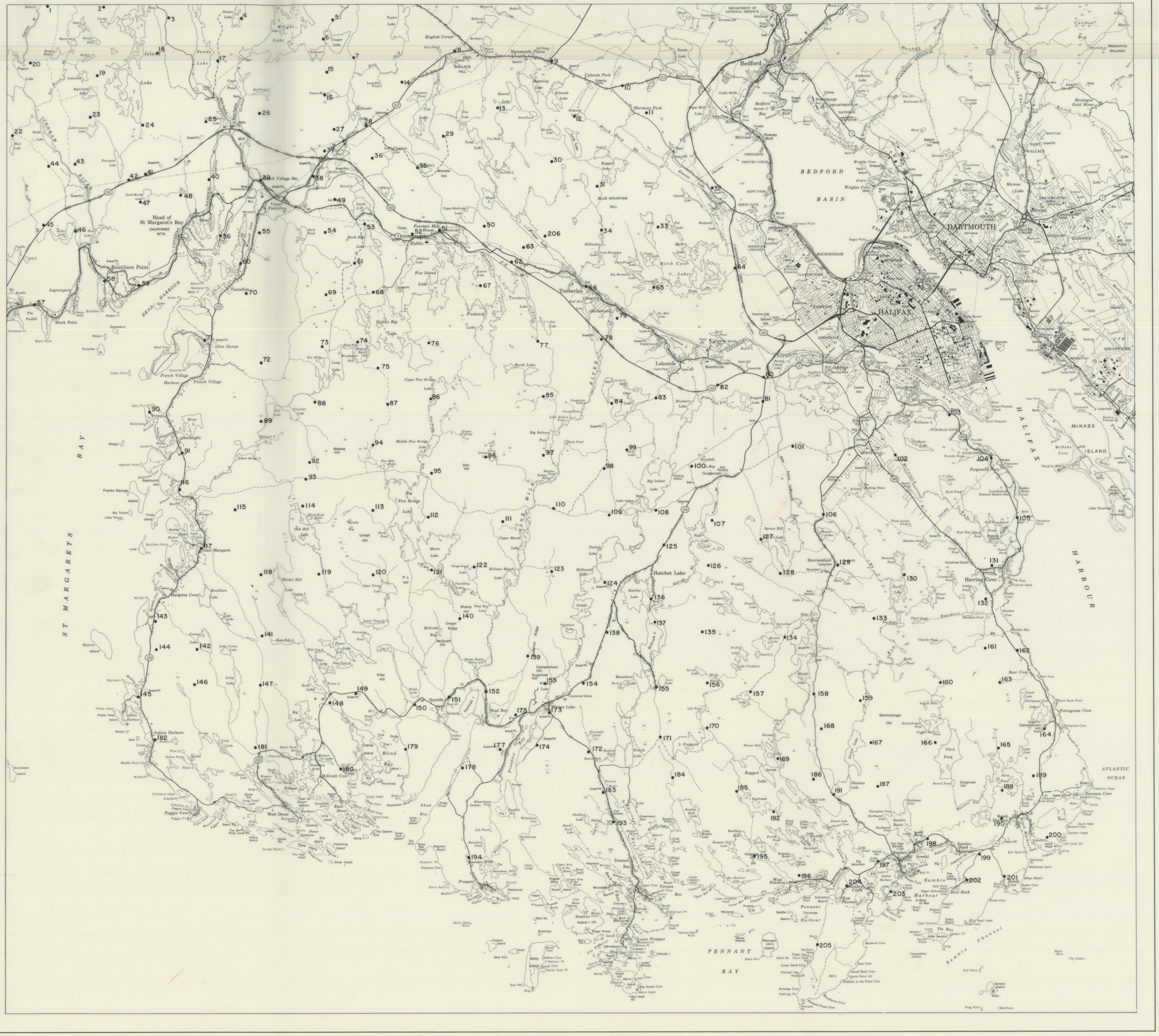


GEOCHEMICAL ANALYSIS

TiO_2 and Fe values in weight percent; Au values in ppb, remaining elements in ppm

MAP#	TT	Sr*	Ni*	TiO2*	Cr*	Ba*	Th*	Sc*	Nb*	Pb*	Zn*	Cu*	As*	Rb*	Mo*	Sb*	Ta*	W*	U*	Fe*	Mn*	Tarv	Nbrv	Wrv	Snrv	Tawv	Nbwv	Wwv	Snwv	W[1]
1	GTB	83	22	0.62	21	280	18	4.6	11	35	39	1	4.4	77	1	0.3	1.0	2	4.8	0.7	152	2.0	9	21	0.5	0.009	0.042	0.099	0.002	2.19
2	GTB	78	9	0.68	43	300	26	6.2	12	24	43	7	13.0	97	2	0.3	1.4	4	6.6	1.4	130	21.0	139	44	12.0	0.141	0.930	0.294	0.080	2.76
3	GTB	103	9	0.72	40	390	17	5.5	12	15	34	2	4.5	90	1	0.3	1.2	2	4.3	1.0	250	2.0	11	23	0.5	0.010	0.056	0.116	0.003	2.17
4	GTB	104	10	0.69	32	390	20	5.9	12	13	40	5	10.0	62	2	0.3	1.2	2	4.4	1.2	210	1.0	4	22	0.5	0.010	0.041	0.226	0.005	4.36
6	GTB	100	21	0.98	47	330	16	7.9	17	7	52	10	9.0	74	2	0.5	1.3	3	3.8	1.6	390	15.0	158	8	7.0	0.074	0.776	0.039	0.034	2.04
7	GTB	98	22	0.98	56	400	15	8.4	16	20	60	12	10.0	81	1	0.5	1.3	2	3.6	1.9	300	19.0	146	12	8.0	0.153	1.178	0.097	0.065	3.83
8	LT	131	44	1.08	113	680	12	15.0	16	21	96	35	28.0	150	3	0.9	1.4	2	3.2	3.7	720	17.0	143	2	8.0	0.210	1.766	0.025	0.099	5.87
9	LT	110	37	1.02	102	610	13	14.0	16	36	90	29	17.0	120	2	0.6	1.4	1	3.1	3.0	640	16.0	122	8	19.0	0.083	0.636	0.042	0.099	1.29
10	LT	113	38	1.04	110	600	15	13.0	17	33	99	32	17.0	130	3	0.8	1.5	2	3.5	3.4	680	19.0	159	12	3.0	0.201	1.681	0.127	0.032	3.67
11	LT	107	39	1.07	108	550	13	13.0	16	24	87	33	16.0	130	3	0.8	1.5	2	2.8	3.0	660	21.0	173	10	4.0	0.209	1.722	0.100	0.040	3.70
12	LT	104	23	1.00	60	350	10	7.9	14	18	53	14	11.0	54	2	0.4	1.4	1	2.7	1.6	220	11.0	108	2	5.0	0.269	2.640	0.049	0.122	8.36
13	LT	91	34	1.13	86	430	13	11.0	18	12	81	20	14.0	96	2	0.6	1.2	2	3.4	2.6	310	17.0	169	2	9.0	0.144	1.432	0.017	0.076	3.69
14	GTA	105	23	1.00	68	420	13	9.1	15	19	55	18	15.0	77	2	0.4	1.5	2	6.2	1.6	280	12.0	125	2	7.0	0.185	1.926	0.031	0.108	6.93
16	GTB	104	19	0.84	42	398	17	7.3	15	21	54	10	15.1	90	1	0.4	1.3	3	5.2	1.6	480	11.0	84	2	5.0	0.083	0.634	0.015	0.038	3.40
17	GTB	104	10	0.73	31	340	23	6.3	13	25	53	10	6.6	98	3	0.3	1.5	4	5.9	1.1	340	1.0	7	36	0.5	0.004	0.027	0.141	0.002	1.81
18	GTB	82	15	0.83	44	290	16	7.1	14	38	86	16	6.6	95	1	0.3	1.3	5	5.1	1.6	184	28.0	157	47	13.0	0.211	1.184	0.355	0.098	2.61
19	GTB	92	19	0.87	39	360	18	7.6	16	28	61	14	18.8	115	1	0.3	1.5	5	5.0	1.5	495	2.0	6	36	0.5	0.023	0.070	0.421	0.006	5.75
20	GTB	92	30	0.73	27	320	18	5.7	14	29	48	2	5.6	86	1	0.3	1.7	3	5.5	0.8	330	1.0	6	2	0.5	0.008	0.048	0.016	0.004	3.58
22	GTB	84	7	0.52	23	360	16	5.5	13	20	37	7	9.0	170	1	0.2	2.0	4	4.9	0.9	270	1.0	7	38	6.0	0.003	0.024	0.128	0.020	1.63
23	GTB	37	7	0.33	15	170	9	4.1	14	23	51	8	10.0	300	1	0.3	3.6	8	10.0	1.0	220	12.0	75	2	23.0	0.020	0.128	0.003	0.039	1.52
24	GTB	86	23	0.55	27	290	17	4.1	12	25	39	nd	6.6	100	1	0.2	1.4	3	5.0	0.8	200	1.0	5	49	0.5	0.003	0.015	0.148	0.002	1.41
25	GTB	69	24	0.53	18	270	18	4.9	14	35	41	50	11.0	140	4	0.2	2.2	8	6.0	1.3	140	67.0	223	190	121.0	0.216	0.720	0.614	0.391	1.29
26	GTB	101	27	0.80	30	430	23	7.1	15	35	59	12	13.0	120	1	0.2	1.6	5	6.2	1.5	290	1.0	4	60	0.5	0.009	0.037	0.555	0.005	3.70
27	GTB	92	29	0.72	25	310	18	5.3	14	29	55	2	12.0	100	1	0.3	1.6	3	5.2	1.1	310	1.0	7	18	0.5	0.011	0.074	0.191	0.005	4.51
28	GTA	99	34	0.99	73	415	14	10.5	15	19	72	25	16.0	110	3	0.6	1.1	2	4.7	2.4	640	15.0	136	11	8.0	0.138	1.252	0.101	0.074	4.27
29	R	51	17	0.61	42	290	10	9.0	27	18	51	8	7.4	330	2	0.4	6.1	6	12.0	1.7	760	64.0	300	47	60.0	0.252	1.180	0.185	0.236	1.61
30	LT	95	22	1.12	81	380	12	10.0	16	18	70	12	11.0	80	2	0.6	1.1	3	3.6	2.4	300	18.0	134	8	13.0	0.245	1.826	0.109	0.177	5.83
31	LT	108	43	1.10	111	510	12	13.0	17	17	95	29	17.0	130	3	0.8	1.1	2	2.8	3.2	760	21.0	154	11	5.0	0.141	1.037	0.074	0.034	2.84
32	GWB	124	38	1.00	105	570	11	13.0	14	71	199	56	8.7	82	1	0.4	1.0	2	2.7	3.1	440	12.0	114	6	4.0	0.173	1.644	0.087	0.058	5.00
33	LT	99	26	1.06	75	490	11	11.0	17	15	63	17	8.9	100	2	0.5	1.4	3	3.9	2.4	330	20.0	183	15	8.0	0.094	0.863	0.071	0.038	2.30
34	GTB	80	2	0.87	58	430	18	11.0	17	21	69	8	10.0	180	2	0.5	2.1	2	7.6	2.6	280	20.0	139	21	37.0	0.214	1.485	0.224	0.395	2.75
35	GTB	85	20	1.06	62	280	15	7.9	18	25	57	14	10.0	91	2	0.5	1.8	2	5.1	1.5	290	23.0	188	16	22.0	0.243	1.988	0.169	0.233	4.76
36	GTC	87	22	0.90	52	370	17	10.0	20	20	73	16	15.0	190	1	0.4	2.4	4	10.0	1.9	540	14.0	115	16	17.0	0.210	1.726	0.240	0.255	6.75
37	GTB	82	9	0.68	25	280	16	5.5	16	19	44	10	15.0	140	2	0.3	2.4	6	7.3	1.0	220	8.0	62	54	8.0	0.039	0.302	0.263	0.039	2.19
38	GTB	86	12	0.72	32	280	16	6.0	17	24	43	8	8.5	140	1	0.3	2.8	6	6.5	1.0	240	24.0	162	57	25.0	0.125	0.846	0.298	0.131	2.37
39	GTB	97	17	0.91	44	415	20	8.2	15	25	70	15	9.8	120	1	0.3	1.4	4	6.8	1.6	470	5.0	49	23	10.0	0.025	0.241	0.113	0.049	2.15
40	GTB	77	9	0.63	25	410	17	7.8	14	32	75	28	35.0	190	2	0.3	1.9	6	16.0	2.0	500	13.0	63	72	34.0	0.059	0.284	0.325	0.153	1.98
41	GTB	77	28	0.56	22	320	14	4.9	16	29	49	9	7.2	160	1	0.2	2.4	6	5.4	0.9	205	2.0	9	89	3.0	0.006	0.028	0.280	0.009	2.16
42	GTB	78	7	0.49	22	280	14	4.3	16	16	34	11	20.0	170	1	0.2	2.3	6	5.7	0.6	220	15.0	87	230	210.0	0.054	0.314	0.831	0.759	3.07
43	GTB	73	26	0.44	16	270	12	4.3	12	33	46	nd	20.0	160	1	0.2	1.7	3	4.4	0.7	176	2.0	9	43	11.0	0.010	0.043	0.207	0.053	2.16
44	GTB	85	26	0.56	23	350	14	4.2	13	37	38	nd	4.2	120	1	0.2	1.7	3	4.0	0.6	210	1.0	7	29	0.5	0.008	0.053	0.220	0.004	3.41
45	GTB	89	30	0.58	18	410	19	5.9	15	33	51	11	6.7	160	1	0.2	2.1	6	5.7	0.9	280	2.0	6	44	8.0	0.006	0.019	0.143	0.026	1.34
46	GTB	73	7	0.50	22	280	14	5.0	12	23	52	16	10.0	180	2	0.2	1.7	5	5.0	0.9	290	25.0	106	36	203.0	0.103	0.436	0.148	0.834	1.85
47	GTB	75	13	0.78	34	300	16	6.3	16	22	47	8	15.0	130	1	0.4	2.2	5	5.1	1.4	172	28.0	190	63	73.0	0.141	0.960	0.318	0.369	2.37
48	GTB	78	24	0.62	28	310	14	4.9	14	29	42	4	9.3	130	2	0.3	1.7	3	4.4	1.0	194	2.0	9	46	0.5	0.007	0.032	0.164	0.002	1.63
50	LT	86	20	1.01	56	380	13	8.3	17	17	50	11	9.2	91	2	0.6	1.6	2	3.7	1.7	390	20.0	175	24	5.0	0.153	1.337	0.183	0.038	3.59
51	GTB	80	27	0.84	67	390	16	11.0	16	33	98	18	137.0	190	5	0.6	2.3	4	35.2	2.5	580	30.0	194	22	180.0	0.296	1.913	0.217	1.775	3.97
53	GTB	59	9	0.60	36	260	14	7.4	19	28	69	5	8.0	200	1	0.3	2.9	5	6.6	1.9	240	25.0	130	23	50.0	0.179	0.930	0.165	0.358	3.19
54	GTB	72	13	0.68	37	280	13	6.4	16	21	43	8	10.0	150	1	0.3	2.6	5	7.8	1.0	220	33.0	198	41	171.0	0.204	1.223	0.253	1.056	2.76
55	GTA	96	9	0.67	41	390	18	5.3	14	21	41	6	11.0	140	1	0.3	2.0	3	6.4	0.8	270	4.0	38	27	15.0	0.028	0.261	0.186	0.103	3.06
57	GTB	86	7	0.47	23	350	16	4.4	10	27	42	11	7.6	140	1	0.2	1.6	3	5.4	0.6	220	5.0	26	58	16.0	0.087	0.452	1.009	0.278	8.00
59	GTB	77	12	0.67	33	330	16	5.4	9	29	46	6	24.0	130	2	0.4	1.7	4	5.2	1.2	360	6.0	39	46	64.0	0.035	0.225	0.266	0.369	2.60
64	GTB/GWB	132	25	1.04	63	480	16	11.0	15	11	74	19	5.9	100	2	0.4	1.5	2	4.3	2.3	460	3.0	29	2	3.0	0.041	0.397	0.027	0.041	6.20
65	GTB	91	18	1.15	61	400	15	9.4	21	26	52	7	8.0	99	1	0.5	1.8	3	8.6	1.9	250	22.0	205	17	12.0	0.169	1.573	0.130	0.092	3.60
66	LT	101	32	1.05	79	430	15	11.0	17	25	48	22	30.0	120	2	0.8	1.4	2	5.6	2.6	740	19.0	147	2	20.0	0.293	2.265	0.031	0.308	7.67
67	GTB	70	19	0.94	59	320	22	11.0	25	38	112	10	29.0	200	3	0.5	3.0	8	7.9	2.8	320	38.0	234	40	180.0	0.289	1.777	0.304	1.367	2.79
68	GTB	70	19	1.03	66	280	15	8.2	18	53	86	8	21.0	95	2	0.6	1.7	2	6.1	2.1	210	36.0	245	45	19.0	0.169	1.151	0.211	0.089	1.86
69	GTB	77	29	0.63	28	280	16	5.5	15	38	36	nd	6.0	130	2	0.2	1.9	3	6.9	0.8	152	2.0	10	43	2.0	0.012	0.059	0.256	0.012	2.92
70	GTB	69	9	0.52	33	250	16	4.8	15	41	50	5	9.1	150	1	0.2	2.2	4	6.3	0.9	230	45.0	255	60	87.0	0.141	0.801	0.188	0.273	1.47
71	GTA	97	12	0.86	46	360	19	6.4	14	19	39	11	7.4	84	2	0.4	1.6	2	4.8	0.9	340	9.0	82	2	3.0	0.123	1.123	0.027	0.041	6.82
72	GTB	66	24	0.57	25	240	14	4.4	16	34	43	2	40.0	150	1	0.2	2.4	5	5.4	0.8	140	56.0	243	88	450.0	0.189	0.820	0.297	1.518	1.34
73	GTB	70	26	0.63	19	210	15	5.2	17	39	74	nd	13.0	140	2	0.3	2.4	4	5.2	1.2	152	4.0	28	45	13.0	0.029	0.201	0.323	0.093	3.18
74	GTB	72	8	0.58	26	260	16	6.1	16	31	51	7	10.0	190	2	0.3	2.6	5	6.4	1.0	280	17.0	146	2	16.0	0.102	0.877	0.012	0.096	2.91
76	GTB	45	13	0.60	32	170	22	9.2	23	34	136	nd	11.0	370	2	0.3	6.3	5	12.0	2.2	360	5.0	28	2	9.0	0.075	0.418	0.030	0.134	5.06
77	LT	86	17	1.01	58	400	12	8.4	19	25	63	10	8.8	110	2	0.5	1.8	2	5.4	1.9	210	26.0	208	20	22.0	0.135	1.083	0.104	0.115	2.62
78	GTB	91	27	1.06	58	380	16	11.0	22	22	74	21	18.0	130	2	0.5	2.3	3	6.5	2.5	640	18.0	143	13	14.0	0.388	3.083	0.280	0.302	8.91
81	LT	106	20	1.00	60	430	11	8.7	17	12	55	10	8.0	79	1	0.4	1.0	2	2.9	1.8	370	26.0	200	19	5.0	0.174	1.341	0.127	0.034	3.32
82	LT	103	31	0.99	68	450	13	11.0	16	14	72	24	15.0	110	2	0.5	1.3	2	3.9	2.1	680	17.0	135	2	23.0	0.152	1.211	0.018	0.206	3.65
83	LT	88	28	1.01	68	390	16	11.0	19	32	93	11	14.0	140	3	0.6	1.9	4	6.6	2.4	535	43.0	218	24	18.0	0.363	1.841	0.203	0.152	1.28
84	LT	84	20	0.97	46	300	14	8.4	18	37	69	14	9.4	100	1	0.5	1.9	3	4.9	1.4	200	34.0	193	20	8.0	0.233	1.321	0.137	0.055	3.32
85	GTB	80	19	0.85	42	330	14	8.0	21	32	95	7	18.0	190	2	0.4	3.0	7	5.9	2.0	400	29.0	198	42	18.0	0.201	1.375	0.292	0.125	3.14
86	GTB	46	8	0.49	22	180	20	5.1	16	26	67	2	10.0	200	2	0.2	2.4	5	9.3	1.5	200	39.0	212	50	32.0	0.150	0.813	0.192	0.123	1.66
87	GTB	56	6	0.52	27	210	10	5.8	28	41	92	10	11.0	340	1	0.2	5.8	11	7.4	1.0	160	38.0	177	76	92.0	0.205	0.953	0.409	0.496	2.47
88	GTB	57	6	0.49	19	190	14	4.4	16	23	42	4	12.0	200	1	0.2	2.6	6	5.9	0.9	152	37.0	212	51	51.0	0.152	0.869	0.209	0.209	1.94
89	GTC	83	26	0.85	44	320	15	6.8	17	25	52	3	13.0	110	1	0.4	1.9	3	4.5	1.3	280	32.0	188	25	42.0	0.448	2.631	0.350	0.588	5.95
90	GTB	97	12	0.78	50	320	17	6.5	15	32	67	15	23.0	100	2	0.4	1.4	3	6.5	1.3	760	6.0	43	36	31.0	0.042	0.298	0.249	0.214	3.17
91	GTB	68	32	0.56	31	340	13	6.2	17	139	88	6	14.0	200	1	0.6	3.0	4	7.5	1.1	880	2.0	14	40	7.0	0.012	0.086	0.246	0.043	1.93
92	GTC	76	35	0.86	44	320	16	8.2	19	45	60	7	12.0	170	2	0.4	2.5	4	6.0	1.7	400	44.0	212	34	63.0	0.334	1.610	0.258	0.478	3.08
93	GTB	72	21	0.73	32	230	12	5.0	17	27	48	2	8.1	120	3	0.3	2.3	3	6.1	1.2	205	42.0	223	31	50.0	0.197	1.048	0.146	0.235	1.78
94	GTC	66	11	0.61	31	240	12	4.8	16	24	32	6	12.0	140	1	0.3	2.4	5	5.7	0.8	120	24.0	189	37	68.0	0.147	1.161	0.227	0.418	3.04
95	GTB	65	19	0.64	24	270	12	5.5	14	29	43	4	11.0	150	2	0.3	1.6	3	4.0	1.0	200	9.0	63	20	5.0	0.057	0.398	0.126	0.032	2.66
96	GTB	58	10	0.57	25	240	14	5.3	16	19	39	nd	16.0	170	2	0.3	2.2	3	6.9	1.3	148	55.0	291	86	20.0	0.207	1.097	0.324	0.075	1.83
97	GTB	71	13	0.82	26	240	15	5.8	18	22	45	4	17.0	130	2	0.4	2.6	4	7.3	1.1	164	25.0	181	22	13.0	0.318	2.302	0.280	0.165	5.86
98	LT	101	34	1.05	82	540	14	13.0	17	34	99	17	14.0	150	2	0.8	1.4	3	4.0	2.8	780	27.0	157	2	9.0	0.236	1.374	0.017	0.079	2.27
99	GTB	71	22	1.10	58	200	16	8.2	19	25	51	nd	7.5	77	2	0.5	1.6	2	4.9	1.7	190	53.0	278	31	19.0	0.829	4.348	0.485	0.297	1.66
100	LT	91	32	1.11	90	430	13	11.0	17	20	75	23	12.0	110	2	0.7	1.5	1	3.7	2.6	490	11.0	71	2	7.0	0.031	0.198	0.006	0.019	1.25
101	LT	104	36	1.03	96	520	14	13.0	17	28	78	24	13.0	120	3	0.5	1.5	3	4.1	2.6	400	19.0	147	2	7.0	0.171	1.322	0.018	0.063	3.76
103	STB	112	31	1.06	88	470	28	11.0	17	124	186	43	55.7	120	3	1.2	1.5	7	4.2	3.7	420	7.0	43	8	11.0	0.138	0.849	0.158	0.217	6.71
104	GTB	79	29	0.78	52	390	13	9.0	19	50	109	24	66.4	210	7	0.8	2.9	5	12.0	3.0	290	6.0	29	17	0.5	0.080	0.384	0.225	0.007	5.67
105	GTB	81	24	0.76	33	290	15	7.7	20	29	80	4	15.0	190	2	0.4	2.7	6	10.0	1.4	275	10.0	66	80	4.0	0.069	0.456	0.553	0.028	3.13
107	GTB	84	21	1.00	52	340	15	9.5	20	16	59	6	8.2	120	1	0.4	1.9	2	5.4	1.9	310	58.0	294	29	21.0	0.222	1.124	0.111	0.080	1.93
108	GTB	80	12	0.81	30	270	16	7.0	18	7	45	7	6.5	130	2	0.3	2.1	2	6.2	1.5	220	2.0	23	34	5.0	0.015	0.173	0.256	0.038	3.17
109	GTB	84	23	0.90	41	290	14	6.4	18	29	48	4	9.5	94	2	0.4	1.8	2	4.0	1.1	225	34.0	180	33	14.0	0.352	1.866	0.342	0.145	4.66
110	GTB	82	19	1.01	46	290	12	7.6	19	24	48	4	10.0	93	2	0.4	1.7	2	4.3	1.3	250	31.0	189	2	11.0	0.258	1.575	0.017	0.092	4.20
111	GTB	60	10	0.75	28	300	19	7.5	18	76	178	8	27.0	190	2	0.4	3.0	10	7.2	1.4	168	30.0	199	70	40.0	0.170	1.128	0.397	0.227	2.79
112	GTC	68	22	0.72	29	190	13	4.9	16	35	40	1	7.5	110	2	0.4	1.7	3	4.1	1.0	176	8.0	55	2	21.0	0.078	0.535	0.019	0.204	4.03
113	GTB	66	21	0.63	22	280	12	5.2	16	39	42	1	6.6	150	2	0.3	1.9	3	4.2	1.0	160	38.0	197	38	56.0	0.210	1.088	0.210	0.309	2.20
114	GTB	63	33	0.71	23	210	18	7.1	29	24	87	nd	7.3	230	2	0.2	4.1	6	9.2	1.9	280	51.0	240	29	40.0	0.271	1.277	0.154	0.213	2.82
115	GTB	84	20	0.75	35	240	15	5.7	16	37	80	nd	13.0	110	1	0.4	1.6	3	5.2	1.2	440	31.0	179	18	15.0	0.241	1.389	0.140	0.116	3.43
116	LT	94	22	0.85	41	340	12	5.9	16	22	56	2	7.2	86	1	0.5	1.5	2	3.7	1.2	540	7.0	47	20	2.0	0.046	0.310	0.132	0.013	2.28
117	GTB	85	28	0.85	37	300	16	6.3	19	25	58	1	10.0	140	1	0.4	2.2	2	6.2	1.5	470	3.0	29	20	4.0	0.055	0.533	0.367	0.073	3.29
118	LT	86	24	0.99	62	380	13	8.1	16	23	74	13	11.0	100	1	0.5	1.5	4	4.8	2.0	300	25.0	190	20	11.0	0.203	1.544	0.163	0.089	3.80
119	GTB	69	14	0.85	58	270	14	8.2	18	44	124	45	13.0	120	3	0.5	2.0	13	8.5	2.2	240	41.0	249	170	41.0	0.260	1.577	1.077	0.260	2.54
120	GTB	60	8	0.53	19	210	11	4.4	13	102	40	nd	8.3	170	2	0.2	1.9	2	5.7	0.9	136	36.0	217	2	35.0	0.179	1.081	0.010	0.174	2.27
121	GTB	65	20	0.70	29	215	12	4.8	16	22	33	1	6.7	110	2	0.3	1.6	1	4.3	1.0	120	30.0	177	23	14.0	0.392	2.314	0.301	0.183	3.80
122	GTB	68	28	0.11	28	260	20	9.4	25	47	90	4	15.0	160	2	0.2	2.9	5	8.3	2.2	310	28.0	134	23	37.0	0.448	2.143	0.368	0.592	8.65
123	GTB	71	17	0.75	38	320	12	7.7	18	19	62	10	8.4	190	2	0.3	1.9	4	4.8	1.7	440	30.0	212	19	14.0	0.140	0.989	0.089	0.065	2.23
124	GTB	81	11	0.83	31	260	12	5.9	16	17	42	5	4.6	130	2	0.3	2.0	3	4.5	1.2	170	2.0	12	30	0.5	0.014	0.082	0.204	0.003	3.04
125	GTB	85	23	0.84	33	370	13	7.5	18	18	58	4	6.6	140	2	0.3	1.9	4	4.2	1.7	480	41.0	189	19	18.0	0.259	1.195	0.120	0.114	3.13
126	GTB	73	19	1.06	51	260	15	8.8	20	26	61	nd	10.0	92	2	0.5	1.6	1	5.3	2.0	188	42.0	211	28	33.0	0.483	2.428	0.322	0.380	3.45
127	LT	93	20	0.99	63	340	13	9.0	18	20	56	8	7.9	86	2	0.5	1.4	3	4.0	2.0	280	26.0	171	17	19.0	0.187	1.232	0.122	0.137	3.22
128	LT	94	26	0.96	76	490	13	11.0	16	26	58	15	10.0	97	1	0.6	1.7	3	3.5	2.0	310	21.0	156	14	6.0	0.111	0.828	0.074	0.032	2.56
129	LT	132	35	0.99	99	680	11	13.0	16	14	86	26	15.0	120	2	0.6	1.3	1	2.6	2.8	680	18.0	130	13	5.0	0.074	0.532	0.053	0.020	1.89
130	LT	111	16	0.99	59	390	15	11.0	19	22	59	12	10.0	99	1	0.4	1.6	6	4.7	2.2	300	23.0	174	52	11.0	0.266	2.013	0.602	0.127	4.92
131	GTB	95	25	0.87	35	330	19	8.5	19	19	129	1	10.0	150	1	0.3	2.6	3	9.4	1.6	300	28.0	152	33	14.0	0.176	0.958	0.208	0.088	3.18
132	GTB	90	45	1.18	47	400	30	15.0	27	22	143	15	8.0	280	3	0.3	2.6	5	14.0	3.4	780	37.0	170	18	26.0	0.659	3.027	0.320	0.463	6.61
133	LT	101	20	0.95	63	430	10	8.9	16	11	59	8	7.8	81	2	0.4	1.1	1	2.6	1.6	340	24.0	194	2	18.0	0.257	2.079	0.021	0.193	4.46
135	LT	96	25	1.02	68	480	15	12.0	18	21	71	22	12.0	140	2	0.6	1.7	2	4.2	2.6	580	31.0	209	18	21.0	0.164	1.104	0.095	0.111	2.45
137	GTB	77	11	0.86	30	290	14	5.7	16	12	32	10	7.1	97	2	0.3	1.9	3	5.0	0.9	130	44.0	221	34	16.0	0.215	1.080	0.166	0.078	2.20
138	LT	87	23	1.02	61	420	12	11.0	20	18	66	7	12.0	120	2	0.6	1.6	1	4.1	2.4	500	35.0	226	25	47.0	0.196	1.265	0.140	0.263	2.60
139	GTB	66	12	0.81	34	300	13	6.1	15	28	47	3	7.5	120	2	0.3	1.5	3	3.9	1.5	156	44.0	262	38	31.0	0.209	1.247	0.181	0.148	2.21
140	GTB	70	25	0.86	43	260	12	6.8	17	36	68	2	16.0	100	1	0.4	1.5	2	5.2	1.7	400	30.0	169	11	11.0	0.481	2.709	0.176	0.176	6.41
141	LT	88	18	1.10	60	420	13	8.3	20	18	58	8	9.4	100	2	0.5	1.8	2	11.0	2.0	640	29.0	236	23	18.0	0.197	1.605	0.156	0.122	3.10
142	LT	80	19	1.07	73	280	11	8.4	18	8	49	6	11.0	89	2	0.5	1.5	2	3.2	2.9	220	25.0	192	24	19.0	0.193	1.485	0.186	0.147	3.77
143	GTC	89	23	0.77	37	330	11	6.1	16	41	65	7	24.0	120	1	0.6	1.7	4	4.6	1.1	680	27.0	165	36	42.0	0.098	0.574	0.560	0.028	6.36
144	GTB	85	20	0.83	36	300	11	5.8	16	108	55	6	10.0	92	1	0.4	1.6	3	4.5	1.0	600	14.0	79	19	8.0	0.112	0.631	0.152	0.064	3.49
145	GTB	66	22	0.58	24	240	12	4.4	14	49	66	nd	10.0	110	2	0.4	1.4	2	4.5	0.8	600	31.0	171	46	19.0	0.266	1.466	0.394	0.163	3.10
146	LT	79	16	0.86	56	300	12	6.6	17	17	38	8	8.7	87	1	0.5	1.6	3	4.1	1.6	220	24.0	174	12	8.0	0.276	1.999	0.138	0.092	4.68
147	LT	80	15	0.86	43	310	12	6.1	15	16	50	11	8.6	82	1	0.5	1.5	2	4.5	1.3	560	25.0	192	2	17.0	0.312	2.393	0.025	0.212	5.78
148	GTB	68	29	0.66	22	270	14	6.6	21	37	100	17	18.0	200	1	0.4	2.6	7	7.5	1.2	400	40.0	201	140	18.0	0.417	2.095	1.459	0.188	2.63
149	GTB	70	22	0.73	30	260	14	5.6	17	32	73	nd	7.5	120	2	0.4	2.0	5	6.0	1.0	168	26.0	136	49	63.0	0.254	1.329	0.479	0.616	4.01
150	GTB	70	13	1.12	36	310	22	13.0	32	296	703	71	75.3	260	4	0.3	4.3	27	13.0	3.2	620	27.0	126	120	38.0	0.150	0.701	0.667	0.211	2.55
151	GTB	70	10	0.69	15	280	13	6.2	19	46	91	15	7.8	170	2	0.3	2.3	9	5.7	1.1	280	27.0	161	57	26.0	0.171	1.018	0.360	0.164	2.98
152	GTB	67	7	0.66	26	260	16	6.0	19	26	55	12	12.0	180	2	0.2	2.9	4	6.7	1.0	210	36.0	178	34	42.0	0.202	0.998	0.191	0.235	2.71
153	GTB	81	22	0.84	40	310	11	6.4	17	18	54	2	8.7	130	2	0.3	1.8	3	4.3	1.5	420	8.0	135	49	8.0	0.037	0.617	0.224	0.037	2.35
154	GTB	78	21	0.79	30	290	13	6.2	17	19	40	4	7.4	120	1	0.3	1.8	3	4.2	1.0	240	43.0	213	36	13.0	0.279	1.384	0.234	0.084	2.76
155	LT	85	15	0.91	48	250	11	6.5	16	7	37	7	5.2	83	2	0.4	1.6	2	3.5	1.1	220	15.0	108	15	9.0	0.071	0.508	0.071	0.042	2.16
156	GTB	87	14	0.90	39	320	14	7.4	17	24	39	6	6.5	110	2	0.4	1.9	1	4.3	1.3	240	21.0	145	18	10.0	0.212	1.462	0.181	0.101	4.72
157	GTB	77	19	0.96	62	300	17	8.7	16	30	83	7	14.0	110	2	0.4	2.0	3	5.3	2.6	320	27.0	150	12	25.0	0.334	1.855	0.148	0.309	5.34
159	LT	101	20	1.04	79	500	11	11.0	17	16	60	9	11.0	100	1	0.5	1.2	2	3.0	2.0	450	26.0	209	2	16.0	0.150	1.206	0.012	0.092	2.81
160	GTB	100	12	0.79	33	340	17	7.0	15	16	45	8	7.2	120	2	0.3	1.7	2	4.9	1.3	200	20.0	101	49	6.0	0.178	0.896	0.435	0.053	4.30
161	GWB	106	23	1.00	59	440	14	9.2	17	13	73	12	13.0	110	2	0.4	1.7	3	4.4	1.8	460	23.0	150	2	37.0	0.147	0.961	0.013	0.237	2.76
162	GTB	103	21	1.00	56	330	13	8.5	17	13	49	13	10.0	90	1	0.4	1.7	3	4.1	1.7	300	22.0	160	16	9.0	0.317	2.305	0.231	0.130	6.44
163	GTB	109	13	0.95	51	440	14	8.8	17	17	47	8	6.7	97	2	0.3	1.6	3	4.3	1.8	220	34.0	237	2	19.0	0.534	3.720	0.031	0.298	7.61
164	LT	108	27	1.00	69	470	10	10.0	16	18	84	17	13.0	100	2	0.5	1.2	3	2.8	2.0	540	25.0	203	17	23.0	0.191	1.551	0.130	0.176	3.15
165	GTB	103	14	0.81	40	370	12	6.7	16	19	43	nd	6.2	95	2	0.3	1.5	2	4.8	1.1	180	48.0	273	45	17.0	0.337	1.919	0.316	0.119	3.36
166	GTB	91	12	0.83	34	340	15	6.5	18	19	59	3	13.0	140	1	0.3	2.3	12	4.6	1.0	168	58.0	250	160	25.0	0.307	1.324	0.848	0.132	2.58
167	LT	95	17	0.94	57	420	14	10.0	17	19	65	16	44.0	110	2	0.6	1.5	3	3.8	2.4	460	46.0	257	20	30.0	0.356	1.987	0.155	0.232	3.56
168	LT	91	24	0.96	67	440	14	10.0	16	23	73	21	13.0	140	2	0.5	1.6	2	4.1	2.6	610	25.0	172	17	14.0	0.155	1.069	0.106	0.087	2.60
169	GTB	77	17	0.65	30	280	12	4.5	13	16	28	nd	6.3	97	2	0.3	1.5	2	3.3	0.8	114	57.0	292	33	23.0	0.369	1.890	0.214	0.149	2.64
170	GTB	83	11	0.77	28	315	15	6.8	18	15	47	5	8.1	150	1	0.2	2.0	4	5.1	1.3	300	34.0	229	29	14.0	0.234	1.578	0.200	0.096	3.51
171	GTB	89	22	0.99	62	330	12	7.4	16	18	49	17	8.5	90	2	0.5	1.4	3	3.7	1.6	450	20.0	140	2	28.0	0.049	0.340	0.005	0.068	1.18
172	GTB	75	12	0.61	24	300	10	4.7	13	21	38	8	7.0	130	2	0.3	1.5	3	3.5	0.8	240	2.0	20	26	8.0	0.014	0.140	0.181	0.056	3.14
174	GTB	75	16	0.87	9	320	11	5.9	17	26	42	10	7.8	98	1	0.4	1.8	3	3.7	1.0	300	2.0	22	18	3.0	0.015	0.163	0.133	0.022	3.56
178	GTB	75	15	0.82	40	300	13	6.3	16	21	59	10	17.0	130	1	0.5	1.9	4	5.4	1.0	320	2.0	26	37	4.0	0.006	0.072	0.103	0.011	1.33
179	GTC	74	23	0.67	27	290	11	5.4	16	66	109	3	21.0	130	2	0.4	1.9	4	4.8	1.1	410	4.0	17	90	12.0	0.075	0.318	1.681	0.224	5.47
180	GTB	83	26	0.88	56	350	13	8.3	17	36	64	9	11.0	110	2	0.5	1.7	2	5.0	1.6	260	36.0	195	28	17.0	0.327	1.772	0.254	0.154	2.34
181	GTB	79	22	0.86	37	310	12	7.1	17	27	62	nd	8.8	130	1	0.4	1.6	3	6.0	1.1	360	24.0	118	25	11.0	0.369	1.814	0.384	0.169	4.34
182	GTB	73	20	0.95	52	270	14	7.5	16	42	60	nd	11.0	75	1	0.6	1.6	1	5.3	1.8	172	39.0	180	41	45.0	0.255	1.179	0.268	0.295	2.07
184	GTB	78	15	1.03	51	270	14	7.3	18	15	46	2	11.0	79	1	0.5	1.7	3	4.8	1.9	172	32.0	232	2	15.0	0.297	2.153	0.019	0.139	4.17
185	LT	72	16	0.97	69	290	11	7.3	16	15	61	5	17.0	44	1	0.5	1.4	2	3.8	2.1	130	30.0	248	2	54.0	0.205	1.693	0.014	0.369	2.73
186	GTB	92	15	0.83	42	380	12	6.8	15	13	43	5	5.9	88	2	0.4	1.5	2	3.4	1.2	220	1.0	19	15	3.0	0.008	0.158	0.125	0.025	3.74
187	LT	89	13	0.77	40	330	13	6.1	15	14	37	8	8.0	120	1	0.3	1.6	4	3.8	1.2	196	79.0	388	48	24.0	0.718	3.528	0.436	0.218	4.09
188	GTB	99	12	0.74	31	330	13	5.7	16	16	38	nd	7.7	96	2	0.3	1.6	3	3.7	1.1	132	56.0	290	38	14.0	0.310	1.605	0.210	0.077	2.35
189	GTB	73	28	0.75	30	300	14	6.8	21	23	55	3	7.2	160	2	0.2	2.5	5	5.6	1.6	280	70.0	375	65	28.0	0.612	3.280	0.569	0.245	4.90
190	GTB	94	17	0.61	19	290	14	5.3	17	13	47	1	8.1	150	1	0.2	2.1	3	5.1	0.9	240	19.0	96	32	3.0	0.113	0.569	0.190	0.018	2.82
191	GTB	91	13	0.78	32	360	15	6.4	15	19	48	9	15.0	110	1	0.3	1.9	6	4.6	1.0	300	6.0	44	63	4.0	0.074	0.539	0.772	0.049	5.55
192	GTB	78	13	0.68	18	240	12	4.2	15	17	32	nd	4.8	92	1	0.3	1.8	3	3.8	0.7	130	4.0	22	22	0.5	0.046	0.250	0.250	0.006	4.63
194	GTB	73	15	0.76	40	320	10	6.0	16	28	54	8	11.0	130	2	0.4	2.0	5	3.3	1.1	220	21.0	158	23	25.0	0.258	1.938	0.282	0.307	5.64
195	GTB	77	12	0.80	39	240	12	5.0	17	13	34	5	9.1	88	1	0.3	1.5	3	3.8	0.9	150	26.0	201	12	10.0	0.228	1.760	0.105	0.088	3.93
196	GTB	88	21	0.75	24	340	17	5.8	18	17	57	10	13.0	150	2	0.3	2.1	3	6.3	1.0	300	31.0	168	21	9.0	0.362	1.961	0.245	0.105	4.00
197	GTB	87	11	0.72	27	280	12	5.2	13	23	37	5	8.4	110	1	0.3	1.7	3	4.2	0.9	240	4.0	28	30	3.0	0.042	0.291	0.311	0.031	4.67
198	GTB	86	16	0.66	22	260	10	4.8	16	16	31	1	10.0	110	1	0.3	2.0	6	3.5	0.8	148	10.0	53	88	2.0	0.077	0.407	0.675	0.015	3.62
199	GTB	99	18	0.68	35	350	13	6.1	16	17	48	5	8.6	150	2	0.2	2.1	7	4.4	1.1	240	22.0	99	120	5.0	0.177	0.798	0.967	0.040	3.46
200	GTB	101	27	1.01	55	440	13	10.0	22	24	65	19	16.0	120	2	0.5	1.7	4	3.9	2.0	470	29.0	151	63	10.0	0.308	1.606	0.670	0.106	4.30
201	GTB	105	16	0.78	37	345	10	6.6	16	13	44	1	5.0	101	1	0.3	1.5	3	3.0	1.0	255	5.0	34	18	0.5	0.069	0.470	0.249	0.007	3.00
202	GTB	101	19	0.86	50	370	13	7.7	17	16	56	10	14.0	100	1	0.4	1.5	4	4.3	1.4	390	11.0	67	26	0.5	0.167	1.019	0.395	0.008	6.11
203	GTB	88	11	0.65	21	290	12	4.8	13	15	34	5	7.4	120	1	0.3	1.8	4	4.1	0.6	200	7.0	45	59	5.0	0.028	0.177	0.233	0.020	1.77
204	GTB	83	16	0.69	27	290	13	4.4	15	11	31	4	5.3	92	2	0.3	1.7	3	3.9	0.6	160	6.0	39	54	0.5	0.042	0.275	0.381	0.004	3.40
205	GTB	95	19	0.79	36	290	12	6.0	15	14	39	3	14.0	87	1	0.4	1.7	3	4.4	1.0	164	3.0	25	36	0.5	0.054	0.453	0.653	0.009	6.56
206	GTB	53	14	0.59	38	260	19	8.0	20	28	106	3	28.0	280	2	0.3	3.2	4	11.0	2.1	370	5.0	37	69	7.0	0.028	0.206	0.385	0.039	2.13

Geochemical analyses were not determined for samples 5, 15, 49, 52, 56, 58, 60, 61, 62, 63, 75, 79, 80, 102, 106, 134, 136, 158, 173, 175, 177, 183 and 193. These samples are clast counts only. The lithologic information is available on Graves and Finck, Open File Map 87-4.

OPEN FILE MAP 87-012

TILL GEOCHEMISTRY OF HALIFAX and SAMBRO MAP SHEETS

NTS 11D/12 and 11D/05

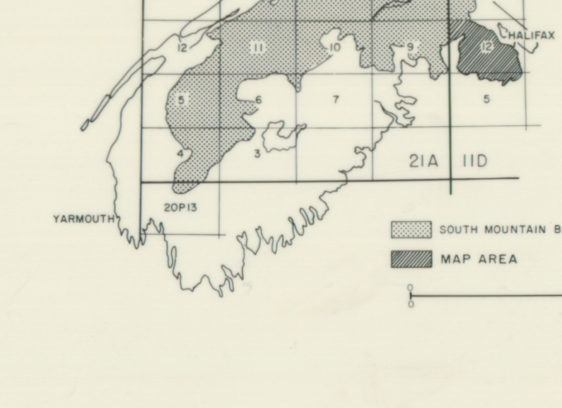
SOUTH MOUNTAIN BATHOLITH PROJECT

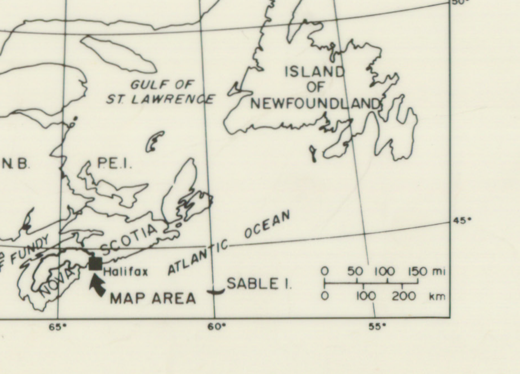
F. J. BONER, P.W. FINCK and R.M. GRAVES

NOVA SCOTIA DEPARTMENT OF MINES AND ENERGY
Honourable Joel R. Matheson, Q.C. John J. Laffin, P.Eng., F.E.I.C.

HALIFAX, NOVA SCOTIA
1987

Kilometres 1 0 1 2 3 4
Miles 1 0 1 2





Nova Scotia Department of Mines and Energy
Canada ~ Nova Scotia Mineral Development Agreement

STATISTICS

TILL TYPES

GTA	Granite Till A
GTB	Granite Till B
GTC	Granite Till C
GWB	Greywacke Till B
STB	Slate Till B
GTB/GWB	Till collected near South Mountain Batholith / Goldenville Formation contact
LT	Lawrencetown Till
R	Regolith

LEGEND

•	sample site
*	analysis of the -230 till fraction
rv	heavy mineral raw analytical value
wv	heavy mineral weighted analytical value
W[1]	weight of heavy minerals in the -50+230 till fraction
na	not analyzed
nd	not detected
0.926	bold numbers indicate anomalous values

TILL TYPE	GRANITE TILL (GTA, GTB, GTC)					MEGUMA TILL (GWC, STB)					LAWRENCETOWN TILL				
Element	MEAN	MIN.	MAX.	5th	N	MEAN	MIN.	MAX.	95th	N	MEAN	MIN.	MAX.	95th	N
Sr	73.48	37	126	50	379	89.35	56	132	118	43	94.82	68	132	124	67
Ni	17.49	0	45	7	379	24.77	13	48	31.75	43	26.9	13	44	40.5	67
TiO_2	0.723	0.108	1.32	0.45	379	0.79	0.45	1.32	1.13	43	1.01	0.74	1.35	1.22	67
Cr	35.8	9	110	18	379	56.8	22	134	107.5	43	70.87	40	113	11C.67	67
Ba	319.7	170	660	221	375	429.3	310	770	585	43	451.12	250	680	616.67	67
Th	16.64	9	34	10.5	375	15	11	28	19.5	43	14.28	10	20	18.7	67
Sc	6.19	3.2	18	4.1	375	8.56	4.4	16	13	43	10.66	5.9	16	14.2	67
	MEAN	MIN.	MAX.	95th	N										
Nb	16.52	9	34	21.5	379	14.9	10	19	17.8	43	17.45	14	22	20.5	67
Pb	25.09	3	296	42.5	379	30.2	13	124	67.5	43	21	7	37	34.5	67
Zn	58.8	19	703	96.5	379	69.6	31	199	143.3	43	73.96	37	109	98.05	67
Cu	9.72	0	87	28.5	379	26.3	0	79	61.3	43	16.78	2	35	33.5	67
As	12.61	2.5	137	31	375	33.1	2.5	112	96	43	12.44	5.2	44	21.67	67
Rb	158	62	390	256.5	375	136.2	61	230	180	43	123.8	44	220	192	67
Mo	1.7	1	7	2.9	375	3.7	1	32	16	43	1.84	1	3	2.97	67
Sb	0.31	0.1	1.7	0.5	375	0.47	0.1	3	1.2	43	0.55	0.3	0.9	0.785	67
Ta	2.18	1	7.2	3.28	375	1.69	0.8	3.2	2.24	43	1.57	1	2.4	2.7	67
W	4.14	1	38	8.85	375	3.6	1	8	7	43	2.57	1	8	4.55	67
U	6.45	2.7	85.1	10.9	375	4.45	2.3	7.1	6	43	4.64	2.6	20.2	7.58	67
Fe	1.28	0.4	4.1	2.45	375	2.7	0.4	20	7.5	43	2.29	1.1	3.8	3.31	67
Mn	283.1	57	880	585	375	350.7	72	1600	720	43	501.96	130	1000	815.8	67
Tarv	15.75	0.5	177	43.3	380	12.2	0.5	41	33.3	43	20.01	1	79	37.8	67
Nbrv	83.13	4	626	233	380	61.95	6	156	154.7	43	139.85	8	388	242.11	67
Wrv	45.78	2	1500	152	380	30.5	2	300	110	43	25.39	2	630	53.3	67
Snrv	32.37	0.5	450	120	380	30.2	0.5	182	100	43	22.32	0.5	195	100	67
Tawv	0.14	0.002	1.362	0.425	380	0.211	0.003	0.927	0.833	43	0.149	0.003	0.718	0.32	67
Nbwv	0.71	0.015	4.348	2.05	380	1.04	0.021	6.047	3.07	43	2.267	0.031	3.528	1.056	67
Wwv	0.32	0.003	10.07	0.84	380	0.417	0.013	4.806	1.33	43	0.137	0.006	2.602	0.45	67
Snwv	0.27	0.001	4.526	1.05	380	0.5	0.002	3.178	2.5	43	0.144	0.002	0.805	0.717	67
	AVG.	MIN.	MAX.	STD.	N	AVG.	MIN.	MAX.	STD.	N	AVG.	MIN.	MAX.	STD.	N
W[1]	3.82	1.04	17.92	2.3	380	7.23	1.13	32.82	6.57	43	3.02	1.05	8.36	1.38	67

NOTES

Data Treatment and Presentation

Till geochemical data has been sub-divided into three populations after the till nomenclature of Finck and Graves (in press). The tills are categorized as follows: granite tills (GTA, GTB and GTC), Meguma Group tills (STB, STC, GWB and GWC), and Lawrencetown Till (LT).

In the granite till population Nb, Ta, U, Rb, Cu, Pb, Zn, Mo, Sb, As, Sn and W have anomalous values defined as being > the 95th percentile of the cumulative frequency distribution. Ni, Cr, Sc, Ba, Sr, Th and TiO_2 are expected to show decreasing values with increasing differentiation in granitoids and are considered anomalous in this population if the value is < the 5th percentile. Values for all elements > the 95th percentile in the Lawrencetown Till and Meguma Group Till populations are regarded as anomalous. The Meguma Group tills were sampled in the exo-contact zone of the South Mountain Batholith and as such dilution by granitic material is common. A better representation of average elemental abundance in slate and greywacke tills is presented in Stea and O'Reilly (1982).

Threshold values for elements within each population have been calculated using the entire data from mapsheets 11D/05, 11D/12, 11D/13 and 21A/09. Basic statistics are shown in the table below. Refer to Graves and Finck (in press) for the lithologic composition of the till samples. The sample numbering system for this geochemical map and the clast lithology map are keyed.

Raw heavy mineral analytical values for Sn, W, Nb and Ta were weighted as in Toverud (1982) using the formula:

Awv = Arv x W1/W2 where

Awv = weighted analytical value (ppm)
Arv = raw analytical value (ppm)
W1 = weight of heavy minerals in -50+230 fraction
W2 = total weight of the -50+230 fraction used in the heavy mineral separation.

This method of representing geochemical data corrects for (1) the problem of weight variation among heavy mineral concentrates in a till sample population and (2) unequal weight of initial sample size. Raw analytical values are not comparable unless normalized against the weight fraction of 'heavies' in the total till. Toverud's formula produces a calculated analytical value that represents the 'ppm level' of the element in the whole till.

Sample Preparation and Analytical Methods

Till matrix (<1.25 cm) from each sample site was submitted to Minerals Engineering Centre at Technical University of Nova Scotia for sample preparation. Heavy minerals were extracted from the -50+230 fraction of the till matrix by heavy liquid separation using tetrabromethane. The -50+230 fraction was wet sieved from 5 kg of till matrix. The heavy mineral concentrate was analyzed for W by neutron activation (NA) and for Sn, Nb and Ta by inductively coupled plasma mass spectroscopy (ICPMS) at X-Ray Assay Laboratories Ltd. The -230 fraction of the till was analyzed at Saint Mary's University by X-ray fluorescence for Cu, Pb, Zn, Nb, Sr, Ni, Cr and TiO_2 and at Bondar-Clegg Ltd. for the Gold + 25 package from which Rb, Sb, Ta, U, Th, Ba, Sc, As, Mo, W and Au are presented. Fe and Mn were analyzed at Bondar-Clegg by atomic absorption.

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