United States Department of Agriculture
Natural Resources Conservation Service

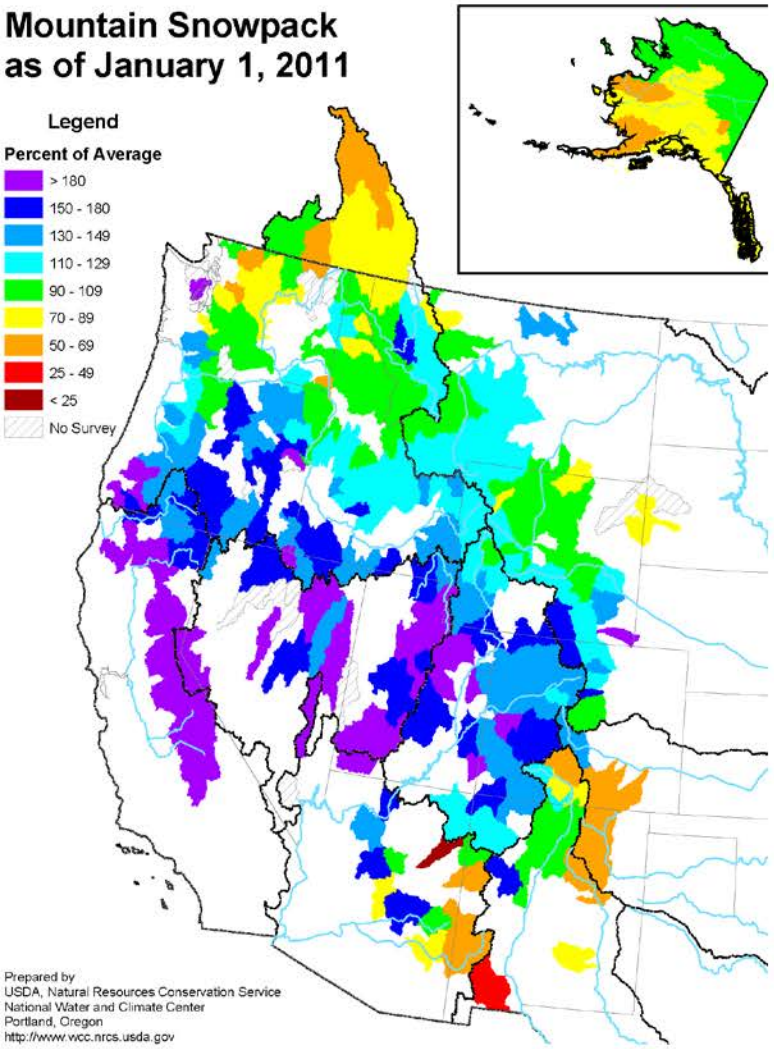
Idaho Water Supply Outlook Report February 1, 2011

Photo by Sara Magenheimer

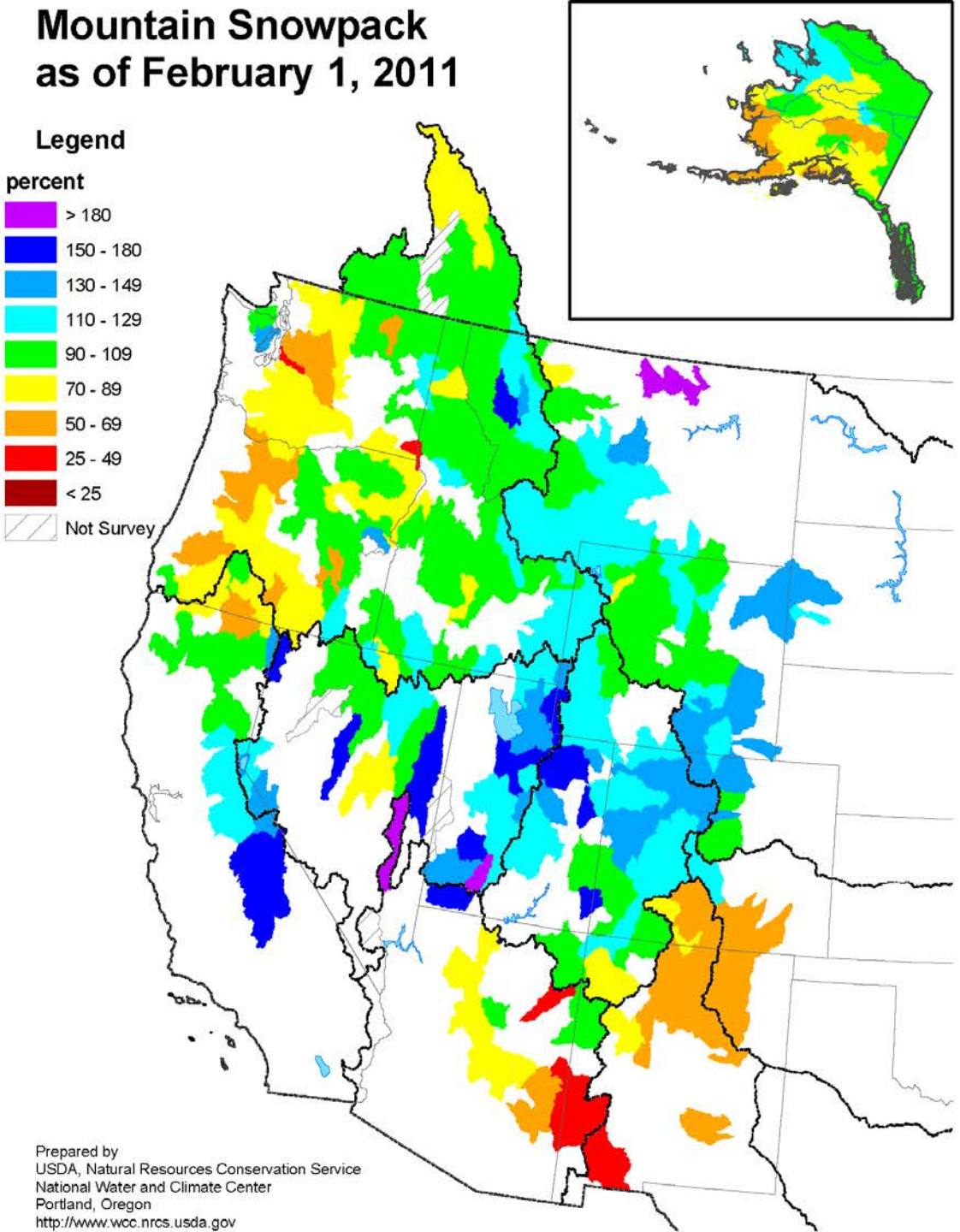
Scientists, engineers, and technicians across the West gathered in McCall, Idaho the week of January 10 for the 62nd annual West Wide Snow Survey Training School. Training included snow sampling, avalanche recognition, outdoor survival, and emergency care to help them safely conduct snow surveys. Professional instructors from the "Learn to Return" Alaska survival school and the Alaska Avalanche School offered a wealth of knowledge and skills that formed the core of the course. As part of the training, students were required to build a snow cave and spend the night in it. The overnight snow bivouac gives participants the opportunity to practice their outdoor survival skills. Pictured above is Nick Studebaker, first time snow surveyor and new employee from the NRCS Sandpoint Field Office, in front of the snow shelter that he constructed and slept in. About 45 participants from NRCS, other federal and state agencies, private utility companies and Soil and Water Conservation Districts attended and all survived the night out. Snow fell throughout the bivouac day, with an additional 4 inches overnight, so it was a very realistic exercise.

Idaho State Water Supply Meeting February 14, 2011

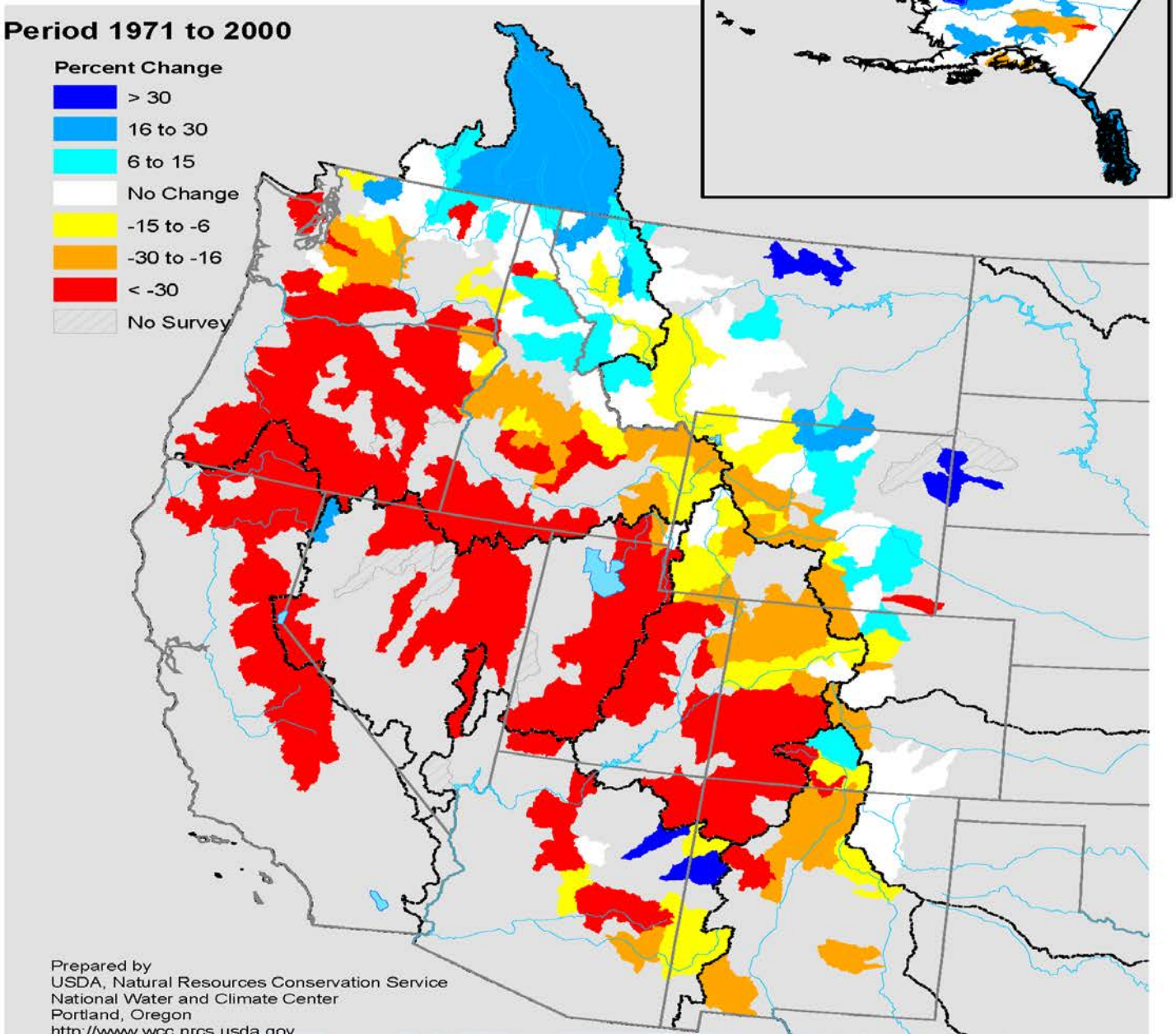
Mountain Snowpack as of January 1, 2011

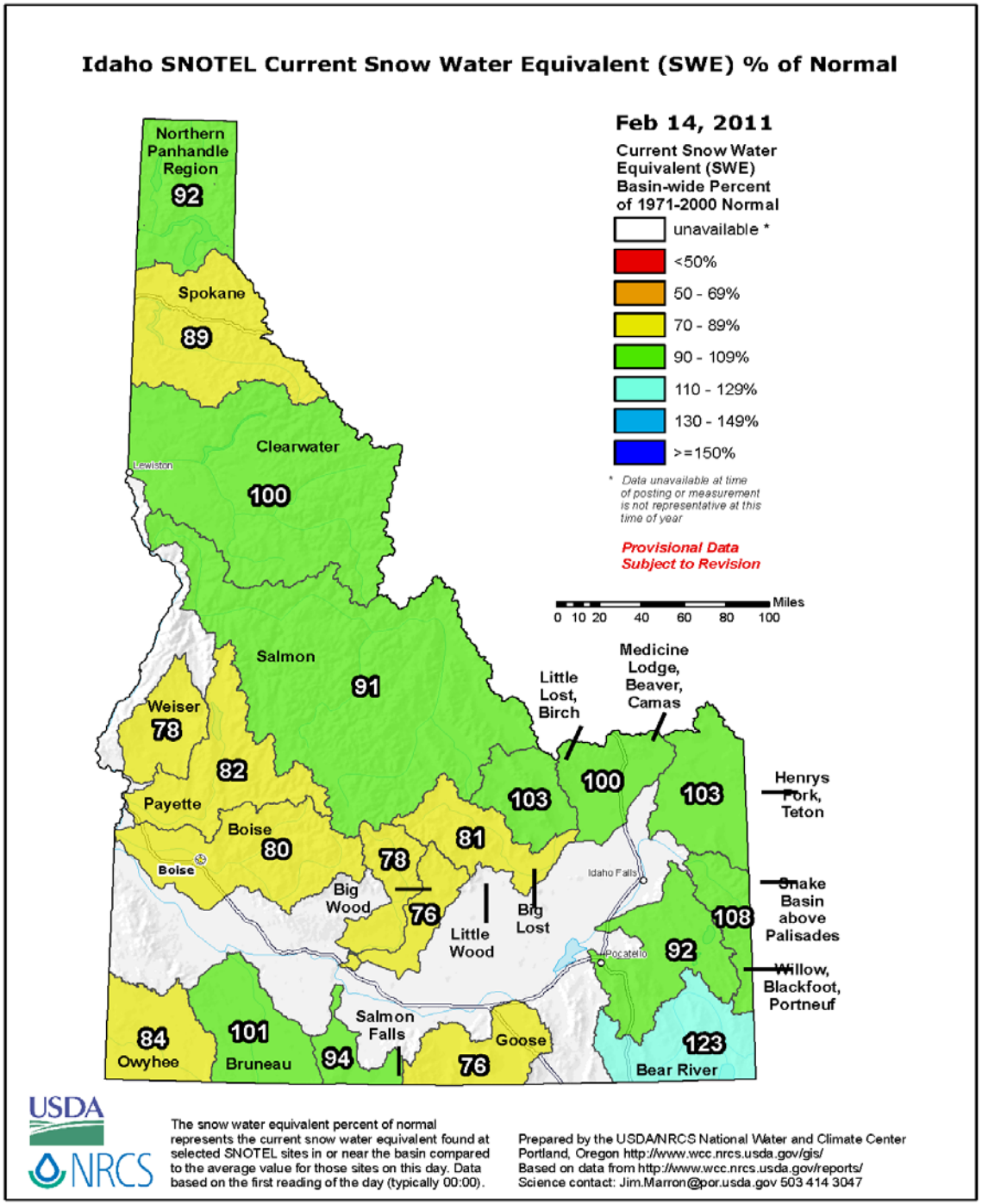


Mountain Snowpack as of February 1, 2011



2011 Mountain Snowpack Change between January 1 and February 1





Today's snow water content as % of seasonal peak ranges from:

53%

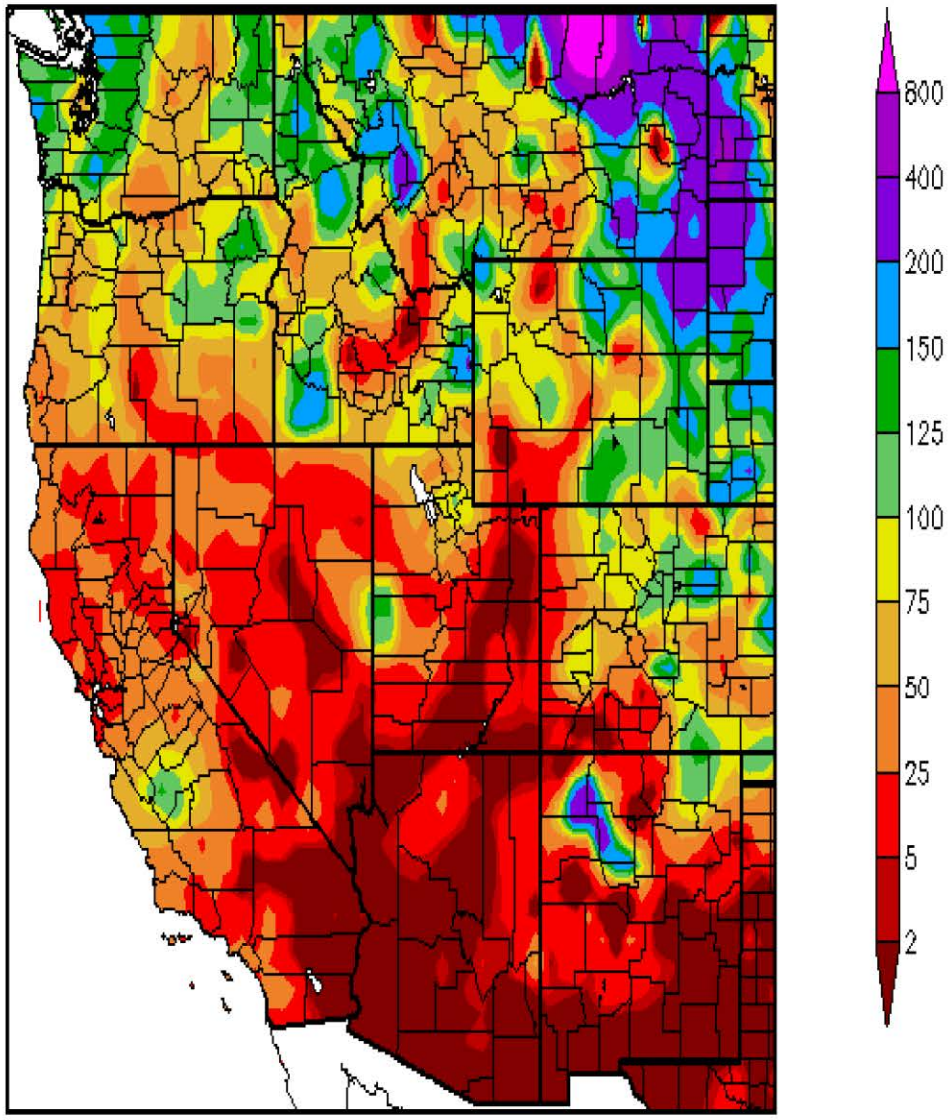
in Little Wood

& Big Lost

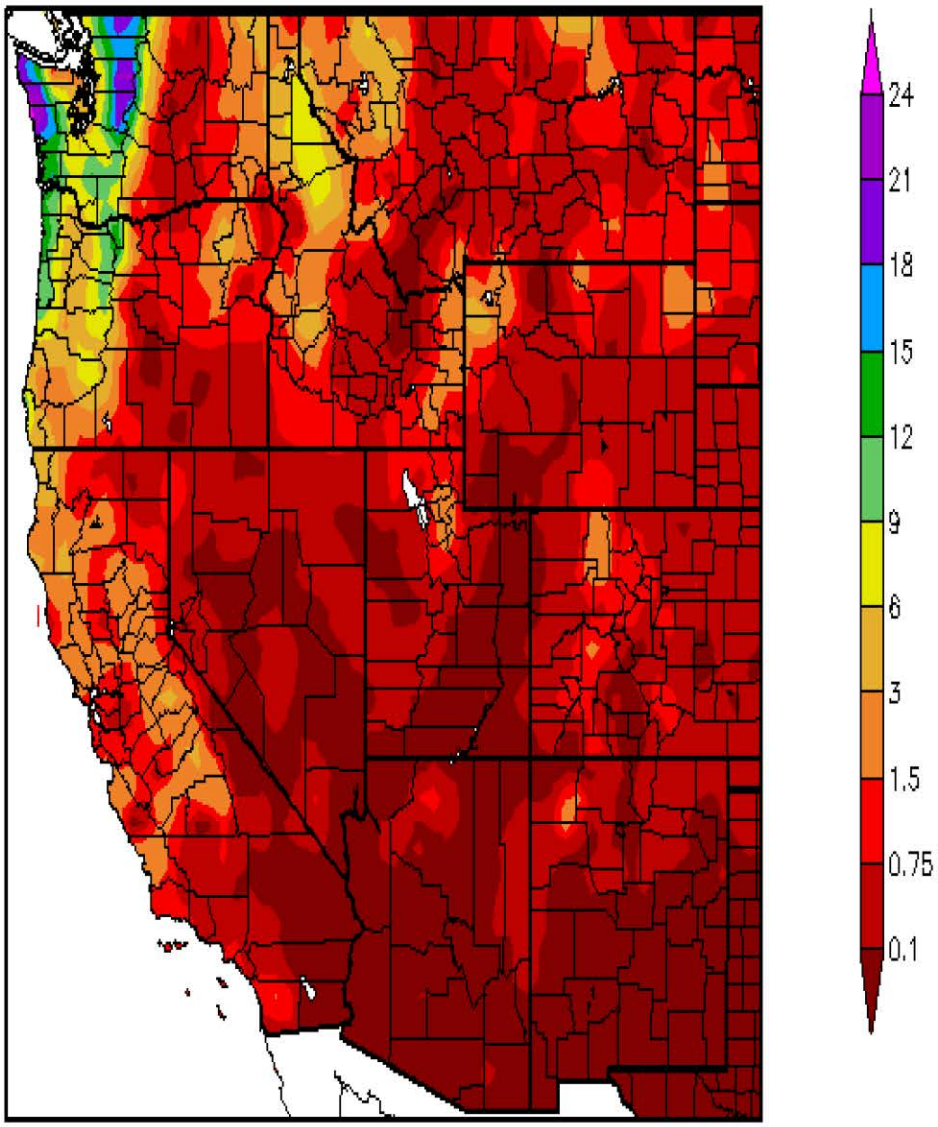
to

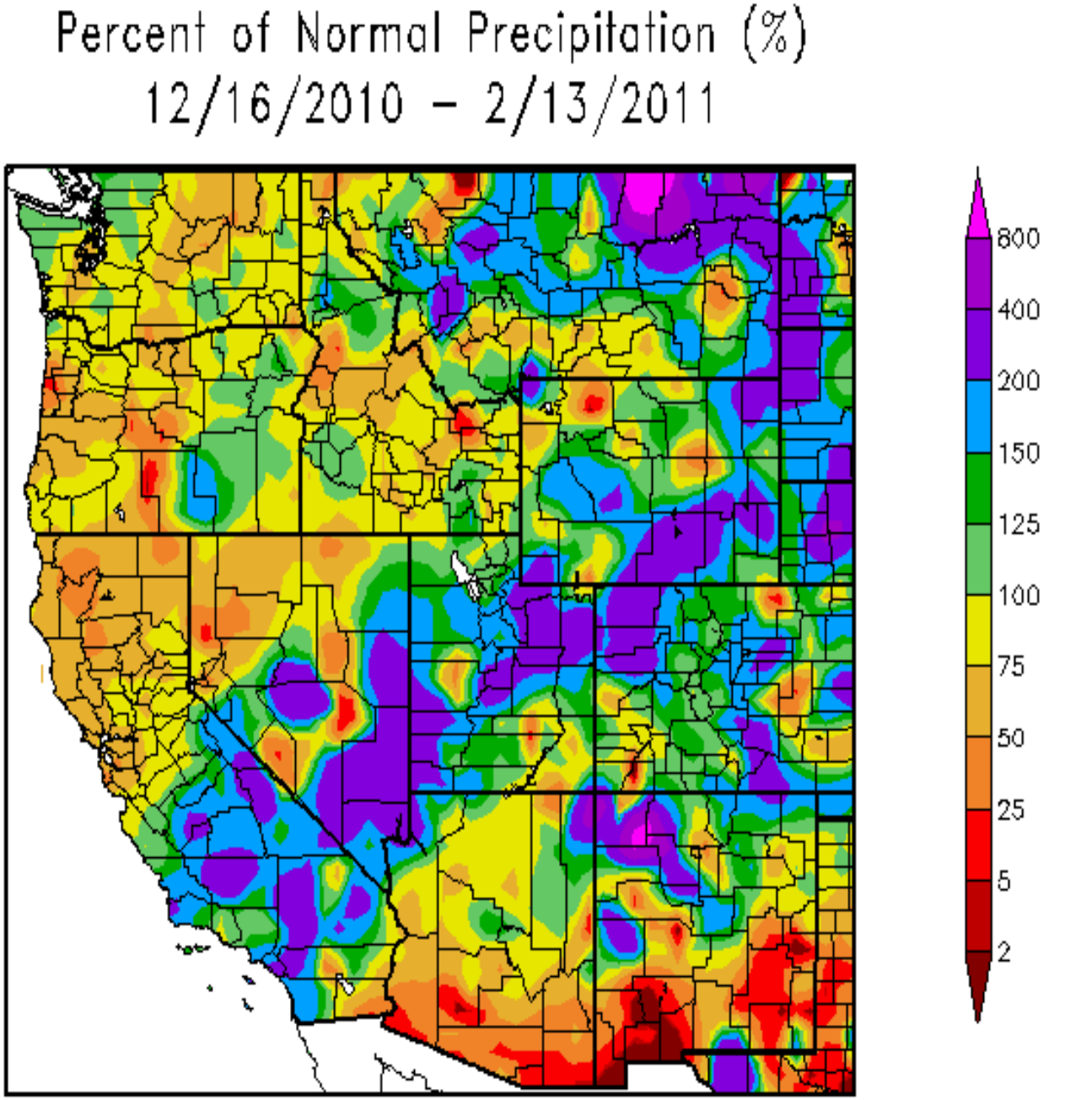
84% in Bear River

Percent of Normal Precipitation (%)
1/1/2011 - 1/31/2011



Precipitation (in)
1/1/2011 - 1/31/2011





Last 60 days precipitation

&

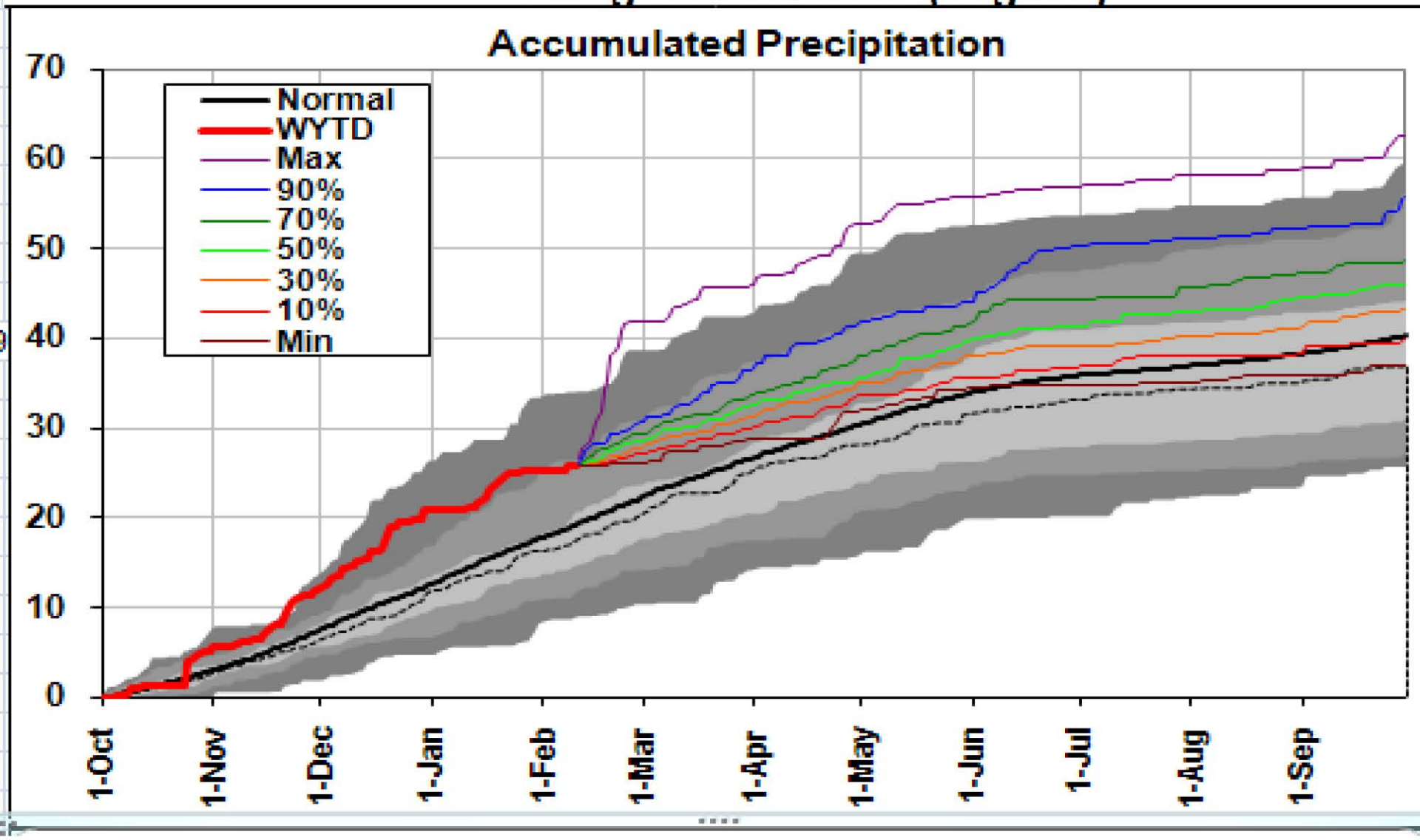
SNOTEL Water Year-to- date precipitation ranges from 90-95% in: Big Wood, Big Lost & Payette

to

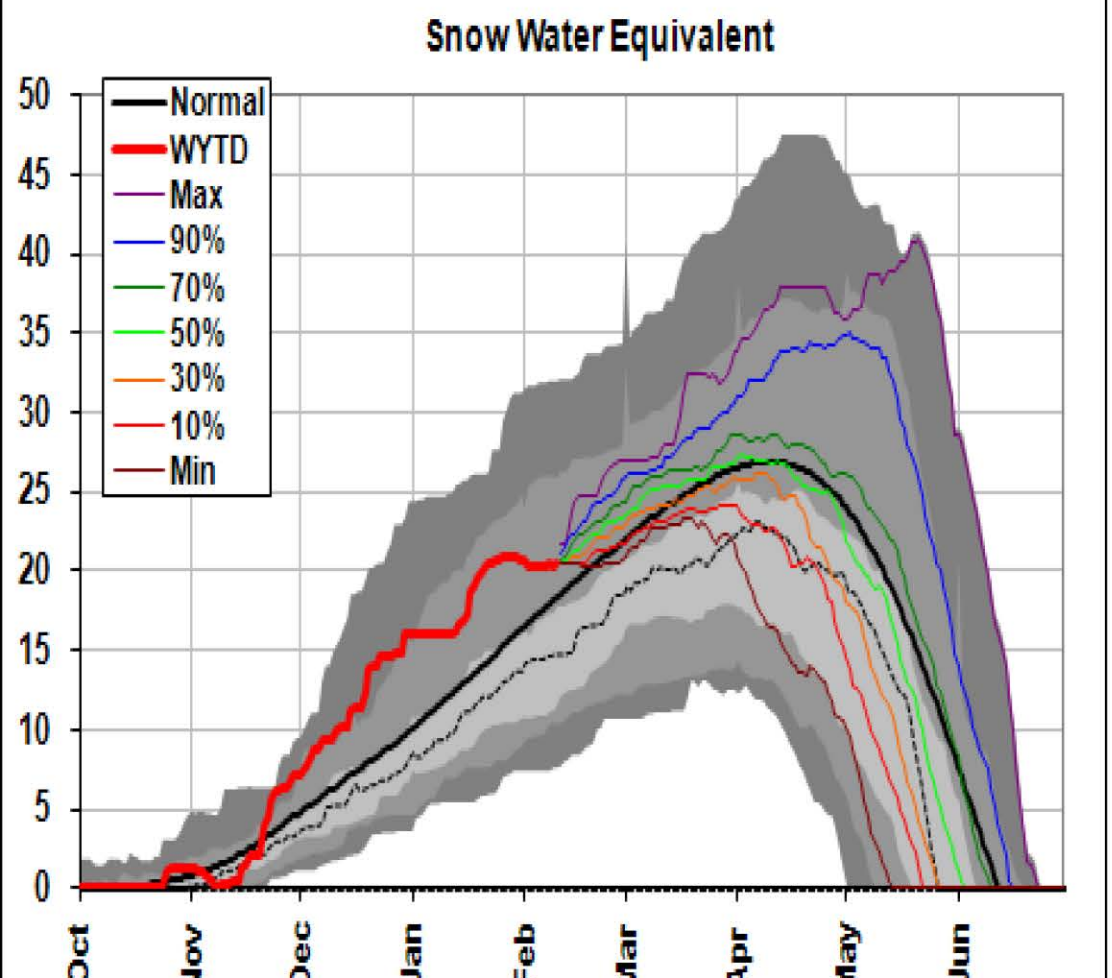
130% in Bruneau, Salmon Falls & Bear

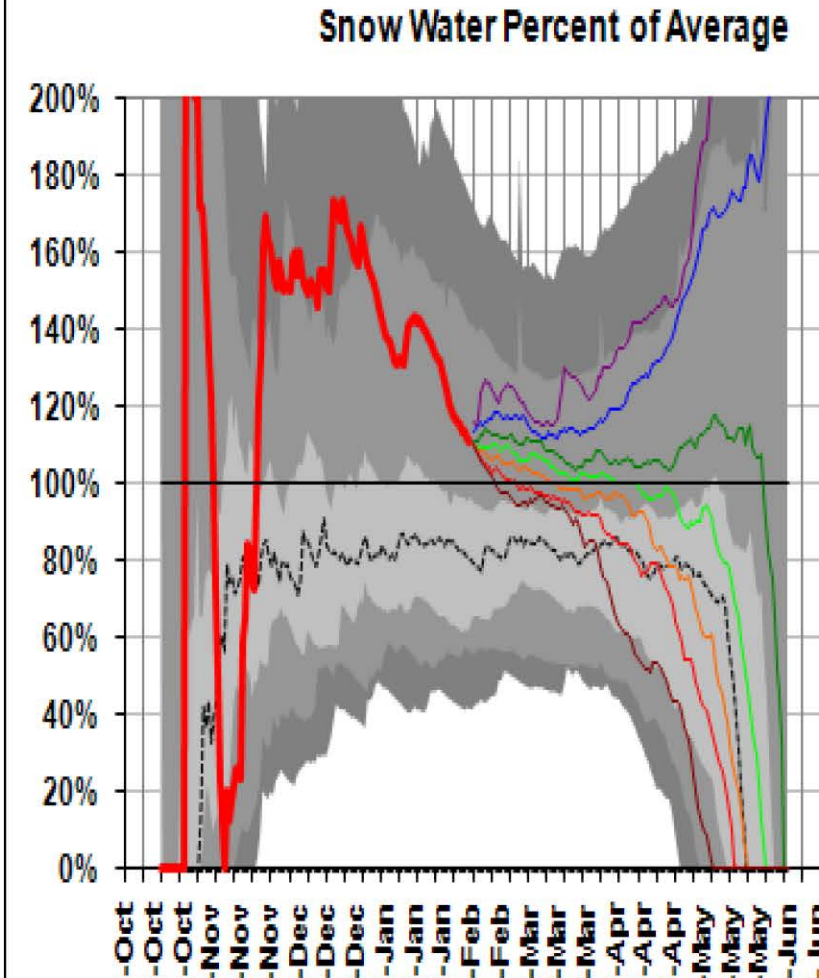
SNOTEL Precipitation Summary Report for January & February		
Region or Basin	January Precipitation % of Average	Feb 1 - 13 Precipitation as % of Monthly Total
SPOKANE	137	27
CLEARWATER BASIN	139	35
SALMON BASIN	84	18
WEISER BASIN	66	6
PAYETTE BASIN	70	8
BOISE BASIN	72	7
BIG WOOD BASIN	49	5
LITTLE WOOD BASIN	23	2
BIG LOST BASIN	27	4
LITTLE LOST, BIRCH BASINS	76	19
MEDICINE LODGE, BEAVER, CAMAS BASINS	64	23
HENRYS FORK, TETON BASINS	74	18
SNAKE BASIN ABOVE PALISADES	86	26
WILLOW, BLACKFOOT, PORTNEUF BASINS	92	11
GOOSE BASIN	87	23
SALMON FALLS BASIN	86	26
BRUNEAU BASIN	70	24
OWYHEE BASIN	54	7
BEAR RIVER BASIN	87	23

Emigrant Summit (11g06s)

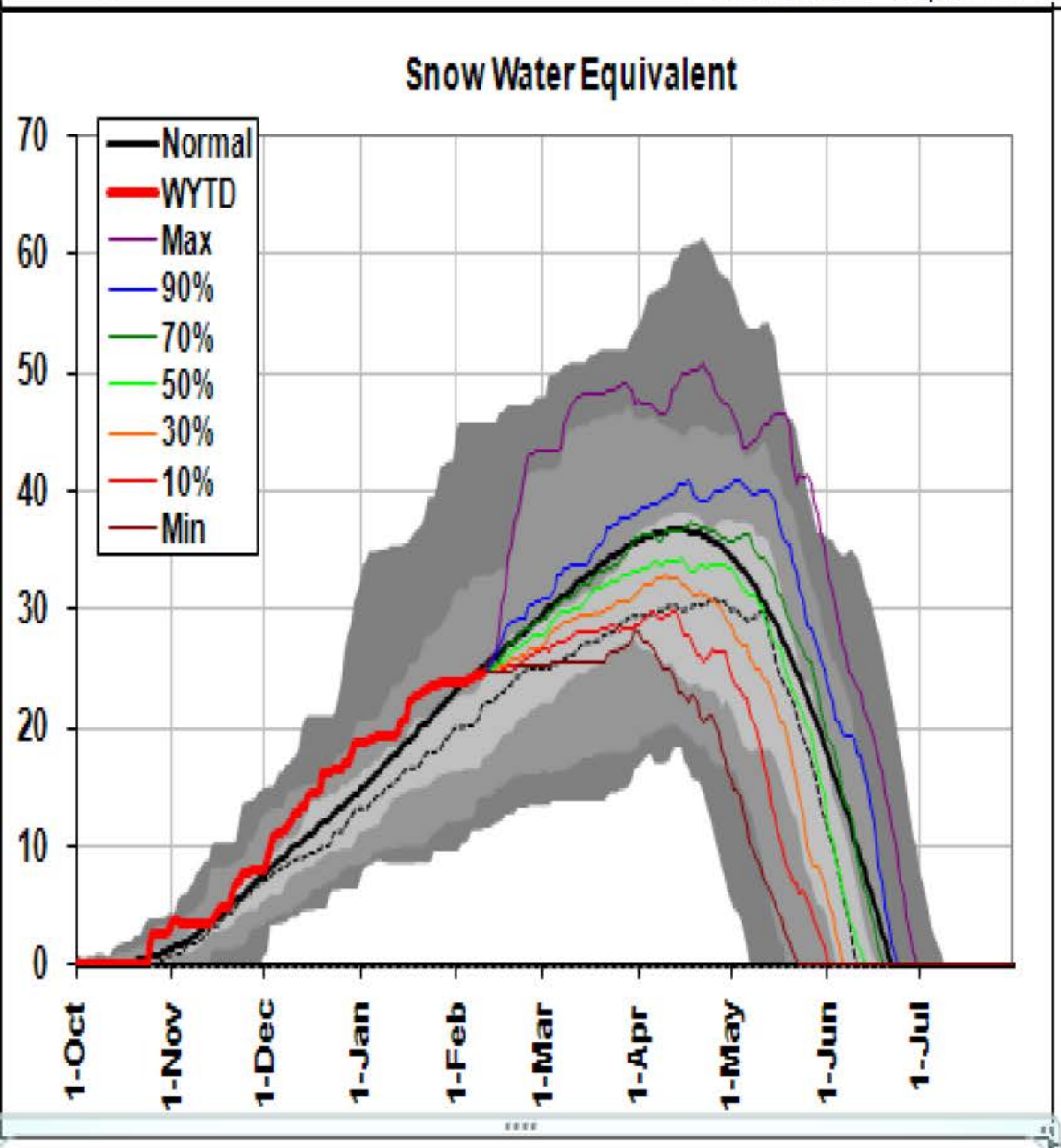


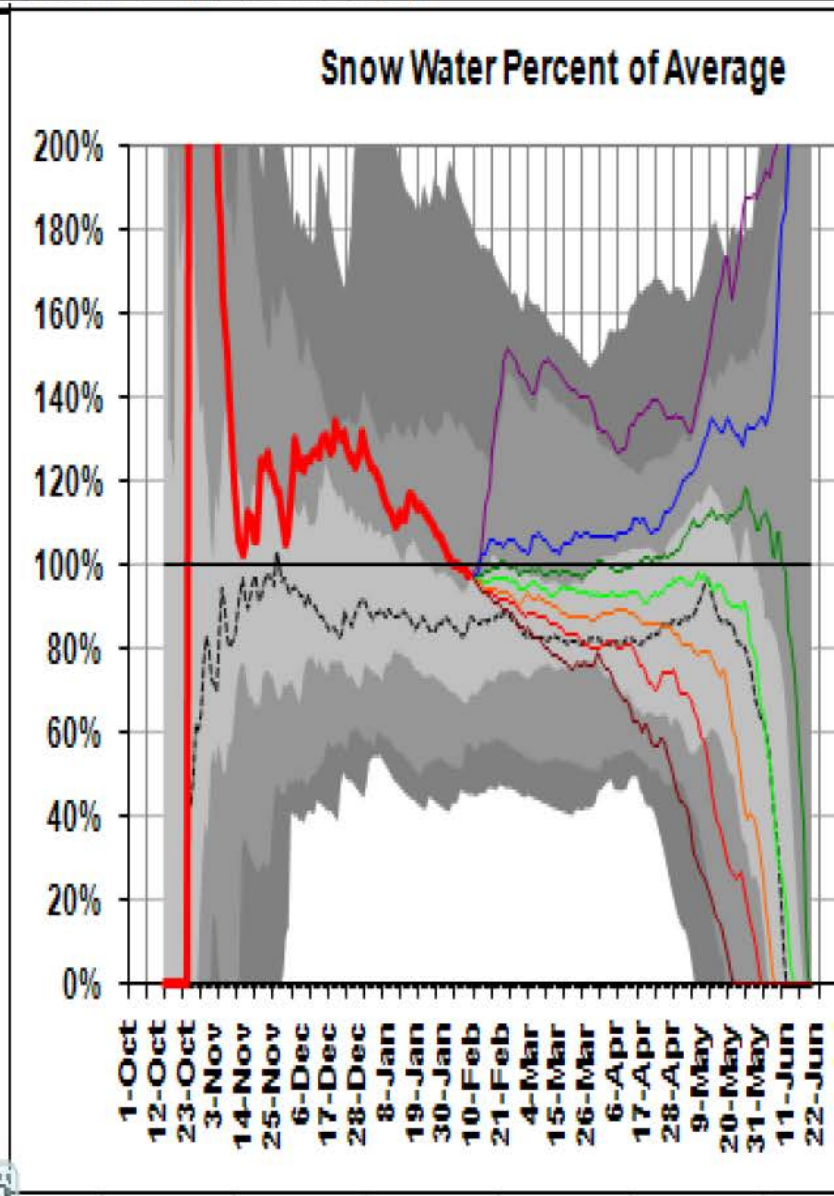
Emigrant Summit (11g06s)



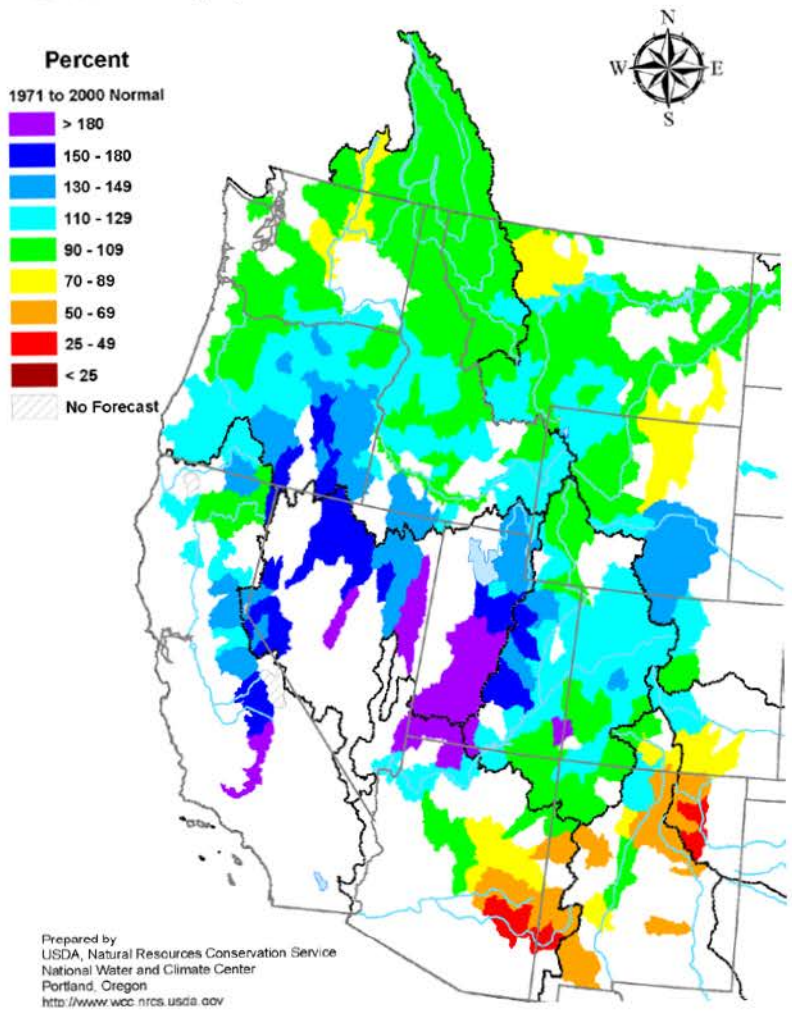


Lewis Lake Divide (10e09s)

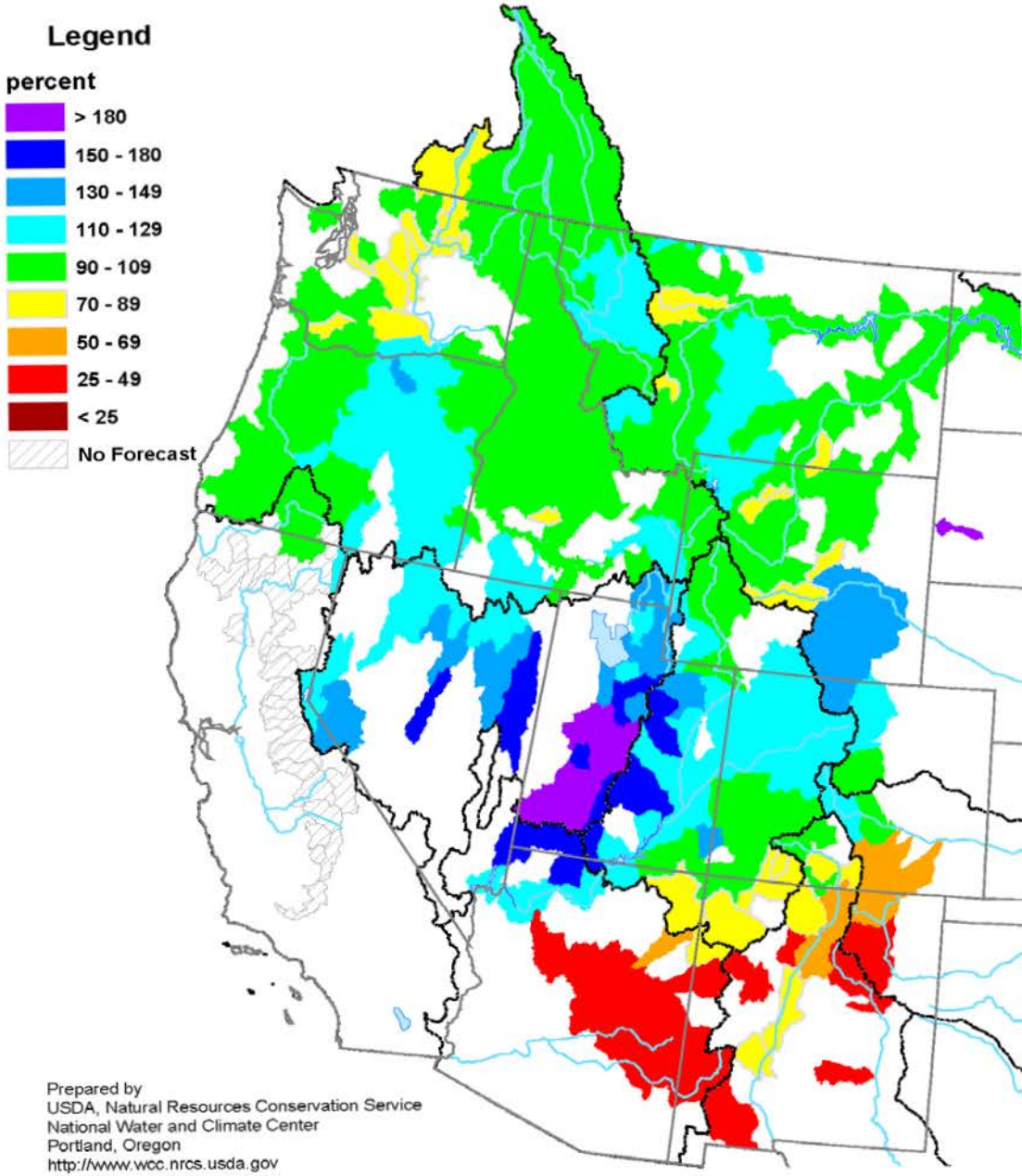




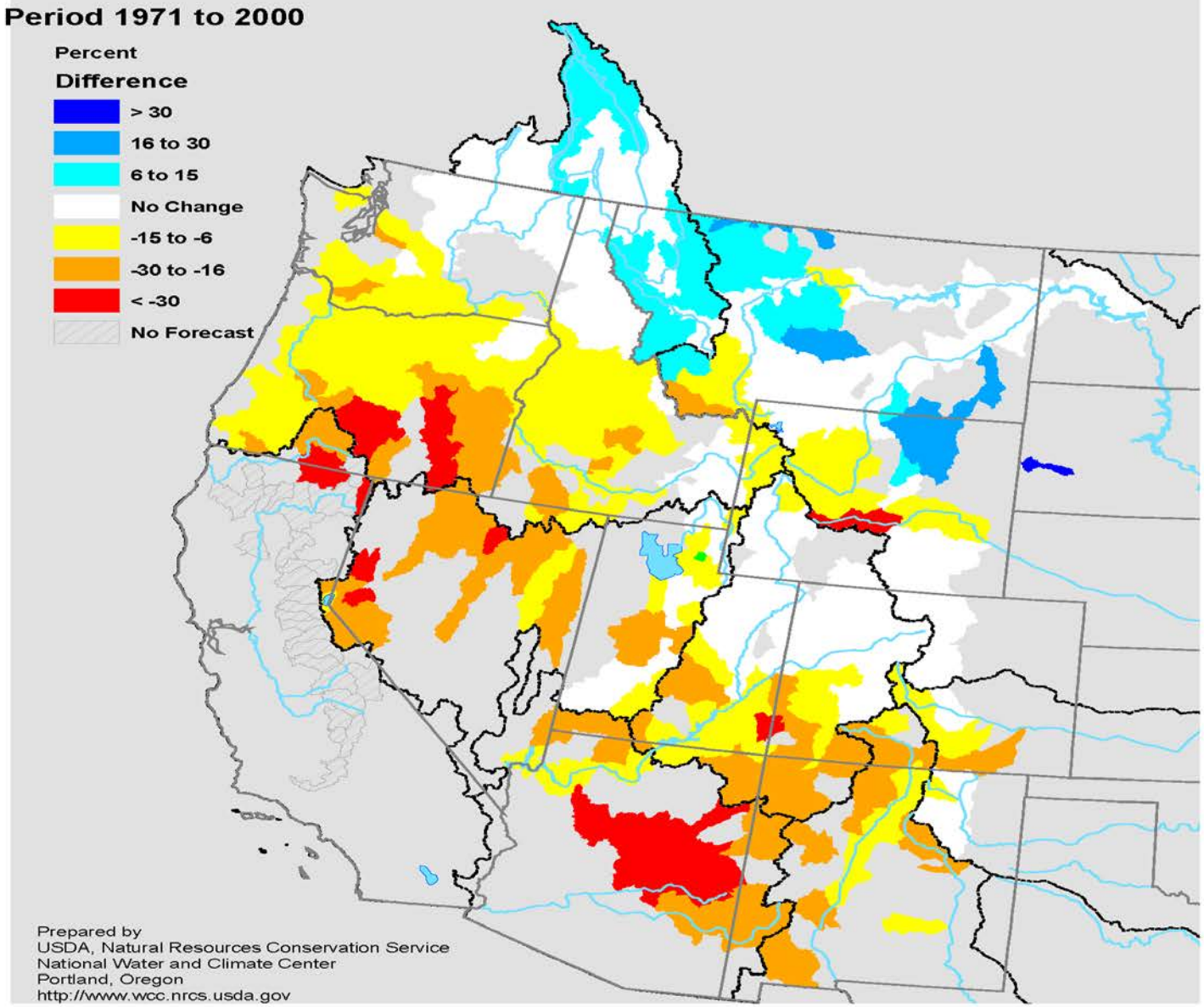
Spring and Summer Streamflow Forecasts as of January 1, 2011

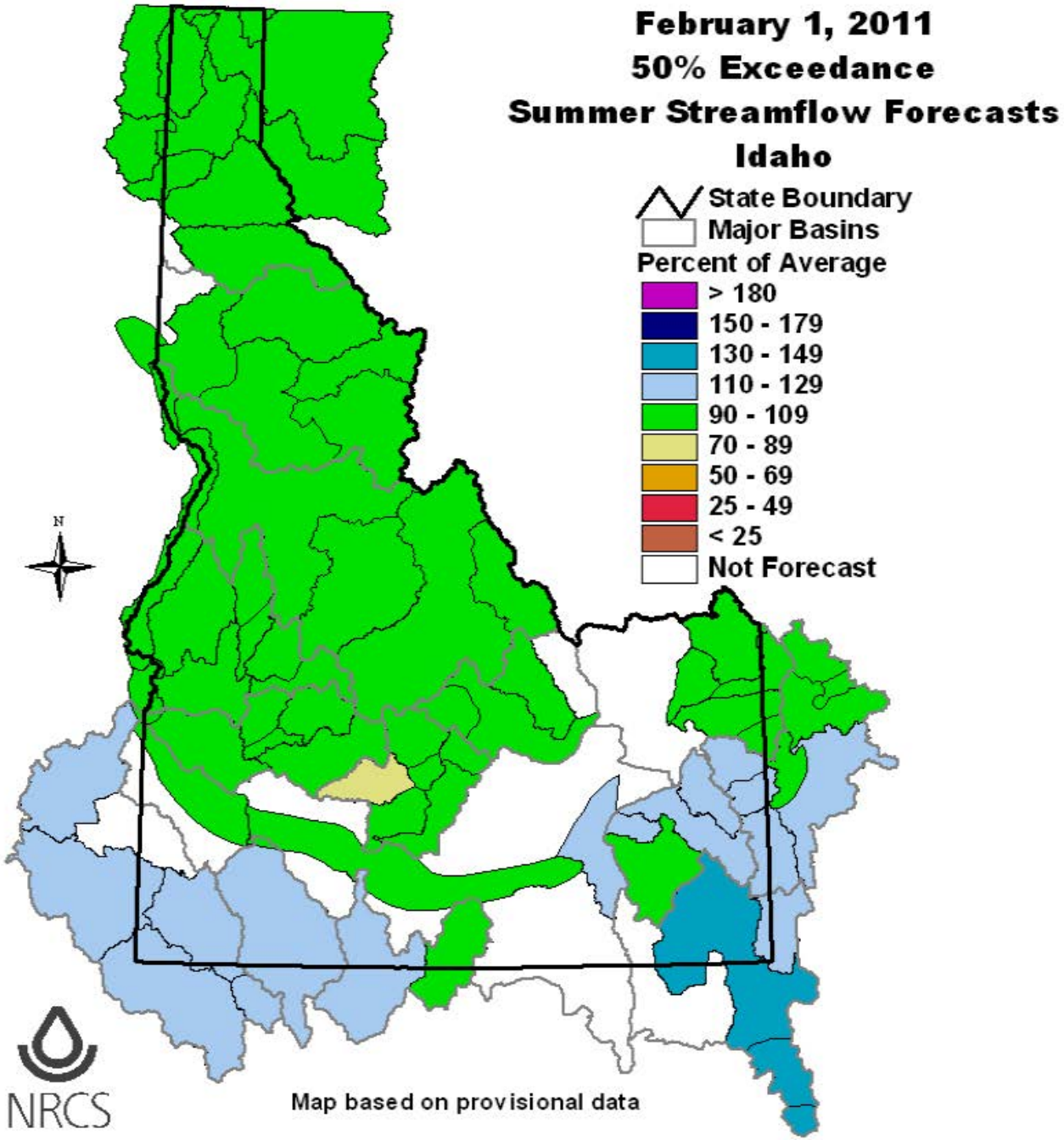


Spring and Summer Streamflow Forecasts as of February 1, 2011



Change in Spring and Summer Streamflow Forecasts from January 1 to February 1, 2011




February 1, 2011
50% Exceedance
Summer Streamflow Forecasts
Idaho
State Boundary
Major Basins
Percent of Average
> 180
150 - 179
130 - 149
110 - 129
90 - 109
70 - 89
50 - 69
25 - 49
< 25
Not Forecast
N
NRCS
Map based on provisional data

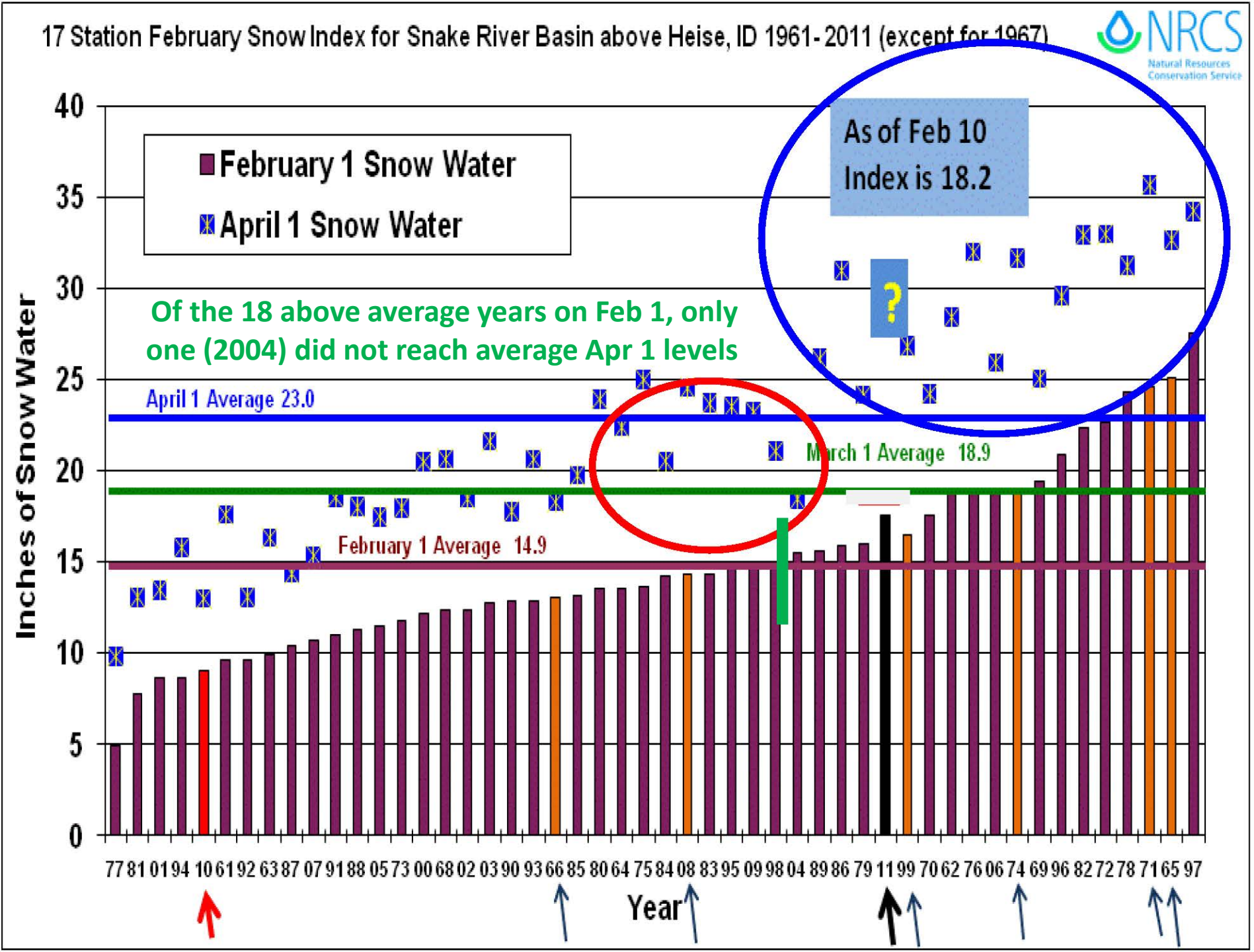
2011 Idaho Surface Water Supply Index (SWSI)

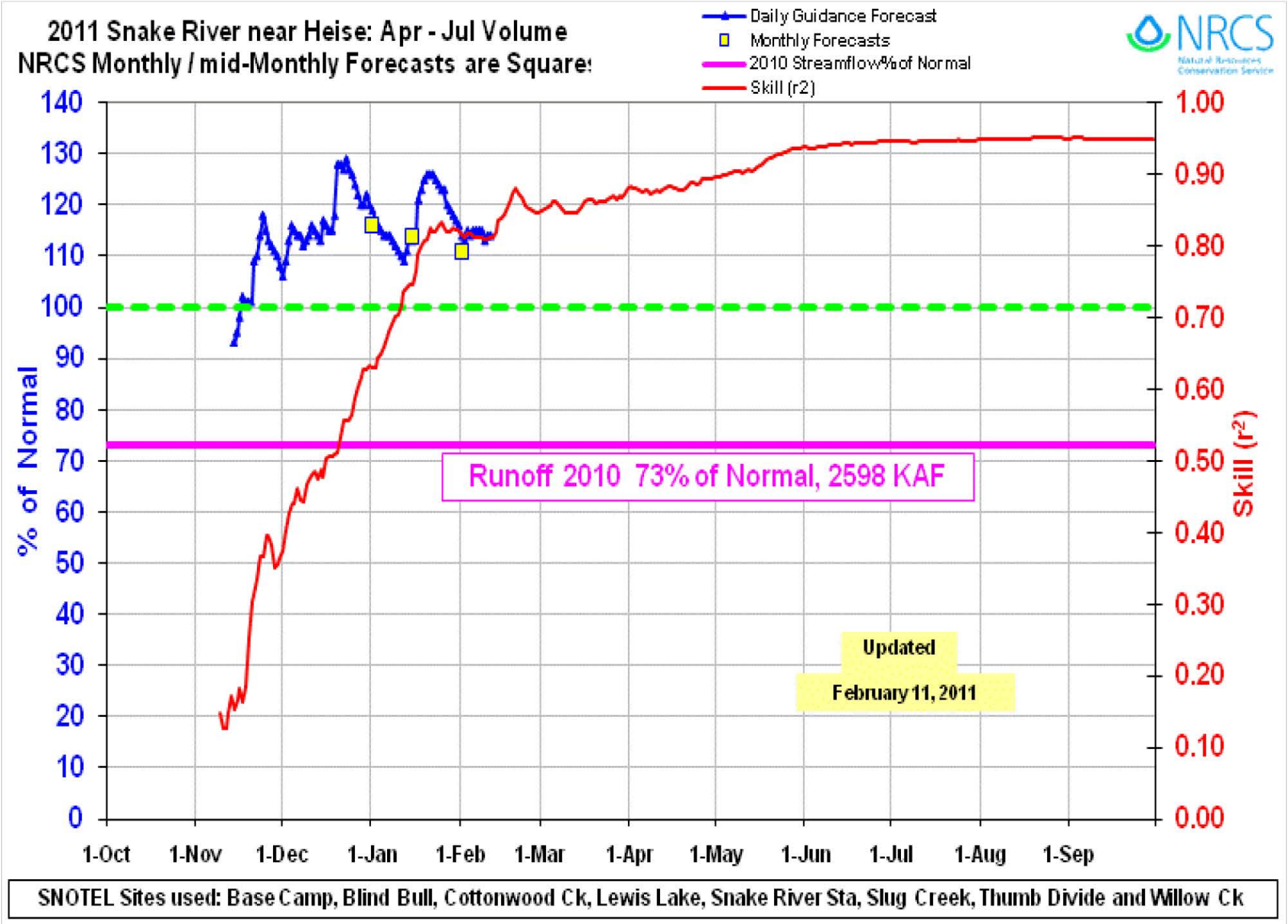
For January and February 2011

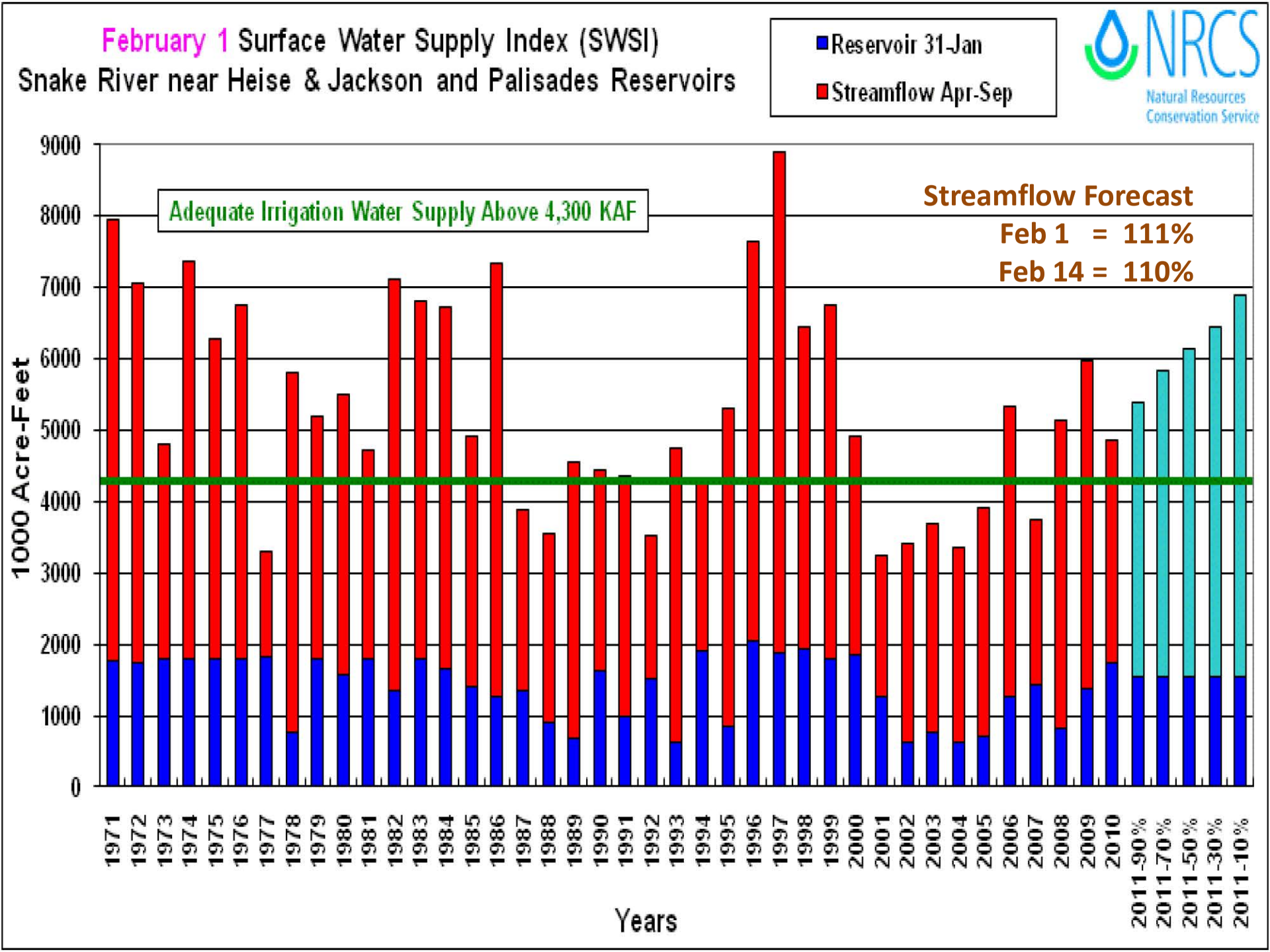
BASIN or/ REGION	January SWSI Value	February SWSI Value	February SWSI Value Based on 90% Exceedance Forecast	Agricultural Surface Water Supply Shortage May Occur When SWSI is Less Than
SPOKANE	---	1.2	------	NA
CLEARWATER	0.3	1.4	------	NA
SALMON	-0.1	0.0	------	NA
WEISER	0.2	-0.4	------	NA
PAYETTE	0.2	0.2	-2.0	NA
BOISE	1.2	0.8	-1.8	-1.8
BIG WOOD	1.2	0.2	-1.6	0.1
LITTLE WOOD	1.0	0.4	-1.8	-1.9
BIG LOST	0.6	0.0	-2.6	0.0
LITTLE LOST	0.2	0.2	-2.6	0.6
HENRYS FORK	0.9	0.7	------	-3.3
SNAKE – HEISE	1.4	1.4	0.8	-1.8
OAKLEY	0.4	0.2	-2.0	-0.6
SALMON FALLS	2.4	1.2	-0.6	-1.4
BRUNEAU	3.3	1.8	-1.0	NA
OWYHEE	2.2	0.6	-0.6	-3.5
BEAR RIVER	-0.6	-0.6	-1.2	-2.8

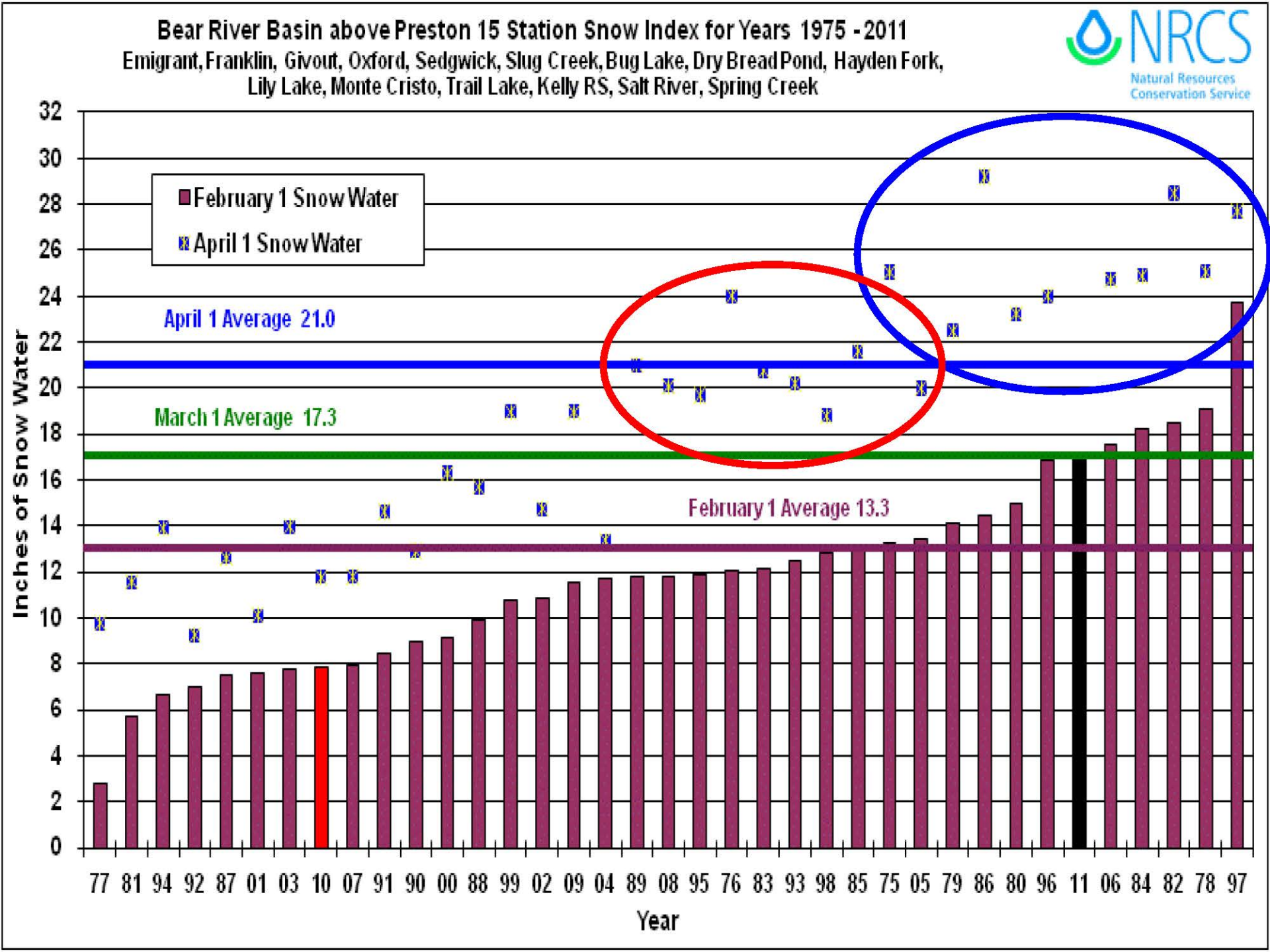
SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION

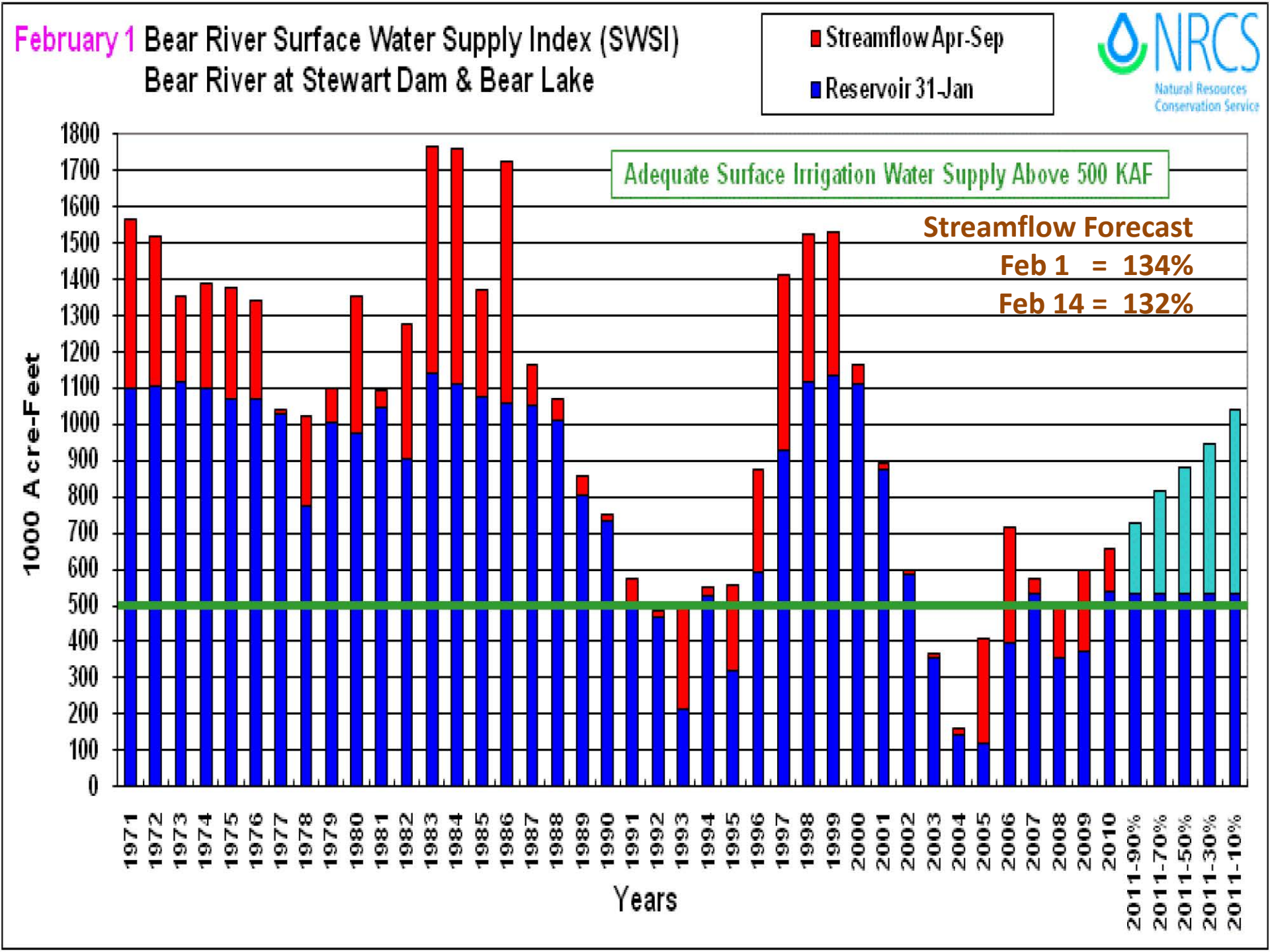
```
-4     -3     -2     -1      0      1      2      3      4
|------|------|------|------|------|------|------|------|
99%    87%    75%    63%    50%    37%    25%    13%    1%
-------------------------------------------------------
|Much  | Below    |    Near Normal     |  Above  | Much |
|Below | Normal   |   Water Supply     |  Normal | Above|
-------------------------------------------------------
```

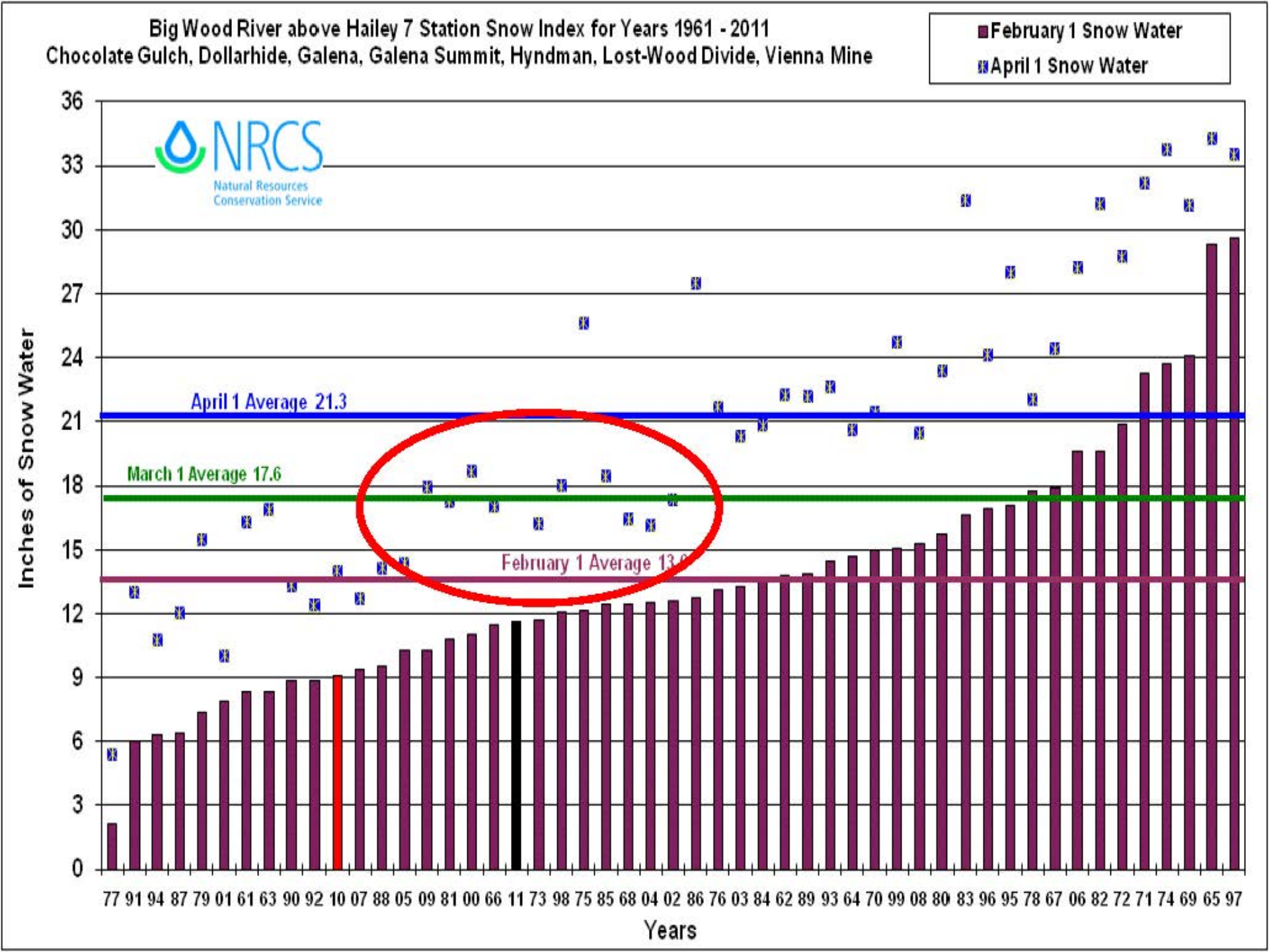

17 Station February Snow Index for Snake River Basin above Heise, ID 1961-2011 (except for 1967)
NRCS
Natural Resources Conservation Service
February 1 Snow Water
April 1 Snow Water
As of Feb 10 Index is 18.2
?
Of the 18 above average years on Feb 1, only one (2004) did not reach average Apr 1 levels
April 1 Average 23.0
March 1 Average 18.9
February 1 Average 14.9
Inches of Snow Water
40
35
30
25
20
15
10
5
0
77 81 01 94 10 61 92 63 87 07 91 88 05 73 00 68 02 03 90 93 66 85 80 64 75 84 08 83 95 09 98 04 89 86 79 11 99 70 62 76 06 74 69 96 82 72 78 71 65 97
Year

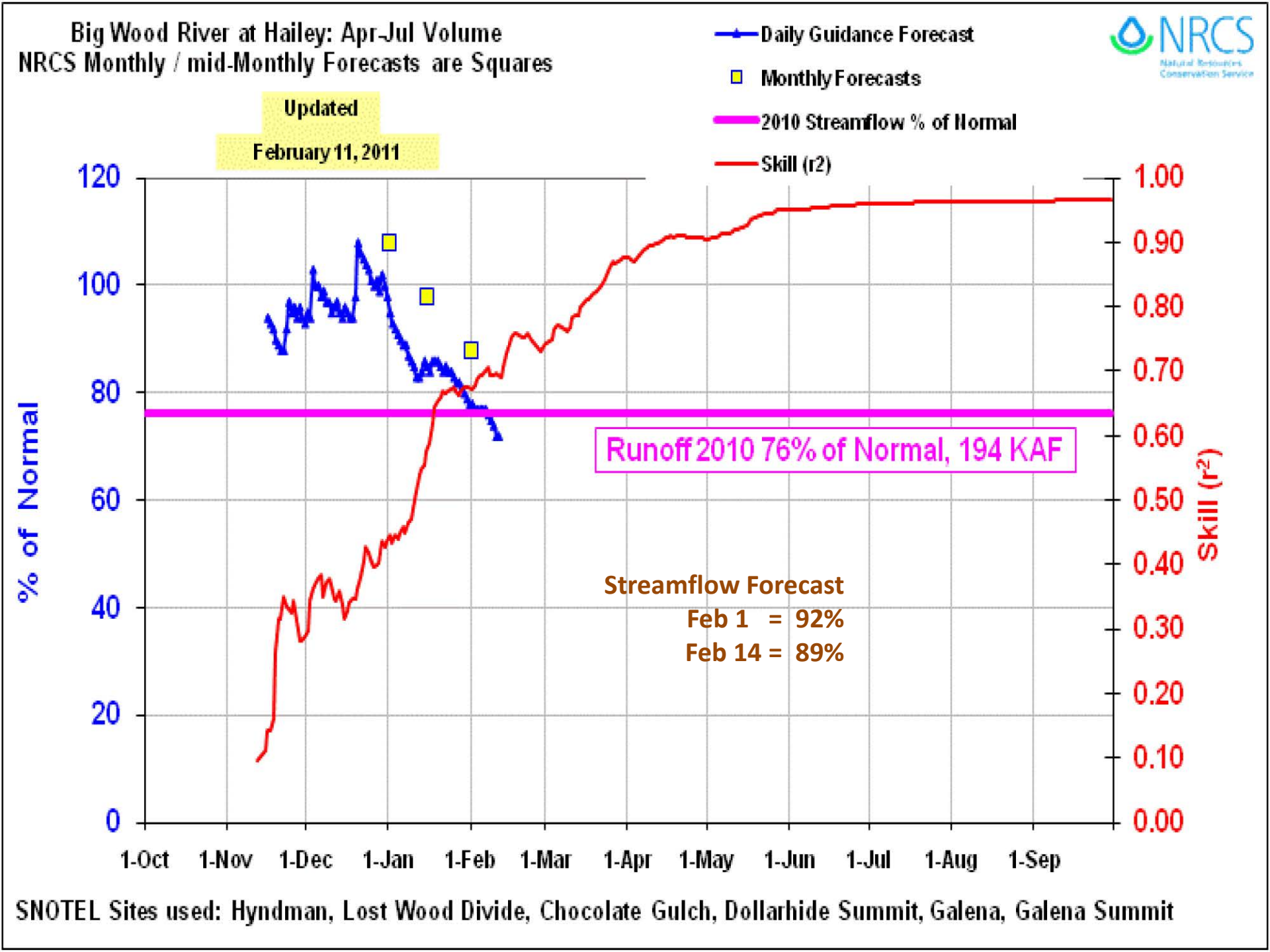

2011 Snake River near Heise: Apr - Jul Volume
NRCS Monthly / mid-Monthly Forecasts are Squares
Daily Guidance Forecast
Monthly Forecasts
2010 Streamflow%of Normal
Skill (r2)
NRCS
Natural Resources Conservation Service
% of Normal
Skill (r²)
Runoff 2010 73% of Normal, 2598 KAF
Updated
February 11, 2011
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
SNOTEL Sites used: Base Camp, Blind Bull, Cottonwood Ck, Lewis Lake, Snake River Sta, Slug Creek, Thumb Divide and Willow Ck

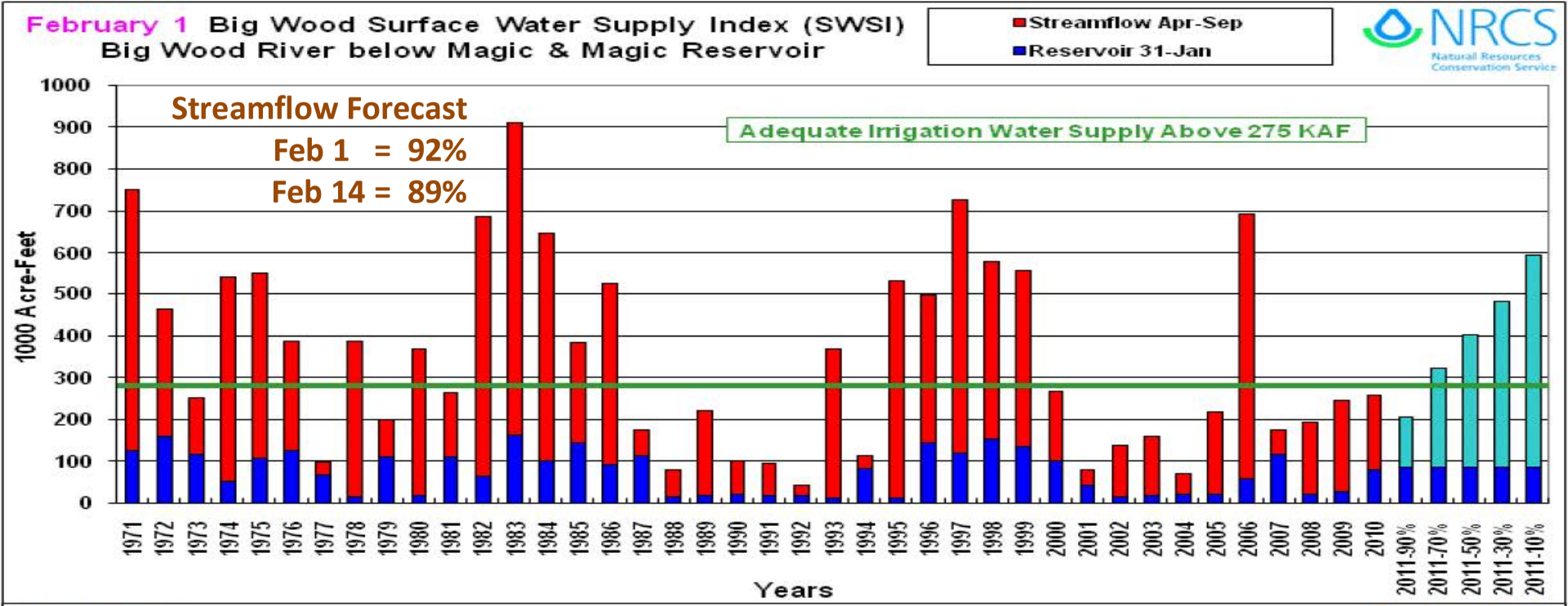

February 1 Surface Water Supply Index (SWSI)
Snake River near Heise & Jackson and Palisades Reservoirs
Reservoir 31-Jan
Streamflow Apr-Sep
NRCS
Natural Resources Conservation Service
Adequate Irrigation Water Supply Above 4,300 KAF
Streamflow Forecast
Feb 1 = 111%
Feb 14 = 110%
1000 Acre-Feet
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011-90%
2011-70%
2011-50%
2011-30%
2011-10%
Years

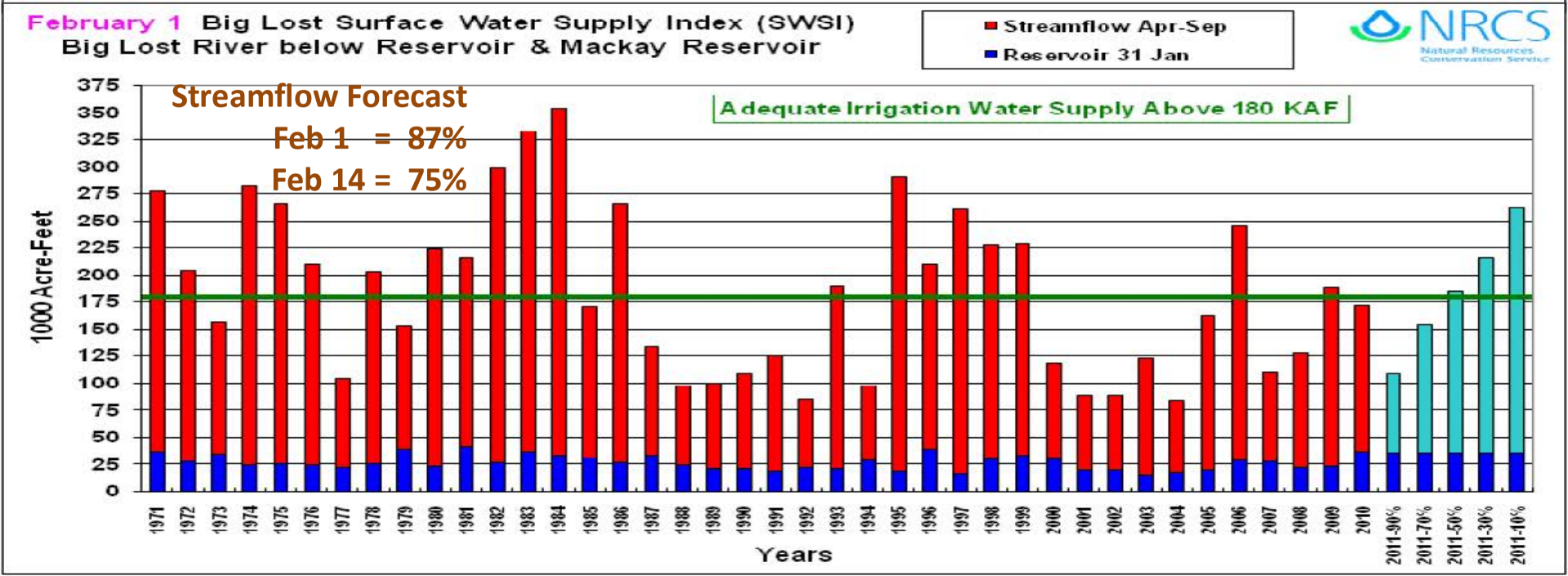

Bear River Basin above Preston 15 Station Snow Index for Years 1975 - 2011
Emigrant, Franklin, Givout, Oxford, Sedgwick, Slug Creek, Bug Lake, Dry Bread Pond, Hayden Fork, Lily Lake, Monte Cristo, Trail Lake, Kelly RS, Salt River, Spring Creek
NRCS
Natural Resources Conservation Service
February 1 Snow Water
April 1 Snow Water
April 1 Average 21.0
March 1 Average 17.3
February 1 Average 13.3
Inches of Snow Water
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
77 81 94 92 87 01 03 10 07 91 90 00 88 99 02 09 04 89 08 95 76 83 93 98 85 75 05 79 86 80 96 11 06 84 82 78 97
Year


February 1 Bear River Surface Water Supply Index (SWSI)
Bear River at Stewart Dam & Bear Lake
Streamflow Apr-Sep
Reservoir 31-Jan
NRCS
Natural Resources Conservation Service
Adequate Surface Irrigation Water Supply Above 500 KAF
Streamflow Forecast
Feb 1 = 134%
Feb 14 = 132%
1000 Acre-Feet
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011-90%
2011-70%
2011-50%
2011-30%
2011-10%
Years

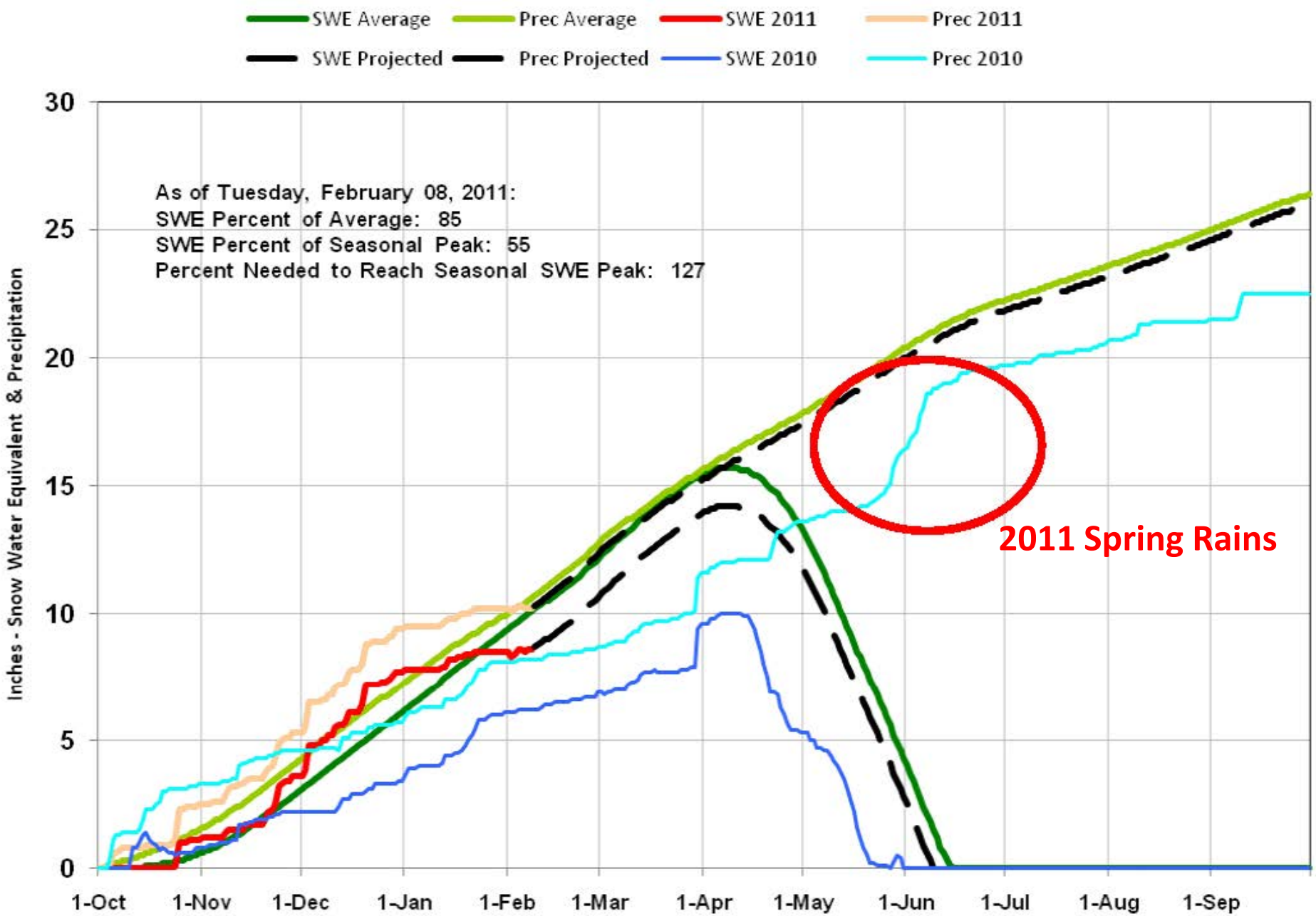

Big Wood River above Hailey 7 Station Snow Index for Years 1961 - 2011
Chocolate Gulch, Dollarhide, Galena, Galena Summit, Hyndman, Lost-Wood Divide, Vienna Mine
February 1 Snow Water
April 1 Snow Water
NRCS
Natural Resources Conservation Service
April 1 Average 21.3
March 1 Average 17.6
February 1 Average 13.9
Inches of Snow Water
0
3
6
9
12
15
18
21
24
27
30
33
36
77 91 94 87 79 01 61 63 90 92 10 07 88 05 09 81 00 66 11 73 98 75 85 68 04 02 86 76 03 84 62 89 93 64 70 99 08 80 83 96 95 78 67 06 82 72 71 74 69 65 97
Years

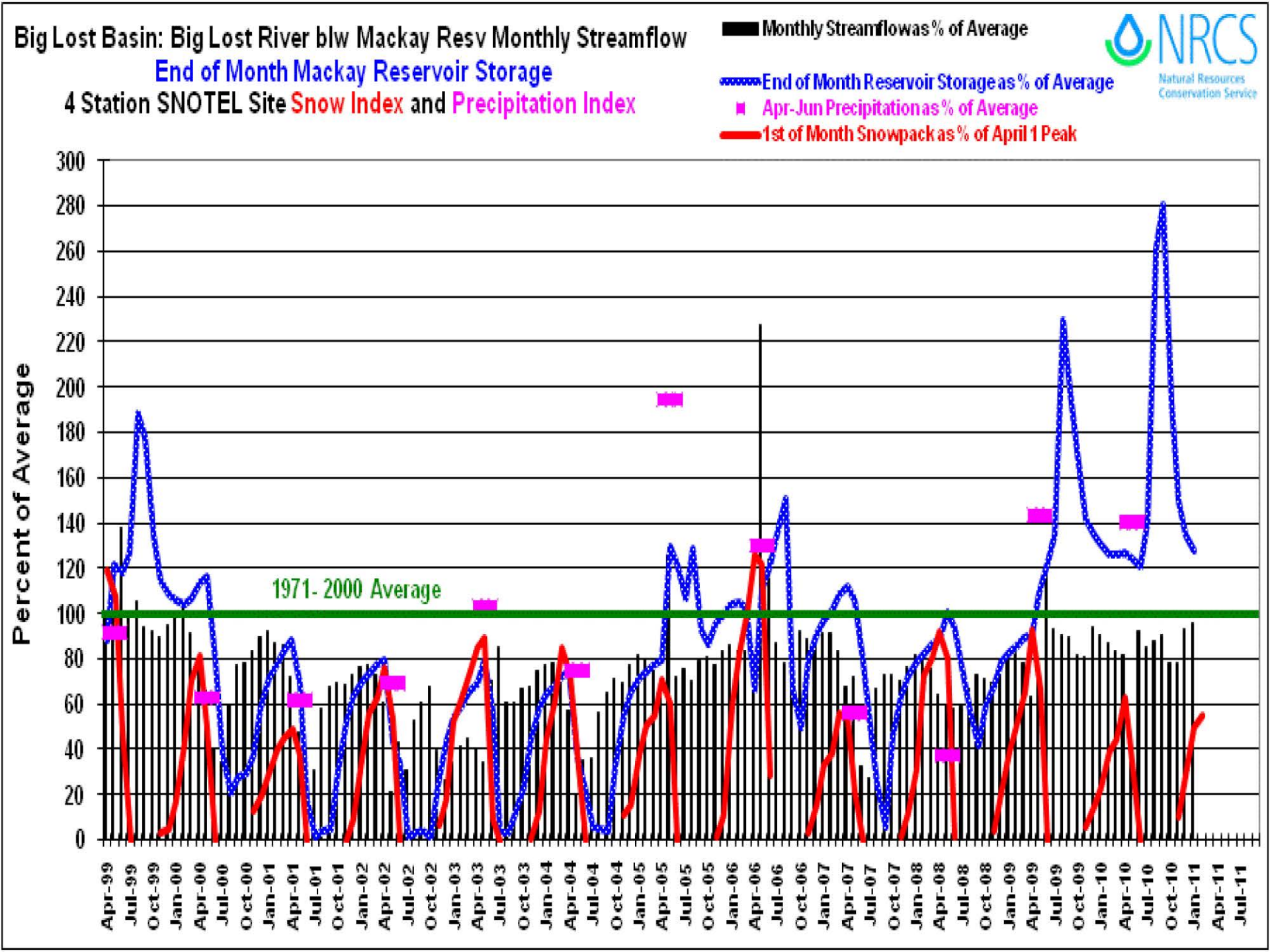

Big Wood River at Hailey: Apr-Jul Volume
NRCS Monthly / mid-Monthly Forecasts are Squares
Updated
February 11, 2011
Daily Guidance Forecast
Monthly Forecasts
2010 Streamflow % of Normal
Skill (r2)
NRCS
Natural Resources Conservation Service
% of Normal
Skill (r²)
120
100
80
60
40
20
0
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Runoff 2010 76% of Normal, 194 KAF
Streamflow Forecast
Feb 1 = 92%
Feb 14 = 89%
SNOTEL Sites used: Hyndman, Lost Wood Divide, Chocolate Gulch, Dollarhide Summit, Galena, Galena Summit


February 1 Big Wood Surface Water Supply Index (SWSI)
Big Wood River below Magic & Magic Reservoir
Streamflow Apr-Sep
Reservoir 31-Jan
NRCS
Natural Resources Conservation Service
Streamflow Forecast
Feb 1 = 92%
Feb 14 = 89%
Adequate Irrigation Water Supply Above 275 KAF
1000 Acre-Feet
Years


February 1 Big Lost Surface Water Supply Index (SWSI)
Big Lost River below Reservoir & Mackay Reservoir
Streamflow Apr-Sep
Reservoir 31 Jan
NRCS
Natural Resources Conservation Service
Streamflow Forecast
Feb 1 = 87%
Feb 14 = 75%
Adequate Irrigation Water Supply Above 180 KAF
1000 Acre-Feet
Years

Big Lost Basin 2011 Snowpack Graph (4 Sites)




Big Lost Basin: Big Lost River blw Mackay Resv Monthly Streamflow
End of Month Mackay Reservoir Storage
4 Station SNOTEL Site Snow Index and Precipitation Index
Monthly Streamflow as % of Average
End of Month Reservoir Storage as % of Average
Apr-Jun Precipitation as % of Average
1st of Month Snowpack as % of April 1 Peak
NRCS
Natural Resources Conservation Service
Percent of Average
1971- 2000 Average
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08
Jul-08
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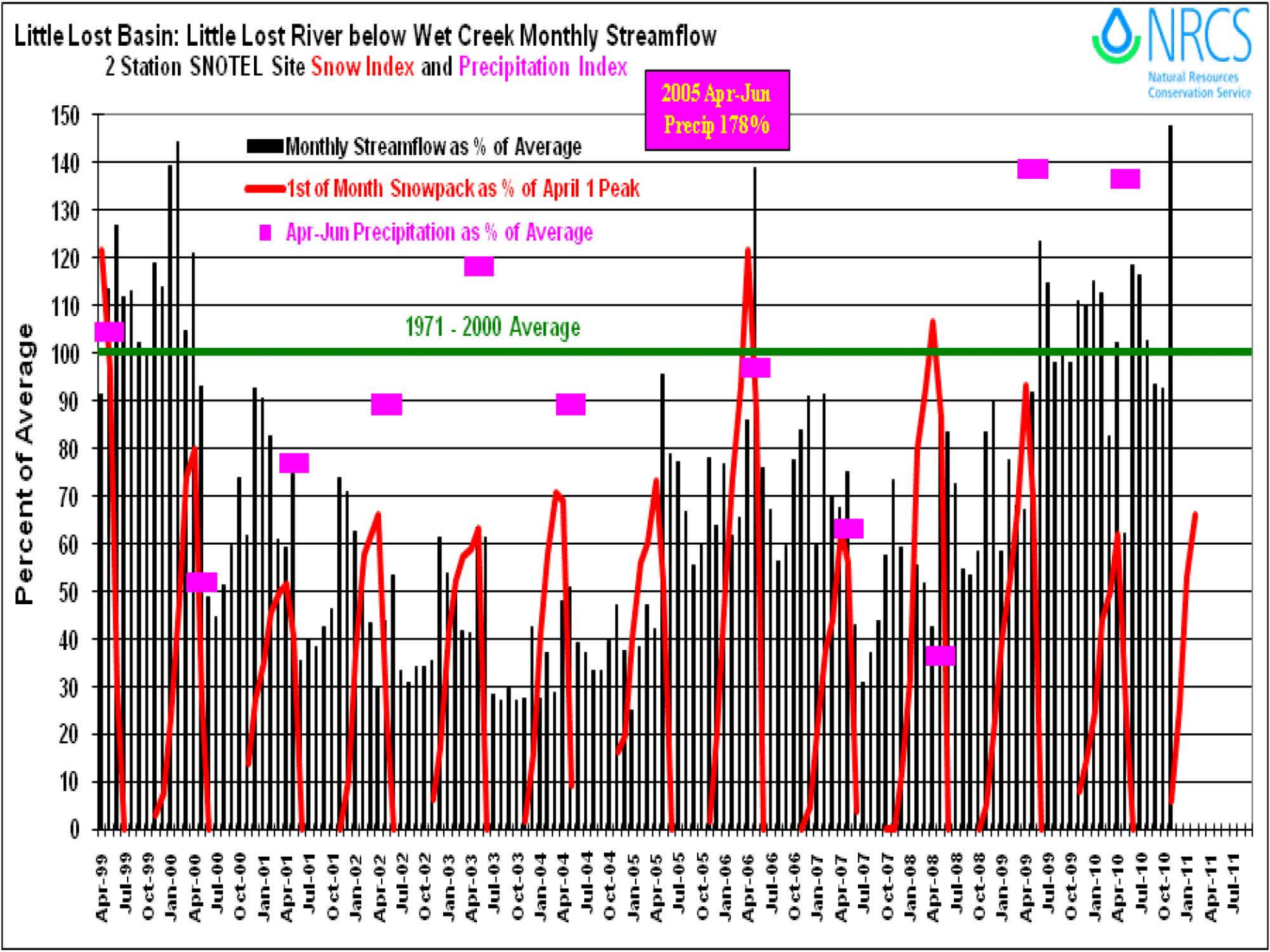
Oct-10
Jan-11
Apr-11
Jul-11


Little Lost Basin: Little Lost River below Wet Creek Monthly Streamflow
2 Station SNOTEL Site Snow Index and Precipitation Index
NRCS
Natural Resources Conservation Service
2005 Apr-Jun Precip 178%
Monthly Streamflow as % of Average
1st of Month Snowpack as % of April 1 Peak
Apr-Jun Precipitation as % of Average
1971 - 2000 Average
Percent of Average
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08
Jul-08
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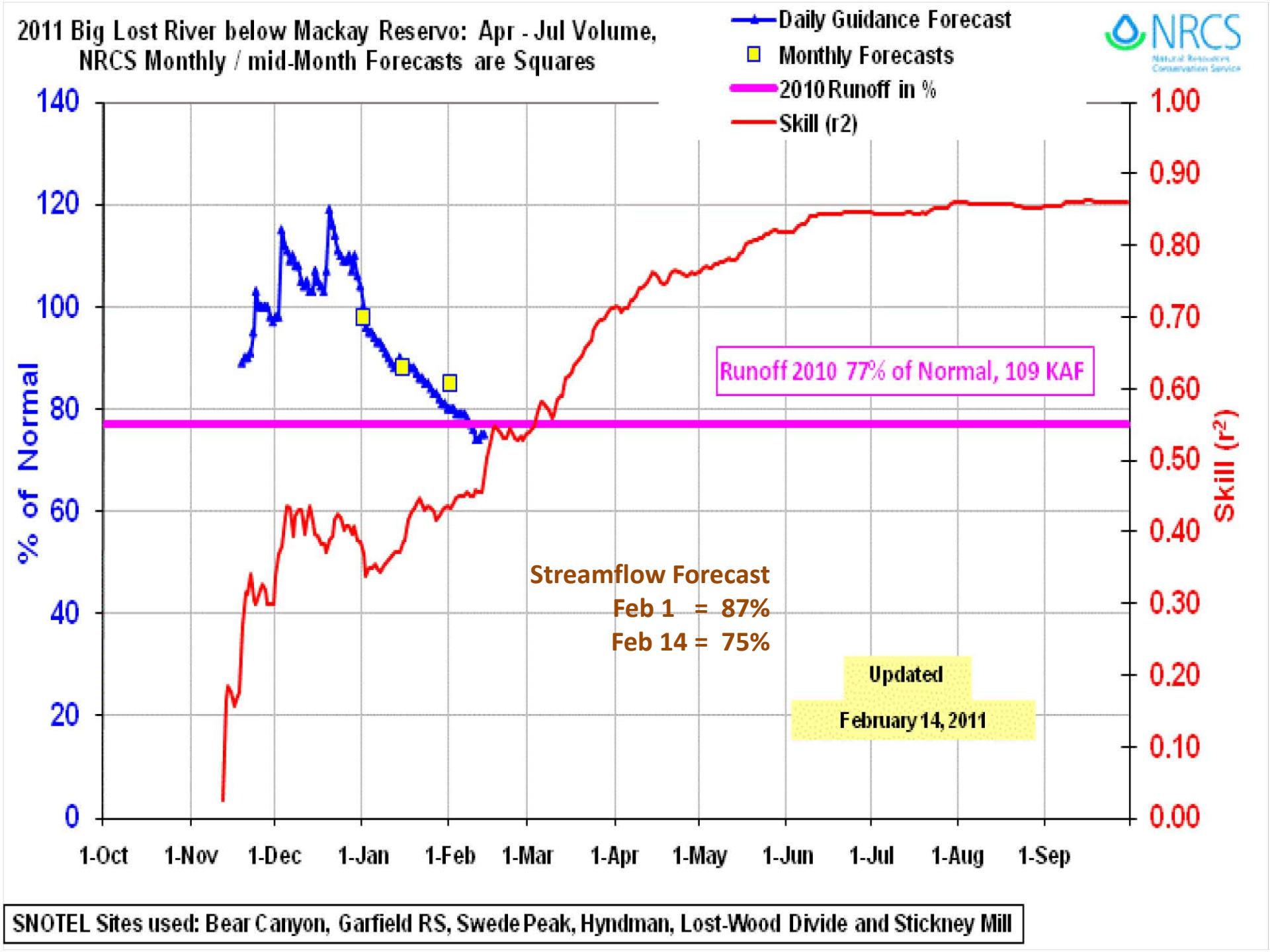
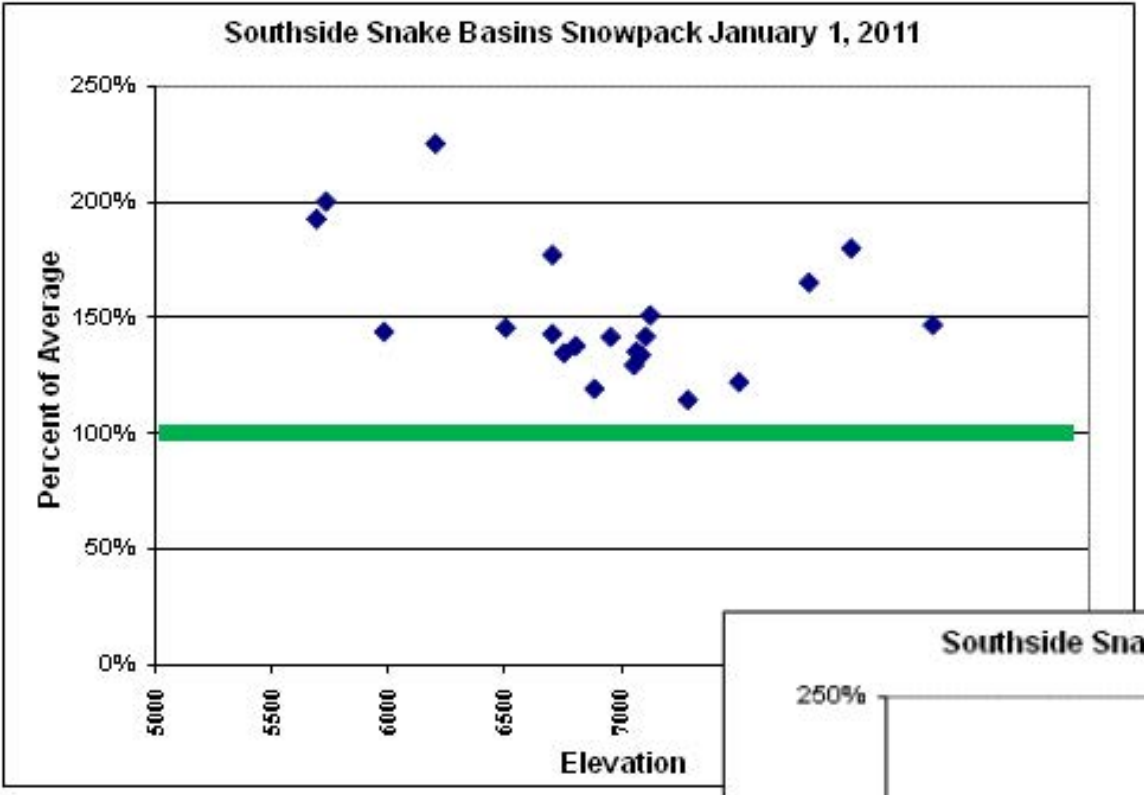
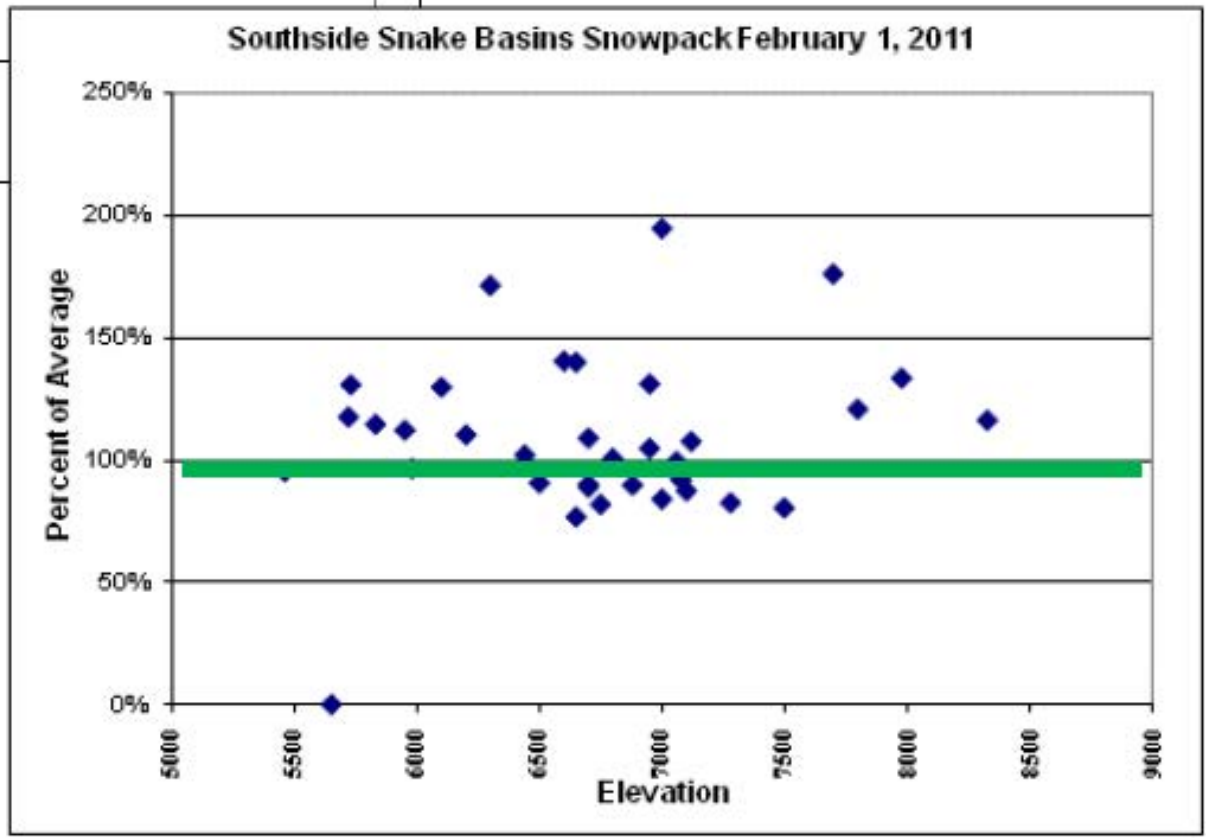
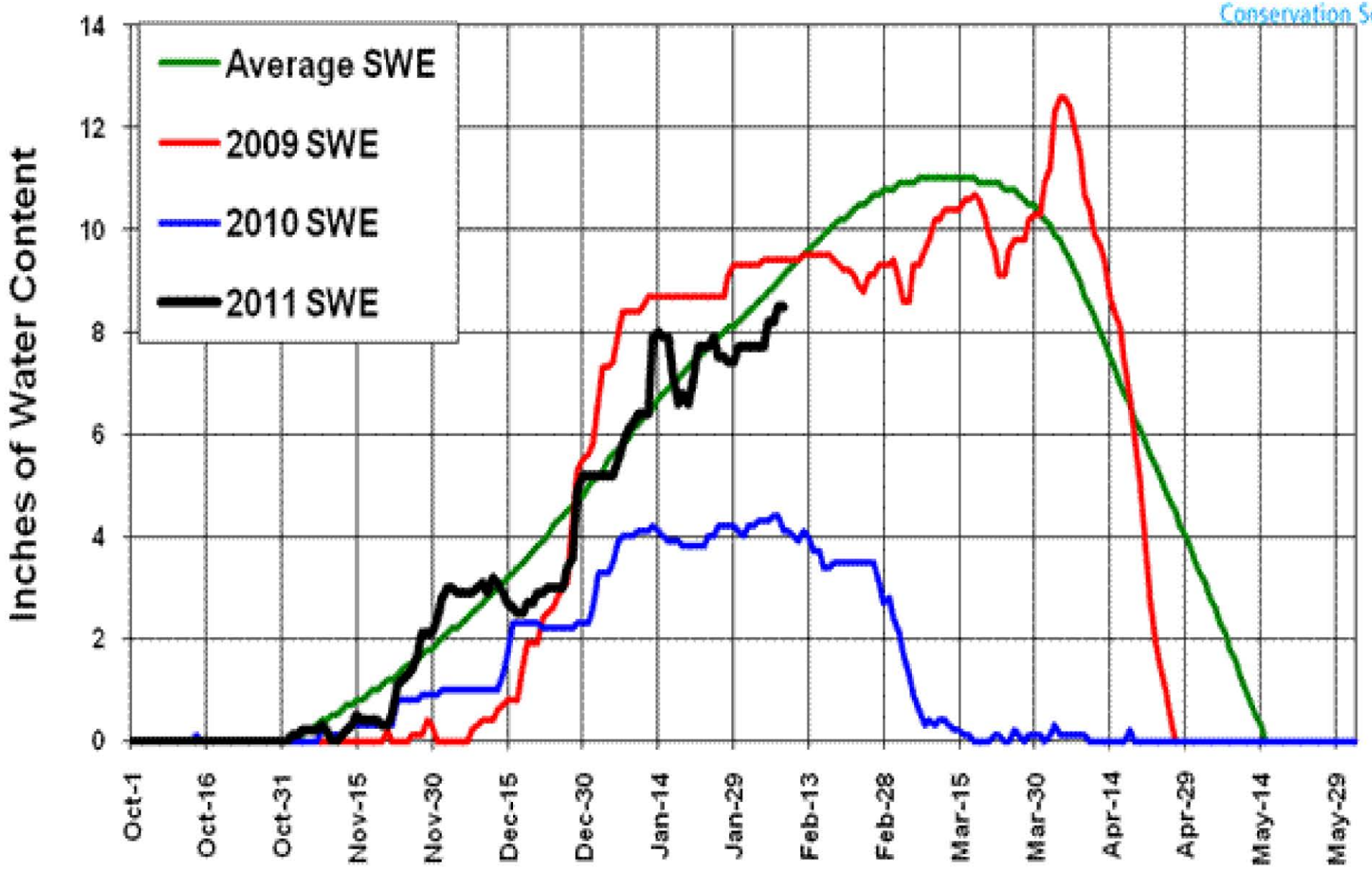
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11

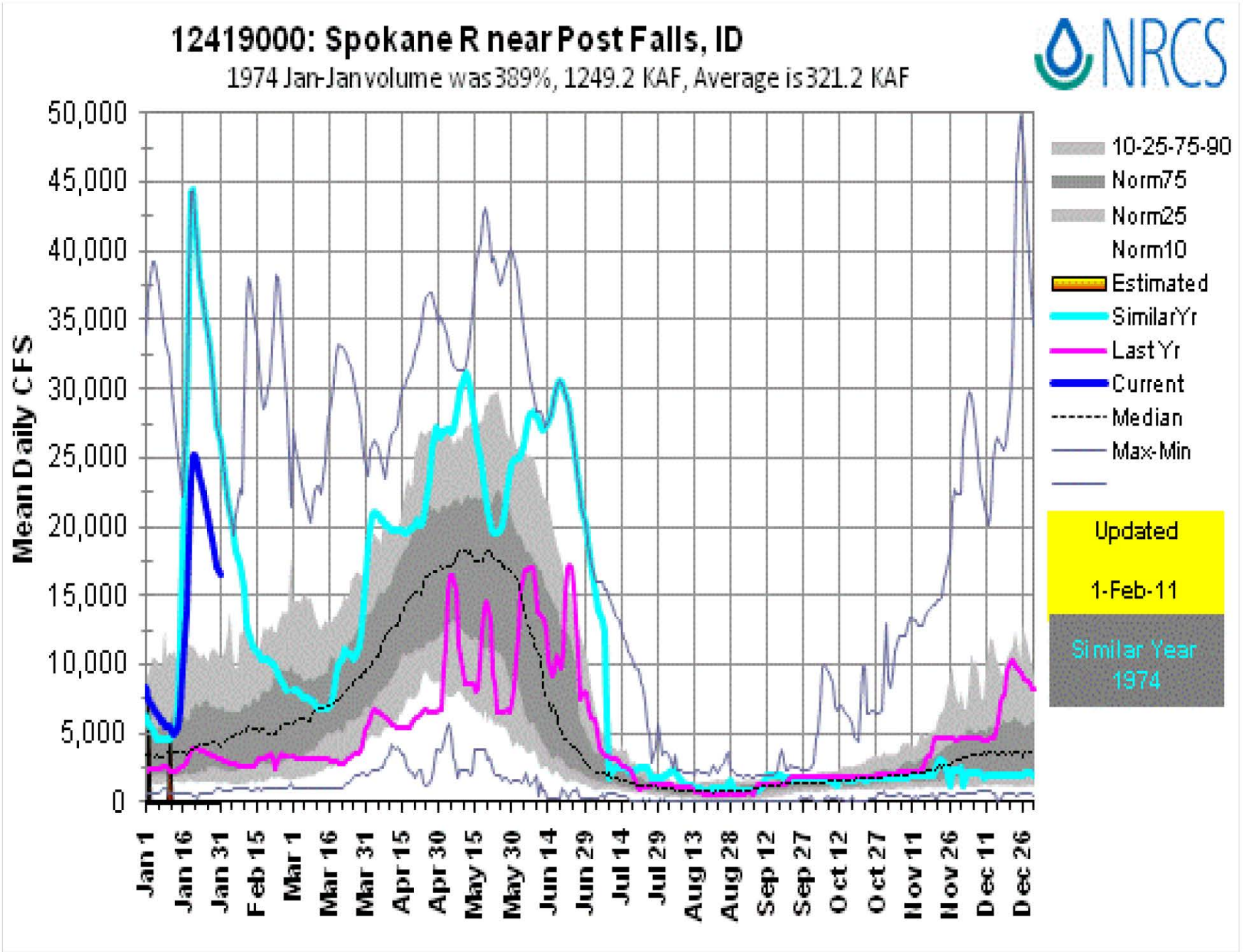

2011 Big Lost River below Mackay Reservo: Apr - Jul Volume,
NRCS Monthly / mid-Month Forecasts are Squares
Daily Guidance Forecast
Monthly Forecasts
2010 Runoff in %
Skill (r2)
NRCS
Natural Resources Conservation Service
% of Normal
Skill (r²)
140
120
100
80
60
40
20
0
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Runoff 2010 77% of Normal, 109 KAF
Streamflow Forecast
Feb 1 = 87%
Feb 14 = 75%
Updated
February 14, 2011
SNOTEL Sites used: Bear Canyon, Garfield RS, Swede Peak, Hyndman, Lost-Wood Divide and Stickney Mill


Southside Snake Basins Snowpack January 1, 2011
250%
200%
150%
100%
50%
0%
Percent of Average
5000
5500
6000
6500
7000
Elevation

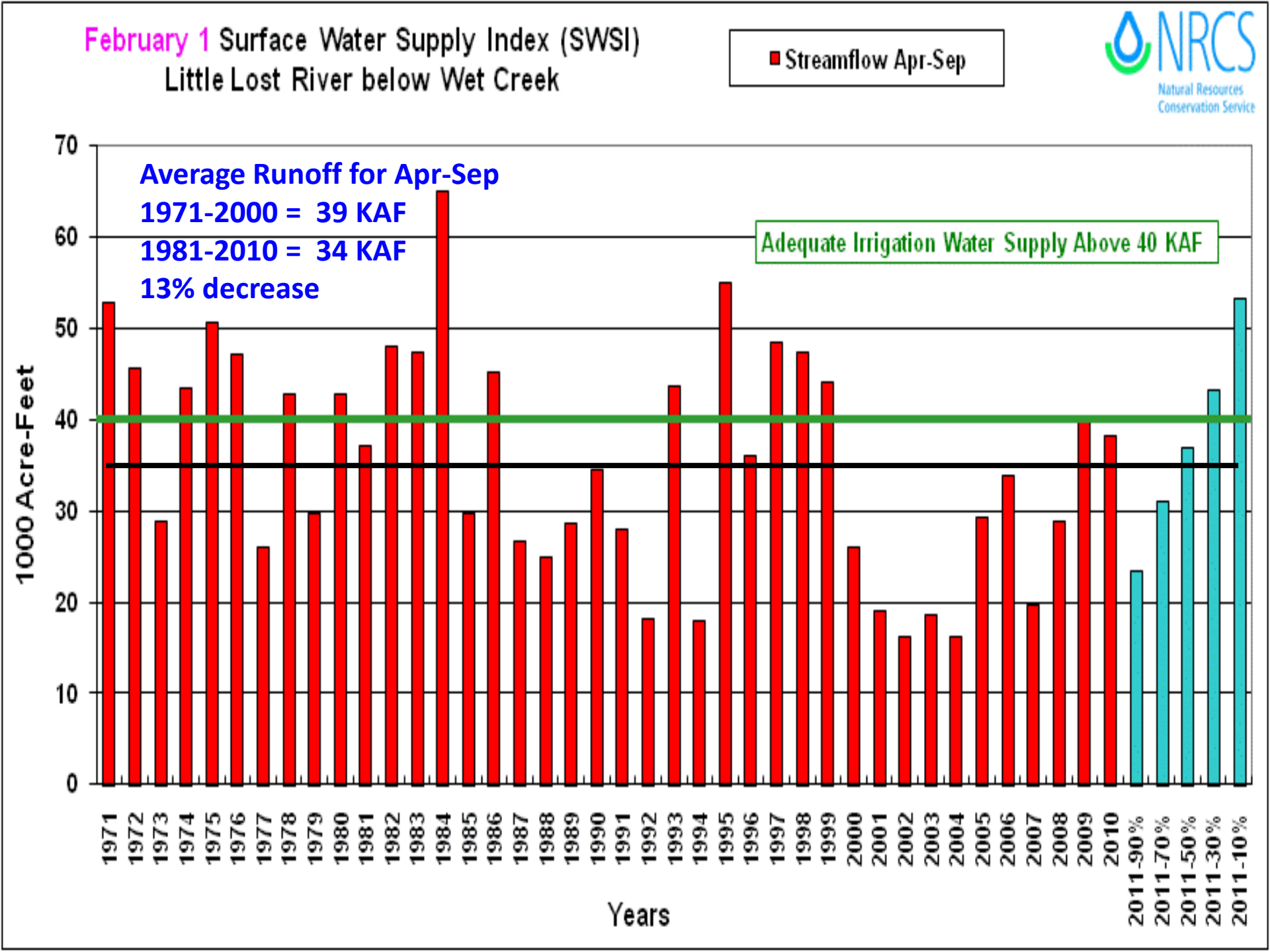

Southside Snake Basins Snowpack February 1, 2011
250%
200%
150%
100%
50%
0%
Percent of Average
5000
5500
6000
6500
7000
7500
8000
8500
9000
Elevation

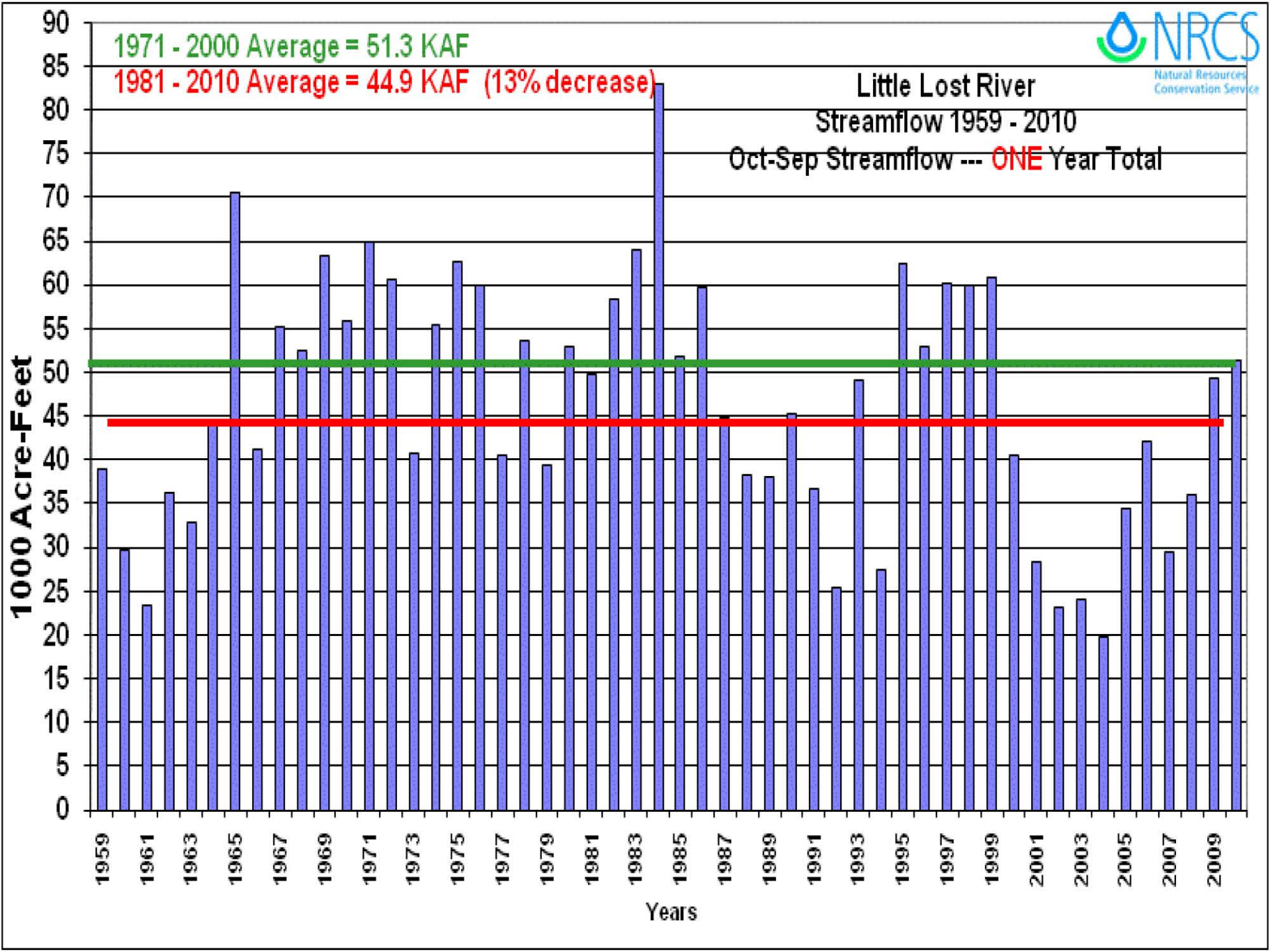
Sherwin SNOTEL El. 3200
Snow Water Equivalent

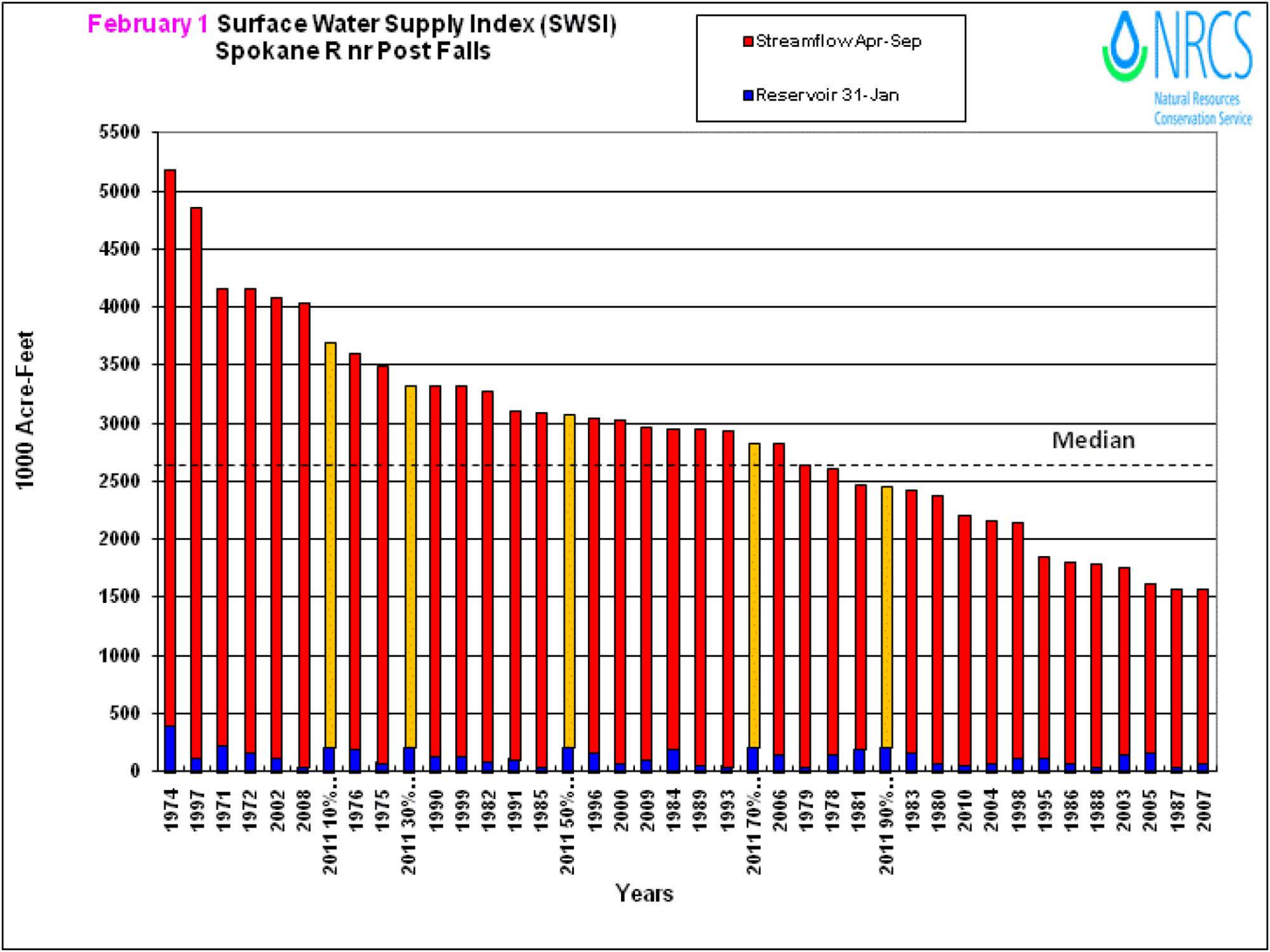



12419000: Spokane R near Post Falls, ID
1974 Jan-Jan volume was 389%, 1249.2 KAF, Average is 321.2 KAF
NRCS
Mean Daily CFS
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Jan 1
Jan 16
Jan 31
Feb 15
Mar 1
Mar 16
Mar 31
Apr 15
Apr 30
May 15
May 30
Jun 14
Jun 29
Jul 14
Jul 29
Aug 13
Aug 28
Sep 12
Sep 27
Oct 12
Oct 27
Nov 11
Nov 26
Dec 11
Dec 26
10-25-75-90
Norm75
Norm25
Norm10
Estimated
SimilarYr
LastYr
Current
Median
Max-Min
Updated
1-Feb-11
Similar Year
1974

Inside a snow shelter
Questions / Comments


February 1 Surface Water Supply Index (SWSI)
Little Lost River below Wet Creek
Streamflow Apr-Sep
NRCS
Natural Resources Conservation Service
Average Runoff for Apr-Sep
1971-2000 = 39 KAF
1981-2010 = 34 KAF
13% decrease
Adequate Irrigation Water Supply Above 40 KAF
1000 Acre-Feet
0
10
20
30
40
50
60
70
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011-90%
2011-70%
2011-50%
2011-30%
2011-10%
Years


1971 - 2000 Average = 51.3 KAF
1981 - 2010 Average = 44.9 KAF (13% decrease)
Little Lost River
Streamflow 1959 - 2010
Oct-Sep Streamflow --- ONE Year Total
NRCS
Natural Resources Conservation Service
1000 Acre-Feet
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
1959
1961
1963
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
Years


February 1 Surface Water Supply Index (SWSI)
Spokane R nr Post Falls
Streamflow Apr-Sep
Reservoir 31-Jan
NRCS
Natural Resources Conservation Service
1000 Acre-Feet
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Median
1974
1997
1971
1972
2002
2008
2011 10%...
1976
1975
2011 30%...
1990
1999
1982
1991
1985
2011 50%...
1996
2000
2009
1984
1989
1993
2011 70%...
2006
1979
1978
1981
2011 90%...
1983
1980
2010
2004
1998
1995
1986
1988
2003
2005
1987
2007
Years