



Map No. 1  
**HYDROGEOLOGY**  
 of the  
**WINDSOR - HANTSPORT - WALTON**  
**AREA,**  
**NOVA SCOTIA**

DEPARTMENT OF MINES, NOVA SCOTIA  
 1969



**LEGEND**

- QUATERNARY RECENT**
- Salt marsh and tidal flat
  - Dykeland
  - Stream alluvium
  - Peat and muck
- CENOZOIC**
- PLEISTOCENE**
- Ice-contact stratified drift
  - Kames, kame complex
  - Esker
  - Outwash sand and gravel
  - Till
- MESOZOIC**
- TRIASSIC**
- FUNDY GROUP
  - 7 WOLFVILLE FORMATION: Sandstone and conglomerate
- PENNSYLVANIAN**
- RIVERSDALE GROUP
  - 6 SCOTCH VILLAGE FORMATION: Sandstone and shale
- MISSISSIPPIAN**
- WINDSOR GROUP
  - 5 Shale, limestone, gypsum and anhydrite; minor sandstone and silt
  - HORTON GROUP
  - 4 HORTON BLUFF AND CHEVERIE FORMATIONS (undivided): Shale, siltstone, sandstone and arkose
- PALAEZOIC**
- DEVONIAN**
- 3 SOUTHERN NOVA SCOTIA BATHOLITH: Porphyritic granite
- ORDOVICIAN**
- MEGUMA GROUP
  - 2 HALIFAX FORMATION: Slate, argillite; minor quartzite
  - 1 GOLDENVILLE FORMATION: Quartzite, greywacke; minor silt (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 (2 1/2') .....  
 Contour, interval 50 feet (5')

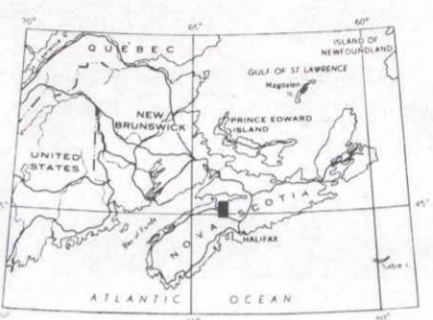
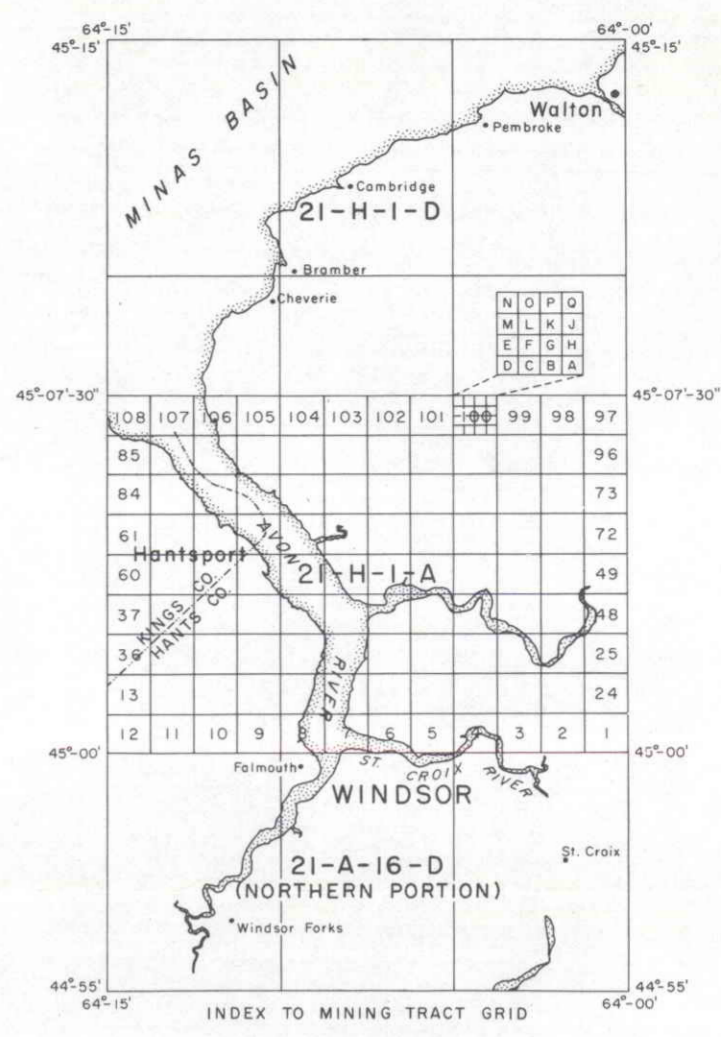
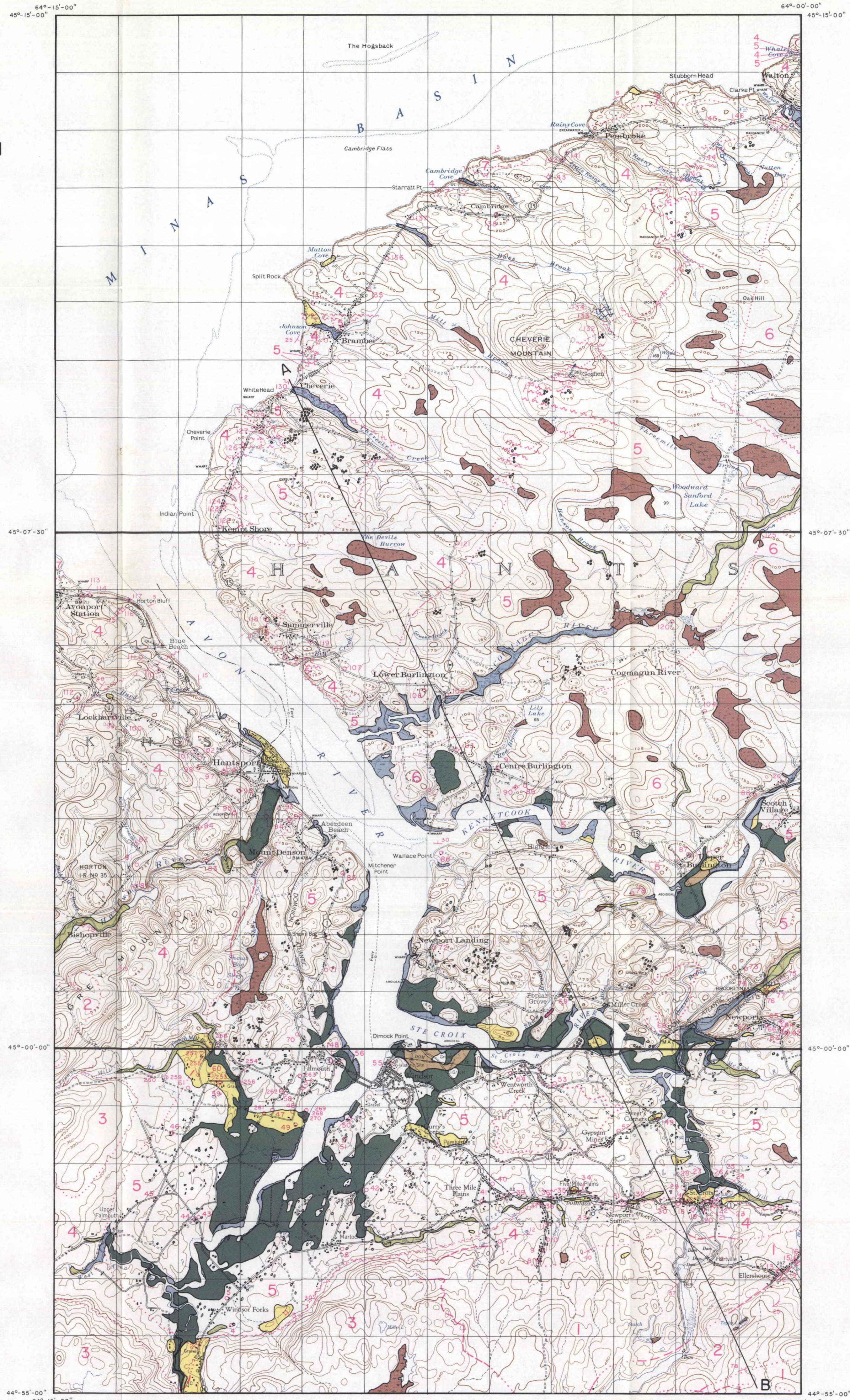
Bedrock geology was compiled from maps by H. Fletcher and E.R. Faribault (1909), F.C. Taylor (1962), D.G. Crosby (1962), R.W. Boyle (1963), and L.J. Weeks (1965) modified in a few places on the basis of drilling records. Surficial geology was mapped by P.C. Trescott, 1968, with reference made to soil maps of Hants County (D.B. Conn, J.D. Hickey and G.R. Smith, 1954), and Kings County (D.B. Conn, J.L. MacDougall, and J.D. Hickey, 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	Index Number	Depth (feet)	Water Level (feet)	Chemical Analysis	
1	4	X		10	20	70		
2	210	45		11	20	70		
3	12	40		12	15	75	X	
4	12	40		13	45	29		
5	12	40		14	11	70		
6	75	15	X	15	56	0	X	
7	125	40	X	16	63	30	11	
8	30	12	X	17	63	30	11	
9	140	12	X	18	7	7		
10	94	13	X	19	7	7		
11	71	6	X	20	6	6	X	
12	103	5	X	21	6	6	X	
13	122	0	X	22	36	3		
14	120	20	X	23	450	3		
15	87	13	X	24	320	134		
16	85	15	X	25	246	8		
17	87	13	X	26	72	8	X	
18	65	10	X	27	60	8		
19	145	10	X	28	85	7	X	
20	102	10	X	29	60	8		
21	47	7	X	30	229	42		
22	55	8	X	31	100	100		
23	30	25	X	32	110	150	40	X
24	47	12	X	33	112	102	40	
25	75	20	X	34	112	102	40	
26	84	39	X	35	111	70	3	X
27	66	15	X	36	119	46	10	
28	12	8	X	37	119	46	10	
29	32	5	X	38	119	46	10	X
30	188	15	X	39	120	20	15	
31	9	9	X	40	90	7	7	
32	52	16	X	41	100	12	12	
33	17	15	X	42	65	9	9	Li, Mn*
34	175	29	X	43	120	60	60	
35	90	21	X	44	120	60	60	
36	87	17	X	45	120	60	60	
37	45	14	X	46	120	60	60	
38	208	52	X	47	120	60	60	
39	40	10	X	48	120	60	60	
40	70	16	X	49	120	60	60	
41	110	16	X	50	120	60	60	
42	10	9	X	51	120	60	60	
43	300	17	X	52	120	60	60	
44	83	15	X	53	120	60	60	

\* Measurements for drilled wells have been taken from drillers' reports; dug wells were measured during the summer of 1968.  
 \* Springs with elevated precipitate (after R. W. Boyle, 1963 - Li, Mn, Mg, Na, Ca, Fe, Zn, Ni, 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 generate 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+ gpm). 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 shales 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 Stubbons 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.

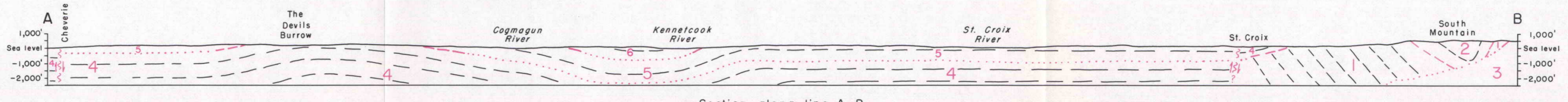
**INDIVIDUAL WELLS MAY YIELD FROM 1 TO 10 GPM**  
 (Goldenville and Halifax Formations, Outwash Sand and Gravel, Glacial Till, and Stream Alluvium)

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