BOISE RESERVOIR SYSTEM OPERATION AND FORECASTING 2017

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BOISE RIVER WATER MANAGEMENT

Overview

I. Introduction to Boise System Operations

II. Review of 2017 Hydrologic Conditions
- Precipitation
- Snowpack

III. Boise System Operations 2017

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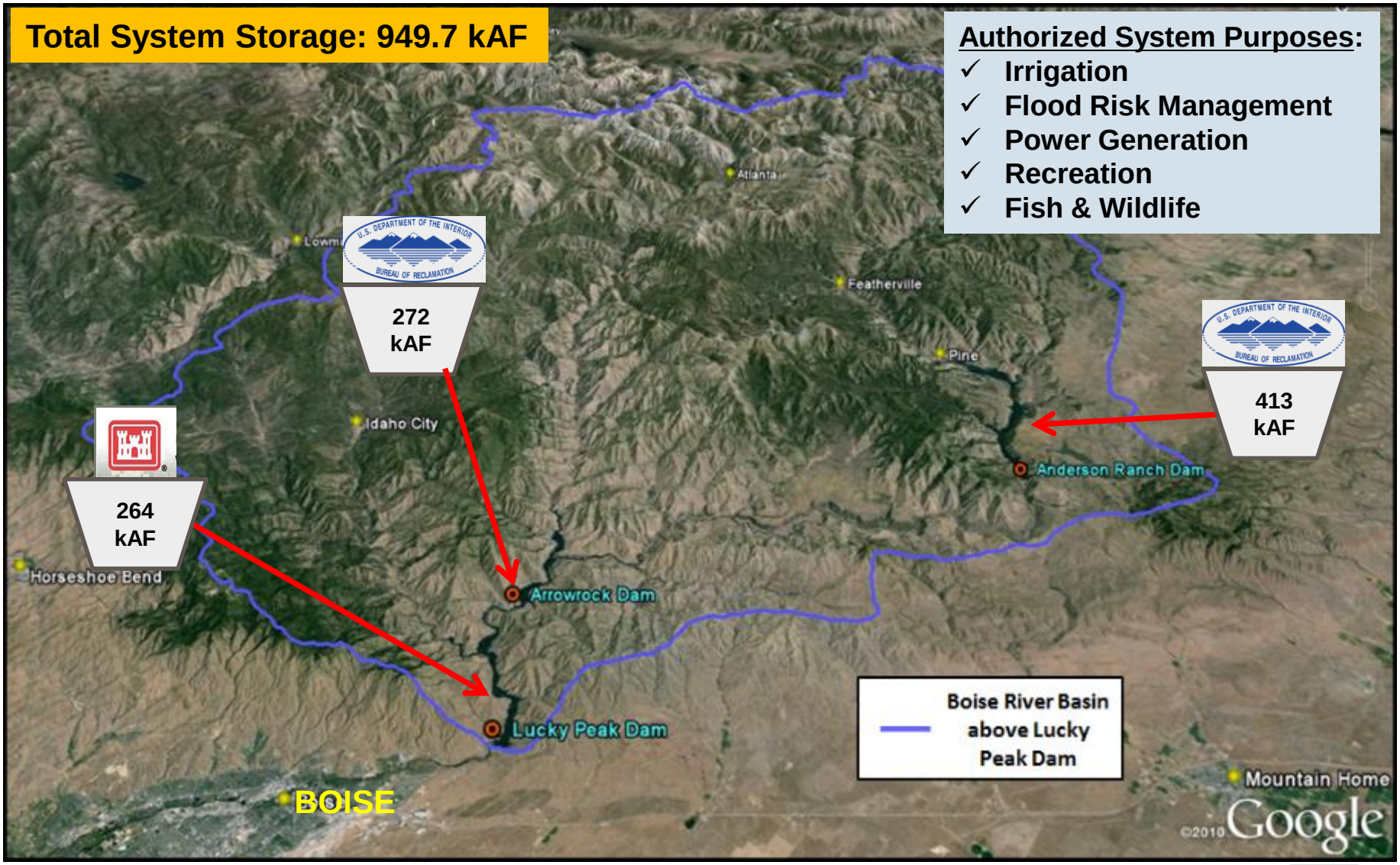
BOISE RIVER WATER MANAGEMENT

Total System Storage: 949.7 kAF

Authorized System Purposes:

- ✓ Irrigation
- ✓ Flood Risk Management
- ✓ Power Generation
- ✓ Recreation
- ✓ Fish & Wildlife



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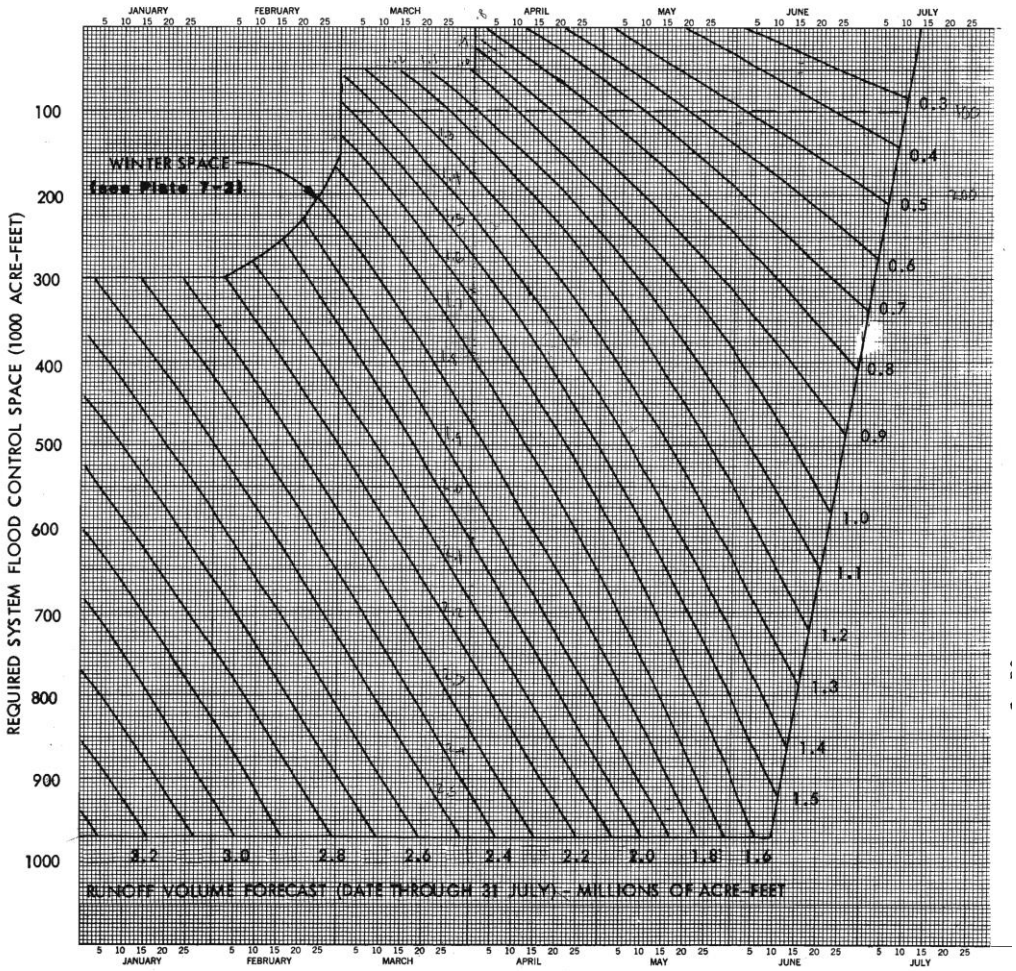
BOISE RIVER WATER MANAGEMENT



Operation Inputs

<u>Seasonal Forecasts</u>

- ✓ Inflows
- ✓ Snowpack
- ✓ Precipitation
- ✓ Temperature

<u>Short-term Forecasts</u>

- ➢ Weather
- ➢ Total System Storage
- ➢ Required Storage

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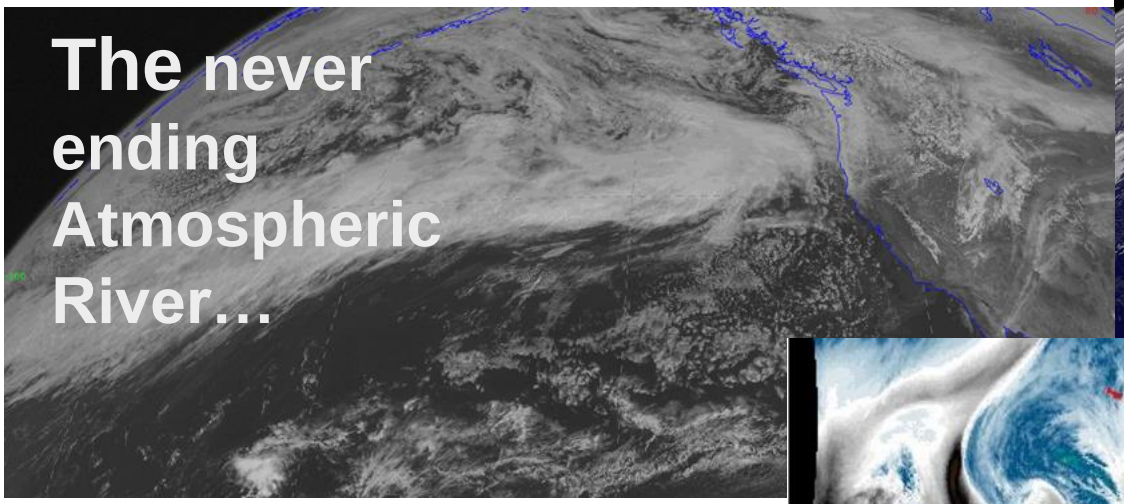
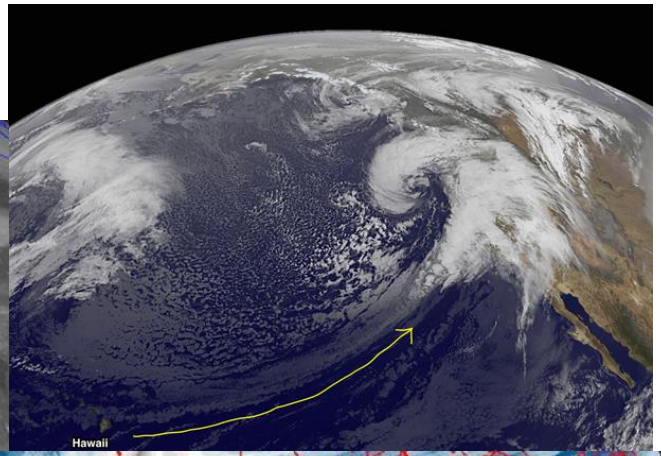
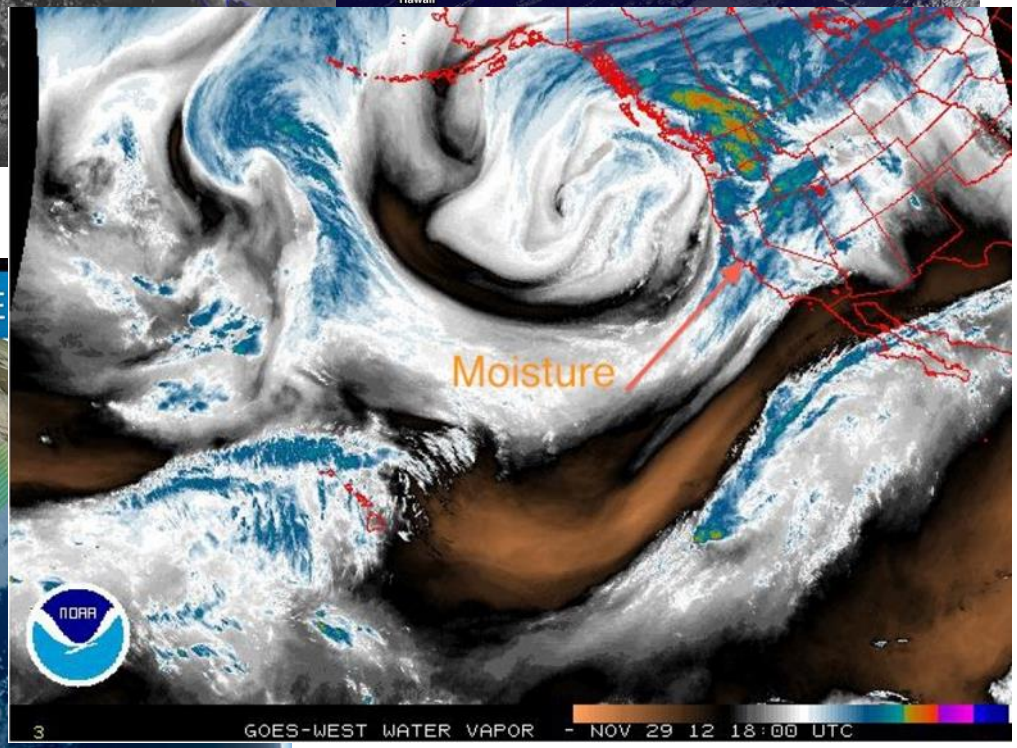
BOISE BASIN SNOW ACCUMULATION

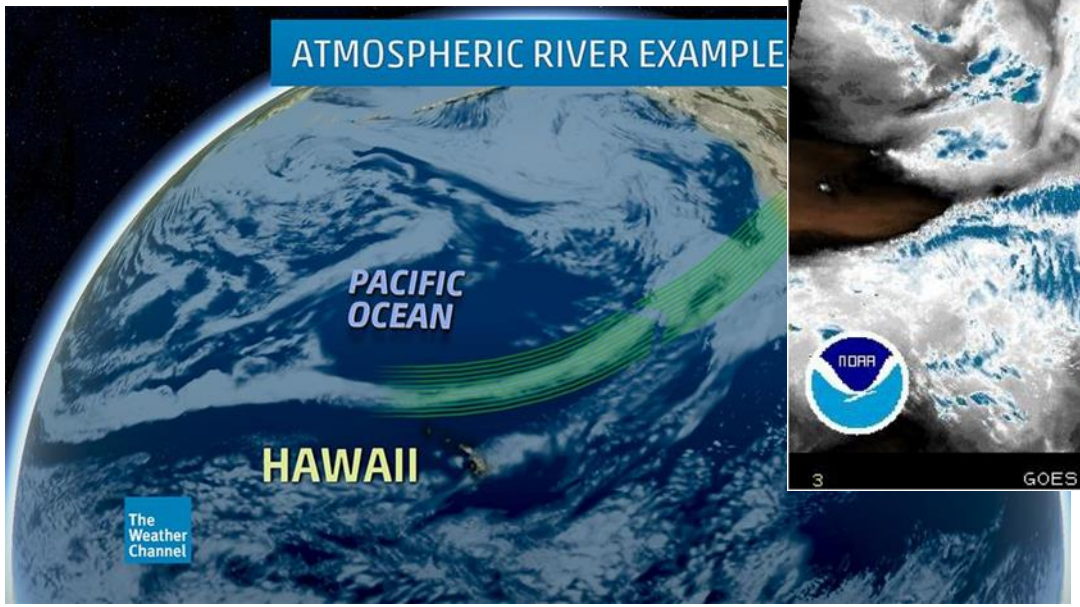
2017 – Not an average year…

The never ending Atmospheric River…

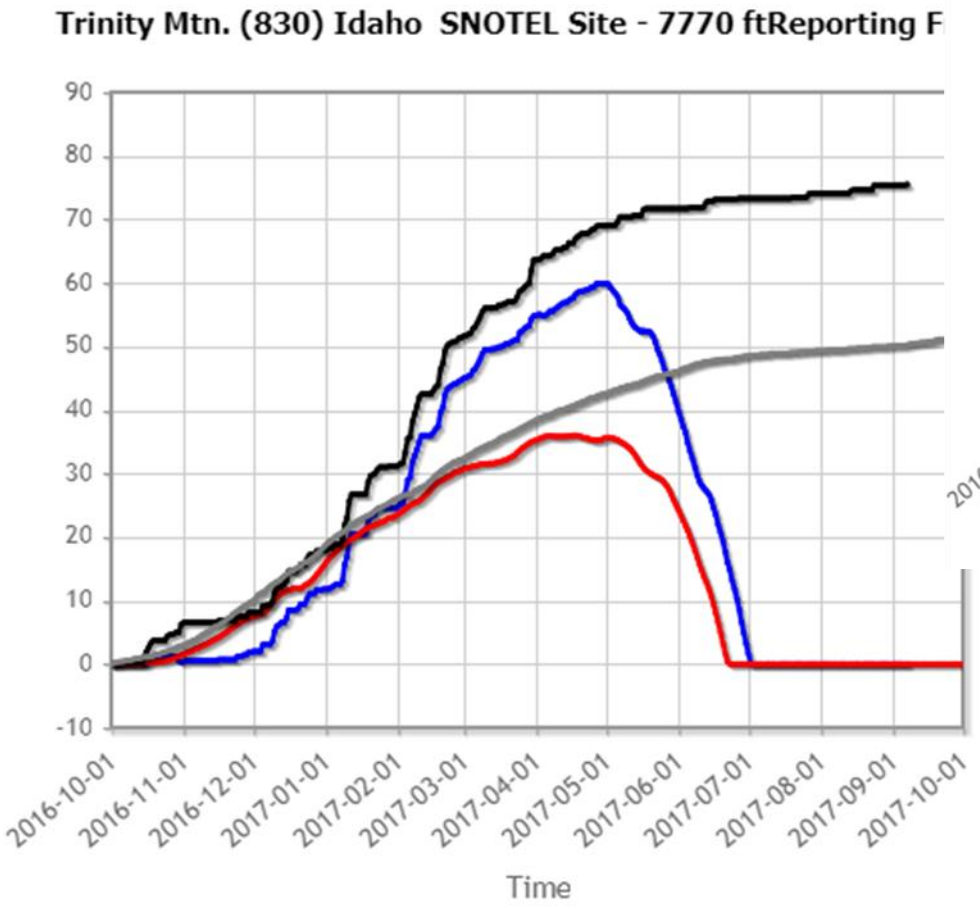


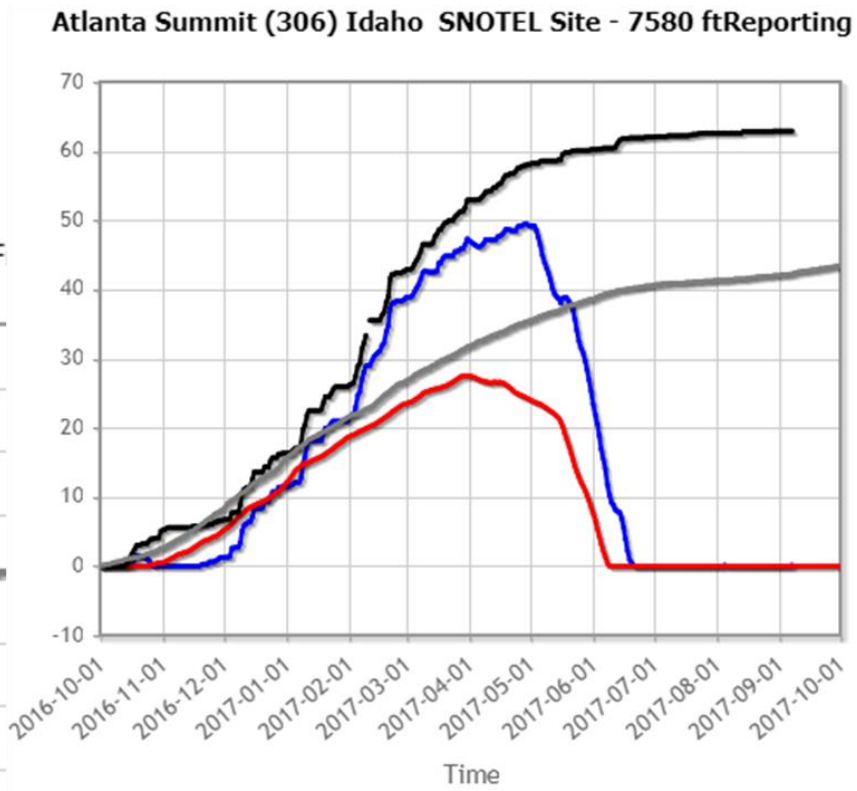




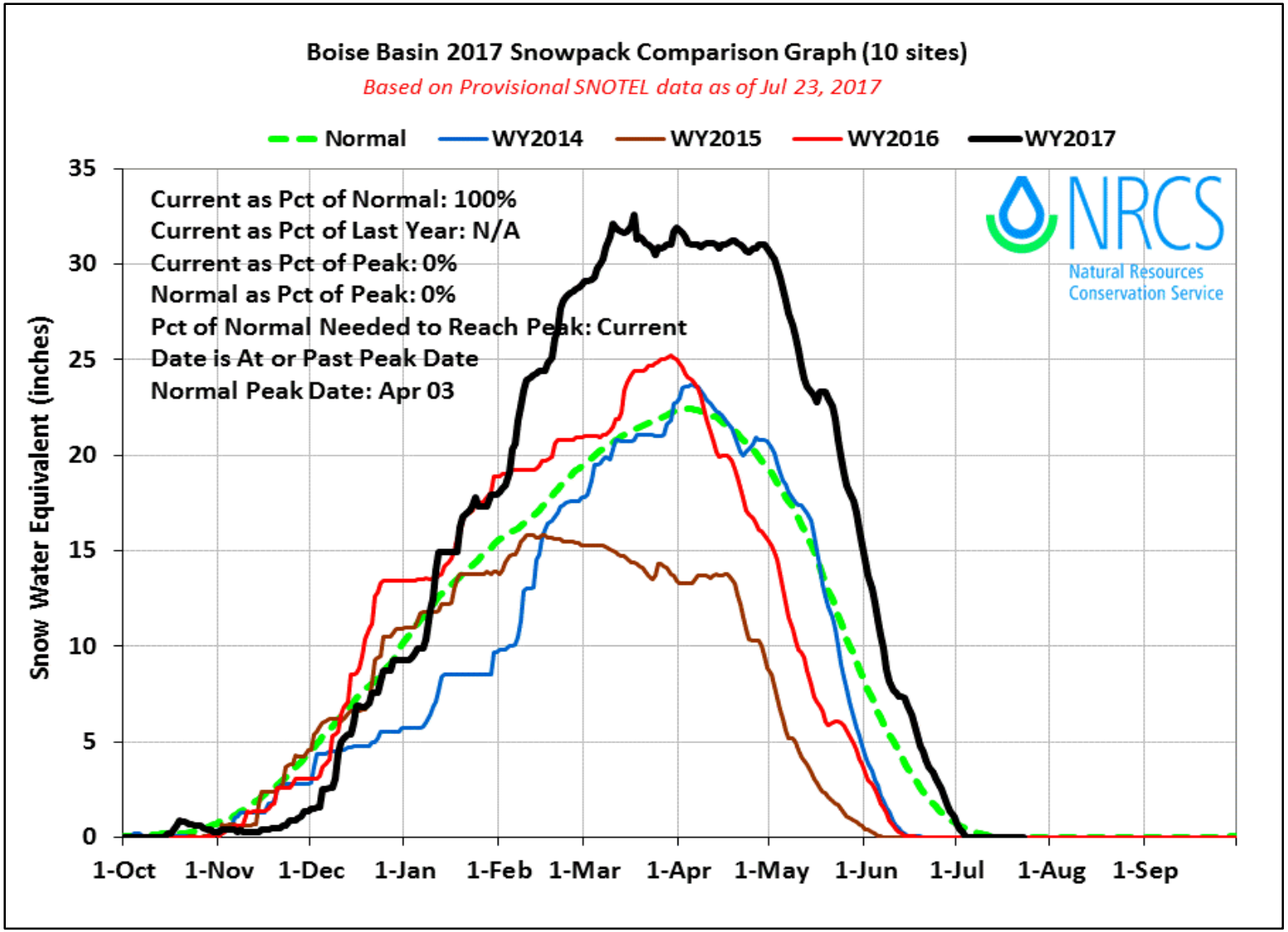


Boise Basin Snow Accumulation





BOISE RIVER SNOW ACCUMULATION



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EXTREMELY DENSE SNOW STATE FOR MAY

VIENNA MINE ~ 9,000 FEET

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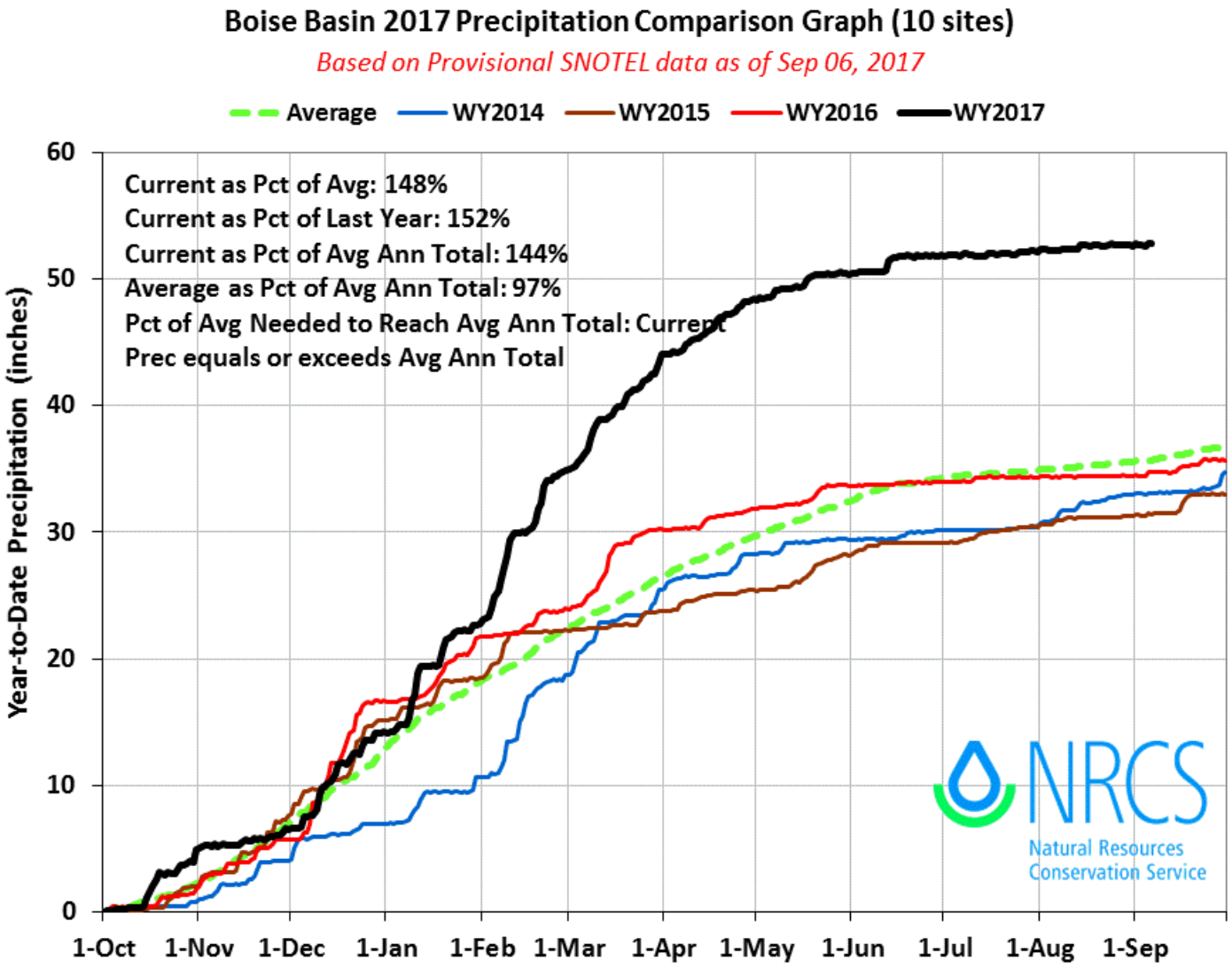
BOISE RIVER CUMMULATIVE PRECIP.



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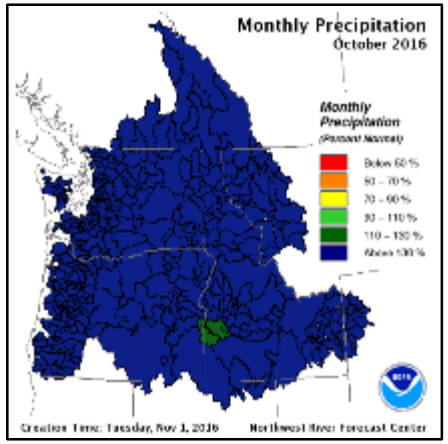
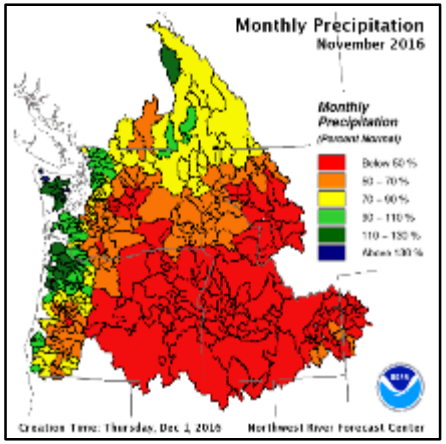
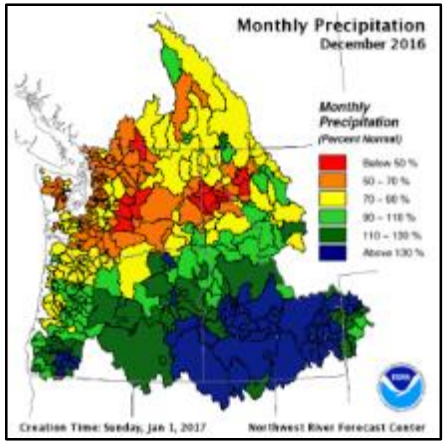
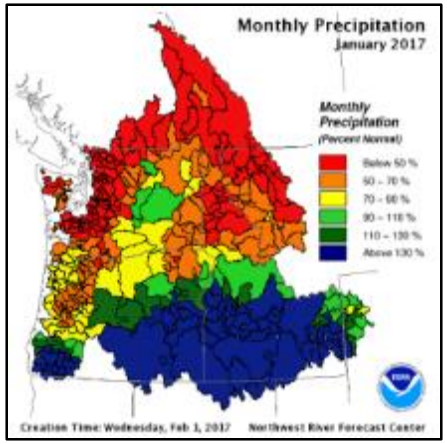
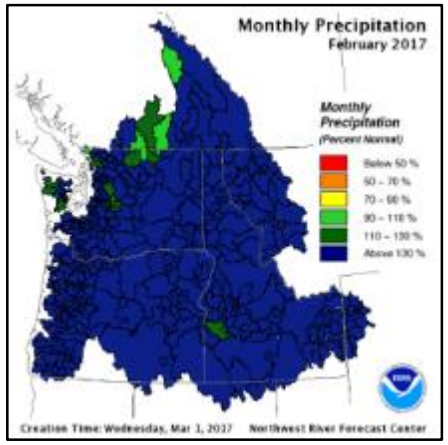
BOISE RIVER MONTHLY PRECIPITATION

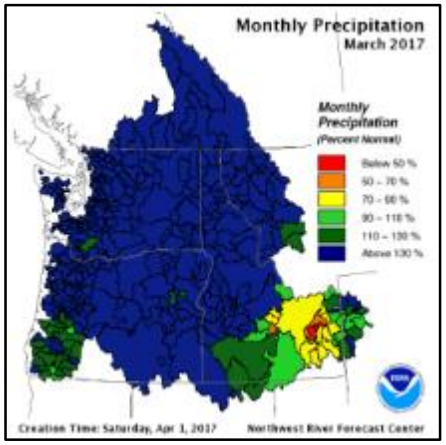


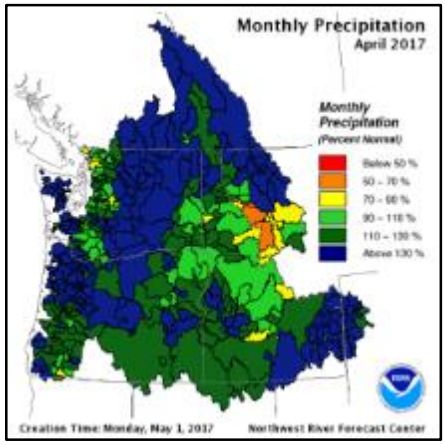


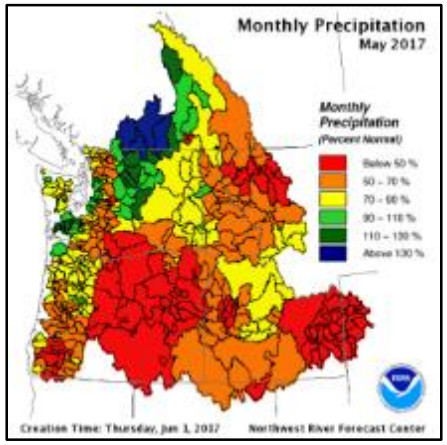












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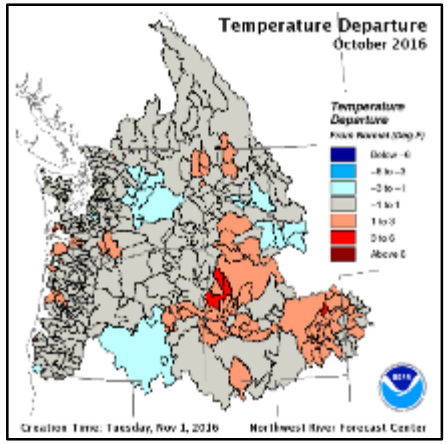
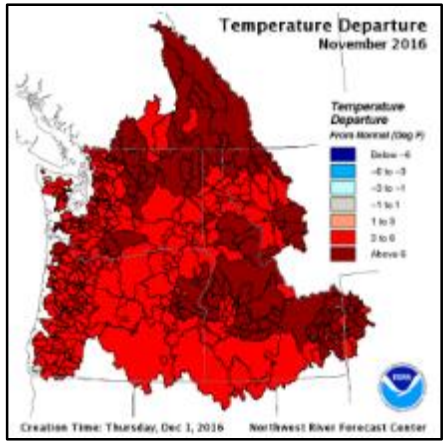
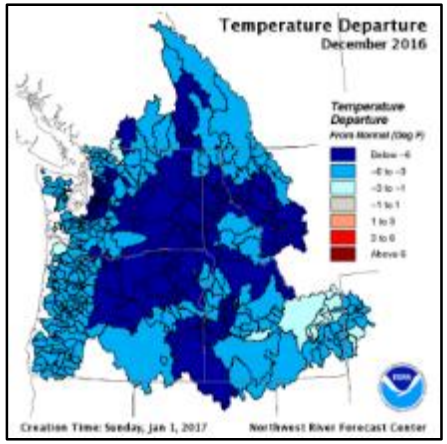
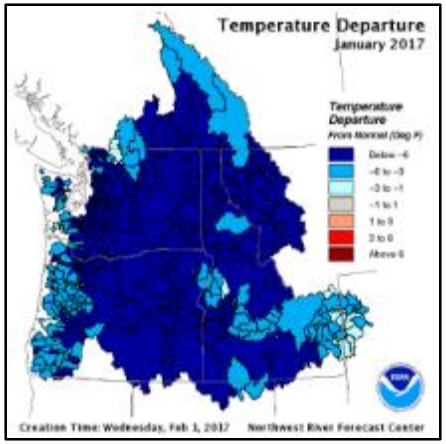
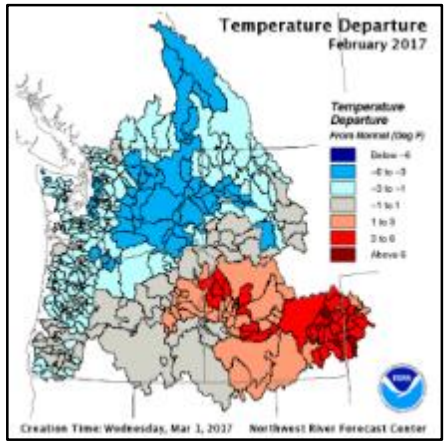
BOISE RIVER TEMPERATURE DEPARTURE

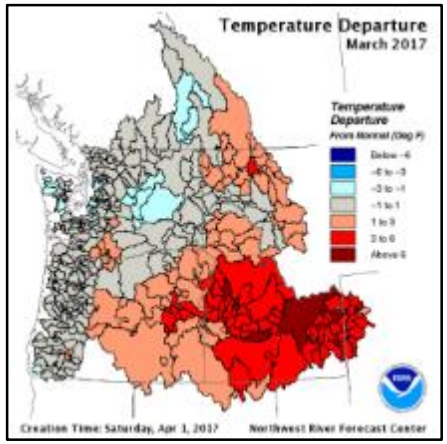


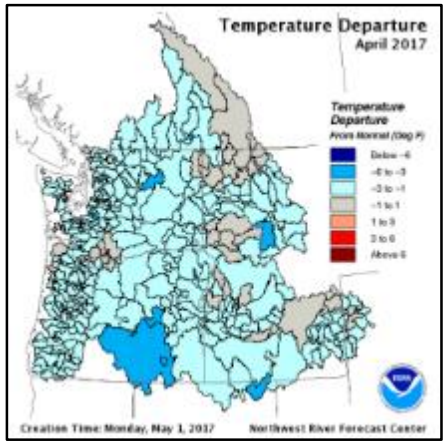


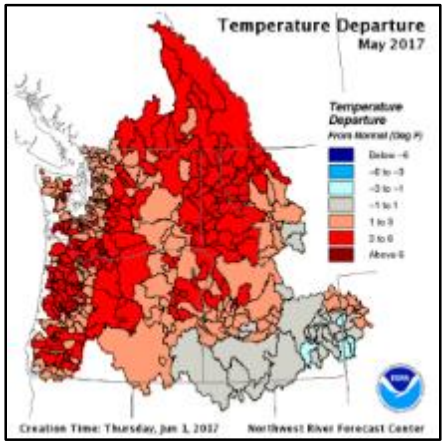












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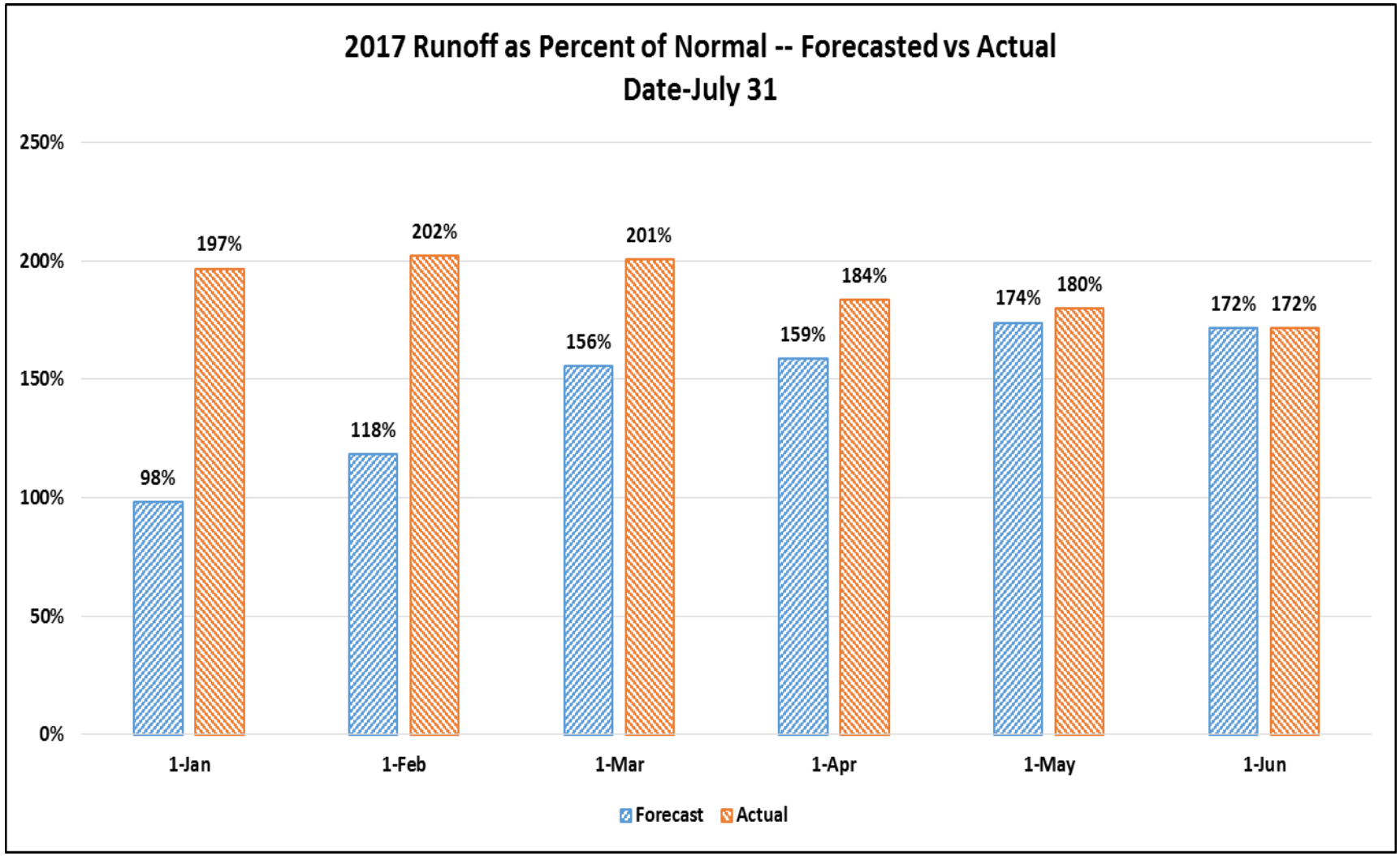
BOISE SYSTEM 2017 VOLUME FORECASTS



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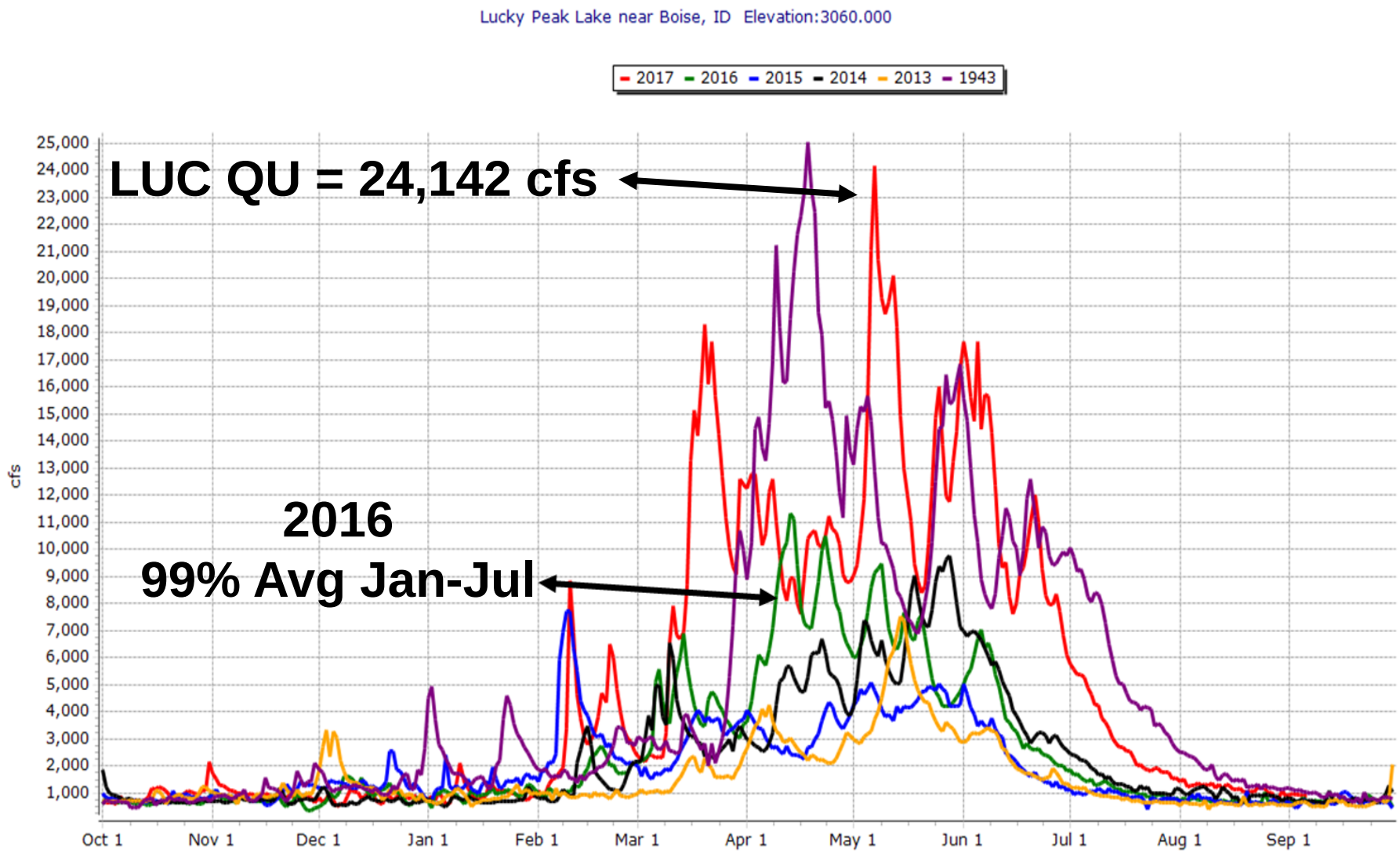
BOISE SYSTEM 2017 RUNOFF



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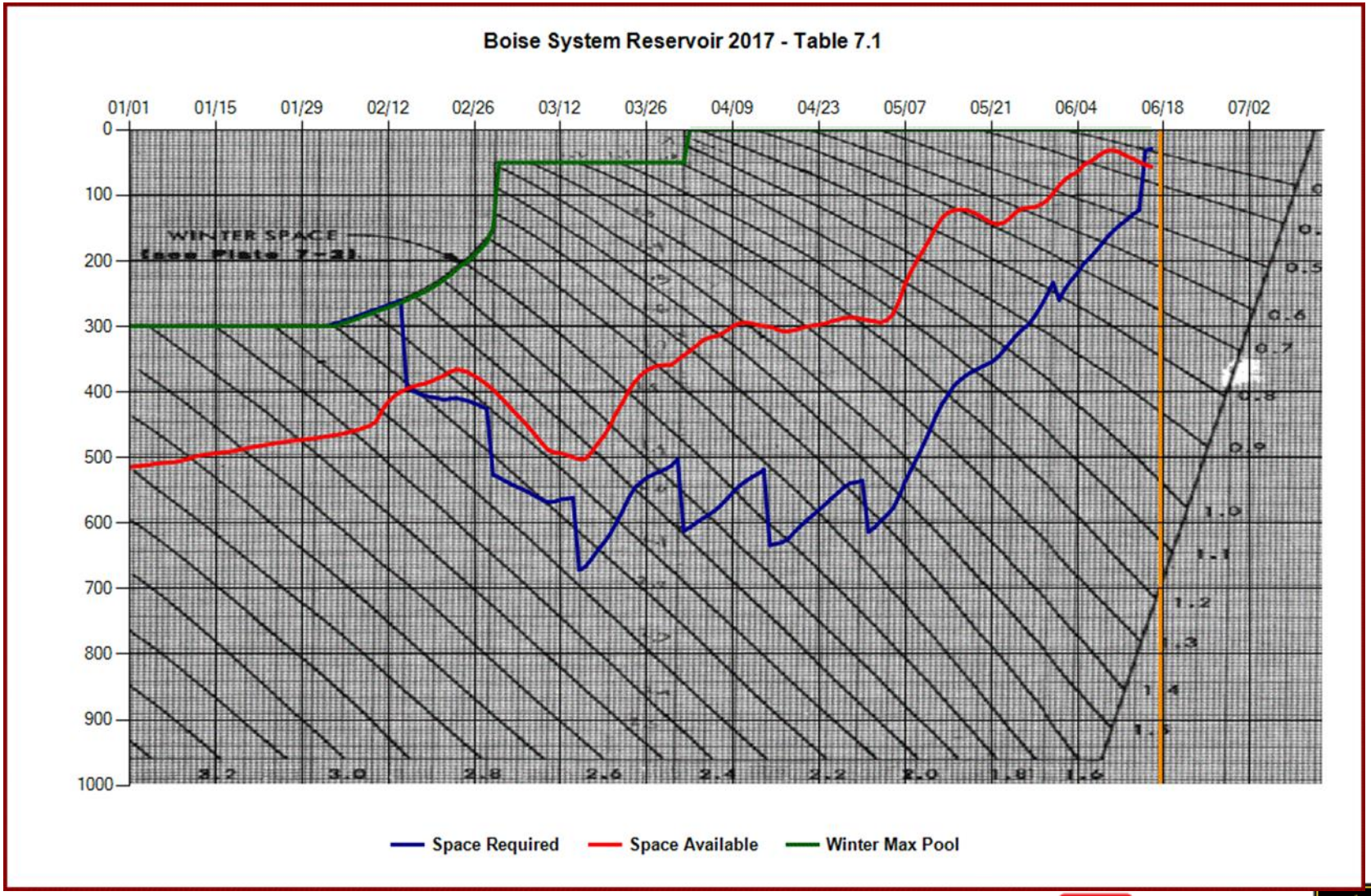
BOISE RIVER OPERATION



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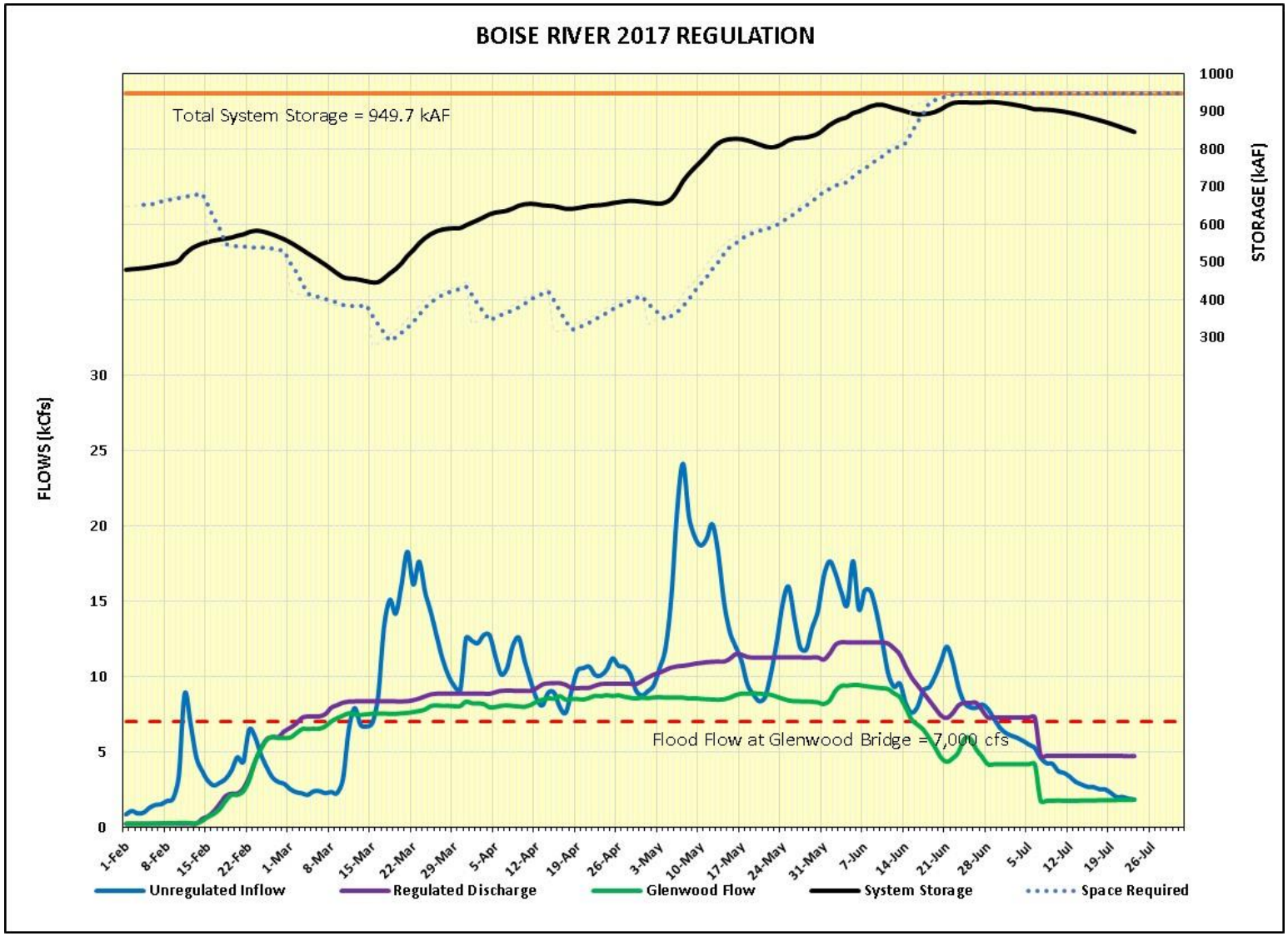
BOISE RIVER OPERATION



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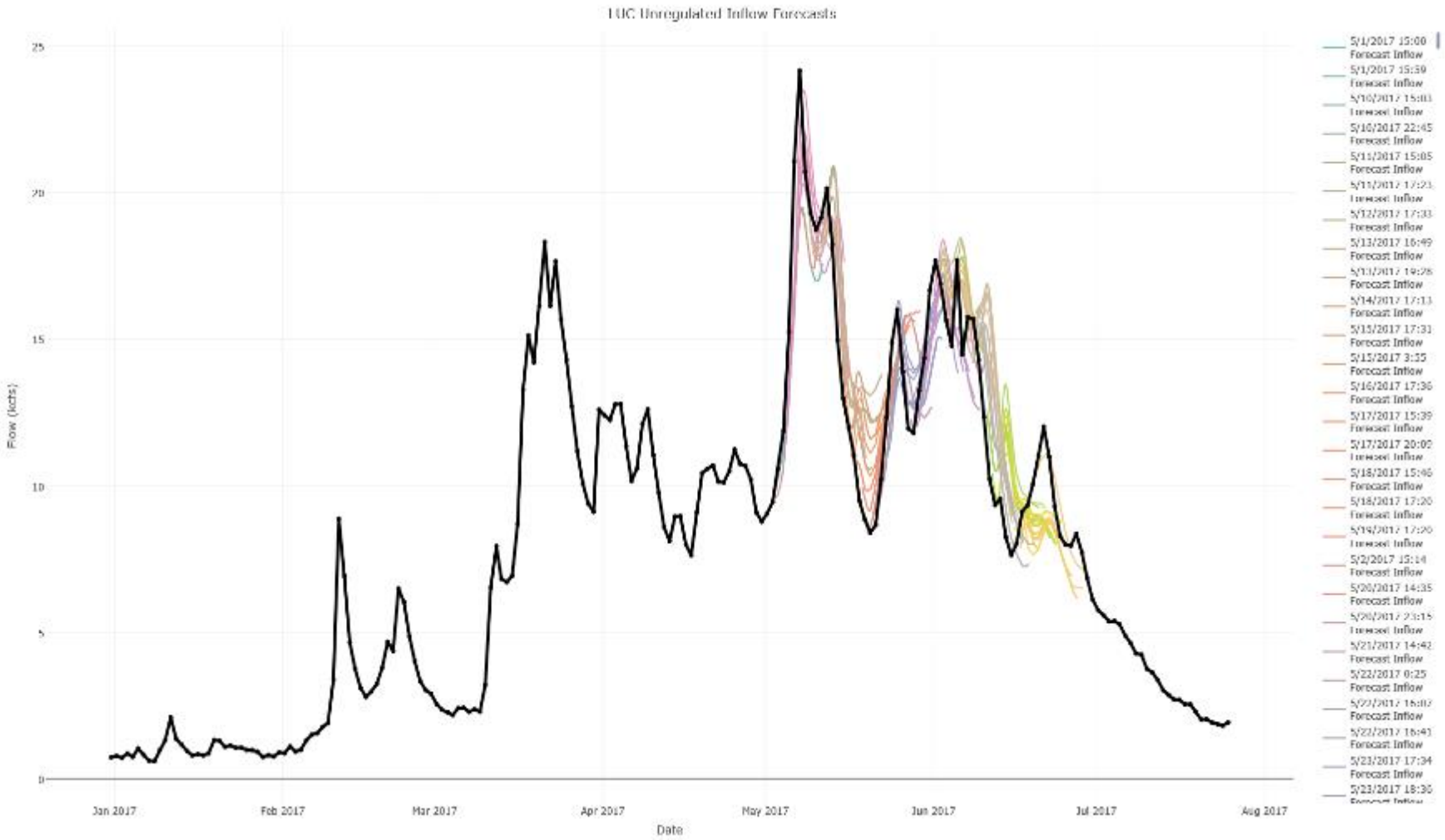
CHPS-FEWS



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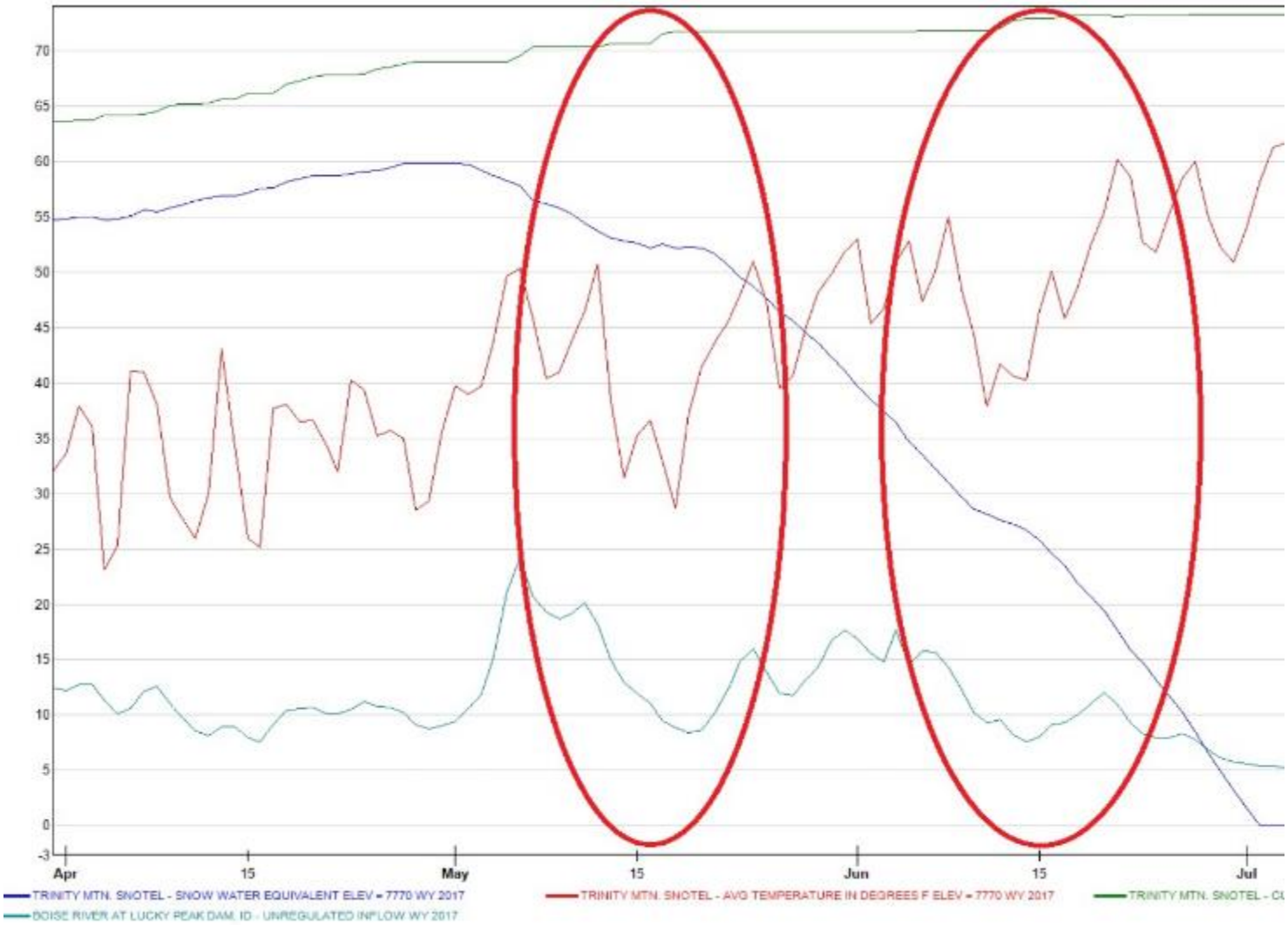
MODEL LIMITATIONS & CALIBRATION CHALLENGES



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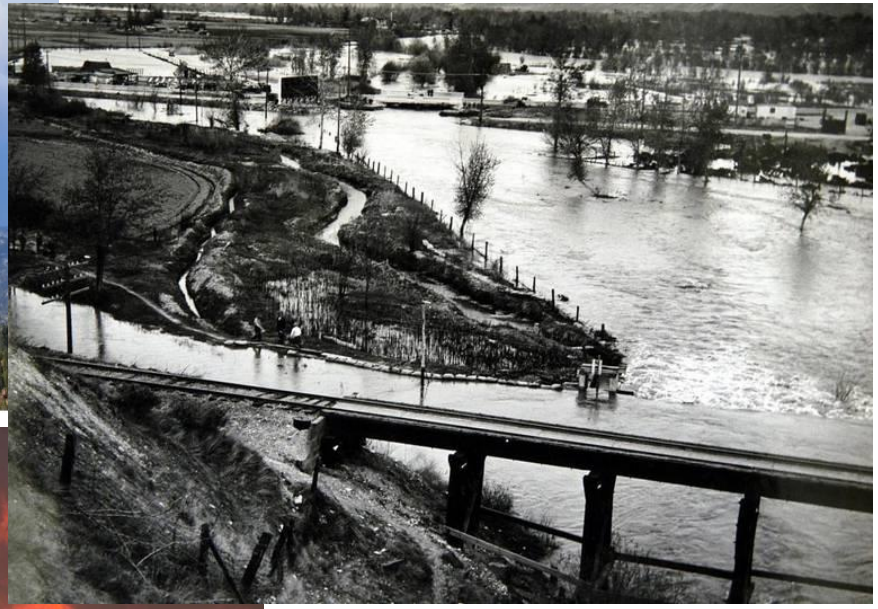
QUESTIONS AND DISCUSSION



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Boise River
Flood Control District #10

- **Steve Sweet, PE, District Engineer**
- **Boise River Flood Control District #10**

FCD#10

STATE OF IDAHO

DEPARTMENT OF WATER ADMINISTRATION

IN THE MATTER OF THE PETITION FOR) CREATION OF A FLOOD CONTROL DIS-) TRICT ON THE BOISE RIVER IN ADA) AND CANYON COUNTIES, IDAHO)	Order Creating Flood Control District No. 10 of Idaho

Boise River Flood Control District #10 was organized in October 1970 by the State of Idaho to maintain the Boise River channel.

A board of three commissioners, appointed by the Director of the Idaho Department of Water Resources is responsible for District activities that aim to protect life and property along the Boise River and Dry Creek, a major tributary to the river that is within the District.

The District's boundaries extend from near the Plantation Golf Course in Boise, to just upstream of the Steel Bridge in Caldwell.

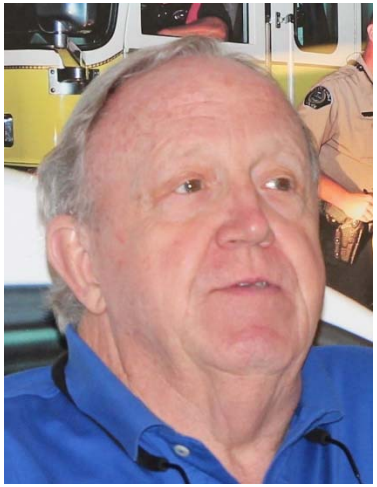
Flood Control District #10

State statute regulating Flood Control Districts:

"Protect and promote the health, safety and general welfare of the people of this state“

FCD10 Commissioners

Dr. Bob Beede



Bill Clayton

Jim Payne

FCD#10
Pit Protection - 2017 High Water

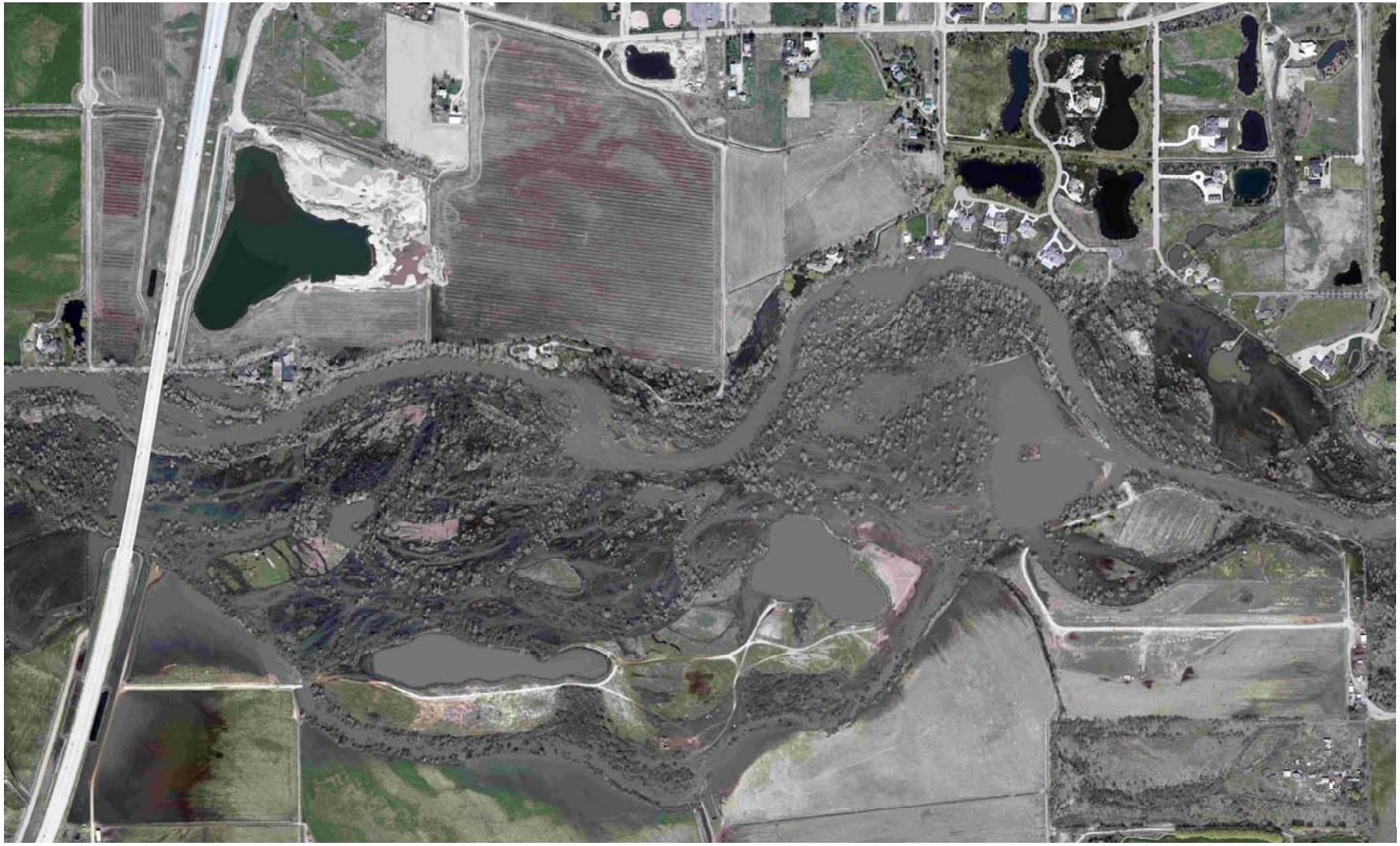
FCD#10
Pit Protection - 2017 High Water

FCD#10
Laguna Point Pit Capture - 2006

FCD#10
2D Modeling – Head of Eagle Island

FCD#10
Duck Alley Gravel Mine - 2016

FCD#10
Duck Alley Gravel Mine - 2017



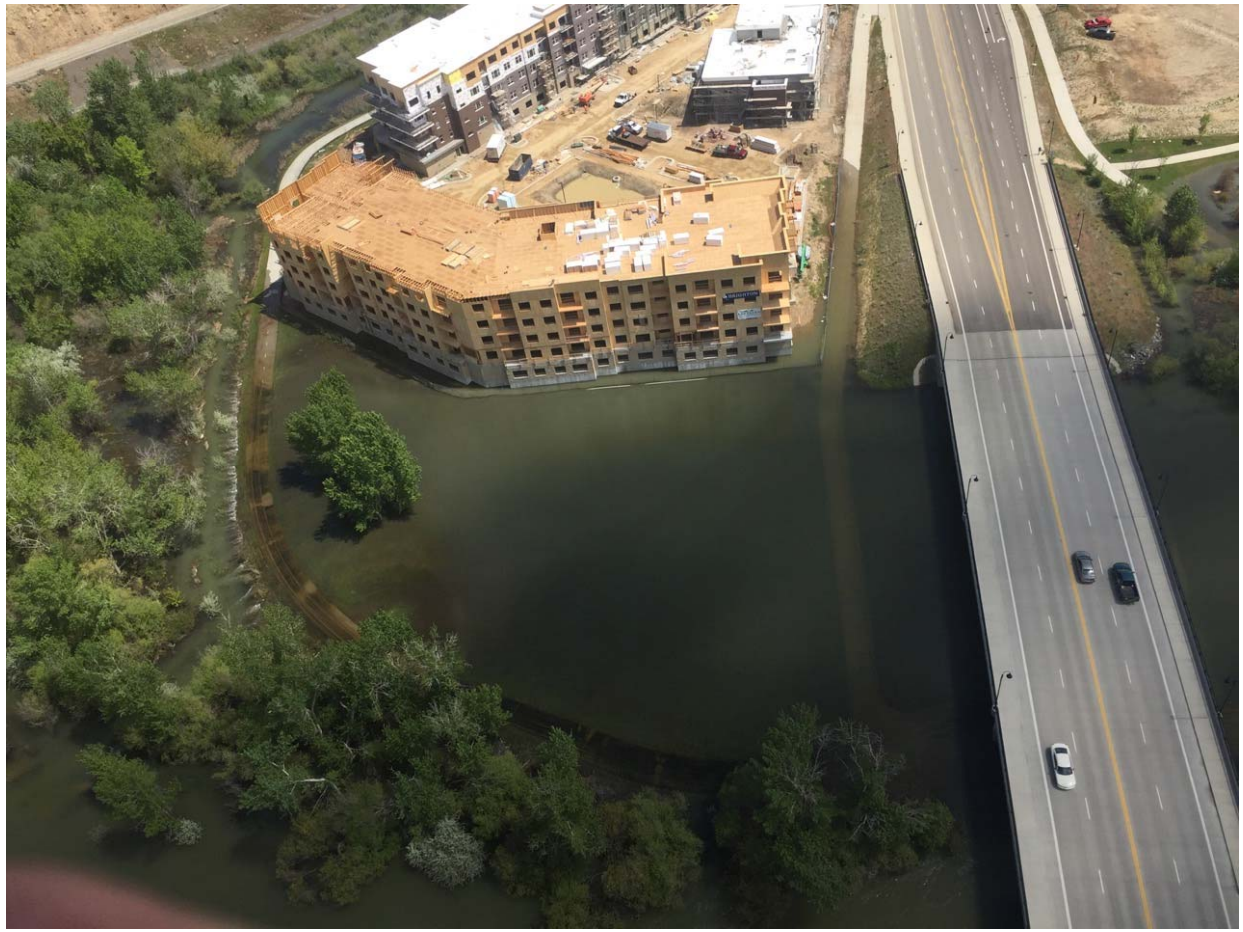
FCD#10
Duck Alley Gravel Mine - 2017

FCD#10
Duck Alley Gravel Mine - 2017

FCD#10
Eagle Island – “Lessons Not Learned”

Questions?

2017 Flood Event



ADA COUNTY EMERGENCY MANAGEMENT

2017 Flood Event

- Record snow depth in Boise -15 inches
- Record total inches of snow Oct thru Jan
- 3rd snowiest winter season
- 4th longest snow on ground (52 consecutive days)
- Precipitation Feb-March 135-300 % of normal
- Runoff 175% - 350% of normal Feb – May

Source: National Weather Service

2017 Flood Event

- EOC Activation March 27th
- County Disaster Declaration March 28th
- 20 organizations/jurisdictions participated
- EOC briefings every Mon, Wed & Fri
- JIS conference calls every Tuesday
- Created flood webpage

2017 Flood Event

ADA COUNTY EMERGENCY MANAGEMENT

2017 Flood Event

ADA COUNTY EMERGENCY MANAGEMENT

2017 Flood Event

ADA COUNTY EMERGENCY MANAGEMENT

PLANTATION ISLAND BRIDGE

PLANTATION ISLAND BRIDGE

Sunroc Pit Issues
As of 28 March 2017
Legend
West Pit
Bank Failures
West Pit
Bank Slough
New Seeps
West Pit
East Pit
East Pit Bank
Sloughs
East Pit
Sinkholes
Overbank Flow
Dry Pit Sloughs
and Seeps
Headcut
Heavy Seep
Back Wall
Low Spot
Dry Pit
Google earth
N

North Channel
South Channel
Eagle Island
Head of Eagle Island
Sunroc Pits
West Boise
WWTP
Shields Ave
Utahna Rd
Maymie Rd
W Claudia Rd
55
Duncan Ln
N Ulmer Ln
Arnet Ln
N Bogart
E Island Woods
E Colchester Dr
Orange St
Fall Ave

HESCO BARRIER

DEERE

Hesco
CAT

AIRE FLOOD DIVERSION TUBE

AIRE FLOOD DIVERSION TUBE

MUSCLE WALL

MUSCLE WALL

WEIR CONSTRUCTION

WEIR CONSTRUCTION

WEIR CONSTRUCTION

Garden City Near 48th St.

LDS CHARITIES (1600 Sandbags)

BARBER PARK

ACHD Traffic Mgmt. Center

RIVIERA ESTATES

RIVIERA ESTATES

RIVIERA ESTATES

Boise River
N Whitewater Park Blv
Ada County
Highway District

VETERAN'S
POND
150 Super Sacks

Zoo Boise

1,750 Feet of Muscle Wall

2017 Flood Event

- 101 days above flood stage
- 81 days above 8,000 CFS
- 5 person EM staff 3,000+ hours
- 80,000 sandbags, 100 superbags
- Contracted with USGS – Rapid Deployment Gage X3
- ACHD 20,577 hrs. OT & 7 weeks 24/7
- 1 pit capture, 2 near capture Sunroc & Veteran's
- ARC shelter – 12 days, 500+ volunteer hrs.
- EOC deactivated - July 13th (100+days)

2017 Flood Event

- $400,000+ costs flood mitigation activities
- $320,000 Homeland Security Grants
- $10 Million+ in damages submitted to FEMA
- FEMA Public Assistance Requirements
  - Emergency Protective Measures
  - Debris Removal
- Presidential Declaration Threshold
  - Ada County = 1.4 Million
  - Idaho = 2.2 Million

2017 Flood Event

- Challenges
  - Communications
  - Who's in Charge
  - Resources
  - Media
- Best Practices
  - Working Relationships: USACE, Ada Co Engineer, FCD10, ACHD, NWS, ACSO, ARC, ITD, CDHD, Utilities, Ada Co Assessor, Cities' PW, etc.

2017 Flood Event

EOC Form #EOC-11

Ada County Emergency Management

Ada County
EOC Check-In/Check-Out Log

Event Name: **2017 Boise River Spring Flooding** | ACEOC Location **7200 Barrister Drive, Boise**

Operational Period: From May 22, 2017 0800

To May 22, 2017 1700

Print Name	Ada County Staff, Agency, or Citizen Volunteer	EOC Assignment (Section)	EOC Visit to Whom	Check-in Time	Check-Out Time
Joe Lombardo	ACEM	PSC		830	
Myla Jeffries	ACEM	Plans		850	1020
Dana Boren	ACSO				
Chris Davidson	ID Power	ESF 12		850	1010
C. Volmer	ARC	6		0855	
Kate McGuire	Ada Co	PIO		8:57	
Doug Hardman	ACEM	Mgmt		0850	1030
Zac Shoa	Intermountain Gas			8:50	10:10
Kelli Bolicero	ACSO			8:55	
Brooke [illegible]	ACHD				
RUSTY COFFELT	EAGLE FD			9:00	
Samuel Akins	ACP	Logs		09:00	10:20
S. Omeara	AC-IT			09:00	10:15
Patrick ON	ACSO	PIO		9:00	10:15

2017 Flood Event

EOC Form #EOC-11

Ada County
EOC Check-In/Check-Out Log

Event Name: **2017 Boise River Spring Flooding**

ACEOC Location **7200 Barrister Drive, Boise**

Operational Period: From May 22, 2017 0800

To May 22, 2017 1700

Print Name	Ada County Staff, Agency, or Citizen Volunteer	EOC Assignment (Section)	EOC Visit to Whom	Check-in Time	Check-Out Time
Richard Rayer	ITD			8:50	10:10
Brandon Holbs	USACE	Liaison		0855	
B Pook	BOCC	Ops		8:57	10:10
Jay Berdubon	NOAA/NWS	Planning		8:55	10:15
Roger Phillips	IGC			8:58	10:10
Patrick Carney	ACS EP	UC		8:59	
Mike Blankenship	ACSO	Finance		900	
Jason Boal	Ada Co OS	Ops		9:00	10:24
James Vincent	GFD	IC		9:00	
Sue Axtom	ACEM	Fin		0730	1100
Rusty McNeill	Ada Co.	Logs		9:04	10:18
Scott Johnson	ACSO	Ops		915	
John DILIBERTI	ACSO	Ops		0910	1030
Mike Blount	GCPD			0900	1030

2017 Flood Event

EOC Form #EOC-11

Ada County
EOC Check-In/Check-Out Log

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Operational Period: From May 22, 2017 0800

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Print Name	Ada County Staff, Agency, or Citizen Volunteer	EOC Assignment (Section)	EOC Visit to Whom	Check-in Time	Check-Out Time
ANNE KAWALEC	VOLUNTEER			854	1015
Perry Oldenburg	BFD			0855	1030
Ron Winegard	BFD	Liaison		0855	10:15
KANDY MORGAN	INTERMOUNTAIN GAS			856	10
Andy Schneider	" "			"	10
Don Watts	~~Planning~~	Planning		8:58	10:15
Nolan Presnell	ACSO	Finance		8:58	
Randy McLeland	CDHD	ESF8 CDHD		0859	
Nicole Carr	ACSO	PIO		0905	1015
CRASH MARUSICH	ACEM	LOGS		0800	1035

ADA COUNTY EMERGENCY MANAGEMENT