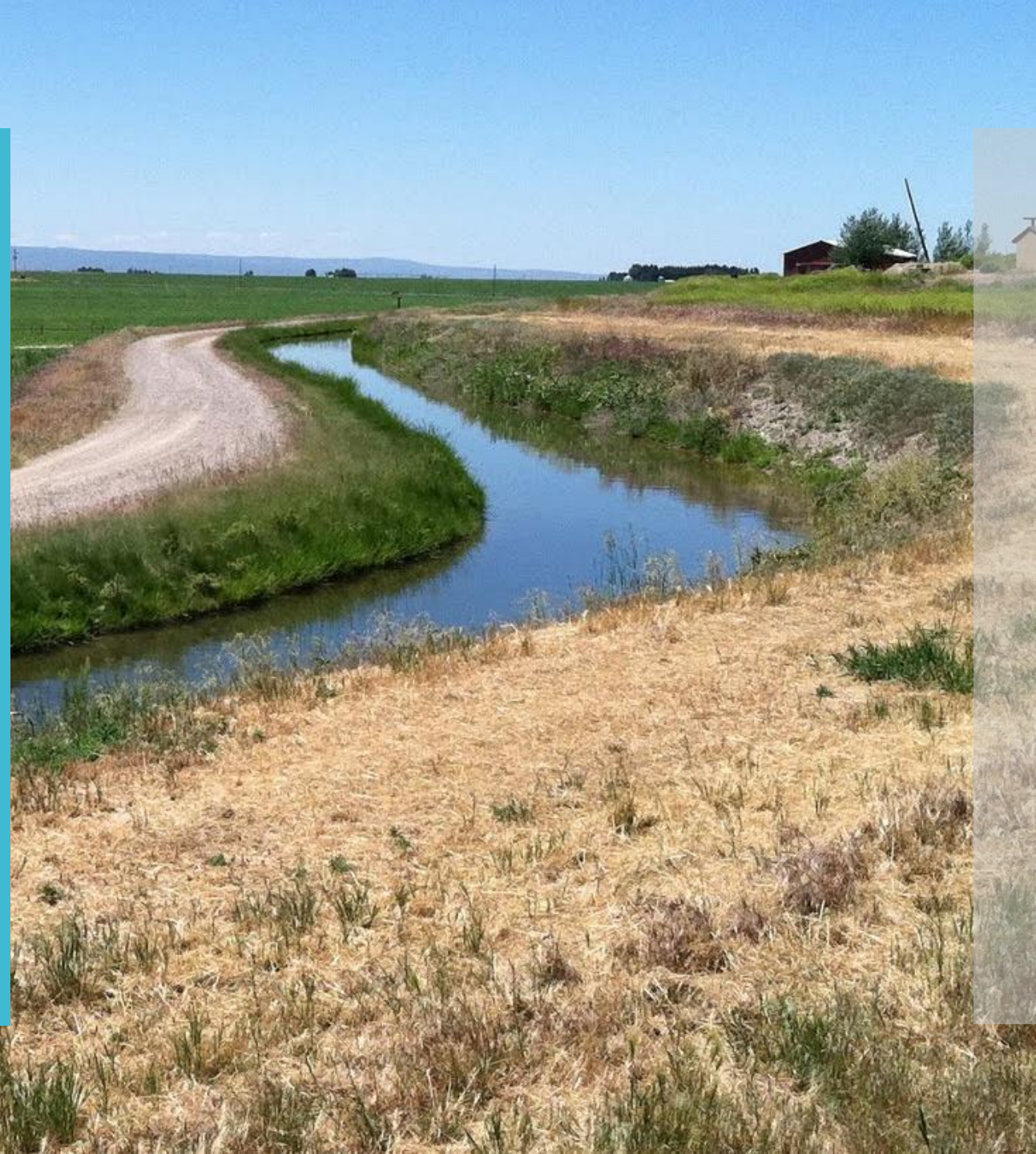
IDAHO WATER USERS ASSOCIATION

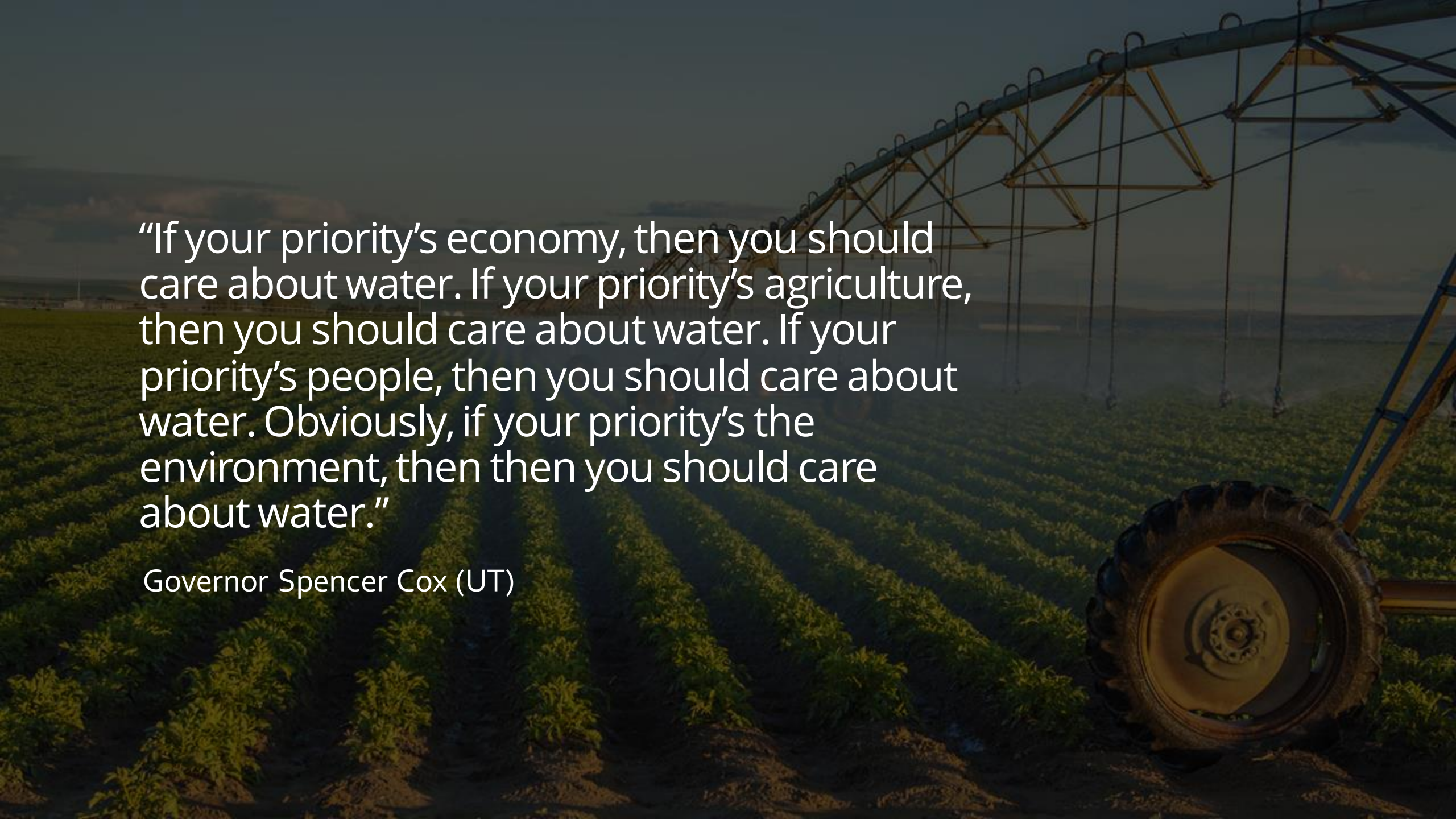
Idaho Water: Challenges & Opportunities

Spring 2024

Idaho Water Users Association

- Formed in 1937 as the Idaho State Reclamation Association
- 300 Members
- Canal Companies, Irrigation Districts, Water Districts, Ground Water Districts, Municipal and Public Water Suppliers, Hydroelectric Companies, Aquaculture Facilities, Agri-Businesses, Professional Firms and Individuals
- Formed to advocate and educate on issues affecting Idaho's agricultural water users





"If your priority's economy, then you should care about water. If your priority's agriculture, then you should care about water. If your priority's people, then you should care about water. Obviously, if your priority's the environment, then then you should care about water."

Governor Spencer Cox (UT)

Outline

A Brief History

The Challenges

- Eastern Snake Plain Aquifer
- Treasure Valley
- Elmore County
- Rathdrum Prairie Aquifer
- Palouse Basin

The Opportunities

- Aquifer Recharge
- Rule 50
- Domestic Exemption

A Brief History

1881

Prior appropriation adopted as law.

- Allows investment in expensive facilities.
- Provides continuity in irrigation systems.
- Put in place to keep minimize conflict among water users.

Priorities set by date water right was established.

- Most early water rights were established simply by putting the water to use.
- Earlier development has the highest priority.

Reclamation in Idaho

1902: Reclamation Act

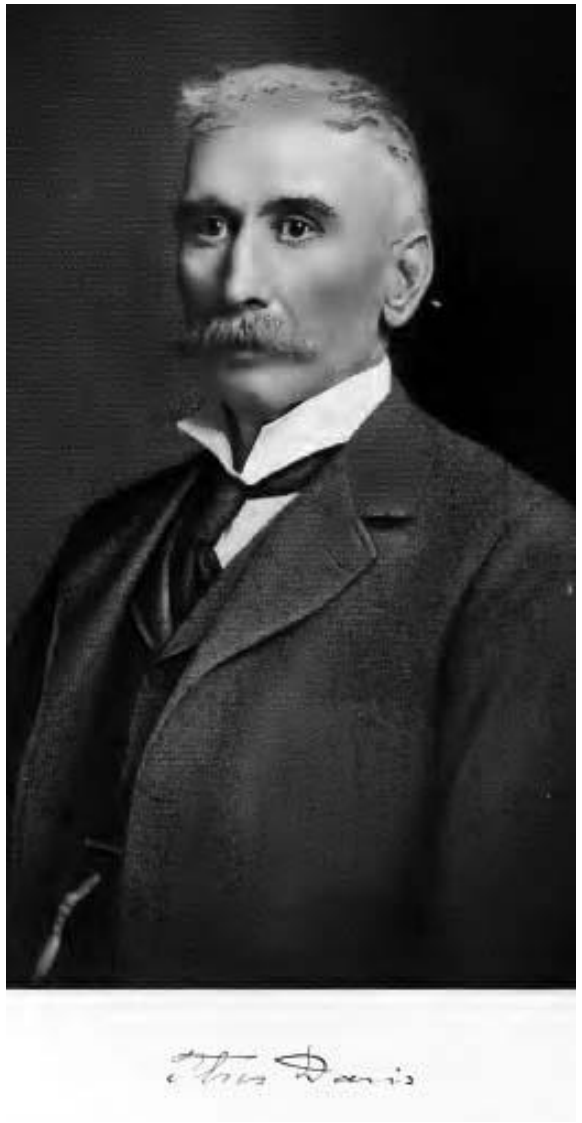
- Created Bureau of Reclamation

Program for "reclaiming" the arid West by storing floodwaters and building canal systems

Constructed dams and systems throughout Idaho

- Water Users repay their proportional share of the costs
- One of the first Reclamation Projects was Idaho's Minidoka Project (1903)

Made Idaho's thriving agricultural economy possible



Early Development

1862-63: Tom Davis is the first to irrigate from the Boise River.

- Development of the New York, Phyllis and Ridenbaugh canal systems begins.
- By 1900 there were 1,650 farms & 113,205 irrigated acres
- The river water at its maximum capacity – storage solutions would be needed.

1880's: Early Settlers in Eastern Idaho

- By 1900 there were 200,000 acres

1906

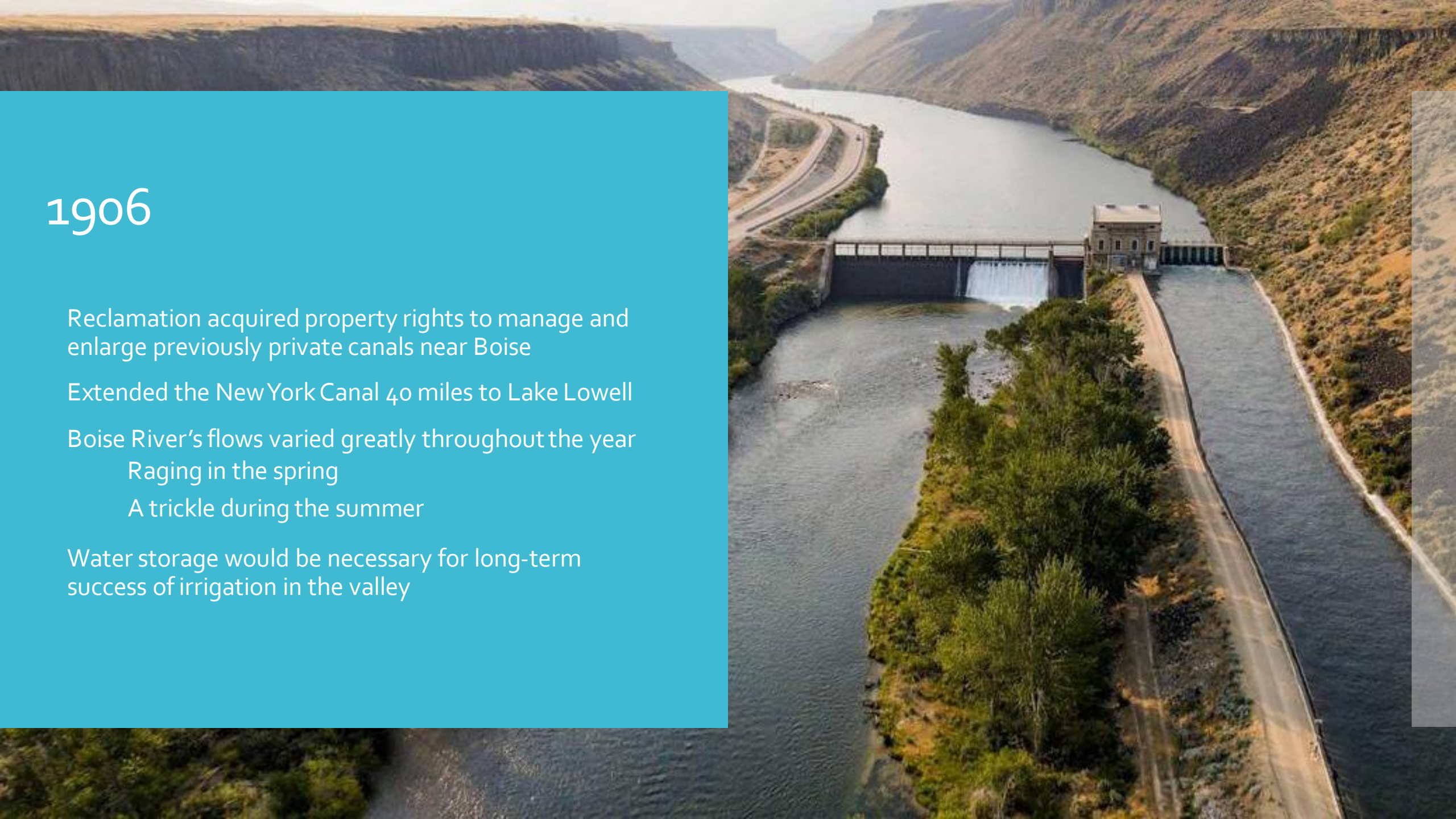
Reclamation acquired property rights to manage and enlarge previously private canals near Boise

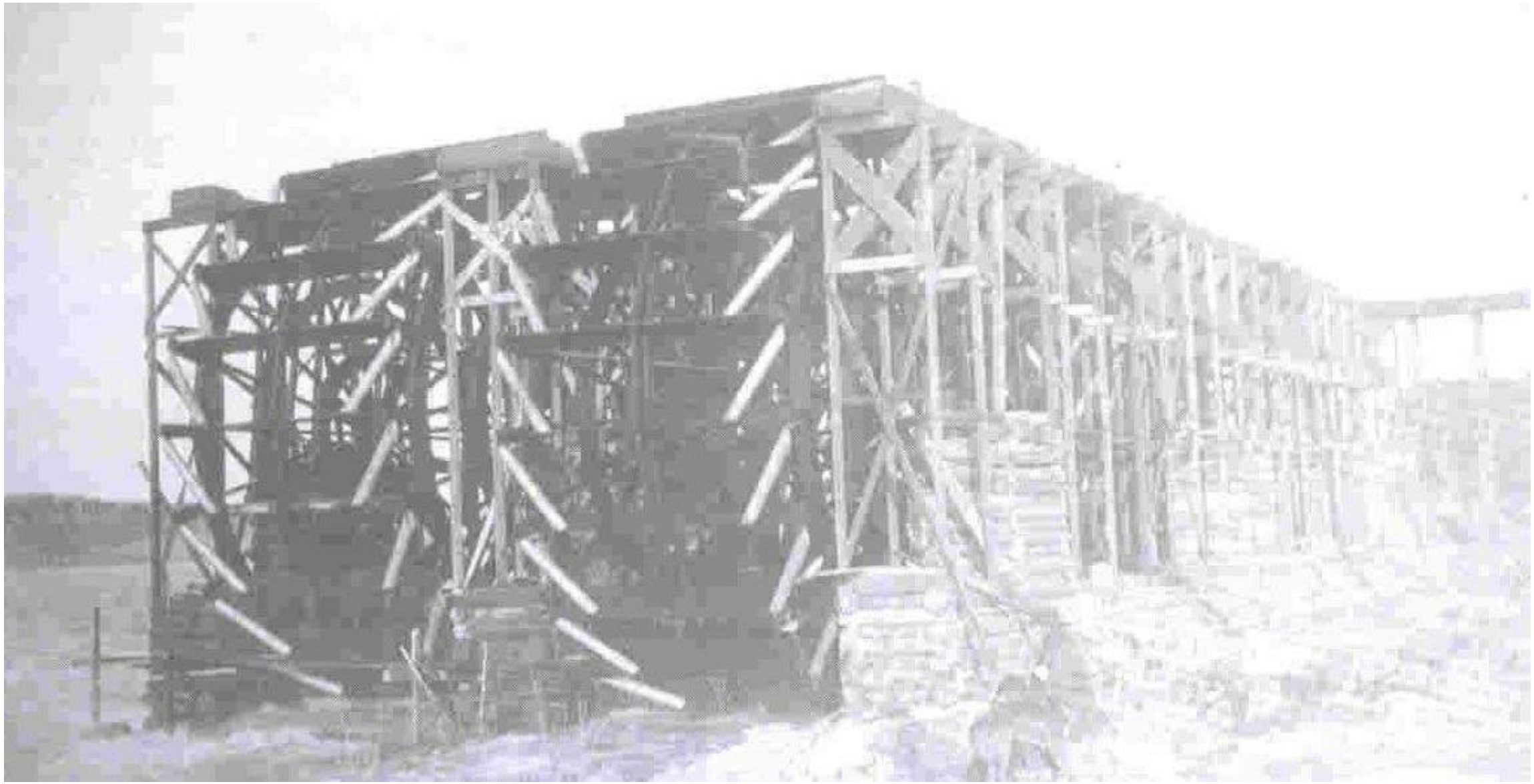
Extended the New York Canal 40 miles to Lake Lowell

Boise River's flows varied greatly throughout the year

- Raging in the spring
- A trickle during the summer

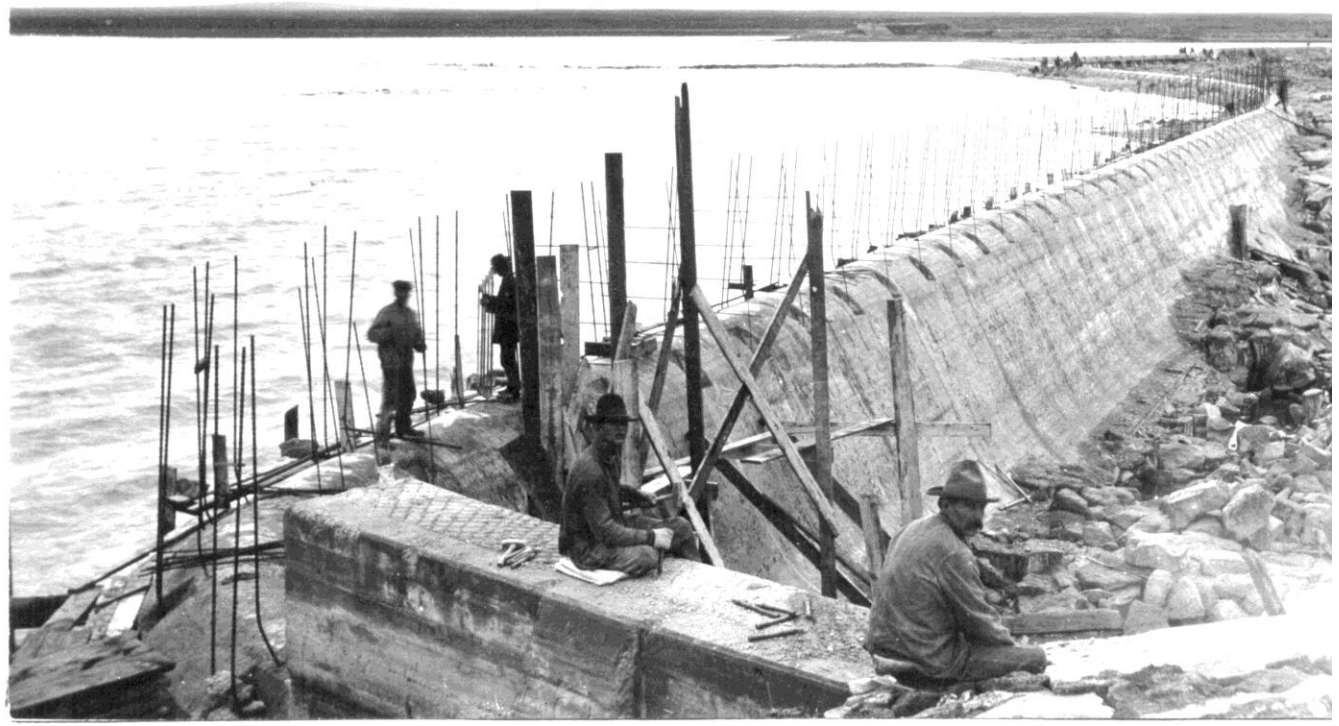
Water storage would be necessary for long-term success of irrigation in the valley

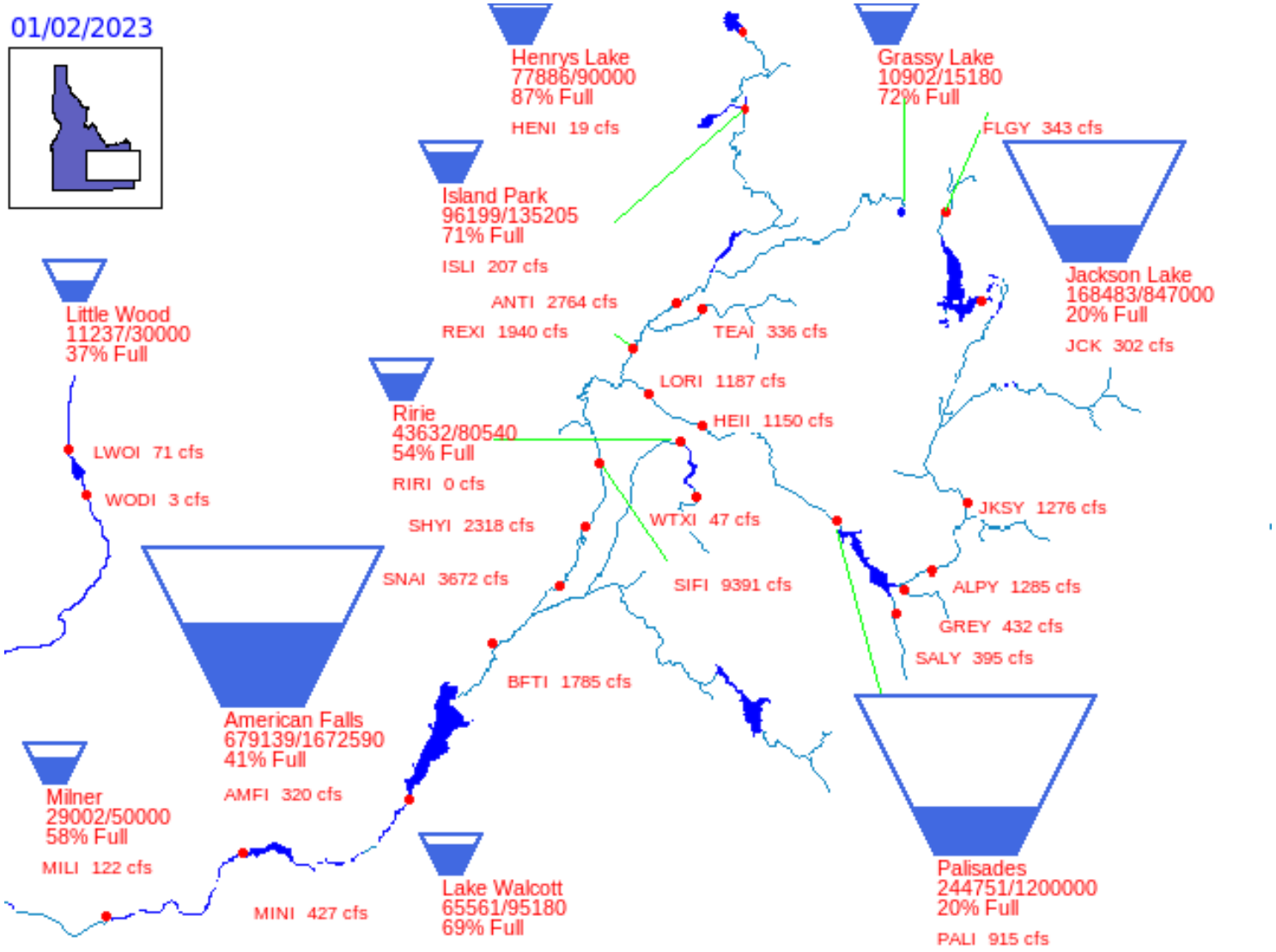


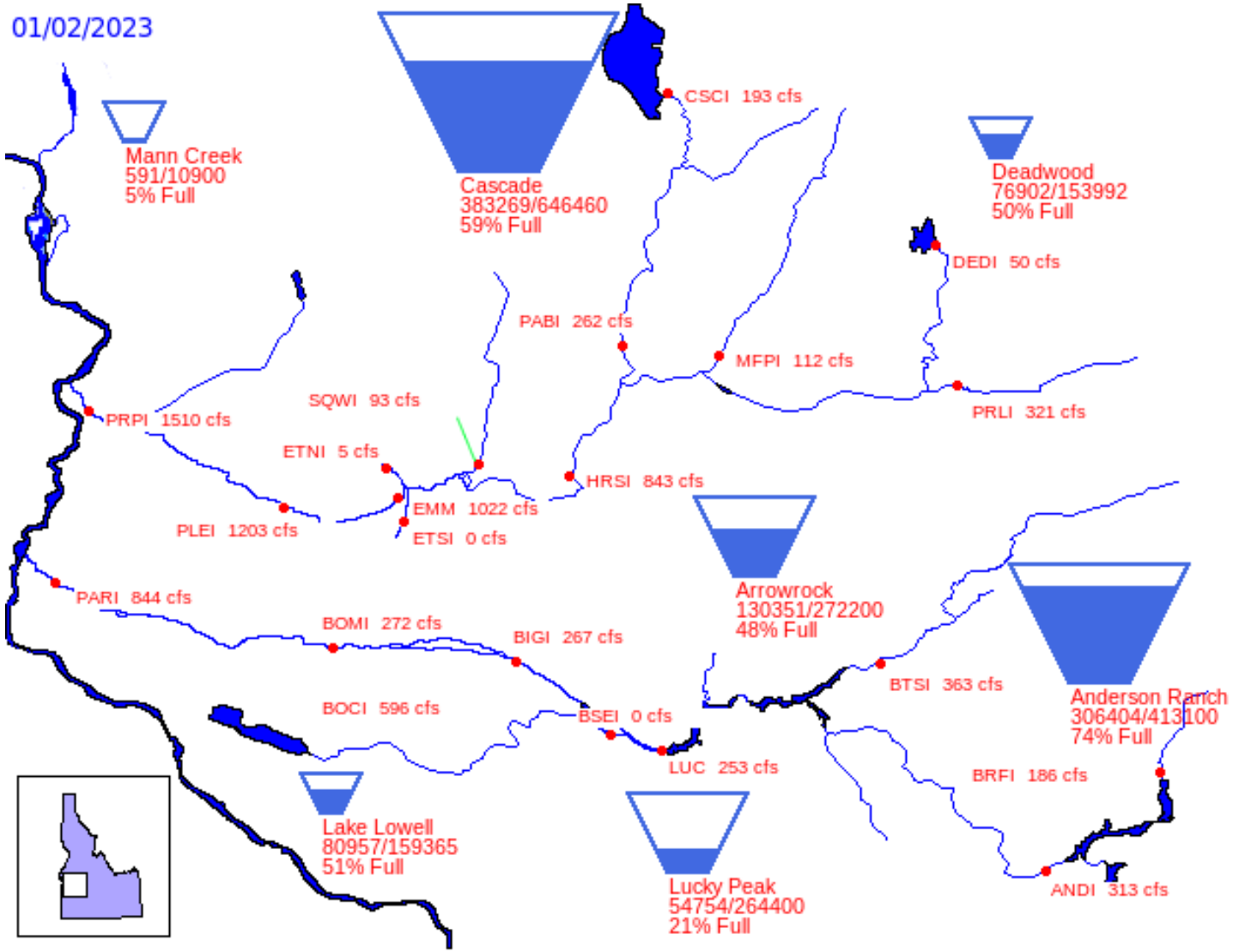


Henry Shodde Water Wheel at Starrs Ferry near Burley (Circa 1890)

Minidoka Dam (Lake Walcott) - First Reclamation Dam in Idaho 1906




01/02/2023
Henrys Lake
77886/90000
87% Full
HENI 19 cfs
Grassy Lake
10902/15180
72% Full
FLGY 343 cfs
Island Park
96199/135205
71% Full
ISLI 207 cfs
ANTI 2764 cfs
REXI 1940 cfs
TEAI 336 cfs
Jackson Lake
168483/847000
20% Full
JCK 302 cfs
Little Wood
11237/30000
37% Full
LWOI 71 cfs
WODI 3 cfs
LORI 1187 cfs
Ririe
43632/80540
54% Full
RIRI 0 cfs
HEII 1150 cfs
SHYI 2318 cfs
WTXI 47 cfs
JKSY 1276 cfs
SNAI 3672 cfs
SIFI 9391 cfs
ALPY 1285 cfs
GREY 432 cfs
SALY 395 cfs
BFTI 1785 cfs
American Falls
679139/1672590
41% Full
AMFI 320 cfs
Milner
29002/50000
58% Full
MILI 122 cfs
MINI 427 cfs
Lake Walcott
65561/95180
69% Full
Palisades
244751/1200000
20% Full
PALI 915 cfs


01/02/2023
Mann Creek
591/10900
5% Full
Cascade
383269/646460
59% Full
CSCI 193 cfs
Deadwood
76902/153992
50% Full
DEDI 50 cfs
PABI 262 cfs
MFPI 112 cfs
PRLI 321 cfs
SQWI 93 cfs
PRPI 1510 cfs
ETNI 5 cfs
HRSI 843 cfs
EMM 1022 cfs
PLEI 1203 cfs
ETSI 0 cfs
Arrowrock
130351/272200
48% Full
PARI 844 cfs
BOMI 272 cfs
BIGI 267 cfs
BTSI 363 cfs
Anderson Ranch
306404/413100
74% Full
BOCI 596 cfs
BSEI 0 cfs
LUC 253 cfs
BRFI 186 cfs
Lake Lowell
80957/159365
51% Full
Lucky Peak
54754/264400
21% Full
ANDI 313 cfs

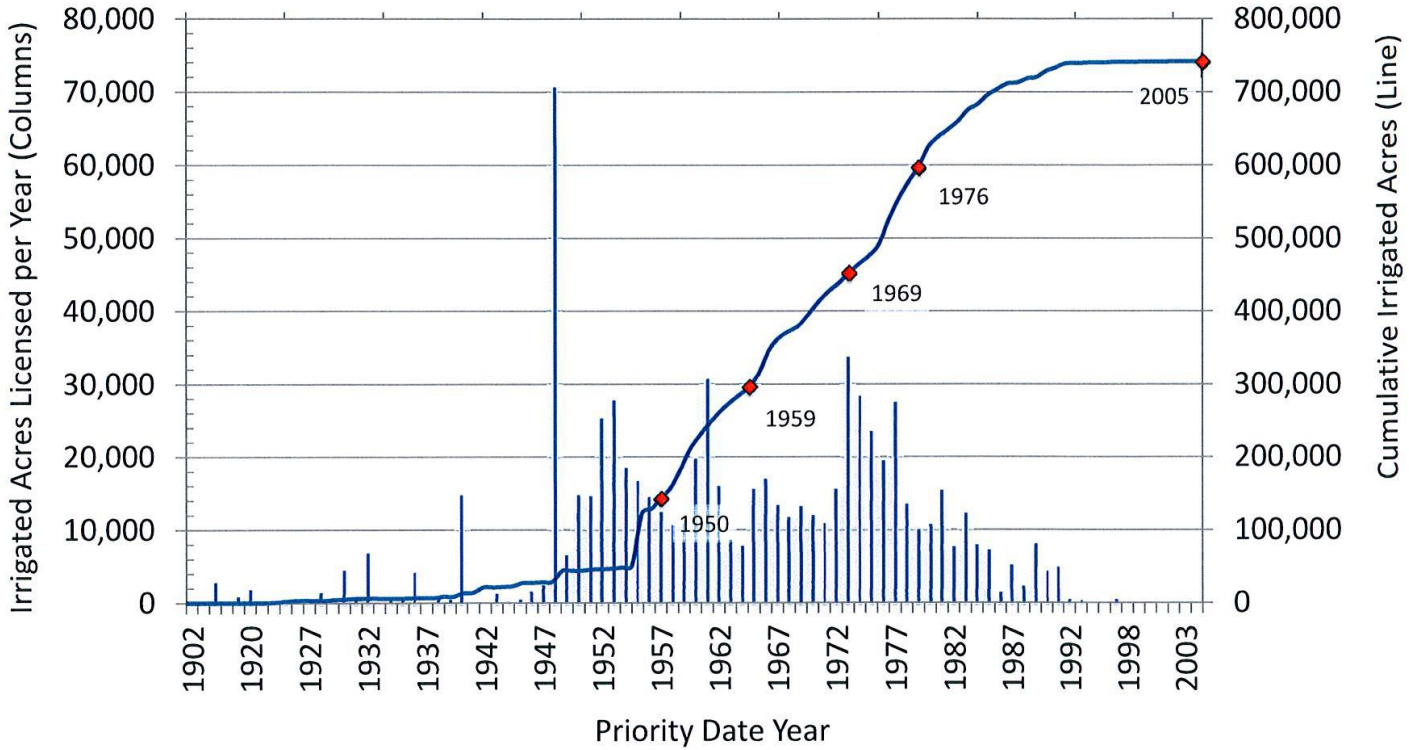
	Boise	Minidoka	Owyhee	Palisades
Crops	$624,575,000	$704,104,000	$155,250,000	$650,900,000
Livestock	$645,000,000	$387,144,000	$93,150,000	$355,448,000
Hydropower	$13,975,000	$6,339,200	$0	$31,413,000
Flood Prevention	$183,287,500	$9,961,600	$755,550	$20,942,000
Recreation	$33,002,500	$28,300,000	$4,830,000	$16,640,400
TOTAL	**$1,499,840,000**	**$1,135,848,800**	**$253,985,550**	**$1,075,343,400**

Water Development Provides Significant Value to Idaho's Economy

Groundwater Development Begins

- 1947 – first known groundwater well drilled
- Julian Clawson, a Salt Lake City businessman, drilled for water north of Rupert.
- Drilled three 20" wells to 400' and irrigated 3800 acres.
- In following years, further development was encouraged by the State and Idaho Power.
  - 1948: 24,000 irrigated acres from 80 wells.
  - 1955: 350 wells
  - Today: over 5,300 wells.

Irrigated Acreage Development by Priority Date Year

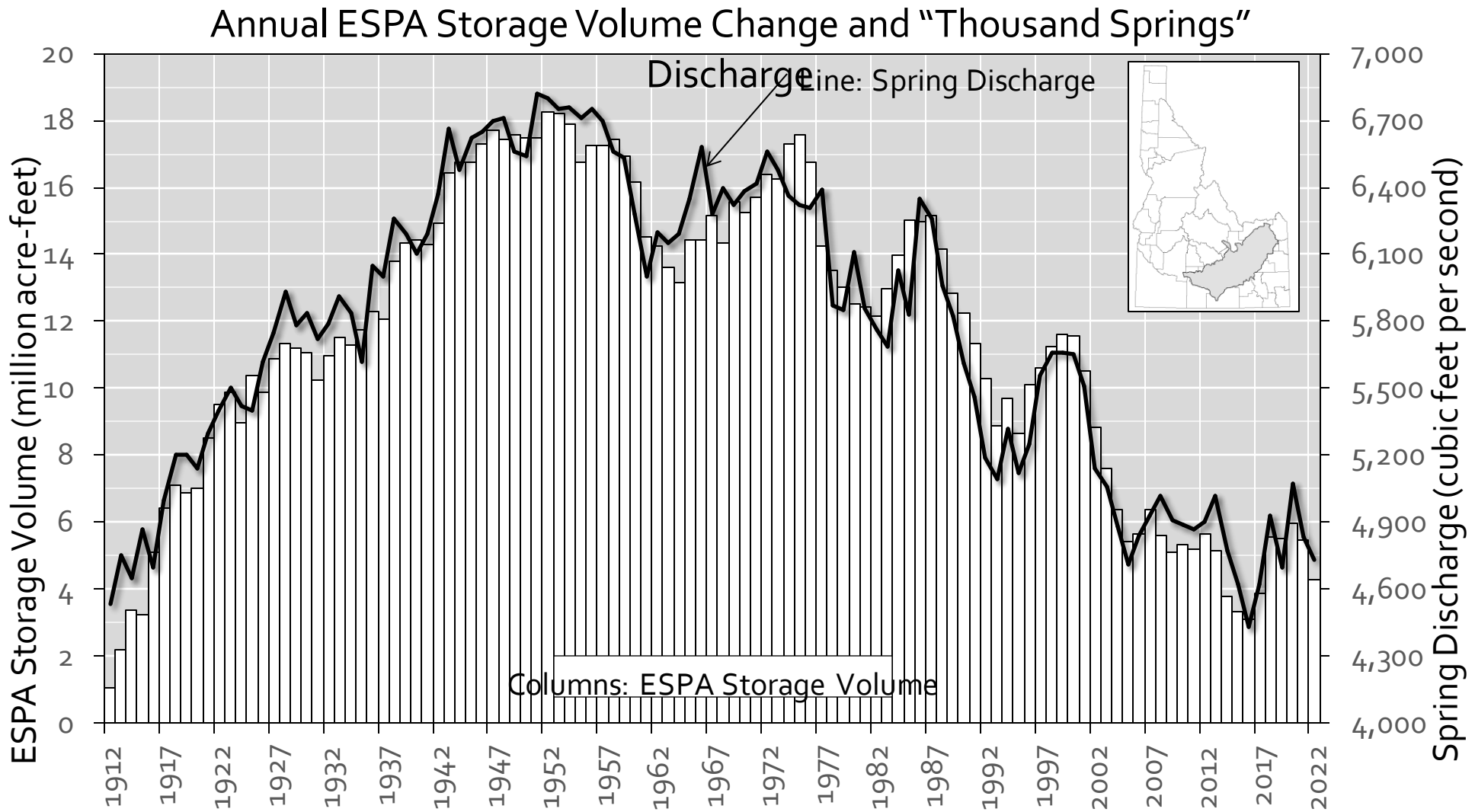


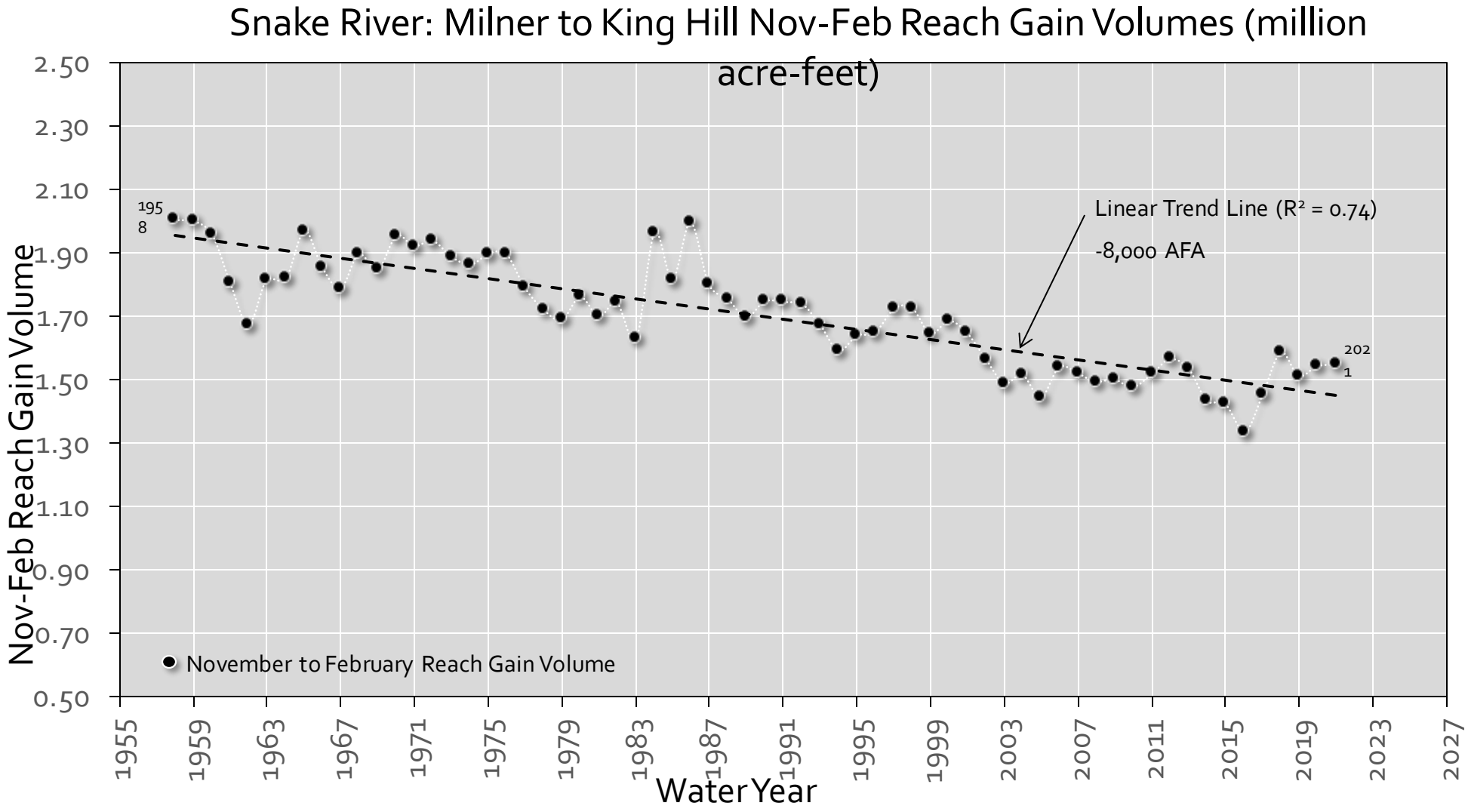
Cumulative Groundwater Irr. Acres within GWD from 1902 to Present ≈ 741,343 Acres

IDAHO Department of Water Resources

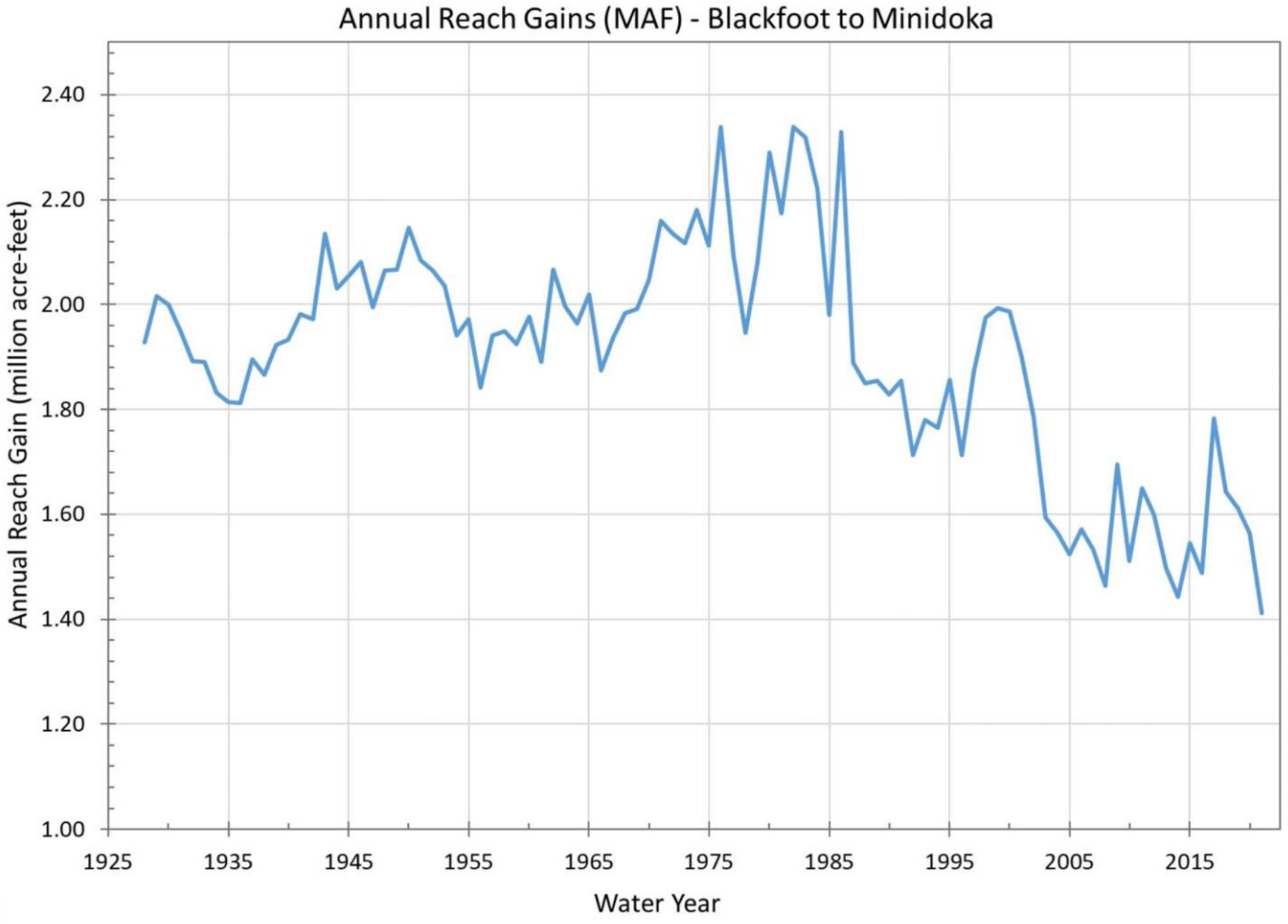
*Irrigated acreage is estimated by summing total WR diversion rates developed in a single year and assuming a standard duty of water of 0.02 CFS per acre.

The Challenges

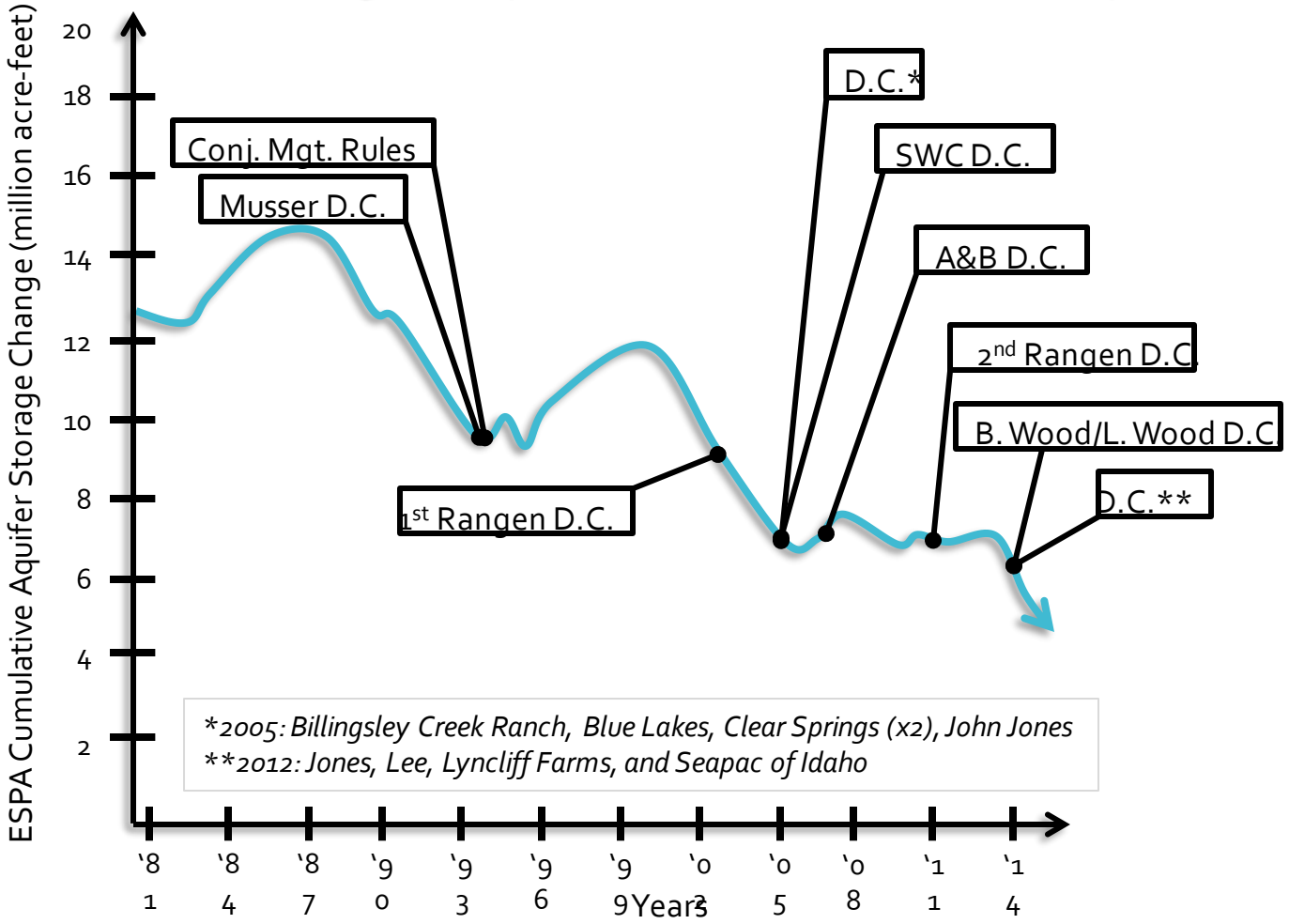

Annual ESPA Storage Volume Change and "Thousand Springs" Discharge
Line: Spring Discharge
Columns: ESPA Storage Volume
ESPA Storage Volume (million acre-feet)
Spring Discharge (cubic feet per second)
0
2
4
6
8
10
12
14
16
18
20
4,000
4,300
4,600
4,900
5,200
5,500
5,800
6,100
6,400
6,700
7,000
1912
1917
1922
1927
1932
1937
1942
1947
1952
1957
1962
1967
1972
1977
1982
1987
1992
1997
2002
2007
2012
2017
2022


Snake River: Milner to King Hill Nov-Feb Reach Gain Volumes (million acre-feet)
Nov-Feb Reach Gain Volume
2.50
2.30
2.10
1.90
1.70
1.50
1.30
1.10
0.90
0.70
0.50
1955
1959
1963
1967
1971
1975
1979
1983
1987
1991
1995
1999
2003
2007
2011
2015
2019
2023
2027
Water Year
1958
2021
Linear Trend Line (R² = 0.74)
-8,000 AFA
November to February Reach Gain Volume

Near Blackfoot to Minidoka Reach Gains – 1928 to 2021



Cumulative Change in Aquifer Volume vs. ESPA Delivery Calls



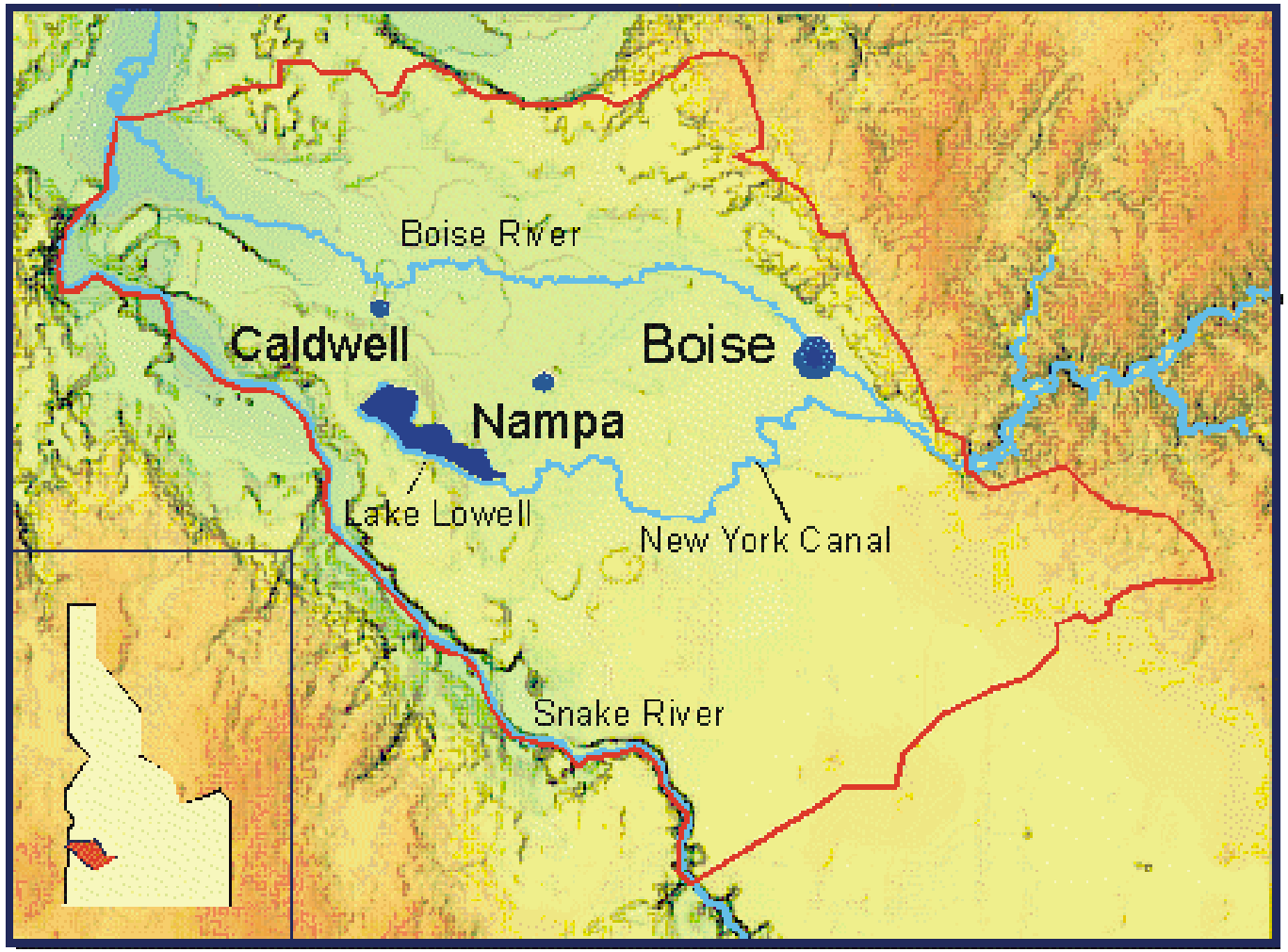
Far reaching impacts to economy

Immediate

- Farm level impacts / family legacies
- Crop contracts

Far reaching:

- Suppliers: Seed, chemical, equipment, irrigation
- Services: Mechanic, repair, etc.
- Feed: Dairy and livestock operations
- Financial: Banks
- Food Service: Inability to meet production needs with crops from Idaho
- Ripple effects through communities (primarily smaller communities)
- Attracting / retaining business in Idaho



The Treasure Valley

Population expected to increase from 625k in 2015 to 1.57 million in 2065

Households expected to increase by 280% - from 226,600 to 638,700

Average temperatures could increase by 1.9 to 6.1 degrees (increasing evapotranspiration by 5-20%

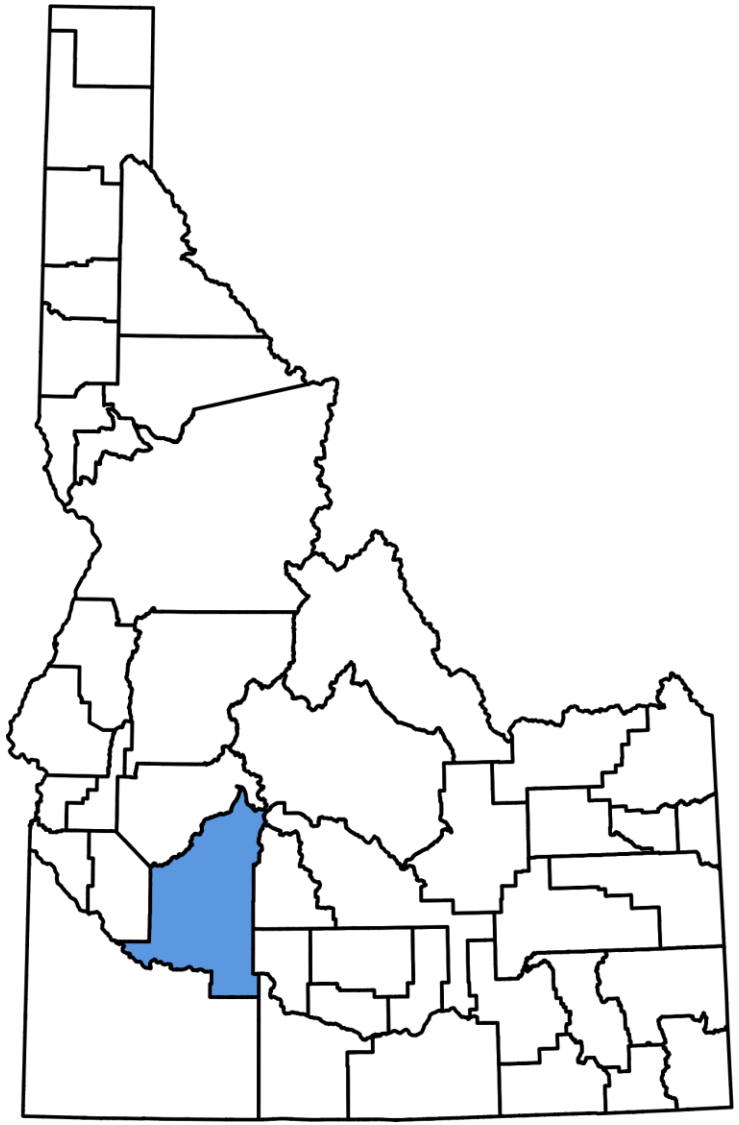
Increase of 109,000 to 188,000 AF/year by 2065

Elmore County

Water-level declines of 100-200 feet since the 1960's

Current decline of 5-feet per year in areas

Annual pumping deficits of 43,000 AF/year



Rathdrum Prairie Aquifer

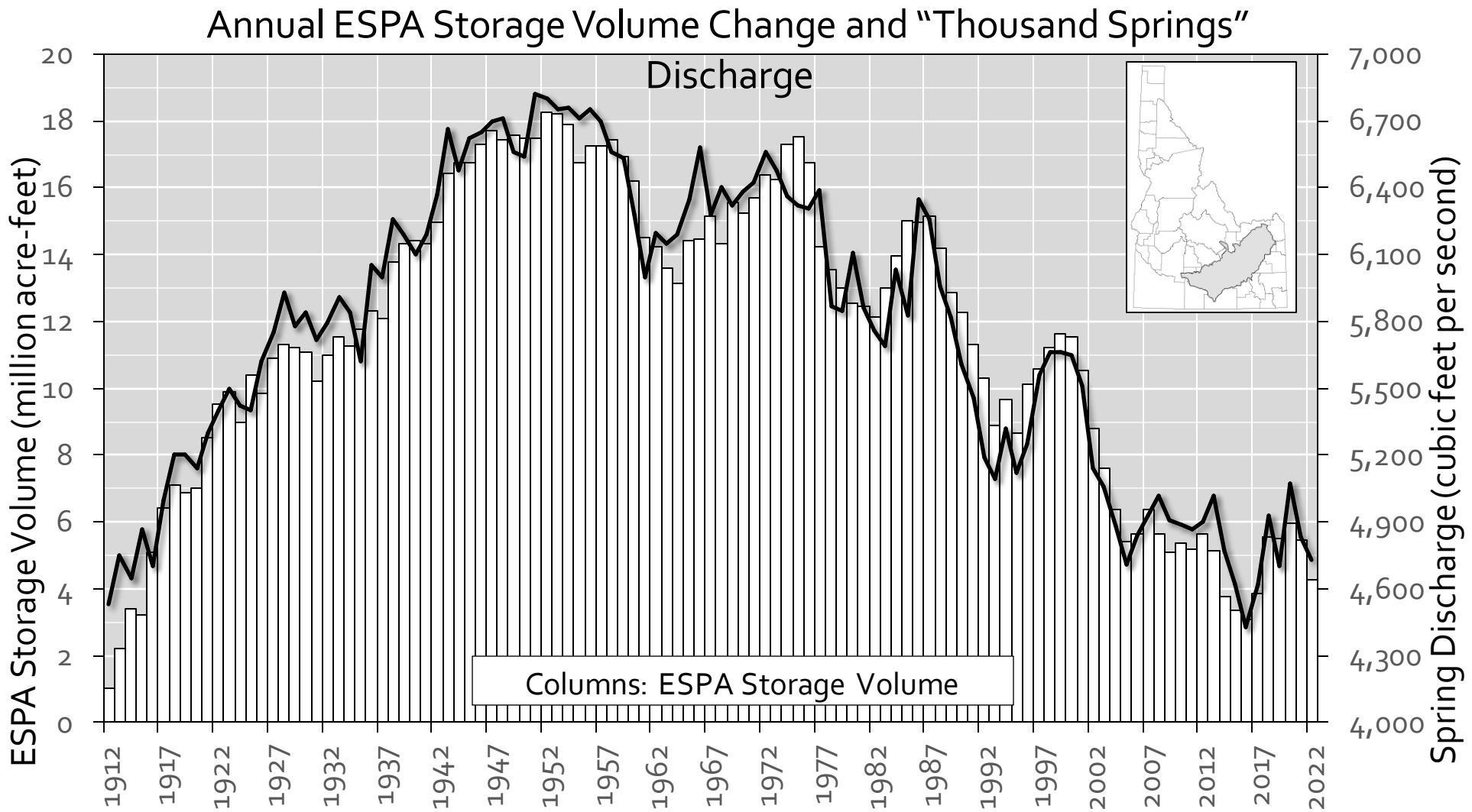
Anticipated population growth of 88,000 by 2045

Maximum daily demand will increase by 61.56 cfs; and the peak hourly demand will increase by 159.41 cfs by 2045

Palouse Aquifer (Idaho)

- 4,874 af/year increase in demand by 2065
- 2,256 af/year required to stabilize the aquifer

The Opportunities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6,100
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6,700
7,000
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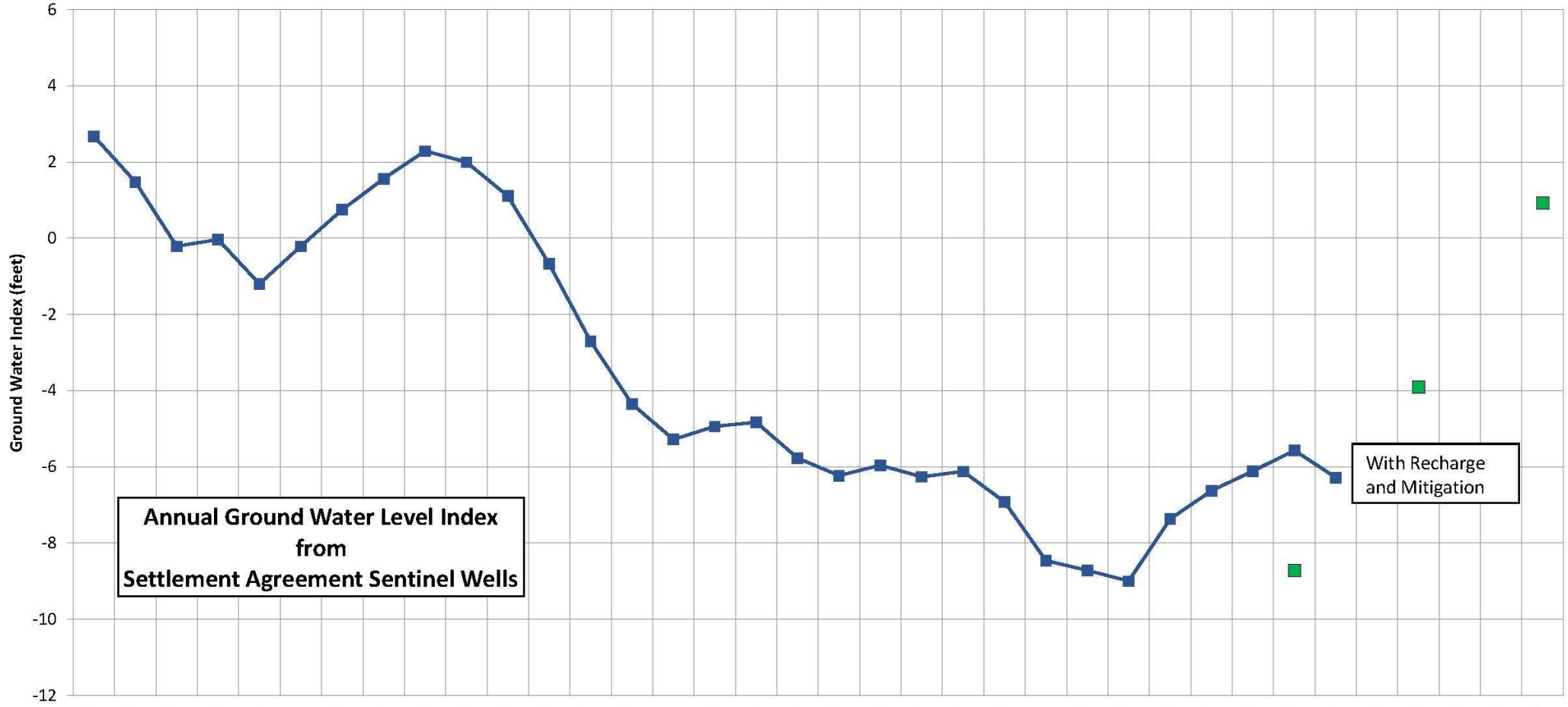
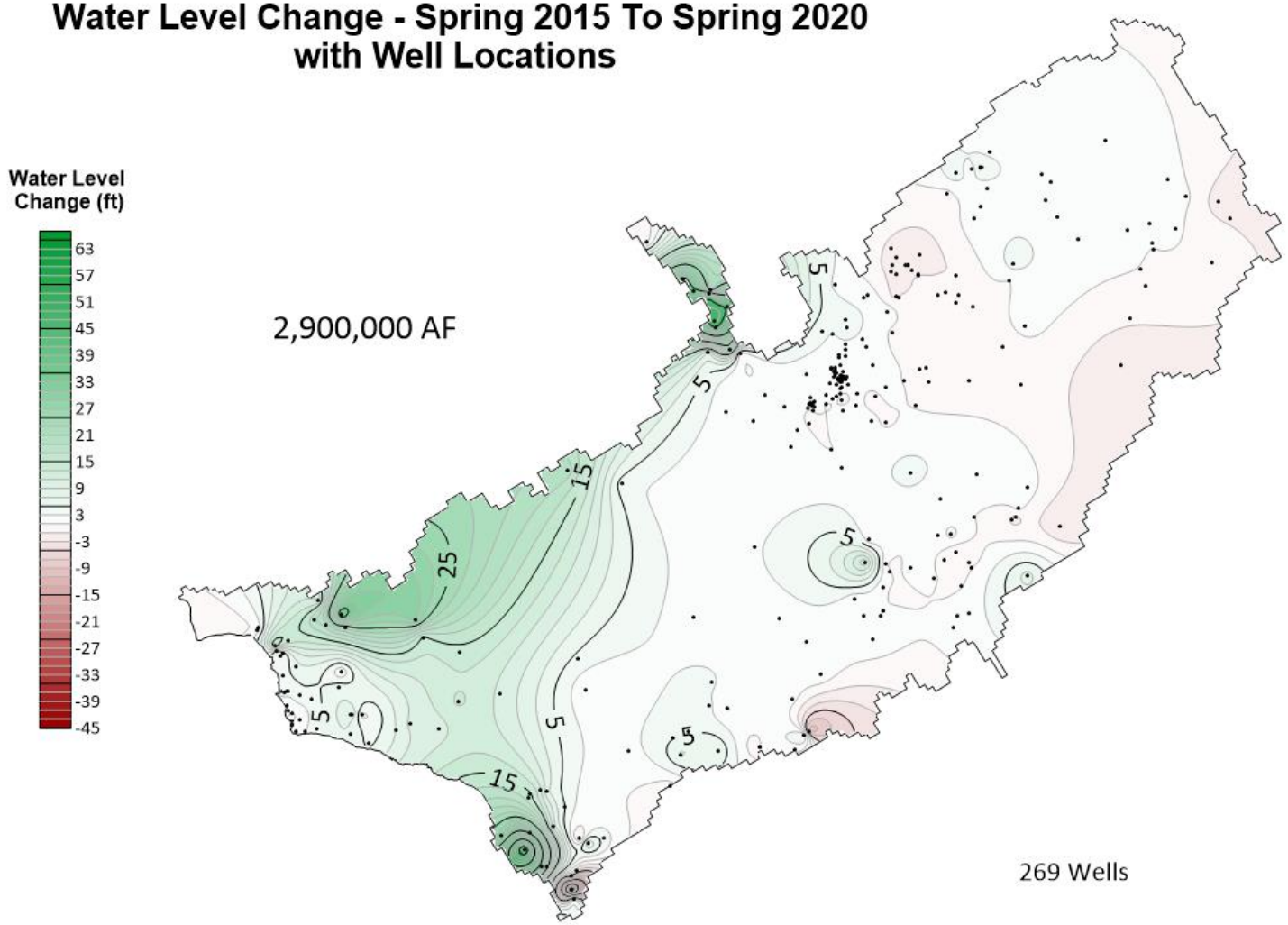
1997
2002
2007
2012
2017
2022

A combination of wet years and changes in aquifer management have resulted in an increased sentinel index



Water Level Change - Spring 2015 To Spring 2020 with Well Locations



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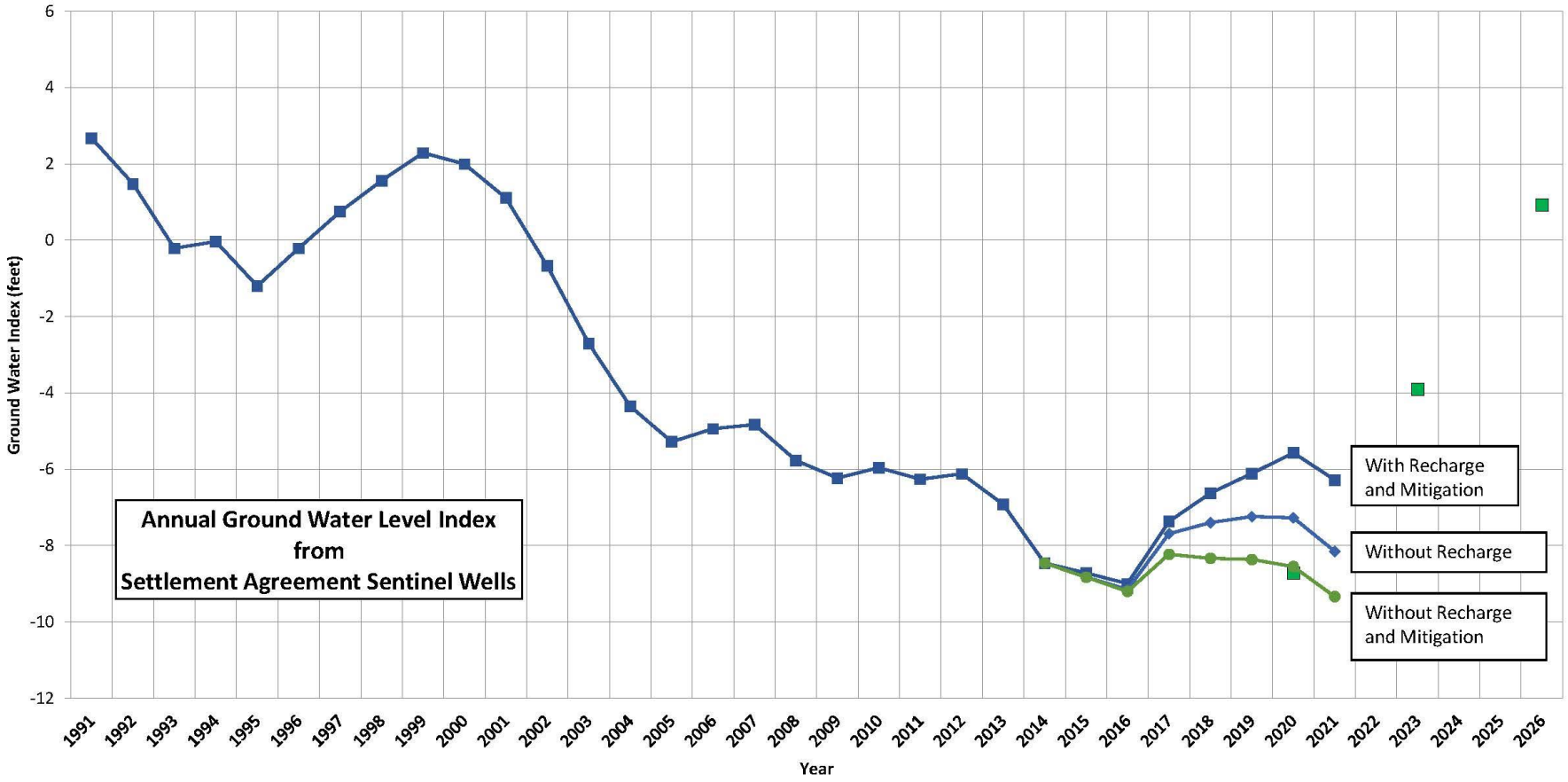
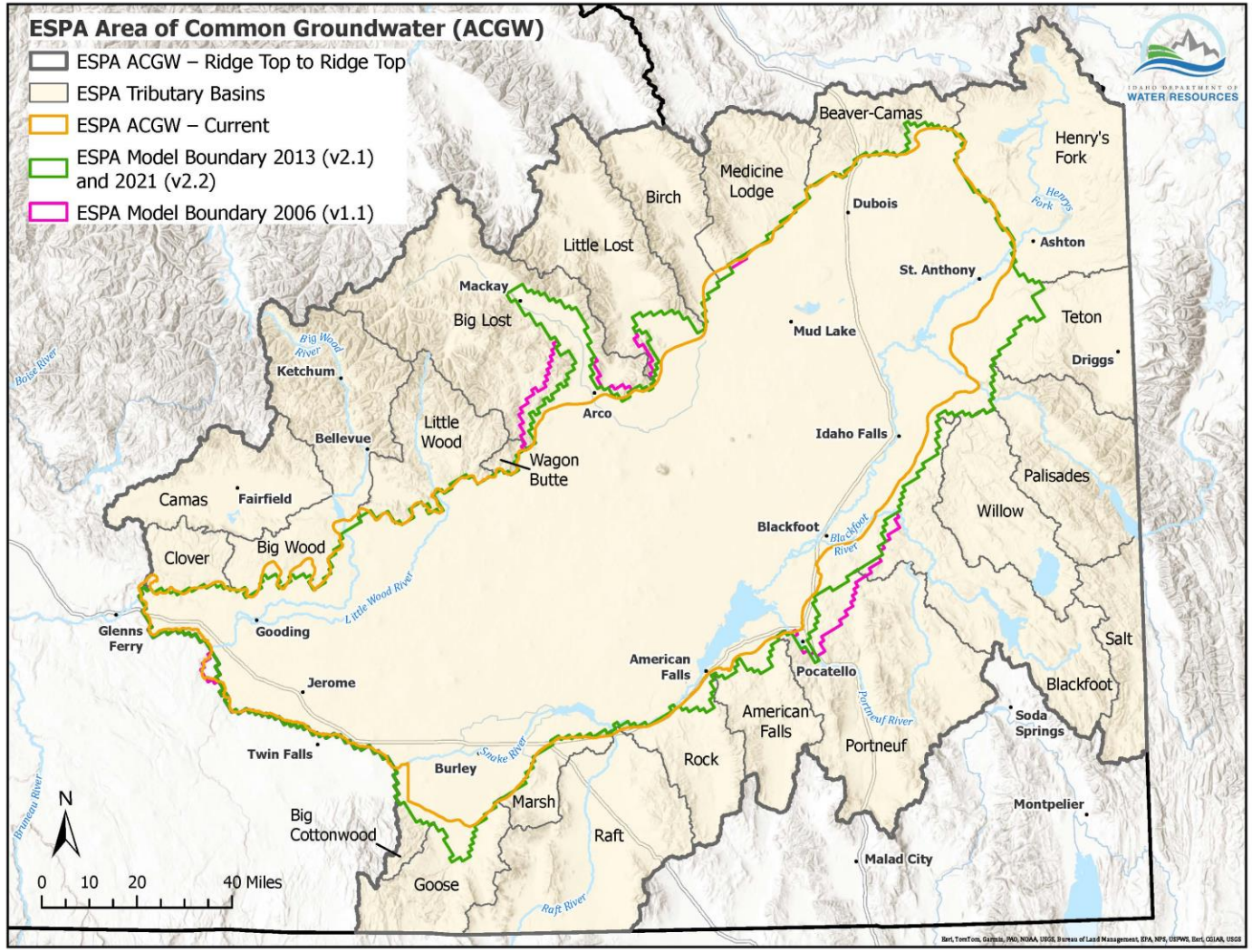



ESPA Area of Common Groundwater (ACGW)
ESPA ACGW – Ridge Top to Ridge Top
ESPA Tributary Basins
ESPA ACGW – Current
ESPA Model Boundary 2013 (v2.1) and 2021 (v2.2)
ESPA Model Boundary 2006 (v1.1)
IDAHO DEPARTMENT OF WATER RESOURCES
Beaver-Camas
Henry's Fork
Medicine Lodge
Birch
Dubois
Henrys Fork
Ashton
Little Lost
St. Anthony
Mackay
Big Lost
Mud Lake
Teton
Big Wood River
Boise River
Driggs
Ketchum
Arco
Idaho Falls
Little Wood
Bellevue
Wagon Butte
Palisades
Camas
Fairfield
Willow
Blackfoot
Blackfoot River
Clover
Big Wood
Little Wood River
Glenns Ferry
Gooding
Salt
American Falls
Pocatello
Jerome
Blackfoot
Soda Springs
American Falls
Portneuf River
Twin Falls
Snake River
Portneuf
Rock
Burley
Marsh
Montpelier
Big Cottonwood
Raft
Malad City
Goose
Raft River
Bruneau River
N
0 10 20 40 Miles

What is "Domestic" (I.C. 42-111(1))?

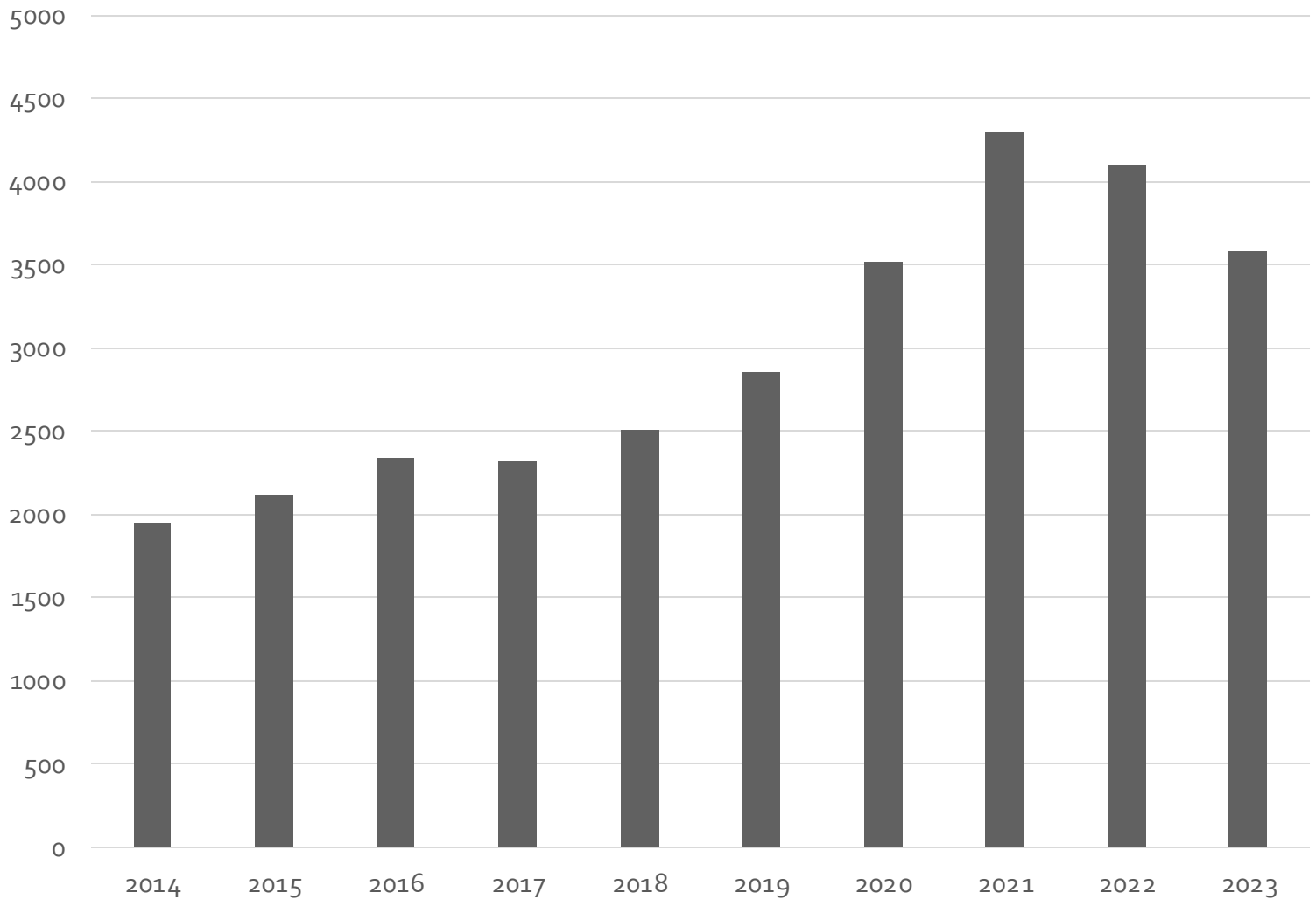
The phrase "domestic purposes" or "domestic uses" means:

(a) The use of water for homes, organization camps, public campgrounds, livestock and for any other purpose in connection therewith, including irrigation of up to one-half (1/2) acre of land, if the total use is not in excess of thirteen thousand (13,000) gallons per day, or

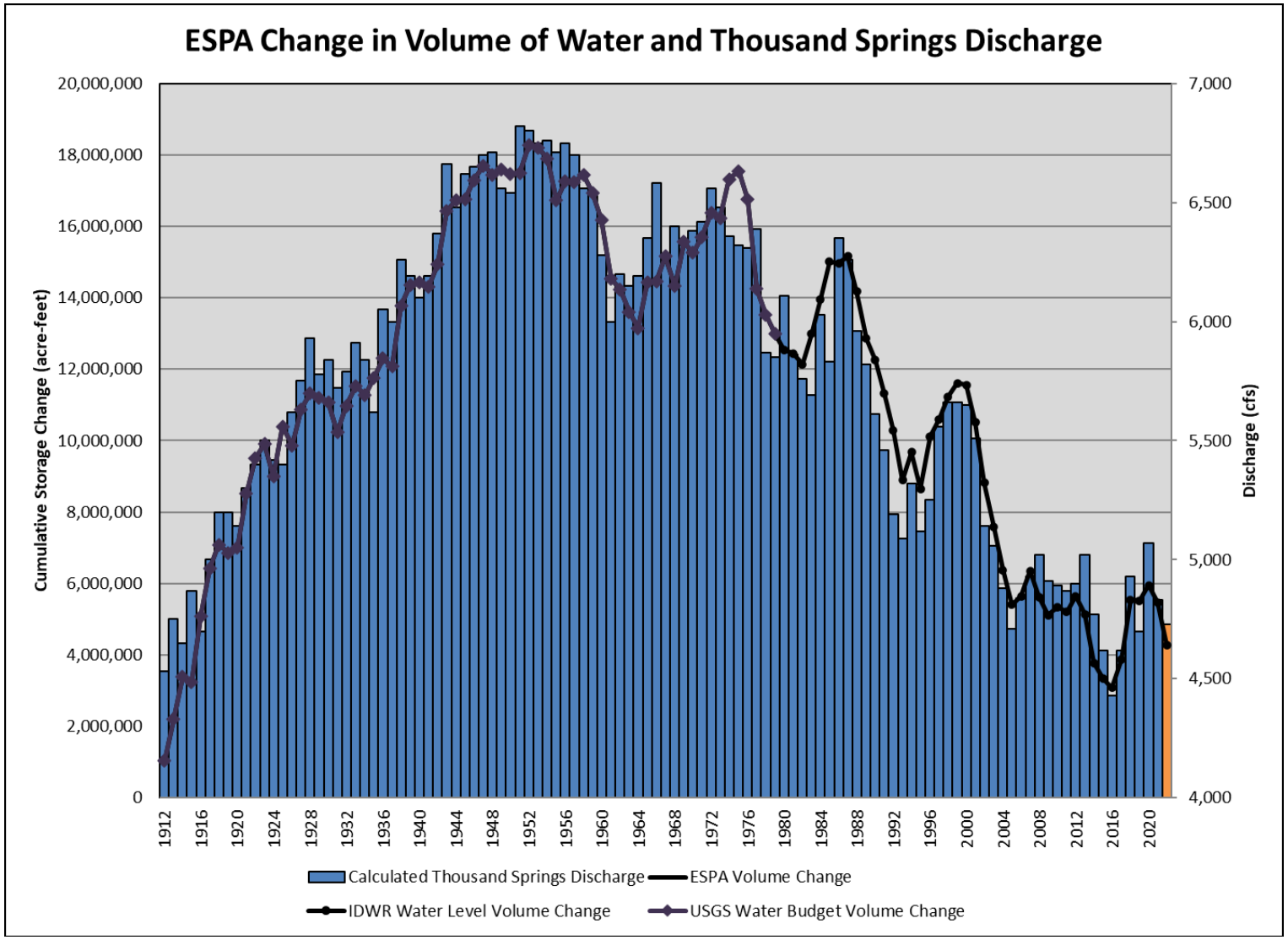
(b) Any other uses, if the total use does not exceed a diversion rate of four one-hundredths (0.04) cubic feet per second and a diversion volume of twenty-five hundred (2,500) gallons per day.

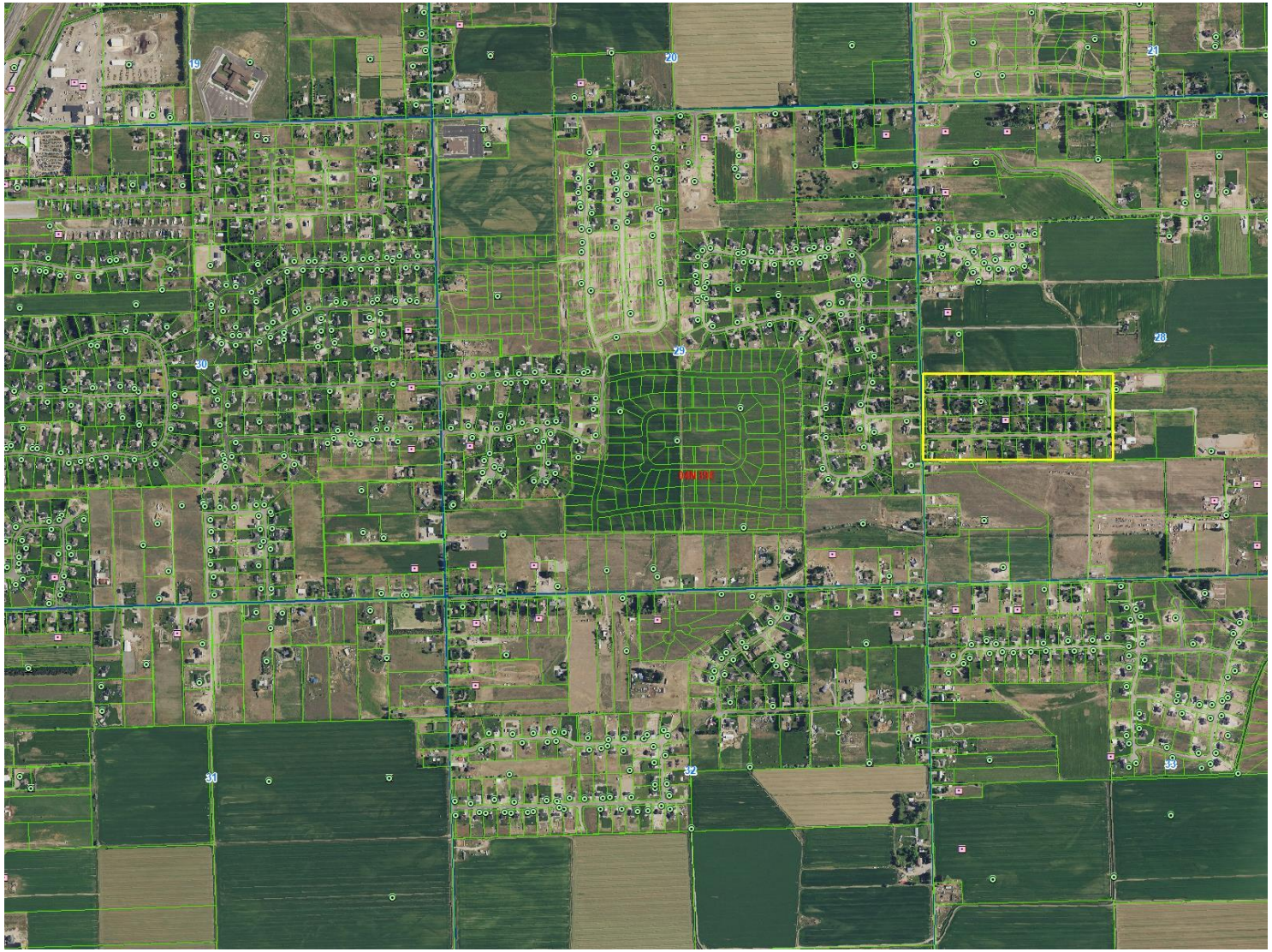
How many domestic exempt wells (pre-2013)?

- IDWR is highly uncertain about the number of *de minimis* claims that have been deferred in the SRBA. Our very preliminary estimate is that there could be as many as 42,000 pre-1987 deferred water rights. If post-1987 water rights are included, the number of additional claims could be 45,000 to 83,000 based on well driller reports. **Thus, we estimate that between 87,000 and 125,000 deferred claims could be filed in the SRBA**



How many domestic exempt wells (2014-2023)?


ESPA Change in Volume of Water and Thousand Springs Discharge
Cumulative Storage Change (acre-feet)
Discharge (cfs)
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
7,000
6,500
6,000
5,500
5,000
4,500
4,000
1912
1916
1920
1924
1928
1932
1936
1940
1944
1948
1952
1956
1960
1964
1968
1972
1976
1980
1984
1988
1992
1996
2000
2004
2008
2012
2016
2020
Calculated Thousand Springs Discharge
ESPA Volume Change
IDWR Water Level Volume Change
USGS Water Budget Volume Change


19
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32
33

The Strawman

- Reduce use of domestic exempt wells in subdivisions
- Provide path for mitigation for subdivisions (don't want to kill development)
- Strengthen "Retain Surface Water" provisions
- Clarify local government authorities


Questions?