

NHDES Dam Bureau

Lake Sunapee

Lake Level Management

Corey Clark – Chief Engineer

Dan Mattaini – Operations &

Maintenance Engineer



Dam Bureau Overview



**Dam Safety
and Inspection
Section**



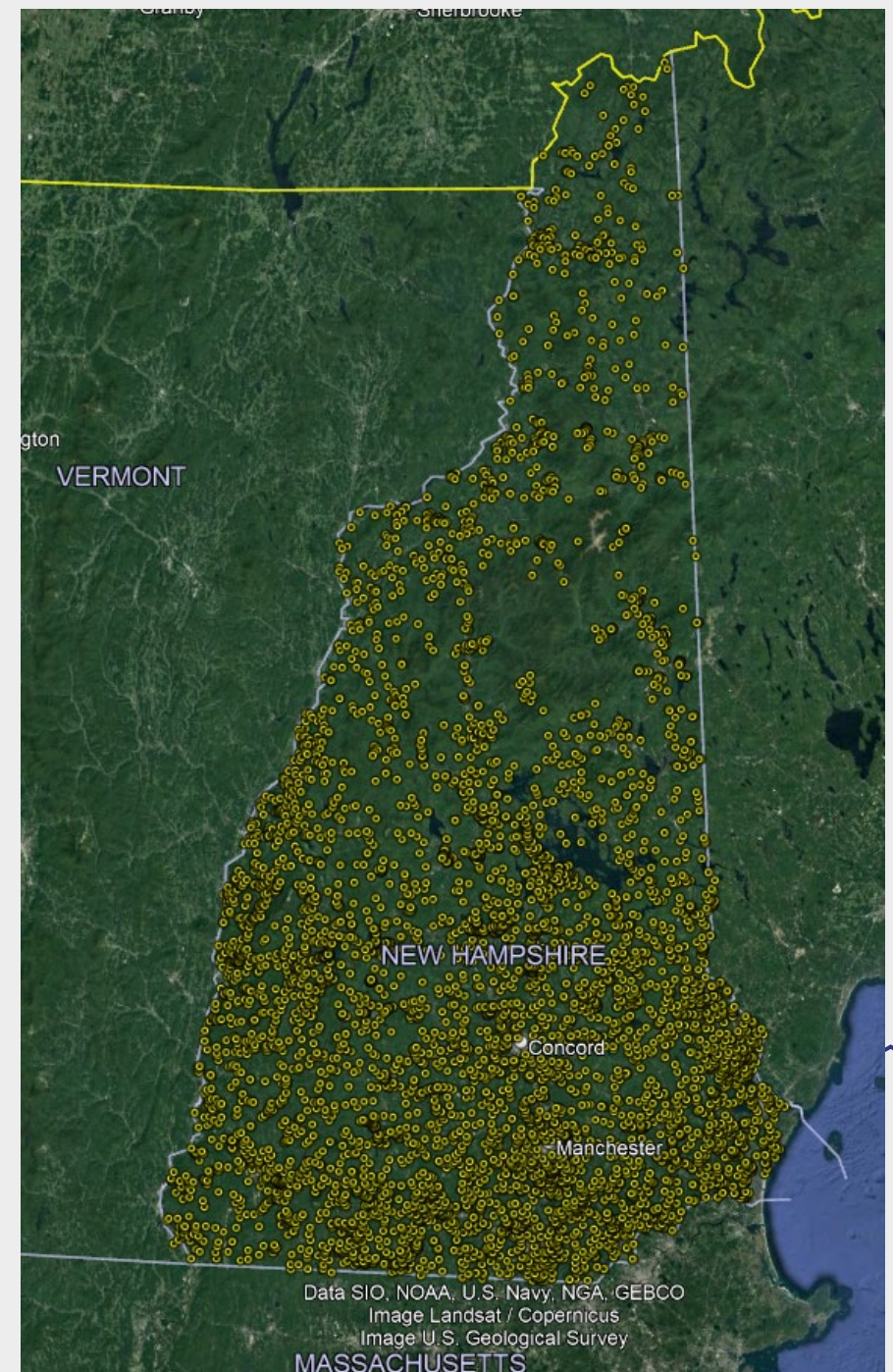
**Operations and
Maintenance
Section**



**Engineering and
Construction
Section**

Dam Safety and Inspection Section

- Responsible for inspection of **2,590** privately and publicly owned dams. This includes routine inspections and construction inspections.
- Responsible for permitting of repairs on existing dams and permitting for new dam construction.



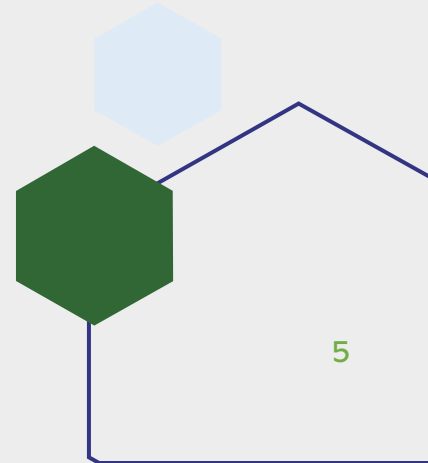
Dam Safety and Inspection Section

- Works with dam owners to ensure dams are operated and maintained in proper working order and works with AG's office on enforcement actions
- Coordinates with Federal Energy Regulatory Commission (FERC) on hydropower inspections and projects



Dam Safety and Inspection Section

- Works directly with NH Homeland Security and Emergency Management on dam related emergency response
- Responds to public inquiries into flood related issues and dam failure incidents



Operations and Maintenance Section

- Responsible for the operations and maintenance of **205 dams**.
- Responsible for maintaining dams and lake levels at the State's largest lakes (i.e., Lake Winnepesaukee, Lake Winnisquam, Squam Lake, Newfound Lake, Lake Sunapee, and Lake Ossipee)



Operations and Maintenance Section

- Provides real time lake level, temperature, precipitation and discharge data at 31 lakes in NH through the <https://nhdes.rtiamanzi.org/> web platform.



A screenshot of the web platform interface. The top header includes the NHDES logo and the text "New Hampshire Department of Environmental Services". A navigation menu on the left lists "Home", "Observations", "Snow Data", and "Useful Links". The main content area is titled "MAP" and "LIST" and displays a map of New Hampshire with numerous blue and yellow markers representing monitoring stations. A "STATION LEGEND" is visible in the top right of the map area. The bottom of the map area includes the text "Powered by: RTI Amanzi™ a product of RTI International" and "Le aflet | © OpenStreetMap contributors".

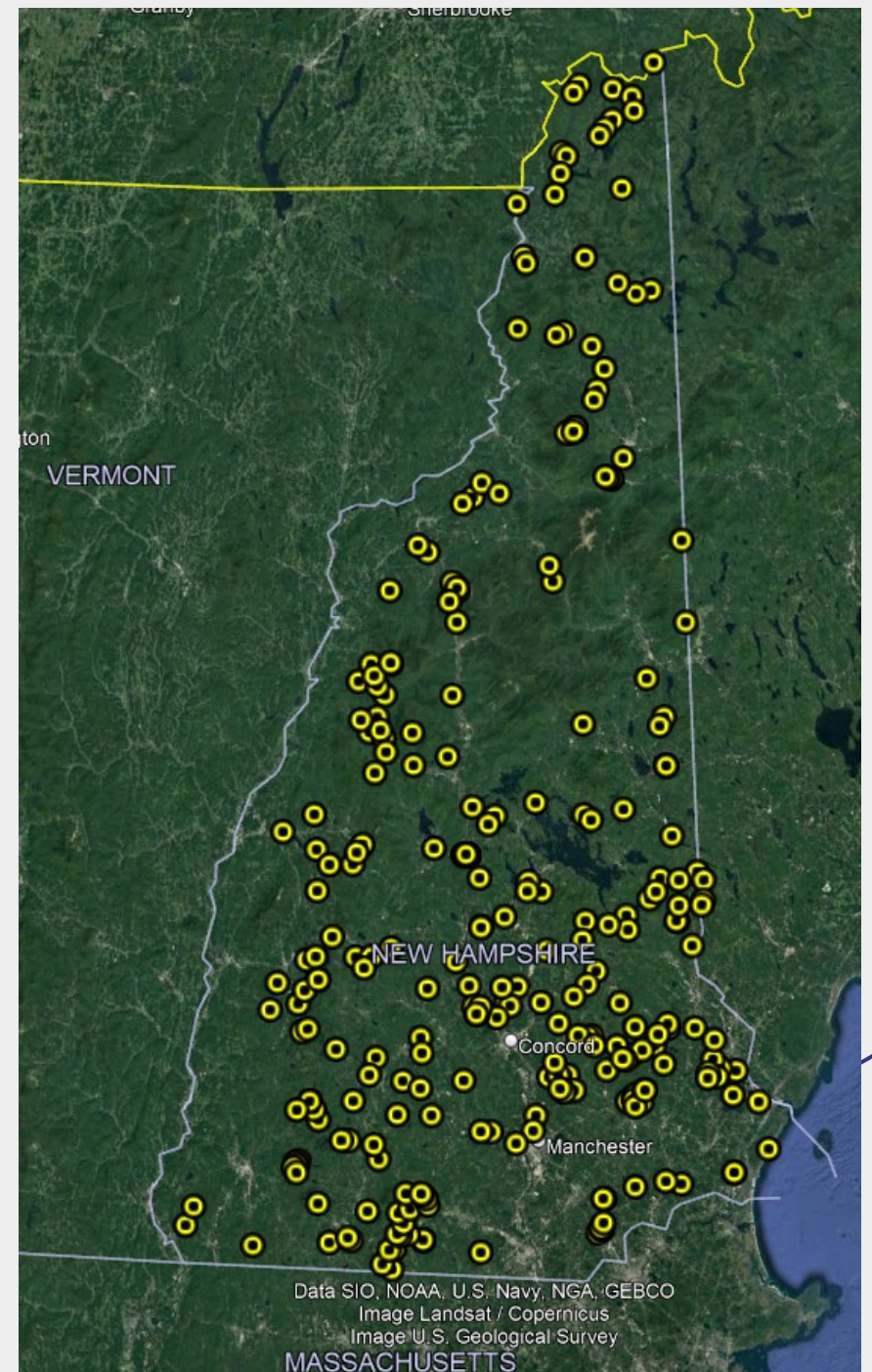
Operations and Maintenance Section

- Manages 8 leases and 26 water user agreements with hydropower developers for the use of State-owned facilities for hydropower and water usage
- 4 water user agreements on Sugar River



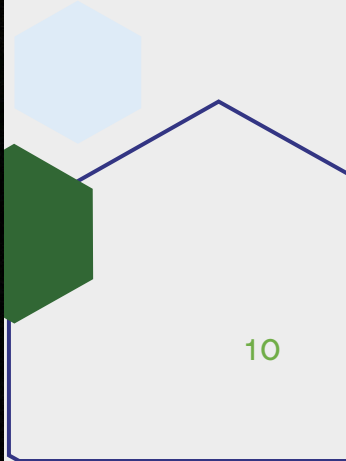
Engineering and Construction Section

- Responsible for major repairs and reconstruction of **270 dams**. This includes preparing and managing contacts, budget estimates and long-term schedules.
- Maintains ownership records and easements necessary for dam operations and repairs through the Land Management group.



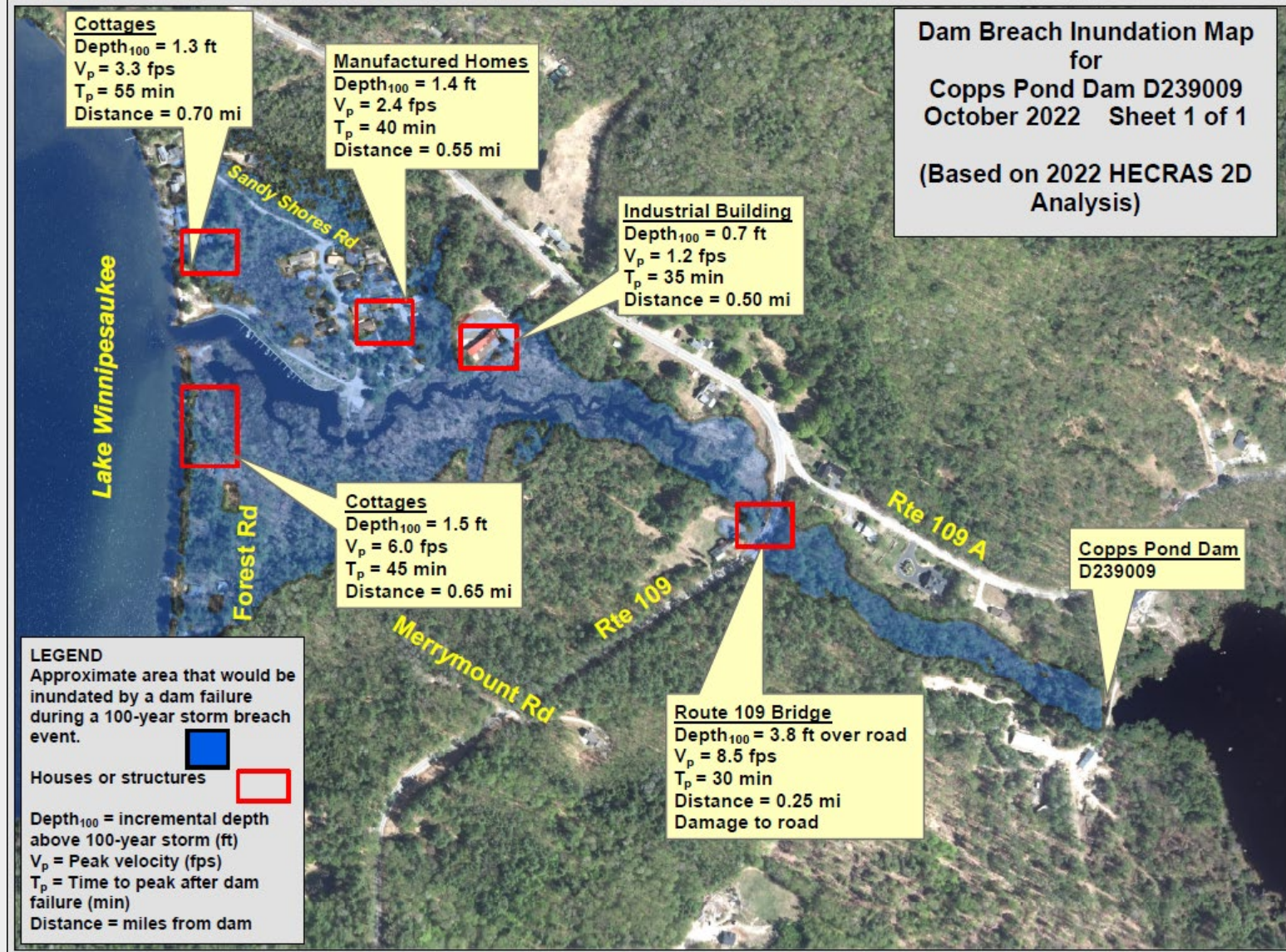
Engineering and Construction Section

- Oversees an in-house construction crew and design team for the repair and reconstruction of State-owned dams.
- Coordinates contracts with outside engineering firms and consultants on dam rehabilitation projects



Engineering and Construction Section

- Prepares notification flow charts, emergency response procedures and inundation maps for Emergency Action Plans (EAP)s at 64 High and 34 Significant hazard dams.
- Reviews and updates plans in accordance with regulatory requirements



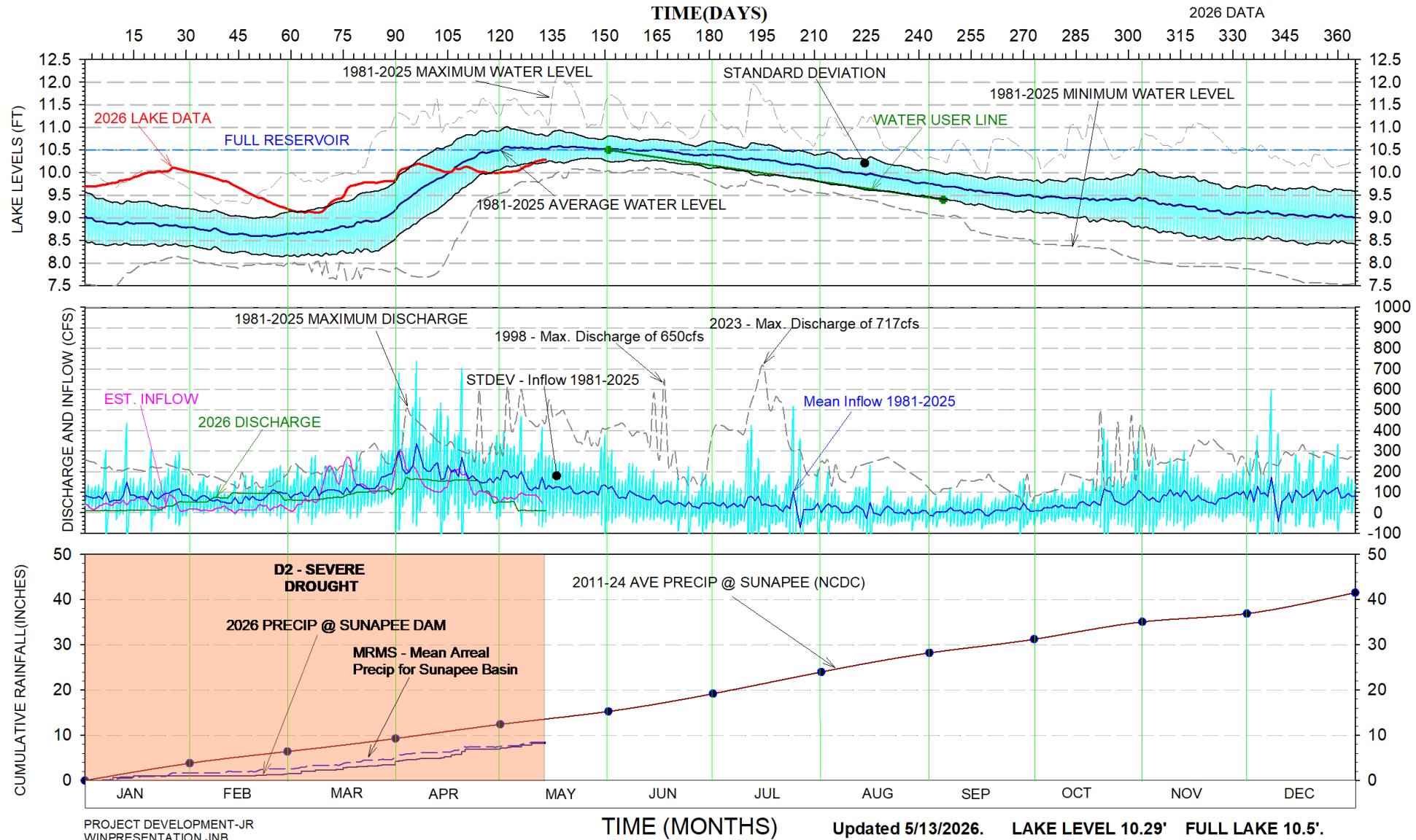
Lake Sunapee Operations



1 for Lake S

Normal Operating Curve with Stream Flow

SUNAPEE LAKE LEVEL DATA



Sunapee Lake Dam

- Constructed in 1872
- Regulating flow into the Sugar River for mill use
- Outlet of Lake Sunapee deepened to allow for more drawdown than naturally possible
- Acquired by the State of NH in 1961 from the Sunapee Dam Corporation



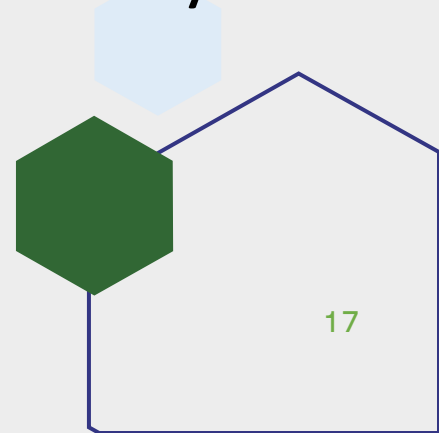
Normal Operations

- Operations are conducted by manipulating three 10ftx5ft wooden gates in the dam.



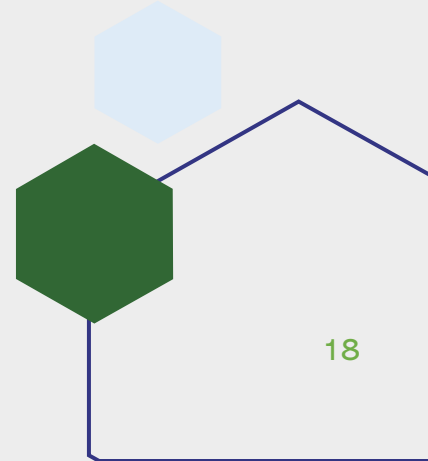
1981 Dam Management Plan

- Maintain a fall and winter discharge based on normal precipitation and necessary changes to accommodate spring runoff.
- Maintain spring discharges to allow the lake to fill not higher than 11.0ft on the gauge by June 1st.
- Maintain summer discharge of approximately 40 cubic feet per second (cfs) from June 1st through Labor Day.
- If a significant amount of deviation from standard summer lake level is observed, then resume the standard dam discharge practices to rectify.
- *Plan was recodified in 1983 Public Hearing Decision*



Downstream Water User Agreements

- Full Pond (Summer Level) at 10.5ft on gauge
- Between March 15th and June 1st, Lake Sunapee should be filled to 10.5ft (1,093.15ft)
- From June 1st to Labor Day the discharge out of Lake Sunapee Dam shall be maintained at no less than 40cfs.
- The normal operating range from June 1st to Labor Day is between 10.5ft and 9.4ft.
- Water shall be released from the project to get to 8.0ft (1,090.6ft) on March 15th.

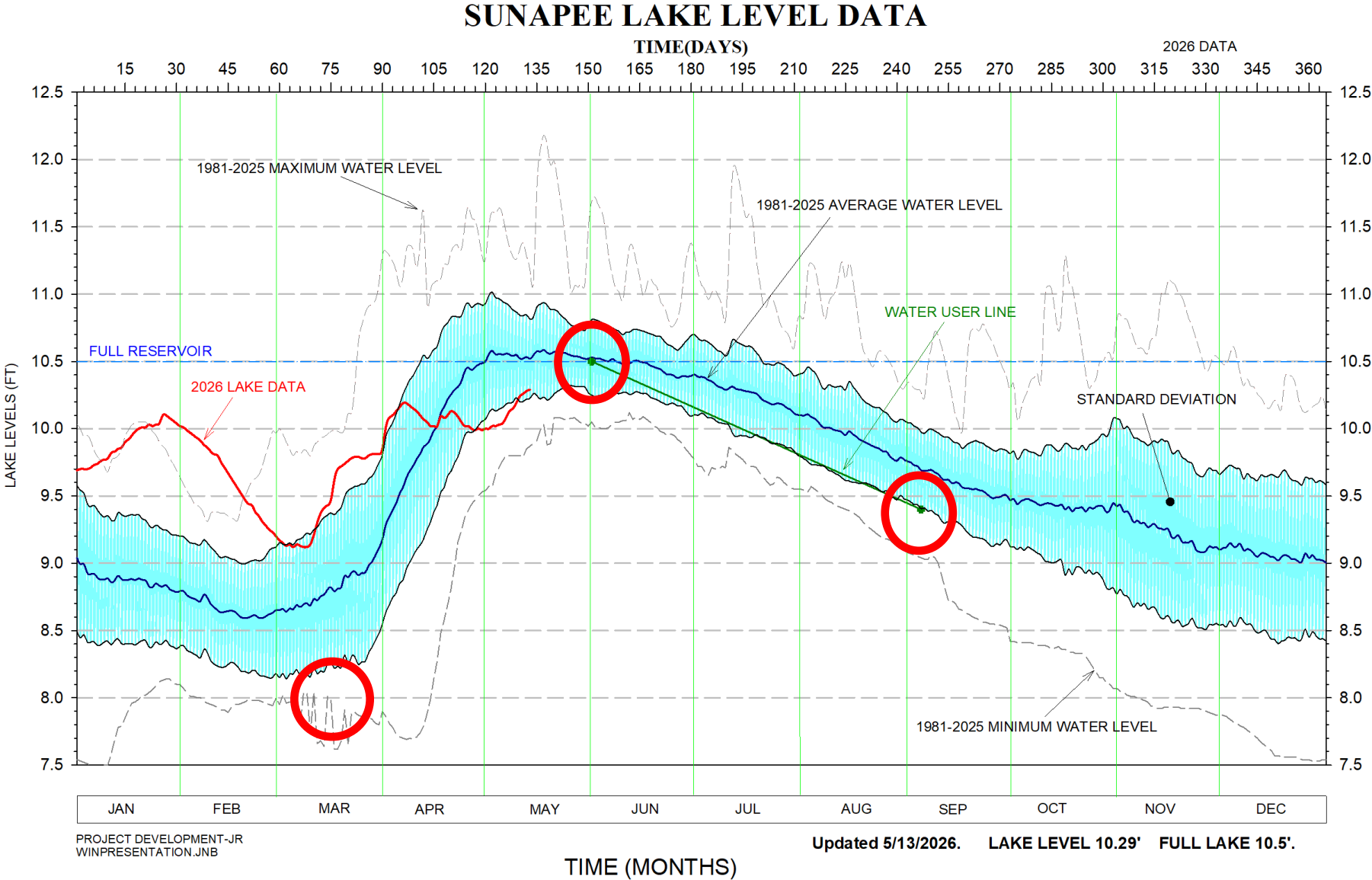


Additional Operation Guidelines

- Normal summer discharge 7 to 40cfs. 7cfs minimum to ensure Sugar River flow for downstream wastewater discharge.
- Columbus Day begin gradual drawdown to 8ft by March, using flows between 80-150 cfs.
- During spring refill keep below 9.5ft to ice out in mid April, and then fill to 10.5ft, occasionally touch 11ft briefly.
- During storm operations need to coordinate with downstream entities, particularly the Town of Sunapee at their hydroelectric dam located directly downstream of Lake Sunapee Dam.



Normal Operating Curve



Drought in 2025

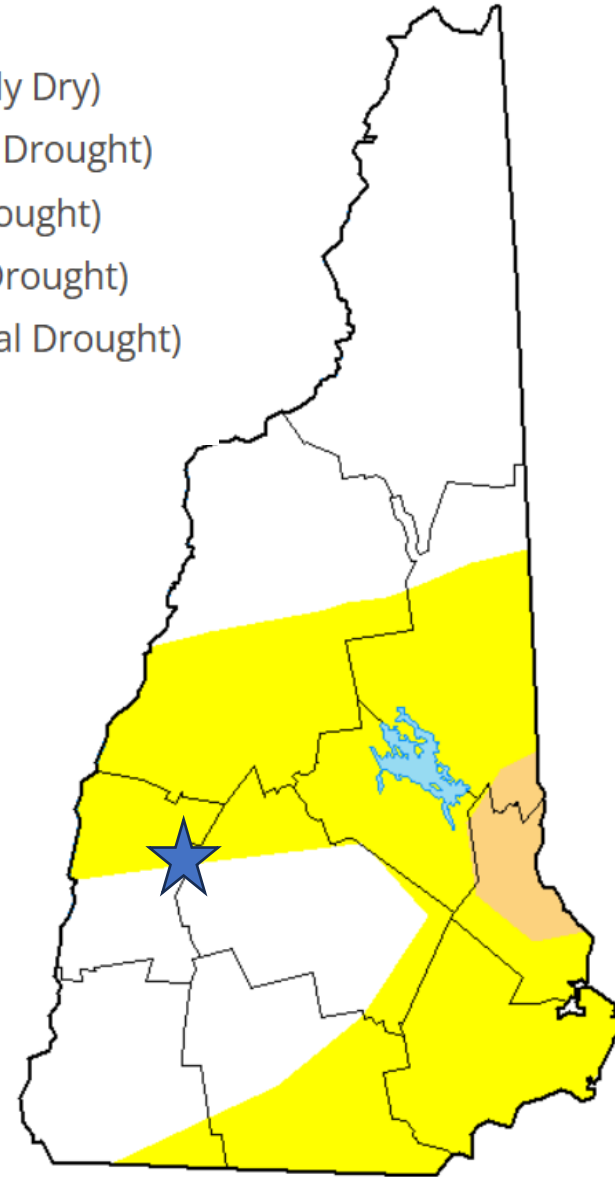
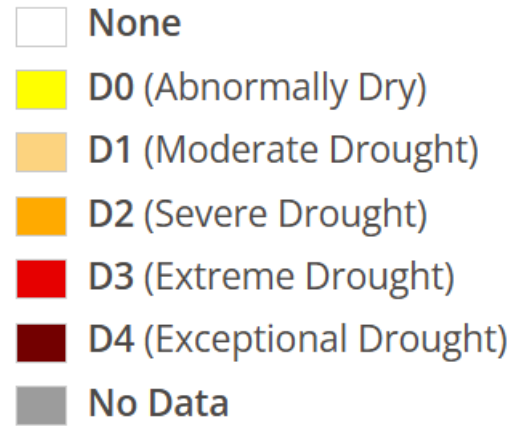


2025

- Started off in spring of 2025 with pockets of abnormally dry conditions
- Lake Sunapee was on the border of abnormally dry conditions

May 6, 2025

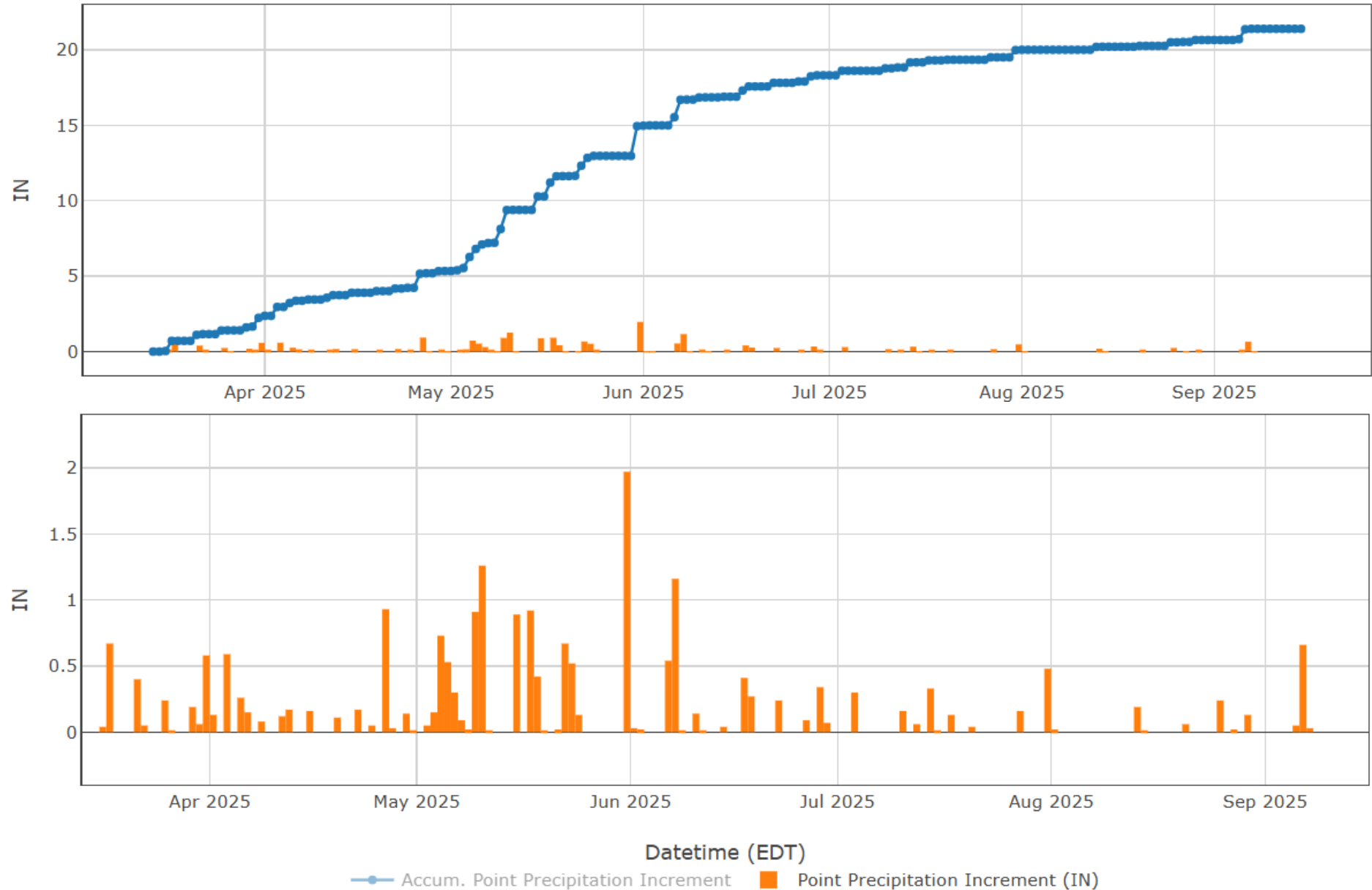
Intensity



2025

- 12 inches of rain between April 1 and June 1
- Less than 6 inches of rain between June 1 and September 1

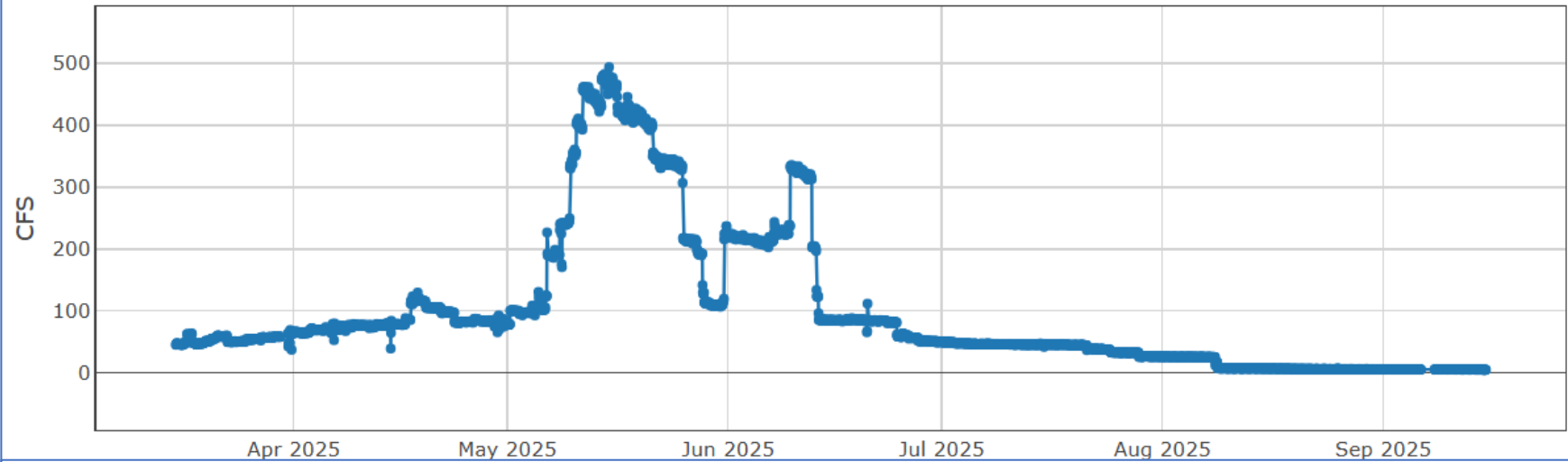
Sunapee Lake (SUNNH)



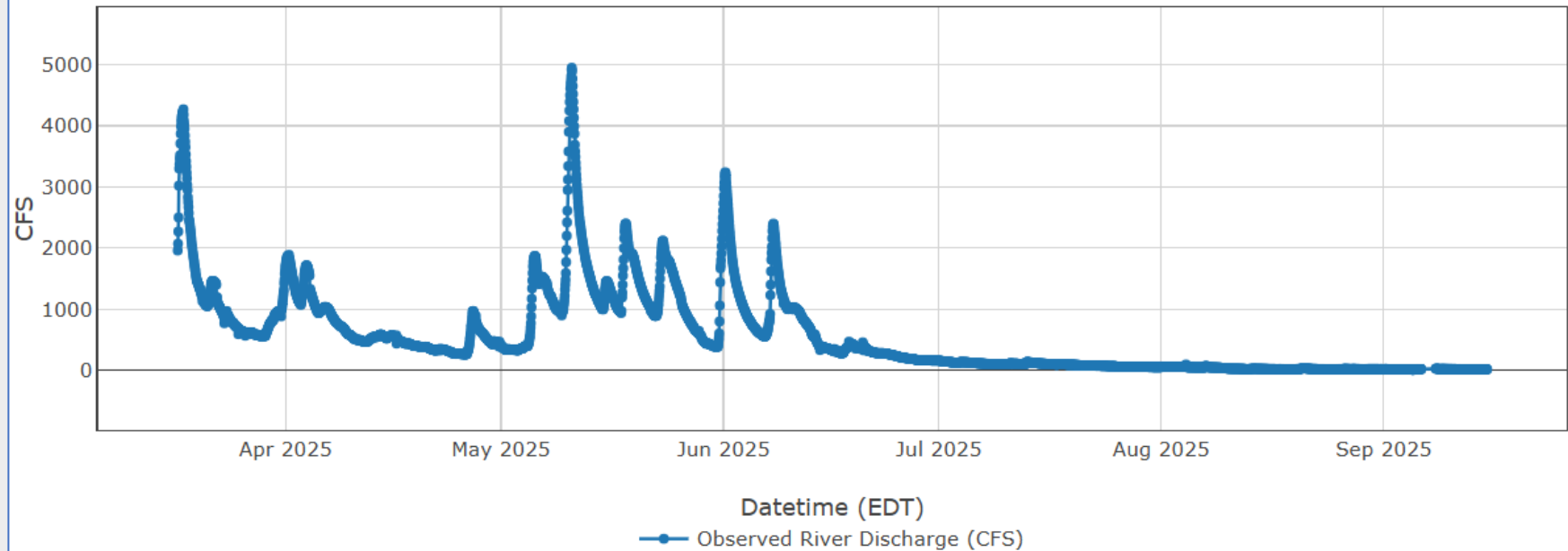
2025

- Peak outflow from Lake Sunapee of 494 cfs on May 15, 2025
- Low flow from Lake Sunapee of 5.3 cfs on September 15, 2025
- Only 13% of required 40 cfs in water user agreement

Sugar River blw Sunapee Dam (SCFNH)



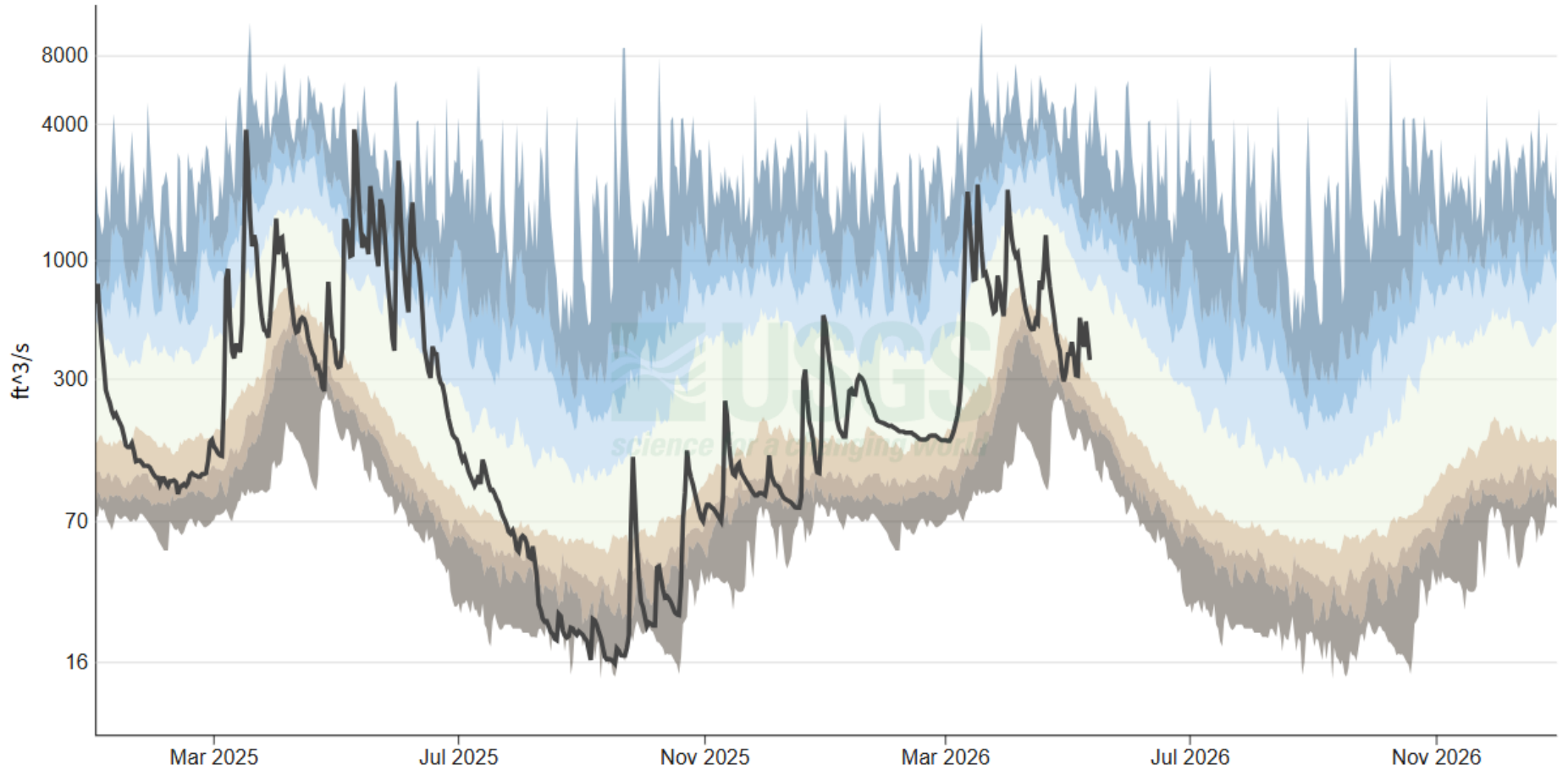
Sugar River at Claremont (WCLN3)



2025

- Flow at the Sugar River Gage was max on May 10, 2025 at 3,800 cfs or extremely above the normal and lowest on September 17, 2025 at 15.8 cfs or extremely below the normal

January 1, 2025 - December 31, 2026
Discharge, cubic feet per second



IMPORTANT Data may be [provisional](#)

[Hide legend](#)

— Daily average (mean) for Discharge, cubic feet per second

Percentile ranges for daily averages (means) for each day of a year (with comparison to normal)

0-5 Extremely below	5-10 Much below	10-25 Below normal	25-75 Normal	75-90 Above normal	90-95 Much above	95-100 Extremely above
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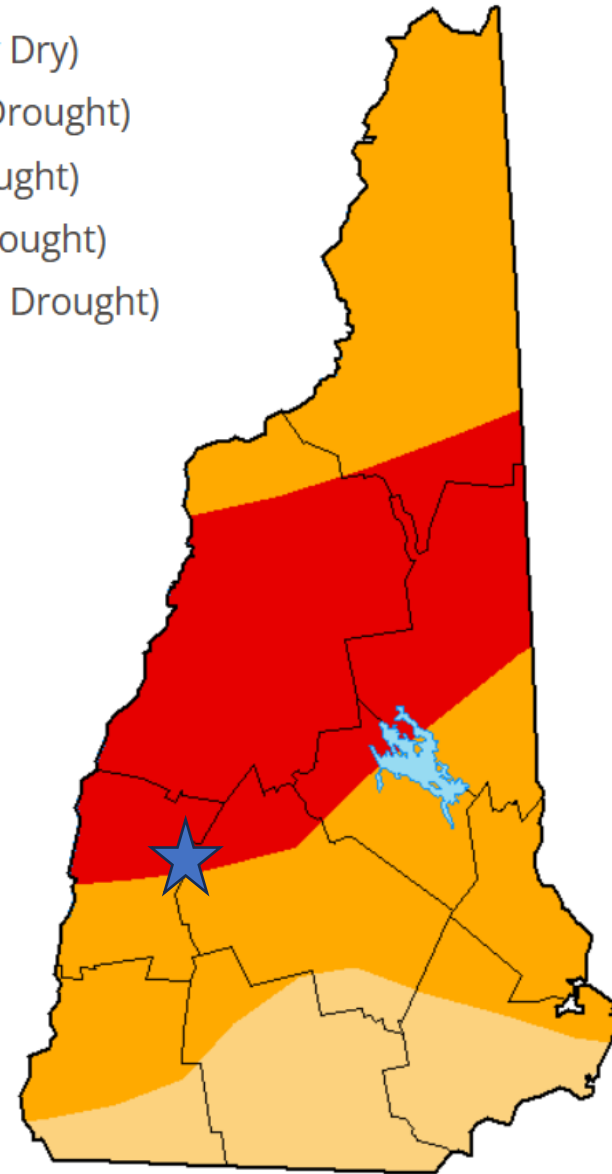
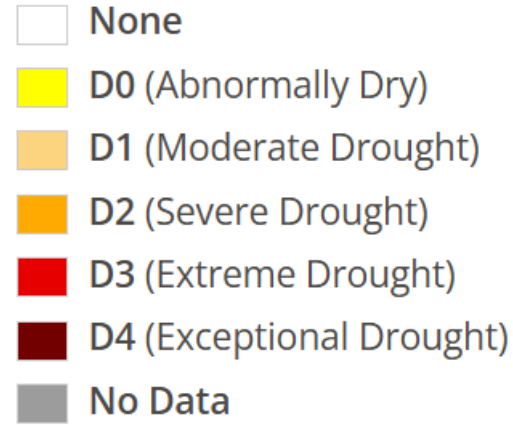
NEW HAMPSHIRE
 DEPARTMENT OF
**Environmental
 Services**

2025

- By the fall of 2025 all of New Hampshire was experiencing drought conditions with over a quarter of the state experiencing extreme drought conditions
- Lake Sunapee was then on the border of severe drought conditions and extreme drought conditions

Intensity

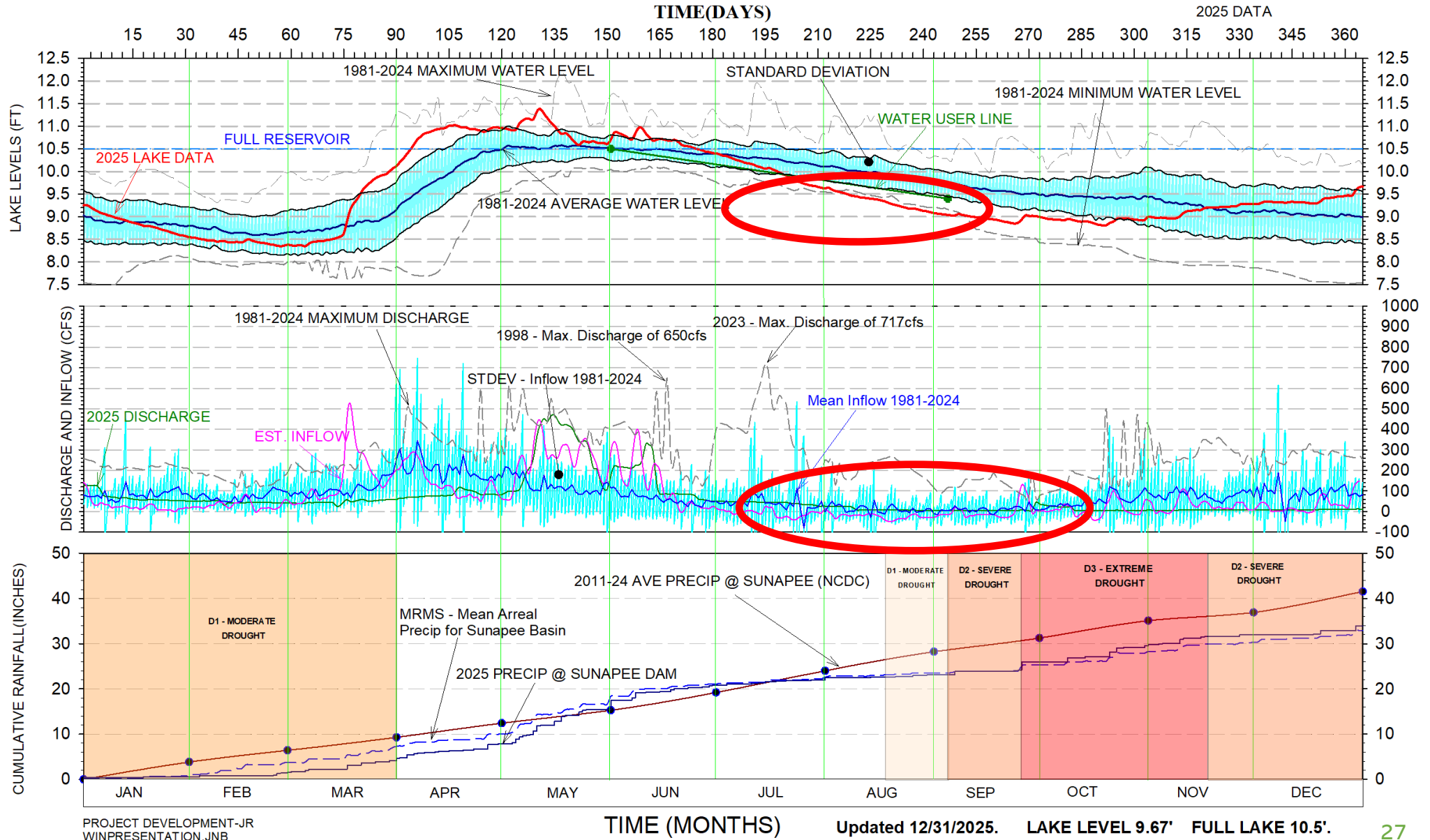
September 30, 2025



2025

- On Labor Day lake was 1.43 ft below full or 4 inches below Labor Day target elevation

SUNAPEE LAKE LEVEL DATA



PROJECT DEVELOPMENT-JR
WINPRESENTATION.JNB



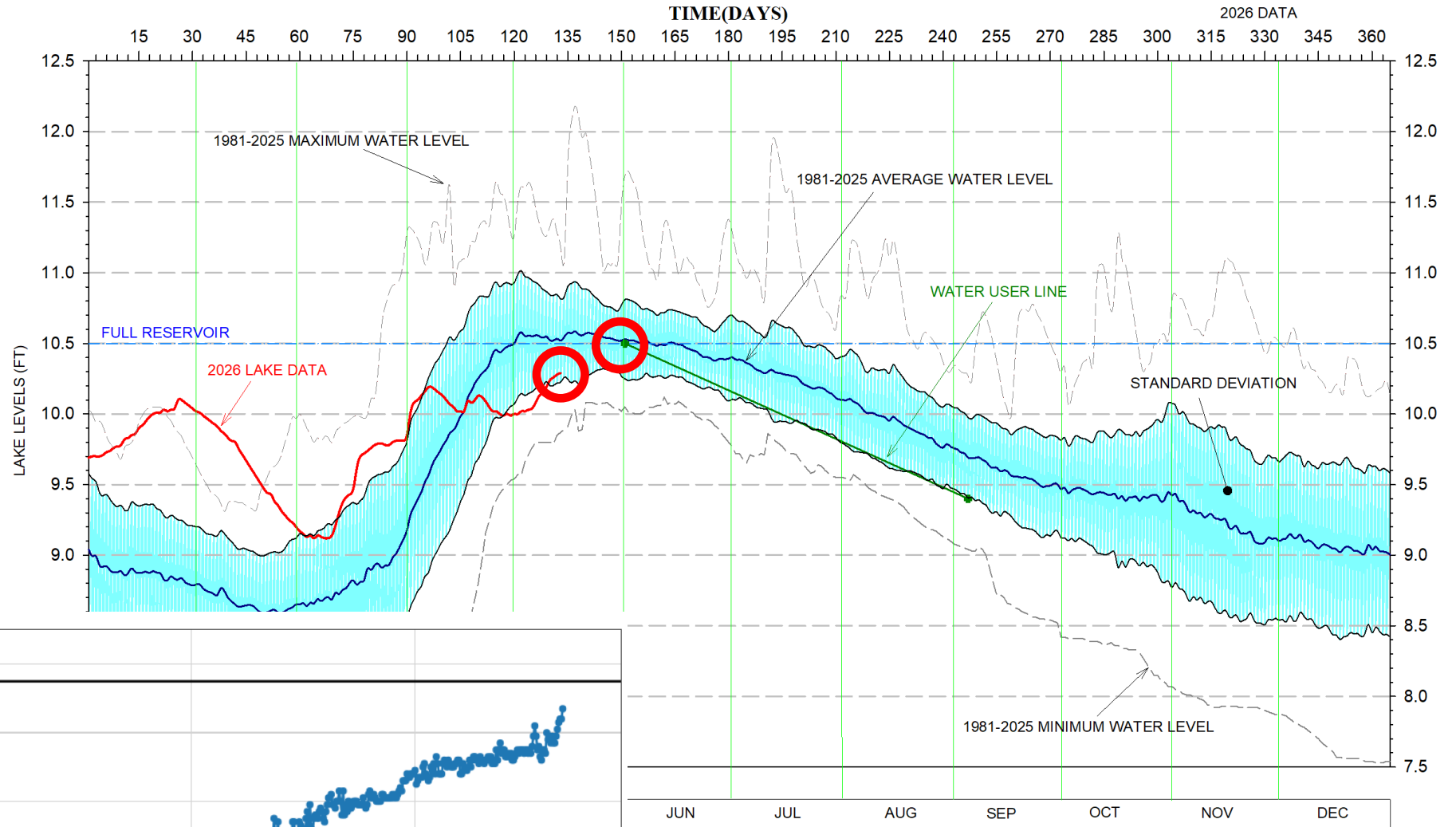
2026 Lake Level Outlook



2026

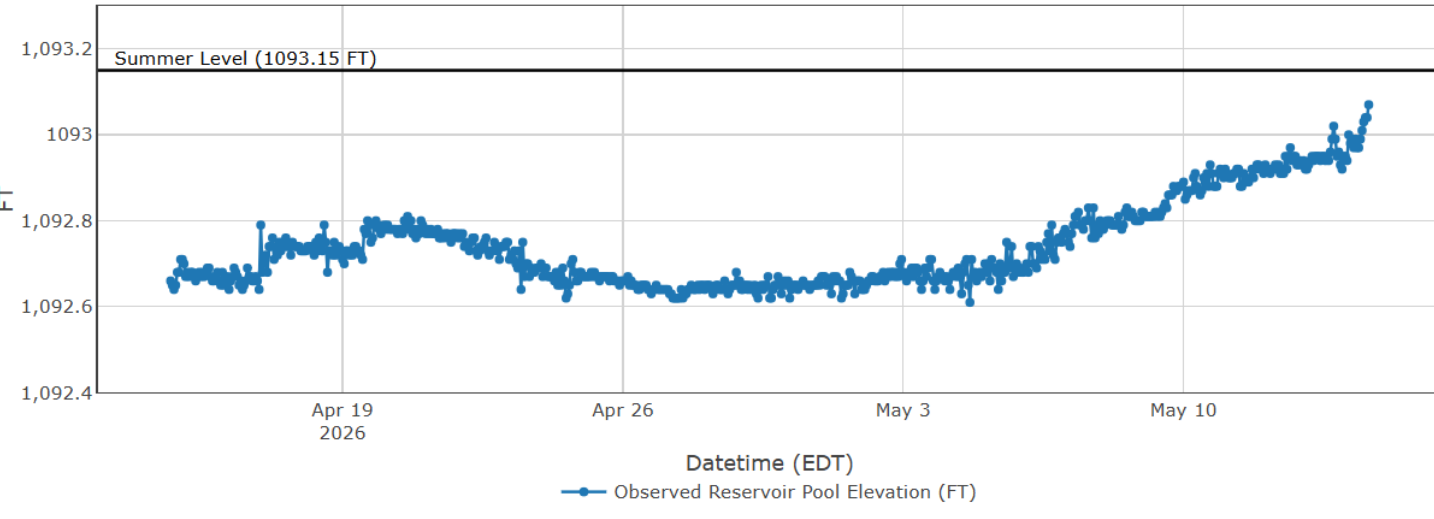
- Lake is at 10.42 ft or 1 inches below full pond.

SUNAPEE LAKE LEVEL DATA



Updated 5/13/2026. LAKE LEVEL 10.29' FULL LAKE 10.5'.

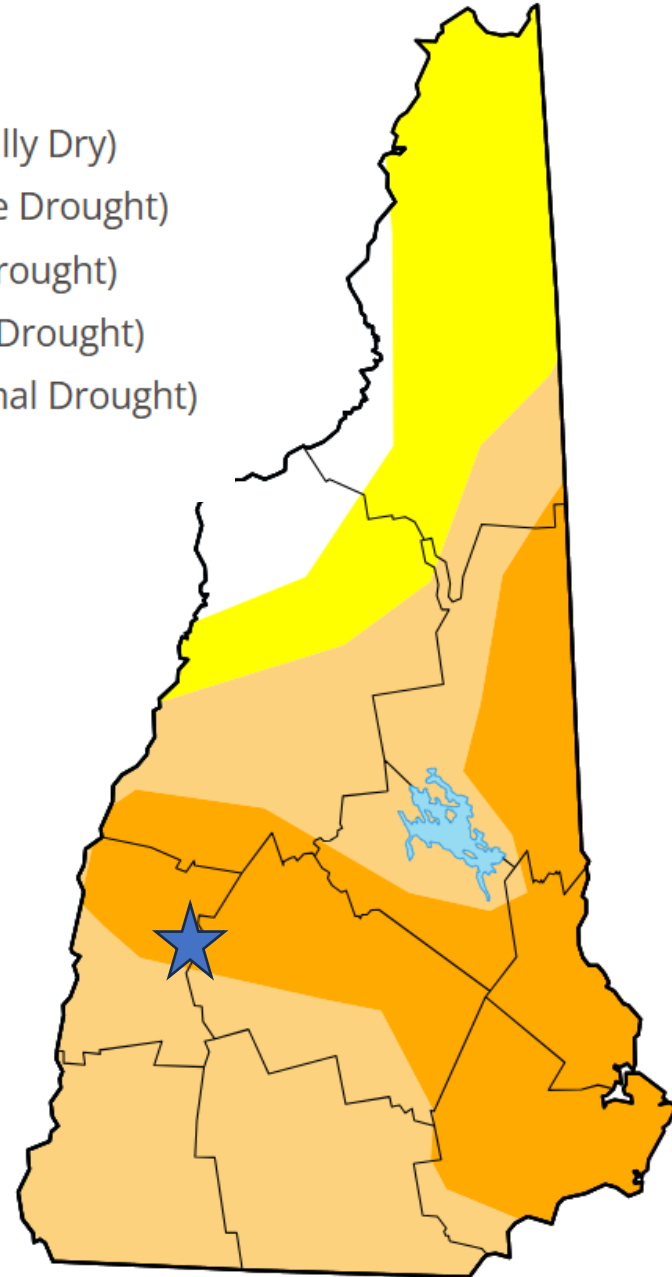
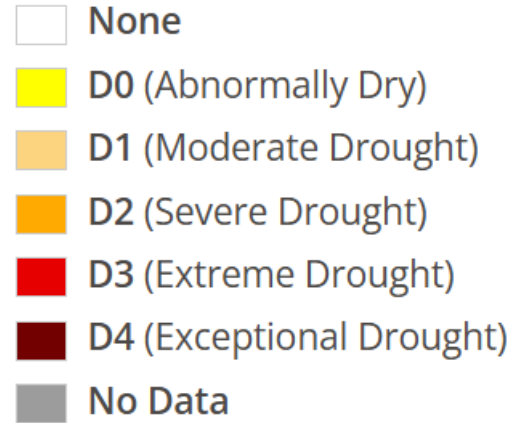
ME (MONTHS)



2026 - Drought

- Drought conditions have improved since the fall of 2025 but nearly all of New Hampshire is experiencing dry or drought conditions
- Lake Sunapee watershed is still experiencing severe drought conditions

Intensity

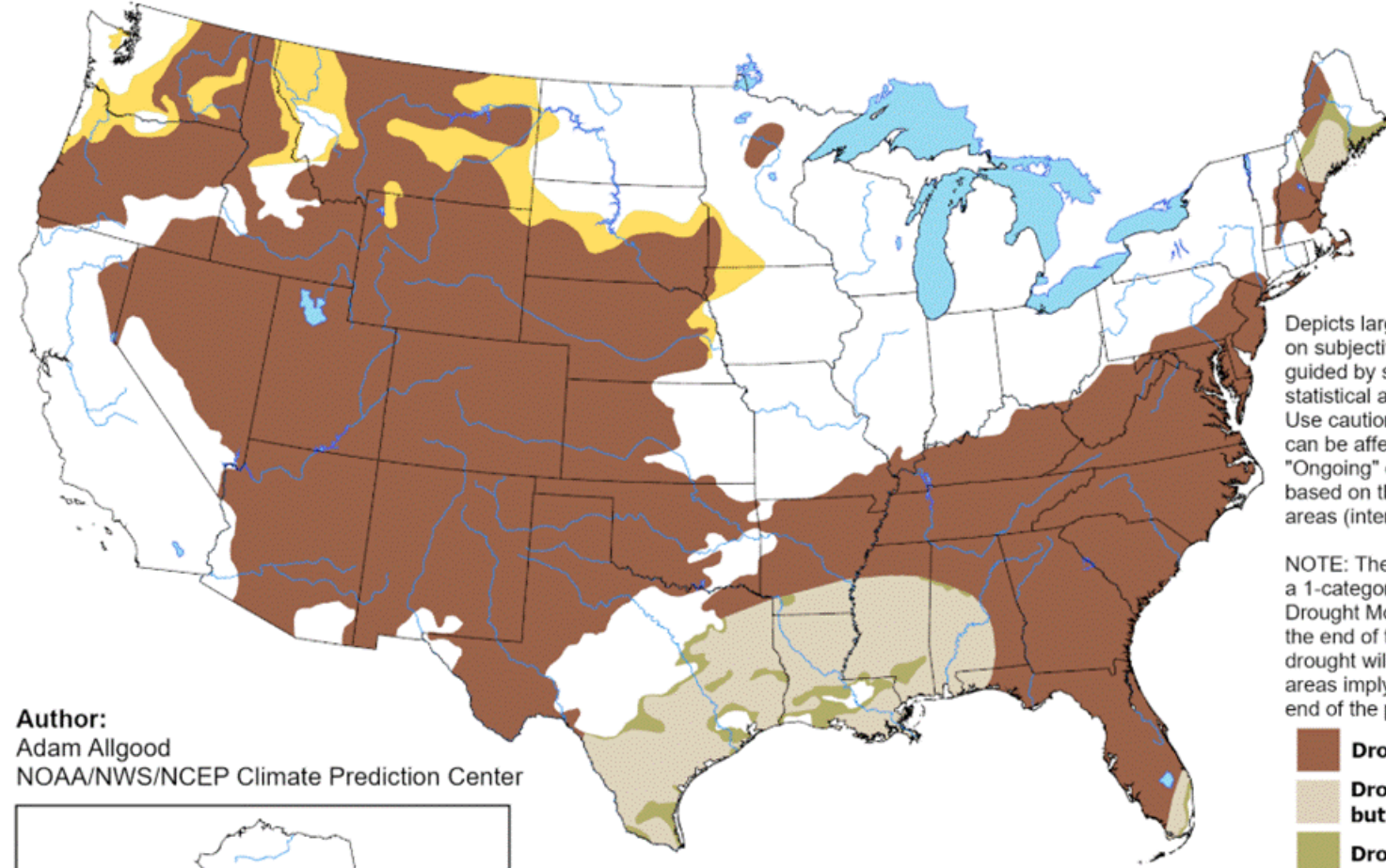


2026 - Drought

- Drought conditions are expected to continue for at least the remainder of this spring

U.S. Monthly Drought Outlook Drought Tendency During the Valid Period

Valid for May 2026
Released April 30, 2026

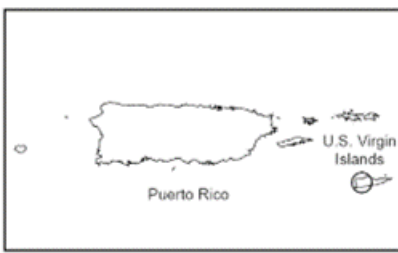


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:
Adam Allgood
NOAA/NWS/NCEP Climate Prediction Center

- Drought persists
- Drought remains, but improves
- Drought removal likely
- Drought development likely
- No drought

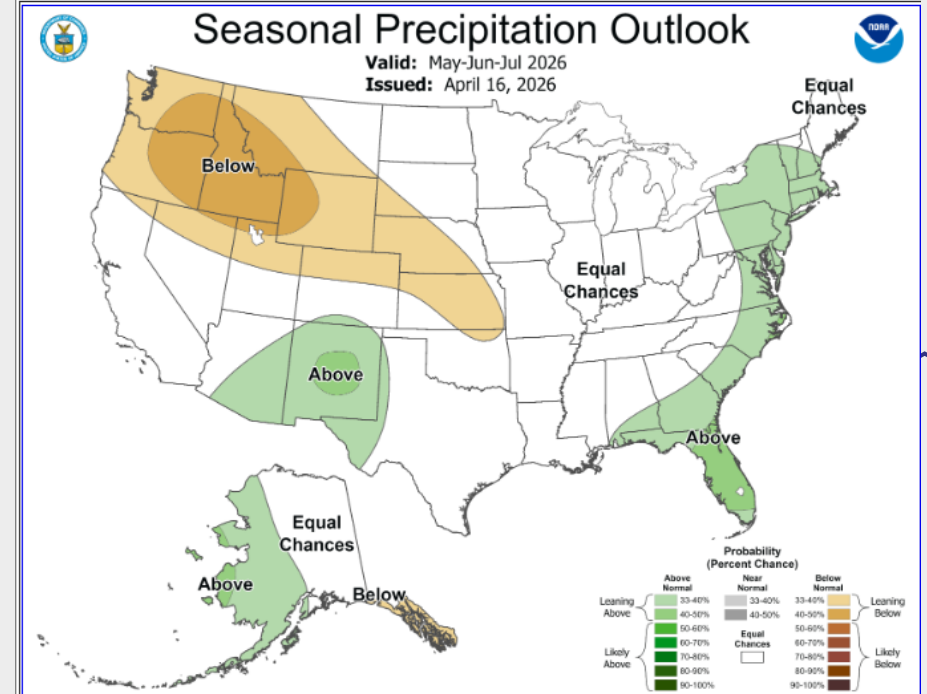
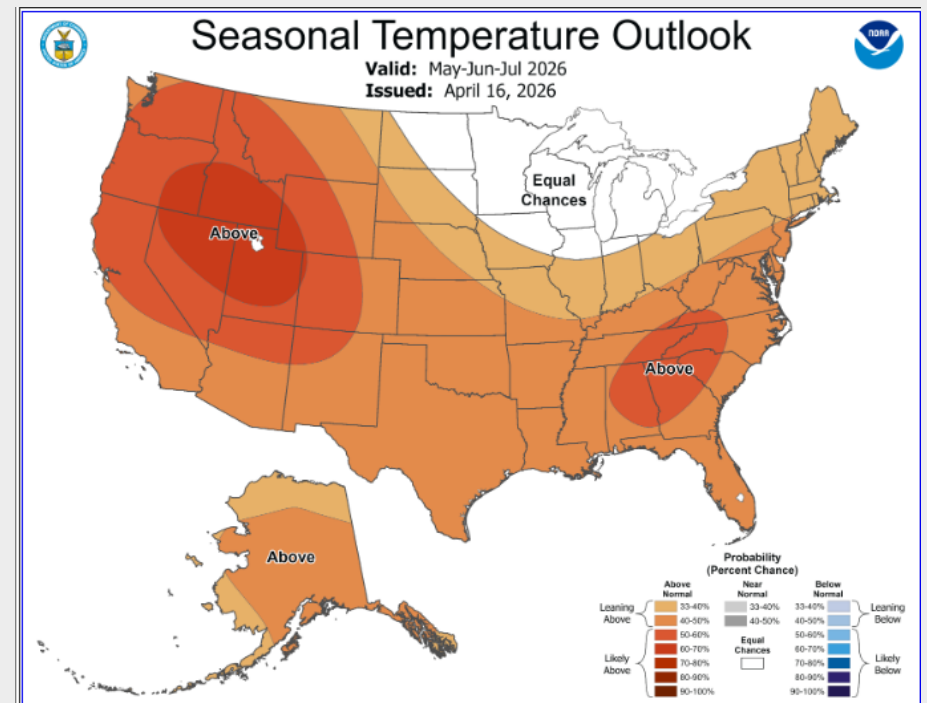


<https://go.usa.gov/3eZGd>



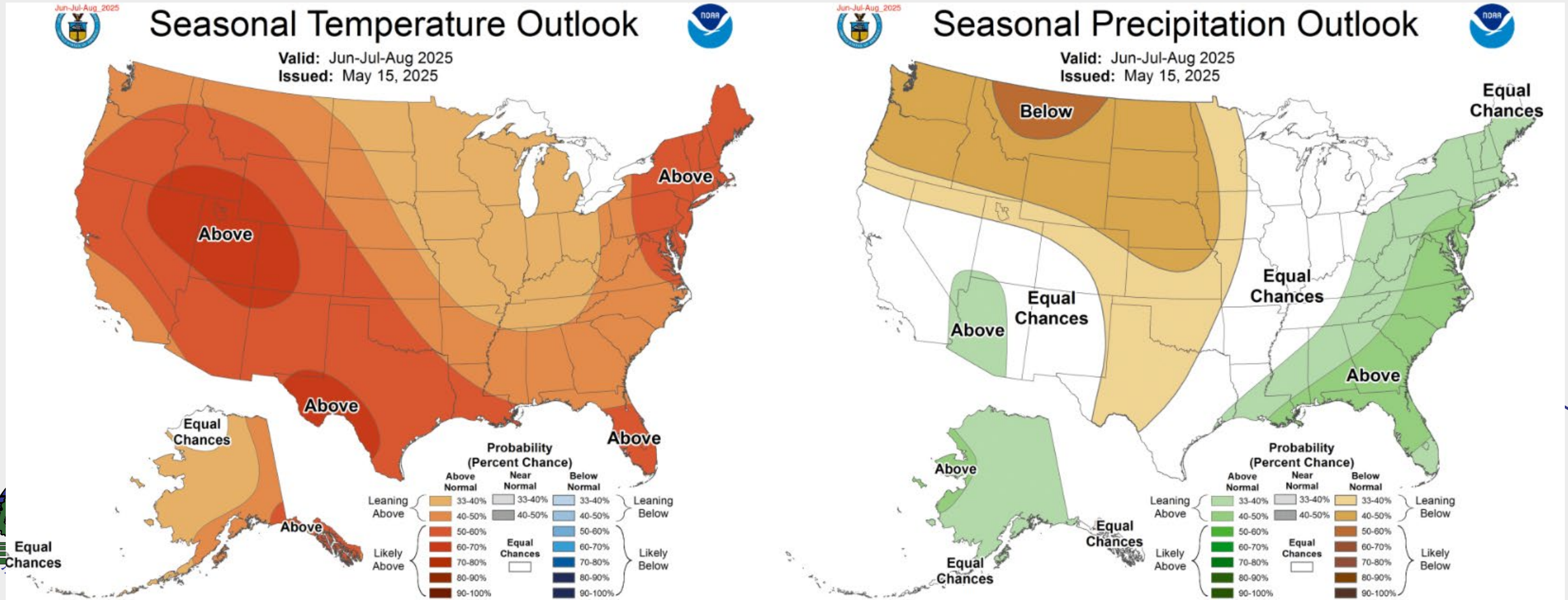
2026 - Mid Term Outlook

- Near normal or slightly above precipitation but above normal temperatures forecast over late spring to mid-summer months. Possibly lead to higher evaporation losses.
- Balancing inflow and outflow to get to 10.5ft by June 1st.
- Lake may rise above 10.5ft to achieve the June 1st goal



2026 - Mid Term Outlook

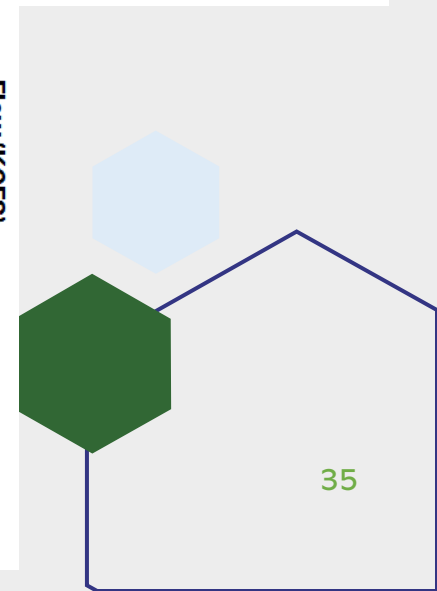
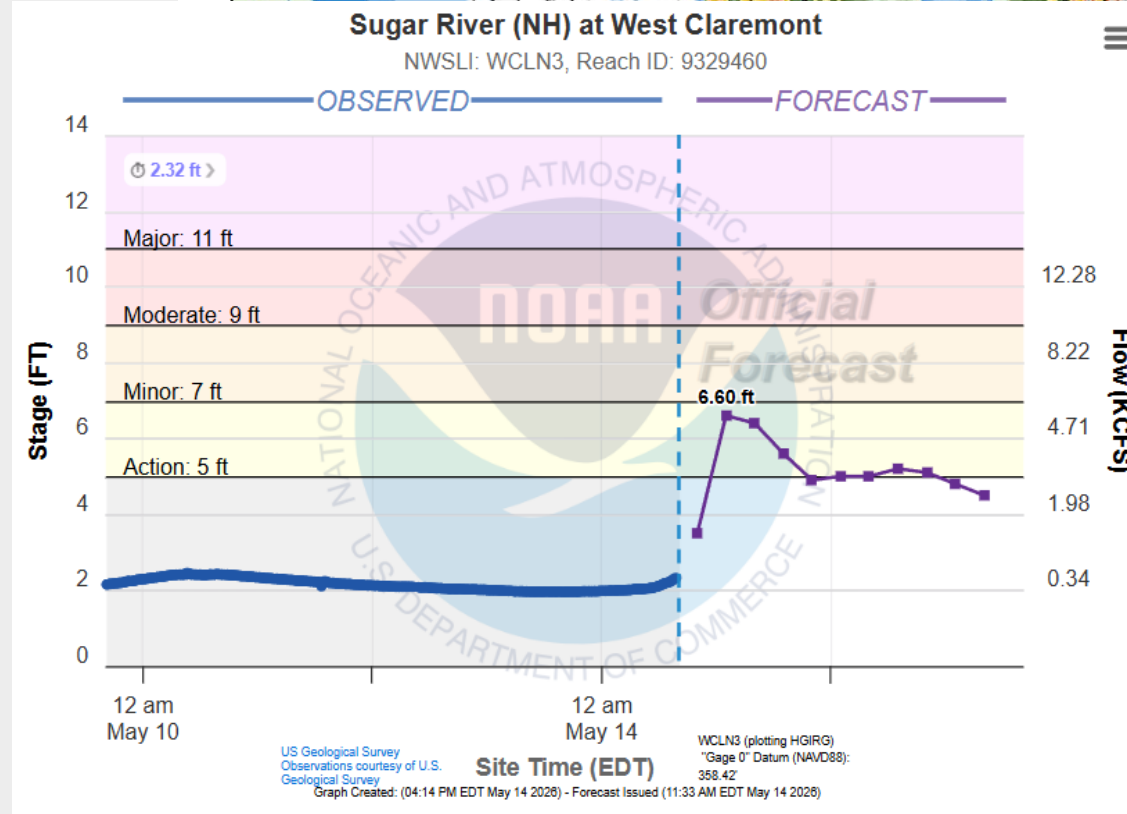
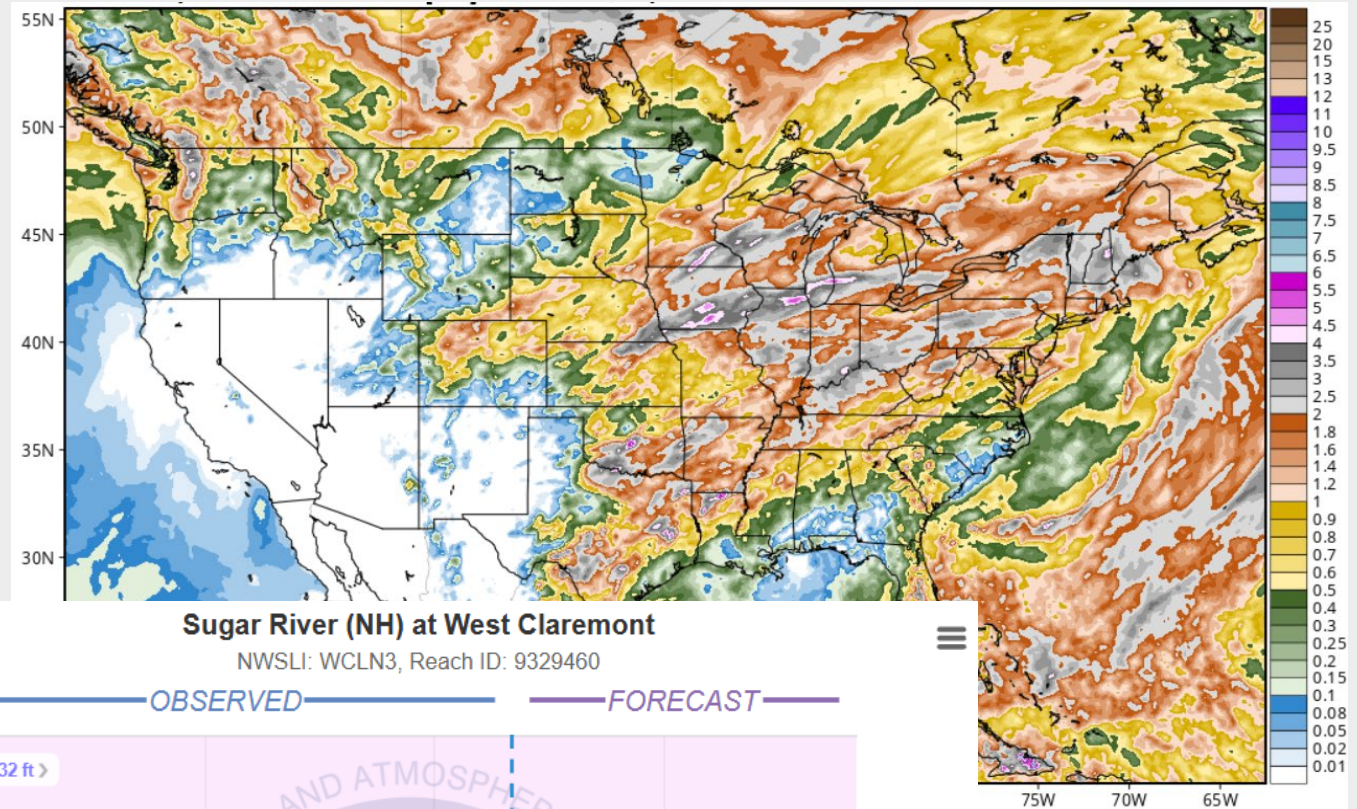
- Current outlook forecast is similar to the 2025 forecast.



2026 - Near Term Outlook

- Possible 2.5 to 3 inches of liquid precipitation in the next 7-days.
- Inflows into the Sugar River Basin expected to increase over the next few days and is expected to reach minor flood stage

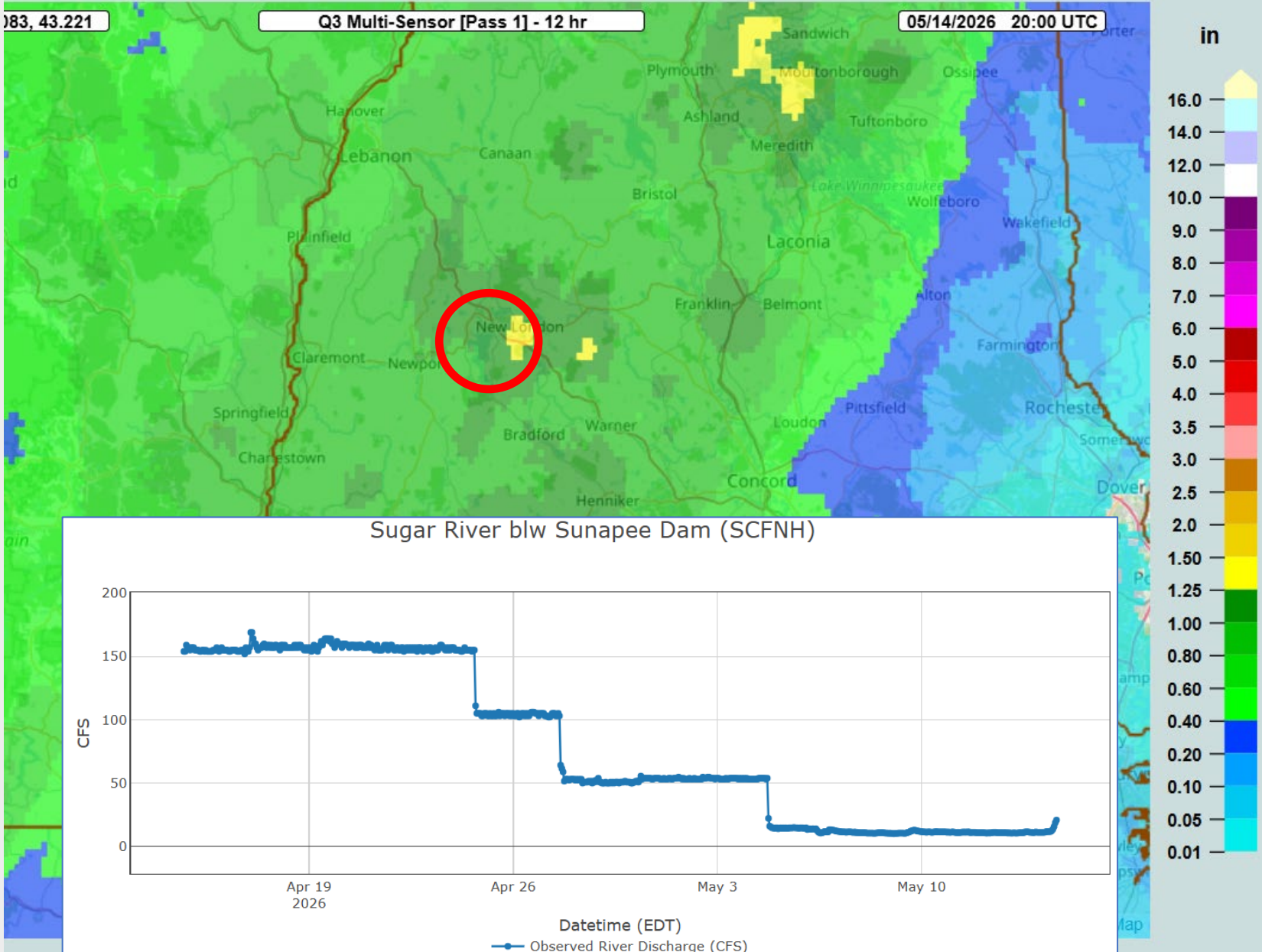
<https://www.weather.gov/nerfc/>



2026

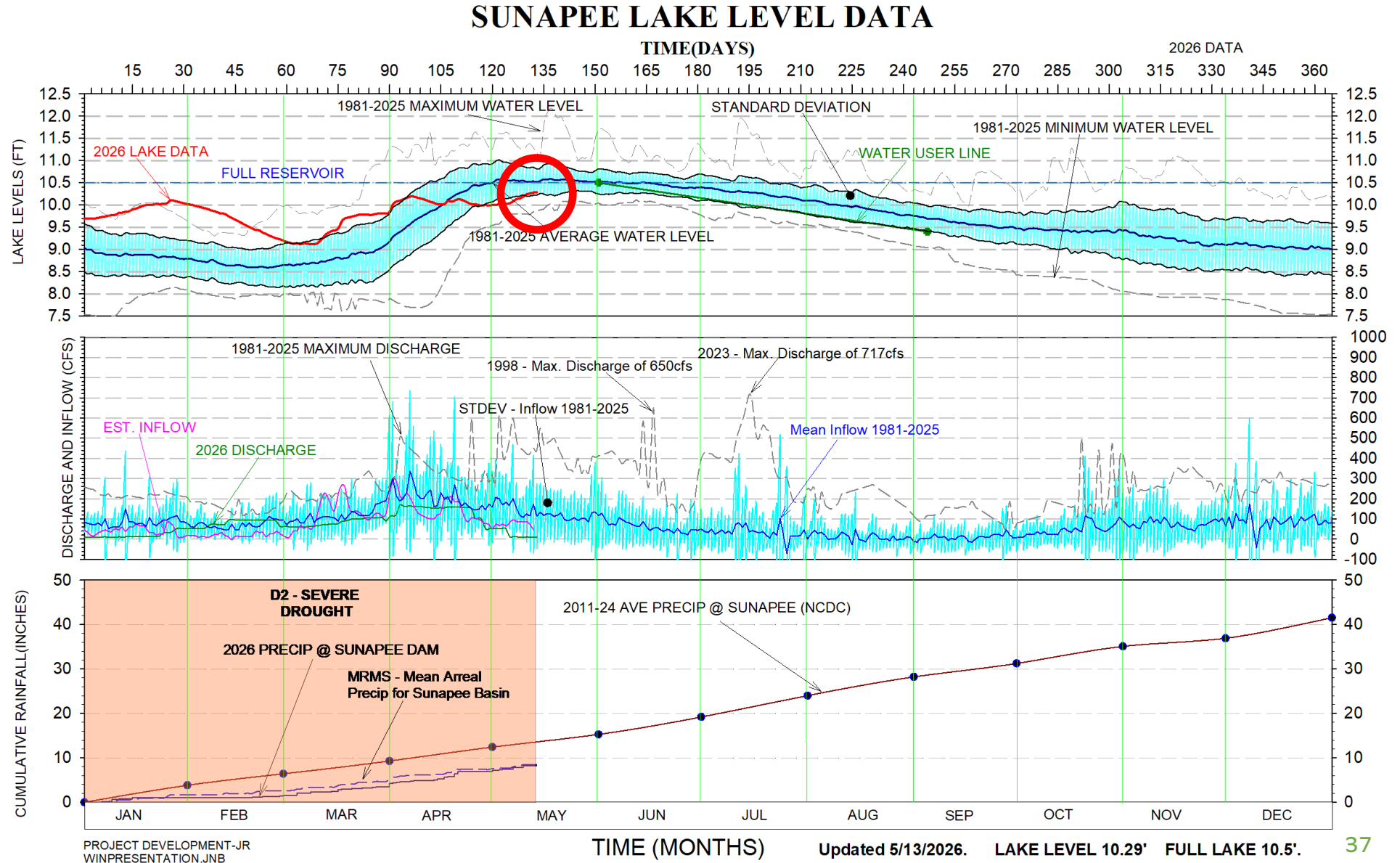
- Releasing 21cfs, up from 11cfs but below average of 150cfs
- Some portions of the watershed has seen over 1 inch of rain over the past 12 hours

Operational Product Viewer



2026

- Lake is at 10.42 ft or 1 inch below full pond
- Still well below average precipitation for the year



NHDES Dam Bureau

- Continue ensuring public safety around and downstream of all dams in New Hampshire
- Continue ensuring that State-owned dams are managed to protect the recreational and natural resources upstream and downstream of the dams



Thank you

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