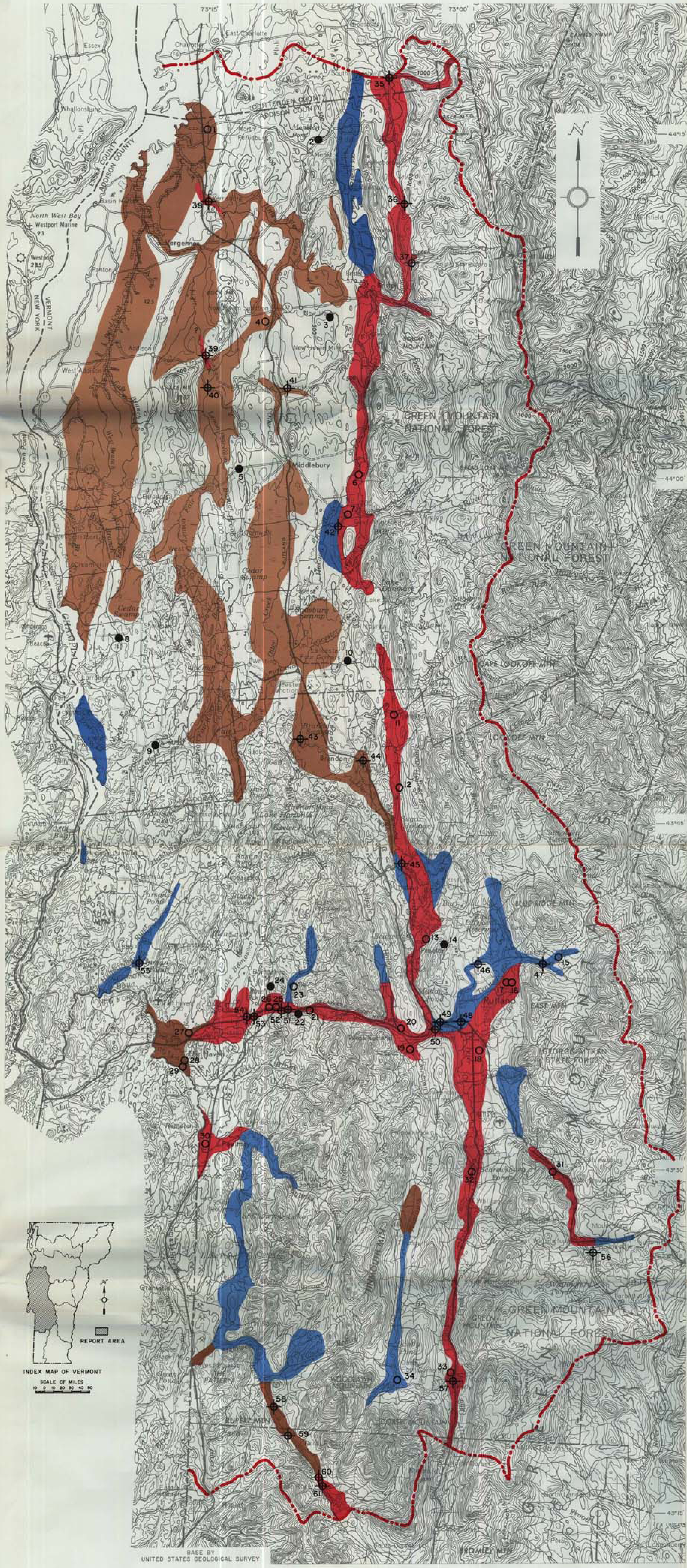

EXPLANATION

Introduction

This report shows relative favorability for development of ground water in that part of western Vermont drained by Otter Creek and lesser streams entering Lake Champlain between Lewis Creek and the Mettawee River. This study is part of a cooperative program between the United States Geological Survey and the State of Vermont Department of Water Resources to provide a statewide reconnaissance of ground-water availability. Information presented in this report is based on a limited amount of data and is intended as a guide for local exploration, and not as a statement that conditions are uniform everywhere within a map unit. Further studies are recommended for a more detailed appraisal of ground-water availability.

Ground-Water Favorability Areas

Areas underlain by thick deposits of coarse-grained stratified glacial drift have excellent ground-water potential. Suitable for exploration to locate wells that should yield sufficient quantities of water to meet municipal and industrial requirements. Deposits are thinner and wells would be less productive along margins.

Areas underlain by thin deposits of coarse-grained stratified glacial drift and stream gravel have low to moderate ground-water potential. Suitable for exploration to locate shallow wells and infiltration galleries that should yield sufficient quantities of water for domestic, commercial, and light industrial use.

Areas underlain by fine-grained stratified glacial drift and swamp deposits have low ground-water potential. These deposits generally will yield sufficient water for domestic wells only. In places, thin lenses of gravel with higher yields may underlie these deposits, but these lenses may not have adequate storage or recharge to produce high yields on a sustained basis.

Areas underlain by deposits of unstratified glacial drift ("hardpan") and bedrock ("ledge") have low ground-water potential. In general, wells in either till or bedrock will yield only enough water for domestic or light commercial use. Till and bedrock underlie the stratified glacial drift of the map units listed above.

Water wells in stratified glacial drift

Water wells in glacial till and bedrock

Test borings

Basin boundary

Well and Test-Boring Data

Well and test-boring data indicate the presence of several thick deposits of water-bearing sand and gravel. In the northern half of the basin, these deposits occur along the western margin of the Green Mountains. In the southern half of the basin, excellent ground-water potential is indicated along Otter Creek from Proctor to Danby; the Castleton River from Center Rutland to Hydeville; the Poultney River from East Poultney to the New York State line; Mill River from East Clarendon to Bowlsville; and the Mettawee River from East Rupert to Dorset.

Numerous areas of thin deposits of sand and gravel occur throughout the basin. In addition to the larger areas shown on the map, low to moderate amounts of ground water can be obtained from well points installed next to most streams that are not flowing directly on a rock floor.

In the northwestern part of the basin, the materials overlying bedrock are predominantly fine sand, silt, and clay. The possibility of clay-covered gravel channels in central Addison County is suggested by water wells 1 and 4, and test borings 38 and 39. Additional testing should be done in this area to define the boundaries of this aquifer. Fine-grained glacial deposits also occur near Brandon, Fair Haven, Tinmouth, West Pawlet and North Rupert in Rutland and Bennington Counties.

Nineteen wells in the Otter Creek basin that produce water from sand and gravel have an average yield of 114 gallons per minute. In contrast, six wells producing water from bedrock average 14 gallons per minute.

WATER WELLS AND TEST BORINGS

WATER WELLS

Number	Owner	Location	Total Depth (in feet) 1/	Depth to Bedrock (in feet) 1/	Aquifer 1/	Yield (in gallons per minute) 1/ 2/
1	Stanley Prescott	N. Ferrisburg	122	NR	Sand	20
2	Monkton Central School	Monkton	255	80	Rock	17
3	Arthur Sherman	New Haven	117	17	Rock	?
4	Joseph Balduc	New Haven	132	NR	Gravel	45
5	Peter Walton	Cornwall	230	90	Rock	unused
6	Town of Middlebury	Middlebury	50	NR	Gravel	300
7	Town of E. Middlebury	E. Middlebury	40	NR	Gravel	90
8	United Farmers of New England	Shoreham	268	20	Rock	8
9	Orwell Central School	Orwell	279	1	Rock	8
10	Bert Cole	Leicester	502	40	Rock	2
11	Town of Brandon	Brandon	60	NR	Gravel	450
12	William C. Ryan	Brandon	215	NR	Gravel	15
13	Village of Proctor	Proctor	130	NR	Gravel	280
14	Reginald Flanders	Pittsford	132	96	Rock	2
15	Henry Foerster	Mendon	73	NR	Sand & gravel	15
16	Anthony Campbell	Rutland	165	NR	Gravel	20
17	Fred Woods	Rutland	152	NR	Gravel	6
18	Lindholm Motors	Rutland	66	NR	Gravel	22
19	Town of West Rutland	West Rutland	60	NR	Gravel	?
20	Green Mountain Marble Company	West Rutland	12	NR	Gravel	100
21	James R. Powers	Castleton	80	NR	Sand	?
22	Henry Anderson	Castleton	241	10	Rock	50
23	Bernard Peltier	Castleton	6	NR	Gravel	?
24	Gerald Eagan	Castleton	100	1	Rock	?
25	Town of Castleton	Castleton	35	NR	Gravel	130
26	Town of Castleton	Castleton	25	NR	Gravel	210
27	Town of Fair Haven	Fair Haven	63	63	Clay (Test Hole)	0
28	Town of Fair Haven	Fair Haven	71	71	Clay (Test Hole)	0
29	Town of Fair Haven	Fair Haven	128	128	Clay (Test Hole)	0
30	Town of Poultney	Poultney	40	NR	Gravel	250
31	Mrs. J. Spencer	Cuttingsville	68	68	Gravel	33
32	Aldis Newton	Clarendon	70	NR	Gravel	25
33	John Corey	Danby	160	NR	Gravel	100
34	Fred Lewis	Danby Four Corners	60	NR	Gravel	50

NR - Not Reached 1/ Reported by owner 2/ May be limited by capacity of pump

GROUND-WATER FAVORABILITY MAP
OF THE
OTTER CREEK BASIN, VERMONT

SCALE OF MILES

1 0 1 2 3 4 5 6 7 8

PREPARED BY
VERMONT DEPARTMENT OF WATER RESOURCES
IN COOPERATION WITH
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
BY
ARTHUR L. HODGES, JR.
U.S. GEOLOGICAL SURVEY

1967

TEST BORINGS (Vermont Department of Highways)

35. Hinesburg (South Hinesburg) - Vt. Route 116 over Hollow Brook — Elevation 634 ft
    - Loam, sand . . . . 0 - 4 ft
    - Sand & gravel . . . . 4 - 44
    - Not to refusal

36. Starksboro - Vt. Route 116 over Lewis Creek — Elevation 489 ft
    - Sand, some silt & fine gravel . . 0 - 40 ft
    - Fine gravel, some sand . . . . . . 40 - 47
    - Not to refusal

37. Bristol - Vt. Route 116 over Baldwin Creek — Elevation Not Available
    - Sand & gravel . . . . 0 - 14 ft
    - Fine gravel & some sand . . . . . 14 - 47
    - Not to refusal

38. Ferrisburg - U.S. Route 7 over Little Otter Creek
    - South side — Elevation 173 ft
      - Clay . . . . 0 - 16 ft
      - Fine sand & gravel . . . . 16 - 27
    - North side — Elevation 153 ft
      - Topsoil . . . . 0 - 3 ft
      - Clay hardpan . . . . 3 - 6

39. Weybridge - New Haven Town Line, Vt. Route 17 over Otter Creek — Elevation Not Available
    - Clay . . . . 0 - 3 ft
    - Clay & sand . . . . 3 - 10
    - Clay . . . . 10 - 11
    - Fine sand . . . . 11 - 15
    - Gravel & clay . . . . 15 - 20
    - Clay & sand . . . . 20 - 22½
    - Clay & gravel . . . . 22½ - 31
    - Gravel . . . . 31 - 36
    - Not to refusal

40. Weybridge - Vt. Route 23 (Middlebury-Addison Road) over Lemon Fair River — Elevation 181 ft
    - East end of bridge
      - Gray clay . . . . 0 - 19 ft
      - Blue clay . . . . 19 - 102
      - Not to refusal

41. New Haven (Brooksville) - U.S. Route 7 over New Haven River — Elevation 245 ft
    - Sand & gravel with clay . . . . . 0 - 5 ft
    - Clay . . . . 5 - 15
    - Clay, sand & gravel . . . . 15 - 20
    - Ledge 20

42. Middlebury - U.S. Route 7 over Middlebury River
    - South end of bridge — Elevation 380 ft
      - Loam, sand, gravel, some boulders 0 - 5 ft
      - Firm sand, gravel & boulders . . . 5 - 10
      - Loose fine sand, trace of loam . . 10 - 14
      - Very compact coarse brown sand, gravel & boulders . . . . . . 14 - 20
      - Very compact fine sand, gravel, boulders & a little clay . . . . 20 - 25
      - Not to refusal
    - North end of bridge — Elevation 373 ft
      - Loose fine loamy sand . . . . . . 0 - 3 ft
      - Hard coarse yellow sand & gravel . 3 - 11 (water table at 5 ft (368'))
      - Firm coarse yellow sand, gravel & some clay . . . . 11 - 40
      - Not to refusal (stopped casing at 35 ft)

43. Sudbury - Vt. Route 73 over Otter Creek — Elevation 200 ft
    - Soil & sand . . . . 0 - 25 ft
    - Firm blue clay . . . . 25 - 27
    - Blue clay . . . . 27 - 68
    - Ledge 68

44. Brandon - Town Road over Neshobe River — Elevation 301 ft
    - Sand & some fine gravel . . . . . 0 - 17 ft
    - White clay . . . . 17 - 19
    - Blue clay . . . . 19 - 27
    - White clay . . . . 27 - 31
    - White clay with sand & some gravel 31 - 39

45. Pittsford (Florence) - bridge over Otter Creek — Elevation 439 ft
    - Topsoil . . . . 0 - 2 ft
    - Sand, silt, some gravel . . . . . 2 - 20
    - Ledge 20

46. Rutland - East Pittsford Road bridge over East Creek approximately 2½ miles SW of East Pittsford Village
    - South end of bridge — Elevation 687 ft
      - Sand & silt . . . . 0 - 3 ft
      - Gravel . . . . 3 - 4
      - Marble formation (bedrock?) . . . 4
    - North end of bridge — Elevation 690 ft
      - Sand & stones . . . . 0 - 1 ft
      - Gravel . . . . 1 - 10
      - Boulder . . . . 10 - 11
      - Silt & fine sand . . . . 11 - 21
      - Not to refusal

47. Mendon - U.S. Route 4 over East Creek (also called Mendon Brook) — Elevation 1,222 ft
    - Water . . . . 0 - 3 ft
    - Gravel . . . . 3 - 5.5
    - Ledge 5.5

48. Rutland City - State Street bridge on U.S. Route 4 over East Creek
    - Downstream — Elevation 536 ft
      - Sand & gravel . . . . 0 - 4 ft
      - Ground water, fine sand, little silt . . . . 4 - 14
      - Gravel, minor sand . . . . 14 - 16
      - Silt & gravel, little sand . . . . 16 - 24
      - Marble & quartz (bedrock?) 24
    - Upstream — Elevation 534 ft
      - Fill . . . . 0 - 10 ft
      - Fine to medium gravel, little sand, trace of silt . . . . 10 - 20
      - Sand, some gravel & silt (till?) . 20 - 30
      - Sand, some silt, little gravel, scattered boulders . . . . 30 - 60
      - Not to refusal

49. Rutland - U.S. Route 4 over Otter Creek — Elevation 476 ft
    - West end of bridge
      - Fine sand & silt . . . . 0 - 4 ft
      - Gravel & sand with boulders . . . 4 - 18
      - Ledge 18

50. Rutland - U.S. Route 4 over Clarendon River — Elevation 478 ft
    - Soil . . . . 0 - 8 ft
    - Sand & gravel, some clay & hardpan 8 - 36
    - Ledge (slate) 36

51. Castleton - East Hubbardton Road over North Brittain Brook — Elevation 498 ft
    - Sand & gravel, some silt . . . . . 0 - 28 ft
    - Silt & sand . . . . 28 - 35
    - Compact sand & silt, some gravel . 35 - 48
    - Bedrock 48

52. Castleton - U.S. Route 4 over Castleton River — Elevation 425 ft
    - Gravel, little sand . . . . 0 - 18 ft
    - Loose silt, trace of gravel & sand 18 - 42
    - Compact silt, trace of gravel & sand . . . . 42 - 63
    - Refusal 63

53. Castleton (Castleton Corners) - U.S. Route 4 over Castleton River — Elevation 287 ft
    - Sand, gravel & silt . . . . 0 - 30 ft
    - Ledge 30

54. Castleton (Castleton Corners) - U.S. Route 4 over Castleton River — Elevation 388 ft
    - Granular - silty sand & gravel . . 0 - 40 ft
    - Gray sandy silt . . . . 40 - 44
    - Ledge 44

55. West Haven - Gardner Road bridge over Hubbardton River approximately 2 miles east of West Haven Village
    - West end of bridge — Elevation 220 ft
      - Hard clay, minor sand & gravel . . 0 - 30 ft
      - Fine sand, minor gravel . . . . . 30 - 55
      - Not to refusal
    - East end of bridge — Elevation 210 ft
      - Clay . . . . 0 - 11 ft
      - Fine sand, sand & gravel . . . . . 11 - 40
      - Not to refusal

56. Mount Holly - Vt. Route 8 over Hill River — Elevation 1,247 ft
    - Sand, gravel & boulders . . . . . 0 - 6 ft
    - Ledge 6

57. Mount Tabor (Danby) - U.S. Route 7 over Mill Brook — Elevation 682 ft
    - Sand & gravel . . . . 0 - 20 ft
    - Gray clay . . . . 20 - 55
    - Clay with fine sand . . . . 55 - 70
    - Gravel? 70

58. Pawlet - Vt. Route 30 over Mettawee River — Elevation 660 ft
    - Coarse gravel . . . . 0 - 7 ft
    - Sandy clay . . . . 7 - 21
    - Very fine sand . . . . 21 - 32
    - Not to refusal

59. Rupert - Vt. Route 30 over Mettawee River — Elevation 698 ft
    - Sand & gravel . . . . 0 - 15 ft
    - Clay . . . . 15 - 22
    - Not to refusal

60. Rupert - Vt. Route 30 over Mettawee River — Elevation 170 ft
    - River gravel . . . . 0 - 5 ft
    - Clay & soft silt . . . . 5 - 60
    - Not to refusal

61. Dorset - Vt. Route 30 over Mettawee River — Elevation Not Available
    - Sand, silt & gravel . . . . 0 - 5 ft
    - Fine sand & silt . . . . 5 - 25
    - Coarse sand, pea stone & gravel . 25
    - Not to refusal