UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

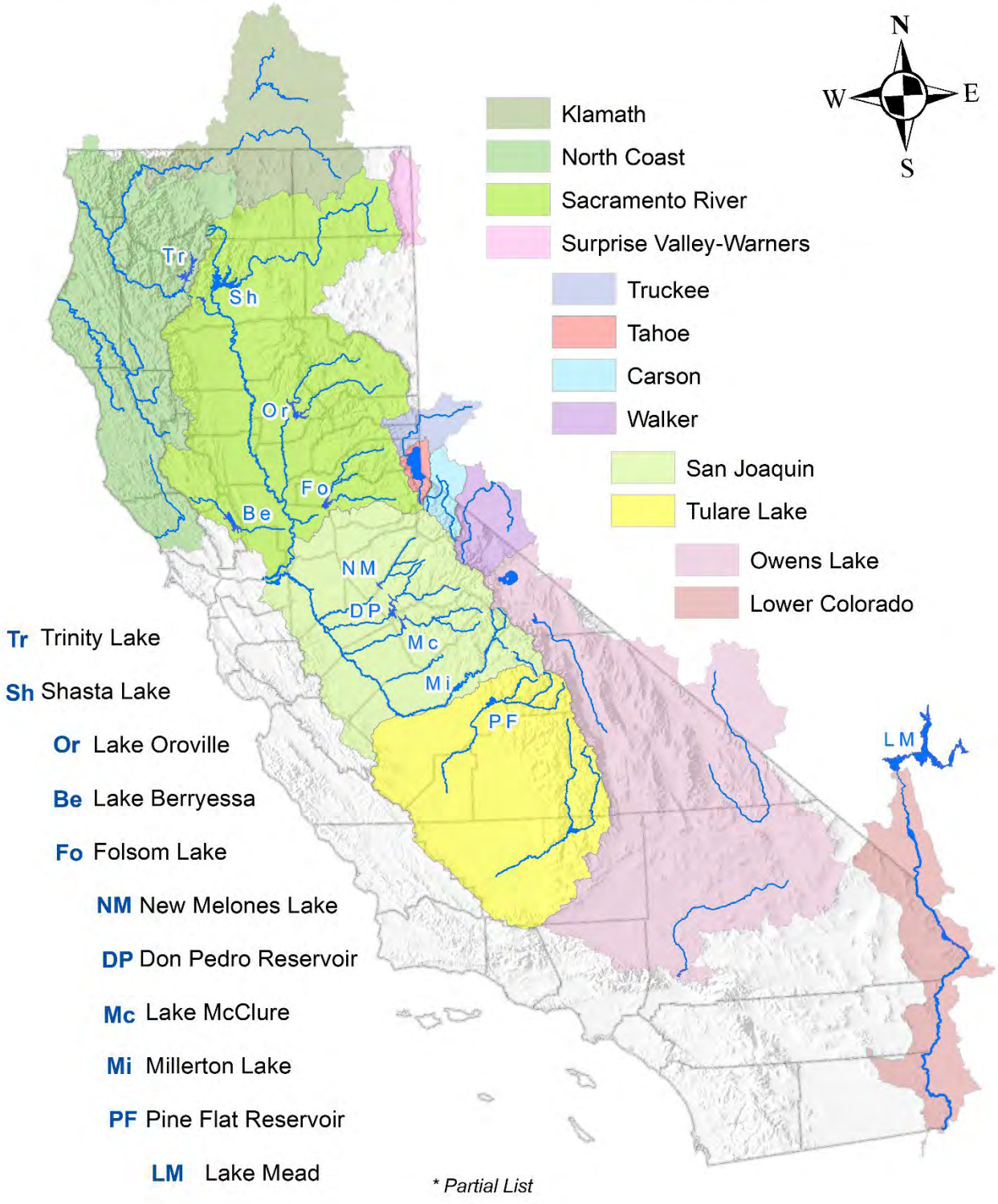
California Water Supply Outlook Report
April 2024

Photo Credit: Evan Smith and Val Bullard

April 1 sampling from Mt. Rose snow course near Lake Tahoe

Contents

California Forecast Basins, Major Rivers, and Large Reservoirs*



Tr Trinity Lake

Sh Shasta Lake

Or Lake Oroville

Be Lake Berryessa

Fo Folsom Lake

NM New Melones Lake

DP Don Pedro Reservoir

Mc Lake McClure

Mi Millerton Lake

PF Pine Flat Reservoir

LM Lake Mead

** Partial List*

STATE OF CALIFORNIA GENERAL OUTLOOK
April 2024

2024 UPDATES:

Water Supply Outlook Report Format Updates

Historically, NRCS CA has displayed data from 2 other agencies: California Department of Water Resources (DWR) and the National Weather Service (NWS) for the western Sierra streamflow predictions. Together with NRCS's forecasting data, the major irrigation watersheds are covered for the whole state. NRCS CA is transitioning to providing links to the most up to date data as opposed to providing a snapshot of the data collected and provided by these Partner agencies. NRCS CA is interested in your feedback on the new format. If you have any comments, please email them to: NRCS.CA.Engineering@usda.gov.

NRCS Water Supply Forecast System for the American West

This year, the NRCS begins using a new water supply forecast (WSF) system, the Multi-Model Machine-Learning Metasystem, or M4. In comparison to the historic singular WSF model, the new system creates a mean value from six different forecast models. Using the mean of the ensemble of models harnesses the strengths of each technique while insulating against potential individual model vulnerabilities. The original NRCS WSF model remains as part of the suite of ensemble models. Testing shows that the ensemble mean generally equals or exceeds the performance of any individual model member. Application of NRCS water supply probabilistic forecasts remains unchanged.

Contact:

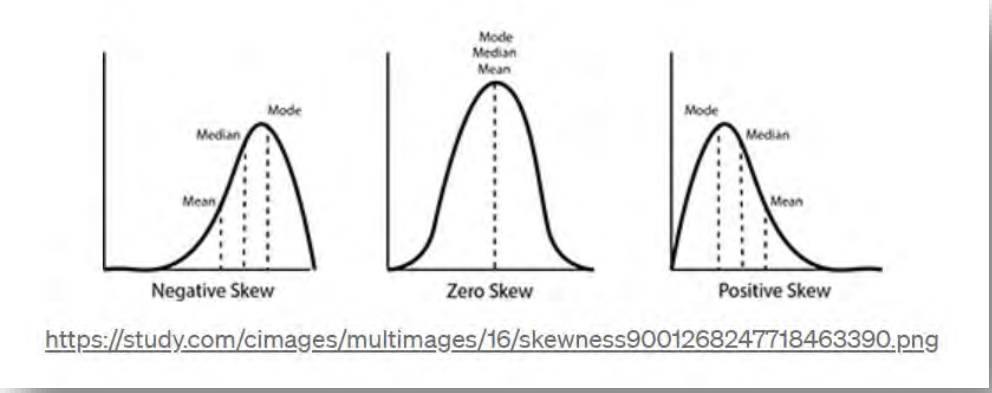
Angus Goodbody, angus.goodbody@usda.gov, Lead Forecast Hydrologist**,** USDA NRCS Snow Survey and Water Supply Forecasting Program

Additional reading:

- Assessing the new NRCS water supply forecast model for the American West
- A Machine Learning Metasystem for Robust Probabilistic Nonlinear Regression-Based Forecasting

Analysis Difference: Percent of Median vs Percent of Average

Median and average are two statistical ways to discuss the center of a dataset. The average is calculated by adding up all of the individual data points and dividing by the total number of data points. The median is the "middle" value of that same data set – meaning that half of the data points would be below the median value and the other half of the points would be above that same value. The data can be represented by bell curves that give a visual of how the data is distributed. If the bell curve is skewed, the average (mean) and the median will not be identical.



NRCS chooses to use percent of median instead of percent of average because median more accurately depicts the "middle" when data distribution is skewed positively or negatively. More information is available at: https://www.nrcs.usda.gov/resources/data-and-reports/climatic-and-hydrologic-normals.

Snowpack

As of April 12th, snowpack is 122 percent of normal for the dates in the northern Sierras (up from 112% early last month); 109 percent of normal in the central Sierras (up from 103% early last month); and 105 percent in the southern Sierras (up from 93% early last month). The DWR Daily Statewide Summary of Snow Water Content map is attached at the end of the General Outlook. More information is available online at: http://cdec.water.ca.gov/snow/current/snow/index2.html.

Precipitation

As of April 12th, the Northern Sierra-, San Joaquin-, and Tulare Basin Index stations received 94-, 88-, and 84 percent of average for this date. A wet February helped bring the precipitation totals closer to an average year to date. More information is available online at: http://cdec.water.ca.gov/snow_rain.html

Reservoirs

As of January 31, 2024, total reservoir storage in intrastate California is 116 percent of average. Total interstate reservoir storage, including Lake Powell, Lake Mead and the North Coast watershed is 85 percent of average. As of April 12, 2024, storage at Shasta Reservoir was 118 percent of average, up from 113 percent of average early last month. Oroville Reservoir was 122 percent of average, down from 131 percent of average early last month. Don Pedro Reservoir was 111 percent of average, down slightly from 112 percent of average early last month. The DWR Selected Reservoirs Daily Graph – Water Supply summary chart is attached at the end of the General Outlook. More information is available online at: https://cdec.water.ca.gov/reservoir.html.

Streamflow

NRCS forecasts in the Tahoe, Truckee, Carson, and Walker River basins are approximately 99 - 214 percent of the 1991-2020 median. NRCS forecasts for stations in the Klamath Basin are 76 - 84

percent of the 1991-2020 medians between March and September NRCS Forecast summaries are attached after the General Outlook Report.

For the Sacramento, San Joaquin, Tulare, North Coast, and Owens Lake forecasts, please refer to the most up to date information on the DWR and NWS webpages. Links with instructions on how to access the data are provided below.

Links to Data for Sacramento, San Joaquin and Tulare Lake Basins data:

Please note that DWR and NWS use percent of average while NRCS uses percent of median to display forecasted stream flows.

- DWR:
  - B120 (ca.gov) This version of DWR's Bulletin 120 links to the seasonal (April – July) forecasting summary for 18 points in the three watersheds and also provides DWR staff contact information.

B-120 WATER SUPPLY FORECAST SUMMARY

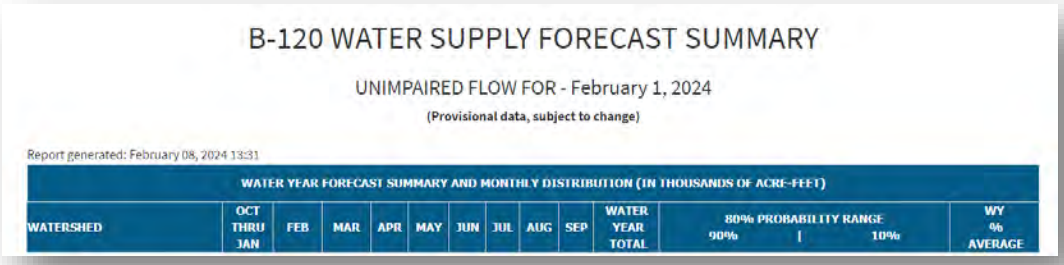
UNIMPAIRED FLOW FOR - February 2024

(Provisional data, subject to change)

Report generated: February 8, 2024 17:48

APRIL-JULY FORECAST SUMMARY (IN THOUSANDS OF ACRE-FEET)				
HYDROLOGIC REGION WATERSHED	APRIL-JULY FORECAST	PERCENT OF AVERAGE	80% PROBABILITY RANGE 90% | 10%	

  - B120DIST (ca.gov) This version of DWR's Bulletin 120 links to the monthly stream forecasts (Feb – Sept) for 16 points in CA and also provides DWR staff contact information.



B-120 WATER SUPPLY FORECAST SUMMARY

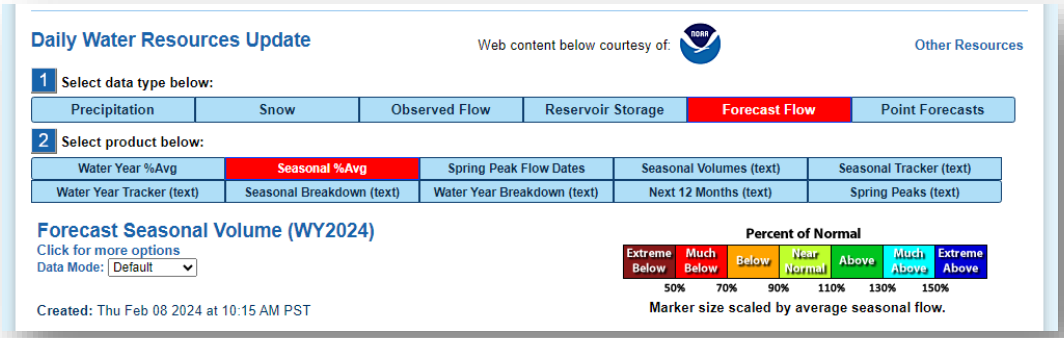
UNIMPAIRED FLOW FOR - February 1, 2024

(Provisional data, subject to change)

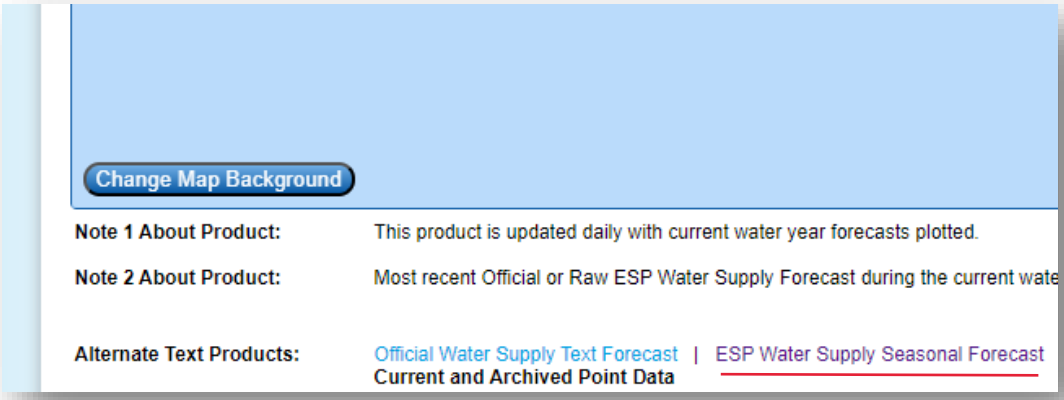
Report generated: February 08, 2024 13:31

WATER YEAR FORECAST SUMMARY AND MONTHLY DISTRIBUTION (IN THOUSANDS OF ACRE-FEET)												
WATERSHED	OCT THRU JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	WATER YEAR TOTAL	80% PROBABILITY RANGE 90% | 10%	WY % AVERAGE

- NWS: [CNRFC - Water Resources - Daily Water Resources Update (noaa.gov)](#) The California Nevada Forecast Center provides Daily Water updates. The report that is closest to the NRCS forecasting report is the "Seasonal %Avg" product in the "Forecast Flow" data type.

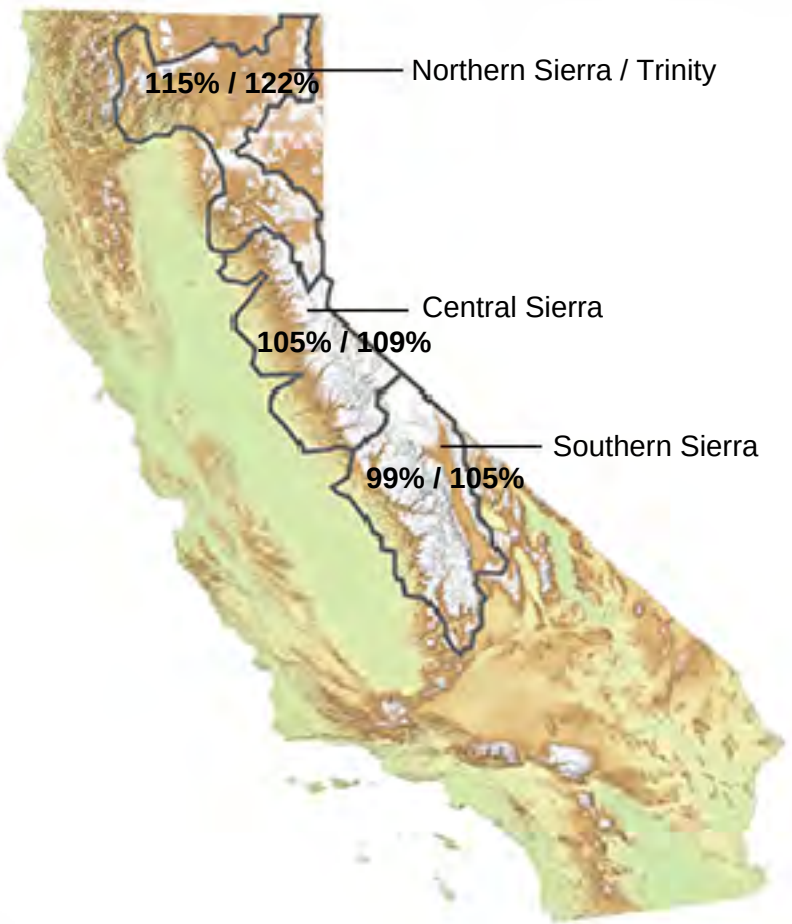


Seasonal Forecast Volumes (as percentages) can be provided by clicking the "show data table" button on the top right of the interactive map. This value is for the whole water year and is not broken down by month. In order to get monthly forecasting data, text reports are available. The "ESP Water Supply Seasonal Forecast" product is the one NRCS used to report data in its previous products.



CURRENT REGIONAL SNOWPACK FROM AUTOMATED SNOW SENSORS

% of April 1 Average / % of Normal for This Date



NORTH	
Data as of April 12, 2024	
Number of Stations Reporting	26
Average snow water equivalent (Inches)	32.7
Percent of April 1 Average (%)	115
Percent of normal for this date (%)	122

CENTRAL	
Data as of April 12, 2024	
Number of Stations Reporting	48
Average snow water equivalent (Inches)	28.1
Percent of April 1 Average (%)	105
Percent of normal for this date (%)	109

SOUTH	
Data as of April 12, 2024	
Number of Stations Reporting	25
Average snow water equivalent (Inches)	21.4
Percent of April 1 Average (%)	99
Percent of normal for this date (%)	105

STATE	
Data as of April 12, 2024	
Number of Stations Reporting	99
Average snow water equivalent (Inches)	27.6
Percent of April 1 Average (%)	107
Percent of normal for this date (%)	112

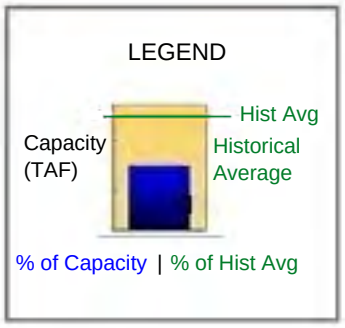
Statewide Average: 107% / 112%

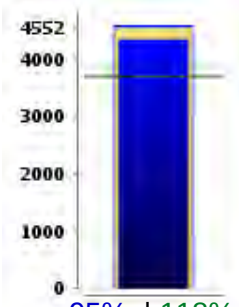
Data as of April 12, 2024

CALIFORNIA MAJOR WATER SUPPLY RESERVOIRS

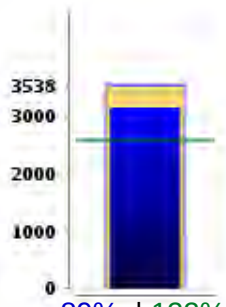
Midnight - April 11, 2024

CURRENT CONDITIONS

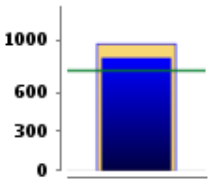




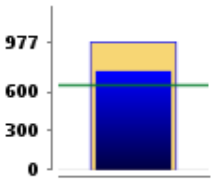
95% | 118%
Shasta



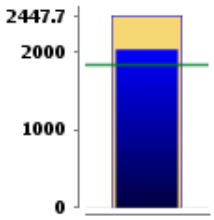
89% | 122%
Oroville



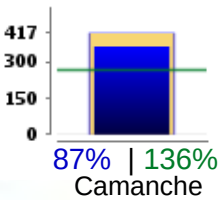
89% | 112%
New Bullards Bar



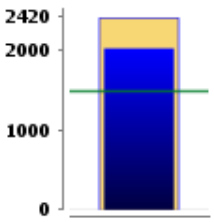
78% | 116%
Folsom



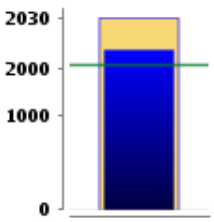
83% | 110%
Trinity



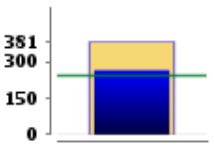
87% | 136%
Camanche



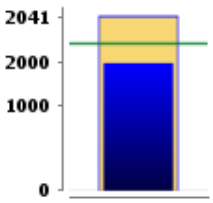
84% | 136%
New Melones



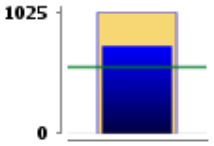
84% | 111%
Don Pedro



70% | 111%
Sonoma

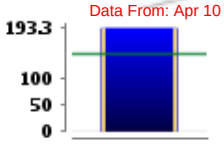


74% | 87%
San Luis

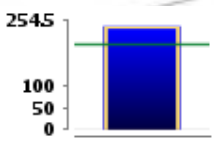


72% | 131%
McClure

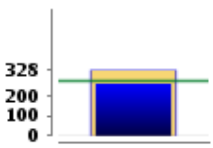
Data From: Apr 10



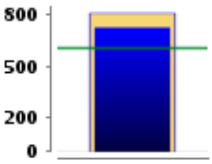
100%| 131%
Cachuma



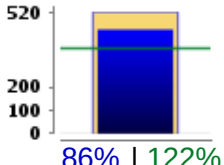
98% | 119%
Casitas



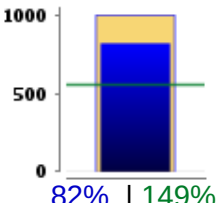
80% | 94%
Castaic



90% | 120%
Diamond Valley



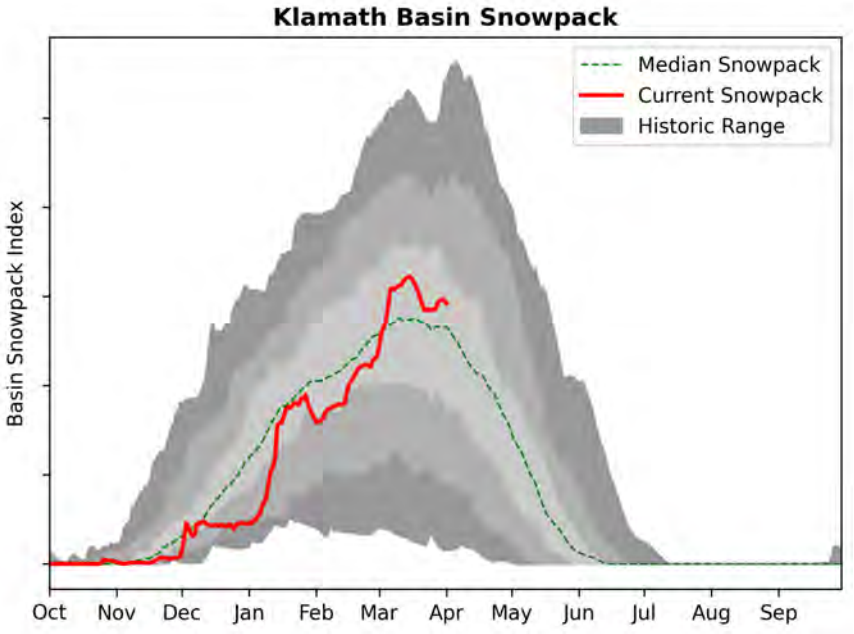
86% | 122%
Millerton



82% | 149%
Pine Flat

Klamath Basin Summary

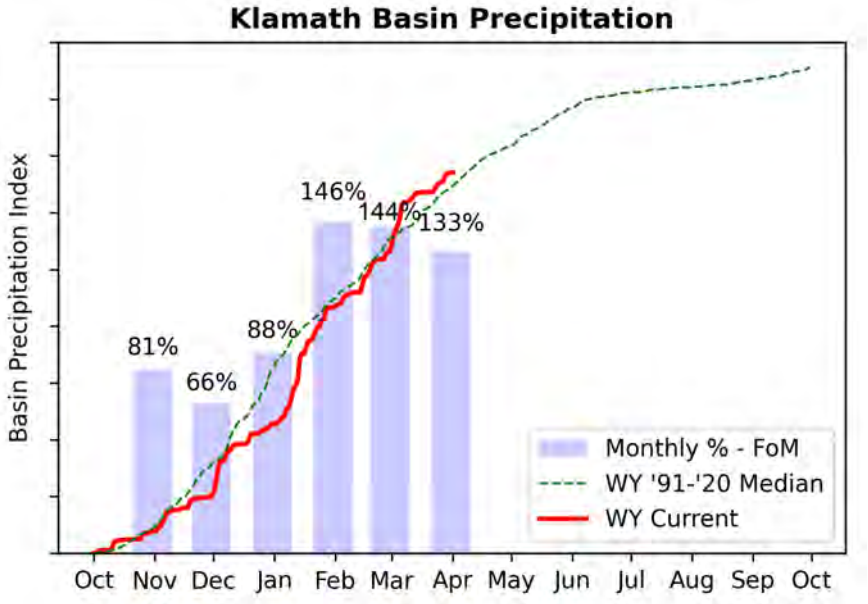
SNOWPACK



► *View snowpack for individual sites by accessing the basin data report* **here**.

As of April 1, the basin snowpack is 109% of median. Last month on March 1 the basin snowpack was 90% of median.

PRECIPITATION



► *View precipitation for individual sites by accessing the basin data report* **here**.

FoM = First of Month

March precipitation is above normal at 133% of median. Precipitation since the beginning of the water year (October 1 - April 1) is 104% of median.

RESERVOIR STORAGE

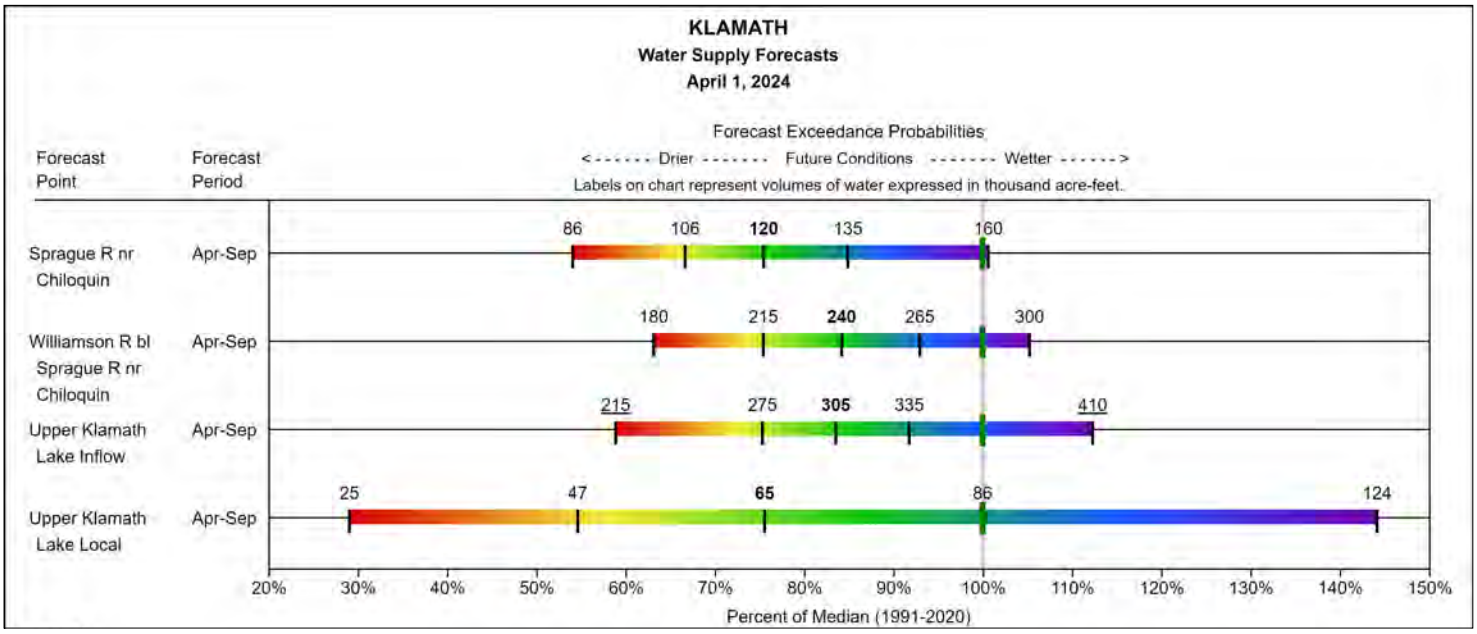
As of April 1, storage at major reservoirs in the basin ranges from 68% of median at Gerber Reservoir to 113% of median at Upper Klamath Lake.

Klamath	Current (KAF)	Last Year (KAF)	Median (KAF)	Capacity (KAF)	Current % Capacity	Last Year % Capacity	Median % Capacity	Current % Median	Last Year % Median
Howard Prairie	27.3	12.0	38.0	62.1	44%	19%	61%	72%	32%
Fourmile Lake	5.2	4.4	7.4	15.6	33%	28%	47%	70%	59%
Upper Klamath Lake	500.0	437.7	441.9	523.7	95%	84%	84%	113%	99%
Clear Lake	129.5	88.2	155.0	513.3	25%	17%	30%	84%	57%
Hyatt Prairie	8.8	3.0	12.0	16.2	54%	18%	74%	73%	25%
Gerber	38.3	16.3	56.6	94.3	41%	17%	60%	68%	29%
Basin Index					**58%**	**46%**	**58%**	**100%**	**79%**
# of reservoirs					6	6	6	6	6

STREAMFLOW FORECAST

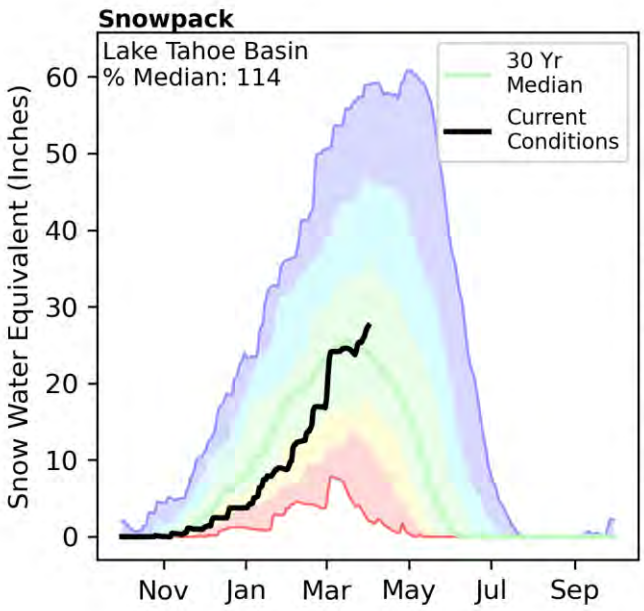
The streamflow forecasts for the primary period in the basin range from 76% to 84% of median.

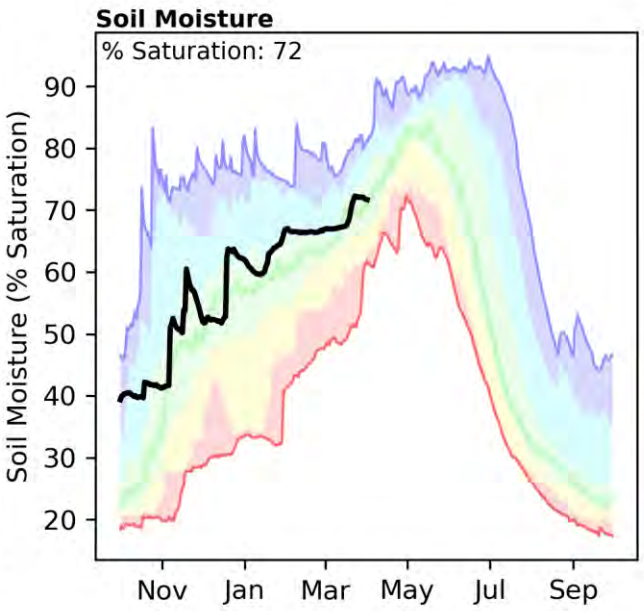
For data in tabular format, in addition to non-primary period data, please view the basin data reports **here**.

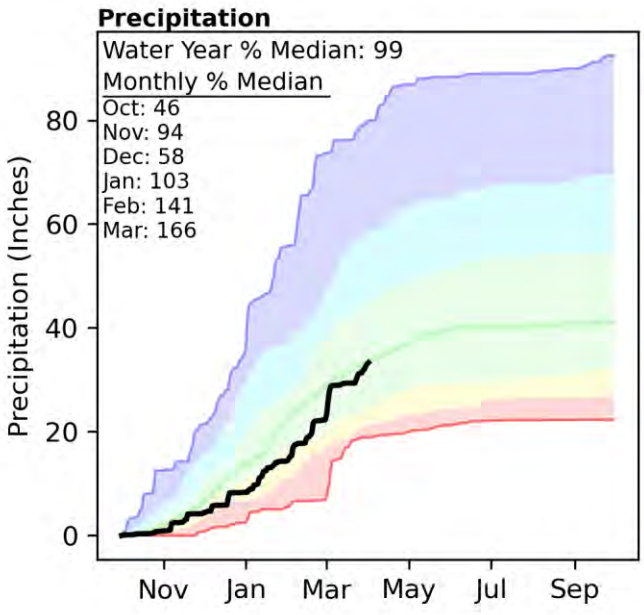


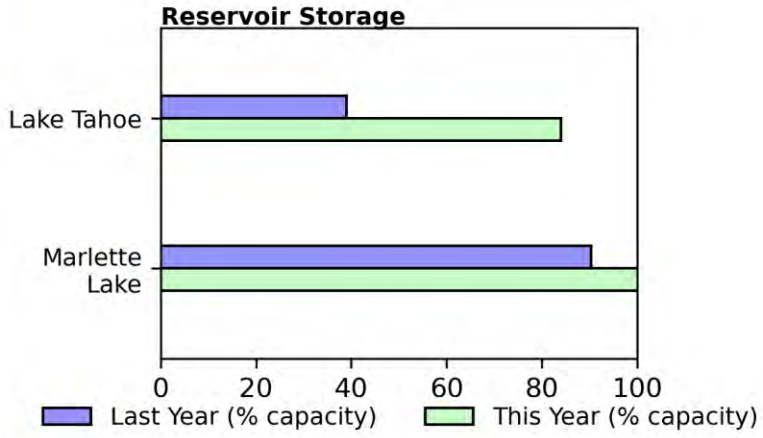
Lake Tahoe Basin | April 1, 2024

Snowpack in the Lake Tahoe Basin is above normal at 114% of median, compared to 238% at this time last year. Precipitation in March was well above normal at 166%, which brings the seasonal accumulation (October-March) to 99% of median. Soil moisture is at 72% saturation compared to 69% saturation last year. Reservoir storage is 84% of capacity, compared to 40% last year.



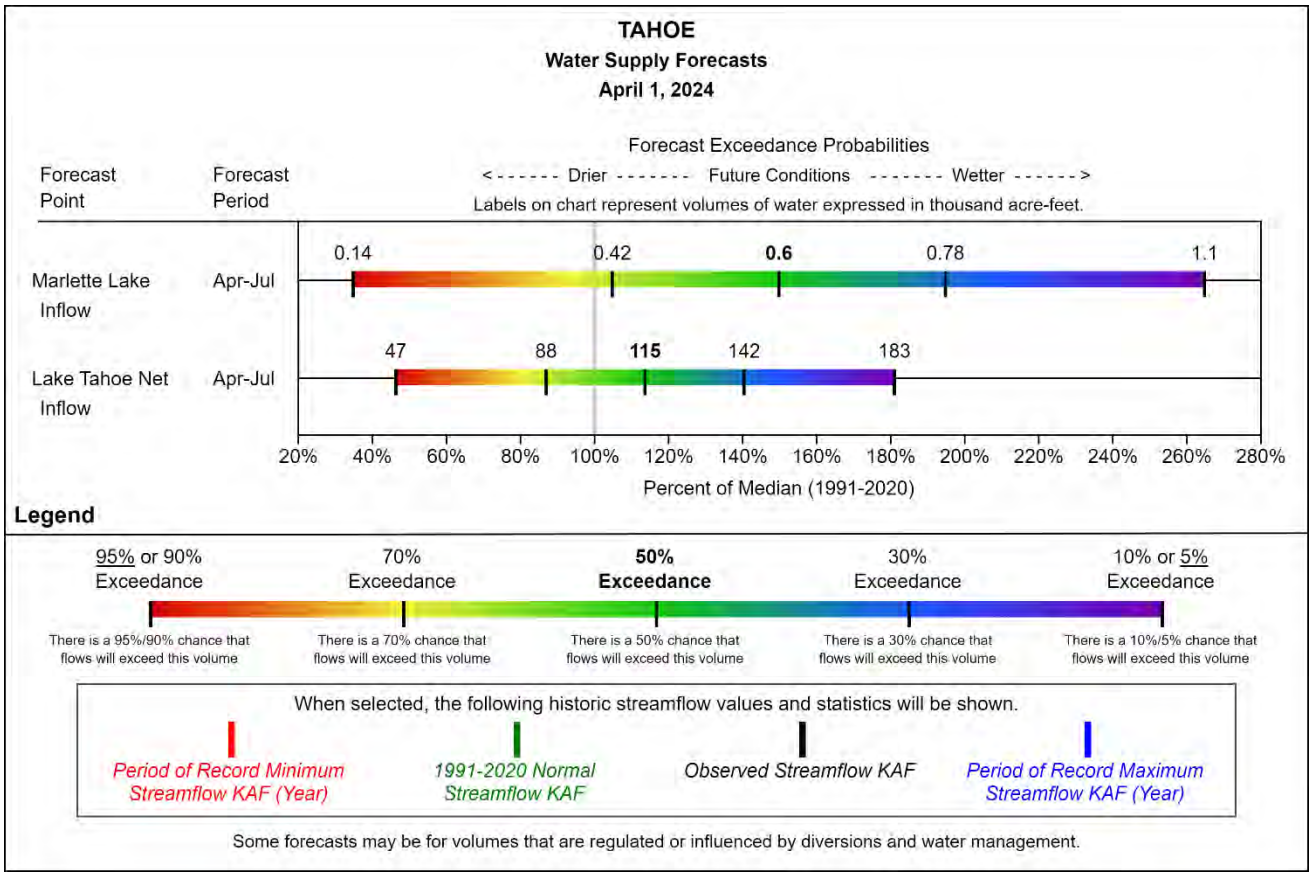


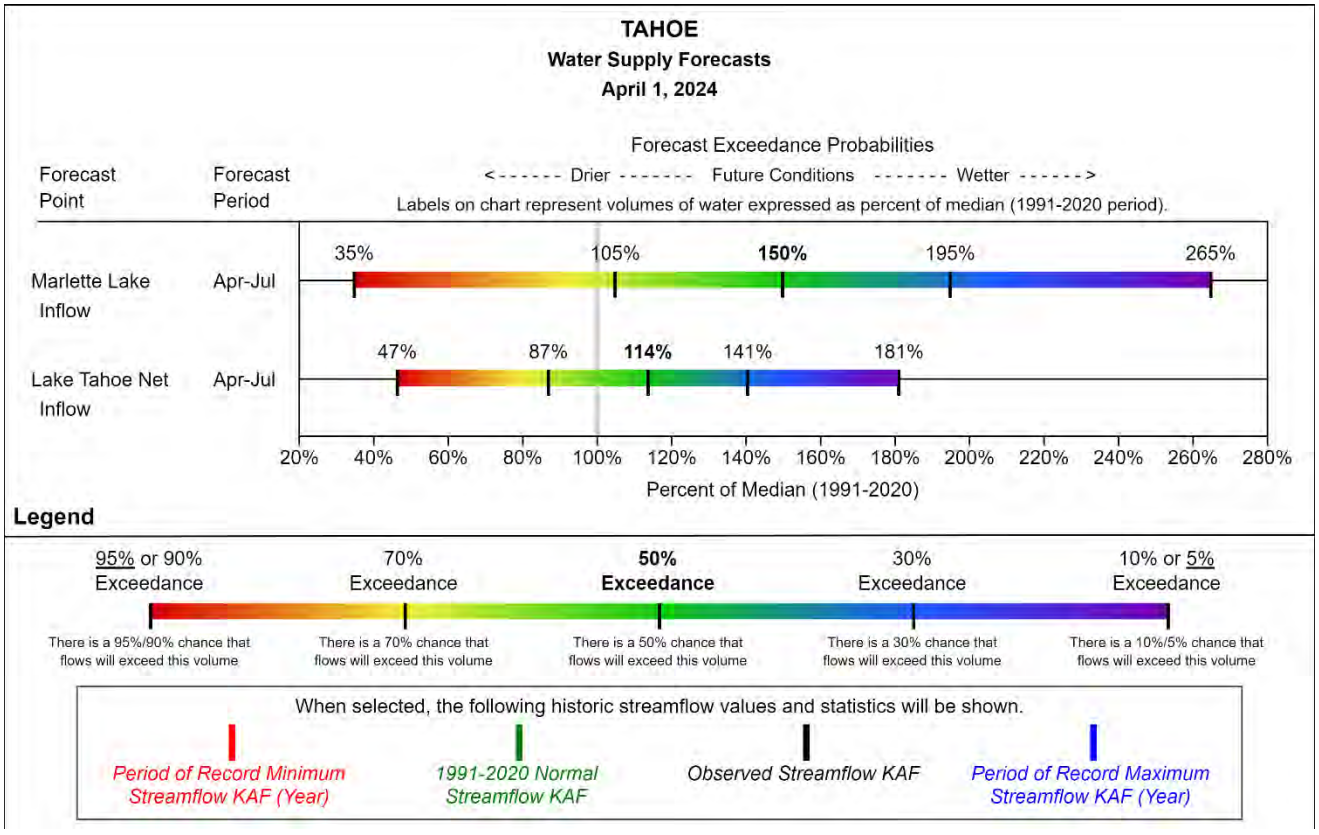




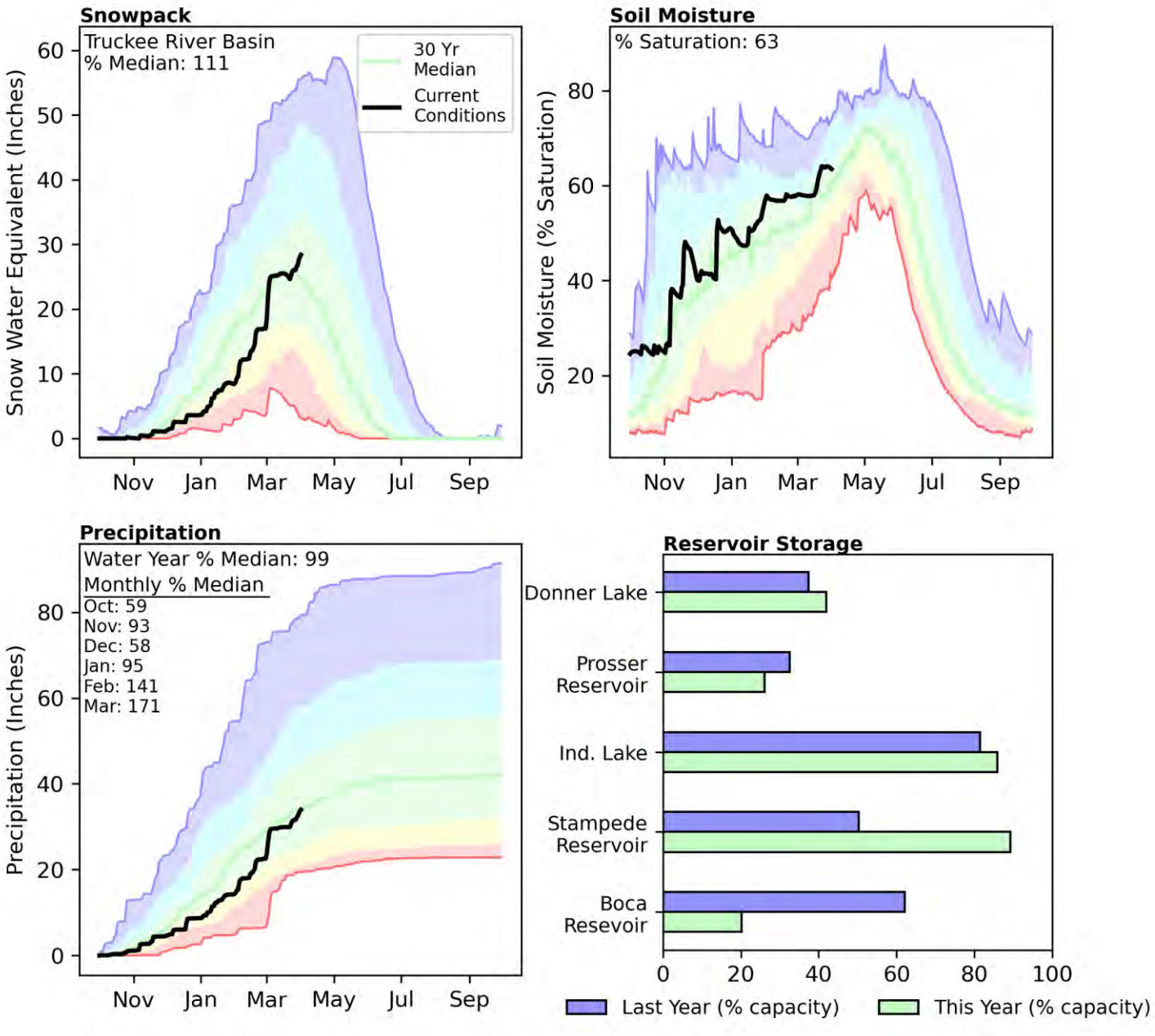
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description

Important Information about Forecast Coordination: Hydrologists with the NRCS and National Weather Service California Nevada River Forecast Center (CNRFC) coordinate Lake Tahoe Rise, Truckee River at Farad, Little Truckee River near Boca, and the Carson River at Ft. Churchill forecasts (following page) using output of their respective hydrology models at the request of the Bureau of Reclamation. The NRCS model is a statistical model based on the current data as of the first of each month. The CNRFC ensemble forecasting system incorporates near-term weather prediction and climatology into their model. These models can provide different answers because of the nature of the model systems, and from the inclusion of future weather in the CNRFC model. The hydrologists agree on forecast values using guidance from both models to best provide an accurate water supply forecast for these points.


TAHOE
Water Supply Forecasts
April 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
<------- Drier -------- Future Conditions -------- Wetter ------->
Labels on chart represent volumes of water expressed in thousand acre-feet.
Marlette Lake Inflow
Apr-Jul
0.14
0.42
0.6
0.78
1.1
Lake Tahoe Net Inflow
Apr-Jul
47
88
115
142
183
20% 40% 60% 80% 100% 120% 140% 160% 180% 200% 220% 240% 260% 280%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

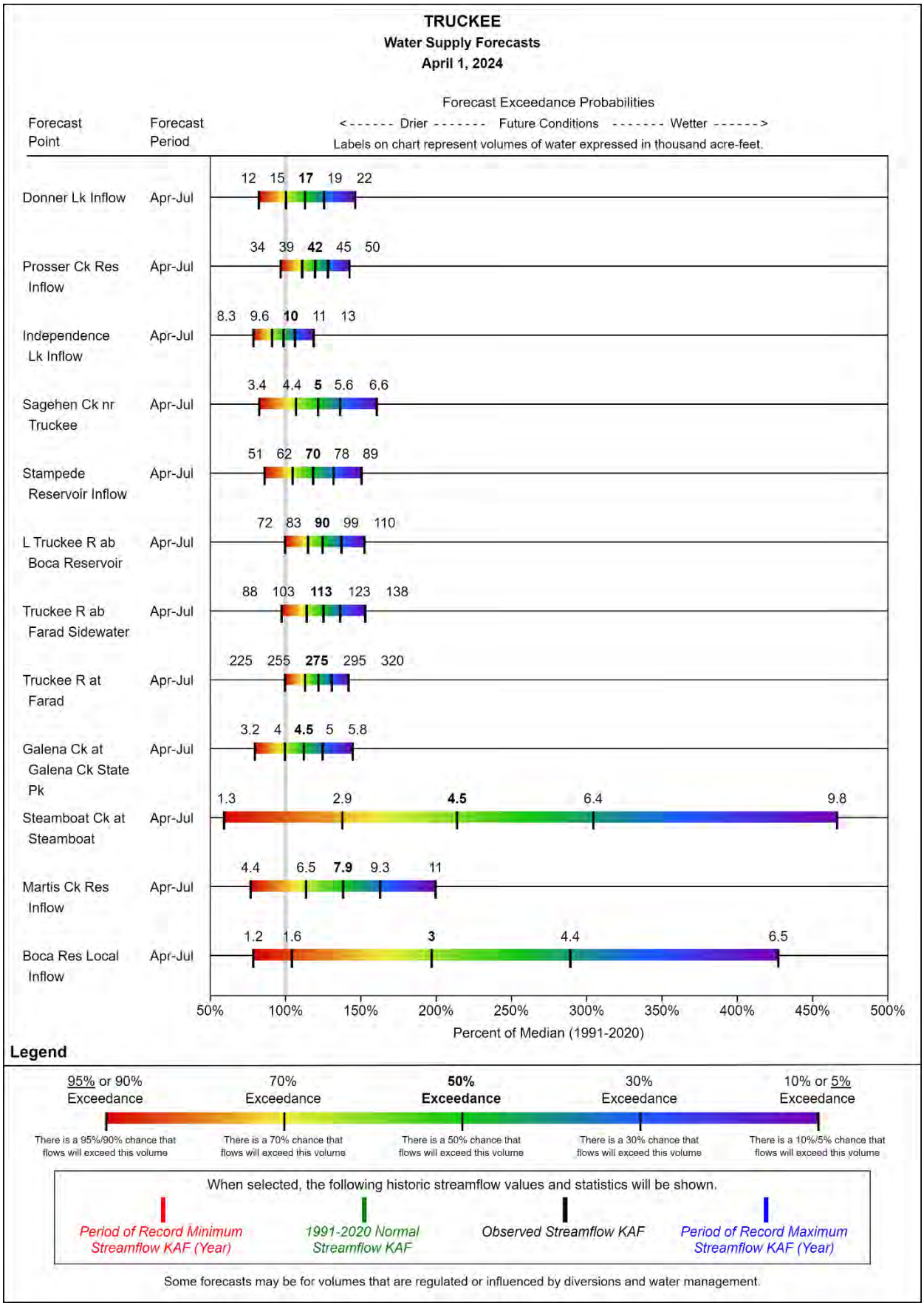

TAHOE
Water Supply Forecasts
April 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
<------- Drier -------- Future Conditions -------- Wetter ------->
Labels on chart represent volumes of water expressed as percent of median (1991-2020 period).
Marlette Lake Inflow
Apr-Jul
35%
105%
150%
195%
265%
Lake Tahoe Net Inflow
Apr-Jul
47%
87%
114%
141%
181%
20% 40% 60% 80% 100% 120% 140% 160% 180% 200% 220% 240% 260% 280%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)

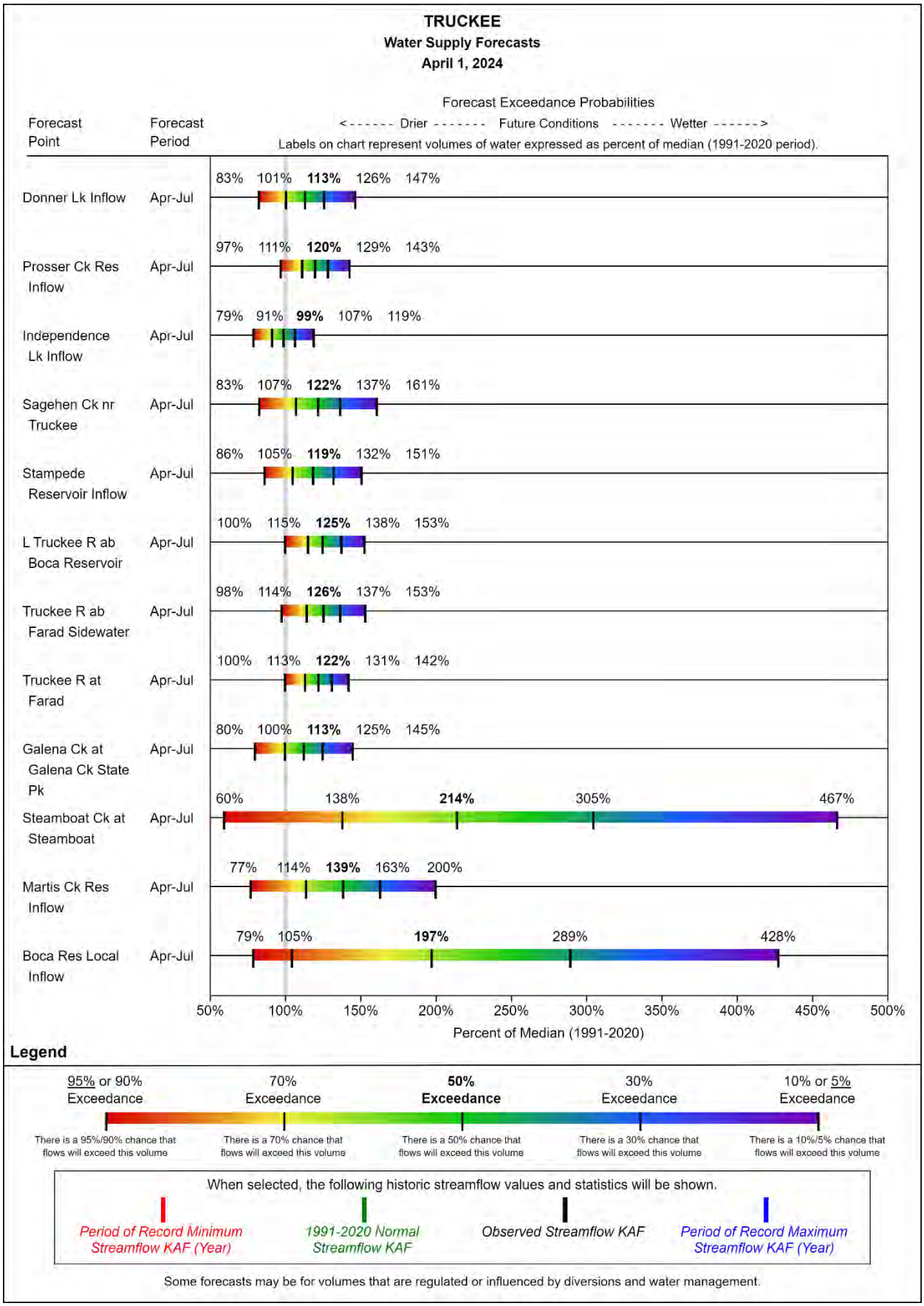
Snowpack in the Truckee River Basin is above normal at 111% of median, compared to 218% at this time last year. Precipitation in March was well above normal at 171%, which brings the seasonal accumulation (October-March) to 99% of median. Soil moisture is at 63% saturation compared to 61% saturation last year. Reservoir storage is 73% of capacity, compared to 51% last year.



Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description

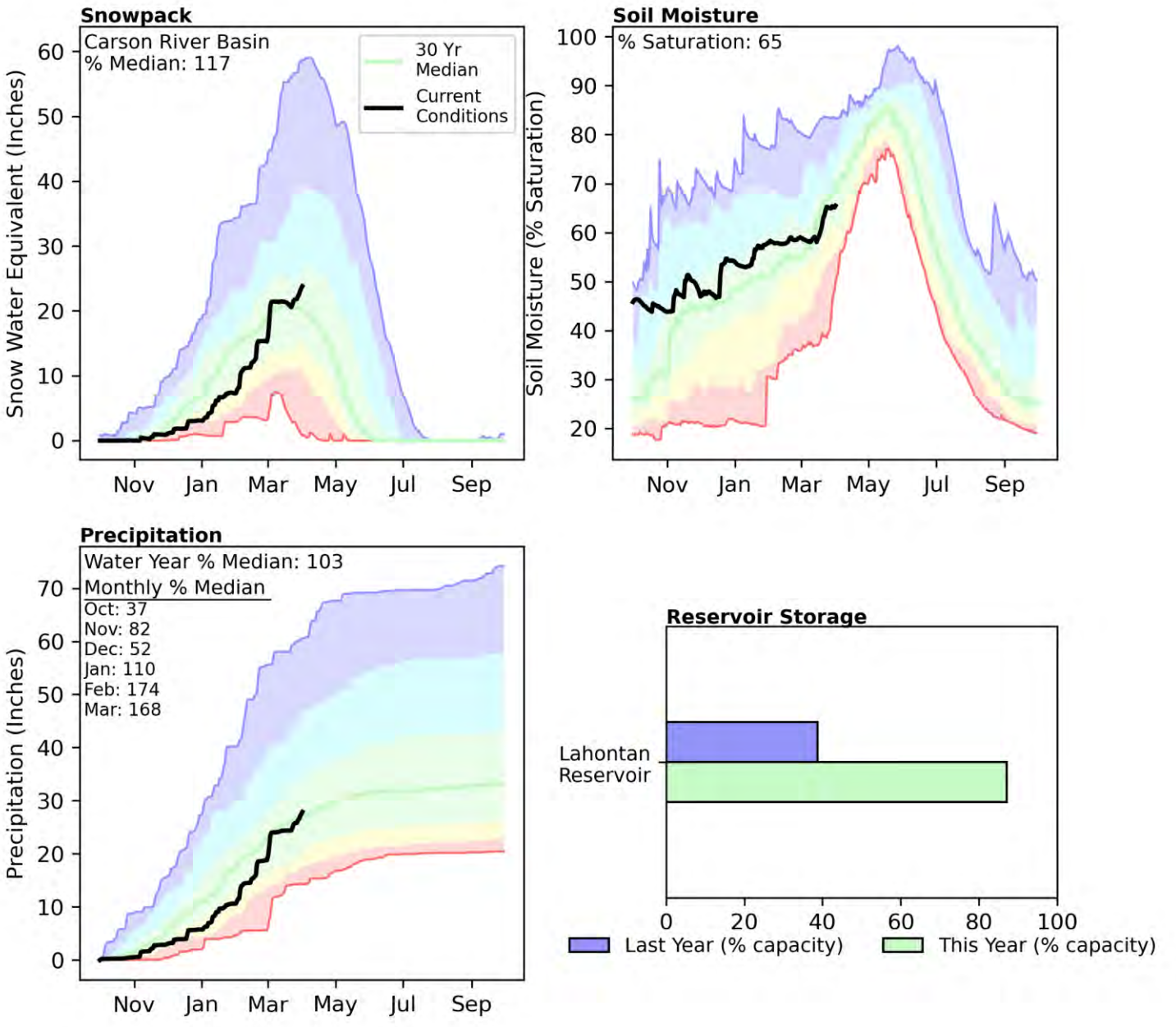
Important Information about Forecast Coordination: Hydrologists with the NRCS and National Weather Service California Nevada River Forecast Center (CNRFC) coordinate Lake Tahoe Rise, Truckee River at Farad, Little Truckee River near Boca, and the Carson River at Ft. Churchill forecasts (following page) using output of their respective hydrology models at the request of the Bureau of Reclamation. The NRCS model is a statistical model based on the current data as of the first of each month. The CNRFC ensemble forecasting system incorporates near-term weather prediction and climatology into their model. These models can provide different answers because of the nature of the model systems, and from the inclusion of future weather in the CNRFC model. The hydrologists agree on forecast values using guidance from both models to best provide an accurate water supply forecast for these points.


TRUCKEE
Water Supply Forecasts
April 1, 2024
Forecast Exceedance Probabilities
< ------- Drier ------- Future Conditions ------- Wetter ------- >
Labels on chart represent volumes of water expressed in thousand acre-feet.
Forecast Point
Forecast Period
Donner Lk Inflow Apr-Jul 12 15 17 19 22
Prosser Ck Res Inflow Apr-Jul 34 39 42 45 50
Independence Lk Inflow Apr-Jul 8.3 9.6 10 11 13
Sagehen Ck nr Truckee Apr-Jul 3.4 4.4 5 5.6 6.6
Stampede Reservoir Inflow Apr-Jul 51 62 70 78 89
L Truckee R ab Boca Reservoir Apr-Jul 72 83 90 99 110
Truckee R ab Farad Sidewater Apr-Jul 88 103 113 123 138
Truckee R at Farad Apr-Jul 225 255 275 295 320
Galena Ck at Galena Ck State Pk Apr-Jul 3.2 4 4.5 5 5.8
Steamboat Ck at Steamboat Apr-Jul 1.3 2.9 4.5 6.4 9.8
Martis Ck Res Inflow Apr-Jul 4.4 6.5 7.9 9.3 11
Boca Res Local Inflow Apr-Jul 1.2 1.6 3 4.4 6.5
50% 100% 150% 200% 250% 300% 350% 400% 450% 500%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.


TRUCKEE
Water Supply Forecasts
April 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
<------- Drier ------- Future Conditions ------- Wetter ------->
Labels on chart represent volumes of water expressed as percent of median (1991-2020 period).
Donner Lk Inflow Apr-Jul 83% 101% 113% 126% 147%
Prosser Ck Res Inflow Apr-Jul 97% 111% 120% 129% 143%
Independence Lk Inflow Apr-Jul 79% 91% 99% 107% 119%
Sagehen Ck nr Truckee Apr-Jul 83% 107% 122% 137% 161%
Stampede Reservoir Inflow Apr-Jul 86% 105% 119% 132% 151%
L Truckee R ab Boca Reservoir Apr-Jul 100% 115% 125% 138% 153%
Truckee R ab Farad Sidewater Apr-Jul 98% 114% 126% 137% 153%
Truckee R at Farad Apr-Jul 100% 113% 122% 131% 142%
Galena Ck at Galena Ck State Pk Apr-Jul 80% 100% 113% 125% 145%
Steamboat Ck at Steamboat Apr-Jul 60% 138% 214% 305% 467%
Martis Ck Res Inflow Apr-Jul 77% 114% 139% 163% 200%
Boca Res Local Inflow Apr-Jul 79% 105% 197% 289% 428%
50% 100% 150% 200% 250% 300% 350% 400% 450% 500%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

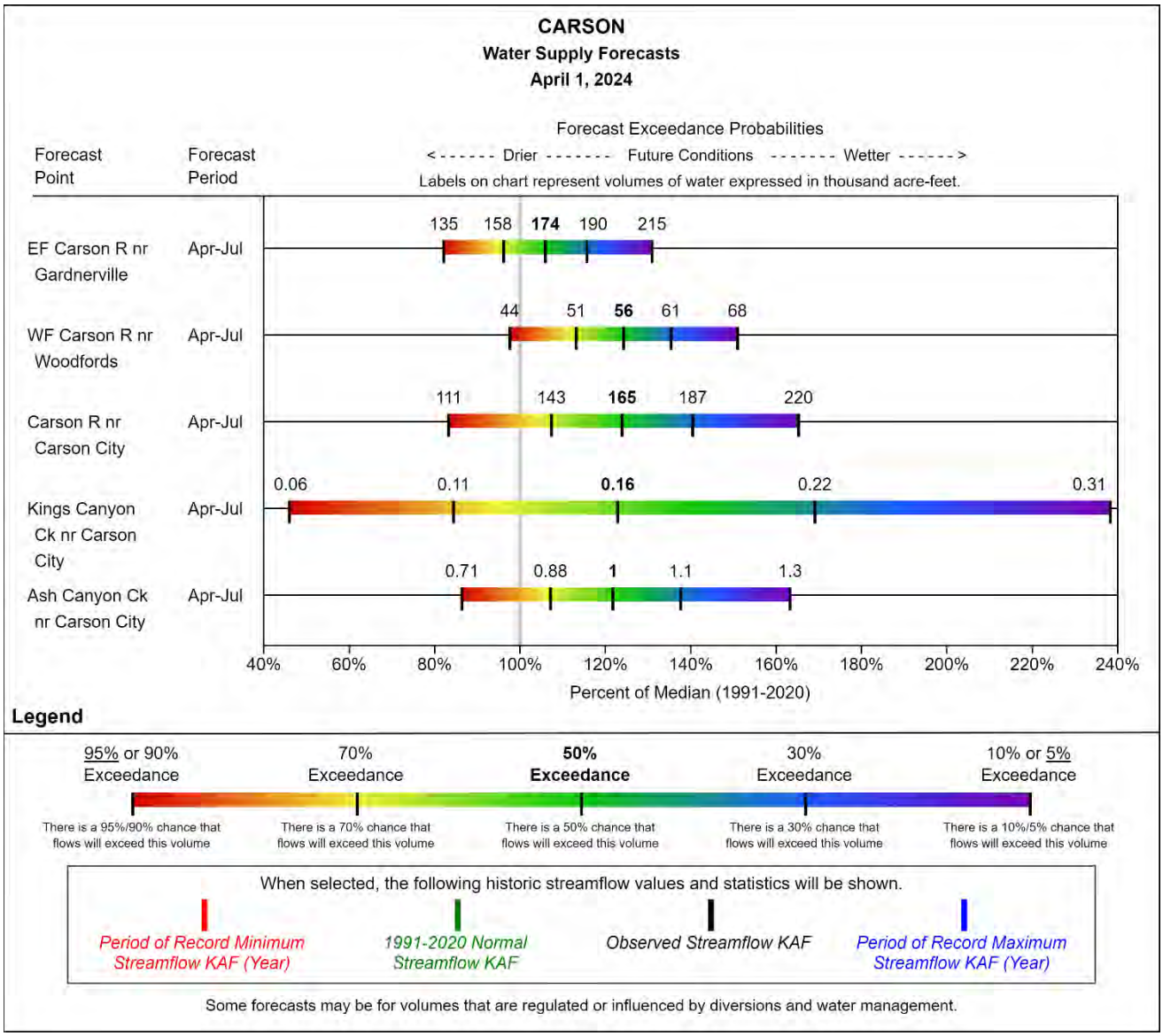
Carson River Basin | April 1, 2024

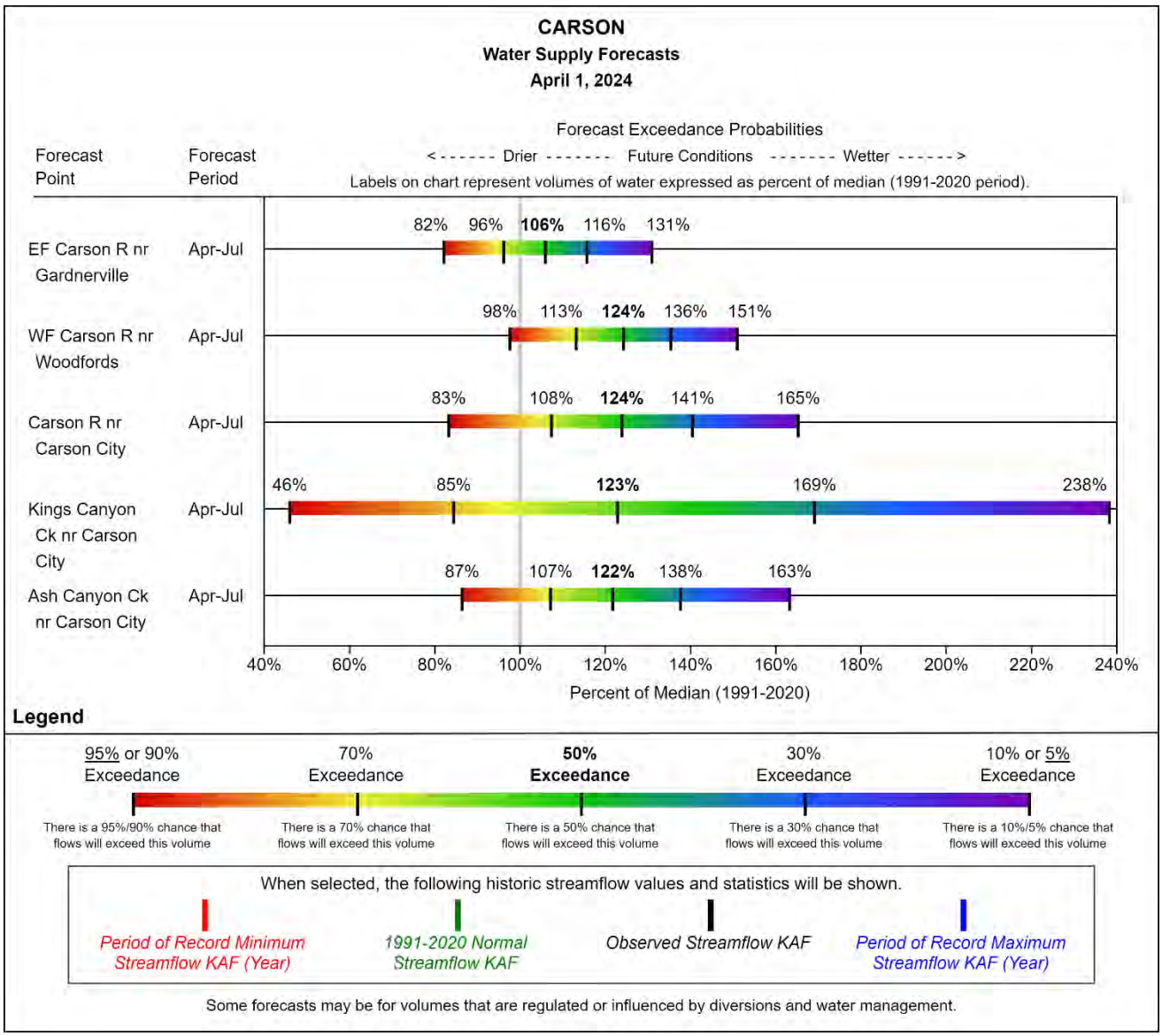
Snowpack in the Carson River Basin is above normal at 117% of median, compared to 290% at this time last year. Precipitation in March was well above normal at 168%, which brings the seasonal accumulation (October-March) to 103% of median. Soil moisture is at 65% saturation, same as last year at this time. Reservoir storage is 87% of capacity, compared to 39% last year.



Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description

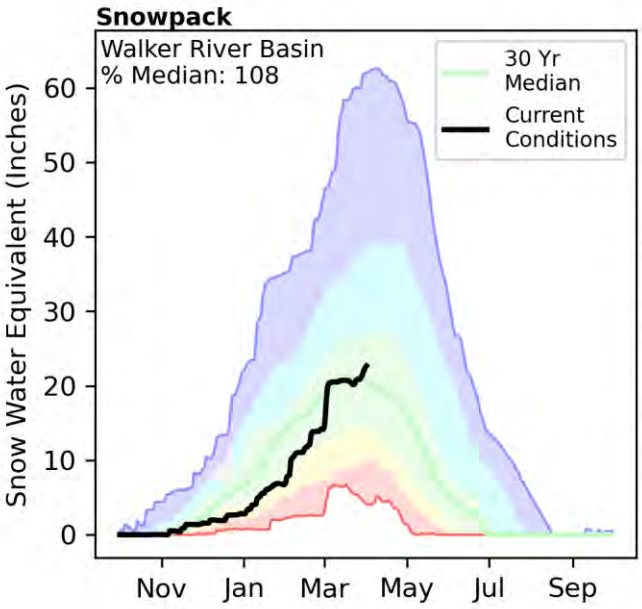
Important Information about Forecast Coordination: Hydrologists with the NRCS and National Weather Service California Nevada River Forecast Center (CNRFC) coordinate Lake Tahoe Rise, Truckee River at Farad, Little Truckee River near Boca, and the Carson River at Ft. Churchill forecasts (following page) using output of their respective hydrology models at the request of the Bureau of Reclamation. The NRCS model is a statistical model based on the current data as of the first of each month. The CNRFC ensemble forecasting system incorporates near-term weather prediction and climatology into their model. These models can provide different answers because of the nature of the model systems, and from the inclusion of future weather in the CNRFC model. The hydrologists agree on forecast values using guidance from both models to best provide an accurate water supply forecast for these points.

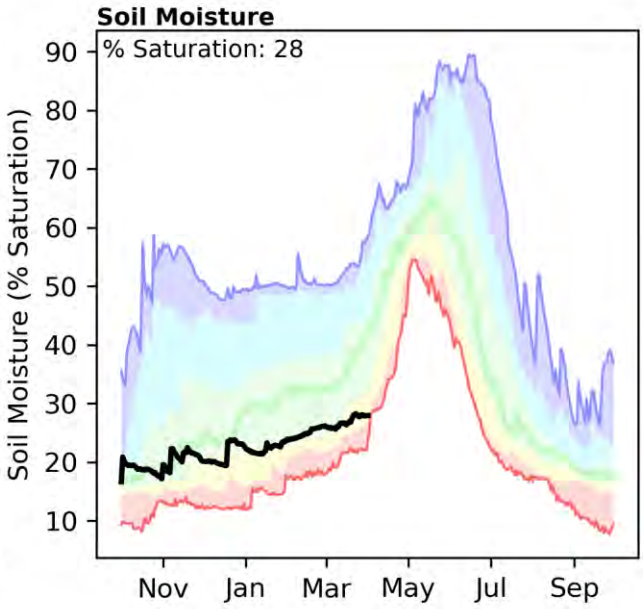

CARSON
Water Supply Forecasts
April 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
< - - - - - - Drier - - - - - - - Future Conditions - - - - - - - Wetter - - - - - - >
Labels on chart represent volumes of water expressed in thousand acre-feet.
EF Carson R nr Gardnerville
Apr-Jul
135 158 174 190 215
WF Carson R nr Woodfords
Apr-Jul
44 51 56 61 68
Carson R nr Carson City
Apr-Jul
111 143 165 187 220
Kings Canyon Ck nr Carson City
Apr-Jul
0.06 0.11 0.16 0.22 0.31
Ash Canyon Ck nr Carson City
Apr-Jul
0.71 0.88 1 1.1 1.3
40% 60% 80% 100% 120% 140% 160% 180% 200% 220% 240%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

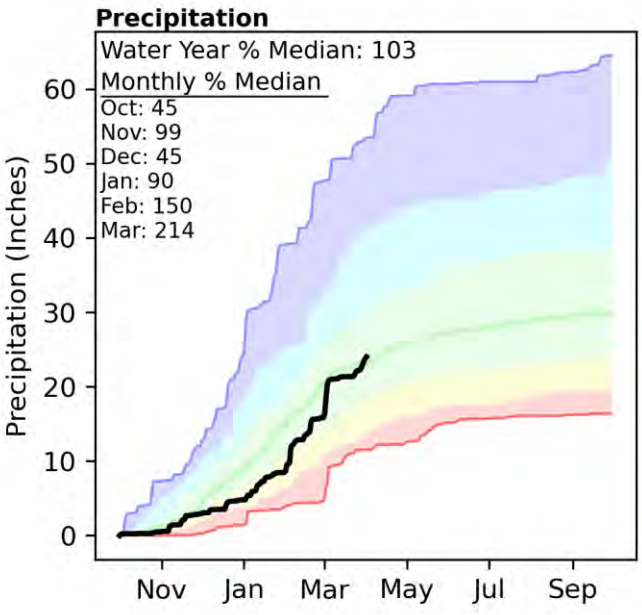

CARSON
Water Supply Forecasts
April 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
< ------ Drier ------- Future Conditions ------- Wetter ------ >
Labels on chart represent volumes of water expressed as percent of median (1991-2020 period).
EF Carson R nr Gardnerville
Apr-Jul
82% 96% 106% 116% 131%
WF Carson R nr Woodfords
Apr-Jul
98% 113% 124% 136% 151%
Carson R nr Carson City
Apr-Jul
83% 108% 124% 141% 165%
Kings Canyon Ck nr Carson City
Apr-Jul
46% 85% 123% 169% 238%
Ash Canyon Ck nr Carson City
Apr-Jul
87% 107% 122% 138% 163%
40% 60% 80% 100% 120% 140% 160% 180% 200% 220% 240%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

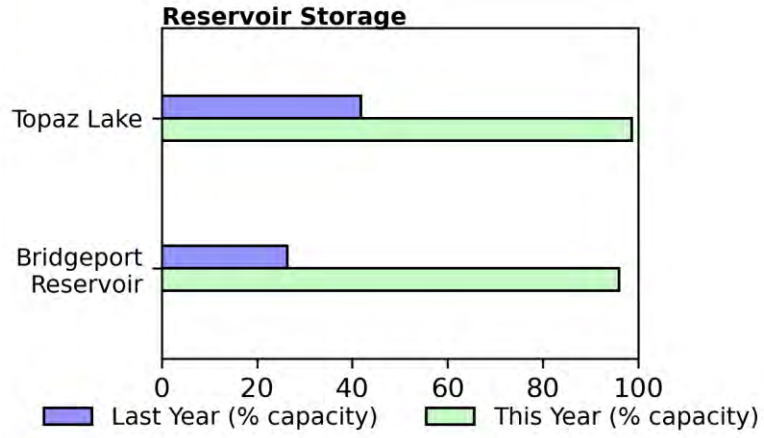
Walker River Basin | April 1, 2024

Snowpack in the Walker River Basin is about normal at 108% of median, compared to 308% at this time last year. Precipitation in March was well above normal at 214%, which brings the seasonal accumulation (October-March) to 103% of median. Soil moisture is at 28% saturation compared to 45% saturation last year. Reservoir storage is 98% of capacity, compared to 35% last year.

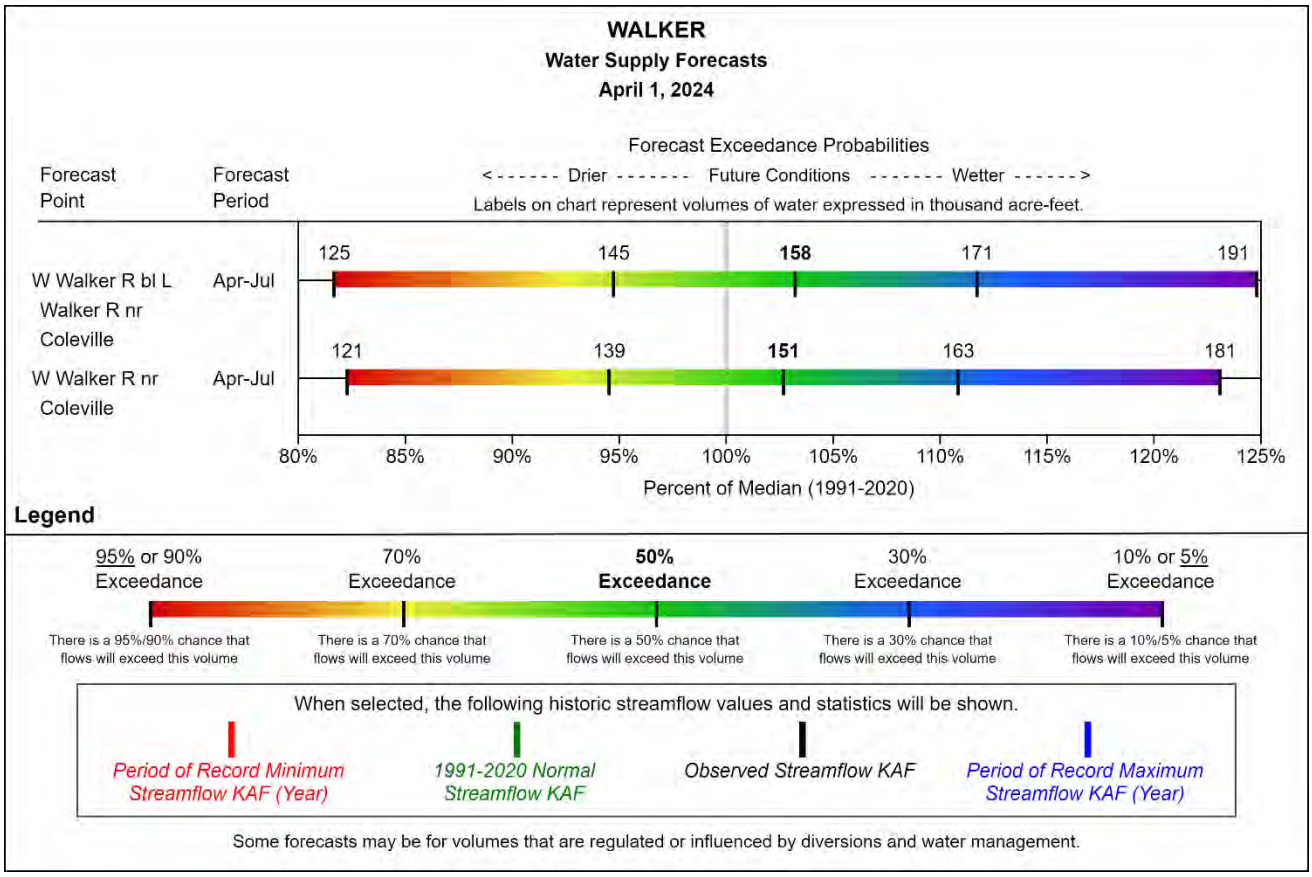


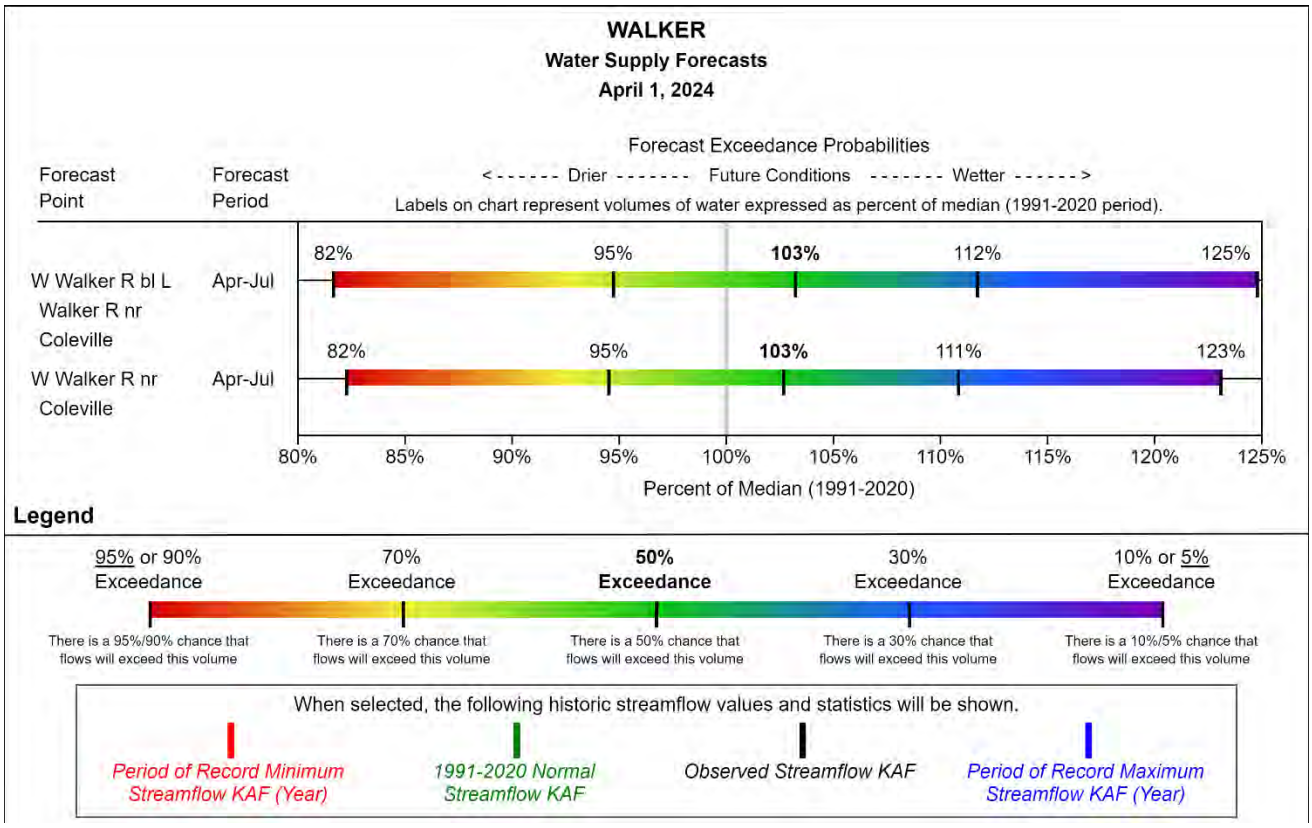






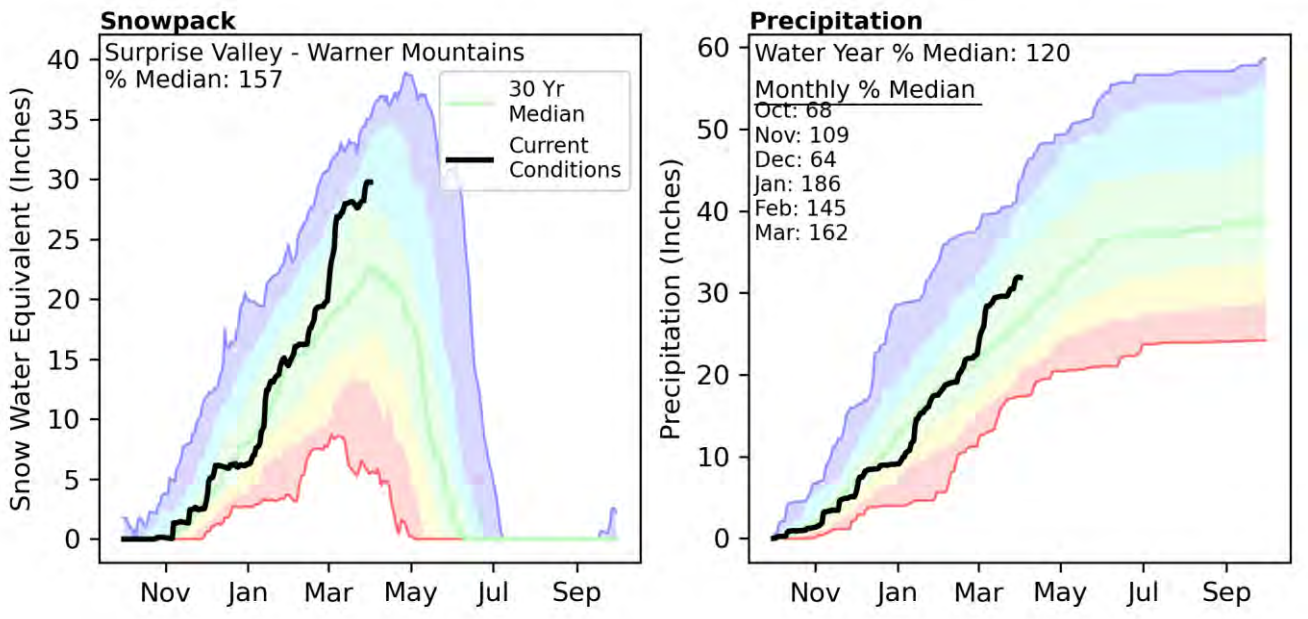
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description


WALKER
Water Supply Forecasts
April 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
< - - - - - - Drier - - - - - - - Future Conditions - - - - - - - Wetter - - - - - - >
Labels on chart represent volumes of water expressed in thousand acre-feet.
W Walker R bl L Walker R nr Coleville
Apr-Jul
125
145
158
171
191
W Walker R nr Coleville
Apr-Jul
121
139
151
163
181
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.


WALKER
Water Supply Forecasts
April 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
< - - - - - - Drier - - - - - - - Future Conditions - - - - - - - Wetter - - - - - - >
Labels on chart represent volumes of water expressed as percent of median (1991-2020 period).
W Walker R bl L Walker R nr Coleville
Apr-Jul
82%
95%
103%
112%
125%
W Walker R nr Coleville
Apr-Jul
82%
95%
103%
111%
123%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)

Surprise Valley - Warner Mountains | April 1, 2024

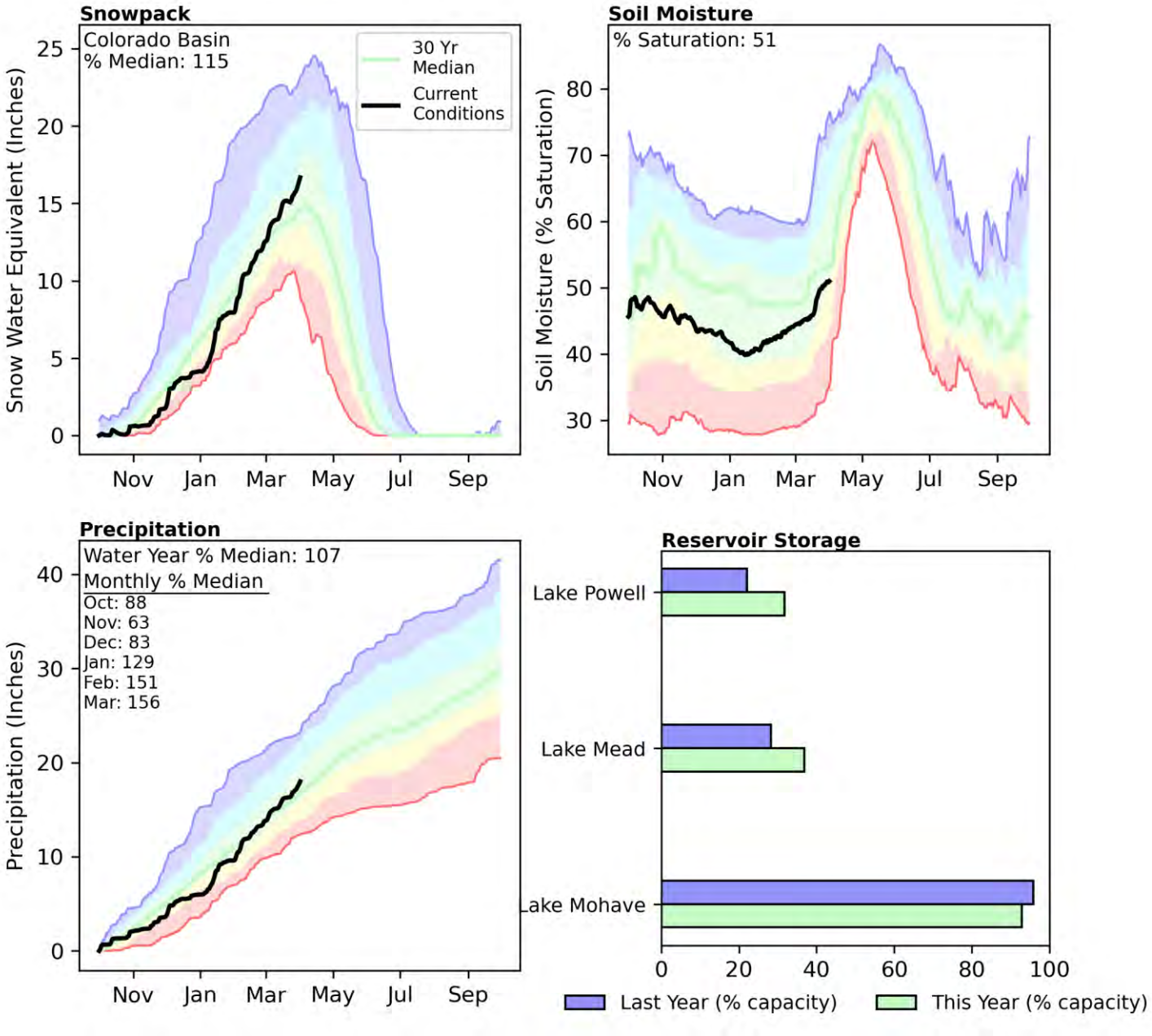
Snowpack in the Surprise Valley - Warner Mountains is well above normal at 157% of median, compared to 189% at this time last year. Precipitation in March was well above normal at 162%, which brings the seasonal accumulation (October-March) to 120% of median.



Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description

Colorado Basin | April 1, 2024

Snowpack in the Colorado Basin above Lake Powell is above normal at 115% of median, compared to 158% at this time last year. Precipitation in March was well above normal at 156%, which brings the seasonal accumulation (October-March) to 107% of median. Soil moisture is at 51% saturation compared to 53% saturation last year. Reservoir storage in the Lower Colorado Basin is 36% of capacity, compared to 27% last year.



Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description

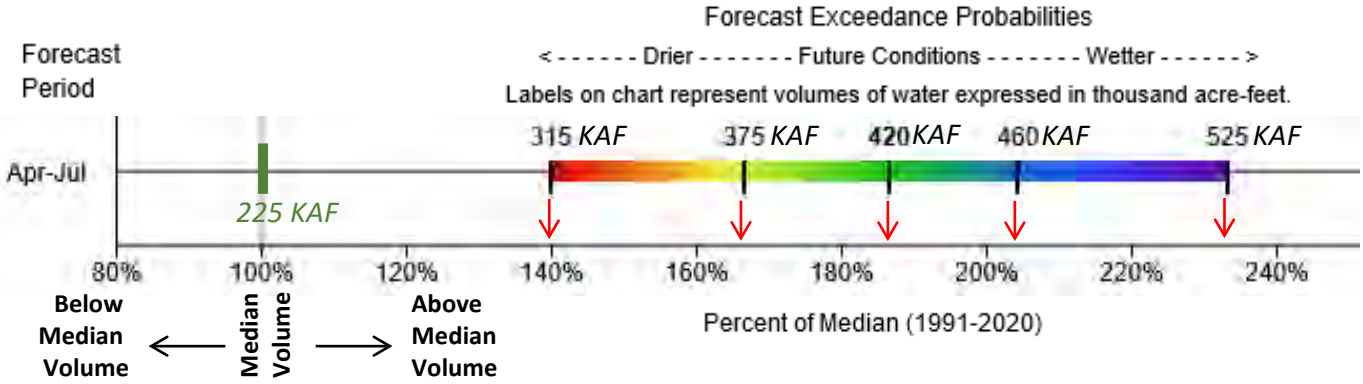
Appendix: Interpreting the Streamflow Forecast Chart

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Median (KAF)
APR-JUL	315	375	420	187%	460	525	225

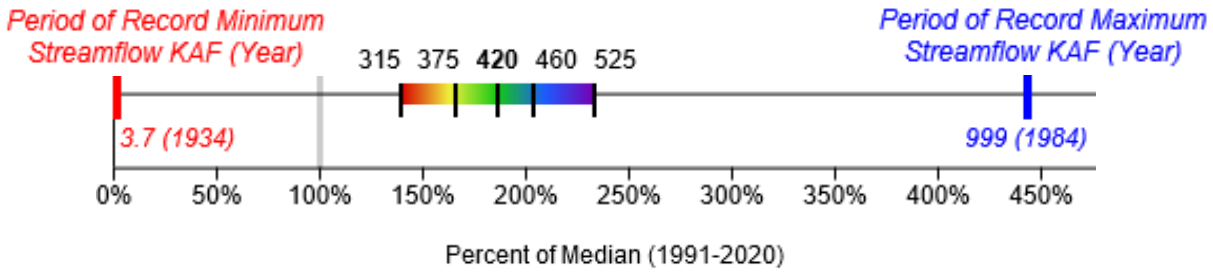
The Forecast Chart (below) provides an alternative to the tables (above) used in the basin summaries. The chart displays the forecast exceedance range as a colored bar. The vertical lines on the bar signify the five forecast exceedances.

The numbers above the forecast bar are the five exceedance probability volumes in thousand acre-feet (KAF). Each exceedance forecast's percent of median can be estimated by looking at the horizontal axis. The green line and number centered above 100% on the horizontal axis represents the 1981-2010 historical median streamflow for the forecast period in KAF.



In the example above, the entire forecast bar is shifted right of the green bar indicating a forecast for above the median Apr-Jul streamflow of 225KAF. The 50% exceedance is represented by the black line in the green portion of the colored bar. This represents a forecast volume of 420KAF which is ~185% of median. If drier than normal future conditions occur the 70% exceedance forecast may be more likely (375KAF or ~165% of median). If future conditions turn wetter than normal, the 30% exceedance forecast may be more likely (460KAF or ~205% of median). Water users are encouraged to consider the range of forecast exceedances instead of relying solely only on the 50% forecast.

In very wet or dry years forecasts may approach historical records. In these cases the period of record minimum or maximum may be displayed. The minimum is represented by a heavy red line, while the maximum is represented by a heavy blue line. The numbers below the red and blue lines represent the volume in KAF and the year it occurred in parentheses.

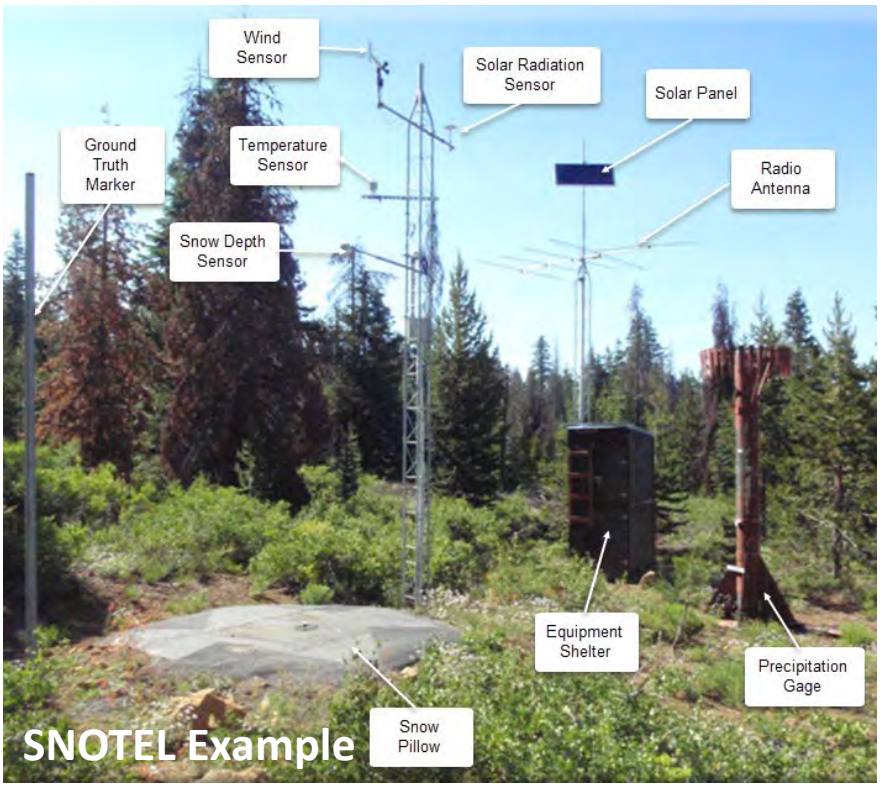


Click here for an online version which allows users to see averages instead of medians, as well as historic forecasts.

Appendix - SNOTEL and Snow Course Overview

SNOTEL

The NRCS operates an extensive, automated data collection network called SNOTEL (short for Snow Telemetry). SNOTEL sites are designed to operate unattended in remote mountain locations. Data are collected and transmitted hourly and available on the internet. Daily data (midnight values) are quality checked by NRCS hydrologists on at least a weekly basis. SNOTEL sites provide snowpack water content data via a pressure-sensing snow pillow. Other data include snow depth, water year precipitation accumulation, air temperature with daily maximums, minimums, and averages, soil moisture and soil temperature at depths of 2, 8 and 20 inches. The earliest NRCS SNOTEL sites have data back to 1981 or a bit earlier.



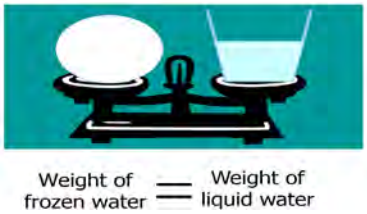
Snow Course

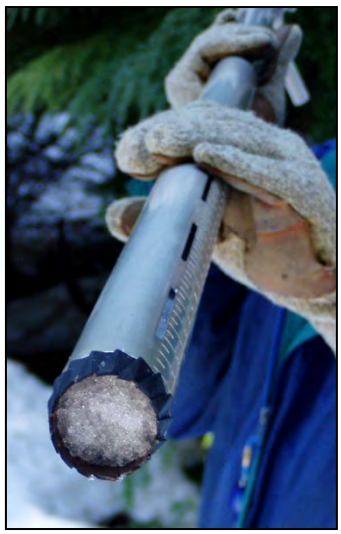
Snow courses are measurement transects where snow tubes are used by snow surveyors during the winter season to determine the depth and water content of the snowpack. Hollow snow tubes are used to vertically core the snowpack. The tubes are then weighed to determine the water content of the snow. Generally, snow courses are situated in meadows or forest openings protected from the wind. A snow course measurement is the average of a number of sample points, typically 5 to 10. Snow courses are measured on a monthly basis typically between February 1 and April 1. Snow courses provide a longer record than SNOTEL. The earliest snow courses in the Lake Tahoe and Truckee basins have data back to 1910.

Snow Water Equivalent (SWE):

Sometimes also called snow water content, this is the amount of water contained within the snowpack. It can be thought of as the depth of water (in inches) that would result if you melted the snowpack. For example, if the snowpack was contained 12 inches of SWE, then when melted there would a puddle of water 12 inches deep on the ground.

SWE measurements made by snow pillows or snow tubes rely on the fact that water weighs the same whether it is liquid or frozen.





Snow core inside snow tubes

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https://www.nrcs.usda.gov/resources/data-and-reports/california-snow-survey

California Water Supply Outlook