Map No. 1

HYDROGEOLOGY of the WINDSOR - HANTSPORT - WALTON AREA, NOVA SCOTIA

DEPARTMENT OF MINES, NOVA SCOTIA

1969

SCALE IN MILES 0 1 2 3 4

LEGEND

CENOZOIC

QUATERNARY
RECENT
- Salt marsh and tidal flat
- Dykeland
- Stream alluvium
- Peat and muck

PLEISTOCENE
Ice-contact stratified drift
- Kames, kame complex
- Esker
- Outwash sand and gravel
- Till

MESOZOIC

TRIASSIC
FUNDY GROUP
- 7 WOLFVILLE FORMATION: Sandstone and conglomerate

PALAEOZOIC

PENNSYLVANIAN
RIVERSDALE GROUP
- 6 SCOTCH VILLAGE FORMATION: Sandstone and shale

MISSISSIPPIAN
WINDSOR GROUP
- 5 Shale, limestone, gypsum and anhydrite; minor sandstone and salt

HORTON GROUP
- 4 HORTON BLUFF AND CHEVERIE FORMATIONS (undivided): Shale, siltstone, sandstone and arkose

DEVONIAN
- 3 SOUTHERN NOVA SCOTIA BATHOLITH: Porphyritic granite

ORDOVICIAN
MEGUMA GROUP
- 2 HALIFAX FORMATION: Slate, argillite; minor quartzite
- 1 GOLDENVILLE FORMATION: Quartzite, greywacke; minor slate (may be pre-Ordovician)

Bedrock boundary (approximate, assumed)
Surficial deposit boundary (approximate)
Fault (approximate, assumed)
Strike and dip of bedding
Sink hole or sink-hole topography
Test hole location and number
Water well (drilled, flowing artesian, dug) and index number
Spring and index number
Mining area
Roads
Trail
County line
Stream
Lake
Marsh or swamp
Building
Dyke
Railways
Contour, interval 25 feet (21 H)
Contour, interval 50 feet (21 A)

Bedrock geology was compiled from maps by H. Fletcher and E.R. Faribault (1909), F.C. Taylor (1962), D.G. Crosby (1962), R.W. Boyle (1963), and L.J. Weeks (1965) modified in a few places on the basis of drilling records.

Surficial geology was mapped by P.C. Trescott, 1968, with reference made to soil maps of Hants County (D.B. Cann, J.D. Hilchey and G.R. Smith, 1954), and Kings County (D.B. Cann, J.I. MacDougall, and J.D. Hilchey, 1965).

Base map compiled by the Cartographic Division, Nova Scotia Department of Mines from topographic maps on a scale of 1:50,000 of the National Topographic Series obtained from the Department of Energy, Mines and Resources, Ottawa.

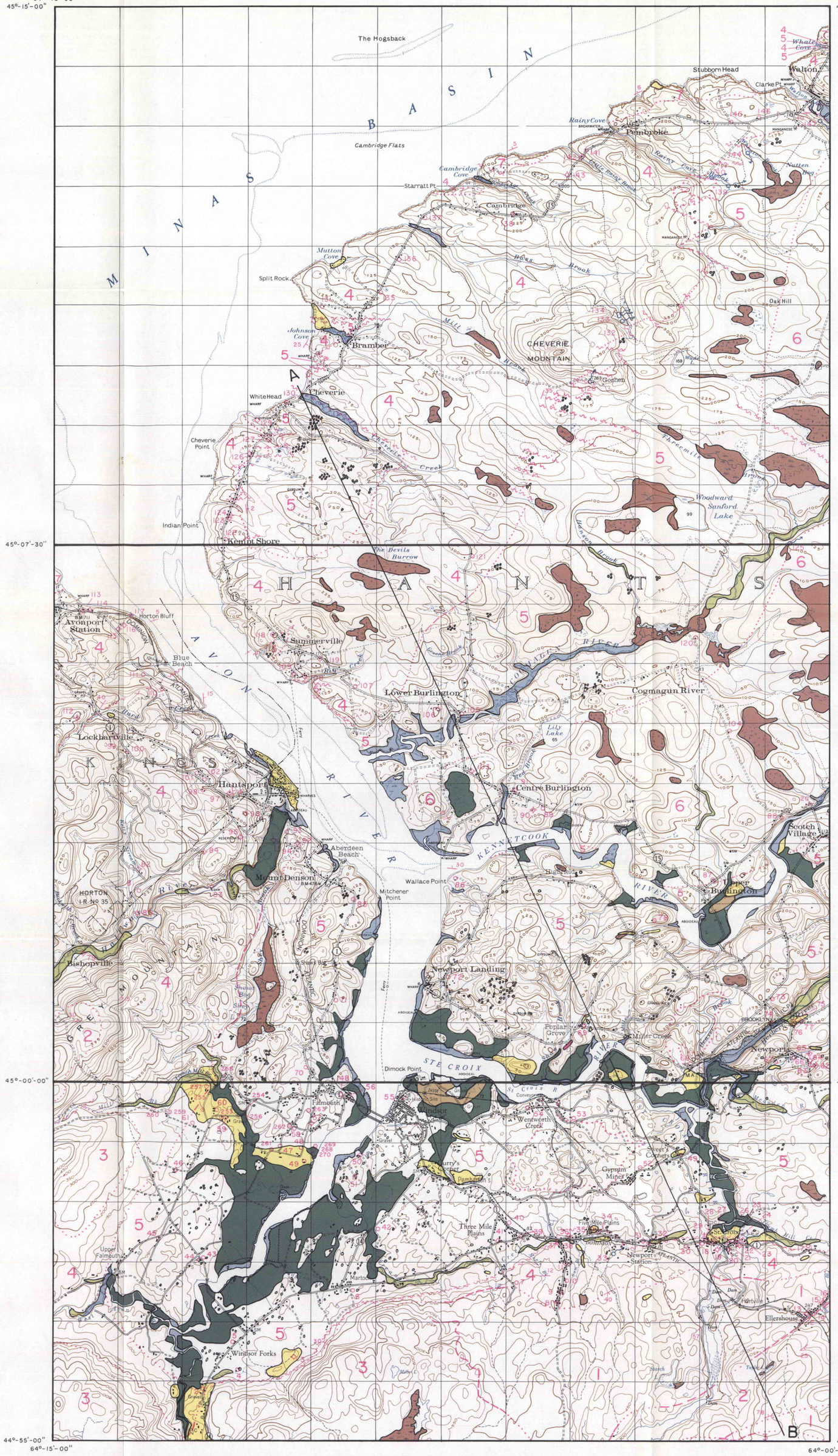
To accompany Nova Scotia Department of Mines
Groundwater Section Report 69-2 by P. C. Trescott

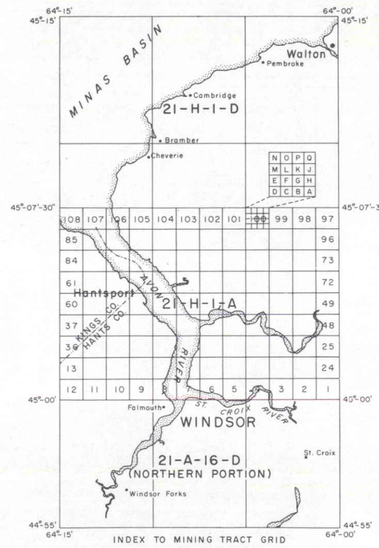
TABLE OF DRILLED WELL, DUG WELL, AND SPRING DATA

Index Number	Depth (feet)#	Water Level (feet)#	Chemical Analysis
1			X
2		6	
3	210	45	
4		8	
5		12	
6		10	
7			X
8	75	15	
9	125	60	X
10		15	
11	50	12	
12	140	12	X
13	98	8	
14	94	12	X
15	52	6	X
16	71		
17		14	
18	103		
19	97	5	
20	78	0	X
21	122	6	
22	120	20	
23	69	13	
24	85	15	
25	87	13	
26	65	11	
27	105	30	
28	145	12	
29	135	0	
30		6	
31	47		
32	39		
33			X
34	55	8	X
35	50	25	
36	49	12	
37	30	6	X
38	75	20	
39	184	39	
40		8	
41	86	15	X
42		8	
43	12	8	X
44	52	5	X
45		6	
46	188	15	
47	9	3	
48			X
49			X
50	52	16	
51		4	
52		11	
53	17	15	X
54		9	
55	175	27	X
56	142		
57	90	21	X
58		9	
59	87	17	X
60			X
61		14	
62	65	20	
63	208	52	X
64	60	12	
65	70	16	
66	120	60	
67	110	16	
68		9	
69		8	
70		9	
71	200		
72		7	
73		12	
74	53	15	X
75			X
76	260	70	
77	267	80	
78	15	7	X
79	40		
80	465	29	
81		11	
82	56		
83	93	0	X
84	225	30	
85		11	
86		7	
87		13	
88		7	
89		7	
90	95		X
91	60	6	X
92	330		X
93		6	
94	38	3	
95	450		
96	250		
97	246	136	
98	175	92	
99	72	8	
100	10	5	X
101		8	
102	60	25	
103	85		X
104		7	
105		9	
106	259	42	
107		6	
108	150		
109	55		
110	150	60	X
111		5	
112	102	40	
113	144	40	
114	703		
115	60	8	X
116	66	10	
117	215		
118		9	
119	65	10	X
120		6	
121		9	
122		5	
123	70	15	
124	90	15	
125			Na*
126	100	12	
127	65	9	X
128			Lim, Mn*
129	60	8	X
130		7	
131		4	
132			Mn*
133			Lim, Mn*
134			Lim, Mn*
135		6	
136	10	7	X
137		8	
138	80	4	
139			Na*
140			Na*
141		4	
142	100	50	
143	63	5	X
144		8	
145	16	0	X
146		3	
147			Na*
148	154		X
149	12	10	X

Measurements for drilled wells have been taken from drillers' reports; dug wells were measured during the summer of 1968.

* Spring with mineral precipitate (after R. W. Boyle, 1963) - Iim, limonite; Mn, manganese; Na, sodium chloride.





NOTES ON THE POTENTIAL FOR GROUNDWATER SUPPLIES

The following outline is a summary of information in Report 69-2. The quality of groundwater generally is satisfactory except in the area underlain by Windsor Group rocks which usually contain groundwaters too hard and with too many dissolved solids for most uses. Drilled wells constructed near the sea in any geologic unit may yield water deteriorating in quality with time due to salt water intrusion; such wells may yield brackish water from the start where the surrounding land has low relief. Yields are given in imperial gallons per minute (gpm).

INDIVIDUAL WELLS MAY YIELD FROM 2 to 100+ GPM
(Windsor Group, Horton Group, Scotch Village Formation, Ice-contact Stratified Drift)

Wells constructed in Windsor limestone, gypsum, and anhydrite may penetrate enough fractures enlarged by solution to yield from 10 to 100+ gpm. Waters from limestones will be hard but probably useable (hardness 200+ ppm); waters from gypsum and anhydrite will be excessively hard (to a hardness of 1,600+ ppm). Wells in shale will yield little more than a domestic supply (1 to 3 gpm) which will be hard because of the associated limestone, gypsum, and anhydrite. Undesirable amounts of iron can be expected from groundwaters high in sulfate because such waters corrode well casings and pumps.

Where wells are constructed in Horton sandstones and conglomerates (which form the basal member of the Horton Bluff Formation and are found interbedded in the upper member of the Horton Bluff Formation and in the Cheverie Formation), yields from 10 to 100+ gpm can be expected. Wells constructed in Horton shales may yield no more than a domestic supply. Waters from Horton rocks range from soft (less than 100 ppm hardness) to hard (300+ ppm hardness).

Wells several hundred feet deep may penetrate enough water-bearing sandstones in the Scotch Village Formation to yield up to 100 gpm. Wells constructed primarily in shale usually will yield no more than a domestic supply. Waters from Scotch Village Formation rocks range from less than 100 to 200+ ppm hardness and may contain excessive amounts of iron.

Screened wells in ice-contact stratified drift may yield up to 100+ gpm of good quality water at Windsor Forks if the deposit there has a sufficient saturated thickness. Elsewhere stratified drift deposits are more restricted and overlie rocks of the Windsor Group. Some wells in these deposits may yield no more than a domestic supply of water which will probably be hard.

INDIVIDUAL WELLS MAY YIELD FROM 2 to 40 GPM
(South Mountain Granite and Wolfville Formation)

Permeability in the South Mountain Granite is concentrated along fractures which tend to parallel the surface. Although a few "dry" holes are known, domestic supplies usually can be obtained; in places wells will penetrate sufficient water-bearing fractures to yield up to 40 gpm of good quality water.

Wolfville Formation sandstones and conglomerates, found along the south shore of the Minas Basin, are limited in thickness and areal extent. At Stubborn Head near Walton, this formation may be up to 100 feet thick; individual wells there may yield up to 40 gpm of good quality water.

INDIVIDUAL WELLS MAY YIELD FROM 1 to 10 GPM
(Goldenville and Halifax Formations, Outwash Sand and Gravel, Glacial Till, and Stream Alluvium)

The fracture permeability in the slates and quartzites of the Goldenville and Halifax Formations commonly will yield no more than a domestic supply to wells; a few wells can be classed as failures. In places water from slate will contain excessive quantities of iron and sometimes manganese.

Exposed outwash sand and gravel deposits are limited to a few places on the dykeland where screened wells will yield no more than a few gallons per minute of water which might be brackish. Recent stream alluvium generally will yield water only to dug wells, but the alluvium may overlie glacial outwash deposits which will yield a significant amount of water to screened wells. Water quality will depend to a large extent on the nature of the underlying bedrock.

Glacial till commonly will yield only a domestic supply to dug wells. Water from till overlying Windsor rocks will be hard, but usually not as hard as water from a well drilled into the bedrock.

SURFICIAL DEPOSITS WHICH NORMALLY DO NOT CONTAIN USEABLE GROUNDWATER SUPPLIES
(Salt Marsh and Tidal Flat, Dykeland, Peat and Muck)

Section along line A-B