



FOR IMMEDIATE RELEASE

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Drought Update for the Week of Sept. 27

SALT LAKE CITY (Sept. 30, 2021) – Today marks the last day of a dismal 2021 water year. A high snowpack was needed to offset record-dry soils at the start of the water year on Oct. 1, 2020. Unfortunately, that didn't happen, and drought that began in spring 2020 intensified quickly into one of the worst in recent history.

"The 2021 water year set the wrong records, with record-low streamflows and reservoir levels, and record-dry soils," said Brian Steed, executive director of the Department of Natural Resources. "The return of monsoon rains, which were absent the last two years, helped reduce demand on our struggling reservoirs but also caused damaging flooding in some areas. Since about 95% of our water supply comes from snowpack, we need to continue to be vigilant in reducing our water use and planning for future conditions if we have another poor or even average snowpack."

Here are some numbers for comparison:

Soil Moisture 9-30-21	Average Soil Moisture	Soil Moisture 9-30-20 *record low
36.0%	37.8%	24.9%

Average of soil moisture in percent saturation of all sites within and adjacent to Utah compared to the average for the period of record. Data collected by NRCS.

Statewide Reservoir Levels 9-27-21	Statewide Reservoir Levels 10-1-20	
47%	67%	

Reservoir percent of capacity averaged from reservoirs with data available at the time of collection. Data collected by NRCS, BOR and water agencies.

When compared to last year, soil moisture has gone up, and reservoir storage has gone down. Soil moisture at this time last year set a new record low at 24.9%. Soil moisture is currently only slightly below the average. Statewide, reservoir storage on Oct. 1, 2020, was 67%. This week statewide storage is at 47%.



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The following <u>drought</u> impacts from the week of Sept. 27 are compiled by the Utah Divisions of <u>Water Resources</u>, <u>Water Rights</u>, <u>State Parks</u>, the <u>Department of Environmental Quality</u> and the <u>Department of Agriculture & Food</u>.

At-a-glance changes for the week:

- Thirty-two of Utah's largest 42 reservoirs are below 55% of available capacity, the same number as last week. Overall statewide storage is 47% of capacity, slightly less than last week. This time last year, reservoirs were about 67% of capacity.
- Soil moisture has dropped to 0.5% above average (4.2% last week) for this time of year. Wet soils are critical in the fall as the state begins to accumulate its winter snowpack. Frequent storms are needed to keep moisture in the soil as we head into winter.
- Of the 97 measured streams, 54 flowed below normal this week compared to 53 last week.
- The Utah Department of Agriculture and Food (UDAF) has created a Drought Resource <u>webpage</u> for producers and citizens, with links to financial resources, including UDAF's new Emergency Disaster Relief Loan Program, a hay and animal feed directory and conservation tips.
- Boat ramp closures remain the same as last week, with 12 at 10 state parks, including Jordanelle, Antelope Island, Echo, Hyrum, Millsite, Piute, Rockport, Quail Creek, Willard Bay and Yuba. Caution advisories have been issued for seven additional state park boat ramps. View conditions <u>here</u>.
- A harmful algal bloom (HABs) Health Watch has been issued for Panguitch Lake. Warning Advisories remain in place for Utah Lake (lakewide), Mantua Reservoir, East Canyon - Taylor Hollow, Whitney Reservoir, Matt Warner Reservoir, Blackridge Reservoir, Big East Lake, and Pineview Reservoir - Middle Inlet Picnic Area. Current conditions and testing results can be found <u>here</u>.

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FULL REPORT: WEEK OF SEPT. 27

Precipitation and soil moisture

- Precipitation accumulation (as measured at NRCS SNOTEL sites) totals a few days before the end of the water year show the state was short 7.4 inches of precipitation for the year. The summer rainfall helped the situation; however, it did not make up for the snowpack we missed or the precipitation deficit from last water year.
- Soil moisture has dropped to 0.5% above average (4.2% last week) for this time of year. Wet soils are critical in the fall as the state begins to accumulate its winter snowpack. Frequent storms are needed to keep moisture in the soil as we head into winter.



Recent rainstorms are reflected as a significant increase in soil moisture followed by a significant decline in the state soil moisture sensors (found at mountain <u>SnoTel sites</u>). Healthy soil moisture levels allow snowpack runoff to enter the streams and reservoirs rather than get absorbed by dry soils. Monsoonal patterns never occurred the last two years, leading to record dry soils in October 2020 and throughout the winter (reflected in the graph above).

Streamflows

- Cumulative flow of 28 headwater streams is 0.51 million acre-feet, just below the lowest on record for the previous 30 years. The median value for the past 30 years is 0.89 million acre-feet.
- Fifty-four (53 reported last week) of Utah's 97 streams reporting data are flowing below normal.
- Ten streams are flowing at their lowest levels ever recorded (six last week).
- Daily flow from 28 headwater streams has decreased as the effect of rainfall recedes. Flow is currently just above the 30-year minimum.



Daily Flow from 28 Headwater Streams

Flows for 28 headwater streams were added together to show how Utah's water supply is being affected. This chart shows the Water Year (WY) from October to September as compared to the median and minimum values (1990-2020). Significant increases from recent storms can be seen. Unfortunately, a few days of high flows don't make up for over a year of near-record low flows.

Reservoir and Lake Levels

- The capacity of major reservoirs statewide dropped to 47% of storage capacity (48% last week).
- Thirty-two of Utah's largest 42 reservoirs are below 55% of available capacity (32 last week).
- The Great Salt Lake's elevation dropped to 4190.5, about 10.8 inches below the previous record low.



Drought Effects on Priority Distribution of Water Rights in Utah (updated Sept. 28)

Water rights are distributed by the state engineer with priority going to the earliest rights. For example, a water right established in 1889 is entitled to receive its full flow before water rights established in 1890 or later can receive any water. This principle is called the "Prior Appropriation Doctrine" or "first in time, first in right." The earliest water rights in Utah are called "direct flow" rights, meaning they cannot be stored. Storage reservoirs were built later on, so storage rights generally have priority dates later than direct flow rights. However, some "high" water rights (direct flow rights with late priority dates) exist.

While public water suppliers own some water rights, others are held by individuals like farmers and ranchers. Priority distribution happens every year, not just during droughts, and occurs irrespective of the type of use. Most water rights are fully or partially curtailed by mid-summer when the natural flow of a stream drops following spring runoff. The term "natural flow" refers to the total supply of a stream, which is generally different from the flow of the stream at any particular point.

Natural flow on complex systems is determined using accounting models developed by the Division of Water Rights. Water can be stored on the system when the natural flow is greater than 100% of the direct flow rights. When the natural flow drops below 100% of the direct flow rights, these rights are reduced according to priority date. Storage, if available, can be released to make up all or part of the deficit. The amount of storage available on each system is a function of the specific projects developed on the system over the last hundred-plus years. This year has seen an early decrease in natural flow because of very little spring runoff. In previous years systems were generally storing water in mid-June, sometimes in considerable amounts, while 2021 has seen some of the earliest water rights being curtailed.

While statewide, there are many different river systems, the information below highlights water rights priorities, natural flow and direct flow on just four of them. CFS below stands for cubic feet per second.

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Date	Priority from River	Natural Flow	% Direct Flow Rights	
Sep 12, 2019	1909	1306 cfs	94%	
Sep 12, 2020	1899	831 cfs	60%	
Sep 12, 2021	1897	562 cfs	40%	

Middle Bear River – Priorities: Direct Flow (1860 - 1909), Storage (1911), High Rights (1914 - 1989)

• Currently, 40% of the direct flow water rights are being met with earliest priority rights being fulfilled from 1860 to 1897.

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Date	Priority from River	Natural Flow	% Direct Flow Rights
Sep 28, 2019	70% 1 st Class	108 cfs	24%
Sep 28, 2020	40% 1 st Class	62 cfs	14%
Sep 28, 2021	30% 1 st Class	46 cfs	10%

Upper Provo River – Priorities: Direct Flow (1st Class - 17th Class), Storage

• Currently, 10% of the direct flow water rights are being met, consisting of 30% of 1st Class rights.

Upper Duchesne River – Priorities: Direct Flow (1900 - 1964), Storage (1964)

Date	Priority from River	Natural Flow	% Direct Flow Rights
Sep 27, 2019	Storage	352 cfs	32%

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Sep 27, 2020	1918	209 cfs	19%
Sep 27, 2021	1935	262 cfs	24%

• Currently, 24% of the direct flow water rights are being met with the earliest priority rights being fulfilled from 1900-1935.

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Date	Priority from River	Natural Flow	% Direct Flow Rights
Sep 27, 2019	47% 1 st Class	140 cfs	34%
Sep 27, 2020	23% 1 st Class	68 cfs	17%
Sep 27, 2021	21% 1 st Class	66 cfs	16%

Upper Sevier River – Priorities: Direct Flow (1st Class – 3rd Class), Storage

• Currently, 16% of the direct flow water rights are being met, consisting of 21% of 1st Class rights.

Natural Flow Distribution on Four River Systems (Sep 28)

Percent Values Greater than 100 Indicate Water Being Stored

