

# **GEOLOGIC MAP OF THE MOUNT POWELL 7.5' QUADRANGLE, SOUTHWESTERN MONTANA**

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## Introduction

The Mount Powell 7.5' quadrangle covers the transition between the east flank of the Flint Creek Range and the Deer Lodge Valley. Mapping here was undertaken as part of a STATEMAP project that included the Anaconda North 7.5' quadrangle to the south in an effort to improve mapping around the hangingwall-footwall transition of the Anaconda Metamorphic Core Complex (Lonn and others, 2003; O'Neill and others, 2004; Grice, 2006; Foster and others, 2010). Previous maps predate modern understanding of crustal extension in orogenic belts and therefore underestimate deformation that occurred after contractional Laramide-Sevier orogenesis ended in Late Cretaceous time.

## Previous maps

Most of the Mount Powell 7.5' quadrangle (figure 1) was mapped at 1:63,360 by Mutch (1960, 1961). Allen (1962) mapped the igneous rocks in the quadrangle. The area south of Racetrack Creek was mapped by Csejtey (1962) at 1:31,680. The entire quadrangle was also included in Wallace's (1987) and Lewis's (1998) Butte 1° x 2° quadrangle maps (1:250,000). The Rock Creek 7.5' quadrangle, which abuts the Mount Powell 7.5' quadrangle to the north, was recently remapped at 1:24,000 (Feeney and others, 2009).

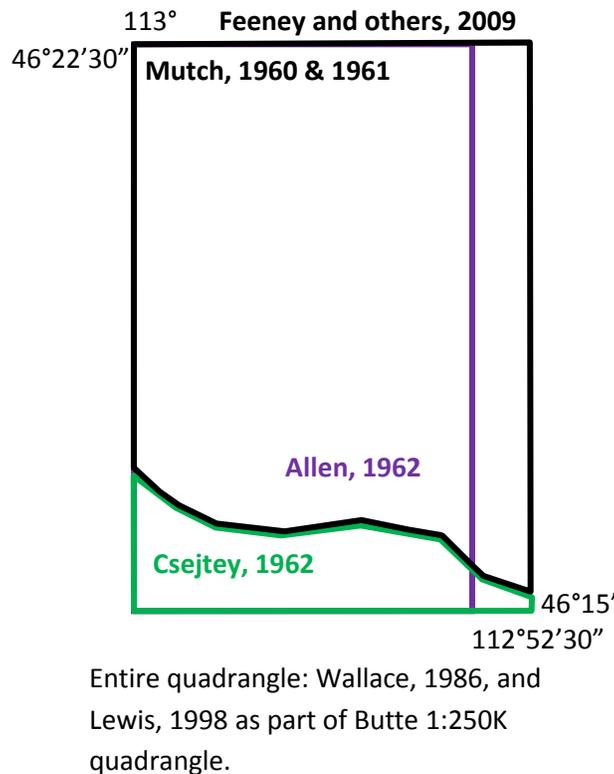


Figure 1. Previous mapping.

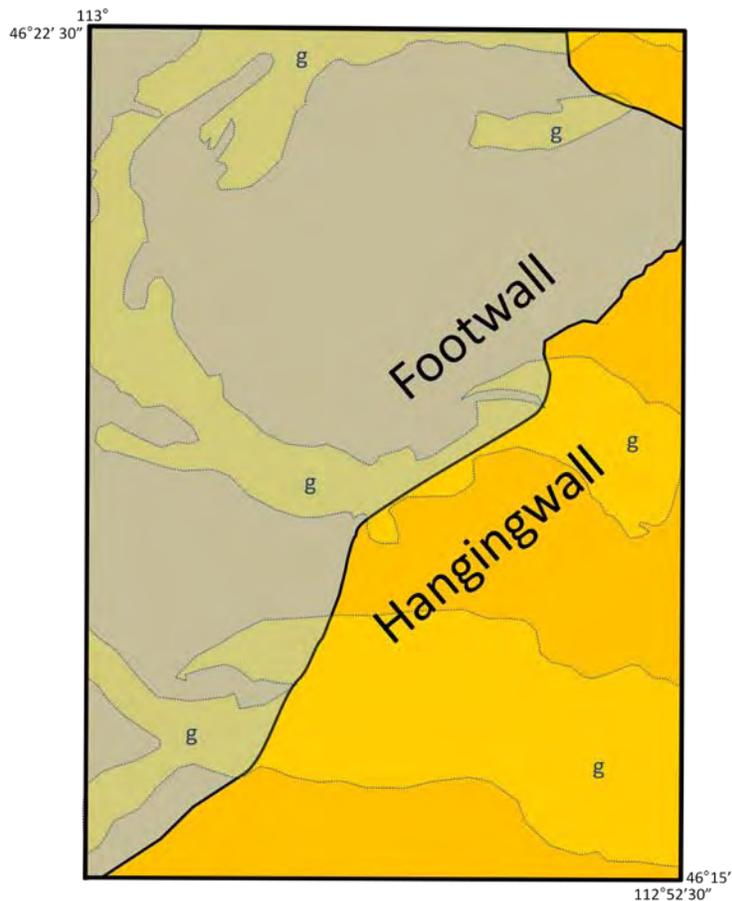
## Geologic Summary

The rocks that form the basement of the Mount Powell 7.5' quadrangle are ductilely-deformed, Mesoproterozoic, Paleozoic, and Mesozoic metasedimentary rocks intruded by Cretaceous granodiorite

(Kg) followed in Cretaceous to Paleocene times by mafic to felsic dikes, sills, and plutons of the Mount Powell Batholith (TKg). Radiometric ages for these units, and their sources, are given in the lithologic descriptions that follow this section.

The cover sequence includes tectonic breccias and predominantly coarse-grained, alluvial and fluvial sediments derived from unroofing of the Anaconda Metamorphic Core Complex and later high-angle normal faulting that accompanied opening of the present-day Deer Lodge Valley.

The basement rocks of the northwest half of the quadrangle belong to the footwall of the Anaconda Metamorphic Core Complex (figure 2). While these rocks are locally mylonitic, there is no discrete detachment exposed in the quadrangle. The footwall and hangingwall are now separated by a set of steep, northeast-trending normal faults mostly concealed beneath younger deposits.



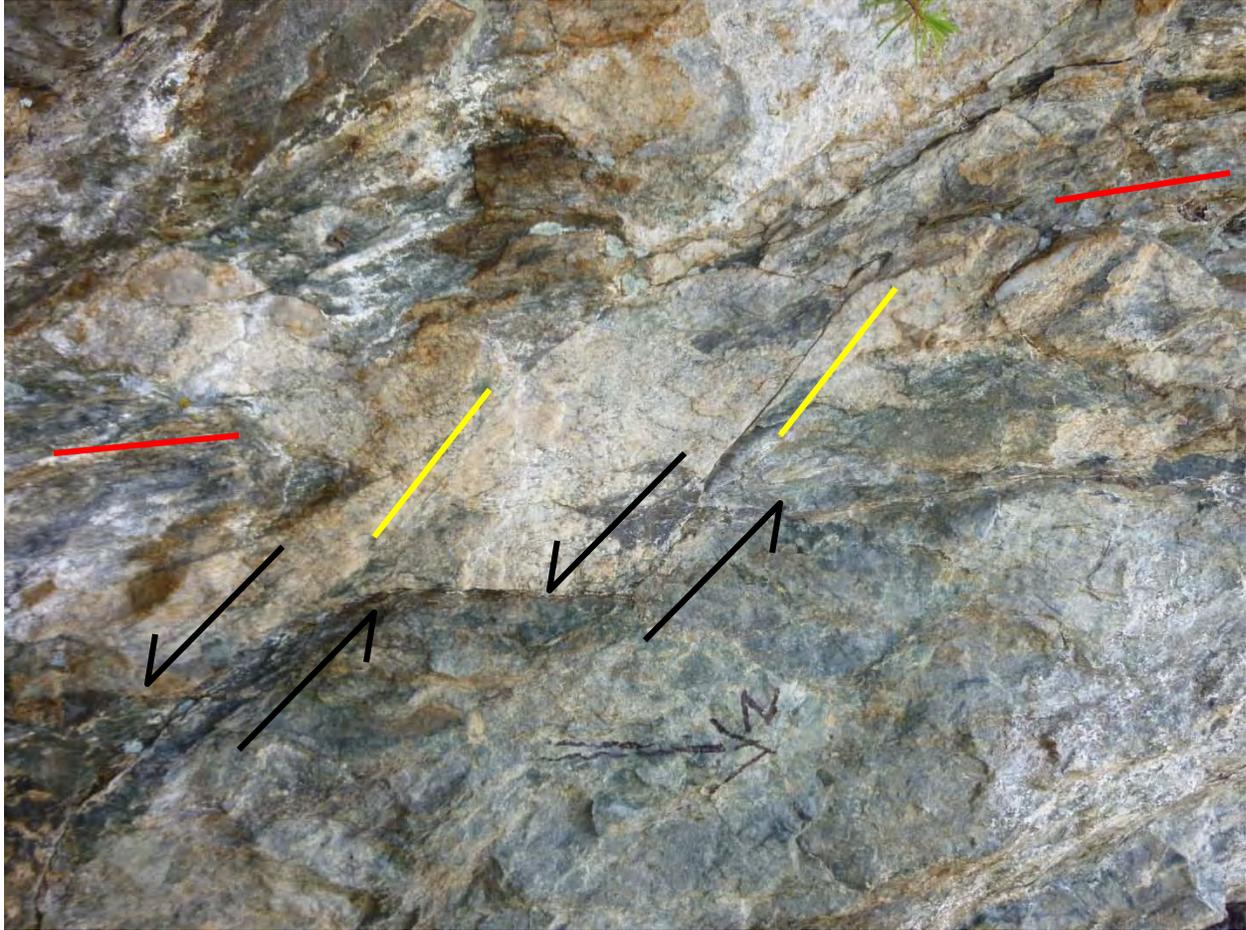
*Figure 2.* Footwall and hangingwall of the Anaconda Metamorphic Core Complex within the Mount Powell 7.5' quadrangle. Footwall rocks are metamorphic and/or intrusive. Hangingwall rocks include transported footwall rocks, tectonically brecciated footwall rocks and syn- and post-extensional clastic deposits. Quaternary glacial deposits overlie the areas within the polygons labeled 'g'.

Footwall rocks include quartzite, phyllite and calcsilicate gneiss (figures 3 and 4) from Mesoproterozoic protoliths (Yq, Yqp, Ycg, Ymi) that were transposed and refolded during Laramide orogenesis. Poorly

exposed Cambrian rocks reveal little evidence of their deformation history (figure 5), but small exposures of marble in the west also contain evidence of at least two generations of folding and accompanying metamorphism (figure 6).



*Figure 3.* Calc-silicate gneiss (Ycg) near the top of Deer Lodge Mountain showing transposed layering and metamorphic segregation.



*Figure 4.* Micaceous quartzite and phyllite (Yqp) with well-developed cleavage (parallel to red lines) crosscut by felsic intrusions associated with the Mount Powell Batholith. The intrusions have themselves been sheared and overprinted by top-south shear bands (parallel to yellow lines) Black arrow illustrate shear sense. Vertical face, field of view approximately 55 cm wide. North Fork Dempsey Creek at N46.336186° W112.892833° (NE¼ sec. 30 T7N R10W).



*Figure 5. Boulders of Flathead Formation quartzite (Cf) in talus at N46.303887° W112.991959° (NE¼ sec. 5 T6N R11W).*



*Figure 6.* Marble (m) boulder at N46.300240° W112.981675° (SE¼ sec. 4 T6N R11W) showing refolded calc-silicate layers (dotted form line) with preferred dimensional orientation axial plane cleavage (solid form lines). Compass is 6.5 cm wide.

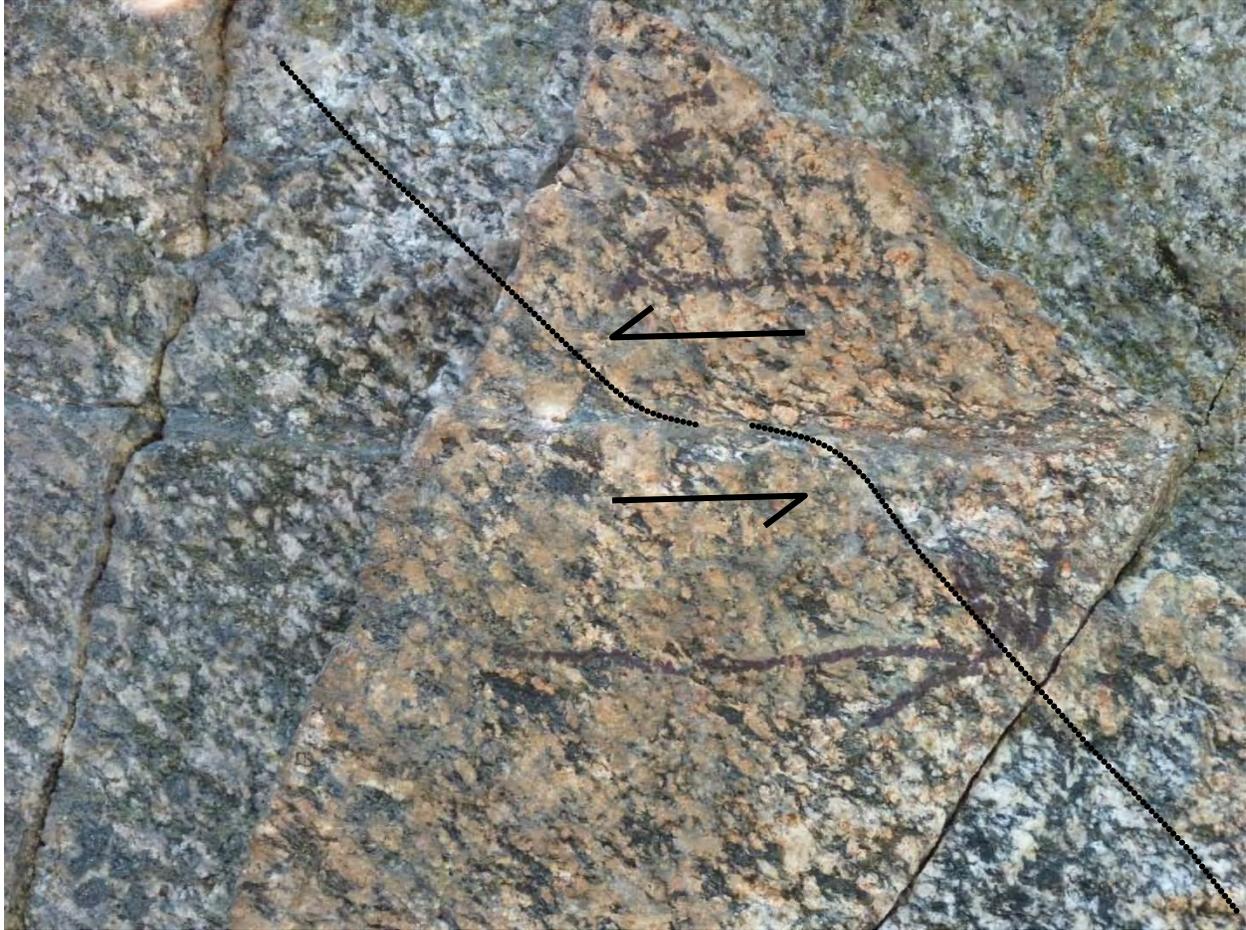
In the southwest corner of the quadrangle, the footwall also contains deformed Cretaceous granodiorite (Kgd) which was intruded by the late Cretaceous-Paleocene Mount Powell Batholith. Mylonitic fabrics in the granodiorite (figure 7) that are cut by dikes and sills of the batholith indicate west-directed tectonic transport during Laramide times. Further evidence for west-directed Laramide transport comes from the Ravalli Mountain anticline which includes the Missoula Group quartzites exposed in the far northwest corner of the quadrangle. This overturned-to-the-west anticline was first mapped by Mutch (1960, 1961), who reported other examples of west-verging structures within the Flint Creek Range but discounted the possibility of regional westward thrusting due to lack of parallel examples elsewhere in Montana. More recent mapping by Lonn and others (2003), Berger and Elliott (2007), and McDonald and others (2012), has produced increasing evidence of west-directed Laramide transport throughout southwest Montana.

Post-Laramide tectonometamorphism is represented by top-east-directed mylonite and shear bands within the footwall, some of which overprint top-west mylonites within Cretaceous granodiorite (Kgd)

(figure 8). Shearing within phases of the Mount Powell Batholith (e.g. figure 4) indicates that deformation occurred after the Paleocene Period.



*Figure 7.* Foliation surface in mylonitic granodiorite (Kgd). Lineations parallel to the long edge of clipboard plunge shallowly west.



*Figure 8.* Foliated granodiorite (Kgd) overprinted by top-east shear zone. Foliation form line dotted. View is looking south at a vertical face. Field of view is approximately 15 cm.

Deformation in the hangingwall is dominated by cataclasis related to Eocene to Oligocene (Foster and others, 2010) extension within the Anaconda Metamorphic Core Complex. Diverse breccias and cataclastic rocks are exposed within the Mount Powell 7.5' quadrangle, and their classification is difficult. Cataclastic units include brecciated dolomite and calcite marble intruded by phases of the Mount Powell Batholith in sec. 10 T6N R11W, making them older than Paleocene. Foliated cataclasites (fcc, figure 9) in sec. 35 T7N R11W and sec. 9 T6N R11W also appear to either be intruded by or synchronous with the batholith.

Tgr1 is demonstrably a sedimentary breccia, with mixed clasts and a clastic sedimentary matrix. Pzb in sec. 30 T7N R10W, though, contains discrete segregations of identifiable stratigraphic units which are thoroughly fractured and bounded by slickensided surfaces. Further along the spectrum, the rocks labeled as Kootenai Formation (Kk) are also fractured (figure 10 a, b), but are exposed over a large enough area and are coherent enough to map as a sedimentary unit rather than a tectonostratigraphic unit.



*Figure 3.* Foliated cataclasite (**fcc**) from E½ sec. 9 T6N R11W. Red color is surface iron staining. Fresh rock is pale greenish gray.

**a**



**b**



*Figure 10.* Cretaceous sedimentary rocks Kk: a) Disrupted Kootenai Formation sandstone and shale with at least one strong slaty cleavage. Cleavage is parallel to red line; bedding is parallel to white line, b) Bedding surface in strongly deformed, Kootenai Formation gastropod limestone. A ductile shear fabric parallel to the red line is overprinted by multiple fracture sets parallel to the black lines. Both photos are from N46.326398° W112.891717° (SE¼ sec. 30 T7N R10W).

It is not surprising to find a wide range of cataclasites and syn-tectonic sedimentary breccias in the hangingwall of a metamorphic core complex. However, the Mount Powell 7.5' quadrangle breccias indicate that cataclasis must have begun in Paleocene times, which is earlier than the 53.1 Ma beginning for extension in the Anaconda Metamorphic Core Complex proposed by Foster and others (2010).

Mylonites related to top-east motion of the hangingwall of the Anaconda Metamorphic Core Complex are offset in the Mount Powell 7.5' quadrangle by steep normal faults. The absolute ages of these faults are not known, though they cut presumed Eocene gravels. The Anaconda Detachment had about 25km of top-east displacement (Foster and others, 2010) and the steep faults cutting the detachment must have had significant movement because the total thickness of Tertiary and Quaternary sediments within the nearby Deer Lodge basin exceeds 10,000 feet (McLeod, 1987).

### Description of Map Units

- Qaf Alluvial fan** (Holocene) — Unconsolidated gravel, sand, silt, and clay in deposits with fan-shaped morphology at break in slope.
- Qal Alluvium** (Holocene) — Well-sorted gravel, sand, silt, and clay along modern streams and flood plains.
- Qta Talus** (Holocene) — Angular rock debris at base of cliffs or steep slopes.
- Qao Older alluvium** (Holocene or Pleistocene) — Well-sorted gravel, sand, silt, and clay along streams and flood plains that are no longer active.
- Qc Colluvium** (Holocene) — Variably transported bedrock fragments in deep soil cover. Poorly sorted, angular, locally derived rocks and soil on hillsides covering rock outcrops.
- Qdf Debris flow** (Holocene) — Mass wasting deposits of unsorted subangular boulders, gravel, sand, and silt.
- Qls Landslide deposit** (Holocene) — Mass wasting deposits of clay- to boulder-size sediment that include rotated or slumped blocks of bedrock and surficial sediment, earthflow deposits, and mudflow deposits. Color and lithology reflect that of transported parent rock and surficial materials.

At N46.254008° W112.900842° (N½ sec. 19 T6N R10W) the transported mass is poorly consolidated sand, gravel, and clay beds centimeters to 1 m thick. Clay is red and gray, with disrupted beds about 10 cm thick; sand is unsorted, coarse and immature, with subangular frosted grains of quartz, feldspar, muscovite, and biotite; gravel is unsorted with angular to well rounded clasts of biotite granite, vein quartz, gray quartzite, purple, and white feldspathic quartzite (probably Belt Supergroup), lithic quartzite/meta-sandstone (probably Cretaceous), black hornfels, red and gray rhyolite, red quartzite, black chert, tan tuff, and black mud. Many clasts are fractured. The gravel beds are locally cemented with calcite. The sediments in the landslide look like Tertiary deposits found at the extreme east end of Stucky Ridge in the Anaconda North 7.5' quadrangle (W½ sec. 31 T5N R11W; Elliott and Lonn, in prep.) and on the east side of the summit of Grassy Mountain in the Mount Haggin 7.5' quadrangle (W½ sec. 7

T3N R11W). Lithologically, all of these deposits resemble the late Eocene/early Oligocene Climbing Arrow Formation described for areas east of Mount Powell (e.g. Vuke, 2004 and 2006).

**Qlsy** **Younger landslide** (Holocene) — Landslide deposits that are youngest in a related sequence.

**Qlso** **Older landslide** (Holocene) — Landslide deposits that are oldest in a related sequence.

**Qrg** **Rock glacier** (Holocene) — Angular rock debris with interstitial ice extending in lobes down slope from talus piles (figure 11).



*Figure 11.* Rock glacier (outlined) in the cirque on the northeast slope of Mount Powell.

- Qgo** **Glacial outwash** (Pleistocene) — Moderately to well-sorted cobble gravel, sand, and silt on perched valley between Bielenberg and Dempsey Creeks.
- Qgt** **Glacial till** (Pleistocene) — Unsorted, unstratified, unconsolidated, subangular to subrounded boulders in an unsorted matrix of sand, silt, and clay. Deposits have irregular topography with local internally drained basins. Includes lateral and terminal moraines of the Pleistocene Tin Cup Joe, Powell, Dempsey, and Racetrack Creek glaciers.
- Qgto** **Glacial till, older** (Pleistocene) — Unsorted, unstratified, unconsolidated, subangular to subrounded boulders in an unsorted matrix of sand, silt, and clay. Underlies glacial till of the main Racetrack Creek glacier. The unit is distinguished from the younger material by its smoother topography, deeper soil profile, and deeply weathered and pitted boulders on the surface.
- QTgc** **Gravel colluvium** (Tertiary-Quaternary?) — Apron of transported cobble gravel derived from upslope Tertiary gravels.
- Tgr** **Gravel** (Tertiary, undivided) — Angular to subangular clasts up to 80 cm across of quartzite, gray slate, argillite, and calc-silicate phyllite (probably Mesoproterozoic), gray limestone with crinoids (probably Madison Group), lithic sandstone, Paleozoic quartzite (probably Quadrant Formation), dacite, cemented granite breccia, meta-lithic sandstone, quartz breccia, porphyritic granite, dolomite marble, chert-pebble conglomerate in quartzite matrix, and foliated quartz sandstone. Overlies Belt-age quartzites and limestone breccia, and is in fault contact with tectonic breccias and Madison Group limestone mylonite. Assumed to be Tertiary because it shows signs of being tectonized, but is probably one of the younger Tertiary gravels because it contains clasts from the footwall and detachment zone of the Anaconda Metamorphic Core Complex.

**Tertiary gravels Tgr1, Tgr2, Tgr3, and Tgr4** were identified based on stratigraphic relationships observed in both the Mount Powell and Anaconda North 7.5' quadrangle maps. **Tgr2** is not found in the Mount Powell 7.5' quadrangle.

- Tgr4** **Youngest/capping gravels** — Coarse cobble fluvial gravel that overlies **Tgr3** with angular unconformity. Subrounded to well rounded cobbles and boulders of biotite-muscovite granite, quartzite, lithic sandstone, and schist derived from the footwall of the Anaconda Detachment. More than 120 m (395 ft) thick.
- Tgr3** **Younger gravels** — On Bielenberg Ridge (figure 12), this deposit is unsorted and polymictic, with angular to round cobbles up to 40 cm across on slope and 2 m across on the ridge line. Clasts are dominantly lithic sandstone and maroon mudstone, probably Kootenai Formation. Other clasts are porphyritic granite, aplite (some with a cleavage, some without), gray limestone (Madison Group?), coarse crystalline white marble, quartzite, some of which is tan and cross-bedded with about 10% feldspar and rusty spots, and rare vesicular basalt. Where this unit is well exposed on the top of the ridge, a slaty cleavage is persistent across clasts of different size and composition (figure 12), indicating that the unit has been tectonically deformed.



*Figure 12.* Tectonically cleaved boulder-sized clasts in Tgr3 gravel on top of Bielenberg Ridge (N46.304811° W112.930552°; NW¼ sec. 1 T6N R11W). Note that the cleavage is continuous across clasts of different composition. Clipboard is 32 cm long.

**Tgr3** Gravels south of Modesty Creek were mapped by Csejtey (1962) as Miocene-aged 'Anaconda beds' angularly overlain by younger 'Modesty Creek beds'. O'Neill (2005) grouped both gravels as Eocene 'Anaconda beds'. Neither interpretation appears to be correct. Our mapping here and within the Anaconda North 7.5' quadrangle to the south (Elliott and Lonn, in prep.) demonstrates that Csejtey's Modesty Creek Beds underlie what he mapped as Anaconda beds and are probably older than Miocene. Our mapping also shows that O'Neill's 'Anaconda beds' include gravels in many different stratigraphic positions and of different ages (Elliott and Lonn, in prep.).

**Tgr3** gravels are more than 360 m (1,200 ft) thick.

**Tgr1 Older gravels** (Paleocene or Eocene) — Gravels which stratigraphically underlie Eocene volcanic rocks found in the Anaconda North 7.5' quadrangle. **Tgr1** gravels are red, calcite-cemented, and weakly foliated sedimentary breccias with unsorted angular clasts up to 40 cm across. Madison Group limestone clasts dominate, but the deposits also include gray quartzite, black chert, foliated quartz-mica schist and calcite mylonite. This unit is probably related to the "West Valley chaos" unit of O'Neill (2005) and represents syntectonic deposits along the Anaconda Detachment. Approximately 60 m (197 ft) thick.

**Tgbg Granite boulder gravel** (Tertiary) — Jumble of biotite-muscovite granite and granodiorite boulders up to 5 m across, in fault contact with alluvial polymict **Tgr1** gravel to the east. Thickness unknown.

**Ks Sedimentary rock** (Cretaceous?) — Unmetamorphosed, flaggy bedded, buff-colored, calcite-cemented sandstone and conglomerate with angular clasts of limestone, quartz, black and purple shale, crystalline calcite, lithic sandstone, Quadrant Formation quartzite, and red siltstone (figure 13). The one exposure of this unit at N46.283038° W112.939377° (SE¼ sec. 11 T6N R11W) is surrounded by sedimentary and tectonic breccias and might be a megaclast. Thickness unknown.



*Figure 13.* Conglomerate bed in Cretaceous (?) calcite-cemented clastic rocks (Ks) at N46.283038° W112.939377° (SE¼ sec. 11 T6N R11W). Notebook is 19 cm long.

- Kk** **Kootenai Formation** (Cretaceous) — Poorly exposed, fractured and brecciated lithic sandstone, maroon and brown shale and slate (figure 10a), polymict conglomerate, and gastropod limestone that is strongly sheared, foliated and brecciated (figure 10b). Thickness unknown.
- Pzb** **Undivided sedimentary rocks, brecciated** (Paleozoic?) — Sedimentary rocks in the northeast quadrant of the map are dominated by angular clasts of Madison Group limestone and Quadrant Formation quartzite in a sheared and locally silica-cemented matrix. In the southwest corner of the map area, the breccia is poorly exposed, and contains areas of breccia dominated by quartzite, marble, mylonite, calc-silicate schist, or vein quartz, or is composed of a mixture of the above. Dominantly cataclastic, but locally has the appearance of sedimentary breccia. Thickness variable.
- Pzqb** **Quartzite, brecciated** (Paleozoic?) — Tectonic breccias dominated by Proterozoic quartzite clasts. At sec. 10 T6N R11W, the unit is well-cemented quartzite to micaceous meta-sandstone

breccia of probable Paleozoic protolith. At N46.283810° W112.936299° (SW¼ sec. 11 T6N R11W) the unit is mostly gray quartzite with zones of black shale and lithic sandstone with a NW-trending shear fabric. Thickness unknown.

- Pzlb Limestone, brecciated** (Paleozoic?) — Tectonic breccia dominated by clasts of limestone of probable Paleozoic age. At N46.283810° W112.936299° (SW¼ sec. 11 T6N R11W), the unit contains clasts of black and dark gray limestone and grey calcite mylonite. It also contains scattered clasts of quartzite. Thickness unknown.
- Pzdb Dolomite, brecciated** (Paleozoic?) — Tectonic breccia dominated by clasts of Paleozoic dolomite. Thickness unknown.
- Pzmb Calcite marble, brecciated** (Paleozoic?) — Tectonic breccia dominated by clasts of marble of probable Paleozoic age. Thickness unknown.
- Mm Madison Group** (Mississippian) — Gray, crinoid-bearing limestone, locally sheared. Thickness unknown.
- Ch Hasmark Formation** (Cambrian) — Poorly exposed pink and tan dolomite. Thickness unknown.
- Csh Silver Hill Formation** (Cambrian) — Very poorly exposed metamorphosed mudstone and siltstone. Thickness unknown.
- Cf Flathead Formation** (Cambrian) — Light gray, pinkish gray or yellowish brown quartzite exposed as float and talus (figure 5). Distinguished from Belt quartzites by lack of feldspars and near proximity of Csh and Ch float. Thickness unknown.
- Ymi Missoula Group** (Mesoproterozoic) — Poorly exposed feldspathic quartzites. Thickness unknown.
- Ycg Calc-silicate gneiss** (Mesoproterozoic?) — Interpreted to be metamorphic equivalents of Piegan Group carbonates as defined by Winston (2007). At Bohn Lake, **Ycg** is interlayered massive calcite marble and coarse crystalline tremolite, quartz, and dolomite, and is intruded by leucocratic garnet-bearing granite dikes. The compositional layering is isoclinally folded and transposed, and has been refolded into complex two- or three-generation interference patterns. The folds are overprinted by a slaty preferred dimensional orientation fabric oriented 062°/52°SE. This fabric has been subsequently overprinted by NW-trending right-handed ductile shear zones and low-angle top-west shear zones. The long complex deformation history of these rocks suggests that they come from deep within the-footwall of the Anaconda Metamorphic Core Complex. At Deer Lodge Mountain, **Ygc** is composed of argillite and calc-silicate layers millimeters to centimeters thick, with a transposition foliation overprinted by a slaty cleavage (figure 3).

**Yqp** **Micaceous quartzite and phyllite** (Mesoproterozoic?) — Gray micaceous quartzite and phyllite, fine-grained, well sorted, with minor feldspar (figure 4). The dominant fabric is a transposed foliation of mm to cm, dark and light bands with strong mica preferred dimensional orientation, overprinted by crenulation and shear band cleavages. Thickness and protolith unknown.

**Yq** **Quartzite** (Mesoproterozoic?) — Poorly exposed (mostly float) medium-grained pink, gray, and red feldspathic quartzite. Cross-bedded with conglomerate layers containing meta-sandstone cobbles. Thickness and protolith unknown.

### Igneous Units

**Tdi** **Diorite** (Tertiary) — Fine- to coarse-grained, layered to massive, hornblende-plagioclase diorite assumed to be Tertiary because it intrudes the Mount Powell Batholith.

**TKg** **Mount Powell Batholith** (Late Cretaceous to Paleocene) — Suite of Late Cretaceous to Paleocene monzogranitic to monzodioritic plutons, sills, and dikes. Includes potassium feldspar porphyritic muscovite-biotite granite, garnet-bearing aplite (figure 14), and pegmatite. Zones within the batholith contain sheets of metamorphic rocks such as strongly foliated quartz-chlorite-biotite phyllite, quartz-muscovite schist, and quartz-feldspar-chlorite-epidote gneiss. The schistose rocks appear to have sedimentary protoliths and the gneisses appear to have intrusive igneous protoliths. Many of these rock types were mapped by Mutch (1960, 1961) as “altered diorite”. The metamorphic rocks appear to have been strongly deformed prior to inclusion in the batholith.



*Figure 14.* Muscovite-garnet aplite of the Mount Powell Batholith (TKg) N46.310632° W113.000000° (NE¼ sec. 5 T6N R11W). Field of view is approximately 8 cm wide.

Eight apatite fission track dates from the Mount Powell Batholith have an average age of 62.1 Ma (Baty, 1973). Marvin and others (1989) report K/Ar dates of  $61.5 \pm 1.0$  Ma for biotite and  $59.7 \pm 1.4$  Ma for muscovite from a sample of granite from the Mount Powell Batholith just west of the Mount Powell 7.5' quadrangle along Racetrack Creek. Grice (2006) reports an  $^{40}\text{Ar}/^{39}\text{Ar}$  mica cooling age closer to 68 Ma based on slightly discordant biotite and muscovite plateaus. Naibert and others (2010) conclude that the emplacement age of the batholith is younger than or equal to the youngest biotite age (65.4 Ma) of the adjacent Philipsburg Batholith. Given the variety of intrusive phases within the Mount Powell Batholith, it seems likely that it was intruded in stages that ranged between late Cretaceous and early Tertiary times. The batholith was probably crystallized by Eocene times because it was affected by top-east mylonitization along the Anaconda Detachment.

The batholith contains inherited zircons with ages between 1.63 and 2.47 Ga (Foster and others, 2006), indicating the presence of Paleoproterozoic rocks in the magmatic source area. Foster and others (2006) include the batholith in their Selway basement terrane which bounds the west side of the Great Falls Tectonic Zone.

**TKdg Closely interlayered Tdi diorite and TKg granite (Tertiary and Cretaceous)**

**Kgd Foliated granodiorite** (Cretaceous) — Hornblende-biotite granodiorite with well-developed, shallowly dipping proto-mylonitic to mylonitic fabrics. Top-to-the-west S-C fabrics and shear bands are locally overprinted by top-east shear indicators that are congruent with top-east mylonitic foliation in the Mount Powell Batholith. Dikes and sills of the batholith crosscut the top-west fabric, showing that the Cretaceous granodiorite was deformed by westerly directed shearing prior to intrusion of the batholith. Both the granodiorite and the Mount Powell Batholith were subsequently subjected to top-east shear (figure 8) associated with extension of the Anaconda Metamorphic Core Complex (O'Neill and others, 2004; Foster and others, 2010. Hawley (1974) named the Cretaceous granodiorite the Racetrack Pluton but included rocks that this study finds to be tectonically and lithologically distinct.

**Age unknown**

**fcc Foliated cataclasite** — Mostly quartz with scattered fine white micas, appears to be recrystallized, brecciated mylonite, probably from a quartzite protolith (figure 9). Probably related to movement on the Anaconda Detachment during unroofing of the Anaconda Metamorphic Core Complex.

**sch Schist** — Silver-black phyllite with amphibole needles, biotite-hornblende schist.

**m Marble** — Foliated and laminated calcite marble (figure 6) with epidote-rich veins, rootless folds and boudins. Locally appears to be recrystallized mylonite.

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