AGENDA

IDAHO WATER RESOURCE BOARD

Aquifer Stabilization Committee No. 4-26
Wednesday, August 26, 2026
9:00 a.m. (MT) / 8:00 a.m. (PT)

Water Center
Conference Rooms 602 C – D
322 E. Front Street
BOISE

Livestream available at https://www.youtube.com/@iwrb

1. Introductions and Attendance
2. Eastern Snake Plain Aquifer Storage Update
3. Eastern Snake Plain Aquifer Spring Discharge and Reach Gains Update
4. Eastern Snake Plain Aquifer Impacts
5. Water Management Information System Database Migration and Enhancement Project Update
6. Other Items
7. Adjourn

Committee Members:
Chair Dean Stevenson, Al Barker, Brian Olmstead, and Pat McMahon.

***Action Item:** A vote regarding this item may be made at this meeting. Identifying an item as an action item on the agenda does not require a vote to be taken on the item. **Americans with Disabilities Act**: If you require special accommodation to attend, participate in, or understand the meeting, please contact the Department no later than five days before the meeting. To request an accommodation, please send an email to milin.ream@idwr.idaho.gov or call (208) 287-4800.

MEMO

To: IWRB – Aquifer Stabilization Committee (Committee)

From: Michael McVay, IDWR Technical Engineer

Date: August 21, 2026

Subject: Eastern Snake Plain Aquifer Storage Update

INFORMATIONAL ITEM

IDWR staff will provide the Committee with a PowerPoint presentation update on the agenda item.

Attachments:

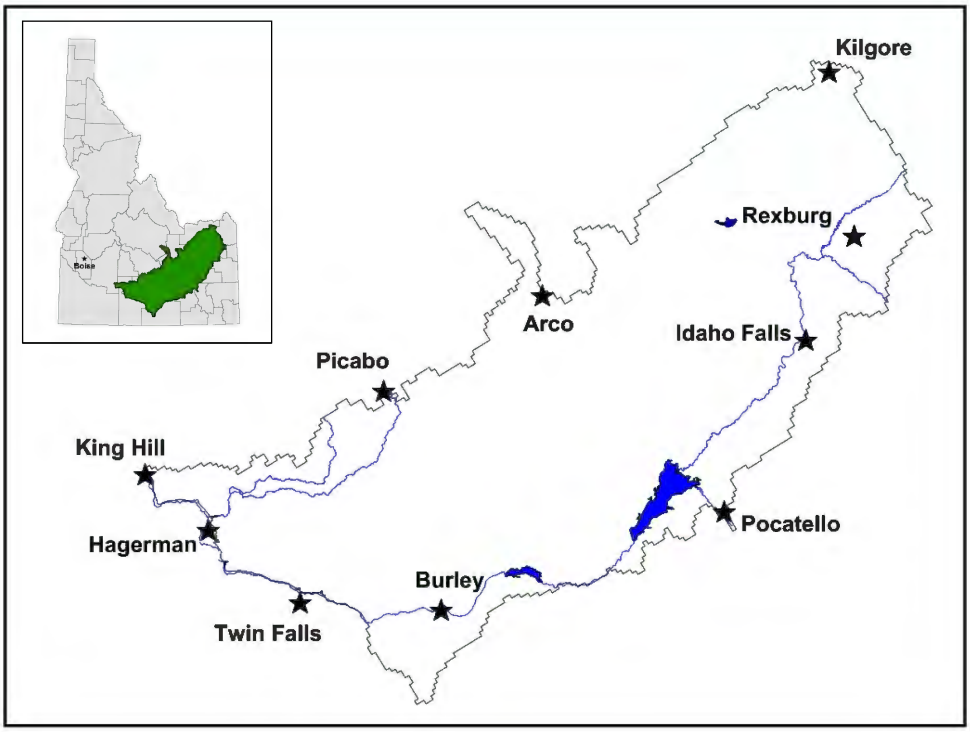
- *PowerPoint Presentation*

ESPA Storage Changes

Presented by Mike McVay, P.E., P.G.

August 26, 2026

1



2

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Aquifer Water Balance

Inflow – Outflow = ΔStorage

ESPA Inflows = Incidental recharge from SW irrigation, Canal Seepage, Perched River Seepage, Tributary Underflow, Precipitation.

ESPA Outflows = Evapotranspiration, Spring Discharge, Well Pumping

- Requires large investment of time, money and effort.
- A more efficient method of calculating change-in-storage allows us to evaluate both aquifer conditions and aquifer management activities.
- Direct calculation of change-in-storage using water-level measurements.

3

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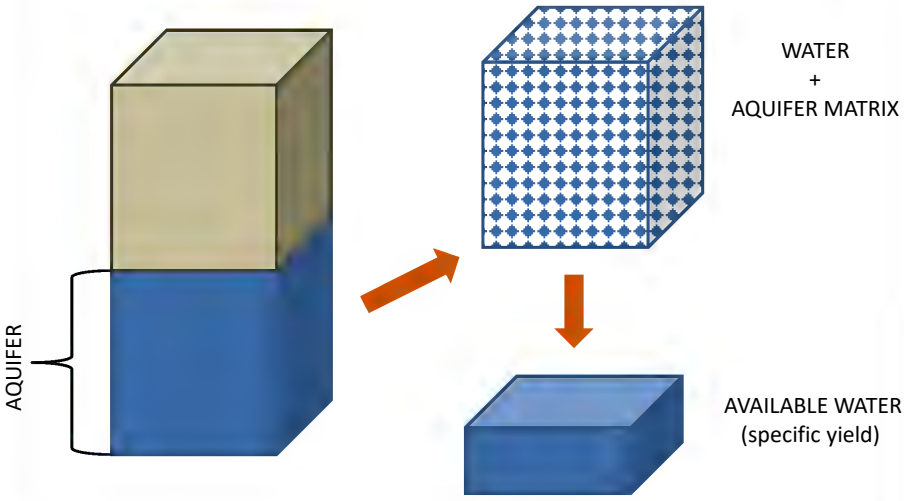
Using Water-Level Data to Estimate Changes in Aquifer Storage

- Water-level changes are calculated for each of the wells.
- Changes at the wells are interpolated across the **ESPAM version 2.2** (ESPAM2.2) model area to create water-level change maps.
  - The resulting volume represents water and aquifer matrix.
- Specific Yield (Sy) is the ratio of the volume of water that drains from a saturated rock due to gravity to the total volume of the rock.

4

Specific Yield = Available Water



5

IDAHO Water Resource Board

Using Water-Level Data to Estimate Changes in Aquifer Storage

- Water-level data are differenced to produce water-level changes at discrete points (at the wells).
- Changes at the wells are interpolated across the ESPAM2.2 model area to create water-level change maps.
  - The resulting volume represents water and aquifer matrix.

✓ The volumes calculated above are multiplied by the average, calibrated Sy from EPAM2.2 to calculate the change in volume of water.

6

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Mass Measurements and Aquifer Storage Changes

- Storage change calculations are based on data collected during mass measurement events.
- Mass measurement events are designed to collect as much data as possible during a brief window of time.
  - Provides a snapshot of the aquifer.
- Mass measurement events take place annually in the **spring**.
- Previous mass measurement events took place in the spring of 1980, 2001, 2002, 2008, 2013, 2018, 2023 and are now conducted every 5 years.

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Rationale for using Spring-Season Water Levels

- Conducting measurement events in the spring:
  - Integrates the impacts due to irrigation-season activities into a resulting condition (annual aquifer storage change).
  - Maximizes the time between irrigation seasons.
  - Pre-irrigation measurements reduce the impact of local water use on water levels (unperturbed water table).

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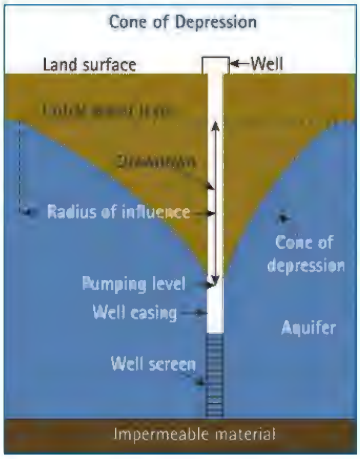
Water-Level Impacts due to Local Water Use

- Example: Short-term pumping in a well can produce water-level changes that do not represent the regional conditions. We don't want these water levels.
- What if a water level is impacted by increased areal recharge from a wet winter?
- Managed recharge also impacts water levels...



Source: National Groundwater Association,2007

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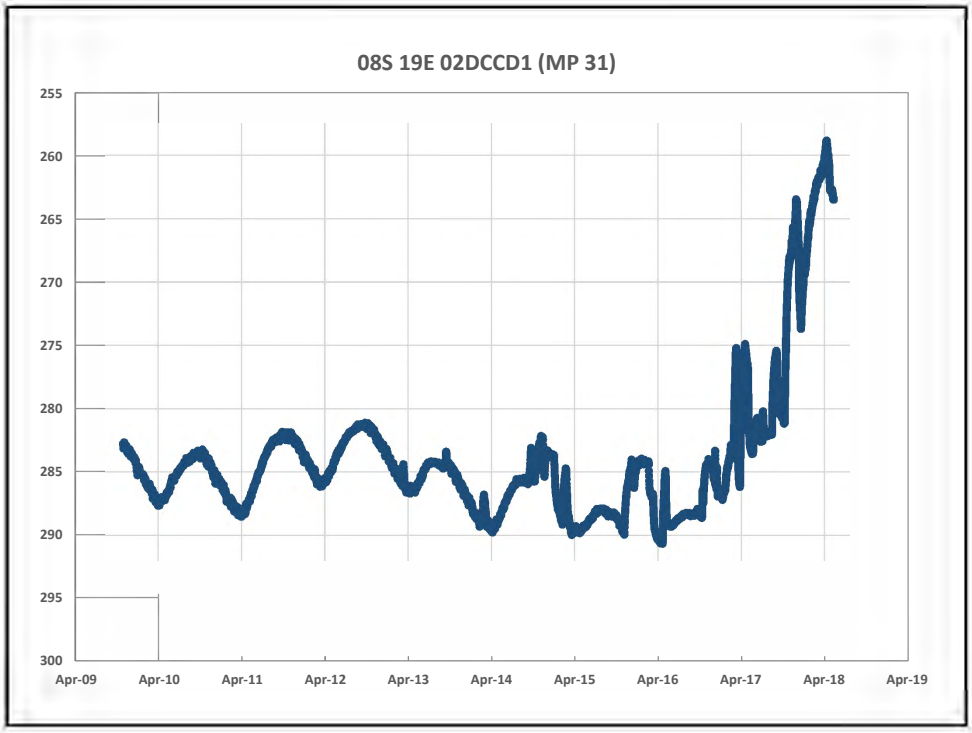
The Value of Transducer-Data Loggers

- Transducers measure the pressure of water above the probe.
  - Manual measurements are used to relate the pressure to depth-of-water.
- Data loggers record the pressure measurements.
- We collect much more data using transducers.
- Able to collect measurements even if the well is inaccessible during the synoptic measurement event.
- Allows for understanding of well behavior.
- Data collected via transducer allows for the selection of the most appropriate water level.

10



11

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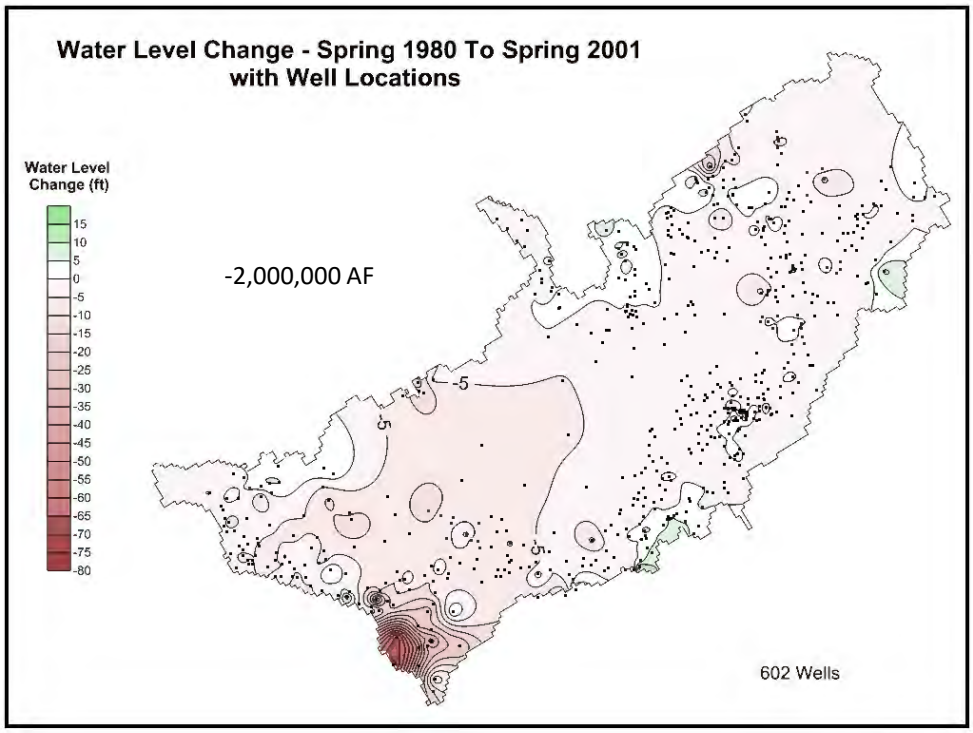
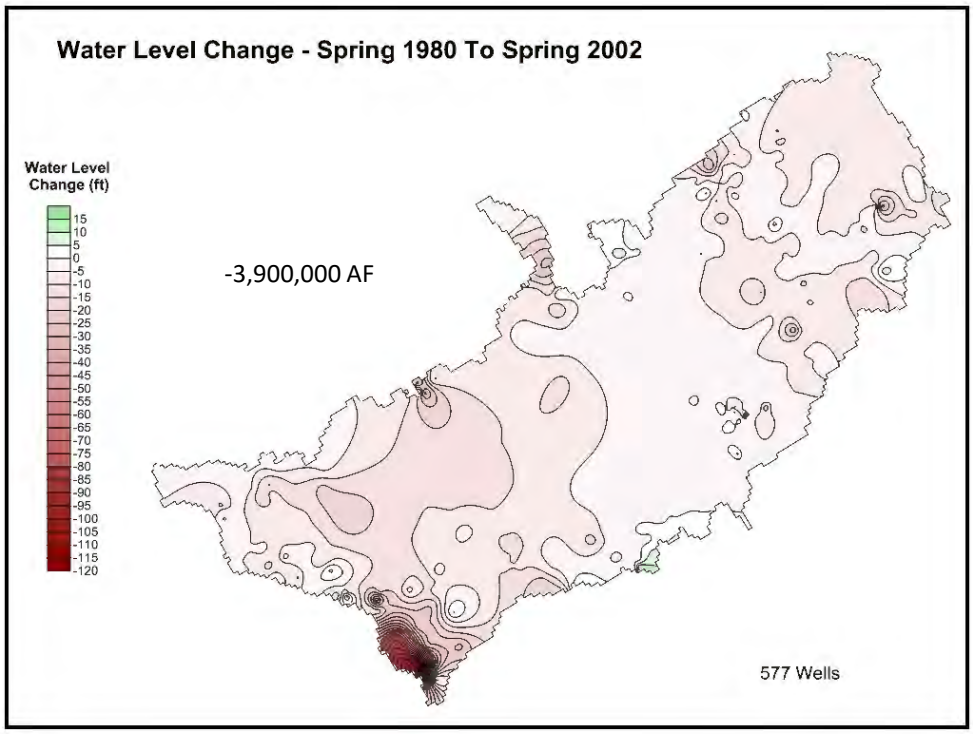
Mass Measurement Change Maps

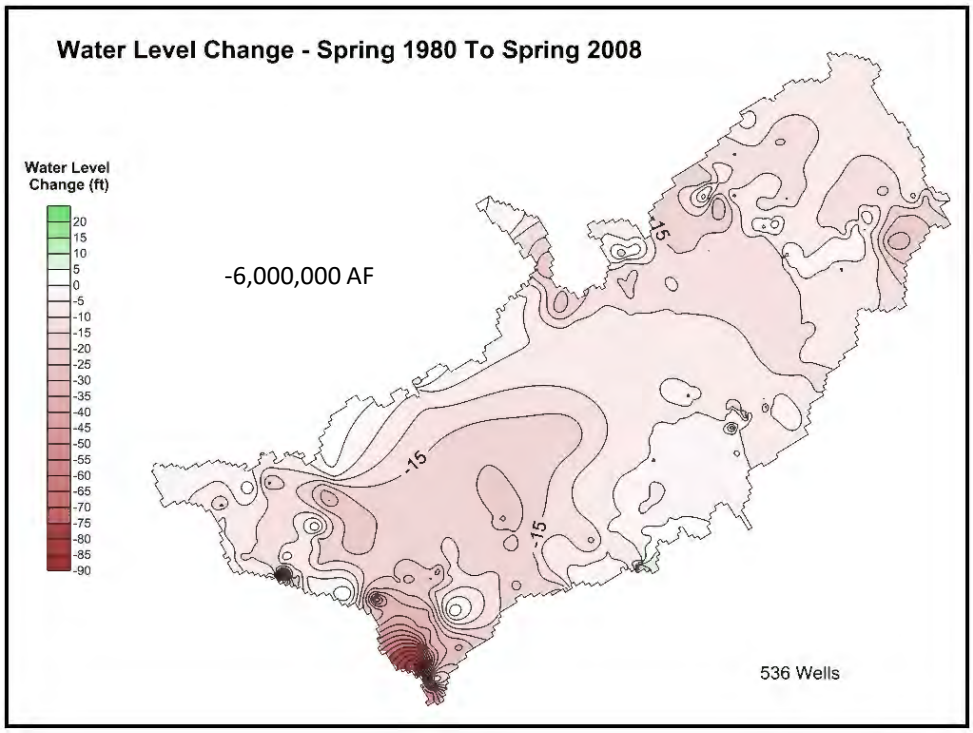
12


Water Level Change - Spring 1980 To Spring 2001
with Well Locations
Water Level Change (ft)
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-2,000,000 AF
-5
-5
602 Wells

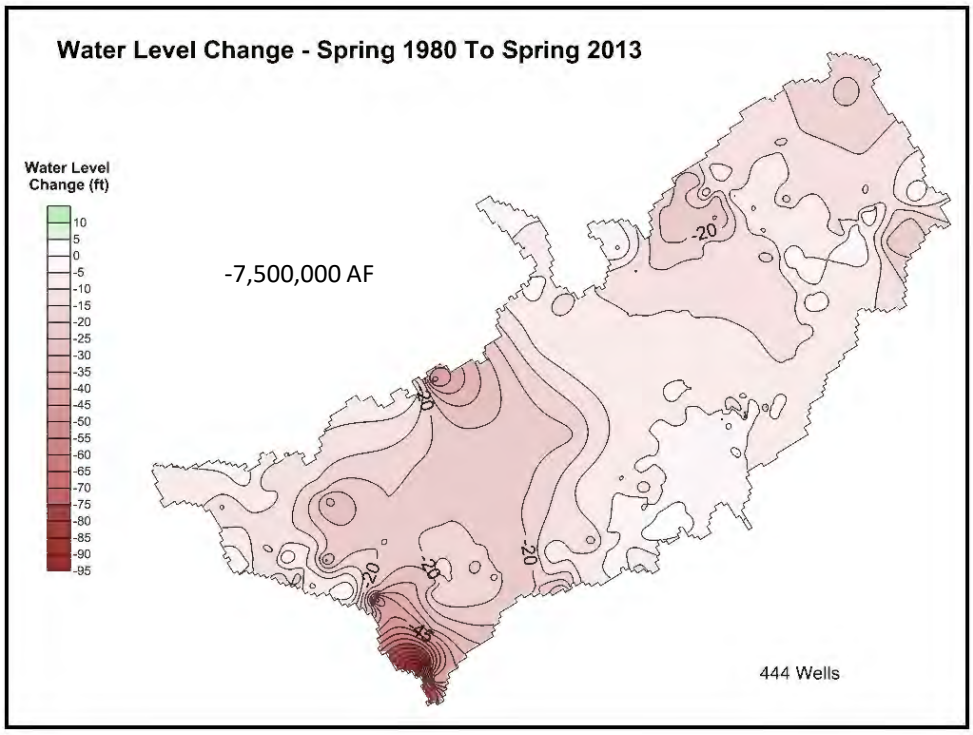
13


Water Level Change - Spring 1980 To Spring 2002
Water Level Change (ft)
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-100
-105
-110
-115
-120
-3,900,000 AF
577 Wells

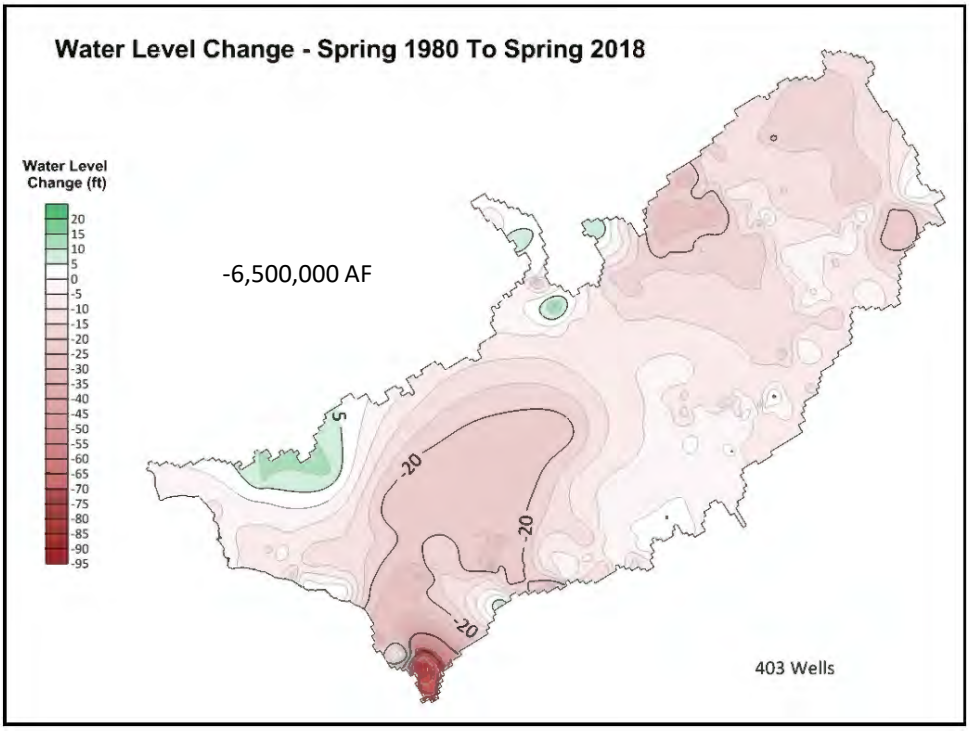
14


Water Level Change - Spring 1980 To Spring 2008
Water Level Change (ft)
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-6,000,000 AF
-15
-15
-15
536 Wells

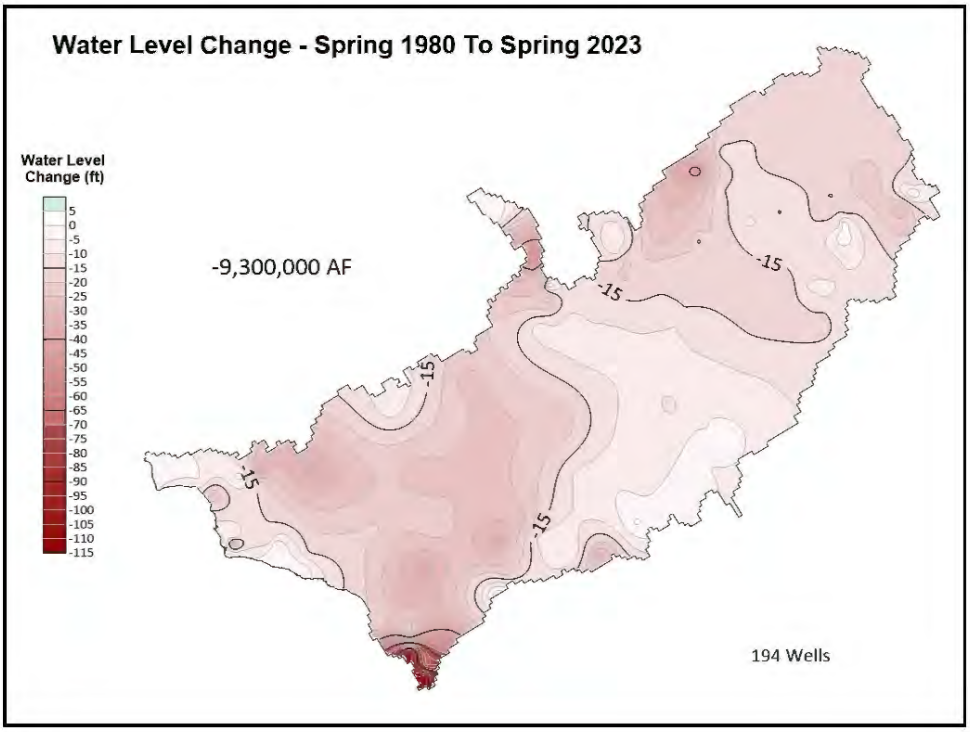
15


Water Level Change - Spring 1980 To Spring 2013
Water Level Change (ft)
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-7,500,000 AF
-20
-20
-20
-20
-20
-45
444 Wells

16


Water Level Change - Spring 1980 To Spring 2018
Water Level Change (ft)
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-6,500,000 AF
5
-20
-20
-20
403 Wells

17


Water Level Change - Spring 1980 To Spring 2023
Water Level Change (ft)
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-100
-105
-110
-115
-9,300,000 AF
-15
-15
-15
-15
-15
194 Wells

18

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Storage Change between Mass Measurements

- Changes based on mass-measurement events give a general indication of the volume of water stored in the aquifer;
  - However, it is difficult to make management decisions with only this information.
- Hundreds of wells are measured in the spring each year.
  - Historically, these measurements were taken as time and conditions allowed.
- Since the spring of 2016, IDWR has been conducting coordinated measurement of the ESPA well network every spring to facilitate storage-change calculations.

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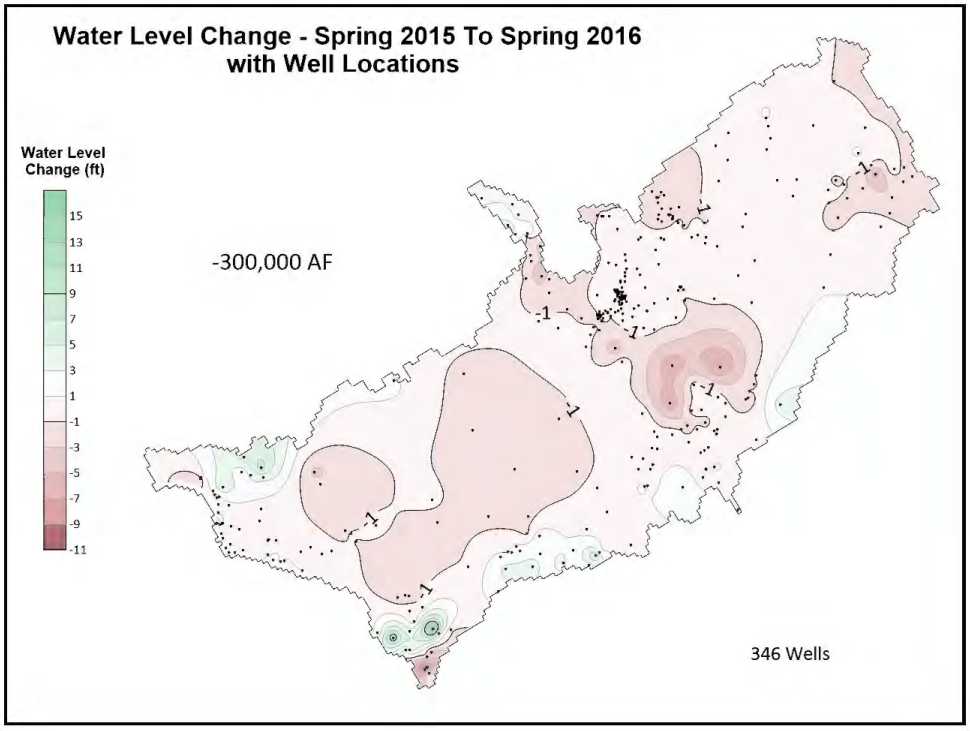
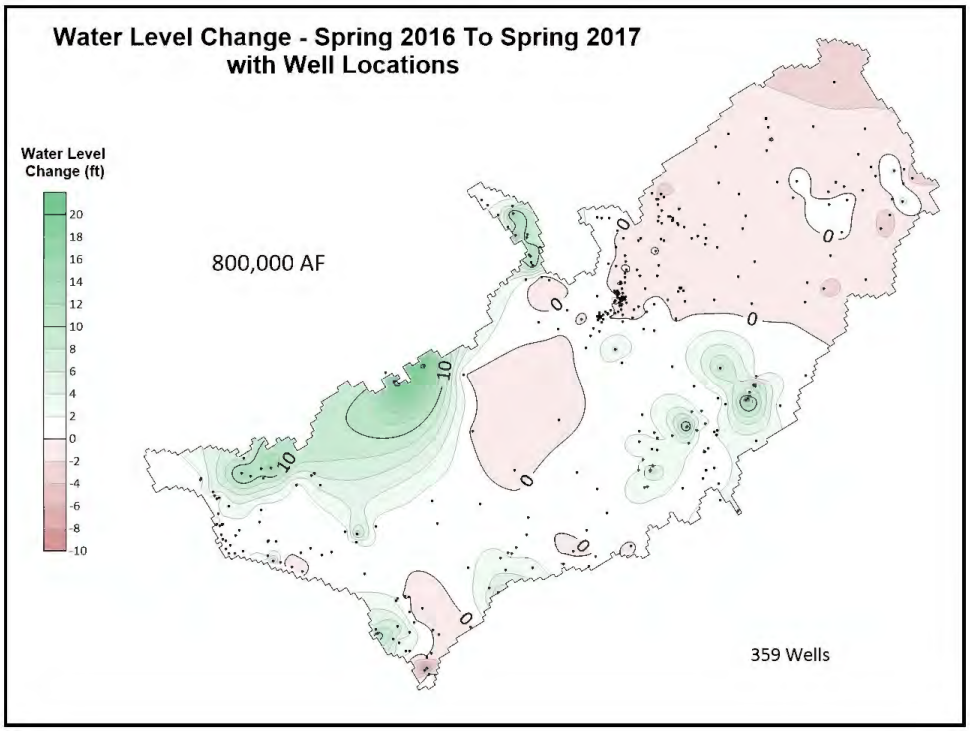
Annual Measurement Change Maps: 2015 – 2025

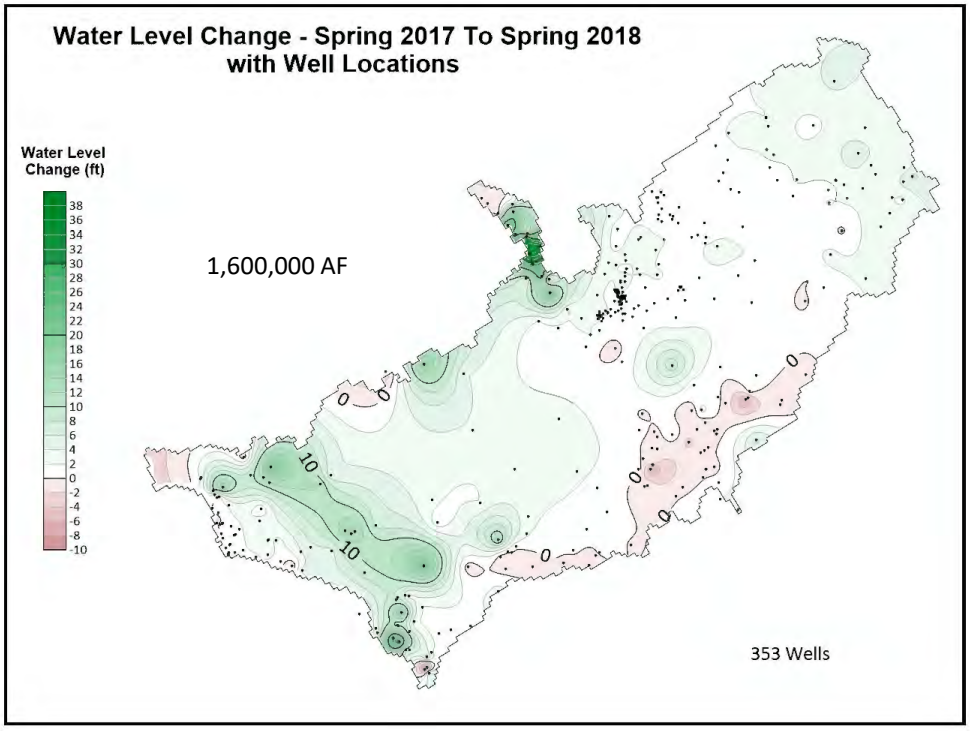
20


Water Level Change - Spring 2015 To Spring 2016
with Well Locations
Water Level Change (ft)
15
13
11
9
7
5
3
1
-1
-3
-5
-7
-9
-11
-300,000 AF
346 Wells

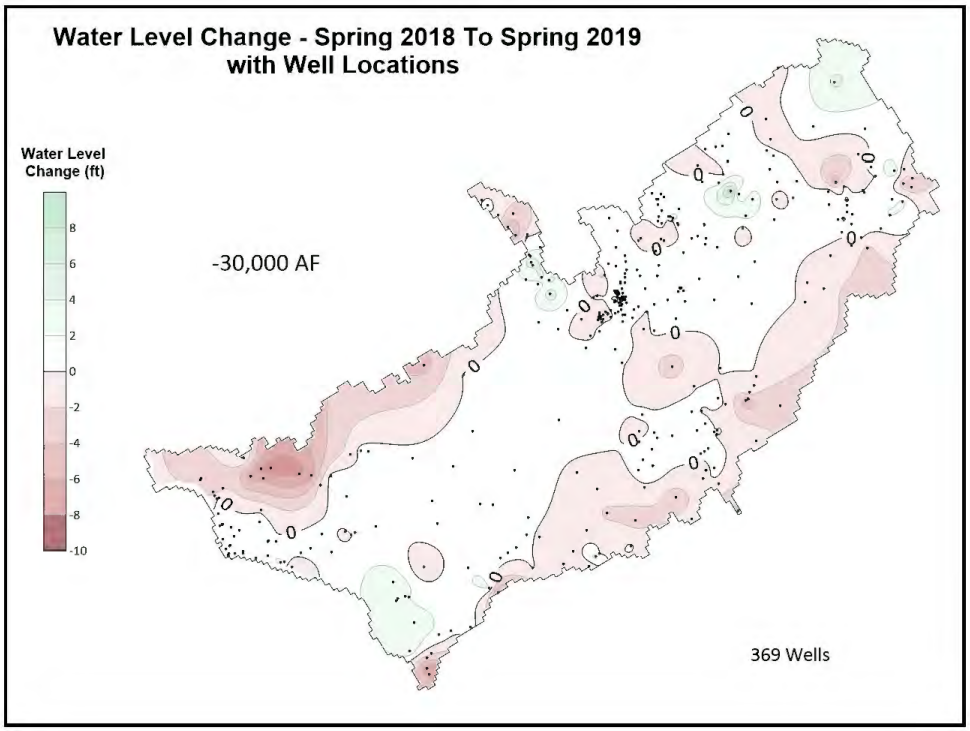
21


Water Level Change - Spring 2016 To Spring 2017
with Well Locations
Water Level Change (ft)
20
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
800,000 AF
359 Wells

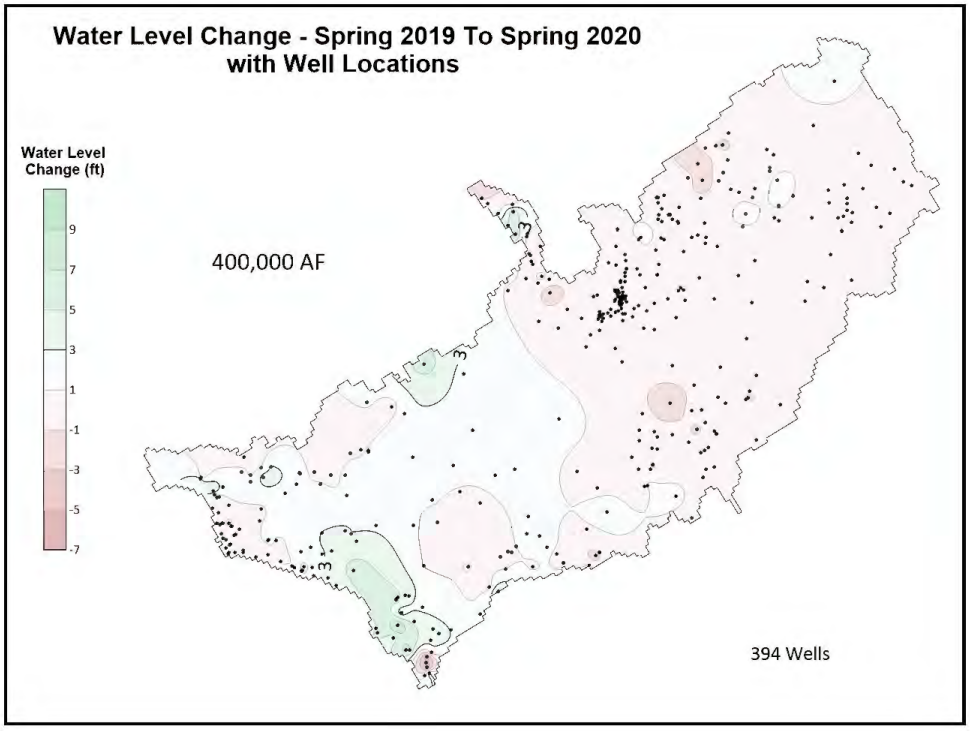
22


Water Level Change - Spring 2017 To Spring 2018
with Well Locations
Water Level Change (ft)
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
1,600,000 AF
353 Wells

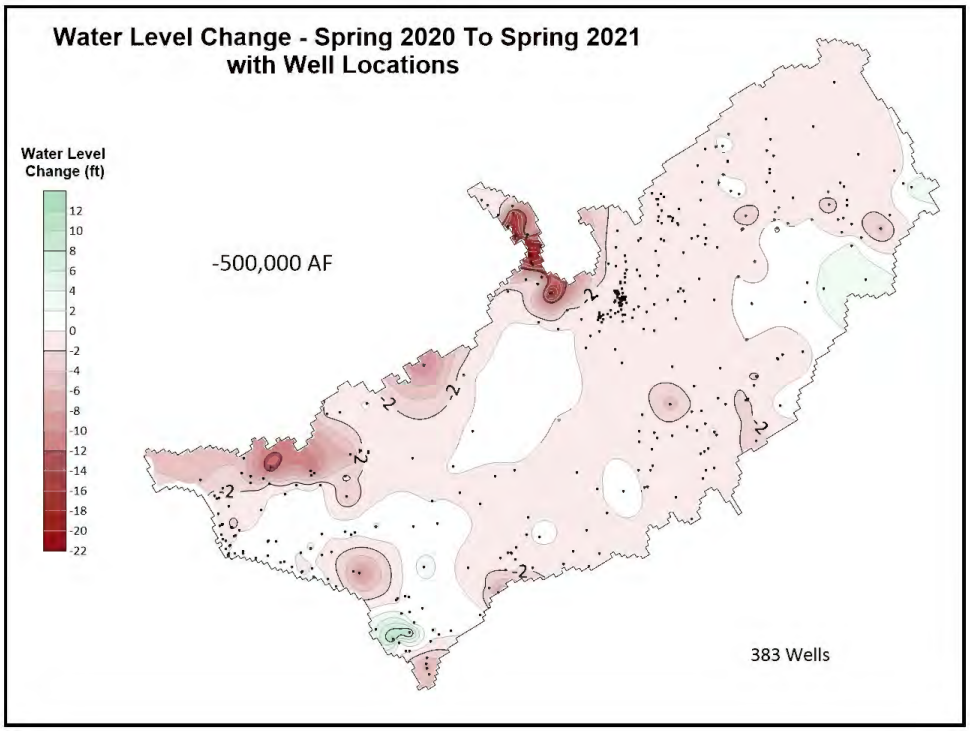
23


Water Level Change - Spring 2018 To Spring 2019
with Well Locations
Water Level Change (ft)
8
6
4
2
0
-2
-4
-6
-8
-10
-30,000 AF
369 Wells

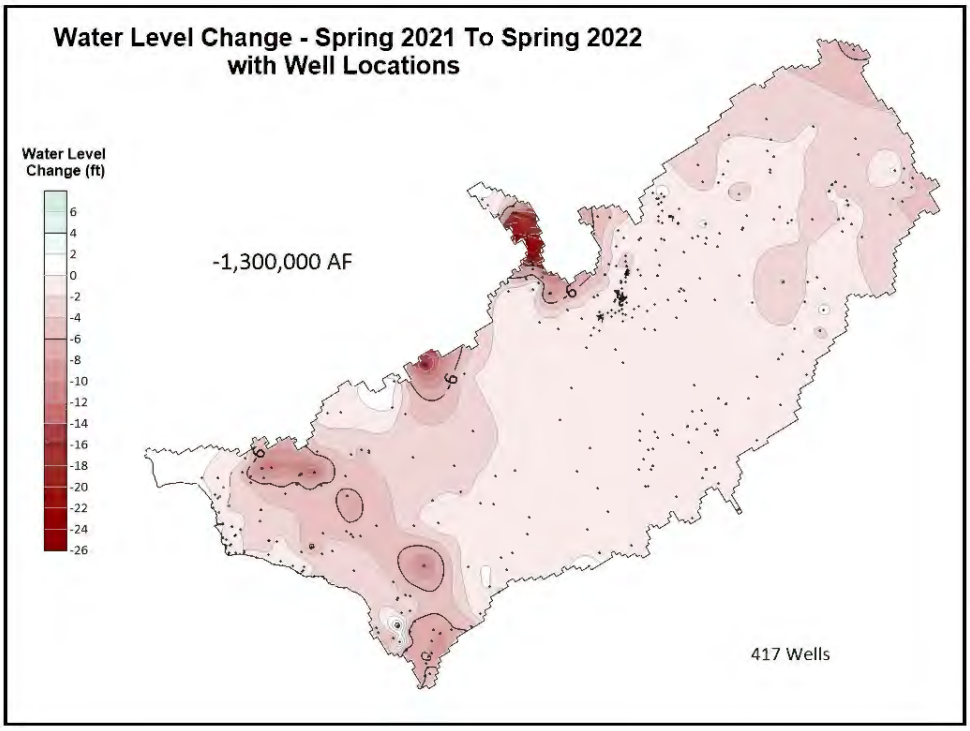
24


Water Level Change - Spring 2019 To Spring 2020
with Well Locations
Water Level Change (ft)
9
7
5
3
1
-1
-3
-5
-7
400,000 AF
394 Wells

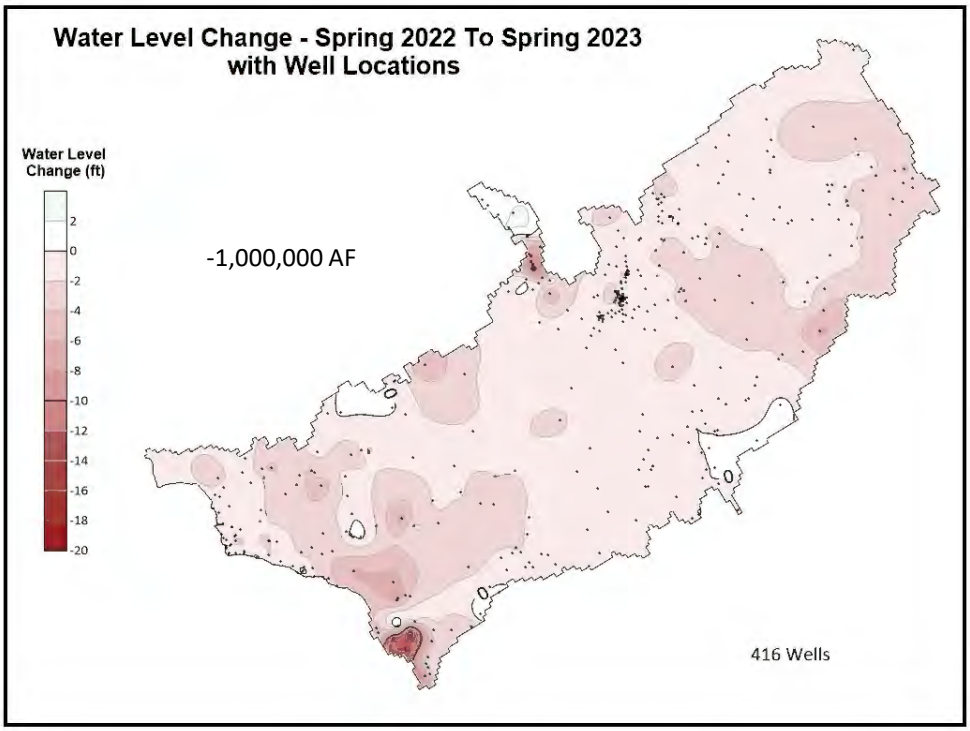
25


Water Level Change - Spring 2020 To Spring 2021
with Well Locations
Water Level Change (ft)
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-500,000 AF
383 Wells

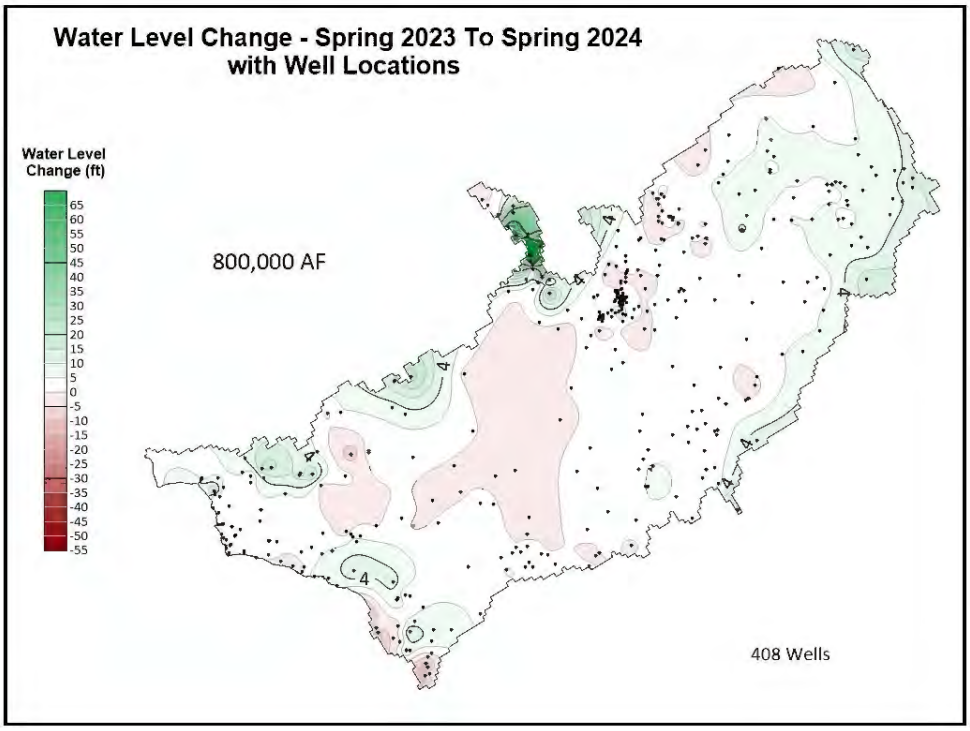
26


Water Level Change - Spring 2021 To Spring 2022
with Well Locations
Water Level Change (ft)
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-1,300,000 AF
417 Wells

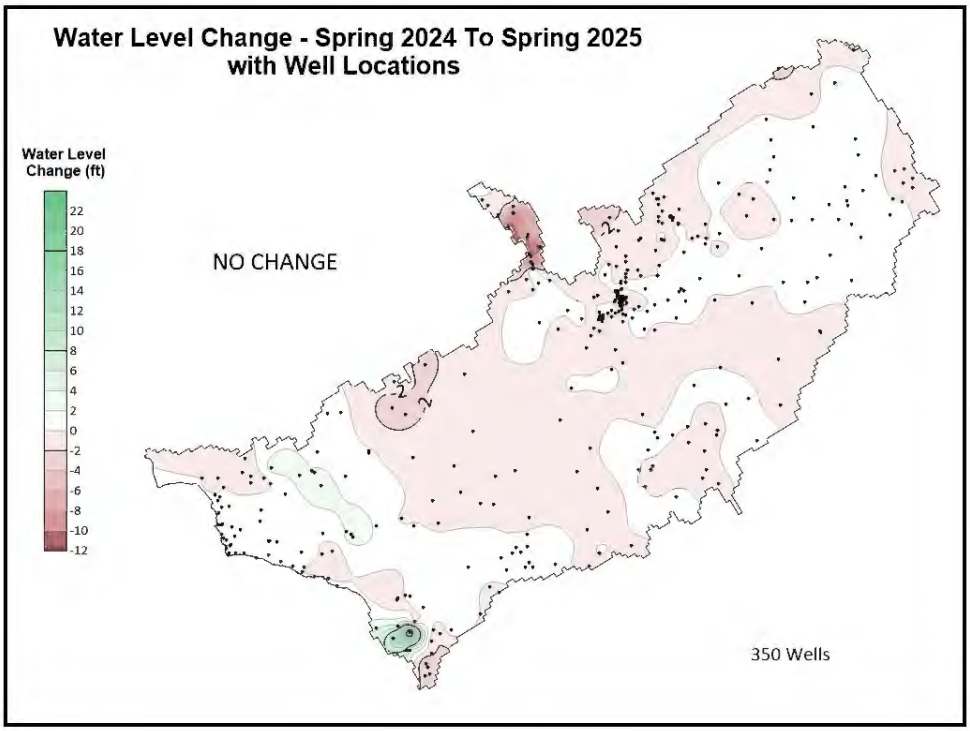
27


Water Level Change - Spring 2022 To Spring 2023
with Well Locations
Water Level Change (ft)
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-1,000,000 AF
416 Wells

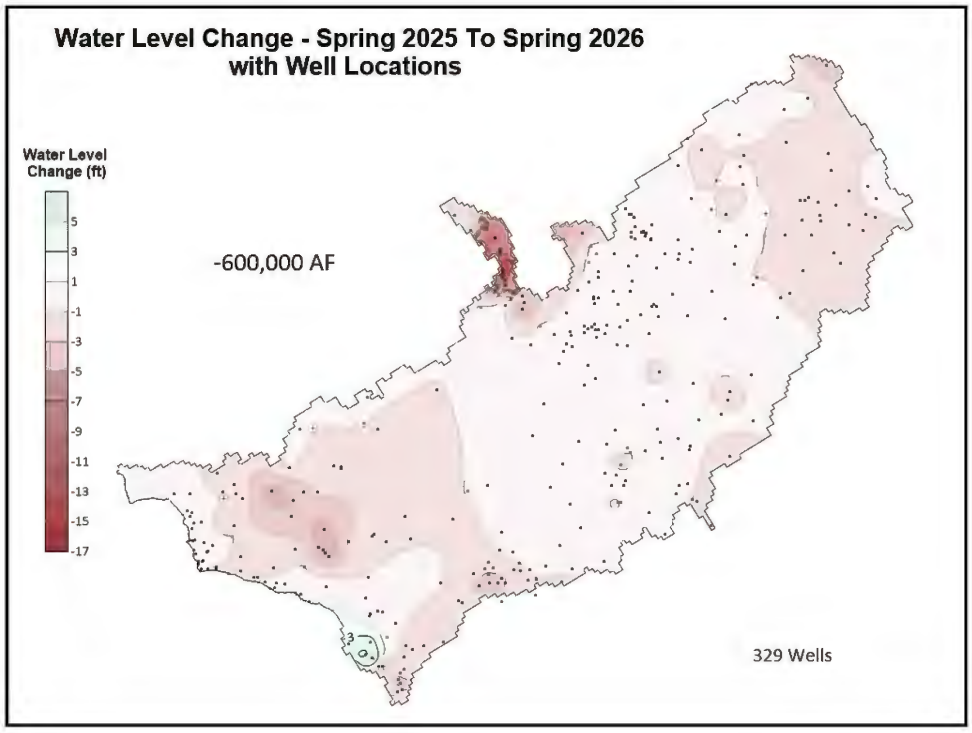
28


Water Level Change - Spring 2023 To Spring 2024
with Well Locations
Water Level Change (ft)
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
800,000 AF
4
4
4
4
408 Wells

29


Water Level Change - Spring 2024 To Spring 2025
with Well Locations
Water Level Change (ft)
22
20
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
NO CHANGE
2
2
2
350 Wells

30



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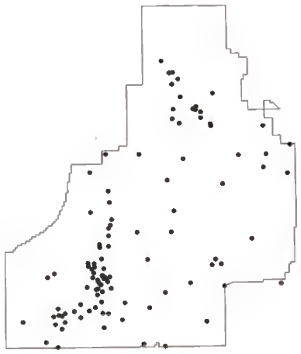
Updated INL Well Network

- Data for 112 wells located in the INL are evaluated each year.
  - The density does not improve or worsen the calculation
- The large number inflates the number of wells used in the calculation.



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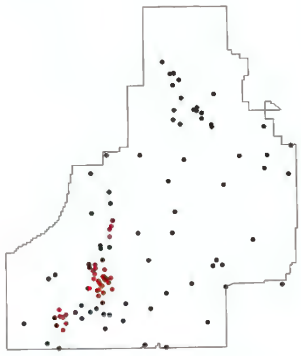
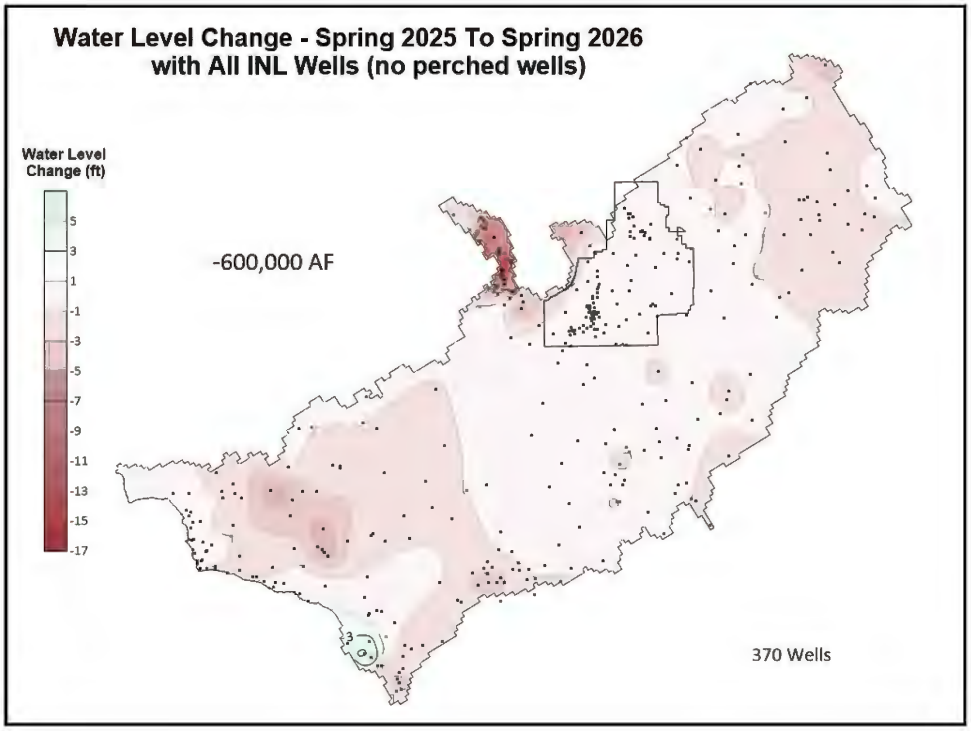
INL Wells Removed from Storage Calculations

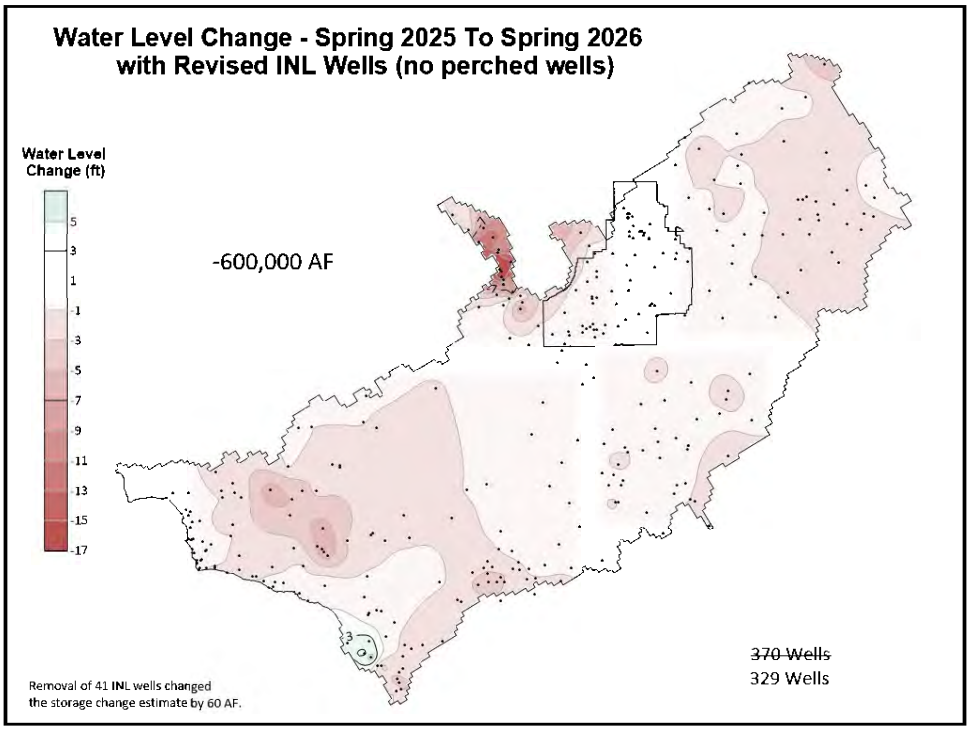
- Removed 45 wells from the data set used to calculate storage change.
- Data set based on the USGS water-level monitoring network.
  - Removed wells located in INL disposal facilities.



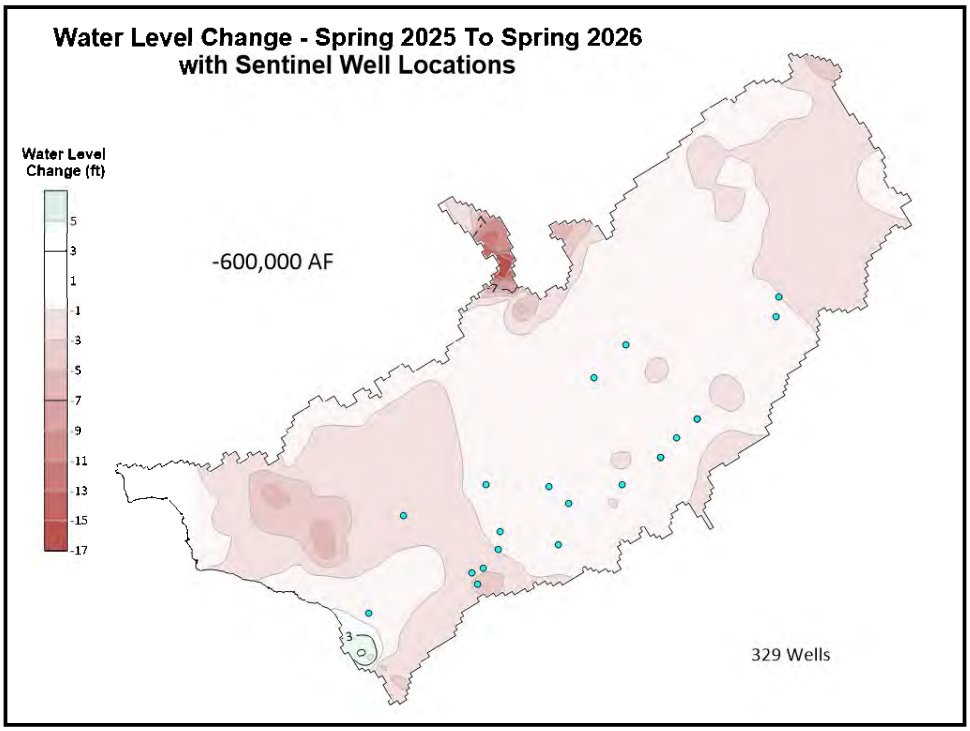
33



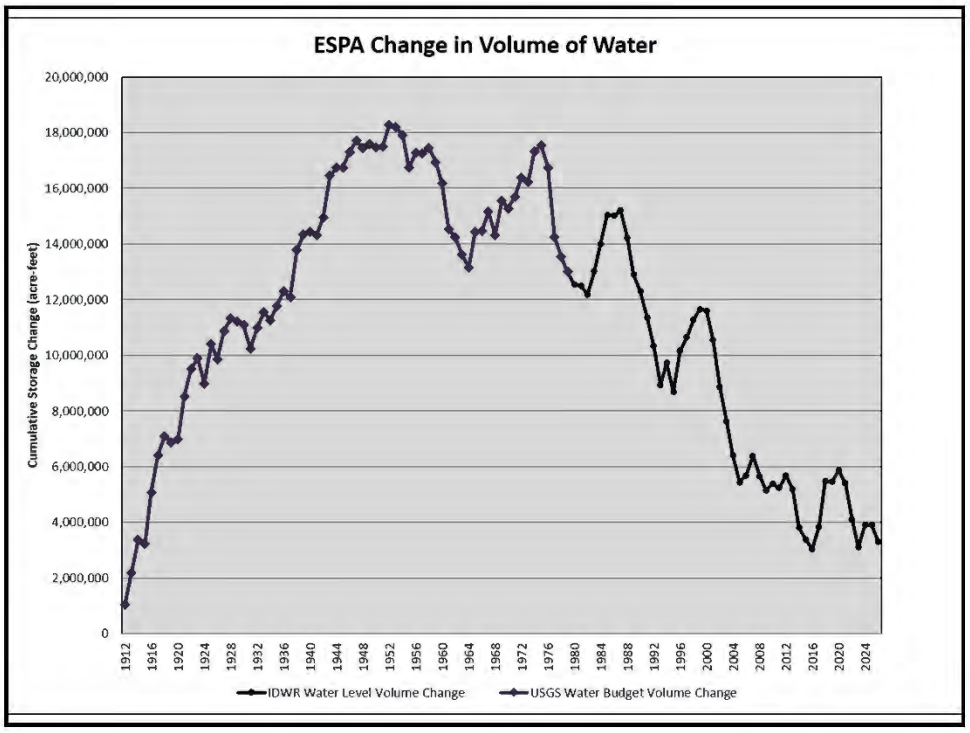
34


Water Level Change - Spring 2025 To Spring 2026
with Revised INL Wells (no perched wells)
Water Level Change (ft)
5
3
1
-1
-3
-5
-7
-9
-11
-13
-15
-17
-600,000 AF
~~370 Wells~~
329 Wells
Removal of 41 INL wells changed the storage change estimate by 60 AF.

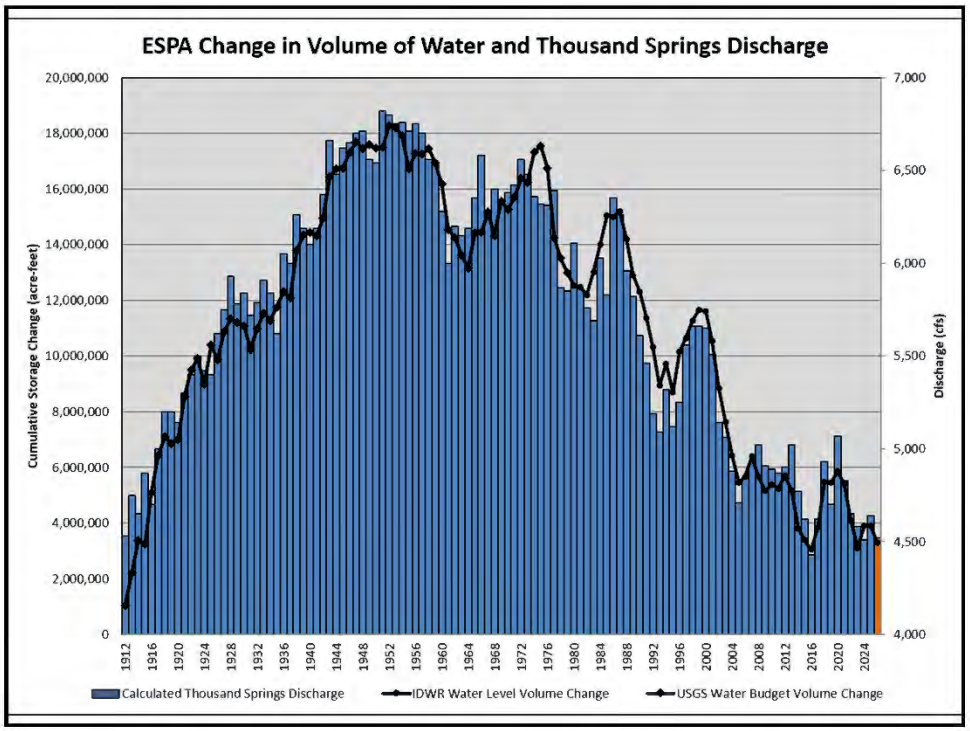
35


Water Level Change - Spring 2025 To Spring 2026
with Sentinel Well Locations
Water Level Change (ft)
5
3
1
-1
-3
-5
-7
-9
-11
-13
-15
-17
-600,000 AF
329 Wells

36


ESPA Change in Volume of Water
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
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 2024
IDWR Water Level Volume Change
USGS Water Budget Volume Change

37


ESPA Change in Volume of Water and Thousand Springs Discharge
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
Discharge (cfs)
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 2024
Calculated Thousand Springs Discharge
IDWR Water Level Volume Change
USGS Water Budget Volume Change

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Intermediate Change Map: 2015 – 2025

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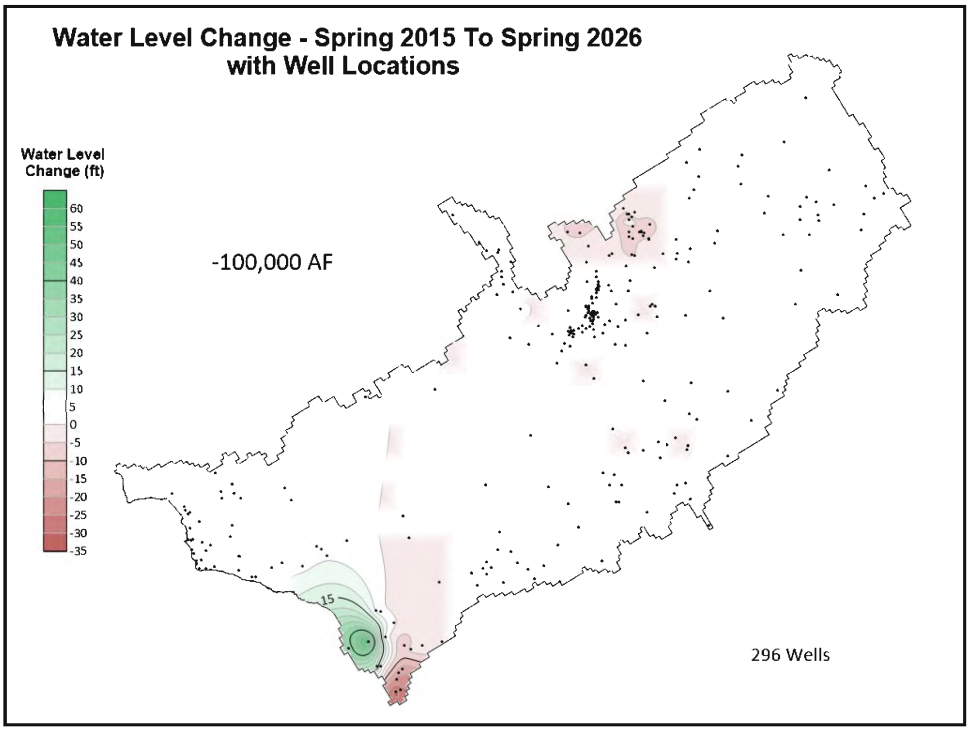
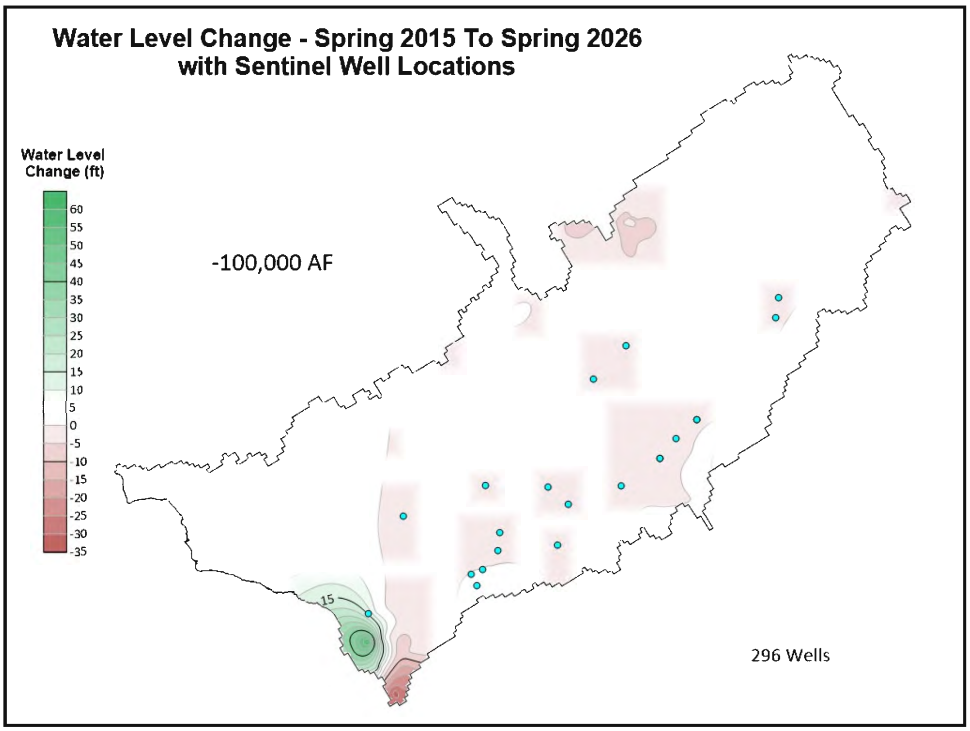


40



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Storage Change Summary

- The aquifer lost approximately 600,000 acre-feet from 2025 to 2026.
- The aquifer has lost approximately 100,000 acre-feet of storage since 2015.
- Undulations due to weather are to be expected.
- The ESPA leaks, and aquifer-storage gains are fleeting.
- Perseverance through the dry times is vital to success.

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Discussion

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MEMO

To: IWRB – Aquifer Stabilization Committee (Committee)

From: Ethan Geisler, IDWR Technical Services Bureau Chief

Date: August 21, 2026

Subject: ESPA Spring Discharge and Reach Gains Update

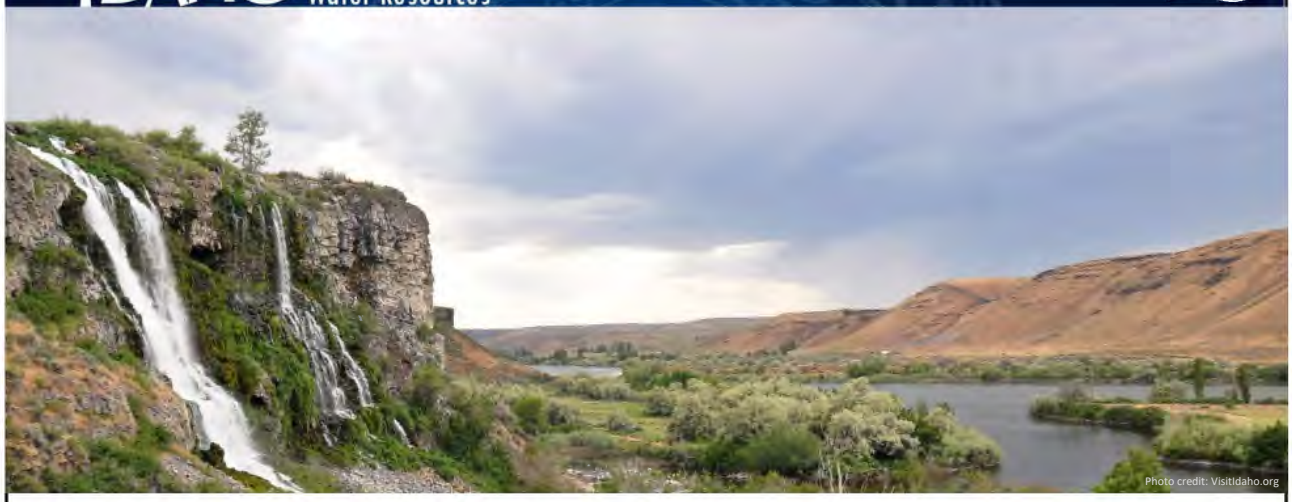
INFORMATIONAL ITEM

Staff will provide the Committee with a PowerPoint presentation update on the agenda item.

Attachments:

- *PowerPoint Presentation*

IDAHO Department of Water Resources

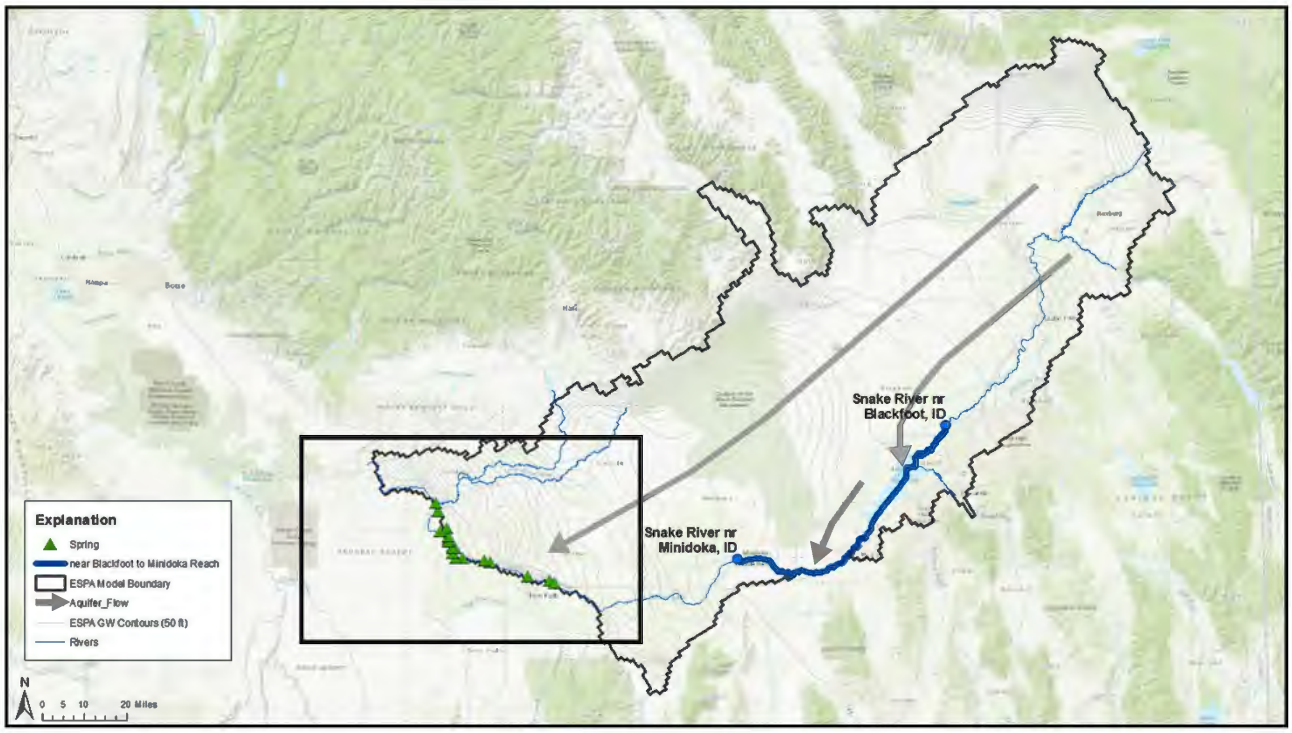


Eastern Snake Plain Aquifer Discharge

Presented by: Ethan Geisler

August 26, 2026

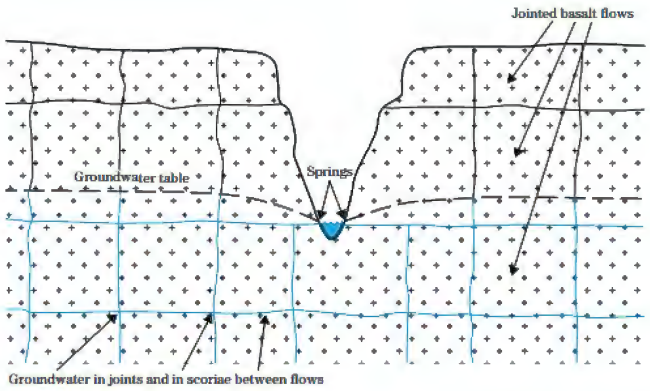
1



2

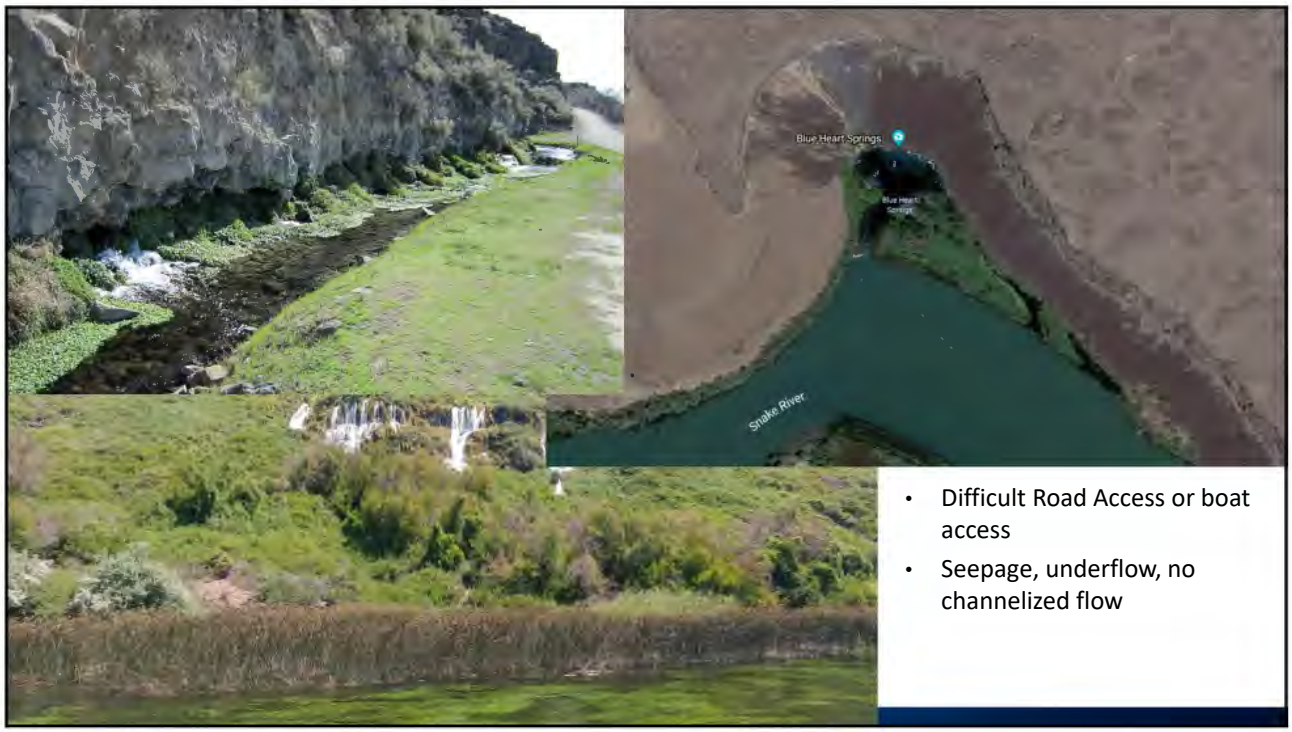
IDAHO Department of Water Resources

Spring Discharge on ESPA



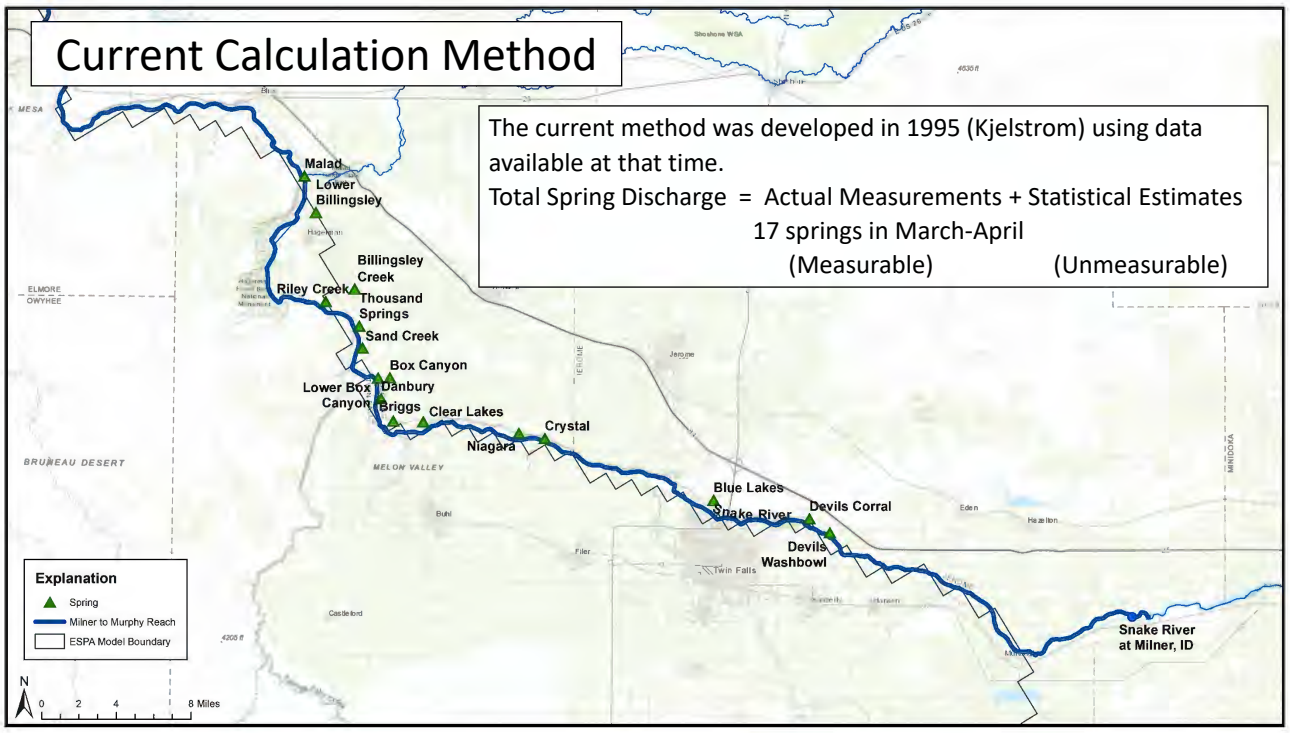
- Springs occur when the groundwater table intersects the land surface or canyon wall.

3

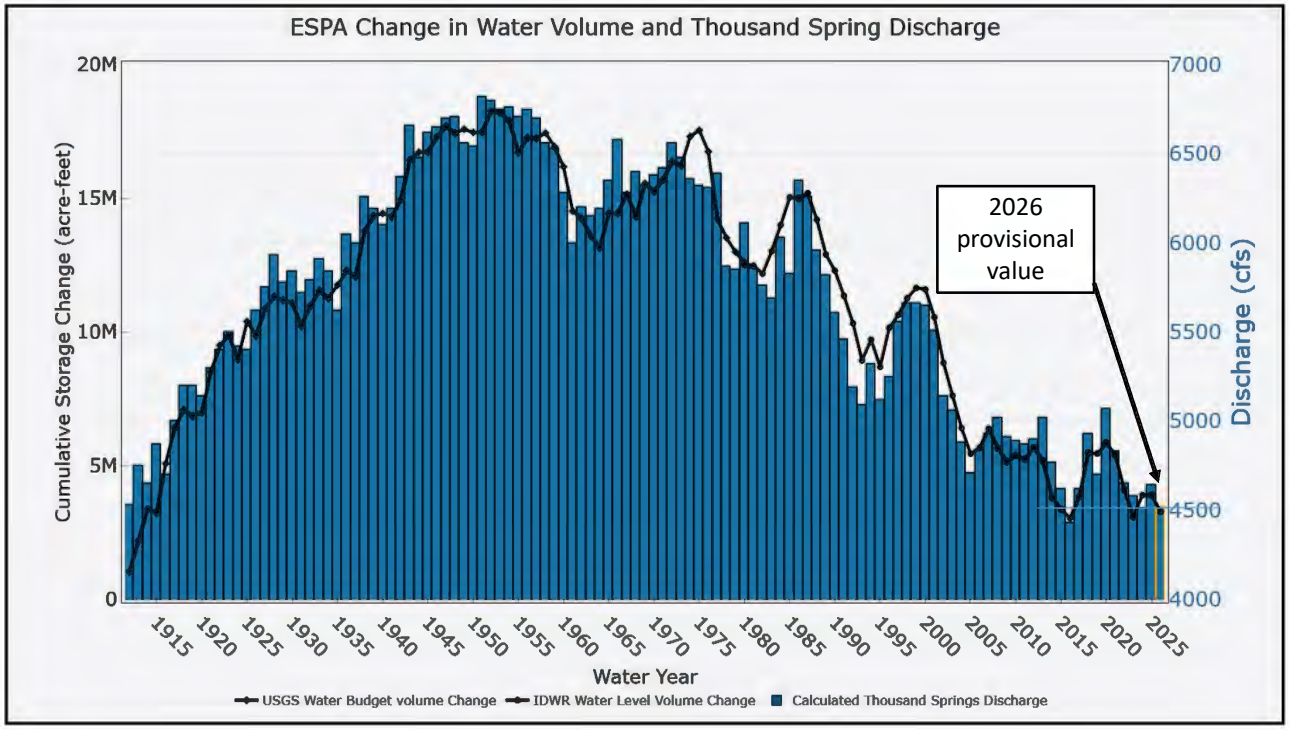


- Difficult Road Access or boat access
- Seepage, underflow, no channelized flow

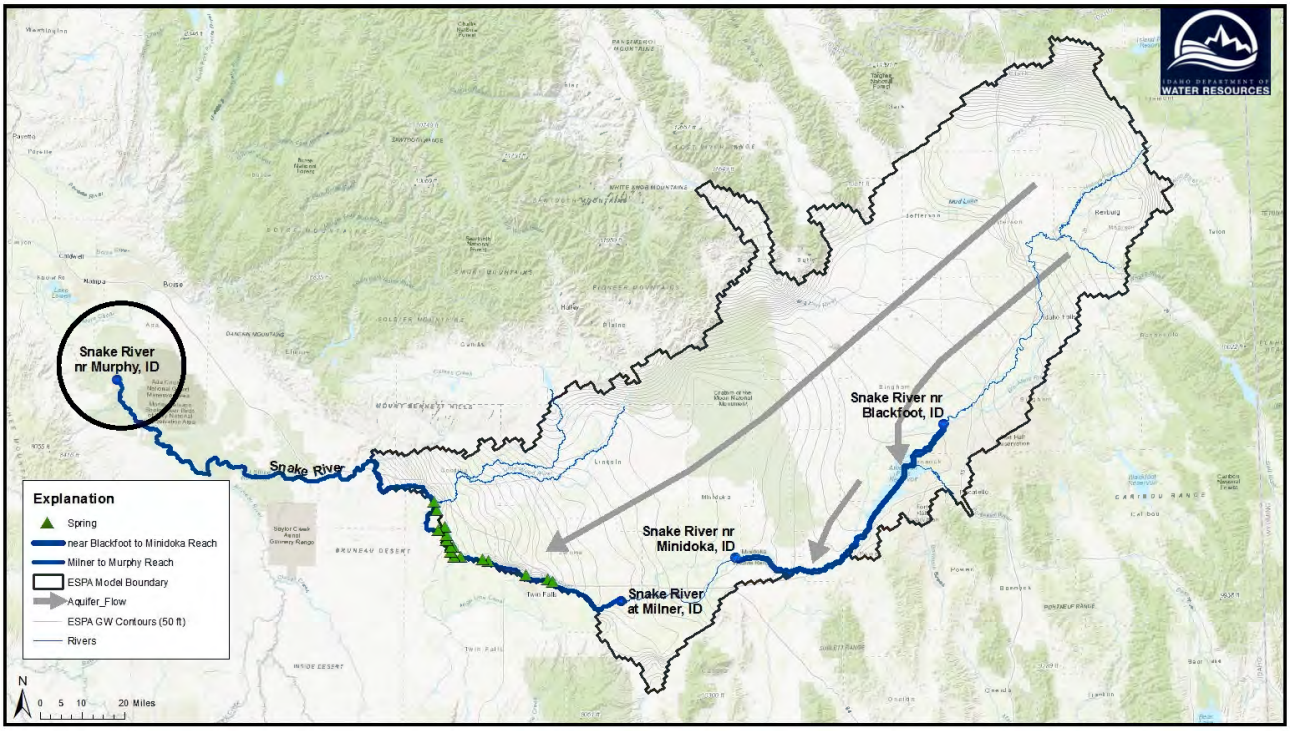
4


Current Calculation Method
The current method was developed in 1995 (Kjelstrom) using data available at that time.
Total Spring Discharge = Actual Measurements + Statistical Estimates
17 springs in March-April
(Measurable) (Unmeasurable)
Malad
Lower Billingsley
Billingsley Creek
Riley Creek
Thousand Springs
Sand Creek
Box Canyon
Lower Box Canyon
Danbury
Briggs
Clear Lakes
Niagara
Crystal
Blue Lakes
Snake River
Devils Corral
Devils Washbowl
Snake River at Milner, ID
BRUNEAU DESERT
MELON VALLEY
Explanation
Spring
Milner to Murphy Reach
ESPA Model Boundary
N
0 2 4 8 Miles

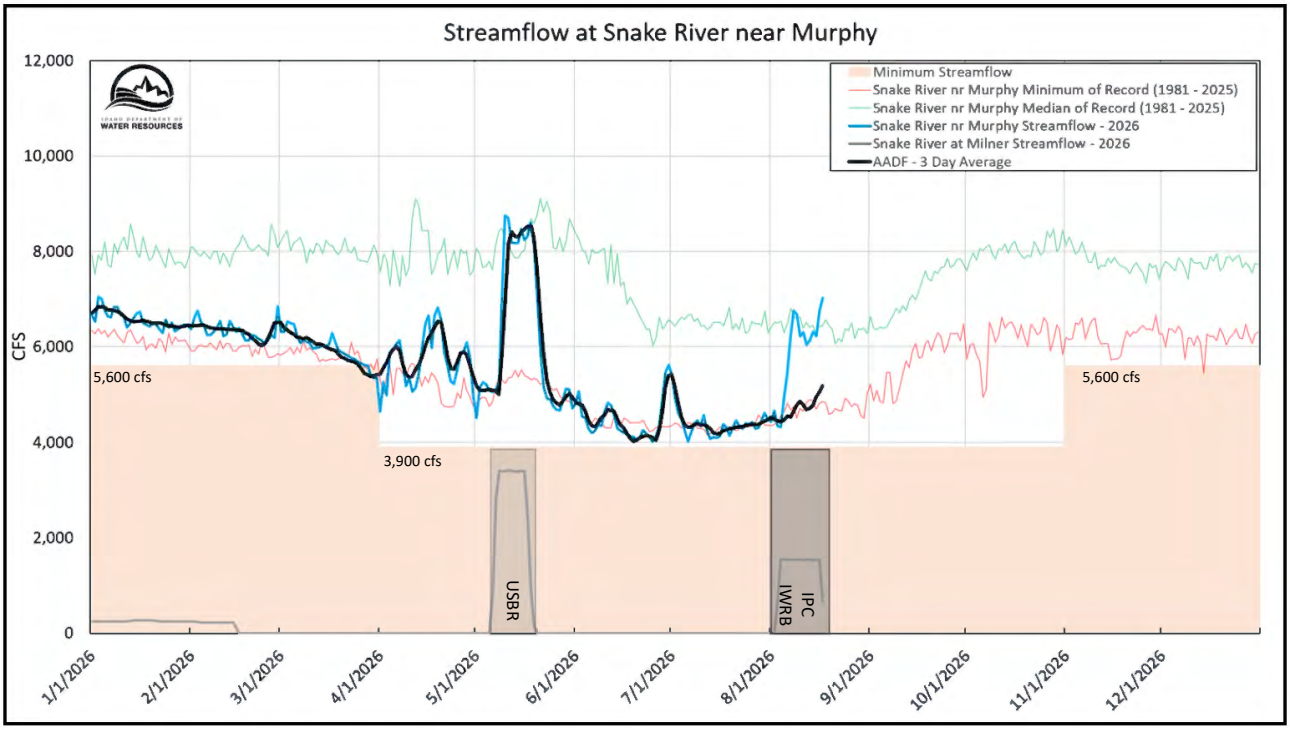
5


ESPA Change in Water Volume and Thousand Spring Discharge
Cumulative Storage Change (acre-feet)
20M
15M
10M
5M
0
Discharge (cfs)
7000
6500
6000
5500
5000
4500
4000
2026 provisional value
1915 1920 1925 1930 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020 2025
Water Year
USGS Water Budget volume Change
IDWR Water Level Volume Change
Calculated Thousand Springs Discharge

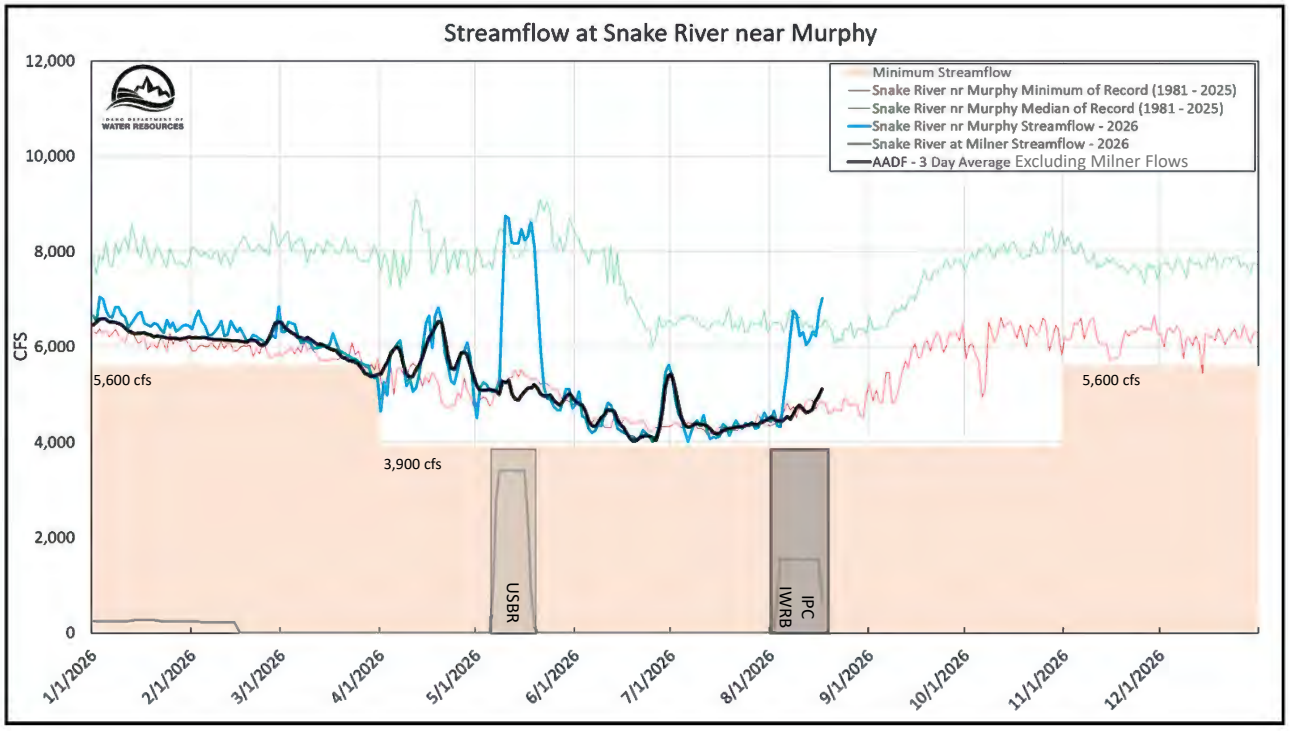
6


Snake River nr Murphy, ID
Snake River
Snake River nr Blackfoot, ID
Snake River nr Minidoka, ID
Snake River at Milner, ID
Explanation
Spring
near Blackfoot to Minidoka Reach
Milner to Murphy Reach
ESPA Model Boundary
Aquifer_Flow
ESPA GW Contours (50 ft)
Rivers
N
0 5 10 20 Miles
IDAHO DEPARTMENT OF WATER RESOURCES

7


Streamflow at Snake River near Murphy
IDAHO DEPARTMENT OF WATER RESOURCES
Minimum Streamflow
Snake River nr Murphy Minimum of Record (1981 - 2025)
Snake River nr Murphy Median of Record (1981 - 2025)
Snake River nr Murphy Streamflow - 2026
Snake River at Milner Streamflow - 2026
AADF - 3 Day Average
CFS
12,000
10,000
8,000
6,000
4,000
2,000
0
5,600 cfs
3,900 cfs
5,600 cfs
USBR
IPC
IWRB
1/1/2026
2/1/2026
3/1/2026
4/1/2026
5/1/2026
6/1/2026
7/1/2026
8/1/2026
9/1/2026
10/1/2026
11/1/2026
12/1/2026

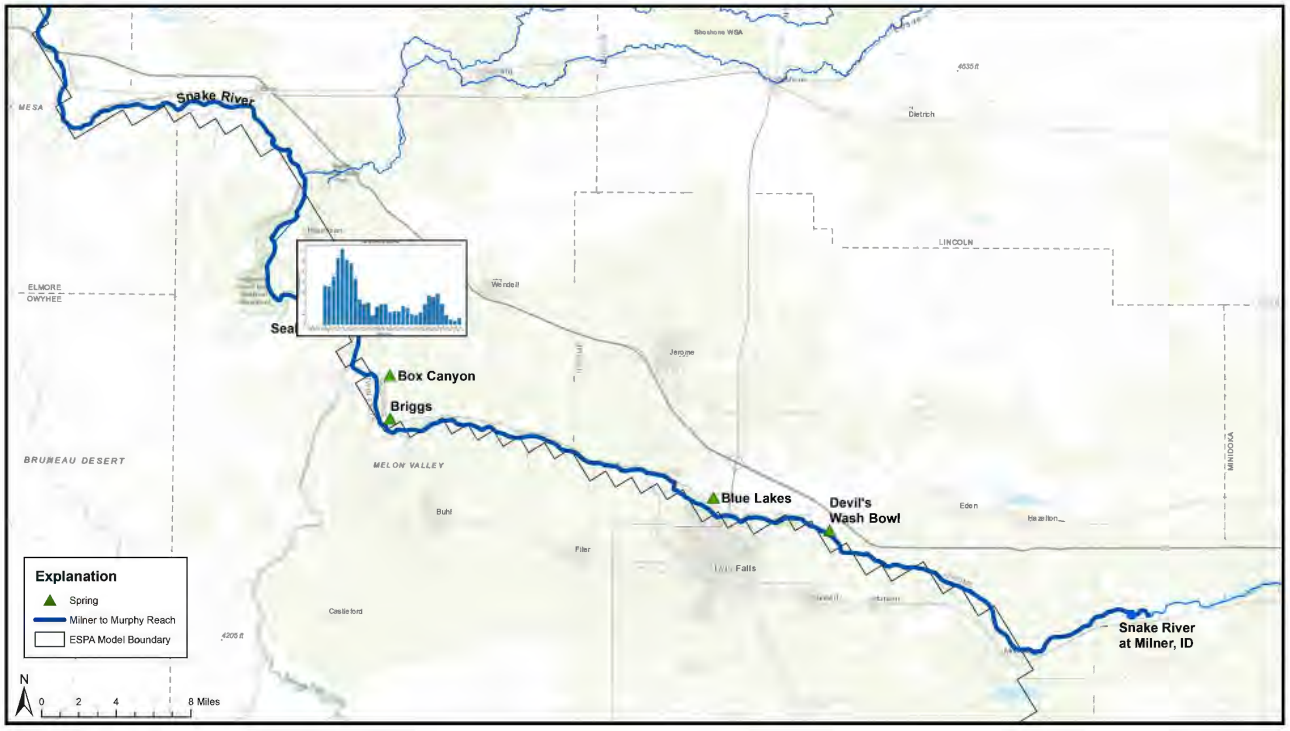
8


Streamflow at Snake River near Murphy
IDAHO DEPARTMENT OF WATER RESOURCES
Minimum Streamflow
Snake River nr Murphy Minimum of Record (1981 - 2025)
Snake River nr Murphy Median of Record (1981 - 2025)
Snake River nr Murphy Streamflow - 2026
Snake River at Milner Streamflow - 2026
AADF - 3 Day Average Excluding Milner Flows
CFS
12,000
10,000
8,000
6,000
4,000
2,000
0
5,600 cfs
3,900 cfs
5,600 cfs
USBR
IPC
IWRB
1/1/2026
2/1/2026
3/1/2026
4/1/2026
5/1/2026
6/1/2026
7/1/2026
8/1/2026
9/1/2026
10/1/2026
11/1/2026
12/1/2026

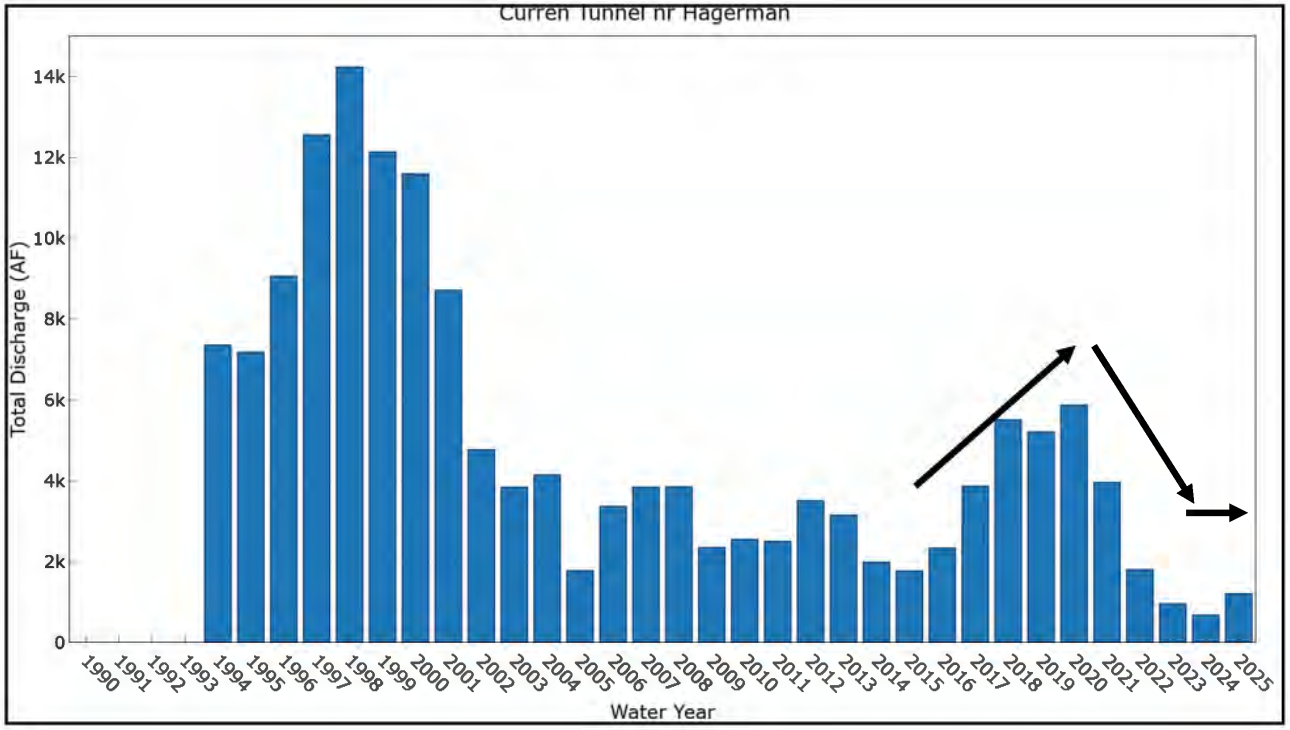
9


Snake River
Curren Tunnel
SeaPac
Bridal Veil
SeaPac ABC
Box Canyon
Briggs
Blue Lakes
Devil's
Wash Bowl
Snake River
at Milner, ID
BRUNEAU DESERT
MELON VALLEY
ELMORE
OWYHEE
LINCOLN
Twin Falls
Explanation
Spring
Milner to Murphy Reach
ESPA Model Boundary
N
0
2
4
8 Miles

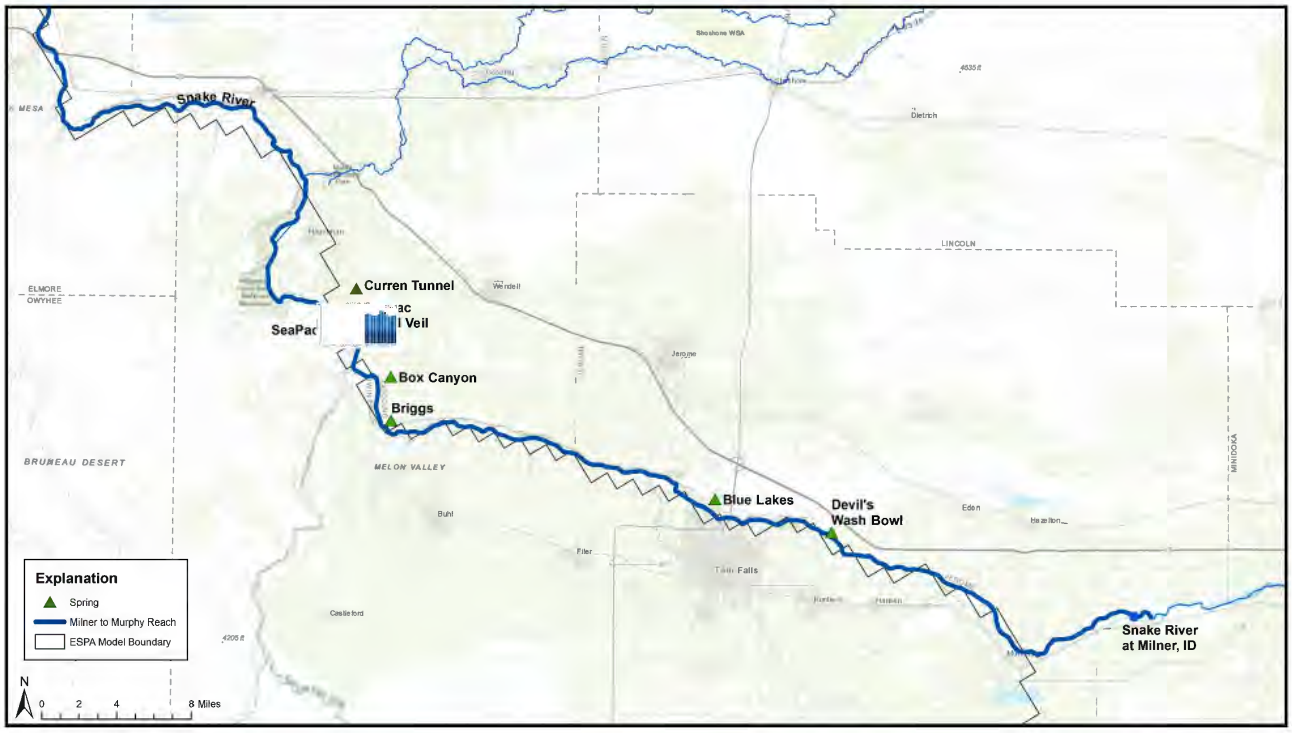
10


Snake River
Box Canyon
Briggs
Blue Lakes
Devil's
Wash Bowl
Snake River
at Milner, ID
BRUNEAU DESERT
MELON VALLEY
LINCOLN
ELMORE
OWYHEE
Explanation
Spring
Milner to Murphy Reach
ESPA Model Boundary
N
0 2 4 8 Miles

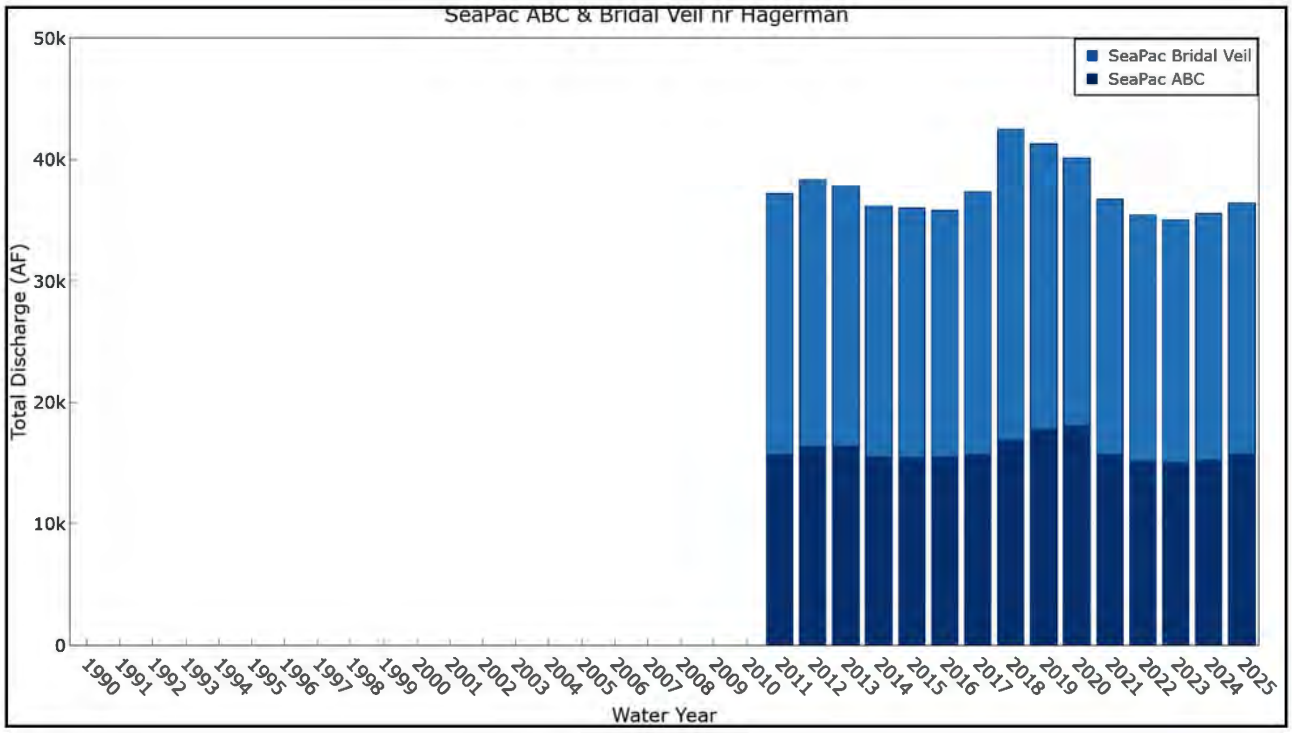
11


Curren Tunnel nr Hagerman
Total Discharge (AF)
0
2k
4k
6k
8k
10k
12k
14k
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
Water Year

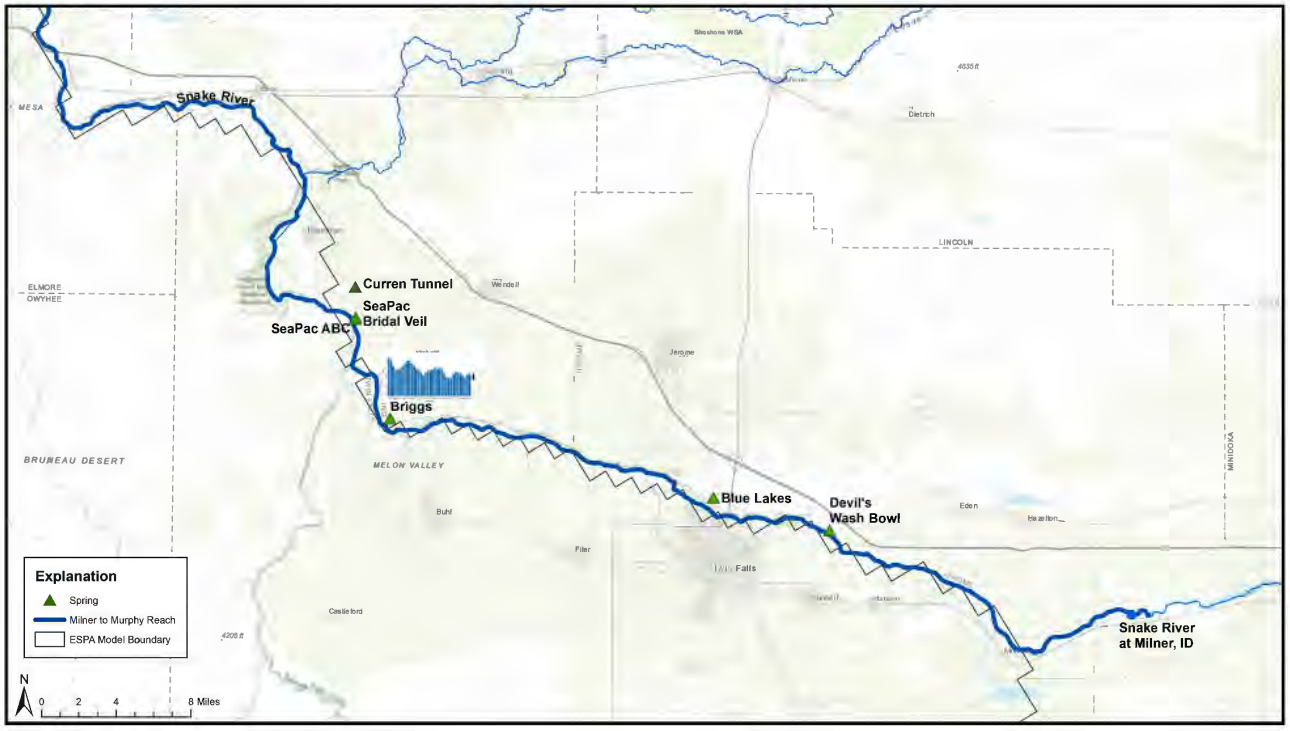
12


Snake River
Curren Tunnel
SeaPac
Veil
Box Canyon
Briggs
Blue Lakes
Devil's
Wash Bowl
Snake River
at Milner, ID
BRUNEAU DESERT
MELON VALLEY
LINCOLN
ELMORE
OWYHEE
Explanation
Spring
Milner to Murphy Reach
ESPA Model Boundary
N
0 2 4 8 Miles

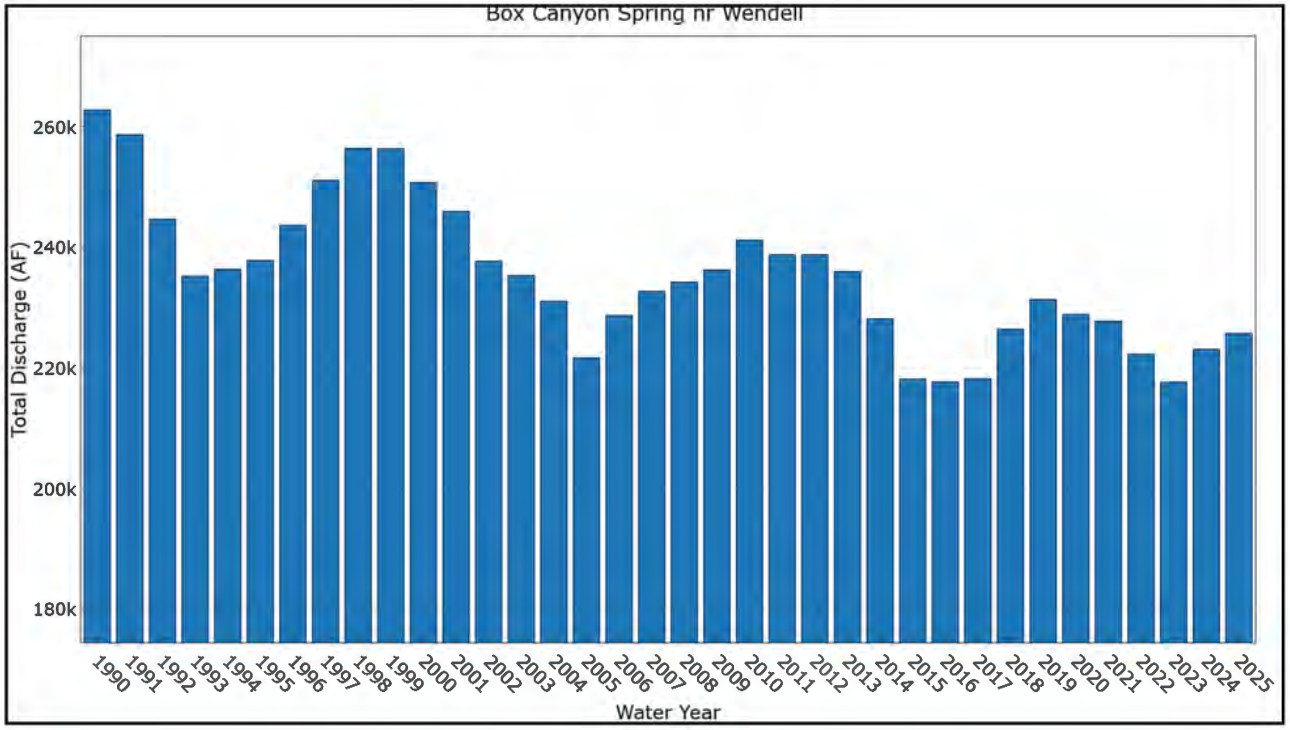
13


SeaPac ABC & Bridal Veil nr Hagerman
SeaPac Bridal Veil
SeaPac ABC
Total Discharge (AF)
50k
40k
30k
20k
10k
0
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
Water Year

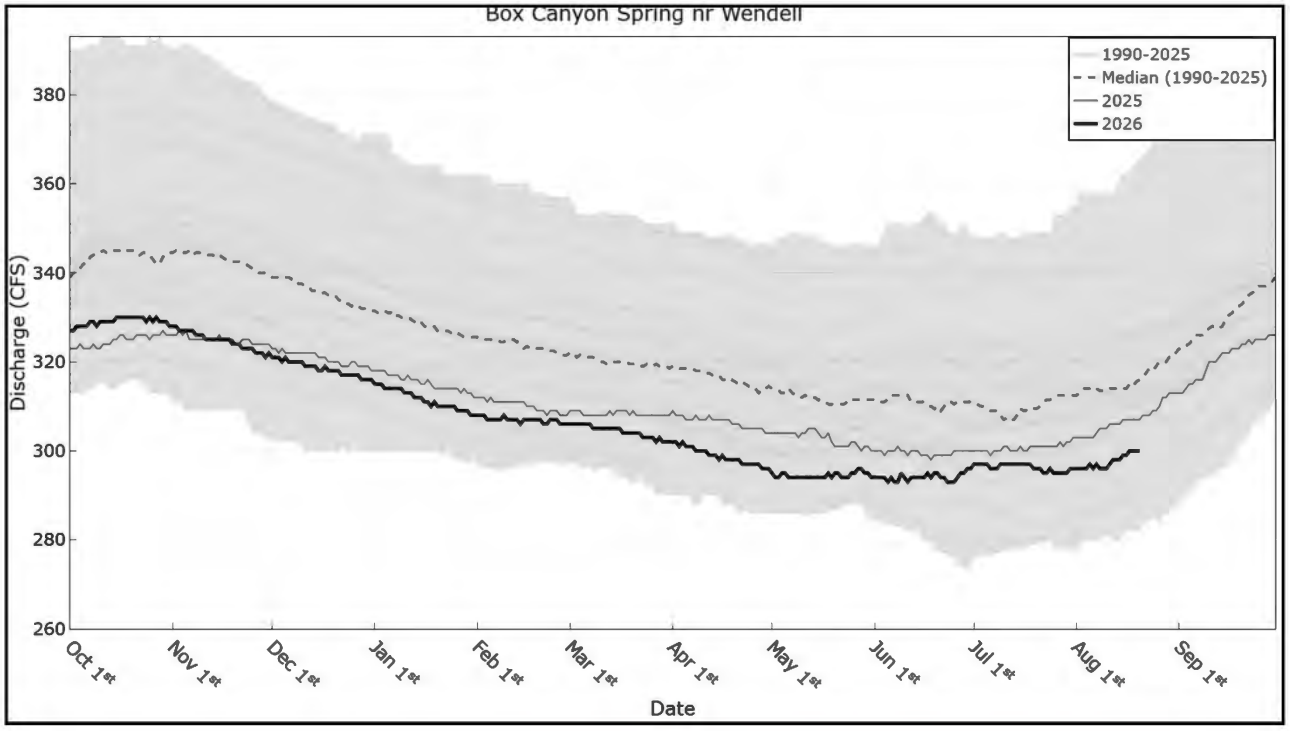
14


Snake River
Curren Tunnel
SeaPac
Bridal Veil
SeaPac ABC
Briggs
Blue Lakes
Devil's
Wash Bowl
Snake River
at Milner, ID
BRUNEAU DESERT
MELON VALLEY
ELMORE
OWYHEE
LINCOLN
MINIDOKA
Explanation
Spring
Milner to Murphy Reach
ESPA Model Boundary
N
0 2 4 8 Miles

16


Box Canyon Spring nr Wendell
Total Discharge (AF)
260k
240k
220k
200k
180k
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
Water Year

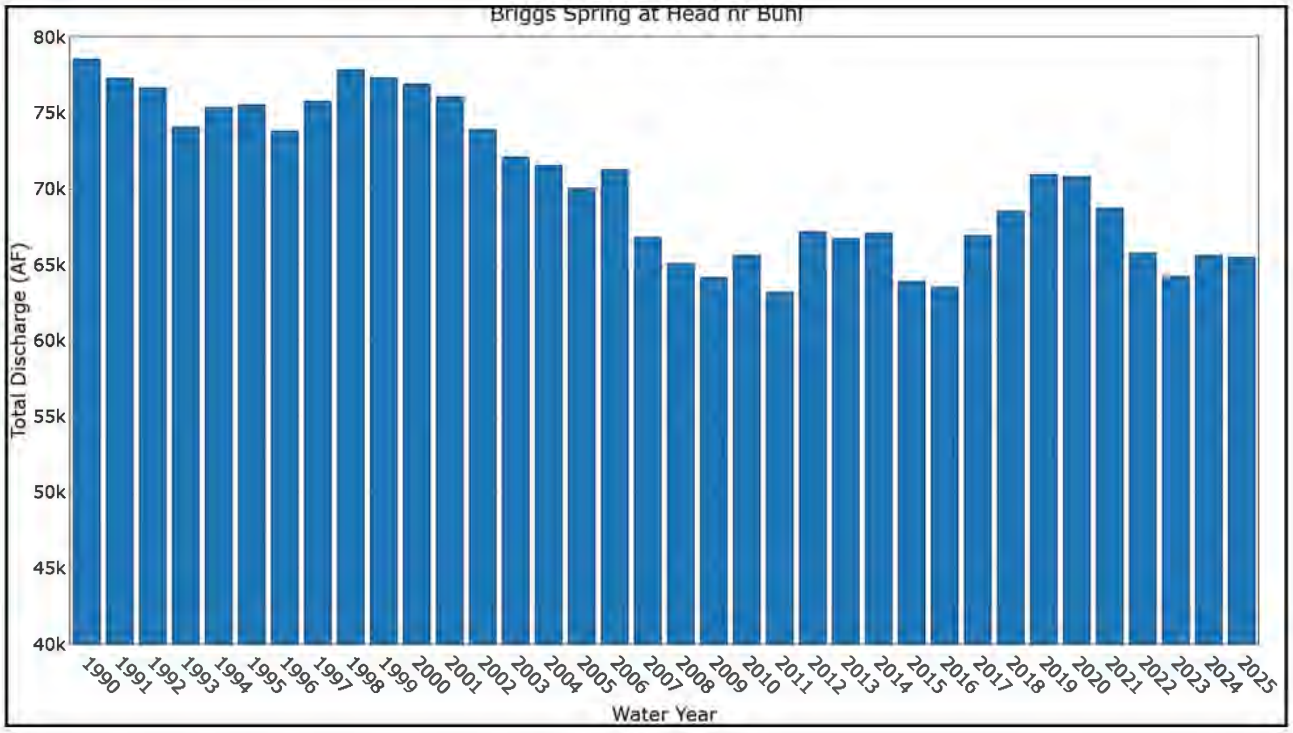
17


Box Canyon Spring nr Wendell
1990-2025
Median (1990-2025)
2025
2026
Discharge (CFS)
380
360
340
320
300
280
260
Oct 1st
Nov 1st
Dec 1st
Jan 1st
Feb 1st
Mar 1st
Apr 1st
May 1st
Jun 1st
Jul 1st
Aug 1st
Sep 1st
Date

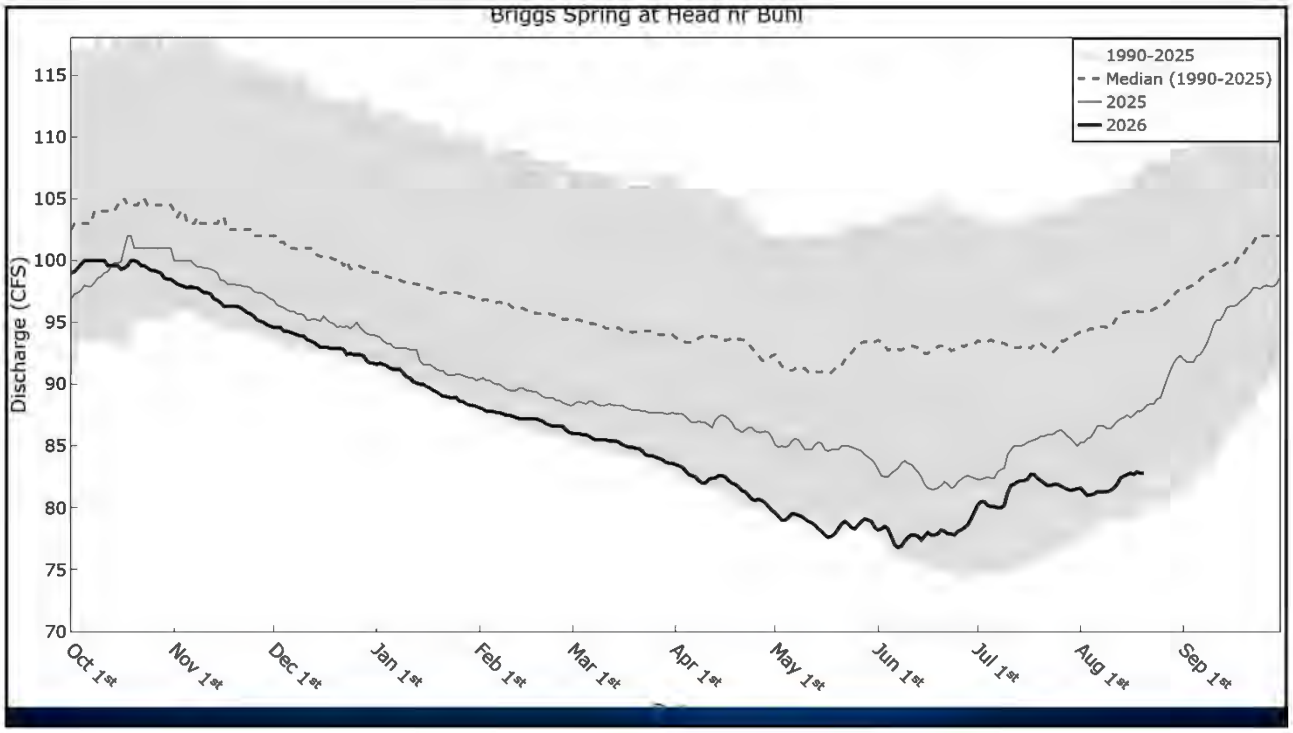
18


Snake River
Curren Tunnel
SeaPac Bridal Veil
SeaPac ABC
Box Canyon
Blue Lakes
Devil's Wash Bowl
Snake River at Milner, ID
BRUNEAU DESERT
ELMORE
OWYHEE
LINCOLN
Explanation
Spring
Milner to Murphy Reach
ESPA Model Boundary
N
0 2 4 8 Miles

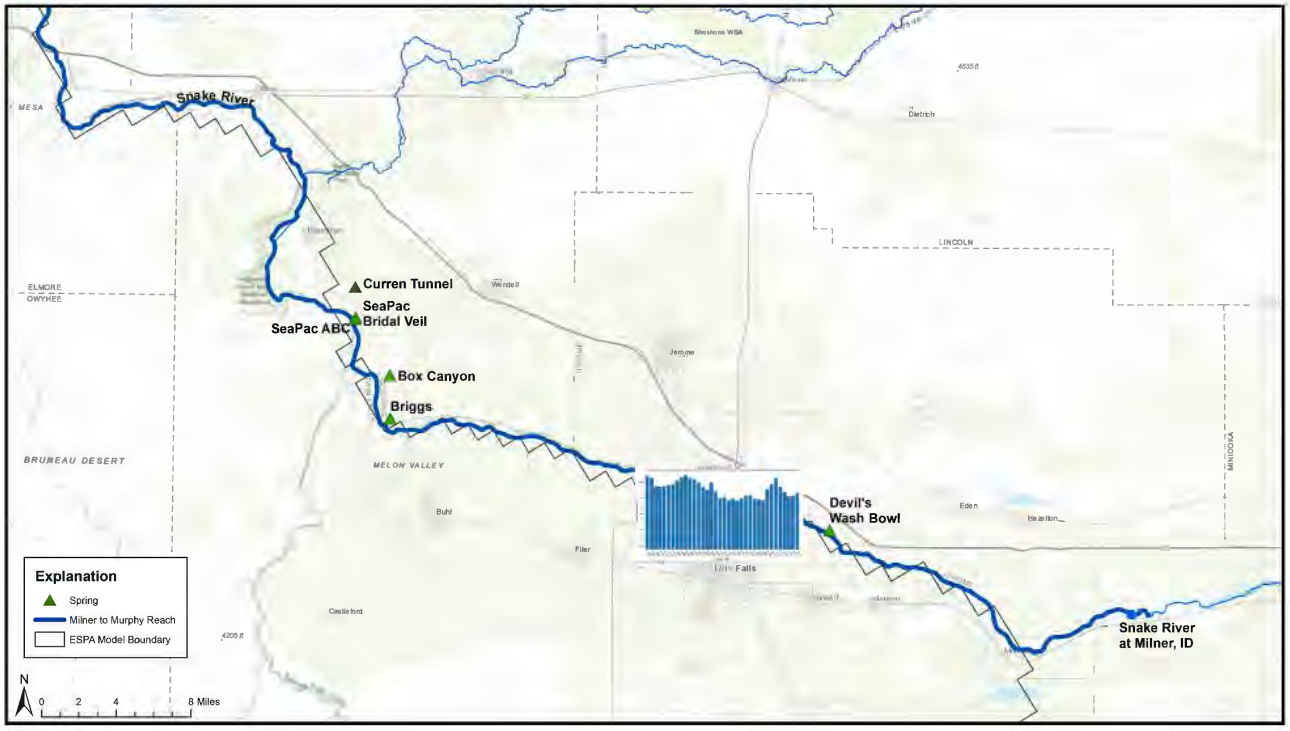
19


Briggs Spring at Head nr Buhl
Total Discharge (AF)
80k
75k
70k
65k
60k
55k
50k
45k
40k
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
Water Year

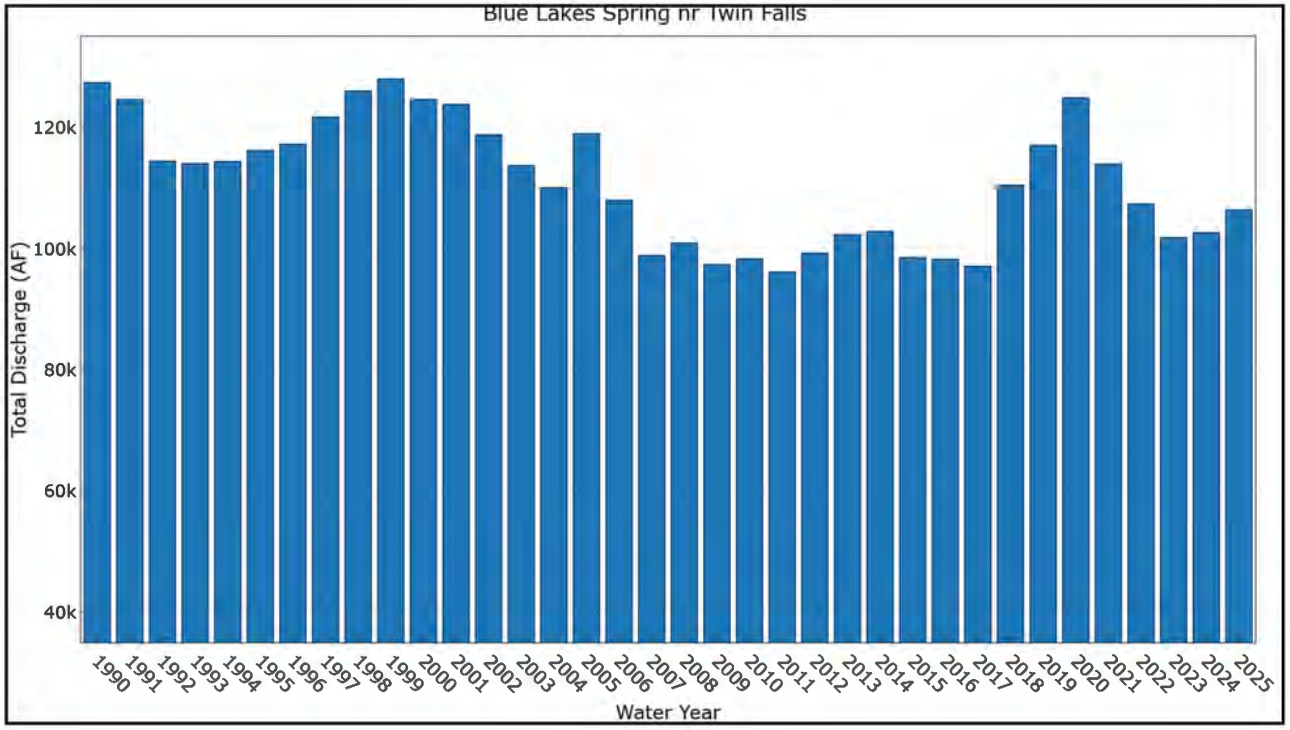
20


Briggs Spring at Head nr Buhl
1990-2025
Median (1990-2025)
2025
2026
Discharge (CFS)
115
110
105
100
95
90
85
80
75
70
Oct 1st
Nov 1st
Dec 1st
Jan 1st
Feb 1st
Mar 1st
Apr 1st
May 1st
Jun 1st
Jul 1st
Aug 1st
Sep 1st

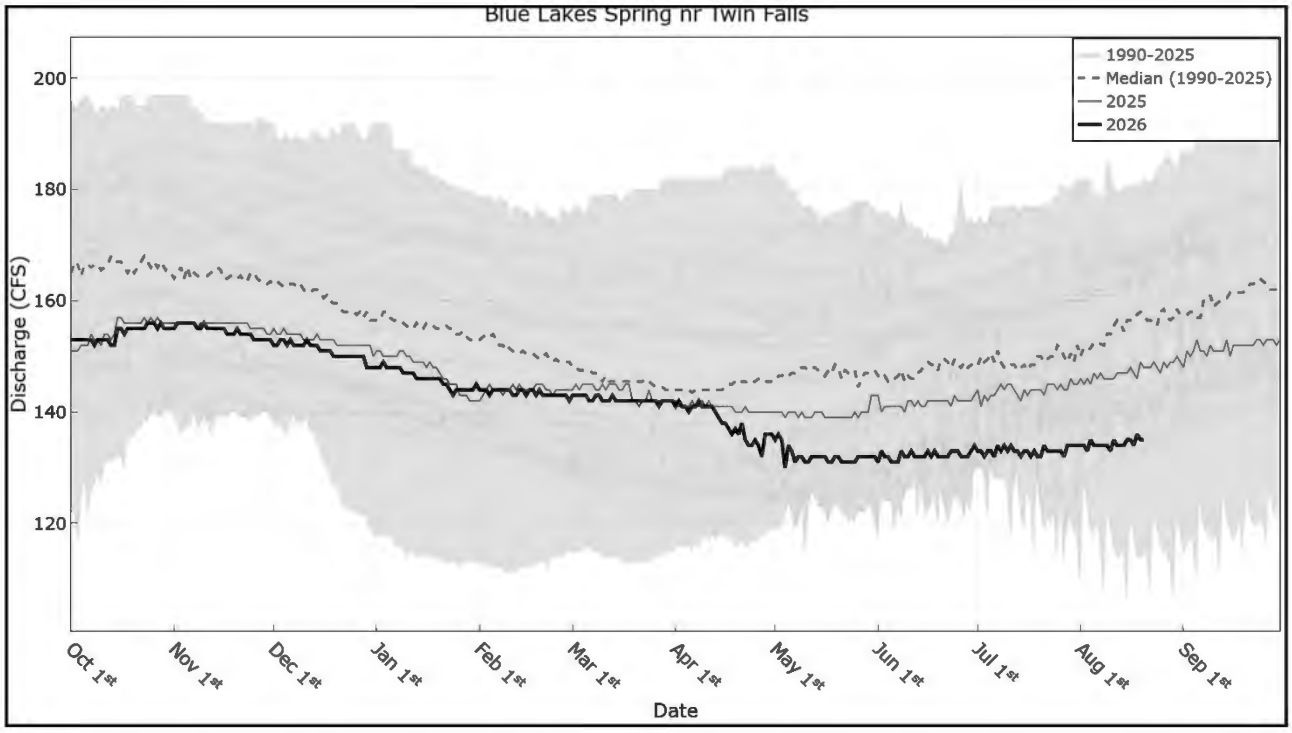
21


Snake River
Curren Tunnel
SeaPac
Bridal Veil
SeaPac ABC
Box Canyon
Briggs
Devil's
Wash Bowl
Snake River
at Milner, ID
Explanation
Spring
Milner to Murphy Reach
ESPA Model Boundary
N
0
2
4
8 Miles
BRUNEAU DESERT
MELON VALLEY
ELMORE
OWYHEE
LINCOLN
MINIDOKA
Twin Falls

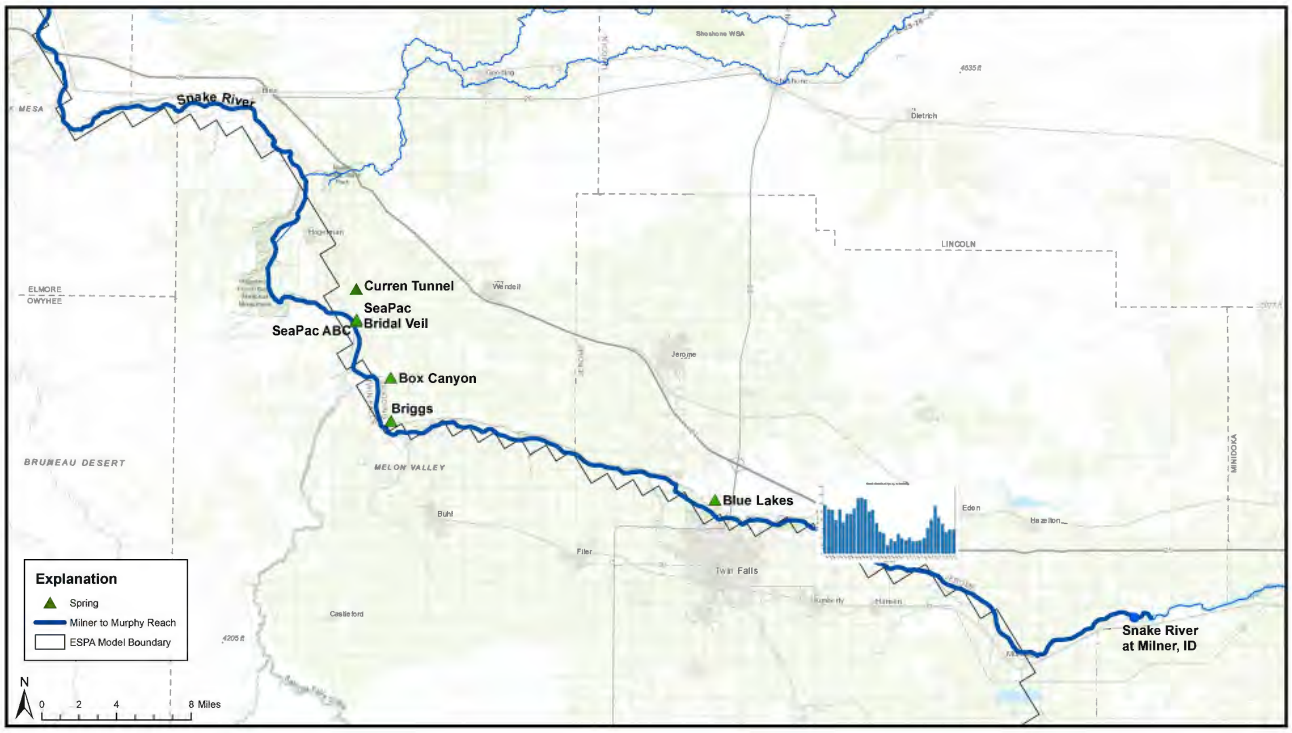
22


Blue Lakes Spring nr Twin Falls
Total Discharge (AF)
120k
100k
80k
60k
40k
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Water Year

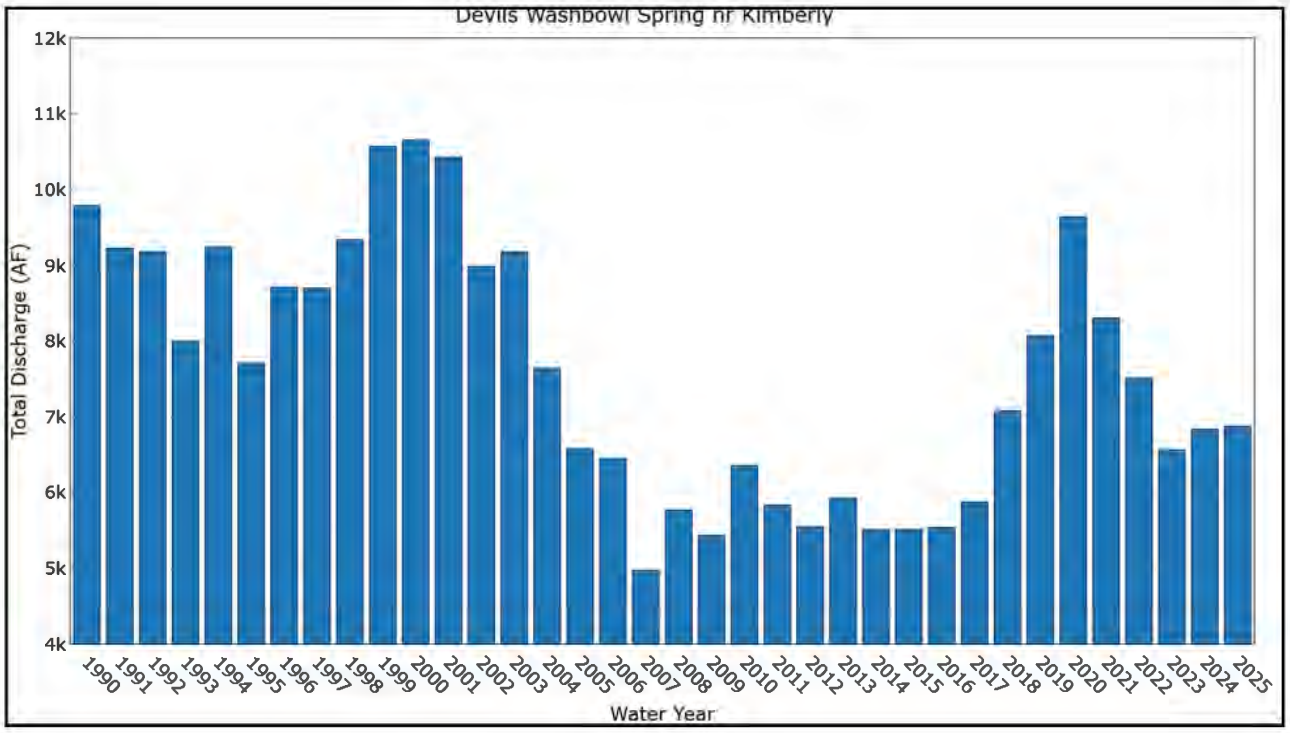
23


Blue Lakes Spring nr Twin Falls
1990-2025
Median (1990-2025)
2025
2026
Discharge (CFS)
200
180
160
140
120
Oct 1st
Nov 1st
Dec 1st
Jan 1st
Feb 1st
Mar 1st
Apr 1st
May 1st
Jun 1st
Jul 1st
Aug 1st
Sep 1st
Date

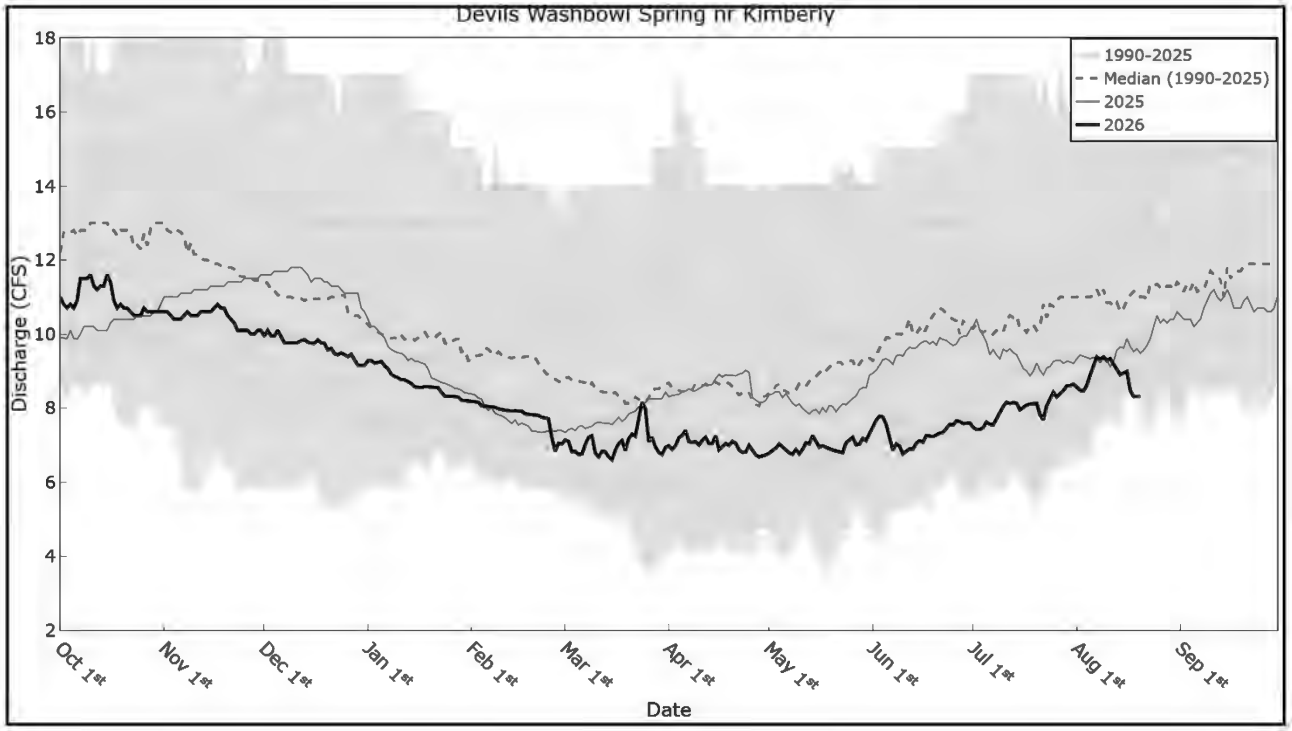
24


Snake River
Curren Tunnel
SeaPac
Bridal Veil
SeaPac ABC
Box Canyon
Briggs
Blue Lakes
Snake River
at Milner, ID
BRUNEAU DESERT
MELON VALLEY
ELMORE
OWYHEE
LINCOLN
Twin Falls
Explanation
Spring
Milner to Murphy Reach
ESPA Model Boundary
N
0
2
4
8 Miles

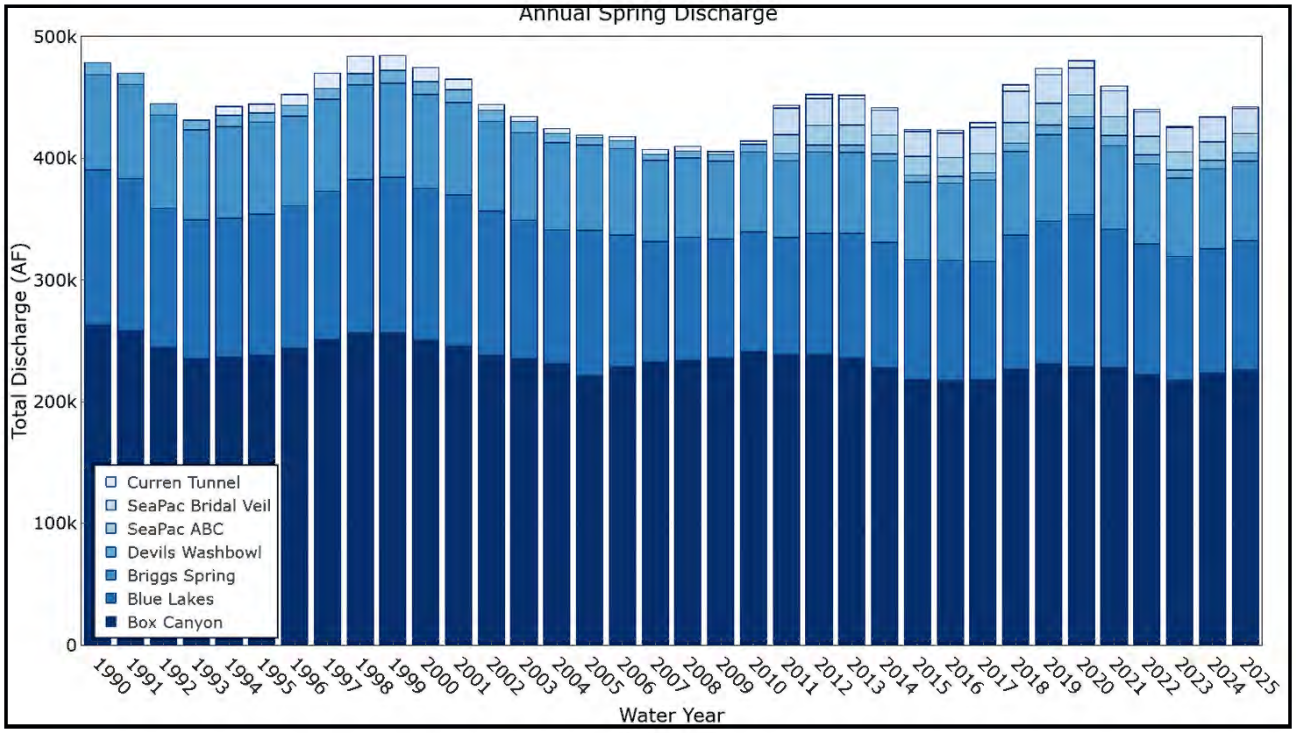
25


Devils Washbowl Spring nr Kimberly
Total Discharge (AF)
12k
11k
10k
9k
8k
7k
6k
5k
4k
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
Water Year

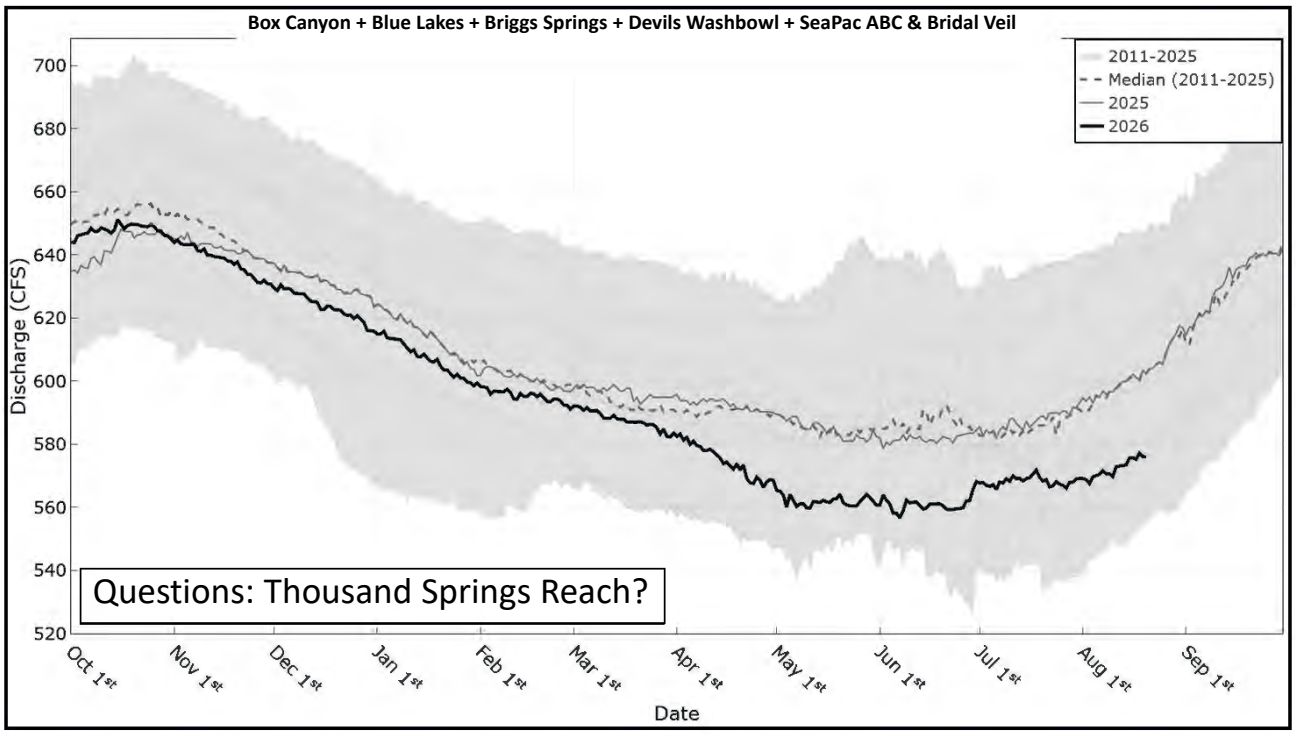
26


Devils Washbowl Spring nr Kimberly
1990-2025
Median (1990-2025)
2025
2026
Discharge (CFS)
18
16
14
12
10
8
6
4
2
Oct 1st
Nov 1st
Dec 1st
Jan 1st
Feb 1st
Mar 1st
Apr 1st
May 1st
Jun 1st
Jul 1st
Aug 1st
Sep 1st
Date

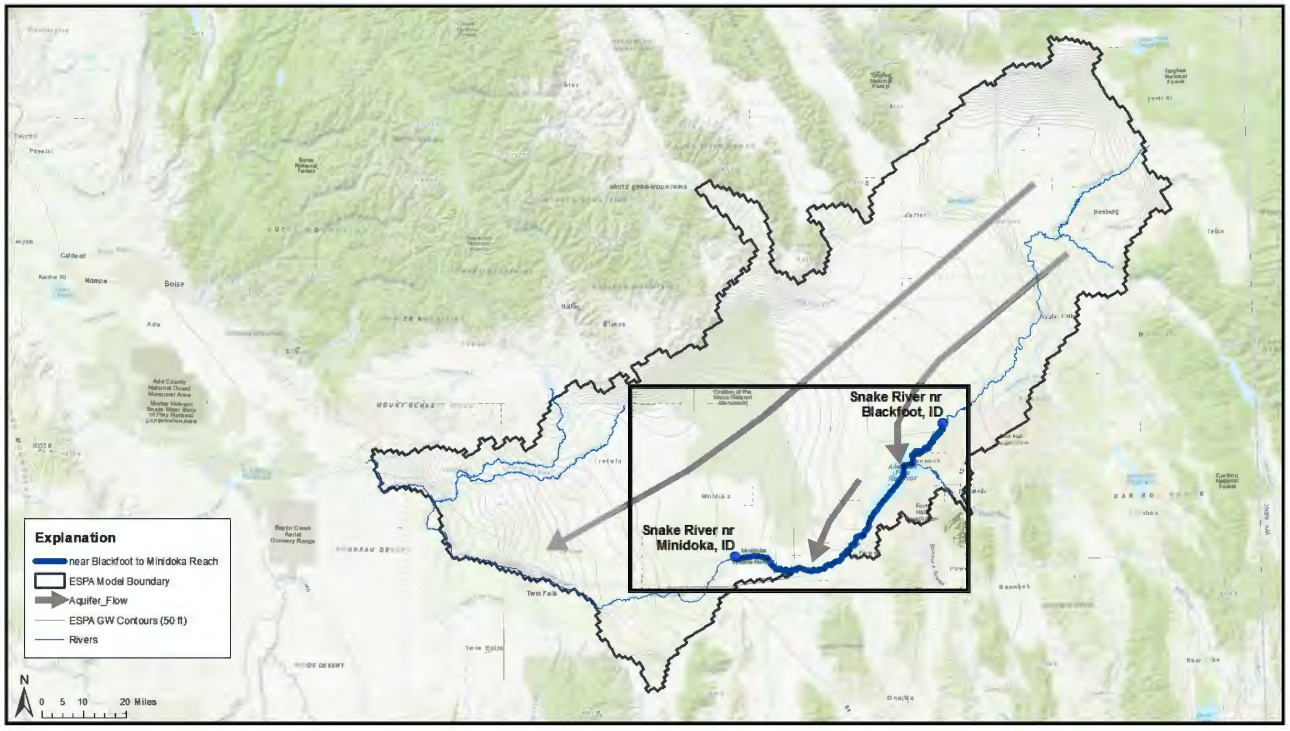
27


Annual Spring Discharge
Total Discharge (AF)
500k
400k
300k
200k
100k
0
Curren Tunnel
SeaPac Bridal Veil
SeaPac ABC
Devils Washbowl
Briggs Spring
Blue Lakes
Box Canyon
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
Water Year

28


Box Canyon + Blue Lakes + Briggs Springs + Devils Washbowl + SeaPac ABC & Bridal Veil
2011-2025
Median (2011-2025)
2025
2026
Discharge (CFS)
700
680
660
640
620
600
580
560
540
520
Questions: Thousand Springs Reach?
Oct 1st
Nov 1st
Dec 1st
Jan 1st
Feb 1st
Mar 1st
Apr 1st
May 1st
Jun 1st
Jul 1st
Aug 1st
Sep 1st
Date

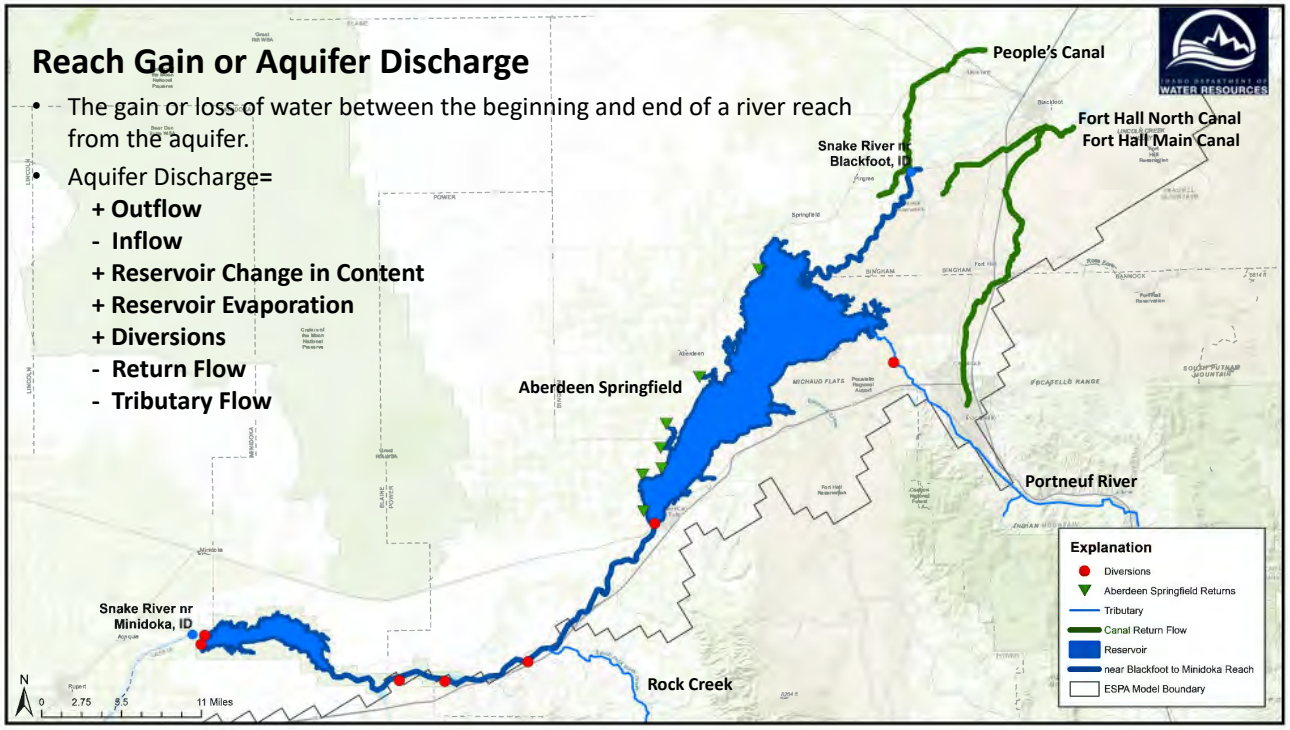
29



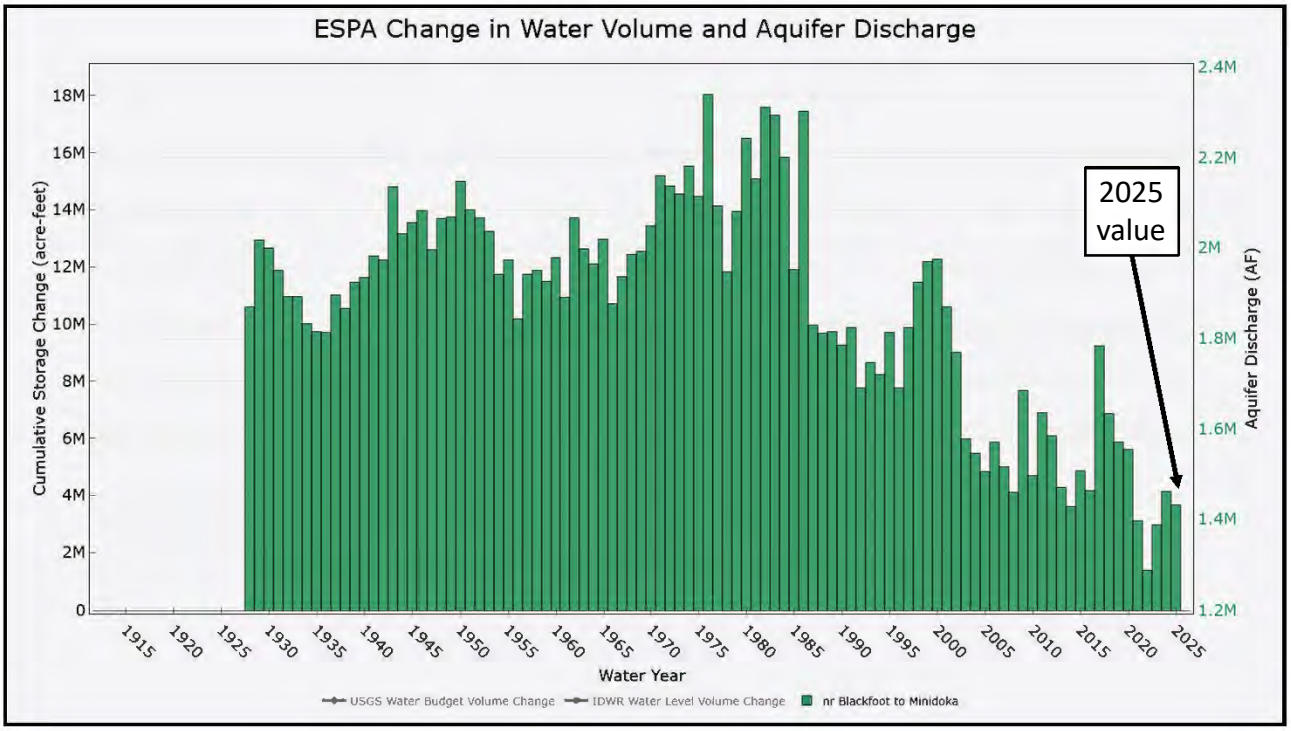
30

Reach Gain or Aquifer Discharge

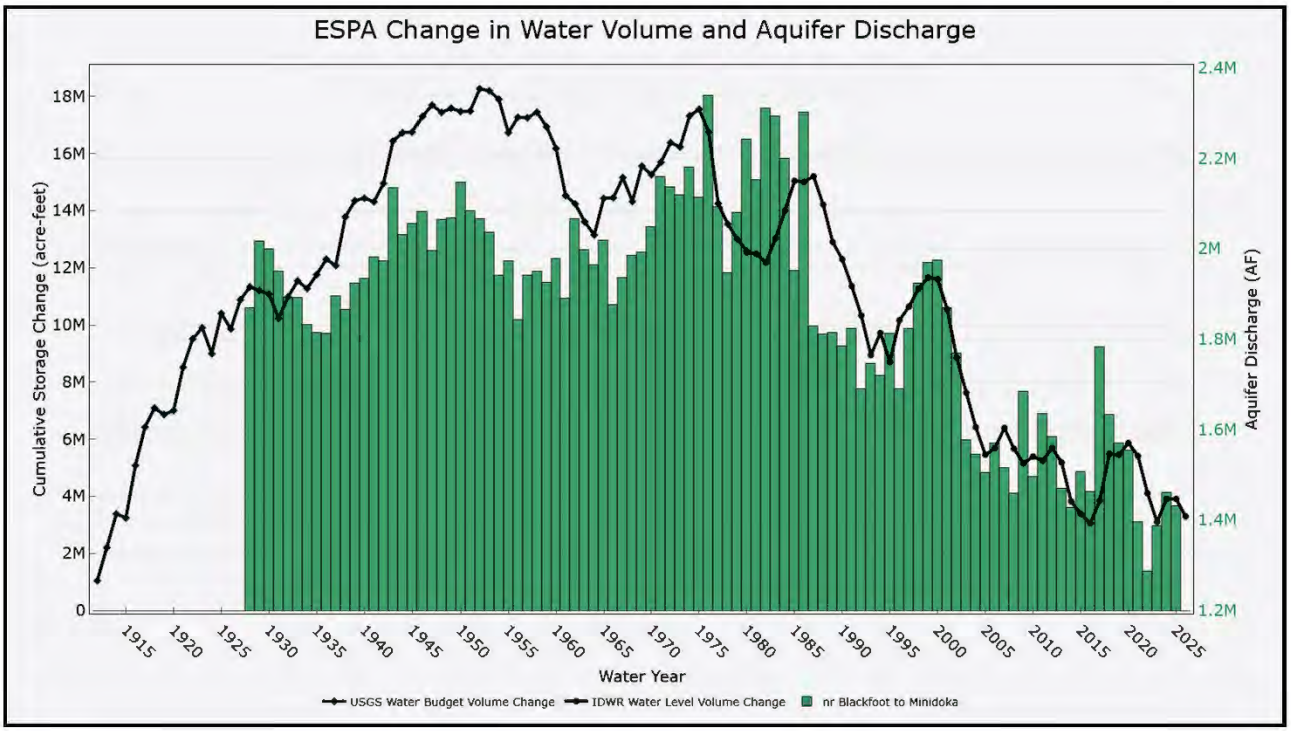
- The gain or loss of water between the beginning and end of a river reach from the aquifer.
- Aquifer Discharge=
  - **+ Outflow**
  - **- Inflow**
  - **+ Reservoir Change in Content**
  - **+ Reservoir Evaporation**
  - **+ Diversions**
  - **- Return Flow**
  - **- Tributary Flow**



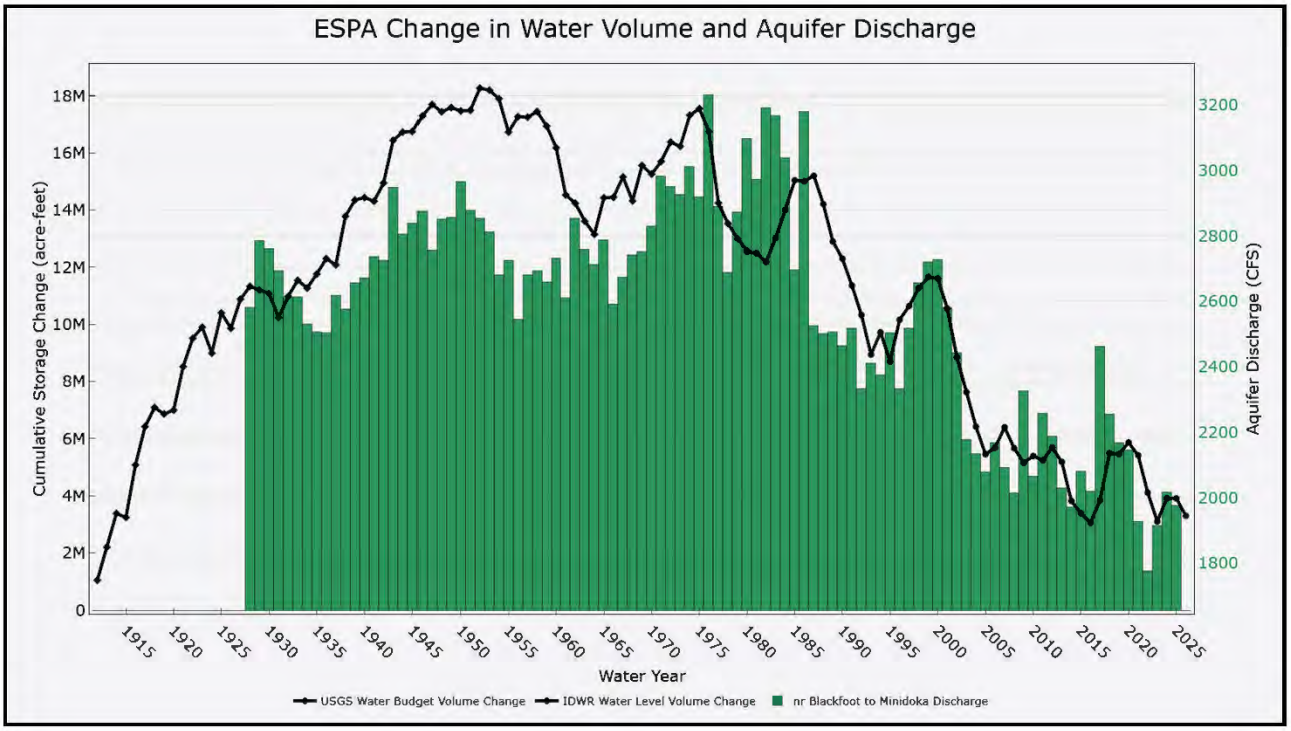
31


ESPA Change in Water Volume and Aquifer Discharge
Cumulative Storage Change (acre-feet)
Aquifer Discharge (AF)
Water Year
2025 value
USGS Water Budget Volume Change
IDWR Water Level Volume Change
nr Blackfoot to Minidoka

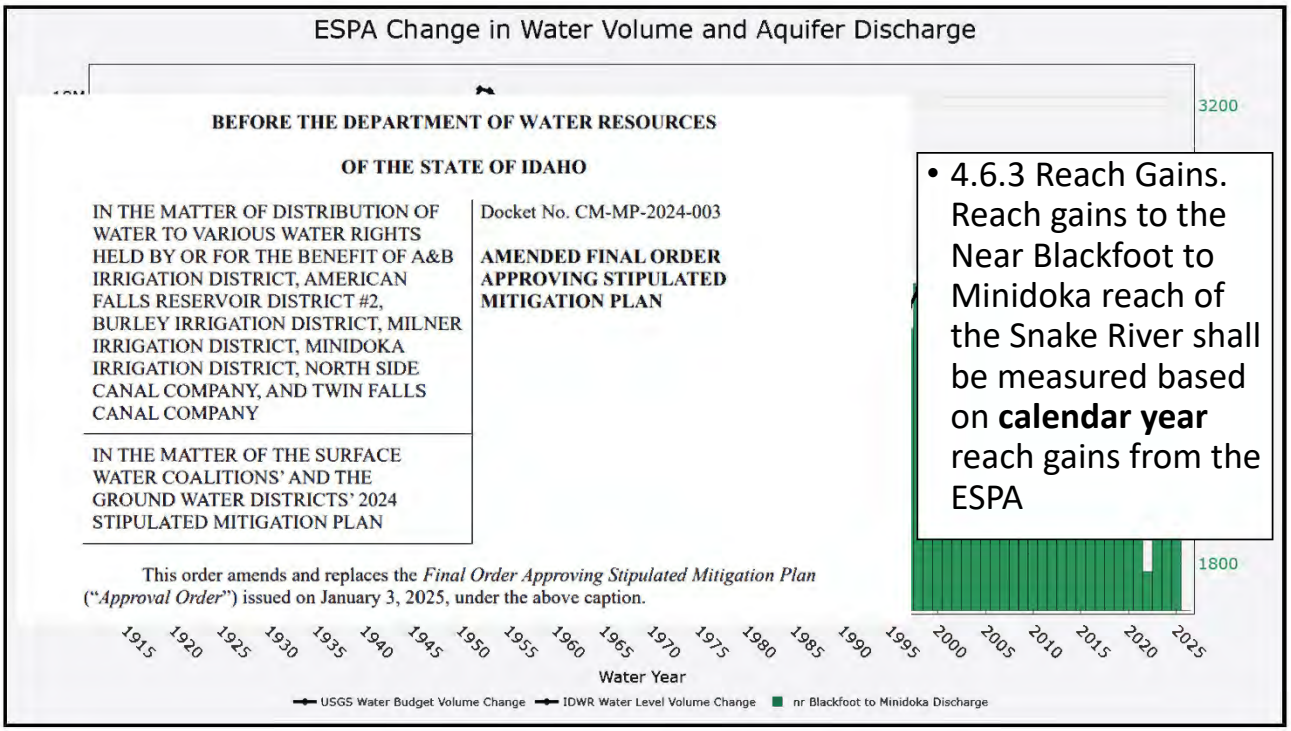
35


ESPA Change in Water Volume and Aquifer Discharge
Cumulative Storage Change (acre-feet)
Aquifer Discharge (AF)
Water Year
USGS Water Budget Volume Change
IDWR Water Level Volume Change
nr Blackfoot to Minidoka

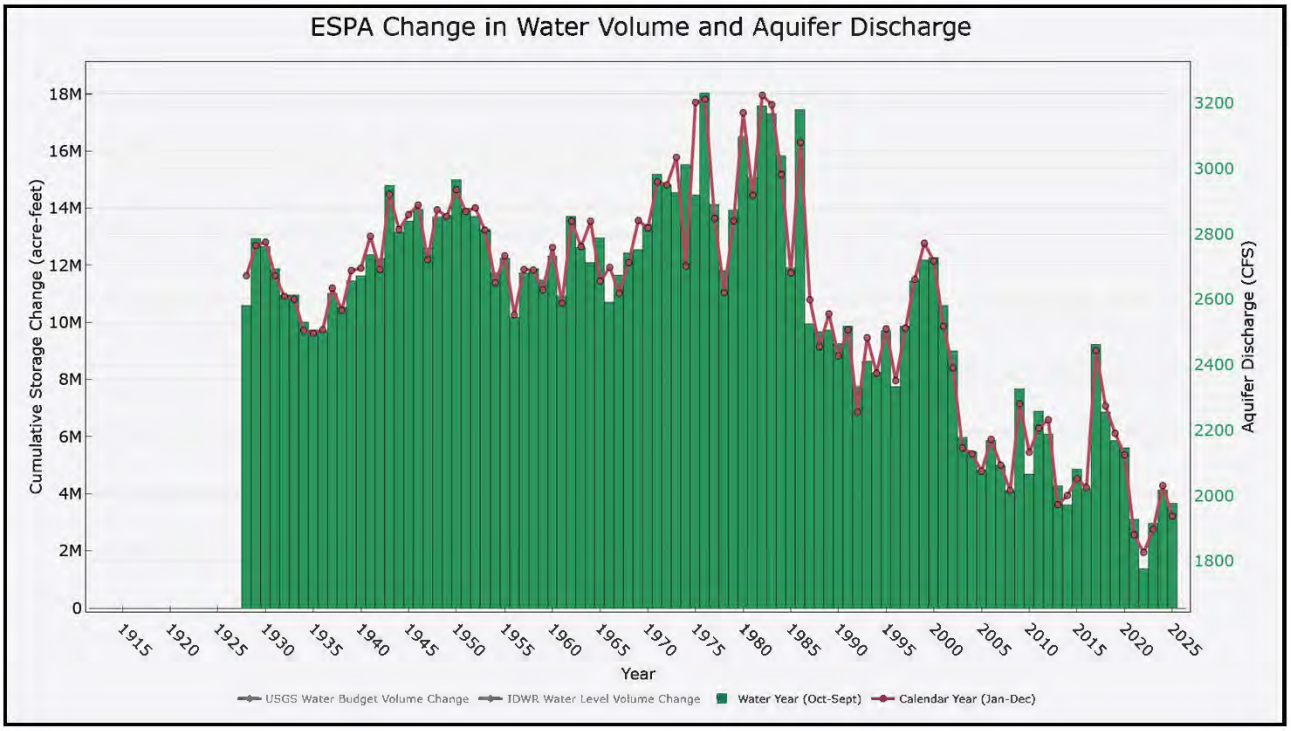
36


ESPA Change in Water Volume and Aquifer Discharge
Cumulative Storage Change (acre-feet)
Aquifer Discharge (CFS)
Water Year
USGS Water Budget Volume Change
IDWR Water Level Volume Change
nr Blackfoot to Minidoka Discharge

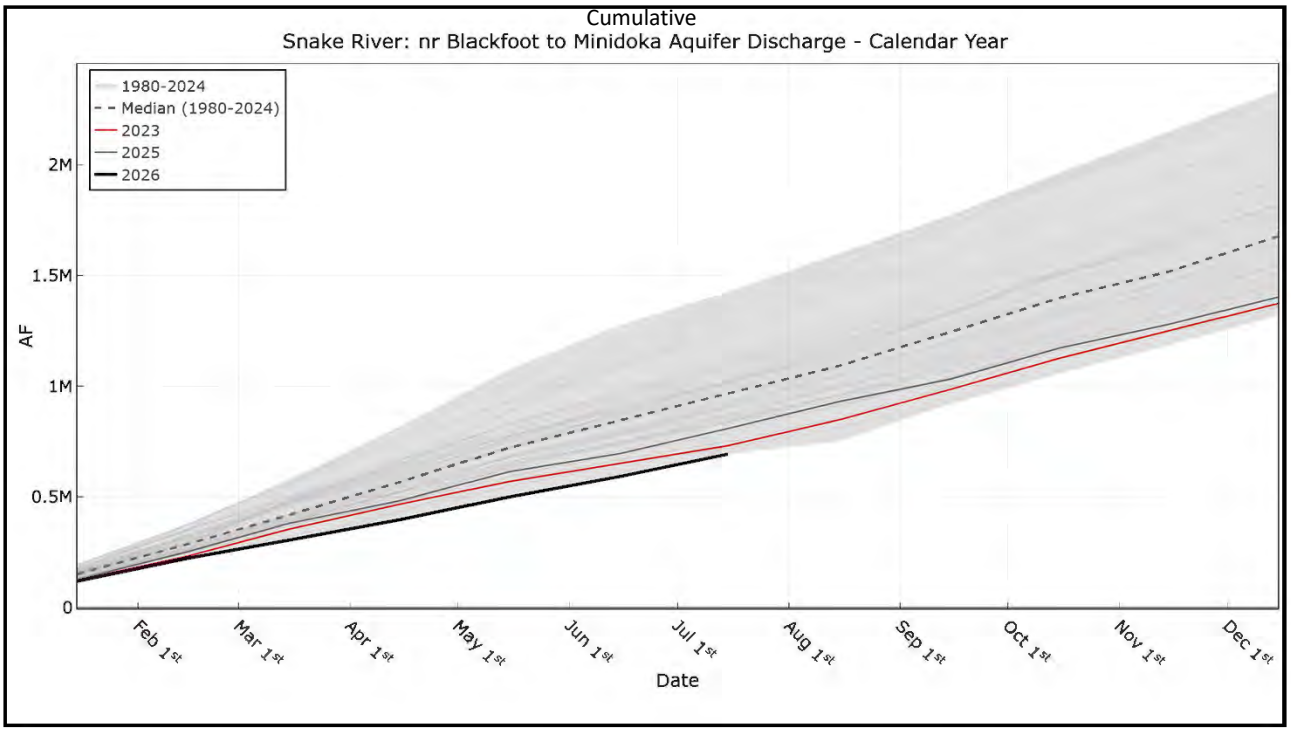
37


ESPA Change in Water Volume and Aquifer Discharge
BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO
IN THE MATTER OF DISTRIBUTION OF WATER TO VARIOUS WATER RIGHTS HELD BY OR FOR THE BENEFIT OF A&B IRRIGATION DISTRICT, AMERICAN FALLS RESERVOIR DISTRICT #2, BURLEY IRRIGATION DISTRICT, MILNER IRRIGATION DISTRICT, MINIDOKA IRRIGATION DISTRICT, NORTH SIDE CANAL COMPANY, AND TWIN FALLS CANAL COMPANY
Docket No. CM-MP-2024-003
AMENDED FINAL ORDER APPROVING STIPULATED MITIGATION PLAN
IN THE MATTER OF THE SURFACE WATER COALITIONS' AND THE GROUND WATER DISTRICTS' 2024 STIPULATED MITIGATION PLAN
This order amends and replaces the Final Order Approving Stipulated Mitigation Plan ("Approval Order") issued on January 3, 2025, under the above caption.
• 4.6.3 Reach Gains. Reach gains to the Near Blackfoot to Minidoka reach of the Snake River shall be measured based on calendar year reach gains from the ESPA
Water Year
USGS Water Budget Volume Change
IDWR Water Level Volume Change
nr Blackfoot to Minidoka Discharge

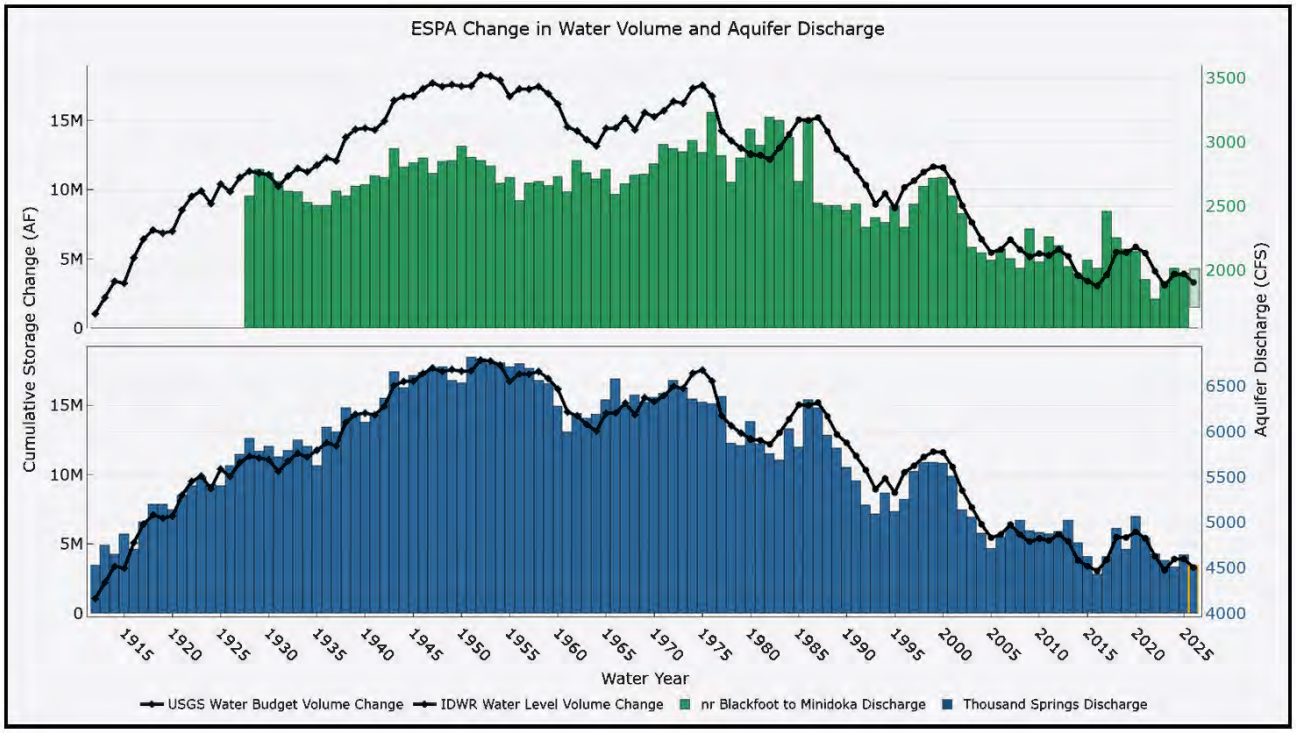
38


ESPA Change in Water Volume and Aquifer Discharge
Cumulative Storage Change (acre-feet)
Aquifer Discharge (CFS)
Year
USGS Water Budget Volume Change
IDWR Water Level Volume Change
Water Year (Oct-Sept)
Calendar Year (Jan-Dec)

39


Cumulative
Snake River: nr Blackfoot to Minidoka Aquifer Discharge - Calendar Year
1980-2024
Median (1980-2024)
2023
2025
2026
AF
Date

41


ESPA Change in Water Volume and Aquifer Discharge
Cumulative Storage Change (AF)
Aquifer Discharge (CFS)
15M
10M
5M
0
3500
3000
2500
2000
6500
6000
5500
5000
4500
4000
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
Water Year
USGS Water Budget Volume Change
IDWR Water Level Volume Change
nr Blackfoot to Minidoka Discharge
Thousand Springs Discharge

42

MEMO

To: IWRB – Aquifer Stabilization Committee (Committee)

From: Alex Moody, IDWR Hydrogeologist

Date: August 21, 2026

Subject: Eastern Snake Plain Aquifer Impacts

INFORMATIONAL ITEM

IDWR staff will provide the Committee with a presentation update on the agenda item.

Attachments:

- *Presentation*

Modeling Aquifer Management Impacts with ESPAM 2.2

Results through July 2026

Alex Moody
Idaho Department of Water Resources

August 26, 2026

IDAHO DEPARTMENT OF WATER RESOURCES

ESPAM 2.2 Inputs

Modeled volumes

IWRB RECHARGE

- Through March 2026
- Tracked by IDWR Planning Section
- Timing and location well known, though some assumptions occur for canal seepage loss

GWD+CITY RECHARGE

- City and private recharge and mitigation
- Through 2025

PUMPING REDUCTIONS

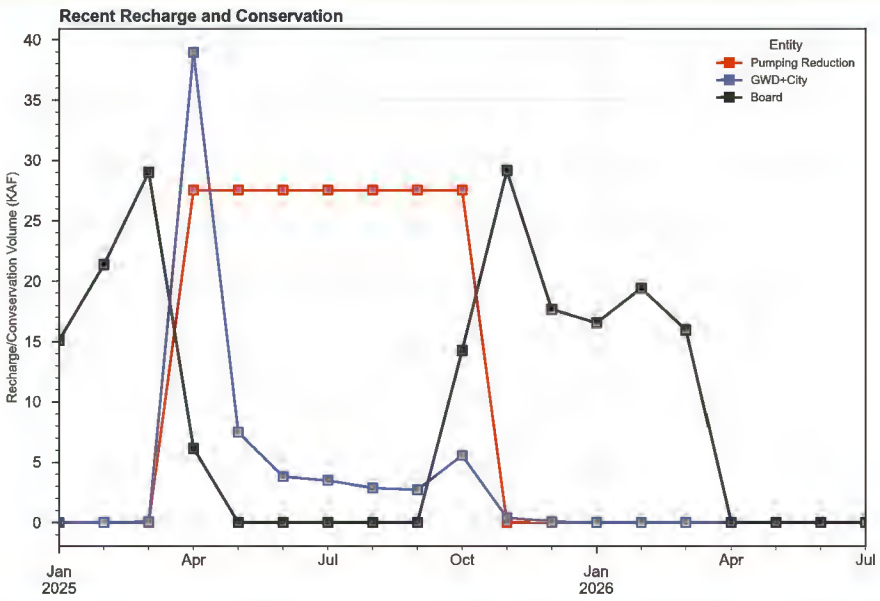
- Distributed evenly through the irrigation season
- Less than 0.5% of reported reductions are outside of ESPAM model boundary
- Through 2025

Annual summary of modeled volumes in thousands of acre-feet

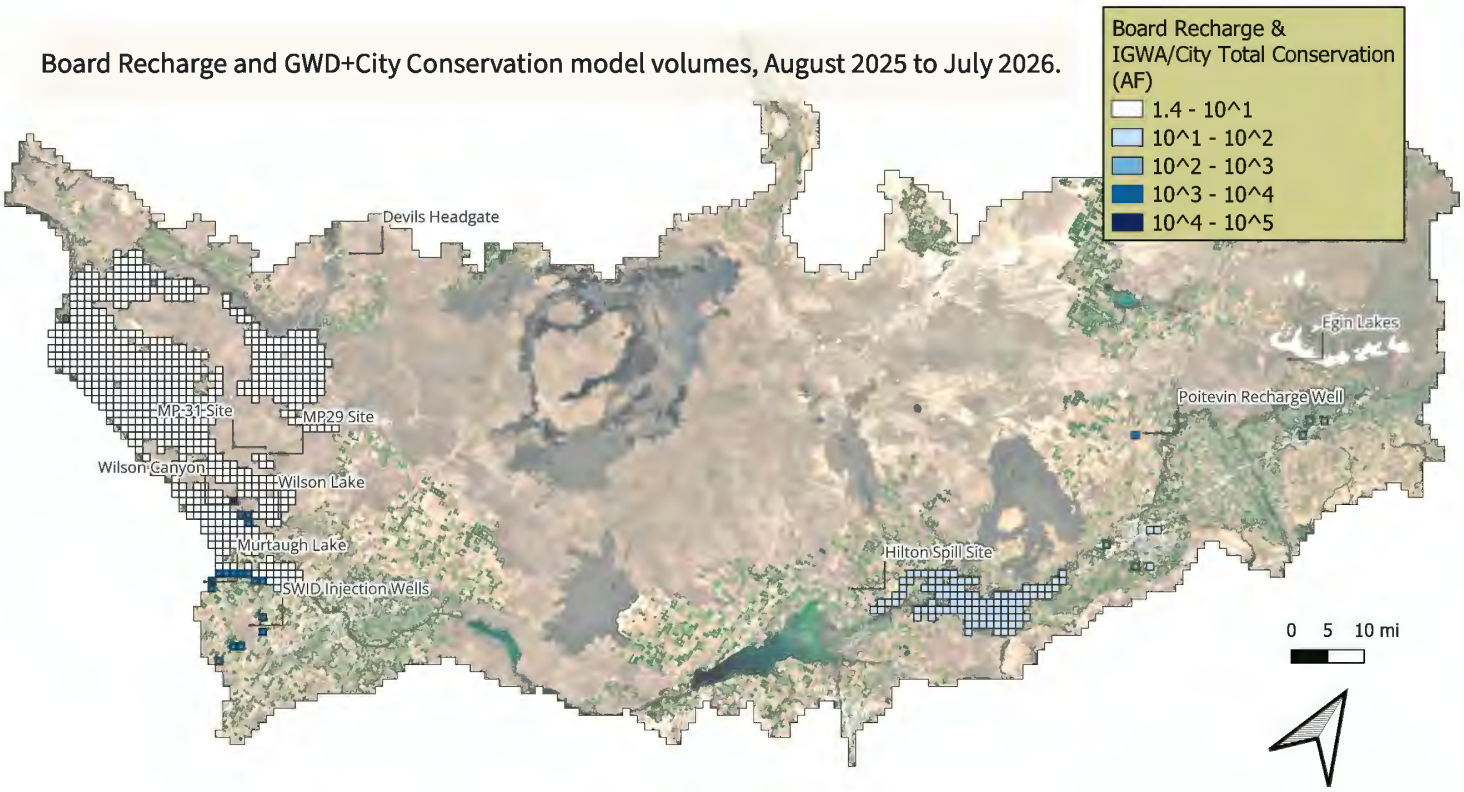
Calendar Year	Board	GWD+City	Pumping Reduction	All Mitigation 5-year Average
2014	36	-	-	-
2015	68	17	-	-
2016	77	102	122	-
2017	420	232	255	-
2018	352	178	202	412
2019	337	161	302	565
2020	451	177	222	718
2021	135	68	71	712
2022	157	20	128	592
2023	177	113	356	575
2024	426	144	226	574
2025	133	65	193	482
2026	52	-	-	438
Total	2821	1277	2077	1612

Recent Recharge

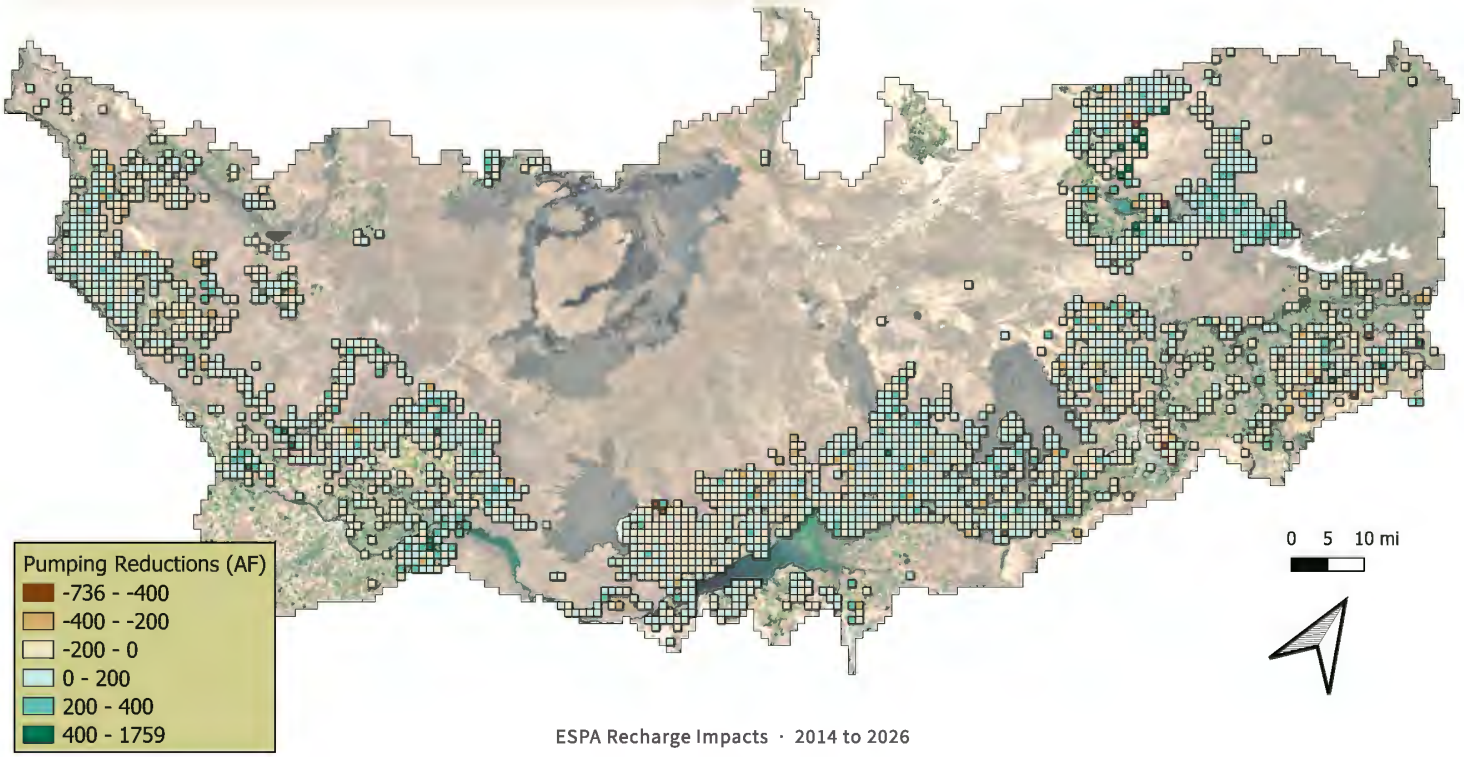
- Spike in GWD+City recharge is early April Bonneville-Jefferson GWD recharge
- Board and GWD+City Activities complement one another in timing



Board Recharge and GWD+City Conservation model volumes, August 2025 to July 2026.



GWD pumping reductions from baseline, August 2025 to July 2026.

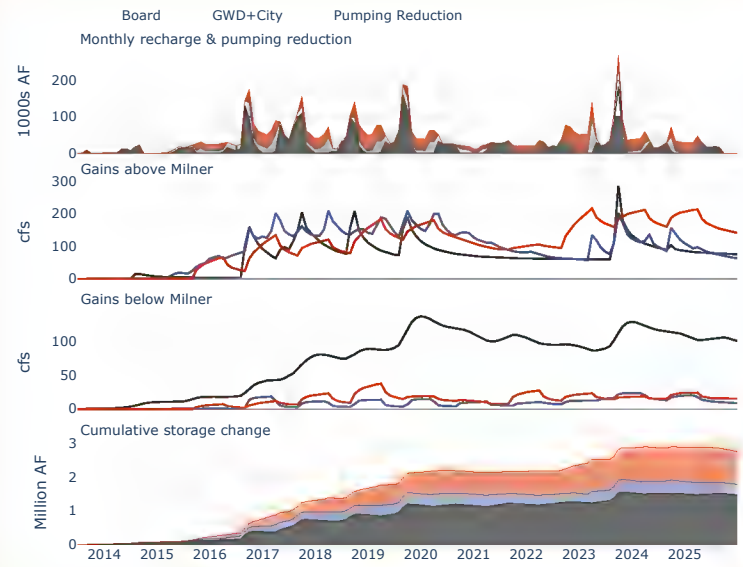


Model Period

- Model results run through **2026-07**
- Monthly time step, Jan 2014 to Jul 2026

Overall Results

Recharge, reach gains, and storage

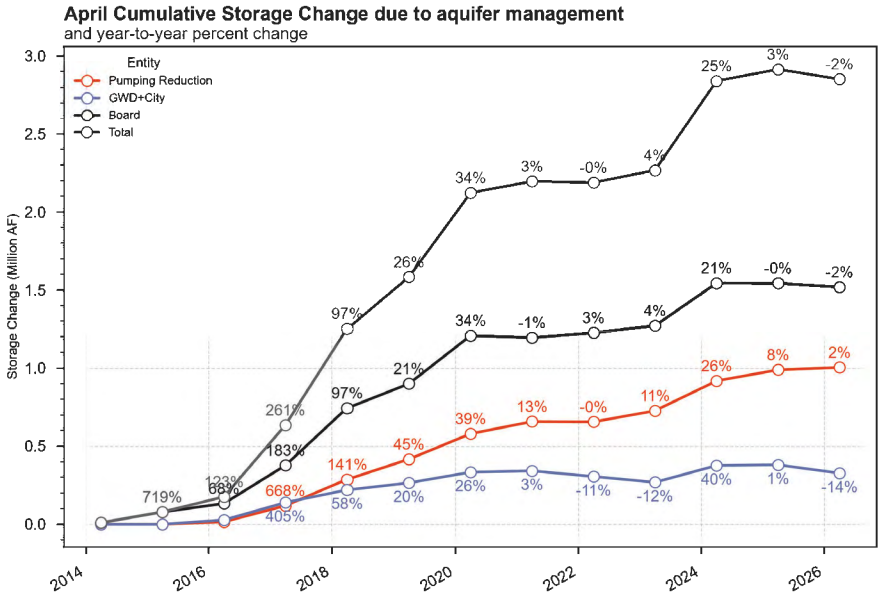


Monthly applied volume (top), gains above and below Milner, and cumulative storage. Areas are stacked; lines are not.

Storage Results

April Cumulative Storage Change

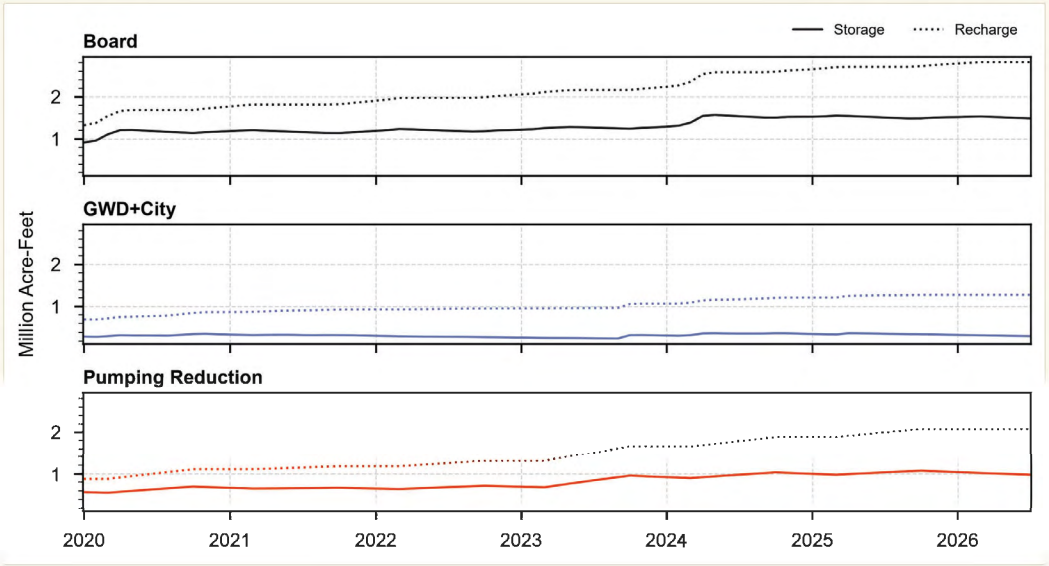
- Board: 1.52 MAF
- GWD+City: 0.33 MAF
- Pumping Reduction: 1.00 MAF



Storage Retention

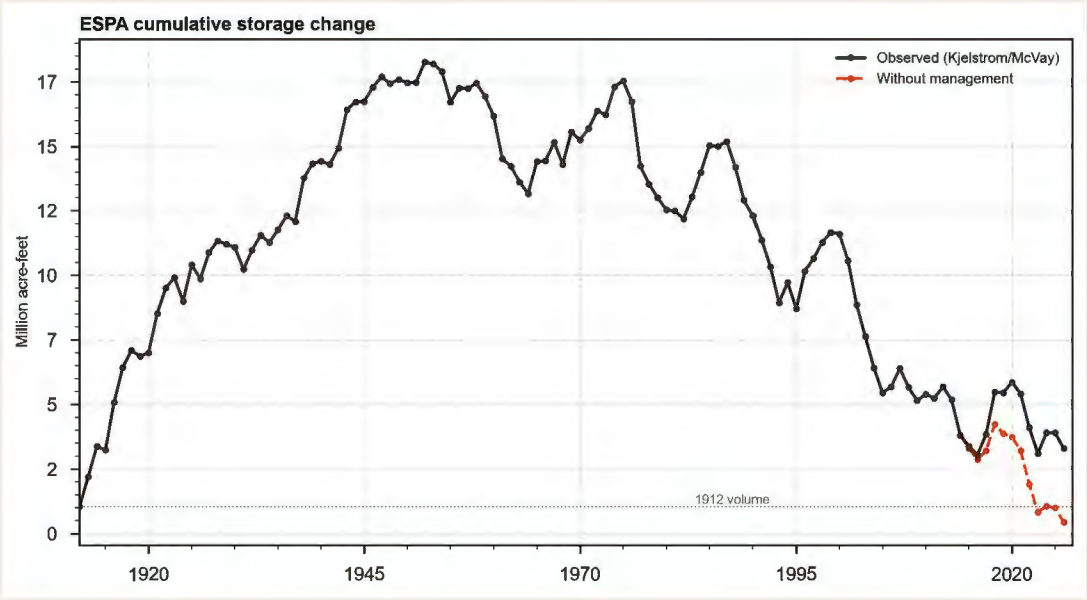
Percent of all recharge and mitigation remaining in aquifer storage as of July 2026

- Board: 53%
- IGWA: 25%
- Pumping Reduction 47%



Cumulative aquifer storage change versus cumulative recharge or conservation.

Impacts to aquifer storage in context

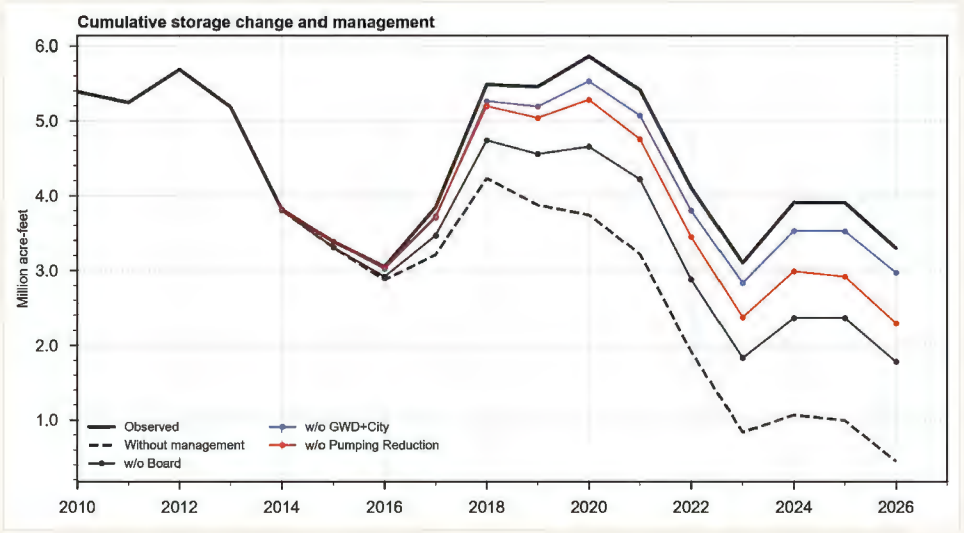


Observed ESPA storage (Kjelstrom/McVay) against the same record with all modeled management impacts removed.

Recent record, one action at a time

READING THE FIGURE

- The gap between the solid and dashed lines is the total modeled contribution
- Each dotted line isolates a single action



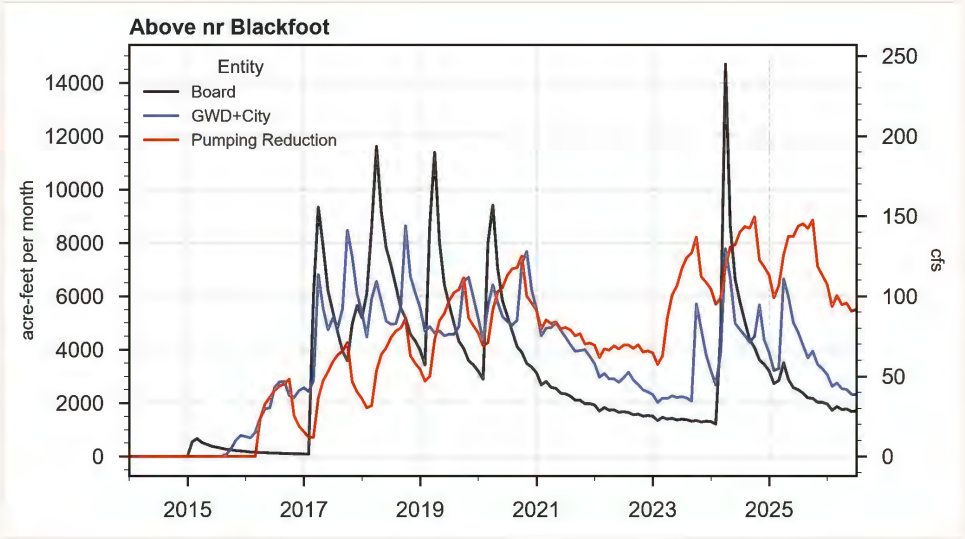
Observed storage change since 2010 with each management action removed individually and all together.

Reach Gain Results

Impacts above near Blackfoot

AVERAGE SEASONAL ACCRUAL SINCE 2021(KAF)

Entity	Apr-Oct	Nov-Mar
Board	19.3	11.2
GWD+City	26.4	18.6
Pumping Reduction	42.7	27.2
Total	88.4	57.0

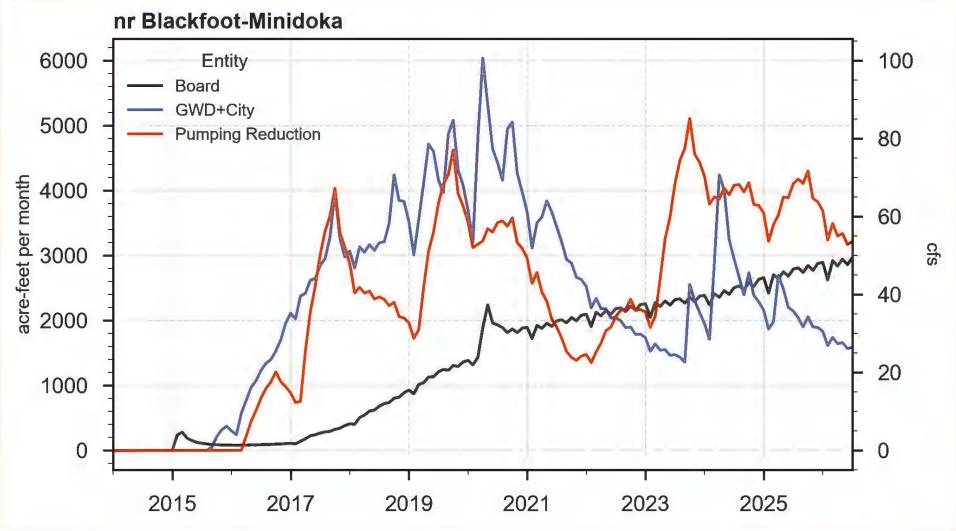


Monthly reach gain impacts in the Snake River above near Blackfoot.

Impacts from near Blackfoot to Minidoka

AVERAGE SEASONAL ACCRUAL SINCE 2021 (KAF)

Entity	Apr-Oct	Nov-Mar
Board	15.8	11.5
GWD+City	16.4	11.7
Pumping Reduction	21.3	14.8
Total	53.6	38.0

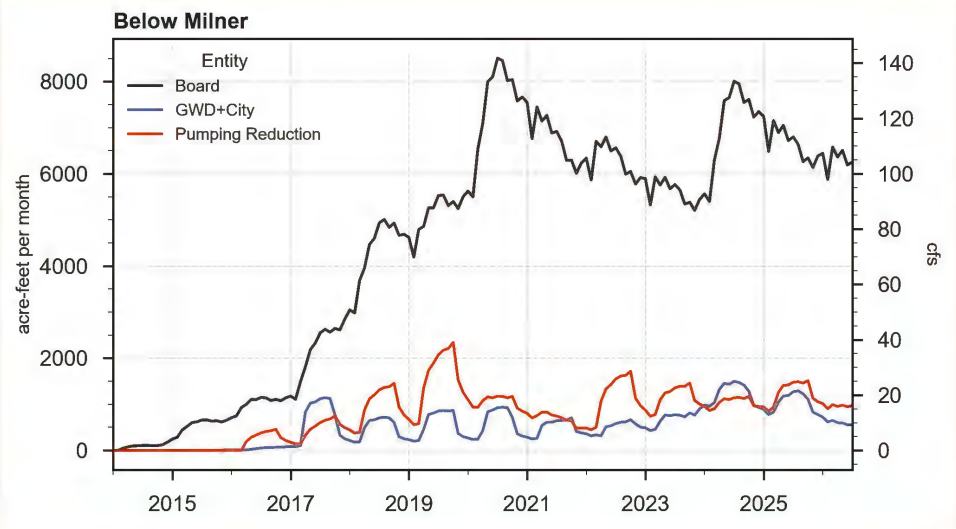


Monthly reach gain impacts in the Snake River in the near Blackfoot to Minidoka Reach.

Impacts below Milner

AVERAGE SEASONAL ACCRUAL SINCE 2021 (KAF)

Entity	Apr-Oct	Nov-Mar
Board	44.2	32.0
GWD+City	5.8	3.1
Pumping Reduction	7.9	4.2
Total	57.9	39.3

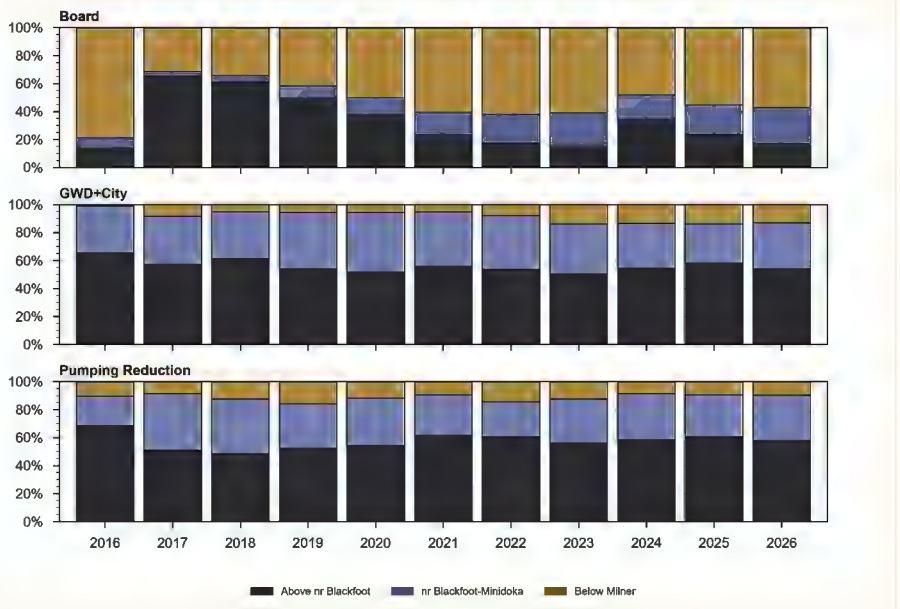


Monthly reach gain impacts in the Snake River below Milner Dam.

Where does water enter the river?

WHAT THE SPLIT REFLECTS

- Board recharge water discharges to the Snake above and below Milner in a 40/60 split
- All mititgation impacts all reaches of the Snake River, but have unique signatures based on location and distance to the river



ESPA Recharge Impacts · 2014 to 2026

Visualizing impacts to aquifer

Animations of modeled and observed water level changes

Animations were removed from the PDF of this presentation

Summary

What the results show

AQUIFER CONDITION

- IWRB recharge has increased aquifer storage by 1.5 million acre-feet
- All modeled activities have increased aquifer storage by 2.8 million acre-feet

IRRIGATION SEASON REACH GAINS

- Near Blackfoot to Minidoka gains 54,000 acre-feet from modeled activities
- Below Milner gains 143 cfs from modeled activities

TIMING

- A share of each year's application returns to the river within the year; the remainder persists in storage for decades

MEMO

To: IWRB – Aquifer Stabilization Committee (Committee)

From: Brian Ragan, IDWR Water Distribution Section

Date: August 21, 2026

Subject: WMIS Database Migration and Enhancement Project Update

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INFORMATIONAL ITEM

Staff will provide the Committee with a PowerPoint presentation update on the agenda item.

Attachments:

- *PowerPoint Presentation*

IDAHO DEPARTMENT OF
WATER RESOURCES

WMIS Database Migration and Enhancement Project Update

Presented by: Brian Ragan, Water Admin. Bureau
Date: August 26, 2026

IDAHO DEPARTMENT OF
WATER RESOURCES

Project Description

- **Migrate** Water Measurement Information System ("WMIS") database into Water Information System Kisters ("WISKI") database
- **Enhance** WMIS functionality and access to data

Why is this necessary?

- WMIS cannot store more than a single diversion volume amount per year per well
  - i.e., no monthly data

IDAHO DEPARTMENT OF
WATER RESOURCES

Catalyst for Migration and Enhancement

2024 SWC-Ground Water District Settlement Agreement

- Mitigation Plan: Section 4.6.1
  - Starting in 2026 monthly reporting of irrigation diversion volumes (June through October)

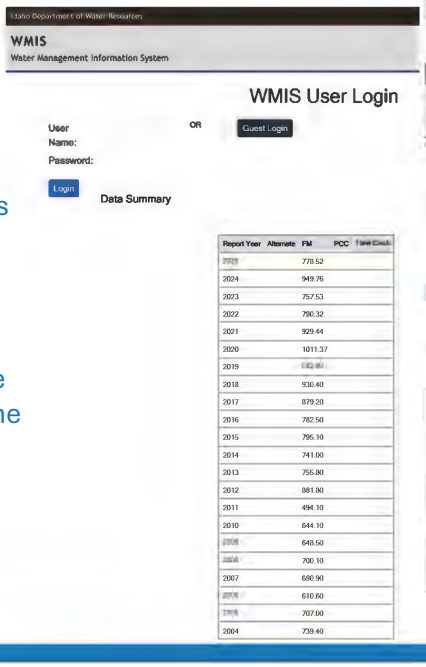
Enhancements identified by IDWR

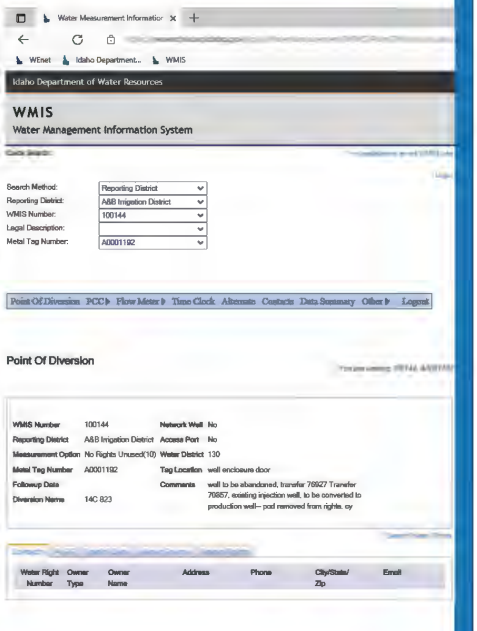
- Store sub-annual measurements
- Hyperlink to backfile (field notes, photos, variance/extension approvals, letters, etc…)
- Data importer
- Data exporter for standardized reports
- etc…

IDAHO DEPARTMENT OF
WATER RESOURCES

WMIS: Water Management Information System

- Relational database
- +10,000 records
- Primarily ground water
- Tracks
  - Well location
  - Annual diversion volumes
  - Measurement method
  - Measuring devices
  - Owner/operator
  - Site characteristics
- Linked to water right database
- Data served to public via online map with export function

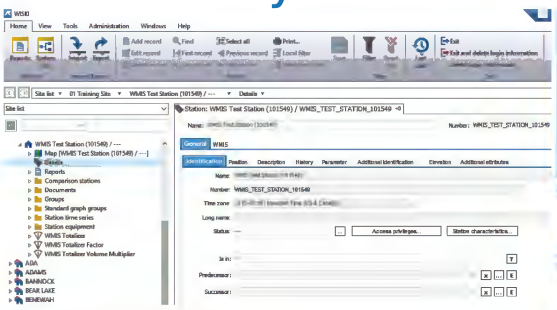


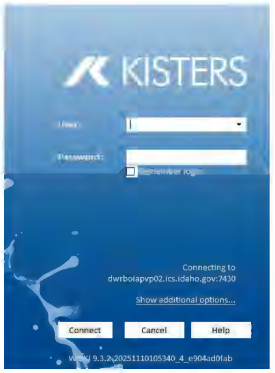


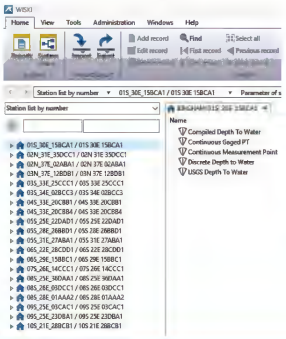
IDAHO DEPARTMENT OF
WATER RESOURCES

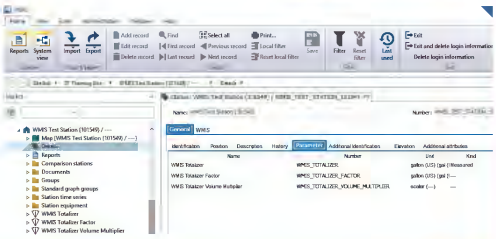
WISKI: Water Information System Kisters

- Relational database
- ~30,000 stations
- Ground water and surface water
- Tracks
  - Well location & construction
  - GW Levels
  - SW/GW quality
  - Entity collecting data
  - Measurement method
  - Site characteristics
- Data served to public via online map with export function









IDAHO DEPARTMENT OF
WATER RESOURCES

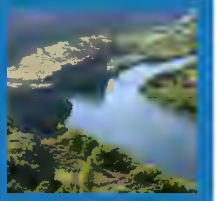
Options Considered

1. Do nothing and track monthly data outside WMIS in spreadsheets
2. Re-write WMIS via Idaho OITS staff
3. Go out for open bidding from software developers
4. **Merge WMIS into the existing WISKI database**

Why Kisters was chosen

- Kisters was a known entity; already in contract with IDWR; familiar with the WISKI database; WISKI could do what we needed
- Idaho OITS wasn't able to allocate resources to this project; would negatively affect IDWR/OITS project prioritization roadmap; advocated for State agencies utilizing third-party off-the-shelf software solutions

IDAHO DEPARTMENT OF WATER RESOURCES



Parties Involved

Entity	Role	Primary Personnel Involved
IWRB	Funding Source	IWRB Board Members
IDWR	Customer, hosts / maintains WMIS and WISKI databases	Water Distribution Section, Hydrology Section, Geospatial Technology Section
Idaho OITS	Technology support, cybersecurity, telecommunications	Project Management, Enterprise Architecture, Application Development, Hosting
Kisters	Contractor, WISKI software developer	Project Managers, Software Developers
SHI Int. Corp.	Contract with Idaho to provide "vendor-neutral technical guidance to help navigate platform selection, integration and optimization"	Account Executive

IDAHO DEPARTMENT OF WATER RESOURCES

Budget

$1,000,000 Total allocated by IWRB

($500,000)

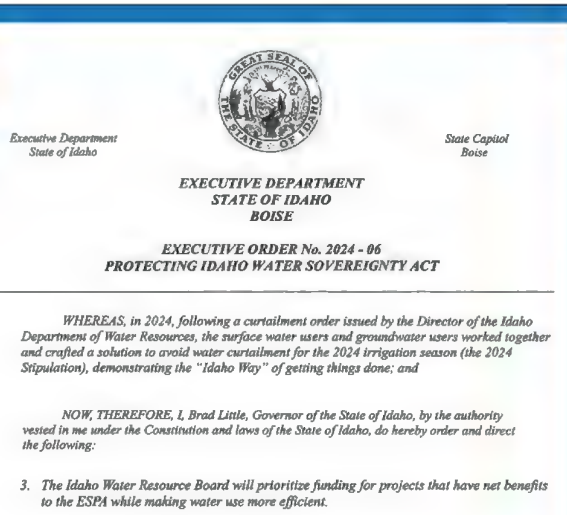
- Allocated in *Resolution to Approve Amended Fiscal Year 2026 WMA Spending Plan* (November 21, 2025)

($500,000)

- Allocated in *Resolution to Approve A Fiscal Year 2027 WMA Spending Plan* (May 21, 2026)

Total Project Budget	$	1,000,000
Expenditures	$	217,663
Remaining Available	$	782,337

$10,725 (Inception Report)
$206,938 (Server/OITS services)



Executive Department
State of Idaho

State Capitol
Boise

EXECUTIVE DEPARTMENT
STATE OF IDAHO
BOISE

EXECUTIVE ORDER No. 2024 - 06
PROTECTING IDAHO WATER SOVEREIGNTY ACT

WHEREAS, in 2024, following a curtailment order issued by the Director of the Idaho Department of Water Resources, the surface water users and groundwater users worked together and crafted a solution to avoid water curtailment for the 2024 irrigation season (the 2024 Stipulation), demonstrating the "Idaho Way" of getting things done; and

NOW, THEREFORE, I, Brad Little, Governor of the State of Idaho, by the authority vested in me under the Constitution and laws of the State of Idaho, do hereby order and direct the following:

3. The Idaho Water Resource Board will prioritize funding for projects that have net benefits to the ESPA while making water use more efficient.

IDAHO DEPARTMENT OF WATER RESOURCES

Estimated Database Cost

- from Kisters Inception Report

Line Item	Kisters[1]	SHI*	Total
Labor	$294,750 ($442,125)	$44,213 ($66,319)	$338,963 ($508,444)
Licensing	$67,500	$4,894	$72,394
Annual Support	$17,500	$2,625	$20,125
Total	$379,750 ($527,125)	$51,732 ($73,838)	$431,482 ($600,963)

[1] Added 50% contingency on Labor

*7.25% on licensing. Upper limit is 21.5%. SHI estimates 15% for this project

Total Project Cost

WMIS/WISKI Database	Server & OITS Services	Inception Report	Total Project
$ 431,482	$ 206,938	$ 10,725	$ 649,145
$ 600,963	$ 206,938	$ 10,725	$ 818,626

IDAHO DEPARTMENT OF WATER RESOURCES

Project Status

Completed
1. Identify Need
2. Secure Funding
3. Select Solution / Engage Vendor
   a) Inception Report
4. Coordinate With Involved Parties

Being Finalized
5. **Develop / Sign Statement of Work**

Yet To Do
6. Sign Contract with Vendor
7. Software Development
   a) Agile
8. User Testing
9. Publish Production Version

Participants / Topic	Occurance Count
- Meeting	41
IDWR/OITS	21
IDWR/Kisters	6
IDWR/OITS/Kisters	5
IDWR	5
IDWR/OITS/SHI	1
IDWR / OITS	1
BRagan / ADellen	1
IDWR/SHI	1
- Submission	6
IDWR	3
Kisters	2
IDWR/SHI	1
- Resolution	2
IWRB	2
Grand Total	49

IDAHO DEPARTMENT OF WATER RESOURCES

Challenges Affecting Timeline

1. State of Idaho Contractor Regulations
   - Go out to bid?, How to contract with Kisters (SHI)
2. Inception Document Preparation
   - Copy of three databases
3. Existing OITS Priorities
   - Virtual server migration consumed staff time
4. Need for Additional Server
   - Not enough capacity, storage space or processing power to host development, staging, production environments
   - No budget for hardware = IWRB
   - Hardware purchased, arriving in October
5. Statement of Work
   - First time OITS using this document

IDAHO DEPARTMENT OF WATER RESOURCES

Functional Database Timeline?

Summer 2027

- WISKI-side, data entry by internal IDWR staff
- Web Applications, public facing data entry, user friendly input to follow

Data Management from Now till Then?

1. WMIS database still functional and supported
2. GWD monthly data tracked in spreadsheets (MS Access if necessary)
   - Will be made available upon request

IDAHO DEPARTMENT OF
WATER RESOURCES

Questions?

Brian Ragan
208.287.4934
brian.ragan@idwr.Idaho.gov

MEMO

To: IWRB – Aquifer Stabilization Committee (Committee)

From: Planning & Projects Bureau Staff

Date: August 21, 2026

Subject: Other Items

INFORMATIONAL ITEM

This item is included to allow the Committee an opportunity to bring forward and discuss any other matters.

Attachments:

- *None*