New Hampshire Groundwater Level Monitoring

February, 2021

New Hampshire Geological Survey
29 Hazen Drive, PO Box 95
Concord, New Hampshire 03302-0095

March 3, 2021

GROUNDWATER CONDITIONS SUMMARY

Neither NOAA nor the Northeast Regional Climate Center (NRCC) at Cornell University have yet released their February precipitation statistics, which are expected to be released next week and will be crucial data to consider during the current drought. In the absence of those summaries, NRCC reports that precipitation across New Hampshire between January 26th and February 23rd was below average (Figure 1). More precipitation figures here.

Drought conditions have remained the same since last month. Moderate drought persists in the Connecticut River Valley and abnormally dry conditions persist in the southern Merrimack basin and Seacoast Region. As of February 23rd, 52% of the state was abnormally dry, and 15% was in moderate drought (Figure 2). Groundwater levels had peaked in December across much of the state, following rain events and subsequent snowmelt. Since then, groundwater has been in steady decline in the northern and western portions of the state. Groundwater level trends are mixed in the Merrimack River basin and Seacoast Region.

Figures 1 and 2 show the monthly status of groundwater levels for both bedrock and overburden wells in the network. Only wells with a period of record (POR) 10 years or more are placed within statistical categories of low through high (symbols red through blue, respectively). Bedrock wells are installed into bedrock and overburden wells are installed in the unconsolidated materials above bedrock.

This month, groundwater levels in nearly all of the wells in the network have experienced a drop since last month, and most wells are below their monthly average. Wells in the northern and western portions of the state are below normal to low. The overburden wells in Lancaster, Lisbon, and Newport remain low. The overburden well in Ossipee, on the eastern side of the state, remains below normal. Groundwater levels in the two overburden wells in Albany have decreased from normal to below normal. The overburden well in Campton has decreased from normal to low. The wells in southern and southeast New Hampshire are experiencing normal to high groundwater levels. Similar to last month, exceptions in the south and southeast include the bedrock well in Deerfield, and the overburden wells in Franklin and Greenfield.

The New Hampshire Geological Survey's groundwater monitoring network (Figures 1 and 2) currently includes 11 bedrock and 20 overburden observation wells, all of which are measured monthly by hand. Using the monthly hand readings, monthly averages and percentile statistics were calculated and are summarized in Figures 1 and 2, the following hydrographs*, and in Table 1.

*The hydrographs show the following data over a period of 12 months: (1) monthly groundwater depths in red, (2) the monthly average over the period of record (POR) of the well in black, and (3) color-coded statistical ranges over the POR of the well. Note the POR is listed below each month's column on the chart and reported as the number of measurements for that respective month. This might include multiple readings in the same month and does not include any gaps in data so therefore may not represent a continuous period.

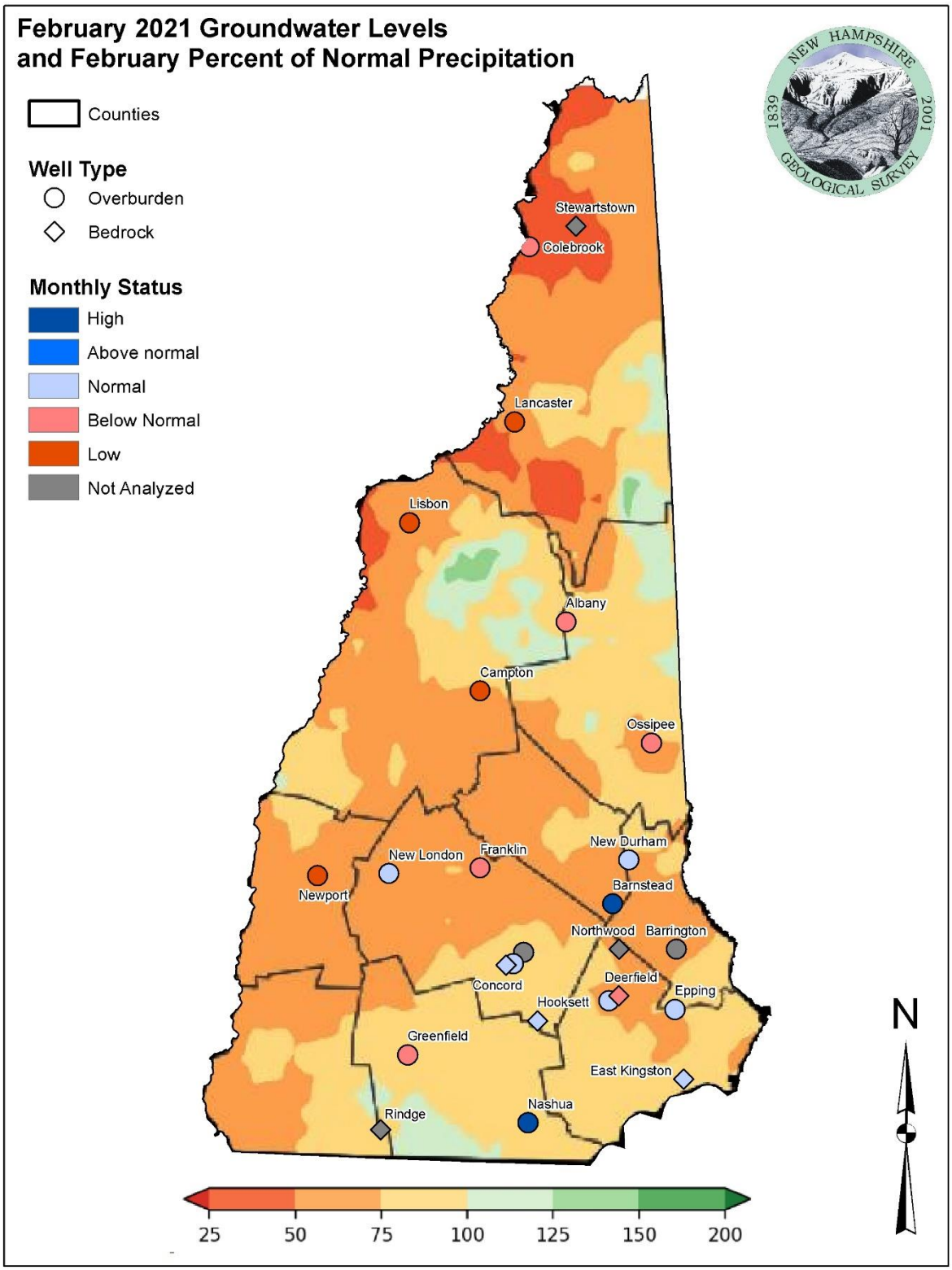


Figure 1. Groundwater Monitoring Network showing groundwater levels relative to statistical envelopes calculated over each well's period of record (POR) and percent normal precipitation map for January 26 – February 23, 2021 (Northeast Regional Climate Center).

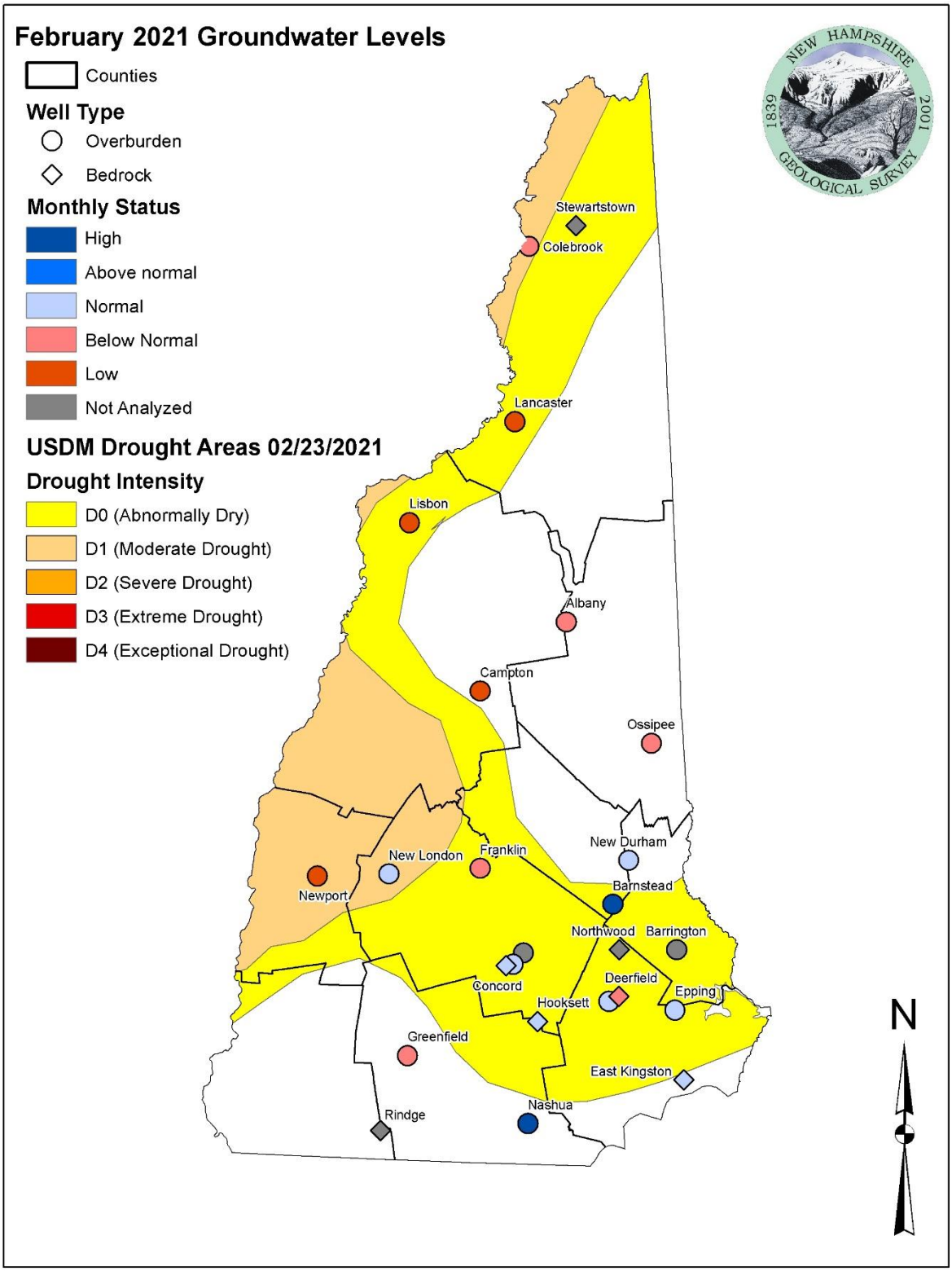
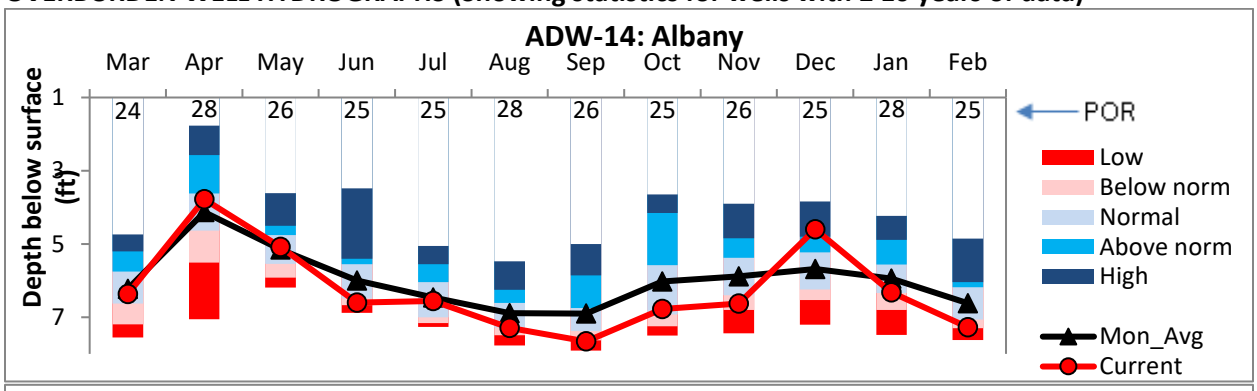
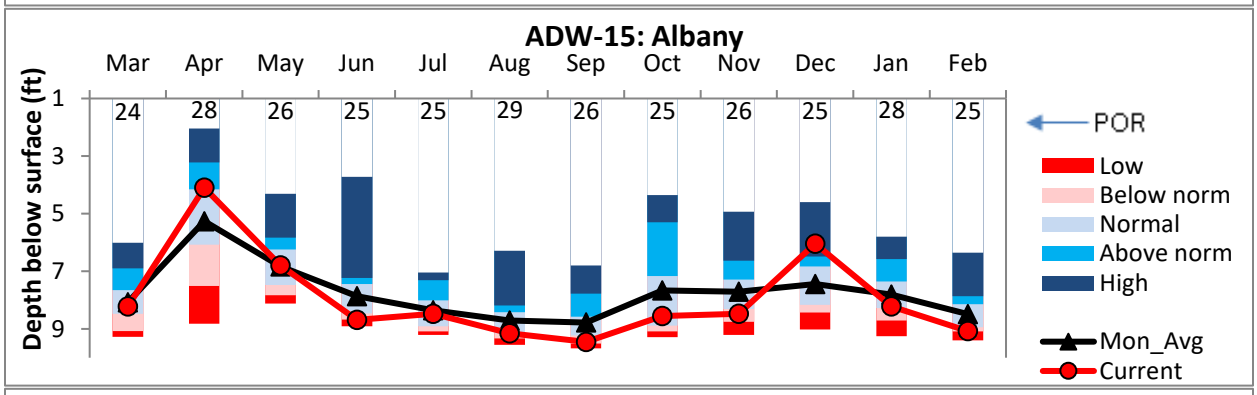
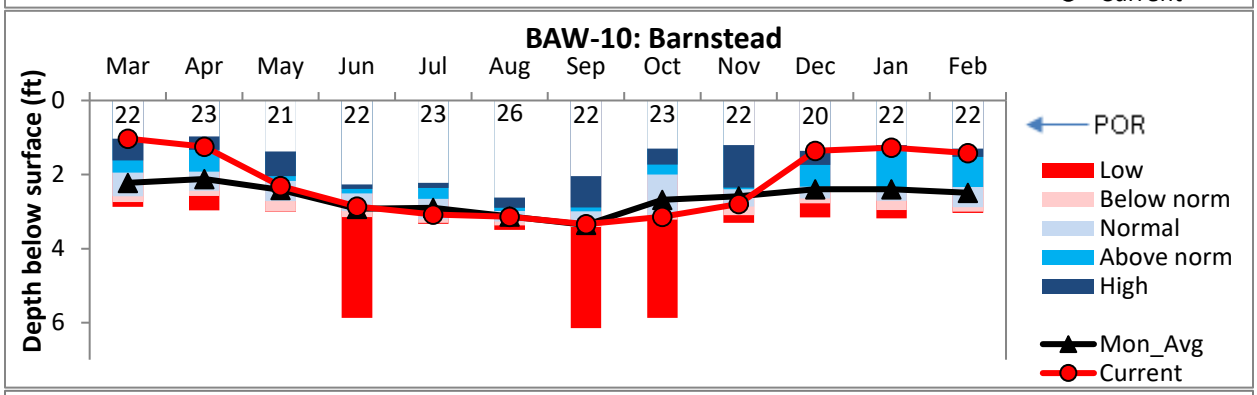


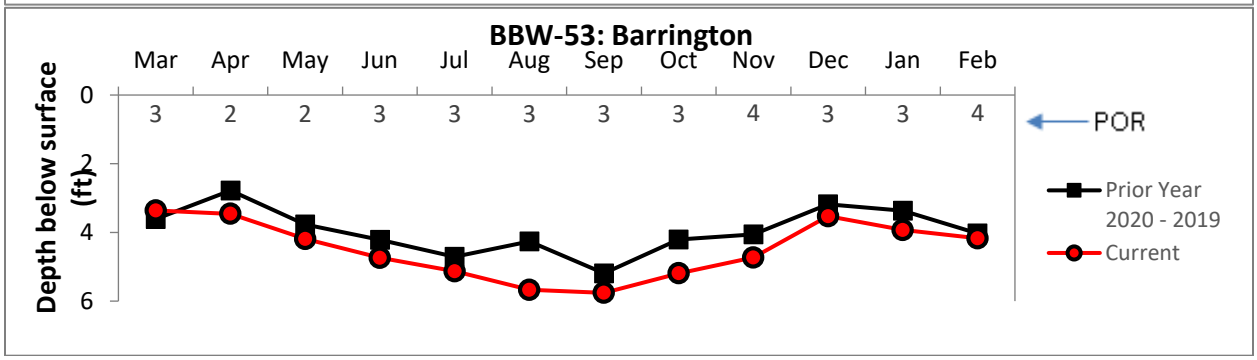
Figure 2. Groundwater Monitoring Network showing groundwater levels relative to statistical envelopes calculated over each well's period of record (POR) and drought areas according to data released by the U.S. Drought Monitor on February 23, 2021.

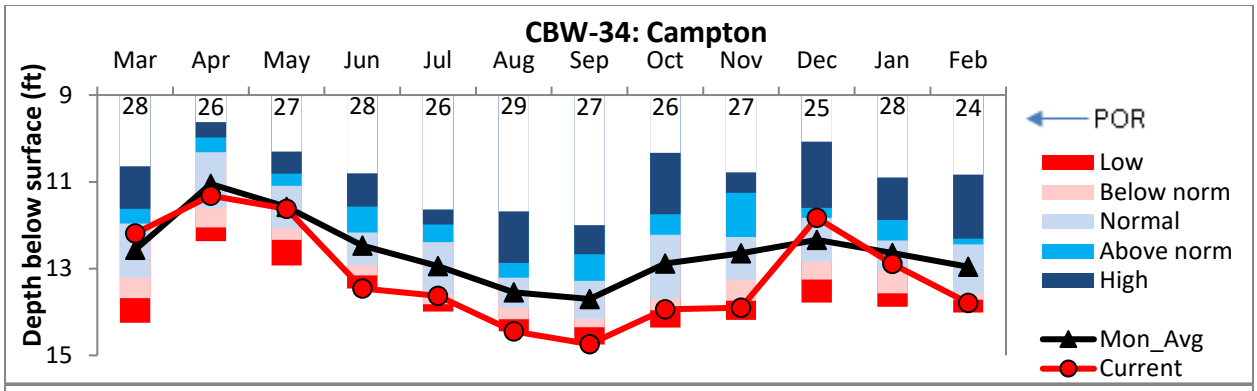
OVERBURDEN WELL HYDROGRAPHS (Showing statistics for wells with ≥ 10 years of data)

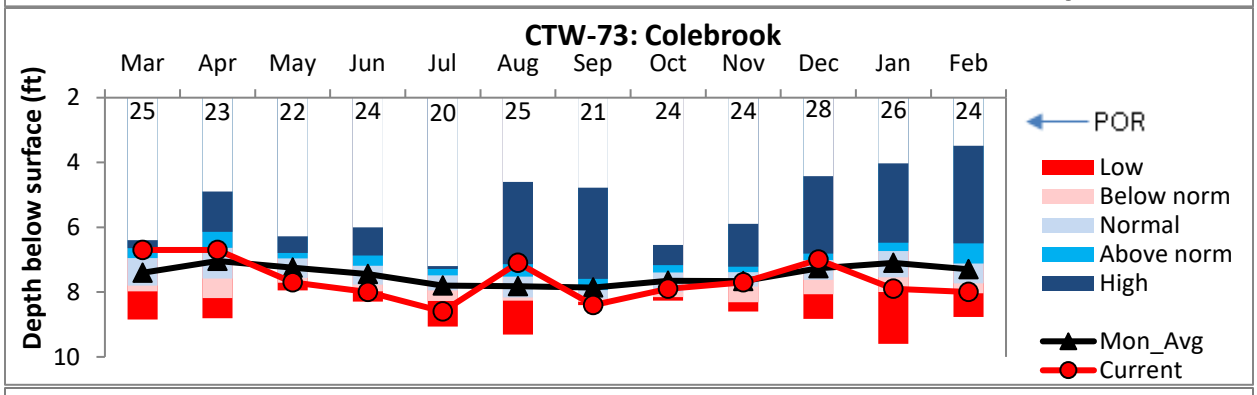


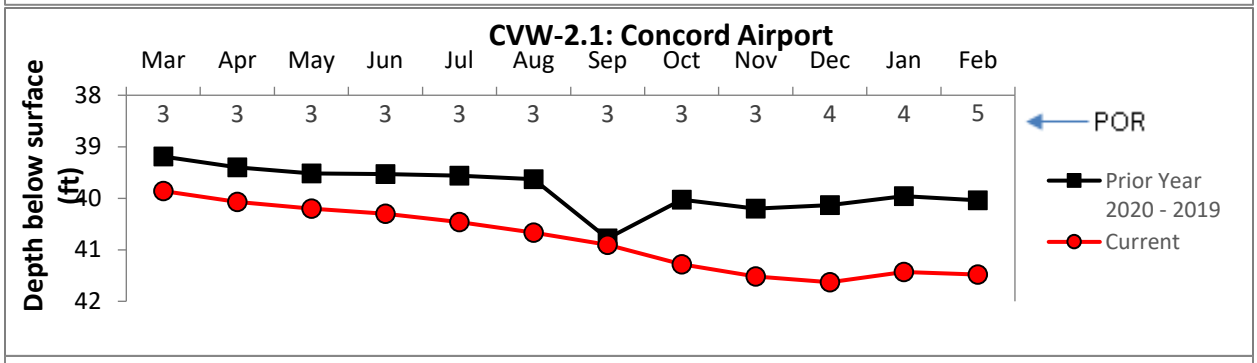


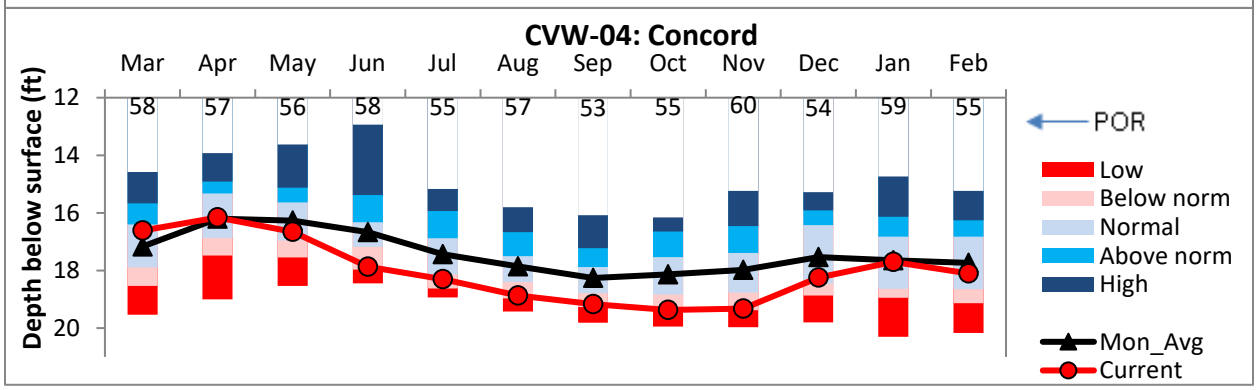


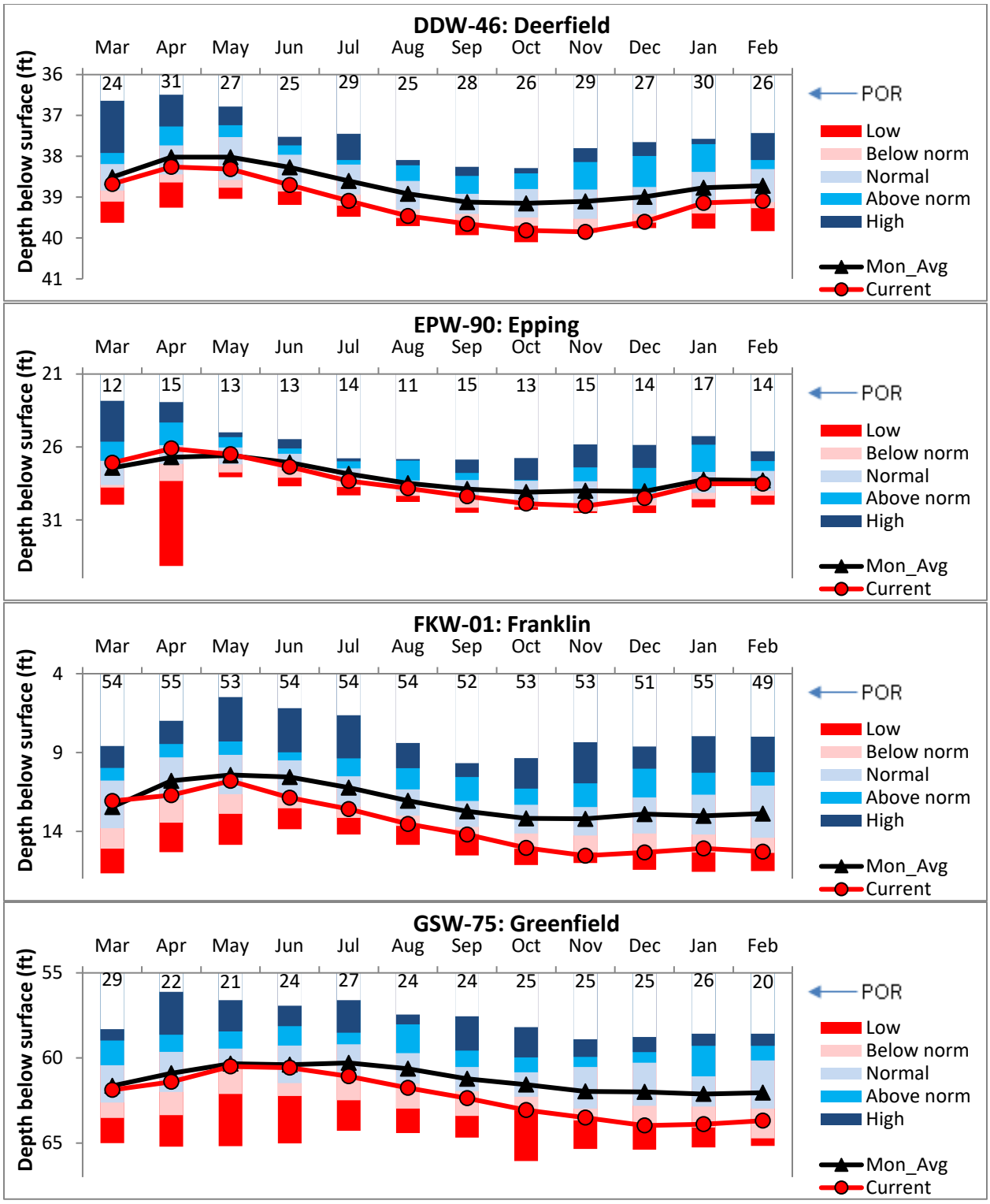


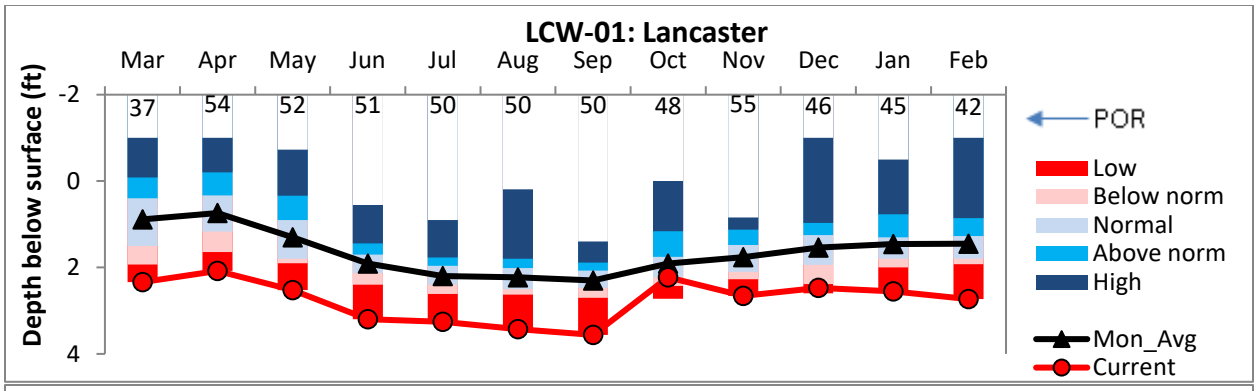

CBW-34: Campton
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
28 26 27 28 26 29 27 26 27 25 28 24
Depth below surface (ft)
9 11 13 15
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

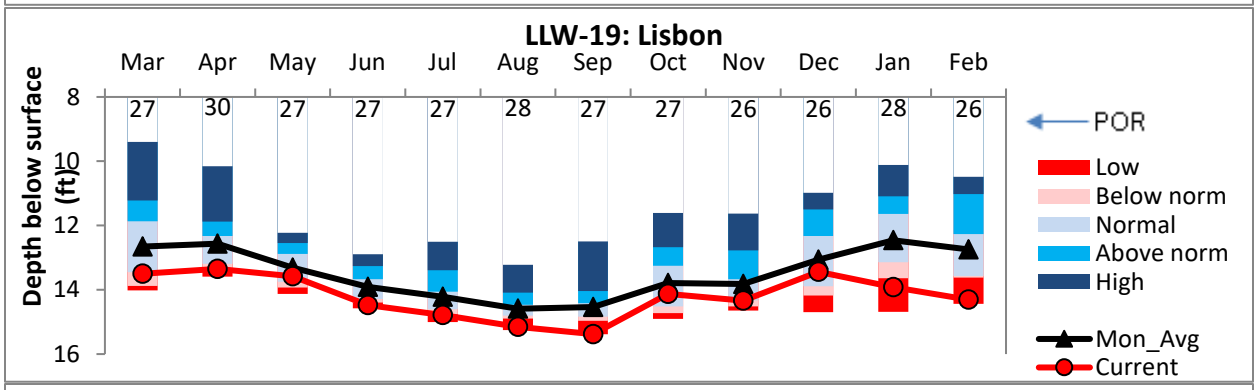

CTW-73: Colebrook
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
25 23 22 24 20 25 21 24 24 28 26 24
Depth below surface (ft)
2 4 6 8 10
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

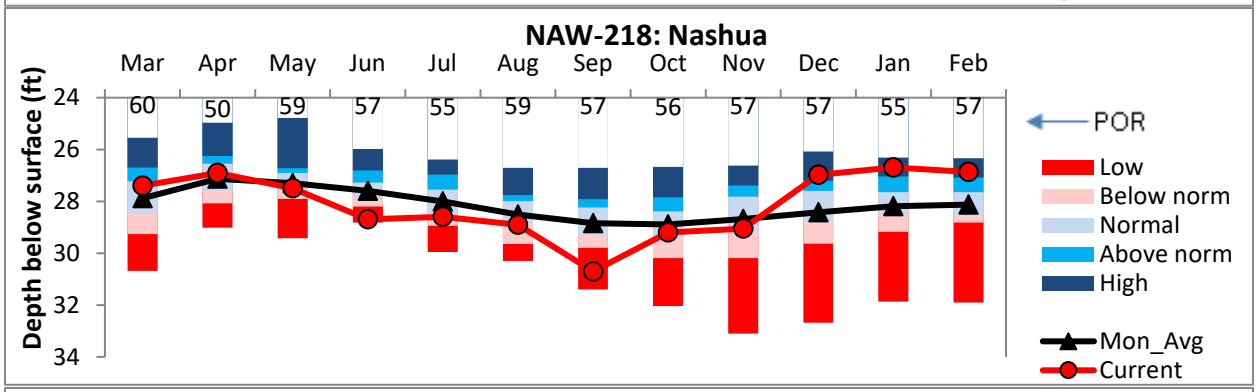

CVW-2.1: Concord Airport
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
3 3 3 3 3 3 3 3 3 4 4 5
Depth below surface (ft)
38 39 40 41 42
POR
Prior Year
2020 - 2019
Current

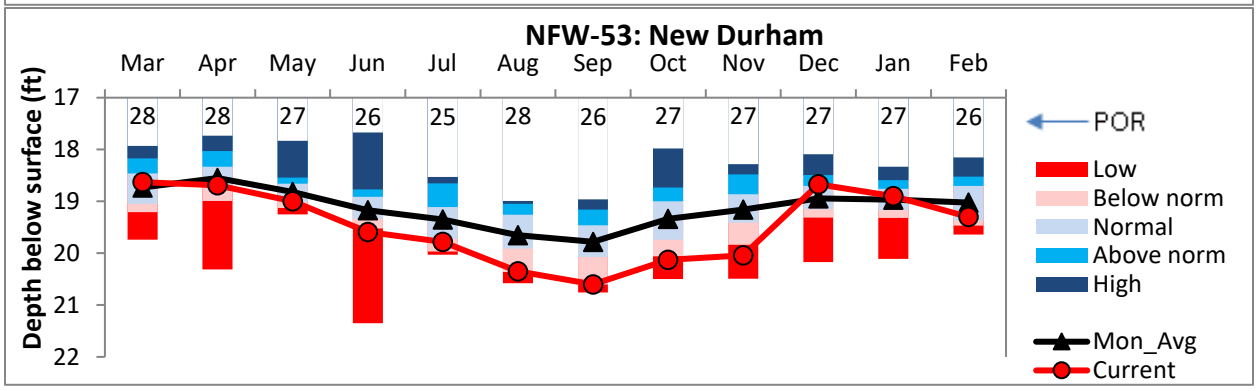

CVW-04: Concord
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
58 57 56 58 55 57 53 55 60 54 59 55
Depth below surface (ft)
12 14 16 18 20
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

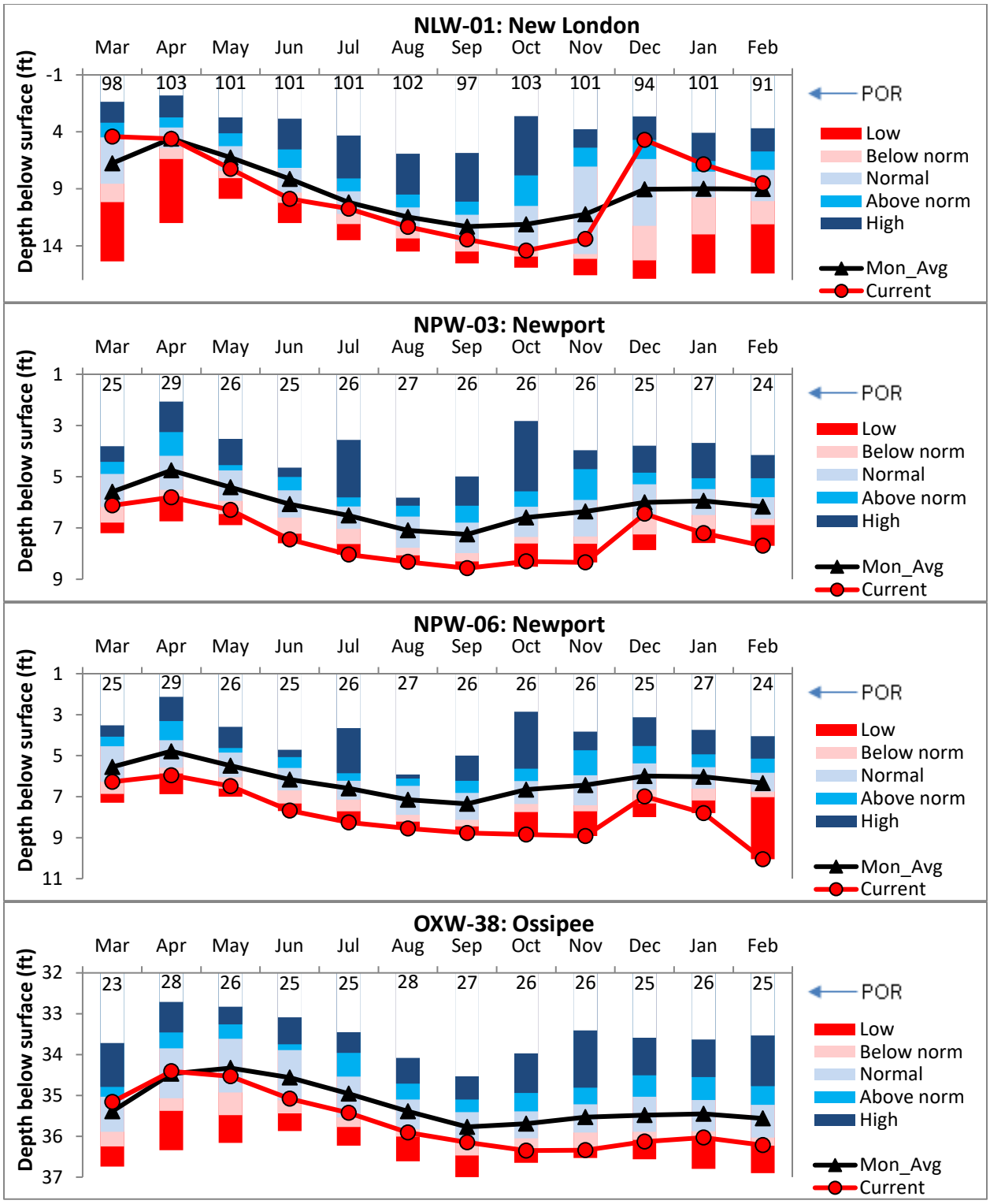

DDW-46: Deerfield
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
24 31 27 25 29 25 28 26 29 27 30 26
Depth below surface (ft)
36 37 38 39 40 41
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
EPW-90: Epping
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
12 15 13 13 14 11 15 13 15 14 17 14
Depth below surface (ft)
21 26 31
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
FKW-01: Franklin
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
54 55 53 54 54 54 52 53 53 51 55 49
Depth below surface (ft)
4 9 14
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
GSW-75: Greenfield
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
29 22 21 24 27 24 24 25 25 25 26 20
Depth below surface (ft)
55 60 65
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


LCW-01: Lancaster
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
37 54 52 51 50 50 50 48 55 46 45 42
Depth below surface (ft)
-2
0
2
4
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

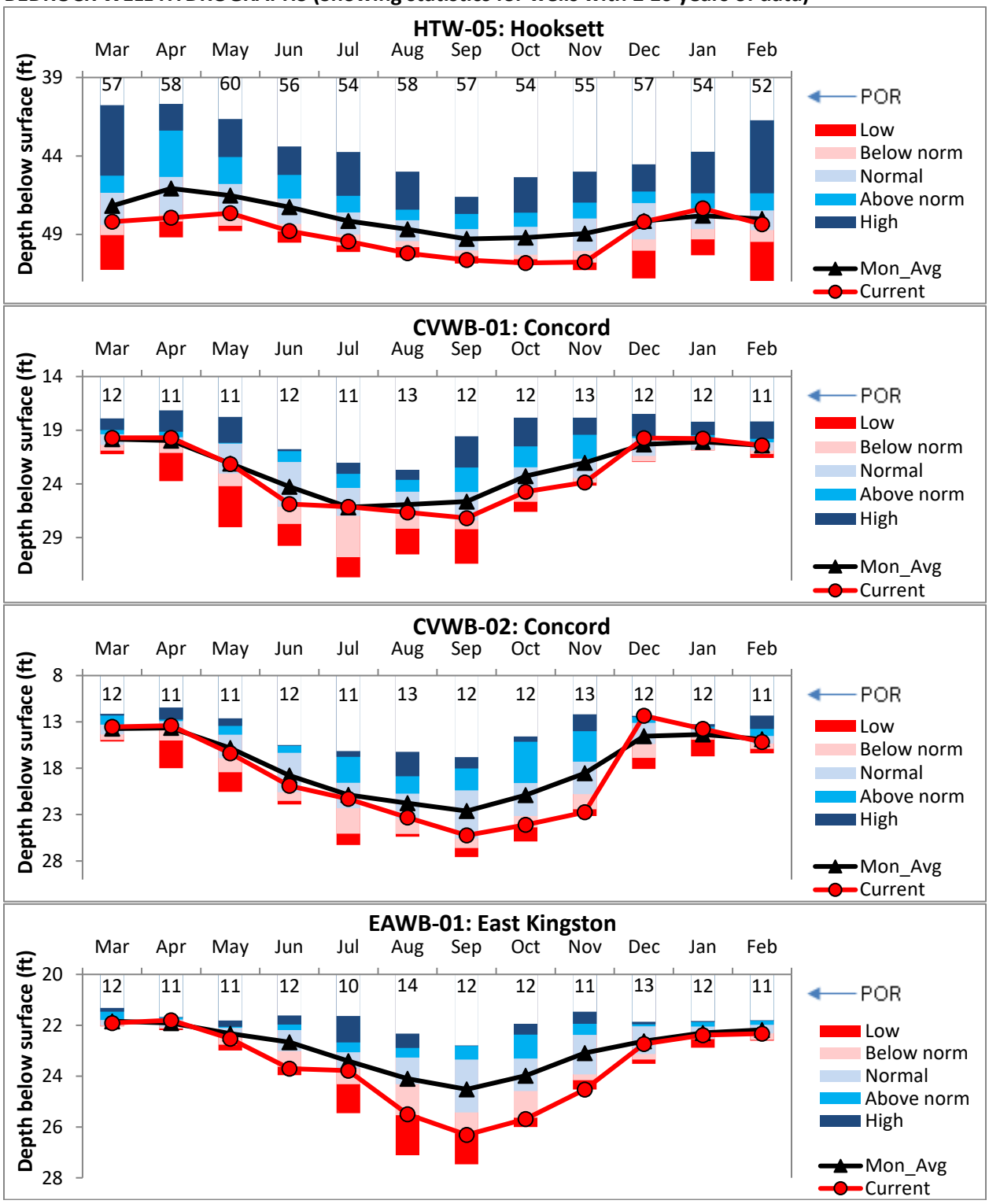

LLW-19: Lisbon
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
27 30 27 27 27 28 27 27 26 26 28 26
Depth below surface (ft)
8
10
12
14
16
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

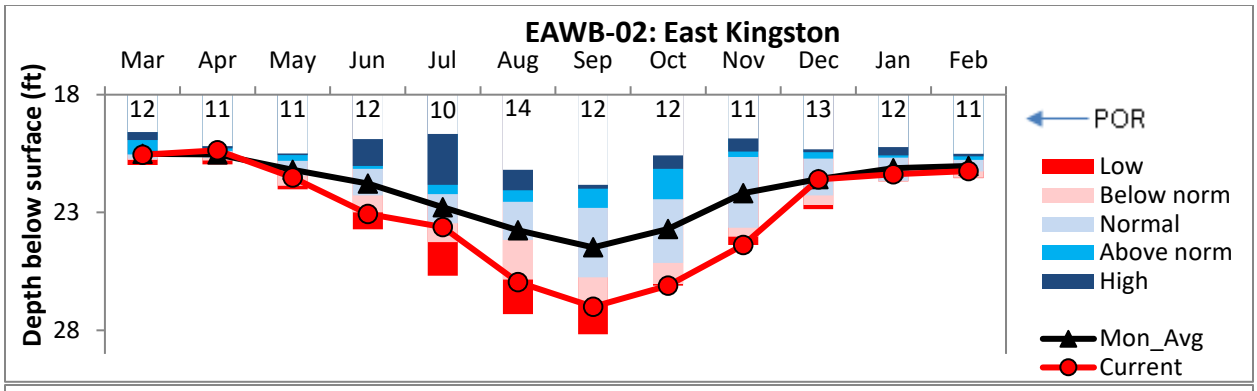

NAW-218: Nashua
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
60 50 59 57 55 59 57 56 57 57 55 57
Depth below surface (ft)
24
26
28
30
32
34
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

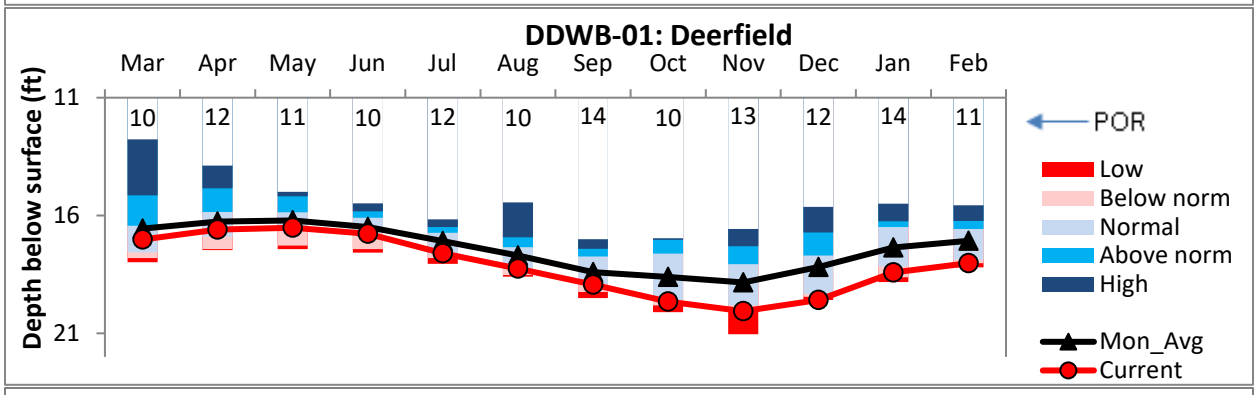

NFW-53: New Durham
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
28 28 27 26 25 28 26 27 27 27 27 26
Depth below surface (ft)
17
18
19
20
21
22
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

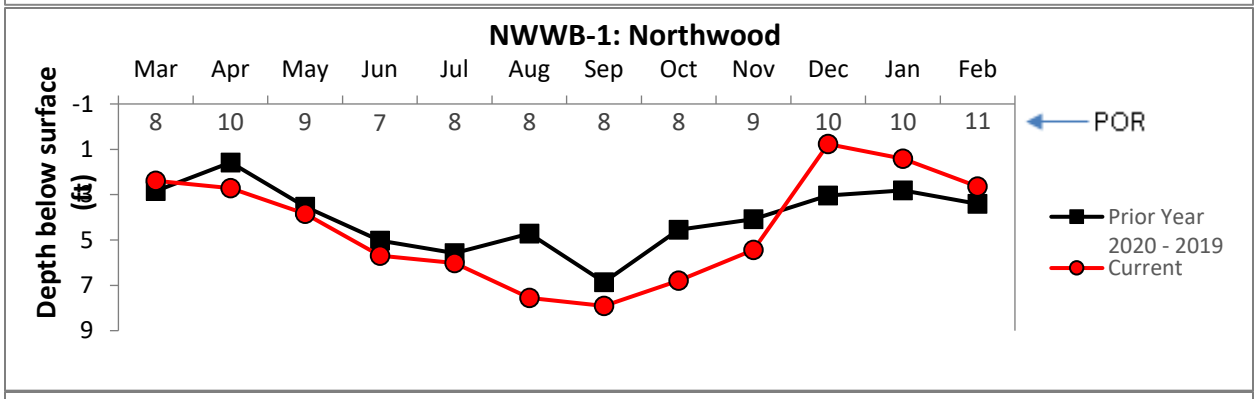

NLW-01: New London
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
98 103 101 101 101 102 97 103 101 94 101 91
Depth below surface (ft)
-1
4
9
14
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
NPW-03: Newport
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
25 29 26 25 26 27 26 26 26 25 27 24
Depth below surface (ft)
1
3
5
7
9
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
NPW-06: Newport
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
25 29 26 25 26 27 26 26 26 25 27 24
Depth below surface (ft)
1
3
5
7
9
11
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
OXW-38: Ossipee
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
23 28 26 25 25 28 27 26 26 25 26 25
Depth below surface (ft)
32
33
34
35
36
37
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

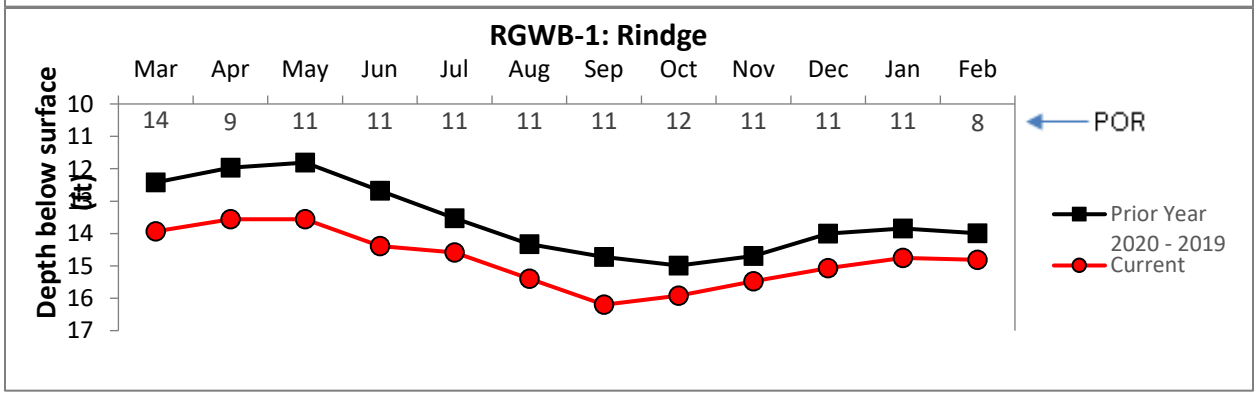
BEDROCK WELL HYDROGRAPHS (Showing statistics for wells with ≥ 10 years of data)




EAWB-02: East Kingston
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
18
23
28
12 11 11 12 10 14 12 12 11 13 12 11
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


DDWB-01: Deerfield
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
11
16
21
10 12 11 10 12 10 14 10 13 12 14 11
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


NWWB-1: Northwood
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
-1
1
5
7
9
8 10 9 7 8 8 8 8 9 10 10 11
POR
Prior Year
2020 - 2019
Current


RGWB-1: Rindge
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
10
11
12
14
15
16
17
14 9 11 11 11 11 11 12 11 11 11 8
POR
Prior Year
2020 - 2019
Current

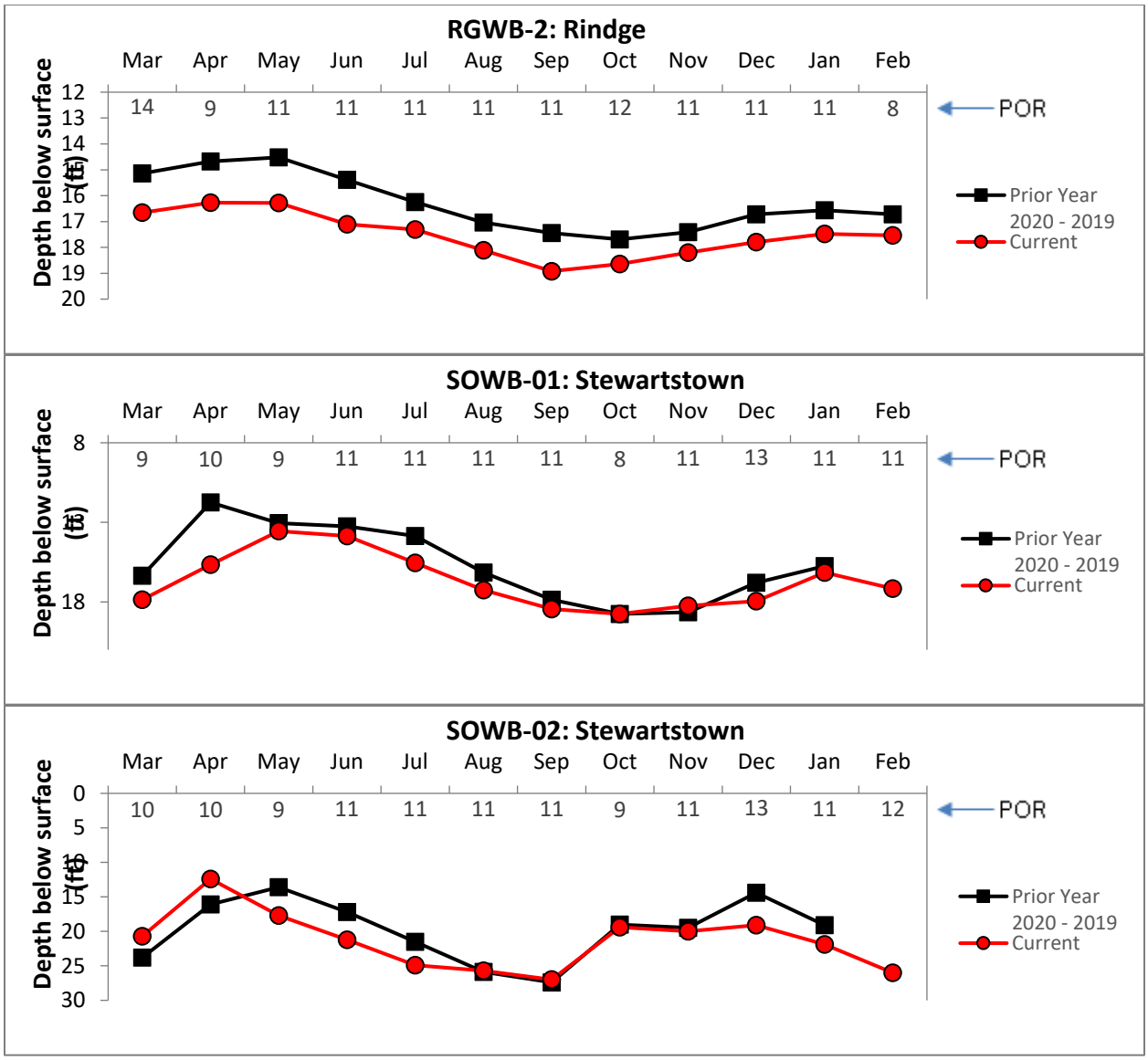

RGWB-2: Rindge
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
14 9 11 11 11 11 11 12 11 11 11 8
POR
Depth below surface (ft)
12 13 14 15 16 17 18 19 20
Prior Year
2020 - 2019
Current
SOWB-01: Stewartstown
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
9 10 9 11 11 11 11 8 11 13 11 11
POR
Depth below surface (ft)
8 18
Prior Year
2020 - 2019
Current
SOWB-02: Stewartstown
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
10 10 9 11 11 11 11 9 11 13 11 12
POR
Depth below surface (ft)
0 5 15 20 25 30
Prior Year
2020 - 2019
Current

Table 1. Summary of groundwater levels sorted by region (dark blue – high, blue – above normal, light blue – normal, pink – below normal, red – low.

Well	Town	Well type	Screen/ open Interval (ft)	Depth to Water (ft)	Monthly Average (ft)	Current Status	Departure from Avg. (ft)	Change since last month (ft)
ADW-14	Albany	Overburden	77.5-79.5	7.27	6.62	Below norm	-0.65	-0.95
ADW-15	Albany	Overburden	16-18	9.07	8.49	Below norm	-0.58	-0.85
BAW-10	Barnstead	Overburden	23-25	1.42	2.49	High	1.07	-0.15
BBW-53	Barrington	Overburden	21-23	4.17	-	Not Analyzed	-	-0.24
CBW-34	Campton	Overburden	21-23	13.79	12.96	Low	-0.83	-0.9
CTW-73	Colebrook	Overburden	105-107	8	7.3	Below norm	-0.7	-0.1
CVW-02.1	Concord	Overburden	59.8-61.8	41.48	-	Not Analyzed	-	-0.05
CVW-04	Concord	Overburden	25-27	18.1	17.73	Normal	-0.37	-0.4
DDW-46	Deerfield	Overburden	59.8-61.8	39.09	38.72	Normal	-0.37	0.05
EPW-90	Epping	Overburden	39.45-40.7	28.52	28.29	Normal	-0.23	0.01
FKW-01	Franklin	Overburden	45.5-47.5	15.29	12.87	Below norm	-2.42	-0.22
GSW-75	Greenfield	Overburden	35.8-37.8	63.69	62.04	Below norm	-1.65	0.2
LCW-01	Lancaster	Overburden	28-30	2.73	1.45	Low	-1.28	-0.18
LLW-19	Lisbon	Overburden	49.8-52.3	14.31	12.74	Low	-1.57	-0.39
NAW-218	Nashua	Overburden	66-68	26.87	28.13	High	1.26	-0.18
NFW-53	New Durham	Overburden	28-30	19.3	19.02	Normal	-0.28	-0.4
NLW-01	New London	Overburden	40-42	8.5	9.01	Normal	0.51	-1.66
NPW-03	Newport	Overburden	40.5-42.5	7.69	6.17	Low	-1.52	-0.49
NPW-06	Newport	Overburden	58-60	10.05	6.33	Low	-3.72	-2.25
OXW-38	Ossipee	Overburden	0-22.55	36.22	35.56	Below norm	-0.66	-0.19
CVWB-01	Concord	Bedrock	470-480	20.4	20.4	Normal	0	-0.63
CVWB-02	Concord	Bedrock	0-315	15.16	14.86	Normal	-0.3	-1.42
DDWB-01	Deerfield	Bedrock	0-300	18.02	17.07	Below norm	-0.95	0.4
EAWB-01	East Kingston	Bedrock	463-473	22.33	22.18	Below norm	-0.15	0.06
EAWB-02	East Kingston	Bedrock	0-323	21.24	21.03	Normal	-0.21	0.14
HTW-05	Hooksett	Bedrock	0-102.7	48.35	48.01	Normal	-0.34	-1
NWWB-01	Northwood	Bedrock	0-130	2.65	-	Not Analyzed	-	-1.23
RGWB-01	Rindge	Bedrock	391-401	14.81	-	Not Analyzed	-	-0.06
RGWB-02	Rindge	Bedrock	0-285	17.54	-	Not Analyzed	-	-0.06
SOWB-01	Stewartstown	Bedrock	443-453	17.15	-	Not Analyzed	-	-1
SOWB-02	Stewartstown	Bedrock	0-303	26	-	Not Analyzed	-	-4.1