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Water Resource Board

ESPA CAMP – 10 Year Progress Report

Idaho Water Users Association

January 21, 2020

Volume Change of Water Stored Within the Eastern Snake Plain Aquifer and Thousand Springs Total Discharge

Aquifer Storage

Thousand Springs Discharge

40 years of "up"

60 years of "down"

1912 – 1952 Change +17,000,000 AF

1952 – 2015 Change -13,000,000 AF

Average annual 1952-2015 loss of aquifer storage is about 215,000 AF

Aquifer storage and flows from the Thousand Springs are directly correlated

Cumulative Storage Change (acre-feet)

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

Spring Discharge (cfs)

7,000
6,500
6,000
5,500
5,000
4,500
4,000

1912 1915 1918 1921 1924 1927 1930 1933 1936 1939 1942 1945 1948 1951 1954 1957 1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011 2014

Total Thousand Springs Flows

Volume Change

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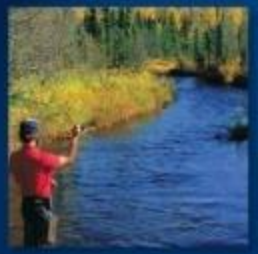

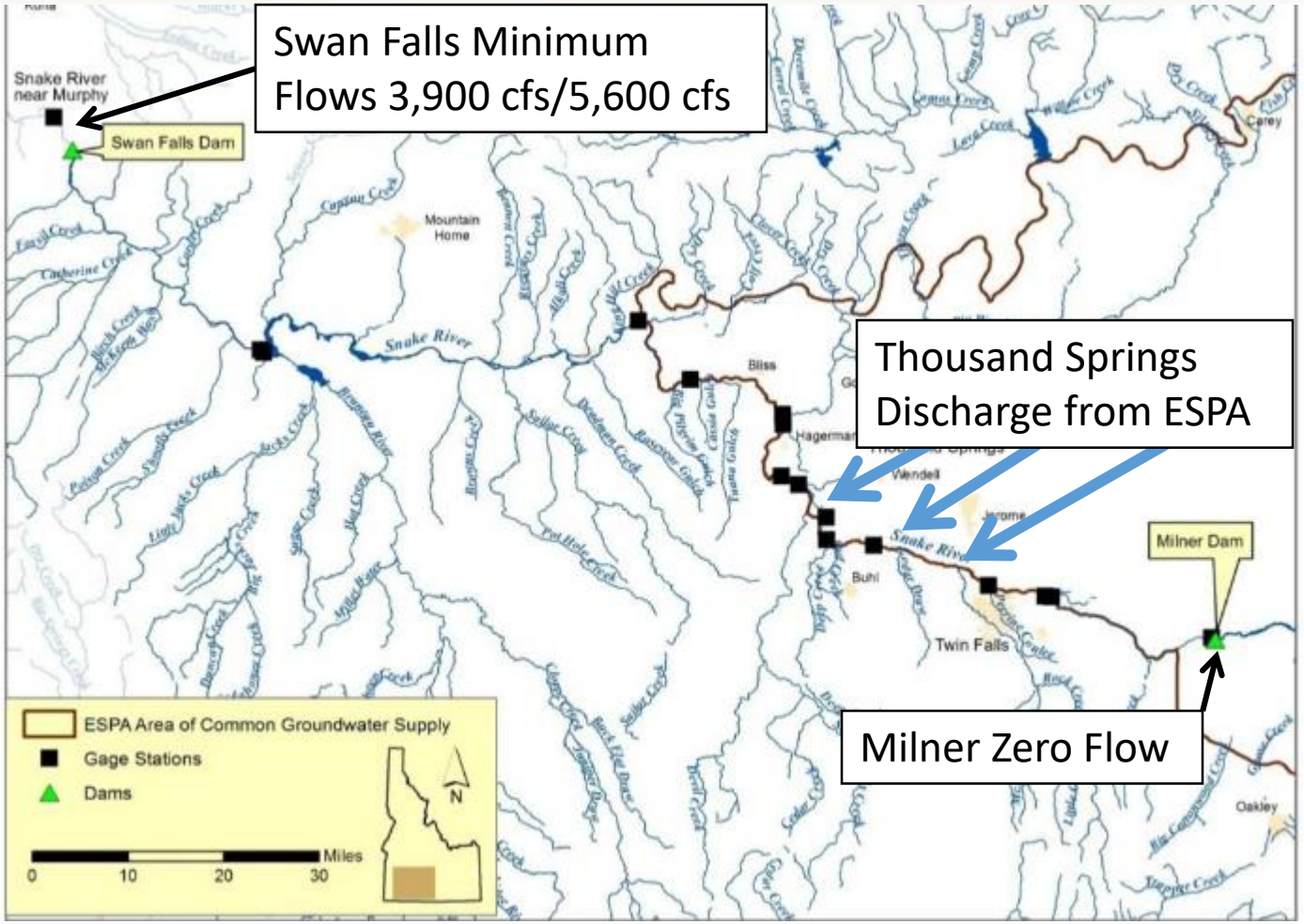

When flow is zero at Milner, flow at Swan Falls Dam is made up almost entirely of spring flows from the ESPA

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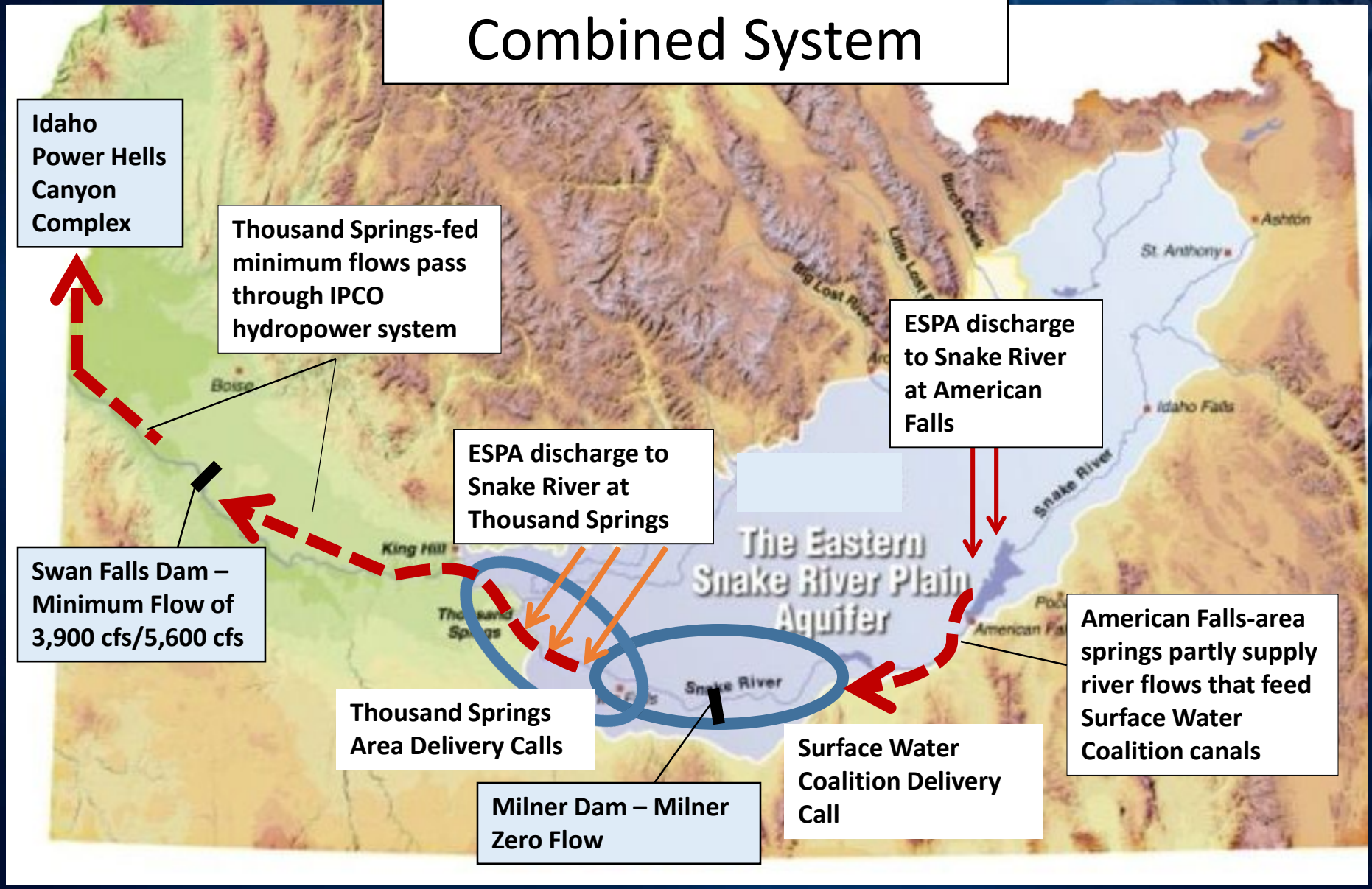
Combined System



- The Comprehensive Aquifer Management Plan (CAMP) was attempt to create a management program for the ESPA to resolve water use conflicts, maintain the Swan Falls minimum flows, and provide other positive outcomes
- The ESPA CAMP adopted by Water Board and approved by Legislature as part of State Water Plan in 2009
- CAMP set goals for management of ESPA by proposing a water budget change of 600,000 AF through management actions:
  - Aquifer Recharge
  - Demand Reduction
  - Ground Water-to-Surface Water Conversions
  - Could Seeding
- CAMP also proposed funding allocation to pay for management -- not adopted

- By letter dated May 8, 2019, Speaker Bedke requested Water Board conduct a 10-year review of CAMP actions and implementation
- Letter included several questions and requested recommendations
- Water Board approached the review as follows:
  - ✓ Inventoried aquifer management actions including those done by State and by others
  - ✓ Reported aquifer level, spring flow, and reach gain responses
  - ✓ Reported on finances provided by State for aquifer management
  - ✓ Conducted review in open, transparent manner through sub-committee meetings
  - ✓ Invited stakeholder input

Major management actions proposed in CAMP have been implemented:

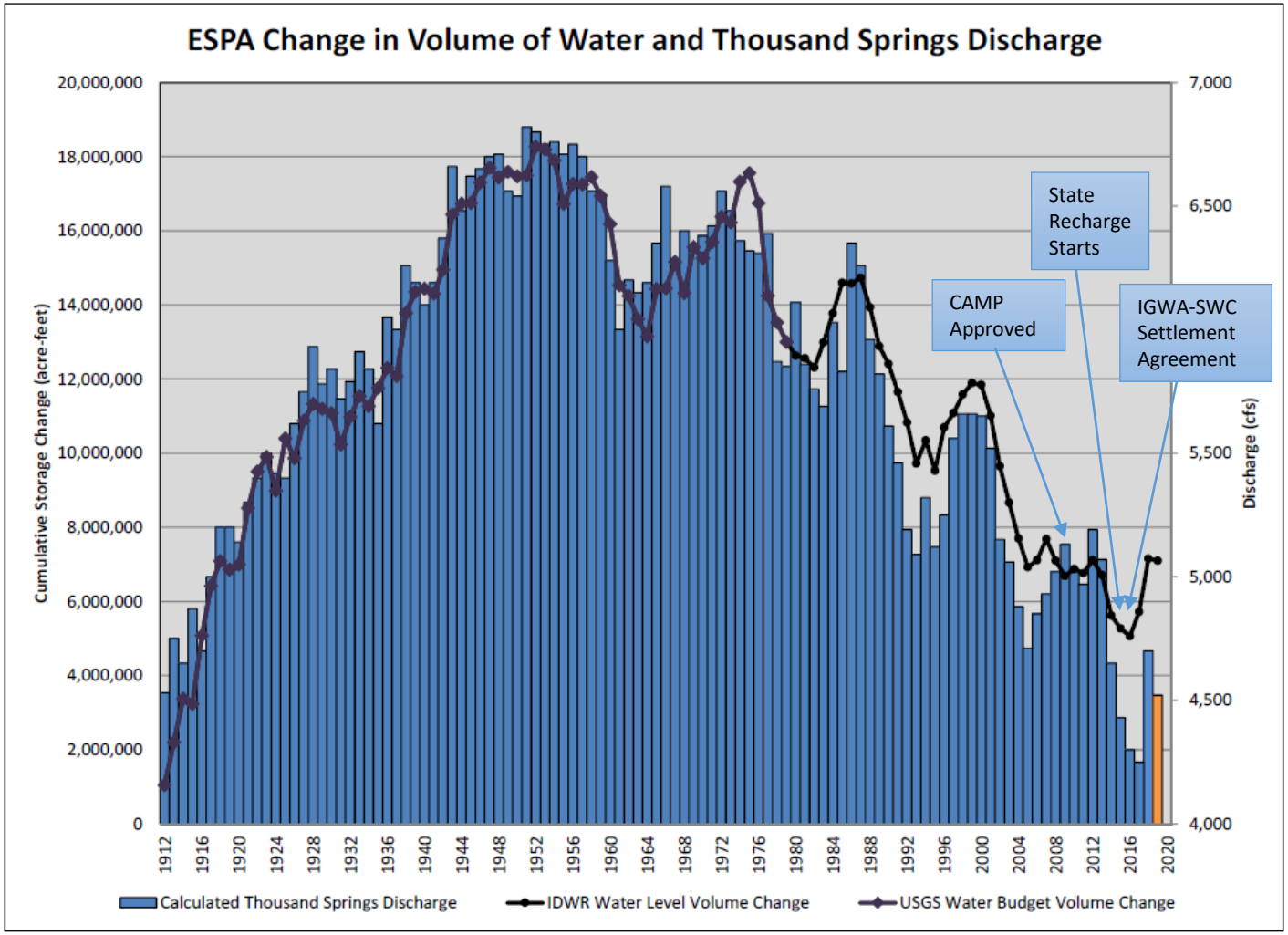
- ✓ Aquifer Recharge – Water Board implementing a 250,000 AF average annual program with state funding and Legislative direction (HB547 in 2014; SCR136 in 2016)
- ✓ Demand Reduction – ground water users agreed to reduce use by 240,000 AF in 2015 SWC-IGWA Settlement Agreement
- ✓ Ground Water-to-Surface Water Conversions – some projects counted toward 240,000 AF reduction; others are separate including 79,000 AF in SWID and 8,000 AF in ABID
- ✓ Cloud Seeding – cooperative program put into place as joint venture between Idaho Power, State, and Water Users in Upper Snake and Wood (and Boise) Basins

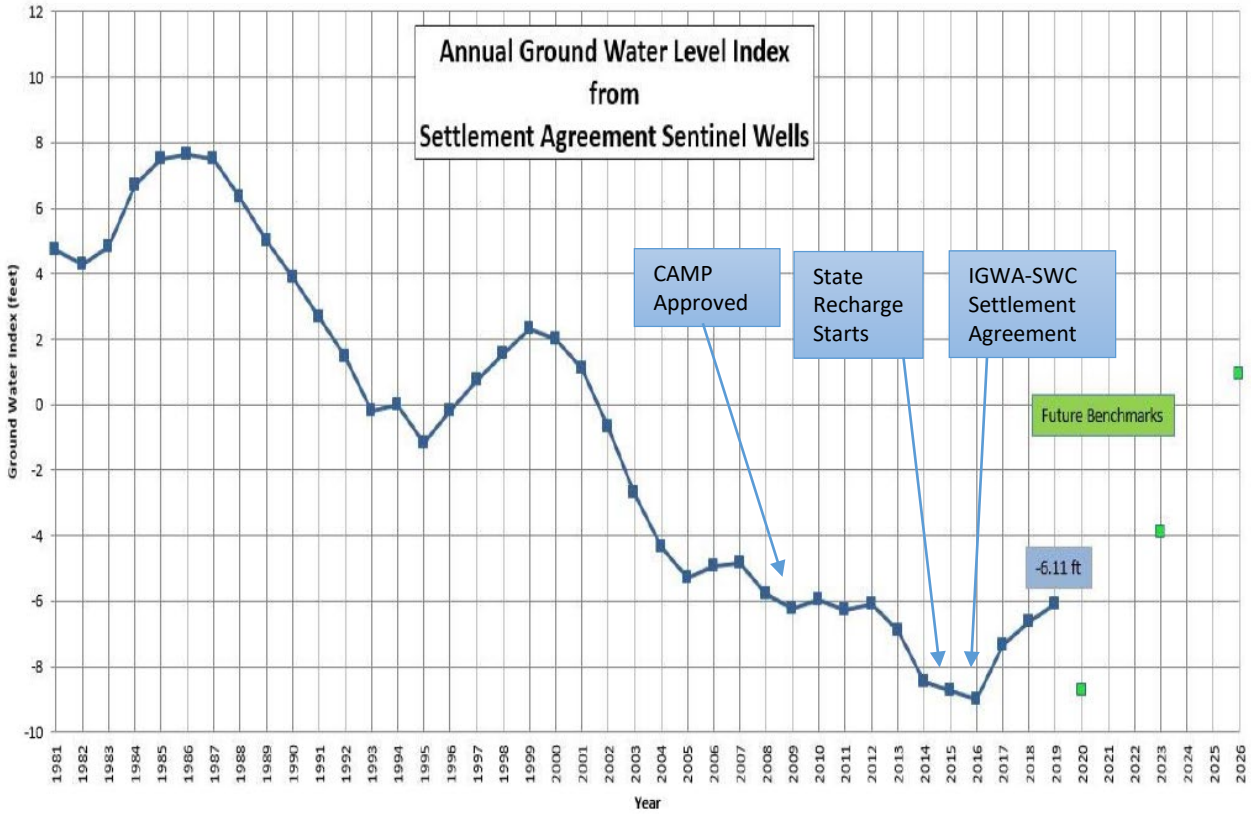
- Other actions contributing to ESPA Aquifer Management:
  - ✓ IGWA-SWC Settlement Agreement – IGWA provides 50,000 AF of storage water to SWC every year -- If not needed by SWC, it is to be used for aquifer management
  - ✓ Cities-SWC-IGWA Settlement Agreement – ESPA Cities agreed to provide 7,650 AF of storage every year to aquifer management
  - ✓ Others – food processors, SWID, ABID agreements
- Adding up all these actions puts at 554,000 AF toward the 600,000 AF CAMP water budget goal from actions reasonably certain to occur
- Other actions occurring that are opportunistic
- CAMP estimated 30 years to reach 600,000 AF

Progress Towards ESPA CAMP Hydrologic Targets		
Action		**Acre-Feet**
IWRB Managed Recharge	Existing Average Annual Capacity	202,000
Demand Reduction		
IGWA-SWC Settlement	2016-2018 Average	239,967
SWID-SWC Settlement	2016-2018 Average	6,421
Ground Water to Surface Water Conversions		
SWID Conversions	2016-2018 Average	78,875
A&B ID Conversions	2016-2018 Average	8,340
Weather Modification/Cloud Seeding	2016-2018 Average	TBD*
Other Annual Activities		
Storage Water from SWC Cities Settlement	Annual Contribution	7,650
SWID Recharge	In addition to IWRB Recharge; 2016-2018 Average	10,894
TOTAL AVERAGE ANNUAL		**554,147**
Opportunistic Activities - Wet Years Only		
Storage Water from SWC-IGWA Settlement	*50, 000 AF contributed for recharge if not needed by SWC*	*50,000*
IGWA Private Recharge	*IGWA-SWC Settlement; 2016-2018 avg.*	*145,130*

Measured by average annual increase in unregulated runoff; currently estimated to be approximately 537,000 acre-feet annually across the ESPA. Efforts are currently underway to determine where the additional water supply is used.

Note – IWRB Managed Recharge numbers are reported as of mid-2019. Additional recharge capacity has been completed since that date (Northside Canal Company) and places the average annual capacity at about 240,000 AF.


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
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
State Recharge Starts
CAMP Approved
IGWA-SWC Settlement Agreement
Calculated Thousand Springs Discharge
IDWR Water Level Volume Change
USGS Water Budget Volume Change


Annual Ground Water Level Index
from
Settlement Agreement Sentinel Wells
CAMP Approved
State Recharge Starts
IGWA-SWC Settlement Agreement
Future Benchmarks
-6.11 ft
Ground Water Index (feet)
Year
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
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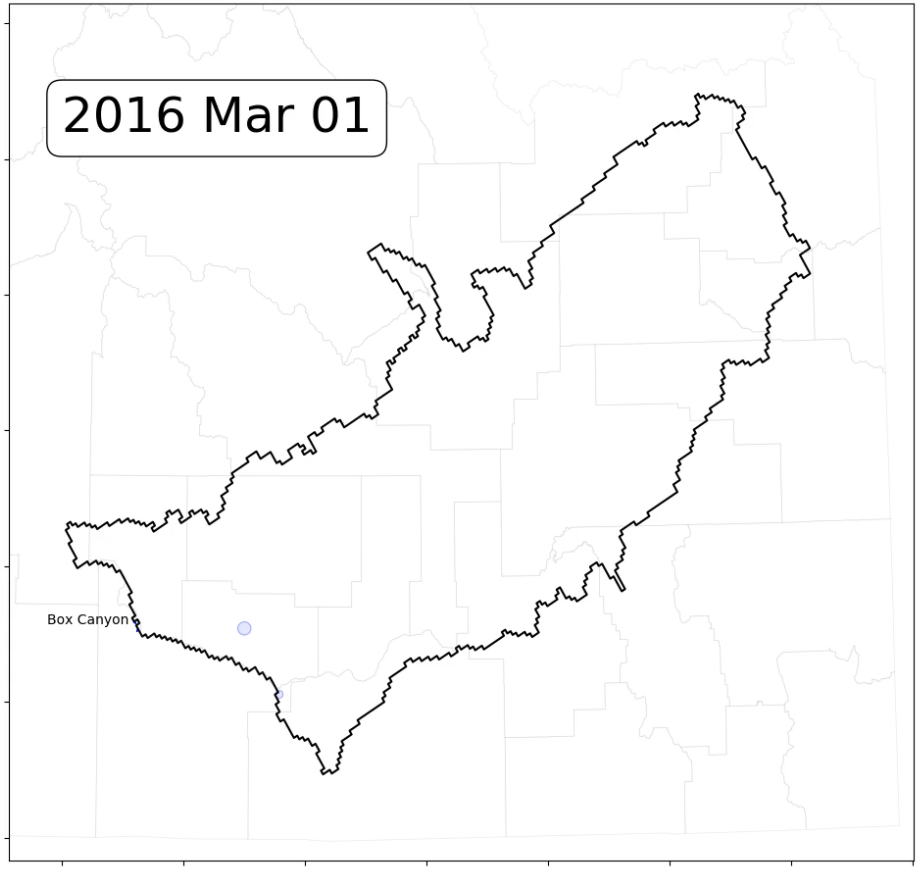
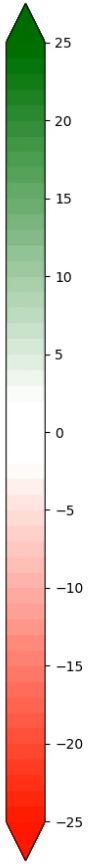
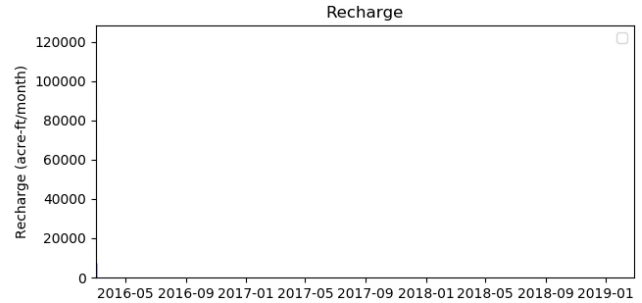
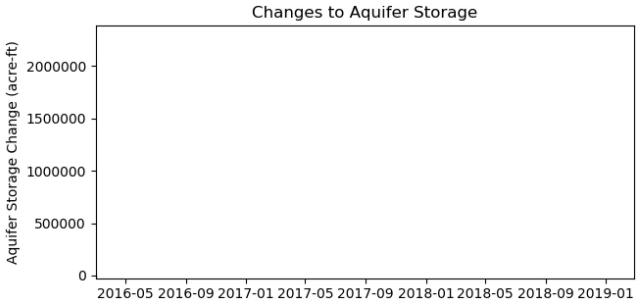
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026

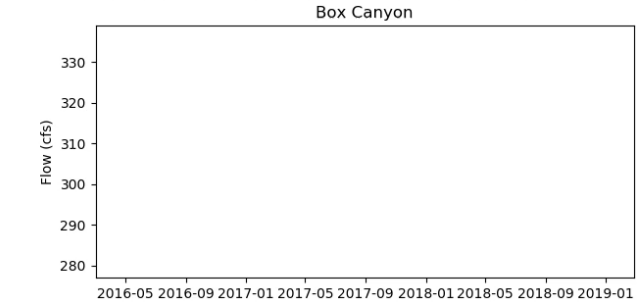
How Has the Aquifer Been Doing?
Observed Aquifer Response 2016-2019



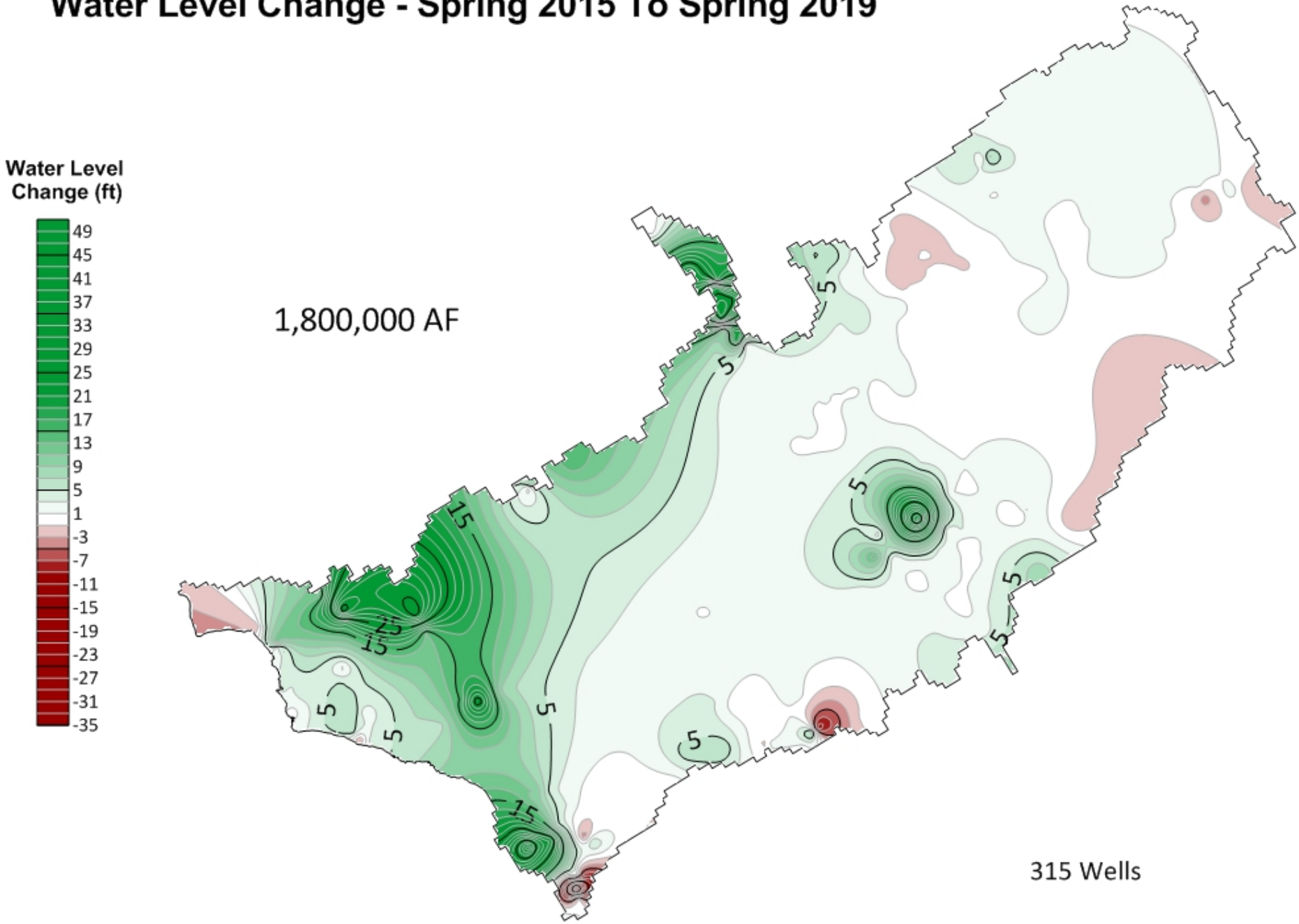








Water Level Change - Spring 2015 To Spring 2019



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A Few Thoughts on Managed Recharge as it Relates to the CAMP

- SCR136 passed by the 2016 Legislature directs IWRB to develop managed recharge program for ESPA of 250,000 AF on average
- How to define average annual? IWRB considered in CAMP review and is proposing a 30-year rolling average.
- Even though recharge in last 3 years has exceeded 250,000 AF, we still don't have enough capacity to average 250,000 AF over long-term

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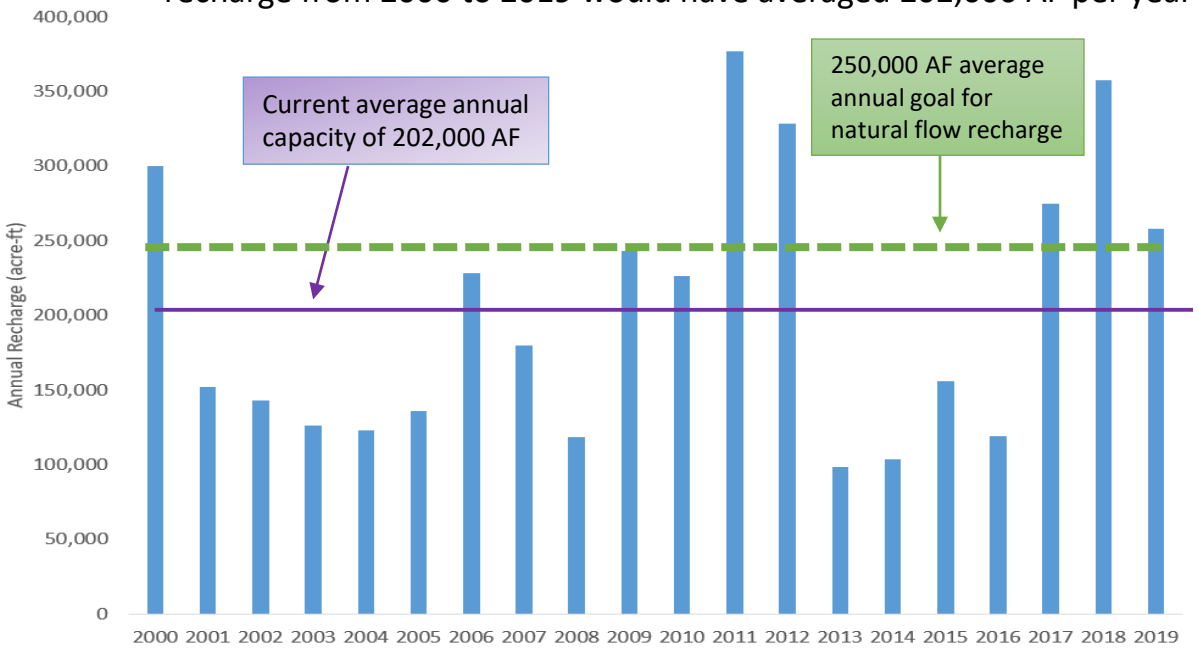
Current Long-Term Average Annual Recharge Capacity

If current level of capacity has been in place in 2000, the natural-flow recharge from 2000 to 2019 would have averaged 202,000 AF per year



Note – these recharge numbers are reported as of mid-2019. Additional capacity completed since that date place the average annual capacity at about 240,000 AF.

- Managed Recharge Water Quality
  - ✓ State recharge is extensively monitored – water going into recharge sites, and ground water before, during, and after recharge
  - ✓ State recharge is causing no effect to ground water quality

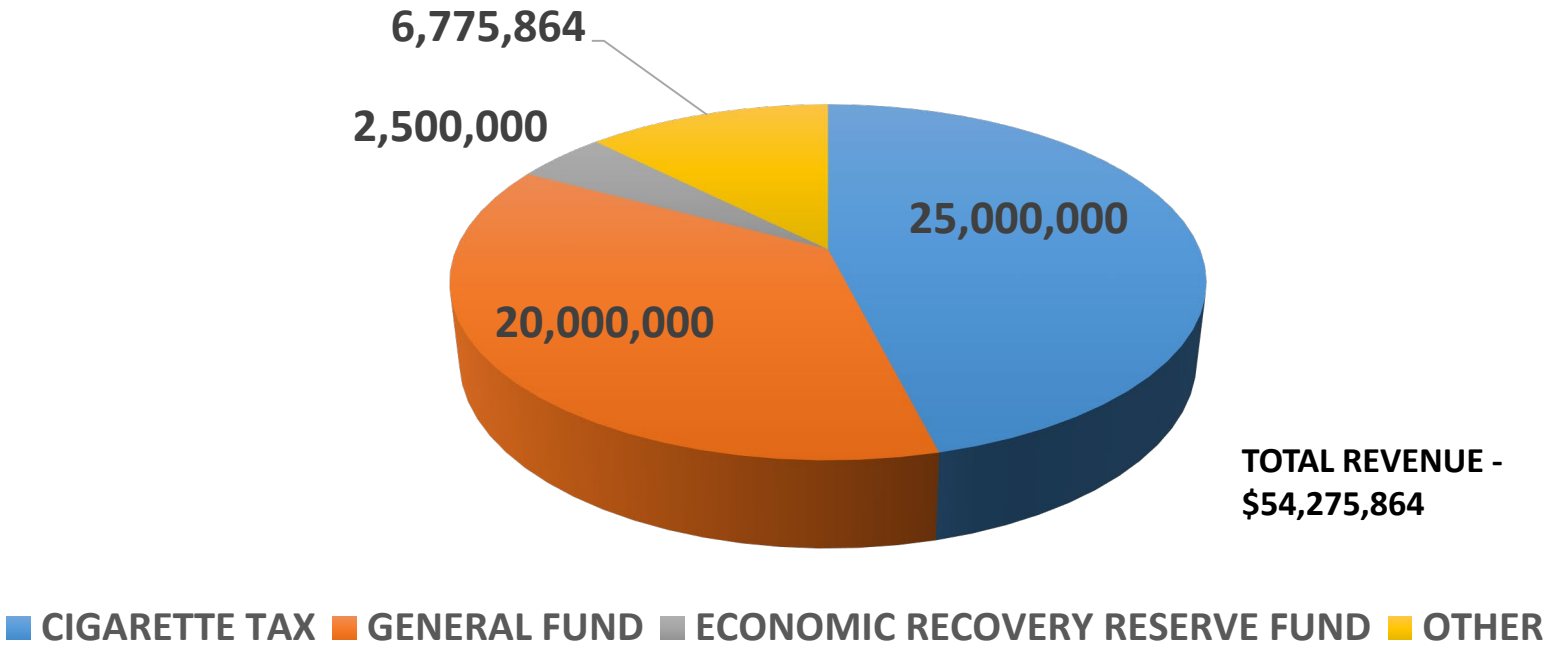
- Role of "Storage Water" recharge by IWRB
  - ✓ Several settlement agreements require parties to provide storage water for aquifer management
  - ✓ Some parties choose to have IWRB recharge it for convenience - they could choose to use it differently for aquifer management
  - ✓ Should be counted separately from the State's 250,000 AF average annual program using natural flows

Role of "Private Recharge" by others

- ✓ SWC-IGWA Settlement allows IGWA Ground Water Districts to offset required reductions with managed recharge
- ✓ Creates a market for managed recharge by private or 3rd parties
- ✓ Recharge is done with:
  - Storage water leased through Rental Pool
  - Natural flow irrigation rights leased through Water Supply Bank
  - Natural flow recharge rights help by irrigation districts, canal companies, or ground water districts
  - Temporary water use approvals during large flows
- ✓ Since this is done pursuant to the IGWA-SWC Settlement, it should be considered separate from the State's 250,000 AF recharge program
- ✓ Through 42-2737, IWRB has role in approving any recharge project greater that 10,000 AF/year on average proposing new use of natural flows

SECONDARY AQUIFER PLANNING MANAGEMENT & IMPLEMENTATION FUND REVENUE AS OF JUNE 30, 2019

Used for Aquifer Management



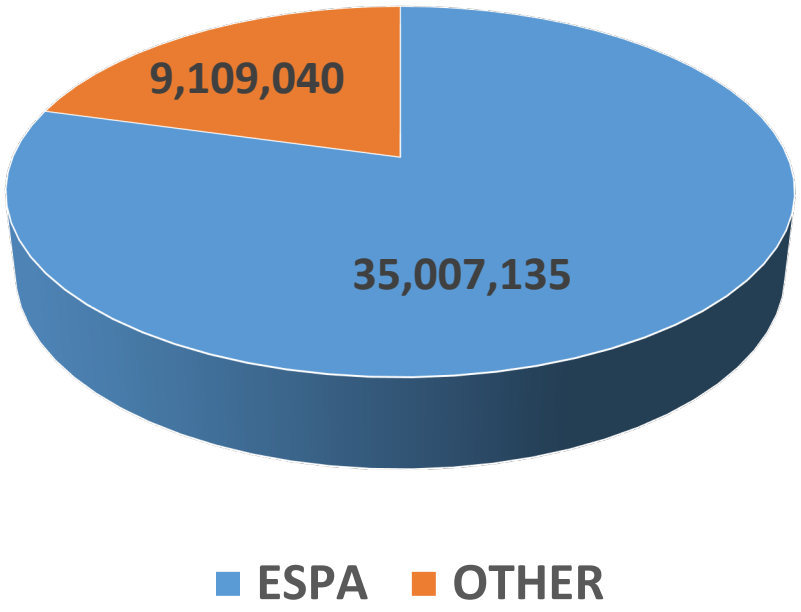
- Cigarette Tax - HB547 (2014) -- up to $5M annually for “Statewide Aquifer Stabilization”
- General Fund -- Part of IDWR “Base Budget” beginning in FY2016 -- $5M annually for “Water Sustainability” and “Aquifer Management”

Data from July 1, 2008 - June 30, 2019

SECONDARY AQUIFER PLANNING MANAGEMENT & IMPLEMENTATION FUND EXPENDITURES & COMMITMENTS

AS OF JUNE 30, 2019

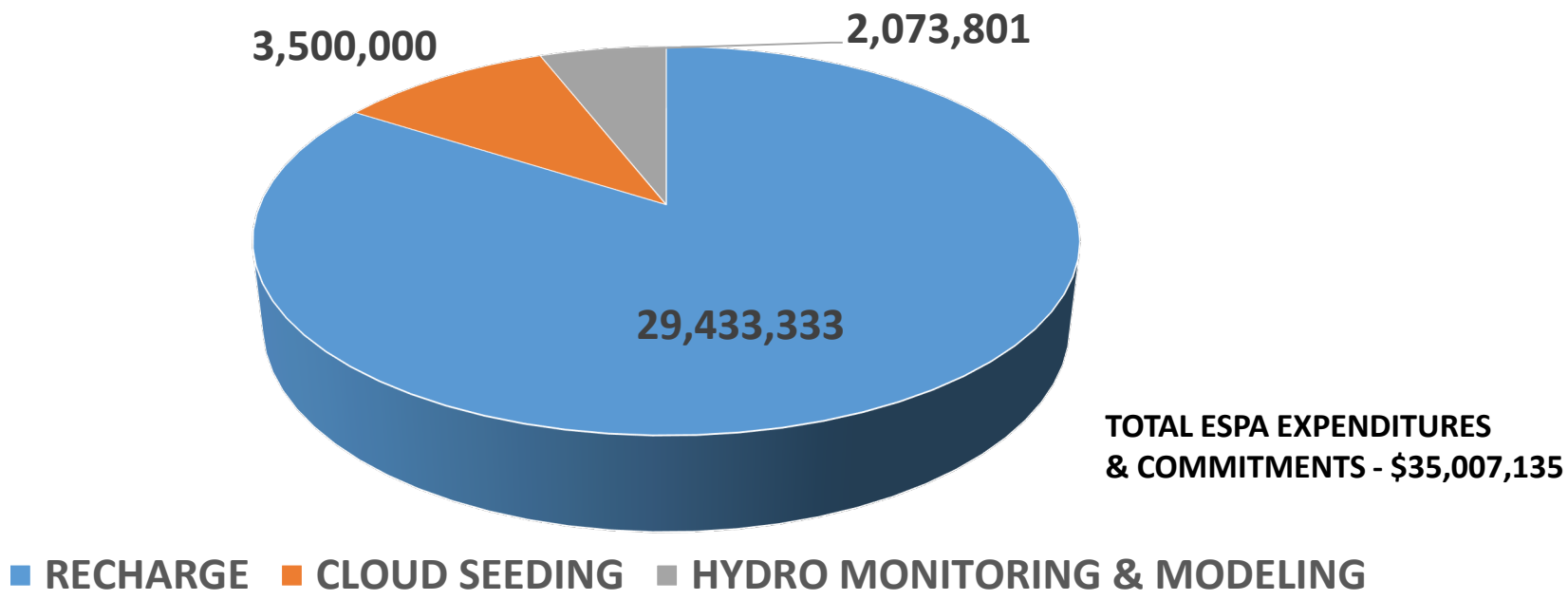
Used for Aquifer Management



TOTAL EXPENDITURE & COMMITMENTS - $44,039,807

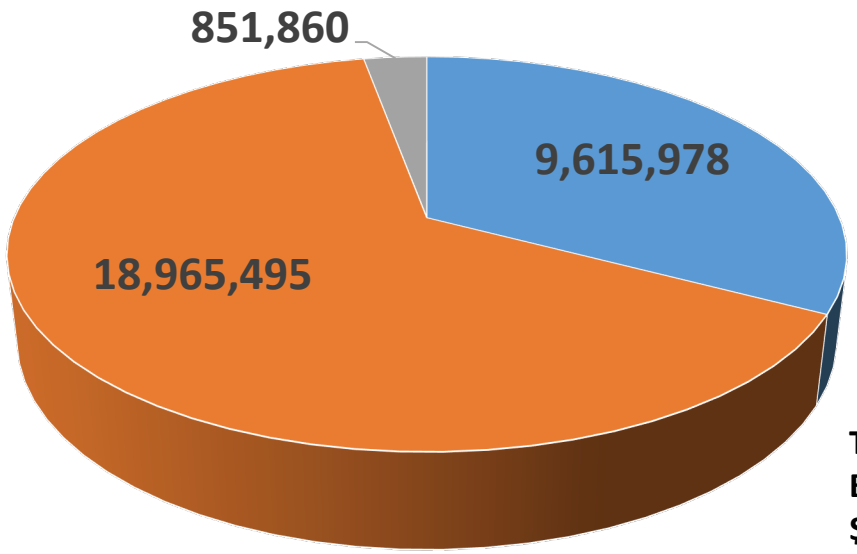
Data from July 1, 2008 - June 30, 2019

SECONDARY AQUIFER FUND
ESPA EXPENDITURES & COMMITMENTS
AS OF JUNE 30, 2019



Data from July 1, 2008 - June 30, 2019

SECONDARY AQUIFER FUND
ESPA RECHARGE EXPENDITURES & COMMITMENTS
AS OF JUNE 30, 2019



TOTAL ESPA RECHARGE EXPENDITURES & COMMITMENTS - $29,433,333

O&M/CONVEYANCE INVESTIGATIONS/INFRASTRUCTURE MONITORING

Data from July 1, 2008 - June 30, 2019

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A Few Thoughts on Finances as they Relate to CAMP

- State is paying for the aquifer recharge and part of cloud seeding
- Ground water users are paying for the demand reduction
  - ✓ Reduced use and therefore reduced crop production
  - ✓ In some cases they are installing GW-to-SW conversion projects to reduce ground water use
  - ✓ SWID and ABID, though not required to reduce GW use under the SWC-IGWA Settlement, have expended significant amounts to install large-scale GW-to-SW conversion projects
  - ✓ Cities, food processors also bearing costs
- May never have a full accounting of ESPA Aquifer Management Costs
- CAMP estimated $600 million over 30 years to achieve 600,000 AF water budget change

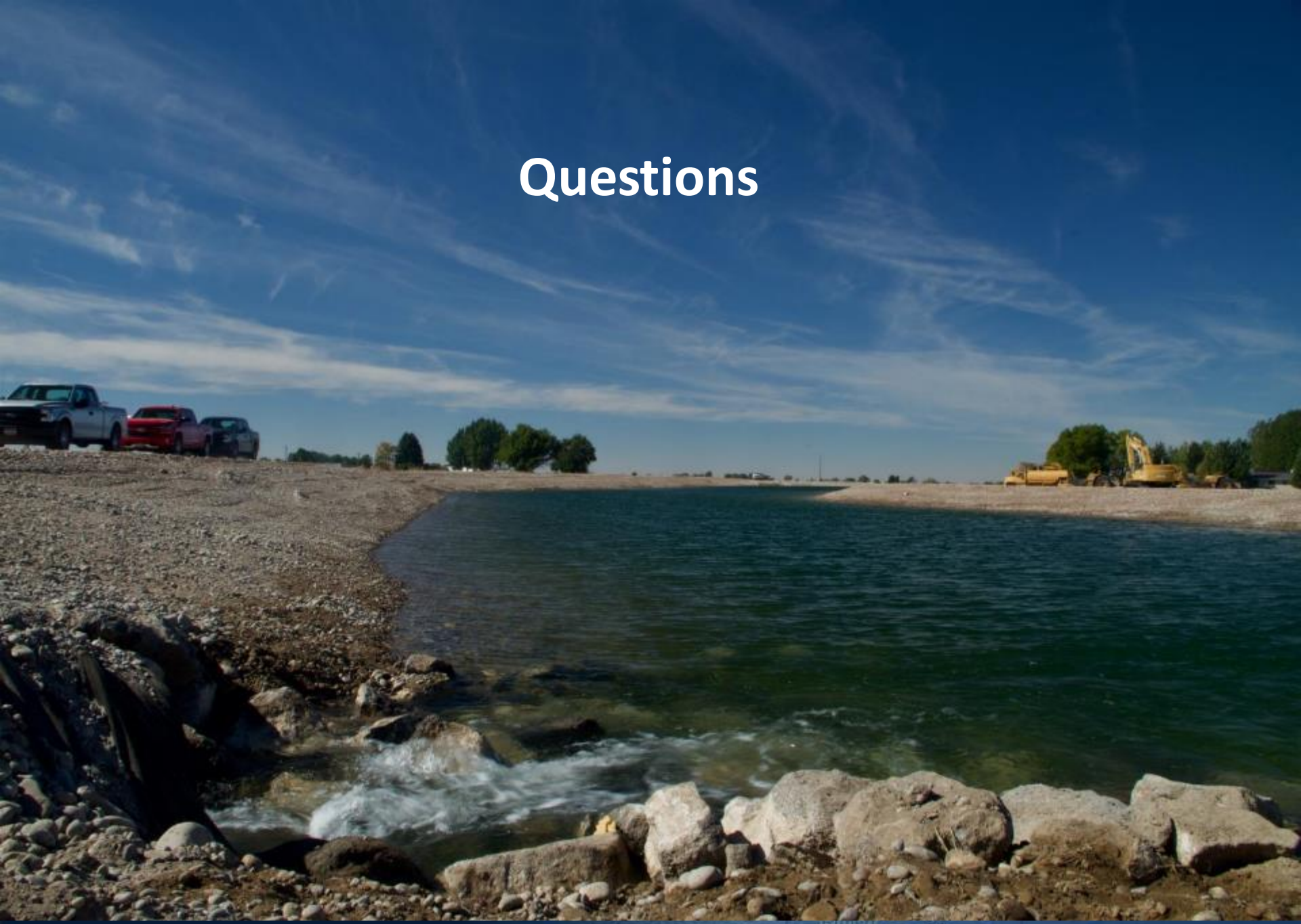
CAMP Implementation Committee

- CAMP report recommended formation of “Implementation Committee” to assist IWRB in implementation the CAMP actions
- Implementation Committee was formed – most CAMP Advisory Committee members were retained
- Without the funding mechanism, Implementation Committee only met a few times
- There has been requests to re-form the Implementation Committee
- IWRB is instead considering forming a Recharge Program Advisory Committee

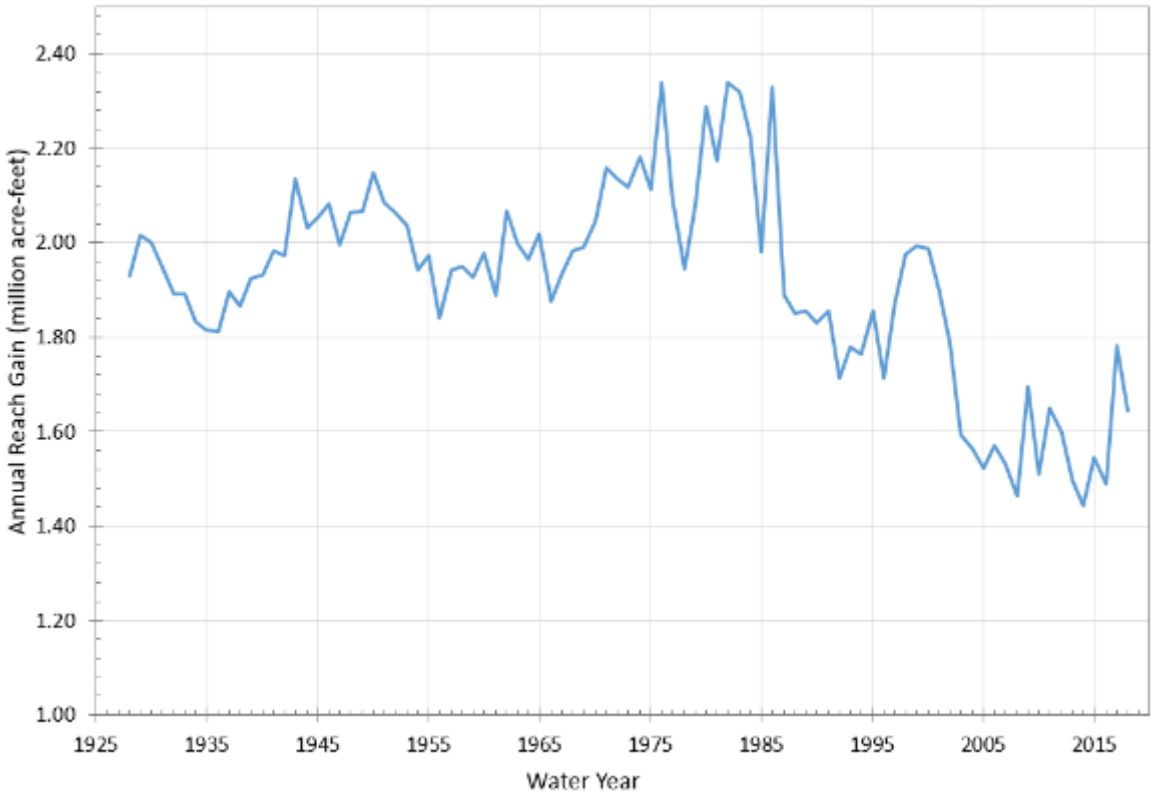
Report

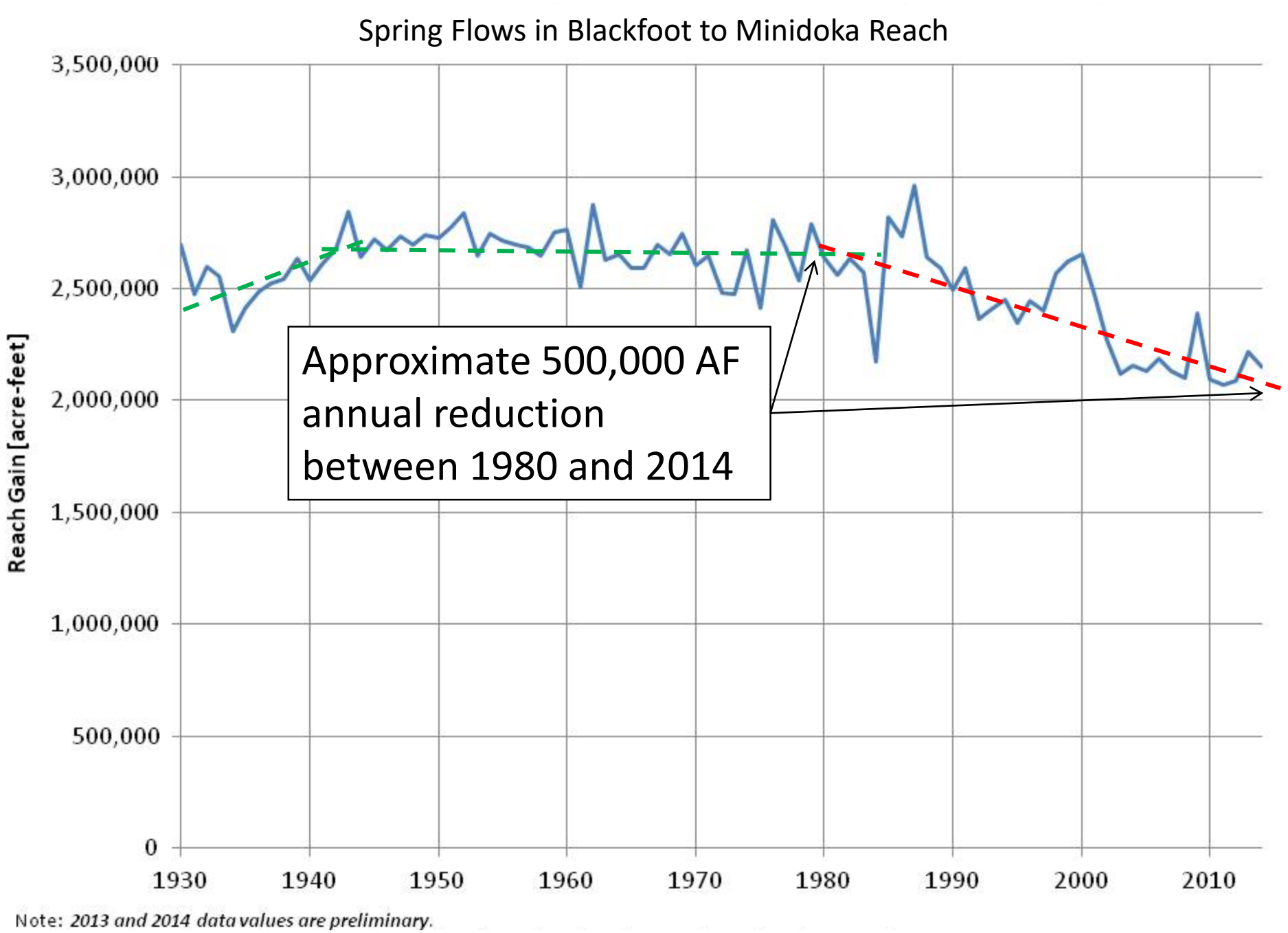
- The report was completed in December
- Submitted to the Governor, Legislative Leadership, and the House and Senate Resource Committees
- It can be found at *https://idwr. idaho.gov/IWRB/*

Questions



Near Blackfoot to Minidoka Reach Gains – 1928 to 2018




Spring Flows in Blackfoot to Minidoka Reach
Reach Gain [acre-feet]
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
1930
1940
1950
1960
1970
1980
1990
2000
2010
Approximate 500,000 AF annual reduction between 1980 and 2014
Note: 2013 and 2014 data values are preliminary.

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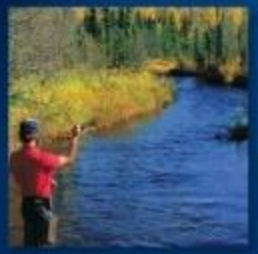
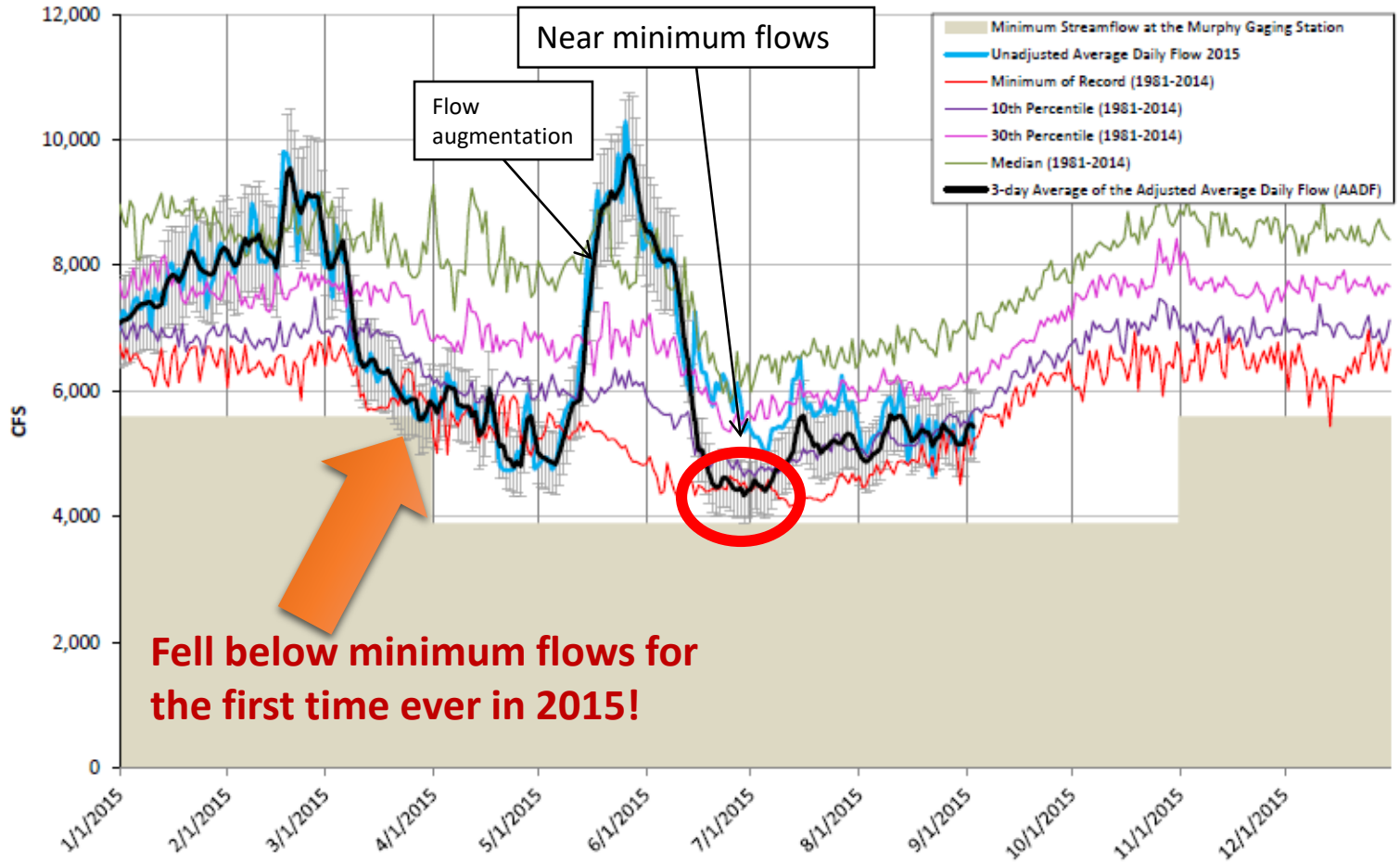


Snake River Near Murphy Gage - Swan Falls Dam - 2015

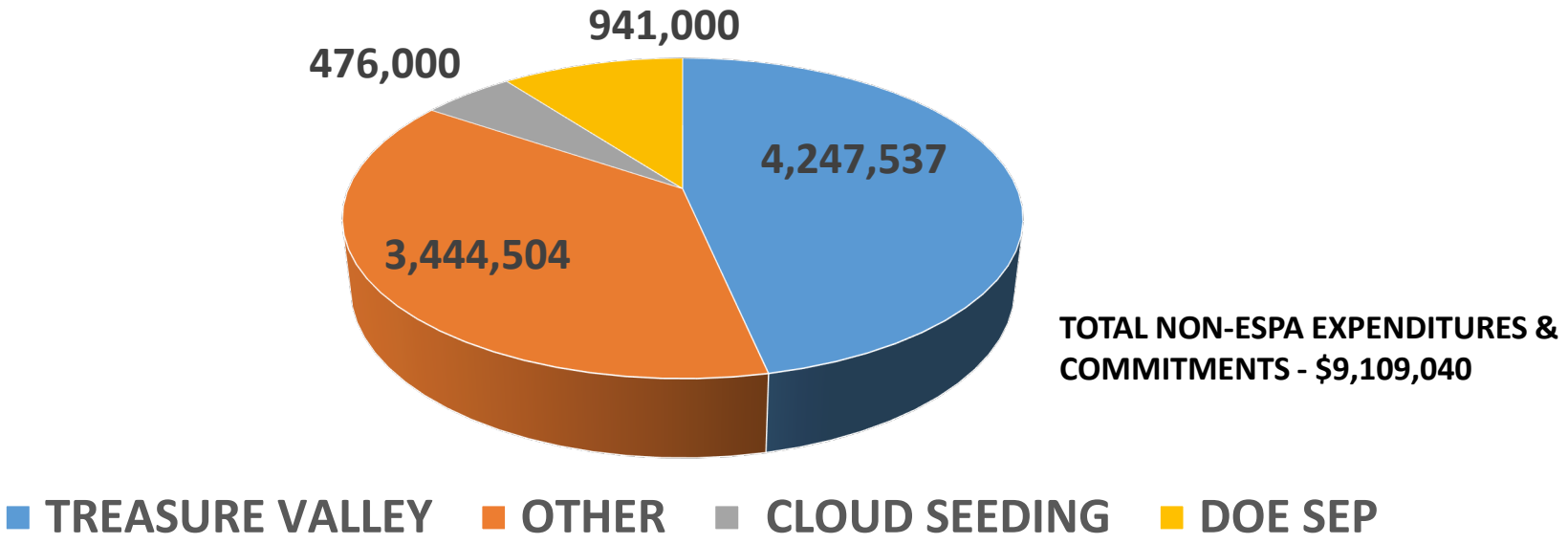


Fell below minimum flows for the first time ever in 2015!

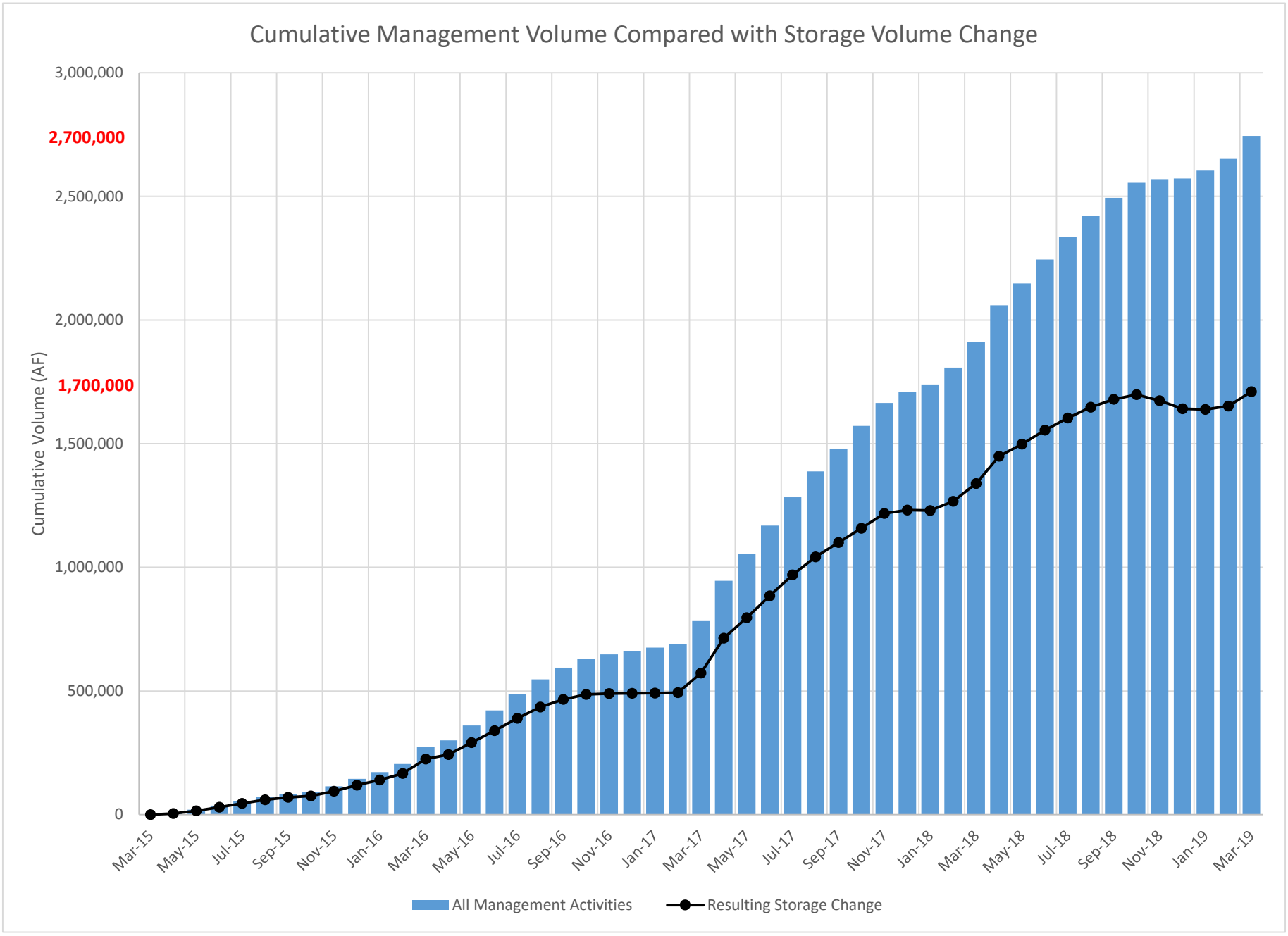
Key Take-Aways

- ESPA Recharge Program is working well
- Programmatic costs are ongoing but capital costs mostly done by 2022 (unless large Upper Basin project is built)
- Program build-out schedule matches with date that Cigarette Tax distribution to Water Board declines
- $5M annually from General Fund that is part of IDWR base budget, together with remainder of the Cigarette Tax distribution, should be sufficient to operate program, undertake minor repairs and improvements, and continue some work in other priority aquifers
- Due to wide swings in O&M costs ($1.2M - $7.1M) careful management will be necessary

SECONDARY AQUIFER FUND
NON-ESPA EXPENDITURES & COMMITMENTS
AS OF JUNE 30, 2019



Data from July 1, 2008 - June 30, 2019


Cumulative Management Volume Compared with Storage Volume Change
Cumulative Volume (AF)
3,000,000
2,700,000
2,500,000
2,000,000
1,700,000
1,500,000
1,000,000
500,000
0
Mar-15
May-15
Jul-15
Sep-15
Nov-15
Jan-16
Mar-16
May-16
Jul-16
Sep-16
Nov-16
Jan-17
Mar-17
May-17
Jul-17
Sep-17
Nov-17
Jan-18
Mar-18
May-18
Jul-18
Sep-18
Nov-18
Jan-19
Mar-19
All Management Activities
Resulting Storage Change