



The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



**Robert R. Scott, Commissioner**

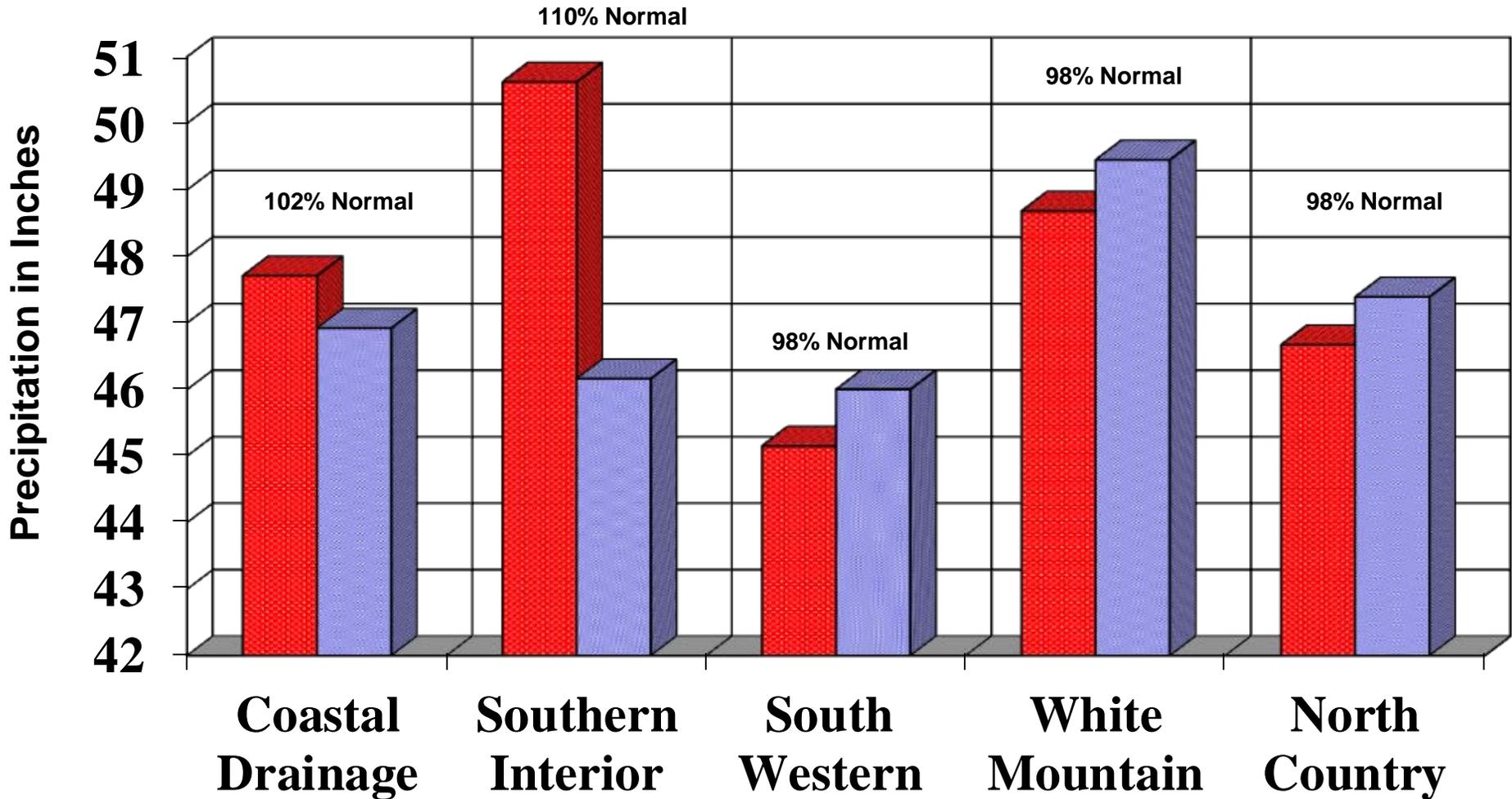
**AGGREGATED PRECIPITATION DATA for N.H.  
 DROUGHT MANAGEMENT AREAS**

	Actual Rainfall (inches)	Normal Rainfall (inches)	Deviation from Normal (inches)	Percent of Normal
<u>Coastal Drainage:</u> Rockingham, Strafford counties				
four month	20.82	15.41	5.41	135%
six month	27.33	23.71	3.63	115%
nine month	37.34	34.42	2.92	108%
twelve month	47.71	46.92	0.79	102%
<u>Southern Interior:</u> Belknap, Hillsborough, Merrimack counties				
four month	22.00	15.80	6.20	139%
six month	27.88	23.76	4.12	117%
nine month	38.02	33.90	4.12	112%
twelve month	50.62	46.16	4.46	110%
<u>South Western:</u> Cheshire, Sullivan counties				
four month	22.15	16.43	5.73	135%
six month	27.56	24.17	3.39	114%
nine month	33.43	33.94	3.95	99%
twelve month	45.15	46.00	3.61	98%
<u>White Mountain:</u> Carroll, Grafton counties				
four month	16.32	17.58	-1.27	93%
six month	23.12	25.95	-2.84	89%
nine month	33.52	36.15	-2.63	93%
twelve month	48.68	49.45	-0.77	98%
<u>North Country:</u> Coos county				
four month	17.46	18.21	-0.75	96%
six month	24.22	26.03	-1.81	93%
nine month	33.18	35.05	-1.87	95%
twelve month	46.67	47.39	-0.72	98%

four month period : June 2018 - September 2018  
 six month period : April 2018 - September 2018  
 nine month period : January 2018 - September 2018  
 twelve month period: October 2017 - September 2018

Source: Northeast River Forecast Center, NH Des Dam Bureau

# TWELVE MONTH AGGREGATED PRECIPITATION DATA for N.H. DROUGHT MANAGEMENT AREAS from October 2017 through September 2018



■ Actual ■ Normal

# MONTHLY PRECIPITATION DATA FOR N.H COUNTIES



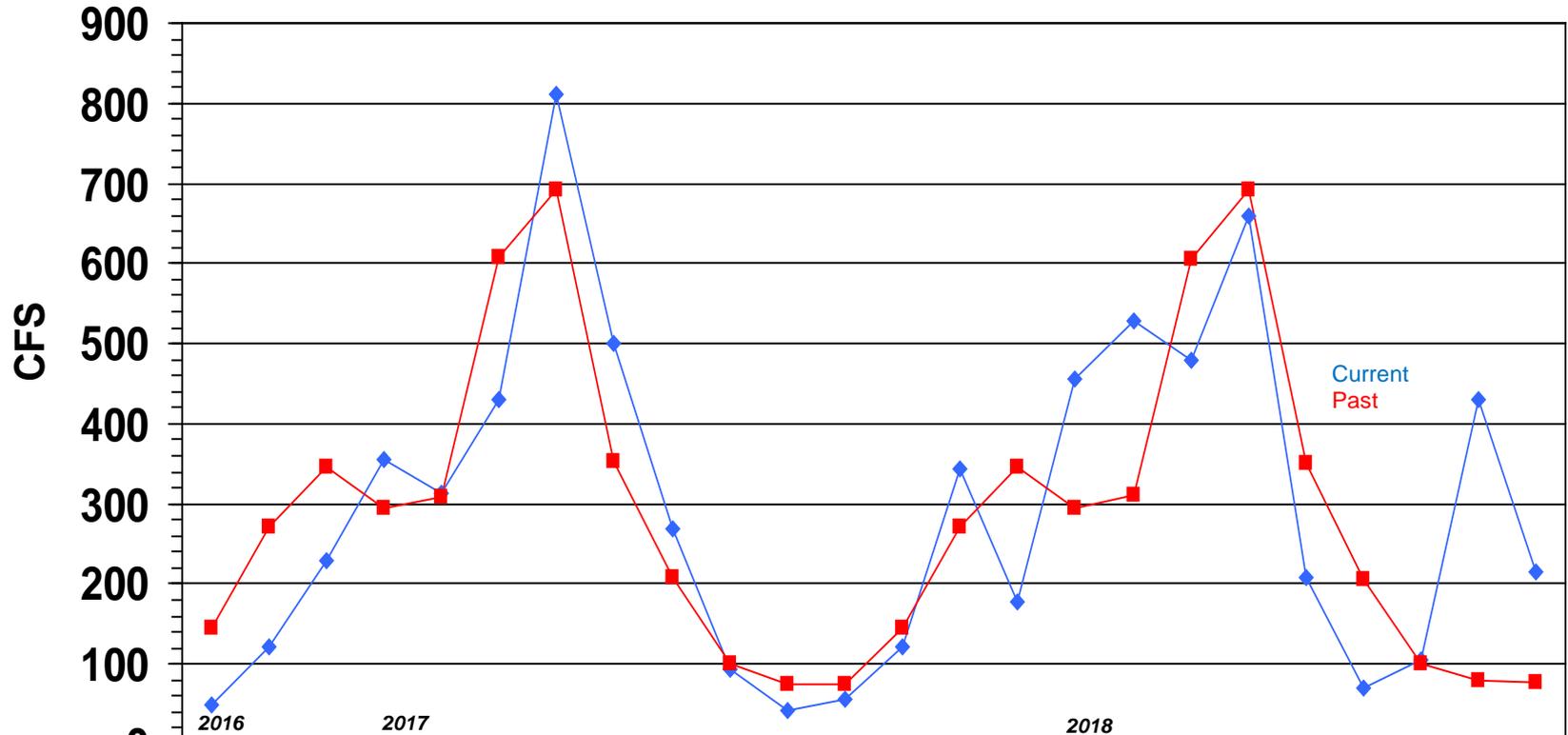
		2017			2018							
		OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG
<u>Coastal drainage</u>												
STRAFFORD	actual	6.03	1.73	3.13	3.34	3.76	3.02	5.25	1.29	3.67	4.47	6.01
	normal	4.38	4.50	3.76	3.21	3.29	4.16	4.22	4.09	4.16	3.99	3.73
	deviation	1.65	-2.77	-0.63	0.13	0.47	-1.14	1.03	-2.80	-0.49	0.48	2.28
ROCKINGHAM	actual	5.73	1.56	2.56	2.94	3.72	3.23	4.99	1.50	4.25	5.04	5.84
	normal	4.35	4.29	3.73	3.27	3.30	4.19	4.19	4.10	4.10	3.78	3.55
	deviation	1.38	-2.73	-1.17	-0.33	0.42	-0.96	0.80	-2.60	0.15	1.26	2.29
Average	actual	5.88	1.65	2.85	3.14	3.74	3.13	5.12	1.40	3.96	4.76	5.93
	normal	4.37	4.40	3.75	3.24	3.30	4.18	4.21	4.10	4.13	3.89	3.64
	deviation	1.52	-2.75	-0.90	-0.10	0.45	-1.05	0.92	-2.70	-0.17	0.87	2.29
<u>Southern Interior</u>												
HILLSBOROUGH	actual	7.67	1.33	3.00	3.44	3.82	3.18	4.56	1.37	4.26	5.89	7.97
	normal	4.46	4.22	3.80	3.39	3.29	3.94	4.13	4.10	4.21	3.96	3.75
	deviation	3.21	-2.89	-0.80	0.05	0.53	-0.76	0.43	-2.73	0.05	1.93	4.22
MERRIMACK	actual	7.46	1.58	3.60	3.95	3.51	2.80	4.68	1.33	3.09	4.99	8.54
	normal	4.42	4.15	3.64	3.26	3.09	3.74	3.96	4.01	4.34	4.11	3.75
	deviation	3.04	-2.57	-0.04	0.69	0.42	-0.94	0.72	-2.68	-1.25	0.88	4.79
BELKNAP	actual	7.63	1.87	3.67	3.97	3.29	2.45	4.55	1.17	3.00	3.64	6.94
	normal	4.49	4.03	3.58	3.08	3.03	3.58	3.75	3.95	4.25	4.08	3.78
	deviation	3.14	-2.16	0.09	0.89	0.26	-1.13	0.80	-2.78	-1.25	-0.44	3.16
Average	actual	7.59	1.59	3.42	3.79	3.54	2.81	4.60	1.29	3.45	4.84	7.82
	normal	4.46	4.13	3.67	3.24	3.14	3.75	3.95	4.02	4.27	4.05	3.76
	deviation	3.13	-2.54	-0.25	0.54	0.40	-0.94	0.65	-2.73	-0.82	0.79	4.06
<u>South Western</u>												
CHESHIRE	actual	7.69	1.44	3.17	4.37	3.98	3.02	3.84	1.39	4.31	7.49	8.21
	normal	4.60	3.98	3.68	3.41	3.18	3.72	3.79	4.10	4.20	4.36	4.06
	deviation	3.09	-2.54	-0.51	0.96	0.80	-0.70	0.05	-2.71	0.11	3.13	4.15
SULLIVAN	actual	6.07	1.55	3.52	3.79	3.12	2.73	4.32	1.26	3.10	5.79	5.50
	normal	4.51	3.86	3.49	2.72	3.00	3.51	3.67	3.92	4.18	4.36	4.06
	deviation	1.56	-2.31	0.03	0.72	0.12	-0.78	0.65	-2.66	-1.08	1.43	1.44
Average	actual	6.88	1.50	3.35	-0.55	3.55	2.88	4.08	1.33	3.71	6.64	6.86
	normal	4.56	3.92	3.59	3.07	3.09	3.62	3.73	4.01	4.19	4.36	4.06
	deviation	2.33	-2.43	-0.24	0.84	0.46	-0.74	0.35	-2.69	-0.49	2.28	2.80
<u>White Mountain</u>												
GRAFTON	actual	7.67	2.56	3.91	3.98	2.91	2.72	5.21	1.58	4.26	4.79	4.24
	normal	4.68	4.35	3.71	3.19	2.84	3.46	3.76	4.20	4.59	4.56	4.60
	deviation	2.99	-1.79	0.20	0.79	0.07	-0.74	1.45	-2.62	-0.33	0.23	-0.36
CARROLL	actual	9.00	2.74	4.44	4.77	3.41	3.02	5.39	1.42	4.06	3.33	4.79
	normal	4.96	4.72	4.17	3.57	3.32	4.02	4.46	4.32	4.50	4.41	4.42
	deviation	4.04	-1.98	0.27	1.20	0.09	-1.00	0.93	-2.90	-0.44	-1.08	0.37
Average	actual	8.34	2.65	4.18	4.38	3.16	2.87	5.30	1.50	4.16	4.06	4.52
	normal	4.82	4.54	3.94	3.38	3.08	3.74	4.11	4.26	4.55	4.49	4.51
	deviation	3.52	-1.89	0.24	1.00	0.08	-0.87	1.19	-2.76	-0.39	-0.43	0.01
<u>North Country</u>												
COOS	actual	7.78	2.63	3.08	3.65	2.63	2.68	4.67	2.09	4.03	4.66	5.04
	normal	4.52	4.24	3.58	3.09	2.72	3.21	3.61	4.21	4.79	4.57	4.85
	deviation	3.26	-1.61	-0.50	0.56	-0.09	-0.53	1.06	-2.12	-0.76	0.09	0.19

# LAMPREY RIVER near NEWMARKET NH

## Gage# 01073500



### MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



	2016	2017	2018																					
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
◆ Monthly Mean Flow	50	121	230	355	314	429	811	500	269	93	41	57	120.4	344	178	456	528	480	659	207	71	105	429	216
■ Mean of Monthly Flows	145	271	347	294	309	607	692	352	207	100	75	74	145	272	345	295	312	606	692	350	206	100	79	76
% of Normal	34%	44%	66%	121%	102%	71%	117%	142%	130%	93%	55%	78%	83%	126%	52%	155%	169%	79%	95%	59%	35%	105%	543%	285%

NH DES, Dam Bureau, Source: USGS

Start of record 1934

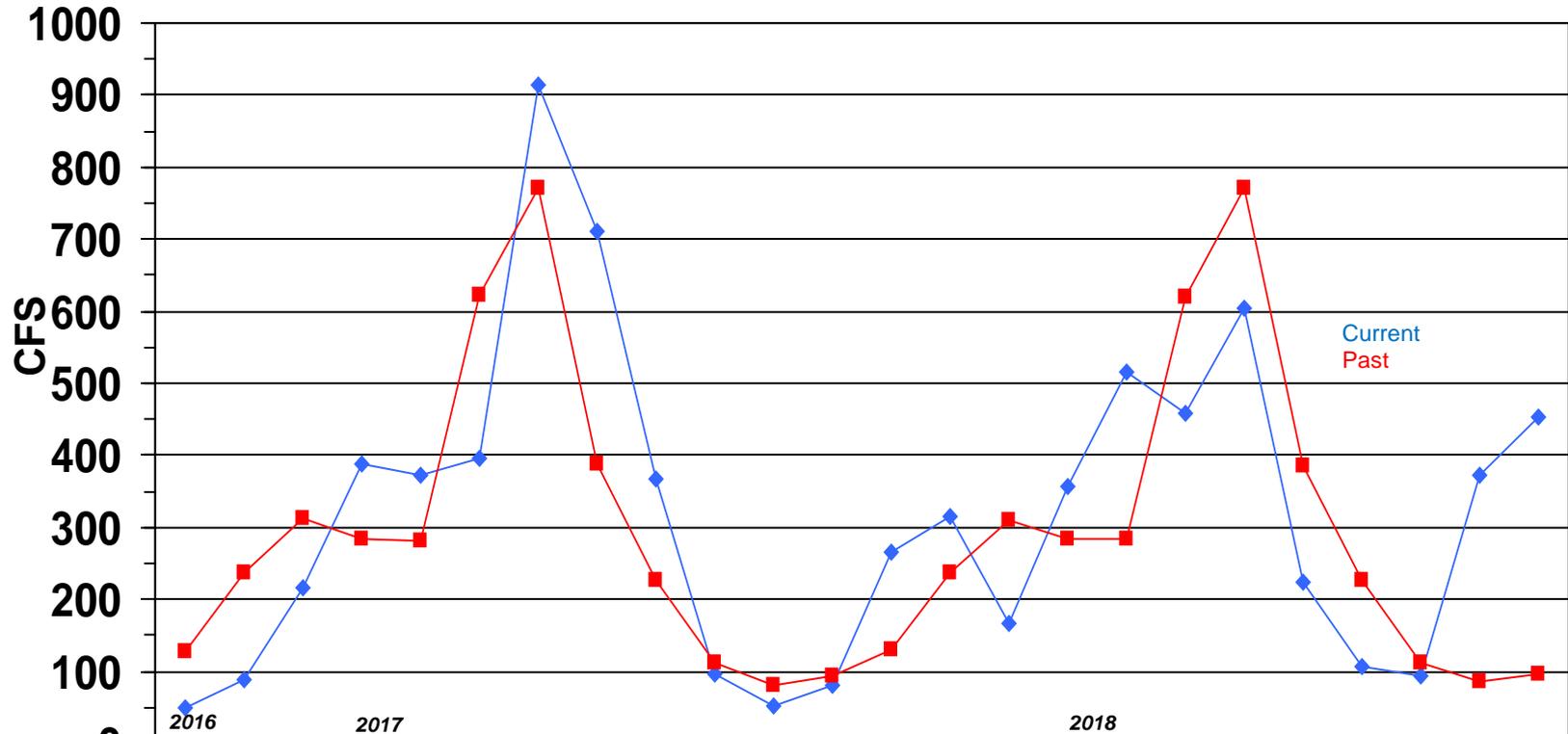
Jan - 12 days ice

# SOUHEGAN RIVER at MERRIMACK NH

## Gage# 01094000



### MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

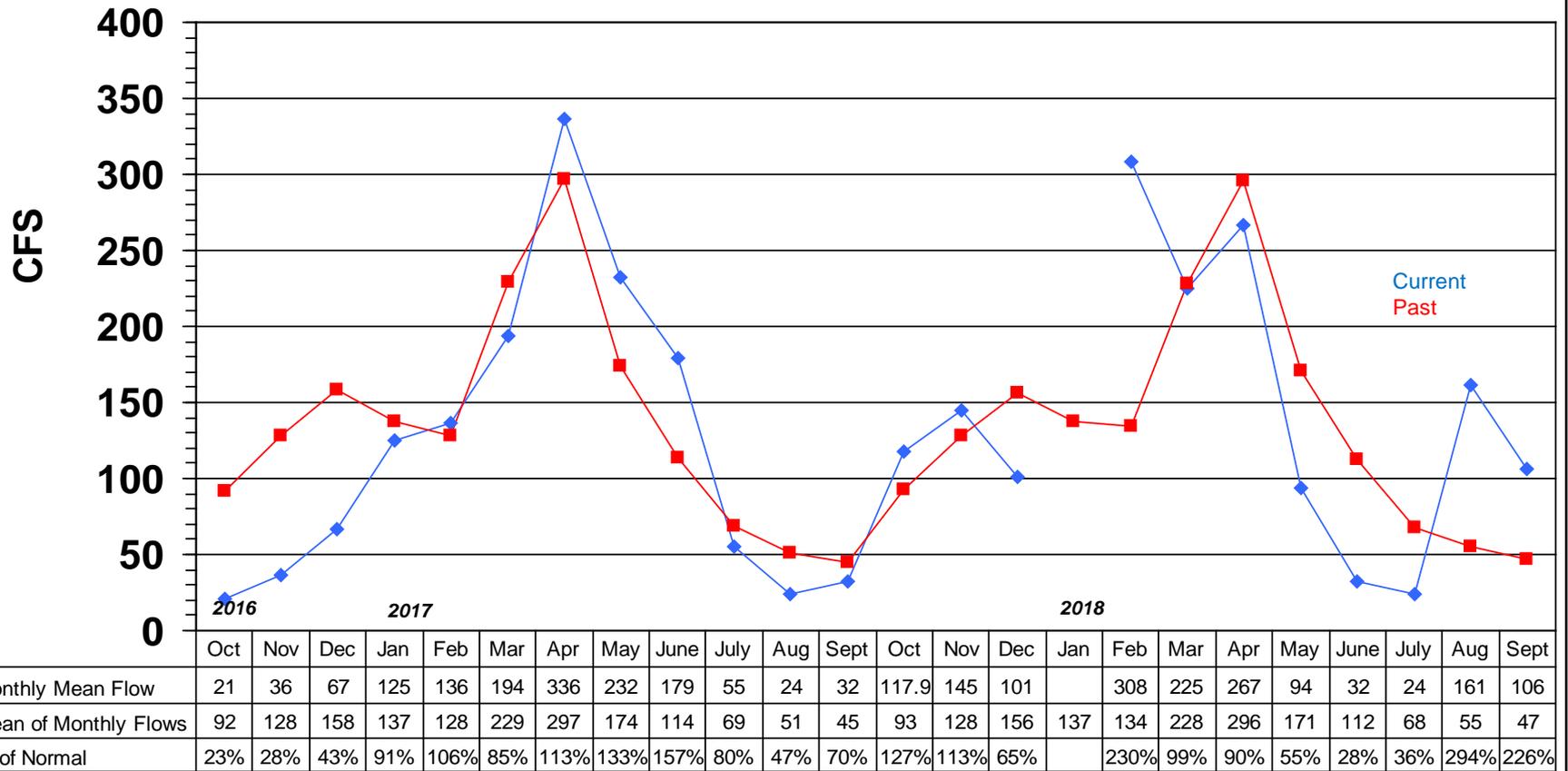


	2016	2017					2018																	
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
◆ Monthly Mean Flow	50	89	217	388	373	395	914	710	367	96	51	80	266.3	315	167	357	516	459	603	224	106	95	372	453
■ Mean of Monthly Flows	127	237	312	284	282	623	772	388	227	111	82	93	129	238	310	285	285	621	770	386	226	111	86	97
% of Normal	39%	37%	70%	137%	132%	63%	118%	183%	162%	87%	62%	86%	206%	132%	54%	125%	181%	74%	78%	58%	47%	85%	432%	467%

# SOUCOOK RIVER at PEMBROKE ROAD near CONCORD NH, Gage# 01089100



## MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



Start of record 1988

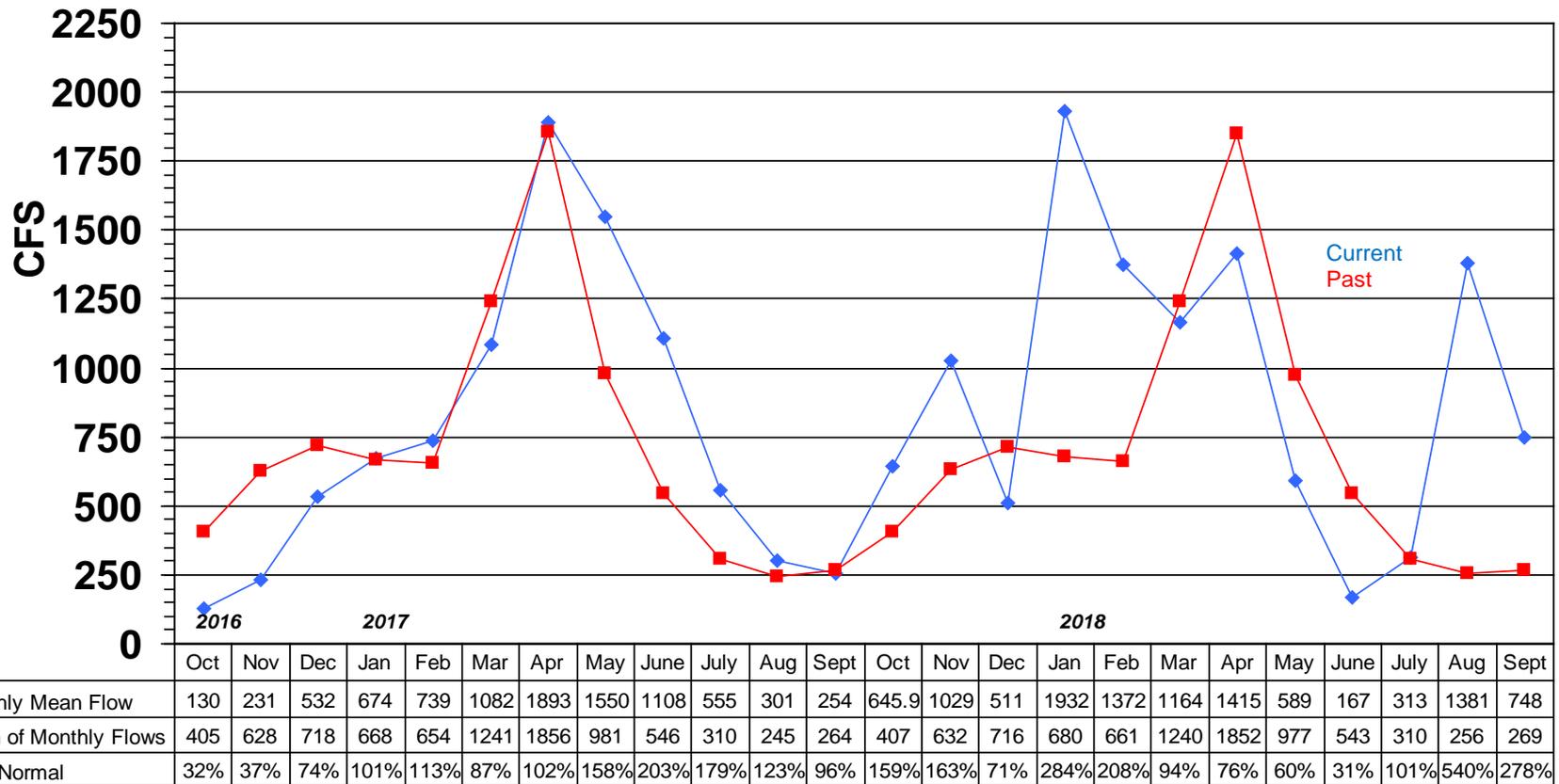
Jan - 31 days ice  
Feb - 15 days ice

# ASHUELOT RIVER at HINSDALE NH

## Gage# 01161000



### MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



Start of record 1907

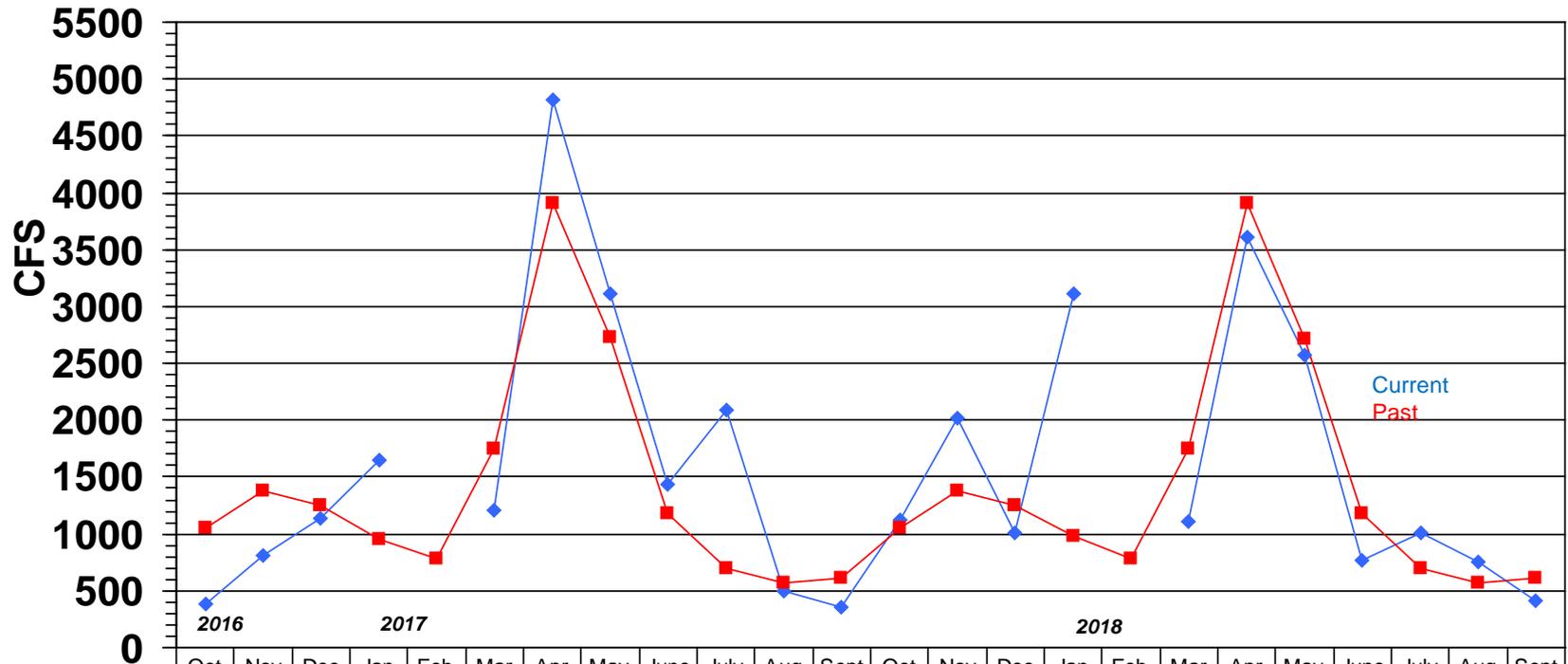
Jan - 13 days ice

# PEMIGEWASSET RIVER at PLYMOUTH NH

## Gage# 01076500



### MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



	2016	2017					2018																	
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
◆ Monthly Mean Flow	390	814	1139	1651	ice	1213	4813	3106	1433	2083	502	351	1126	2012	1014	3117		1113	3608	2573	764	1011	747	413
■ Mean of Monthly Flows	1056	1376	1246	955	778	1755	3911	2722	1177	693	565	606	1056	1382	1244	974	778	1750	3908	2721	1174	696	566	605
% of Normal	37%	59%	91%	173%		69%	123%	114%	122%	301%	89%	58%	107%	146%	81%	320%		64%	92%	95%	65%	145%	132%	68%

Jan - 16 days ice  
Feb - all ice

Start of record 1903

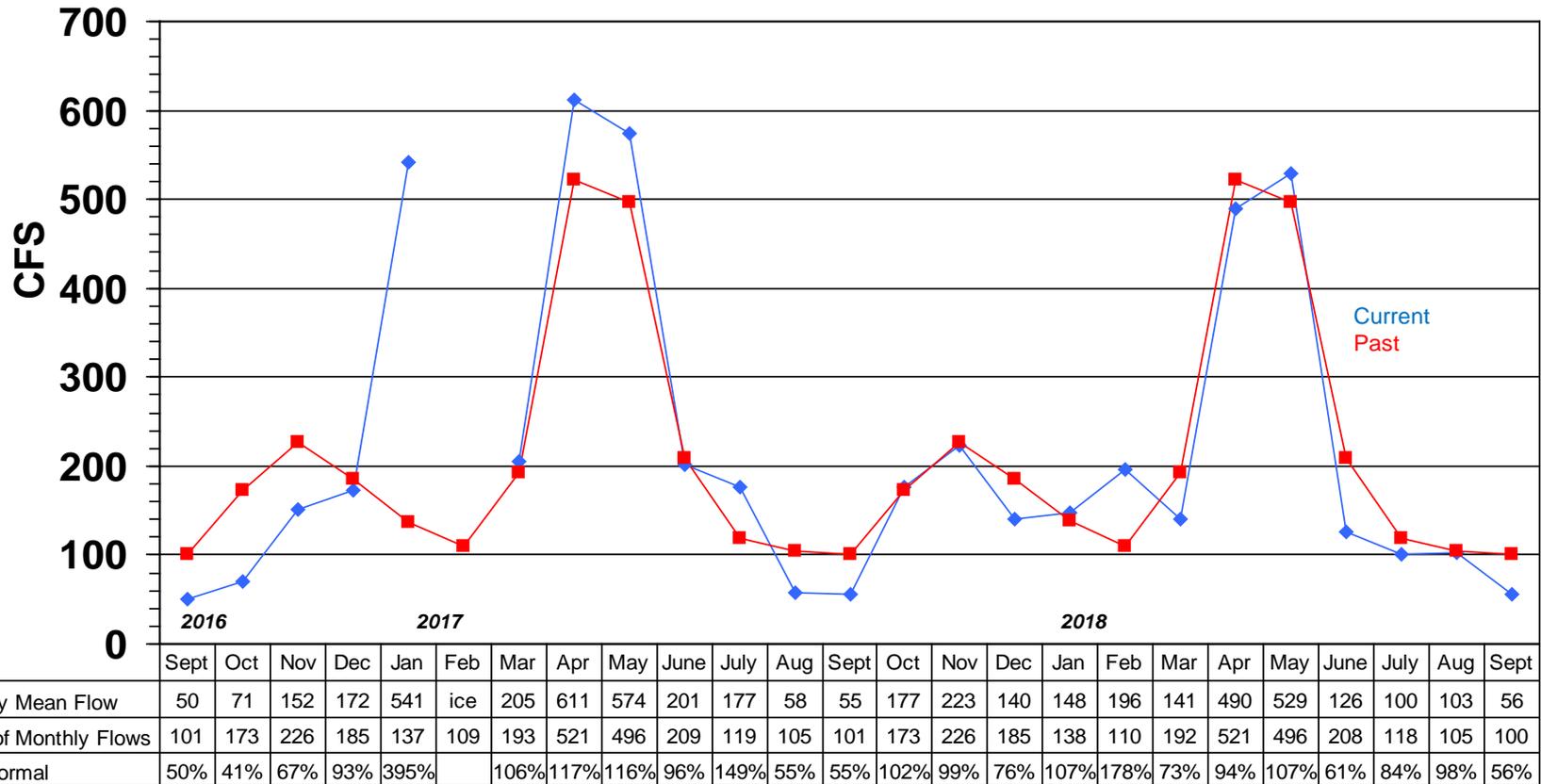
# AMMONOOSUC RIVER at BETHLEHEM JUNCTION NH

## Gage# 01137500



### MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

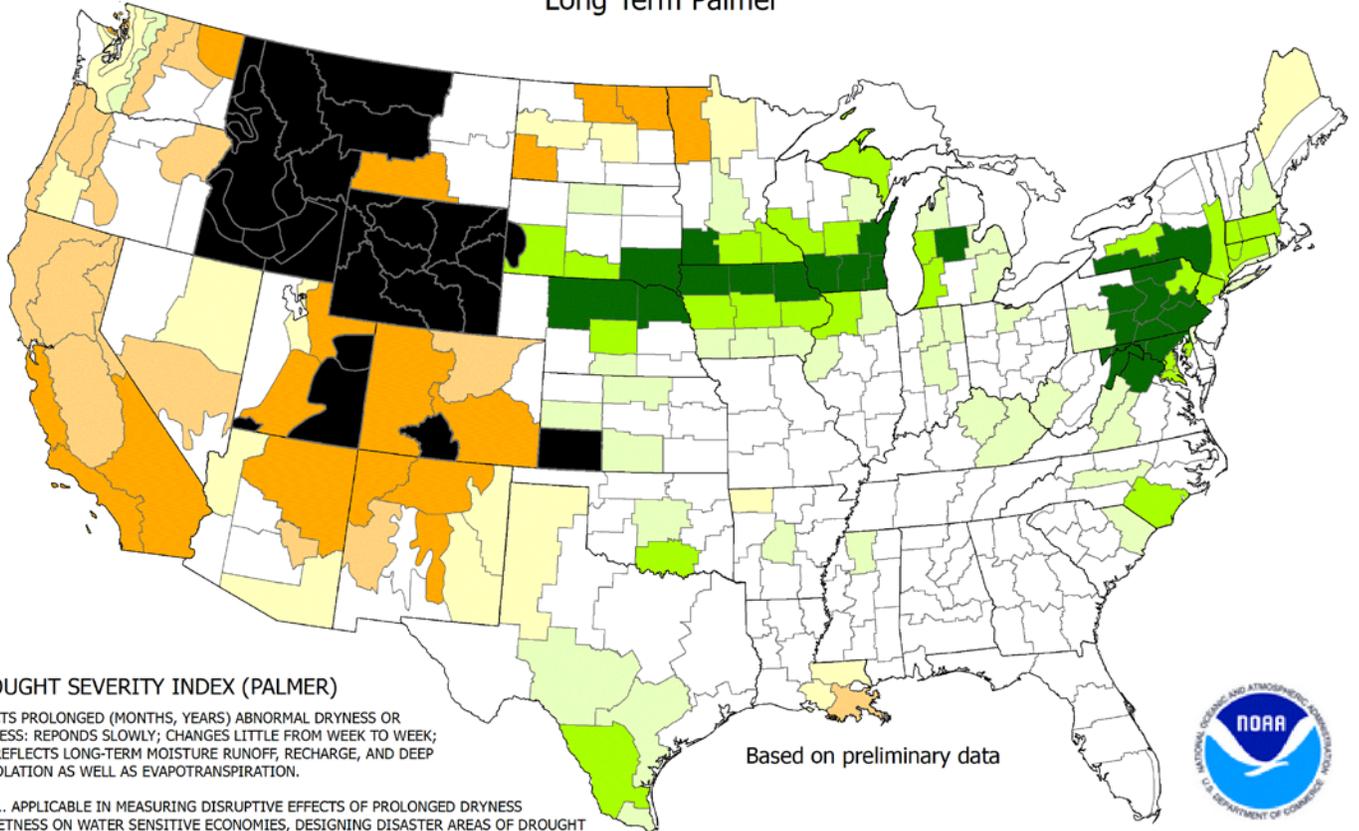
This station replaces gage# 01137000 which was discontinued by DES at the end of Sept 2004



Dec - 19 days ice

Start of record 1939

Drought Severity Index by Division  
 Weekly Value for Period Ending Oct 06, 2018  
 Long Term Palmer



**DROUGHT SEVERITY INDEX (PALMER)**

DEPICTS PROLONGED (MONTHS, YEARS) ABNORMAL DRYNESS OR WETNESS; REponds SLOWLY; CHANGES LITTLE FROM WEEK TO WEEK; AND REFLECTS LONG-TERM MOISTURE RUNOFF, RECHARGE, AND DEEP PERCOLATION AS WELL AS EVAPOTRANSPIRATION.

USES... APPLICABLE IN MEASURING DISRUPTIVE EFFECTS OF PROLONGED DRYNESS OR WETNESS ON WATER SENSITIVE ECONOMIES, DESIGNING DISASTER AREAS OF DROUGHT OR WETNESS; AND REFLECTING THE GENERAL LONG-TERM STATUS OF WATER SUPPLIES IN AQUIFERS, RESERVOIRS AND STREAMS.

LIMITATIONS... IS NOT GENERALLY INDICATIVE OFFSHORT-TERM (FEW WEEKS) STATUS OF DROUGHT OR WETNESS SUCH AS FREQUENTLY AFFECTS CROPS AND FIELD OPERATIONS (THIS IS INDICATED BY THE CROP MOISTURE INDEX).

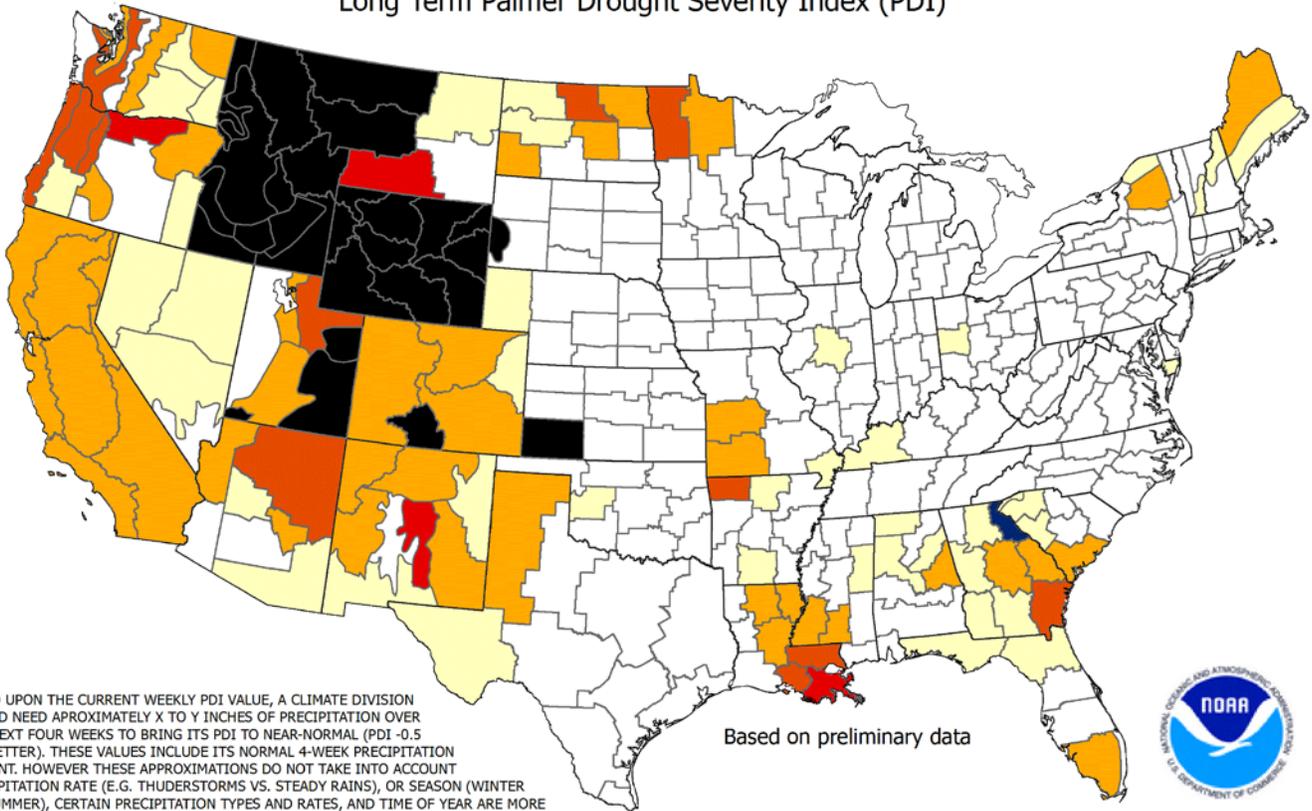
Based on preliminary data

- |   |  |
|---|--|
| <span style="color: orange;">■</span> -4.0 or less (Extreme Drought)    | <span style="color: lightgreen;">■</span> +2.0 to +2.9 (Unusual Moist Spell) |
| <span style="color: darkorange;">■</span> -3.0 to -3.9 (Severe Drought) | <span style="color: green;">■</span> +3.0 to +3.9 (Very Moist Spell)         |
| <span style="color: yellow;">■</span> -2.0 to -2.9 (Moderate Drought)   | <span style="color: darkgreen;">■</span> +4.0 and above (Extremely Moist)    |
| <span style="color: white;">■</span> -1.9 to +1.9 (Near Normal)         | <span style="color: black;">■</span> Missing/Incomplete                      |

**THE PALMER DROUGHT SEVERITY INDEX**

The Palmer Index uses temperature and rainfall information in a formula to determine dryness. The advantage of the Palmer Index is that it is standardized to local climate.

Additional Precip. Needed (In.) to bring PDI to -0.5  
 Weekly Value for Period Ending Oct 06, 2018  
 Long Term Palmer Drought Severity Index (PDI)



Based on preliminary data



BASED UPON THE CURRENT WEEKLY PDI VALUE, A CLIMATE DIVISION WOULD NEED APPROXIMATELY X TO Y INCHES OF PRECIPITATION OVER THE NEXT FOUR WEEKS TO BRING ITS PDI TO NEAR-NORMAL (PDI -0.5 OR WETTER). THESE VALUES INCLUDE ITS NORMAL 4-WEEK PRECIPITATION AMOUNT. HOWEVER THESE APPROXIMATIONS DO NOT TAKE INTO ACCOUNT PRECIPITATION RATE (E.G. THUNDERSTORMS VS. STEADY RAINS), OR SEASON (WINTER VS. SUMMER), CERTAIN PRECIPITATION TYPES AND RATES, AND TIME OF YEAR ARE MORE CONDUCTIVE FOR AMELIORATING DROUGHT WHILE OTHERS MAY PRODUCE LESS DROUGHT REDUCTION (E.G. RUNOFF OR FROZEN GROUND).

UNCOLORED CLIMATE DIVISIONS ARE CURRENTLY AT NEAR-NORMAL TO MOIST PDI CONDITIONS. (EXAMPLE - IF 4-WEEK NORMAL PRECIPITATION IS 3 INCHES AND PDI DEFICIT TO BRING TO -0.5 IS 4 INCHES, THE VALUE IS 7)

- |                   |                    |
|-------------------|--------------------|
| Zero Inches       | 9 to 12 Inches     |
| Trace to 3 Inches | 12 to 15 Inches    |
| 3 to 6 Inches     | Over 15 Inches     |
| 6 to 9 Inches     | Missing/Incomplete |

This is the amount of rainfall required in a week's time to bring the index back to zero inches required.