



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Robert R. Scott, Commissioner

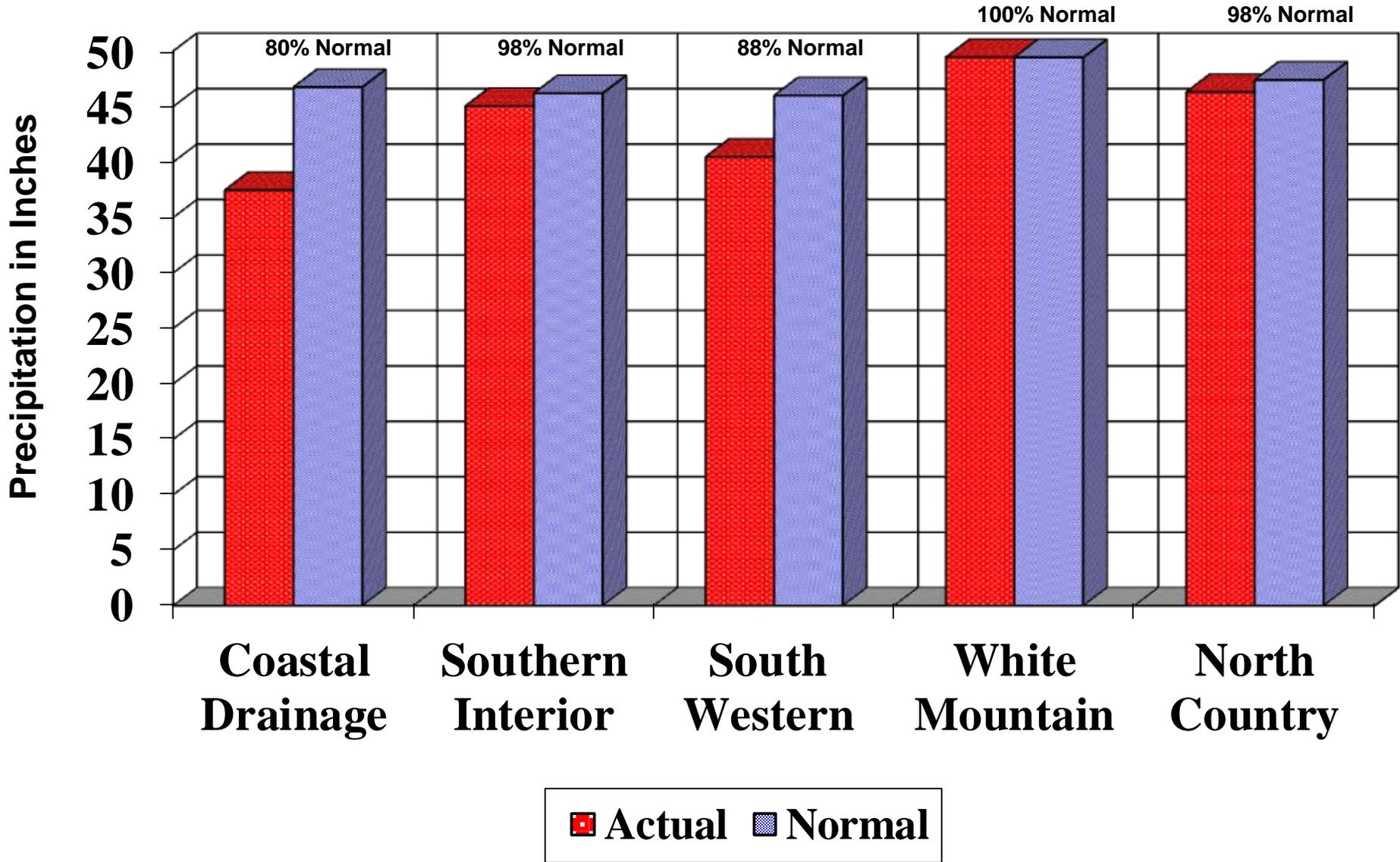
**AGGREGATED PRECIPITATION DATA for N.H.
 DROUGHT MANAGEMENT AREAS**

	Actual Rainfall (inches)	Normal Rainfall (inches)	Deviation from Normal (inches)	Percent of Normal
<u>Coastal Drainage:</u> Rockingham, Strafford counties				
four month	10.71	15.44	-0.67	69%
six month	16.94	23.67	-2.67	72%
nine month	27.93	35.36	-3.36	79%
twelve month	37.46	46.74	-5.22	80%
<u>Southern Interior:</u> Belknap, Hillsborough, Merrimack counties				
four month	17.07	16.00	1.08	107%
six month	24.68	24.28	0.39	102%
nine month	35.28	35.12	0.16	100%
twelve month	45.02	46.18	-1.15	98%
<u>South Western:</u> Cheshire, Sullivan counties				
four month	16.85	16.79	0.06	100%
six month	25.09	24.98	0.11	100%
nine month	34.78	35.41	-0.63	98%
twelve month	40.45	45.98	-2.75	88%
<u>White Mountain:</u> Carroll, Grafton counties				
four month	19.55	17.86	1.70	109%
six month	27.41	26.65	0.76	103%
nine month	38.50	37.57	0.93	102%
twelve month	49.43	49.42	0.01	100%
<u>North Country:</u> Coos county				
four month	17.99	17.93	0.06	100%
six month	26.39	26.93	-0.54	98%
nine month	35.83	36.48	-0.65	98%
twelve month	46.29	47.39	-1.10	98%

four month period : July 2017 - October 2017
 six month period : May 2017 - October 2017
 nine month period : February 2017 - October 2017
 twelve month period: November 2016 - October 2017

Source: Northeast River Forecast Center, NH Des Dam Bureau

TWELVE MONTH AGGREGATED PRECIPITATION DATA for N.H. DROUGHT MANAGEMENT AREAS from November 2016 through October 2017



MONTHLY PRECIPITATION DATA FOR N.H COUNTIES



		2016	2017										
		NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT
Coastal drainage													
STRAFFORD	actual	3.36	3.35	2.65	3.42	3.74	3.62	1.65	3.93	1.72	3.21	2.84	6.03
	normal	4.50	3.77	3.20	3.30	4.17	4.22	4.10	4.16	3.99	3.72	3.74	4.38
	deviation	-1.14	-0.42	-0.55	0.12	-0.43	-0.60	-2.45	-0.23	-2.27	-0.51	-0.90	1.65
ROCKINGHAM	actual	3.62	3.11	2.96	3.21	3.99	4.01	1.76	5.12	2.42	1.00	3.43	5.73
	normal	4.30	3.73	3.27	3.30	4.19	4.19	4.10	4.10	3.77	3.16	3.77	4.35
	deviation	-0.68	-0.62	-0.31	-0.09	-0.20	-0.18	-2.34	1.02	-1.35	1.00	-0.34	1.38
Average	actual	3.49	3.23	2.81	3.32	3.49	3.82	1.71	4.53	2.07	-0.38	3.14	5.88
	normal	4.40	3.75	3.24	3.30	4.18	4.21	4.10	4.13	3.88	3.44	3.76	4.37
	deviation	-0.91	-0.52	-0.43	0.02	-0.32	-0.39	-2.40	0.40	-1.81	0.25	-0.62	1.52
Southern Interior													
HILLSBOROUGH	actual	3.78	3.06	3.06	2.83	4.63	3.74	1.98	5.15	2.22	3.93	3.65	7.67
	normal	4.22	3.80	3.39	3.29	3.95	4.14	4.10	4.22	3.96	3.75	3.74	4.46
	deviation	-0.44	-0.74	-0.33	-0.46	0.68	-0.40	-2.12	0.93	-1.74	0.18	-0.09	3.21
MERRIMACK	actual	3.84	3.17	2.56	3.08	3.76	3.84	2.50	5.62	2.00	4.01	3.18	7.46
	normal	4.15	3.65	3.26	3.09	3.73	3.96	4.01	4.33	4.11	3.76	3.77	4.42
	deviation	-0.31	-0.48	-0.70	-0.01	0.03	-0.12	-1.51	1.29	-2.11	0.25	-0.59	3.04
BELKNAP	actual	4.07	3.25	2.43	3.21	3.20	3.53	2.32	5.24	2.50	3.86	3.11	7.63
	normal	4.03	3.58	3.08	3.03	3.58	3.75	3.95	4.25	4.08	3.79	3.66	4.49
	deviation	0.04	-0.33	-0.65	0.18	-0.38	-0.22	-1.63	0.99	-1.58	0.07	-0.55	3.14
Average	actual	3.90	3.16	2.68	3.04	3.86	3.70	2.27	5.34	2.24	3.93	3.31	7.59
	normal	4.13	3.68	3.24	3.14	3.75	3.95	4.02	4.27	4.05	3.77	3.72	4.46
	deviation	-0.24	-0.52	-0.56	-0.10	0.11	-0.25	-1.75	1.07	-1.81	0.17	-0.41	3.13
South Western													
CHESHIRE	actual	3.45	2.83	2.64	2.81	4.04	3.10	2.38	6.37	3.37	4.29	3.02	7.69
	normal	3.97	3.68	3.42	3.17	3.73	3.79	4.10	4.20	4.36	4.06	3.83	4.60
	deviation	-0.52	-0.85	-0.78	-0.36	0.31	-0.69	-1.72	2.17	-0.99	0.23	-0.81	3.09
SULLIVAN	actual	3.40	2.75	2.18	2.73	3.23	3.48	2.50	5.22	3.35	3.18	2.73	6.07
	normal	3.85	3.49	2.72	3.00	3.51	3.66	3.91	4.17	4.36	4.06	3.80	4.51
	deviation	-0.45	-0.74	-0.90	-0.27	-0.28	-0.18	-1.41	1.05	-1.01	-0.88	-1.07	1.56
Average	actual	3.43	2.79	-0.55	2.77	3.64	3.29	2.44	5.80	3.36	3.74	2.88	6.88
	normal	3.91	3.59	3.07	3.09	3.62	3.73	4.01	4.19	4.36	4.06	3.82	4.56
	deviation	-0.49	-0.80	-0.84	-0.32	0.02	-0.44	-1.57	1.61	-1.00	-0.33	-0.94	2.33
White Mountain													
GRAFTON	actual	3.93	3.54	2.53	3.28	3.58	3.53	3.13	5.45	5.61	3.42	2.69	7.67
	normal	4.35	3.70	3.19	2.84	3.45	3.76	4.20	4.58	4.56	4.61	4.09	4.68
	deviation	-0.42	-0.16	-0.66	0.44	0.13	-0.23	-1.07	0.87	1.05	-1.19	-1.40	2.99
CARROLL	actual	4.56	3.97	3.33	3.78	3.59	4.42	2.35	4.78	4.05	3.31	3.35	9.00
	normal	4.72	4.16	3.57	3.31	4.02	4.46	4.32	4.49	4.40	4.42	3.99	4.96
	deviation	-0.16	-0.19	-0.24	0.47	-0.43	-0.04	-1.97	0.29	-0.35	-1.11	-0.64	4.04
Average	actual	4.25	3.76	2.93	3.53	3.59	3.98	2.74	5.12	4.83	3.37	3.02	8.34
	normal	4.54	3.93	3.38	3.08	3.74	4.11	4.26	4.54	4.48	4.52	4.04	4.82
	deviation	-0.29	-0.18	-0.45	0.46	-0.15	-0.14	-1.52	0.58	0.35	-1.15	-1.02	3.52
North Country													
COOS	actual	3.57	3.84	3.05	2.84	3.09	3.51	2.92	5.48	3.91	4.00	2.30	7.78
	normal	4.24	3.58	3.09	2.72	3.21	3.62	4.21	4.79	4.57	4.84	4.00	4.52
	deviation	-0.67	0.26	-0.04	0.12	-0.12	-0.11	-1.29	0.69	-0.66	-0.84	-1.70	3.26

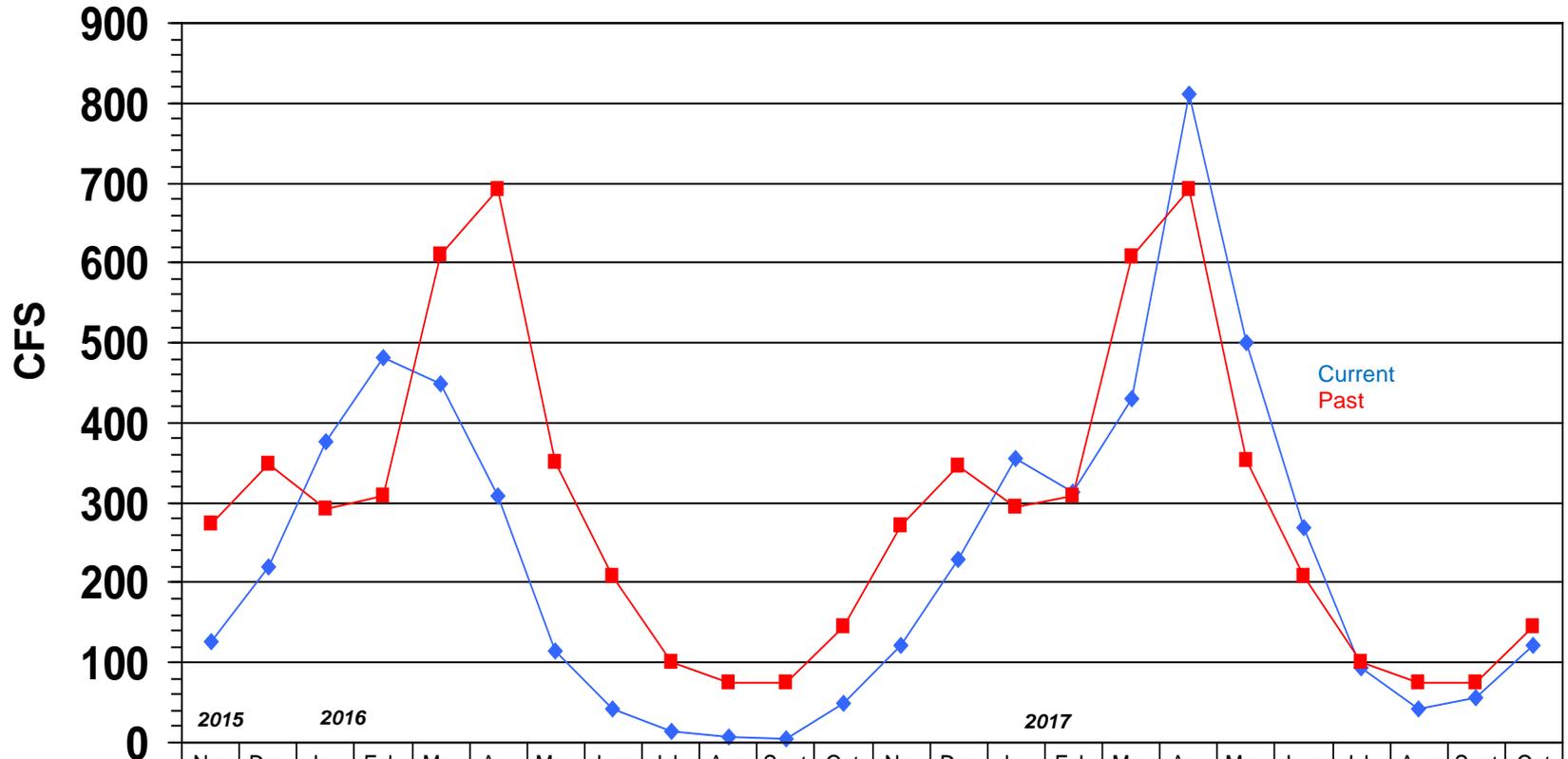
Source: Northeast River Forecast Center, NH DES Dam Bureau

LAMPREY RIVER near NEWMARKET NH

Gage# 01073500



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



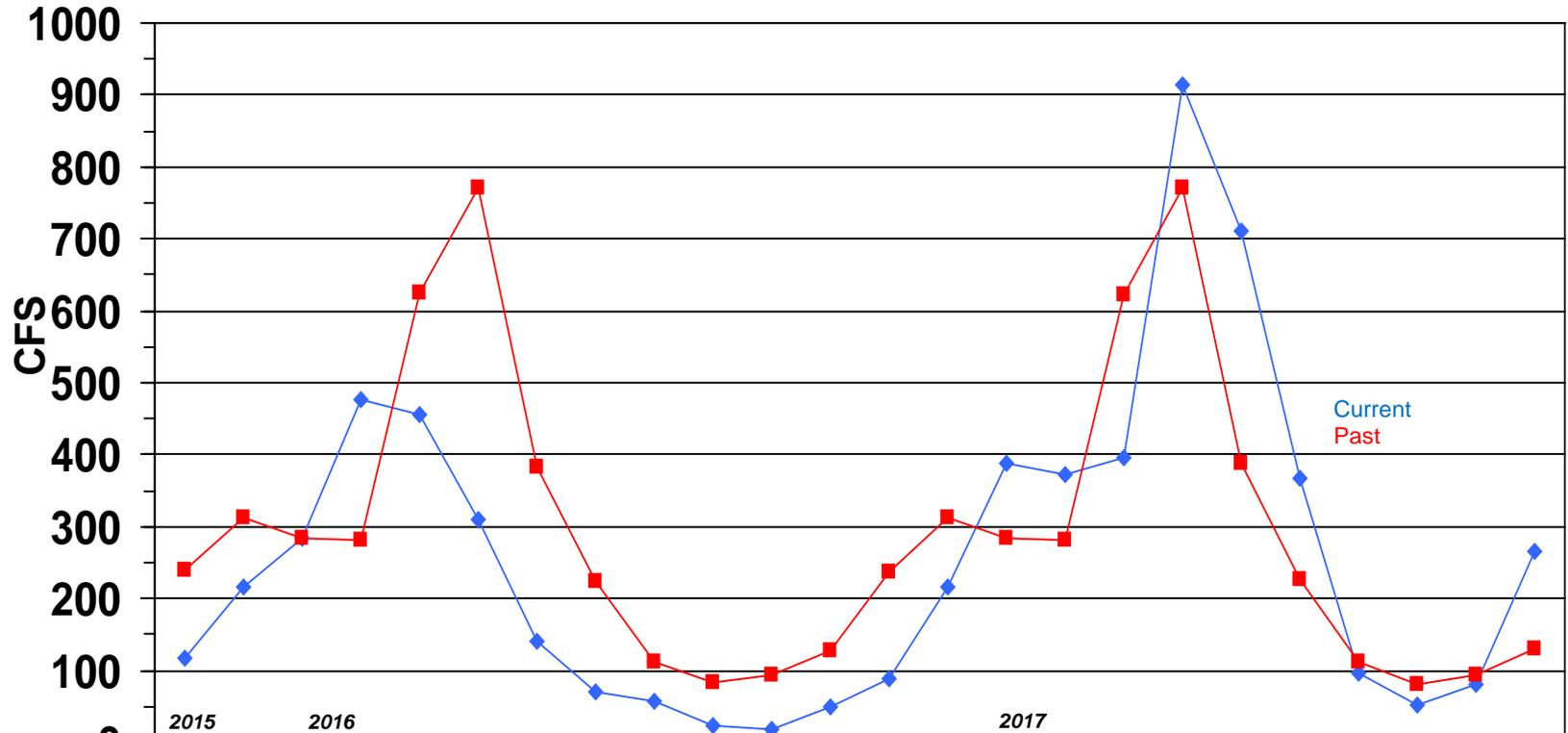
	2015	2016	2017																					
	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
◆ Monthly Mean Flow	127	219	376	481	450	308	115	43	14	7	5	50	121	230	355	314	429	811	500	269	93	41	57	120.4
■ Mean of Monthly Flows	273	349	293	309	609	691	350	207	100	75	74	145	271	347	294	309	607	692	352	207	100	75	74	145
% of Normal	46%	63%	128%	156%	74%	45%	33%	21%	14%	9%	7%	34%	44%	66%	121%	102%	71%	117%	142%	130%	93%	55%	78%	83%

SOUHEGAN RIVER at MERRIMACK NH

Gage# 01094000



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

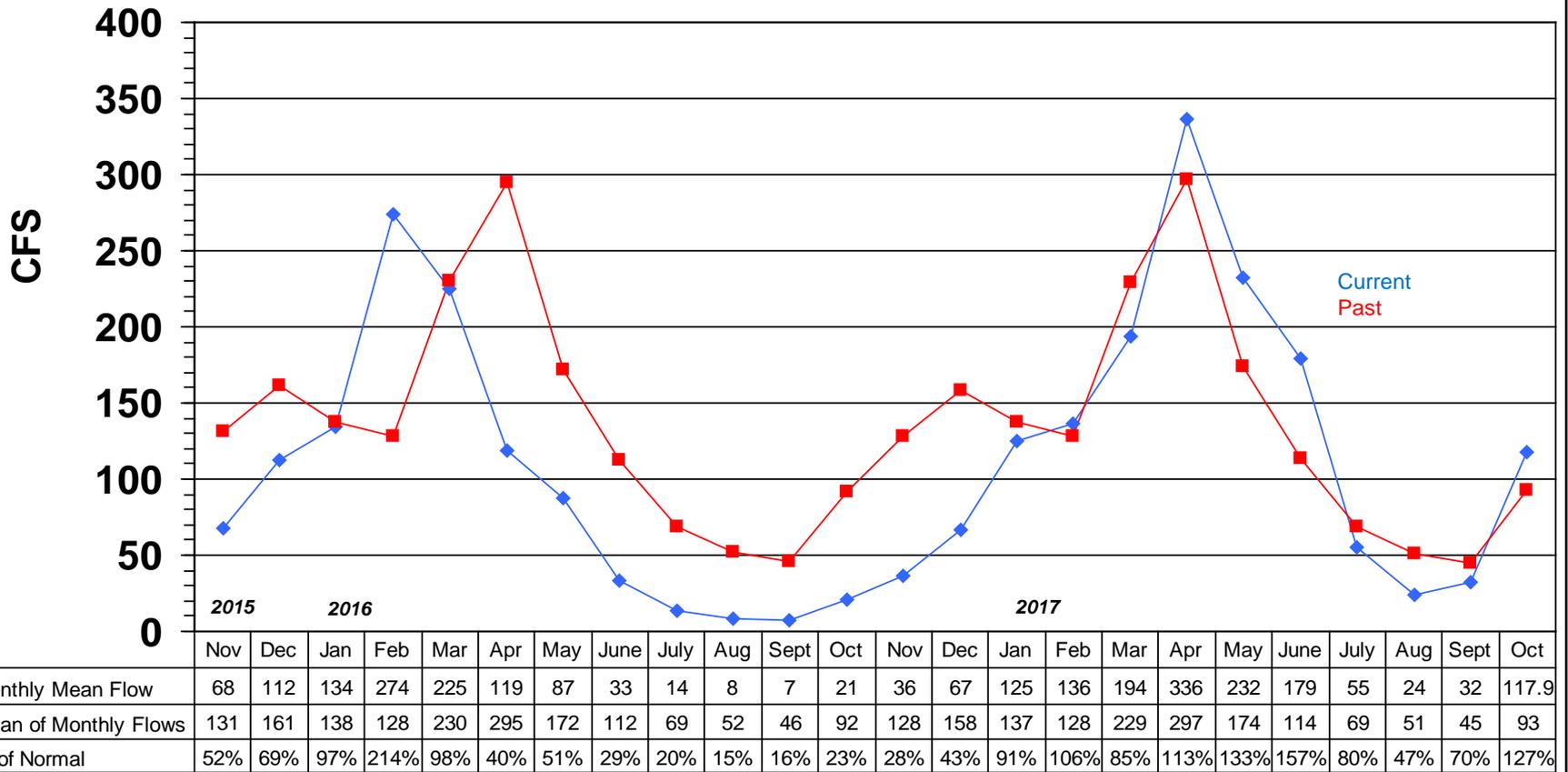


	2015	2016	2017																					
	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
◆ Monthly Mean Flow	118	216	285	476	457	309	141	71	58	23	17	50	89	217	388	373	395	914	710	367	96	51	80	266.3
■ Mean of Monthly Flows	239	313	283	281	626	770	384	225	111	83	93	127	237	312	284	282	623	772	388	227	111	82	93	129
% of Normal	49%	69%	101%	169%	73%	40%	37%	52%	52%	28%	18%	39%	37%	70%	137%	132%	63%	118%	183%	162%	87%	62%	86%	206%

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



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

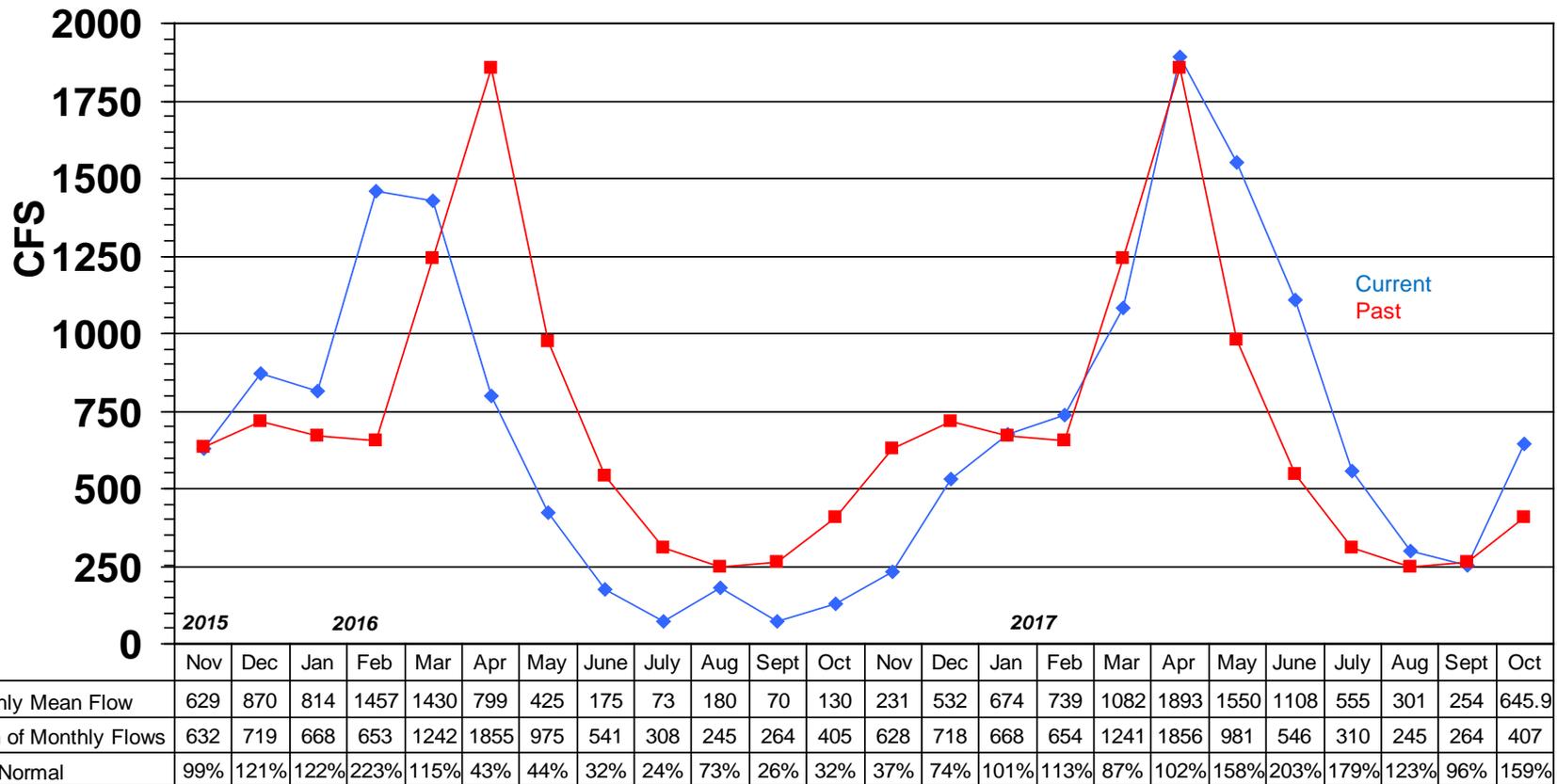


ASHUELOT RIVER at HINSDALE NH

Gage# 01161000



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

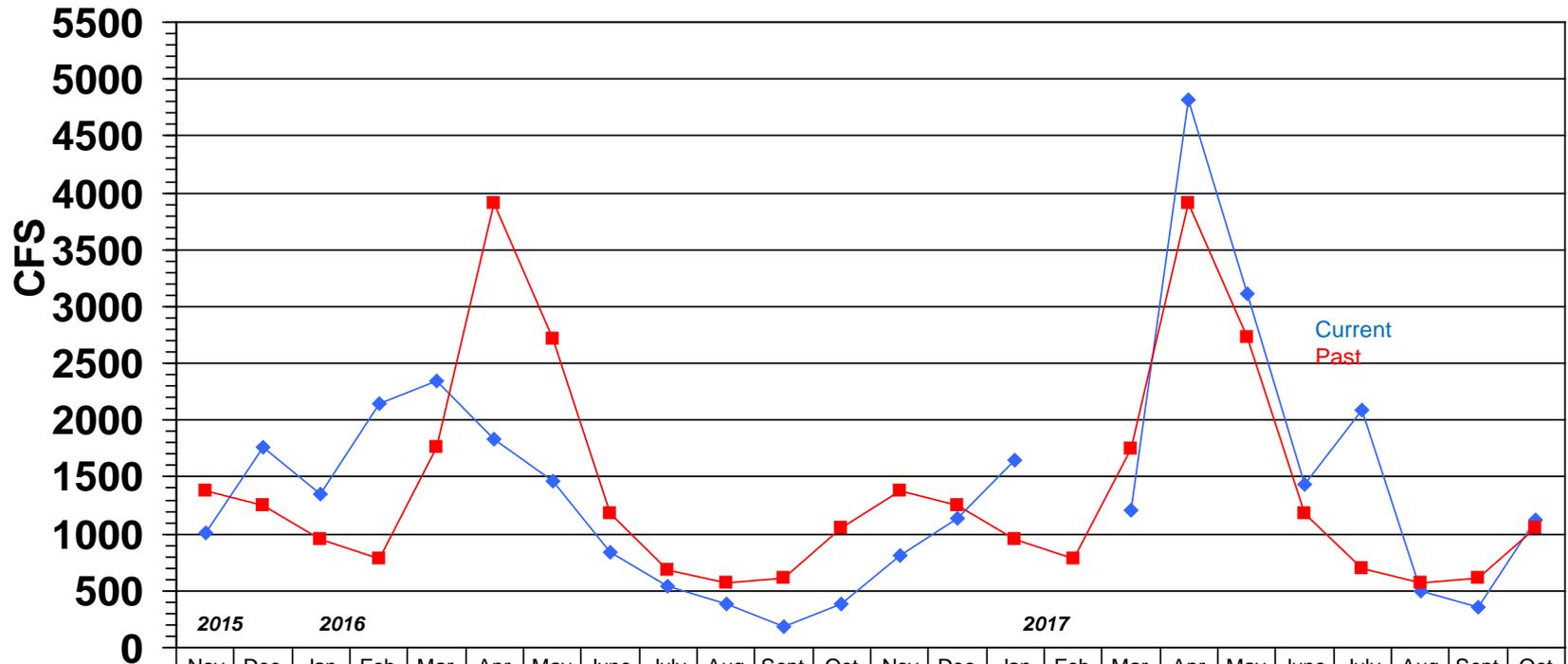


PEMIGEWASSET RIVER at PLYMOUTH NH

Gage# 01076500



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



	2015	2016	2017																					
	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
◆ Monthly Mean Flow	1016	1759	1357	2142	2348	1830	1461	845	538	384	186	390	814	1139	1651	ice	1213	4813	3106	1433	2083	502	351	1126
■ Mean of Monthly Flows	1381	1247	949	778	1760	3903	2719	1175	681	565	609	1056	1376	1246	955	778	1755	3911	2722	1177	693	565	606	1056
% of Normal	74%	141%	143%	275%	133%	47%	54%	72%	79%	68%	30%	37%	59%	91%	173%		69%	123%	114%	122%	301%	89%	58%	107%

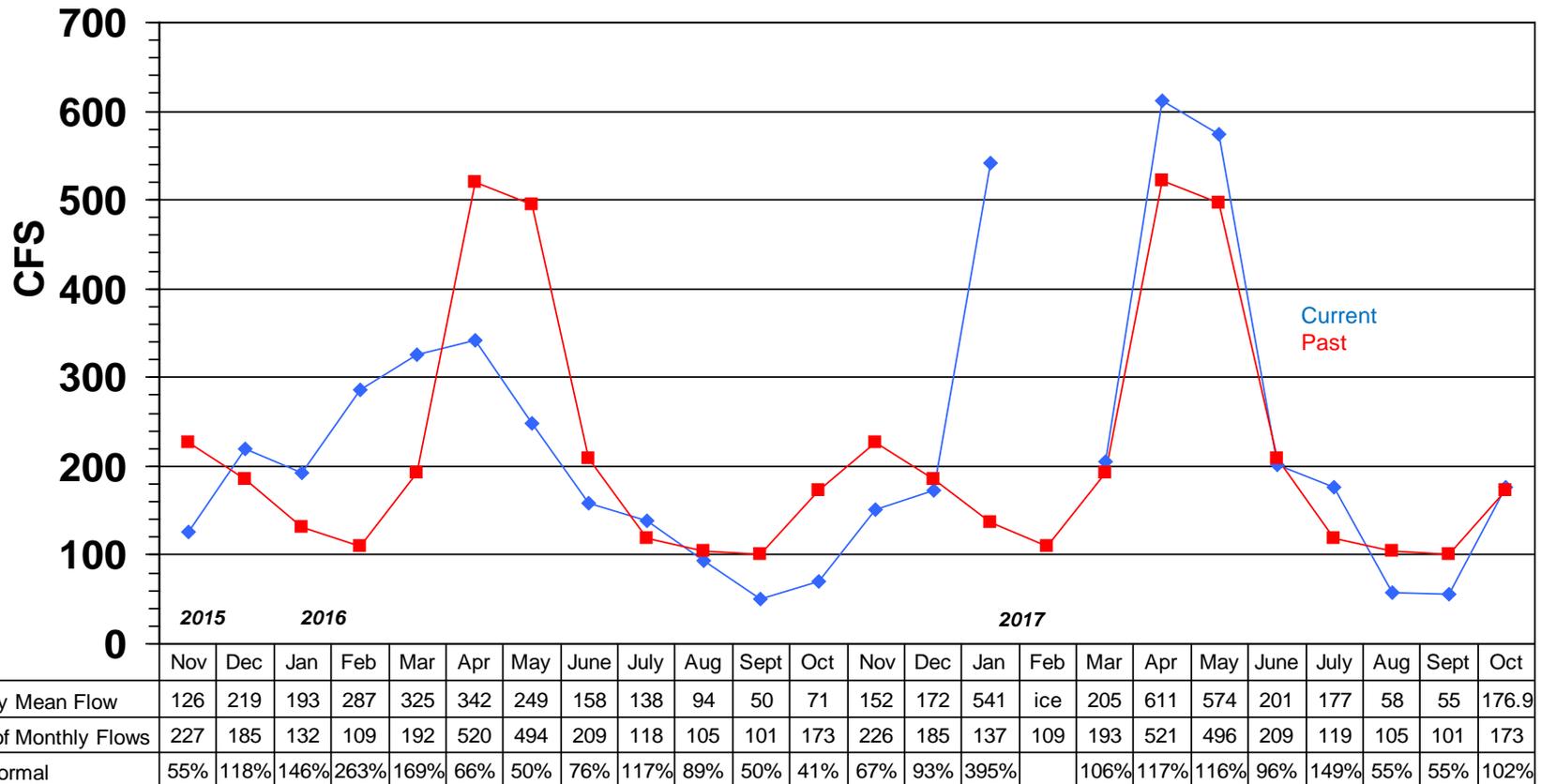
AMMONOOSUC RIVER at BETHLEHEM JUNCTION NH

Gage# 01137500

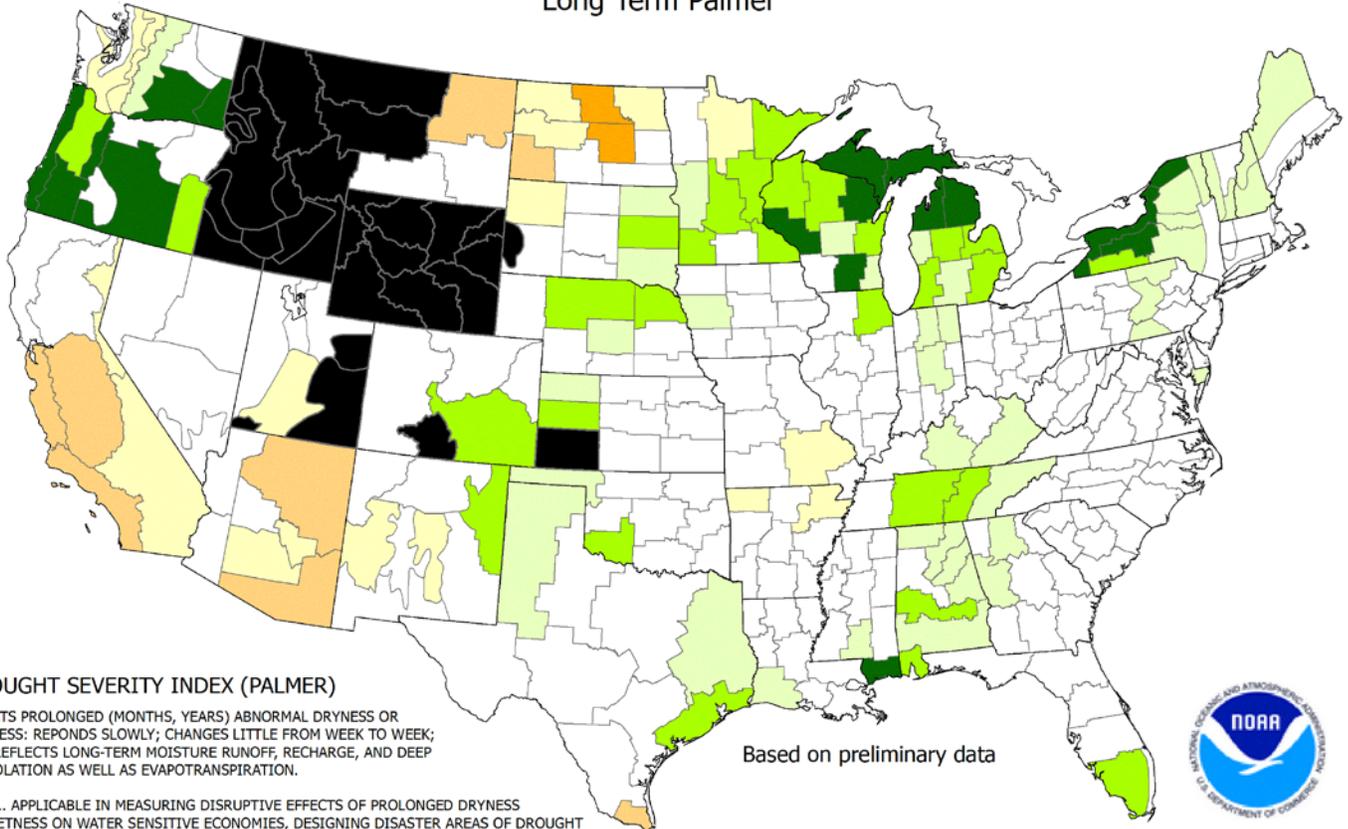


MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

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



Drought Severity Index by Division
 Weekly Value for Period Ending Nov 11, 2017
 Long Term Palmer



DROUGHT SEVERITY INDEX (PALMER)

DEPICTS PROLONGED (MONTHS, YEARS) ABNORMAL DRYNESS OR WETNESS; RESPONDS 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

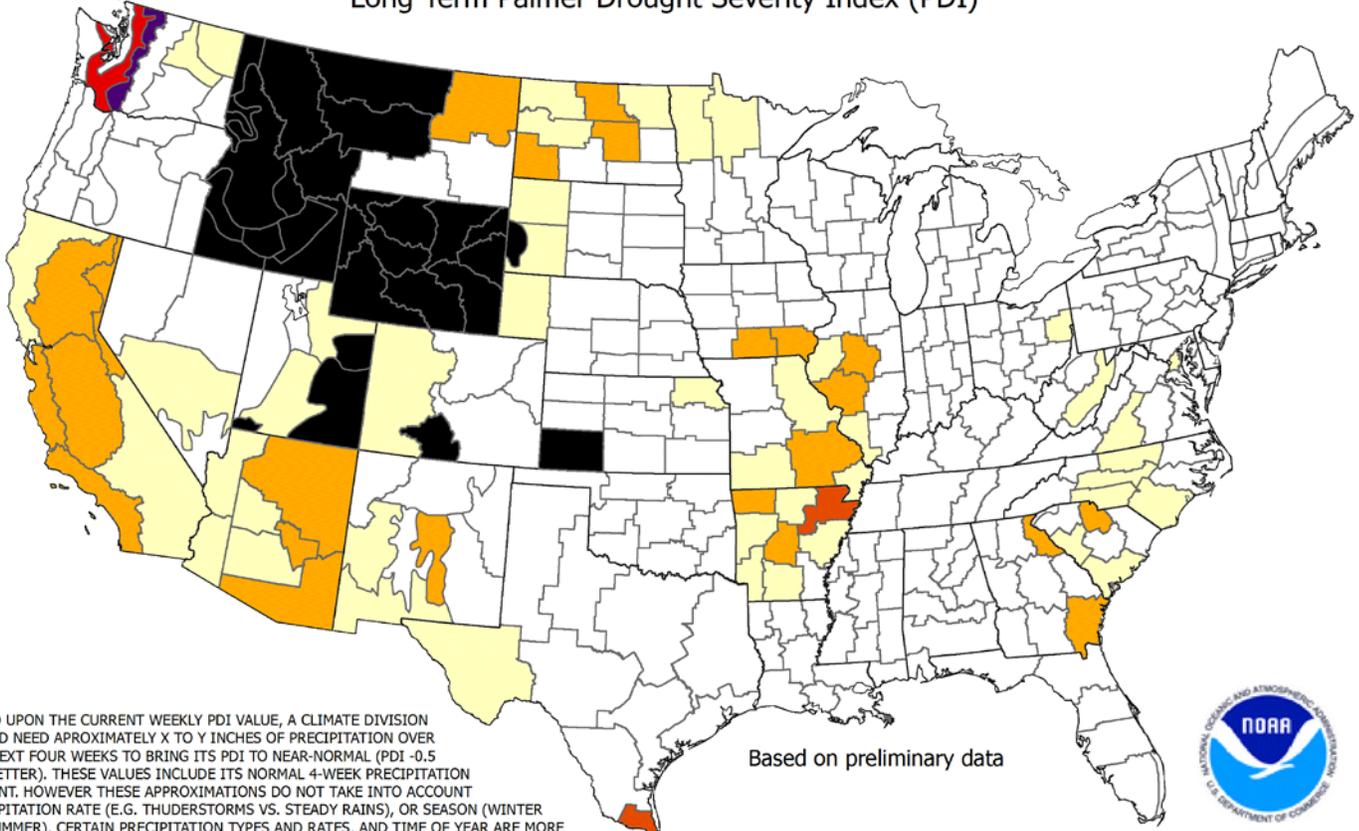


- | | |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------|
| ■ -4.0 or less (Extreme Drought) | ■ +2.0 to +2.9 (Unusual Moist Spell) |
| ■ -3.0 to -3.9 (Severe Drought) | ■ +3.0 to +3.9 (Very Moist Spell) |
| ■ -2.0 to -2.9 (Moderate Drought) | ■ +4.0 and above (Extremely Moist) |
| ■ -1.9 to +1.9 (Near Normal) | ■ 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 Nov 11, 2017
 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.