NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Idaho Water Supply Outlook Report February 1, 2010

IDWR Water Supply Meeting February 11, 2010

Ron Abramovich
Water Supply Specialist

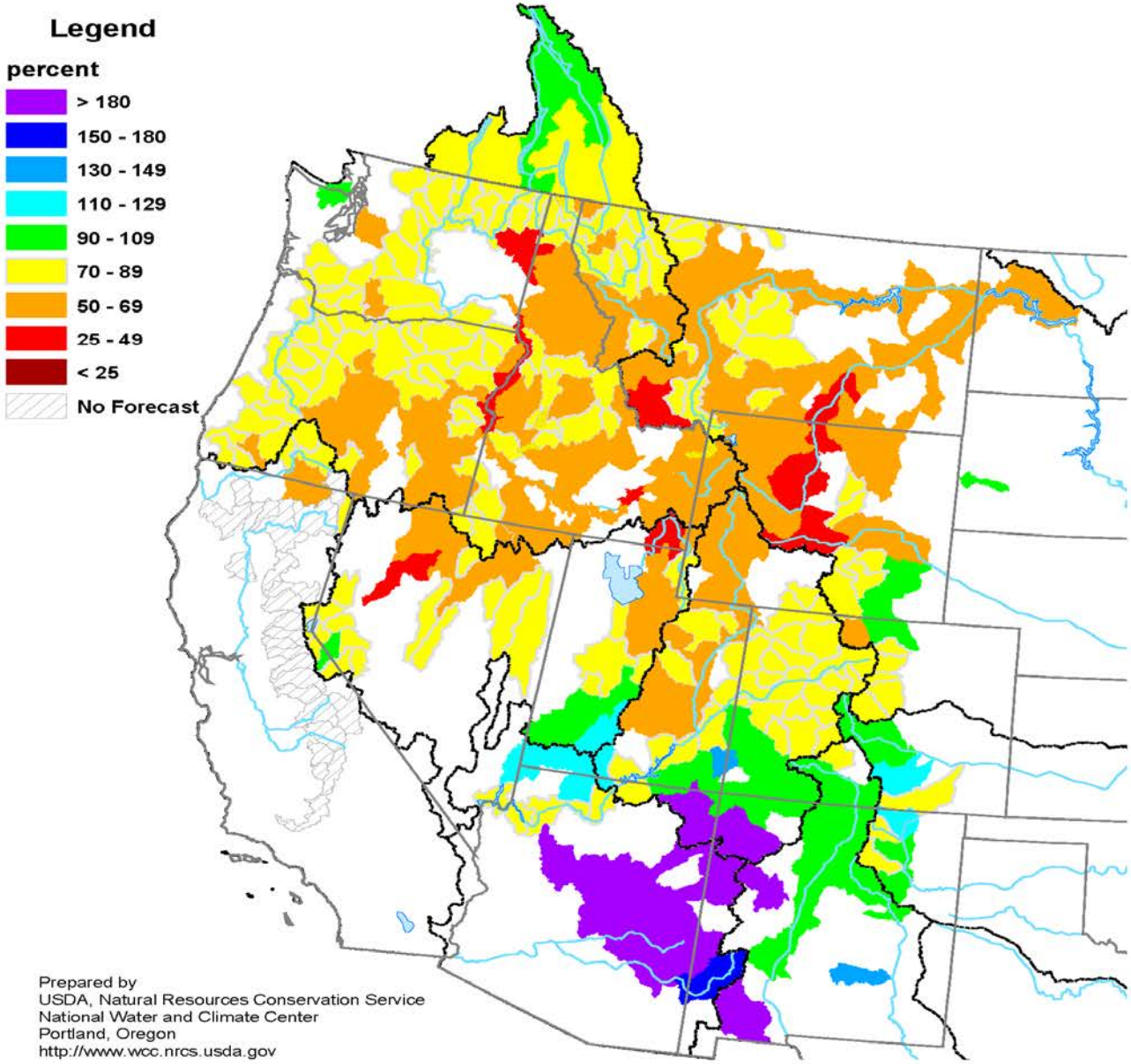
USDA NRCS Snow Survey
Boise, Idaho

Photo Credit: Bill Schaefer, Idaho State Journal, Pocatello, Idaho

February 1st snowpacks are 60-80% of normal for most basins in Idaho. The most troubling conditions exist in the Upper Snake River basin in Wyoming and eastern Idaho where the snowpacks are struggling to stay above 60% of normal, making it the sixth leanest winter in the last 50 years and the tenth lowest since 1919. Despite good reservoir carryover storage from last year, water users should prepare for the possibility of water shortages especially if the coming months bring less than normal precipitation.

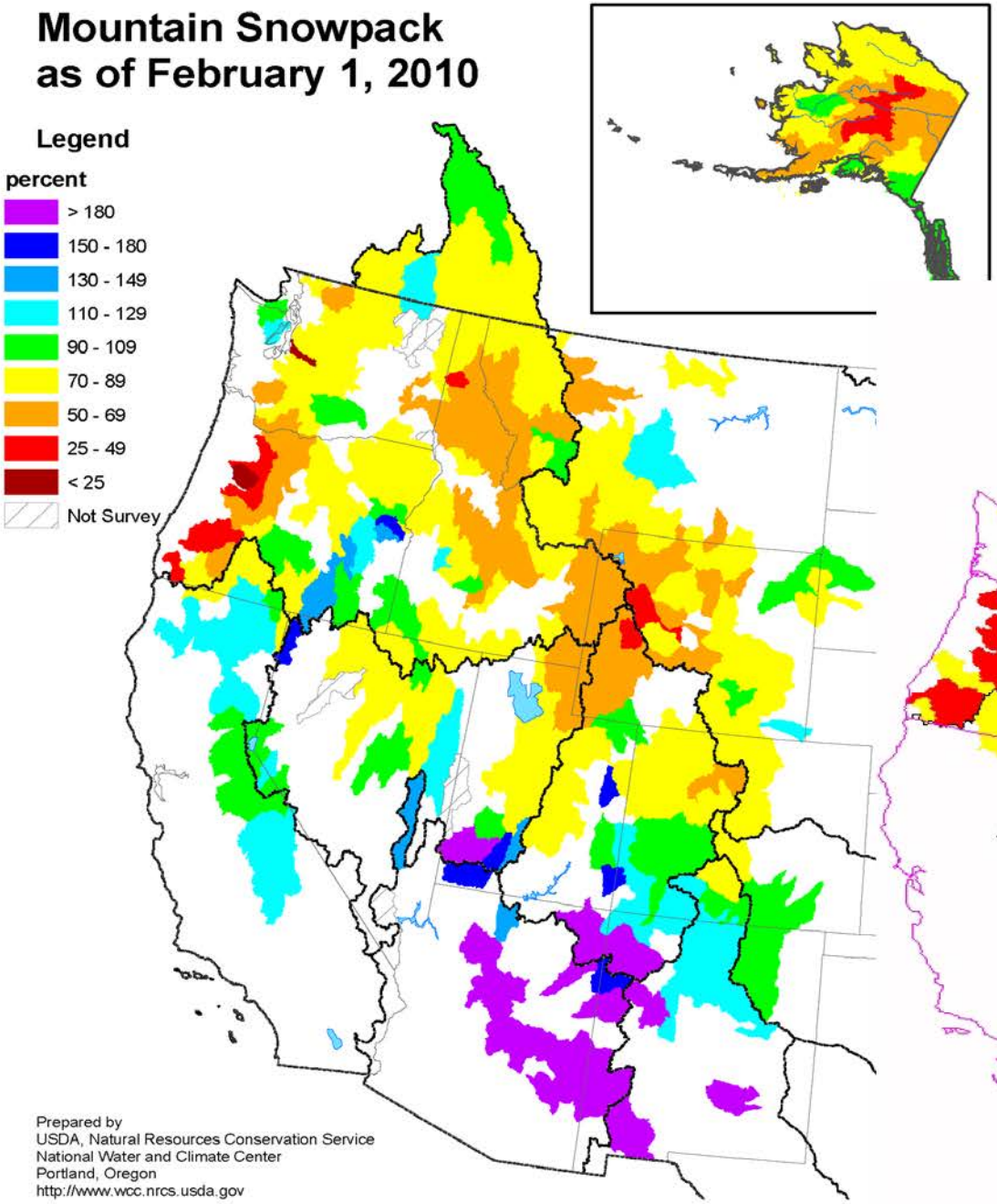
USDA United States Department of Agriculture
NRCS Natural Resources Conservation Service

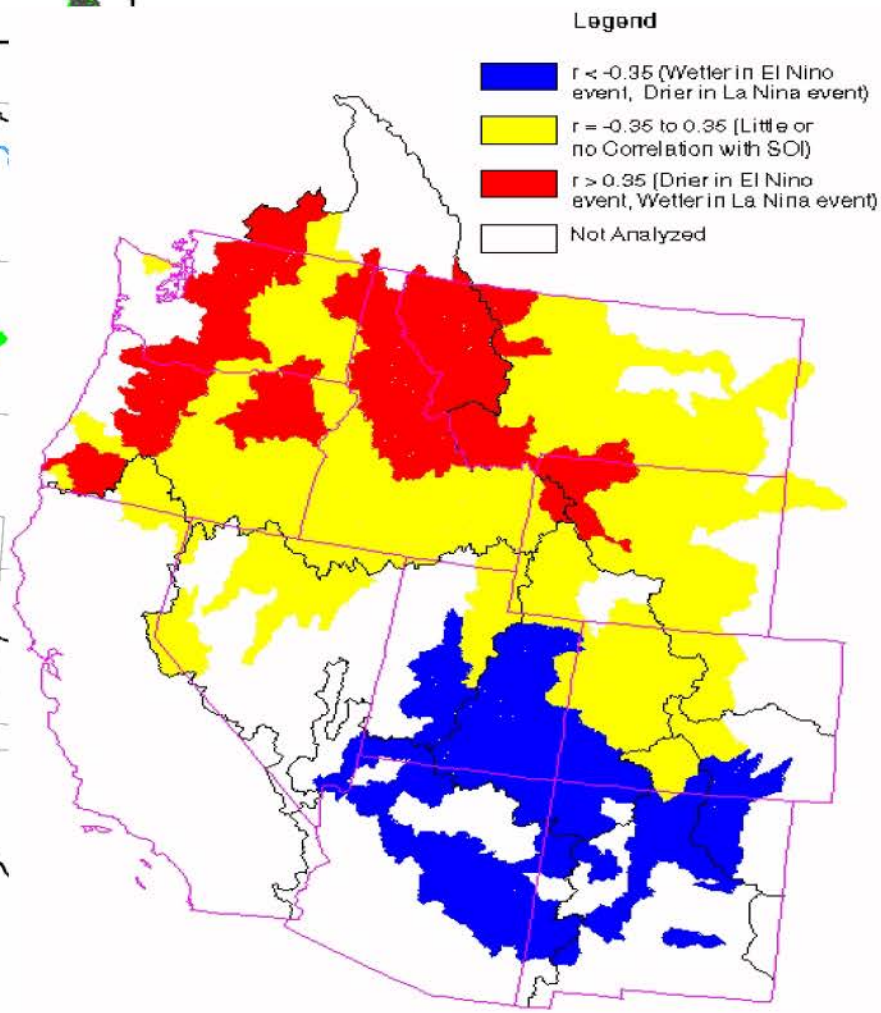
Spring and Summer Streamflow Forecasts as of February 1, 2010



Prepared by
USDA, Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov

Mountain Snowpack as of February 1, 2010





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Portland, Oregon
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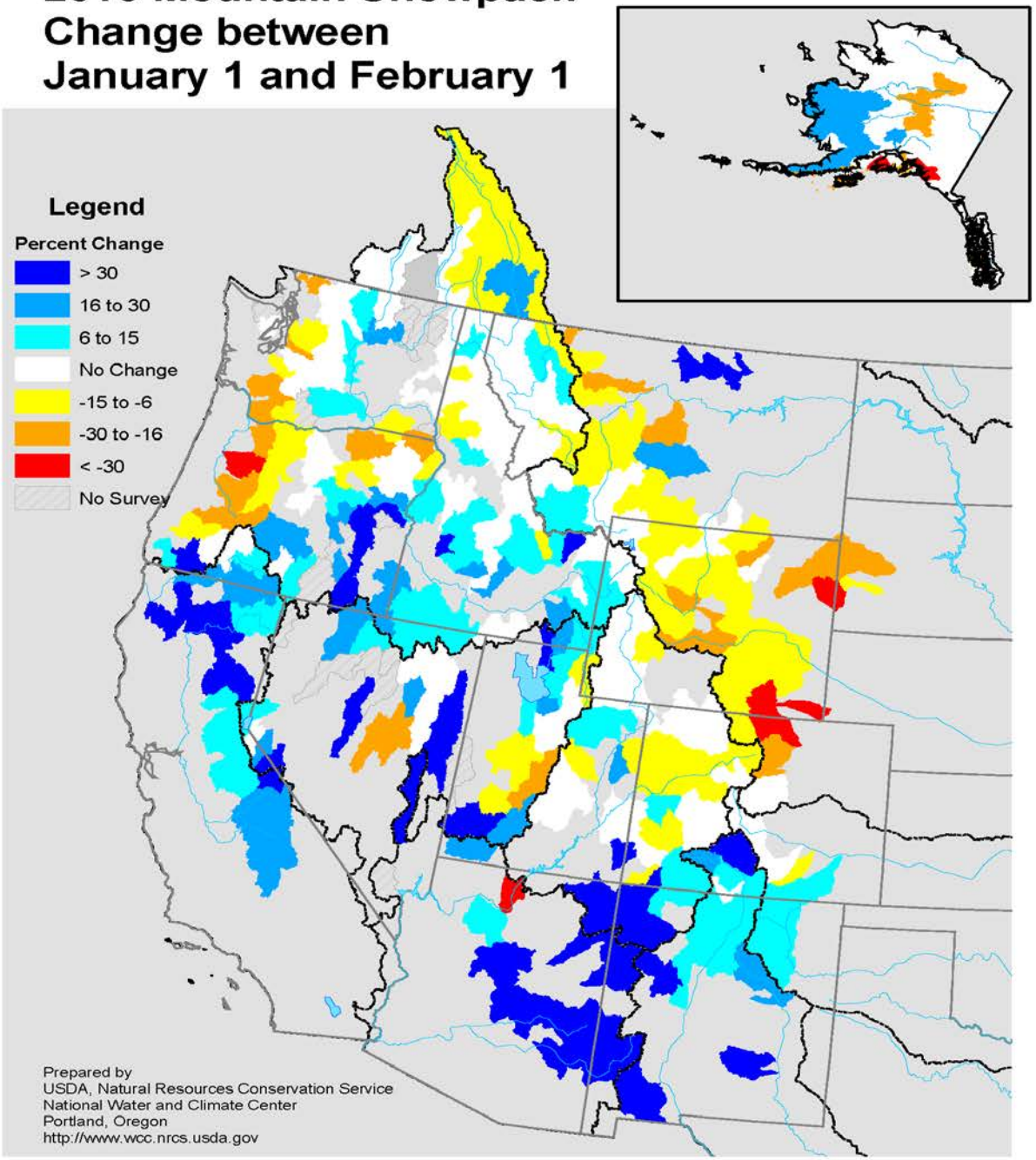
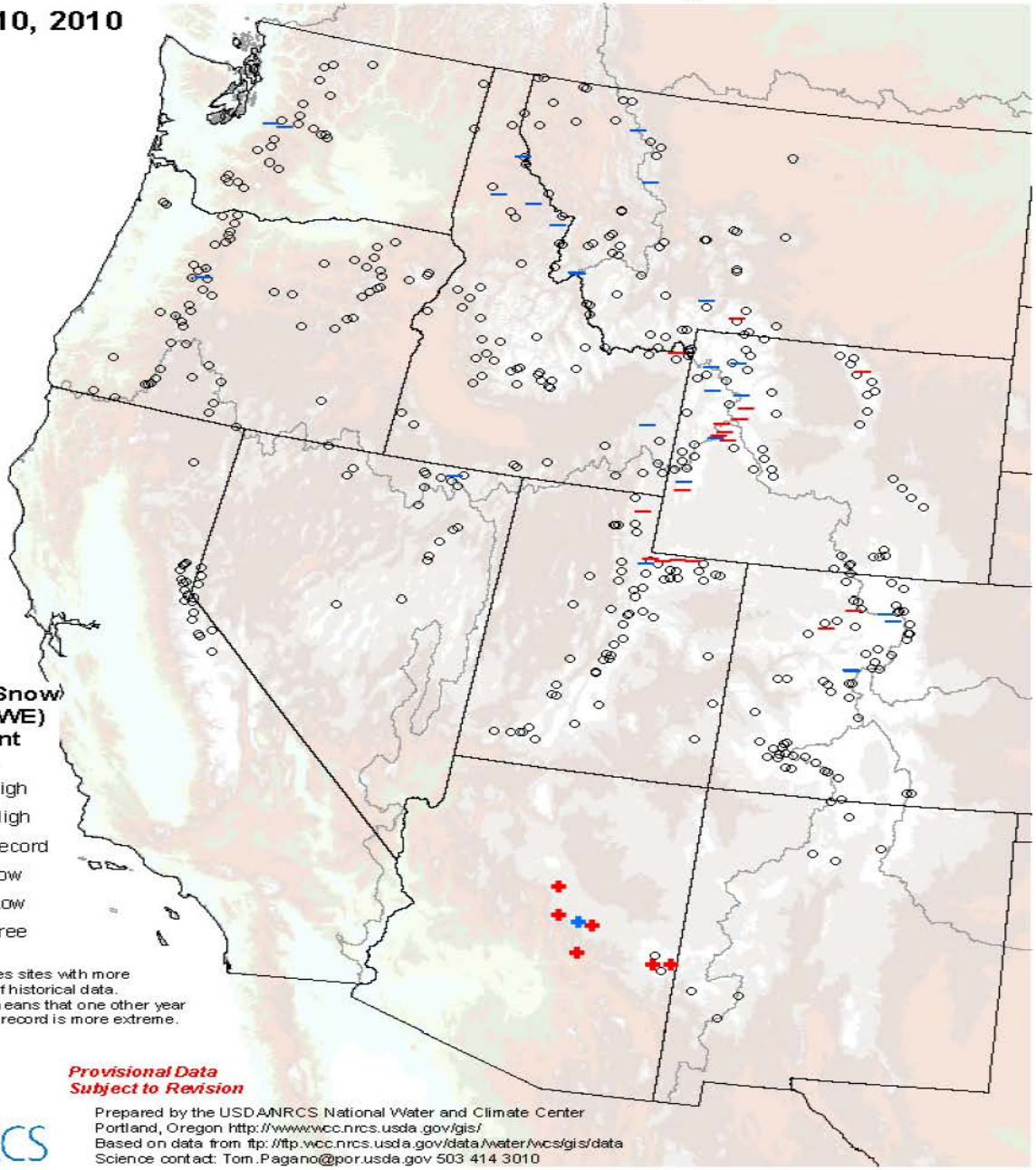
2010 Mountain Snowpack Change between January 1 and February 1



SNOTEL Current Snow Water Equivalent (SWE) Records

Feb 10, 2010



Current Snow Water (SWE) Equivalent Records

- New High
- Near High
- Non-Record
- New Low
- Near Low
- snow free

Analysis includes sites with more than 20 years of historical data.
"Near" record means that one other year of the period of record is more extreme.

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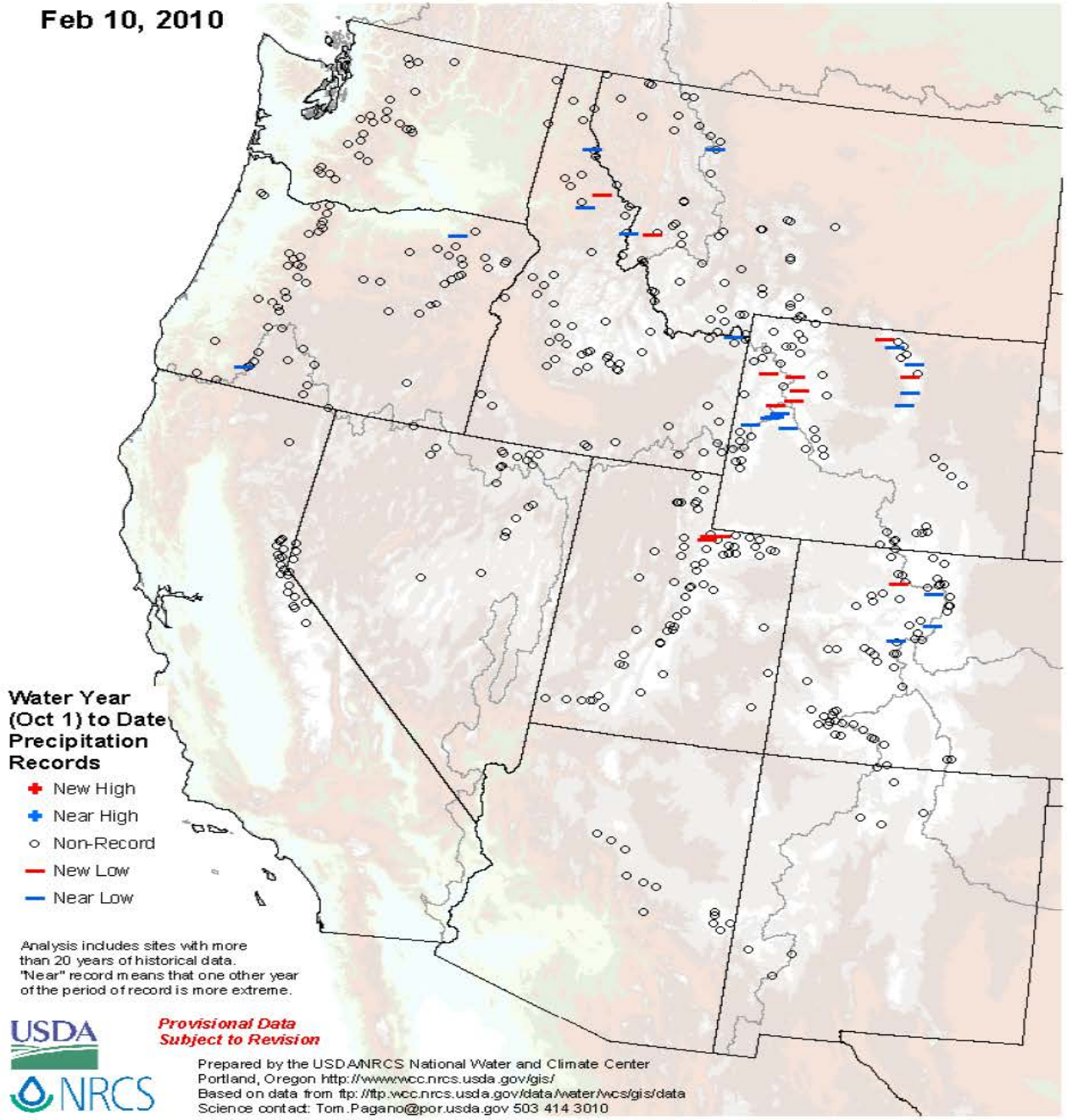
Provisional Data Subject to Revision

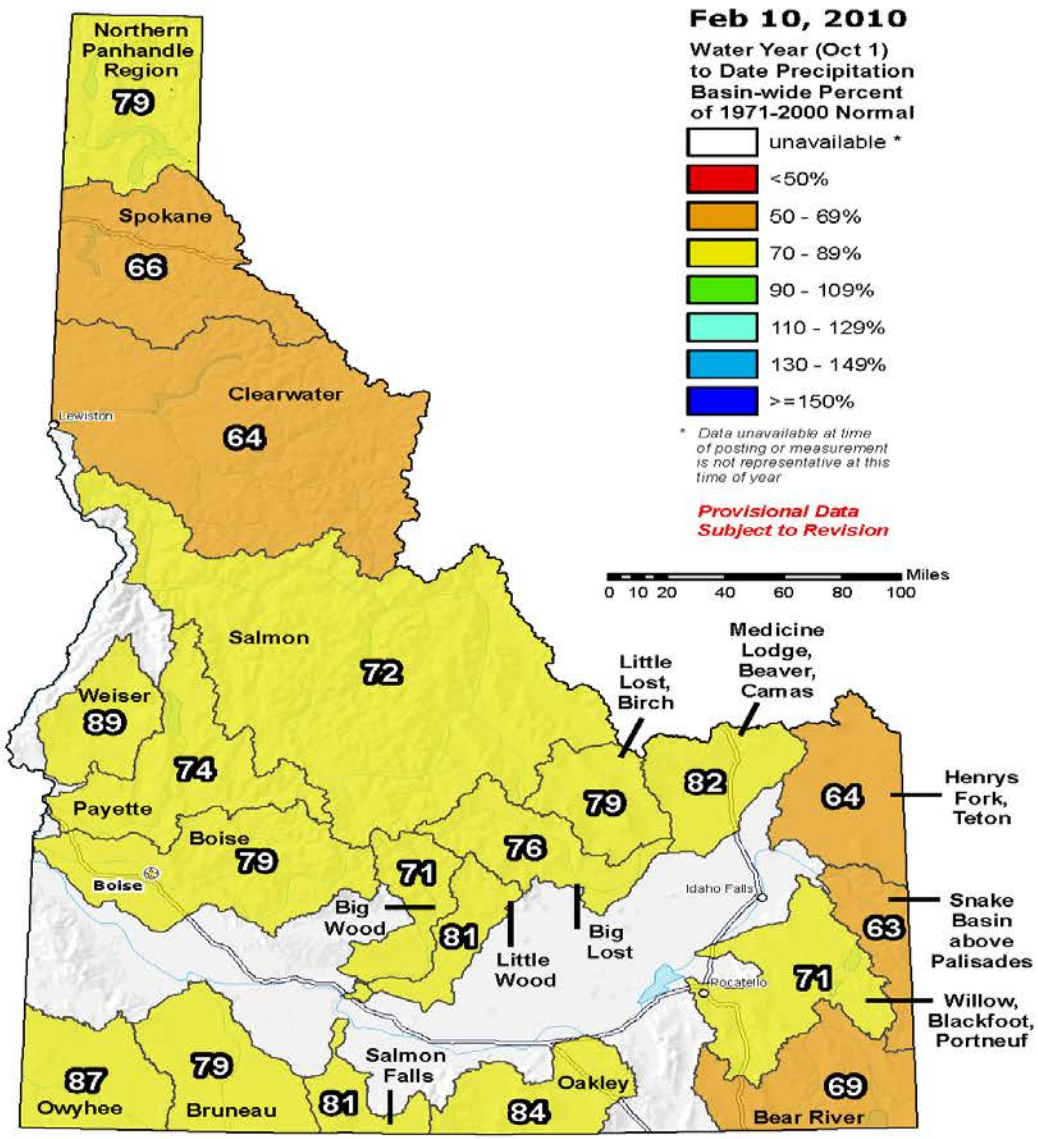
Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/data
Science contact: Tom.Pagano@por.usda.gov 503 414 3010

SNOTEL Water Year (Oct 1) to Date Precipitation Records

Feb 10, 2010



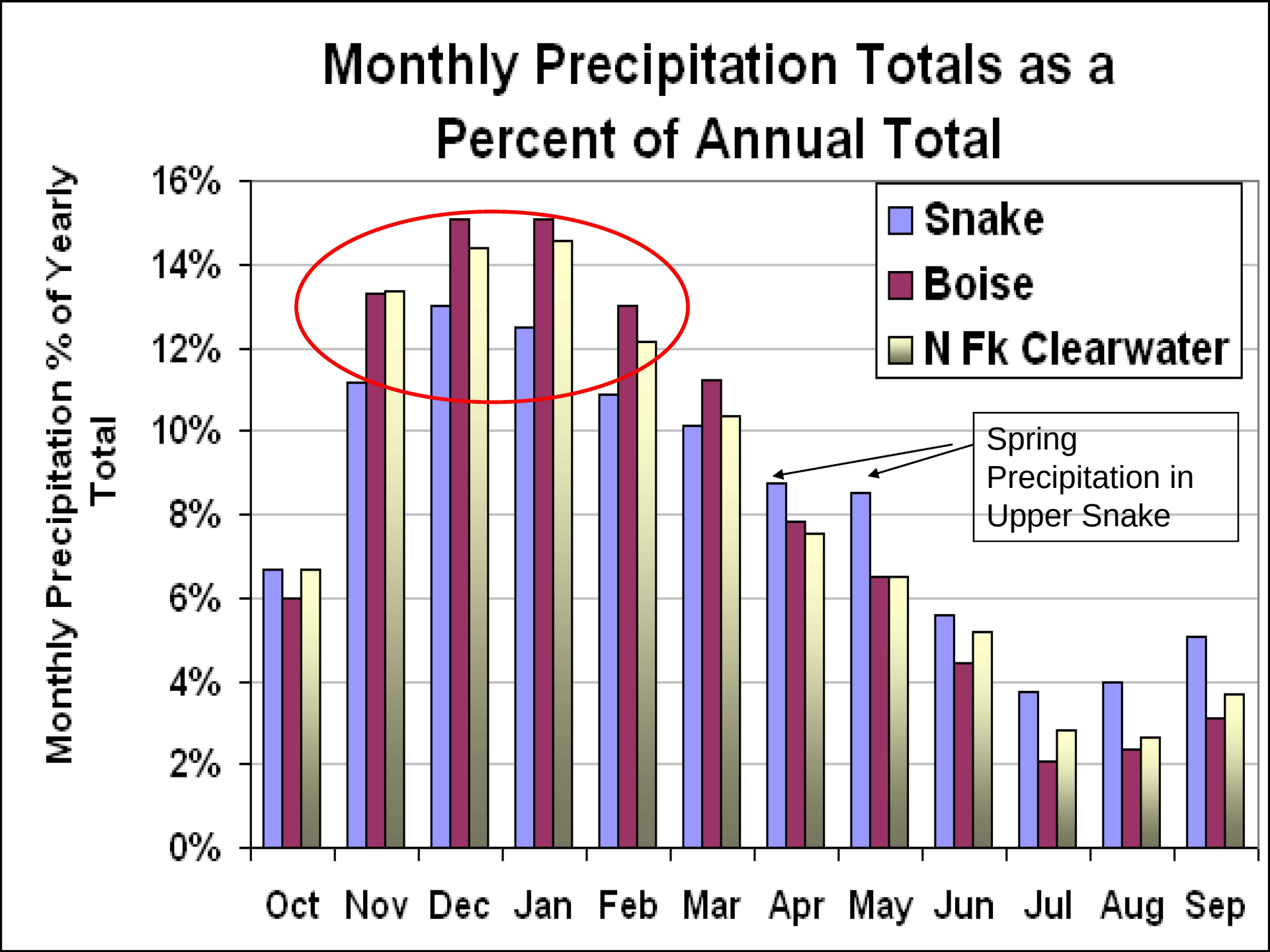
Idaho SNOTEL Water Year (Oct 1) to Date Precipitation % of Normal



USDA NRCS

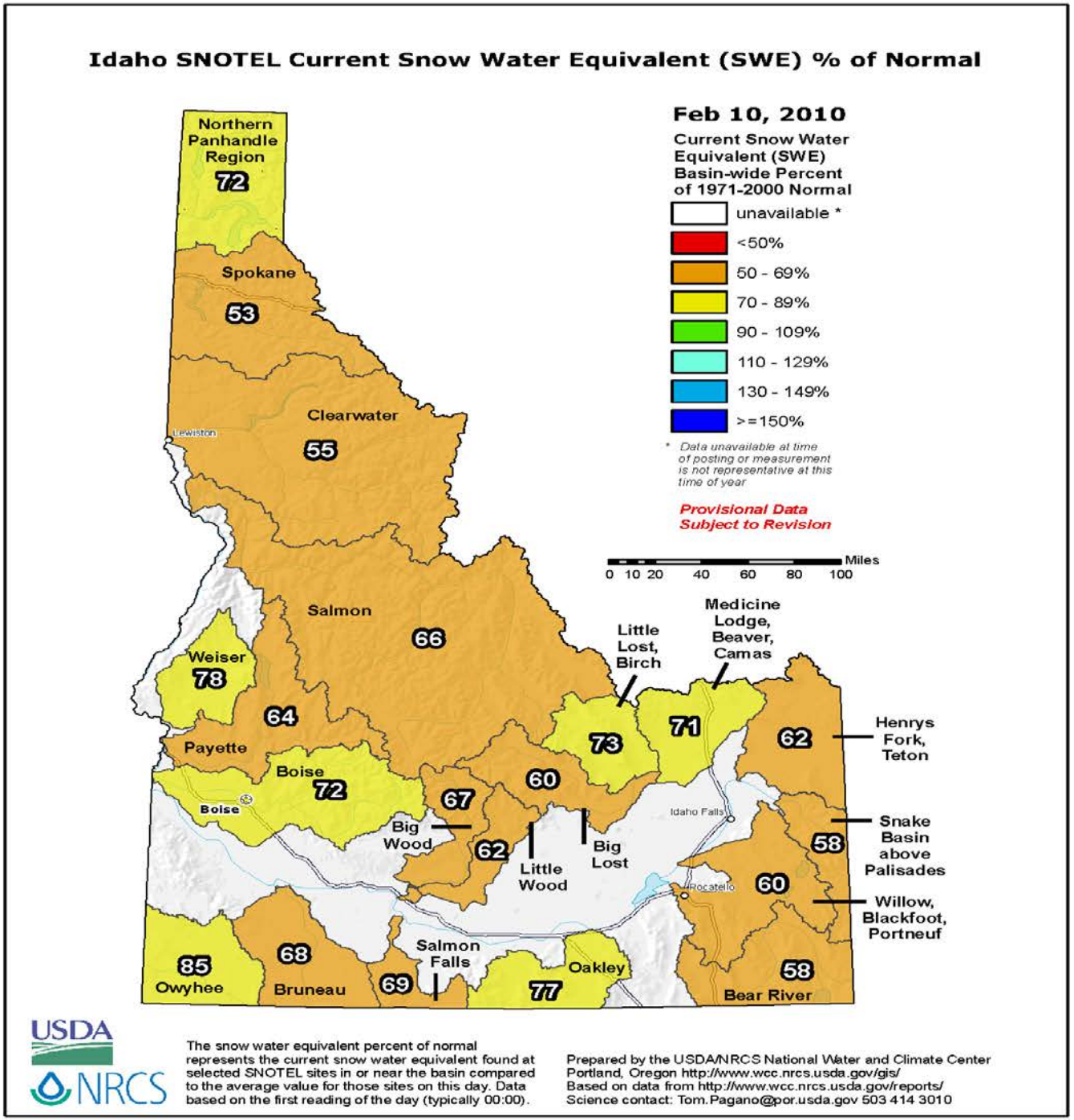
The water year to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Tom.Pagano@por.usda.gov 503 414 3010


Monthly Precipitation Totals as a Percent of Annual Total
Monthly Precipitation % of Yearly Total
16%
14%
12%
10%
8%
6%
4%
2%
0%
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Snake
Boise
N Fk Clearwater
Spring Precipitation in Upper Snake

SNOTEL Precipitation Summary Report

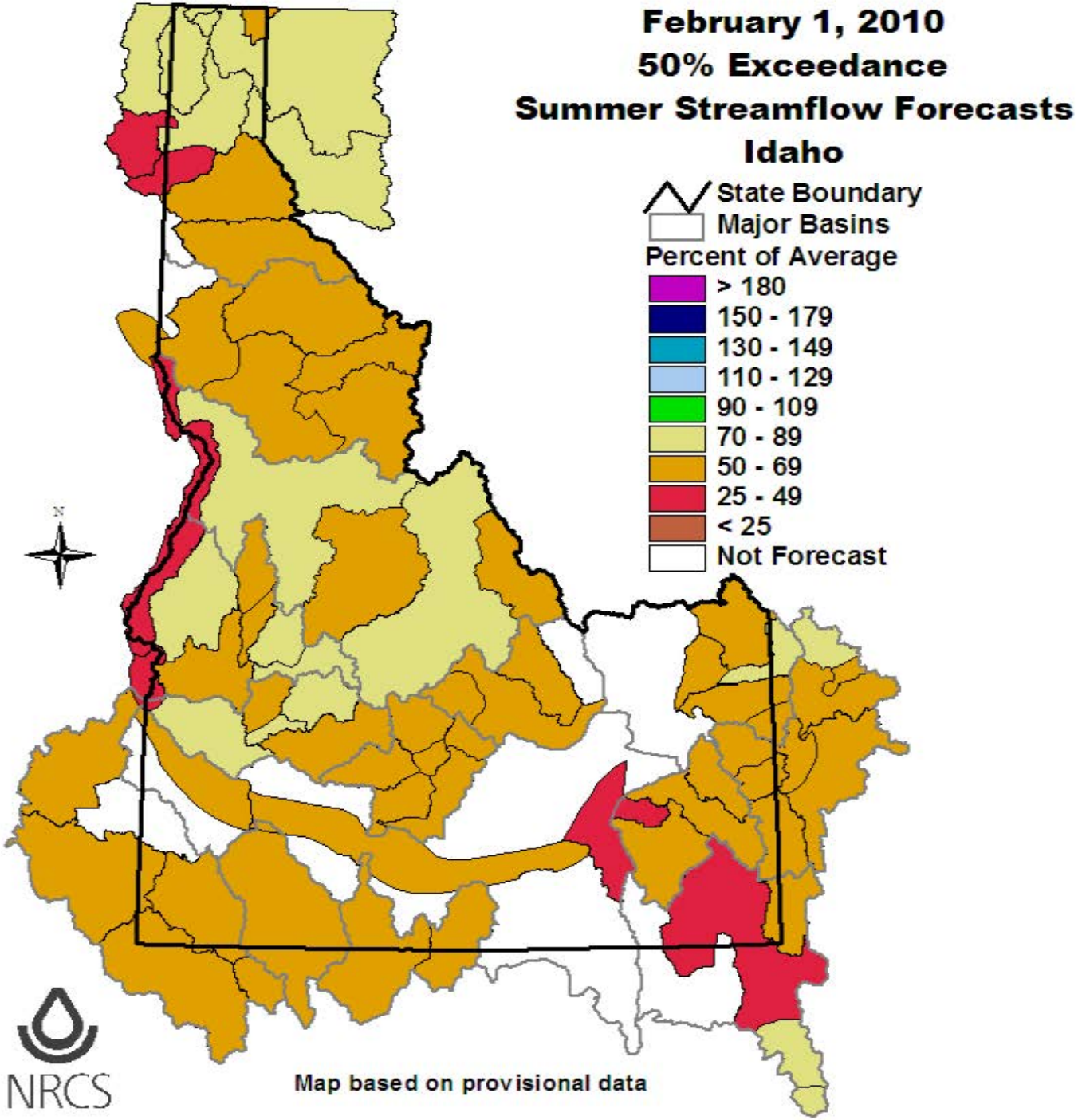
Region or Basin	November Precipitation as % of Average	December Precipitation as % of Average	January Precipitation as % of Average	February 1-10 Precipitation as % of Monthly Total
Panhandle	69	58	64	7
Clearwater	55	65	57	7
Salmon	49	53	76	9
Weiser, Payette, Boise	48	63	90	9
Wood and Lost	41	45	94	7
Upper Snake	33	56	75	11
Southside Snake	33	94	91	11
Bear	27	61	82	12

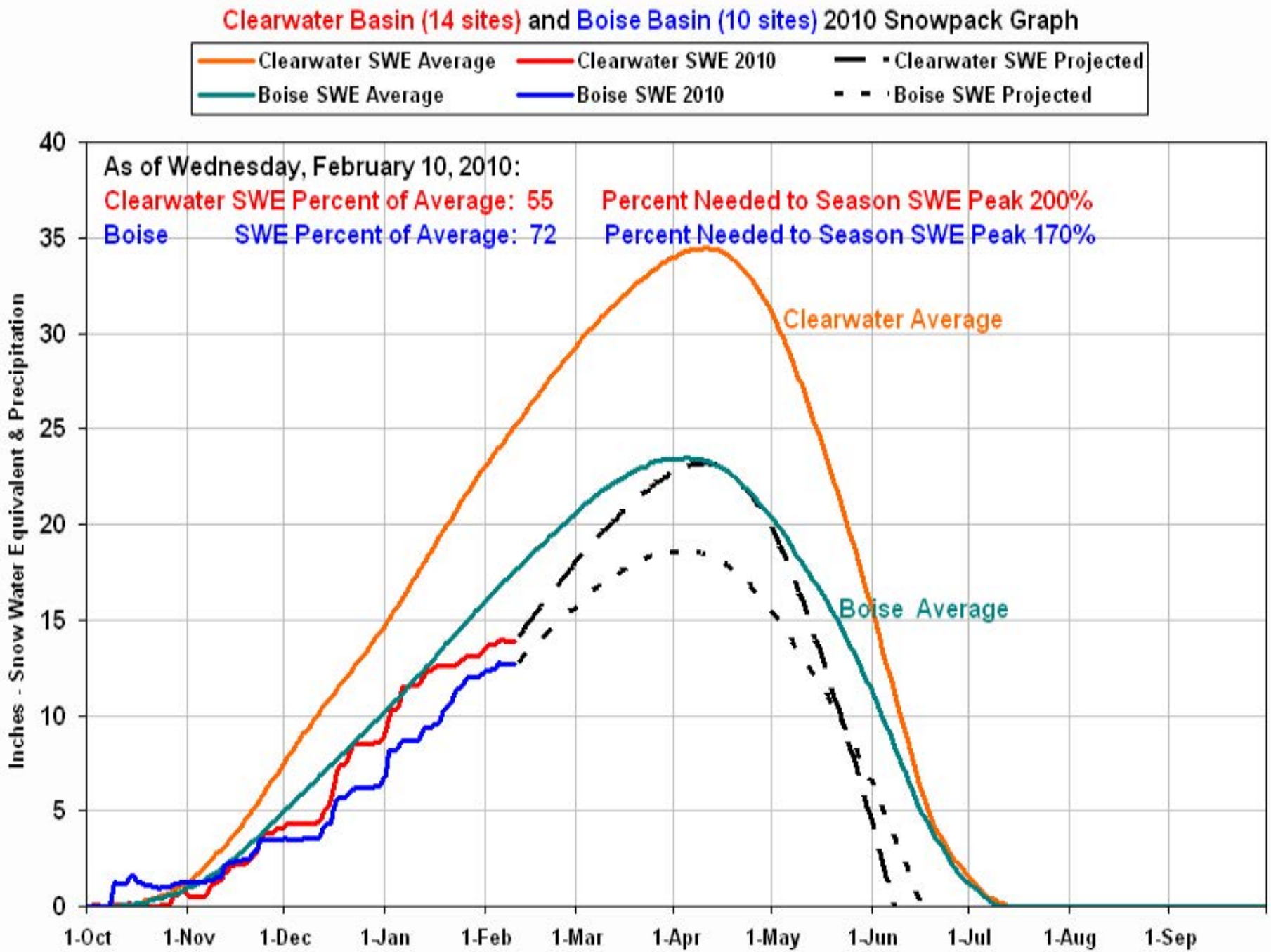


Snowpacks range from 40-60% of Seasonal Snow Peaks that occur in early April

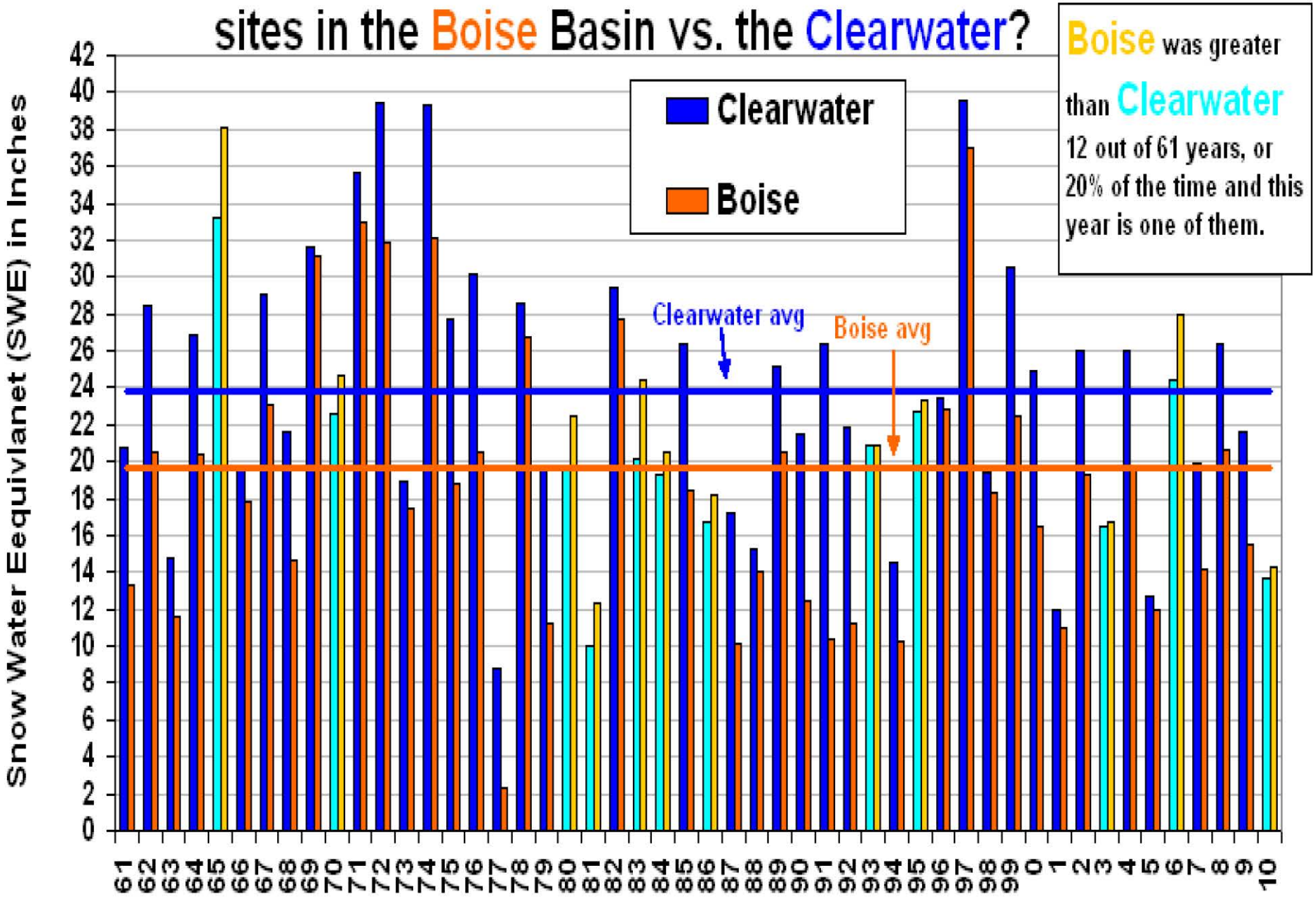
Idaho Snowpack *February 1, 2010*

River or Basin	Snowpack Percent of Average	Rank	Record Starts	Lowest Year / Percent of Average
Spokane	53%	5th Lowest	1961	1977 / 34%
Clearwater	55%	6th Lowest	1961	1977 / 37%
Salmon	66%	6th Lowest	1981	2001 / 54%
Payette	64%	10th Lowest	1961	1978 / 13%
Big Wood	67%	11th Lowest	1961	1977 / 15%
Little Wood	62%	11th Lowest	1961	1977 / 16%
Big Lost	60%	10th Lowest	1961	1978 / 9%
Henrys Fork/Teton	62%	7th Lowest	1961	1977 / 33%
Snake above Palisades	58%	5th Lowest	1961	1977 / 33%
Willow/Blkft/Portneuf	60%	7th Lowest	1961	1977 / 21%
American Falls	59%	6th Lowest	1961	1977 / 32%
Bear River	58%	9th Lowest	1975	1977 / 24%


February 1, 2010
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


Clearwater Basin (14 sites) and Boise Basin (10 sites) 2010 Snowpack Graph
Clearwater SWE Average
Clearwater SWE 2010
Clearwater SWE Projected
Boise SWE Average
Boise SWE 2010
Boise SWE Projected
As of Wednesday, February 10, 2010:
Clearwater SWE Percent of Average: 55
Percent Needed to Season SWE Peak 200%
Boise SWE Percent of Average: 72
Percent Needed to Season SWE Peak 170%
Clearwater Average
Boise Average
Inches - Snow Water Equivalent & Precipitation
0
5
10
15
20
25
30
35
40
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep

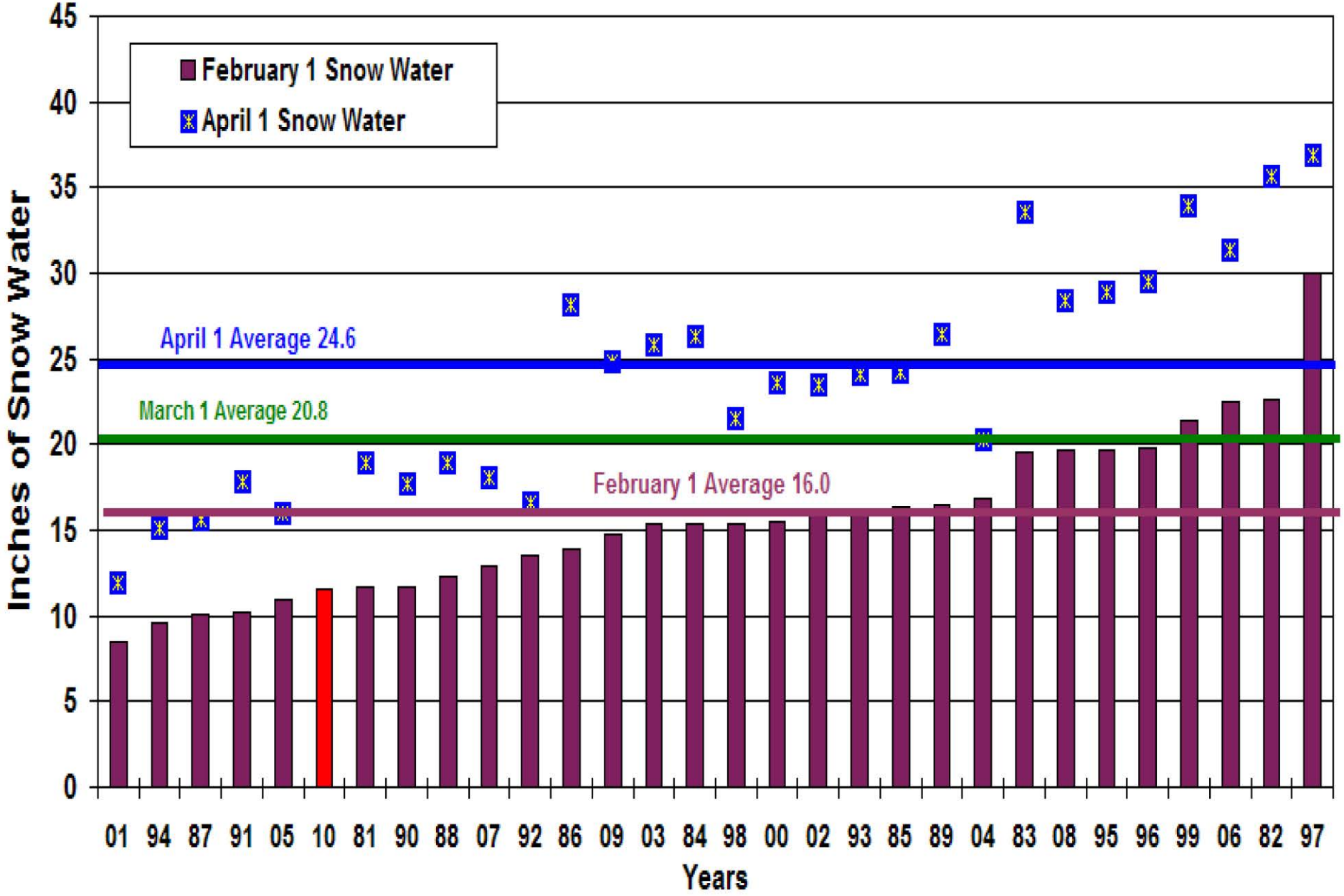
How many times on Feb 1 is the SWE greater at SNOTEL sites in the Boise Basin vs. the Clearwater?

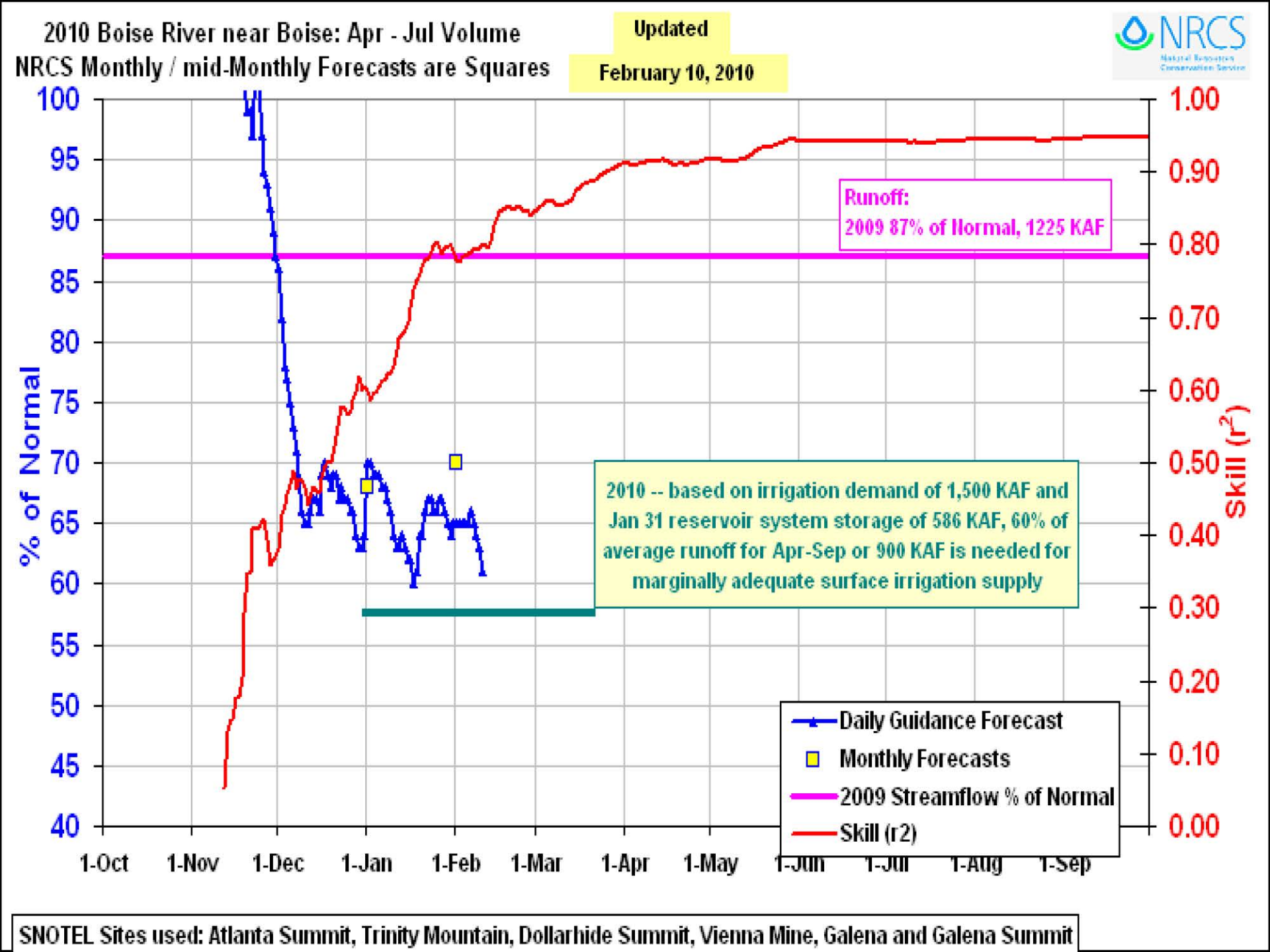


Boise was greater than Clearwater 12 out of 61 years, or 20% of the time and this year is one of them.

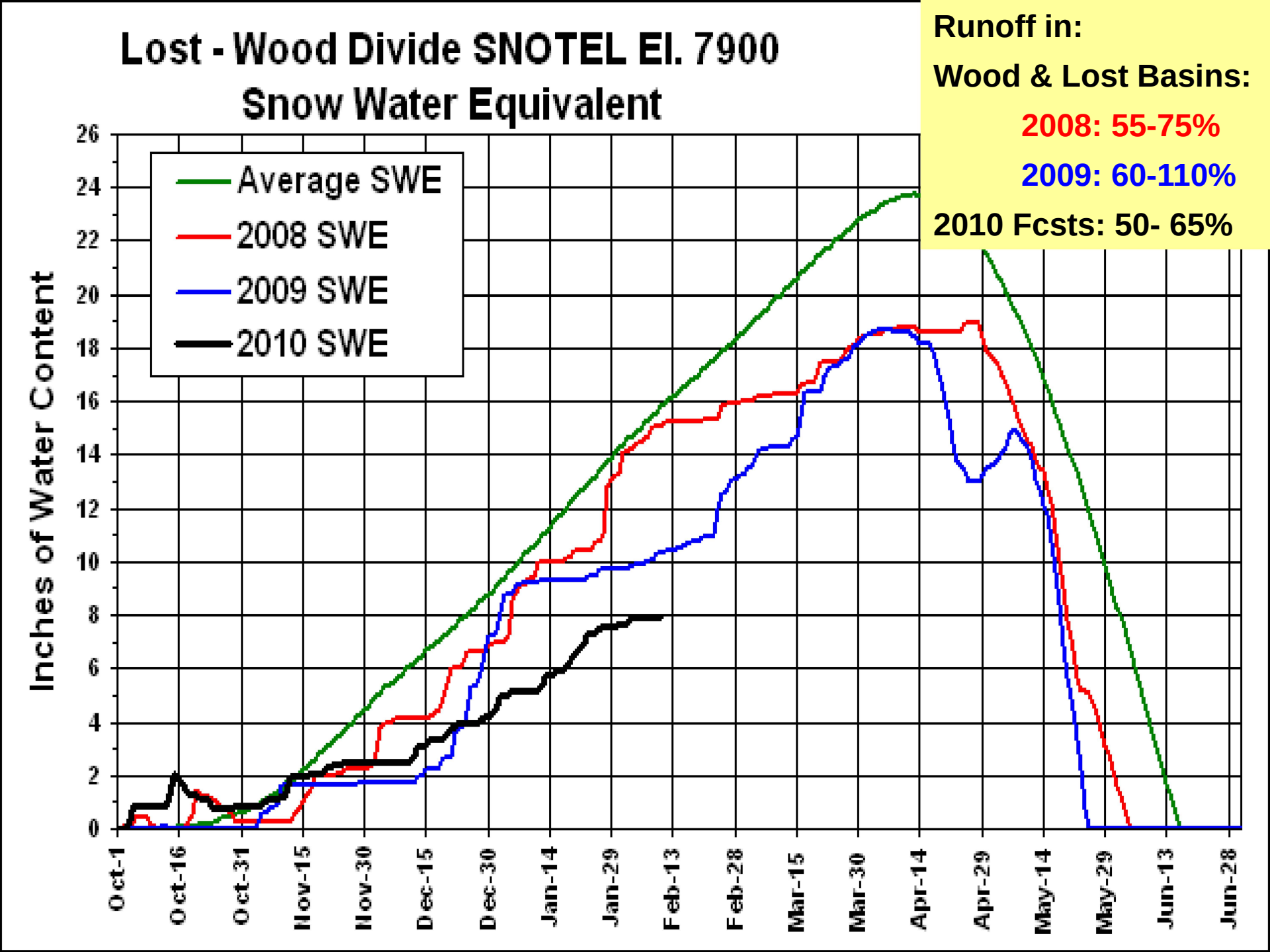
Salmon Basin 18 Station Snow Index for Years 1981 - 2010

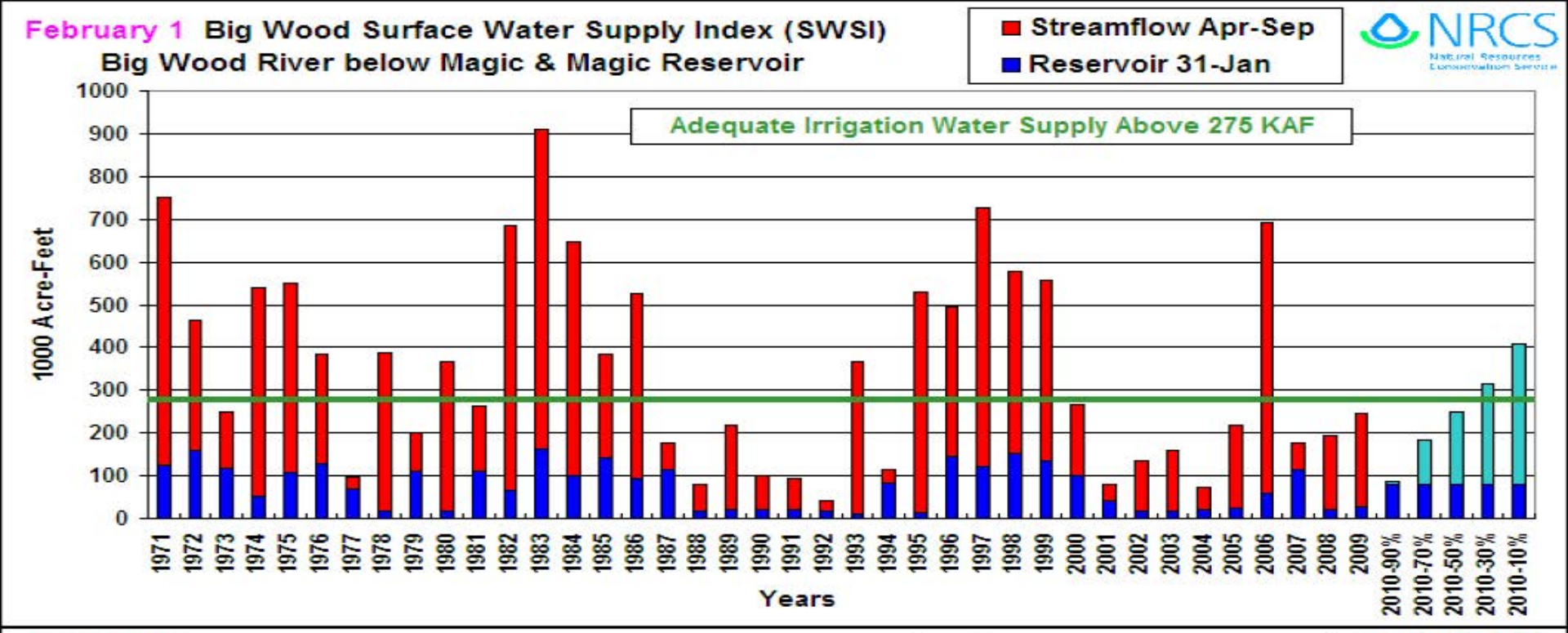
Banner Summit, Bear Basin, Big Creek Summit, Brundage Reservior,Deadwood Summit, Galena, Galena Summit, Mill Creek Summit, Moonshine, Moose Creek, Morgan Creek, Secesh Summit, Squaw Flat, Vienna Mine, West Branch, Darkhorse Lake, Lemhi Ridge, Saddle Mountain

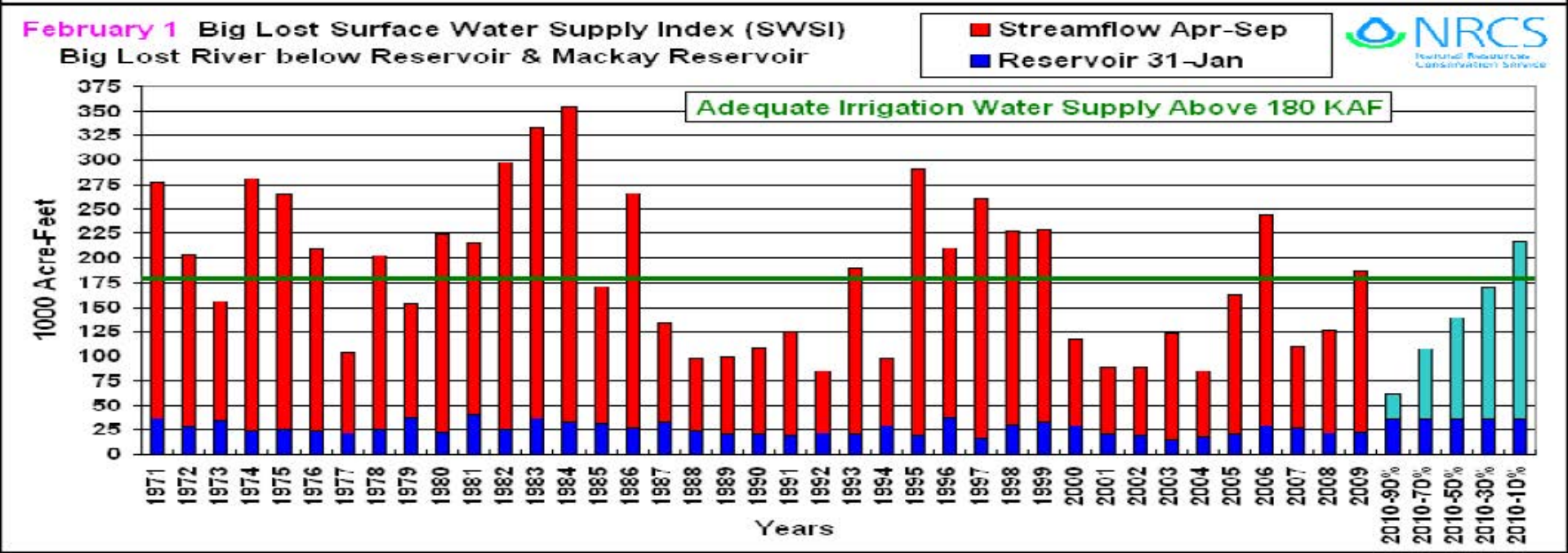


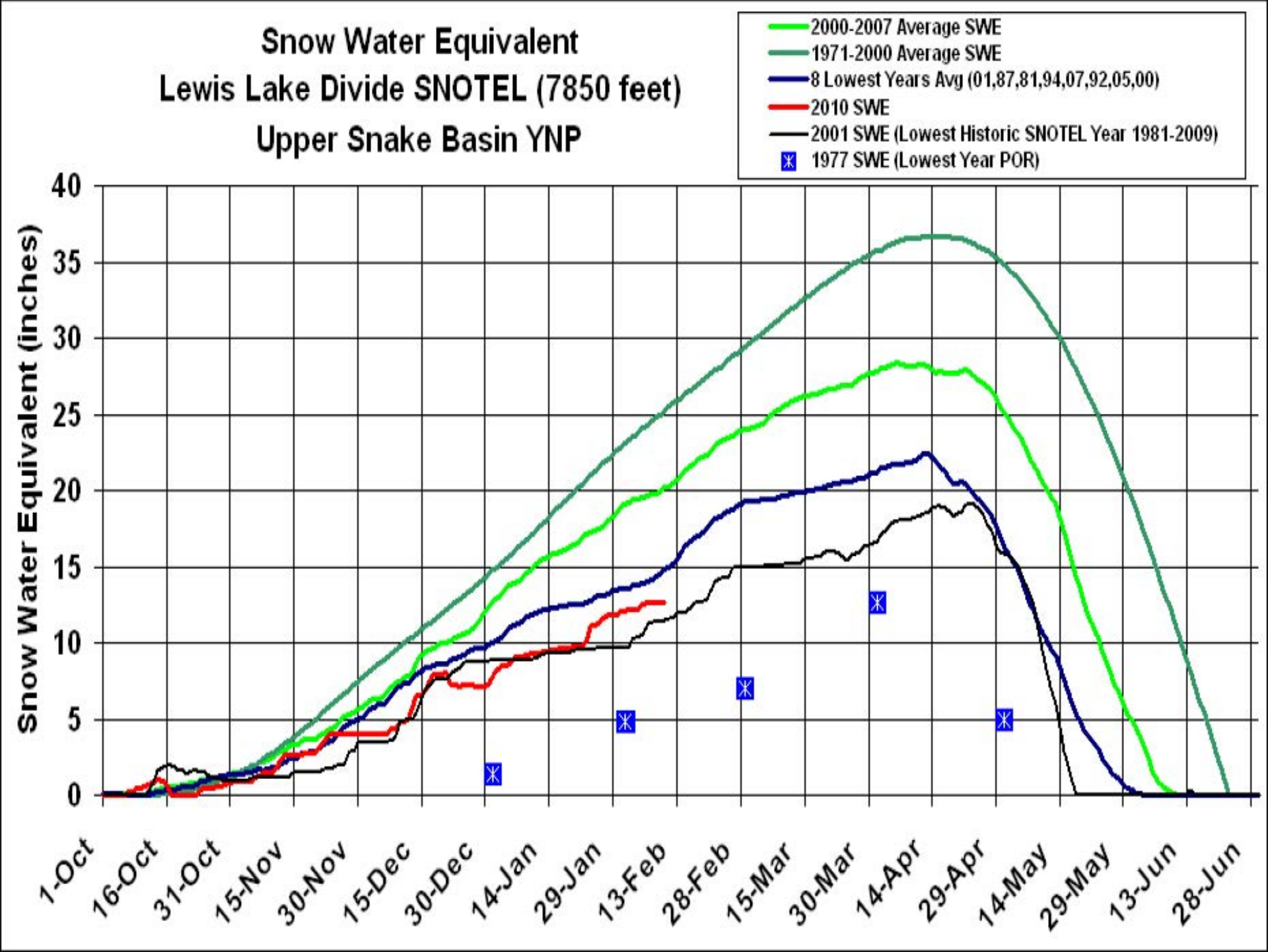


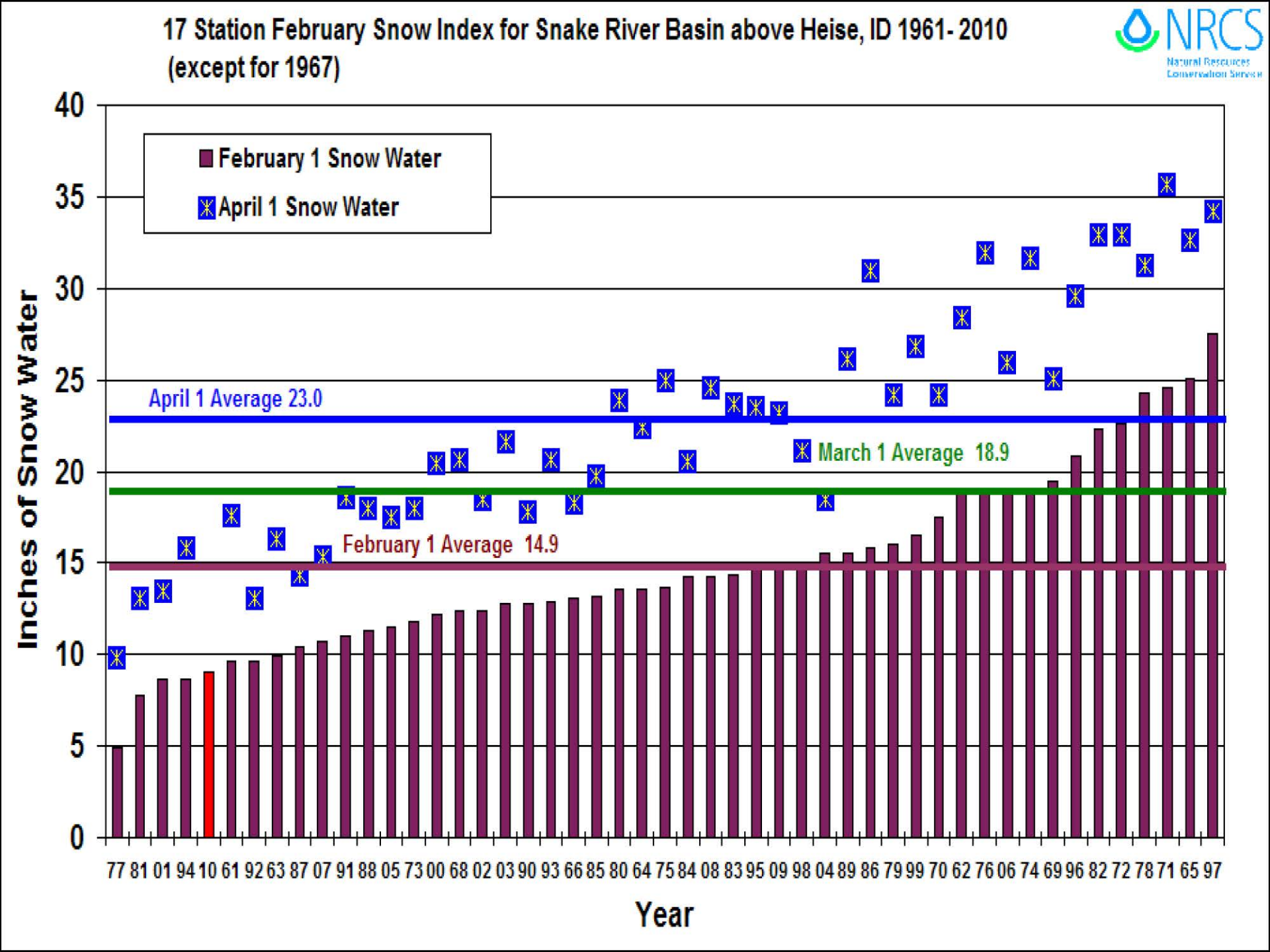
SNOTEL Sites used: Atlanta Summit, Trinity Mountain, Dollarhide Summit, Vienna Mine, Galena and Galena Summit

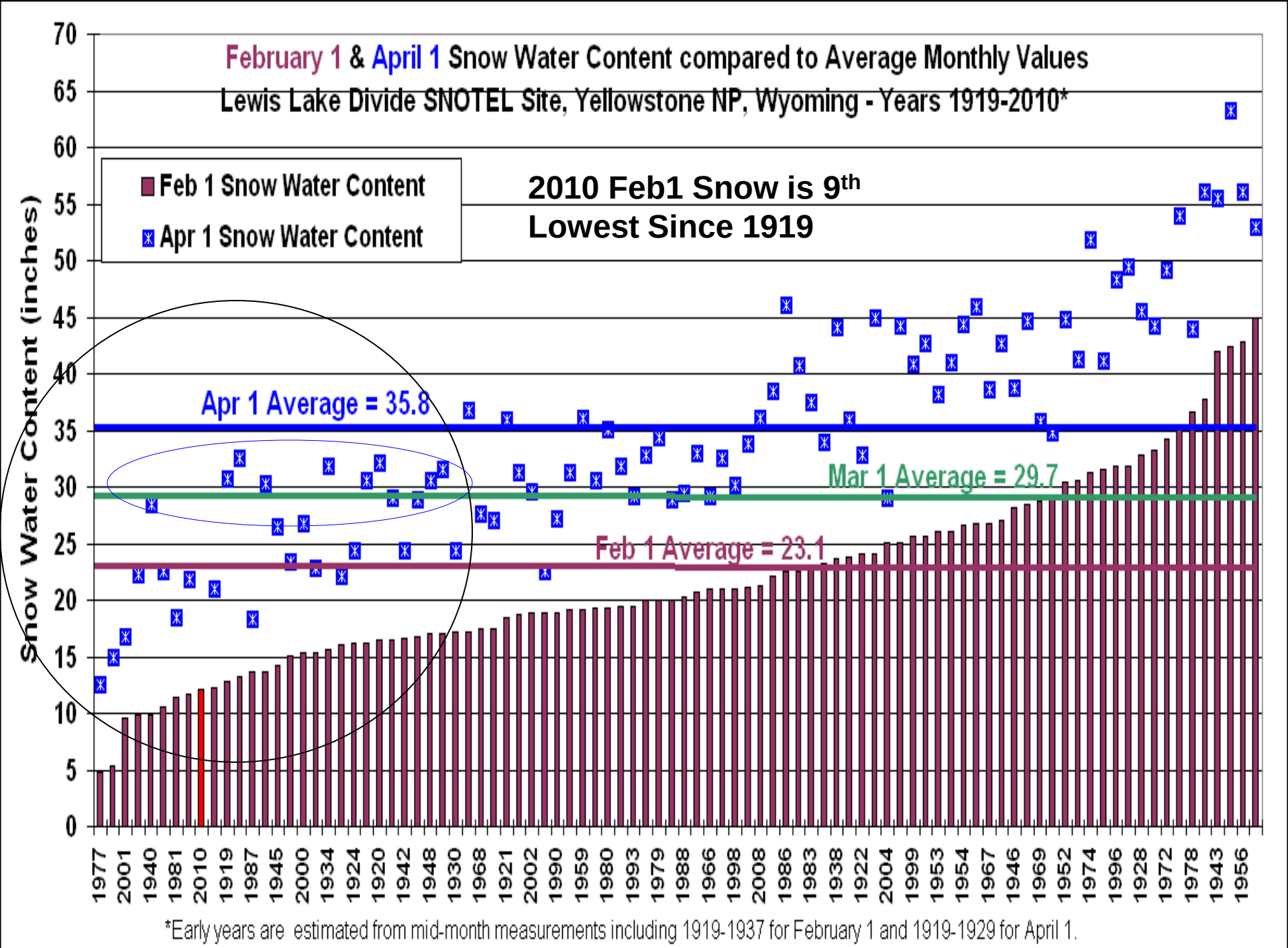

Lost - Wood Divide SNOTEL El. 7900
Snow Water Equivalent
Runoff in:
Wood & Lost Basins:
2008: 55-75%
2009: 60-110%
2010 Fcsts: 50- 65%
Average SWE
2008 SWE
2009 SWE
2010 SWE
Inches of Water Content
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Oct-1
Oct-16
Oct-31
Nov-15
Nov-30
Dec-15
Dec-30
Jan-14
Jan-29
Feb-13
Feb-28
Mar-15
Mar-30
Apr-14
Apr-29
May-14
May-29
Jun-13
Jun-28

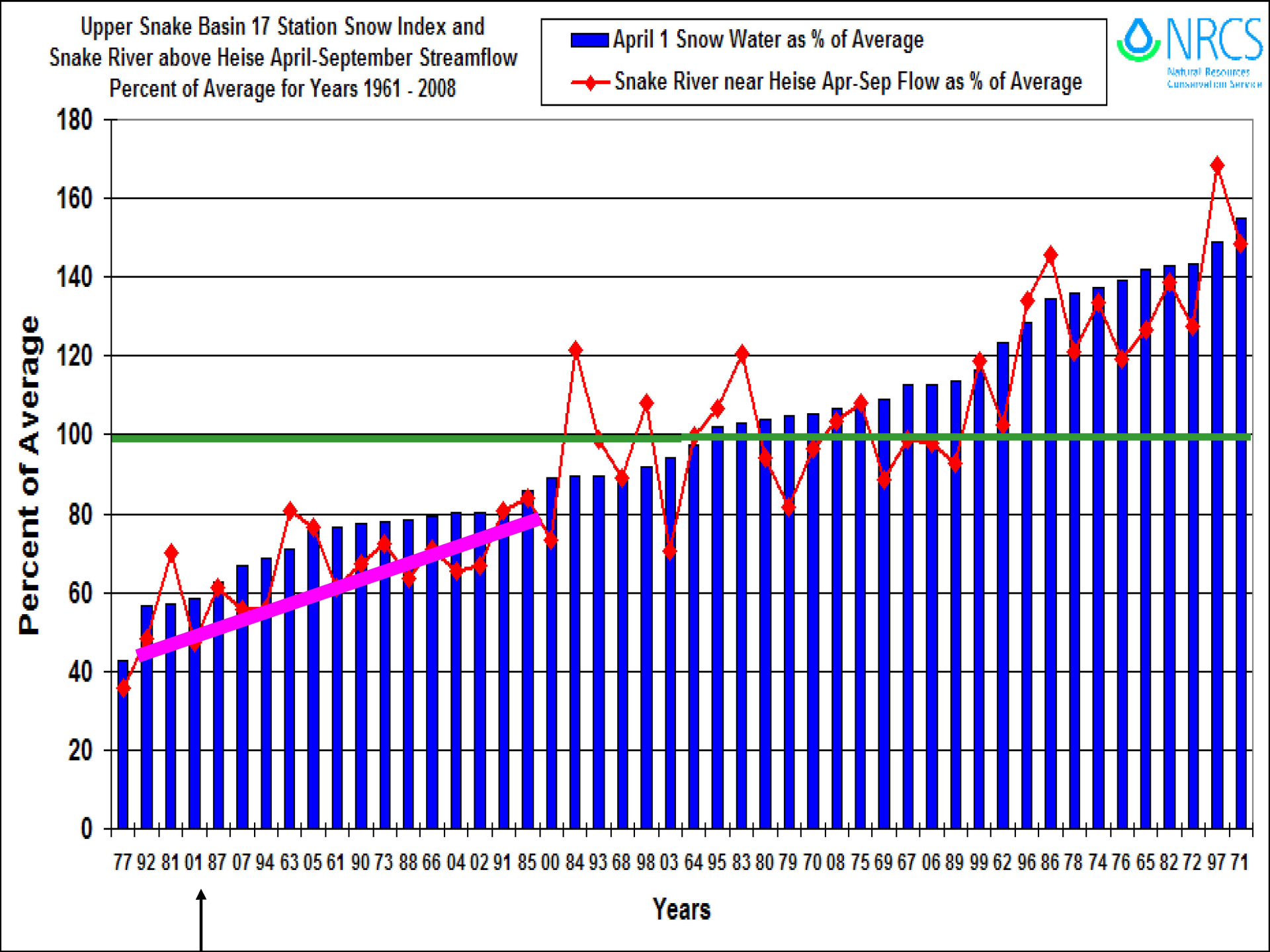

February 1 Big Wood Surface Water Supply Index (SWSI)
Big Wood River below Magic & Magic Reservoir
Streamflow Apr-Sep
Reservoir 31-Jan
NRCS
Natural Resources Conservation Service
Adequate Irrigation Water Supply Above 275 KAF
1000 Acre-Feet
Years

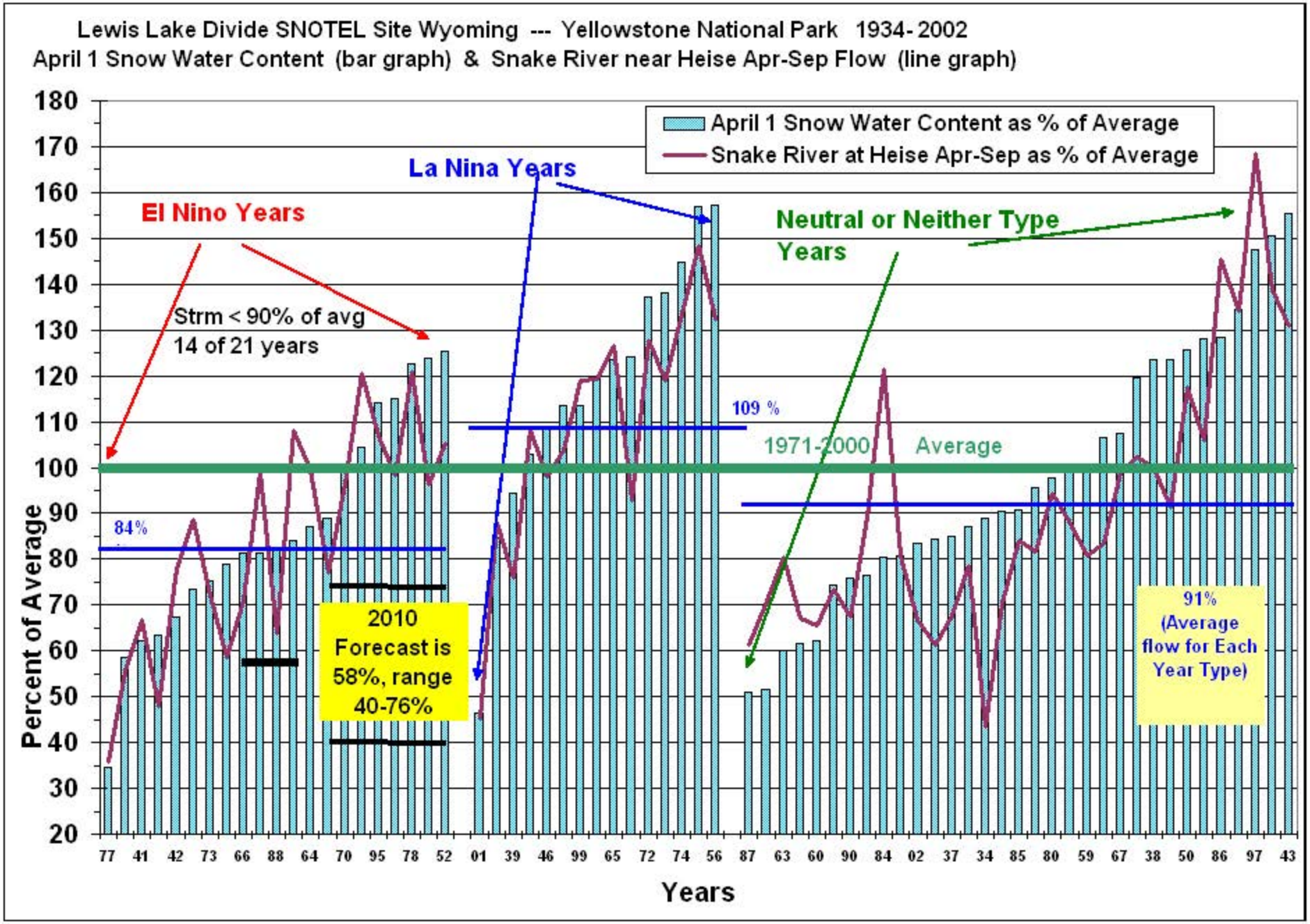

February 1 Big Lost Surface Water Supply Index (SWSI)
Big Lost River below Reservoir & Mackay Reservoir
Streamflow Apr-Sep
Reservoir 31-Jan
NRCS
Natural Resources Conservation Service
Adequate Irrigation Water Supply Above 180 KAF
1000 Acre-Feet
Years

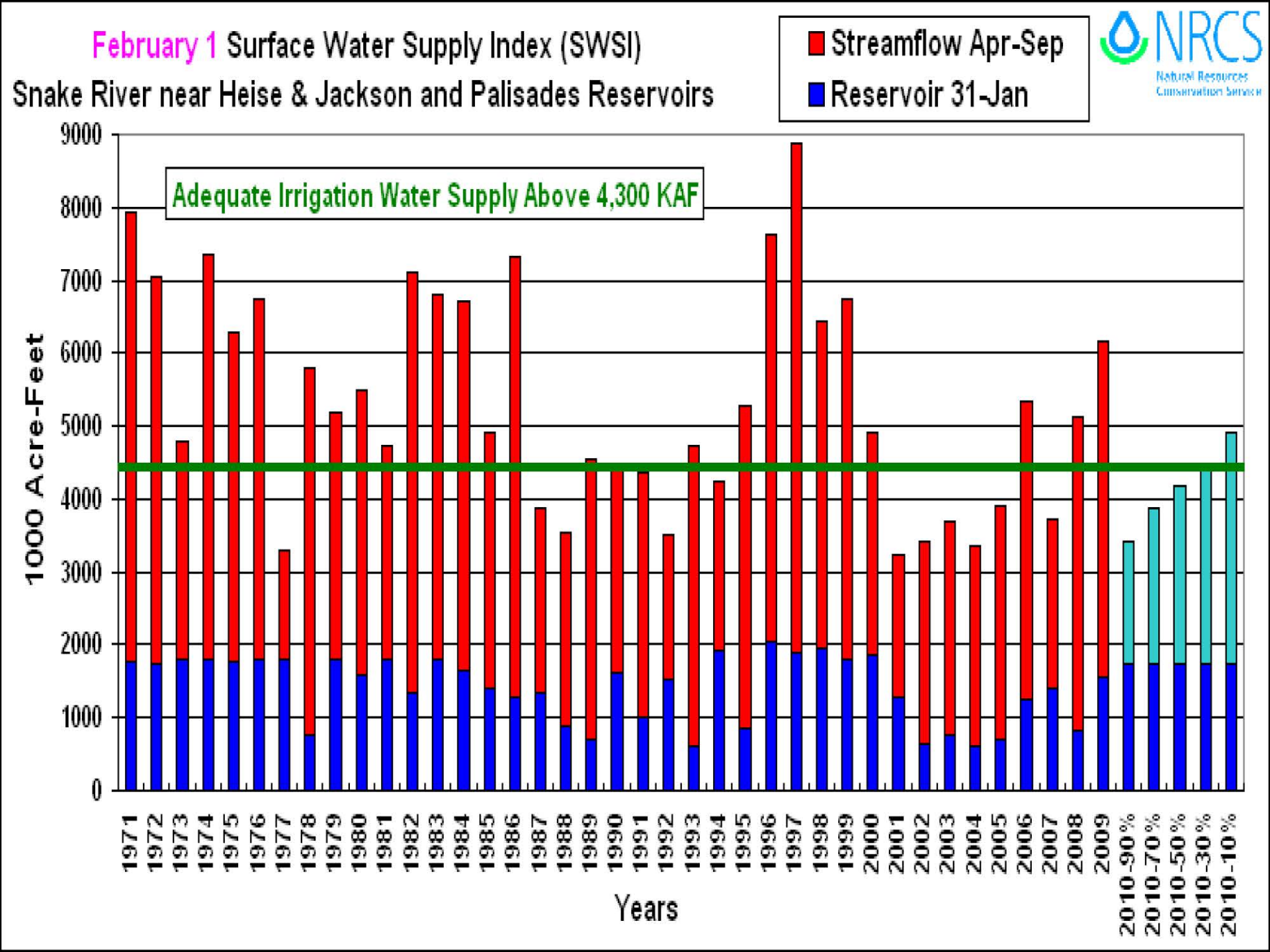

Snow Water Equivalent
Lewis Lake Divide SNOTEL (7850 feet)
Upper Snake Basin YNP
2000-2007 Average SWE
1971-2000 Average SWE
8 Lowest Years Avg (01,87,81,94,07,92,05,00)
2010 SWE
2001 SWE (Lowest Historic SNOTEL Year 1981-2009)
1977 SWE (Lowest Year POR)
Snow Water Equivalent (inches)
40
35
30
25
20
15
10
5
0
1-Oct
16-Oct
31-Oct
15-Nov
30-Nov
15-Dec
30-Dec
14-Jan
29-Jan
13-Feb
28-Feb
15-Mar
30-Mar
14-Apr
29-Apr
14-May
29-May
13-Jun
28-Jun

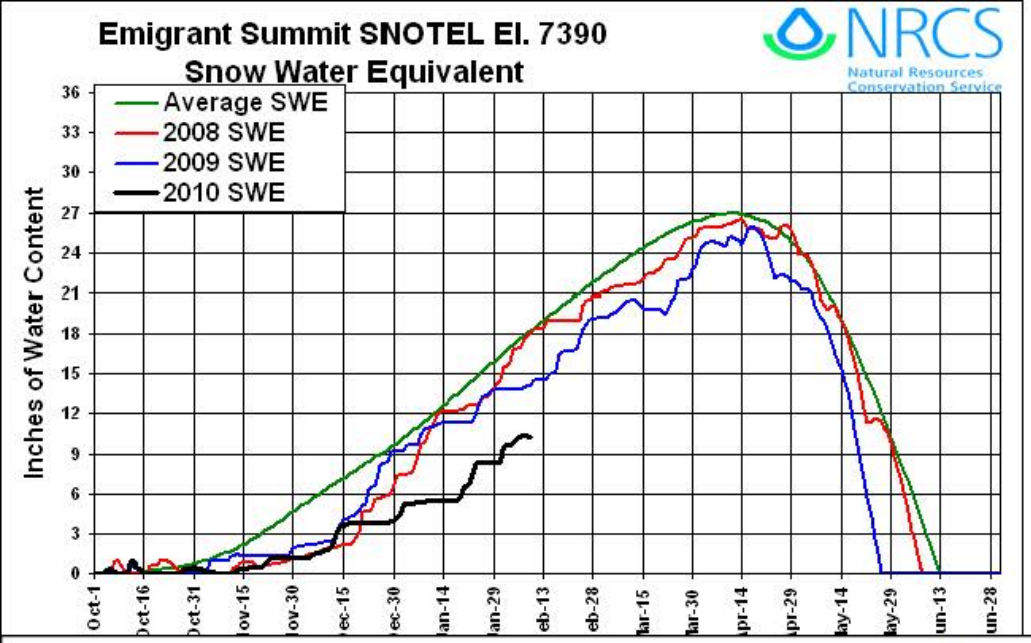

17 Station February Snow Index for Snake River Basin above Heise, ID 1961- 2010
(except for 1967)
NRCS
Natural Resources Conservation Service
February 1 Snow Water
April 1 Snow Water
April 1 Average 23.0
March 1 Average 18.9
February 1 Average 14.9
Inches of Snow Water
0
5
10
15
20
25
30
35
40
77 81 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 99 70 62 76 06 74 69 96 82 72 78 71 65 97
Year

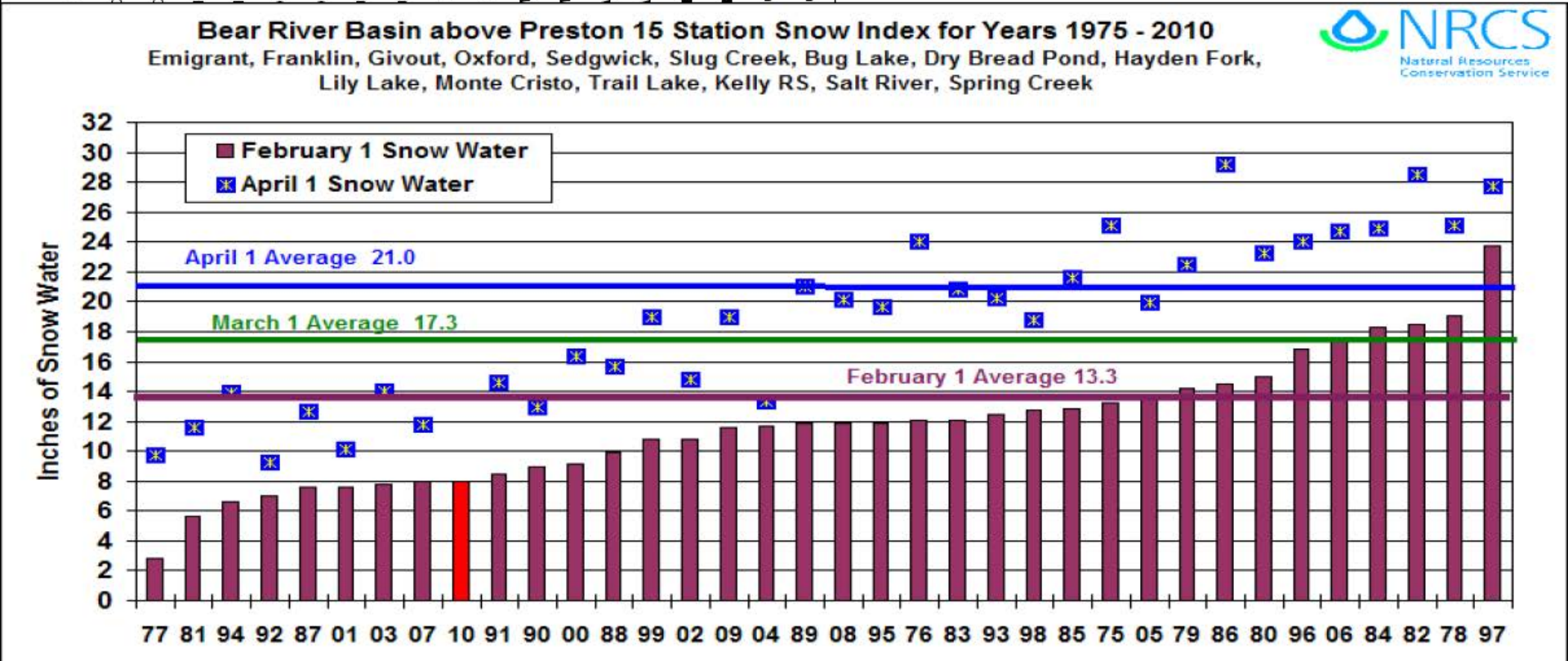

February 1 & April 1 Snow Water Content compared to Average Monthly Values
Lewis Lake Divide SNOTEL Site, Yellowstone NP, Wyoming - Years 1919-2010*
Feb 1 Snow Water Content
Apr 1 Snow Water Content
2010 Feb1 Snow is 9th
Lowest Since 1919
Apr 1 Average = 35.8
Mar 1 Average = 29.7
Feb 1 Average = 23.1
Snow Water Content (inches)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
1977
2001
1940
1981
2010
1919
1987
1945
2000
1934
1924
1920
1942
1948
1930
1968
1921
2002
1990
1959
1980
1993
1979
1988
1966
1998
2008
1986
1983
1938
1922
2004
1999
1953
1954
1967
1946
1969
1952
1974
1996
1928
1972
1978
1943
1956
*Early years are estimated from mid-month measurements including 1919-1937 for February 1 and 1919-1929 for April 1.

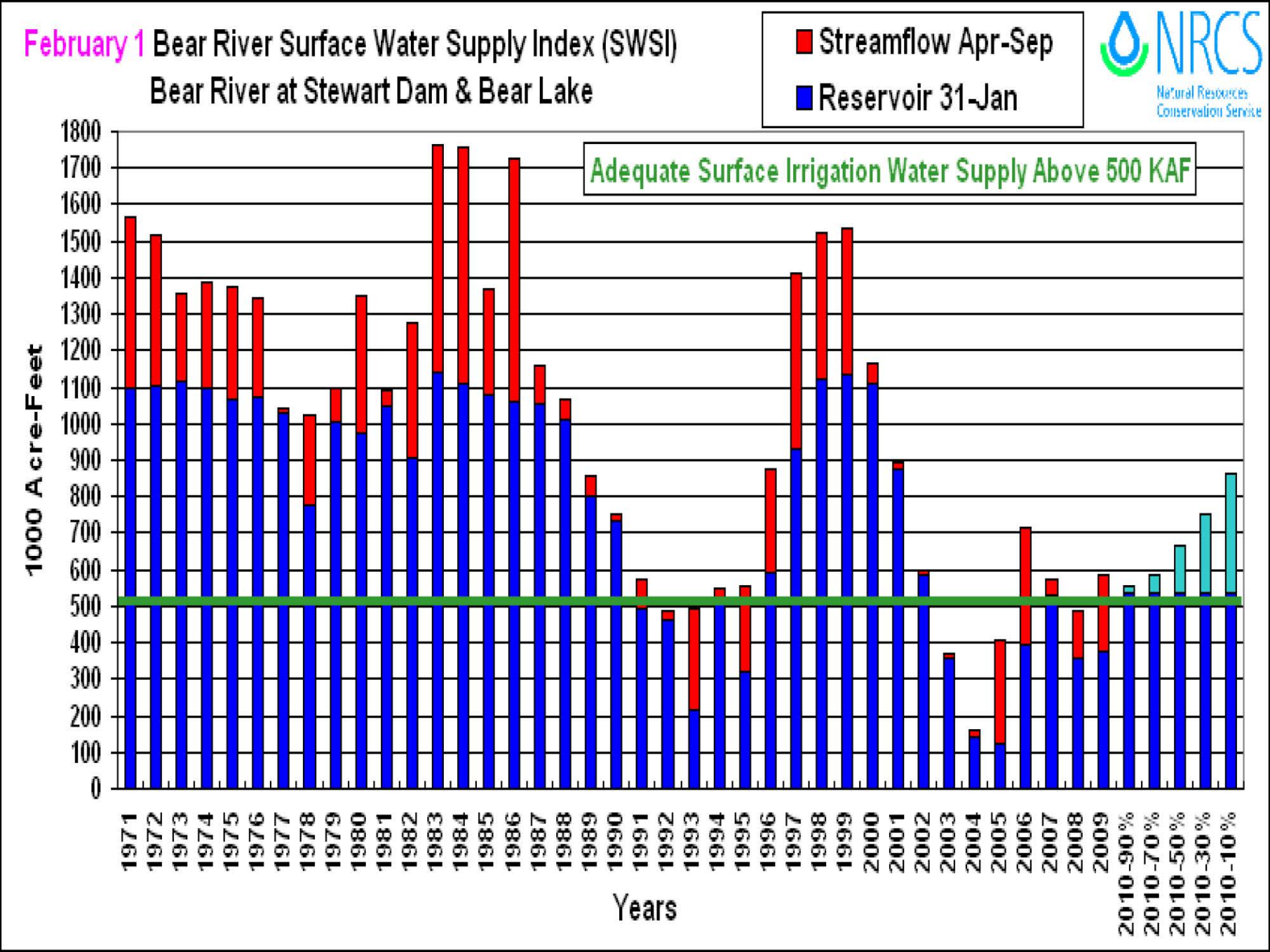

Upper Snake Basin 17 Station Snow Index and
Snake River above Heise April-September Streamflow
Percent of Average for Years 1961 - 2008
April 1 Snow Water as % of Average
Snake River near Heise Apr-Sep Flow as % of Average
NRCS
Natural Resources Conservation Service
Percent of Average
180
160
140
120
100
80
60
40
20
0
77 92 81 01 87 07 94 63 05 61 90 73 88 66 04 02 91 85 00 84 93 68 98 03 64 95 83 80 79 70 08 75 69 67 06 89 99 62 96 86 78 74 76 65 82 72 97 71
Years

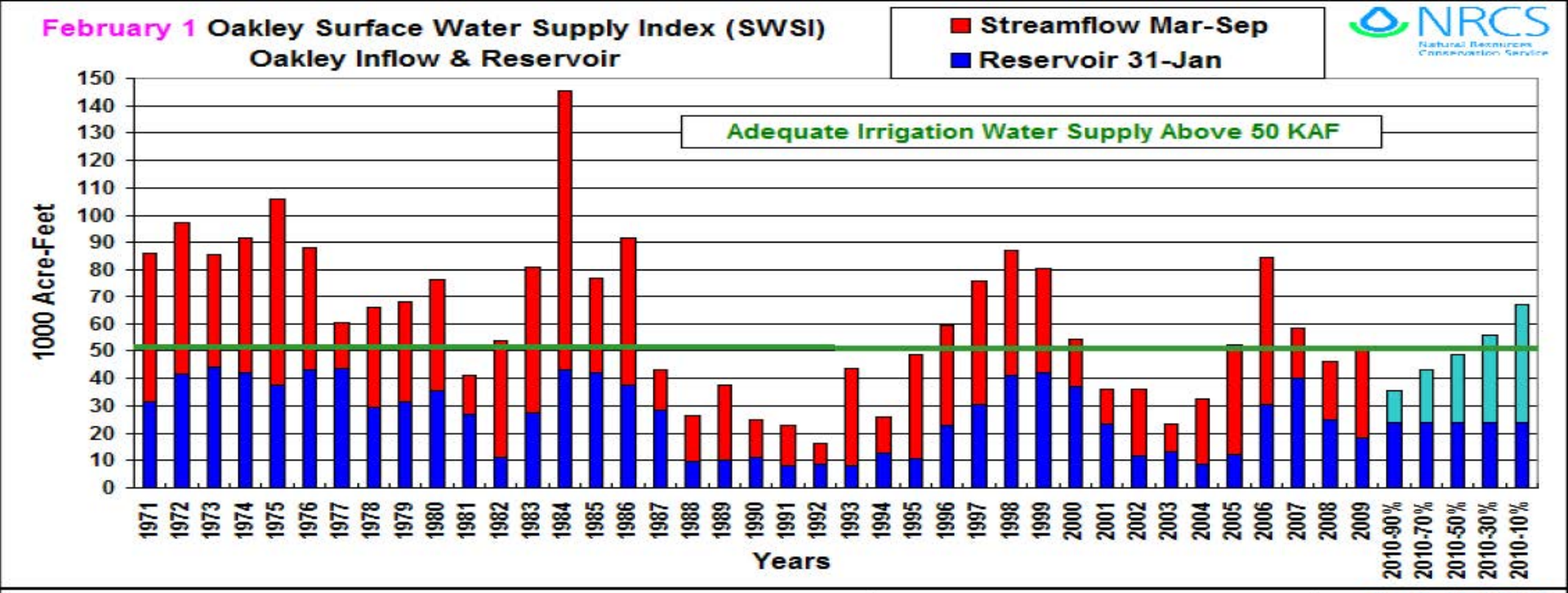

Lewis Lake Divide SNOTEL Site Wyoming --- Yellowstone National Park 1934-2002
April 1 Snow Water Content (bar graph) & Snake River near Heise Apr-Sep Flow (line graph)
April 1 Snow Water Content as % of Average
Snake River at Heise Apr-Sep as % of Average
La Nina Years
El Nino Years
Neutral or Neither Type Years
Strm < 90% of avg
14 of 21 years
109 %
1971-2000 Average
84%
2010 Forecast is 58%, range 40-76%
91% (Average flow for Each Year Type)
Percent of Average
Years
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
77 41 42 73 66 88 64 70 95 78 52 01 39 46 99 65 72 74 56 87 63 60 90 84 02 37 34 85 80 59 67 38 50 86 97 43

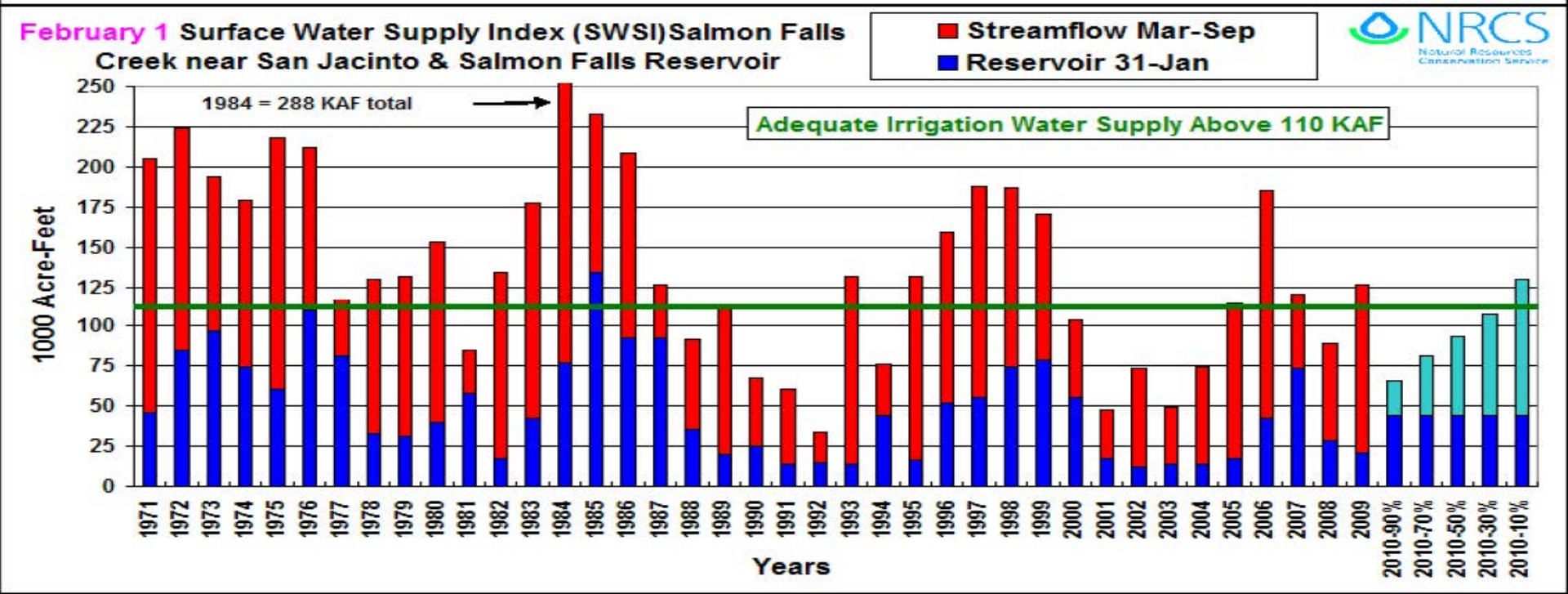

February 1 Surface Water Supply Index (SWSI)
Snake River near Heise & Jackson and Palisades Reservoirs
Streamflow Apr-Sep
Reservoir 31-Jan
NRCS
Natural Resources Conservation Service
Adequate Irrigation Water Supply Above 4,300 KAF
1000 Acre-Feet
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
1971
1972
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
2010-90%
2010-70%
2010-50%
2010-30%
2010-10%
Years


Emigrant Summit SNOTEL El. 7390
Snow Water Equivalent
NRCS
Natural Resources Conservation Service
Average SWE
2008 SWE
2009 SWE
2010 SWE
Inches of Water Content
36
33
30
27
24
21
18
15
12
9
6
3
0
Oct-1
Oct-16
Oct-31
Nov-15
Nov-30
Dec-15
Dec-30
Jan-14
Jan-29
Feb-13
Feb-28
Mar-15
Mar-30
Apr-14
Apr-29
May-14
May-29
Jun-13
Jun-28


Bear River Basin above Preston 15 Station Snow Index for Years 1975 - 2010
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
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
77 81 94 92 87 01 03 07 10 91 90 00 88 99 02 09 04 89 08 95 76 83 93 98 85 75 05 79 86 80 96 06 84 82 78 97


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
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
2010-90%
2010-70%
2010-50%
2010-30%
2010-10%
Years


February 1 Oakley Surface Water Supply Index (SWSI)
Oakley Inflow & Reservoir
Streamflow Mar-Sep
Reservoir 31-Jan
NRCS
Natural Resources Conservation Service
Adequate Irrigation Water Supply Above 50 KAF
1000 Acre-Feet
Years


February 1 Surface Water Supply Index (SWSI)Salmon Falls
Creek near San Jacinto & Salmon Falls Reservoir
Streamflow Mar-Sep
Reservoir 31-Jan
NRCS
Natural Resources Conservation Service
1984 = 288 KAF total
Adequate Irrigation Water Supply Above 110 KAF
1000 Acre-Feet
Years

February 2010 Idaho Surface Water Supply Index (SWSI)

BASIN or/ REGION	April SWSI Value Based on 50% Exceedance Forecast	April SWSI Value Based on 70% Exceedance Forecast	Agricultural Surface Water Supply Shortage May Occur When SWSI is Less Than
PANHANDLE	-3.2		NA
CLEARWATER	-3.2	-3.6	NA
SALMON	-1.6	-2.8	NA
WEISER	-1.6	-2.4	NA
PAYETTE	-1.8	-2.2	NA
BOISE	-1.3	-1.7	-1.7
BIG WOOD	-0.5	-1.6	0.0
LITTLE WOOD	-0.9	-1.8	-1.9
BIG LOST	-0.9	-2.6	-0.1
LITTLE LOST	-2.4	-2.6	0.6
HENRYS FORK	-2.4	-3.4	-3.3
TETON	-2.8	-3.2	NA
SNAKE – HEISE	-2.0	-2.4	-1.8
OWYHEE	-2.0	-3.4	-3.4
OAKLEY	-0.9	-1.8	-0.9
SALMON FALLS	-1.8	-2.4	-1.3
BRUNEAU	-1.4	-2.6	NA
BEAR RIVER	-1.6	-1.8	-2.9

SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION

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-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|
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Questions / Comments?

Looks like Idaho's Capitol, but it is our Nation's Capitol after recent storms and their 4th consecutive Snow Day