NWS FORM E-5 U.S. DEPARTMENT OF COMMERCE HYDROLOGIC SERVICE AREA:
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE **SAN JOAQUIN VALLEY - HANFORD, CA**

REPORT FOR:

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

MONTH: **MAY** YEAR: **2019**

TO: Hydrometeorological Information Center, W/OH12x1
National Weather Service/Office of Hydrology
1325 East-West Highway #7116
Silver Spring, MD 20910

SIGNATURE:

Kevin Durfee
(In Charge of Hydrologic Service Area)

DATE: June 6, 2019

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts and hydrologic products issued (WSOM E-41).

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¦ ¦ An **X** inside this box indicates that no flooding occurred for the month
+---+ within this hydrologic service area.

May, 2019 was extraordinarily wet and exceptionally cool. It was a month that defied climatological norms, for sure. May usually marks the beginning of the traditional dry season in central California, particularly in the San Joaquin Valley. May, 2019 was far from that. Fresno received five times its normal rainfall for the month and became the 2nd wettest May ever since the beginning of record keeping in the late 1800's. Bakersfield's Meadows Field airport received at least 8 times its normal rainfall for the month and ended up as the 6th wettest May on record. As unusual as rain was in the San Joaquin Valley for the month of May, an even rarer occurrence was the amount of snow that fell over the mountains of the HSA. Despite the usual loss of snow due to melting and sublimation, the frequency of cold winter-like storms deepened the Sierra snowpack by a foot or more during the month. In fact, accumulating snow occurred over the highest elevations of the HSA as late as May 26th. By the first of June, the snowpack over the southern Sierra averaged 178 percent of normal. That's a good 40 percent higher than the amount of snow that was present at the beginning of June, 2017, which was also a Spring that was preceded by an extremely wet Winter. Up to 8 inches of water fell in the Sierra during the month. This boosted the San Joaquin 5-Station Precip Index to its 5th wettest May on record. The Tulare Lake 6-Station Index ranked as the 3rd wettest for May. (see charts below) Much of the rest of California cashed in on a very wet May, too. Nearly two thirds of the Golden State received at least 200 percent of its normal May precipitation. Maps showing the percentage of normal precipitation for May, 2019 and for the water year so far since October 1st are provided below in addition to the actual precipitation that fell in May and the departure from normal. Additionally, new daily 24-hour rainfall records were established in Fresno and Bakersfield on the 16th and 19th and again on the 23rd in Fresno.

Believe it or not, it was a high amplitude upper level ridge of high pressure anchored over the western Pacific that was to blame for the unusually wet weather over the Golden State. The ridge was so far displaced that it left room for cold, wet storm systems to dive into California from the Gulf of Alaska during the month. There were at least five of them. The first one brought wet weather into the Golden State from the 5th through the 6th. The next storm system brought rain and mountain snow to the HSA on the 15th and 16th and was quickly followed by another Gulf of Alaska storm on the 18th and 19th. The two remaining storms tracked through the central California interior from the 21st into the 23rd and from the 26th into the 27th. Every one of these storms produced wintry weather and accumulating snow above 6,000 feet along with wind chill temperatures as low as the teens over the highest elevations of the Sierra. In the lower elevations, locally heavy rain produced urban and highway flooding in places. While most reports of flooding were relatively minor, there were two cases of debris flow flooding. The first incidence occurred during the afternoon of May 9th along Highway 140 in the vicinity of the Ferguson burn scar. Fortunately Caltrans closed the highway beforehand, thanks to the proactive heads up from the NWS. The second incidence of debris flow flooding occurred along Cameron Canyon Road near Highway 58 west of Mojave on the afternoon of the 11th. Additionally, each of these storm systems produced scattered thunderstorms within the HSA. Many were equipped with hail, heavy downpours and gusty winds. A few of them spawned funnel clouds. One thunderstorm spawned a weak EF0 tornado, the 6th one of the season, in a rural location just east of Huron during the late afternoon hours of the 19th. Fortunately, there was no reported damage, but the tornado was captured by witnesses with camera phones.

The month was also characterized by unseasonably cool weather. There were several days in the San Joaquin Valley when high temperatures were no higher than the 60s. Memorial Day was exceptionally cool. The high temperature of 58 degrees that day in Fresno was the lowest high temperature ever recorded on May 27th. To give you an example of just how persistently cool the month was, there were 9 days between the 15th and 28th when temperatures averaged at least 8 degrees below normal in the San Joaquin Valley. Minimum temperatures were as low as the lower 40s in the chilliest locations of the San Joaquin Valley during this period.

Water levels gradually increased on many rivers of the HSA during the month as dam owners were forced to make larger water releases to make room in the reservoirs for Sierra snowmelt and above normal precipitation. The Merced River at Stevinson rose above its respective monitor stage on the 19th and remained above monitor stage for the remainder of the month. The Merced River at Pohono Bridge crested approximately a foot below Flood Stage on a few occasions between the 9th and 16th of May. By June 1st, most of the major reservoirs were three quarters full with a water capacity averaging 78% of normal.

HYDROLOGIC PRODUCTS ISSUED

Flash Flood Warnings

Ferguson Burn Scar in Mariposa County	2113Z	09-MAY
Tulare County mountains	0306Z	10-MAY
Tulare County mountains	0353Z	10-MAY
San Joaquin Valley portion of Kern County	1541Z	10-MAY
Extreme southern San Joaquin Valley/Tehachapi Mountains	2302Z	25-MAY
Kern County Desert	2316Z	25-MAY
Ferguson Burn Scar in Mariposa County	0154Z	30-MAY

Flood Advisories

Kern County Desert	0131Z	10-MAY
Arroyo/Small Stream for the Kern County Mountains	0750Z	10-MAY
Urban/Small Stream for the Kern County Desert	1000Z	10-MAY
Urban/Small Stream for the Kern County Desert	1639Z	10-MAY
Western portion of Kern County	1651Z	10-MAY
Kern County Desert	1856Z	10-MAY
Extreme southern San Joaquin Valley/Tehachapi Mountains	2136Z	10-MAY
Tulare County Mountains	1613Z	16-MAY
San Joaquin Valley north of Kern County	0038Z	24-MAY
San Joaquin Valley north of Kern County	2105Z	26-MAY
San Joaquin Valley north of Kern County	2202Z	26-MAY
Fresno County & Tulare County portion of the San Joaquin Valley	0008Z	27-MAY

Hydrologic Outlooks

Foothills and higher elevations of the Sierra	1728Z	08-MAY
Foothills and higher elevations of the Sierra	1715Z	09-MAY
Foothills and higher elevations of the Sierra	1724Z	10-MAY

Hydrologic Statements

Merced River @Stevinson	0636Z	19-MAY
Merced River @Stevinson	1622Z	19-MAY
Merced River @Stevinson	1634Z	20-MAY
Merced River @Stevinson	1645Z	21-MAY

Merced River @Stevinson	1626Z	22-MAY
Merced River @Stevinson	1458Z	23-MAY
Merced River @Stevinson	1552Z	24-MAY
Merced River @Stevinson	1553Z	25-MAY
Merced River @Stevinson	1602Z	26-MAY
Merced River @Stevinson	1649Z	27-MAY
Merced River @Stevinson	1535Z	28-MAY
Merced River @Stevinson	1512Z	29-MAY
Merced River @Stevinson	1532Z	30-MAY
Merced River @Stevinson	1611Z	31-MAY

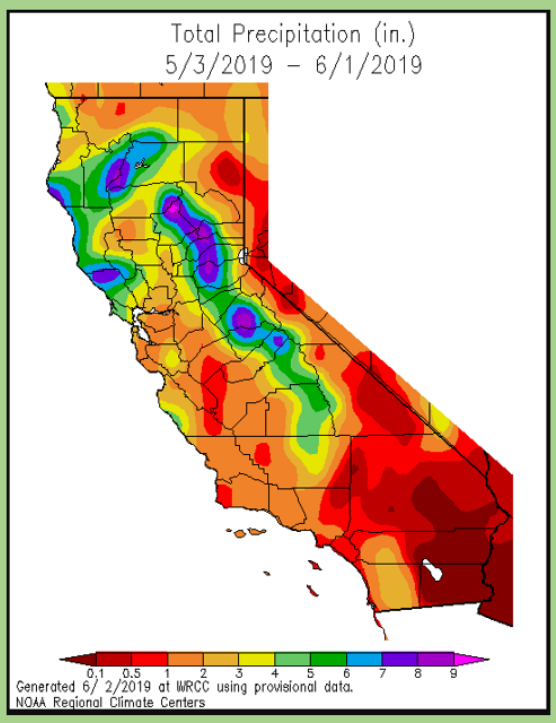
Sierra 5 Station Index

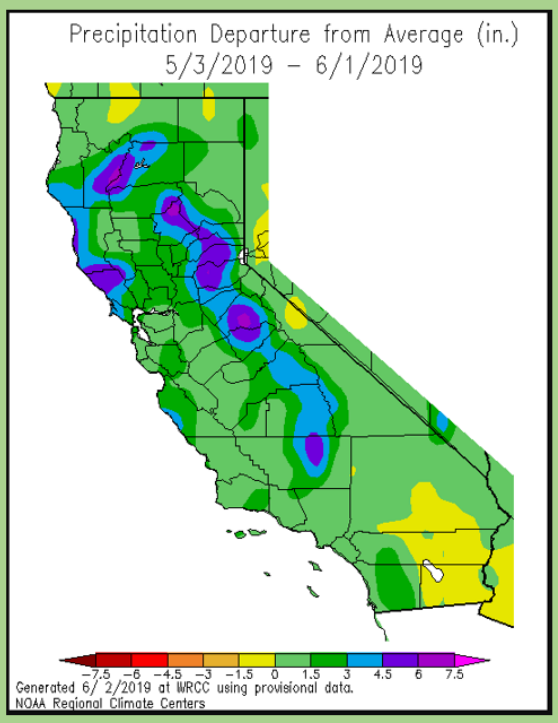
SJ5SI Wettest MAY Rank	MAY Rainfall to Date	Rainfall Season
1	6.97	1997-1998
2	6.94	1914-1915
3	6.17	1956-1957
4	5.71	1994-1995
5	5.64	2018-2019
6	5.49	2004-2005
7	4.09	1941-1942
8	4.05	1955-1956
9	4.04	2008-2009
10	3.64	1932-1933
11	3.51	2010-2011
12	3.46	1976-1977
13	3.28	1970-1971
14	3.22	1995-1996
15	3.16	1989-1990
16	3.01	2002-2003
17	2.98	1963-1964
18	2.94	1999-2000
19	2.86	1962-1963
20	2.78	1931-1932
21	2.68	2009-2010
22	2.63	1921-1922
23	2.63	1930-1931
24	2.59	1952-1953
25	2.39	2001-2002

Tulare Lake 6 Station Index

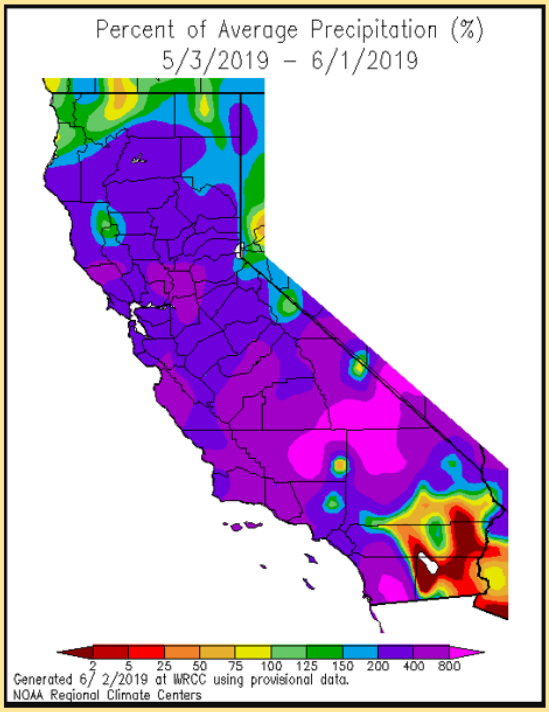
TL6SI Wettest MAY Rank	MAY Rainfall to Date	Rainfall Season
1	5.51	1956-1957
2	5.35	1997-1998
3	4.66	2018-2019
4	4.41	1994-1995
5	3.81	2004-2005
6	2.99	1929-1930
7	2.95	1932-1933
8	2.85	2002-2003
9	2.78	1976-1977
10	2.58	1970-1971
11	2.53	2010-2011
12	2.44	1989-1990
13	2.16	1955-1956
14	2.03	1931-1932
15	2.01	1963-1964
16	1.68	1979-1980
17	1.58	1988-1989
18	1.54	1924-1925
19	1.54	1954-1955
20	1.52	1948-1949
21	1.51	1987-1988
22	1.50	2001-2002
23	1.49	1993-1994
24	1.48	1957-1958
25	1.42	1999-2000

May, 2019 PRECIPITATION ACROSS CALIFORNIA

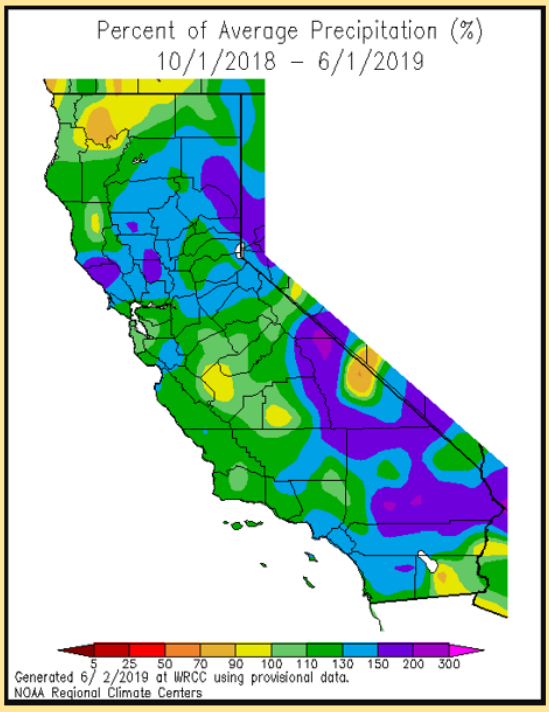




Percentage of Normal Precipitation across California



May, 2019



2018-19 Water Year through June 1st

CC:

W/OH12X1
W/WR2
CNRFC
WFO HNX
WFO STO