



- QUATERNARY**
PLEISTOCENE AND RECENT
 Qd Till, alluvium, colluvium
- CRETACEOUS AND TERTIARY**
UPPER CRETACEOUS AND PALEOCENE
 TKwc WILLOW CREEK FORMATION: red, green, dark grey, and purple shale; sandstone lenses; limy nodules
- CRETACEOUS**
UPPER CRETACEOUS
 Kmr ST. MARY RIVER FORMATION: siltstone, channel-fill sandstone, and shale; bentonite and ironstone; basal member, coal-bearing
 Kbo BLOOD RESERVE FORMATION: massive and crossbedded argillite; sandstone concretions; local shale partings; coquina lenses (Ostrea, Halymenites), up to 3 m thick
 Kbp BEARPAW FORMATION: dark grey-brown shale; minor thin sandstone, bentonite, and ironstone; basal coquina (Ostrea)
- MESOZOIC**
UPPER CRETACEOUS
 Kdw BELLY RIVER GROUP
 DRYWOOD CREEK FORMATION: sandstone, dark greenish grey shale; minor coal, coquina
 Kkb LUNDBRECK FORMATION: greenish grey shale; limy concretions, pedogenic limestone, channelized sandstone bodies
 Kcc CONNELLY CREEK FORMATION: channelized sandstone bodies and shale; common wood, plants and coaly fragments in sandstone; minor coquina (gastropods)
- ALBERTA AND BELLY RIVER GROUPS**
 Kbu ALBERTA GROUP
 FRANKOW FORMATION: recessive dark greenish grey marine shale, minor sandstone (formation less than 10 m thick)
 BURMIS FORMATION: light grey, crossbedded argillite; minor brown weathering, concretionary and iron-bearing calcareous sandstone and magnetite-bearing sandstone
 Kkl LEES LAKE FORMATION: dark grey marine shale, light grey sandstone
 Kwp WAPIABI FORMATION: dark grey marine shales and minor thin siltstone, fine grained sandstone and calcareous sandstone

- MAP SYMBOLS**
 Outcrop (small, large, scattered)
 Geological boundary (defined, approximate, assumed)
 Geological boundary (assumed projection under younger deposits)
- LOCAL STRUCTURES**
PLANAR STRUCTURES
 Bedding, tops known (horizontal, inclined, overturned, vertical)
 Bedding, tops unknown (inclined, vertical, dip unknown)
 Cleavage, first phase (inclined)
 Joint (inclined, vertical)
 Vein (inclined, vertical)
- LINEAR STRUCTURES**
 Intersection lineation (L₁)
 Fold axis (anticline, Z-fold)
 Fault station
- REGIONAL STRUCTURES**
 Thrust fault (teeth indicate dip direction; defined, approximate, assumed)
 Thrust fault (assumed projection under cover of younger deposits)
 Anticline (upright, overturned; approximate position)
 Syncline (upright, overturned; approximate position)
- OTHERS**
 Well (gas producer, dry and abandoned)
 Abandoned mine
 Sand and gravel pits
 Fossil locality

Geology by D. Lebel and E.P. Williams based on fieldwork and studies of vertical air photographs by E.P. Williams (1947, 1948) and D. Lebel (1993, 1994). Additional information about the geology can be found in Williams (1949, 1956) and Lebel (1994).

- REFERENCES**
 Lebel, D. 1994. Regional geology of the Cardston map area, Alberta, in Current Research 1994-A; Geological Survey of Canada, p. 231-236.
 Williams, E.P. 1949. Preliminary Map, Cardston, Alberta; Geological Survey of Canada, Paper 49-3.
 Williams, E.P. 1956. Geology of the Cardston area, Alberta, Canada. Unpublished Doctoral Thesis, Harvard University, Massachusetts, 205 pages.

- SCHEDULE OF WELLS**
- 1- UWID 1000100226W4 0, LETHBERTA (WEEKS) NO. 1, surface location: 1-1-2-26
 - 2- UWID 100011000326W4 0, FRANCO NO. 2, surface location: 1-10-3-26
 - 3- UWID 10001200124W4 0, CHEVRON ET AL. WHISKEY GAP 1-26-1-24, surface location: 1-20-1-24
 - 4- UWID 1000200026W4 0, CHEVRON ET AL. CARWAY 2-2-2-26, surface location: 3-2-2-26
 - 5- UWID 1000300026W4 0, FRANCO NO. 1, surface location: 3-5-3-25
 - 6- UWID 100041800125W4 0, SUNCOR ET AL. CARWAY 4-18-1-25, surface location: 4-8-1-25
 - 7- UWID 1000500026W4 0, CMV ET AL. WOOLFORD 5-25-2-24, surface location: 5-25-2-24
 - 8- UWID 100061800125W4 0, CZAR ET AL. OUTPOST 6-18-1-25, surface location: 6-18-1-25
 - 9- UWID 100061800125W4 0, ELTUN NRG ET AL. OUTPOST 6-18-1-25, surface location: 6-18-1-25
 - 10- UWID 100061800125W4 0, ELTUN NRG ET AL. OUTPOST 6-18-1-25, surface location: 6-18-1-25
 - 11- UWID 10006300125W4 0, CZAR ET AL. OUTPOST 6-31-1-25, surface location: 6-31-1-25
 - 12- UWID 1000700023W4 0, UNIGAS ET AL. SPRING COULEE 7-8-3-23, surface location: 7-8-3-23
 - 13- UWID 1000710023W4 0, BRACELL ET AL. JEFFERSON 7-17-2-23, surface location: 7-17-2-23
 - 14- UWID 1000740024W4 0, CS DOME WOOLFORD 7-24-2-24, surface location: 7-24-2-24
 - 15- UWID 1000750024W4 0, CMV ET AL. WOOLFORD 7-25-2-24, surface location: 7-25-2-24
 - 16- UWID 1000750024W4 2, CMV ET AL. WOOLFORD 7-25-2-24, surface location: 7-25-2-24
 - 17- UWID 100083100123W4 0, PRECAM ET AL. WHISKEY GAP 8-31-1-23, surface location: 8-31-1-23
 - 18- UWID 10009800126W4 0, LETHBERTA OILS #2, surface location: 9-36-1-26
 - 19- UWID 100101800125W4 0, MINERALS PETERS 10-18-1-25, surface location: 10-18-1-25
 - 20- UWID 100111400226W4 0, MCFARLIN OIL NO. 3, surface location: 11-14-2-26
 - 21- UWID 1001220023W4 0, PHILLIPS AETNA 11-22-2-25, surface location: 11-22-2-25
 - 22- UWID 10013400126W4 0, GPD DOME CARWAY 11-34-1-26, surface location: 12-34-1-26
 - 23- UWID 1001220023W4 0, PHILLIPS AETNA 12-28-2-25, surface location: 12-28-2-25
 - 24- UWID 100140400125W4 0, DOMINION OIL NO. 1, surface location: 14-4-1-25
 - 25- UWID 100140400324W4 0, PAGE ET AL. WOOLFORD 14-4-3-24, surface location: 14-4-3-24
 - 26- UWID 100141400324W4 0, CMV ET AL. WOOLFORD 14-14-3-24, surface location: 14-14-3-24
 - 27- UWID 100141400324W4 0, CMV ET AL. WOOLFORD 14-14-3-24, surface location: 14-14-3-24
 - 28- UWID 100141800223W4 0, SOCONY JEFFERSON NO. 18-14, surface location: 14-18-2-23
 - 29- UWID 100142800223W4 0, WESTCOAST ET AL. AETNA 14-28-2-25, surface location: 14-28-2-25
 - 30- UWID 10015000125W4 0, LETHBERTA NO. 3, surface location: 15-5-1-25
 - 31- UWID 100151500125W4 0, CARWAY 15-15, surface location: 15-15-1-25
 - 32- UWID 100150500125W4 0, BOSTON ALBERTA #1, surface location: 16-5-1-25
 - 33- UWID 102011000326W4 0, FRANCO NO. 2A, surface location: 1-10-3-26
 - 34- UWID 102061800125W4 0, AEL ET AL. OUTPOST 6-18-1-25, surface location: 6-18-1-25
 - 35- UWID 102061800125W4 0, WEEKS & CUTLER NO. 1, surface location: 6-18-1-25
 - 36- UWID 102160500125W4 0, BOSTON ALBERTA #2, surface location: 16-5-1-25
 - 37- UWID 10209800126W4 0, LETHBERTA #2, surface location: 9-36-1-26

Geological cartography by D. Lebel with contributions by S. Hinds and M. McDonough
 Any revisions or additional geological information to the user would be welcomed by the Geological Survey of Canada

Base map at the same scale published Surveys and Mapping Branch in 1978
 Copies of the topographical edition of this map area may be obtained from the Canada Map Office, Department of Natural Resources, Ottawa, Ontario
 Elevations values unavailable in the digital file used for this map at press time, please refer to an original topographical map (contours interval 25 feet east half, 50 feet west half)

NOTE: Base map and geology have been transformed from NAD27 to NAD83

Copies of this map are available from:
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**SOUTHERN ALBERTA
 NATMAP PROJECT**

OPEN FILE 2854
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**GEOLOGY
 CARDSTON
 ALBERTA**

Scale 1:50 000 Echelle 1/50 000

Kilometers 1 0 1 2 3 Kilometers

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82H/5	82H/6	82H/7
Pincher Creek GSC Pap. 51-22	Raley	Raymond
82H/4	82H/3	82H/2
Waterton Lakes GSC Pap. 52-10	Cardston GSC O.F. 2854 GSC Pap. 49-3	Del Bonita GSC Pap. 37-10

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO ADDITIONAL GEOLOGICAL SURVEY OF CANADA MAPS

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