
Every Drop Counts...

INVISIBLE WATER COSTS

How much water it takes to produce...

Corn - 108.1 gallons per pound

Apple - 18.5 gallons to grow

Beef - 1,581 gallons per pound

Oats - 122.7 gallons per pound

Dry Beans - 150 gallons per cup

White Sugar – 7 gallons per tablespoon

Milk – 48 gallons per cup

An egg – 63 gallons

Watershed
11,560 square miles

Chronicle / Michael Maloney

Snow Water Equivalent (SWE) is a common snowpack measurement. It is the amount of water contained within the snowpack. It can be thought of as the depth of water that would theoretically result if you melted the entire snowpack instantaneously.

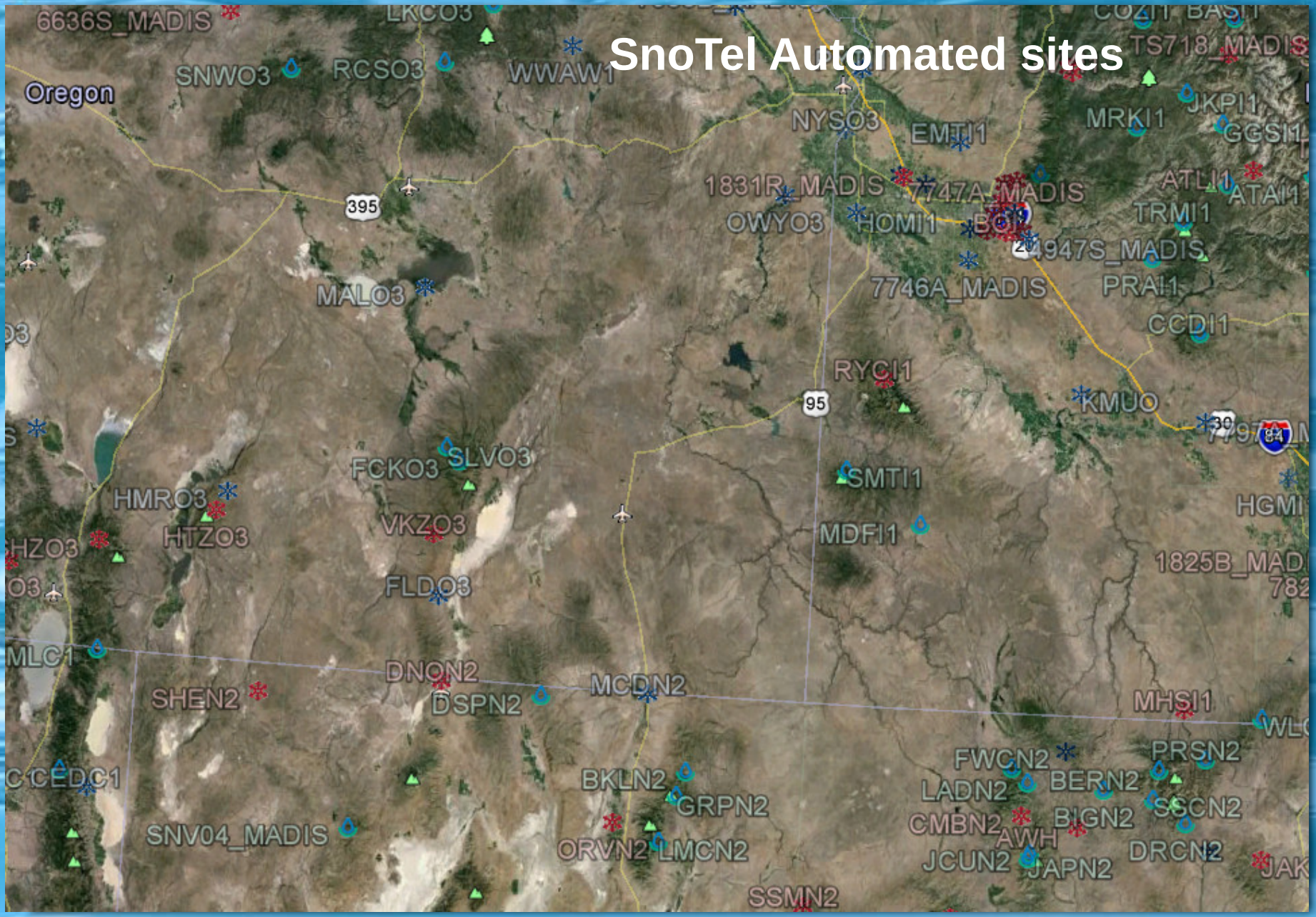
For example, say there is a swimming pool that is filled with 36 inches of new powdery snow at 10% snow water density. If you could turn all the snow into water magically, you would be left with a pool of water 3.6 inches deep. In this case, the SWE of your snowpack would equal 36" x 0.10 = 3.6 inches.

The NRCS measures SWE at many remote SNOTEL sites and uses the data for streamflow forecasting.

To determine snow depth from SWE you need to know the density of the snow. The density of new snow ranges from about 5% when the air temperature is 14° F, to about 20% when the temperature is 32° F.

After the snow falls its density increases due to gravitational settling, wind packing, melting and recrystallization.

Most snow that falls in the Cascade Mountains of Washington and Oregon tends to be higher density snow. In the Cascades, snowpack densities are around 20-30% in the winter to 30-50% in the spring. However, **east of the Cascades, the snowpack density is much less. Typical values are 10-20% in the winter and 20-40% in the spring.**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6636S_MADIS
LKCO3
SNWO3
RCSO3
WWAW1
Oregon
NYSO3
EMTI1
MRKI1
JKPI1
GGSI1
TS718_MADIS
1831R_MADIS
7747A_MADIS
ATLI1
ATAI1
TRMI1
OWYO3
HOMI1
947S_MADIS
7746A_MADIS
PRAI1
CCDI1
MALO3
RYCI1
KMUO
FCKO3
SLVO3
SMTI1
HMRO3
HTZO3
VKZO3
MDFI1
HGMI
FLDO3
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MLC1
DNQN2
MCDN2
SHEN2
DSPN2
MHSI1
CEDC1
FWCN2
PRSN2
BKLN2
LADN2
BERN2
GRPN2
CMBN2
BIGN2
SSCN2
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ORVN2
LMCN2
JCUN2
JAPN2
DRCN2
SSMN2
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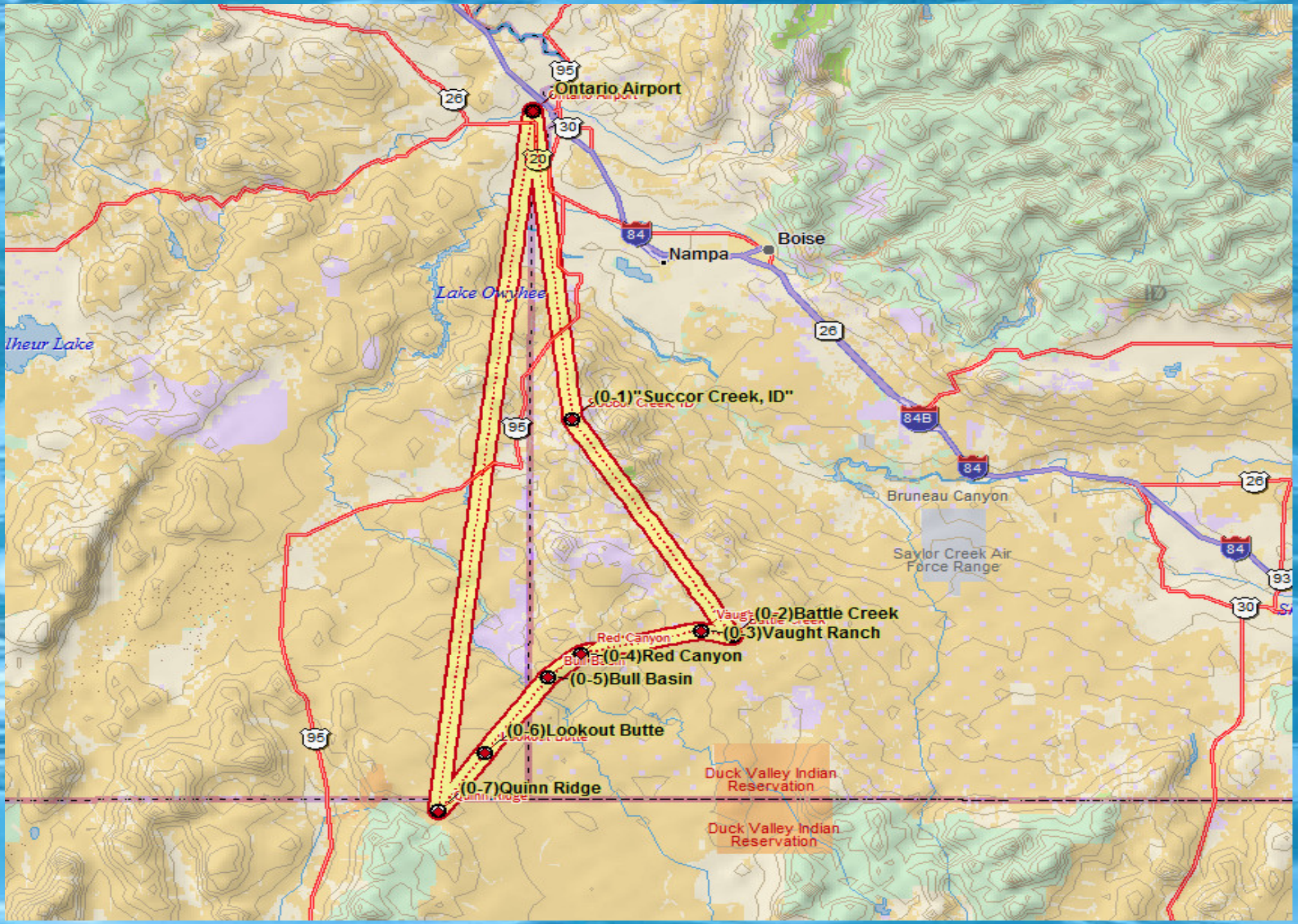
95
84


Ontario Airport
Nampa
Boise
Lake Owyhee
(0-1)"Succor Creek, ID"
(0-2)Battle Creek
(0-3)Vaught Ranch
(0-4)Red Canyon
(0-5)Bull Basin
(0-6)Lookout Butte
(0-7)Quinn Ridge
Bruneau Canyon
Saylor Creek Air Force Range
Duck Valley Indian Reservation
Duck Valley Indian Reservation
95
26
30
20
84
84B
93

S N O W - P R E C I P I T A T I O N U P D A T E

Based on Mountain Data from NRCS SNOTEL Sites
As of WEDNESDAY: DECEMBER 11 , 2013

BASIN Data Site Name	ELEV. (Ft)	SNOW WATER EQUIVALENT			TOTAL PRECIPITATION		
		Current	Median	% Median	Current	Average	% Avg
OREGON							
OWYHEE							
JACK CREEK UPPER	7250	2.2	3.5	63	3.7	6.4	58
FAWN CREEK	7000	1.9	3.7	51	3.9	7.2	54
BIG BEND	6700	1.2	1.5	80	2.3	3.7	62
LAUREL DRAW	6697	1.4	2.4	58	3.7	6.0	62
SOUTH MTN.	6500	1.6	3.6	44	3.6	7.7	47
TAYLOR CANYON	6200	.3	.6	50	2.1	2.9	72
MUD FLAT	5730	.1	1.2	8	2.0	3.6	56
REYNOLDS CREEK	5600	1.1	1.1	100	3.8	4.8	79
Basin Index (%)				56			59
MALHEUR							
BLUE MOUNTAIN SPRING	5870	2.9	3.4	85	5.7	8.4	68
ROCK SPRINGS	5290	.2	.9	22	1.6	4.0	40
LAKE CREEK R.S.	5240	2.5	2.2	114	3.1	6.3	49
Basin Index (%)				86			56

WEISER BASIN

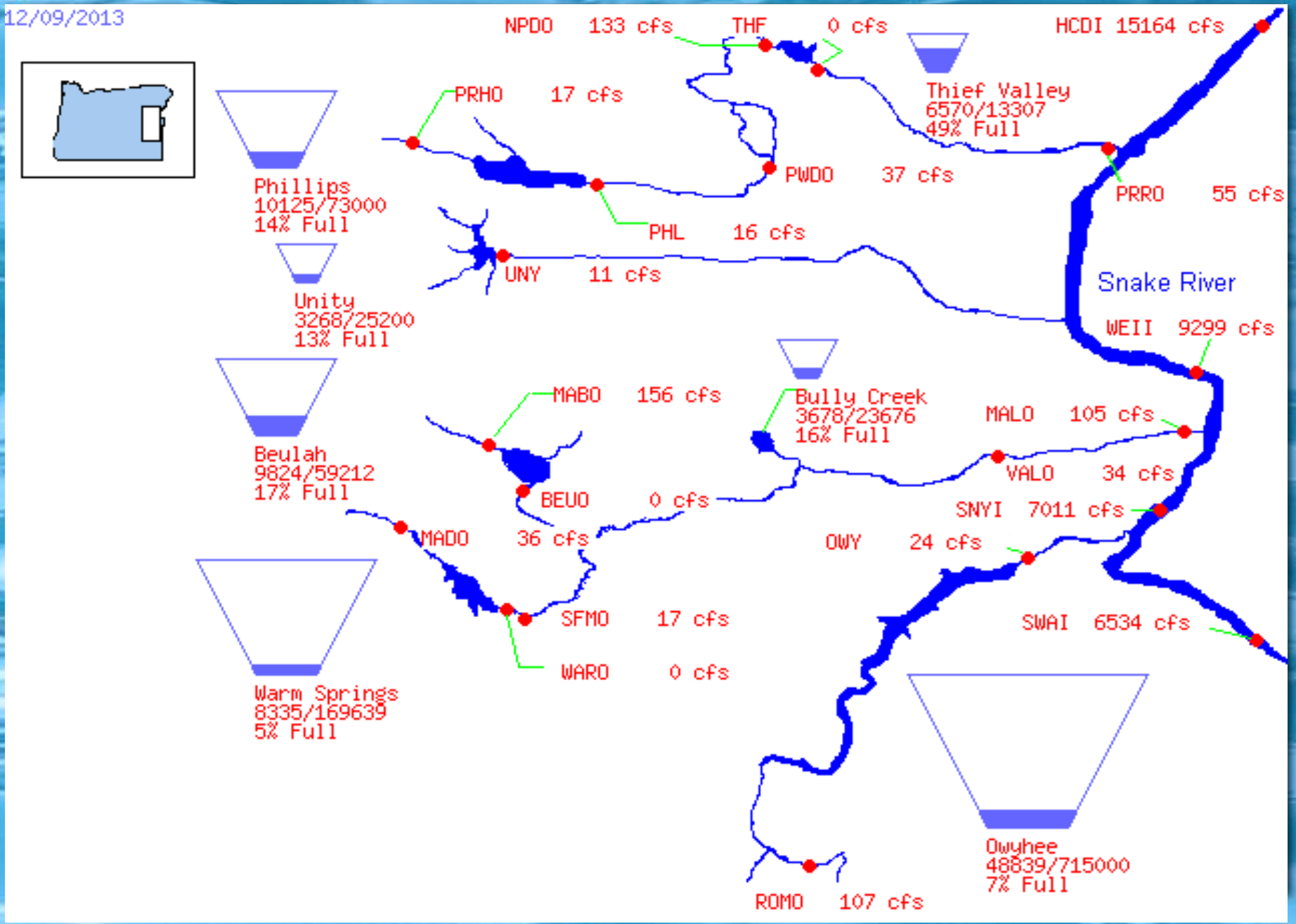
BEAR SADDLE	6180	1.8	5.2	35	3.0	8.1	37
SQUAW FLAT	6240	4.0	5.0	80	5.5	10.5	52
VAN WYCK	4920	.0	1.6	0	3.1	5.4	57
WEST BRANCH	5560	3.2	5.2	62	6.0	10.4	58
Basin Index (%)				53			51

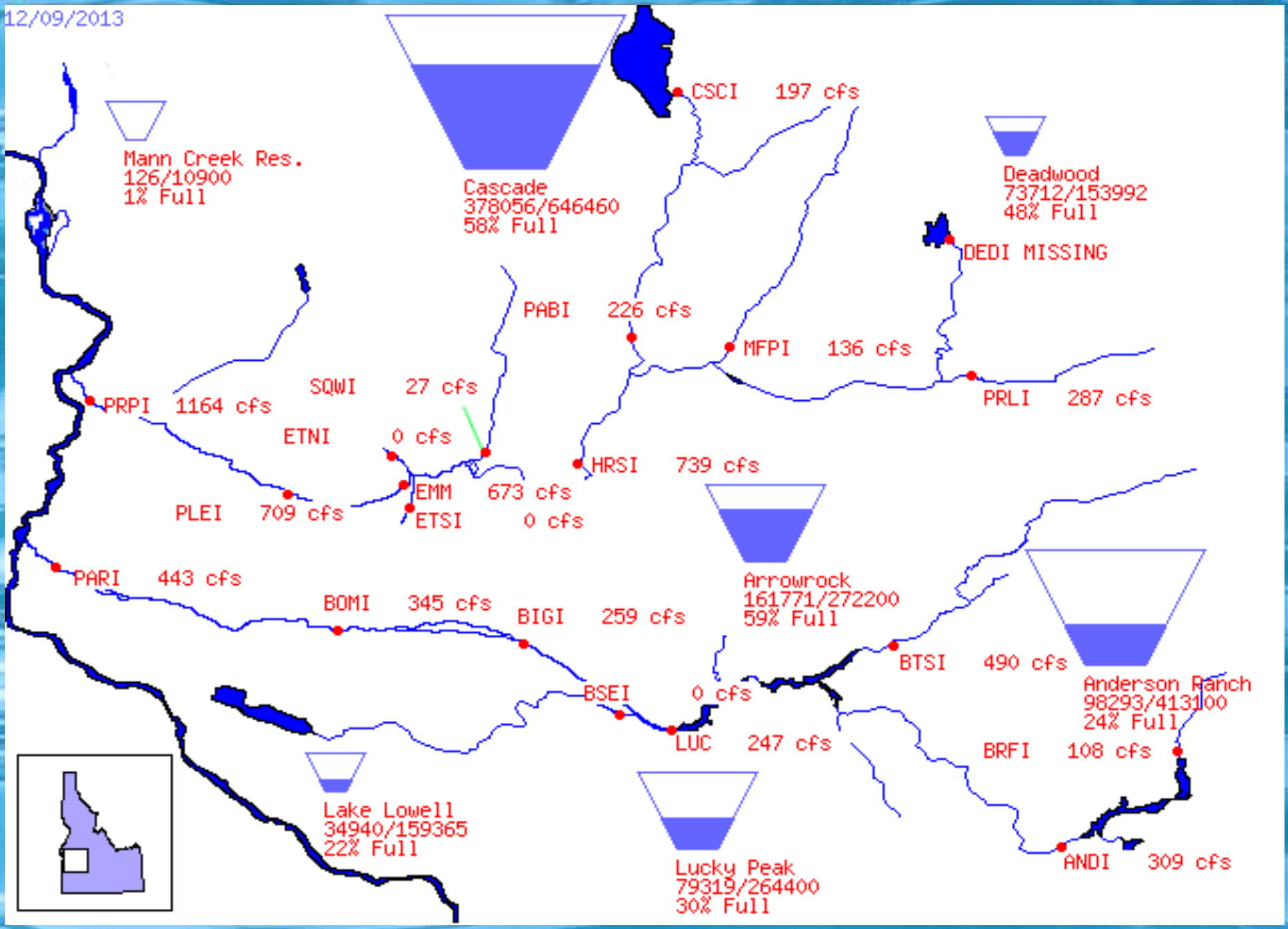
PAYETTE BASIN

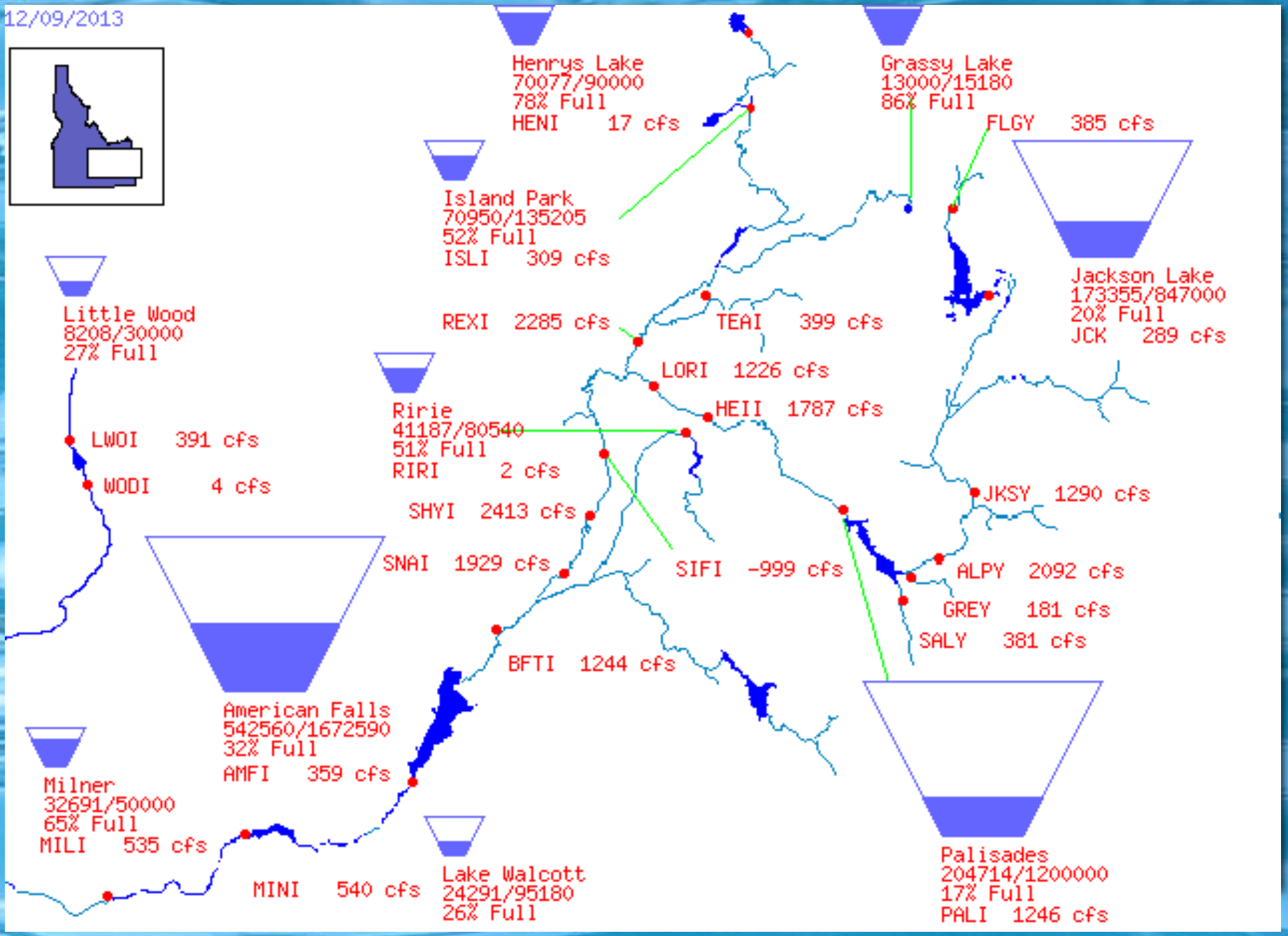
BANNER SUMMIT	7040	5.1	7.0	73	6.3	10.2	62
BEAR BASIN	5350	2.1	4.5	47	3.9	8.3	47
BIG CREEK SUMMIT	6580	6.3	8.2	77	7.4	11.7	63
BOGUS BASIN	6340	3.9	5.0	78	5.8	7.0	83
BRUNDAGE RESERVOIR	6250	8.3	6.0	138	8.6	11.8	73
COZY COVE	5380	.9	3.9	23	4.8	8.4	57
DEADWOOD SUMMIT	6860	12.0	10.4	115	8.0	14.5	55
JACKSON PEAK	7070	5.3	6.6	80	6.7	10.5	64
LONG VALLEY	4890	.3	1.5	20	2.8	5.6	50
SECESH SUMMIT	6520	5.5	7.4	74	5.8	11.3	51
SQUAW FLAT	6240	4.0	5.0	80	5.5	10.5	52
Basin Index (%)				82			60

BOISE BASIN

ATLANTA SUMMIT	7580	6.4	7.8	82	6.5	10.7	61
BOGUS BASIN	6340	3.9	5.0	78	5.8	7.0	83
CAMAS CREEK DIVIDE	5710	.7	2.2	32	2.7	5.6	48
DOLLARHIDE SUMMIT	8420	-M	6.4	*	4.9	8.5	58
GRAHAM GUARD STA.	5690	1.8	2.8	64	6.8	8.0	85
JACKSON PEAK	7070	5.3	6.6	80	6.7	10.5	64
MORES CREEK SUMMIT	6100	6.7	6.6	102	7.7	11.6	66
PRAIRIE	4800	.2	.7	29	3.3	5.1	65
TRINITY MTN.	7770	7.2	10.5	69	6.7	13.0	52
VIENNA MINE	8960	7.4	8.4	88	7.7	10.0	77
Basin Index (%)				78			65


12/09/2013
NPDO 133 cfs
THF 0 cfs
HCDI 15164 cfs
Thief Valley
6570/13307
49% Full
PRHO 17 cfs
PWDO 37 cfs
PRRO 55 cfs
Phillips
10125/73000
14% Full
PHL 16 cfs
UNY 11 cfs
Snake River
Unity
3268/25200
13% Full
WEII 9299 cfs
MABO 156 cfs
Bully Creek
3678/23676
16% Full
MALO 105 cfs
Beulah
9824/59212
17% Full
VALO 34 cfs
BEUO 0 cfs
SNYI 7011 cfs
MADO 36 cfs
OWY 24 cfs
SFMO 17 cfs
SWAI 6534 cfs
WARO 0 cfs
Warm Springs
8335/169639
5% Full
Owyhee
48839/715000
7% Full
ROMO 107 cfs


12/09/2013
Mann Creek Res.
126/10900
1% Full
Cascade
378056/646460
58% Full
CSCI 197 cfs
Deadwood
73712/153992
48% Full
DEDI MISSING
PABI 226 cfs
MFPI 136 cfs
PRLI 287 cfs
SQWI 27 cfs
PRPI 1164 cfs
ETNI 0 cfs
HRSI 739 cfs
EMM 673 cfs
PLEI 709 cfs
ETSI 0 cfs
Arrowrock
161771/272200
59% Full
PARI 443 cfs
BOMI 345 cfs
BIGI 259 cfs
BTSI 490 cfs
Anderson Ranch
98293/413100
24% Full
BSEI 0 cfs
LUC 247 cfs
BRFI 108 cfs
Lake Lowell
34940/159365
22% Full
Lucky Peak
79319/264400
30% Full
ANDI 309 cfs


12/09/2013
Henrys Lake
70077/90000
78% Full
HENI 17 cfs
Grassy Lake
13000/15180
86% Full
FLGY 385 cfs
Island Park
70950/135205
52% Full
ISLI 309 cfs
Jackson Lake
173355/847000
20% Full
JCK 289 cfs
Little Wood
8208/30000
27% Full
REXI 2285 cfs
TEAI 399 cfs
LORI 1226 cfs
HEII 1787 cfs
Ririe
41187/80540
51% Full
RIRI 2 cfs
LWOI 391 cfs
WODI 4 cfs
SHYI 2413 cfs
JKSY 1290 cfs
SNAI 1929 cfs
SIFI -999 cfs
ALPY 2092 cfs
GREY 181 cfs
SALY 381 cfs
BFTI 1244 cfs
American Falls
542560/1672590
32% Full
AMFI 359 cfs
Milner
32691/50000
65% Full
MILI 535 cfs
MINI 540 cfs
Lake Walcott
24291/95180
26% Full
Palisades
204714/1200000
17% Full
PALI 1246 cfs

National Weather Service

Climate Prediction Center

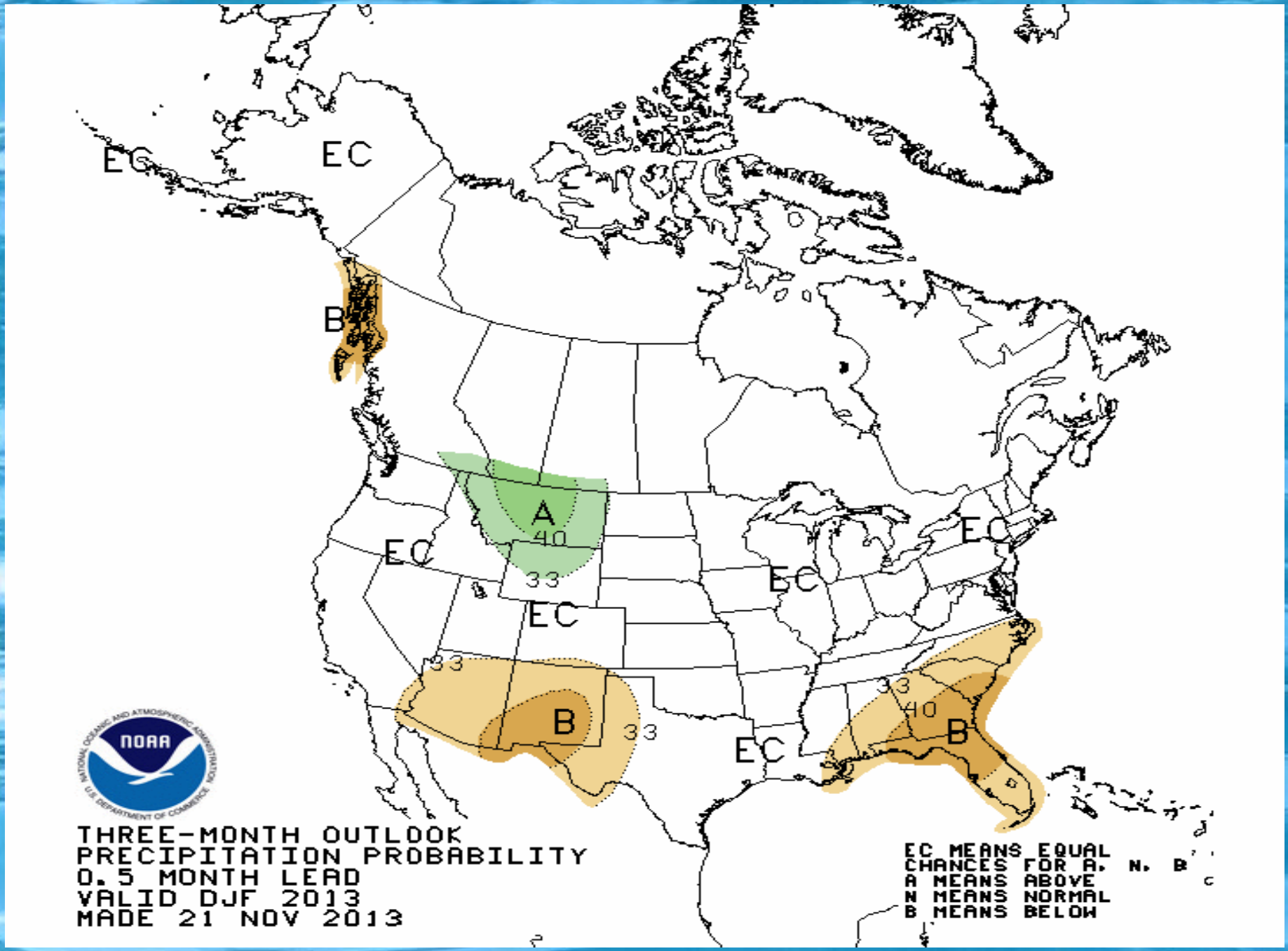
RECENT ATMOSPHERIC AND OCEANIC OBSERVATIONS CONTINUE TO INDICATE ENSO NEUTRAL CONDITIONS. THE OFFICIAL ENSO OUTLOOK CALLS FOR A CONTINUATION OF THE ENSO NEUTRAL STATE INTO EARLY 2014.

THE TEMPERATURE OUTLOOK FOR DECEMBER-JANUARY-FEBRUARY (DJF) 2013-14 INDICATES ELEVATED CHANCES FOR ABOVE-NORMAL TEMPERATURES FOR PARTS OF THE SOUTHWEST, THE SOUTHERN ROCKIES, THE SOUTHERN GREAT PLAINS, TEXAS AND PARTS OF THE SOUTHEAST. ABOVE-NORMAL TEMPERATURES ARE ALSO FAVORED FOR MUCH OF NEW ENGLAND. THERE ARE INCREASED ODDS FOR ABOVE-NORMAL TEMPERATURES IN WESTERN ALASKA. ENHANCED CHANCES FOR BELOW-NORMAL TEMPERATURES ARE INDICATED FOR PARTS OF THE NORTHERN GREAT PLAINS, AS WELL AS IN THE ALASKAN PANHANDLE.

THE DJF 2013-14 PRECIPITATION OUTLOOK CALLS FOR ELEVATED ODDS OF ABOVE-MEDIAN PRECIPITATION IN THE NORTHERN ROCKIES. BELOW-MEDIAN PRECIPITATION AMOUNTS ARE FAVORED IN THE SOUTHWEST, SOUTHERN ROCKIES, AND WESTERN SECTIONS OF THE SOUTHERN GREAT PLAINS. THE CHANCES FOR BELOW-MEDIAN PRECIPITATION ARE ALSO ELEVATED IN PARTS OF THE SOUTHEAST. BELOW-MEDIAN PRECIPITATION AMOUNTS ARE FAVORED FOR MOST OF THE ALASKAN PANHANDLE. IN AREAS WHERE THE LIKELIHOODS OF SEASONAL MEAN TEMPERATURES AND SEASONAL ACCUMULATED PRECIPITATION AMOUNTS ARE SIMILAR TO CLIMATOLOGICAL PROBABILITIES, EQUAL CHANCES (EC) IS SHOWN.

SEASONAL PRECIPITATION SIGNALS ARE WEAK AND UNRELIABLE FOR MOST OF THE REMAINING SEASONS, EXCEPT FOR THE PACIFIC NORTHWEST IN JJA AND JAS 2014, WHERE RECENT TRENDS FAVOR BELOW-MEDIAN PRECIPITATION.

The National Weather Service **typically does not make a detailed long-range winter weather forecast.** Its Climate Prediction Center, however, does offer a less specific three-month forecast. The most recent, issued Nov. 21, indicated neither wet nor dry conditions.


EC
EC
B
A
40
33
EC
EC
EC
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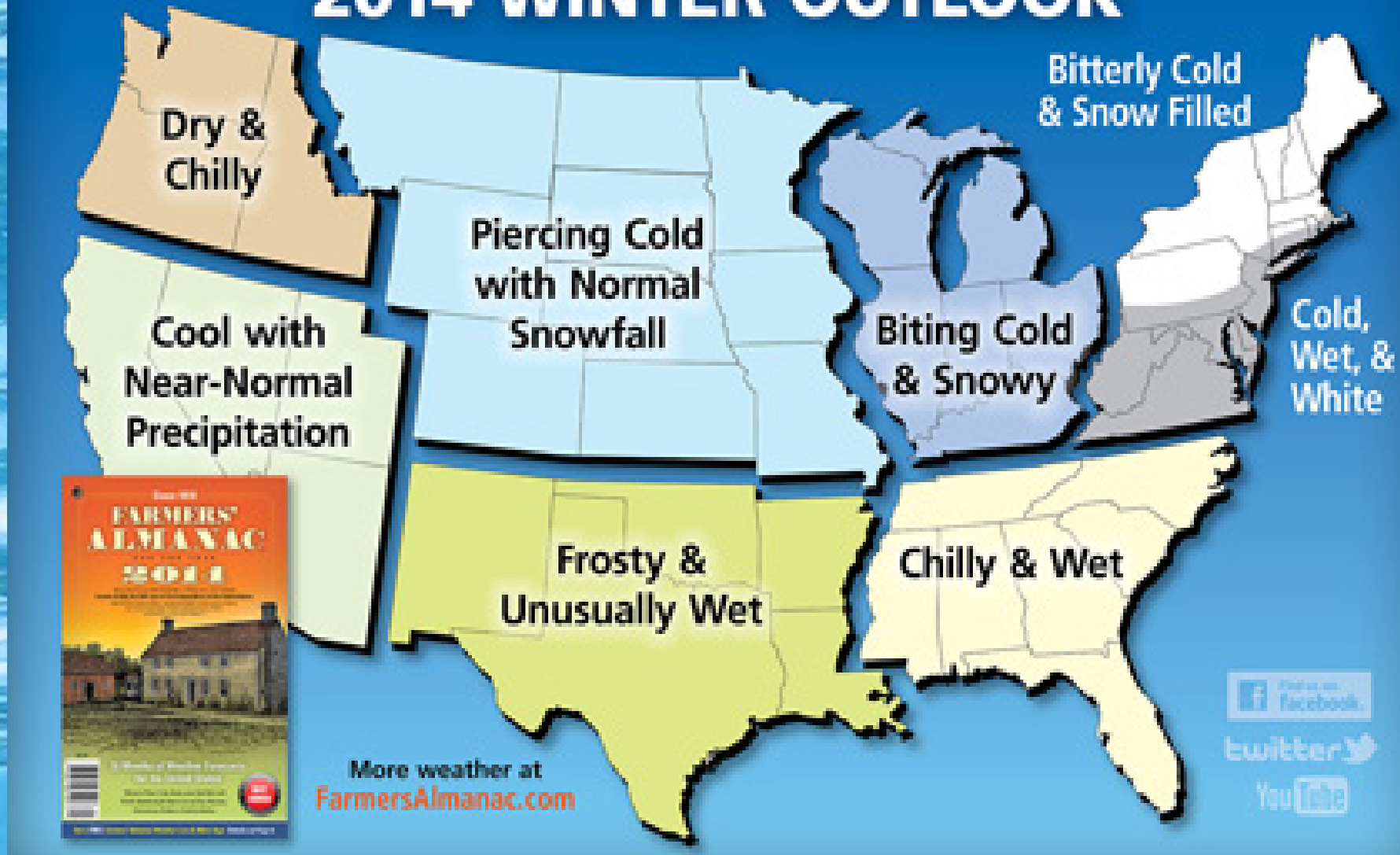
33
B
33
EC
33
40
B
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID DJF 2013
MADE 21 NOV 2013
EC MEANS EQUAL
CHANCES FOR A. N. B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

FARMERS' ALMANAC

2014 WINTER OUTLOOK



“Our thinking here at Liveweatherblogs.com is a west based weak to moderate El Nino to develop in late fall or early winter. This will keep the southern jet active and allow for the areas from California to Texas to the Mid Atlantic to have above average winter precipitation. Areas with above snowfall would be the Southeast, Mid Atlantic, Deep South and Mountain Southwest including the Rockies in Colorado.

The Northeast will see near normal snowfall and that will extend back into the Ohio Valley. The Upper Midwest will be below normal snowfall due to the mainly southerly storm track this winter.

California will have above average rainfall and snowfall and even a few very big winter storms esp. along the coast. **The Pacific Northwest will see near to slightly above average rainfall and snowfall.”**

Owyhee
Irrigation District