

SASKATCHEWAN RESEARCH COUNCIL

GEOLOGY OF THE KINDERSLEY AREA (72N)  
SASKATCHEWAN

Report 0036-002      October 4, 1979

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October 4, 1979

Geology Division  
Saskatchewan Research Council  
30 Campus Drive  
Saskatoon, Saskatchewan  
S7N 0X1

Attention: Dr. Alfred Schneider

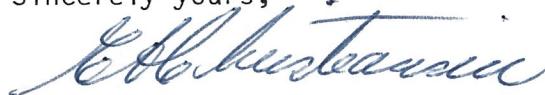
Dear Dr. Schneider:

Enclosed are copies of the bedrock geology and topography map of the Kindersley area along with an explanation and four cross sections. The map and cross sections were completely redrawn to include new information and knowledge accumulated since the last unpublished version was compiled.

If you intend to have my name or that of my firm on the published map, I would like to check it over before it is published.

If you have any queries about the map or cross sections, please call me.

Sincerely yours,



E.A. Christiansen

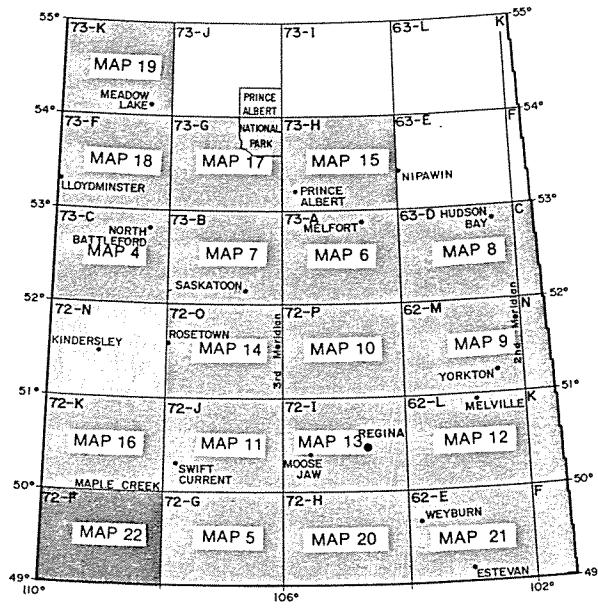
MAP NO. 23

GEOLOGY OF THE KINDERSLEY AREA (72N)  
SASKATCHEWAN

E.A.CHRISTIANSEN CONSULTING LTD.

1980

1:250,000



INDEX MAP

## GLACIAL GEOLOGY

### Stratigraphy

#### Drift, undifferentiated



0-900 feet (274m) thick; mainly gray, brown, and olive calcareous tills with minor amounts of calcareous, gravel, sand, silt, and clay. Drift shown only in cross sections which also exhibit glaciofluvial and lacustrine sediments in the Verendrye Valley (BB') and colluvium in the Eagle Creek Valley (DD').

## BEDROCK GEOLOGY\*

### Stratigraphy

#### Tertiary-Quaternary



0-200 feet (30m) thick; interbedded calcareous and noncalcareous, gray brown, and olive sand and silt; locally with well rounded chert and quartzite pebbles.

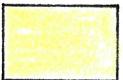
#### Cretaceous

##### Bearpaw Formation



0-550 feet (168m) thick; gray, noncalcareous silt and clay, locally bentonitic and concretionary; includes several extensive sandy beds (Caldwell, 1968), the best developed of which are shown by a gray screen tint.

##### Judith River Formation



0-350 feet (107m) thick; interbedded, gray, noncalcareous silt; sandy silt, friable sand, and sandstone cemented with calcite; and carbonaceous zones; includes the Ribstone Creek Tongue (McLean, 1971).

\* See Geological map of Saskatchewan (Whitaker and Pearson, 1972).

### Lea Park Formation and Upper Colorado Group

1200-1600 feet (366-488m) thick; upper part is gray, noncalcareous silt and clay including the Grizzly Bear Tongue (McLean, 1971), base marked by "Eagle (Milk River) Shoulder"; lower part is dark gray, noncalcareous becoming calcareous toward base which is marked by the "Second White Speckled Shale".

### Lower Colorado Group

Gray, noncalcareous silt and clay.

### Structure

The Structural interpretation of the Rosetown Low is based on composite seismic maps (Sawatsky, 1967) and on investigations by Christiansen and Meneley (1971) and De Mille *et al.* (1964). The vertical gravity faults in the Rosetown Low (Cross Section CC') are schematic.

### BEDROCK SURFACE TOPOGRAPHY

The bedrock surface topography of the Kindersley area was formed mainly by glacial erosion; preglacial, proglacial, and subglacial fluvial erosion; and collapse.

The glacial thrusting model (Christiansen and Whitaker, 1976; Clayton and Moran, 1974) was used as a basis for constructing the upward facing concave bedrock surface. The Tyner Valley, which was modified by glacial erosion, is preglacial. The Eagle Creek Valley, on the other hand, was a glacial spillway (Tramping Spillway, Christiansen, 1979), and the Verendrye Valley is believed to be an ice-walled valley. The Rosetown Low is interpreted as a collapse structure resulting from dissolution of salt from the Devonian Elk Point Group.

### BASE OF GROUNDWATER EXPLORATION

The base of groundwater exploration defines the depth below which it is generally considered to be uneconomic to explore for groundwater because of the cost of drilling to the required depth and/or because the water at that depth is considered to be too highly mineralized for the intended use. Aquifers containing water which has a TDS of more than 4000 ppm are not considered as potential aquifers at this time. If economic methods of desalination of groundwater are developed in the future, many such aquifers would become potential aquifers for municipal and industrial purposes. Test drilling for groundwater should be continued to the base of exploration as defined by the cross sections. All testholes should be electric logged to identify potential aquifers and to permit the quality of each water bearing zone to be estimated before the well is constructed.

### ACKNOWLEDGMENTS

Test drilling was done by Big Indian Drilling Company Ltd., Calgary; M.R. Hall Drilling Ltd., Regina; Elk Point Drilling Ltd., North Battleford; and Hayter Drilling Ltd., Watrous. Additional testhole information was received from the Family Farm Improvement Branch, Saskatchewan Department of Agriculture, Regina; from PFRA, Regina; from Underwood McLellan (1977) Ltd. through the Town of Kerrobert; and from the Saskatchewan Department of Highways and Transportation through E.K. Sauer.

#### LITERATURE CITED

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INDEX OF CROSS SECTION LOGS

1. Imperial Bathurst 10-1-24-25-W3
2. SRC Glidden NW15-21-24-23-W3
3. SRC Newcombe NE8-8-25-24-W3
4. Imperial Cornfield 10-32-25-25-W3
5. FFIB Hulda Jasman SW12-28-26-25-W3
6. Phillips Warrior No.1 11-9-27-25-W3
7. SRC Laporte SE1-29-27-25-W3
8. Imperial Warrior 10-29-27-25-W3
9. Husky Marengo STH No.7 (75E/2580S) NEC16-28-26-W3
10. SRC Flaxcombe NE16-32-28-26-W3
11. Imperial Flaxcombe 7-27-29-26-W3
12. Phillips Whiteside No.1 5-11-30-26-W3
13. Husky Whiteside 11-22-30-26-W3
14. FFIB Smiley NW11-10-31-26-W3
15. Imperial Dewar 7-23-31-26-W3
16. Husky Prairiedale 9-10-32-26-W3
17. Canso Seaboard 6-29-32-26-W3
18. SRC Fusilier NW2-1-33-27-W3
19. Canso Fusilier 7-1-33-25-W3
20. Husky Fusilier 9-22-33-27-W3
21. Canso Fusilier 10-33-33-27-W3
22. Canso Fusilier 7-12-34-28-W3
23. SRC Court NE8-15-34-28-W3
24. Canso Dusilier 11-15-34-28-W3
25. Husky Panama 16-28-34-28-W3
26. FFIB Wendelin Kohlman NE13-2-35-28-W3
27. Husky Panama 4-9-35-28-W3
28. SRC Cuthbert SW5-34-25-29-W3
29. Phillips Cuthbert 6-2-26-29-W3
30. Dome Cabri Lake STH No. 1 (60N/30E) NEC36-25-29-W3
31. Texaco Cuthbert 4-17-26-28-W3
32. Husky Marengo STH No.4 (110E/60N) NEC15-26-28-W3
33. SRC Eyre SE1-26-26-28-W3
34. Phillips Mantario 1-5-27-27-W3

35. SRC Mantario NW14-32-26-27-W3
36. Phillips Eyre No.1 6-10-27-27-W3
37. Imperial Baily 11-17-27-26-W3
38. Phillips Besharah No.1 11-35-27-24-W3
39. SRC Verendrye SW4-4-28-23-W3
40. SRC Verendrye NE8-4-28-23-W3
41. SRC Verendrye SE8-10-28-23-W3
42. FFIB Werner Krahn SW4-9-28-22-W3
43. Phillipps Inglenook No.1 1-4-28-22-W3
44. Imperial Turvin 1-1-28-22-W3
45. Phillips Mylrea No.1 10-29-27-21-W3
46. SRC McMorran SE13-13-27-21-W3
47. ZD-HB Petrody McMorran 11-17-27-20-W3
48. Mobil Penkill 1-16-27-19-W3
49. SRC Penkill SE9-24-27-19-W3
50. Socony Bickleigh 13-14-27-18-W3
51. SRC Chipperfield NW13-8-27-17-W3
52. SRC Gunworth SE1-17-27-16-W3
53. HB Rosetown 4-16-27-16-W3
54. SRC Elrose SE2-14-27-15-W3
55. TW Kyle STH No.56 (118E/76N) NEC33-23-15-W3
56. TW Elrose STH No.293 (2104W/32N) NEC5-24-15-W3
57. SRC Whitebear NW13-7-24-15-W3
58. TW Elrose STH No.252 (58E/17S) NEC12-24-16-W3
59. Husky Elrose STH No.6 (60E/360N) NEC10-24-16-W3
60. TW Elrose STH No.256 (86W/18S) NEC 22-24-16-W3
61. TW Elrose STH No.255 (325W/145N) NEC36-24-16-W3
62. ZD-HB Elrose 6-7-25-15-W3
63. TW Elrose STH No.266 (710W/157N) NEC7-25-15-W3
64. SRC Lillie No.3 SE8-18-25-15-W3
65. SRC Lillie SW4-30-25-15-W3
66. TW Elrose STH No.259 (35E/536N) NEC24-25-16-W3
67. SRC Lillie NW13-35-25-16-W3
68. TW STH No.264 (0/0) NEC 34-25-16-W3
69. Sohio Elrose No.4 16-10-26-16-W3

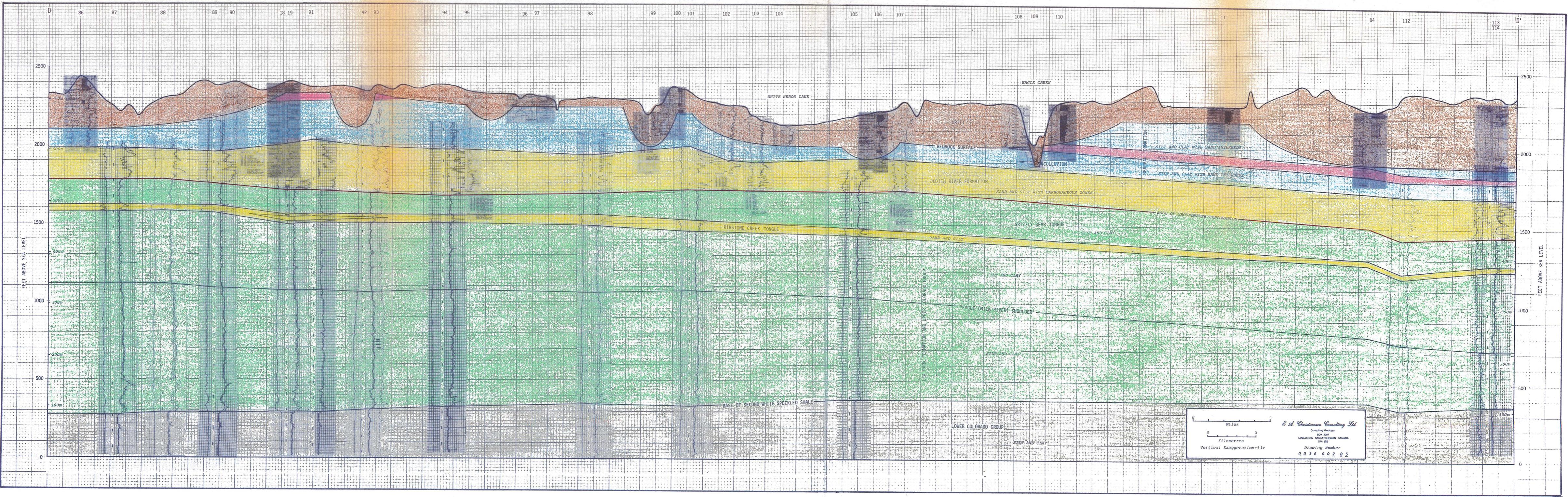
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78. SRC Anglia SW4-31-30-15-W3
79. IMP TW Rosetown 12-19-31-15-W3
80. SRC Anglia SW12-19-31-15-W3
81. TW Herschel No.2 15-11-32-16-W3
82. SRC Herschel NE15-11-32-16-W3
83. TW Goldburg No.1 13-22-33-16-W3
84. SRC Duperow NW13-17-34-16-W3
85. TW Duperow 4-9-35-16-W3
86. SRC Loverna SE3-5-32-28-W3
87. Phillips Loverna No.1 6-3-32-28-W3
88. Canso Hilldale 6-7-32-27-W3
89. Canso Hilldale 13-15-32-27-W3
90. FFIB Clifford Epp SW9-22-32-27-W3
91. Texaco Fusilier 7-7-33-26-W3
92. Graham Major No.1 SW5-22-33-26-W3
93. FFIB Leslie Heintz NE15-22-33-26-W3
94. Canso Superb 16-29-33-25-W3
95. FFIB John Wiebe NW13-27-33-25-W3
96. SRC Superb NW1-12-34-25-W3
97. SRC Superb SW11-7-34-24-W3
98. Albercan Onward 7-10-34-24-W3
99. FFIB Lyall Knorr 11-8-34-23-W3
100. SRC Kerrobert SE1-9-34-23-W3
101. Albercan Kerrobert 11-3-34-23-W3
102. FFIB Simon Zerr NE11-36-33-23-W3
103. FFIB Eddie Kohlman NE9-6-34-22-W3
104. UMA Kerrobert SE15-8-34-22-W3
105. Ceepee Dukesbury 13-18-34-21-W3

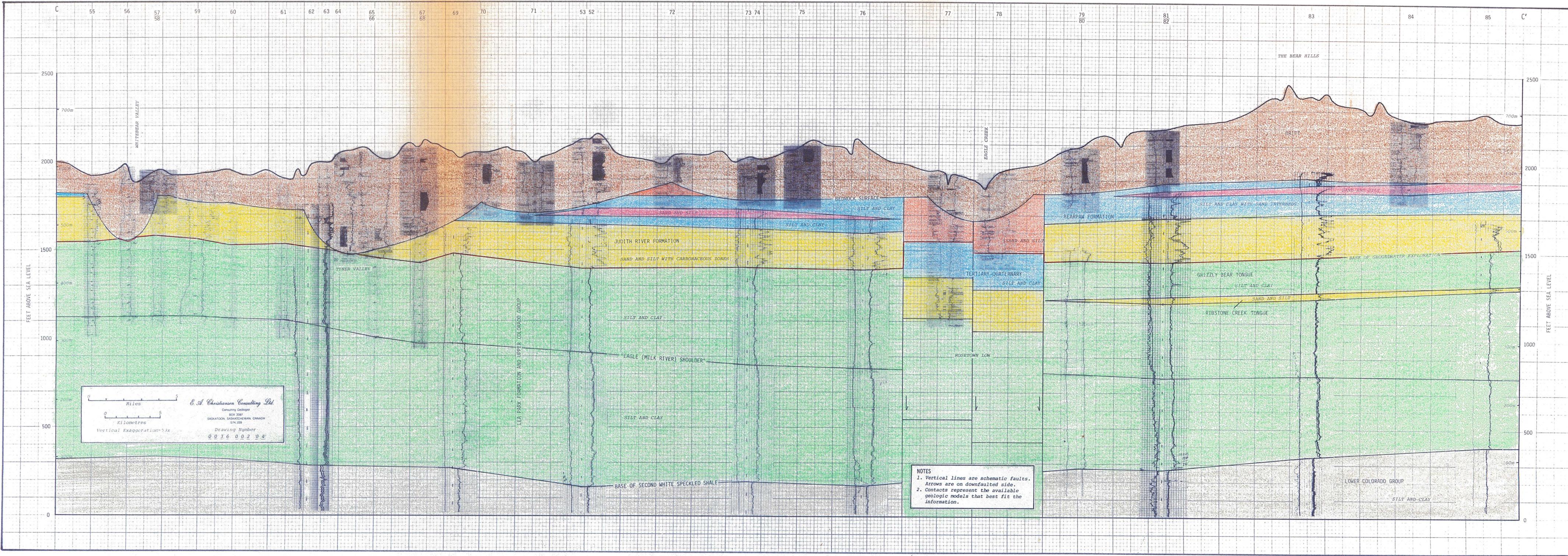
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107. FFIB Melville Whetter SW12-28-34-21-W3
108. SDH Eagle Creek No.4 NW15-22-34-20-W3
109. SDH Eagle Creek No.1 NE14-23-34-20-W3
110. SRC Eagle Creek NE16-24-34-20-W3
111. SRC Ruthidla SW4-26-34-18-W3
112. TW Duperow 4-22-34-16-W3
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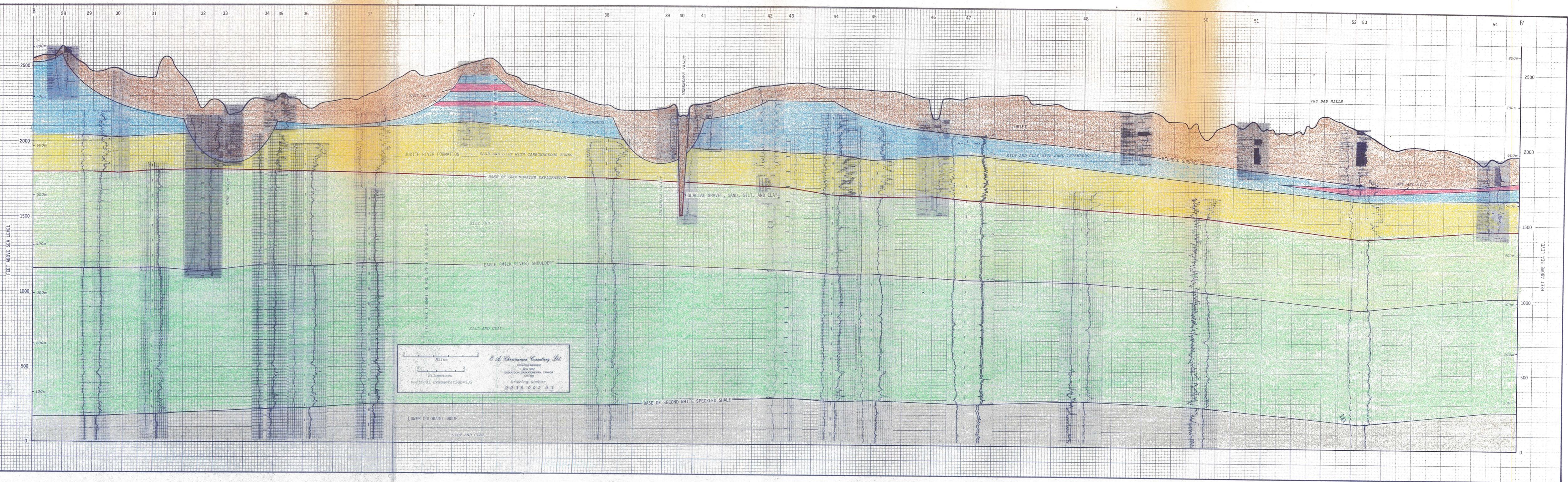
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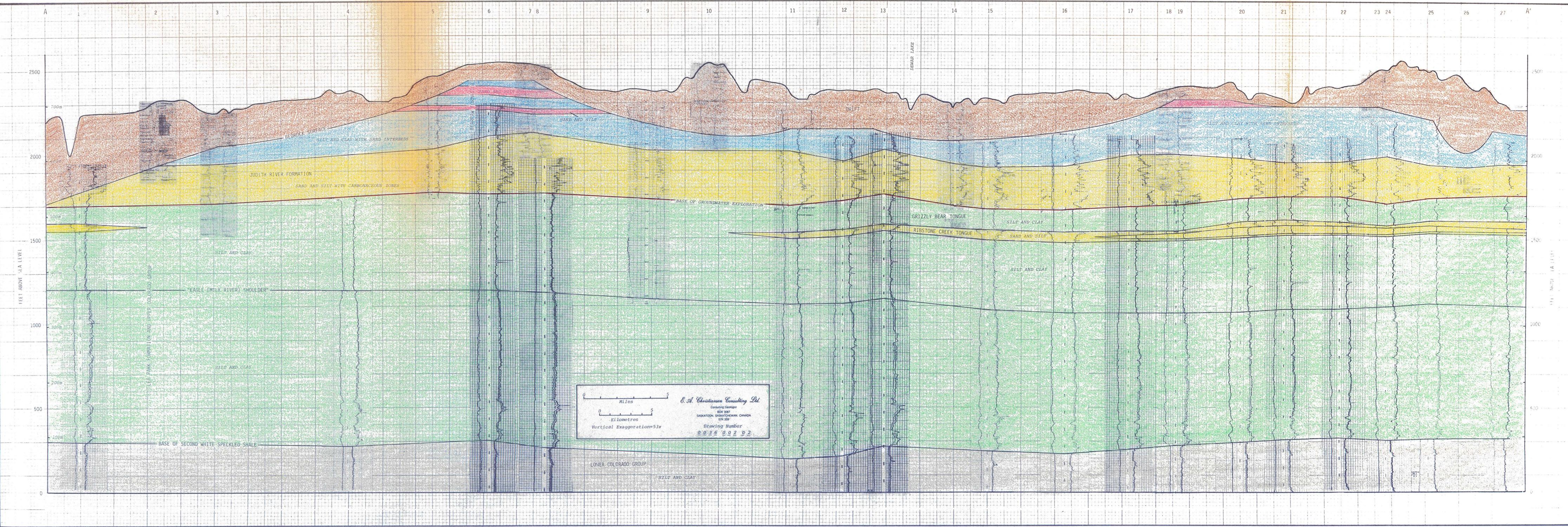
Categories of subsurface data up to and including 1979

Rotary cuttings, electric logs, and sidehole cores -----	⊖
Rotary cuttings and electric logs -----	⊖
Electric logs only -----	○
Augerhole logs -----	●
Bedrock surface below designated elevation -----	2210 -
Bedrock surface above designated elevation -----	1975 +
Bedrock surface at designated elevation -----	2130
Contour lines on bedrock surface, interval 100 ft -----	1700
Contour lines on present land-surface, interval 100 ft -----	2300
Cross section line with log numbers -----	31
Saskatchewan Research Council observation well -----	▲
Geological contact -----	~~~~~









72 N

1:250,000

## CANADA

EDITION 1

