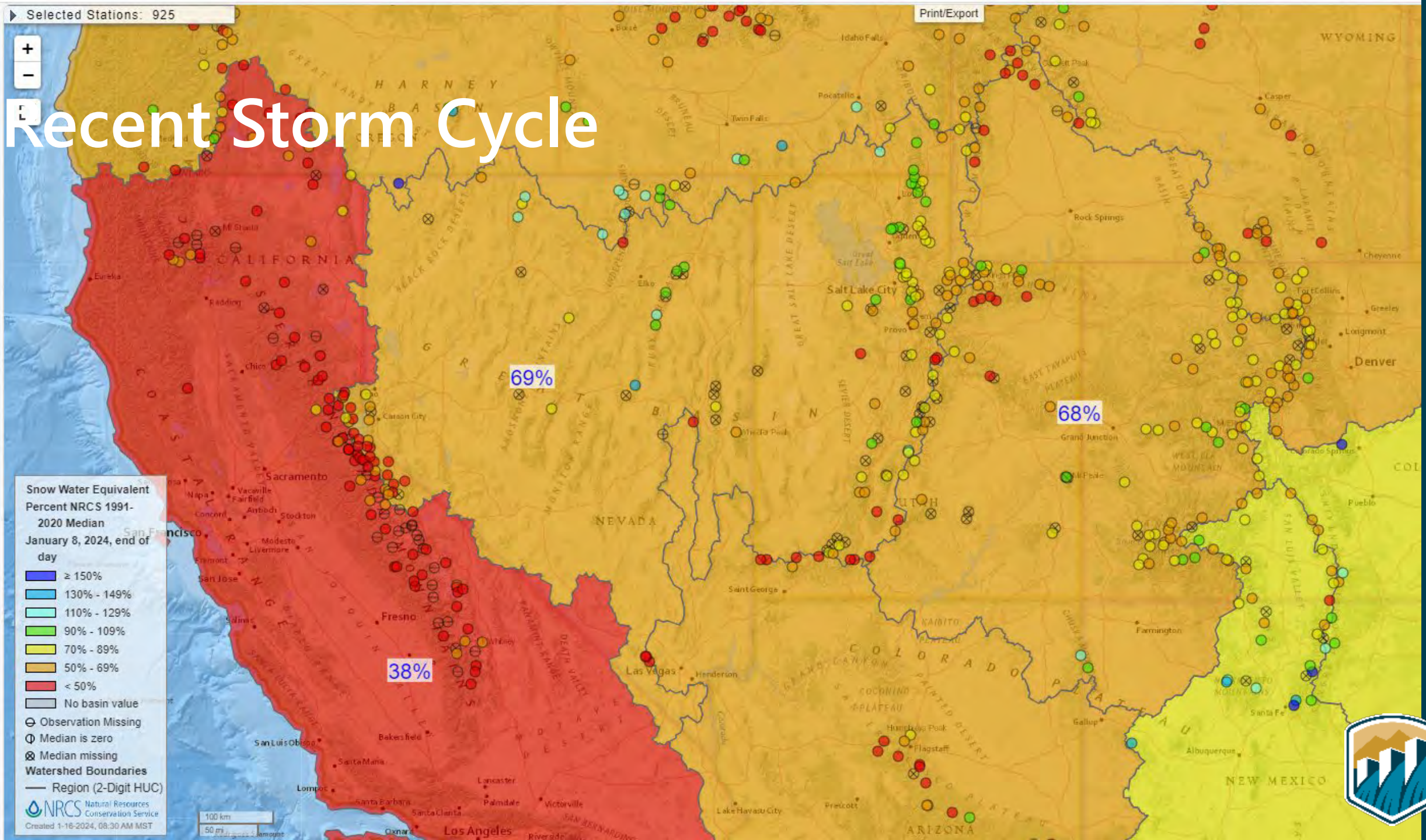
BUREAU OF RECLAMATION

Navajo Unit Operations Coordination Meeting

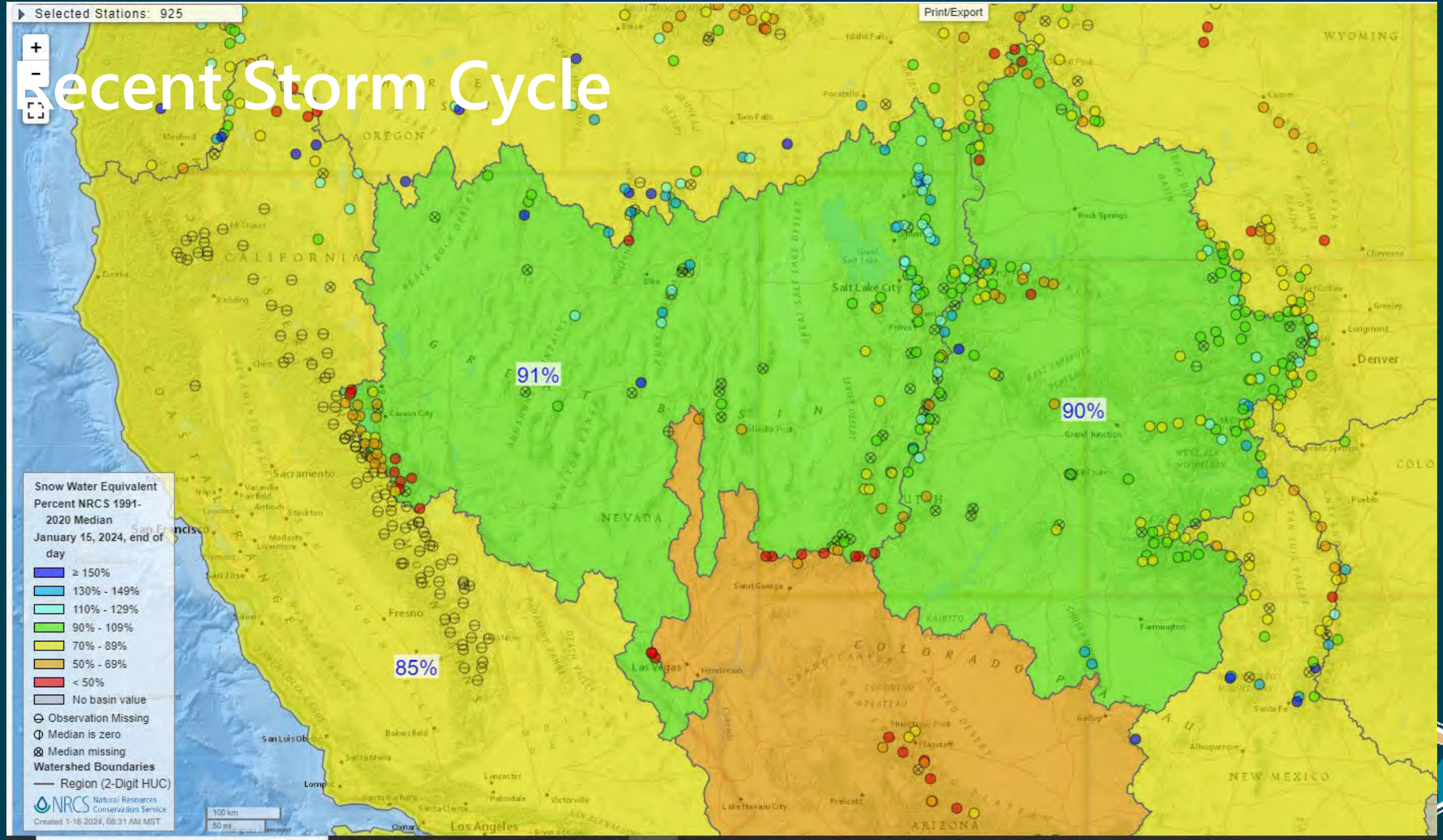
January 16th, 2024

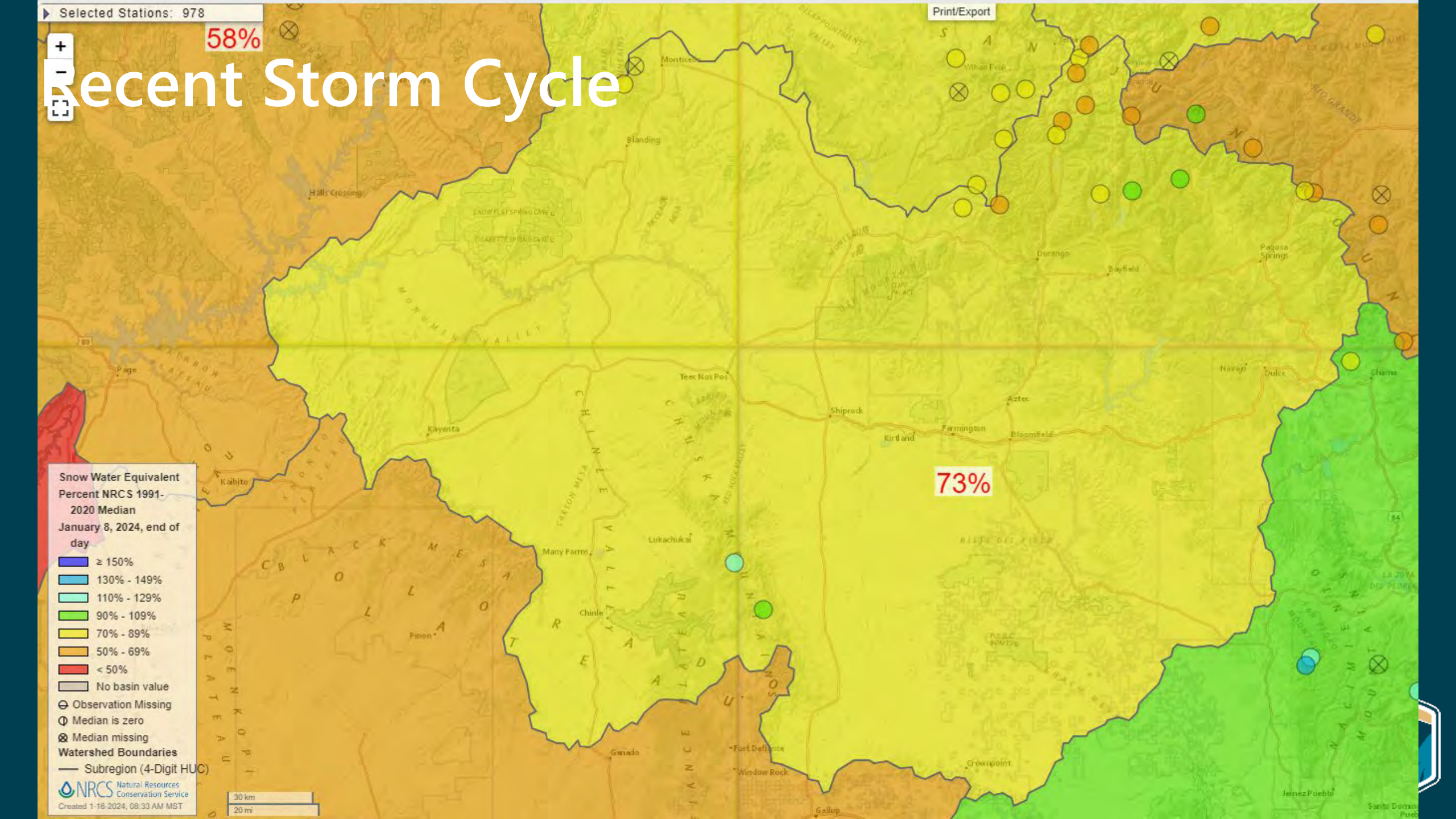
1:00 PM

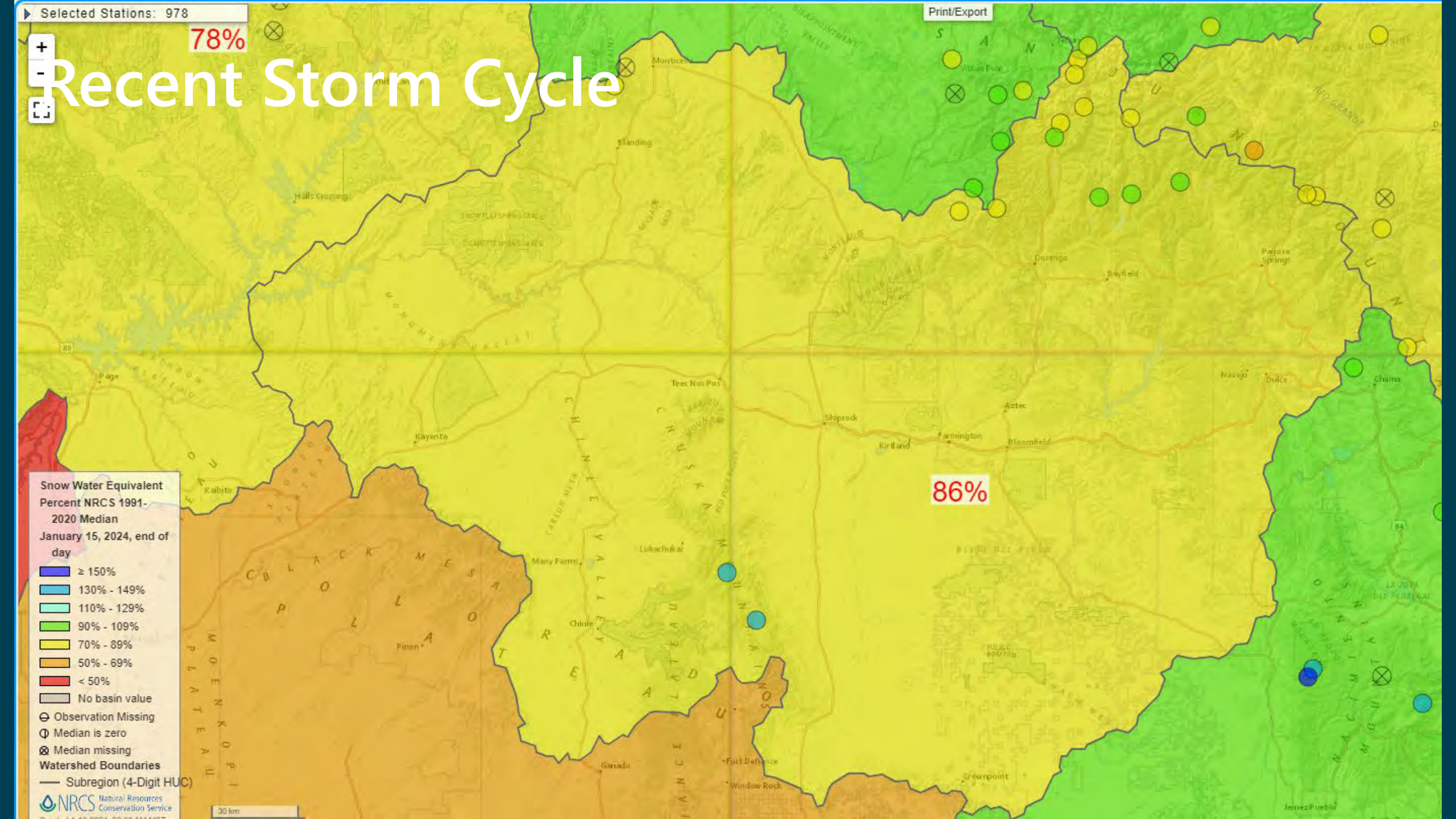
Recent Storm Cycle



Recent Storm Cycle

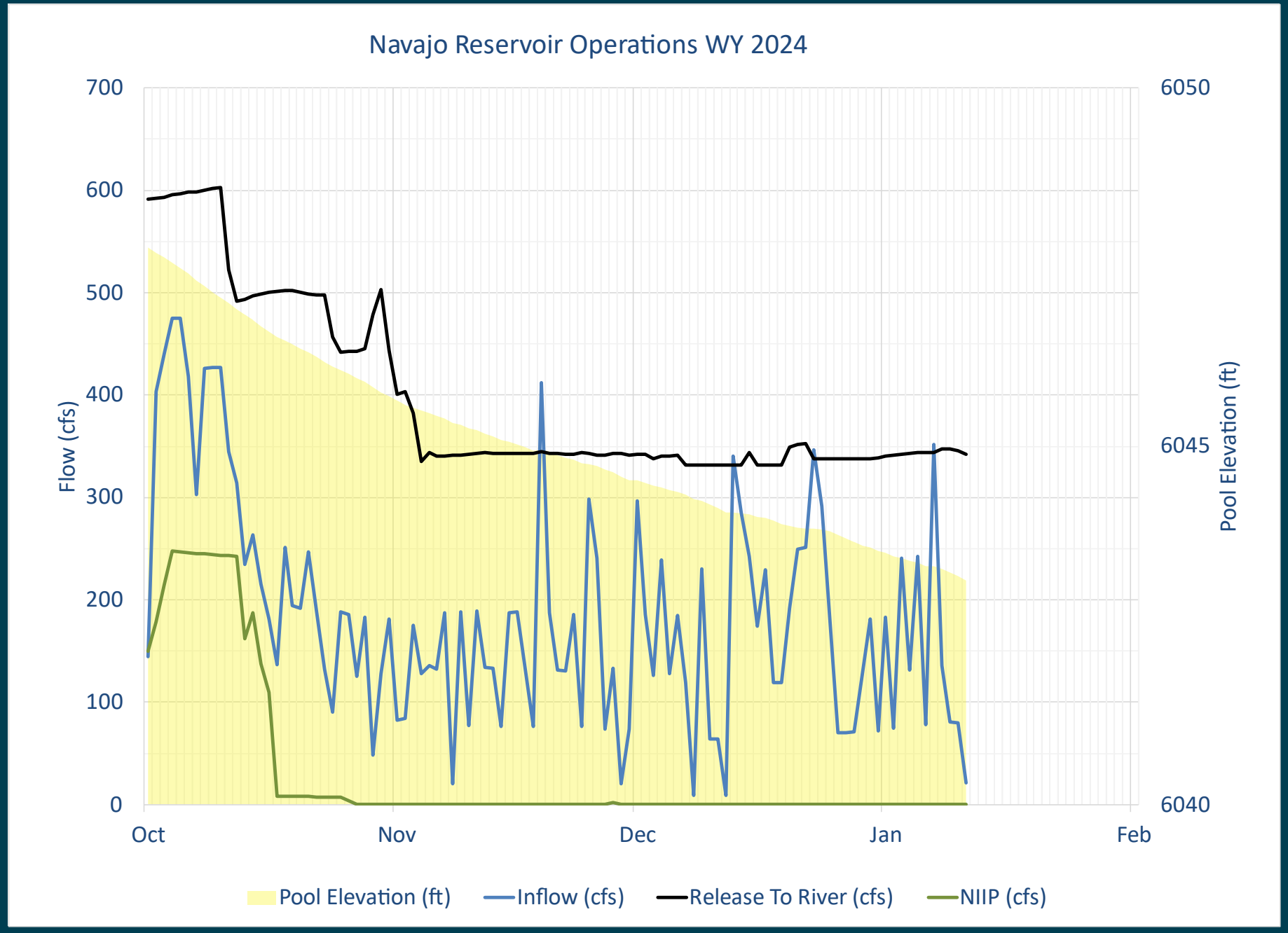



Selected Stations: 978
Print/Export
58%
Recent Storm Cycle
73%
Snow Water Equivalent
Percent NRCS 1991-2020 Median
January 8, 2024, end of day
≥ 150%
130% - 149%
110% - 129%
90% - 109%
70% - 89%
50% - 69%
< 50%
No basin value
Observation Missing
Median is zero
Median missing
Watershed Boundaries
Subregion (4-Digit HUC)
NRCS Natural Resources Conservation Service
Created 1-16-2024, 08:33 AM MST
30 km
20 mi
Monticello
Blanding
Halls Crossing
Durango
Bayfield
Page
Kayenta
Teec Nos Pos
Shiprock
Aztec
Farmington
Kirtland
Bloomfield
Navajo
Dulce
Chama
Kaibito
Many Farms
Lukachukai
Chinle
Pinon
Ganado
Fort Defiance
Window Rock
Crownpoint
Gallup
Jemez Pueblo

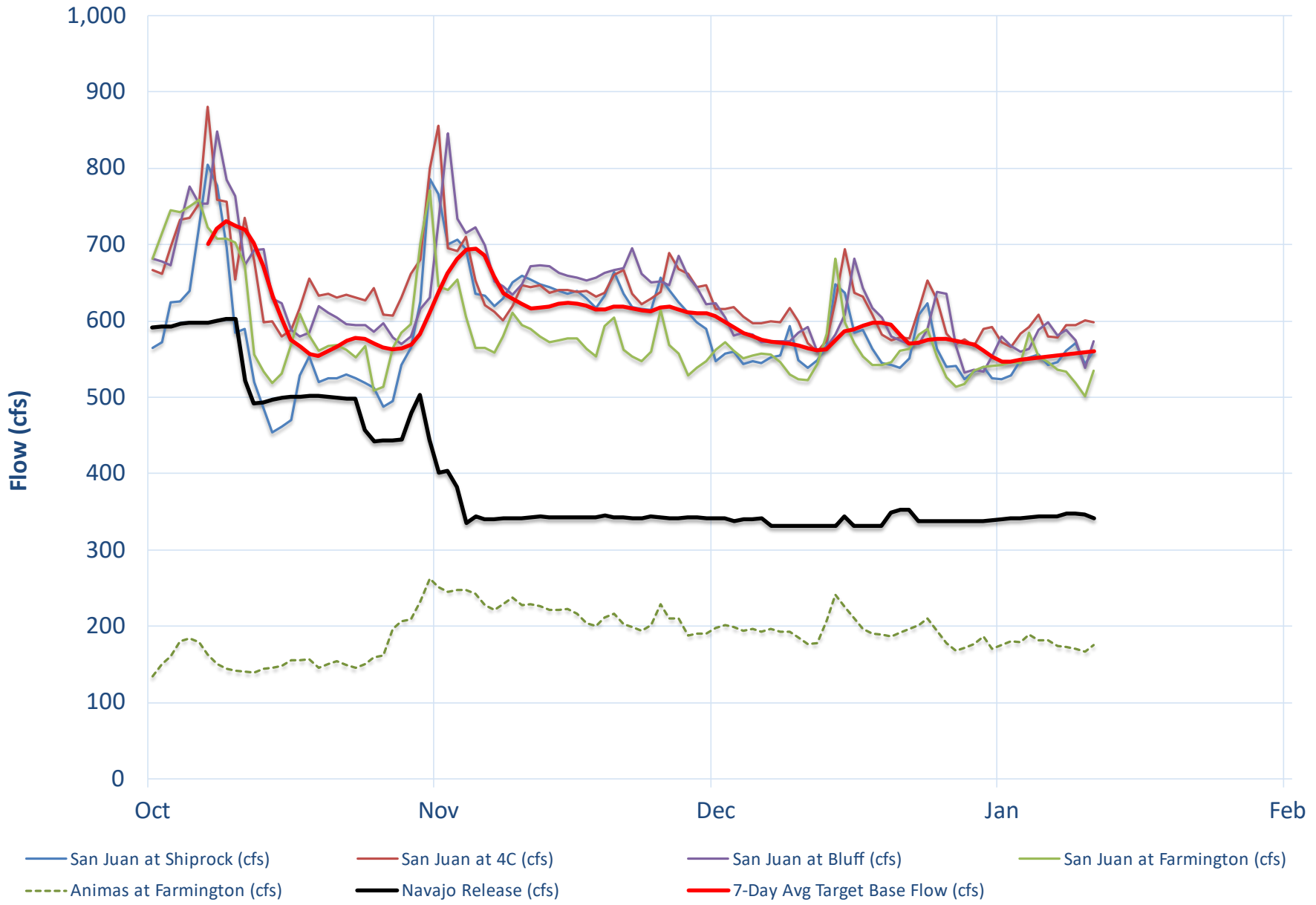

Selected Stations: 978
78%
Print/Export
Recent Storm Cycle
86%
Snow Water Equivalent Percent NRCS 1991-2020 Median
January 15, 2024, end of day
≥ 150%
130% - 149%
110% - 129%
90% - 109%
70% - 89%
50% - 69%
< 50%
No basin value
Observation Missing
Median is zero
Median missing
Watershed Boundaries
Subregion (4-Digit HUC)
NRCS Natural Resources Conservation Service
30 km
Montezuma
Standing
Hells Crossing
Durango
Bayfield
Page
Kayenta
Tec Nos Pos
Shiprock
Aztec
Farmington
Kirtland
Bloomfield
Navajo
Dulce
Chama
Kaibito
Many Farms
Lukachukai
Chinle
Pinon
Ganado
Fort Defiance
Window Rock
Crownpoint
Jemez Pueblo

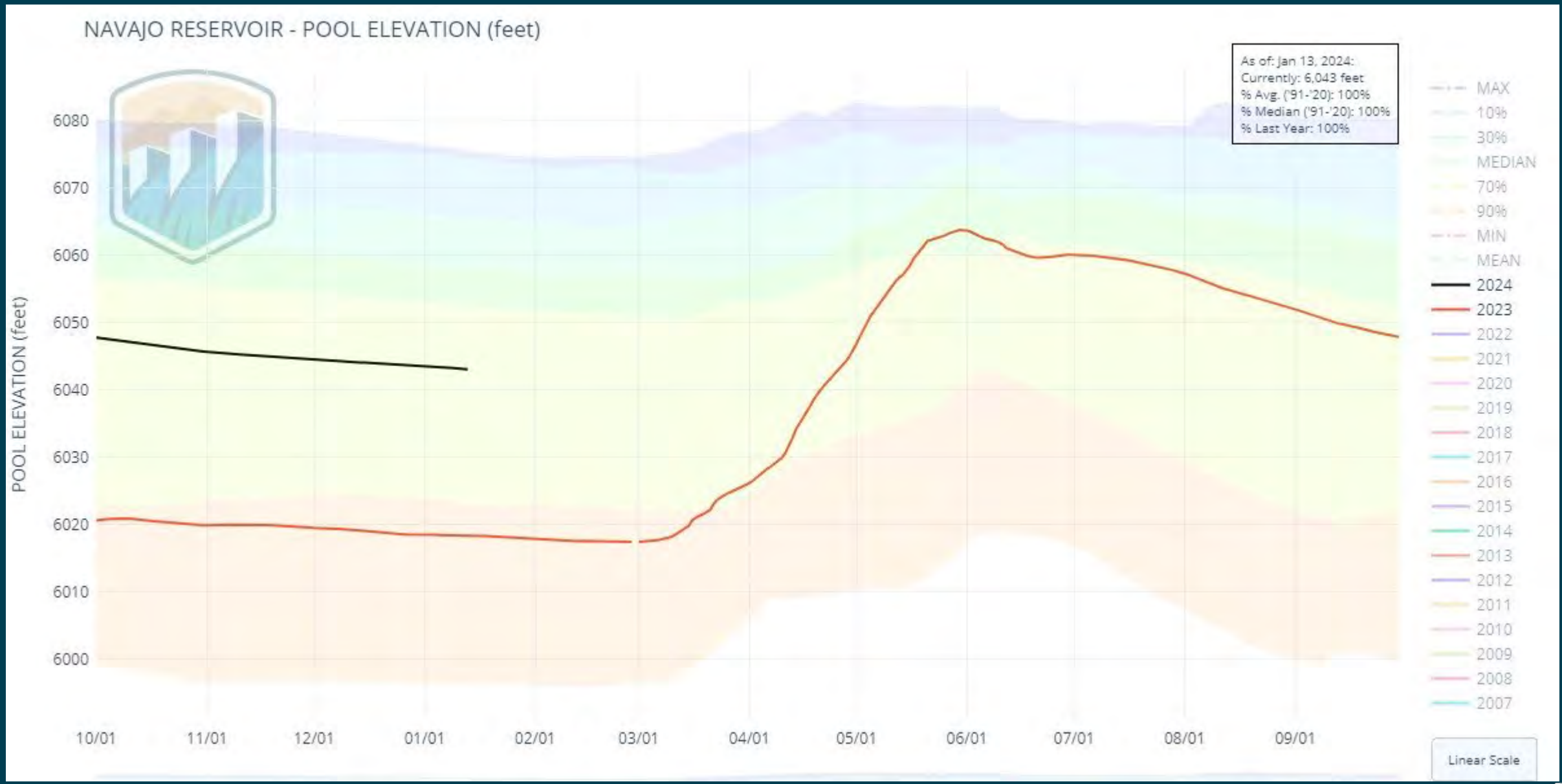
Agenda

- Introductions
- WY 2024 Operations to date
- Seasonal Weather Outlook– Erin Walter, NWS
- Spring Runoff Forecast– Ashley Nielson, CBRFC
- WY 2024 planned operations
- Maintenance Update
- SJRIP Update
- Comments and Reports

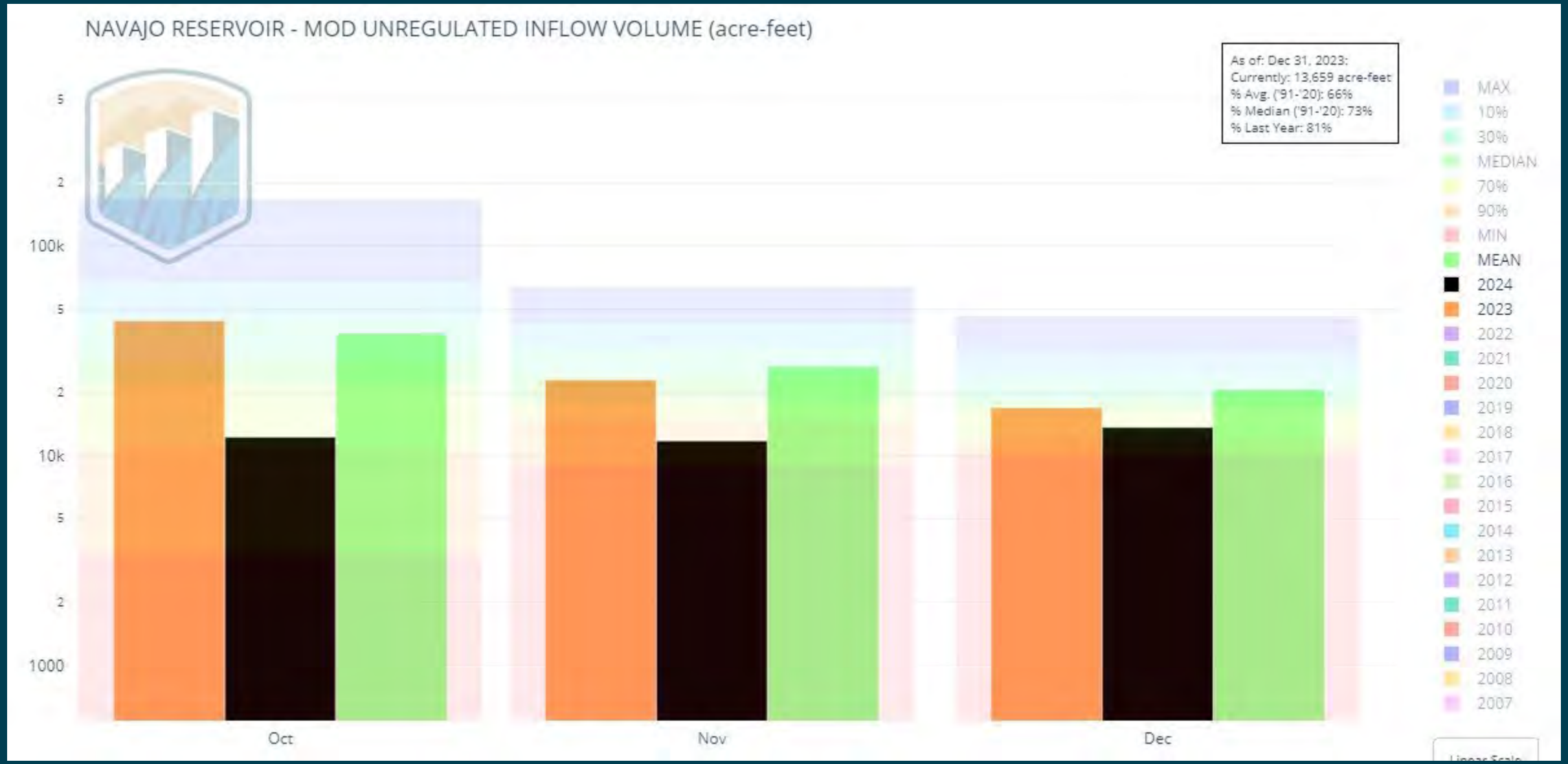

Navajo Reservoir Operations WY 2024
700
600
500
400
300
200
100
0
Flow (cfs)
6050
6045
6040
Pool Elevation (ft)
Oct
Nov
Dec
Jan
Feb
Pool Elevation (ft)
Inflow (cfs)
Release To River (cfs)
NIIP (cfs)

San Juan River Flows WY 2024





Reclamation Hydro Data
https://www.usbr.gov/uc/water/hydrodata/reservoir_data/site_map.html



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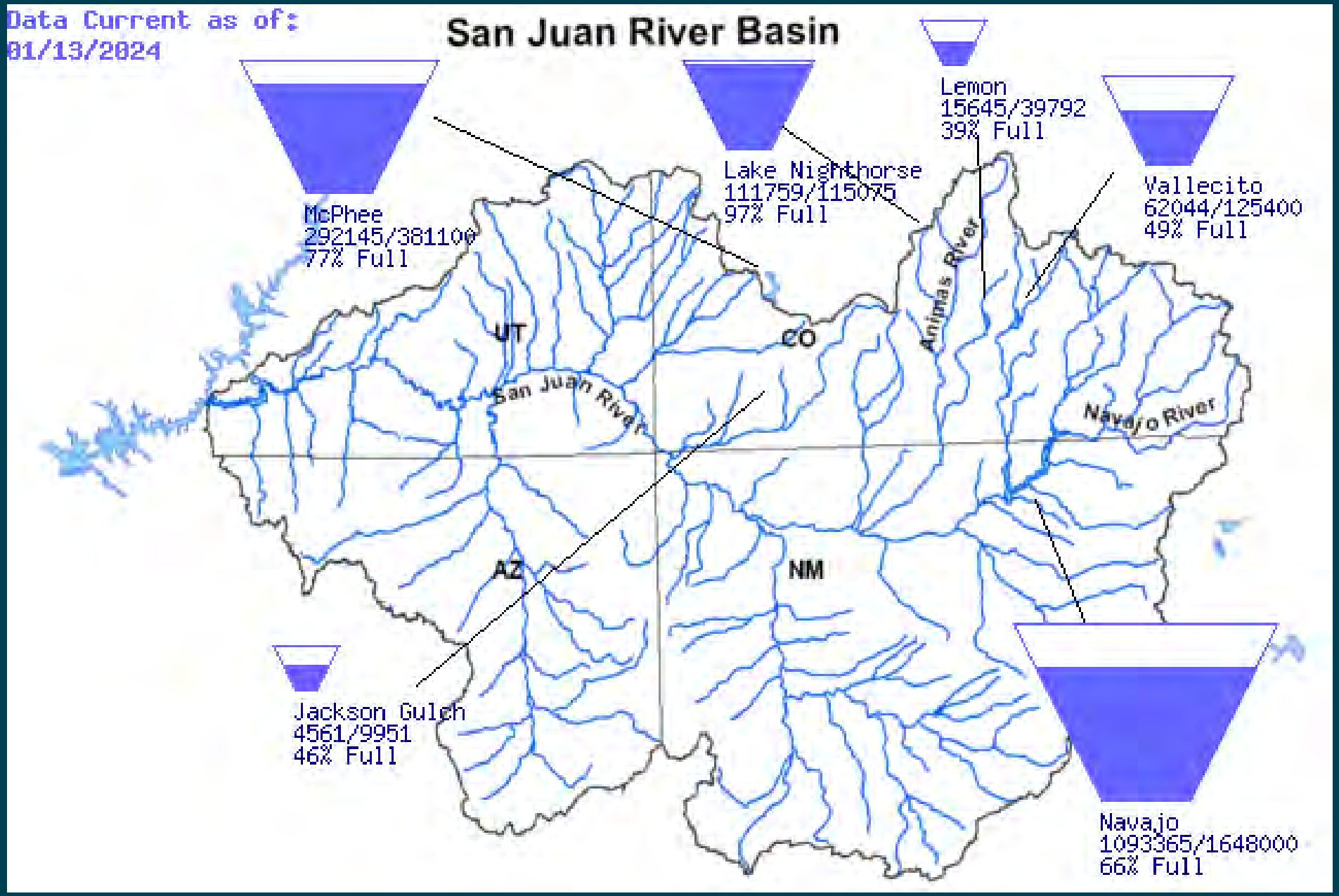
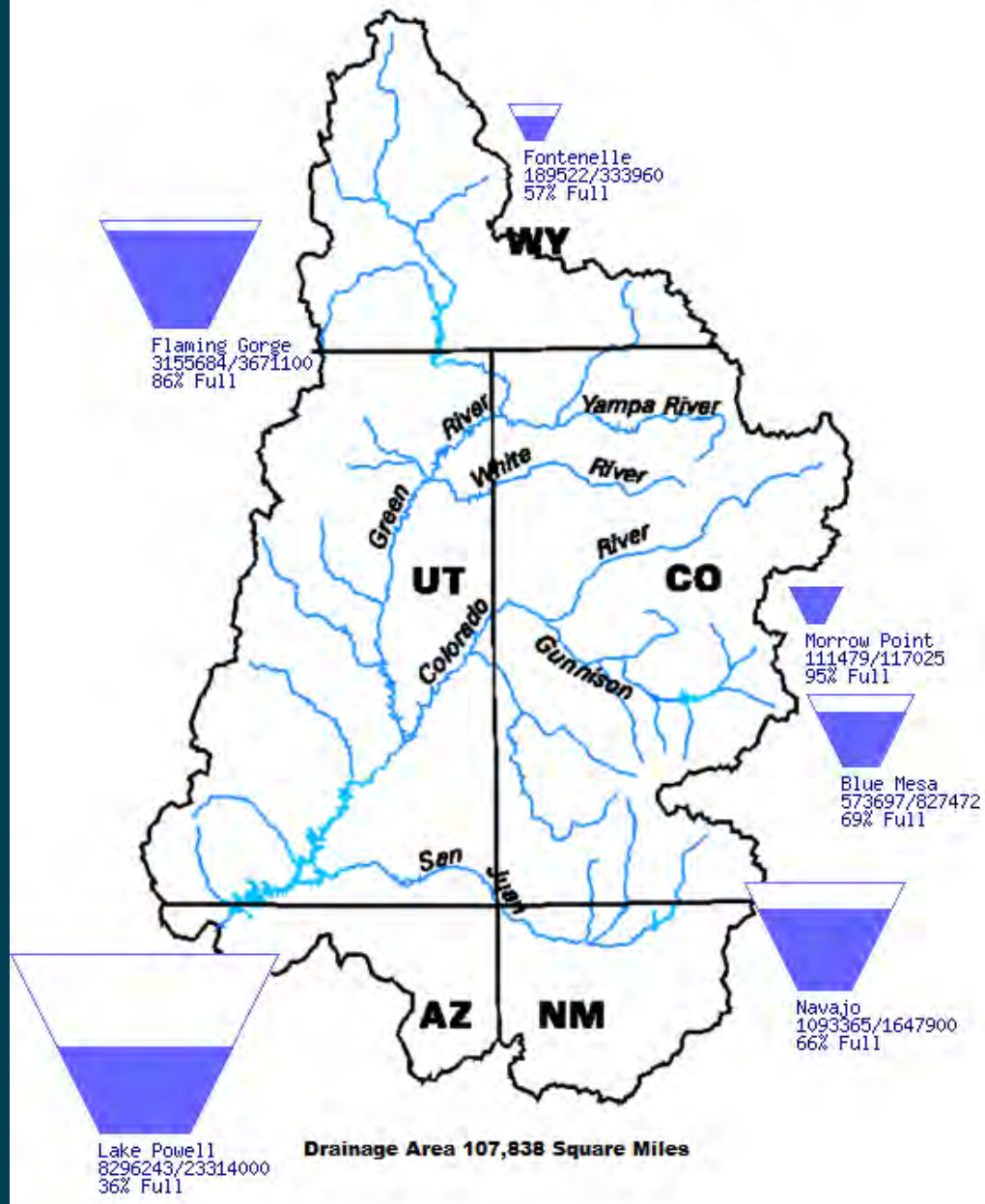

Data Current as of:
01/13/2024
San Juan River Basin
McPhee
292145/381100
77% Full
Lake Nighthorse
111759/115075
97% Full
Lemon
15645/39792
39% Full
Vallecito
62044/125400
49% Full
Navajo
1093365/1648000
66% Full
Jackson Gulch
4561/9951
46% Full
UT
CO
AZ
NM
San Juan River
Animas River
Navajo River


Data Current as of:
01/16/2023
San Juan River Basin
McPhee
188761/381100
50% Full
Lake Nighthorse
113160/115075
98% Full
Lemon
16956/39792
43% Full
Vallecito
69555/125400
55% Full
Jackson Gulch
5555/9951
56% Full
Navajo
850740/1648000
52% Full
UT
CO
AZ
NM
San Juan River
Animas River
Navajo River
THIS TIME LAST YEAR

Data Current as of:
01/13/2024

Upper Colorado River Drainage Basin



THIS TIME LAST YEAR

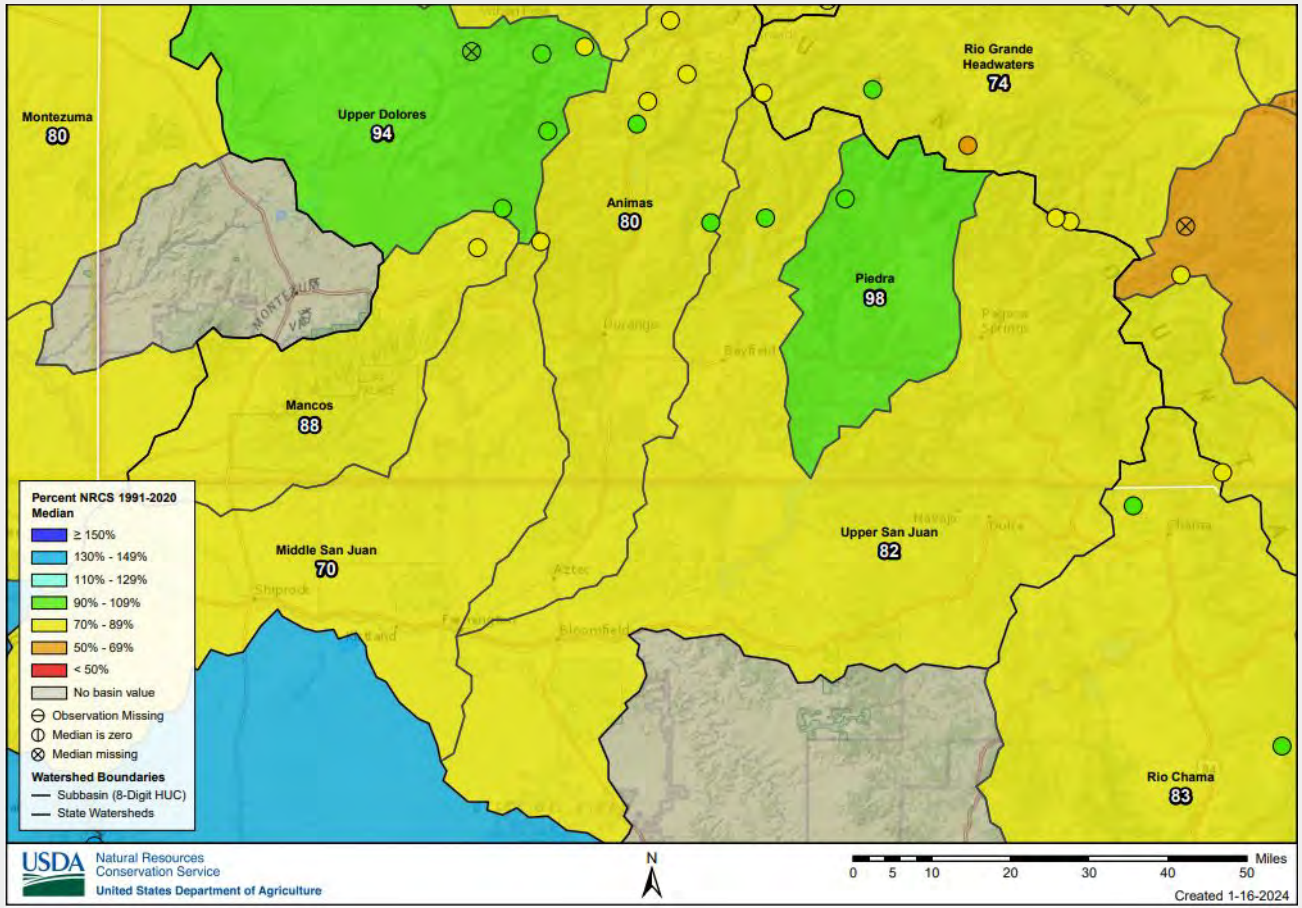
JAN. 16TH, 2024

NAVAJO RESERVOIR HYDROLOGIC OUTLOOK

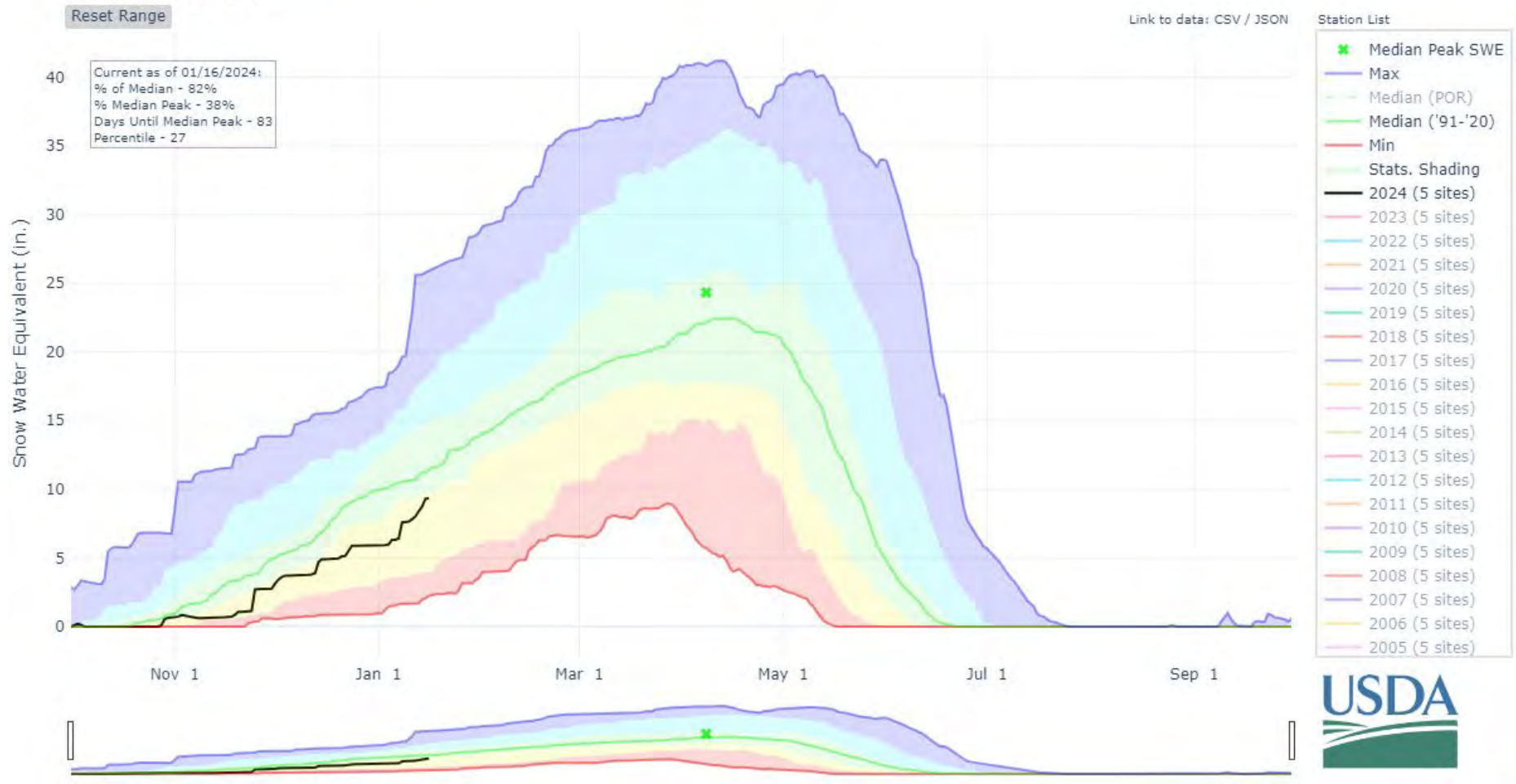
WWW.WEATHER.GOV/GJT

SNOW WATER EQUIVALENT

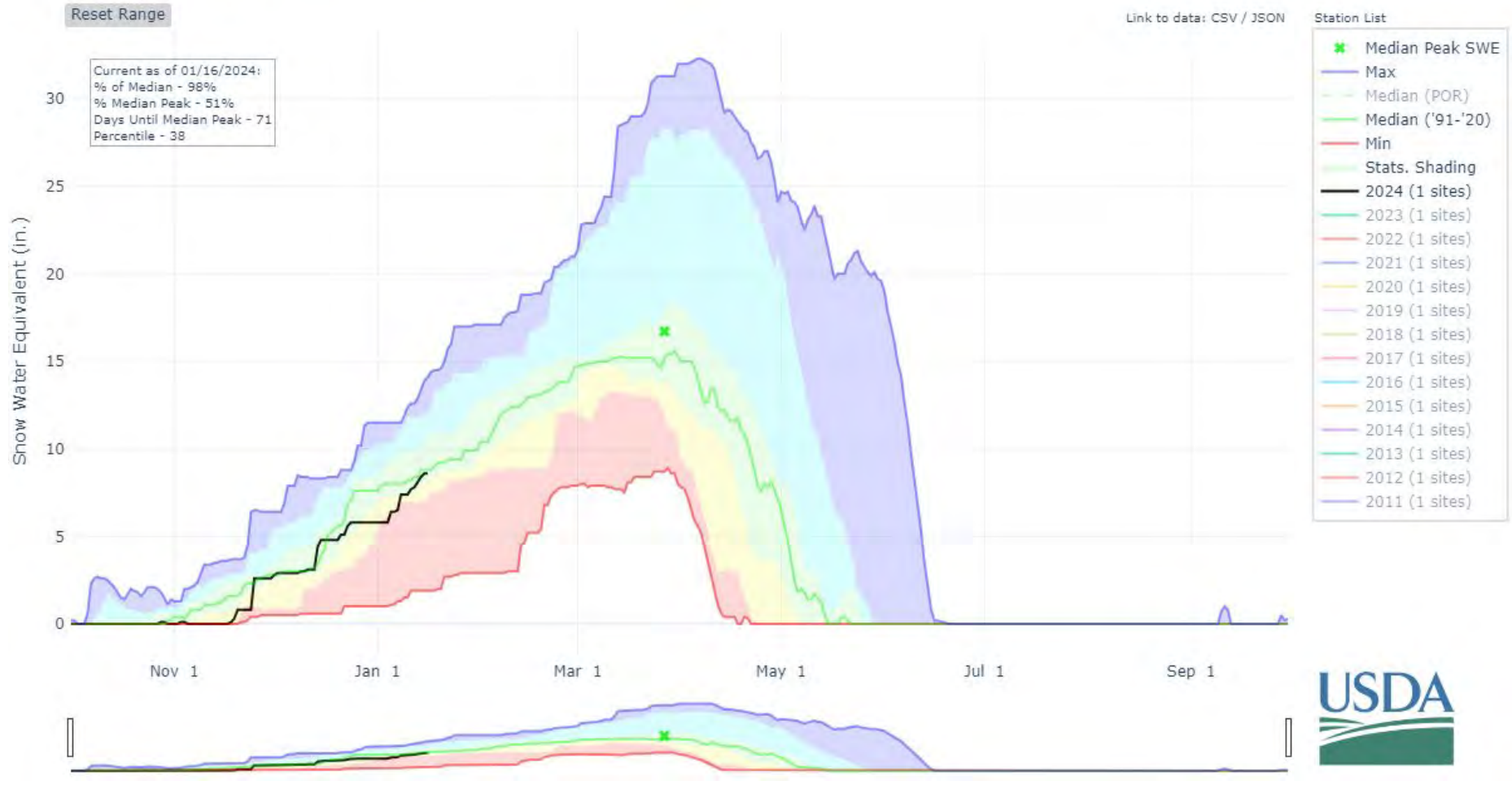
Percent NRCS 1991-2020 Median



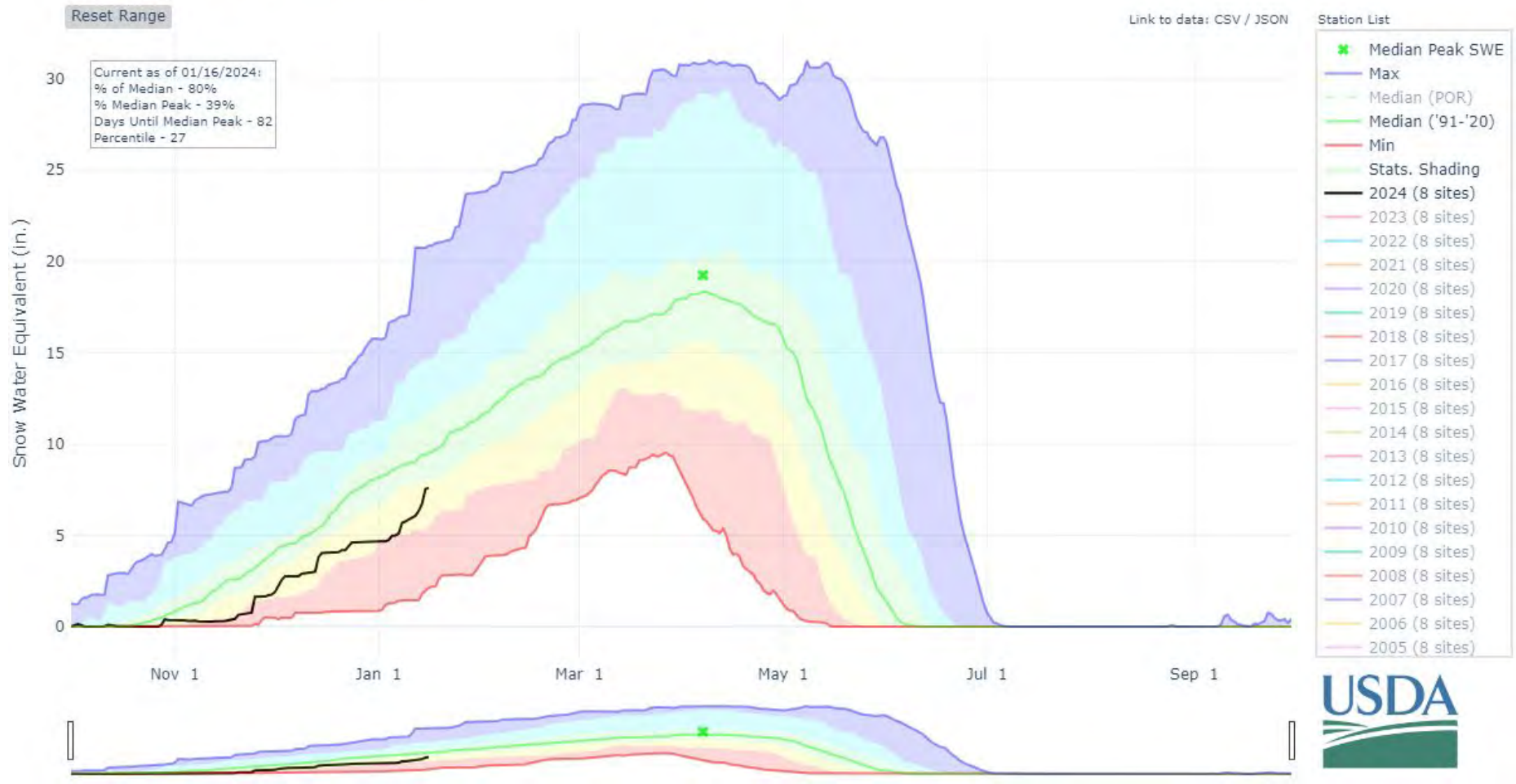
SNOW WATER EQUIVALENT IN UPPER SAN JUAN

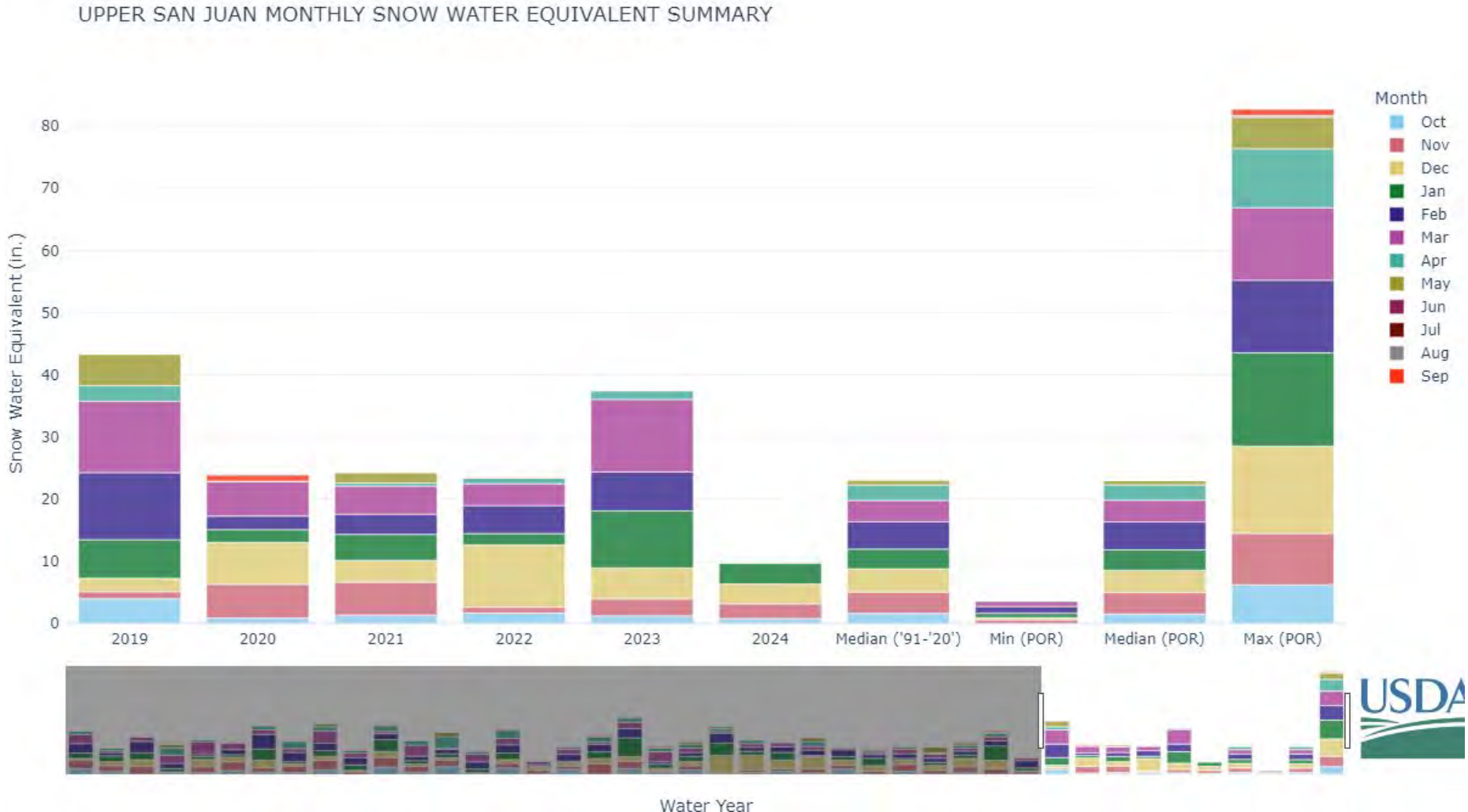


SNOW WATER EQUIVALENT IN PIEDRA

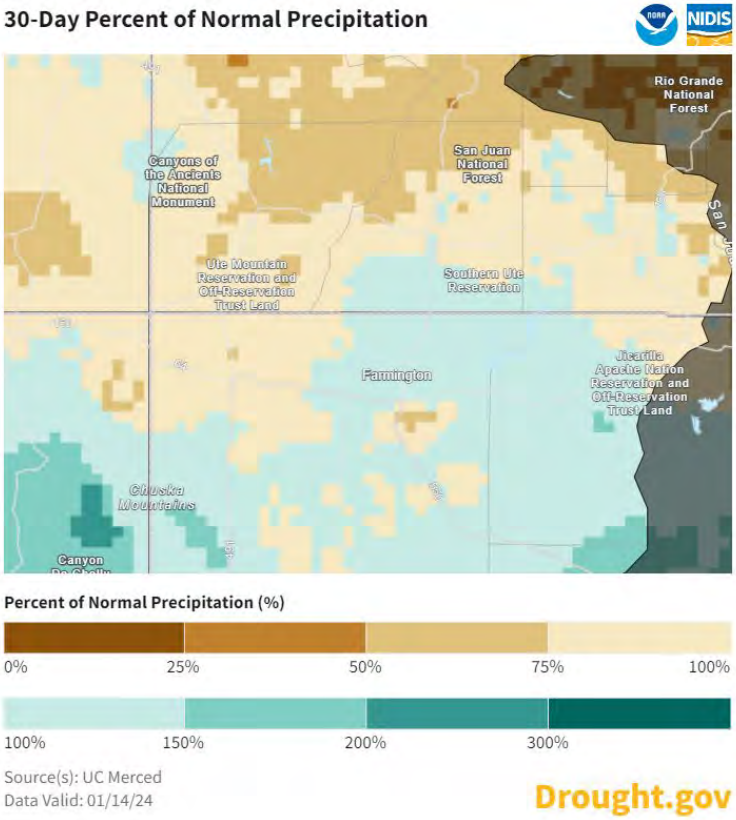


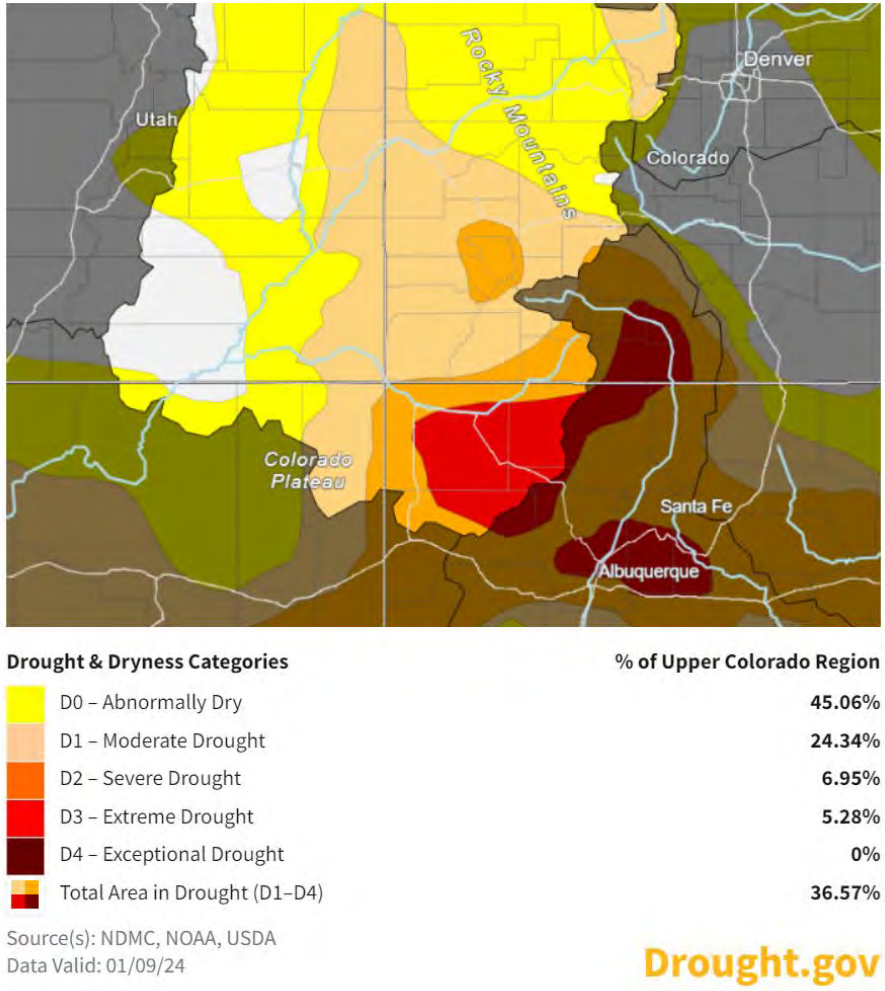
SNOW WATER EQUIVALENT IN ANIMAS




UPPER SAN JUAN MONTHLY SNOW WATER EQUIVALENT SUMMARY
Snow Water Equivalent (in.)
0
10
20
30
40
50
60
70
80
2019
2020
2021
2022
2023
2024
Median ('91-'20')
Min (POR)
Median (POR)
Max (POR)
Month
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Water Year
USDA

U.S. DROUGHT MONITOR





El Nino Southern Oscillation

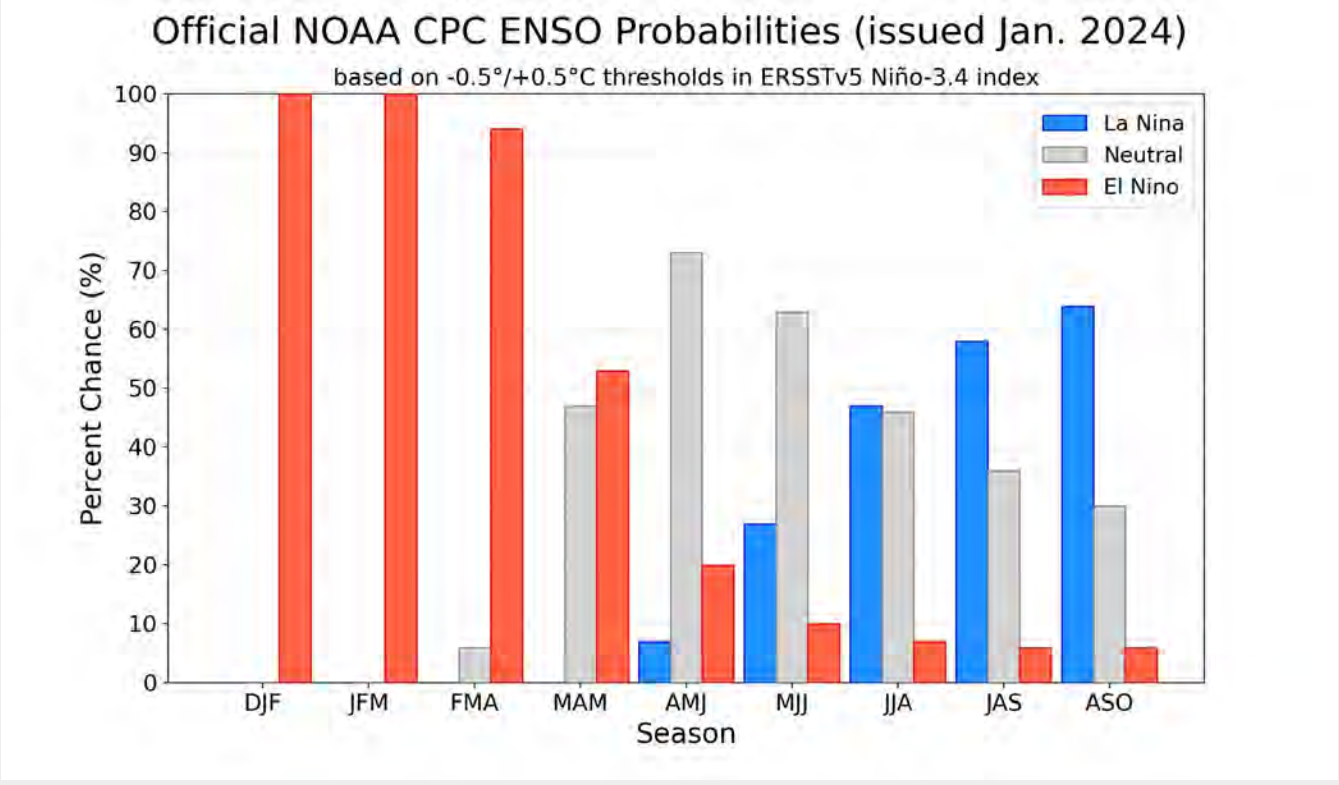
Current Conditions & Prediction

ENSO Status: El Nino Advisory

BUT....
There is more to the story...

The Madden Julian Oscillation (MJO)

The Pacific-North American teleconnection pattern (PNA)



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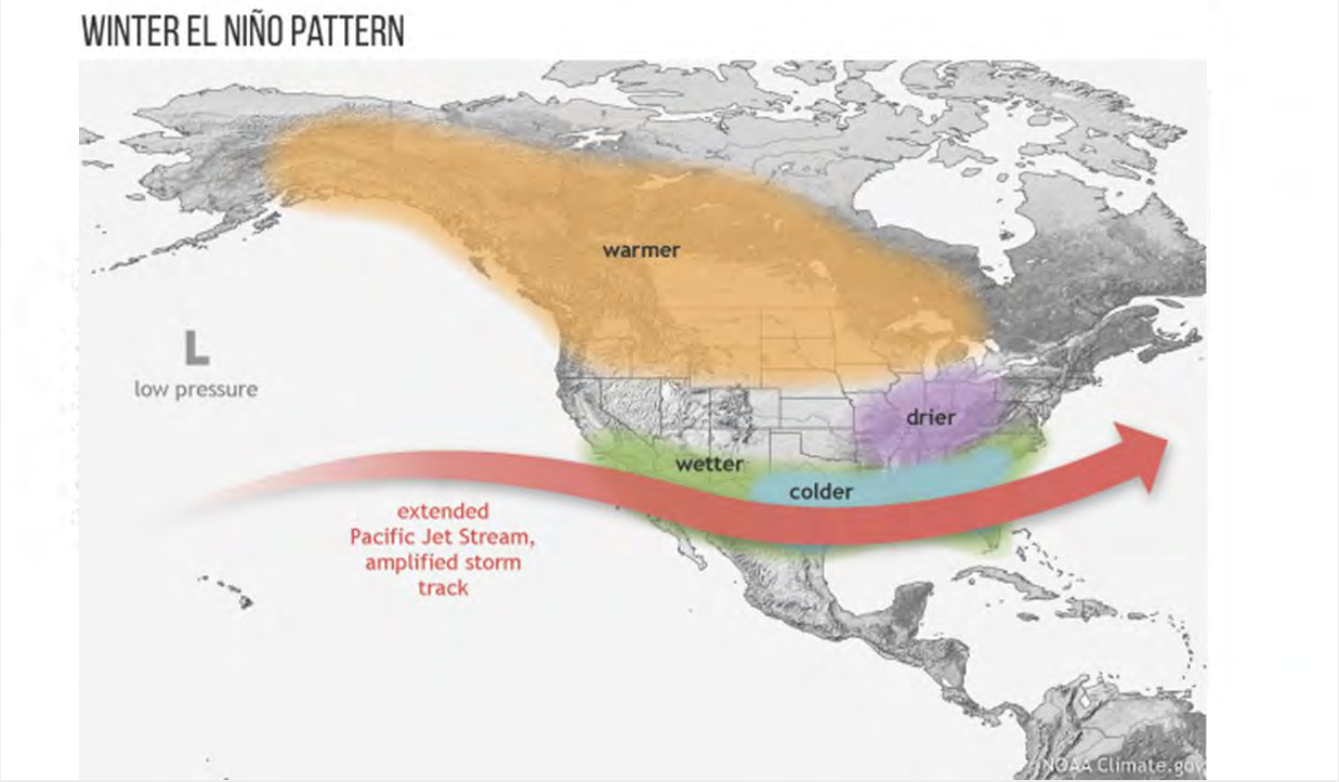

El Nino Southern Oscillation

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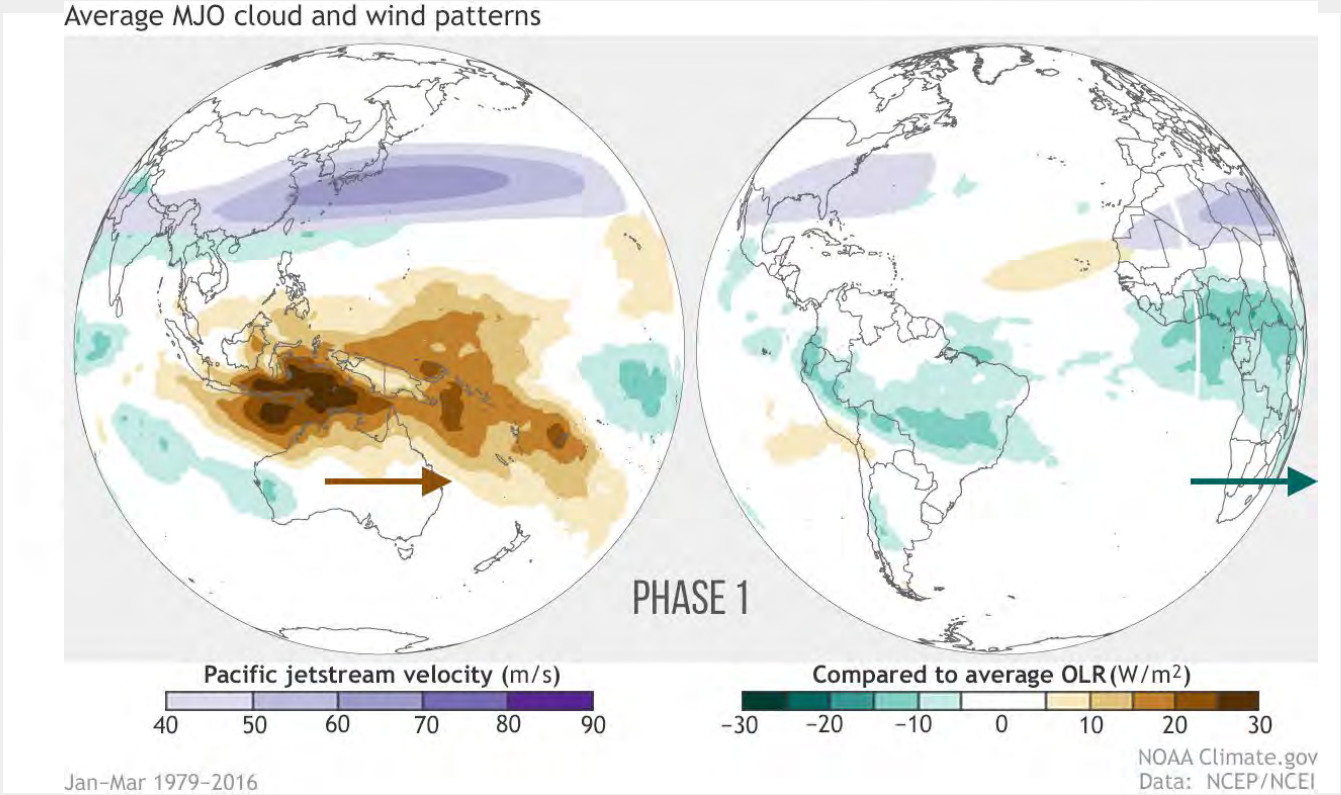

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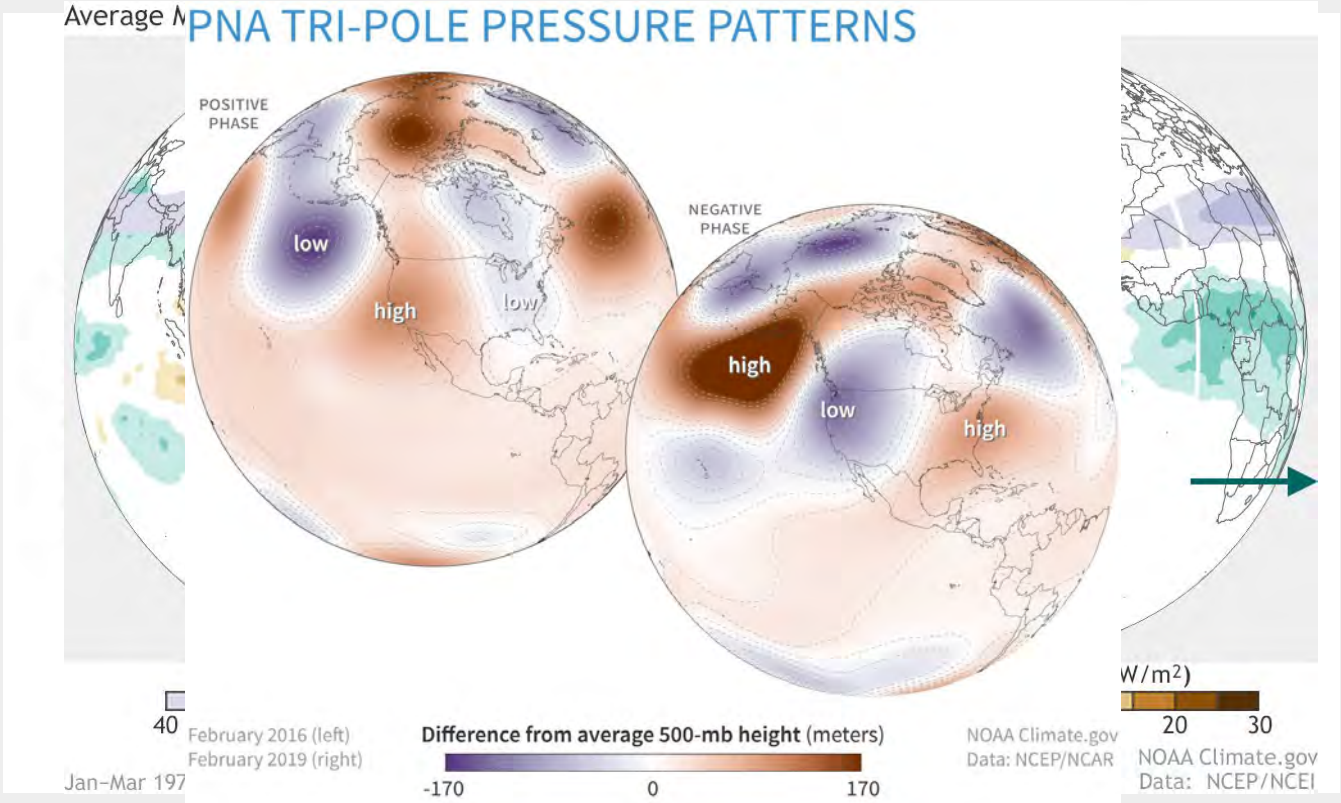
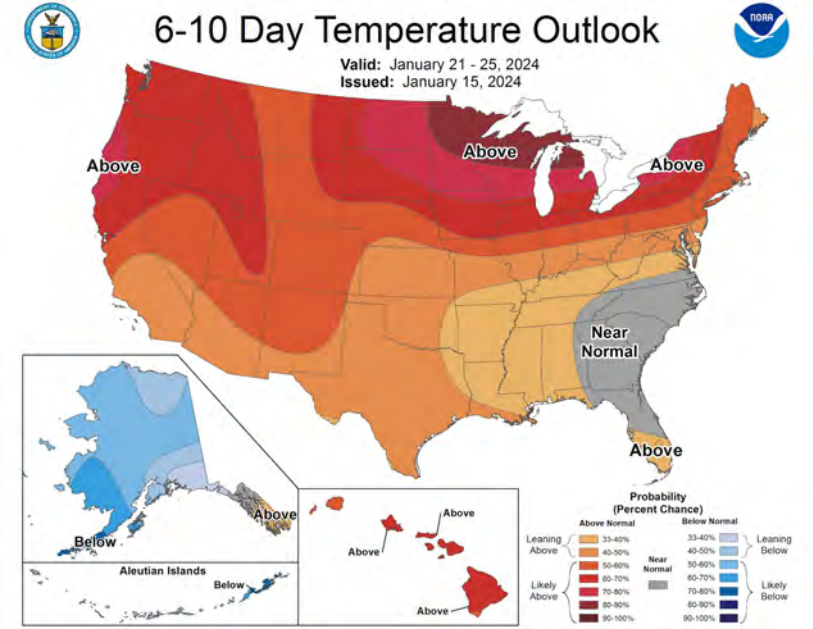
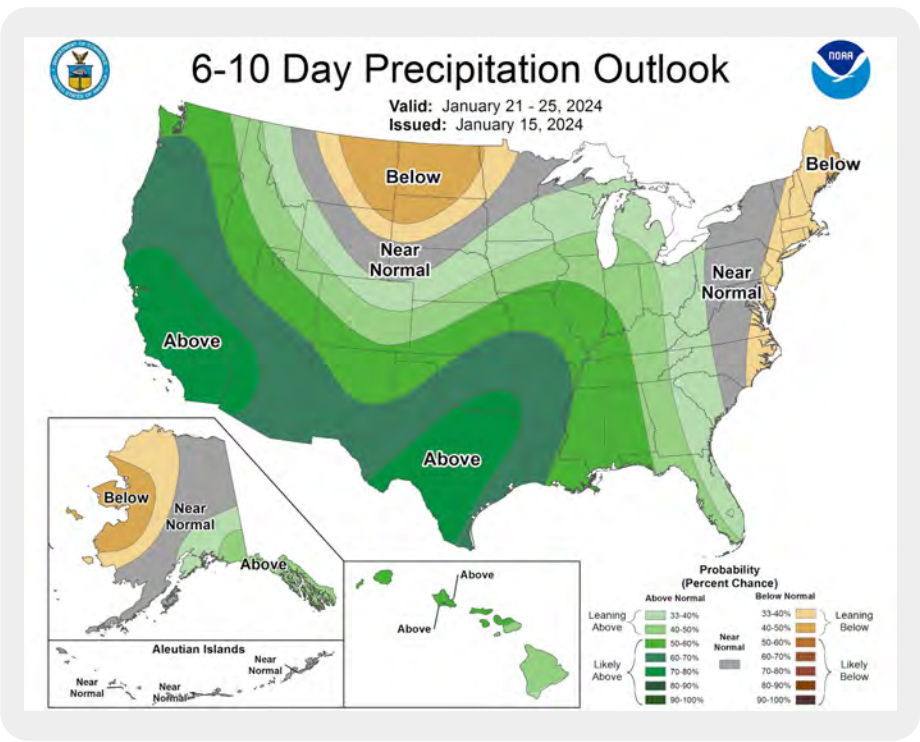


6 TO 10 DAY OUTLOOK

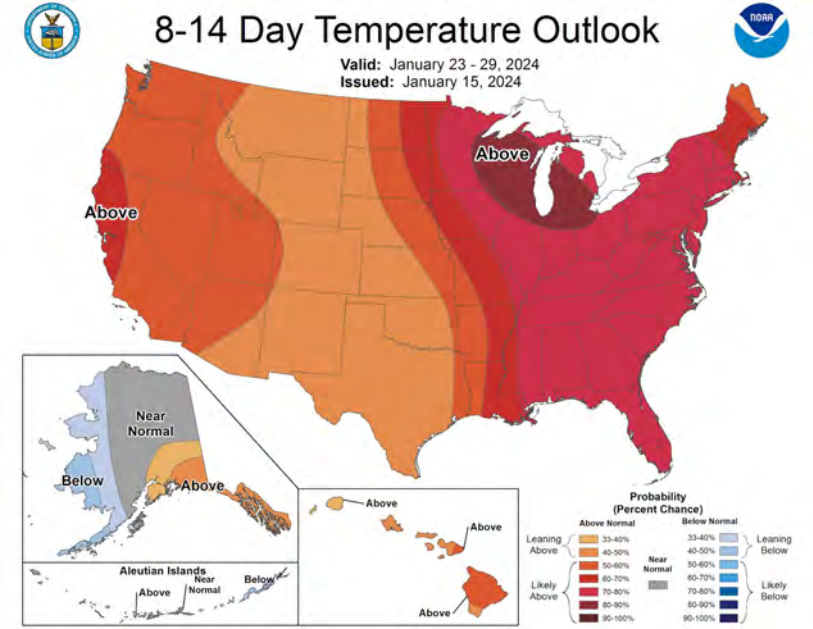
CLIMATE PREDICTION CENTER

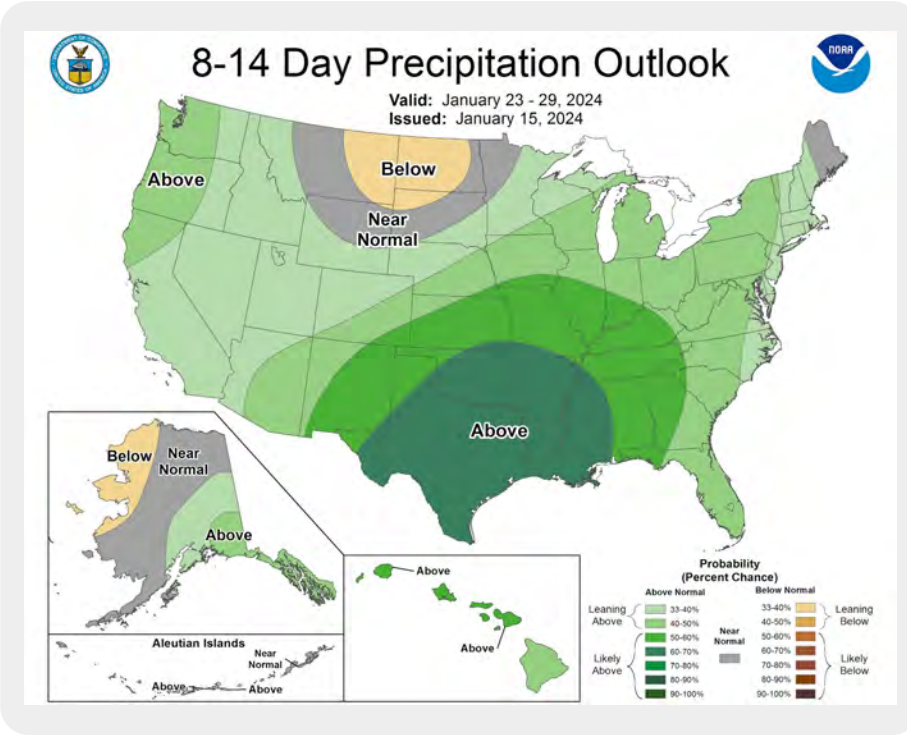




8 TO 14 DAY OUTLOOK

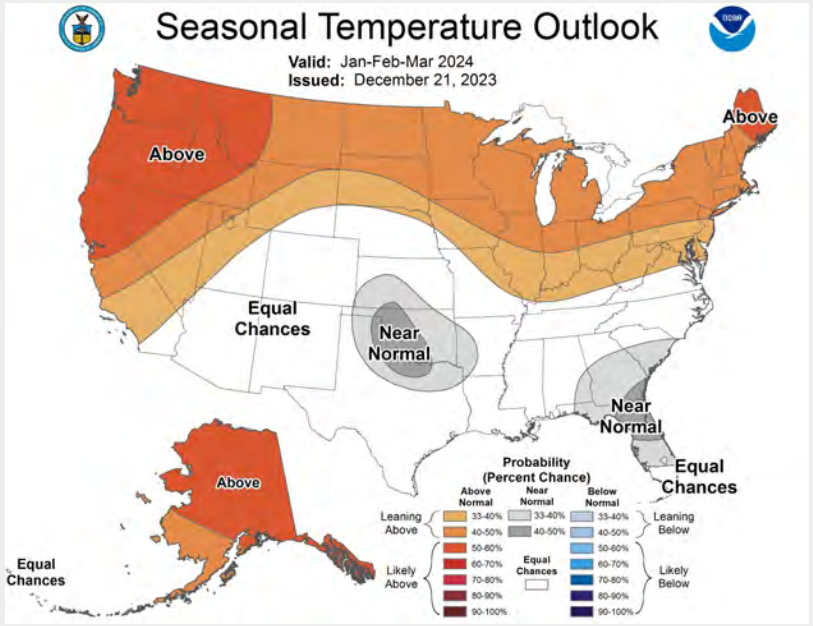
CLIMATE PREDICTION CENTER

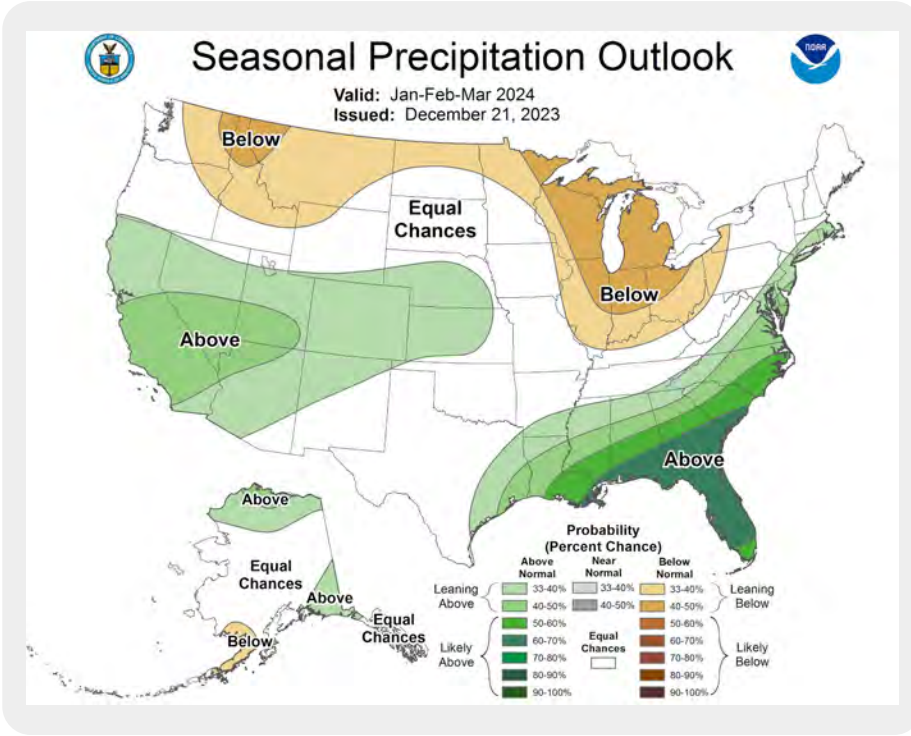




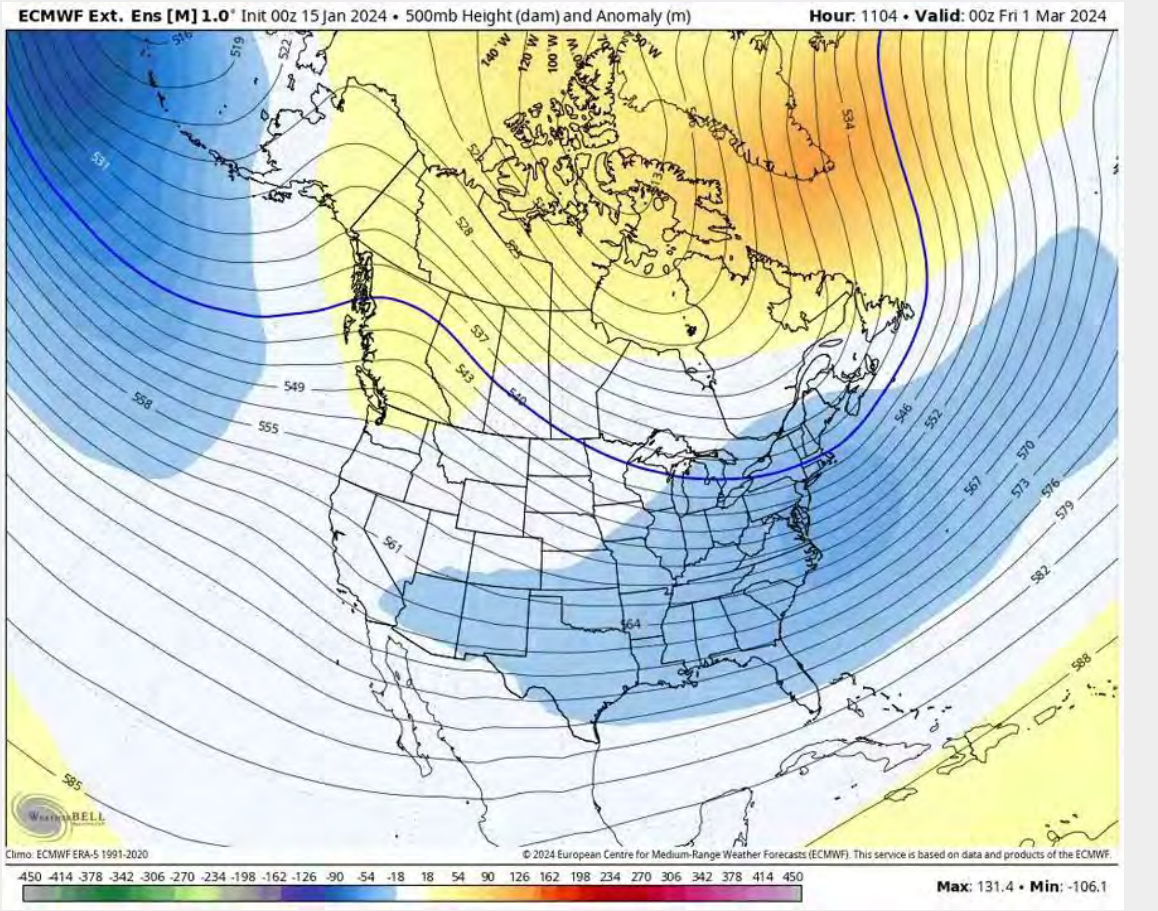
SEASONAL OUTLOOK

JAN, FEB, MAR - CLIMATE PREDICTION CENTER





IS A WINDY FORECAST ON THE HORIZON?



ANY QUESTIONS?

THANK YOU!

ERIN.WALTER@NOAA.GOV

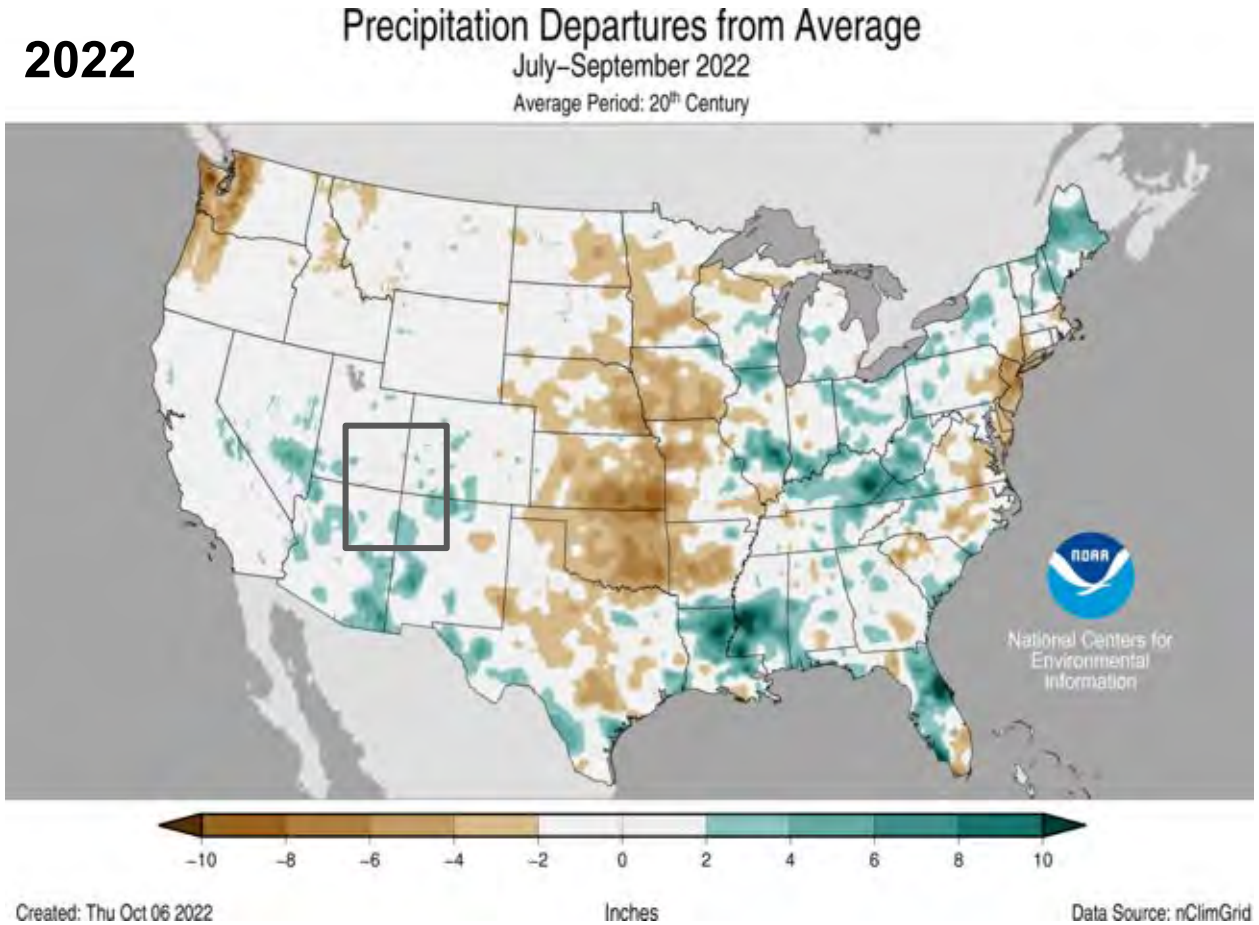
Navajo Reservoir/San Juan Basin Water Supply Outlook January 2024

Ashley Nielson
Senior Hydrologist
Colorado Basin River Forecast Center
National Weather Service/NOAA

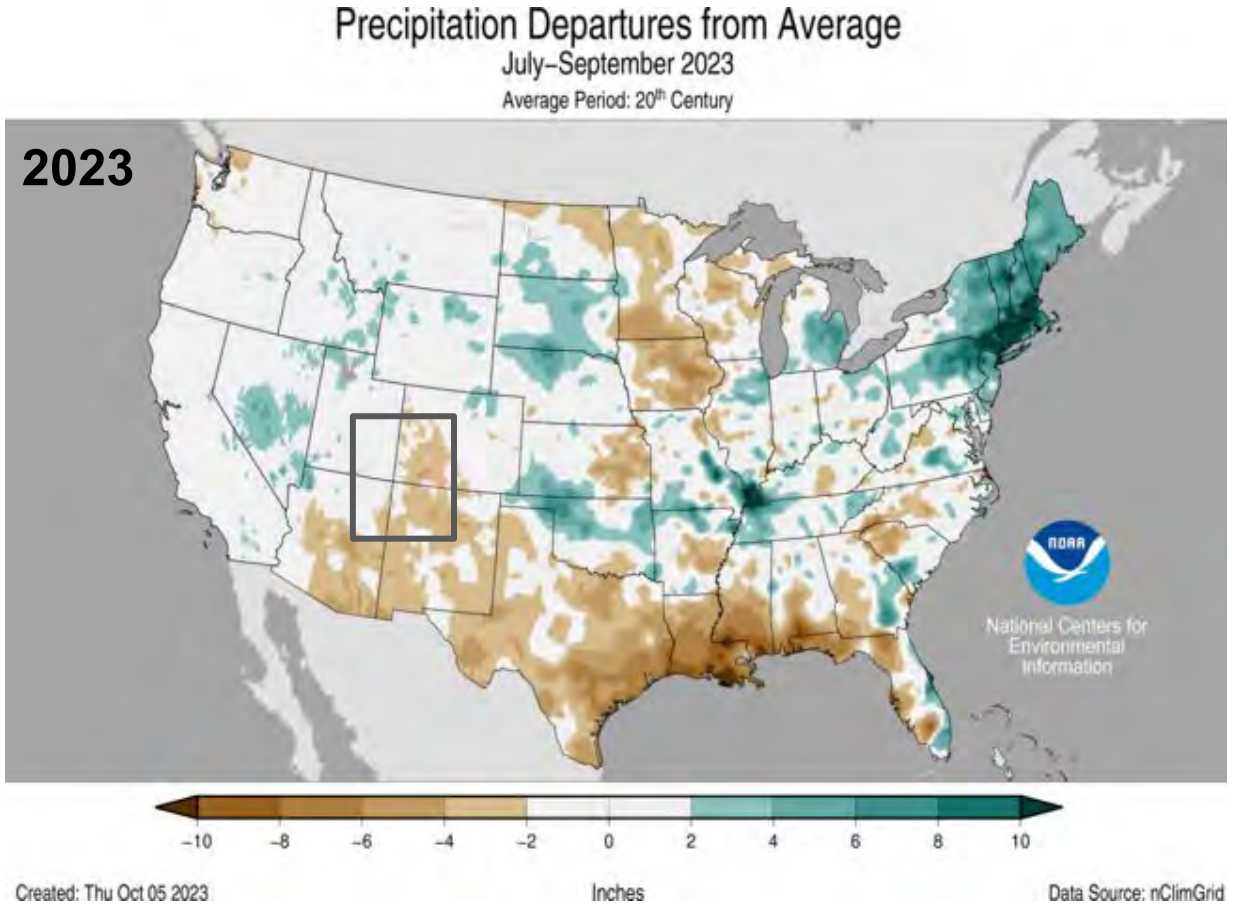
2023 Monsoon: July-September Precipitation

Precipitation during the monsoon season was much below normal. On average July-September precipitation accounts for ~20% of the annual precipitation in upper elevations in the San Juan River Basin. This can have a significant impact on streamflow during the summer and fall months.

2022

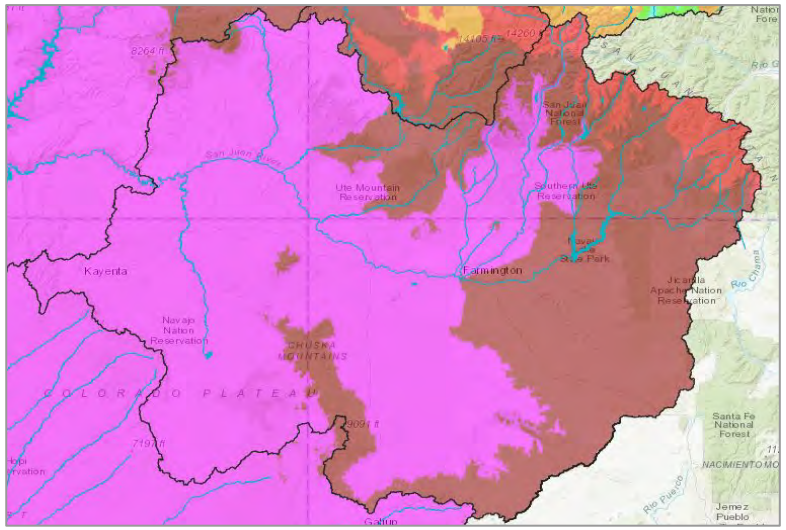


2023



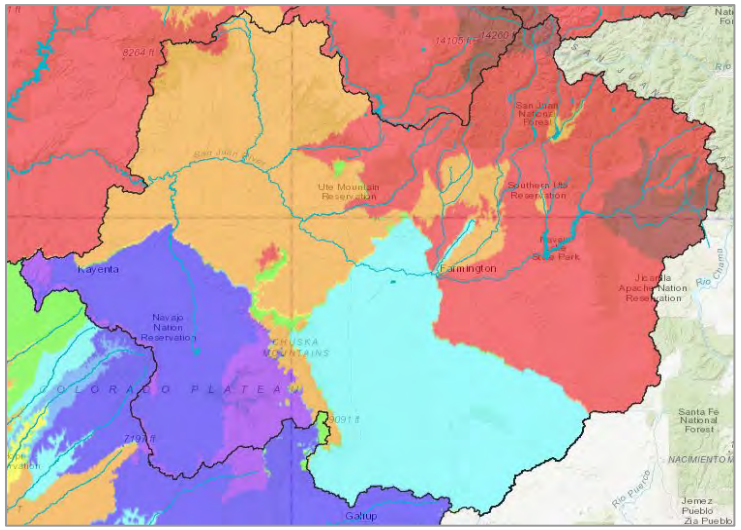
Water Year 2024: October-December Observed Precipitation

October



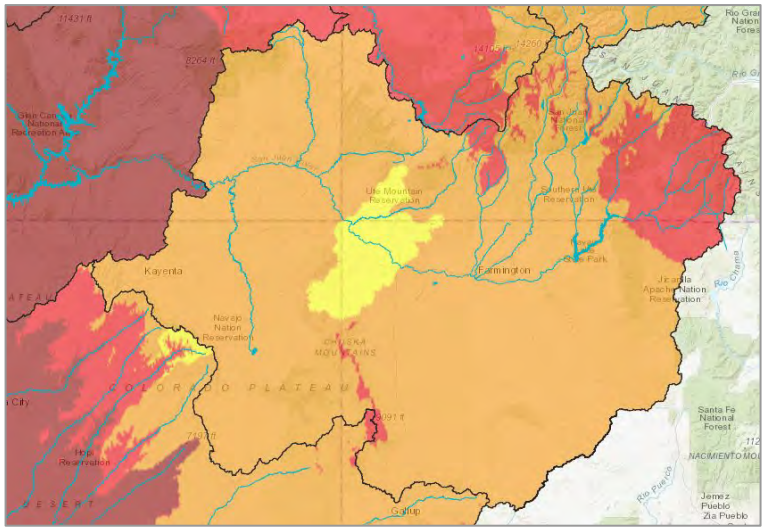
Animas River Basin: 40%
Above Navajo Reservoir: 50%

November

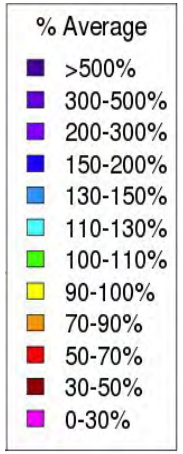


Animas River Basin: 55%
Above Navajo Reservoir: 55%

December



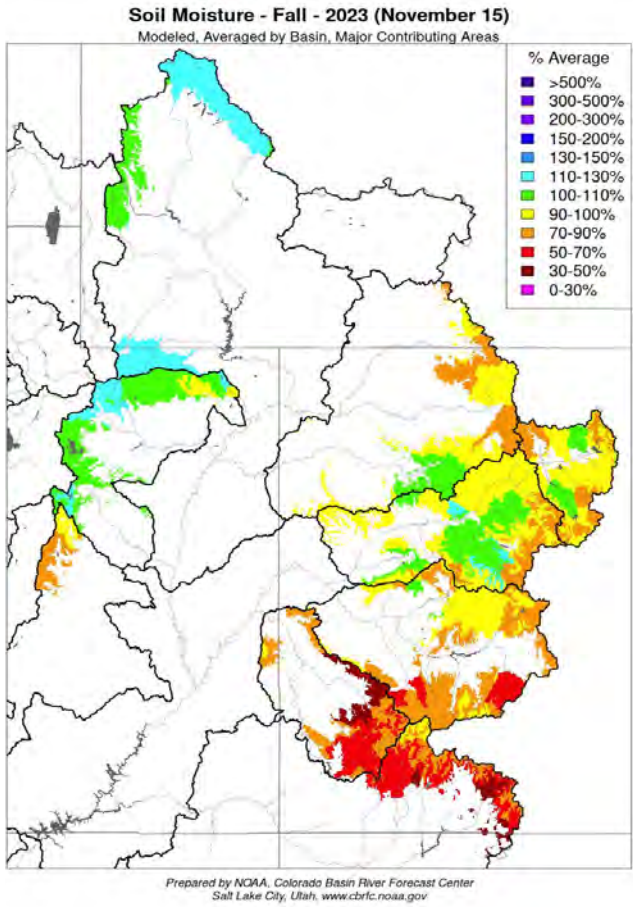
Animas River Basin: 80%
Above Navajo Reservoir: 65%

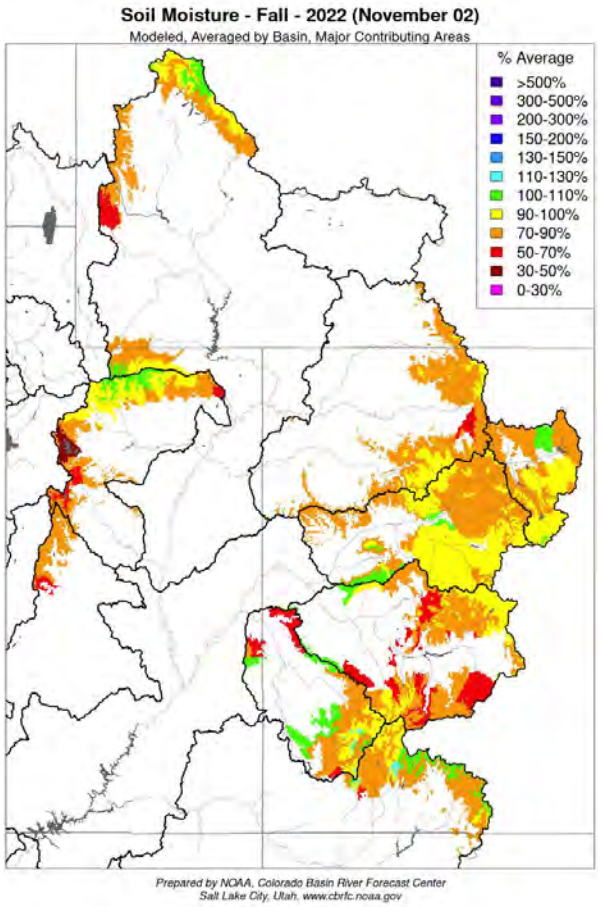


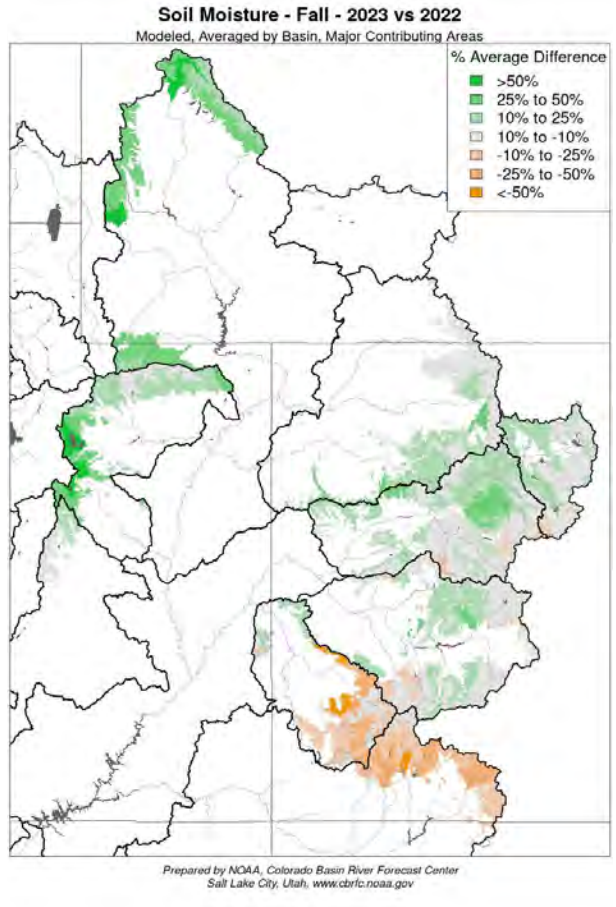
Observed precipitation is averaged by CBRFC defined basin elevation zones.

San Juan River Basin: Fall 2023 Model Soil Moisture Conditions

Soil moisture conditions are worse than last year for most runoff producing areas due to below normal summer and fall precipitation.







<u>Soil Moisture Impacts on Water Supply / Runoff</u>

Above normal soil moisture conditions → positive impact (increased runoff efficiency)

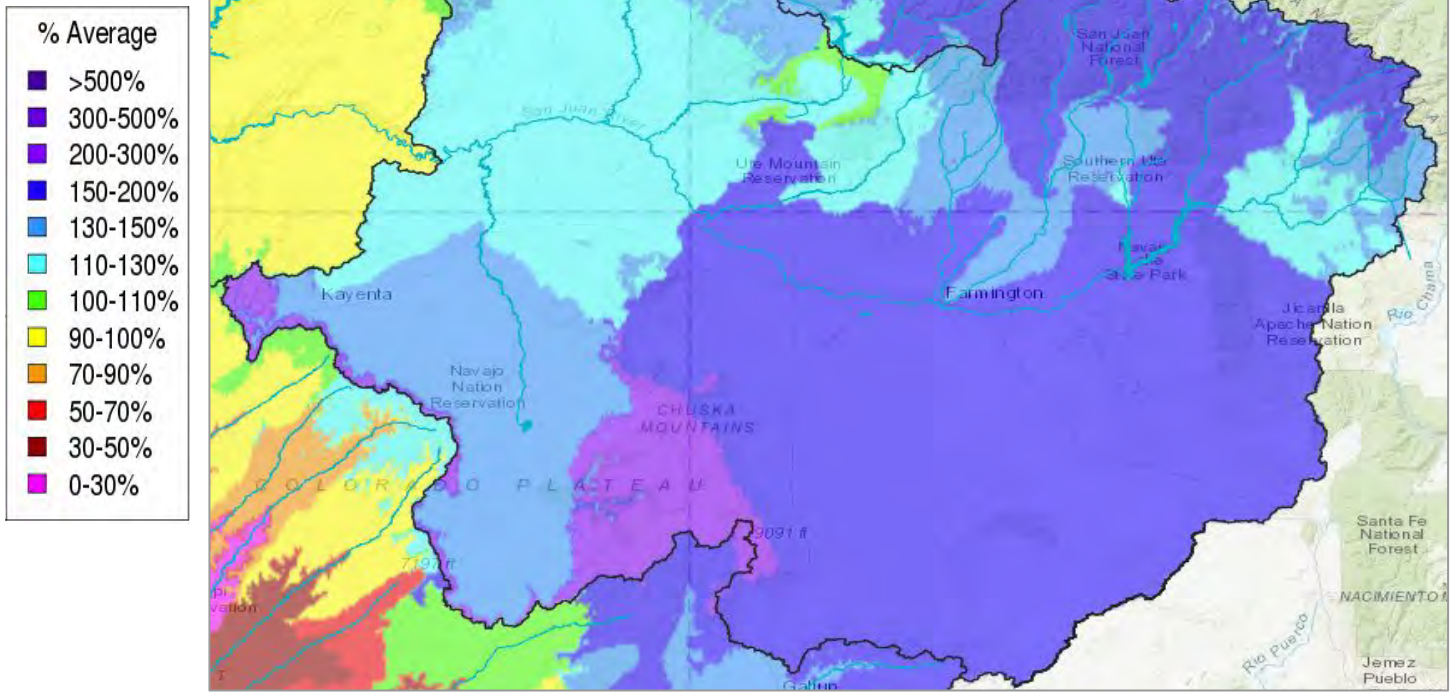
Below normal soil moisture conditions → negative impact (decreased runoff efficiency)

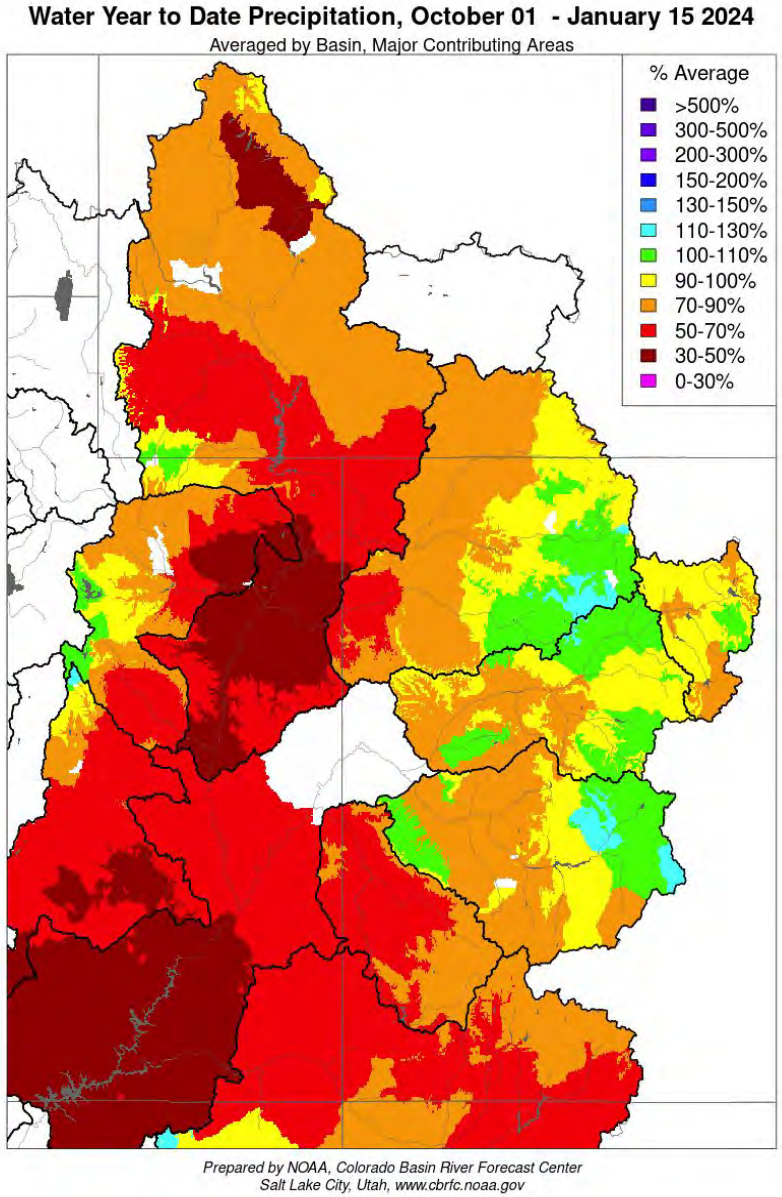
<u>Runoff Efficiency</u>

- Soil moisture deficit must be fulfilled before runoff can occur.
- Timing/magnitude of runoff is ultimately a result of:
  - Spring Weather (precipitation/temperature)
  - Snow Conditions
  - Soil Moisture Conditions
  - Dust conditions

Water Year 2024: Early January and Water Year to Date Precipitation

January 1- 15 Observed Precipitation



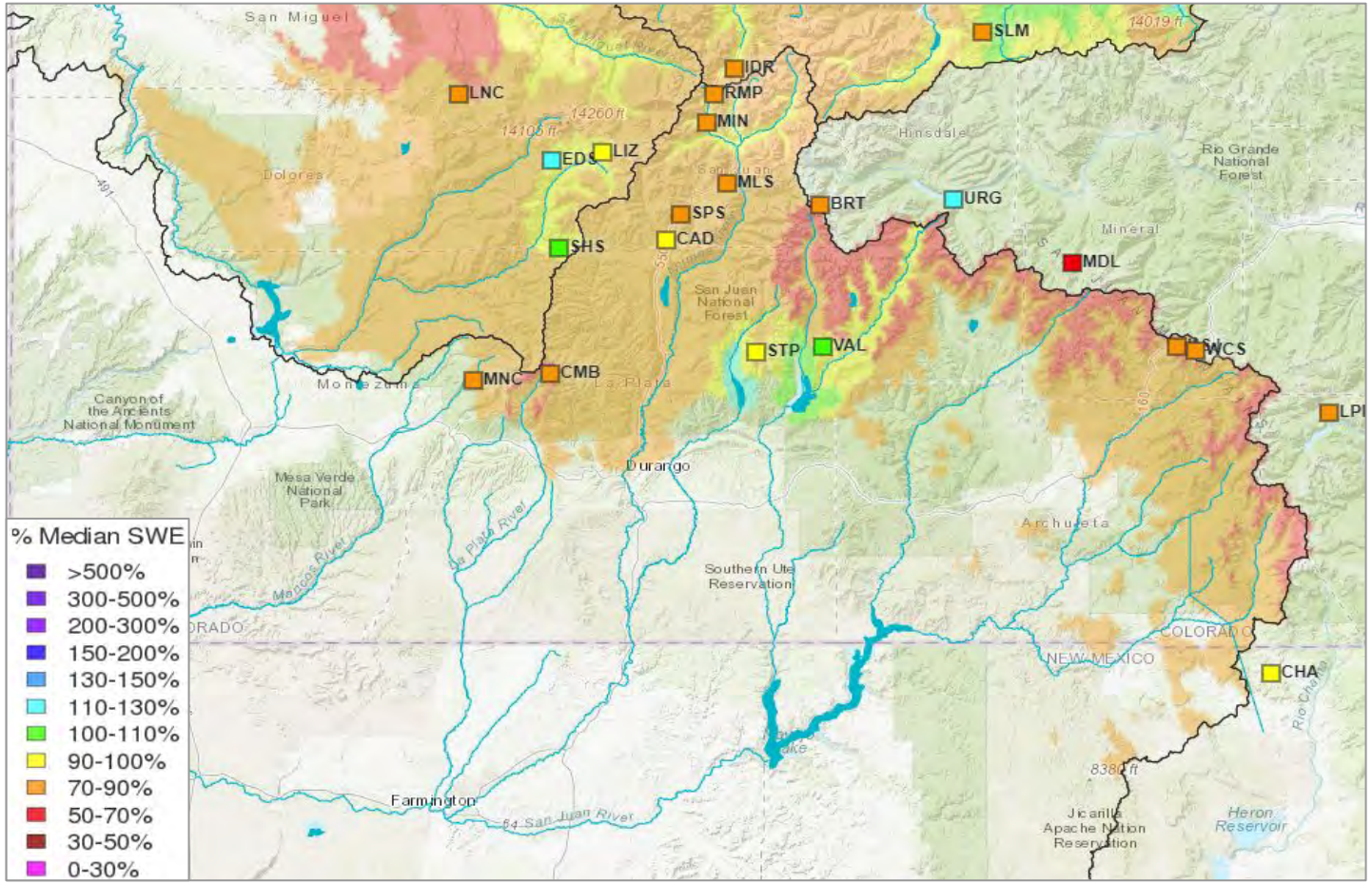


Observed precipitation is averaged by CBRFC defined basin elevation zones.

Snow Conditions

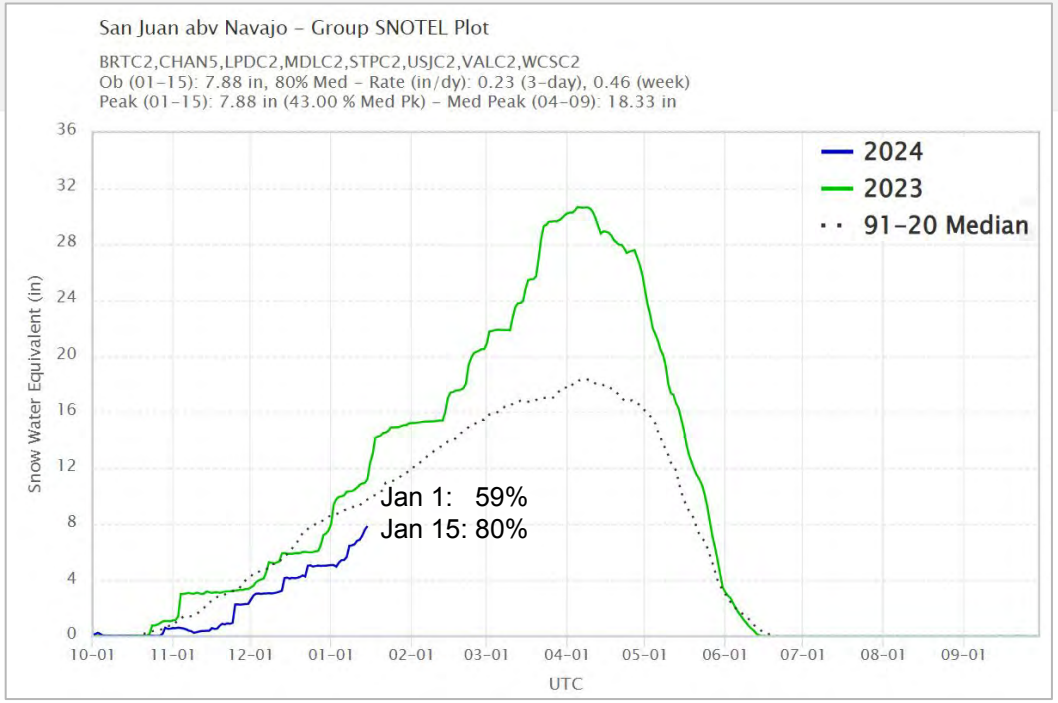
January 15 SWE Conditions

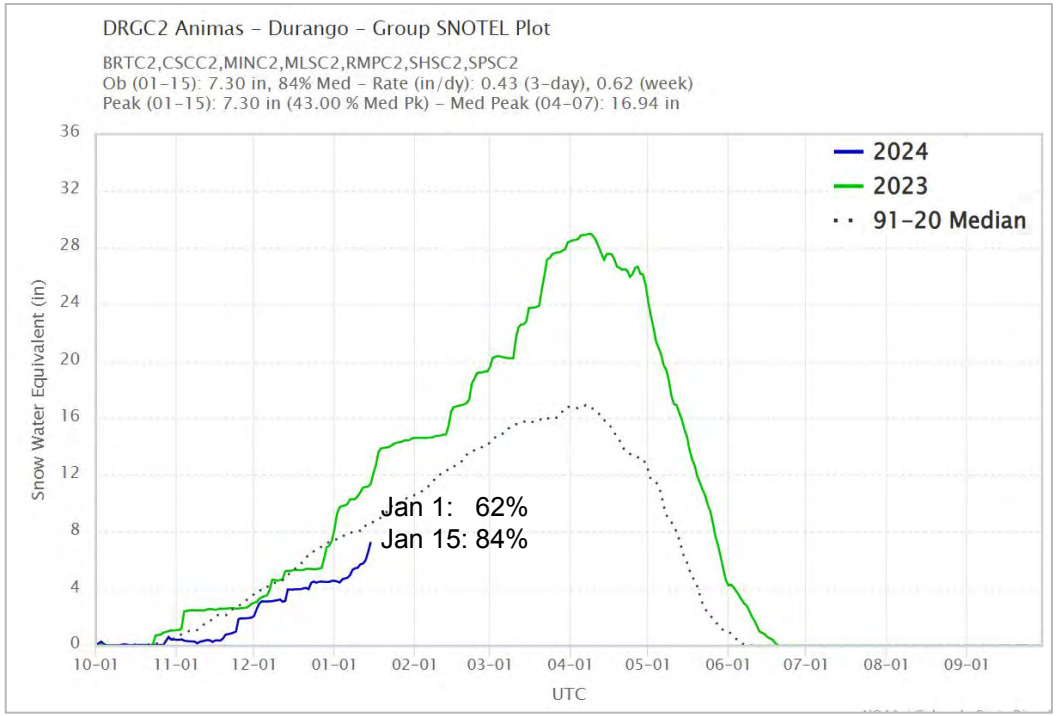
NRCS SNOTEL Observed (Squares)
CBRFC Model (Significant Areas)



Model snow includes areas above and below SNOTEL sites.

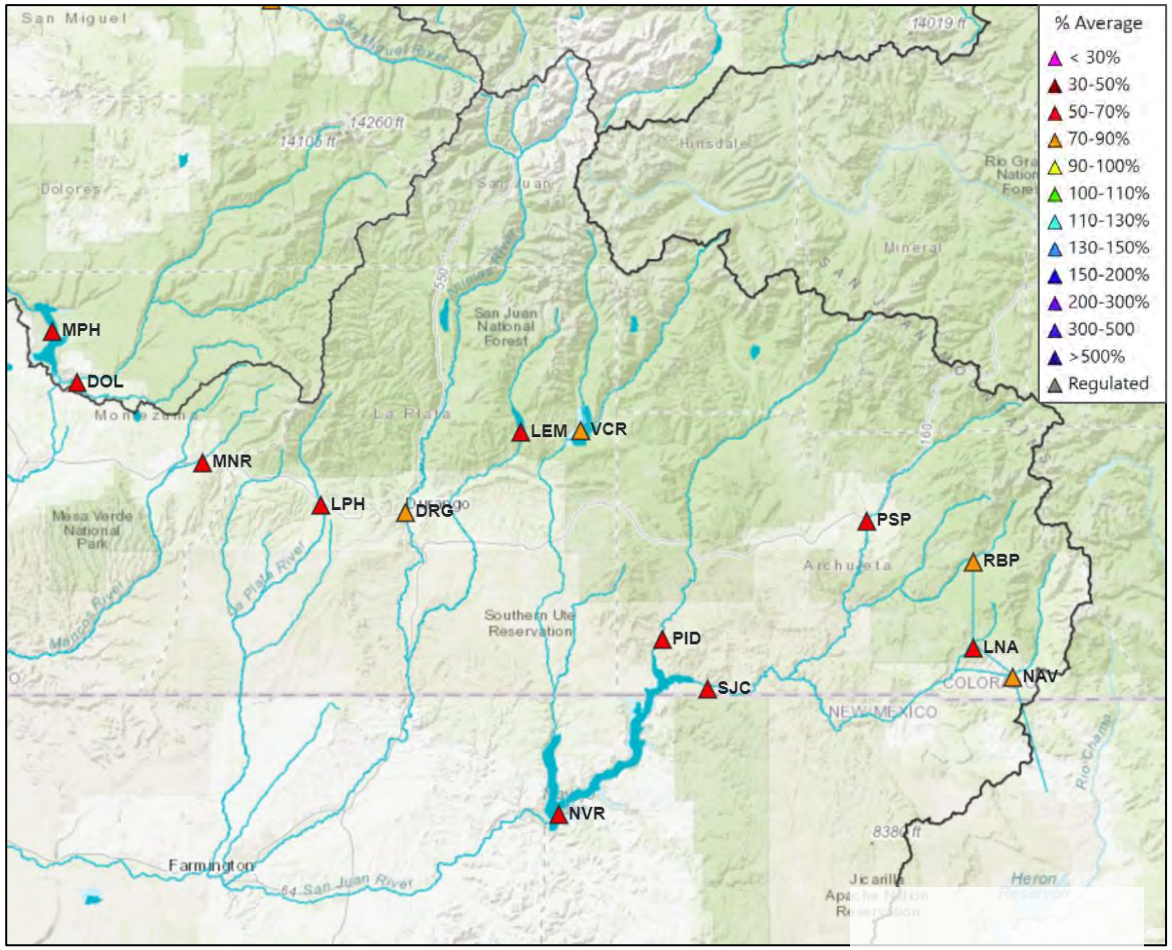
- SNOTEL locations range from ~8,500-11,500’
- Some modeled basins extend to over 13,000’





Mid-January Water Supply Forecasts: San Juan River Basin

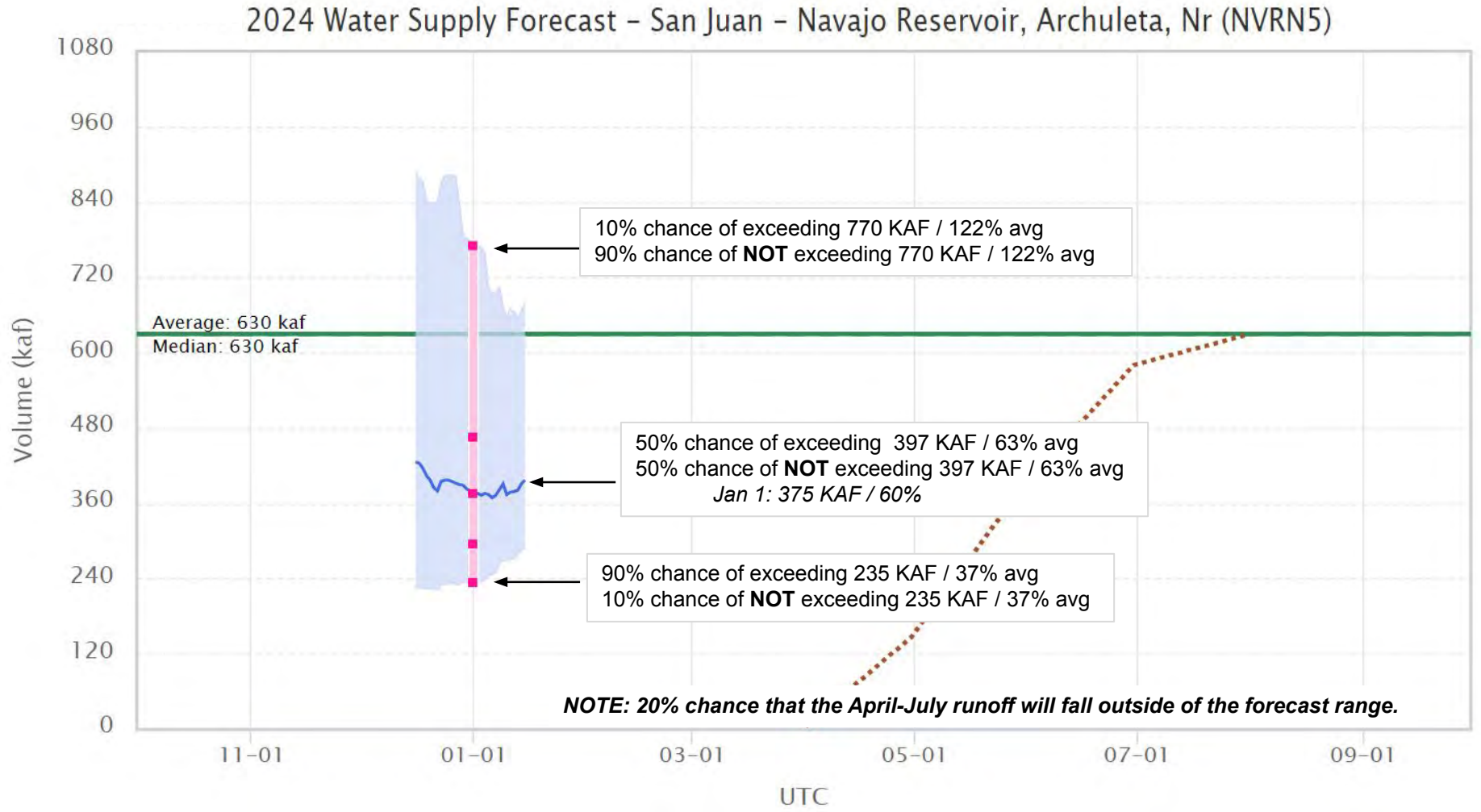
April-July Forecasts
Volume in 1000's acre-feet / Percent of 1991-2020 average



NWS ID	River	Location	ESP Date	Avg Cond	Forecast Period	MP 50	Avg	Pct Avg
PSPC2	San Juan	Pagosa Springs	2024-01-15	▲	Apr-Jul	134	194	69
SJCC2	San Juan	Carracas; Nr	2024-01-15	▲	Apr-Jul	226	330	69
RBPC2	Rio Blanco	Pagosa Springs; Nr; Blanco Dam; Blo	2024-01-15	▲	Apr-Jul	35.6	49.0	73
NAVC2	Navajo	Chromo; Nr; Oso Div Dam; Blo	2024-01-15	▲	Apr-Jul	40.7	58.0	70
PIDC2	Piedra	Arboles; Nr	2024-01-15	▲	Apr-Jul	111	181	62
VCRC2	Los Pinos	Vallecito Reservoir; Bayfield; Nr	2024-01-15	▲	Apr-Jul	130	177	73
NVRN5	San Juan	Navajo Reservoir; Archuleta; Nr	2024-01-15	▲	Apr-Jul	397	630	63
LEMC2	Florida	Lemon Reservoir; Durango; Nr	2024-01-15	▲	Apr-Jul	33.1	48.0	69
DRGC2	Animas	Durango	2024-01-15	▲	Apr-Jul	279	385	72
LPHC2	La Plata	Hesperus	2024-01-15	▲	Apr-Jul	14.9	23.0	65
BFFU1	San Juan	Bluff; Nr	2024-01-15	▲	Apr-Jul	653	1110	59
MNRC2	Mancos	Mancos; Nr	2024-01-15	▲	Apr-Jul	11.8	17.2	69
LNAC2	Little Navajo	Oso Div Dam;Bl;Chromo;Nr	2024-01-15	▲	Apr-Jul	3.36	6.10	55

Mid-January 50% exceedance forecasts range from 55-75% average.

Water Supply Forecast: Navajo Reservoir Inflow



Blue shading: Daily Raw Model Guidance 90% - 10% exceedance range
Blue line: Daily Raw Model Guidance 50% exceedance
Pink line: Official forecast 90%, 70%, 50%, 30%, 10% exceedance

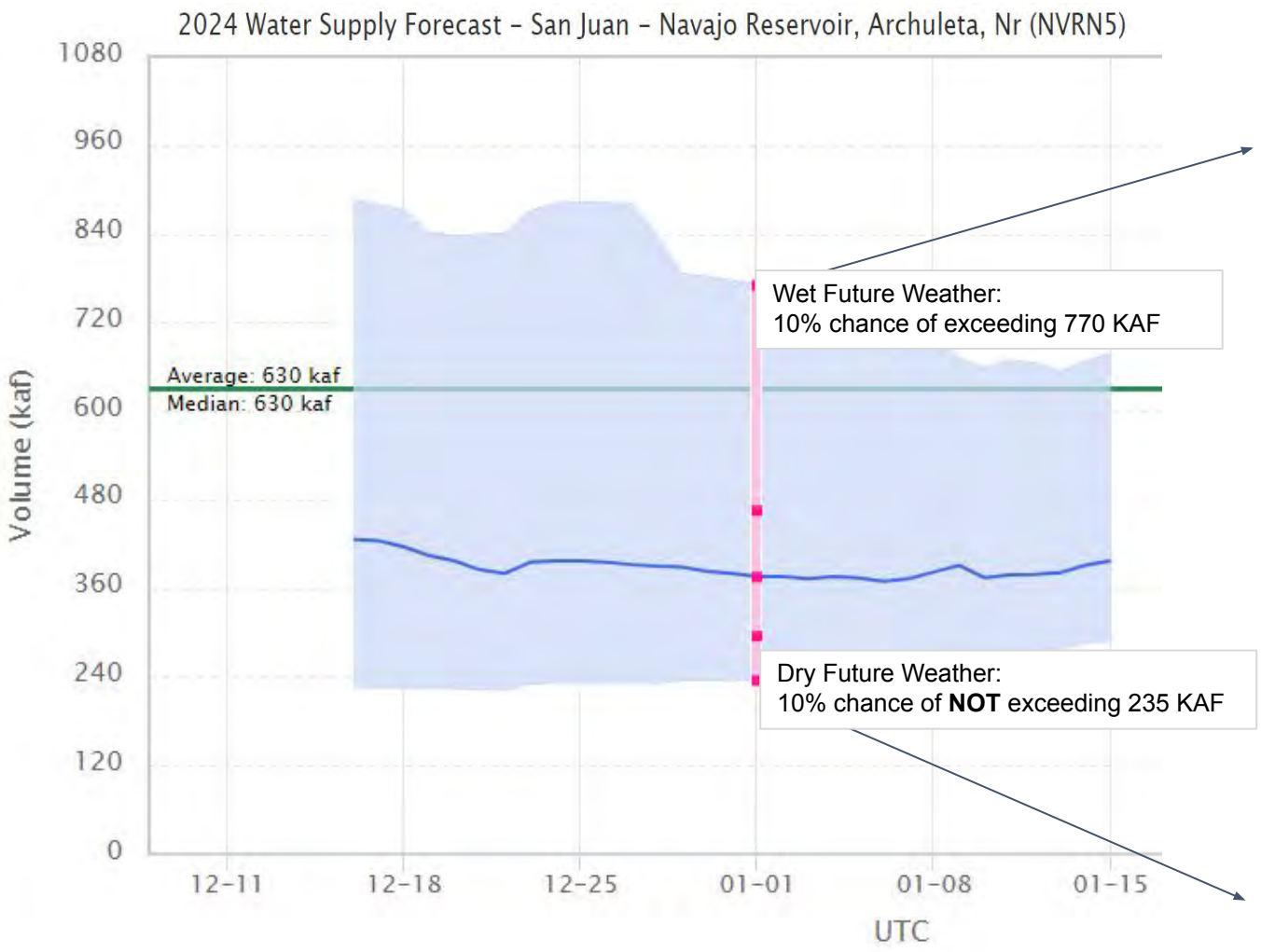
Green solid: 1991-2020 average April-July volume
Green dotted: 1991-2020 median April-July volume

Brown dotted: Average observed

- The forecast has increased slightly since January 1st due to improved snow conditions.
- Still early in the water supply season.

[Navajo Inflow Forecast Plot Link]

Water Supply Forecast: Navajo Reservoir Inflow



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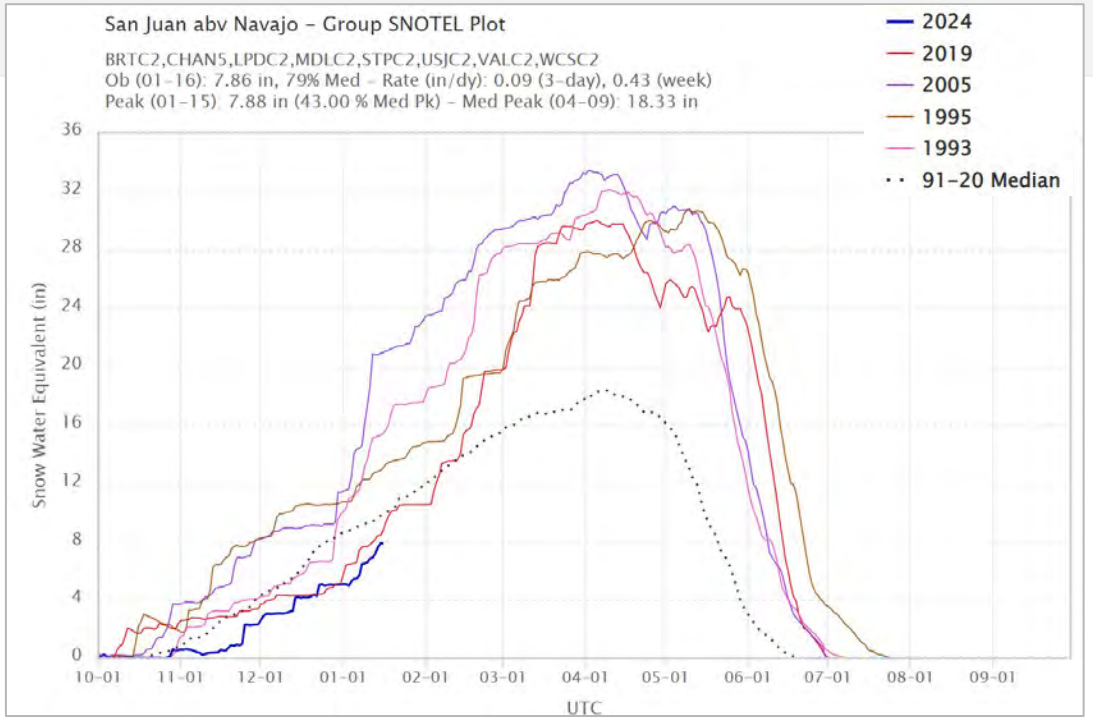
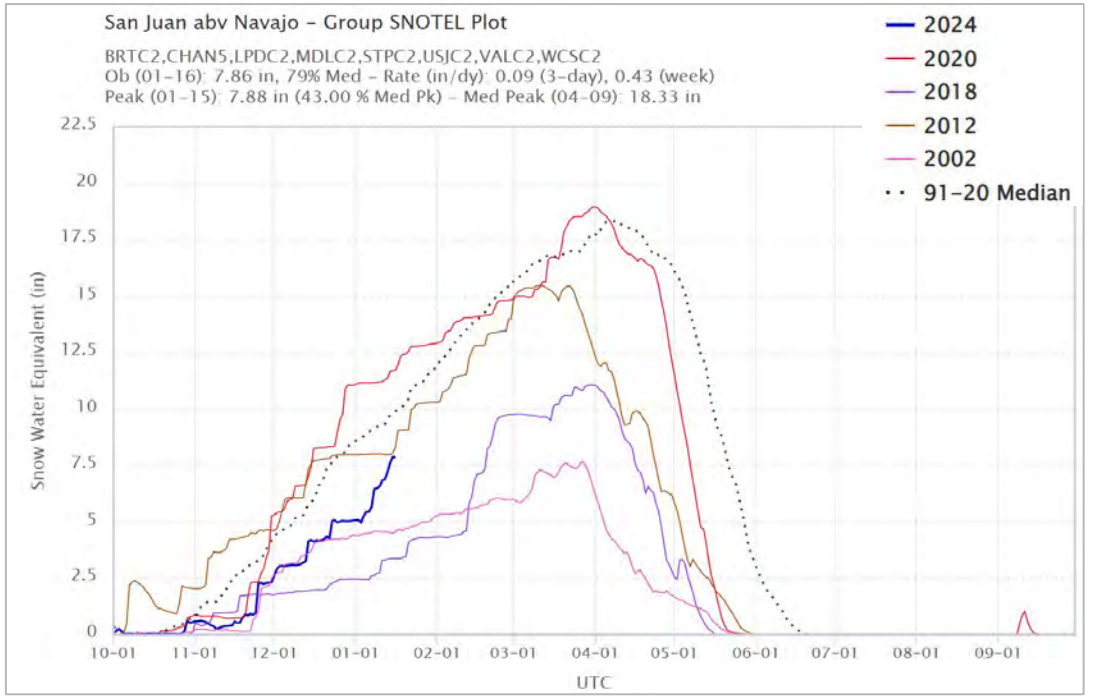




Early Season Forecast Uncertainty

January 1st Forecast:

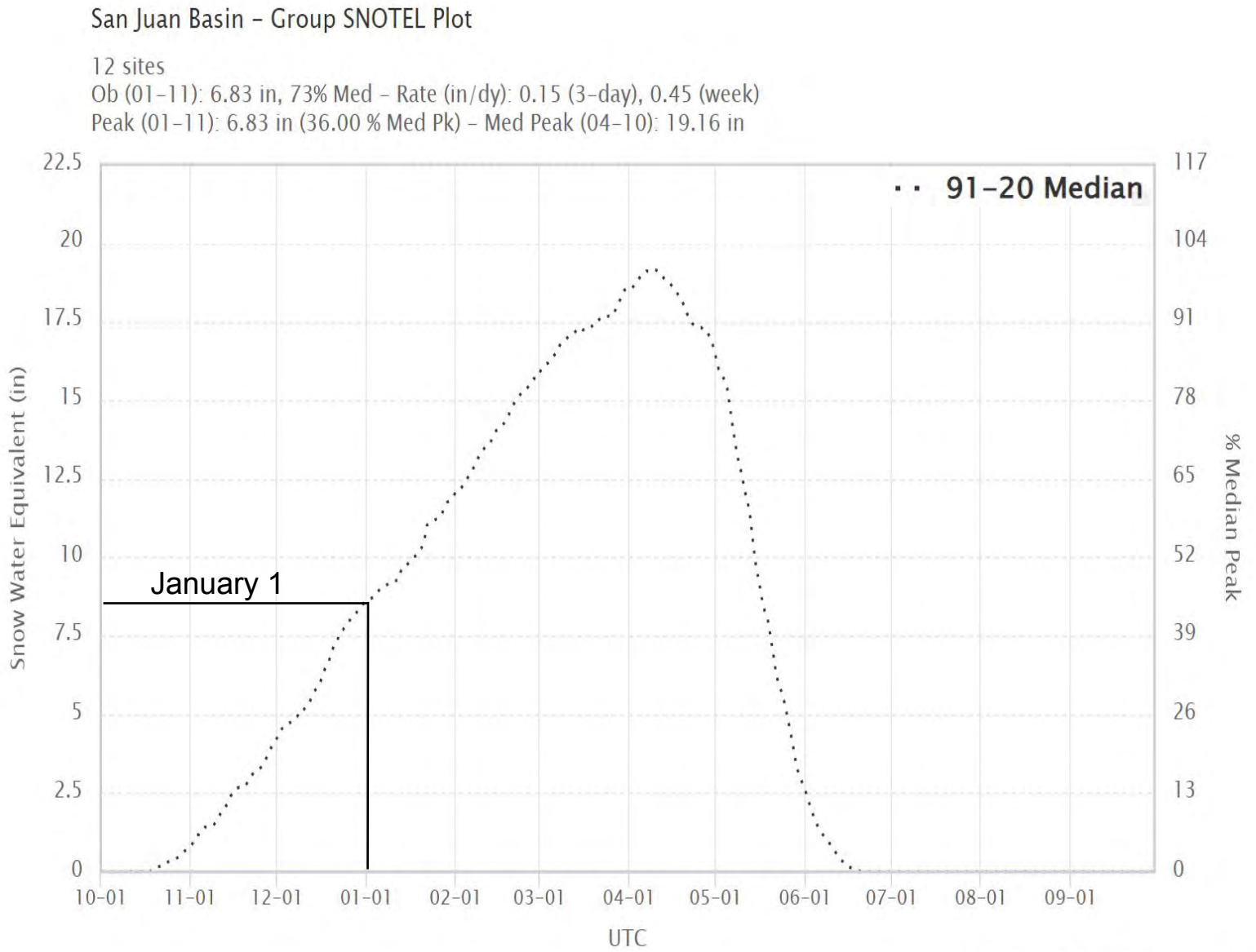
What we know:

- ~40% of snowpack accumulation
- Fall soil moisture conditions

What we **DON'T** know:

- Jan-June weather (5 months)
- ~60% of snowpack accumulation
-

Navajo Reservoir:
Average January Forecast Error: ~200 KAF



NOAA / Colorado Basin River Forecast Center /

Summary

Soil moisture

- Conditions are worse than last year and are below normal.
- Soil moisture deficits must be overcome before runoff can occur.
- Conditions will most likely have an negative impact on runoff.
- Final impact will depend on spring weather and snow conditions.

Snow

- Snow conditions have improved since early January due to a favorable weather pattern.
- Below to near normal conditions as of mid-January
- Mid-January is a little less than halfway (~40-50%) through the snow accumulation season
  - Still early in the snow season

January Water Supply Forecasts

- Forecasts range from:
  - Early-January: 50-70% of average
  - Mid-January: 55-75% of average
- Forecast guidance has increased slightly since early January.

Contact Info

Contact Information

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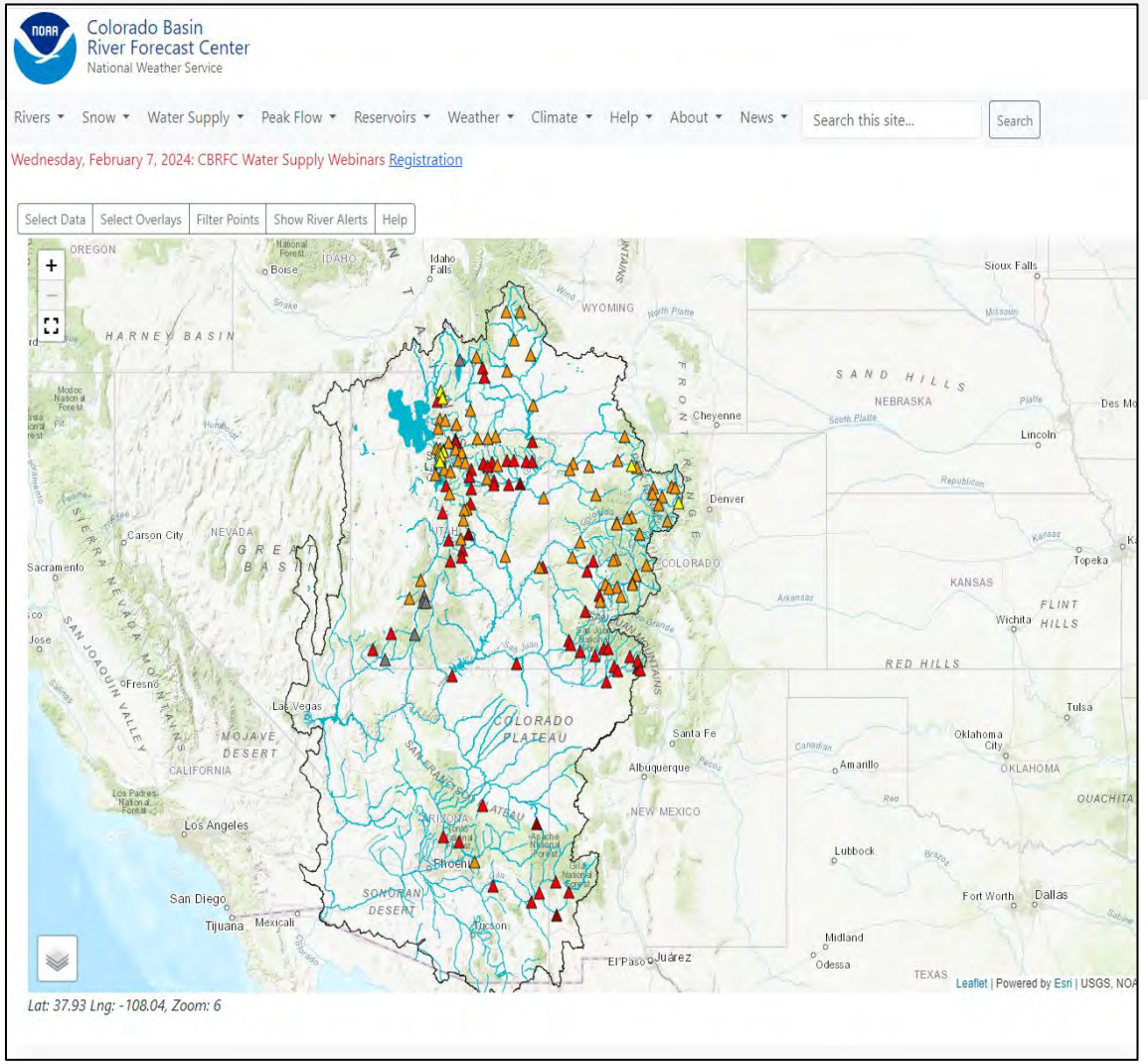
  - 801-524-5130 x333
- Operational Hydrologist: in office
  - 801-524-4004
  - cbrfc.operations@noaa.gov



CBRFC Webpage
https://www.cbrfc.noaa.gov/

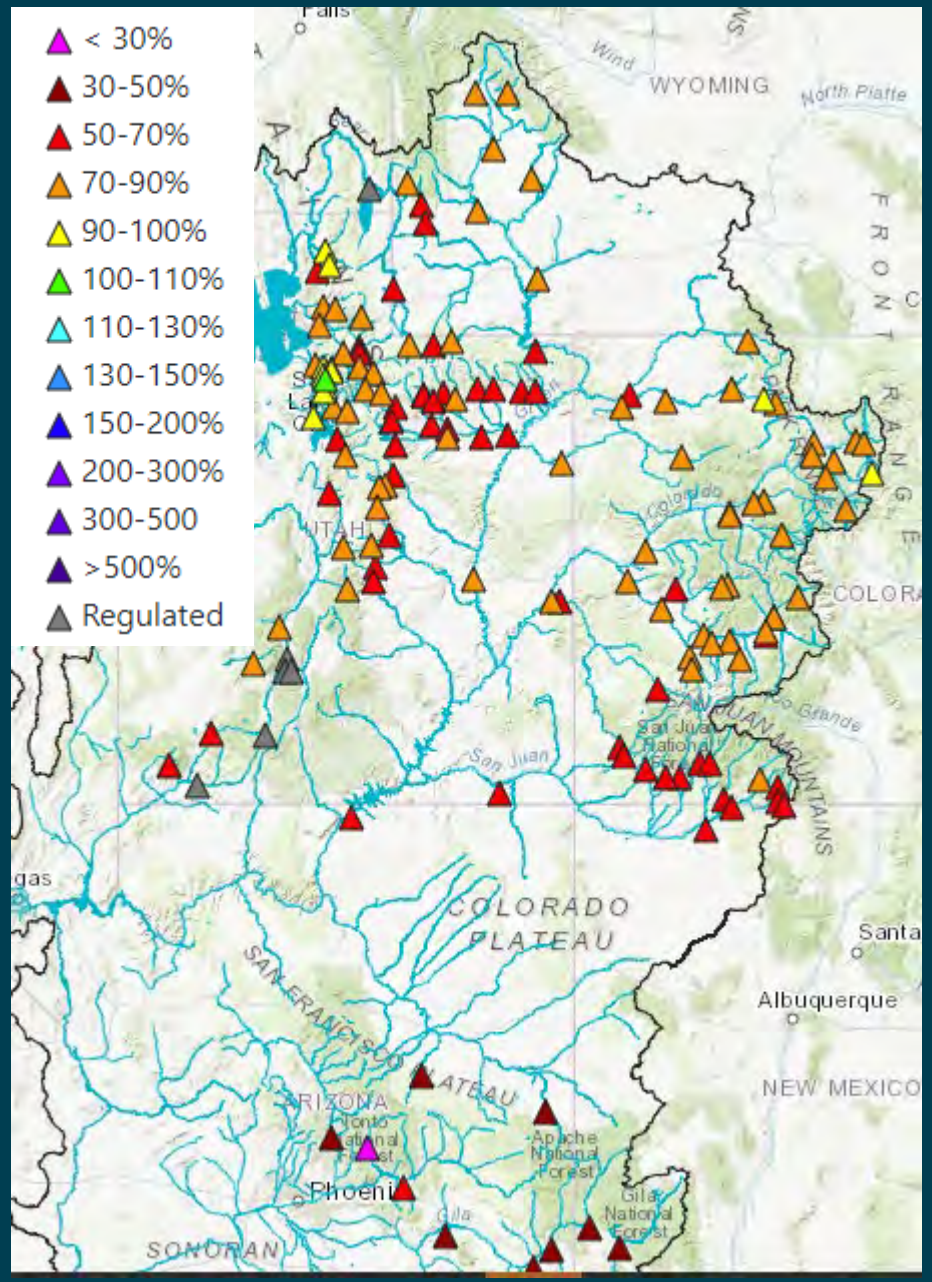
CBRFC Water Supply Presentations
https://www.cbrfc.noaa.gov/present/present.php

Official 2024 Water Supply Forecast (April-July)

as of January 2024

Navajo:	375 kaf (60%* avg)
Vallecito:	118 kaf (67% avg)
Lemon:	30 kaf (63% avg)
Animas:	265 kaf (69% avg)
McPhee:	145 kaf (57% avg)
Powell:	4,200 kaf (66% avg)

*average of the 1991 – 2020 time period



Official 2023 Water Supply Forecast (April-July)

THIS TIME LAST YEAR

Navajo: 570 kaf (90%* avg)

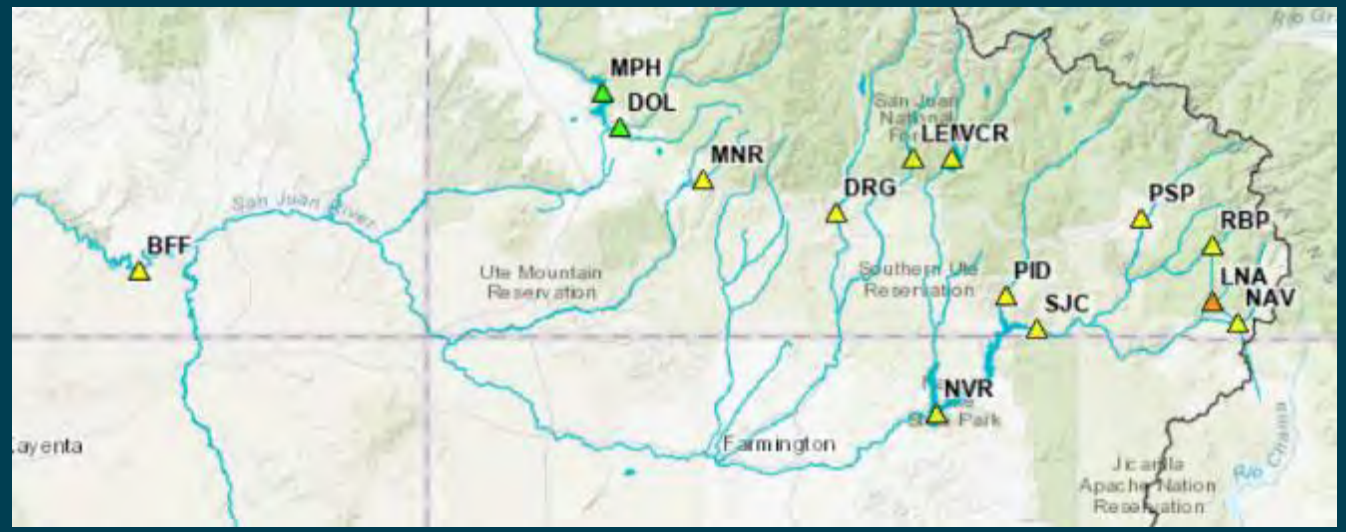
Vallecito: 170 kaf (96% avg)

Lemon: 48 kaf (100% avg)

Animas: 385 kaf (100% avg)

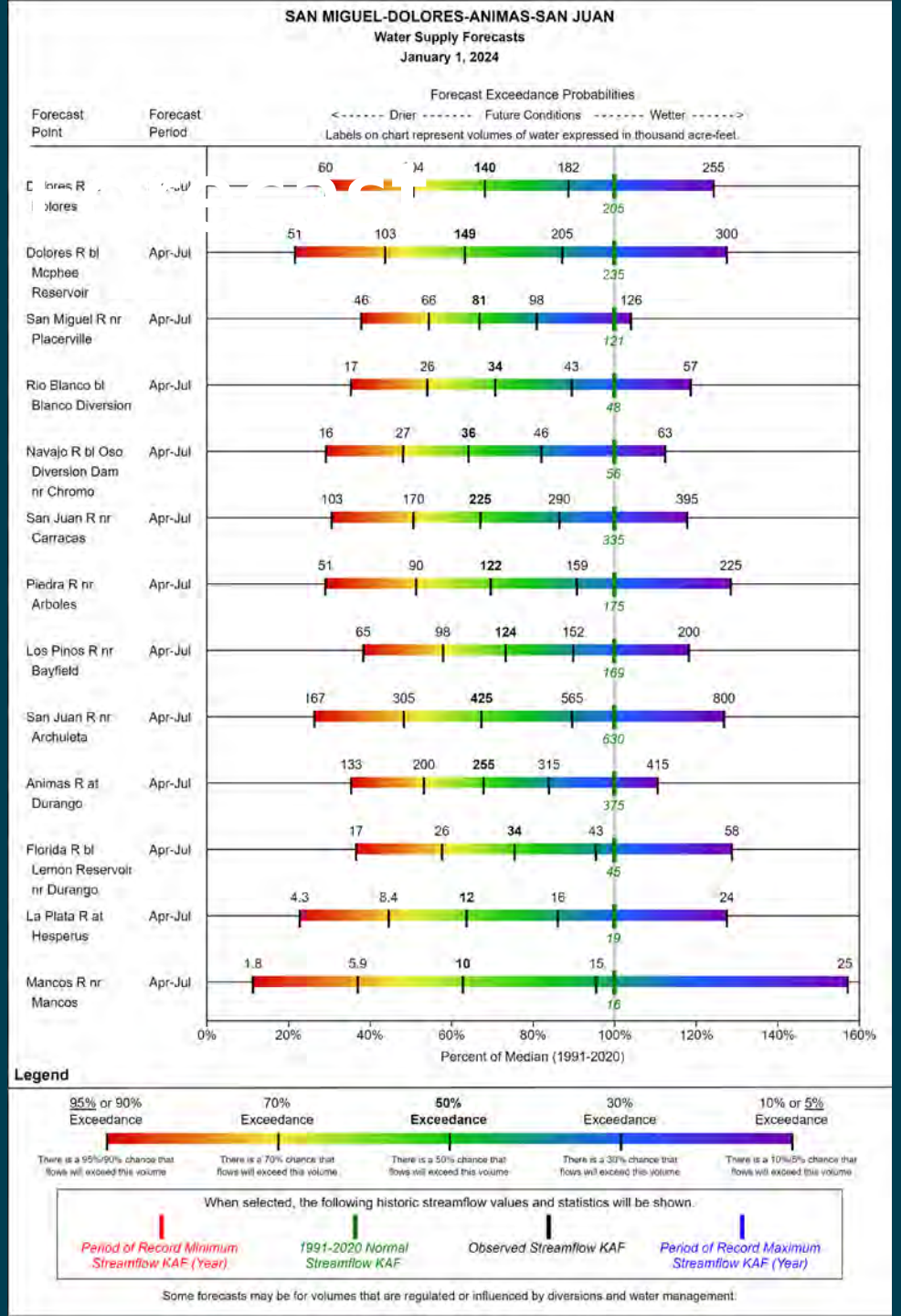
McPhee: 260 kaf (102% avg)

Powell: 6,700 kaf (105% avg)



*average of the 1991 – 2020 time period

NRCS 2024 Water Supply (April-July)

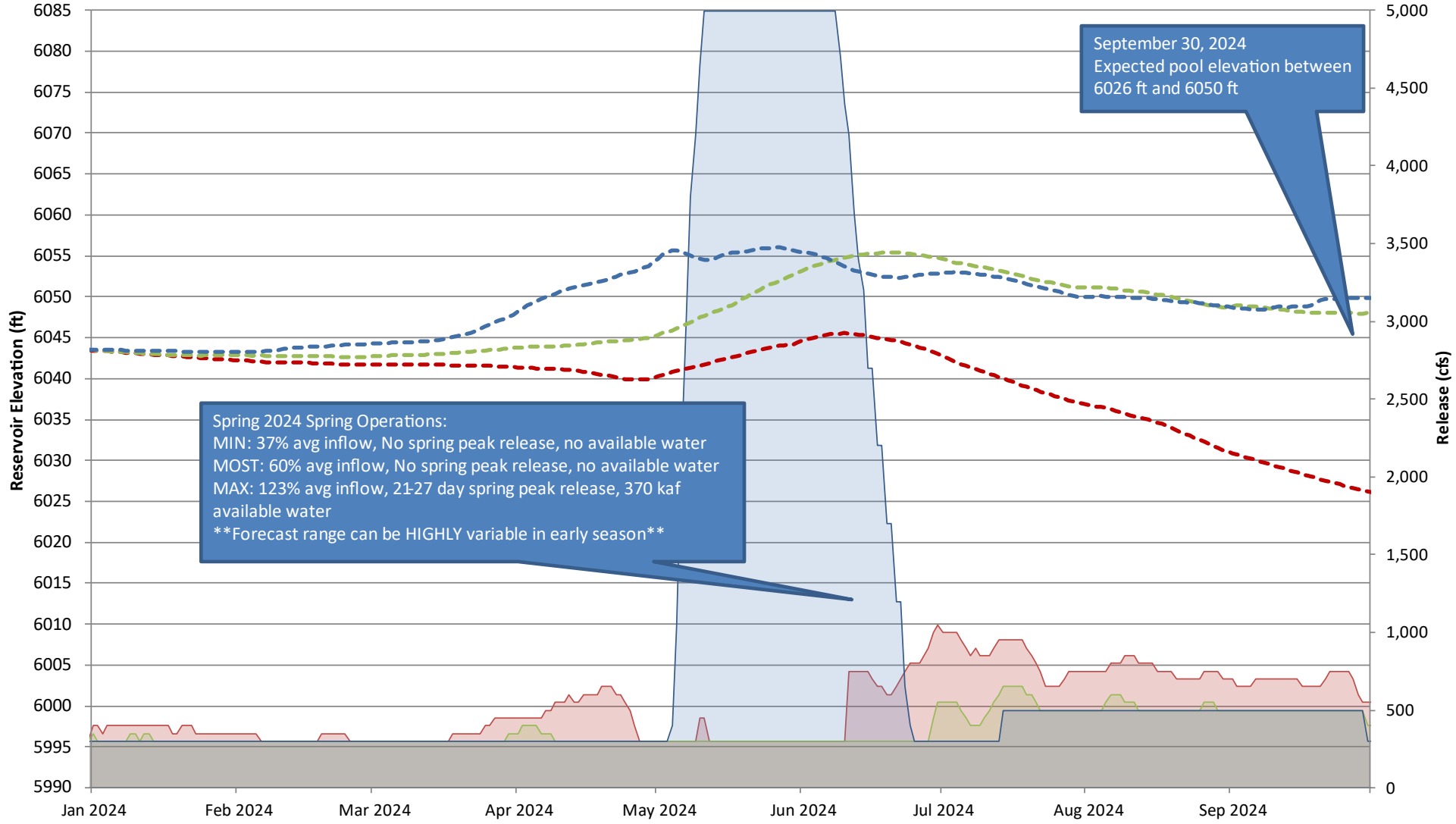


Spring Operations Calculations

Navajo spring operations are made in accordance with the Record of Decision (2006). Spring operations will depend on if there is any “available water” after calculating storage levels, upstream reservoir operations, and after calculating that all contract releases and minimum ESA requirements are met, as well as several other factors.

Navajo Reservoir Forecast Elevation and Release WY 2024

as of January 2024 24-Month Study



Reduced release for instream work

- Project managers for the Turley Manzanares Ditch Company Diversion Dam Rehabilitation Project have requested a reduction in the release to 250 cfs for instream work.
- The City of Farmington Power Plant will take this opportunity to do maintenance as they will not be able to generate power.
- The release will be made through the Auxiliary 4x4 during this time.
- This reduction from 350 cfs to 250 cfs will begin Monday, January 29th at 3:00 PM. The release will be restored to 350 cfs on **Tuesday, January 30th** at 8:00 AM.

Projected Operations WY 2024

Based on the current streamflow conditions, storage levels, and statistical outlooks based on 30 years of historical hydrology,

- Navajo Reservoir runoff projections range from 235 kaf (37% avg) – 770 kaf (123% avg) with a median projection of 375 kaf (60% avg).
- Potential for a spring peak release under the Max Probable forecast. No spring peak under Min or Most Prob forecast. (Watch for snow! We may trend towards the Max just like last year or in 2019.)
- No project shortages are forecast to occur in WY2024.
- Reservoir forecast to peak between 6045 and 6055 ft in spring.
- End of Water Year storage range 925 kaf (6025 ft, 56% full) – 1,170 kaf (6055 ft, 71% full)

Maintenance Update

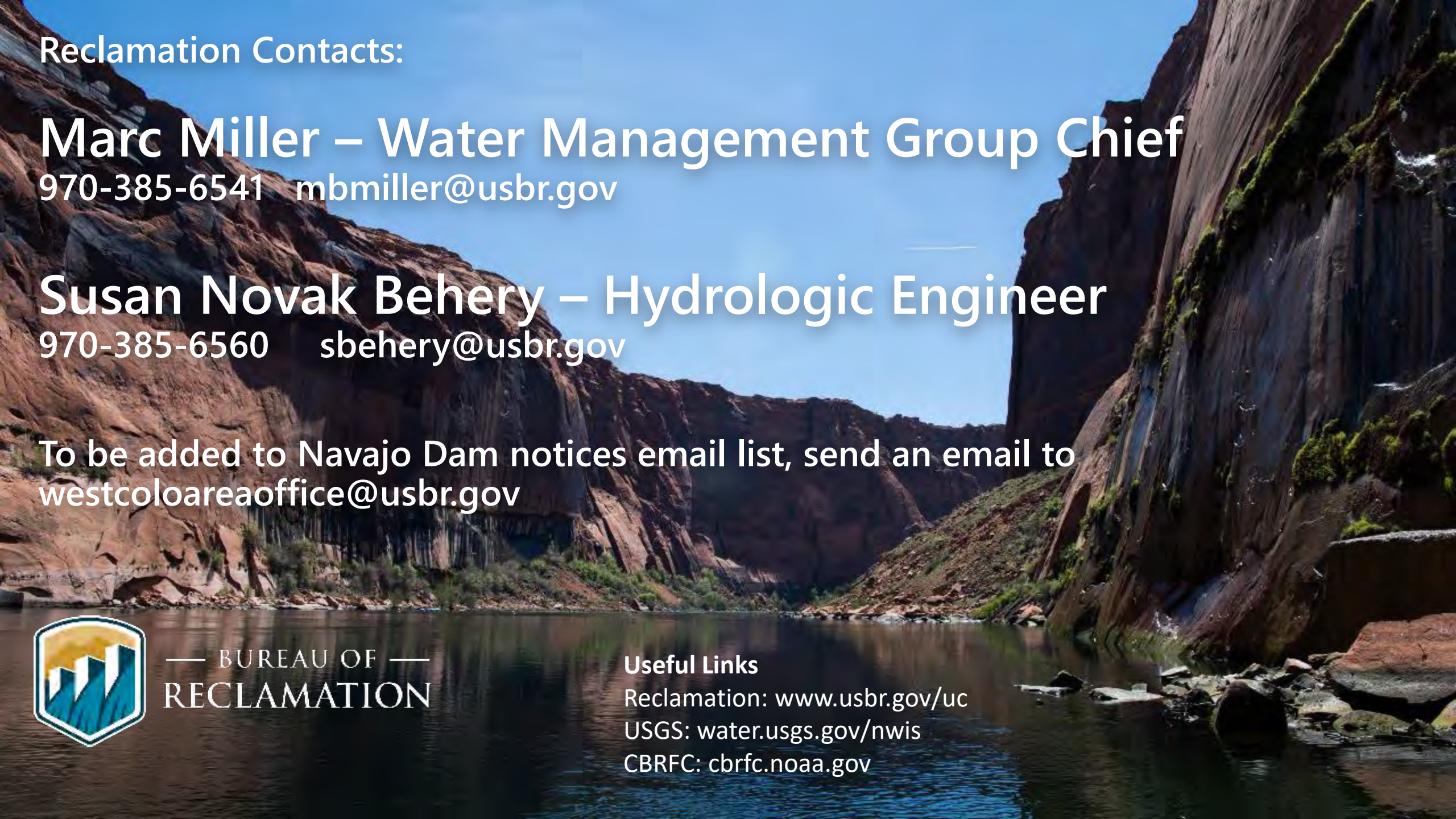
- An exploratory drilling project has begun on the dam face.
- You may see drill rigs and official personnel working along the face and crest of the dam through summer 2025.
- Periodic extended road closures will occur on CR 511 (crossing the dam) and CR 539 (dam crest).
- No road closures are planned during the summer recreational season (between Memorial Day and Labor Day).

Next Meeting April 23rd

Links

- Navajo Project Notices: https://www.usbr.gov/uc/wcao/water/rsvrs/notice/nav_rel.html
- Navajo Monthly Forecast Update: https://www.usbr.gov/uc/water/crsp/cs/nvd.html

- UC Water Operations Home: https://www.usbr.gov/uc/water/index.html
- Teacups: https://www.usbr.gov/uc/water/basin/index.html
- 24-Month Study: https://www.usbr.gov/uc/water/crsp/studies/index.html
- DROA: https://www.usbr.gov/dcp/droa.html



Reclamation Contacts:

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Susan Novak Behery – Hydrologic Engineer

970-385-6560 sbehery@usbr.gov

To be added to Navajo Dam notices email list, send an email to westcoloareaoffice@usbr.gov

BUREAU OF RECLAMATION

Useful Links

Reclamation: www.usbr.gov/uc

USGS: water.usgs.gov/nwis

CBRFC: cbrfc.noaa.gov