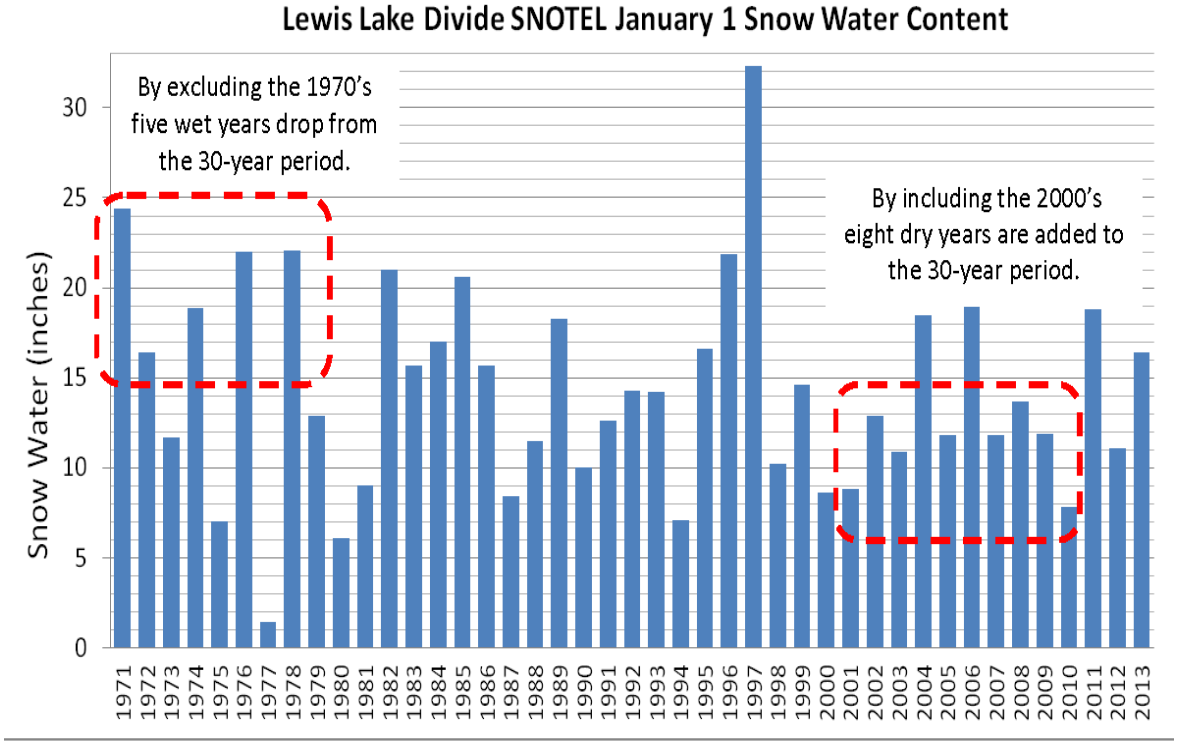
United States Department of Agriculture
Natural Resources Conservation Service

Idaho Water Supply Outlook Report January 1, 2013

Information to Explain the New Normals Period Now in Use 1981 -2010

Idaho NRCS Snow Survey Staff



What is the upshot of changing 30-year normal periods?

Every decade there is shift in the 30-year period used to calculate normals. **The change requires all of us to recalibrate our expectations when using percentages to understand the water supply.**

New Normals this Year

- Every decade the 30 year normals change periods.
- This year we go from the 1971-2000 period to the 1981-2010 period.
- The change is meant to keep pace with current climatic conditions as the most recent years are said to represent the current conditions.
- Most data types are calculated as a straight average except Snow Water Equivalent which is "median" or "middle value"

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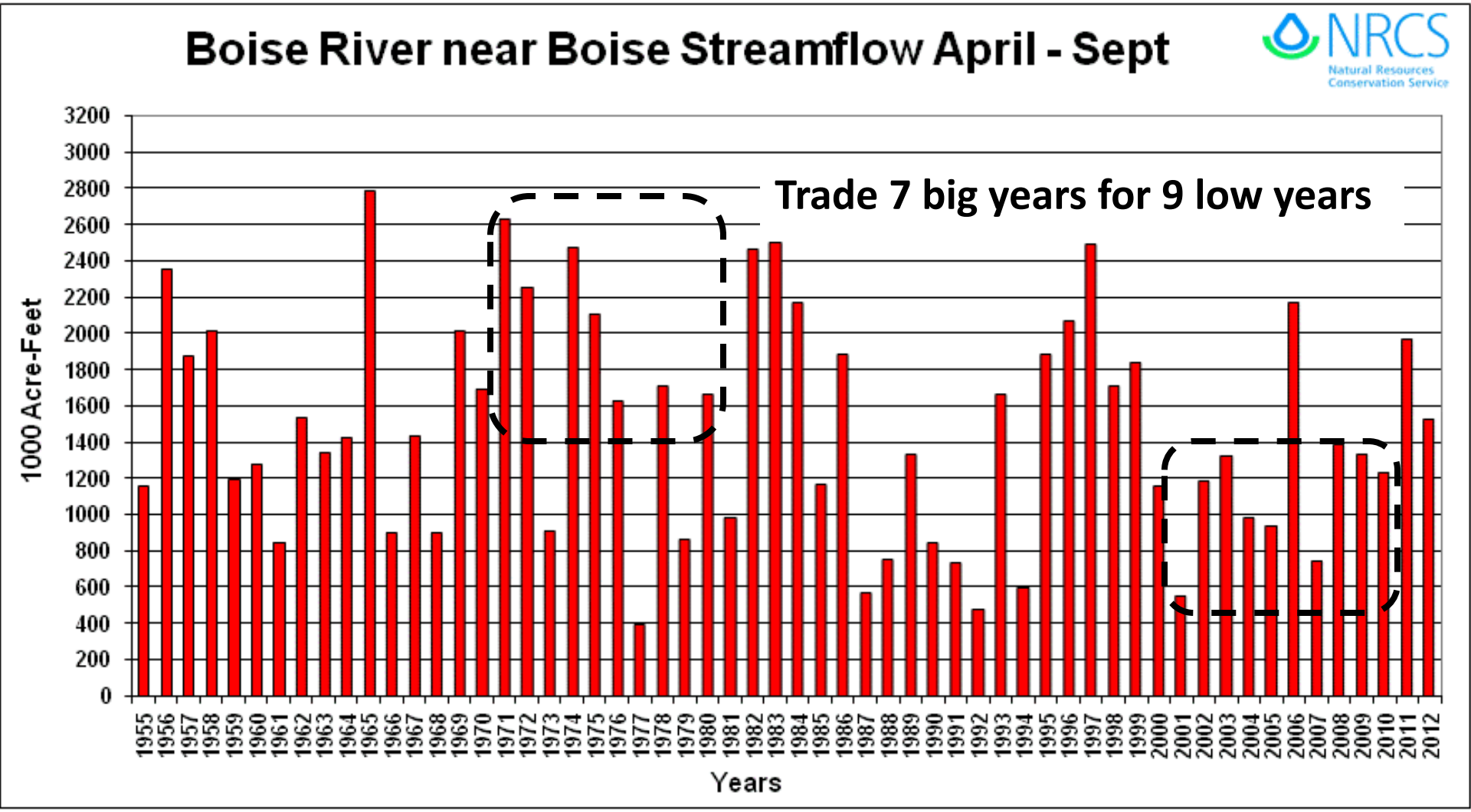
Boise River near Boise Streamflow April - Sept



Apr-Sep Volumes:

1971-2000 average = 1,526 KAF

1981-2010 average = 1,363 KAF

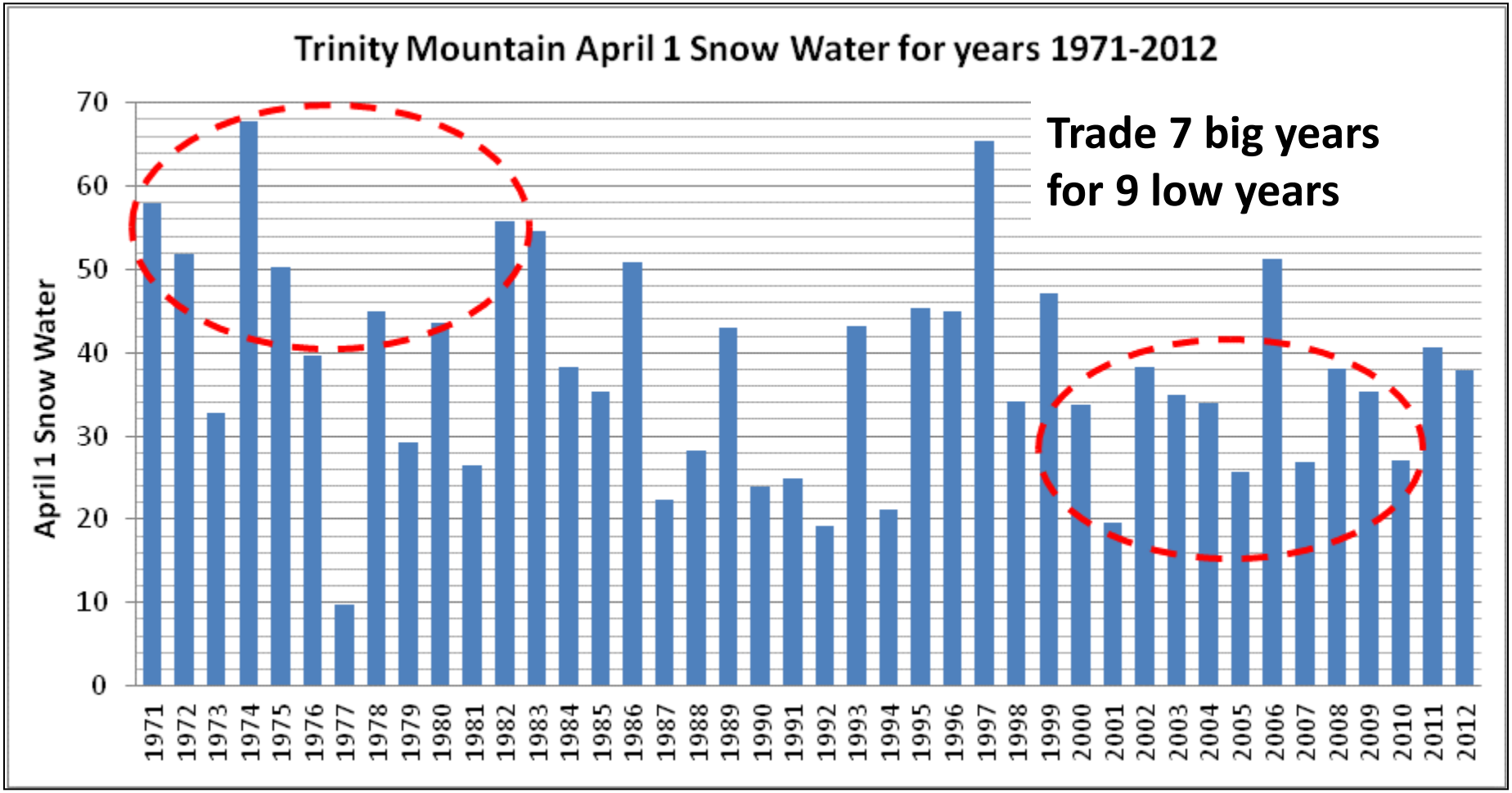
Compare 2012 runoff of 1,600 KAF

105% of 1971-2000 average

117% of 1981-2010 average

+12%

Old 1971-2000 vs New 1981-2010 Normals



1971-2000 average = 39.5”

1981-2010 median = 35.3”

Compare 2012 snowpack of 37.9”

95% of 1971-2000 average

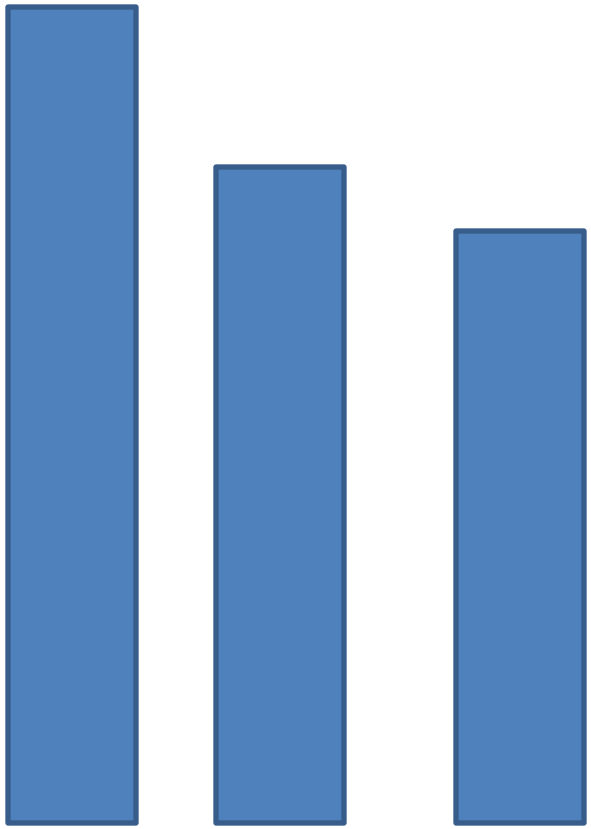
107% of 1981-2010 average +12%

What does this mean?

I see the new normals as the hydrologic equivalent of "No child left behind"

Thanks to the new, lower averages…

For the same work, a winter snowpack now needs to earn a grade of "B+" instead of a "C".



‘71-’00 normal April 1 SWE = 50”

‘81-’10 normal April 1 SWE = 42.5”

2012 Apr 1 SWE = 40”

Do the Math SNOTEL Example:

SWE / normal = % of normal

40” / 50” old average = 80% (‘71-00)

40” / 42.5” new median = 94% (’81-10)

This year we all need to re-calibrate our idea of what a good snowpack is.

In the past you might have been happy with a 75-85% of normal snowpack, but now you’ll need ~90-95% of normal snow to obtain the same runoff

Statewide April 1, 2012 SWE values would have been ~10-20% higher if we’d been using the 1981-2010 medians last year. Average increase would have been ~15%.

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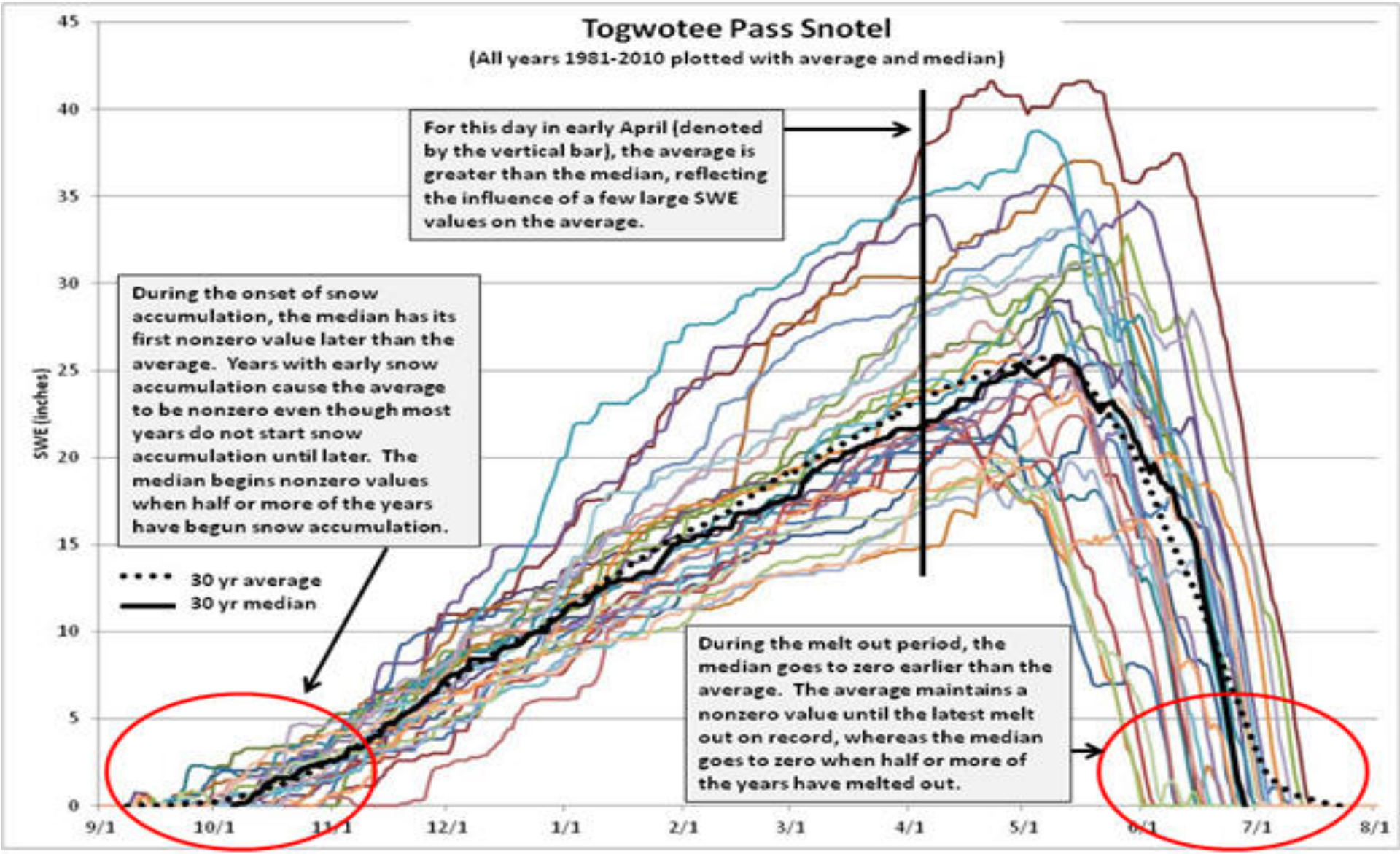
Why will SWE use a median?



Idaho Water Supply Outlook

IDWR State Water Supply Meeting

February 14 2013

United States Department of Agriculture
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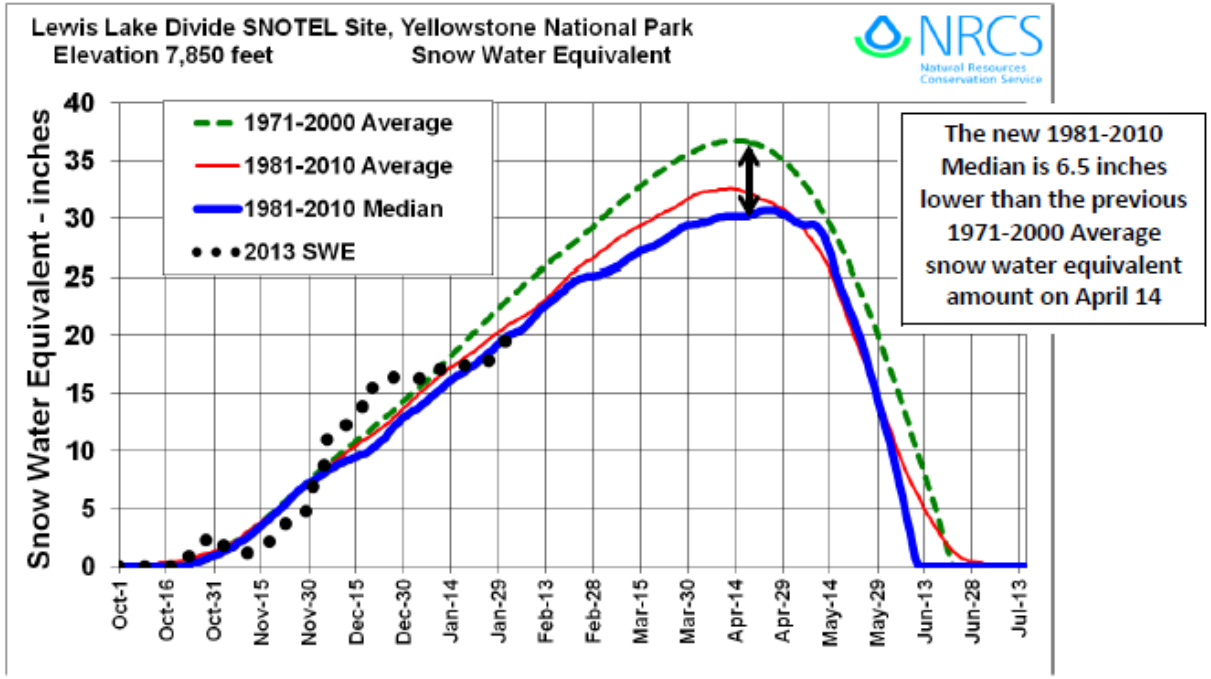
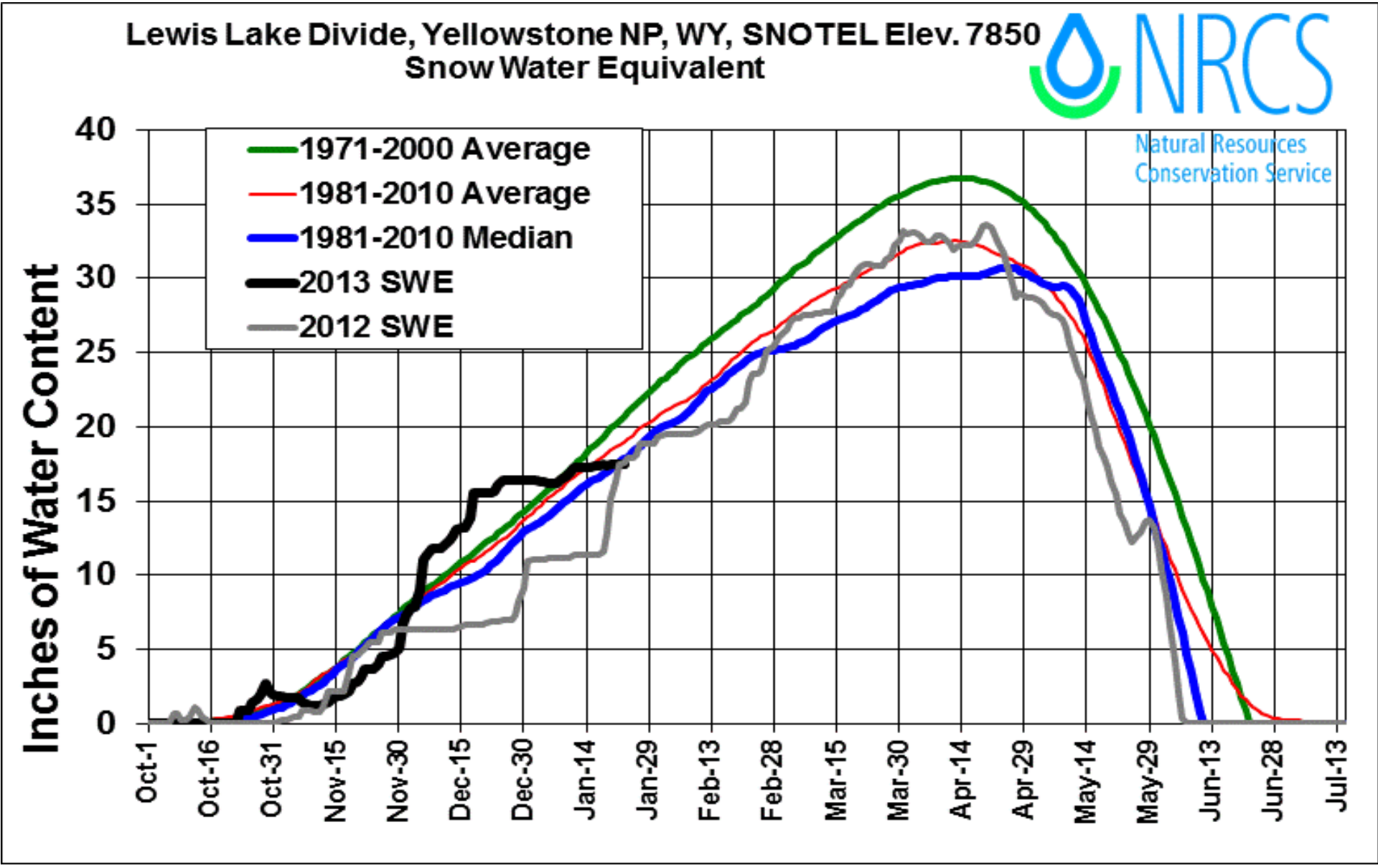
Idaho Water Supply Outlook Report
February 1, 2013



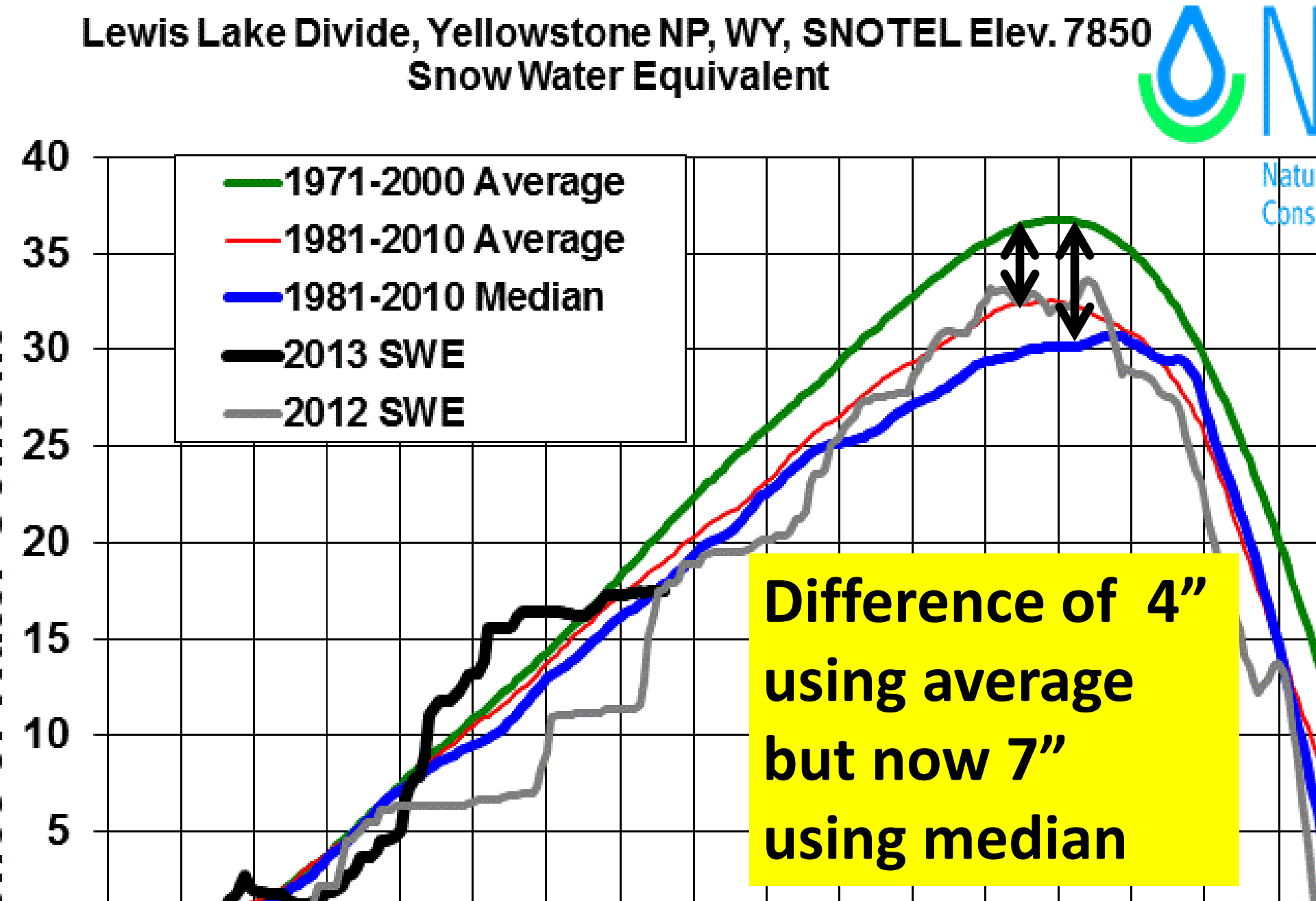
Use of Median vs. Average to Compare Snow Water Content

Although *average* is a commonly-used and well understood statistic, *median* is also a common descriptor used to express a "middle" value in a set of data. This "middle" value is also known as the *central tendency*. Median is determined by ranking the data from largest to smallest, and then identifying the middle so that there are an equal number of data values larger and smaller than it is. While the average and median can be the same or nearly the same, they are different if more of the data values are clustered toward one end of their range and/or if there are a few extreme values. In statistical terminology, this is called *skewness*. In this case, the average can be significantly influenced by the few values, making it not very representative of the majority of the values in the data set. Under these circumstances, median gives a better representation of central tendency than average.

Use of median for Snow Water



Use of median for Snow Water



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Basin	# Sites	January 1 SWE as % of 1971-2000 Average	January 1 SWE as % of 1981-2010 Median	Difference
Snake above Palisades	17	93%	112%	19%
Owyhee	7	62%	79%	17%
Bear River	15	85%	102%	17%
Little Lost, Birch	4	117%	133%	16%
Northern Panhandle	7	117%	132%	15%
Spokane	10	77%	92%	15%
Willow, Blackfoot, Portneuf	6	70%	85%	15%
Snake Basin Above American Falls	27	93%	108%	15%
Big Lost	4	155%	168%	13%
Medicine Lodge, Beaver, Camas	4	111%	123%	12%
Clearwater	14	75%	86%	11%
Boise	9	93%	103%	10%
Big Wood	9	124%	133%	9%
Goose	2	79%	88%	9%
Bruneau	5	75%	83%	8%
Henrys Fork, Teton	7	104%	111%	7%
Salmon	22	106%	113%	7%
Payette	11	100%	105%	5%
Weiser	3	67%	72%	5%
Salmon Falls	5	78%	83%	5%
Raft	1	99%	103%	4%
Little Wood	4	145%	147%	2%

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Basin / Station Name	Elevation (ft)	Jan 1, 2013 Snow Water Equivalent (in)	1971-2000 Average SWE (in)	1981-2010 Median SWE (in)	% of 71-00 Ave	% of 81-10 Median	Difference
Snake above Palisades							
GUNSIGHT PASS	9820	6.7	na	6.1	na	110%	na
BLIND BULL SUM	8650	10.1	13.1	9.1	77%	111%	34%
EAST RIM DIVIDE	7930	4.5	5.9	4.3	76%	105%	29%
WILLOW CREEK	8380	11.3	14.3	10.8	79%	105%	26%
THUMB DIVIDE	7980	8.5	7.6	6.2	112%	137%	25%
SNAKE RIVER STATION	6920	7.5	7.9	6.4	95%	117%	22%
SPRING CREEK DIVIDE	9000	10.6	12.5	10.2	85%	104%	19%
GRANITE CREEK	6770	7.6	7.6	6.5	100%	117%	17%
BASE CAMP	7030	10	8.2	7.2	122%	139%	17%
LOOMIS PARK	8240	6.2	7.9	6.6	78%	94%	16%
COTTONWOOD CREEK	7670	8.5	9.7	8.5	88%	100%	12%
PHILLIPS BENCH	8200	10.9	12.5	11.0	87%	99%	12%
LEWIS LAKE DIVIDE	7850	16.4	14.8	13.3	111%	123%	12%
GROS VENTRE SUMMIT	8750	6.2	6.9	6.2	90%	100%	10%
TWO OCEAN PLATEAU	9240	16.3	13.5	12.5	121%	130%	9%
SALT RIVER SUMMIT	7760	4.9	5.4	4.9	91%	100%	9%
TOGWOTEE PASS	9580	11.3	11.6	11.1	97%	102%	5%
Basin-wide Percent	17 sites				93%	112%	19%

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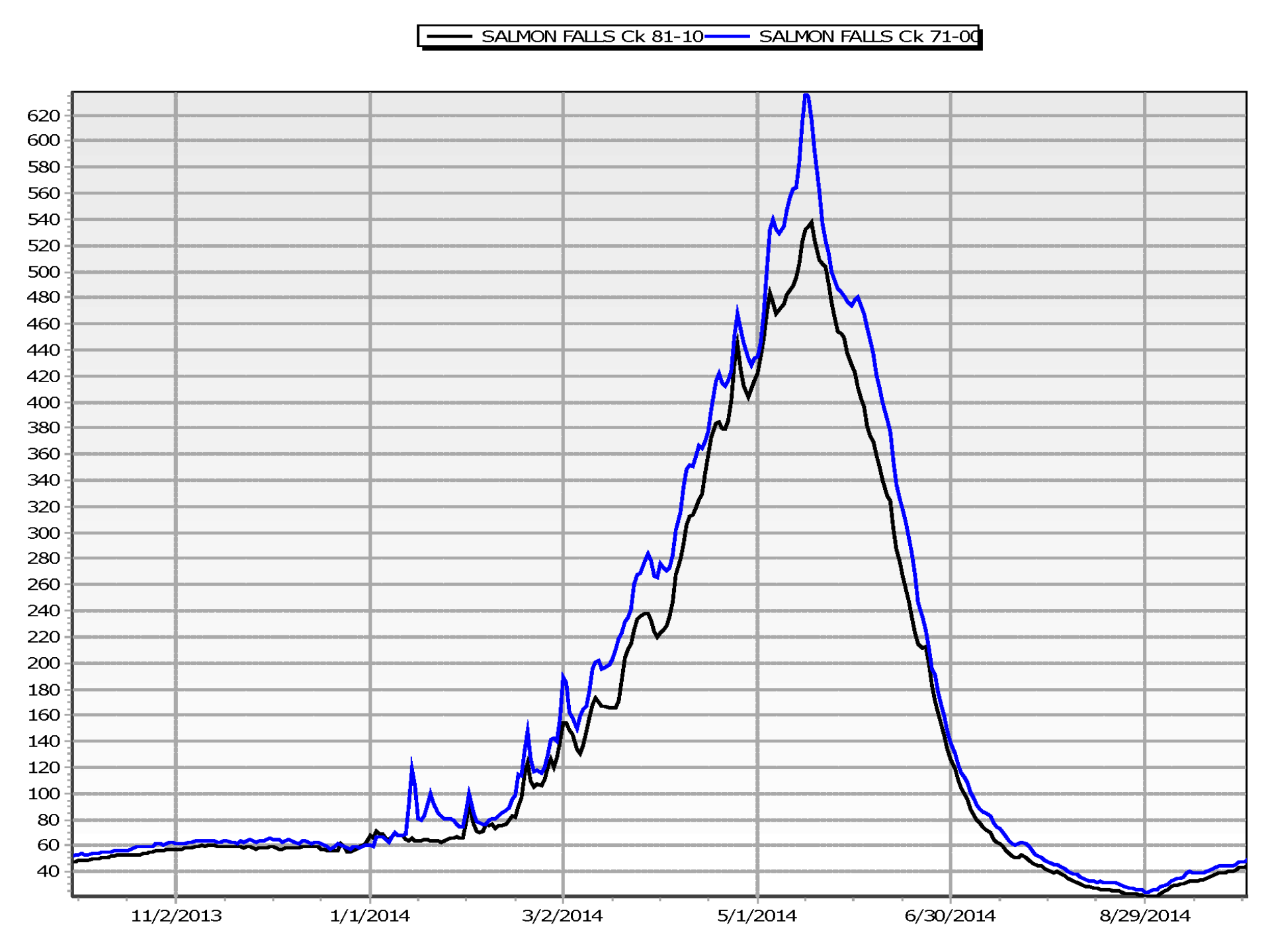
Basin	# Sites	February 1 SWE as % of 1971-2000 Average	February 1 SWE as % of 1981-2010 Median	Difference
Medicine Lodge, Beaver, Camas Basins	4	98%	113%	15%
Snake above Palisades	17	81%	95%	14%
Little Lost, Birch Basins	4	101%	115%	13%
Goose	2	77%	90%	13%
Snake Basin Above American Falls	27	82%	95%	13%
Bear River Basin	15	73%	85%	12%
Big Lost	4	118%	130%	12%
Henreys Fork, Teton Basins	7	90%	101%	12%
Willow, Blackfoot, Portneuf Basins	6	69%	80%	11%
Salmon	22	91%	101%	10%
Raft Basin	1	95%	104%	9%
Big Wood	9	93%	102%	9%
Spokane	9	74%	83%	9%
Payette	9	86%	94%	9%
Clearwater	14	78%	86%	8%
Salmon Falls Basins	5	76%	84%	8%
Bruneau Basin	5	88%	95%	8%
Boise	9	75%	82%	8%
Weiser	3	74%	82%	8%
Little Wood	4	108%	116%	7%
Owyhee Basin	7	76%	83%	7%
Northern Panhandle	7	97%	104%	6%

Streamflow Average Comparison — **Acre-feet**

Month	*Big Wood R ab Magic Reservoir			*Oakley Reservoir Inflow			*Salmon Falls Ck nr San Jacinto			Month
	81-10 Ave Big Wood*	71-00 Ave Big Wood*	% decrease from 71-00	81-10 Ave Oakley*	71-00 Ave Oakley*	% decrease from 71-00	81-10 Ave Salmon Falls*	71-00 Ave Salmon Falls*	% decrease from 71-00	
Oct	5676	6833	-17%	1838	2063	-11%	3216	3510	**-8%**	Oct
Nov	5718	6990	-18%	2217	2420	**-8%**	3509	3790	**-7%**	Nov
Dec	4012	5080	**-21%**	2371	2497	**-5%**	3574	3810	**-6%**	Dec
Jan	3872	4657	-17%	2509	3047	-18%	4068	4887	**-17%**	Jan
Feb	3694	4587	-19%	3242	3677	-12%	5223	5973	-13%	Feb
Mar	7790	9533	-18%	4675	5450	-14%	11160	13283	-16%	Mar
Apr	22400	24903	-10%	6782	7690	-12%	20304	22673	-10%	Apr
May	58032	62683	**-7%**	10382	12717	-18%	29455	33447	-12%	May
Jun	66439	73200	**-9%**	4647	6033	**-23%**	15958	19110	**-16%**	Jun
Jul	22793	29113	**-22%**	1861	2160	-14%	4053	4797	**-16%**	Jul
Aug	7010	7973	-12%	1266	1580	**-20%**	1721	2077	**-17%**	Aug
Sep	5114	6193	-17%	1218	1490	-18%	2034	2370	-14%	Sep
Period										**Period**
Apr-Jul	169663	189900	**-11%**	23672	28600	**-17%**	69769	80027	**-13%**	Apr-Jul
Apr-Sep	181787	204067	**-11%**	26156	31670	**-17%**	73524	84473	**-13%**	Apr-Sep


SALMON FALLS Ck 81-10
SALMON FALLS Ck 71-00
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360
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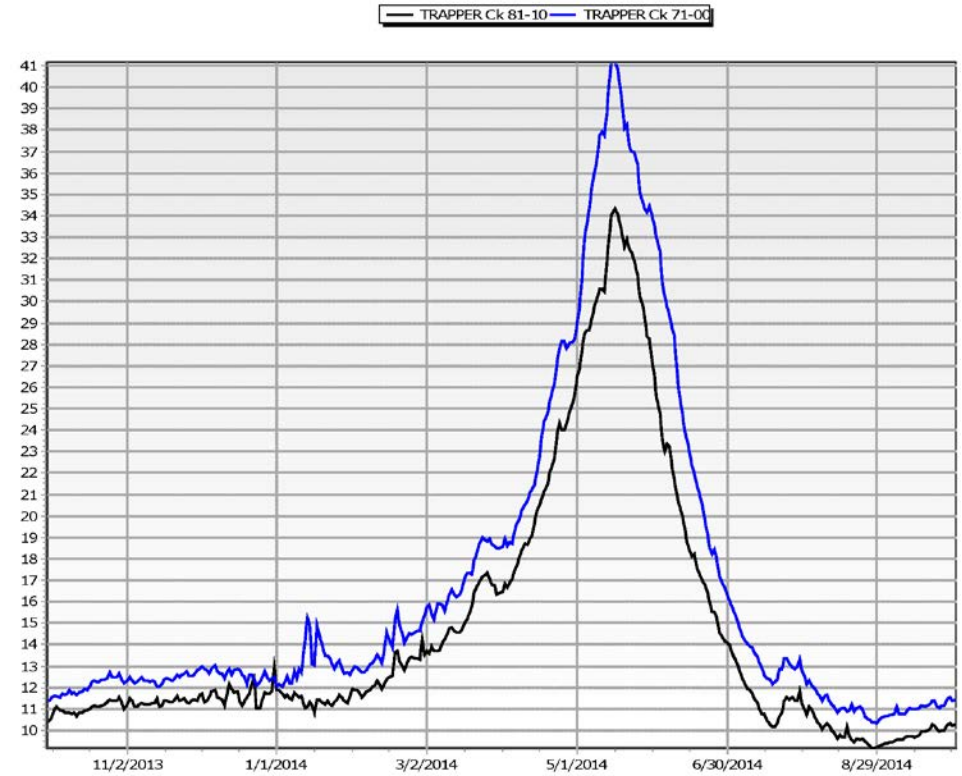
5/1/2014
6/30/2014
8/29/2014


TRAPPER Ck 81-10
TRAPPER Ck 71-00
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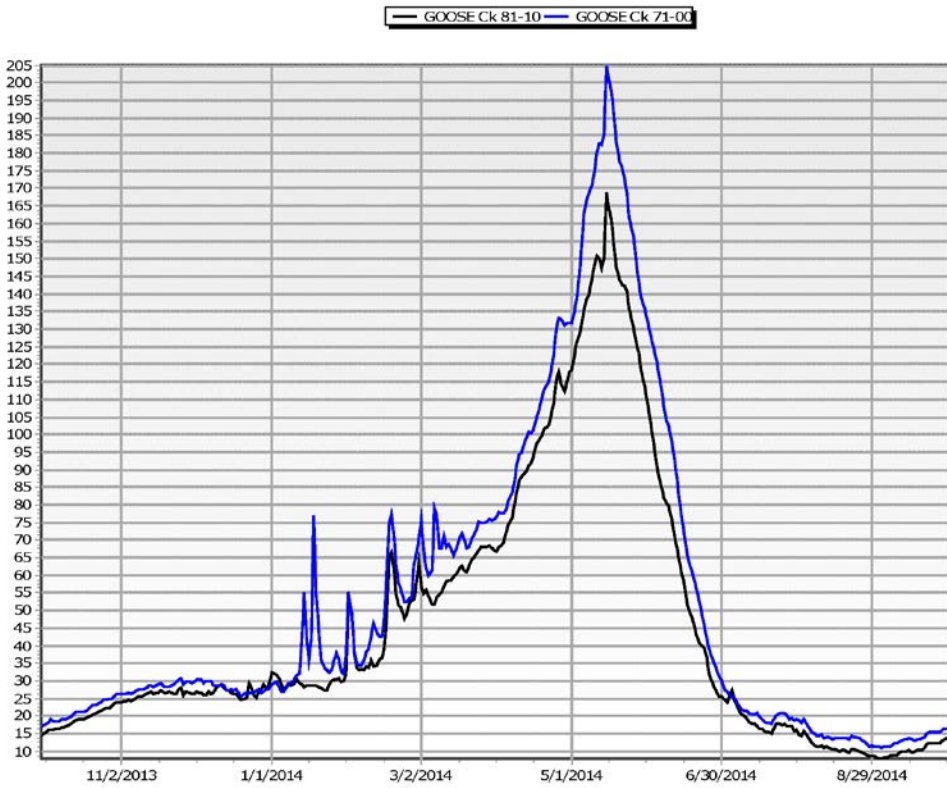
GOOSE Ck 81-10
GOOSE Ck 71-00
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