RECLAMATION

Managing Water in the West

Navajo Unit Operations
April 27, 2010
Coordination Meeting

U.S. Department of the Interior
Bureau of Reclamation

Agenda

- Welcome
- Review of 2010 Operations (to date)
- 2010 Hydrologic Conditions
- Proposed Operations for 2010
- Navajo Dam Maintenance Activities
- Aquatic Invasive Species
- Fish & Wildlife Service/San Juan RIP Update
- Reports from other Agencies
- Questions from Audience
- How To Access Information
- Close

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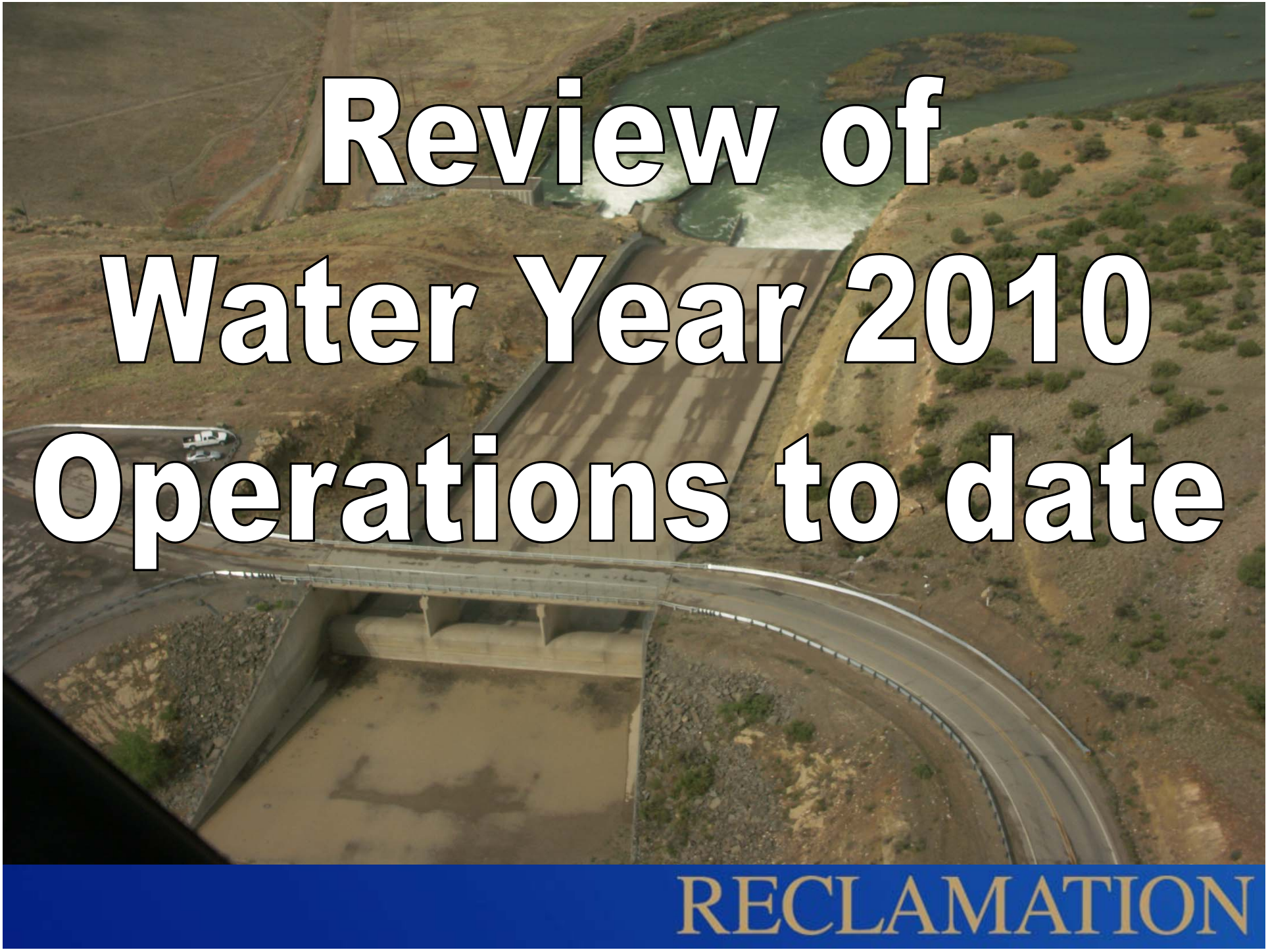
Review of
Water Year 2010
Operations to date
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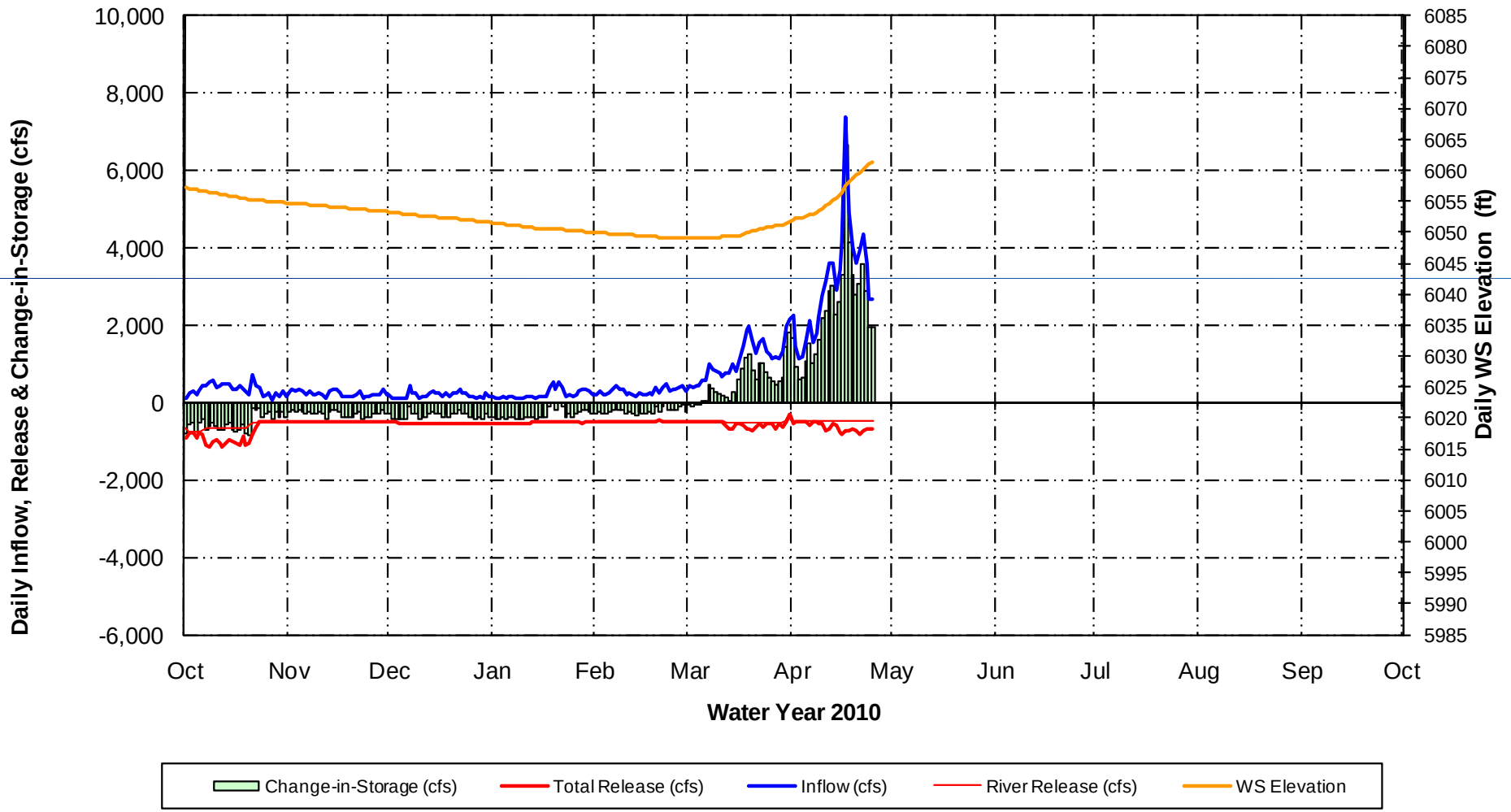
NAVAJO RESERVOIR OPERATIONS



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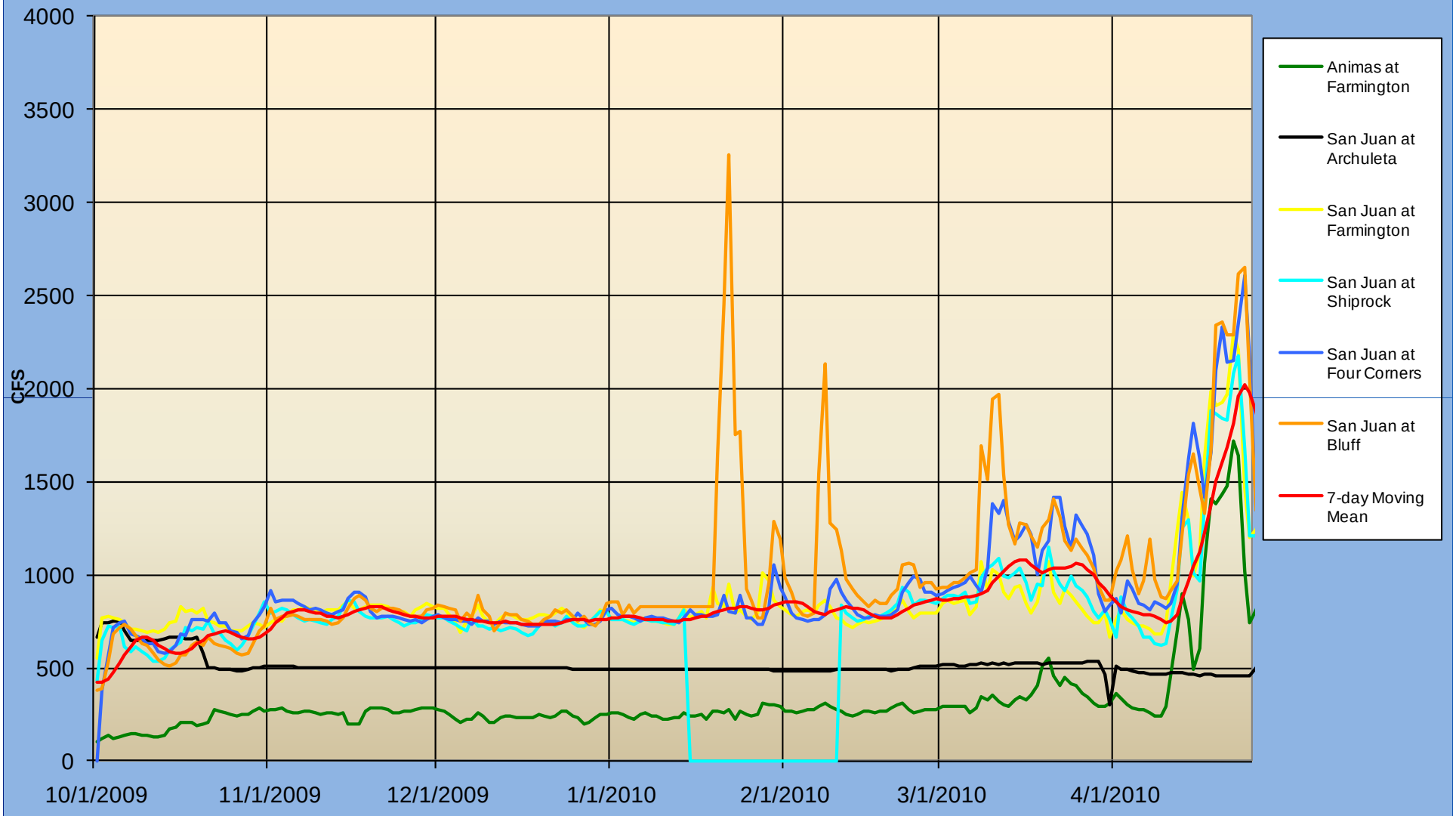
USGS Provisional Mean Daily Flows

Updated on 4/26



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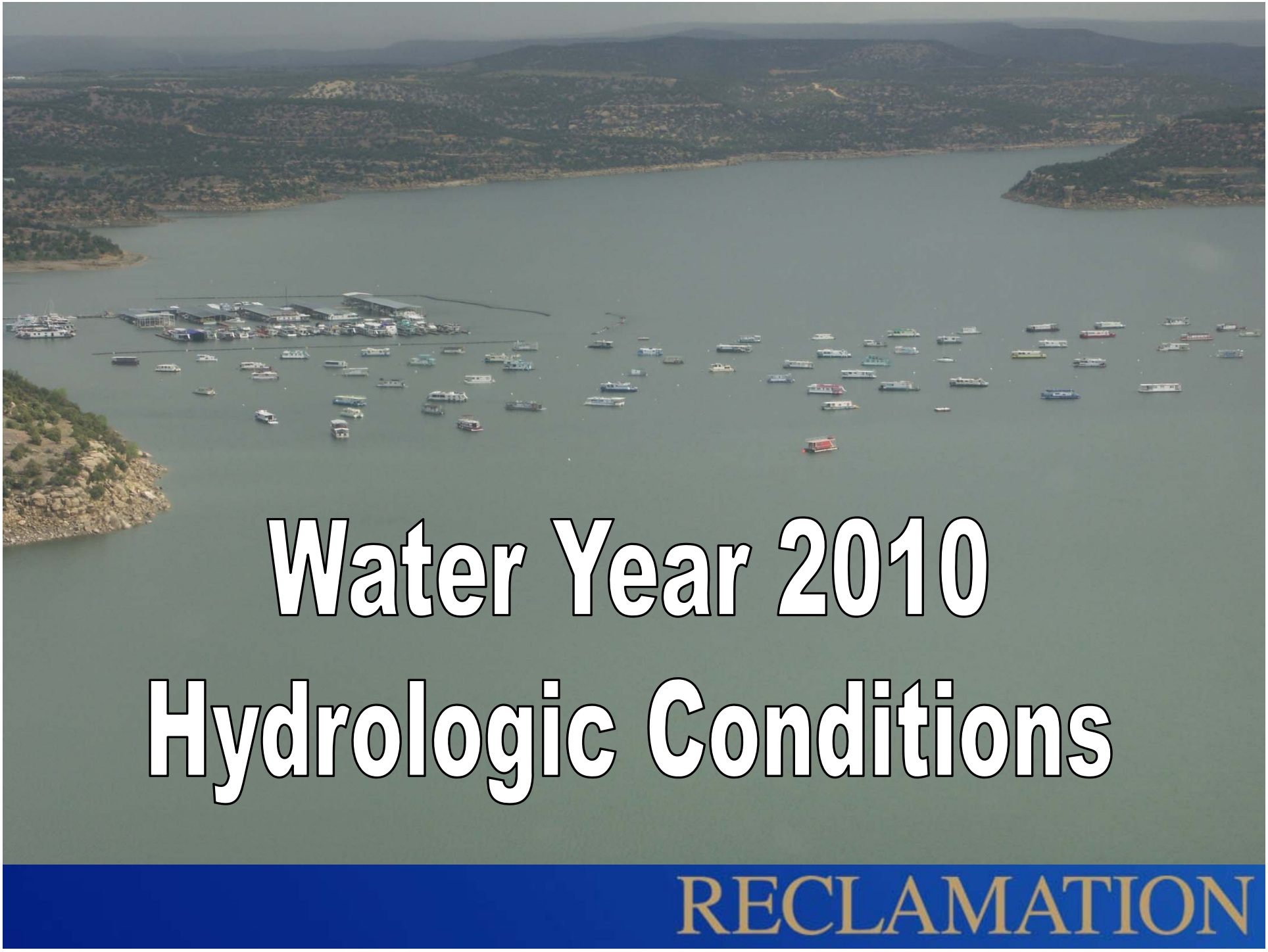

Water Year 2010 Hydrologic Conditions

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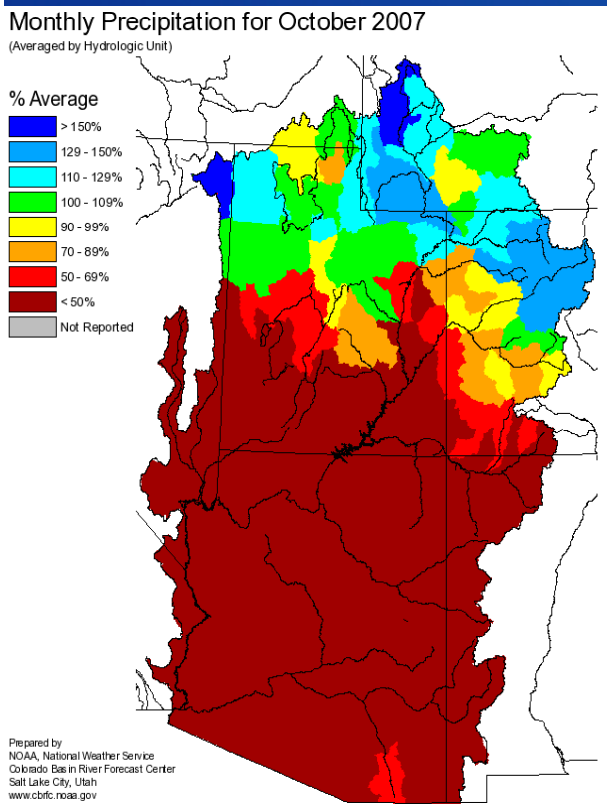

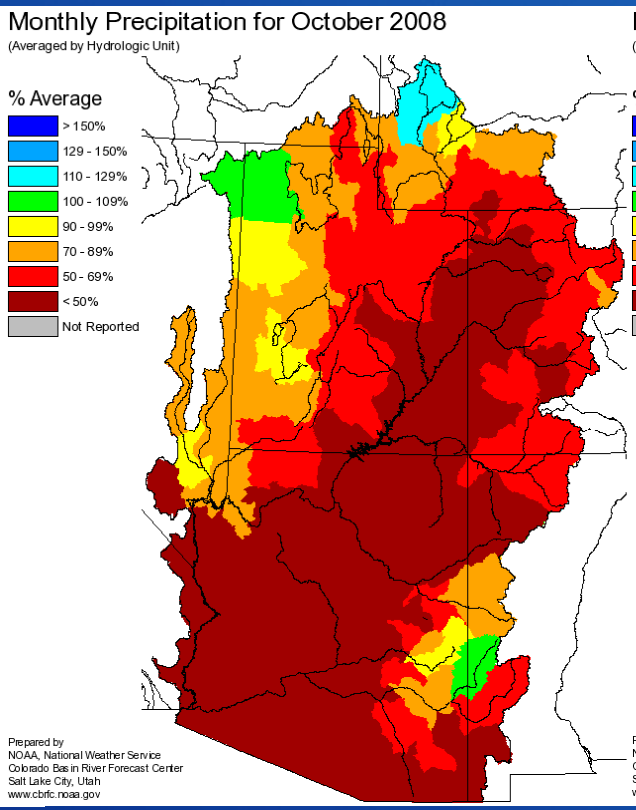

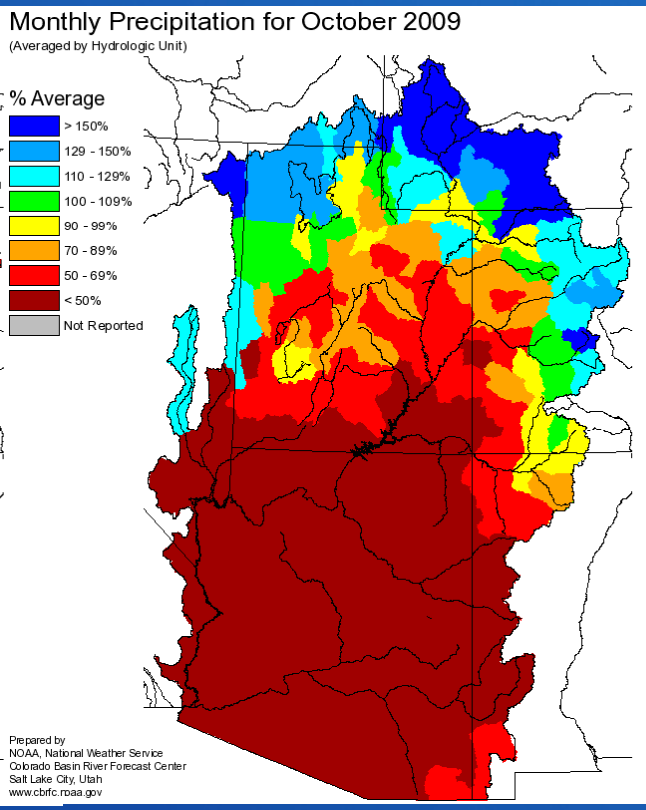

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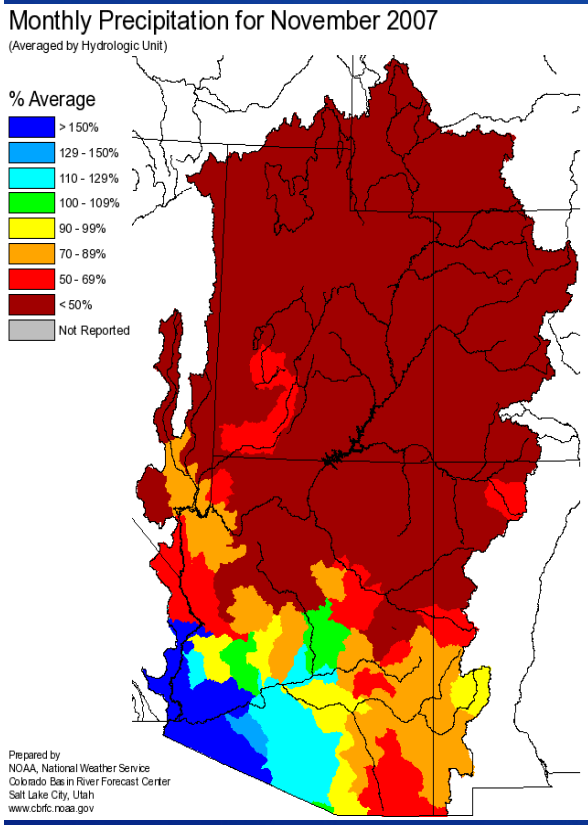

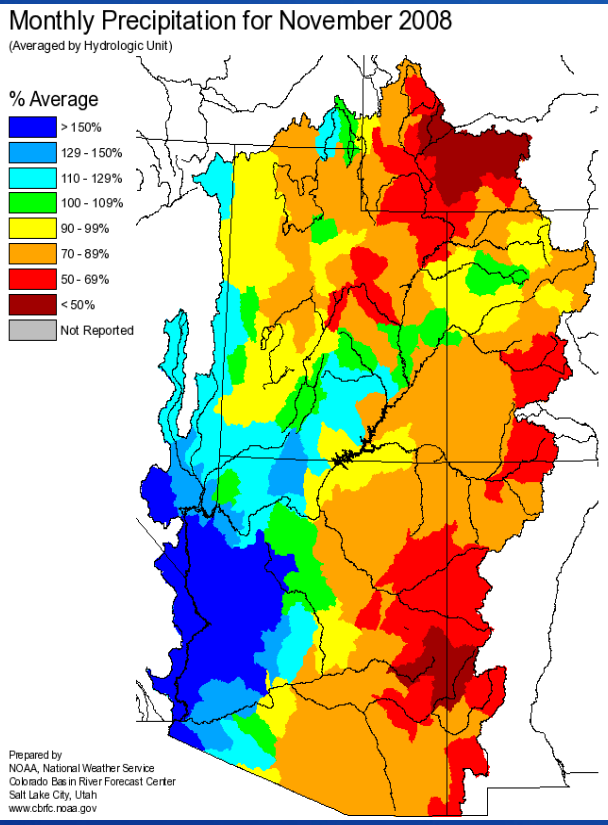

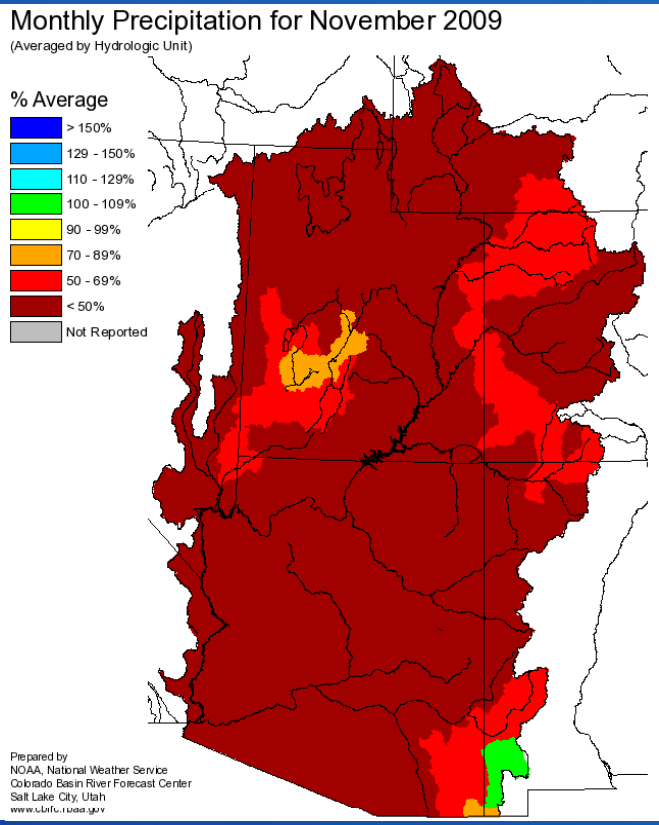

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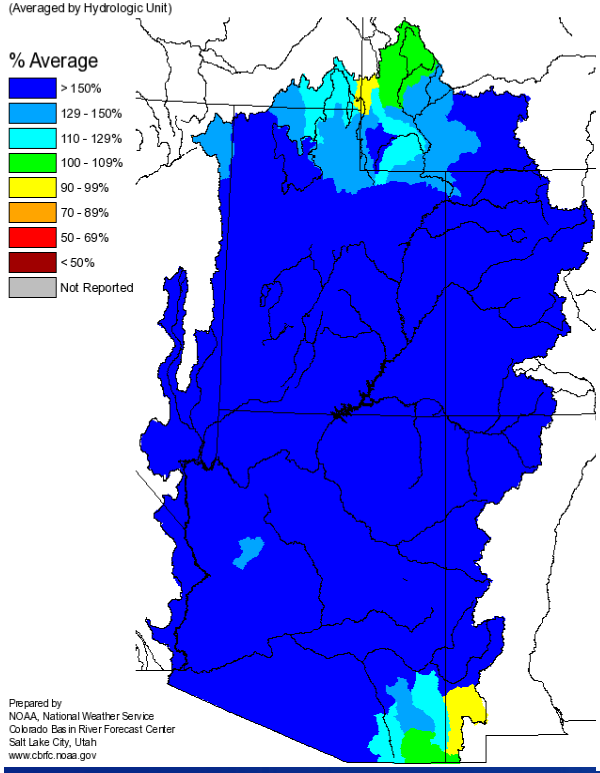
Monthly Precipitation for December 2007

(Averaged by Hydrologic Unit)



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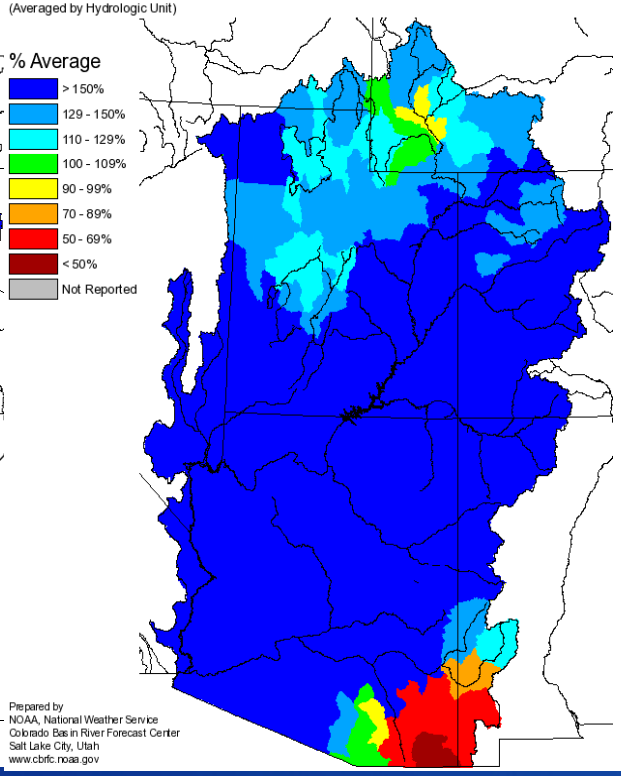

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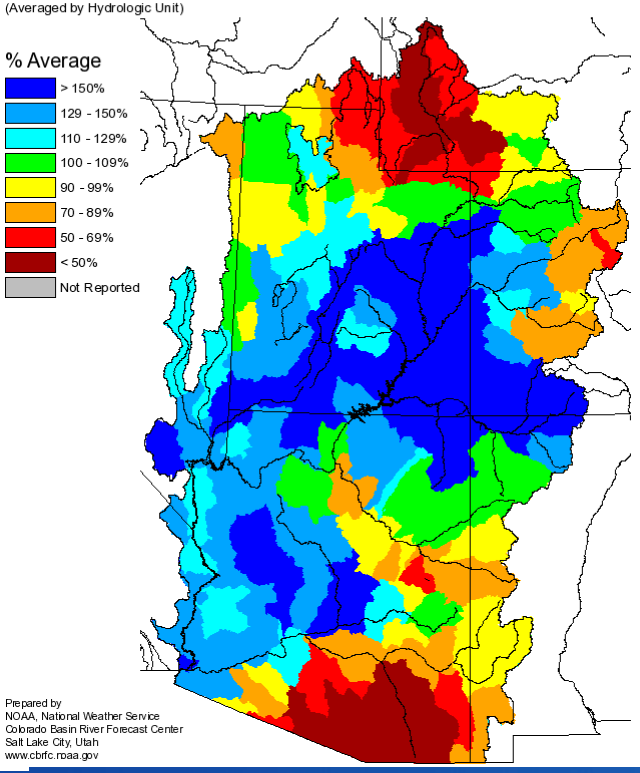
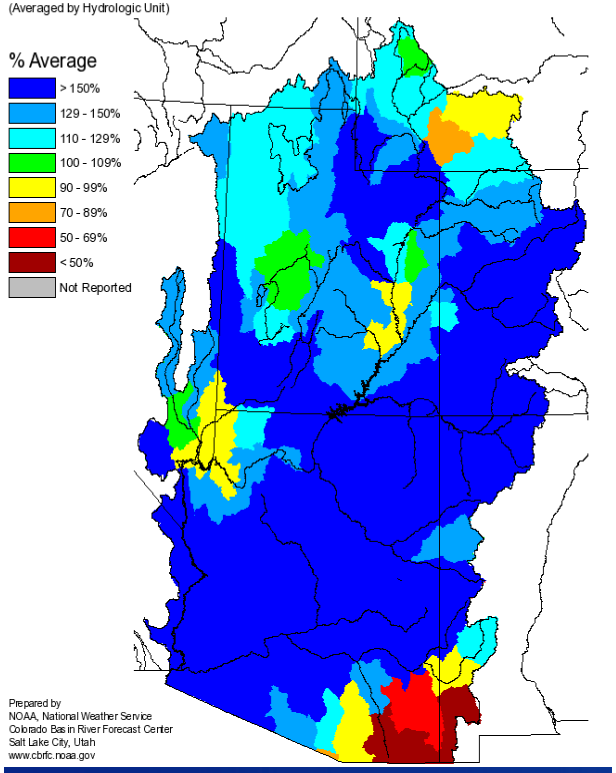


RECLAMATION

Monthly Precipitation for January 2008

(Averaged by Hydrologic Unit)



Monthly Precipitation for January 2009

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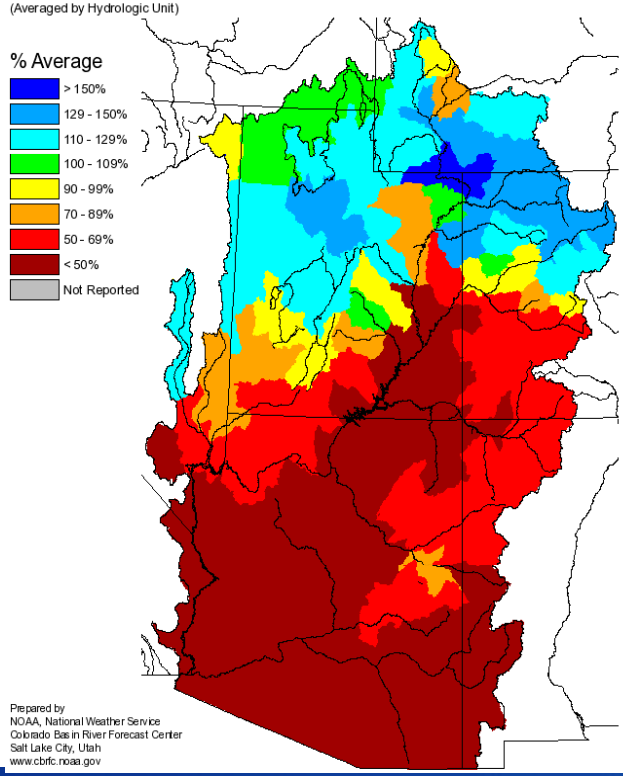

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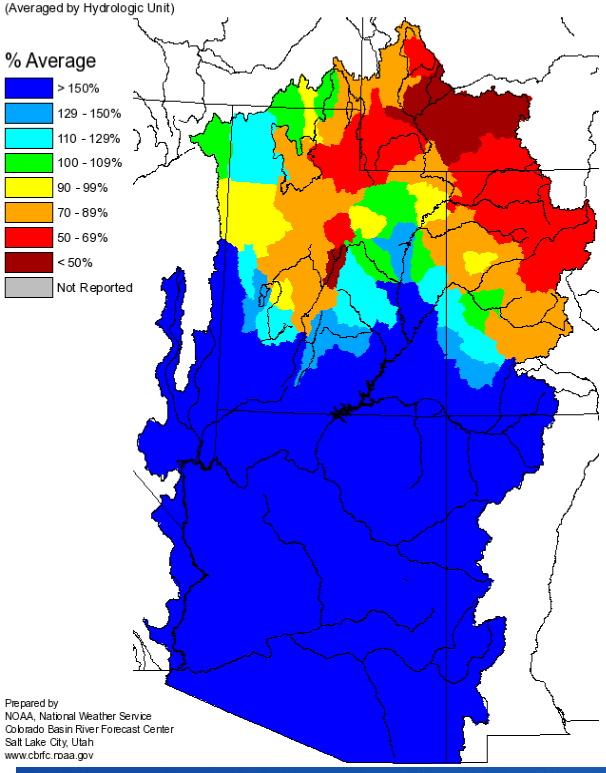

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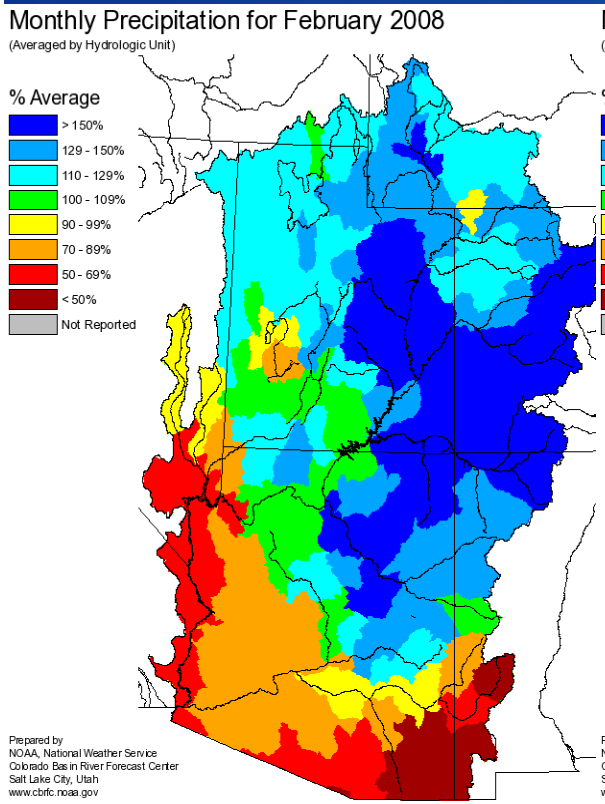

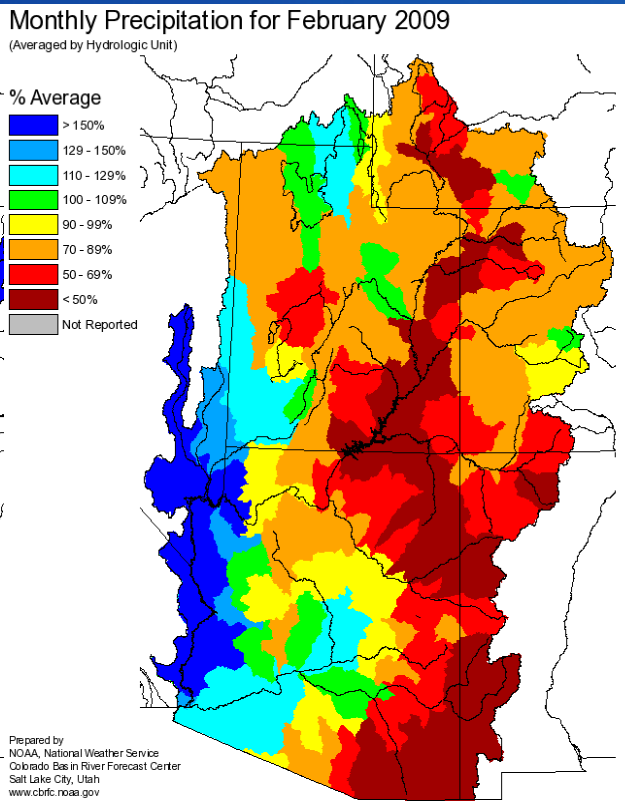

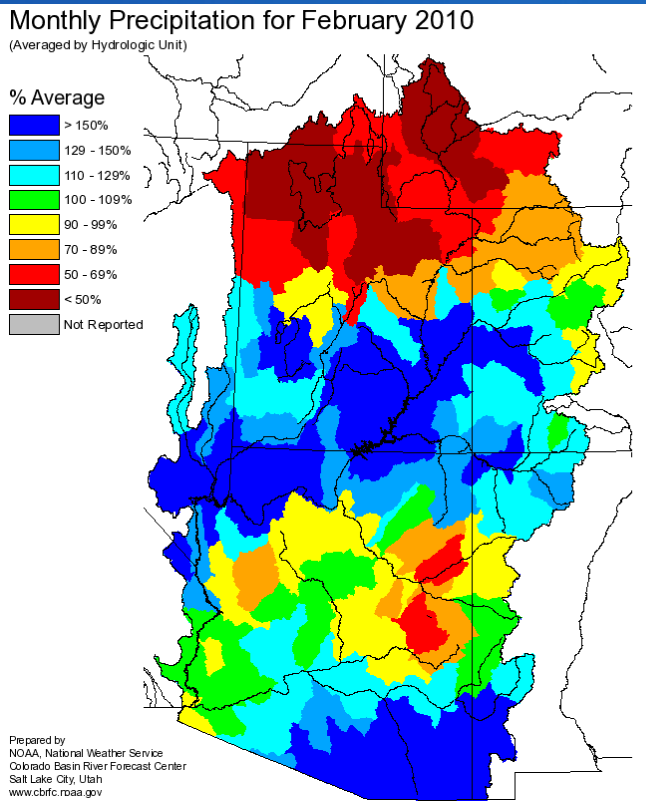

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Monthly Precipitation for March 2008

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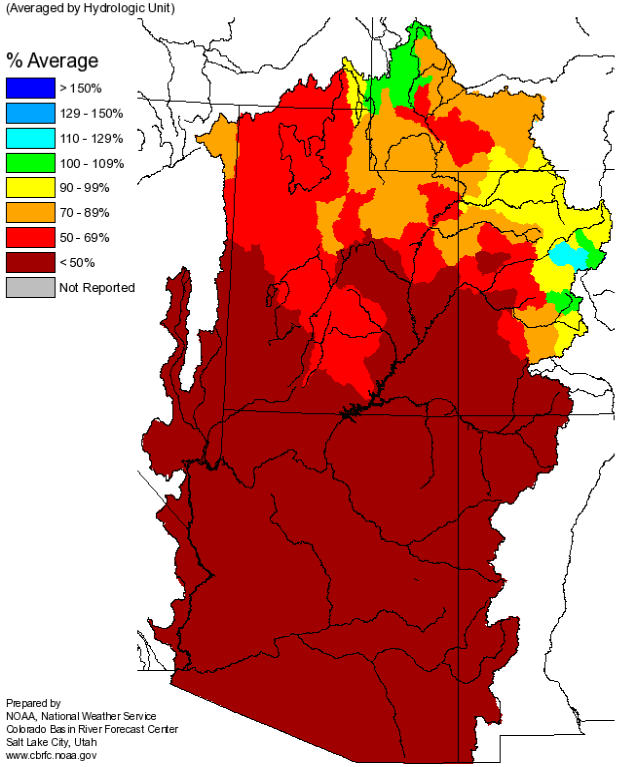

Monthly Precipitation for March 2009

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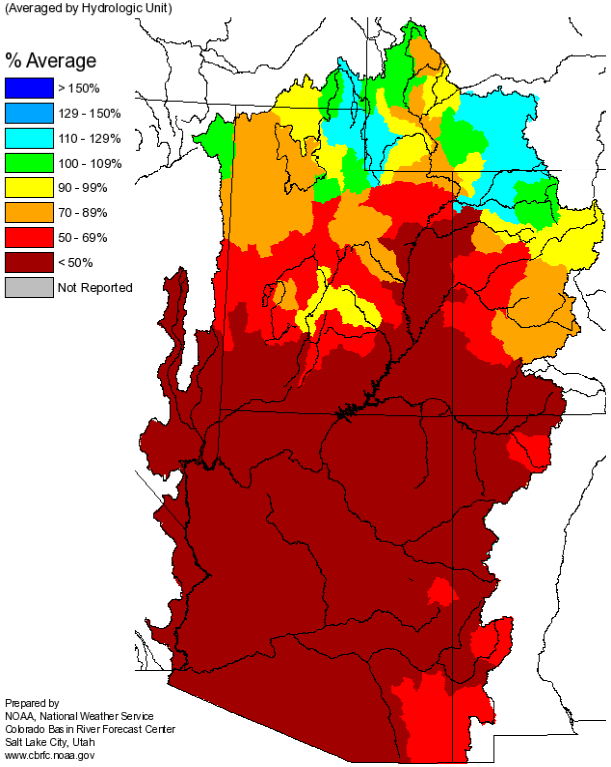

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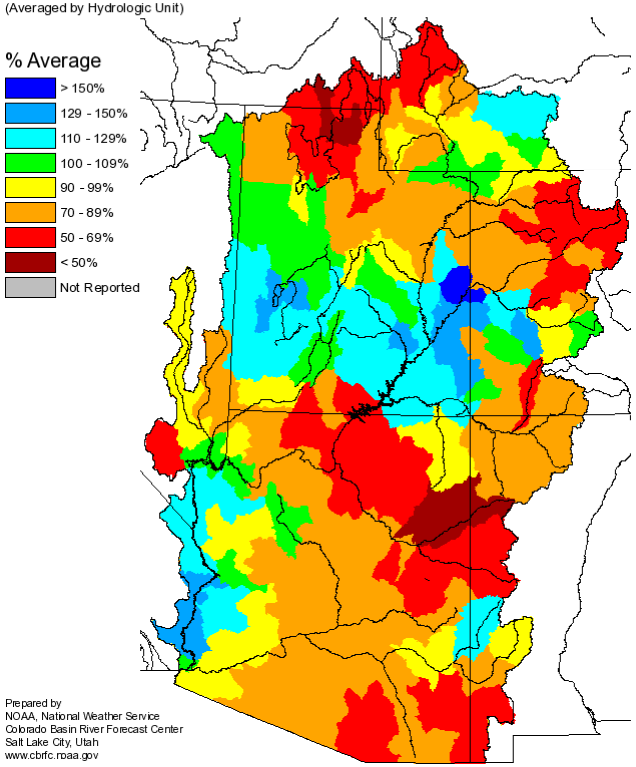

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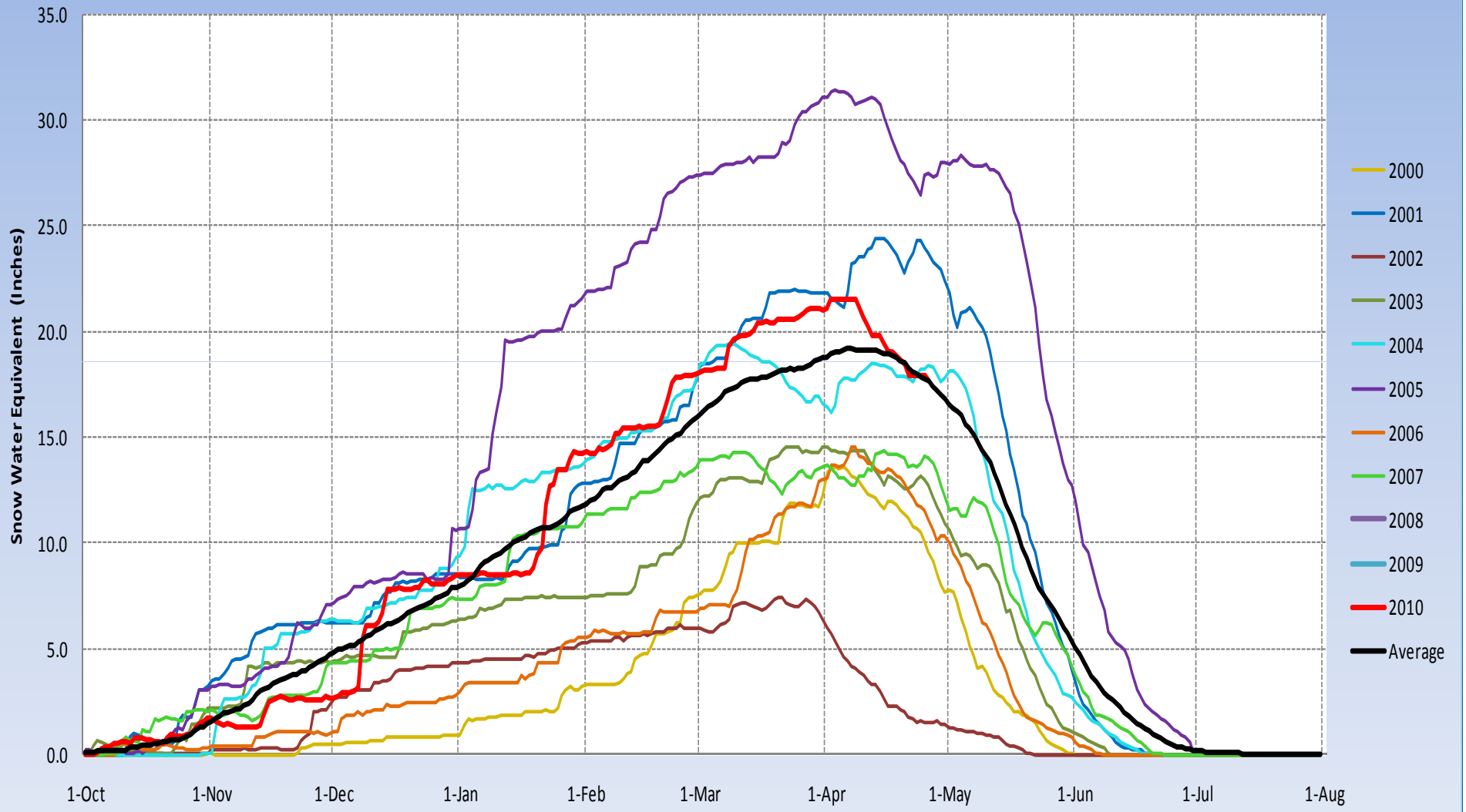
Navajo Reservoir SNOTEL SWE from 2000-2010



(as of 4/26/2010)

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Water Year 2010 (as of 4/26/2010)
Navajo Inflows & San Juan Basin Snowpack

EOM	Inflow (af)	% Average	SJ SWE (in.)	% Average
October	20,830	41%	1.7	116%
November	13,929	42%	2.7	57%
December	16,144	50%	8.5	107%
January	13,775	66%	14.2	121%
February	16,144	52%	18.0	113%
March	66,107	73%	21.0	112%
April (Current)	181,186	124% (estimated)	17.7	100%

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Mid April 2010 Forecast
Navajo Reservoir Mod Unregulated
April-July Inflow Volume

	Inflow (af)	% of Average	2009 Forecast
Most Probable	635,000	84%	720,000 (93%)
Minimum Probable	450,000	60%	505,000 (65%)
Maximum Probable	865,000	114%	975,000 (126%)

2009 Actual = 657,000 acre-feet

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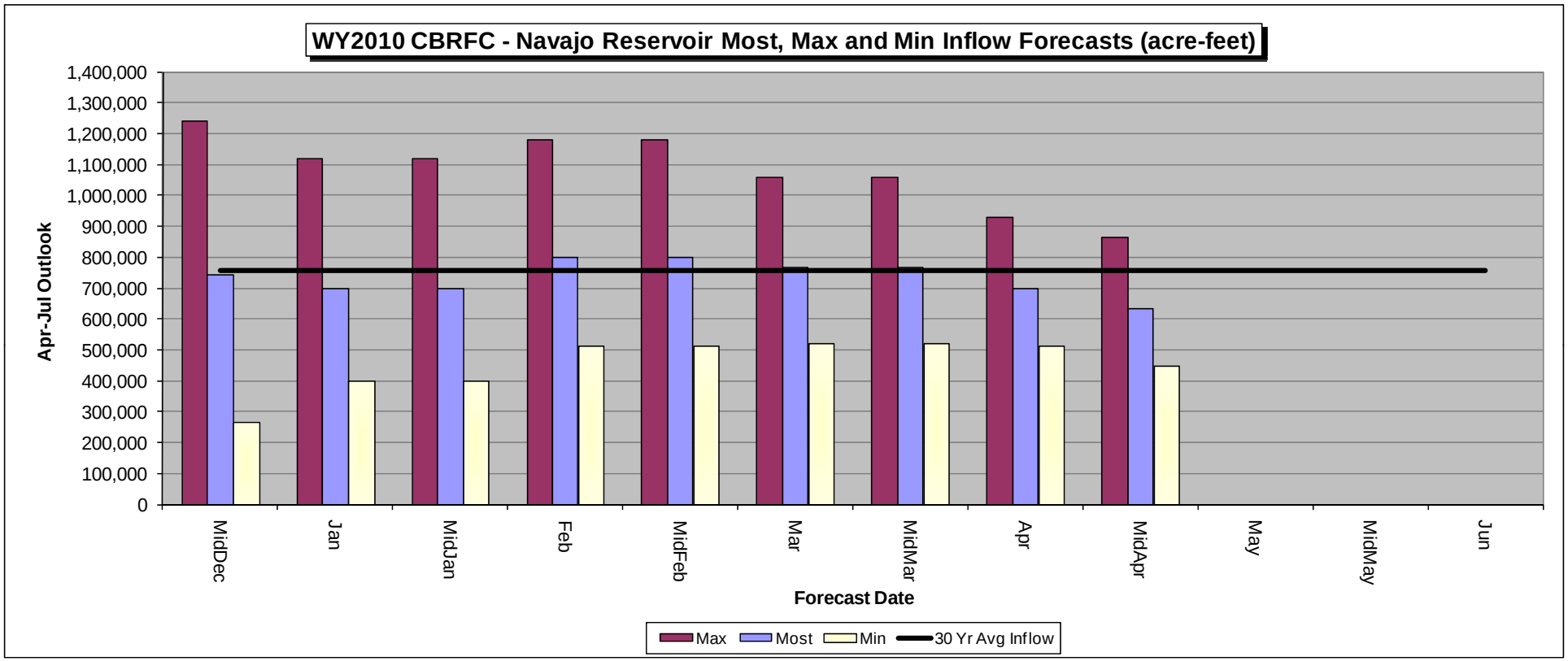
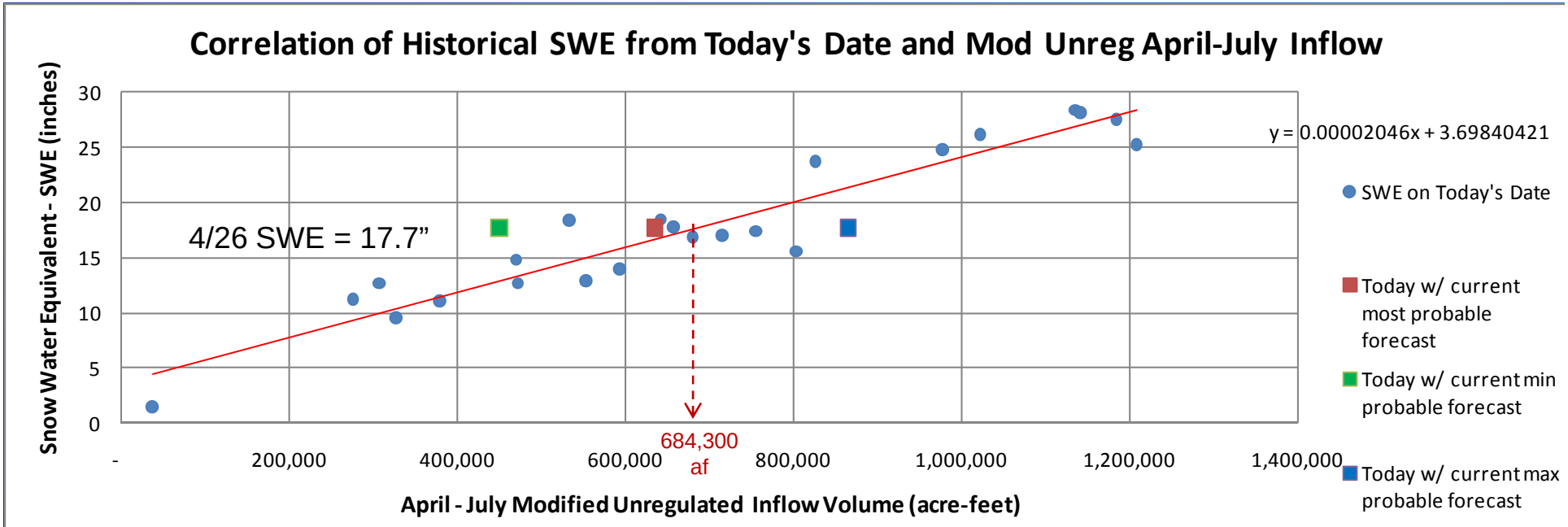
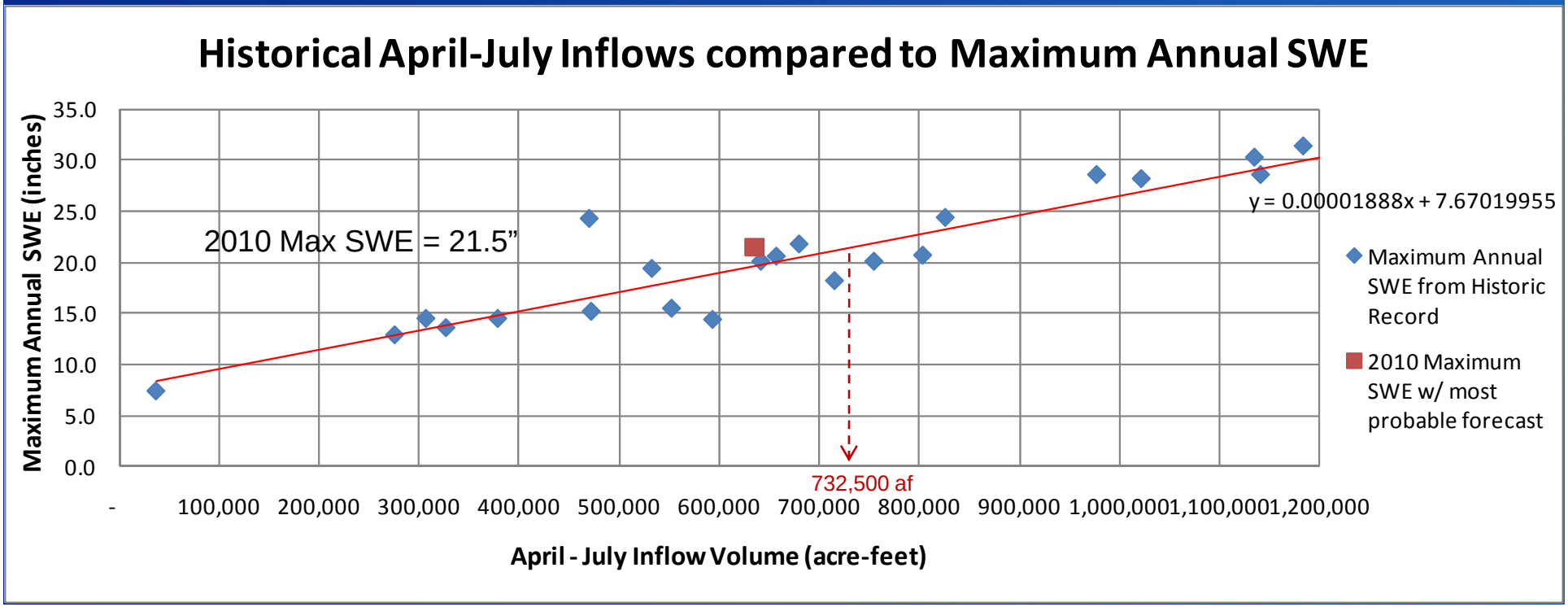

WY2010 CBRFC - Navajo Reservoir Most, Max and Min Inflow Forecasts (acre-feet)
Apr-Jul Outlook
1,400,000
1,300,000
1,200,000
1,100,000
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
MidDec
Jan
MidJan
Feb
MidFeb
Mar
MidMar
Apr
MidApr
May
MidMay
Jun
Forecast Date
Max
Most
Min
30 Yr Avg Inflow


Correlation of Historical SWE from Today's Date and Mod Unreg April-July Inflow
Snow Water Equivalent - SWE (inches)
30
25
20
15
10
5
0
-
200,000
400,000
600,000
800,000
1,000,000
1,200,000
1,400,000
4/26 SWE = 17.7”
684,300 af
April - July Modified Unregulated Inflow Volume (acre-feet)
y = 0.00002046x + 3.69840421
SWE on Today's Date
Today w/ current most probable forecast
Today w/ current min probable forecast
Today w/ current max probable forecast


Historical April-July Inflows compared to Maximum Annual SWE
Maximum Annual SWE (inches)
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-
100,000
200,000
300,000
400,000
500,000
600,000
700,000
800,000
900,000
1,000,000
1,100,000
1,200,000
2010 Max SWE = 21.5”
732,500 af
April - July Inflow Volume (acre-feet)
y = 0.00001888x + 7.67019955
Maximum Annual SWE from Historic Record
2010 Maximum SWE w/ most probable forecast

Navajo Reservoir SNOTEL – SWE on 4/26

	1999	2003	2010	1992	1991
SWE	17	17.4	**17.70**	17.8	18.4
Percentile	48%	52%	57%	61%	65%
Rank (wet)	13	12	11	10	9
Rank (dry)	12	13	14	15	16
April-July Inflow	754,853	306,809	635,000	803,651	680,093

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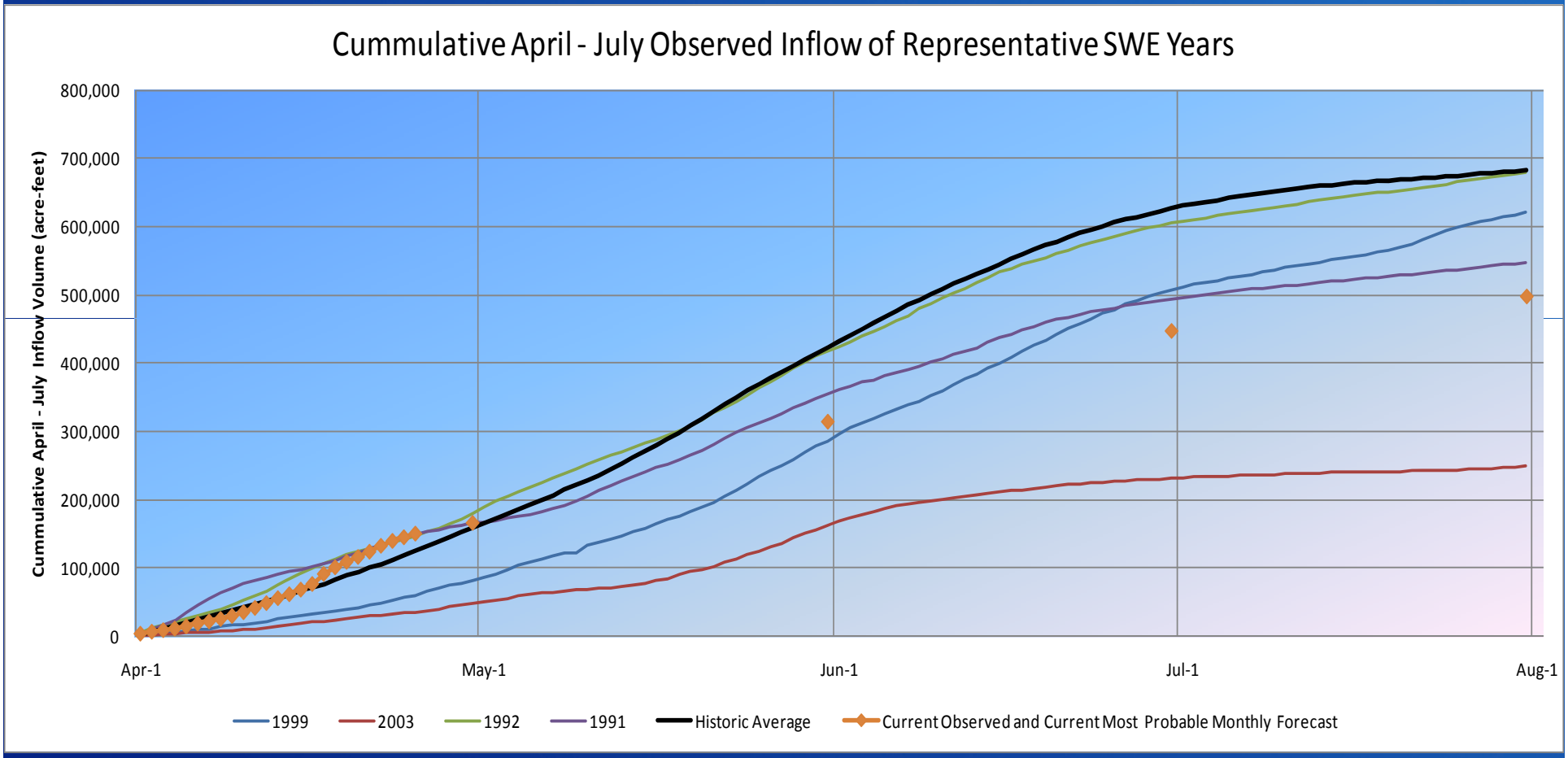

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How much is influenced by dust on snow and soil moisture?

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Looking Ahead to Summer/Fall

EOM	Forecasted Most Probable Mod Unreg Inflow (af)	% Average	Predicted Observed Inflow (af)	% Average
April	190,000	111%	166,769	114%
May	205,000	73%	148,308	67%
June	200,000	85%	132,946	69%
July	40,000	59%	50,547	67%
August*	32,175	72%	46,404	75%
September*	38,069	86%	49,146	91%

*August & September volumes are based on a linear regression between July and 100% of Average for October.

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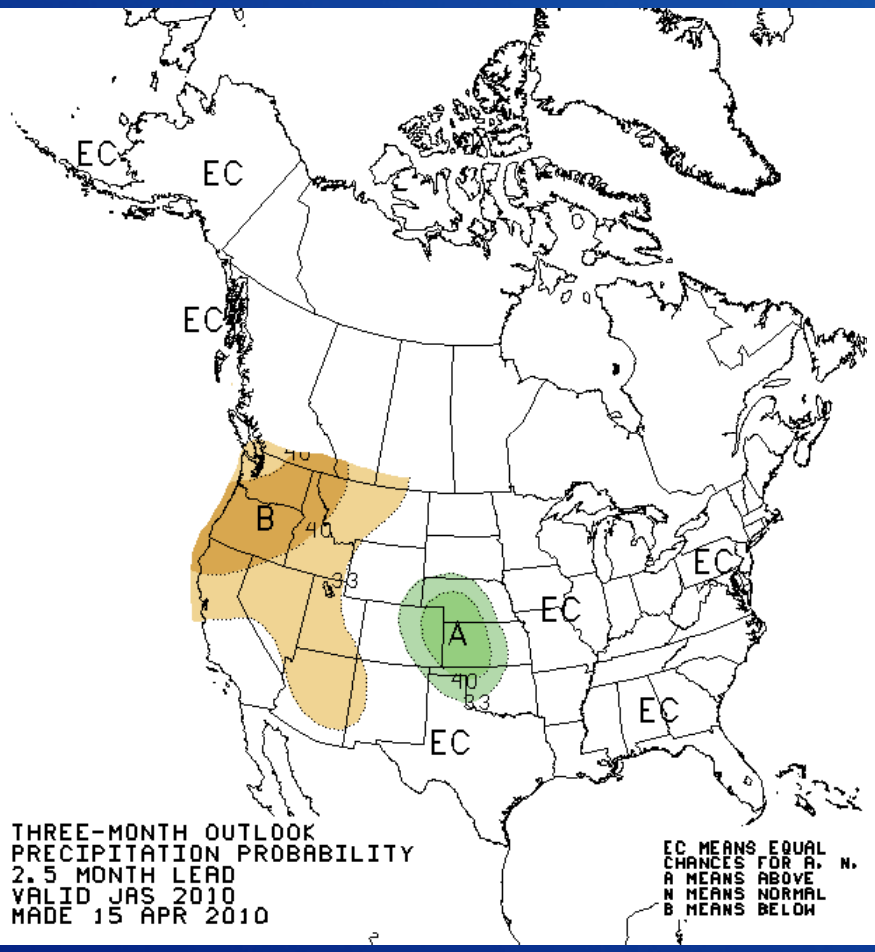
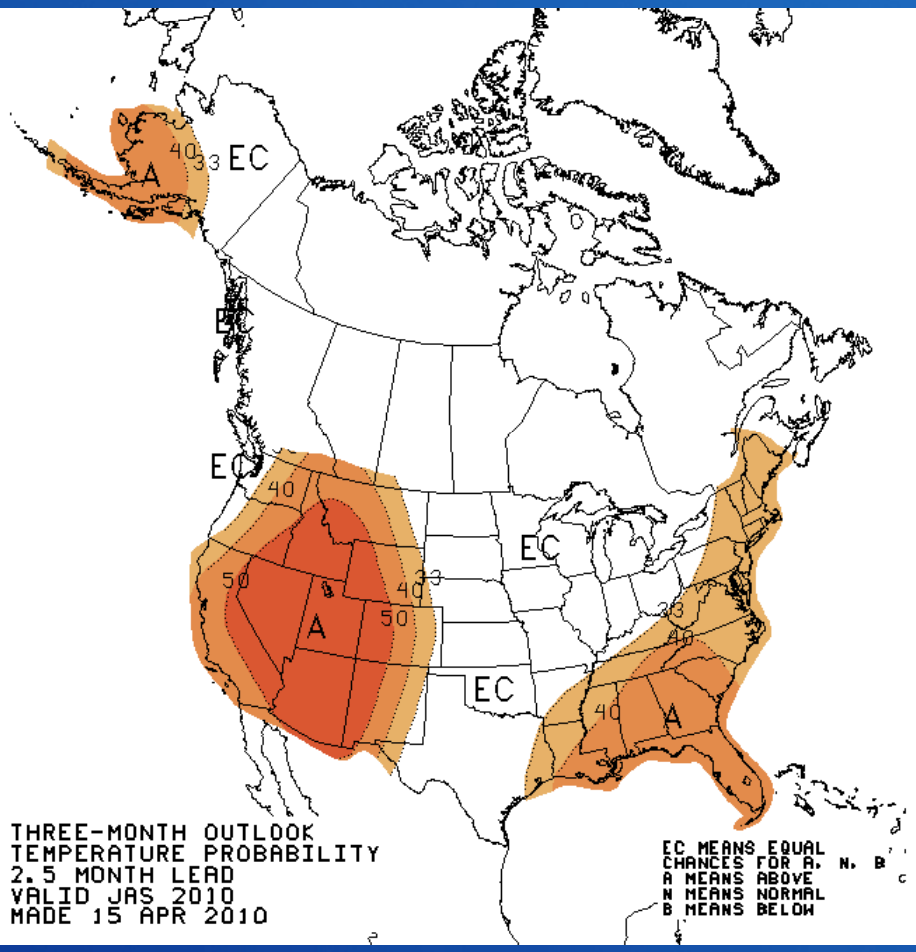
July-August-September Outlook (CPC):





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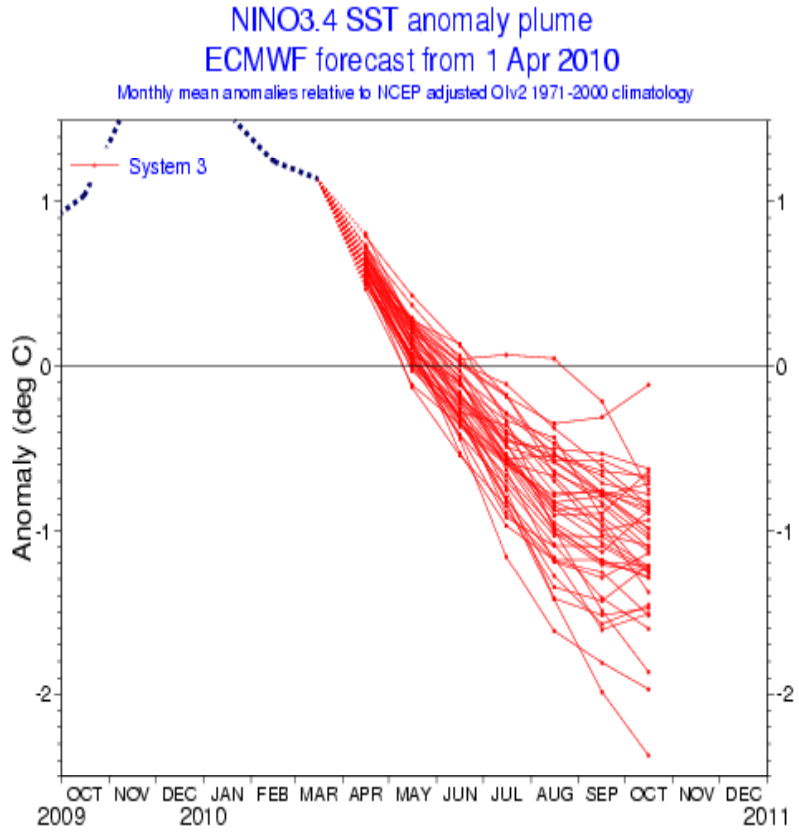
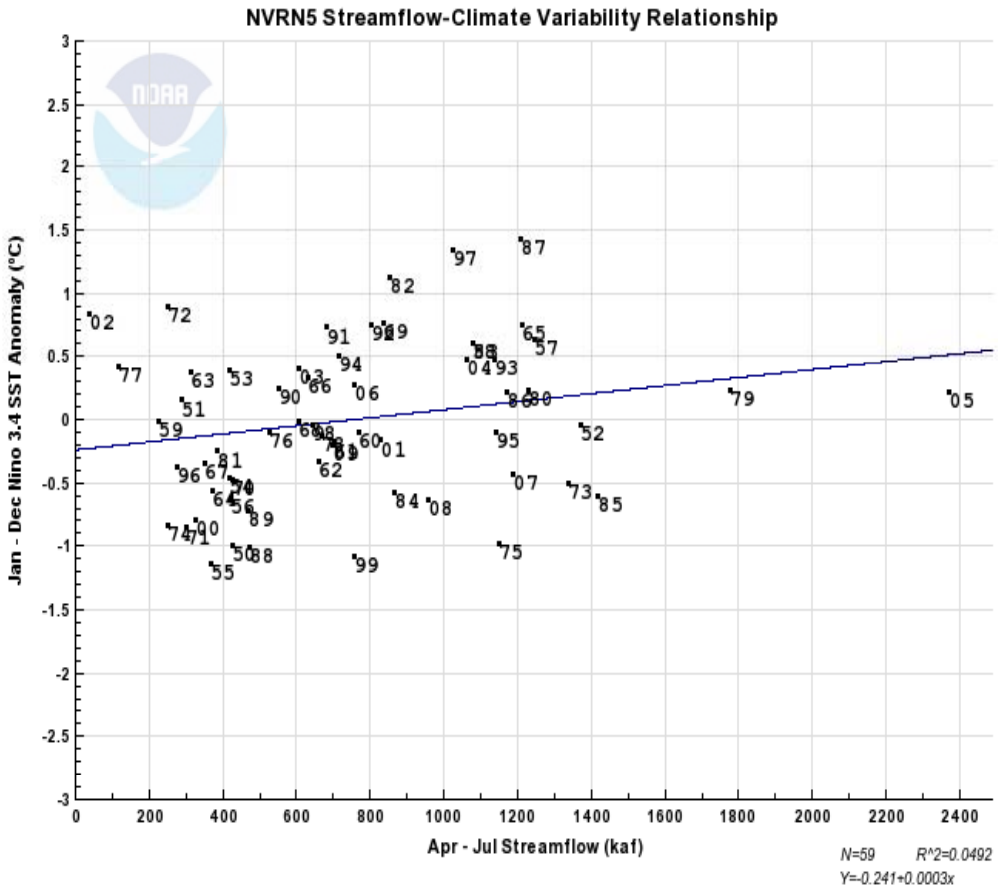
What about El Niño ?





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Water Year 2010 Operations

- Based on the most probable forecasts and anticipated operations, Navajo Reservoir will be near target elevation without a Spring Peak Release
- 500 cfs base until further notice
- San Juan RIP Flow Recommendations call for no Spring Peak Release this year
- A Spring Peak Release is still a possibility if the forecast increases (~35% probability) Some adjustments may still be necessary!

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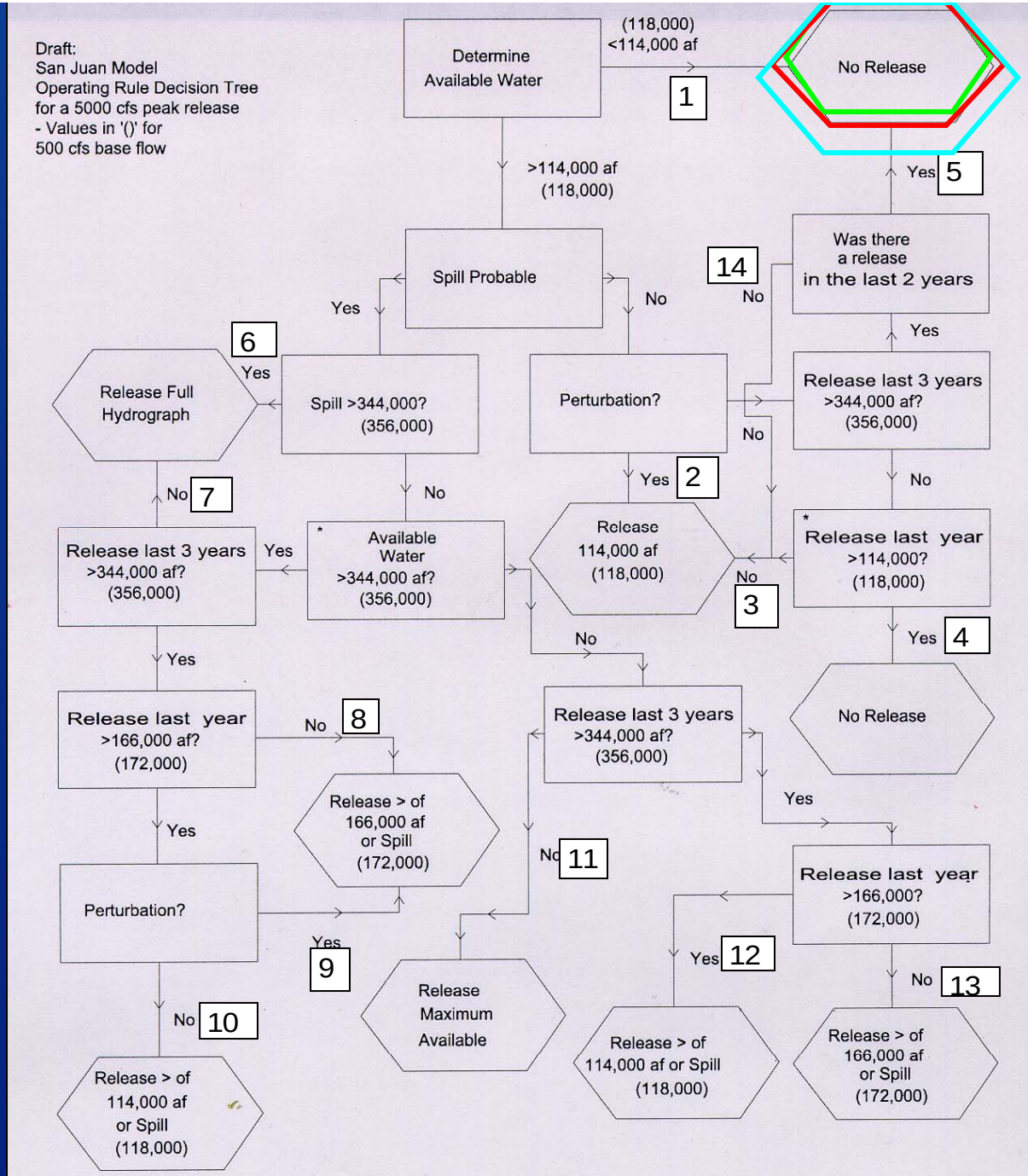

AVAILABLE WATER		PATH
Min Prob:	291,100 af	#5
Most Prob:	474,500 af	#5
Max Prob:	644,300 af	#5

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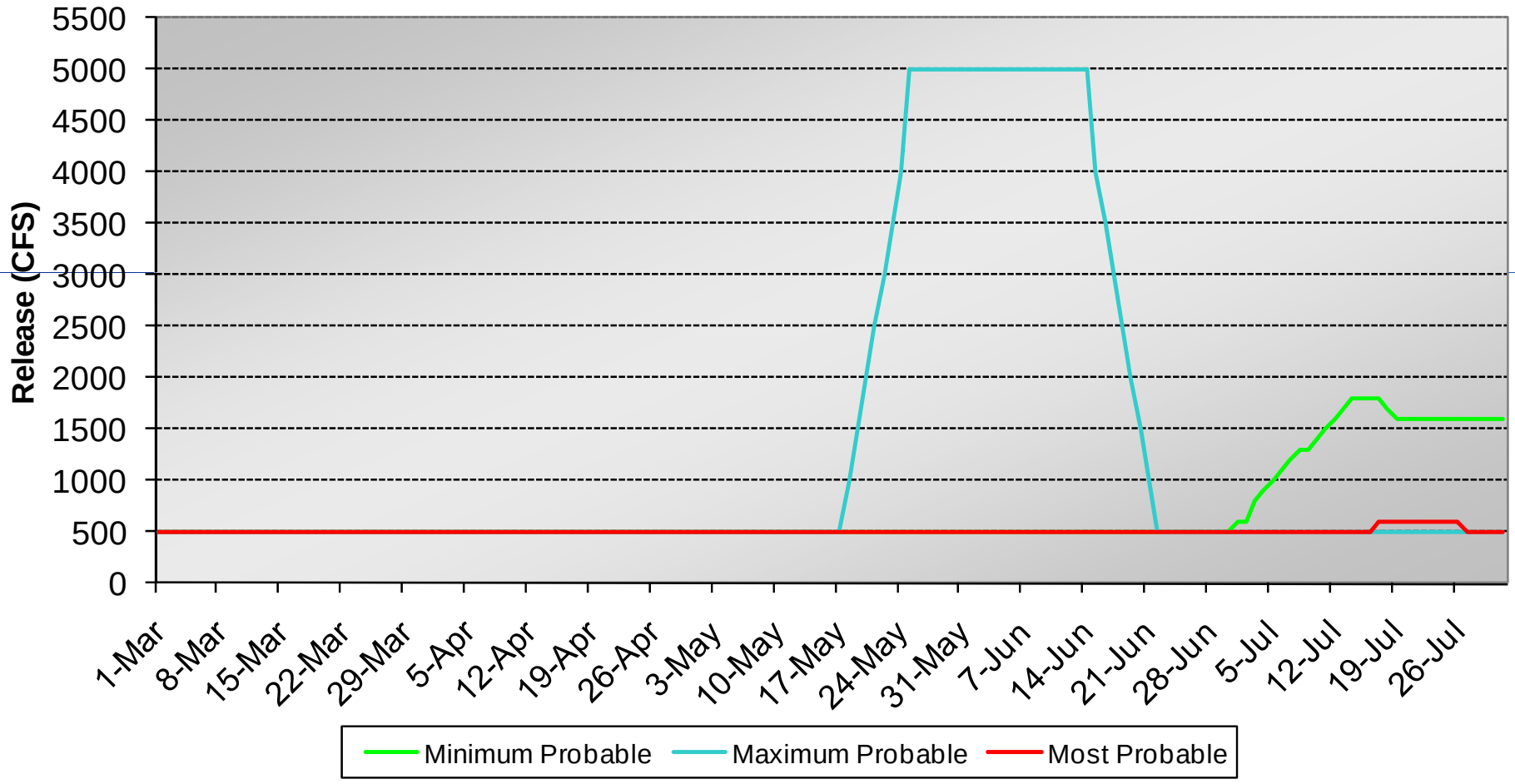
Spring Peak Hydrographs for WY2010 as of the Mid April Forecast



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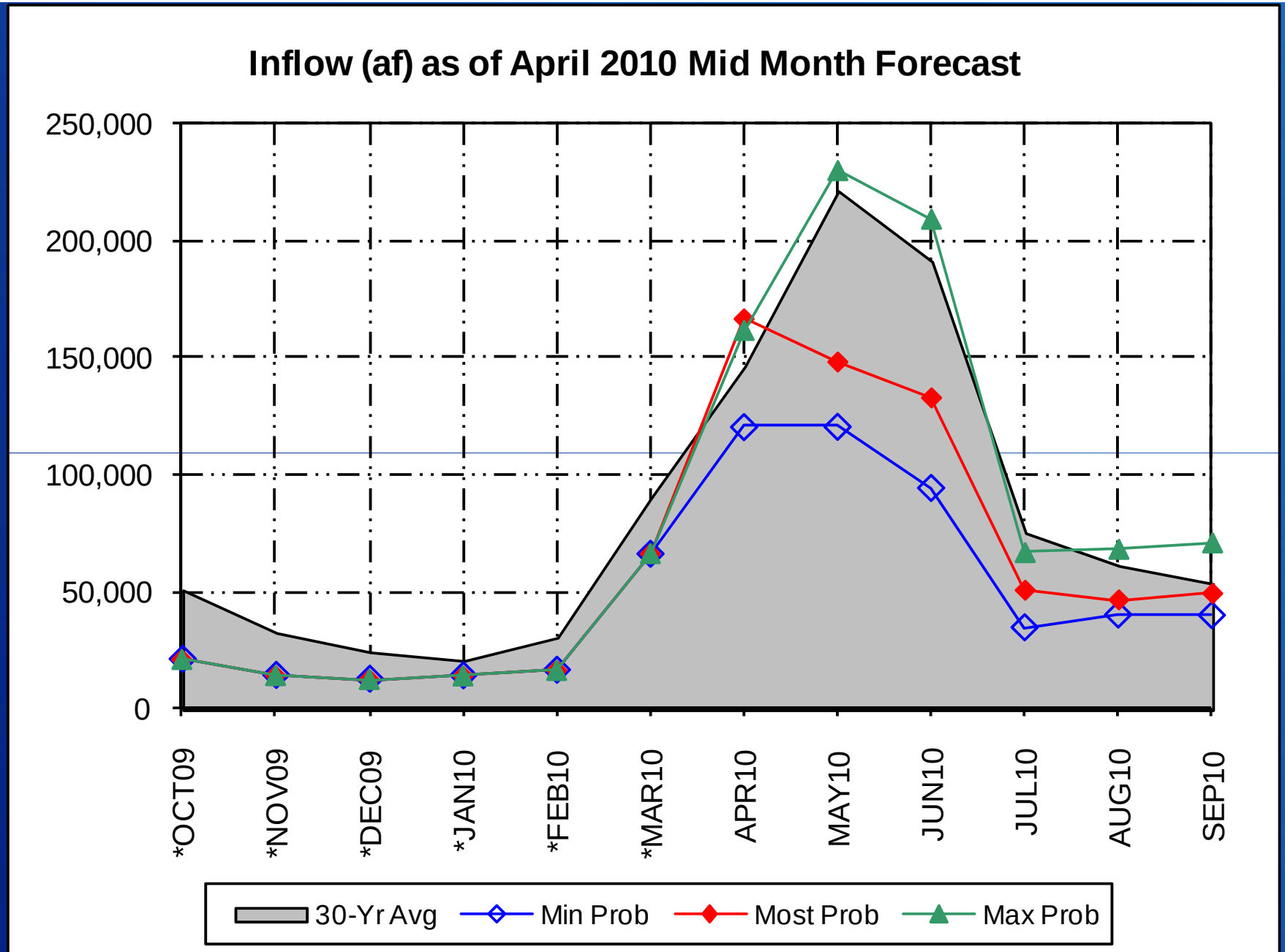

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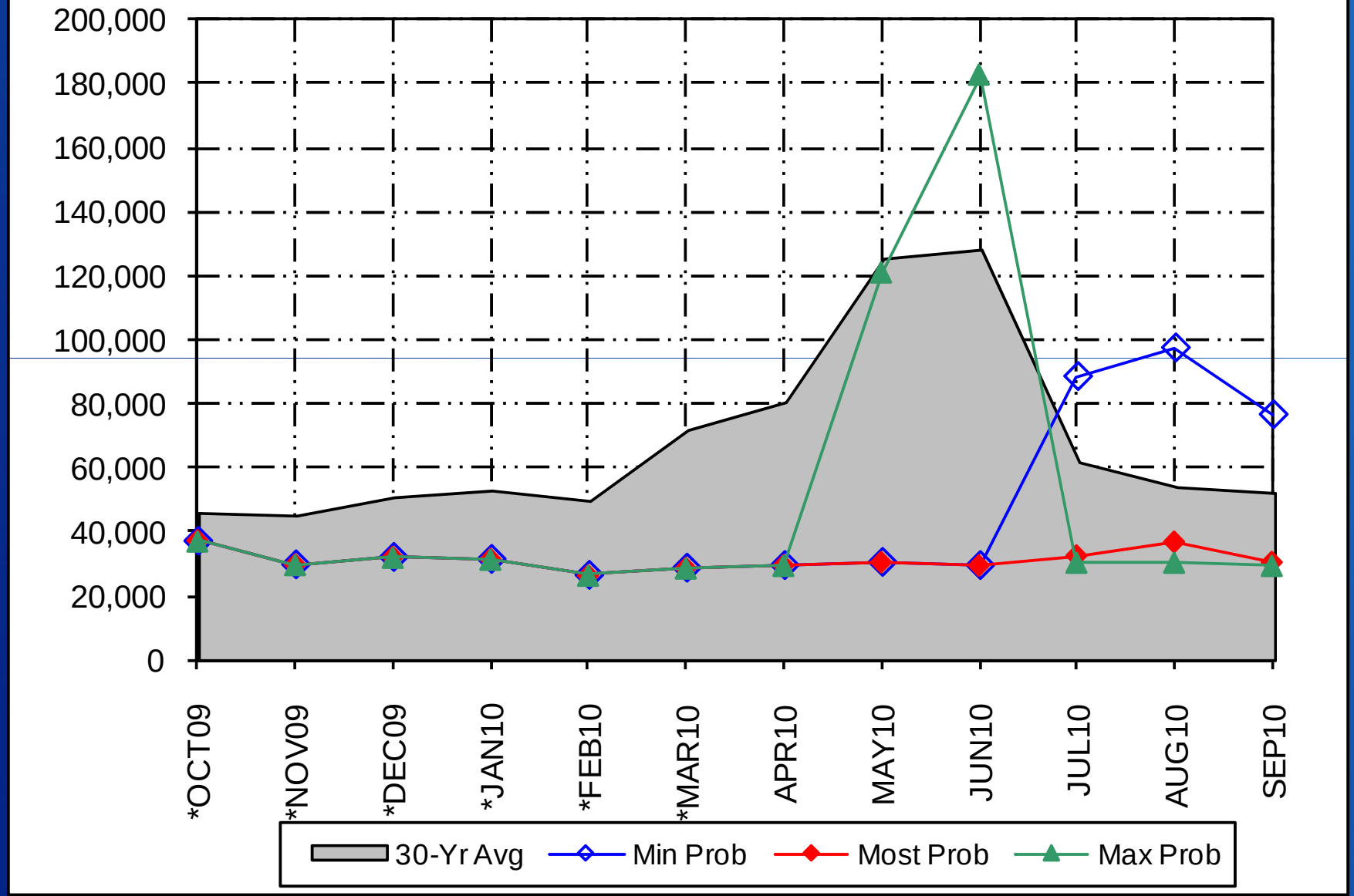
Release (af) as of April 2010 Mid Month Forecast



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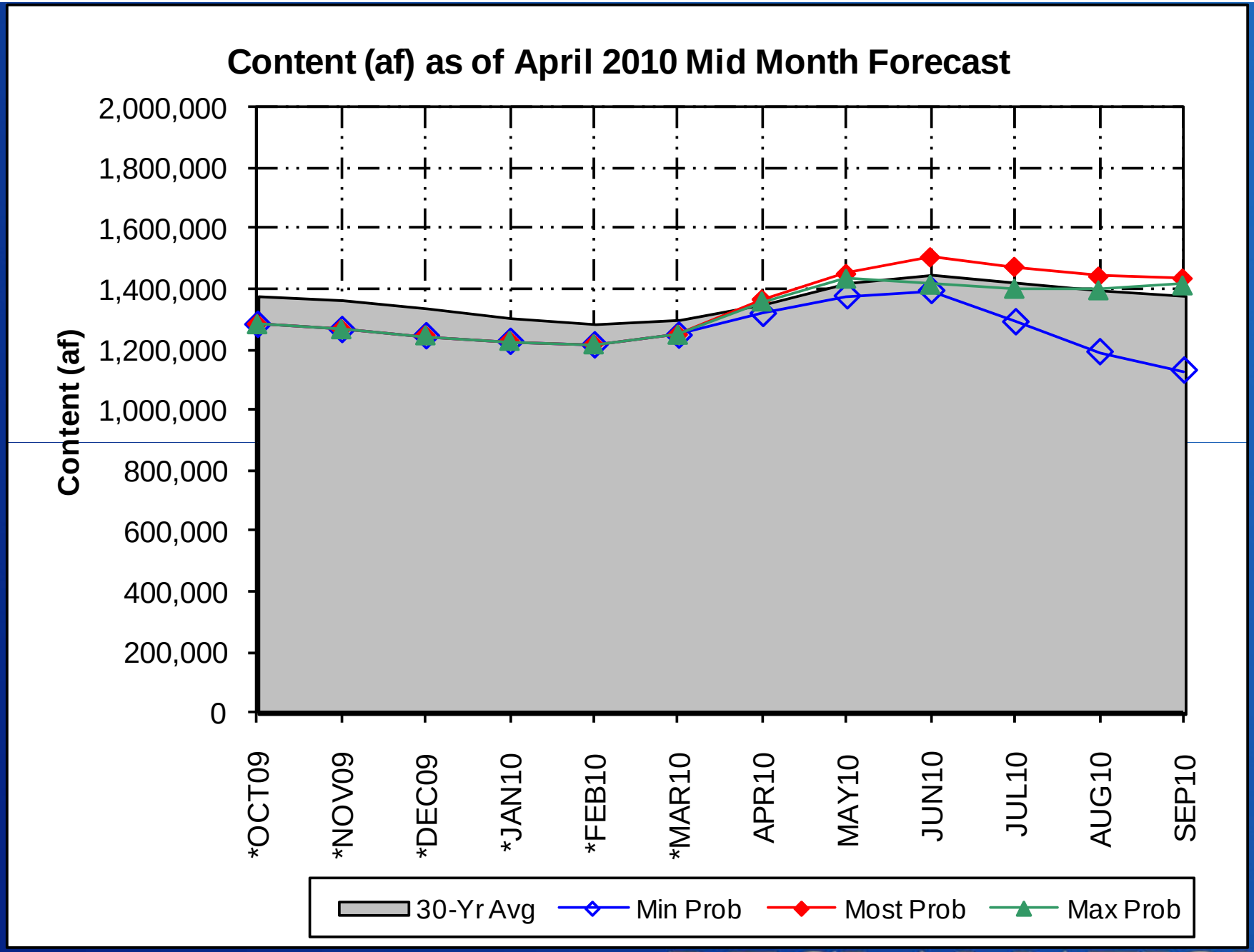

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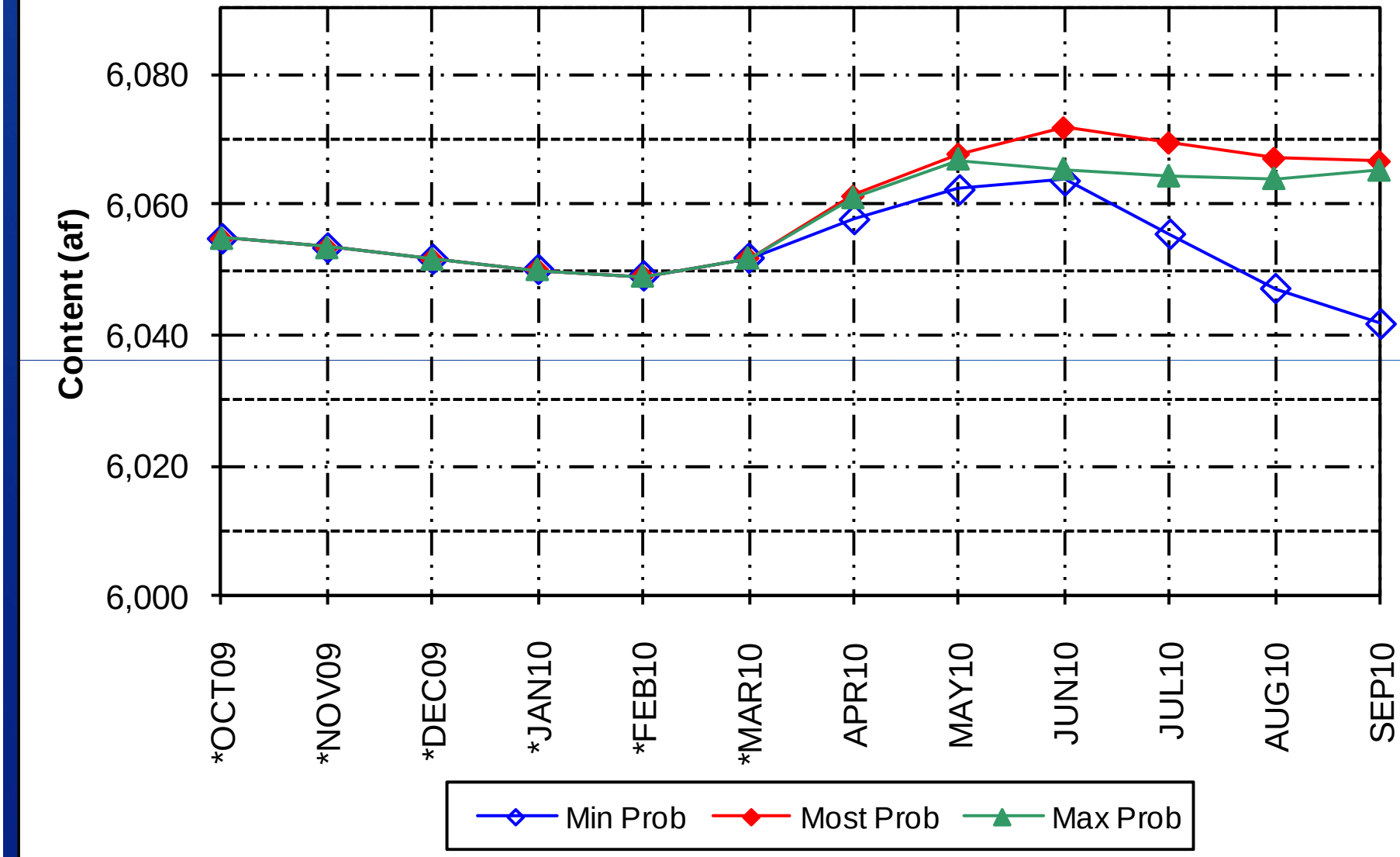
Elevation as of April 2010 Mid Month Forecast



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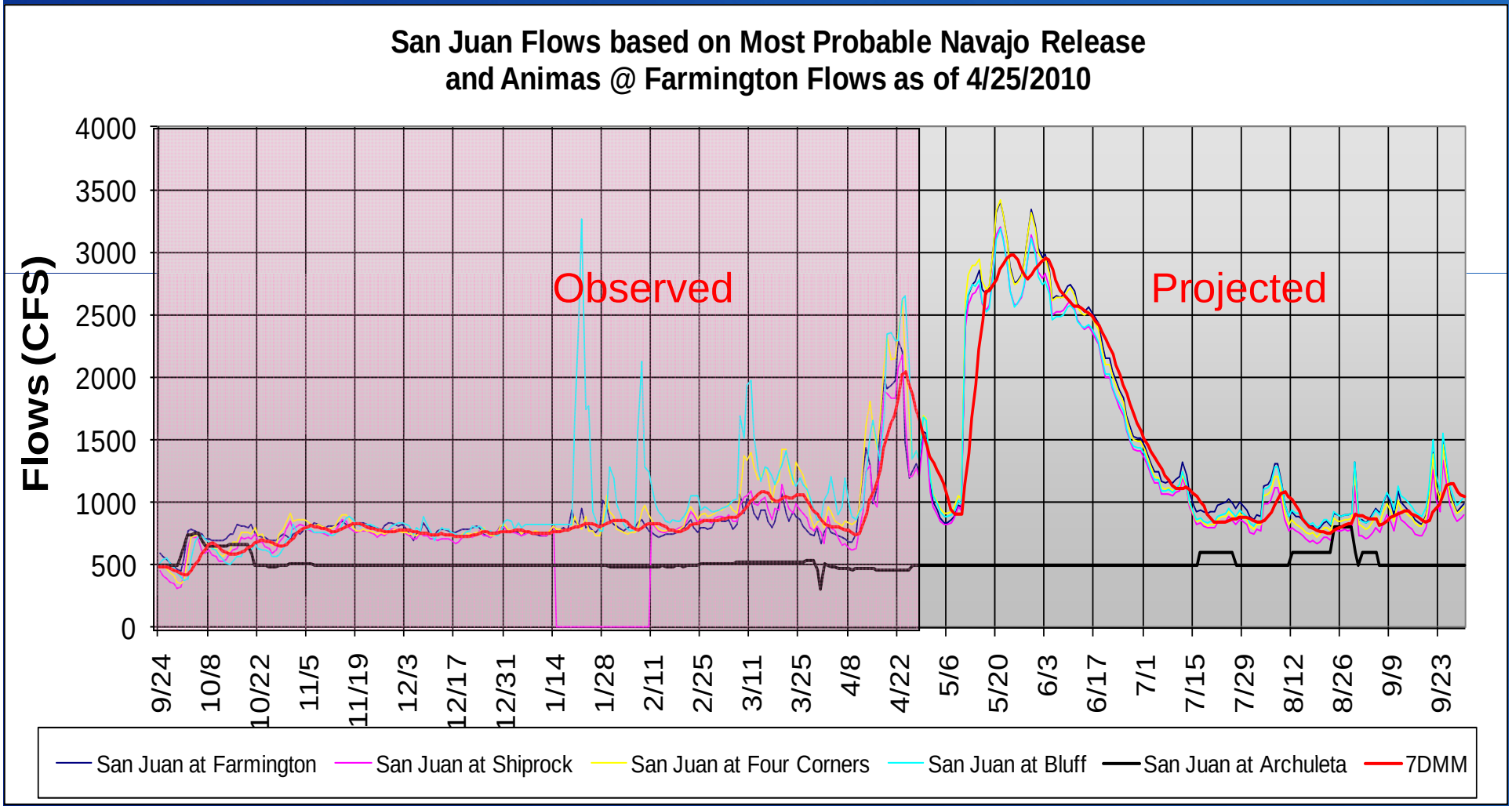
San Juan River Downstream Flows



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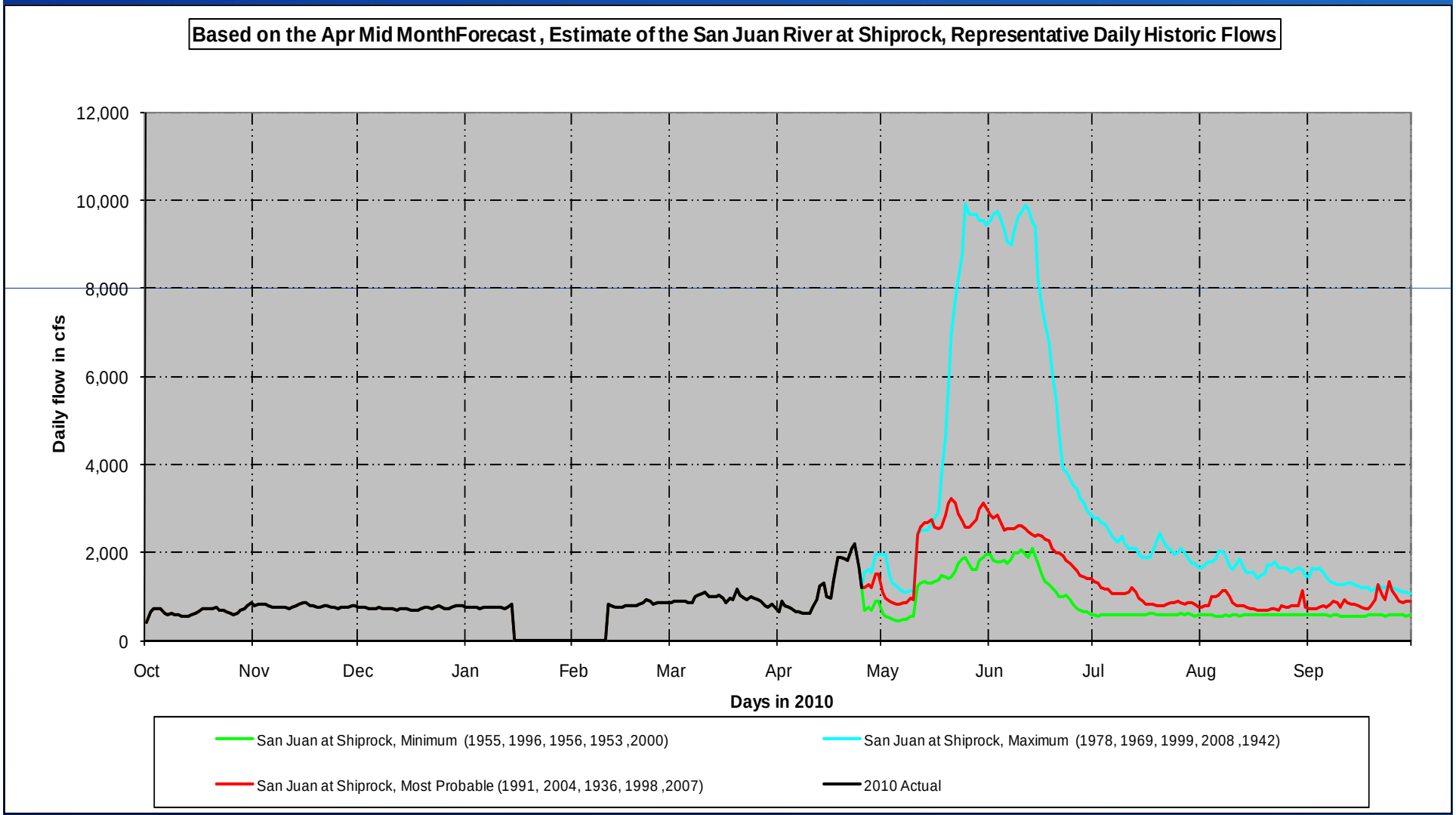
San Juan River at Shiprock



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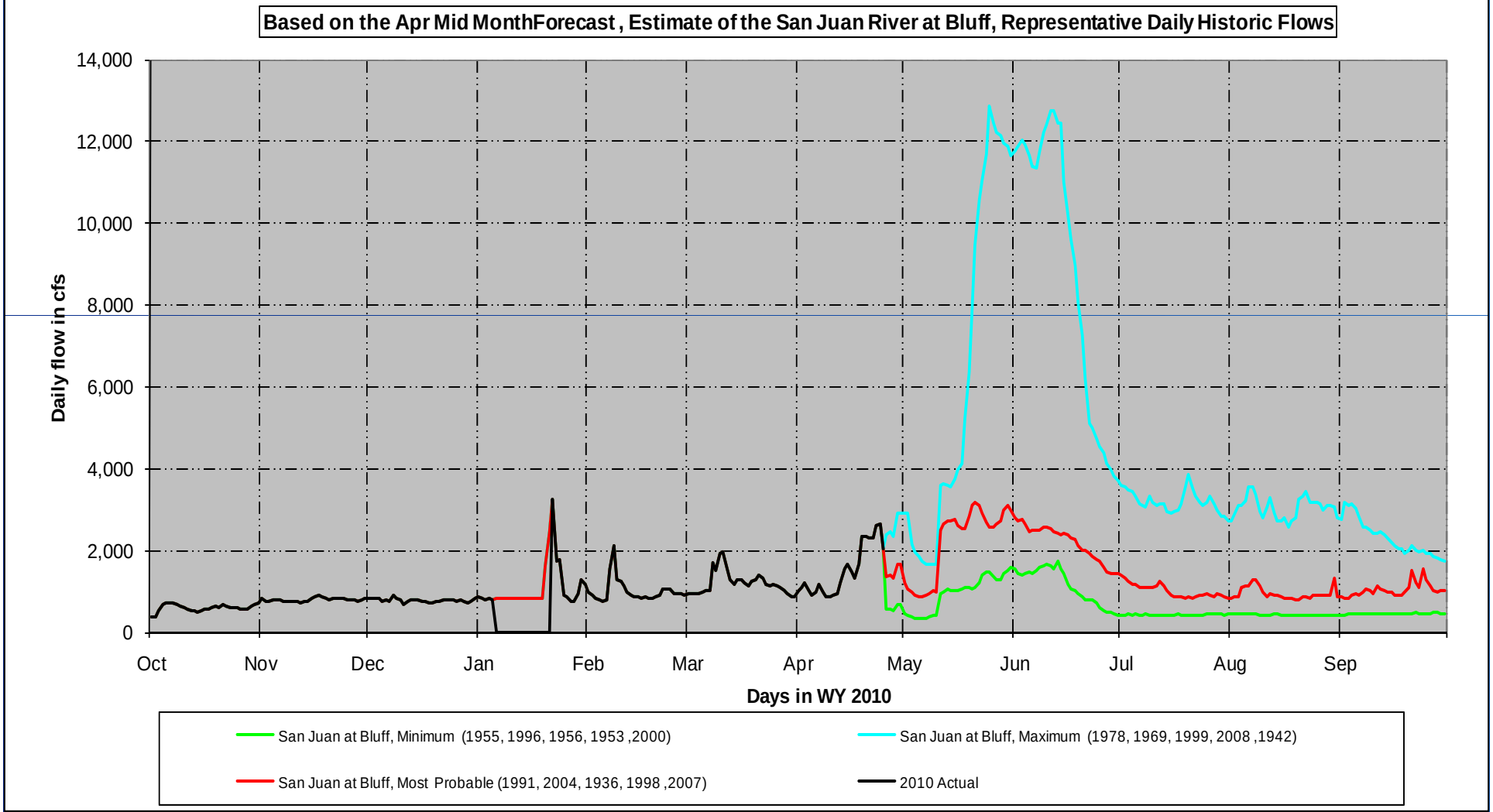
San Juan River at Bluff



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Current Conditions
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Navajo Current Conditions

(as of 4/25/10)

Elevation = 6061.3 (101% of Average)

Storage = 1,364,407 af (80% Full)

Inflow = 3550 cfs*

Release = 500 cfs*

NIIP = 260 cfs*

SJ-Chama Diversion = 530 cfs*

* Weekly Average from (4/19 – 4/25)

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Nearby Reservoirs

(4/25/2010)

Vallecito

- Elevation = 7637.0 (46% Full, 79% of average)
- Storage = 58,051 af
- Release = 60 cfs
- Inflow = 722 cfs*

Lemon

- Elevation = 8091.3 (32% Full, 53% of average)
- Storage = 12,793 af
- Release = 9 cfs
- Inflow = 136 cfs*

* Weekly Average from (4/19 – 4/25)

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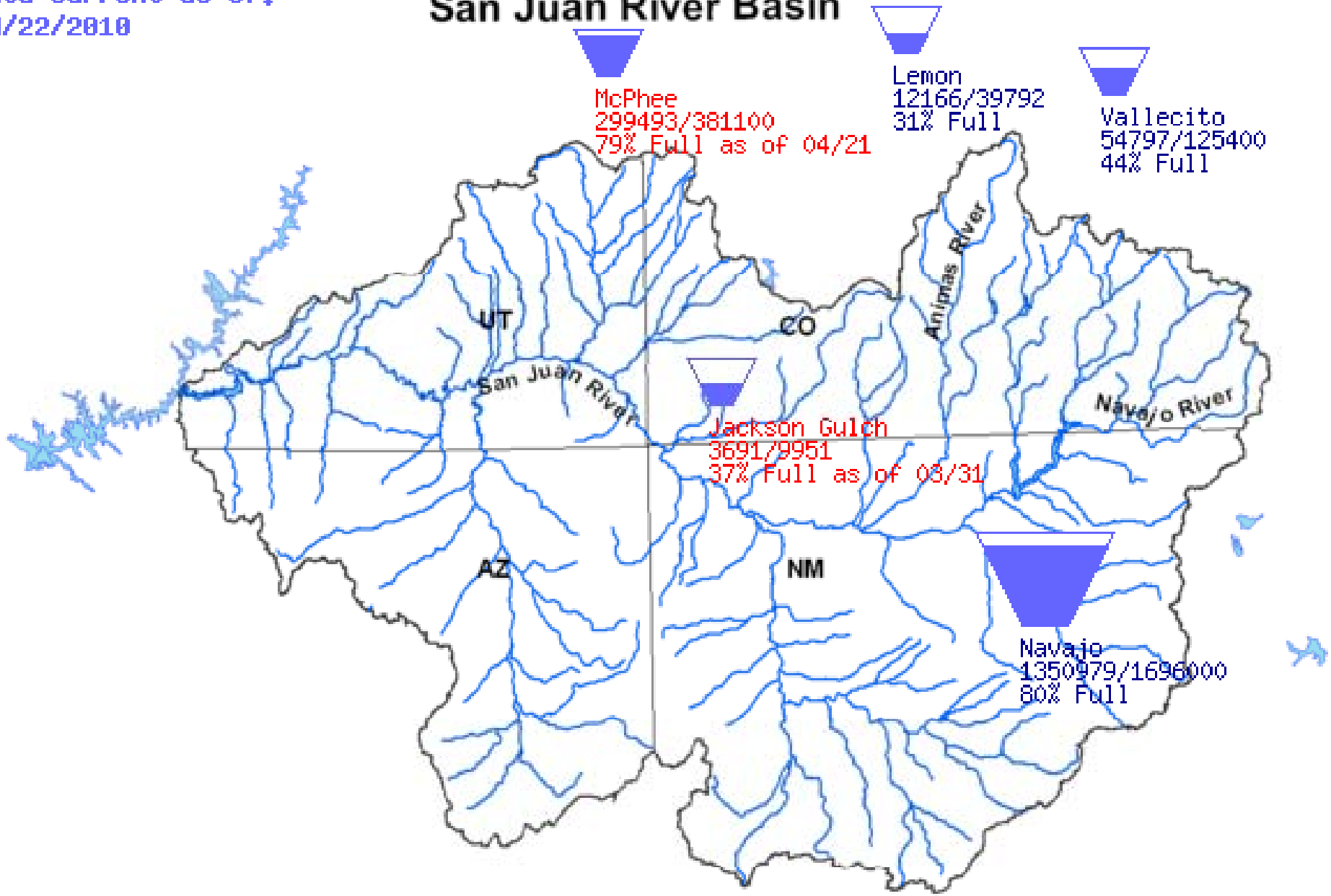
Data Current as of:
04/22/2010

San Juan River Basin



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Animas-La Plata Project

- Pumping began March 2nd
- ~8000 acre-feet pumped this year
- Maximum diversion this year = 285 cfs
- Reservoir is 29% Full (35,500 af stored)
- Holding period anticipated for June
- Navajo Nation Municipal Pipeline is currently under construction

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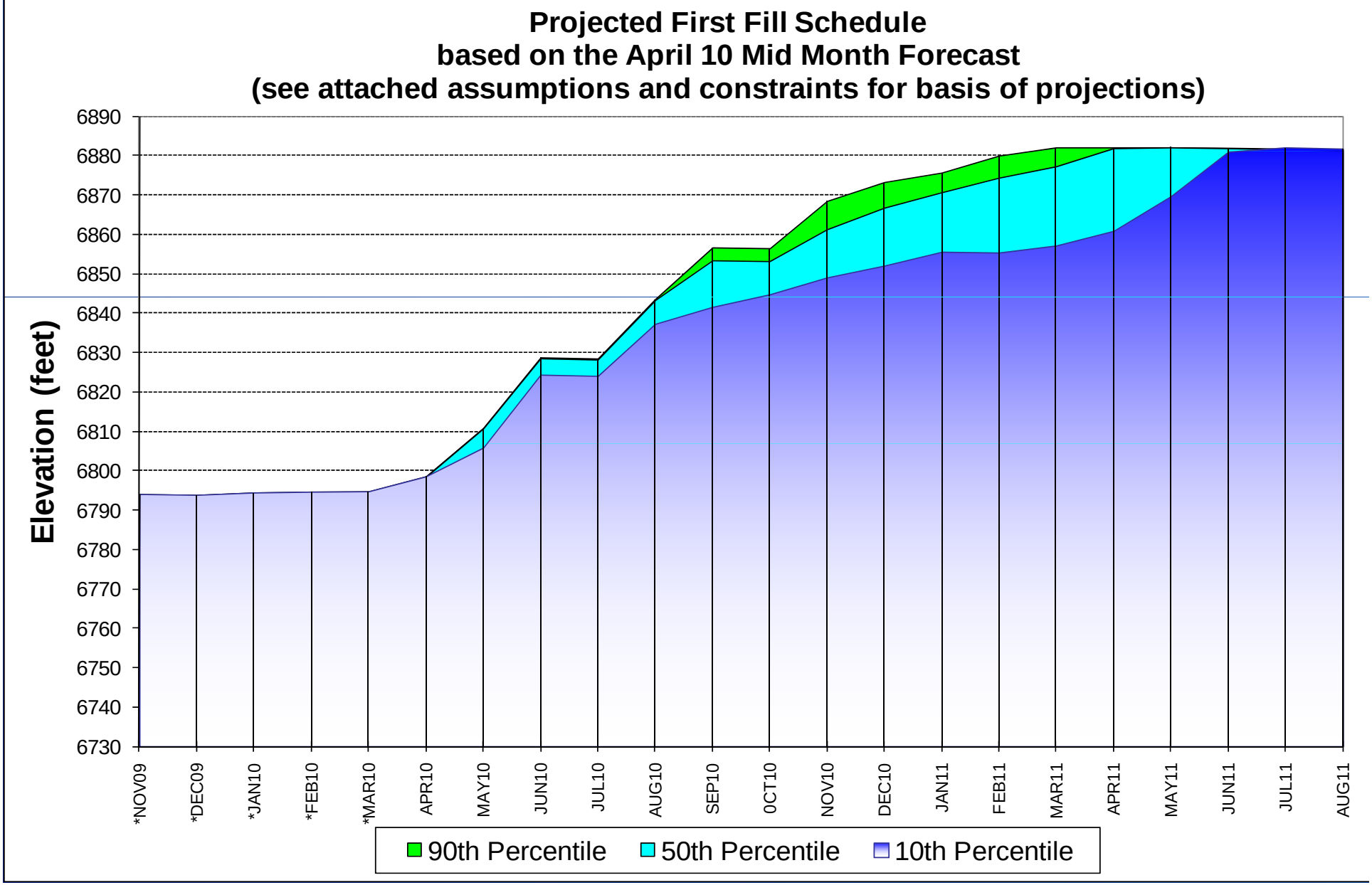
Animas-La Plata Project




Navajo Dam
Maintenance Activities

Future Navajo Dam Maintenance Activities:

- Muck-out Stilling Basin
  - Contract will be issued this summer
  - Work planned for late Aug – early Sept
- Repair 6x13 Emergency Gate Bonnet
  - Will occur after Stilling Basin muck-out
  - Flow will be diverted through auxiliary gate for ~1 month
- Auxiliary Outlet Works Gates
  - Gates will not be tested except for base flow diversion during 6x13 gate repair

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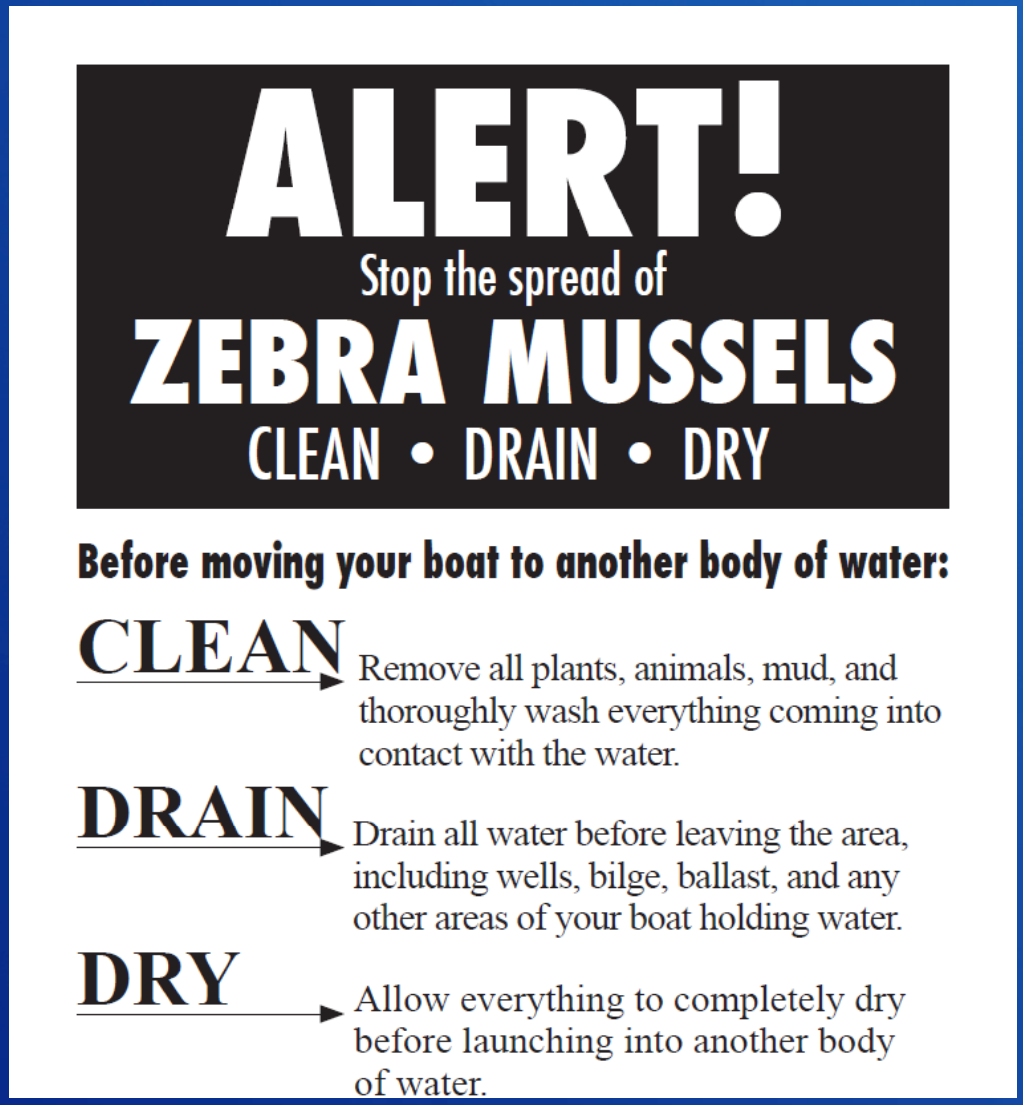
Invasive Aquatic Species



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Public Law 111-11

- Non-Navajo ditch improvements
  - Ten ditches expressed interest
  - Site visits scheduled for May

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Fish & Wildlife Service
San Juan RIP Update

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Reports from other Agencies
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Questions from
the Audience

How You Can Access Information

Bureau of Reclamation
www.usbr.gov/uc

USGS
http://water.usgs.gov/nwis

Colorado Basin River Forecast Center
www.cbrfc.noaa.gov

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RECLAMATION

Upcoming Meetings of Importance

- SJRIP Biology Committee Meeting 5/11
- SJRIP Annual Meeting 5/12
- SJRIP Coordination Committee Meeting 5/13

RECLAMATION

Summary

- For 2010, the reservoir is at a manageable elevation and can store all forecasted spring runoff inflows
- Most Probable April–July Inflow Forecast is 84% of average
- No Spring Peak Release is anticipated, but still possible
- Likely Minimum (Base) Release = 500 cfs
- Increased releases may be necessary to meet Target Base Flows
- Target Base Flow is 500 -1000 cfs in Critical Habitat (Farmington-Lake Powell)

- Next Operations Meeting: August 24, 2010

RECLAMATION


Thanks For Coming!
RECLAMATION