

patches of cordierite (sometimes sericitised), quartz clasts, and lithic fragments within quartz and sericite matrix.

79126220 PHYLLITE WITH SILTSTONE BAND

very fine grained foliated chlorite, sericite, and quartz with a slightly coarser, quartz-rich bed 1 cm thick at a shallow angle to foliation (low-grade metamorphosed silty shale).

79126221 QUARTZ GREYWACKE

similar to 79126252.

79126234 ALTERED VOLCANIC

similar to 79126054.

79126235 VOLCANIC PEBBLE CONGLOMERATE

compact dark-green rock with a weathered pink surface.
Well-rounded pebbles up to 2 cm across in a coarse, poorly sorted greywacke matrix of angular quartz, feldspar, microperthite, and chert grains, with sericite, chlorite and opaques (magnetite), and carbonate.
Pebbles consist predominantly of highly altered volcanic rocks which include:

* coarse pink porphyritic volcanic containing altered feldspar and minor mafic mineral (low chlorite) phenocrysts in a sericitic, chloritic matrix;
* variolitic and porphyritic volcanic - slender feldspar laths/ phenocrysts in a dark-brown groundmass of radiating microlites;
* slightly porphyritic andesitic(?) rock consisting of interlocking altered plagioclase laths and coarser phenocrysts with interstitial chlorite, opaques;
* quartz, greywacke;
* jasper;
* vein quartz.

BURRELL CREEK FORMATION (contd)

79126236 LITHIC GREYWACKE

coarse-grained, poorly sorted, angular grains of quartz, sodic plagioclase, microperthite, K feldspar, chert, and volcanic rock and shale fragments.
Minor rounded zircon(?), detrital muscovite, chlorite (after mafic) minor - as it includes parallel strangers of opaques).
Volcanic rock fragments consisting of altered interlocking feldspar(?) laths or radiating microlites and opaques.

79126237 RHYODACITE PEBBLES

porphyritic pink rock consisting of stout euhedral oligoclase, orthoclase, and minor mafic, and quartz phenocrysts (< 5 mm) set in an aphanitic groundmass of quartz alkali feldspar, chlorite, carbonate, opaques, trace apatite, and zircon(?).
Feldspars are commonly zoned and altered to sericite and carbonate (particularly cores).
'Mafic' phenocrysts consist of chlorite, carbonate, and opaques (after biotite?).

79126238 ALTERED VOLCANIC

similar to 79126054.
Suggestion of flow layering.

79126239 SPOTTED PHYLLITE

fine-grained foliated sericite and chlorite with rounded 'porphyroblasts' of fine-grained chlorite (chlorite is probably a replacement of original metamorphic mineral as foliation in the porphyroblasts is preserved and shows some rotation; also minor deflection of main foliation and quartz beard growths); edges of the porphyroblasts are a darker green.

79126240 QUARTZ GREYWACKE

similar to 79126252.
similar to 79126252.
Matrix strongly foliated.

79126243 SILTSTONE

massive recrystallised chlorite, sericite, and quartz, minor opaques with scattered angular silty quartz grains.

BURRELL CREEK FORMATION (contd)

79126244 SHALE
laminated and weakly foliated microcrystalline sericite, quartz, and iron oxides. Very minor scattered angular silty quartz grains.

79126245 MUSCOVITE-BIOTITE-CORDIERITE HORNFELS
(meta siltstone?)
similar to 79126065.

79126246 GREYWACKE HORNFELS
hornfelsed version of 79126252.
Poorly sorted, medium, angular grains of quartz, chert, and altered feldspar(?) in a recrystallised matrix of granuloblastic quartz, biotite, muscovite, and minor opaques. Tourmaline and muscovite also occur as coarse unstrained crystals.

79126247 MUSCOVITE-BIOTITE-QUARTZ-CORDIERITE HORNFELS
fine-grained granuloblastic mosaic of cordierite, quartz, biotite, minor muscovite, and trace amounts of tourmaline. Cordierite forms larger poikilitic grains, and quartz also occurs as poorly sorted medium grains.
Probably hornfelsed quartz greywacke.

79126248 LITHIC GREYWACKE
similar to 79126236.
Metamorphic epidote and carbonate present in the matrix.

79126249 QUARTZ GREYWACKE
similar to 79126252.

79126250 PHYLLITE
similar to 79126303.

79126251 FELDSPATHIC GREYWACKE
poorly sorted, very coarse (< 2 mm) subrounded to subangular, quartz, alkali feldspar, plagioclase (albite/oligoclase), and volcanic rock fragments in a fine-grained matrix of angular grains of the same composition, plus secondary muscovite, chlorite, carbonate, and trace tourmaline.

BURRELL CREEK FORMATION (contd)

79126251 (contd) Volcanic rock fragments of two sorts - opaque-chlorite aggregates and rare feldspar or quartz phenocrysts set in a fine-grained quartz feldspar mosaic.
Carbonate commonly replaces feldspar.

79126252 QUARTZ GREYWACKE
medium-grained, poorly sorted, angular quartz, chert, sericitic rock (altered feldspar?); minor opaque, chlorite, and muscovite grains set in a weakly foliated matrix of sericite and chlorite.

79126253 QUARTZ GREYWACKE
similar to 79126252.

79126254 PHYLLITE
fine-grained foliated pale-green chlorite and minor quartz (with coarser quartz rich blebs). Probably disrupted silty laminae.

79126255 SPOTTED SLATE
similar to 79126239.
Massive green rock with small pale-brown spots (< ½ mm).
Microcrystalline sericite with minor scattered opaque grains and rounded porphyroblasts (< ½ mm) of fine-grained carbonate(?) with brownish coloured rims.

79126300 SPOTTED PHYLLITE
similar to 79126239.
Porphyroblasts weathered out or totally replaced by secondary iron oxides adjacent to a quartz-hematite veinlet.

79126301 LITHIC GREYWACKE
weathered version of 79126236; feldspars sericitised; secondary iron oxides concentrated in matrix and in some rock fragments (probably volcanic). Minor epidote in matrix.

79126302 BIOTITE-SILTSTONE HORNFELS
weakly foliated and laminated fine-grained biotite and quartz. Minor opaques with scattered silty quartz grains and coarser decussate patches of biotite. Probably hornfelsed siltstone.

BURRELL CREEK FORMATION (contd)

79126303 PHYLLITE
pale-green weakly foliated chlorite; sericite and minor quartz.

79126304 HORNFELSED VOLCANIC GREYWACKE
very coarse (< 4 mm), poorly sorted angular fragments of porphyritic felsic volcanic rock (composed of rounded embayed quartz, stout oligoclase, and minor K feldspar phenocrysts, in recrystallised groundmass quartz, alkali feldspar, and minor biotite); interlocking stubby orthoclase crystals with interstitial quartz, quartz, and feldspar in a finer grained recrystallised matrix of the same composition + biotite, magnetite, minor muscovite, carbonate (commonly replacing plagioclase), epidote, and apatite.

79126305 QUARTZ GREYWACKE
similar to 79126252.

79126306 QUARTZ GREYWACKE
similar to 79126252.

79126312 ALTERED VOLCANIC
similar to 79126054.

ZAMU DOLERITE

79126073 QUARTZ DOLERITE
massive greenish-grey medium-grained rock composed of clinopyroxene, feldspar, and quartz (3%).

79126074 QUARTZ DOLERITE
similar to 79126073.

79126075 QUARTZ DOLERITE
similar to 79126073.
Massive fine-grained greenish-grey rock composed of subprismatic clinopyroxene, plagioclase and K feldspar laths, interstitial quartz (5%), and minor acicular apatite and opaques, and secondary sericite and chlorite.

ZAMU DOLERITE (contd)

79126076 QUARTZ DOLERITE
similar to 79126073.
Feldspars are less sericitised and mainly plagioclase.
Minor K feldspar.

79126077 QUARTZ DOLERITE
similar to 79126073.
Clinopyroxene commonly zones subprismatic crystals with altered brownish rims and fractured.
Graphically intergrown quartz and feldspar in the mesostasis and quartz (total 5%).

79126078 METADOLERITE
medium-grained ophitic clinopyroxene (mostly altered to fine-grained acicular, colourless to pale-green amphibole, and minor biotite) enclose recrystallised plagioclase and K feldspar laths; recrystallised clots of fibrous colourless amphibole and opaques.

79126098 ALTERED QUARTZ DOLERITE
medium-grained massive rock consisting of clinopyroxene, amphibole, feldspar, and quartz.
High proportion of twinned clinopyroxene, mostly replaced by fibrous brown amphibole. Anhedral felspar is mostly altered to epidote. Interstitial quartz and opaques. Ferromagnesian minerals are also chloritised.

79126105 ALTERED QUARTZ DOLERITE
clinopyroxene, amphibole, plagioclase, K feldspar, and quartz.
Ferromagnesian minerals are invariably altered to chlorite but relict structures remain. Graphic intergrowths of quartz and feldspar are common. Quartz is present also as discrete anhedral crystals.

79126207 QUARTZ DOLERITE
similar to 79126075.
Slightly more altered with patchy carbonate and chlorite, skeletal opaques. Plagioclase is sericitised - K feldspar is fresh.

ZAMU DOLERITE (contd)

79126241 ALTERED QUARTZ DOLERITE

massive dark-green, medium-grained rock comprised of amphibole clinopyroxene, feldspar, and quartz; fibrous pale-green clots of amphibole, relict prismatic pale-brown clino-pyroxene mostly replaced by brown-green amphibole, sericitised stout plagioclase, and K feldspar crystals, anhedral quartz (3%) (graphically intergrown with K feldspar in places), embayed opaques, apatite, secondary granular epidote.

79126242 ALTERED QUARTZ DOLERITE

same as 79126241.
+ chlorite, (plag-andesine), quartz + K spar > 25%.

79126260 QUARTZ DOLERITE

fine-grained massive rock.
Interlocking sericitised plagioclase laths and subprismatic twinned clinopyroxene crystals which form aggregates commonly altered to chlorite. Minor anhedral K feldspar, quartz (in places graphically intergrown), opaques, and prisms of apatite, patchy carbonate.

79126308 DOLERITE

medium-grained dark greyish-green massive rock containing white spots < ½ cm.
Interlocking plagioclase (andesine/labradorite) and minor K feldspar laths with subprismatic twinned clinopyroxene (showing partial alteration to chlorite on margins) embayed and skeletal opaques.
Minor interstitial chlorite, secondary epidote. White spots are radiating fibrous zeolite filled cavities (colourless, first order grey-white).

79126309 DOLERITE

massive medium-grained pale-grey rock containing dark-green spots < ½ cm.
Porphyritic texture - phenocrysts (< 0.5 cm) of altered rounded orthopyroxene exhibiting schiller structure and including altered feldspar laths in an altered groundmass of fine-grained, pale-brown anhedral clinopyroxene. Sericitised and chloritised feldspar

ZAMU DOLERITE (contd)

79126309 (contd) laths, less than 1%, interstitial mesostasis of quartz and graphically intergrown quartz and feldspar, some interstitial chlorite, opaques, and apatite.

79126310 HORNBLENDE-BIOTITEPLAGIOCLASE HORNFELS
(metadolerite).
Fibrous to subprismatic, pale green to brown amphibole (hornblende), subidiomorphic plagioclase and K feldspar, granular and decussate aggregates of golden-brown biotite, minor relict skeletal opaques, and acicular apatite and quartz.

79126313 HORNBLENDE-PLAGIOCLASE-BIOTITE HORNFELS
(metadolerite).
Similar to 79126310.
Less biotite and plagioclase and more quartz.

79126314 BIOTITE-PLAGIOCLASE-AMPHIBOLE HORNFELS
(meta-volcanic?).
Dark-green massive rock composed of fine-grained acicular pale-green amphibole (75% +); minor subidiomorphic plagioclase, quartz, opaques, and biotite; scattered relict tabular feldspar phenocrysts (< 5 mm) replaced by sericite and amphibole.
Hornfelsed volcanic or possibly dolerite.

79126315 HORNBLENDE HORNFELS
(metadolerite).
Similar to 79126320.
Minor biotite and granular epidote(?).

79126318 AMPHIBOLE HORNFELS
(metadolerite).
Patchy fine-grained pale-green fibrous amphibole on altered feldspathic(?) base.
Relict coarse skeletal opaques and trace acicular apatite.

79126319 QUARTZITE
medium-grained recrystallised moderately sorted quartz, minor K feldspar and trace plagioclase grains with fine-grained recrystallised intergranular biotite and opaques.
Most grains show undulose extinction.
Biotite randomly oriented - probably hornfels.

ZAMU DOLERITE (contd)

79126320 HORNBLENDE HORNFELS
(metadolerite).
Medium to coarse-grained subidiomorphic pale green - bluish brown hornblende (probably twinned after clinopyroxene), altered feldspar laths (sericitised) and relict interstitial mesostasis of quartz and graphically intergrown quartz and feldspar. Secondary acicular amphibole, minor secondary chlorite and carbonate skeletal opaques, acicular apatite.

79126322 AMPHIBOLE HORNFELS
(metadolerite).
Similar to 79126318.
Minor sericitised subidiomorphic plagioclase.

ZAMU DOLERITE Thin sections 79126106, 79126121, 79126122, 79126127, 79126131, 79126137, 79126152, 79126168, 79126171, and 79126178 are similar to 79126098.

KOMBOLGIE FORMATION

79126070 QUARTZ SANDSTONE
coarse, poorly sorted, sub to well-rounded quartz grains, commonly rimmed by quartz or granular iron oxides, cemented by fine-grained sericite. Minor coarser patches of sericite may be altered feldspar. Trace detrital tourmaline.

79126071 CONGLOMERATE
compact, poorly sorted quartz, minor chert pebbles and grains (subrounded) in a sericitic matrix - some recrystallisation at grain boundaries.

79126226 QUARTZ SANDSTONE
very coarse, very poorly sorted, subangular to well-rounded quartz and minor chert grains. Partly recrystallised cement of quartz, sericite, and opaques; trace well-rounded detrital opaques and monazite(?).

KOMBOLGIE FORMATION (contd)

79126227 MEDIUM QUARTZ SANDSTONE

compact poorly sorted, medium-grained angular to subrounded quartz, minor chert, and rare monazite (or zircon?) opaque and tourmaline grains, cemented by clay minerals(?) and sericite (after feldspar?) and opaques.

79126228 SILTY SHALE

graded laminae (< 1 cm) of silty quartz, detrital mica and chlorite in brown shale consisting of fine-grained iron oxides, chlorite(?) and minor detrital white mica, and quartz. Micro scours and cross bedding.

79126229 QUARTZ GREYWACKE

very coarse grained, angular fragments (< 1 cm) of quartz, brown shale, siltstone, minor detrital opaques, monazite(?), and tourmaline muscovite in a quartz sandy matrix, with fine chlorite, sericite, and iron oxides.

79126230 QUARTZ SANDSTONE

very coarse, poorly sorted, sub to well-rounded quartz and minor chert grains tightly compacted and cemented by iron oxides; very porous - open spaces in places may reflect weathering out of clay matrix.

79126231 LITHIC GREYWACKE

angular fragments of shale(?) and well-rounded chert and quartz in a poorly sorted sandy matrix consisting of subrounded quartz, sericite (after feldspar), opaques, detrital tourmaline, and monazite(?).

79126232 LITHIC GREYWACKE

coarse, poorly sorted angular fragments of quartz, sericitised feldspar, altered volcanic rock (opaques and relict interlocking feldspathic texture) minor tourmaline, monazite, muscovite schist, in a fine-grained sericitic matrix of the same composition. Incipient crenulation cleavage.

KOMBOLGIE FORMATION (contd)

79126233 MEDIUM QUARTZ SANDSTONE
similar to 79126227.
Minor scattered sub-rounded quartz, pebbles up to 1 cm across.

CULLEN GRANITE

79126138 ADAMELLITE
felspar, quartz, biotite, hornblende, and muscovite form an interlocking mosaic.
Felspar consists of albite, microcline, and possibly anorthoclase; most albite has been sericitised. Biotite occurs as acicular interstitial flakes. Yellow/green hornblende has been considerably altered.

79126087 ADAMELLITE
as for 79126138.

79126139 ADAMELLITE
as for 79126138.

79126140 ADAMELLITE
quartz, albite and microcline feldspar enclosing clots and small laths of biotite and rare muscovite. Plagioclase is occasionally altered to sericite.

79126085 GRANITE
as for 79126140.

79126086 ADAMELLITE
as for 79126140.

79126088 ADAMELLITE
coarse textured albite and quartz outline interstitial biotite and minor amphibole.

79126090 ADAMELLITE
as for 79126140.

CULLEN GRANITE (contd)

79126094 ADAMELLITE

as for 79126140.

79126142 ADAMELLITE

as for 79126138.

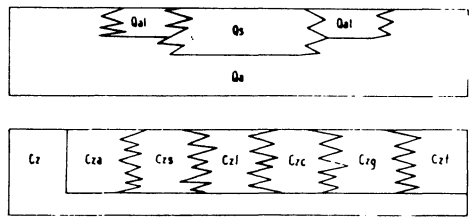
Contains, in addition, minor yellow/green amphibole.

79126144 ADAMELLITE

large phenocrysts of quartz and microcline enclosing small quartz sodic feldspar and interstitial biotite. Traces of yellow/green amphibole.

79126147 ADAMELLITE

fine-grained assemblage of biotite laths enclosed by quartz and altered feldspar. Rare clots of muscovite and some secondary carbonate.



	Qa	*Silt, sand, clay locally consolidated grey sandy siltstone along some drainage courses creek and river alluvium*	QUATERNARY	CAINOZOIC
	Qal	*Silt, clayey silt levee deposits*		
	Qs	*Unconsolidated sand outwash and alluvial deposits*		
	Cz	*Skeletal soils, gradational red soils and yellow earth type soils*	TERTIARY TO QUATERNARY	
	Cza	*Winnowed sand silt, clay, partially stripped Czs*		
	Czs	*Unconsolidated sand, ferruginous and clayey sand*		
	Czl	*Nodular and concretionary laterite*		
	Czc	*Gravelly sand alluvium and skeletal soil: higher level alluvial plains*		
	Czg	*Higher level gravels and gravelly skeletal soils*		
	Czt	*Sandstone, quartzite and shale fragments sand rubble and talus*		
Petrel Formation Kp	Kp	*Ferruginous coarse to medium friable sandstone and conglomerate with shale clasts*	EARLY TO LATE CRETACEOUS	MESOZOIC
Kombolgie Formation Phk	Phk	*Medium to coarse quartz sandstone, clayey or pebbly in places; basal conglomerate common, minor siltstone beds, rare basal breccia-conglomerate Extensively ripple-marked and cross-bedded*	CARPENTARIAN	PROTEROZOIC
Margaret Granite Pgg; Prices Springs Granite Pgp; Cullen Granite Pgc (Pgc_a, Pgc_d)	Pgg	*Coarse porphyritic granite and adamellite*		
	Pgp	*Adamellite*		
	Pgc	*Undifferentiated granite*		
	Pgc_d	*Fine even grained grey leucocratic granite*		
	Pgc_a	*Coarse porphyritic pink and green adamellite*		
Zamu Dolerite Pdz	Pdz	*Massive quartz dolerite*		
FINNISS RIVER GROUP: Burrell Creek Formation Pfb	Pfb	*Laminated shale, siltstone and phyllite minor massive quartzose, feldspathic and calcareous tumbstone greywacke, white sandy siltstone, quartz sandstone, conglomerate ⁘ denotes rare volcanolithic lens*	EARLY PROTEROZOIC	PROTEROZOIC
SOUTH ALLIGATOR GROUP: Mount Bonnie Formation * Pso	Pso	*Laminated reddish brown shale and siltstone with minor laminated black chert bands, lenses and nodules, minor pyritic banded iron formation, argillite, crystal tuff, tuffaceous chert, massive medium feldspathic greywacke*		
Gerowie Tuff Psg	Psg	*Laminated grey, brown and red silicified siltstone; blue-grey and brown argillite, siliceous siltstone and shale, glassy black spotted crystal tuff and tuffaceous chert, minor tuffaceous greywacke and arenite*		
Koolpin Formation Psk	Psk	*Ferruginous siltstone and shale with chert bands, lenses and nodules; silicified dolomite and massive magnesite lenses Ferruginous, siliceous, and silty chert breccias commonly at base Pale green, grey or white massive claystone; minor laminated quartz sandstone, sandy siltstone and limonitic coarse-grained quartz sandstone near base in Mount Masson area Massive hematitic and limonitic ironstone in places*		
MOUNT PARTRIDGE GROUP: Wildman Siltstone (Ppw_2, Ppw_1, Ppw)	Ppw_2	*Laminated feldspathic sandstone and quartzite with minor pebbly conglomerate; grey, brown and yellow cross-bedded quartz sandstone, grey quartzite, sandy siltstone, phyllite, slate, shale, calcareous quartz sandstone*		
	Ppw_1	*Red and white banded laminated sandy siltstone, red brown and grey massive siltstone, mauve, cream and grey siliceous phyllite, white claystone; ~ denotes ironstone-massive hematite and limonite with siliceous matrix*		
	Ppw	*Laminated colour-banded shale (pyritic and carbonaceous at depth), silty shale, siltstone and sandy siltstone Medium to coarse quartz sandstone (pyritic in places) and fine quartzite Lenticular cross-bedding, ripple marks, current lineations, flute markings and load casts present in places*		
Mundogie Sandstone Ppm	Ppm	*Fine to coarse quartz sandstone, quartzite and arkose; minor pebble conglomerate Graded bedding, cross-bedding and scour structures in places Laminated brown, white shale, siltstone, sandy siltstone; massive brown micaceous siltstone and sandy siltstone, colour banded (red and white) siltstone, phyllite, minor brown or grey quartzite ≡ denotes major pelitic lens*		
NAMOONA GROUP: Masson Formation Pnm	Pnm	*Shale (probably carbonaceous at depth), brown micaceous siltstone, slate and phyllite, minor sandy siltstone, feldspathic quartzite*		

~~~ Unconformity Facies change * Informal name

RECORD NO. 1981/47

Figure 3(a). Reference to compilation sheets, McKinlay River Sheet area

16/D 52-8/3
~~~

Geological boundary

Anticline

Syncline

Overturned anticline

60 Overturned syncline

Fault

fe qb Fault containing; fe - iron, q - quartz, qb - quartz breccia

42 Normal fault, tick on downthrow side indicates direction of dip

Fault showing relative horizontal displacement

85 Low angle thrust fault, triangle on upthrown side indicates direction of dip

Fault zone with crushing

Where location of boundaries, folds and faults is approximate, line is broken; where inferred, querried; where concealed boundaries and folds are dotted, faults are shown by short dashes

Minor anticline

Minor syncline

FA 37 Fold axes

Arrowhead indicates trend of plunge and value indicates plunge value for fold axes

Shear zone

45 Strike and dip of strata

Strike and dip of strata, facing not known

52 Strike and dip of strata, showing proved direction of dip based on sedimentary structures

Vertical strata

Horizontal strata

70 Strike and dip of overturned strata

Airphoto interpretation

Strike and dip of strata, dip 5° to 15°

Strike and dip of strata, dip 15° to 45°

Strike and dip of strata, dip greater than 45°

Trend line

Lineament

Joint pattern

80 Strike and dip of joint

Vertical joint

55 Strike and dip of cleavage

Vertical cleavage

30 Strike and dip of foliation

Vertical foliation

30 Trend and plunge of lineation

Trend of plunge of mineral elongation

Some structural element symbols observed at a single locality may be combined on the map

Sample locality for isotopic age determination

Dyke or vein; dl - dolerite, f - felsite, fe - iron, min - minette, q - quartz, qb - quartz breccia

Prospect or mine with little or no production

Abandoned prospect, no production

Mine, minor

Abandoned mine

Alluvial workings, minor

Abandoned alluvial workings

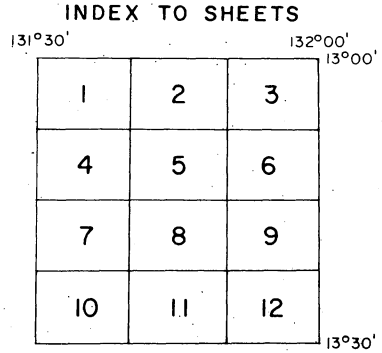
Treatment plant, not operating

Costean

Drillhole, DD - Diamond drillhole, SH MK2 - Scouthole with BMR reference number

Au - Gold, Bi - Bismuth, Cu - Copper, Pb - Lead, Sn - Tin

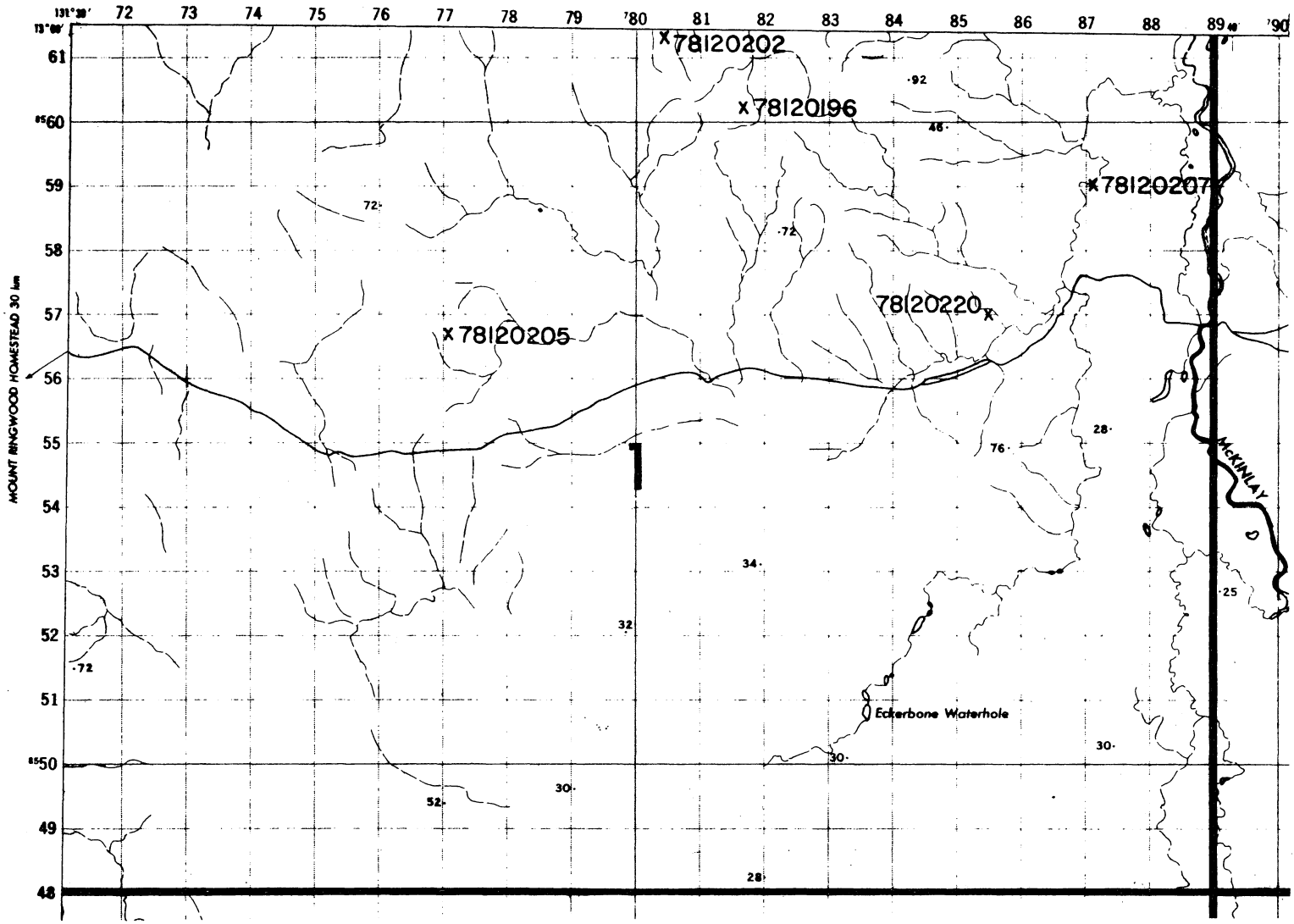
INDEX TO SHEETS



16/D 52-8/4

RECORD NO. 1981/47

Figure 3 (b). Reference to compilation sheets, McKinlay River Sheet area



x79126054 *Thin section locality with BMR registered number*

RECORD NO. 1981/47

Figure 4(a). McKinlay River thin section localities

16/D52-8/5

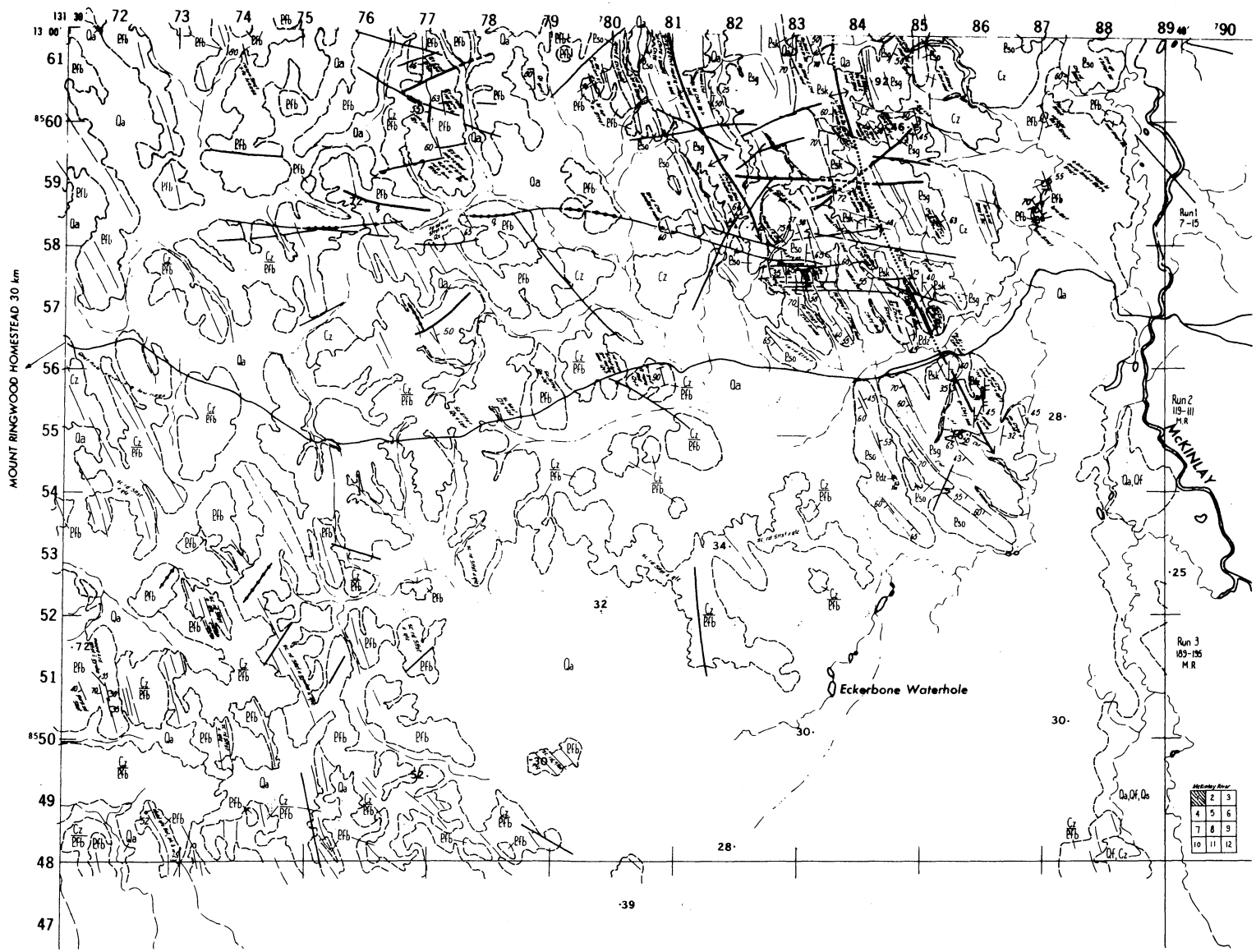
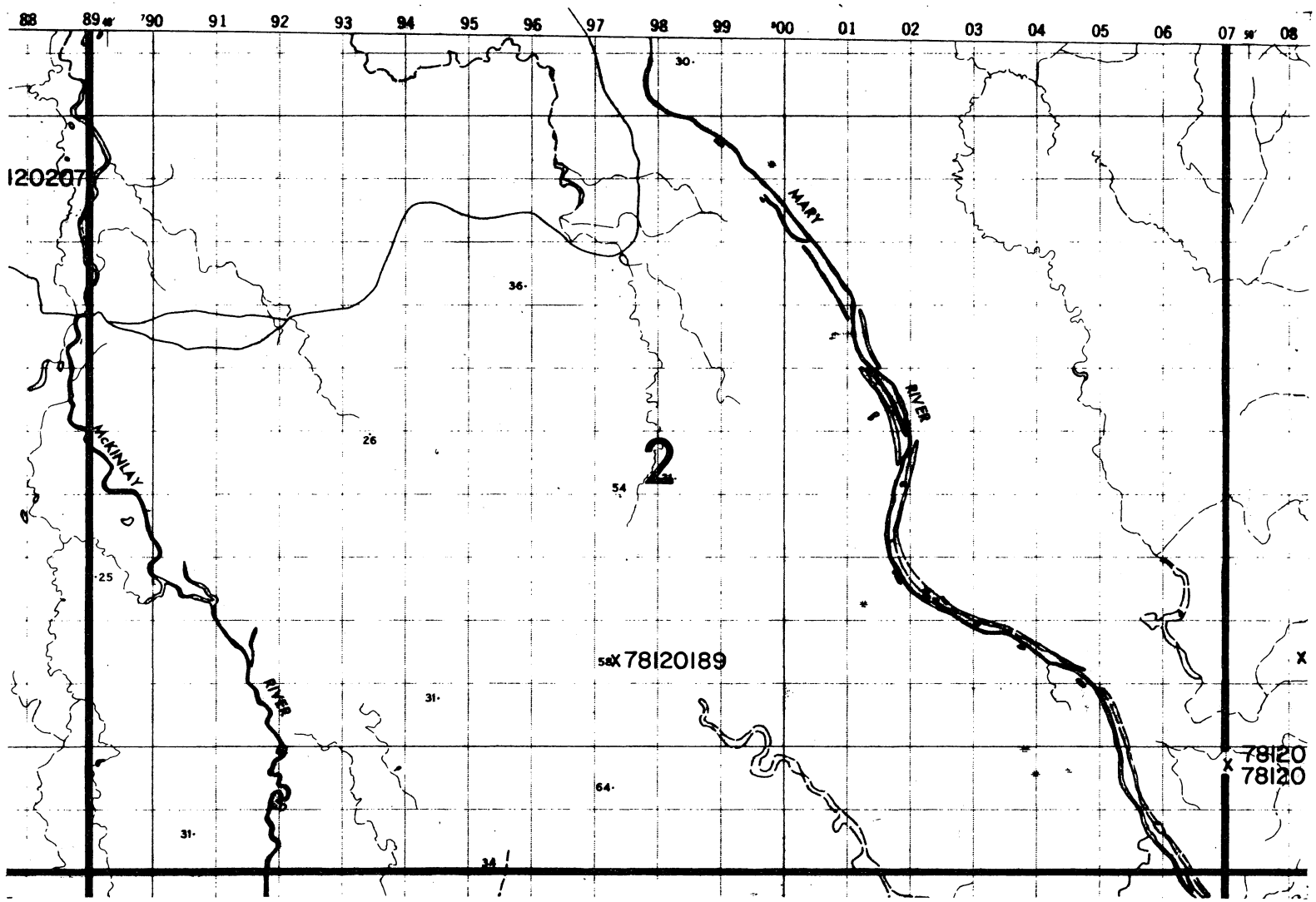


Figure 4(b). McKinlay River 1:100 000 reduction of 1:250 000 compilation sheet



x79126054 *Thin section locality with BMR registered number*

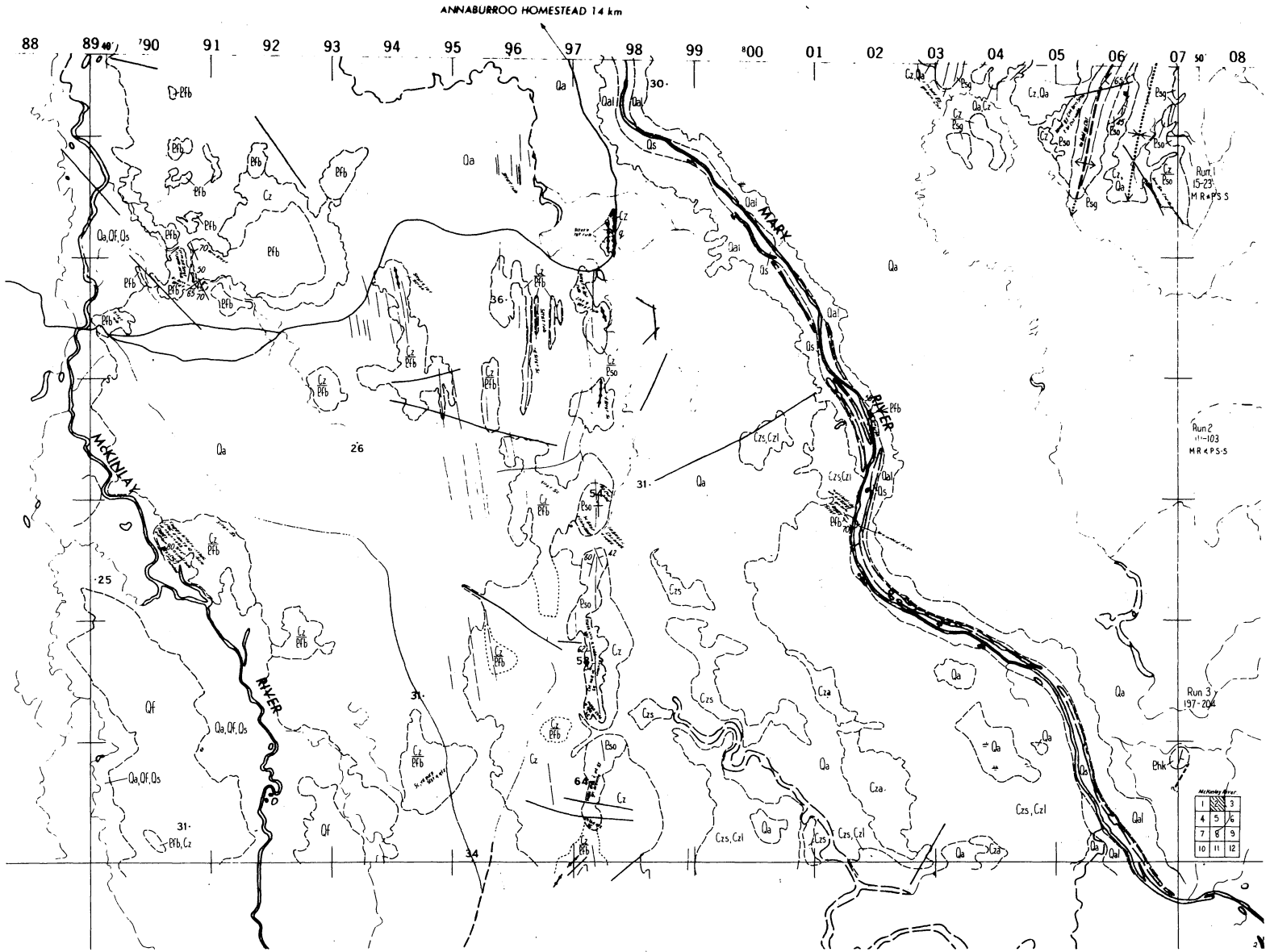
McKINLAY RIVER

0 2 4 6 km

RECORD NO. 1981/47

Figure 5 (a). McKinlay River thin section localities

16/D52-8/7



McKINLAY RIVER

Geology 1978 by P.G. Stuart-Smith, D.A. Wallace, I.H. Crick, BMR; M.J. Roarty, NTGS
1979 by R.S. Needham, P.G. Stuart-Smith, D.A. Wallace, BMR; M.J. Roarty

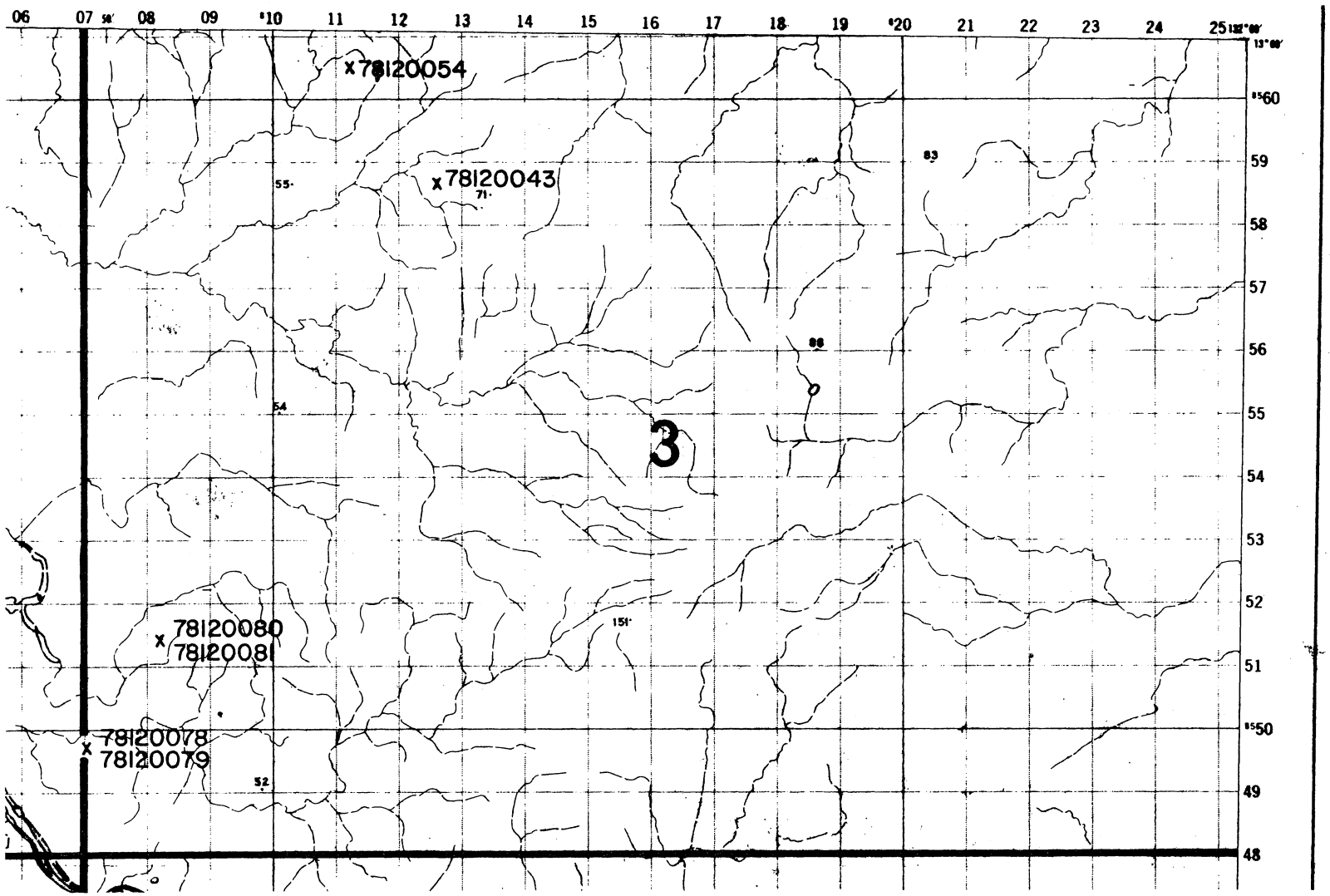
Compiled 1978-79 by D.A. Wallace, P.G. Stuart-Smith, R.S. Needham, T.W. Brown, I.C. O'Donnell, BMR; M.J. Roarty

Scale 1:25 000 approx.

RECORD NO. 1981/47

16/D52-8/8

Figure 5(b). McKinlay River 1:100 000 reduction of 1:250 000 compilation sheet



x 79126054 *Thin section locality with BMR registered number*

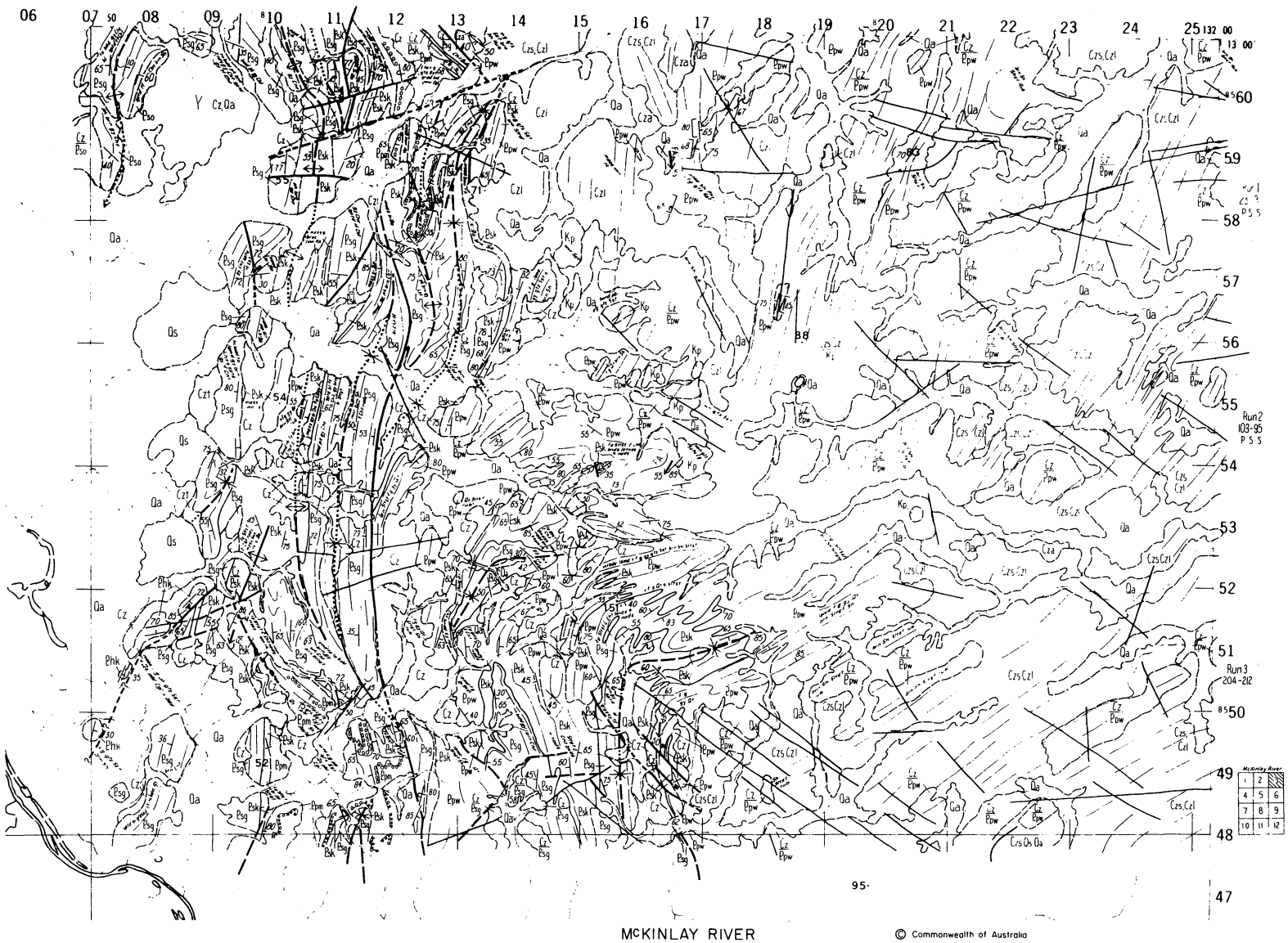
McKINLAY RIVER

0 2 4 6 km

RECORD NO. 1981/47

Figure 6(a). McKinlay River thin section localities

16/D52-8/9



Geology 1978 by P.G Stuart-Smith, D.A.Wallace, I.H.Crick, BMR; M.J Roorty, NTGS
1979 by R.S Needham, P.G Stuart-Smith, D.A.Wallace, BMR; M.J Roorty

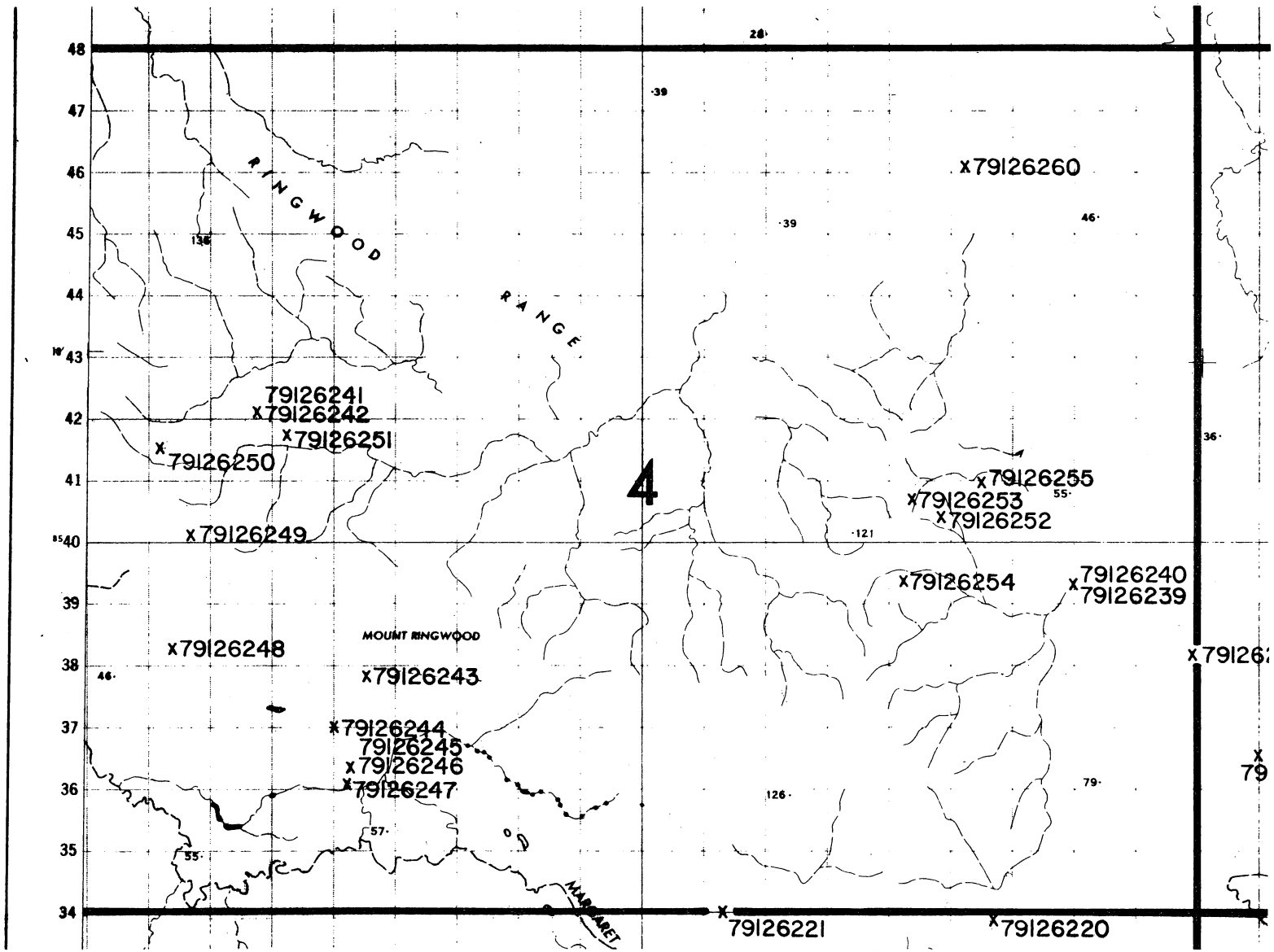
Compiled 1978-79 by D.A.Wallace, P.G.Stuart-Smith, R.S.Needham, T.W.Brown, I.C.O'Donnell, BMR; M.J.Roorty

Scale 1:250 000 approx.

RECORD NO. 1981/47

16/D52-8/10

Figure 6(b). McKinlay River 1:100 000 reduction of 1:250 000 compilation sheet



x79126054 *Thin section locality with BMR registered number*

McKINLAY RIVER

0 2 4 6 km

RECORD NO. 1981/47

16/D52-8/11

Figure 7(a). McKinlay River thin section localities

Geology 1978 by P.G. Stuart-Smith, D.A. Wallace, I.H. Crick, BMR; M.J. Roarty, NTGS
1979 by R.S. Needham, P.G. Stuart-Smith, D.A. Wallace, BMR; M.J. Roarty

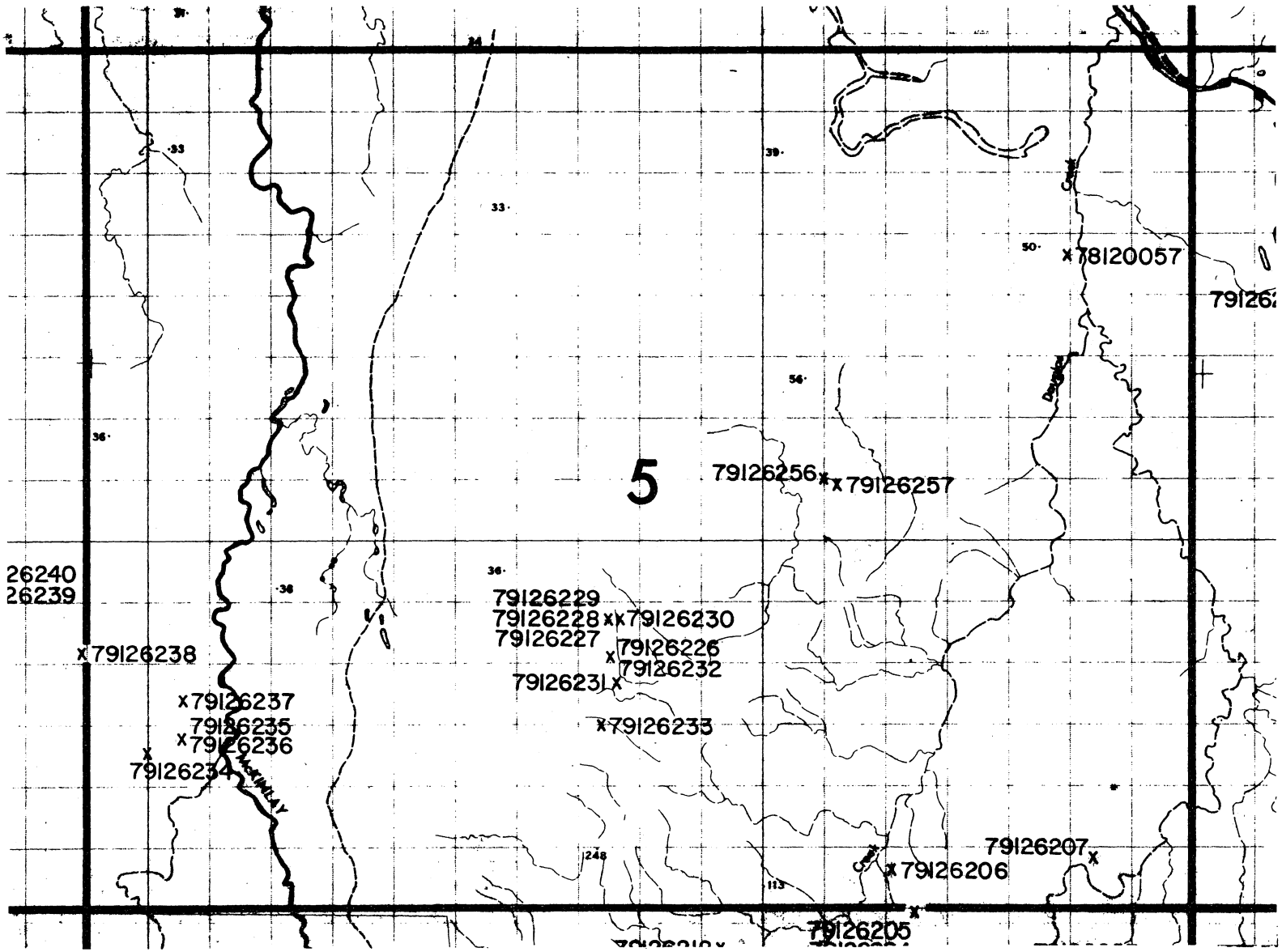
Compiled 1978-79 by D.A. Wallace, P.G. Stuart-Smith, R.S. Needham, T.W. Brown, I.C. O'Donnell, BMR; M.J. Roarty

Scale 1:25 000 approx.

RECORD NO. 1981/47

16/D52-8/12

Figure 7(b). McKinlay River 1:100 000 reduction of 1:250 000 compilation sheet



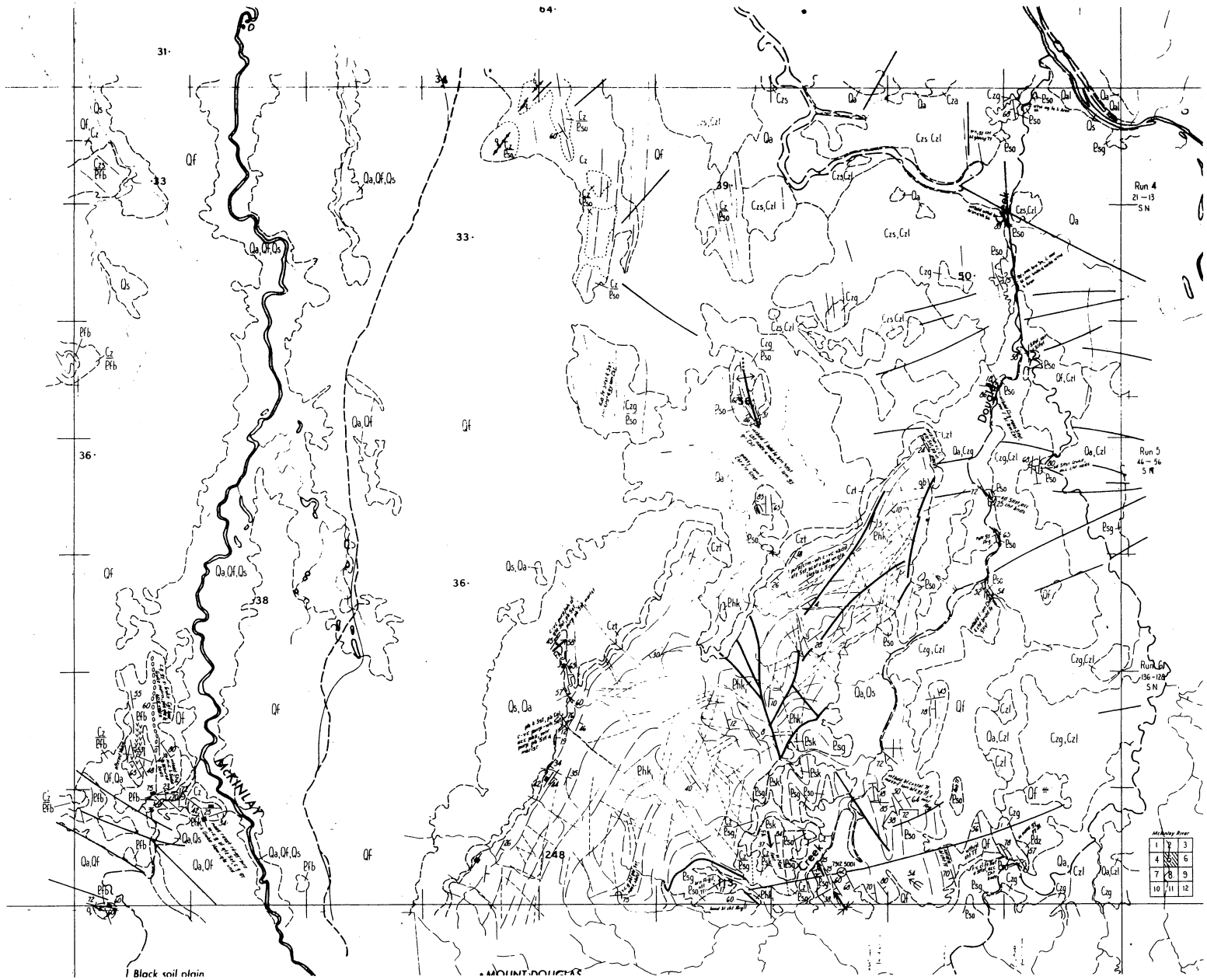
x 79126054 *Thin section locality with BMR registered number*

McKINLAY RIVER

RECORD NO. 1981/47

Figure 8(a). McKinlay River thin section localities

16/D52-8/13



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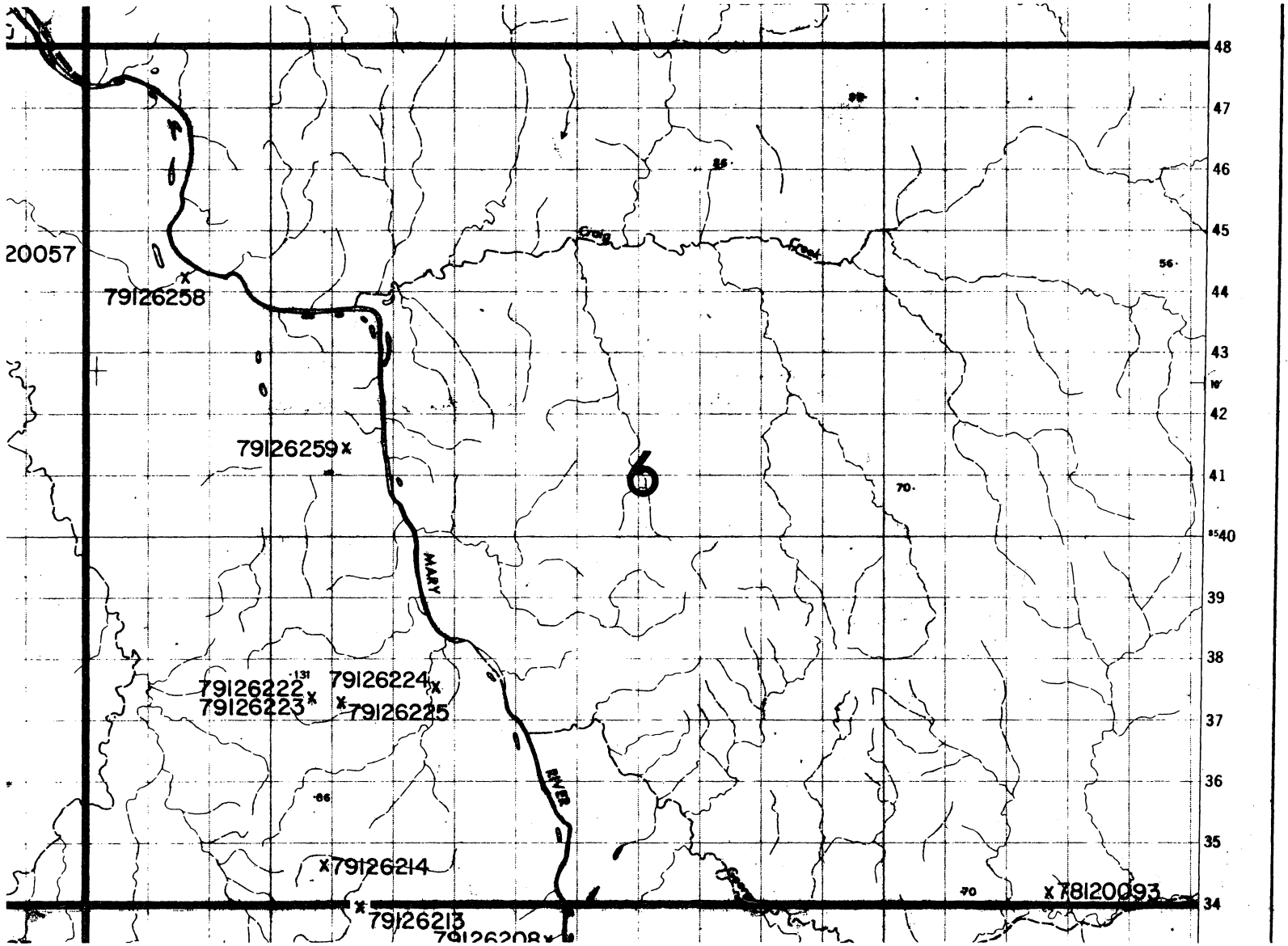
Geology 1978 by P.G. Stuart-Smith, D.A. Wallace, I.H. Crick, BMR; M.J. Roarty, NTGS
1979 by R.S. Needham, P.G. Stuart-Smith, D.A. Wallace, BMR; M.J. Roarty

Compiled 1978-79 by D.A. Wallace, P.G. Stuart-Smith, R.S. Needham, T.W. Brown, I.C. O'Donnell, BMR; M.J. Roarty

Scale 1:25 000 approx

16/D52-8/14

Figure 8(b). McKinlay River 1:100 000 reduction of 1:250 000 compilation sheet



x 79126054 *Thin section locality with BMR registered number*

McKINLAY RIVER

0 2 4 6 km

RECORD NO. 1981/47

16/D52-8/15

Figure 9(a). McKinlay River thin section localities

RECORD NO. 1981/47

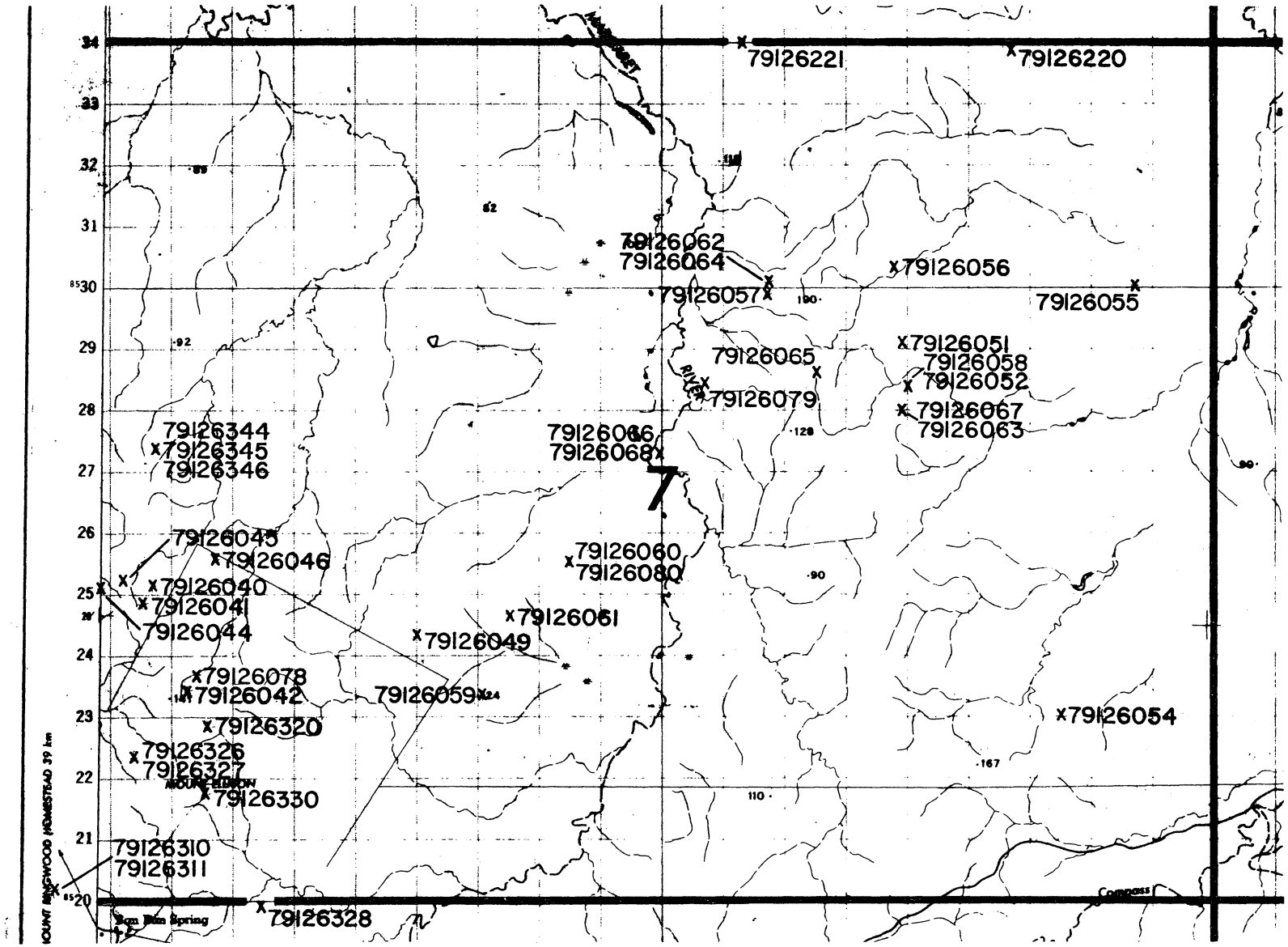
Geology 1978 by PG Stuart-Smith, DA Wallace, IH Crick, BMR, MJ Roarty, NTGS
1979 by RS Needham, PG Stuart-Smith, DA Wallace, BMR; MJ Roarty

Compiled 1978-79 by DA Wallace, PG Stuart-Smith, RS Needham, TW Brown, IC O'Donnell, BMR; MJ Roarty

Scale 1:250 000 approx

16/D52-8/16

Figure 9(b). McKinlay River 1:100 000 reduction of 1:250 000 compilation sheet



x 79126054 *Thin section locality with BMR registered number*

McKINLAY RIVER

0 2 4 6 km

RECORD 1981/47

16/D52-8/17

Figure 10(a). McKinlay River thin section localities

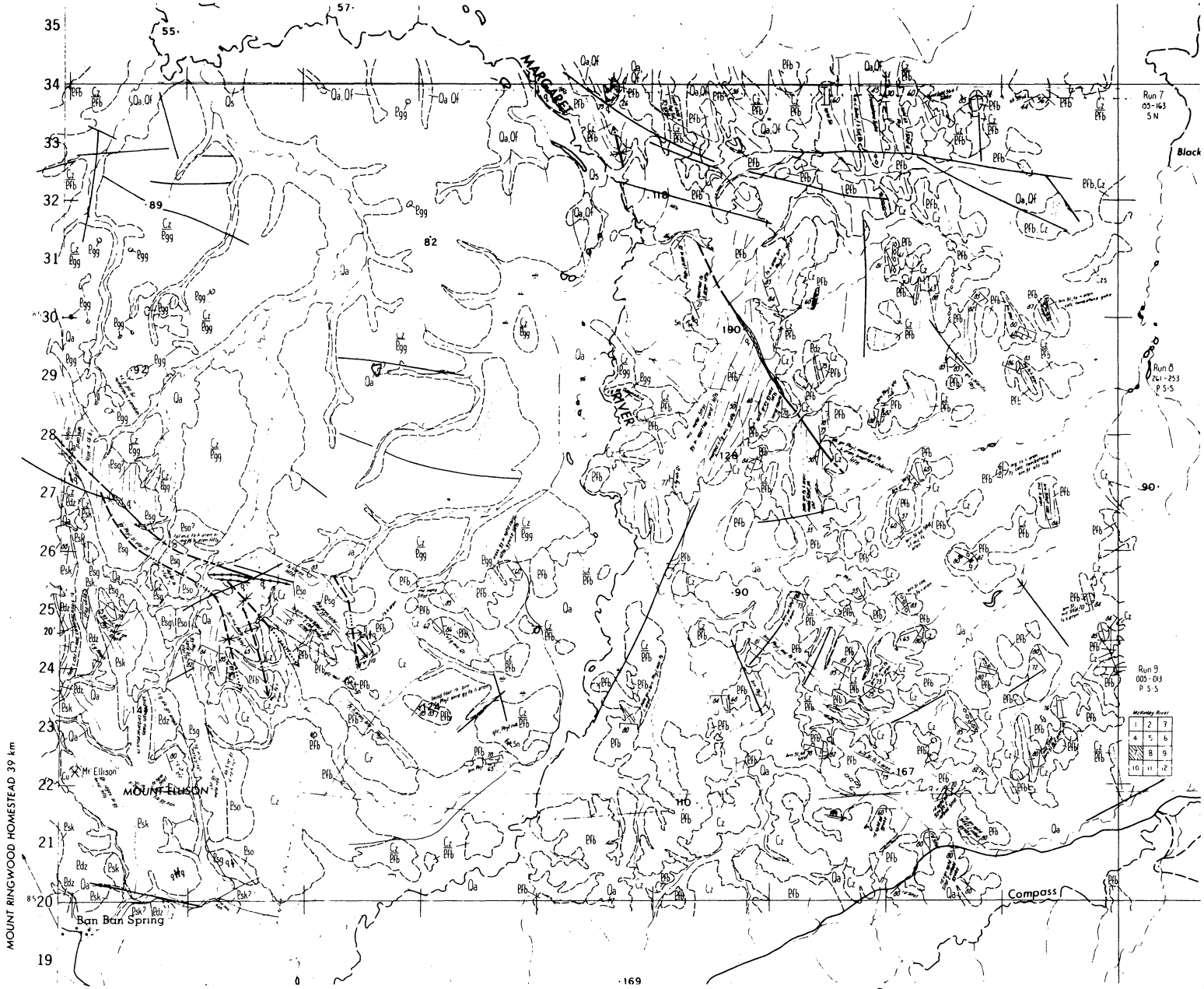
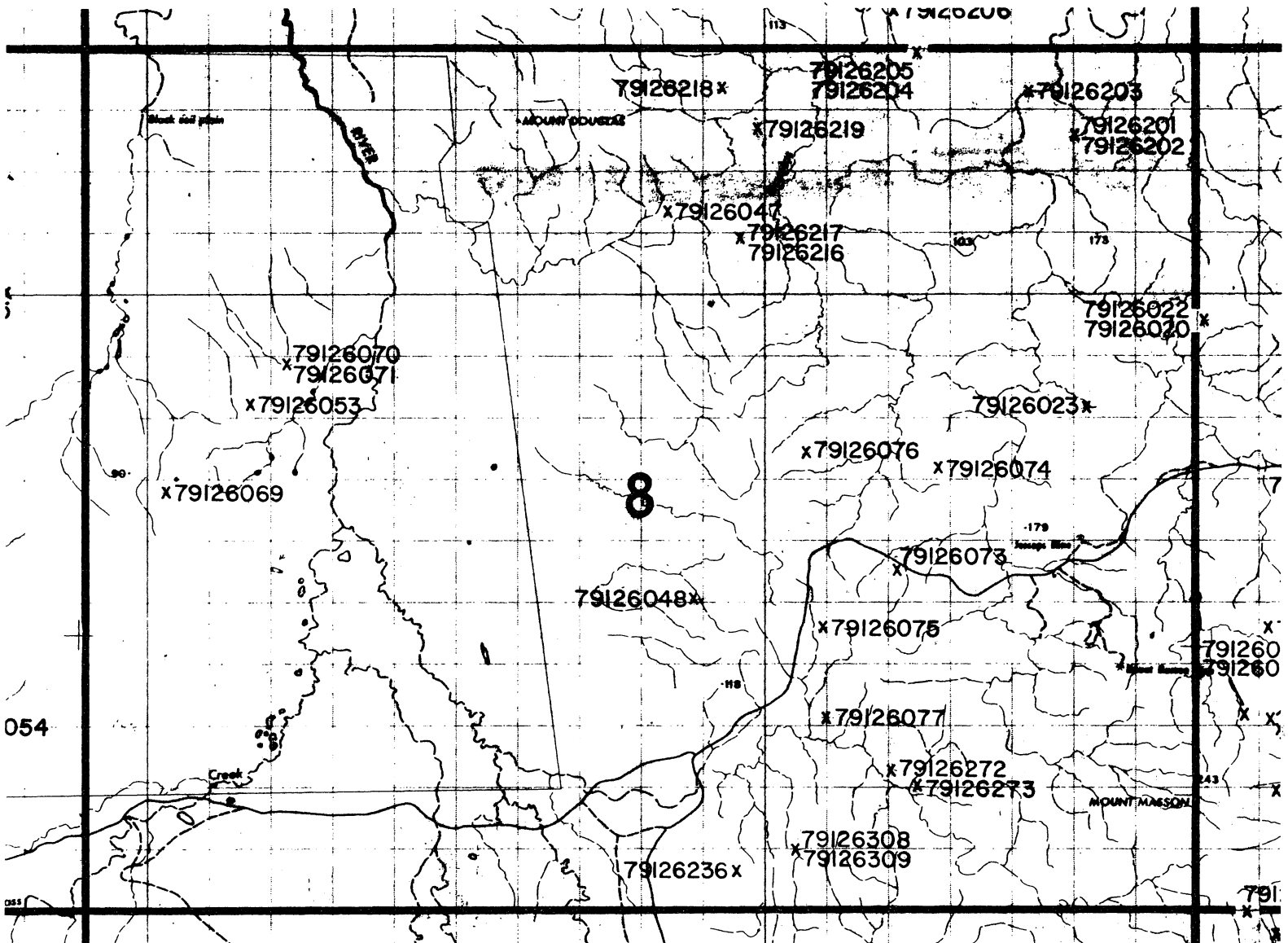


Figure 10(b). McKinlay River 1:100000 reduction of 1:250000 compilation sheet

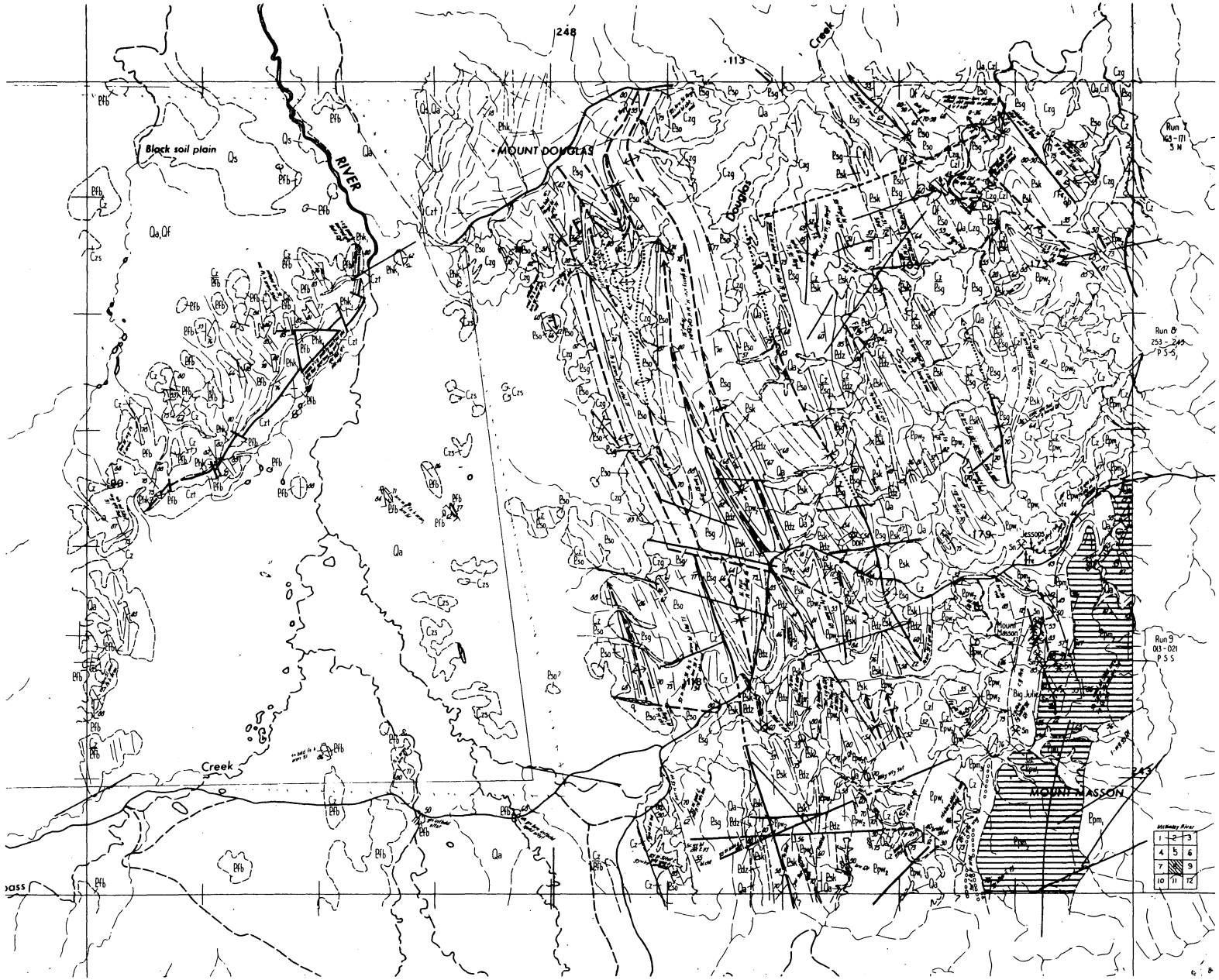


x 79126054 *Thin section locality with BMR registered number*

RECORD NO. 1981/47

16/D52-8/19

Figure 11(a). McKinlay River thin section localities



Geology 1978 by P.G. Stuart-Smith, D.A. Wallace, I.H. Crick, BMR; M.J. Roarty, NTGS
1979 by R.S. Needham, P.G. Stuart-Smith, D.A. Wallace, BMR; M.J. Roarty

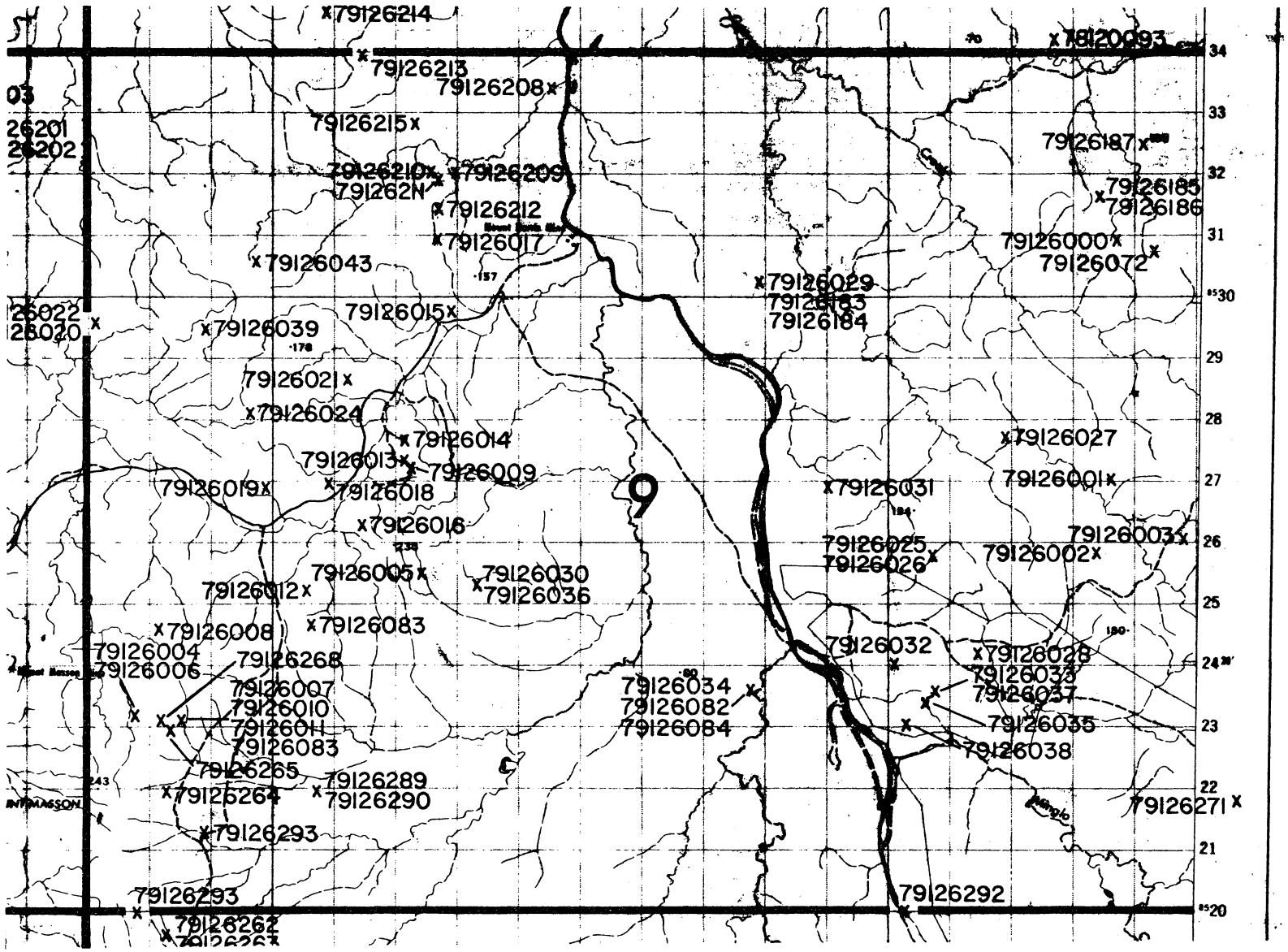
Compiled 1978-79 by D.A. Wallace, P.G. Stuart-Smith, R.S. Needham, T.W. Brown, I.C. O'Donnell, BMR, M.J. Roarty

Scale 1:25 000 approx

RECORD NO. 1981/47

16/D52-8/20

Figure 11(b). McKinlay River 1:100 000 reduction of 1:250 000 compilation sheet

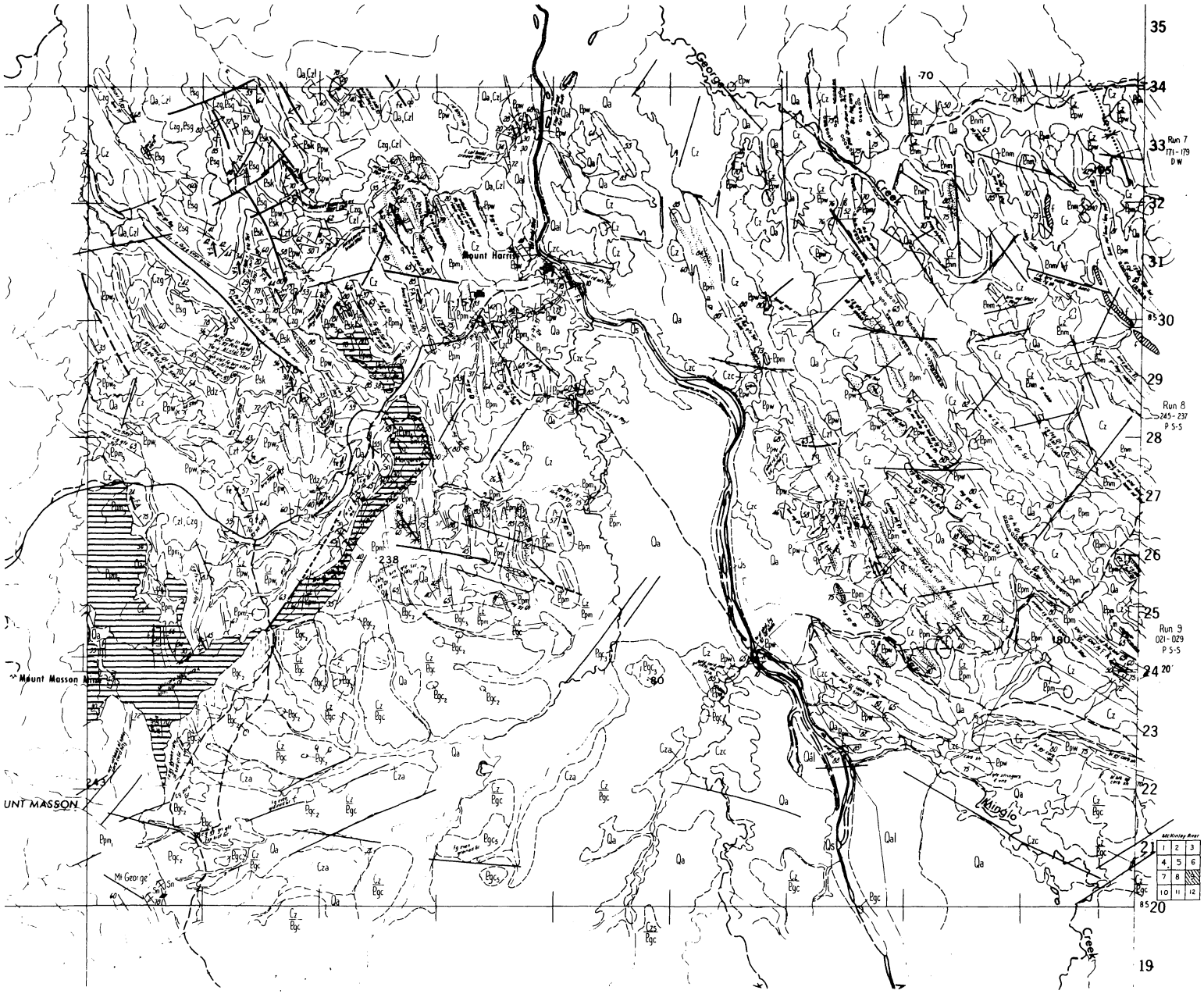


x 79126054 *Thin section locality with BMR registered number*

RECORD NO. 1981/47

Figure 12(a). McKinlay River thin section localities

16/D52-8/21



Geology 1978 by P.G. Stuart-Smith, D.A. Wallace, I.H. Crick, BMR, M.J. Roarty, NTGS
1979 by R.S. Needham, P.G. Stuart-Smith, D.A. Wallace, BMR, M.J. Roarty

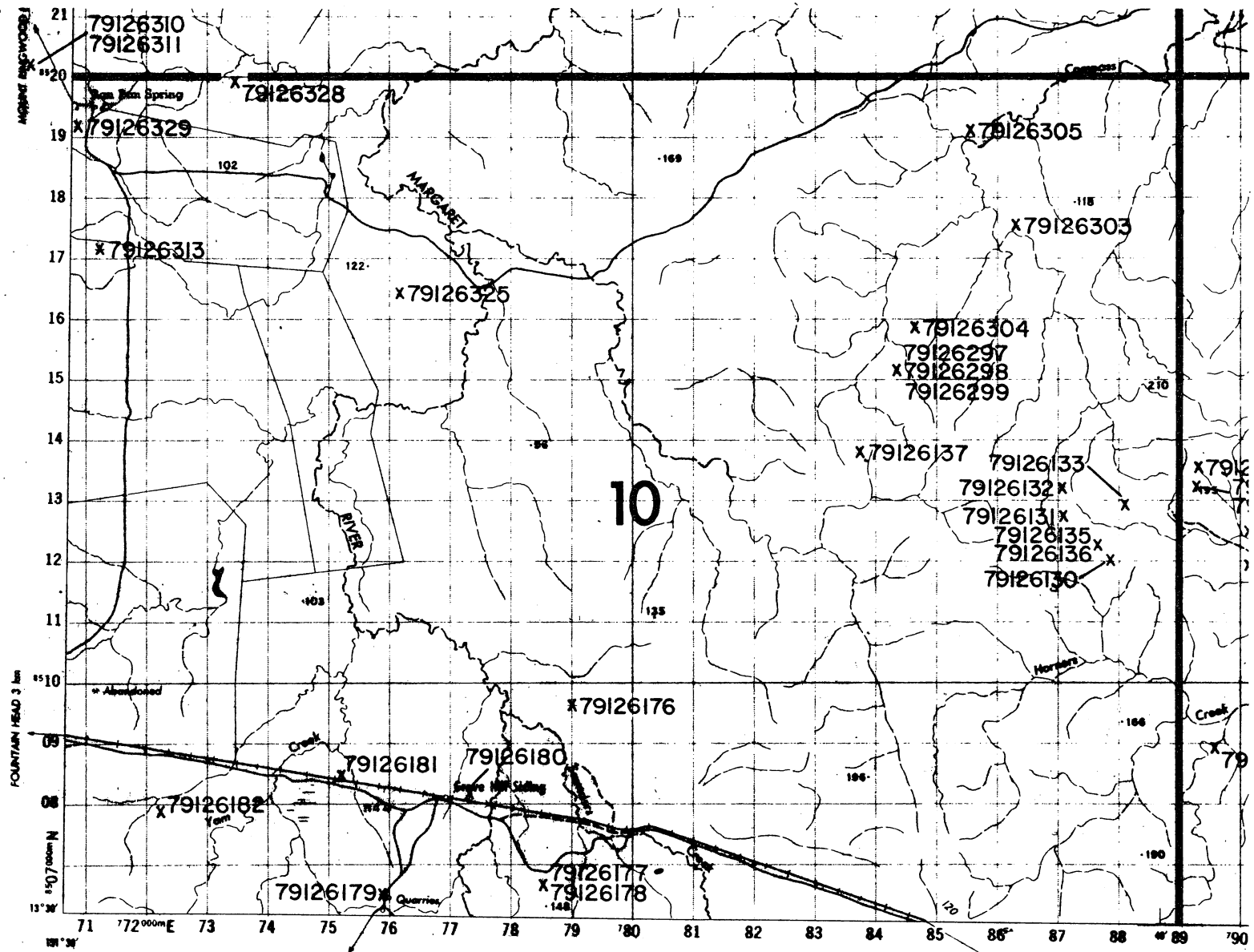
Compiled 1978-79 by D.A. Wallace, P.G. Stuart-Smith, R.S. Needham, T.W. Brown, I.C. O'Donnell, BMR; M.J. Roarty

Scale 1:25 000 approx

RECORD NO. 1981/47

16/D52-8/22

Figure 12(b). McKinlay River 1:100 000 reduction of 1:250 000 compilation sheet



x 79126054 *Thin section locality with BMR registered number*

McKINLAY RIVER

0 2 4 6 km

RECORD NO. 1981/47

16/D52-8/23

Figure 13(a). McKinlay River thin section localities

Geology 1978 by P.G. Stuart-Smith, D.A. Wallace, I.H. Crick, BMR; M.J. Roarty, NTGS
1979 by R.S. Needham, P.G. Stuart-Smith, D.A. Wallace, BMR; M.J. Roarty

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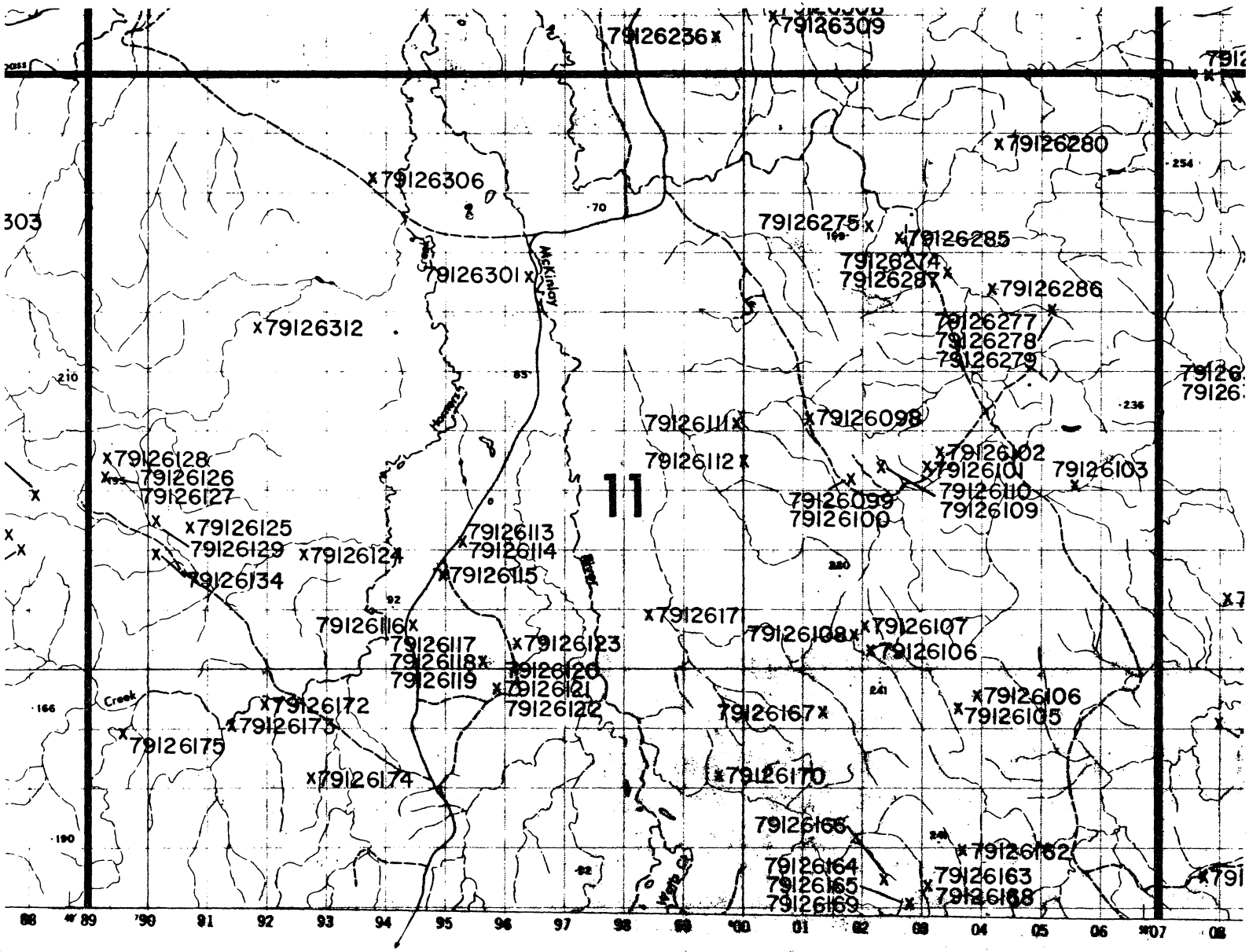
Compiled 1978-79 by D.A. Wallace, P.G. Stuart-Smith, R.S. Needham, T.W. Brown, I.C. O'Donnell, BMR; M.J. Roarty

Scale 1:25 000 approx

16/D52-8/24

Figure 13(b). McKinlay River 1:100 000 reductions of 1:250 000 compilation sheet



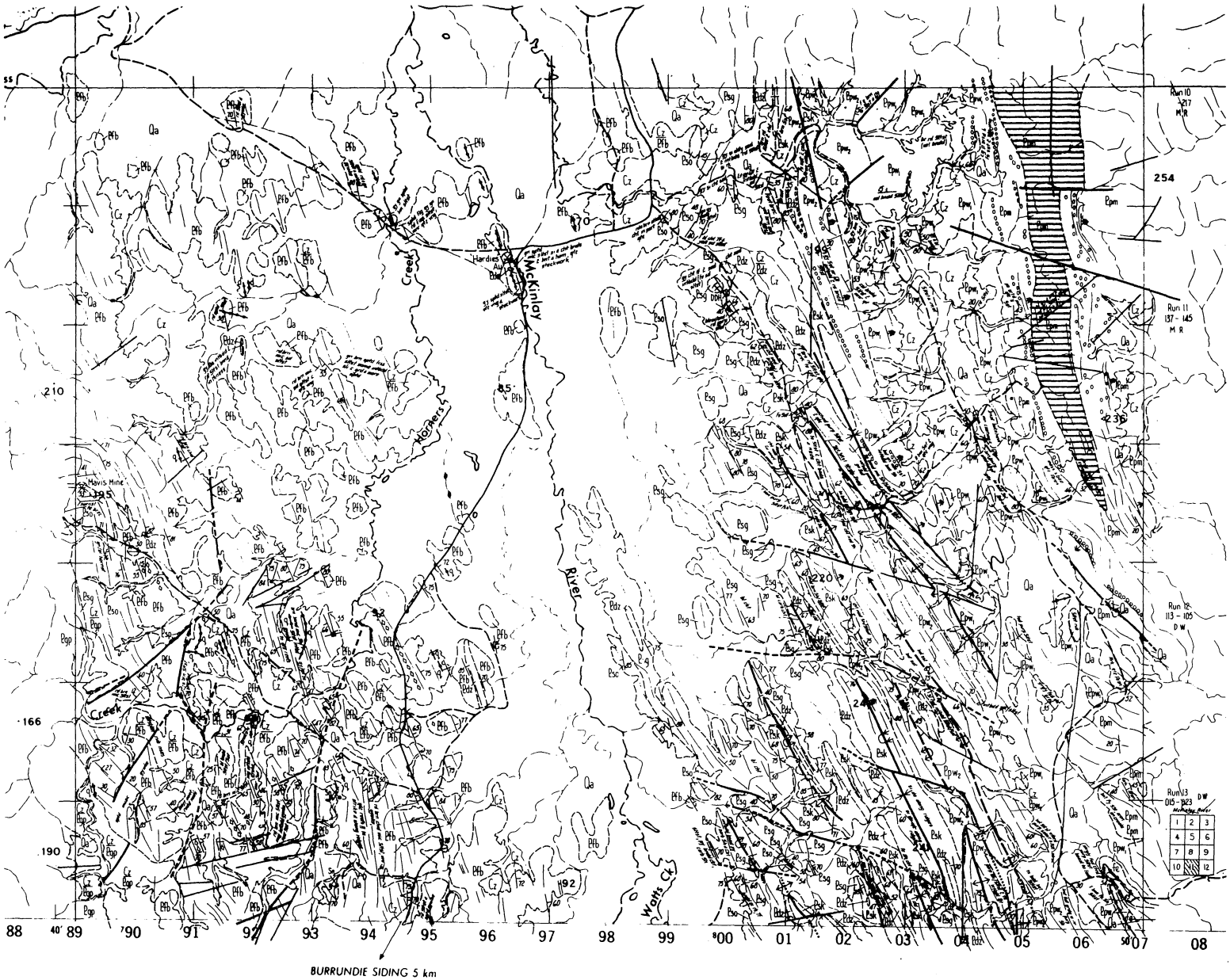
x 79126054 *Thin section locality with BMR registered number*

McKINLAY RIVER

RECORD NO. 1981/47

Figure 14(a). McKinlay River thin section localities

16/D52-8/25



McKINLAY RIVER

Geology 1978 by P.G Stuart-Smith, D.A Wallace, I.H Crick, BMR; M.J Roarty, NTGS
1979 by R.S Needham, P.G Stuart-Smith, D.A.Wallace, BMR; M.J.Roarty

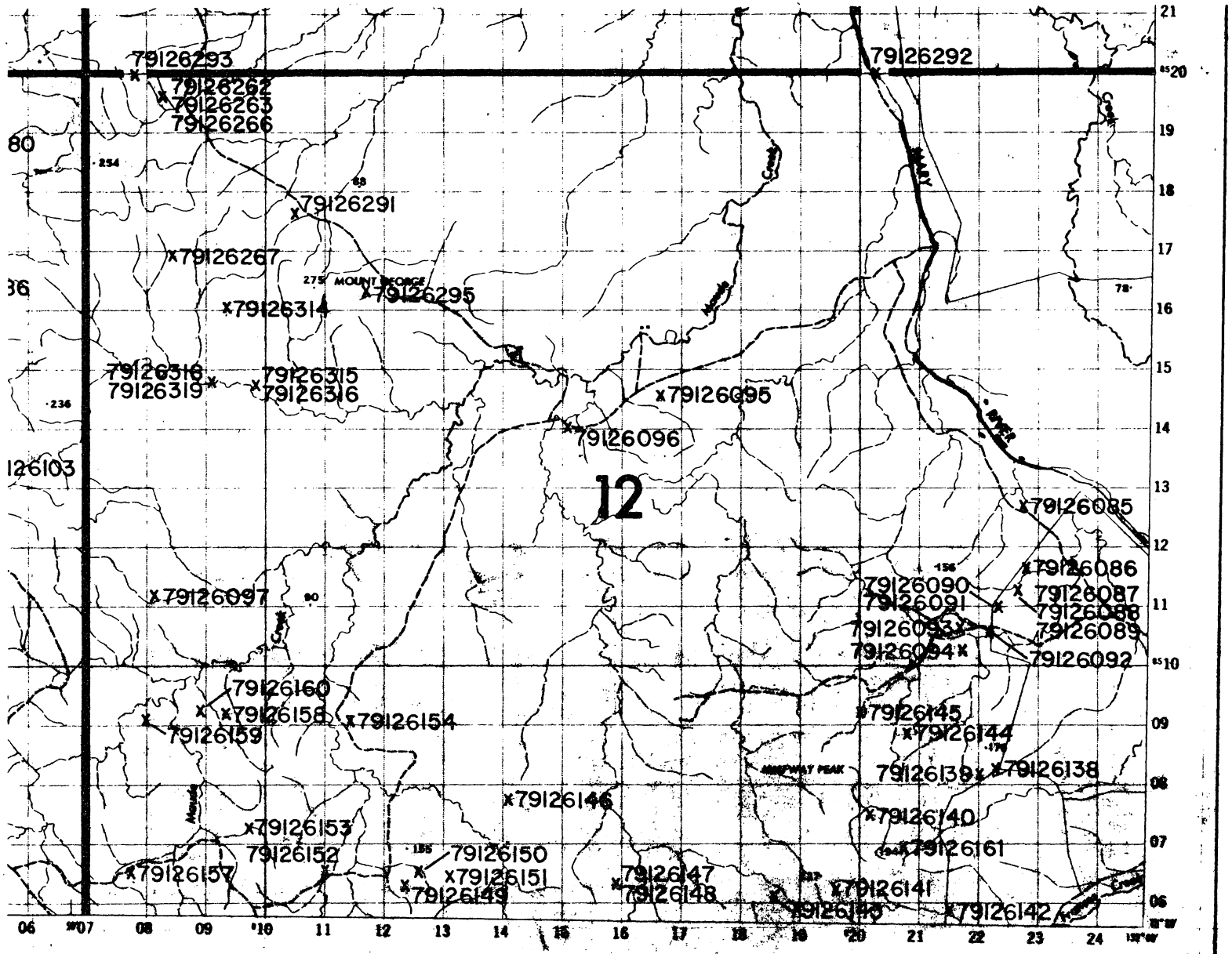
Compiled 1978-79 by D.A.Wallace, P.G Stuart-Smith, R.S.Needham, T.W. Brown, I.C.O'Donnell, BMR, M.J Roarty

Scale 1:250 000 approx

RECORD NO. 1981/47

16/D52-8/26

Figure 14(b). McKinlay River 1:100 000 reduction of 1:250 000 compilation sheet

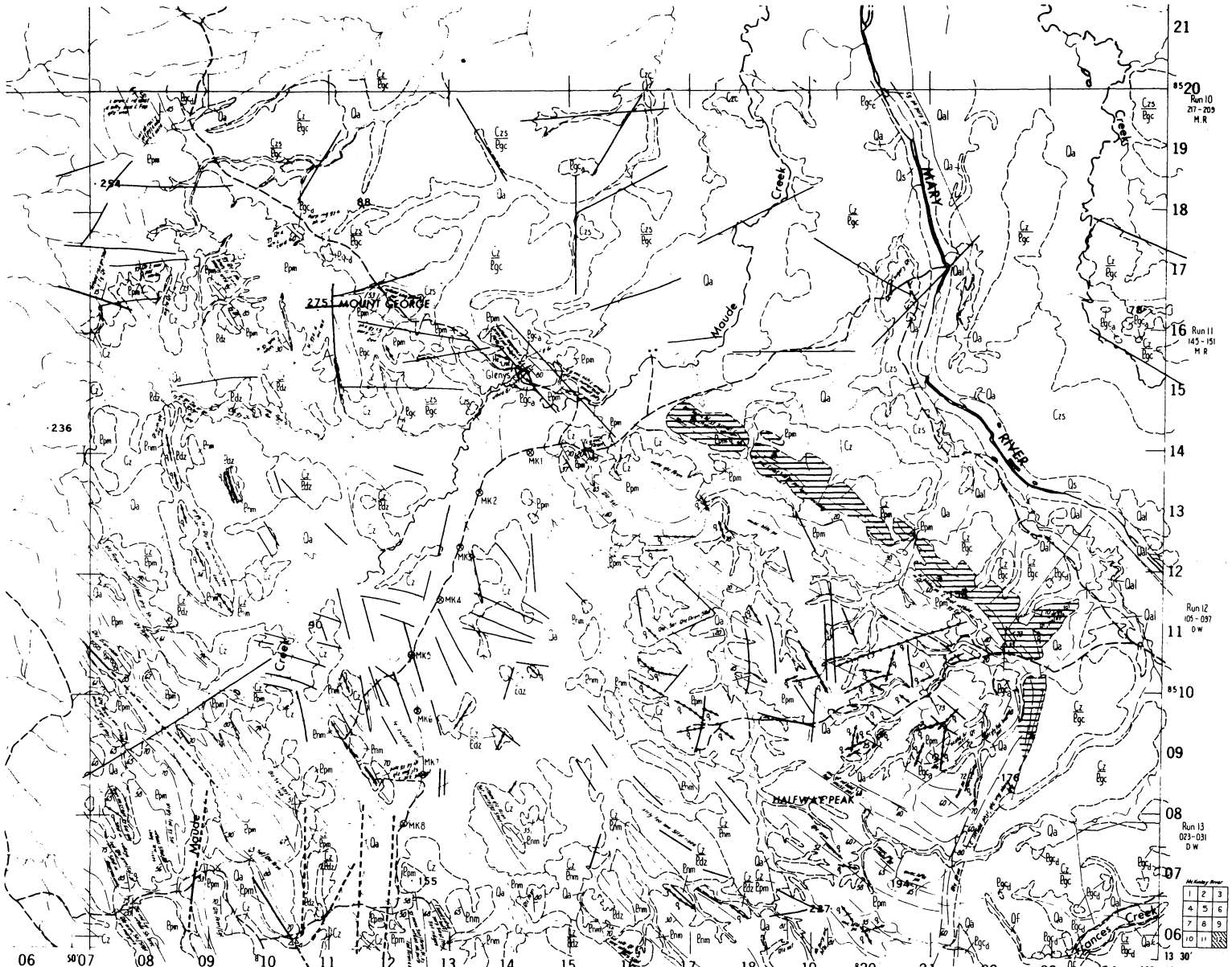


x 79126054 *Thin section locality with BMR registered number*

RECORD NO. 1981/47

Figure 15(a). McKinlay River thin section localities

16/D52-8/27



McKINLAY RIVER

Geology 1978 by P.G Stuart-Smith, D.A Wallace, I.H Crick, BMR, M.J Roarty, NTGS
1979 by R.S Needham, P.G Stuart-Smith, D.A Wallace, BMR, M.J.Roarty

Compiled 1978-79 by D.A Wallace, P.G.Stuart-Smith, R.S.Needham, T.W Brown, I.C O'Donnell, BMR, M.J.Roarty

Scale 1:250 000 approx

RECORD NO. 1981/47

16/D52-8/28

Figure 15(b). McKinlay River 1:100 000 reduction of 1:250 000 compilation sheet