

Colorado River Commission of Nevada

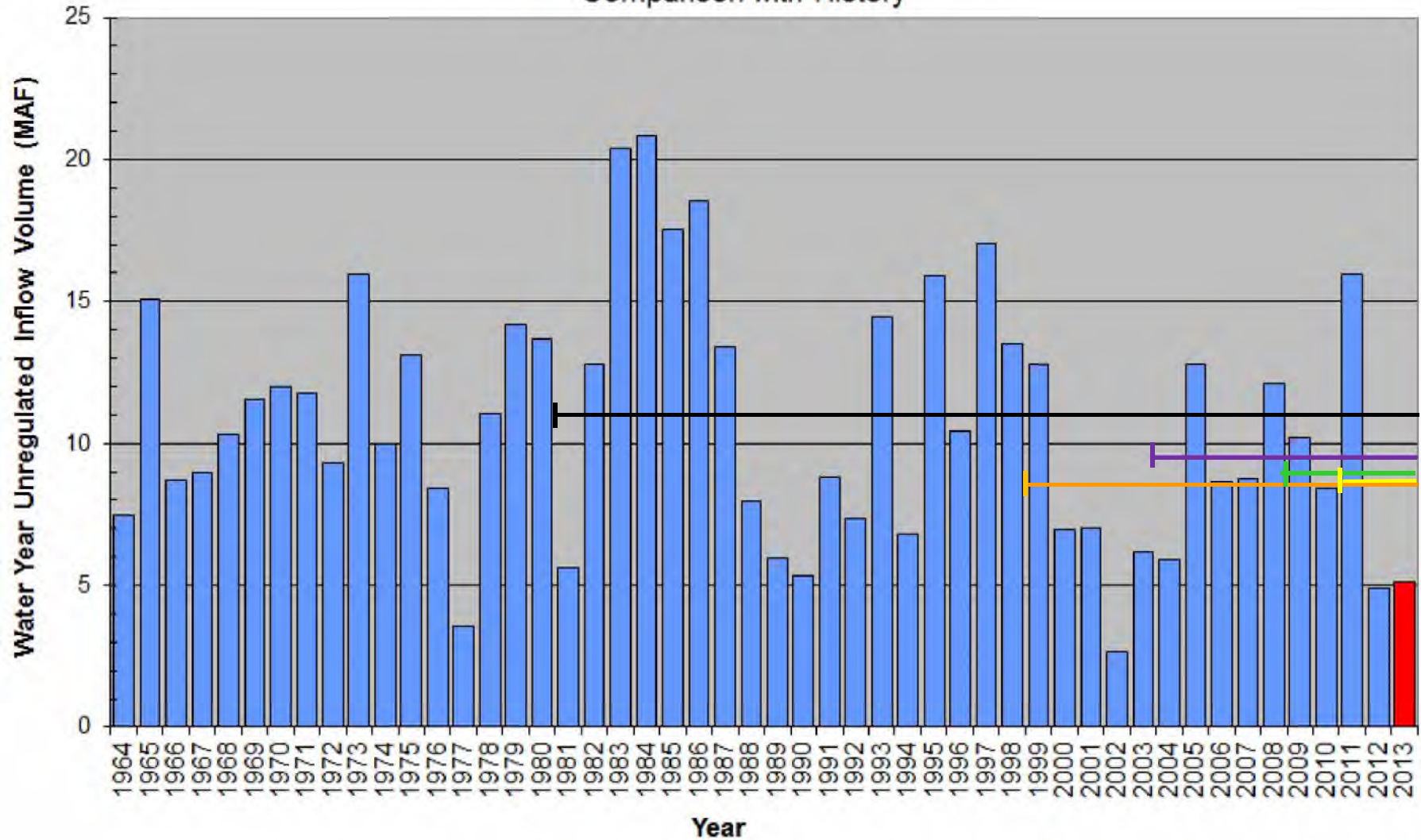
Natural Resources Group Hydrologic Update November 12, 2013



Unregulated Inflow



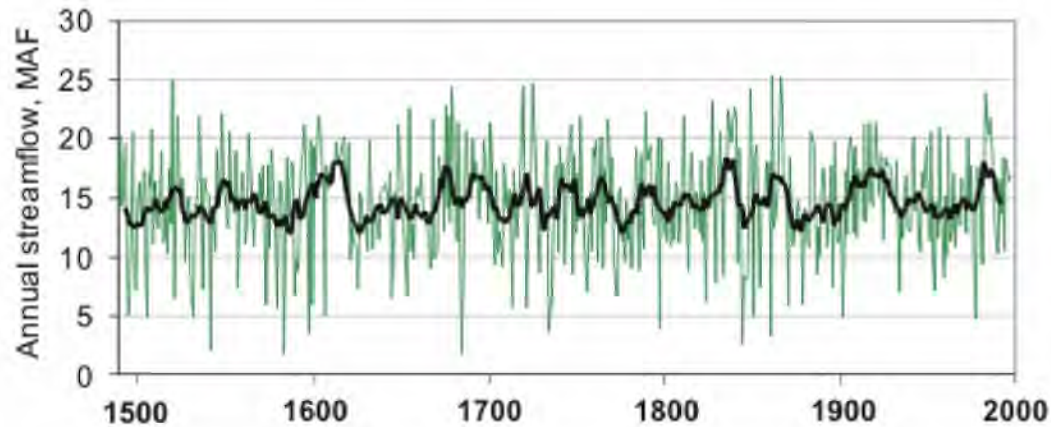
Lake Powell Unregulated Inflow Comparison with History



Yellow = 3 Year Average = 8.67 maf
 Green = 5 Year Average = 8.93 maf
 Purple = 10 Year Average = 9.23 maf
 Orange = 15 Year Average = 8.56 maf
 Black = Normal (1981-2010) = 10.83 maf

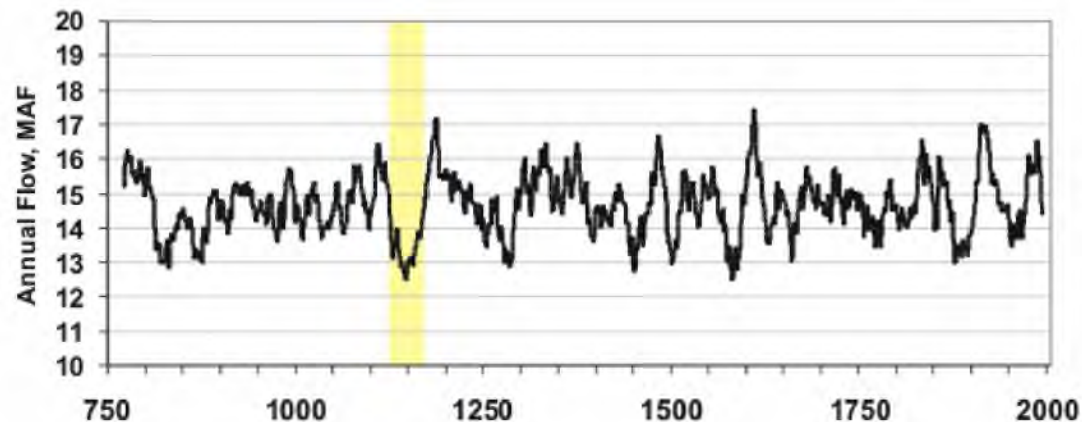
Normal - The 30 year interval is sufficiently long to filter out short-term interannual fluctuations and anomalies, but sufficiently short to be used to reflect longer term climatic trends

Recent Paleo Studies



Woodhouse et al. (2006)

- Reconstructed at 10 gages
- Multiple reconstructions for each gage
- Calibration at stations were very similar
- Long term flow was about 14.7 maf
- 10 year running mean (black)



Meko et al. (2007)

- Collected tree remnants to create longer history
- Reconstructed 1200 years
- 57-year period (1121-1177) only 9 years had reconstructed flow higher than the gage record mean

Unregulated Inflow Into Lake Powell

As of November 1, 2013

	MAF*	% Avg**
• WY 2013 (observed):	5.12	47%
• April-July 2013 (observed):	2.56	36%
• Oct (observed):	0.55	107%
• Nov (projected):	0.43	91%

*MAF=Million Acre-Feet

**30-year average, from 1981-2010 (current normal)



Storage Conditions

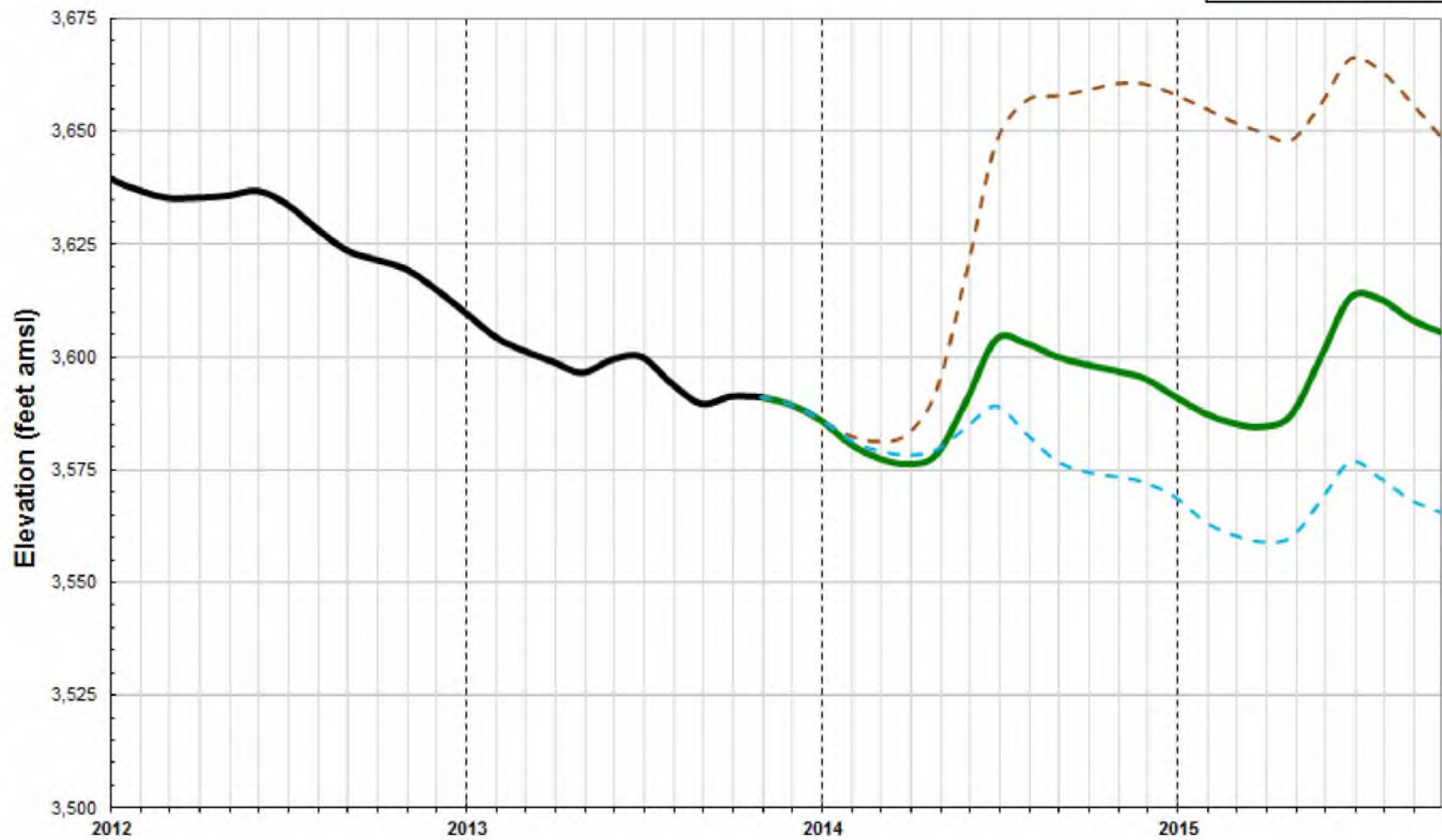
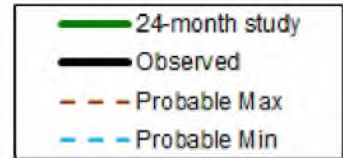
As of November 4, 2013

		<u>Percent of Capacity</u>	<u>Δ from last year</u>
Lake Mead elev.	1,104.10 ft	45%	↓ 12.27 ft
Lake Powell elev.	3,590.96 ft	45%	↓ 28.25 ft
Total System Storage (11/2013)	29.62 maf	50%	↓ 4.00 maf
Total System Storage 11/2012)	33.62 maf	56%	



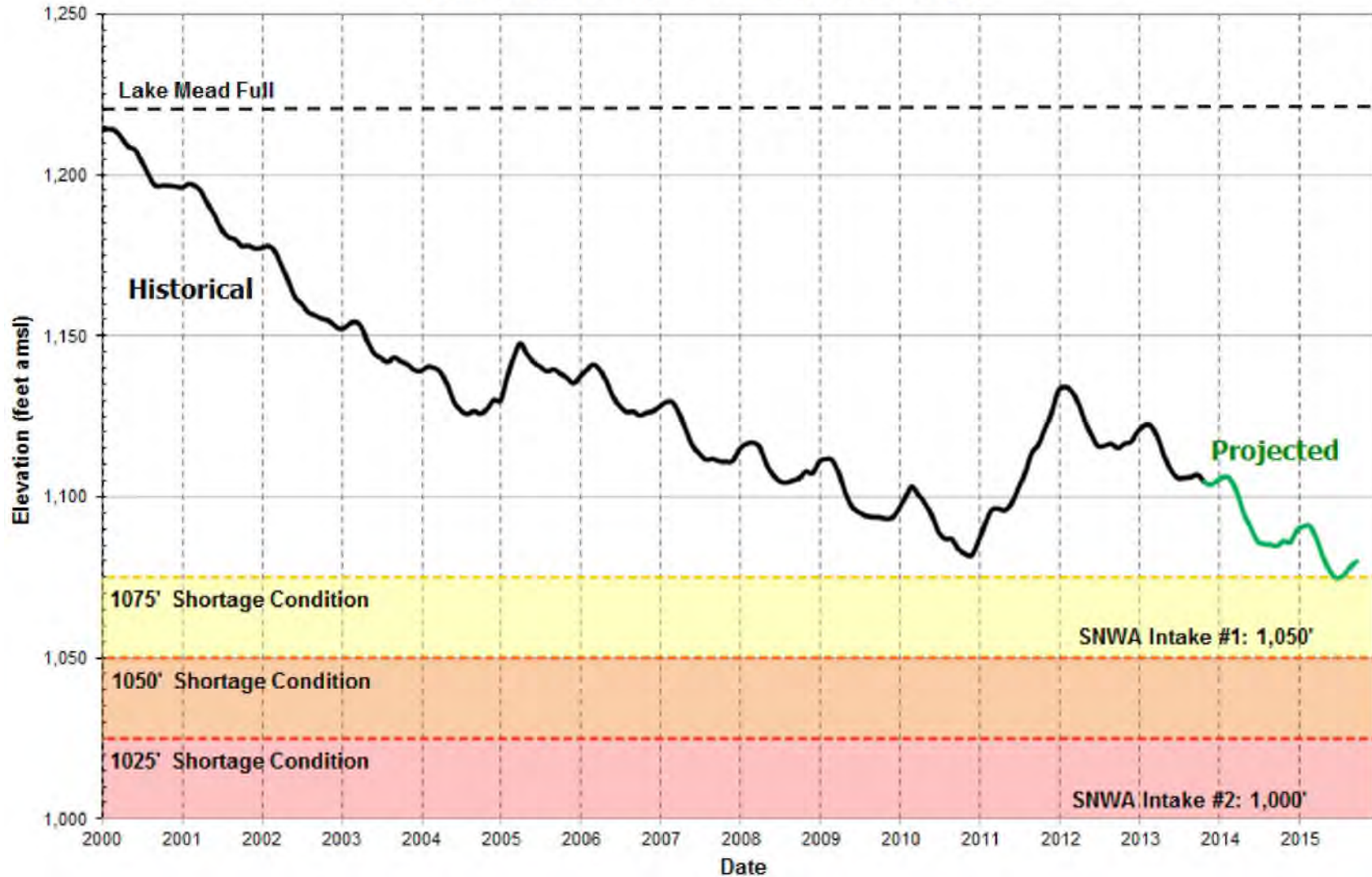
Lake Powell End of Month Elevations

(based on OCT 2013 24-month Study)



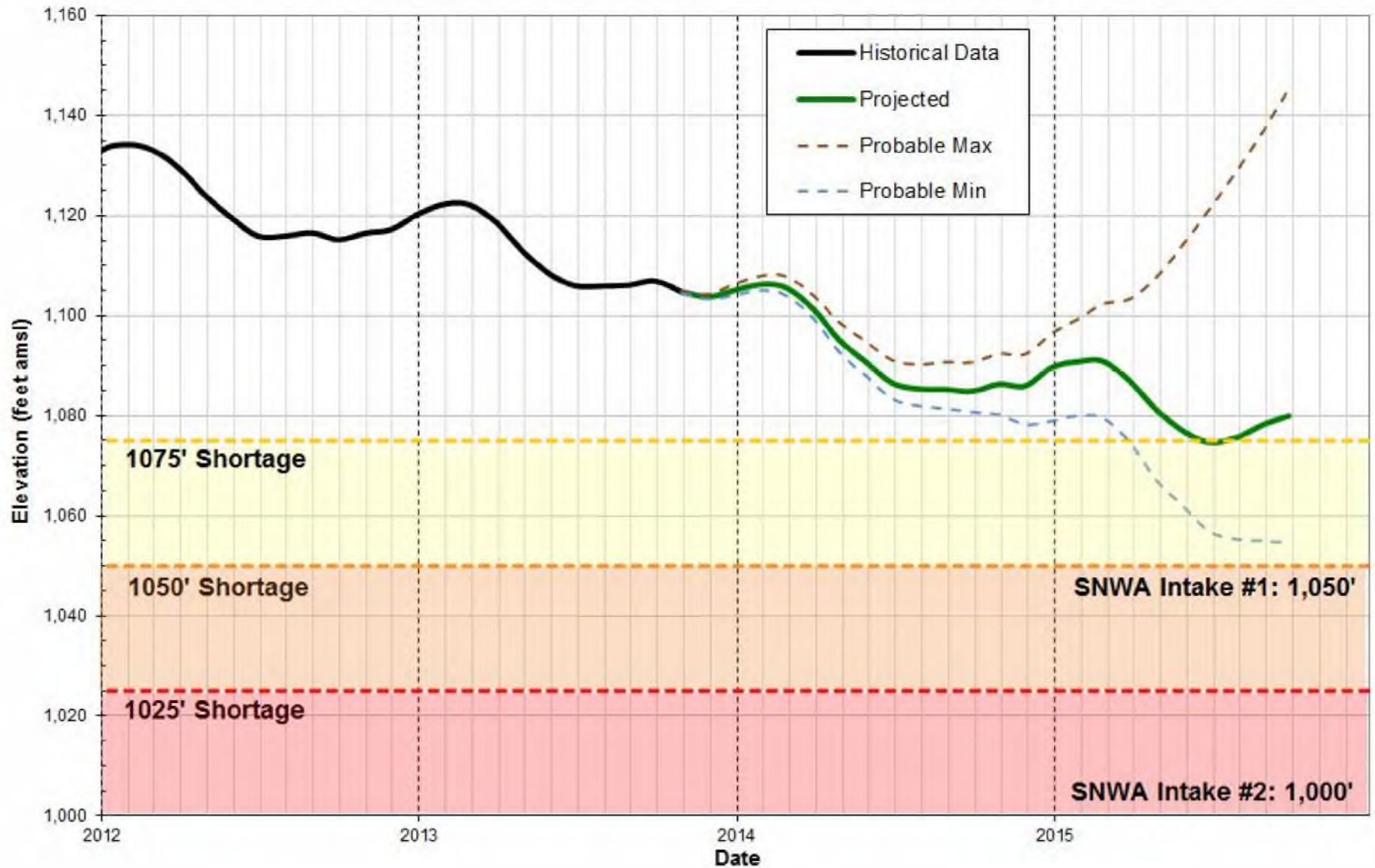
Lake Mead End of Month Elevation Projections

(based on the OCT 2013 24-month study)



Lake Mead End of Month Elevation Projections

(based on the OCT 2013 24-month study)



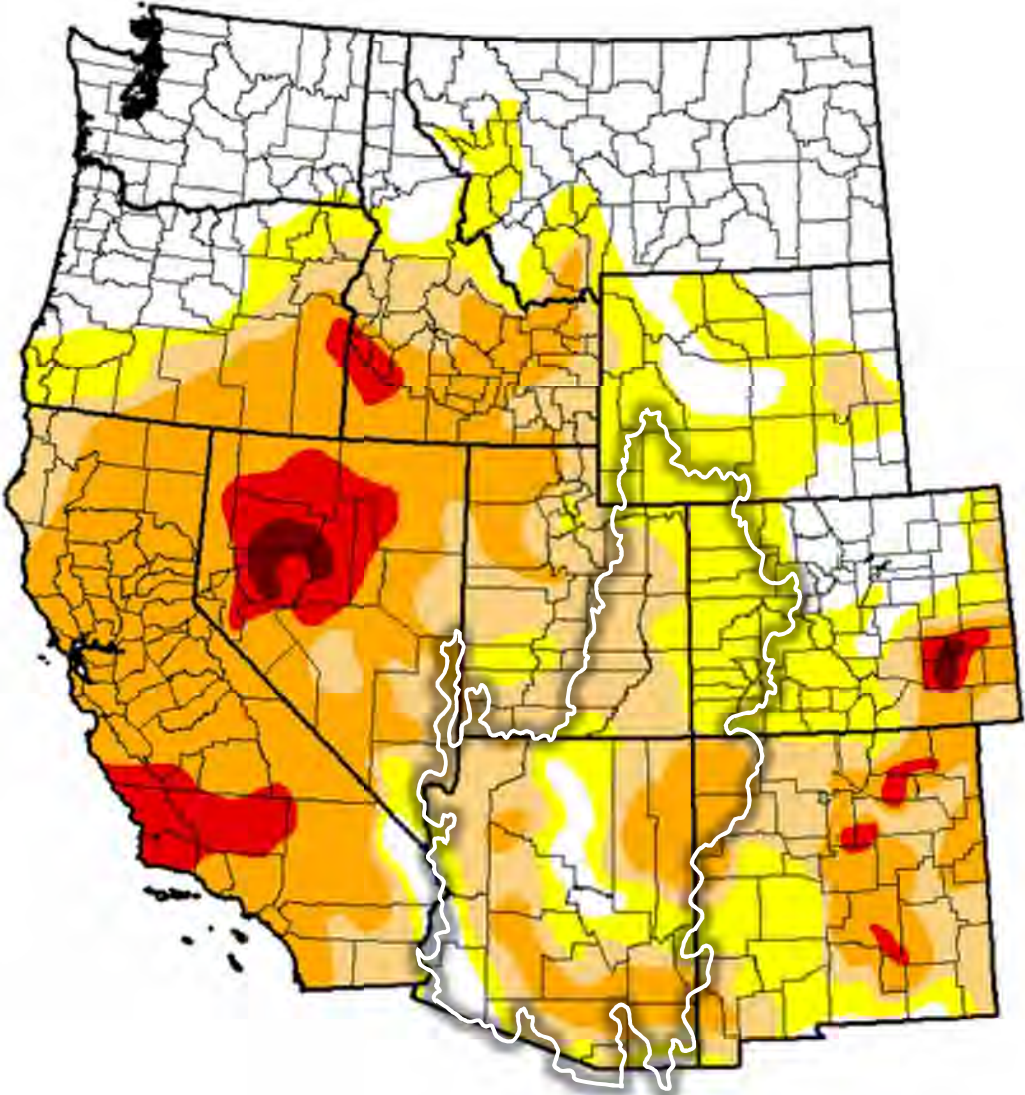
Drought and Precipitation








U.S. Drought Monitor

West

November 5, 2013
(Released Thursday November 7, 2013)
Valid 7 a.m. Eastern



Intensity:

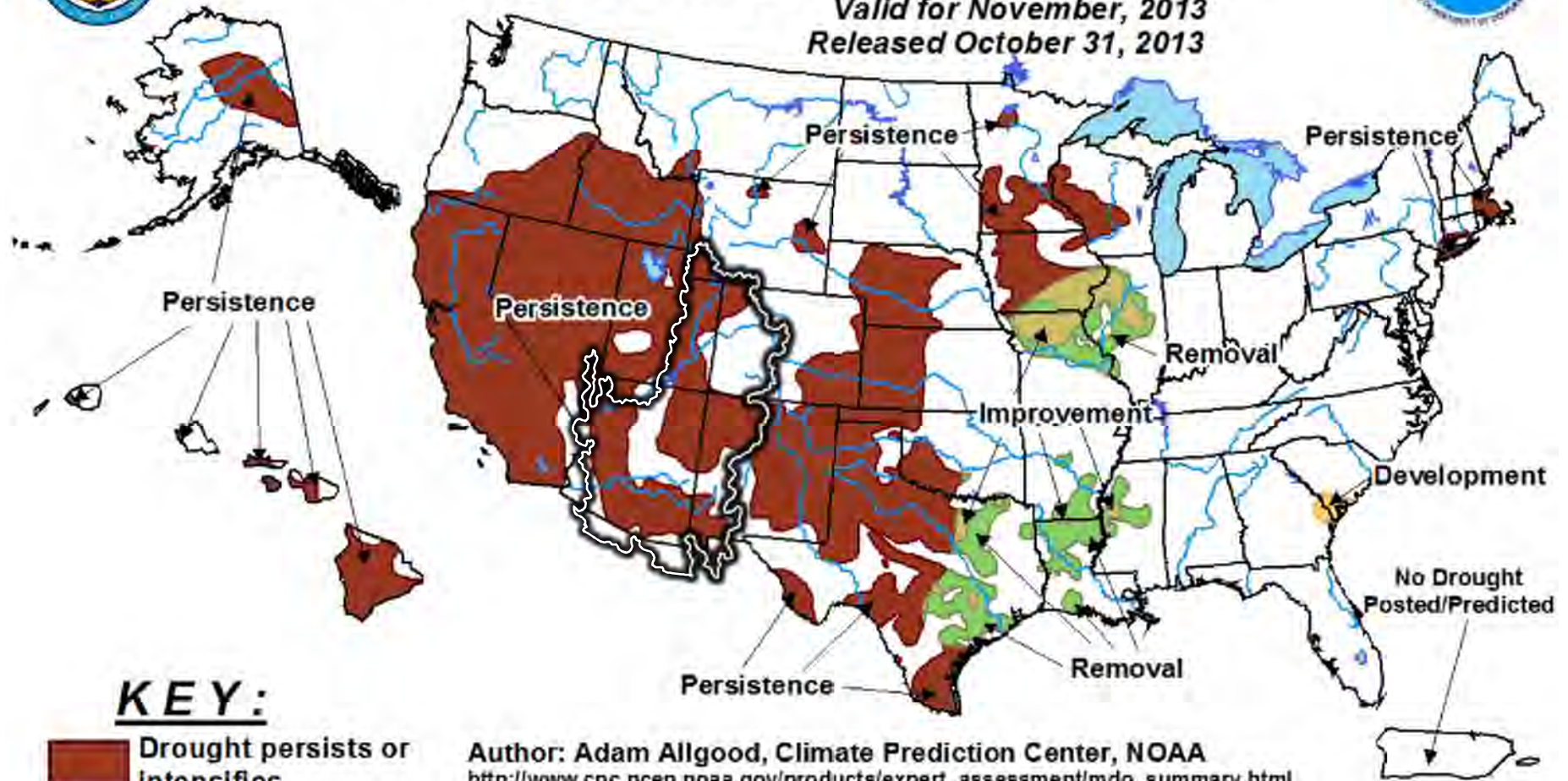
-  D0 - Abnormally Dry
-  D1 - Moderate Drought
-  D2 - Severe Drought
-  D3 - Extreme Drought
-  D4 - Exceptional Drought







U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for November, 2013
Released October 31, 2013



KEY:

-  Drought persists or intensifies
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely

Author: Adam Allgood, Climate Prediction Center, NOAA
http://www.cpc.ncep.noaa.gov/products/expert_assessment/mdo_summary.html

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor.

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)

Precipitation – Colorado River Basin

As of November 1, 2013

Upper Colorado Basin

WY Precip to Date

112% (3.2")

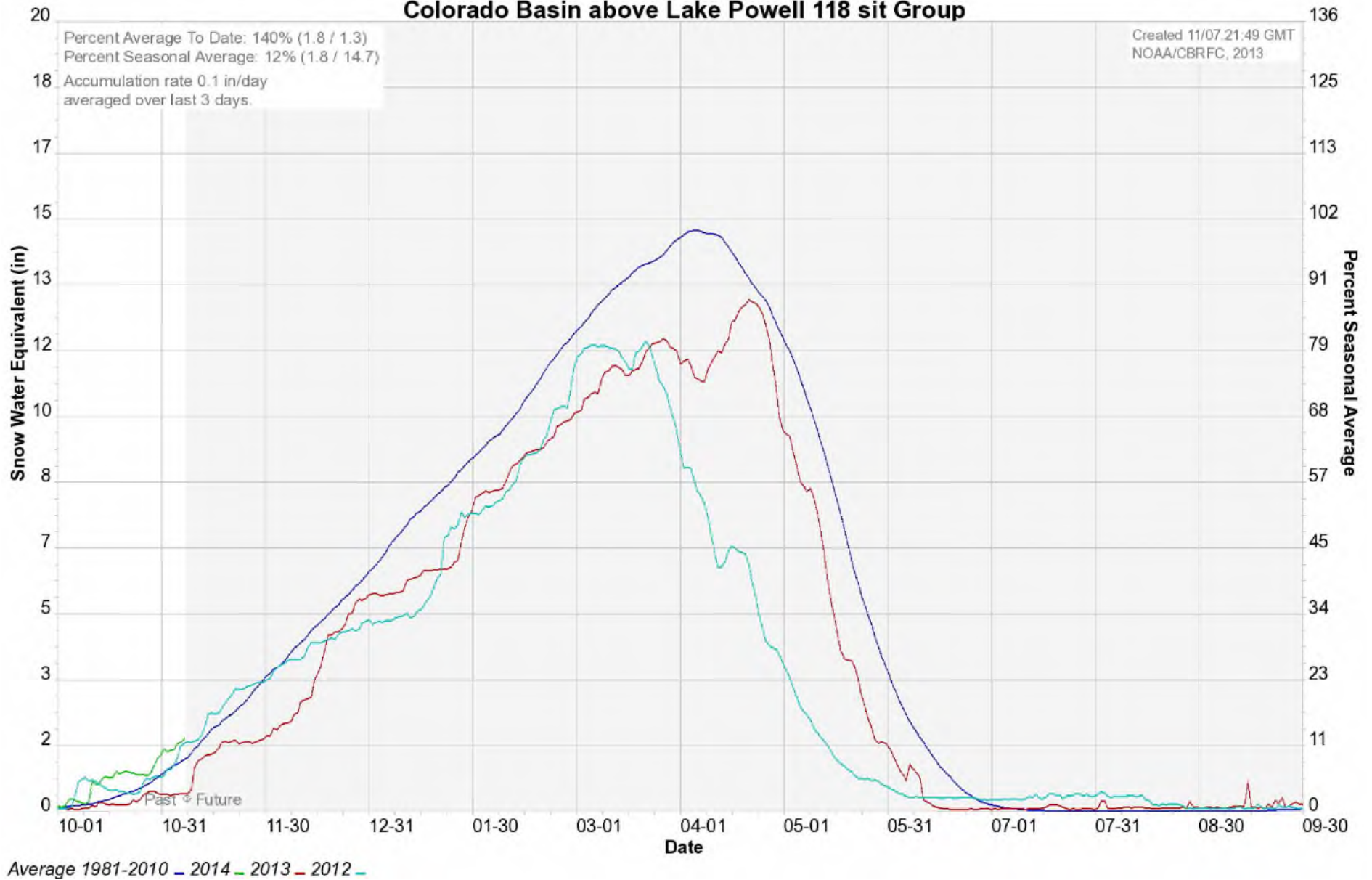
Current Basin Snowpack

NA% (NA)

(Avg 1981-2010)



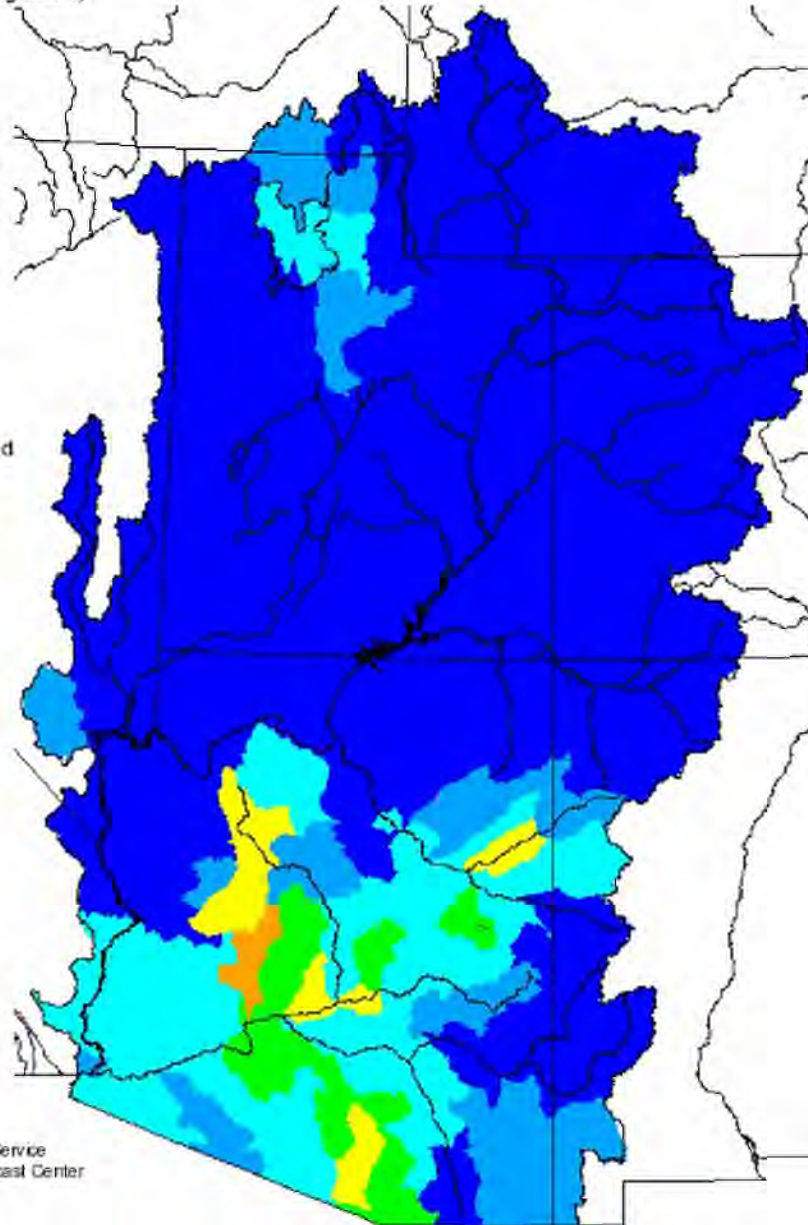
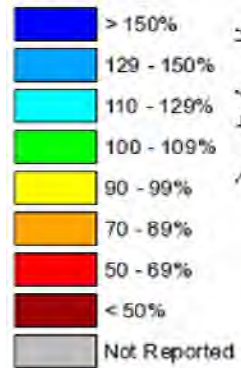
Colorado Basin River Forecast Center Colorado Basin above Lake Powell 118 sit Group



Monthly Precipitation for September 2013

(Averaged by Hydrologic Unit)

% Average



Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

McCarran International Airport

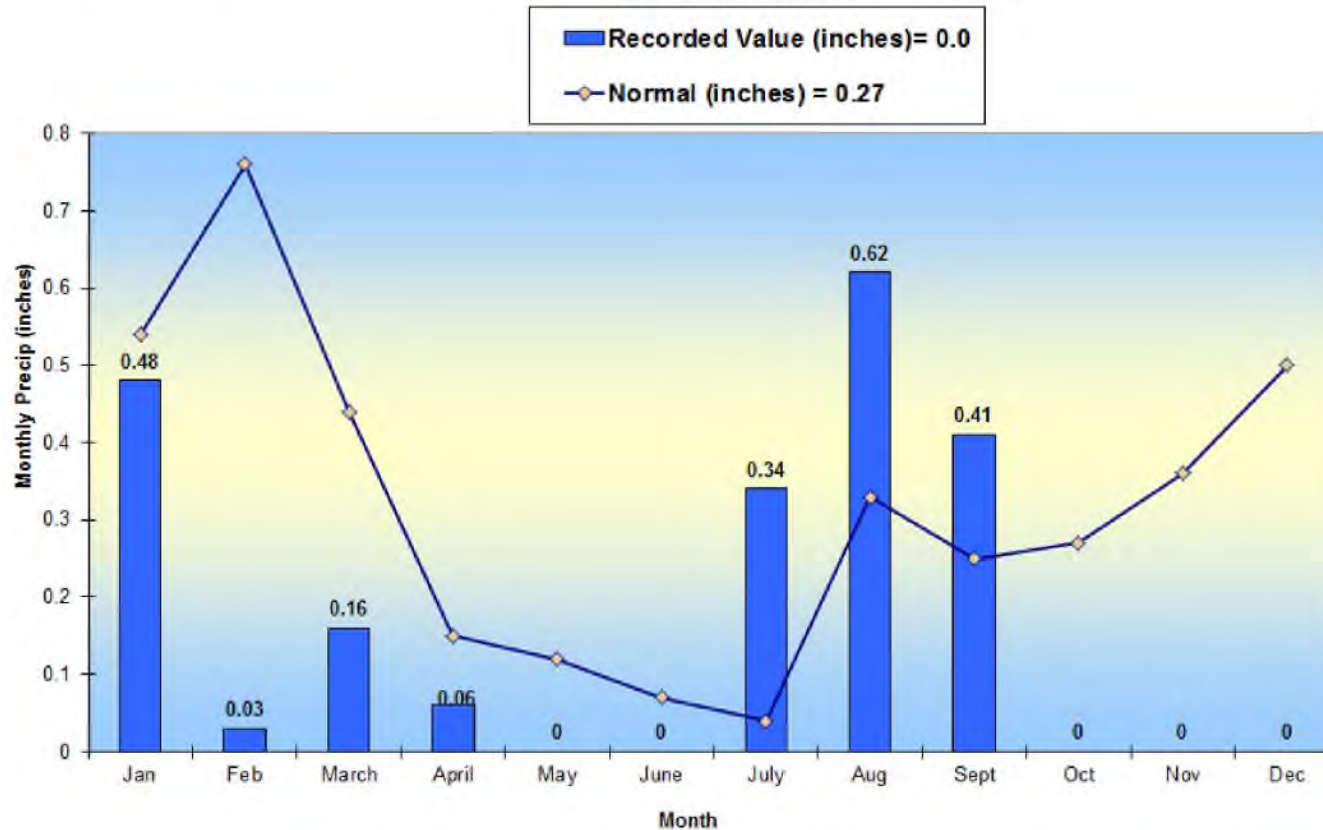


- Weather observations back to 1895 in Las Vegas
- Government employees started data collection on January 1, 1937 at Western Express Field
- Eventually became Nellis Air Force Base
- Purchased by the United States Weather Bureau (1948)
- Purchased by Clark County and called McCarran International Airport
- Still used today as the official weather observation location today

Record of Precipitation, Las Vegas, NV

As of October 31, 2013

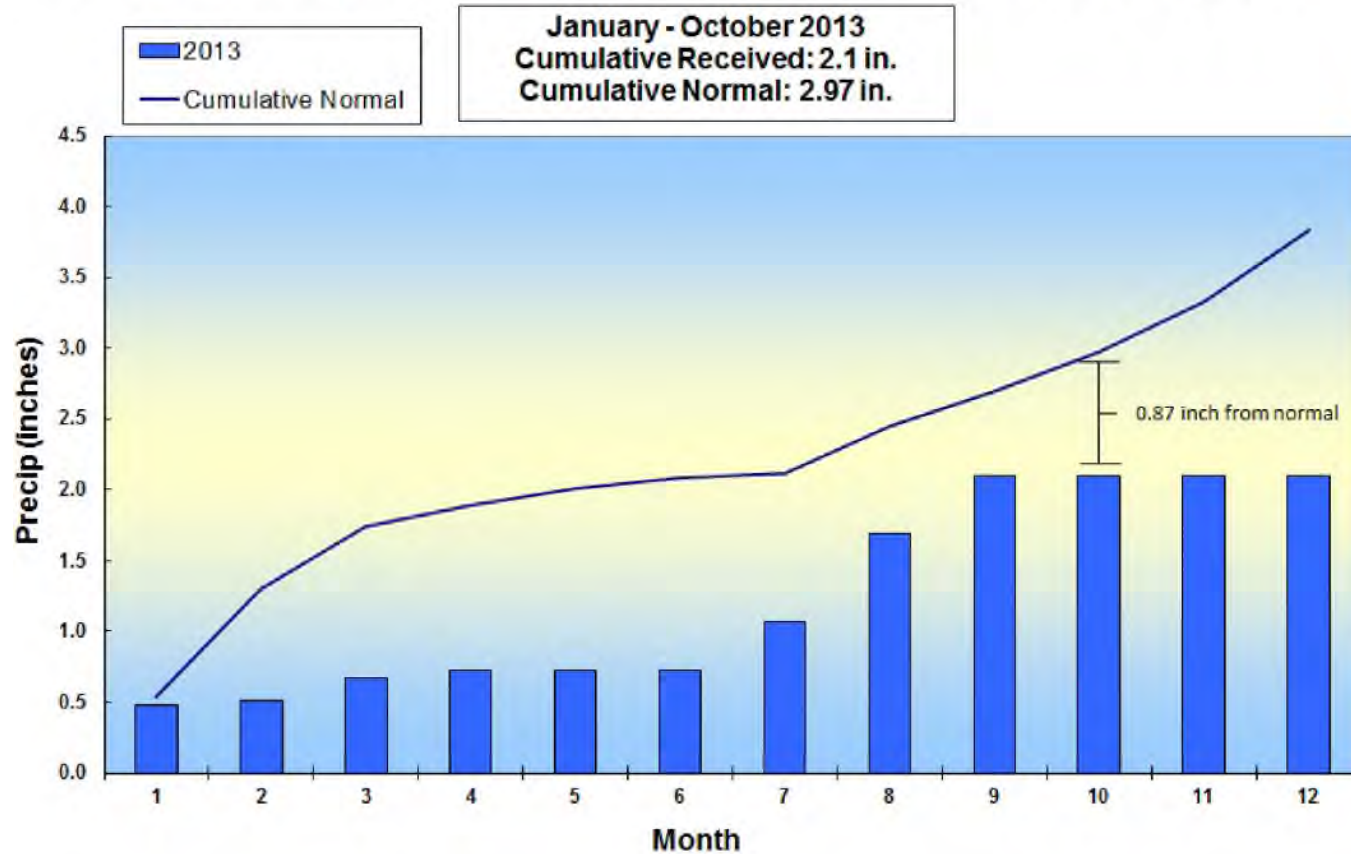
Record of Precipitation at McCarran International Airport, Las Vegas, NV
October 2013



Record of Precipitation, Las Vegas, NV

As of October 31, 2013

Record of Precipitation at McCarran International Airport, Las Vegas, NV



Record of Precipitation

As of October 31, 2013

SOME SPECIFIC PRECIPITATION TOTALS INCLUDE...

LOCATION	TOTAL	SOURCE
EAST LAKE MEAD PARKWAY	0.15 INCH	COCORAHS
SUMMERLIN NORTHWEST	0.08 INCH	CCRFC
SUMMERLIN	0.07 INCH	COCORAHS
OKEY & JONES	0.05 INCH	COCORAHS
SUMMERLIN CENTRE	0.05 INCH	NWS EMPLOYEE
DOWNTOWN LAS VEGAS	0.04 INCH	CCRFC
FLOYD LAMB PARK	0.04 INCH	CCRFC
TENAYA & WASHINGTON	0.04 INCH	COCORAHS
SAHARA & VALLEY VIEW	0.02 INCH	COCORAHS
NELLIS AFB	0.02 INCH	ASOS
TROPICANA & BUFFALO	0.02 INCH	COCORAHS
NORTH LAS VEGAS AIRPORT	0.01 INCH	ASOS
CRAIG & LOSEE	TRACE	CO-OP OBSERVER
HENDERSON EXECUTIVE AIRPORT	TRACE	AWSS
NWS OFFICE	TRACE	NWS STAFF



Water Use in Southern Nevada



Water Use in Southern Nevada

January - September

2013*:	Consumptive Use =	182,935
	<u>CR Water Banked =</u>	<u>0</u>
		182,935
2012:	Consumptive Use =	189,670
	<u>CR Water Banked =</u>	<u>0</u>
		189,670

Difference = - 6,735 af

*Subject to final accounting.



Water Use Comparison

Water Use	2012 Acre Feet	2013 Acre Feet	Difference	% Change
Las Vegas Wash Gauged Flow	154,235	159,910	5,675	3.7%
Diversions	340,236	340,203	-33	0.0%
Return Flow Credit	150,566	157,268	6,702	4.5%
Consumptive Use	189,670	182,935	-6,735	-3.6%



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