AGENDA

IDAHO WATER RESOURCE BOARD

Joint Aquifer Stabilization & Planning Committee Meeting No. 3-19

July 24, 2019 at 1:00 p.m.
SpringHill Suites
Conference Room
1177 S. Yellowstone Hwy
REXBURG

1. Introductions and Attendance
2. ESPA CAMP Progress Report
   a. Aquifer Storage Update
   b. Reach Gains Above Milner
   c. Spring Flows Below Milner
   d. Discussion of ESPA Camp Targets
   e. Progress Report Schedule
3. ESPA Recharge Payment Structure*
4. Other Items for Discussion
5. Adjourn

Committee Members: Bert Stevenson (Chair), Al Barker, Jeff Raybould, Roger Chase and Vince Alberdi

Committee Members: Jeff Raybould (Chair), Bert Stevenson, Al Barker, Pete Van Der Meulen and Jo Ann Cole-Hansen

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Water Storage Committee Meeting No. 1-19

July 24, 2019 at 6:00 p.m.
SpringHill Suites
Conference Room
1177 S. Yellowstone Hwy
REXBURG

1. Introductions and Attendance
2. Island Park Reservoir Enlargement Project – Results of Land and Real Estate Assessment
3. Other Items for Discussion
4. Adjourn

Committee Members: Jeff Raybould (Chair), Jo Ann Cole-Hansen, Pete Van Der Meulen, and Bert Stevenson

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* Action Item: A vote regarding this item may be made 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

The meeting will be held in facilities that meet the accessibility requirements of the Americans with Disabilities Act. If you require special accommodations to attend, participate in, or understand the meeting, please make advance arrangements by contacting Department staff by email nikki.regent@idwr.idaho.gov or by phone at (208) 287-4800.

322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098
Phone: (208) 287-4800 Fax: (208) 287-6700 Website: idwr.idaho.gov/IWRB/

Memorandum

To: Idaho Water Resource Board (IWRB)

From: Neeley Miller

Date: July 17, 2019

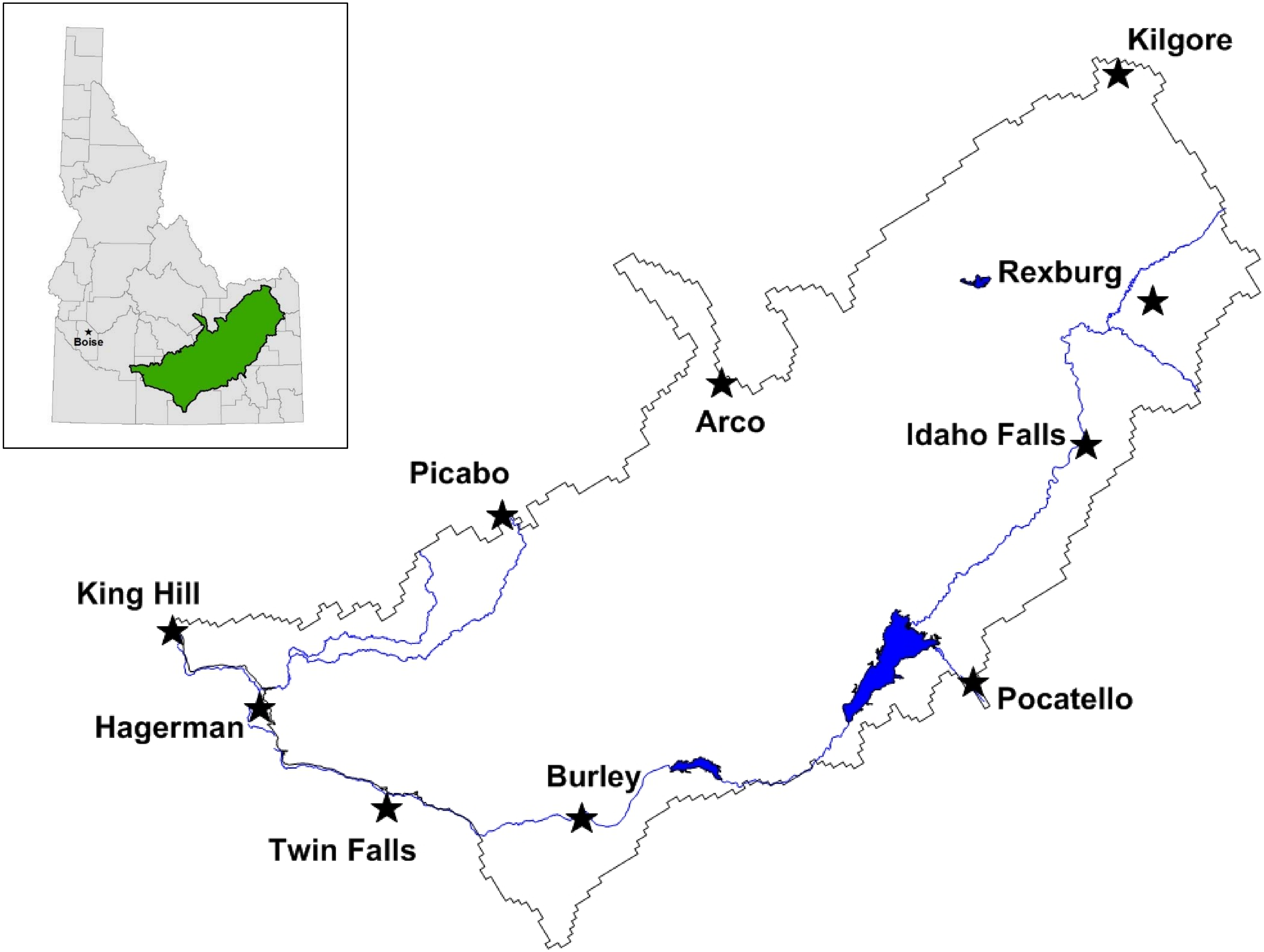
Re: ESPA Aquifer Storage Update

Mike McVay from the Idaho Department of Water Resources (IDWR) will provide an ESPA Aquifer Storage update to the Joint Aquifer Stabilization & Planning Committee.

ESPA Storage Changes

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

July 24, 2019


Boise
Kilgore
Rexburg
Arco
Idaho Falls
Picabo
King Hill
Hagerman
Pocatello
Burley
Twin Falls

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.

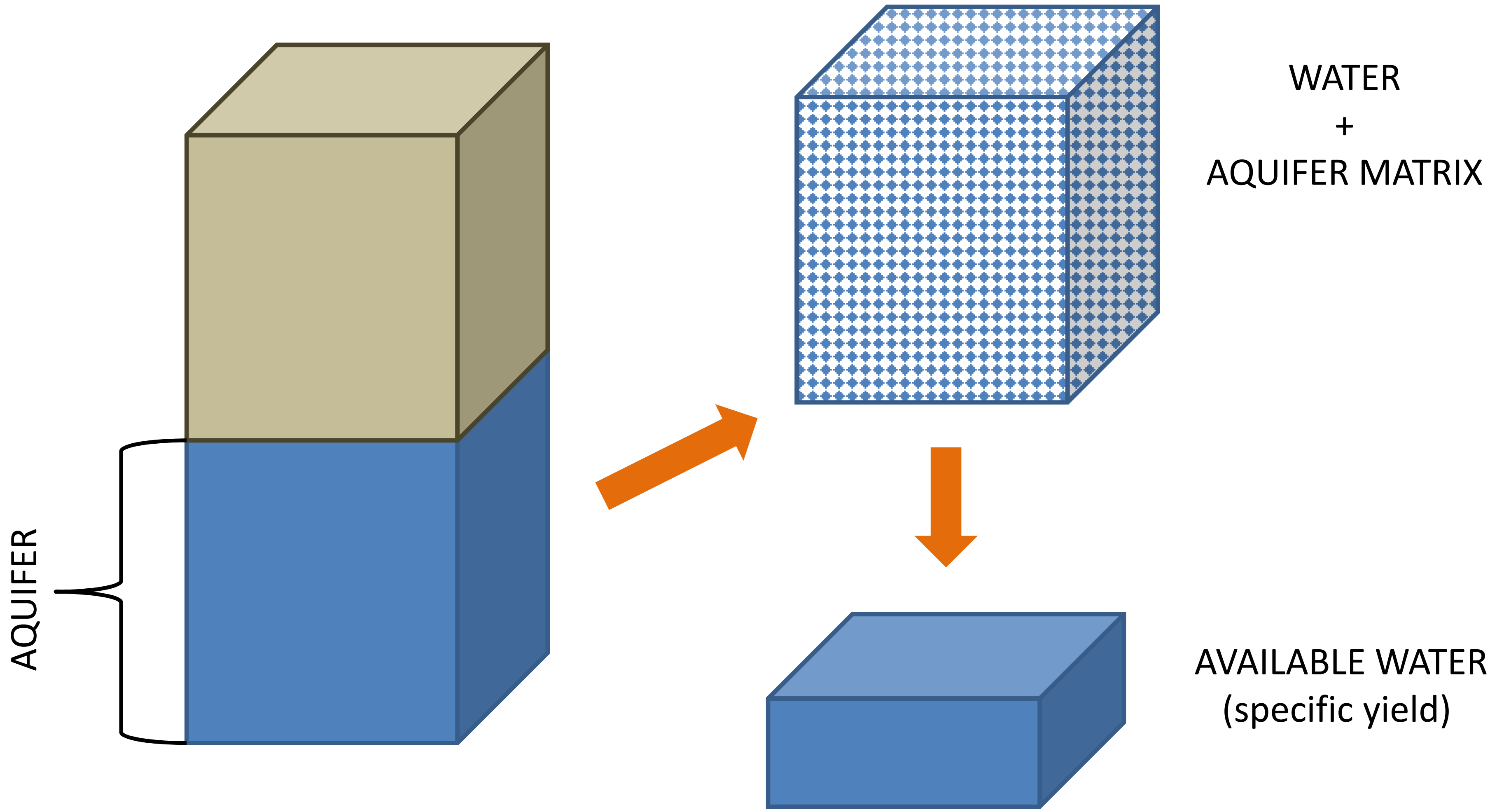
Mass Measurements

1. Storage change calculations are based on data collected during mass measurement events.
2. Mass measurement events are designed to collect as much data as possible during a brief window of time.
3. Provides a snapshot of the aquifer.
4. Reduces the influence of variable water use.
5. Provides continuity in the data used for analyses over time.

Using Water-Level Data to Estimate Changes in Aquifer Storage

1. Water-level data have been differenced to produce water-level changes at discrete points (at the wells).
2. Changes at the wells have been interpolated across the ESPAM2.1 model area to create water-level change maps.
   a. Depth of change and area of the model result in a volume.
   b. The resulting volume represents water and aquifer matrix.
3. 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.

Specific Yield = Available Water

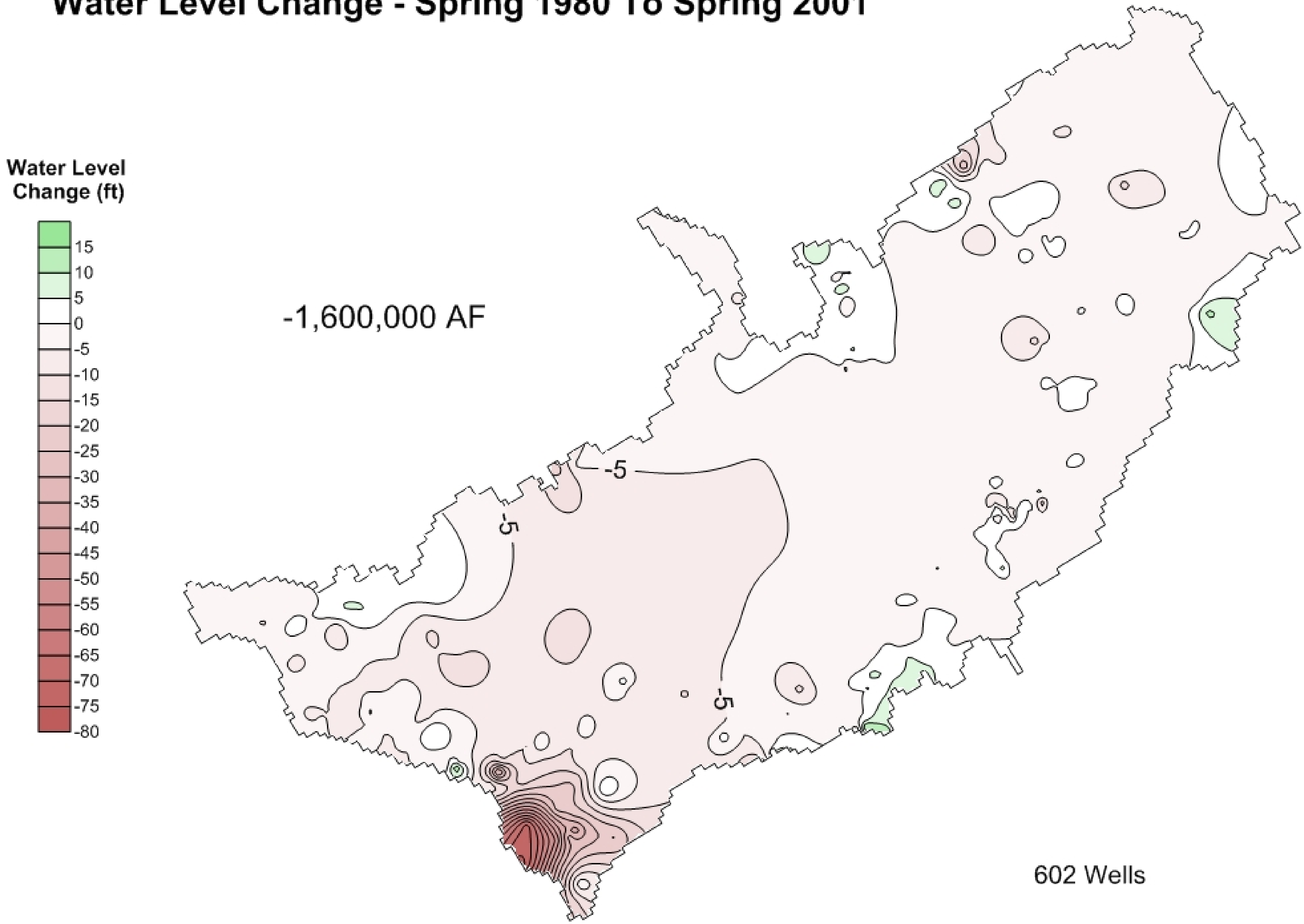


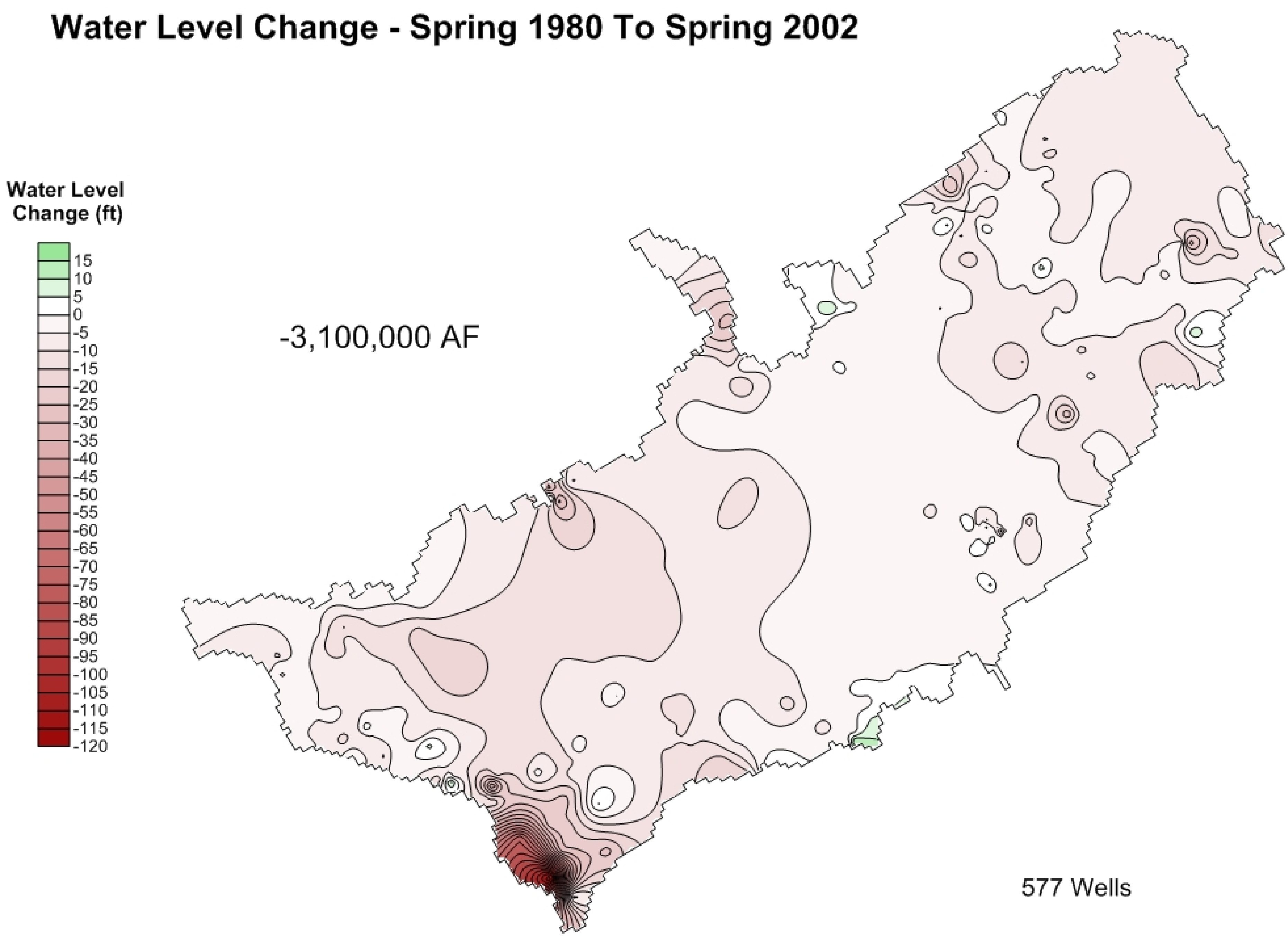
IDAHO
Water Resource Board

Using Water-Level Data to Estimate Changes in Aquifer Storage

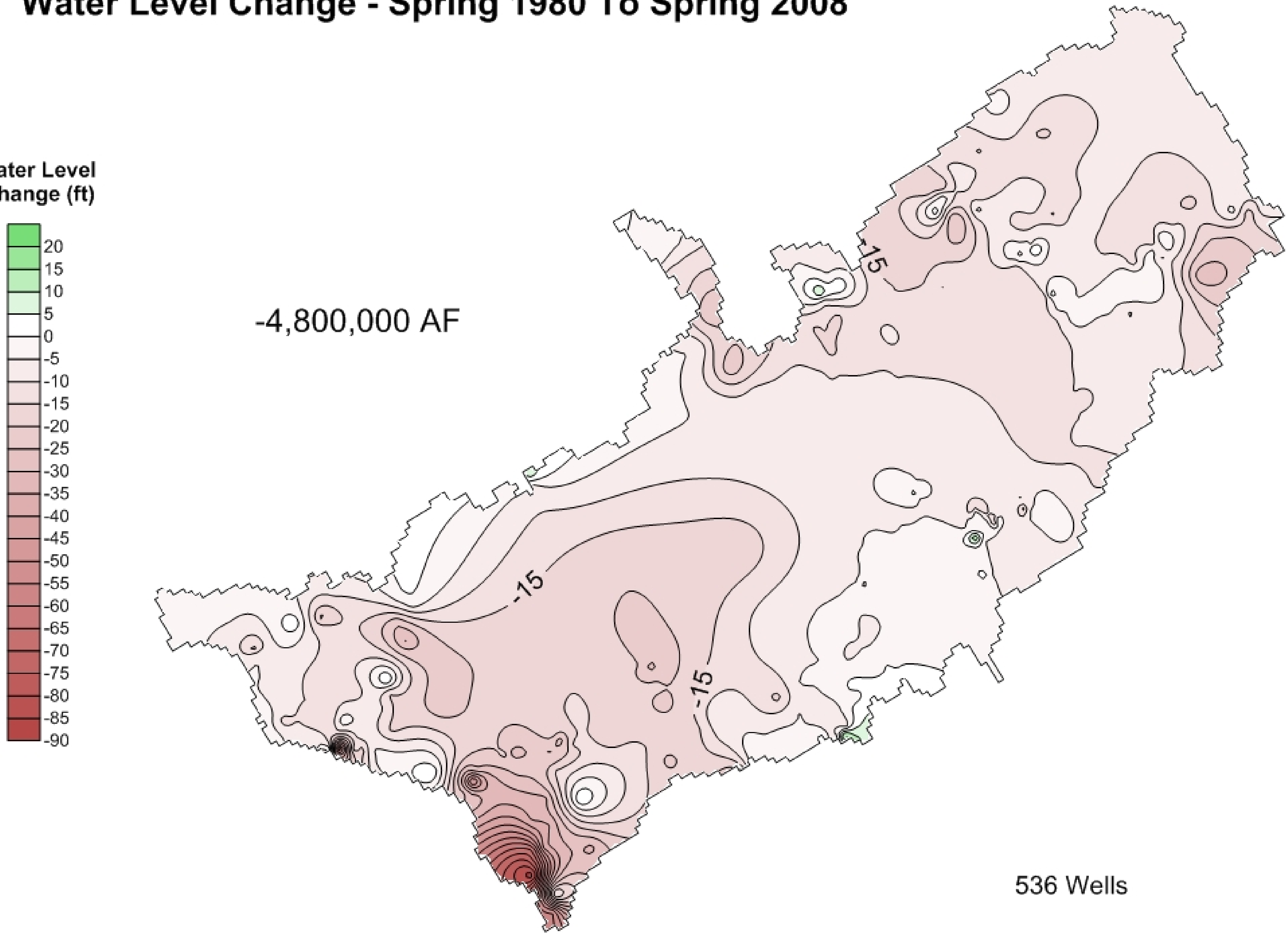
1. Water-level data have been differenced to produce water-level changes at discrete points (at the wells).
2. Changes at the wells have been interpolated across the ESPAM2.1 model area to create water-level change maps.
   a. Depth of change and area of the model result in a volume.
   b. The resulting volume represents water and aquifer matrix.
3. 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. Water-level changes are multiplied by the average, calibrated Sy from EPAM2.1 to calculate the change in volume of water.

Water Level Change - Spring 1980 To Spring 2001

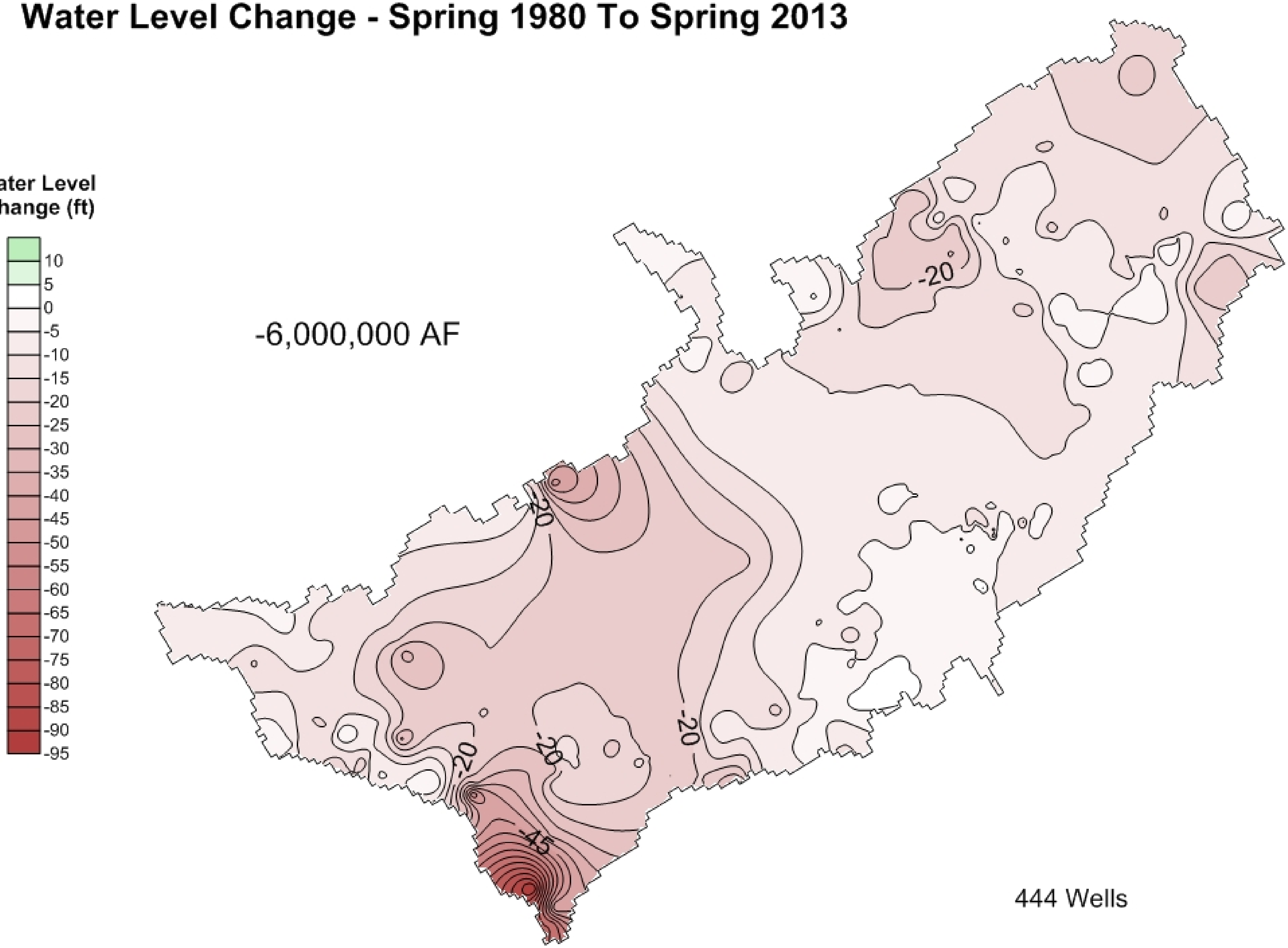



Water Level Change - Spring 1980 To Spring 2002
Water Level Change (ft)
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-100
-105
-110
-115
-120
-3,100,000 AF
577 Wells

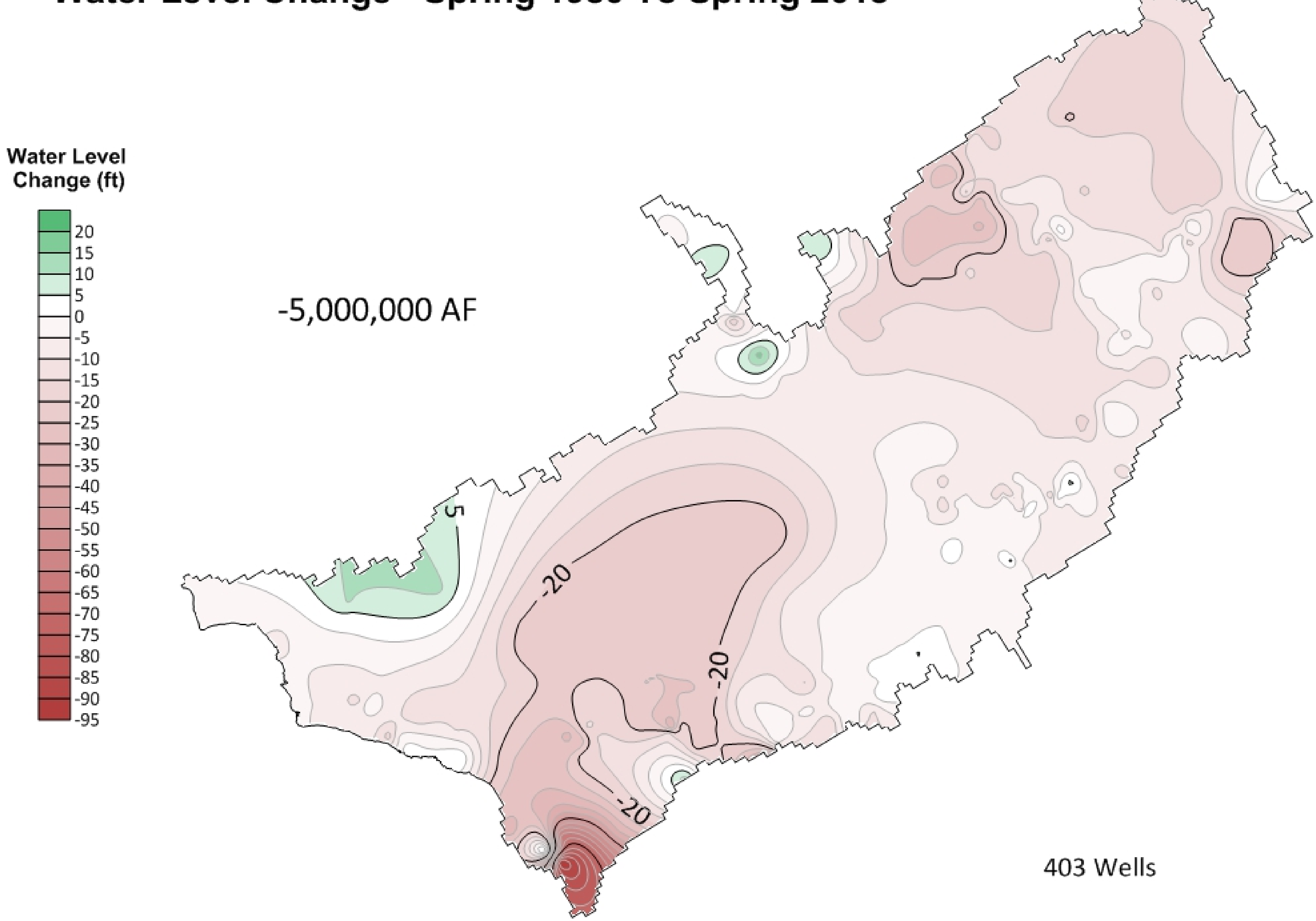
Water Level Change - Spring 1980 To Spring 2008

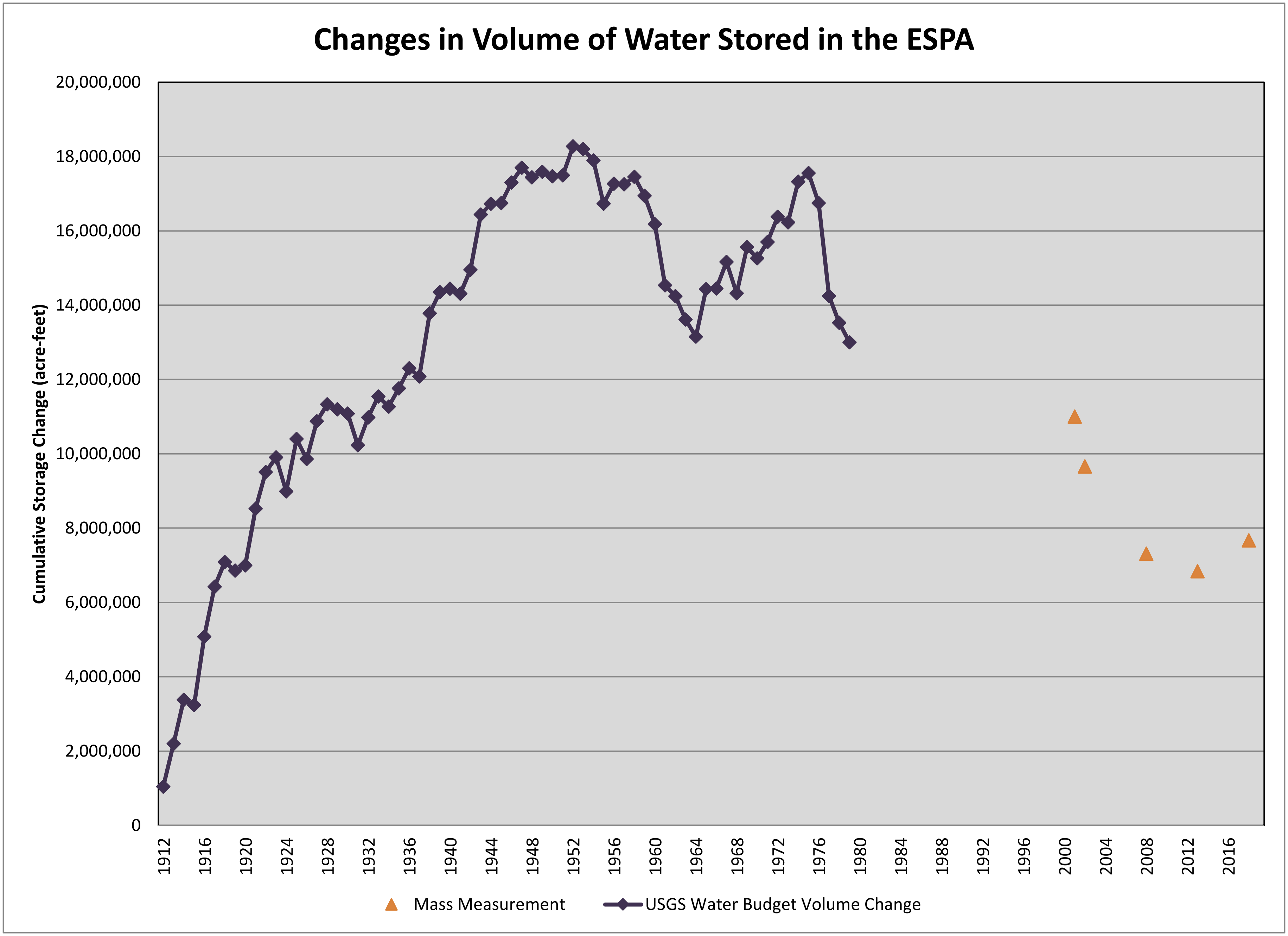


Water Level Change - Spring 1980 To Spring 2013



Water Level Change - Spring 1980 To Spring 2018

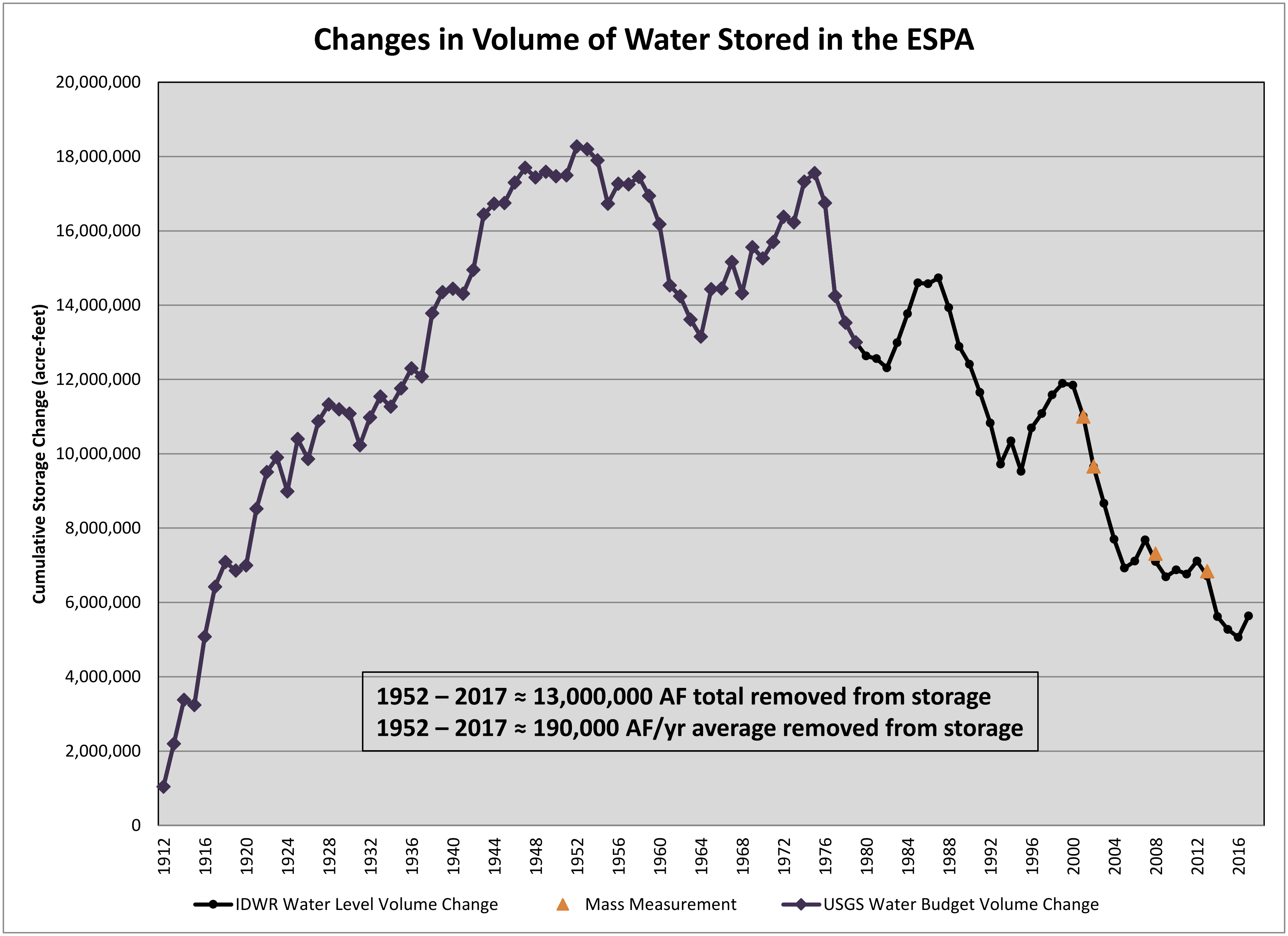




Changes in Volume of Water Stored in the ESPA
Cumulative Storage Change (acre-feet)
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
1912
1916
1920
1924
1928
1932
1936
1940
1944
1948
1952
1956
1960
1964
1968
1972
1976
1980
1984
1988
1992
1996
2000
2004
2008
2012
2016
Mass Measurement
USGS Water Budget Volume Change

Storage Change between Mass Measurements

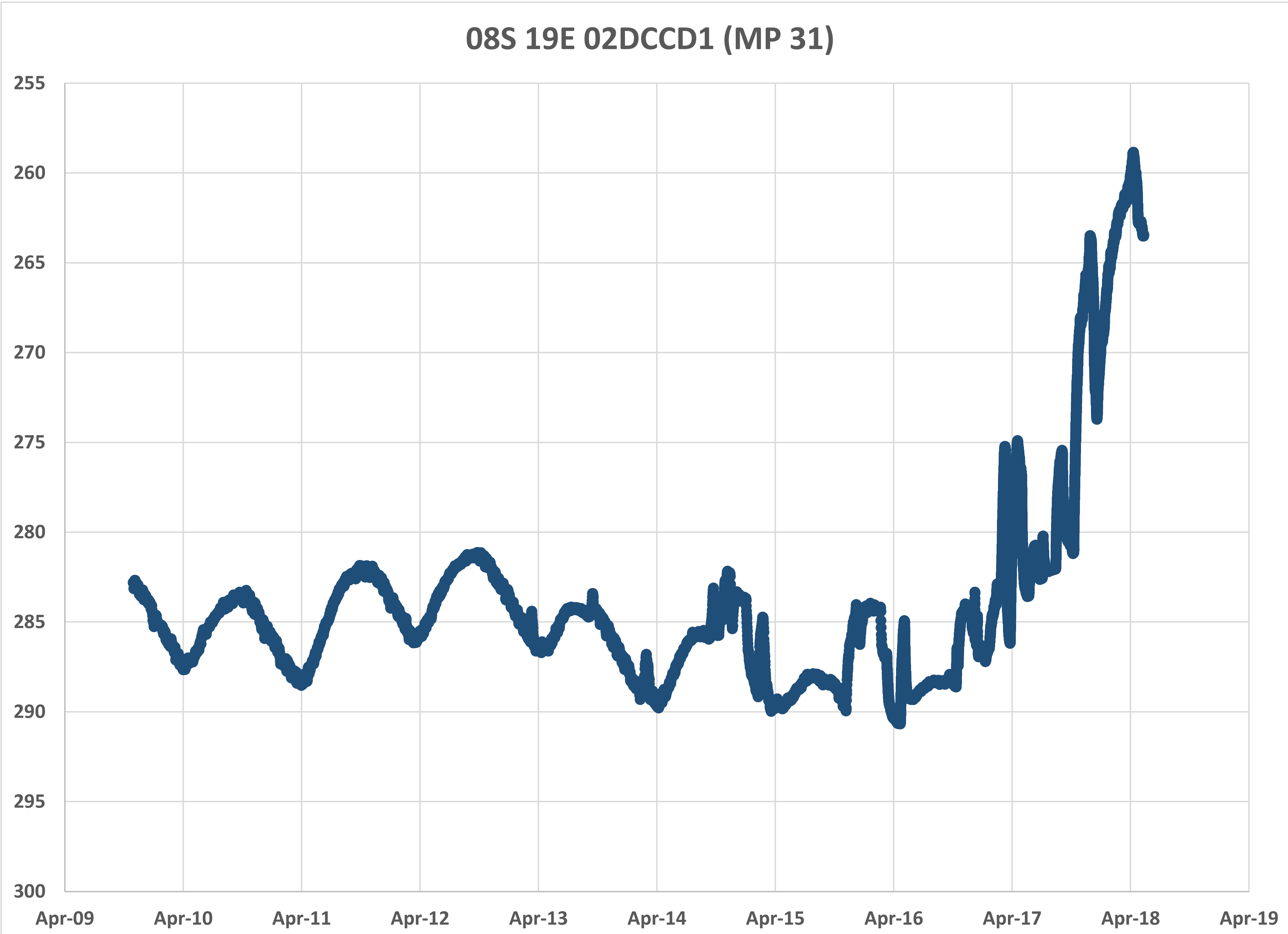
- Mass measurements provide an efficient method for calculating storage changes every few years.
- Mass measurements give general indication of the volume of water stored in the aquifer; however, it is difficult to make management decisions with only this information.
- Hundreds of wells are measured in the spring each year. We have been using these annual data to calculate storage changes (1980-2018).
- Beginning in the spring of 2016, IDWR conducts coordinated measurement of the ESPA well network (synoptic measurement events) to facilitate storage-change calculations.



Changes in Volume of Water Stored in the ESPA
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
1952 – 2017 ≈ 13,000,000 AF total removed from storage
1952 – 2017 ≈ 190,000 AF/yr average removed from storage
IDWR Water Level Volume Change
Mass Measurement
USGS Water Budget Volume Change

Rationale for using March/April Water Levels

- Water-level changes provide a straight-forward, reliable method for calculating changes in aquifer storage.
  - Water levels reflect the amount of water in the aquifer.
  - Conducting measurements in the March/April maximizes the time between irrigation seasons (unperturbed water table).
  - March/April measurements allow for the integration of the impacts due to irrigation-season activities into a resulting condition (annual aquifer storage change).



08S 19E 02DCCD1 (MP 31)
255
260
265
270
275
280
285
290
295
300
Apr-09
Apr-10
Apr-11
Apr-12
Apr-13
Apr-14
Apr-15
Apr-16
Apr-17
Apr-18
Apr-19

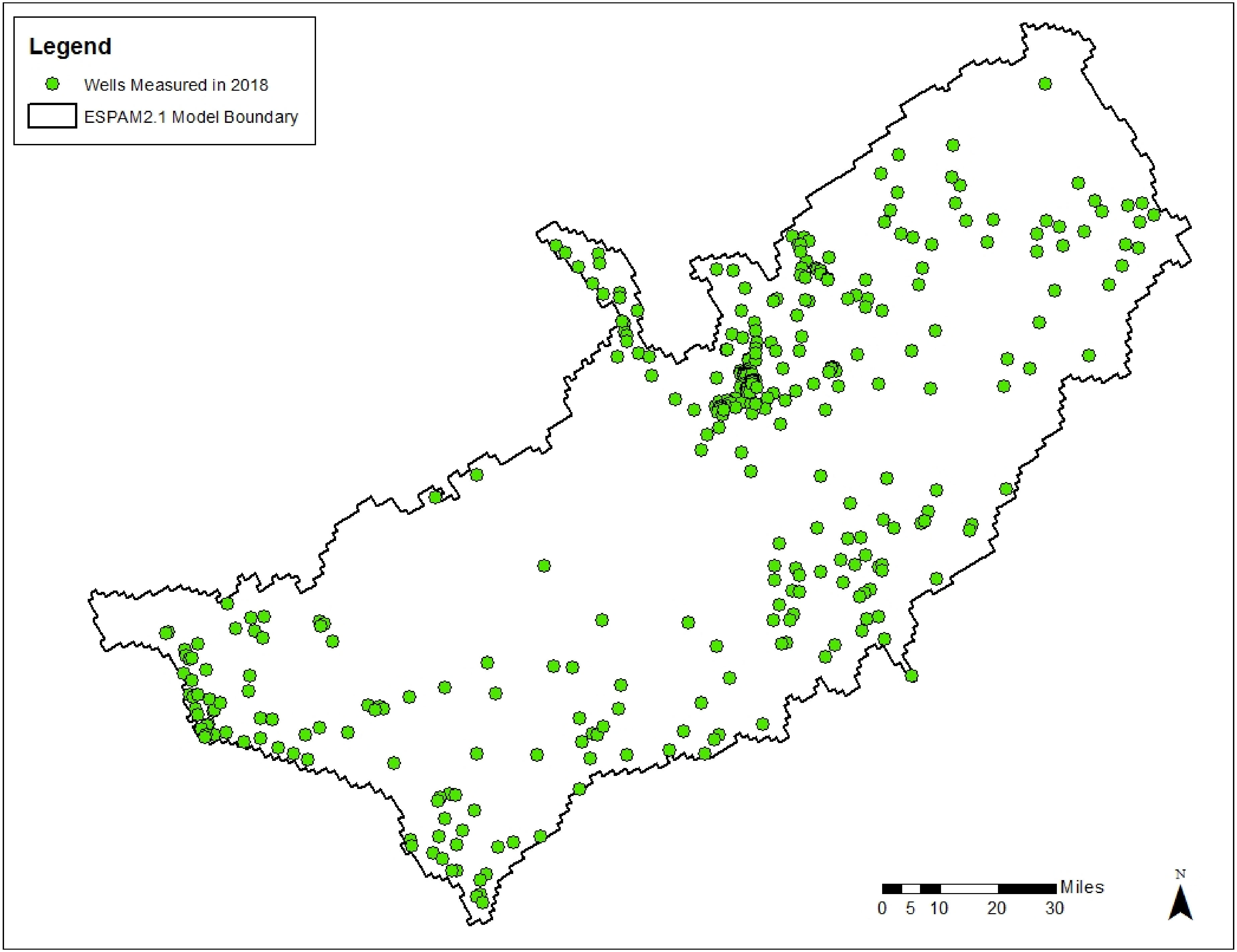
Rationale for using March/April Water Levels

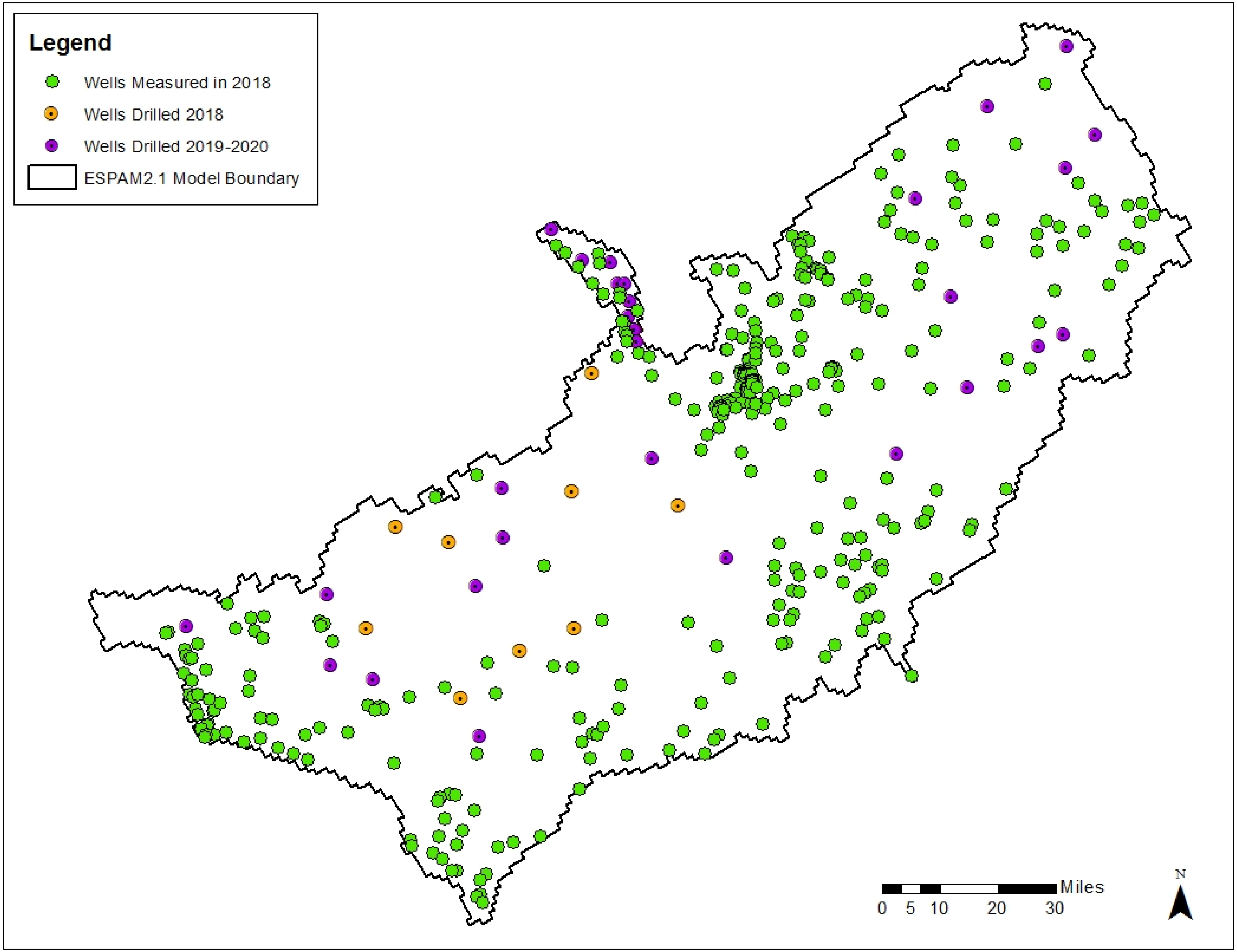
- Managed recharge creates complexities that need to be addressed to reduce uncertainty in storage-change estimates.
  - Estimates presented here should be considered provisional.
- Changes to the methodology will be introduced beginning with the 2019-2020 estimate.
  - Estimates based on the different methodologies will be tracked and presented to illustrate the changes.

Aquifer Storage Change: 2016-2019

- Settlement Agreement activities began in 2016, and the State-sponsored Managed Recharge program increased substantially.
- Winter of 2016-2017 was exceptional, and large volumes of runoff occurred at unusual times during 2017.
- Recharge was conducted shortly before, during or after the spring 2017, 2018, and 2019 synoptic measurements.
- Managed recharge presents new complexities that we are working through.
- The storage-change calculations are still useful, but not nearly as straightforward.

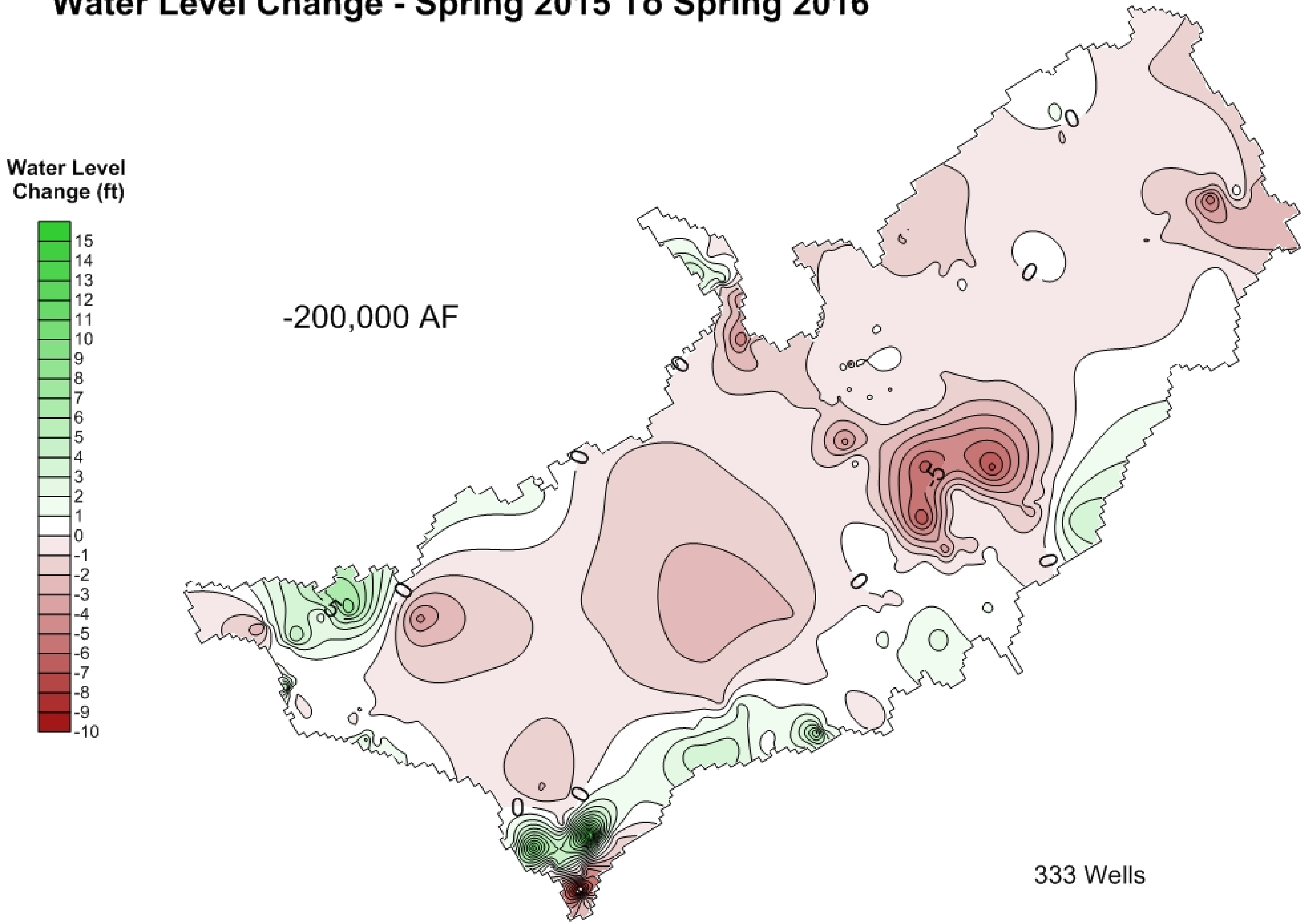
Water-Level Monitoring Network Continues to Expand


Legend
Wells Measured in 2018
ESPAM2.1 Model Boundary
Miles
0 5 10 20 30
N

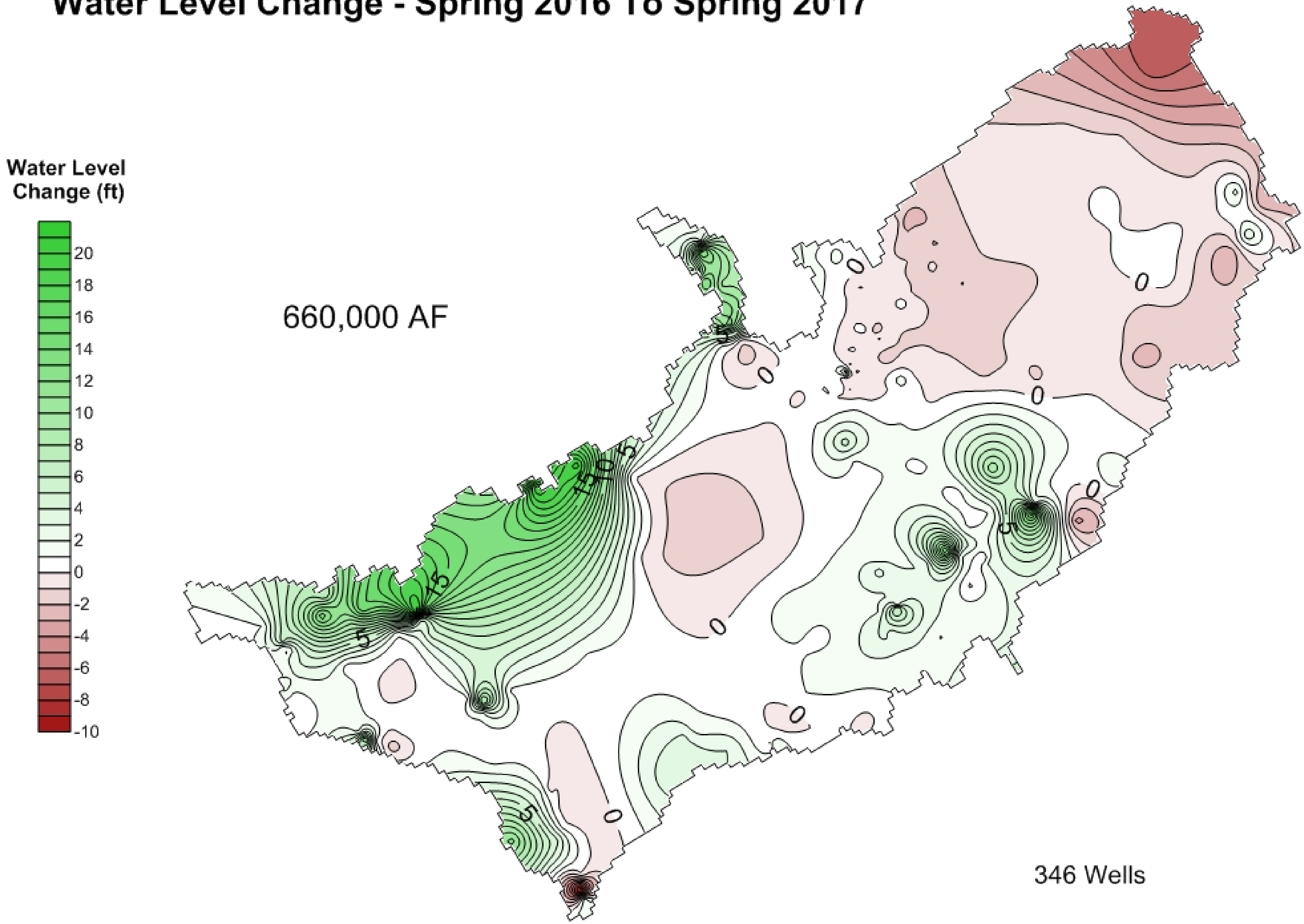


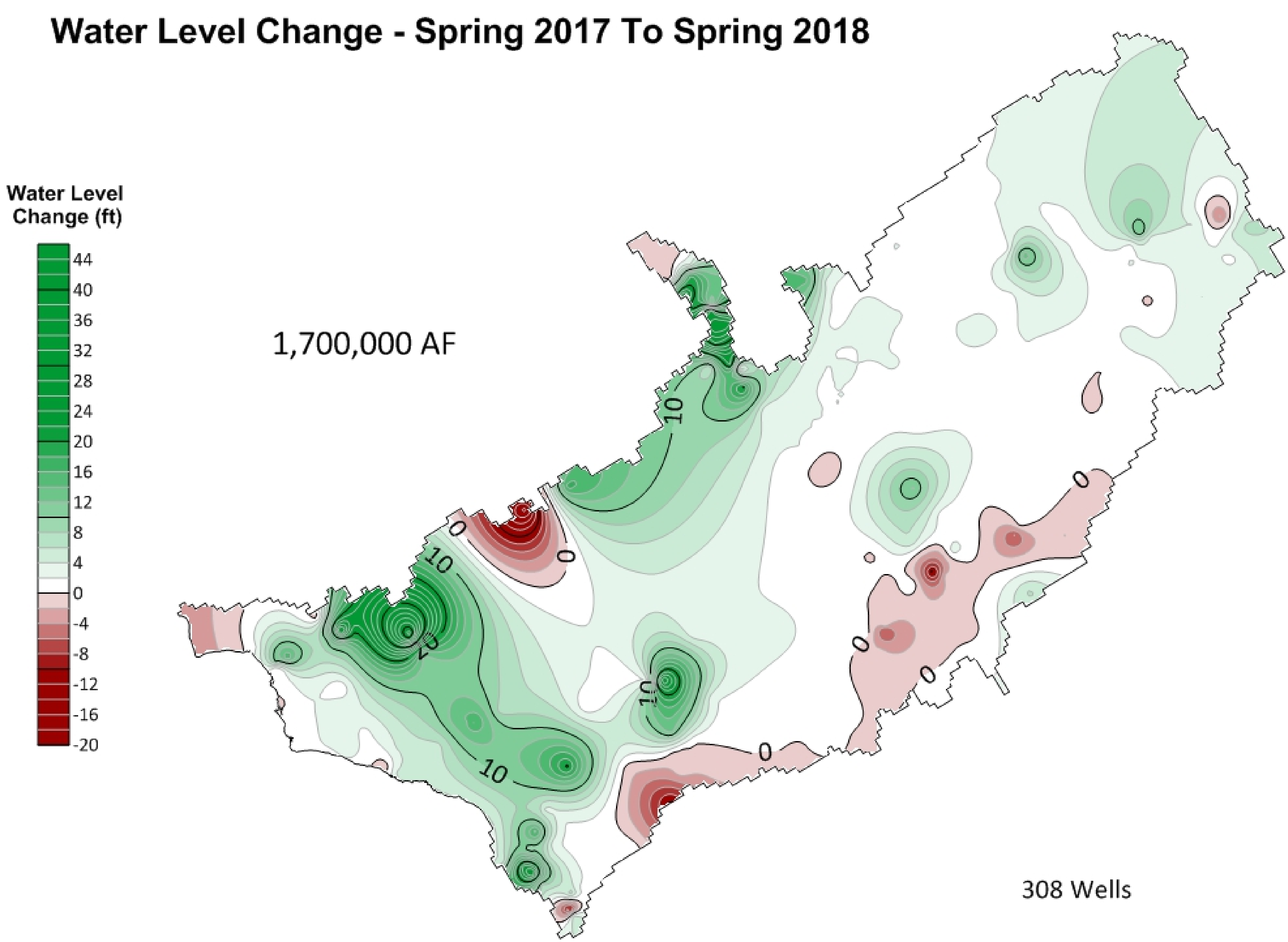
Legend
Wells Measured in 2018
Wells Drilled 2018
Wells Drilled 2019-2020
ESPAM2.1 Model Boundary
Miles
0 5 10 20 30
N

Water Level Change - Spring 2015 To Spring 2016



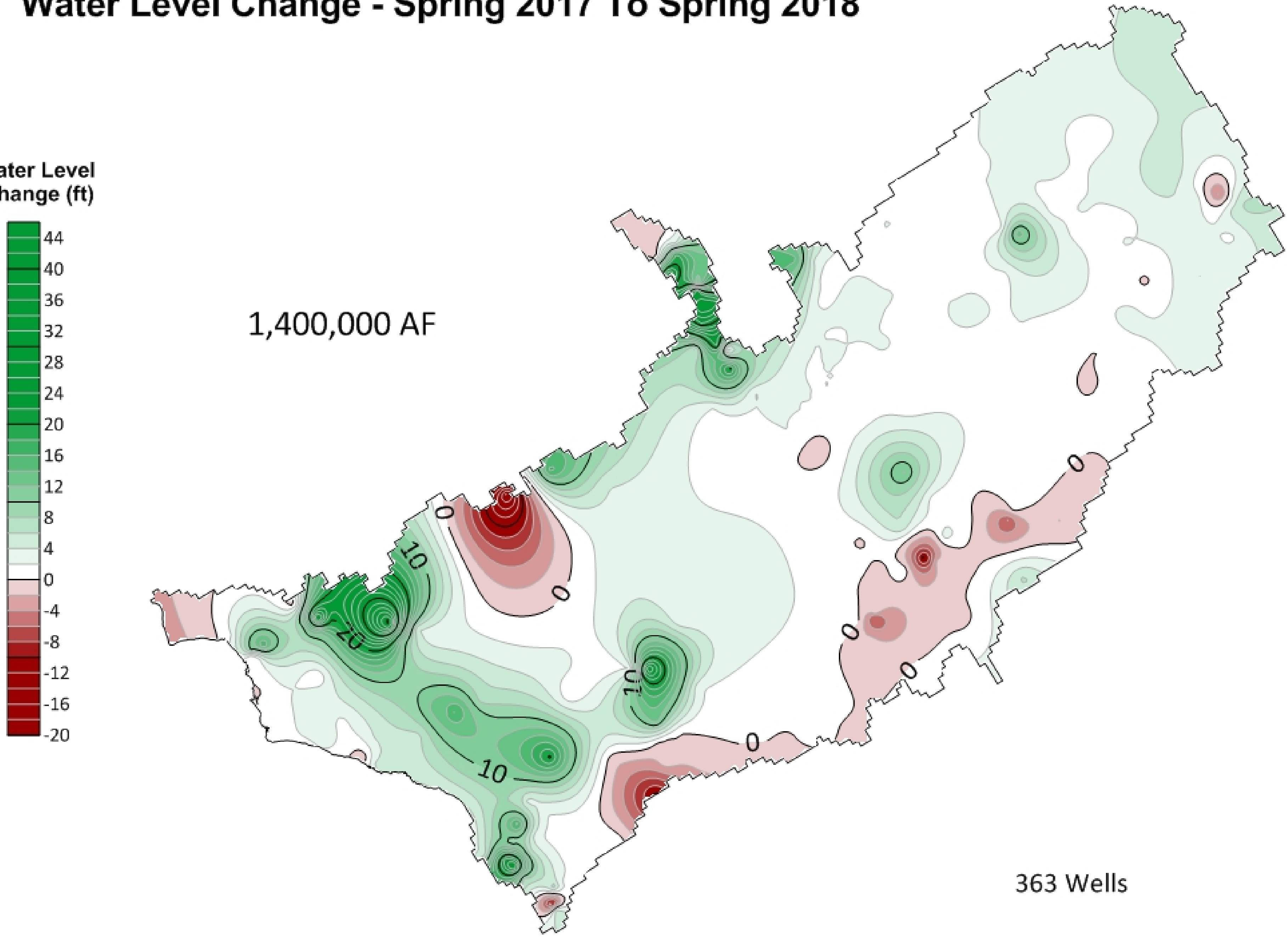
Water Level Change - Spring 2016 To Spring 2017



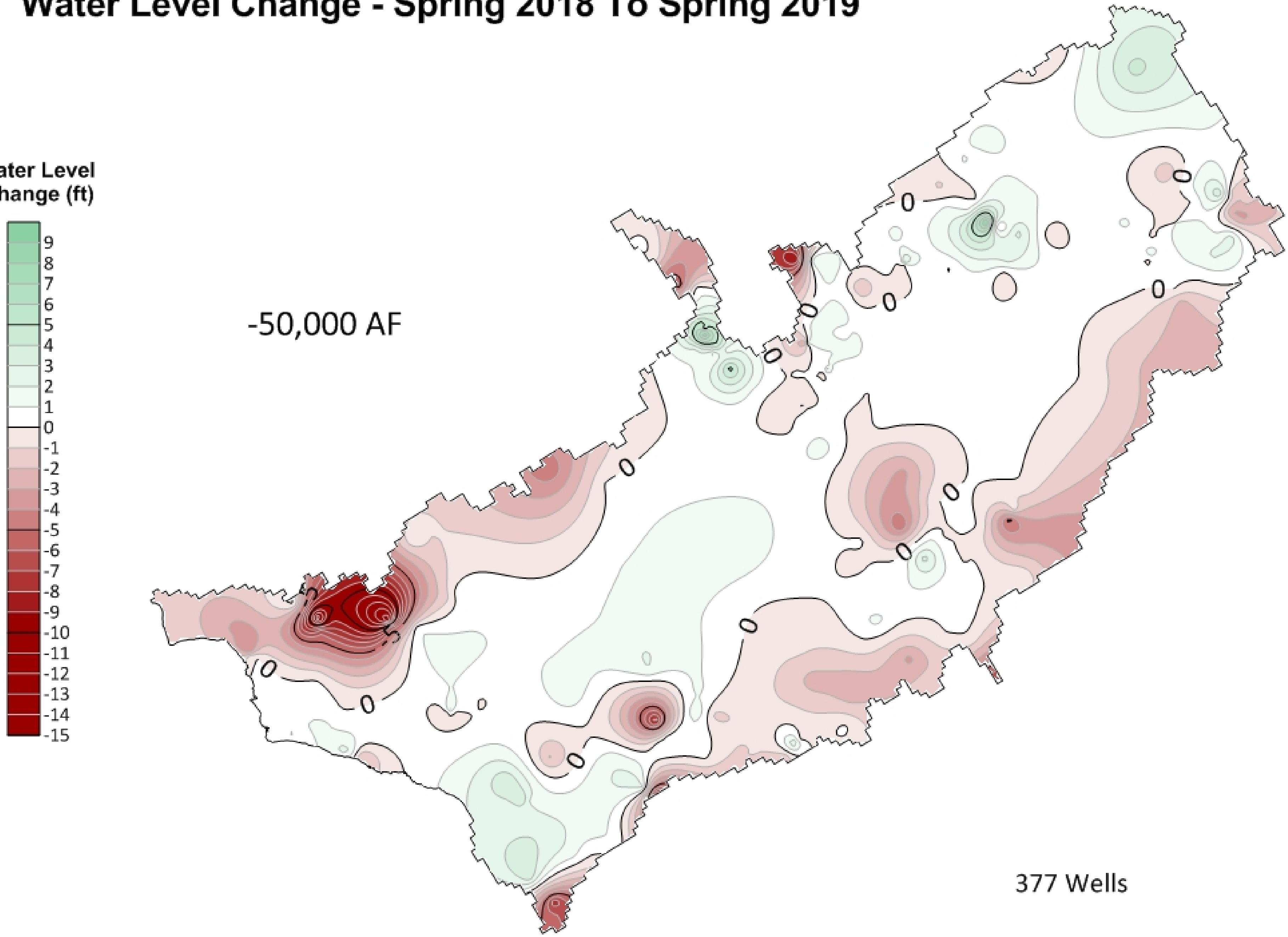


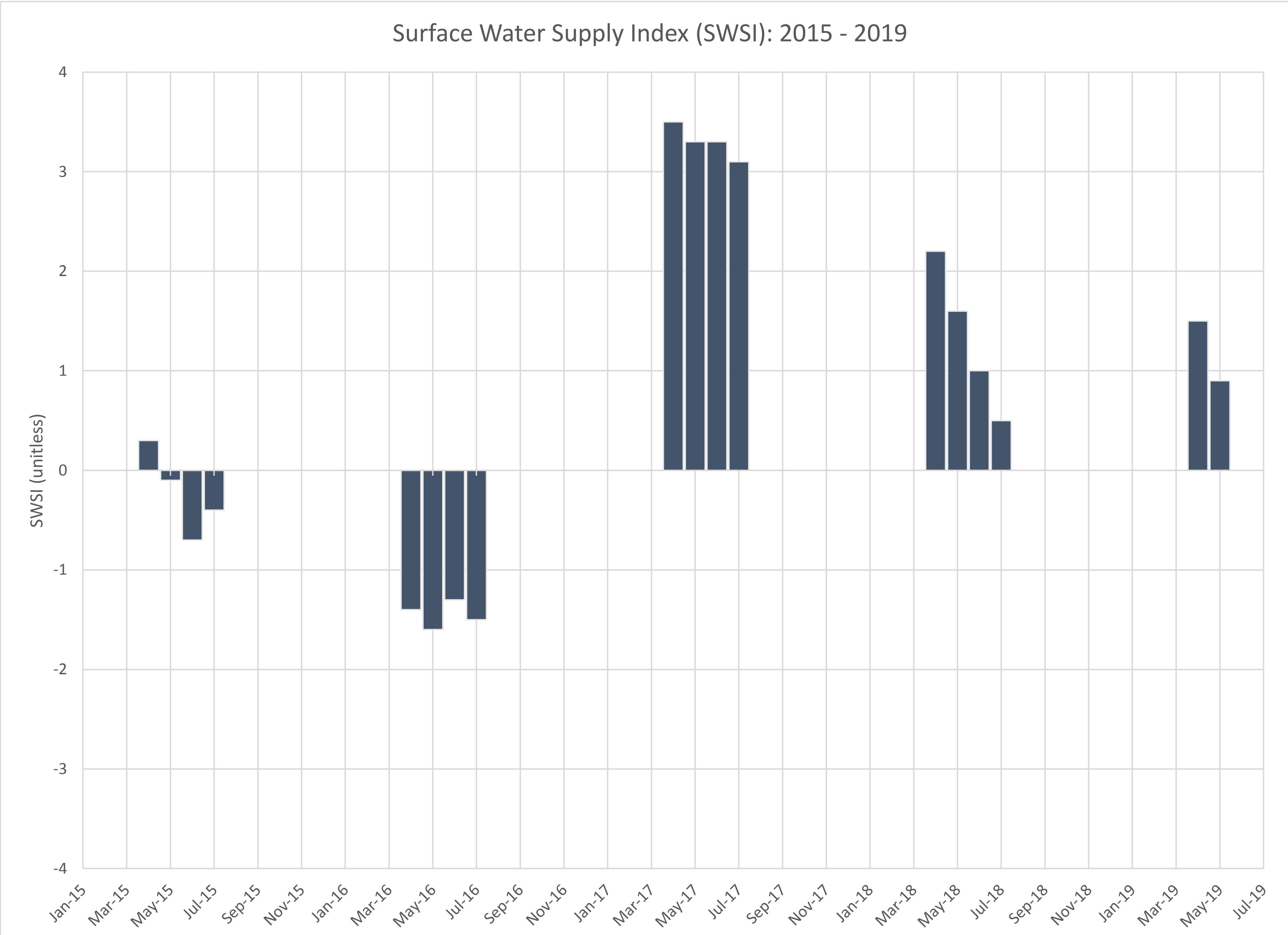
Water Level Change - Spring 2017 To Spring 2018
Water Level Change (ft)
44
40
36
32
28
24
20
16
12
8
4
0
-4
-8
-12
-16
-20
1,700,000 AF
10
0
308 Wells

Water Level Change - Spring 2017 To Spring 2018

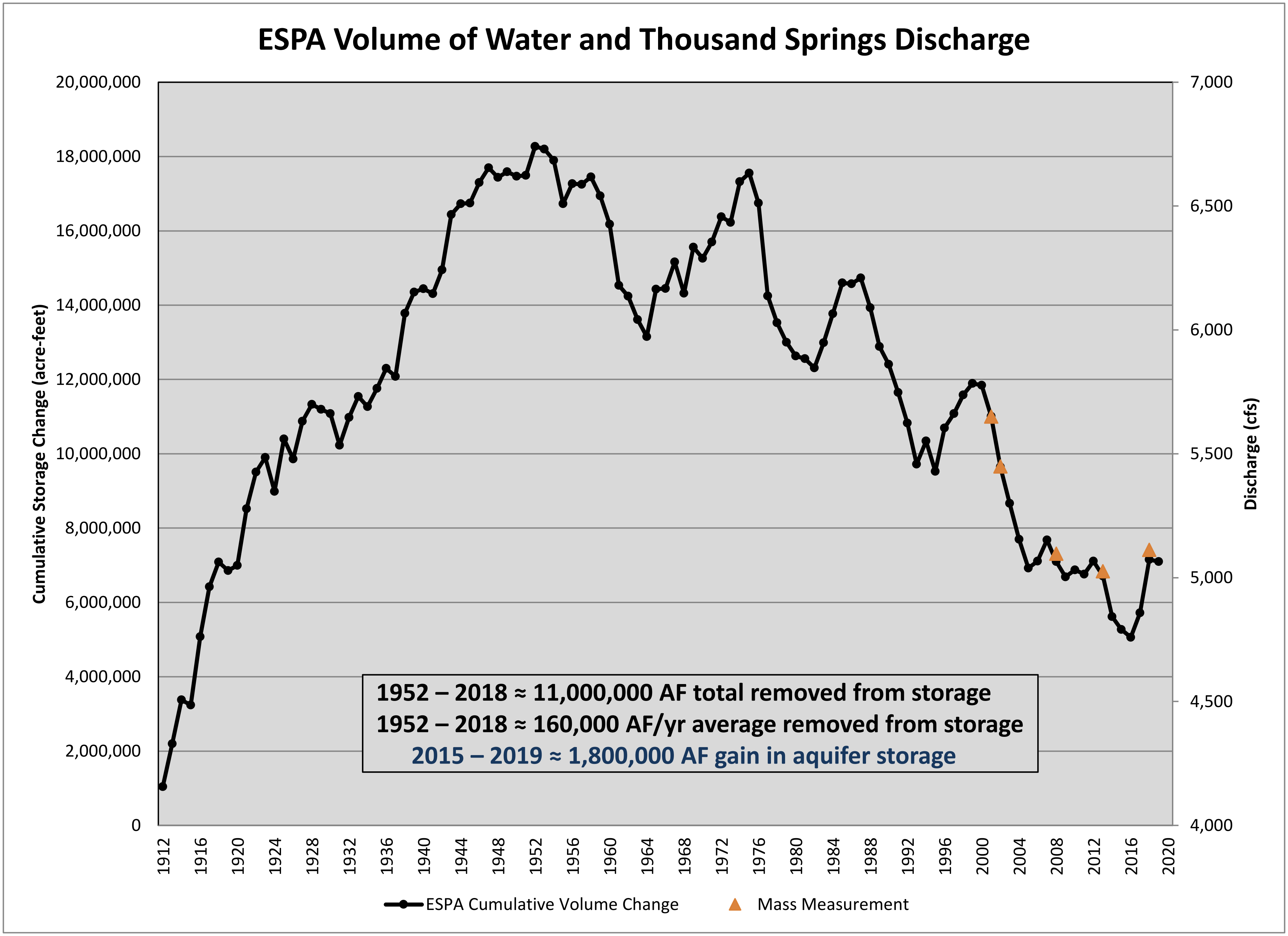


Water Level Change - Spring 2018 To Spring 2019



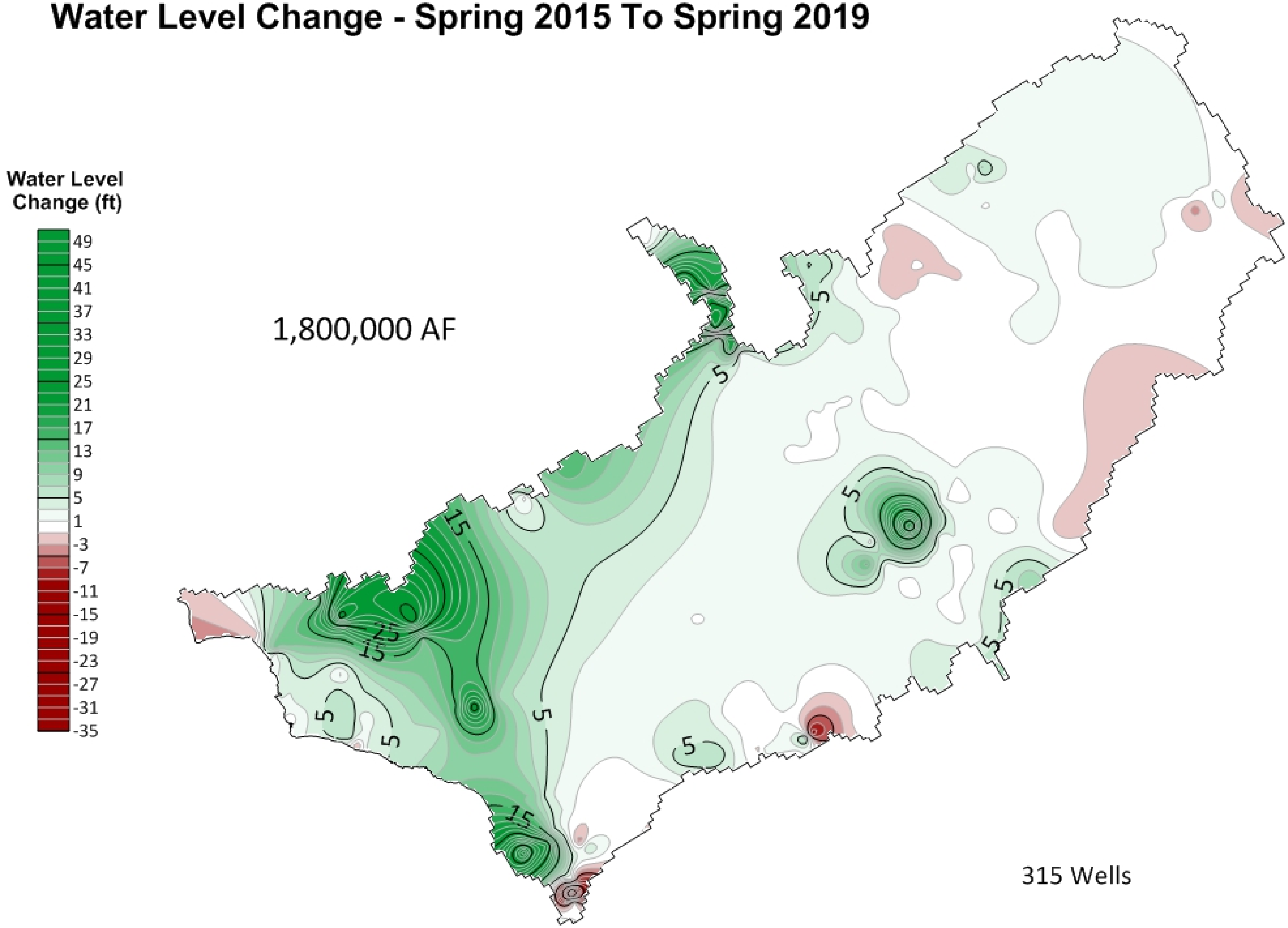


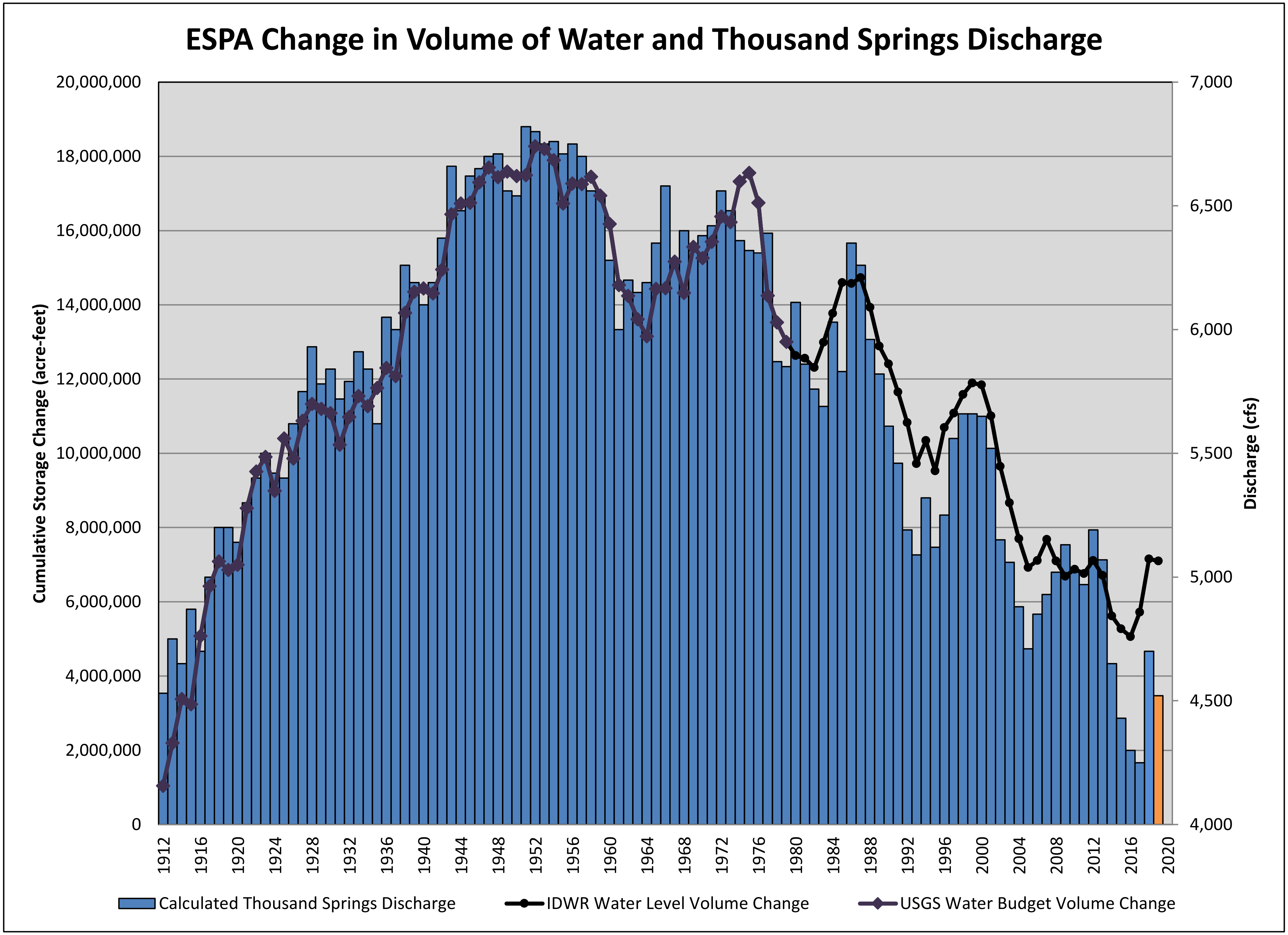
Surface Water Supply Index (SWSI): 2015 - 2019
SWSI (unitless)
4
3
2
1
0
-1
-2
-3
-4
Jan-15
Mar-15
May-15
Jul-15
Sep-15
Nov-15
Jan-16
Mar-16
May-16
Jul-16
Sep-16
Nov-16
Jan-17
Mar-17
May-17
Jul-17
Sep-17
Nov-17
Jan-18
Mar-18
May-18
Jul-18
Sep-18
Nov-18
Jan-19
Mar-19
May-19
Jul-19



ESPA 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
1952 – 2018 ≈ 11,000,000 AF total removed from storage
1952 – 2018 ≈ 160,000 AF/yr average removed from storage
2015 – 2019 ≈ 1,800,000 AF gain in aquifer storage
ESPA Cumulative Volume Change
Mass Measurement

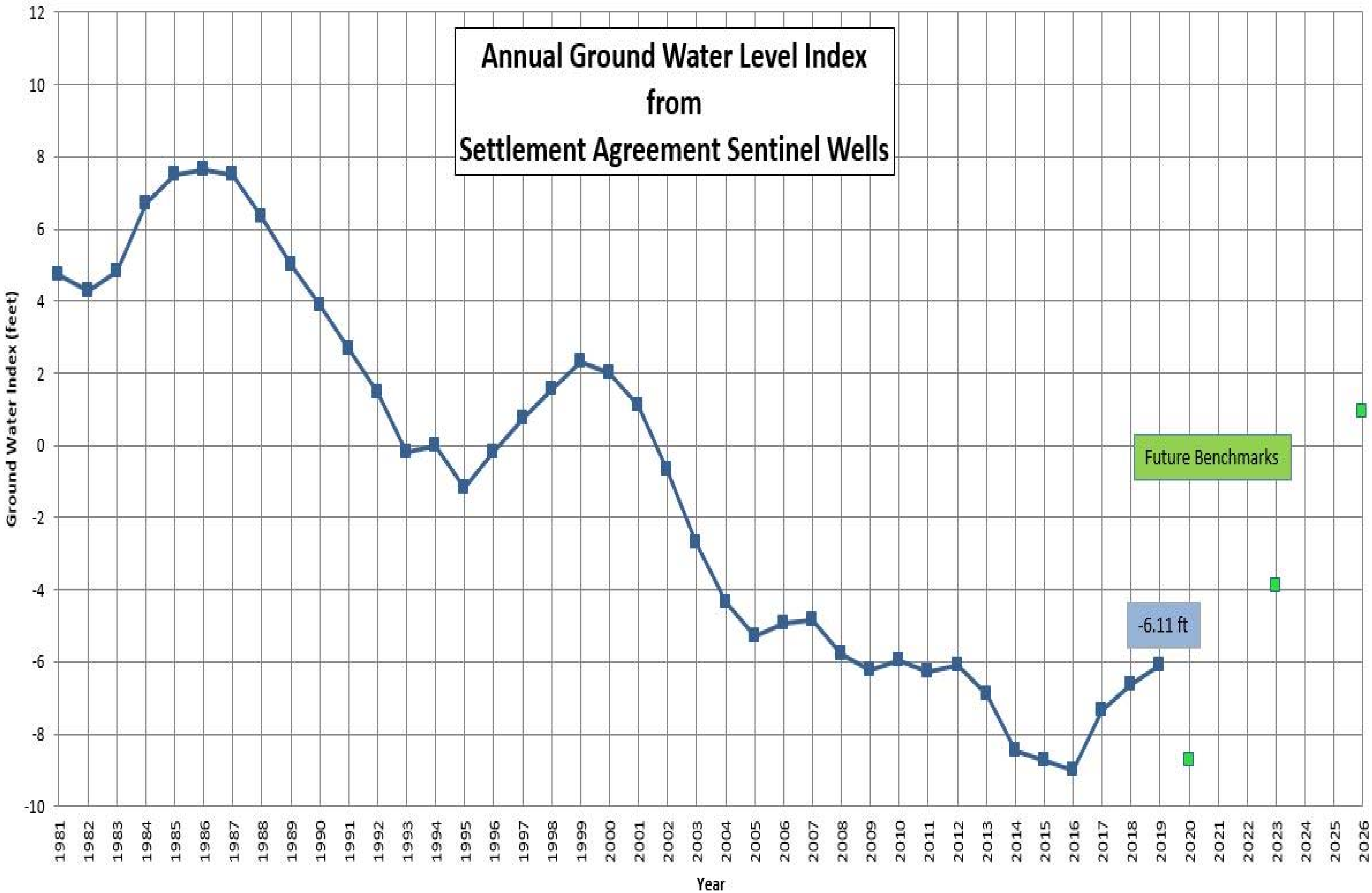
Water Level Change - Spring 2015 To Spring 2019





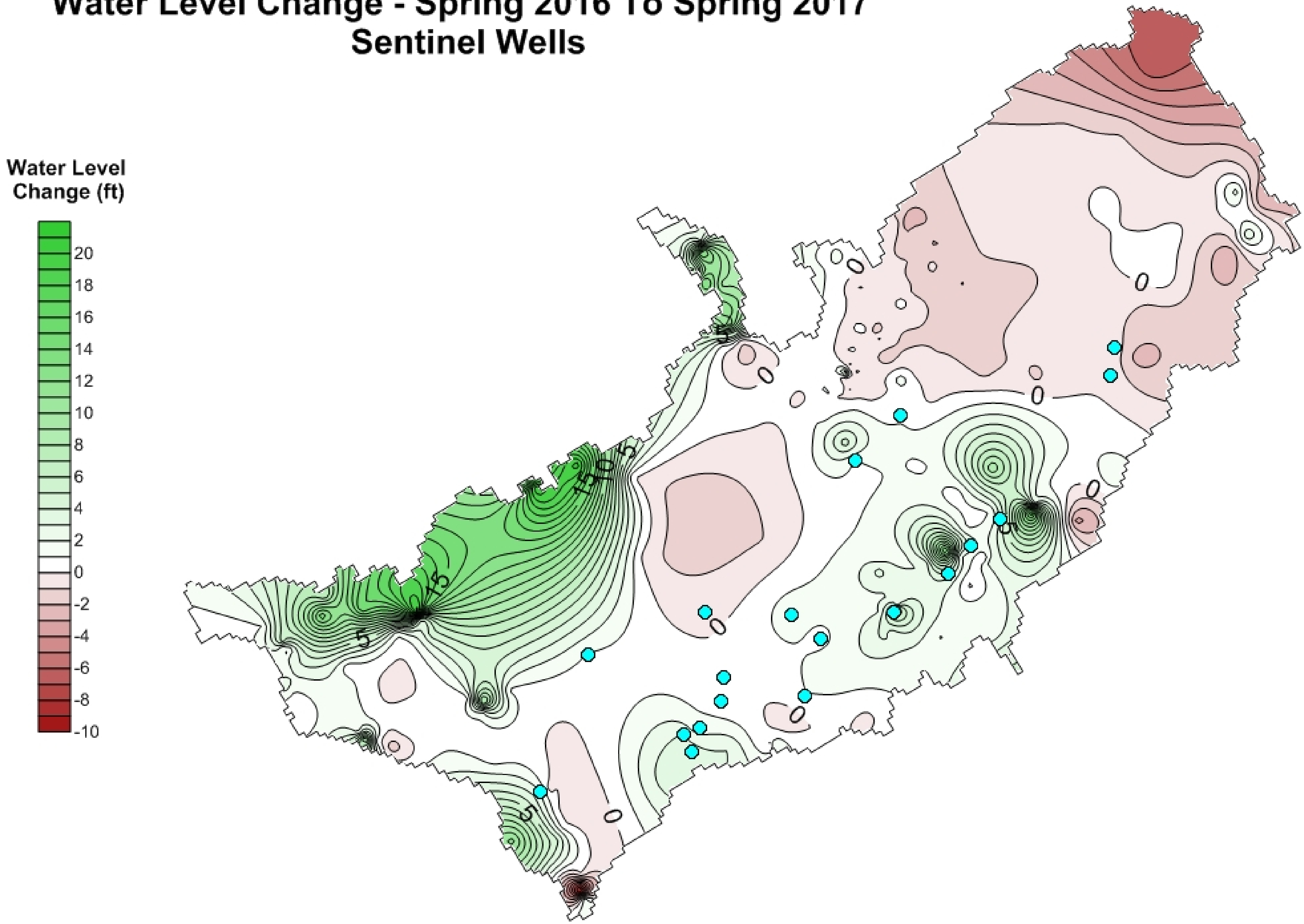
ESPA Change in Volume of Water and Thousand Springs Discharge
Cumulative Storage Change (acre-feet)
Discharge (cfs)
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
7,000
6,500
6,000
5,500
5,000
4,500
4,000
1912
1916
1920
1924
1928
1932
1936
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
IDWR Water Level Volume Change
USGS Water Budget Volume Change

Settlement Agreement Sentinel Wells

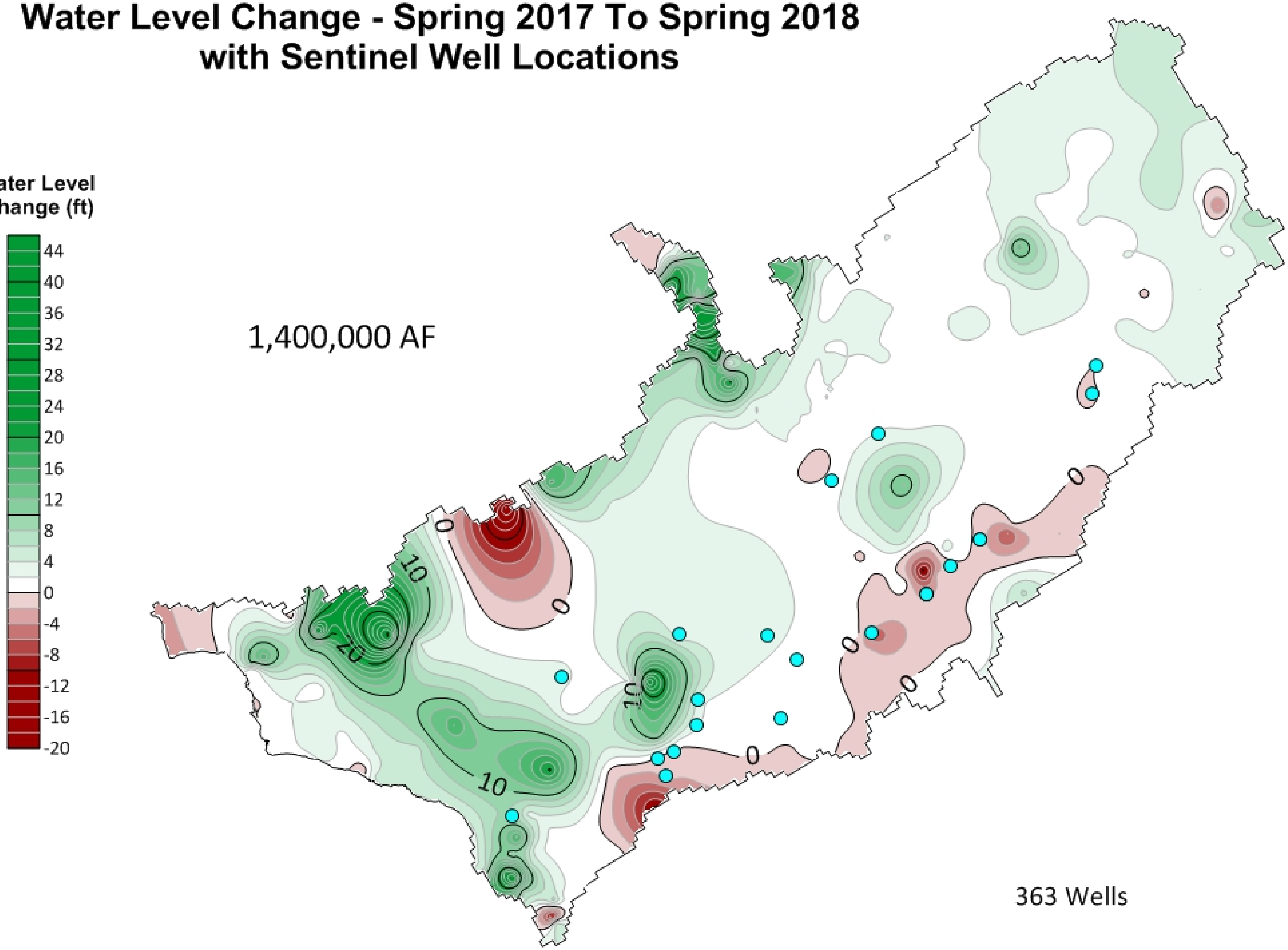


Annual Ground Water Level Index
from
Settlement Agreement Sentinel Wells
Future Benchmarks
-6.11 ft
Ground Water Index (feet)
Year

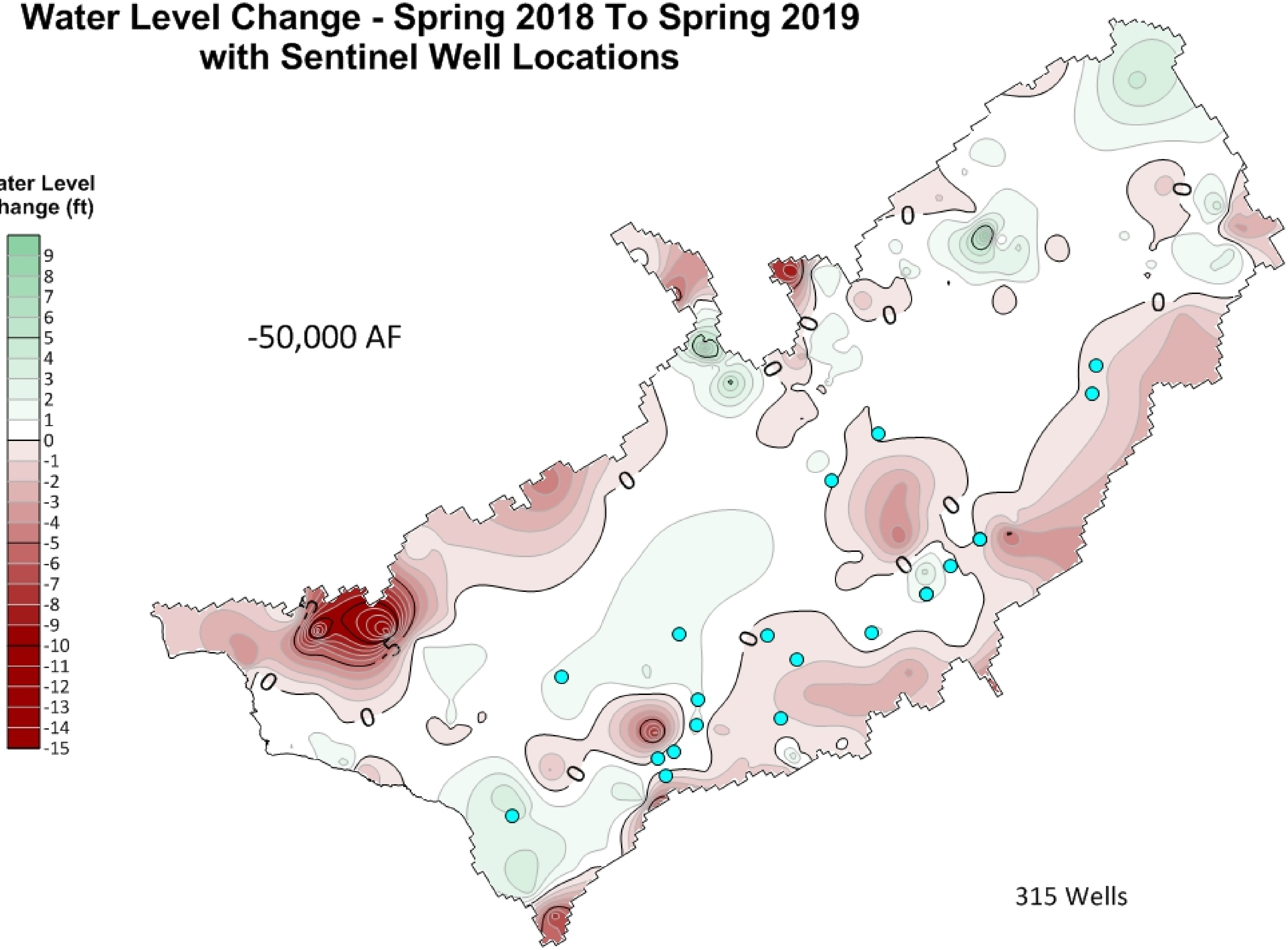
Water Level Change - Spring 2016 To Spring 2017
Sentinel Wells



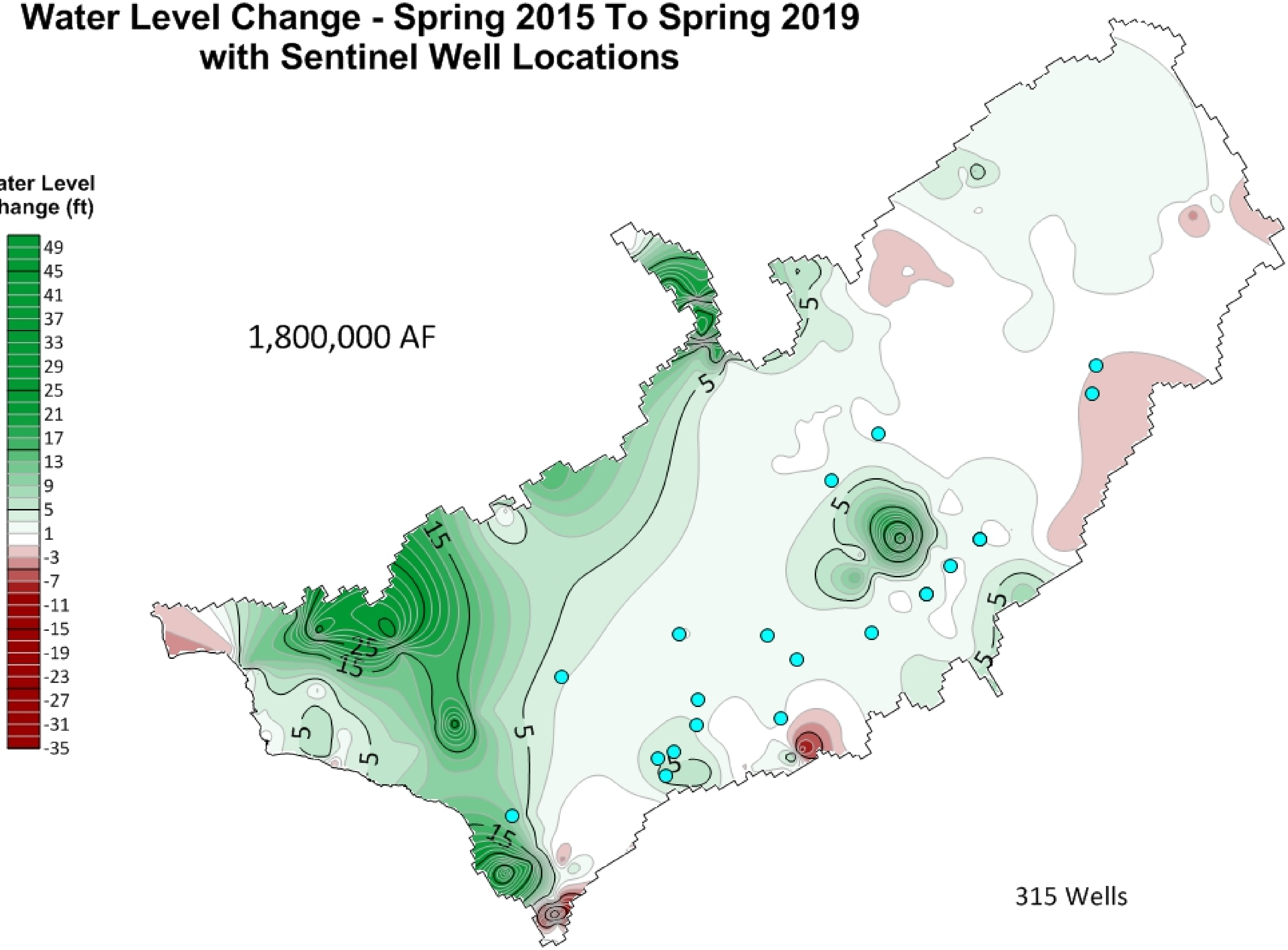
Water Level Change - Spring 2017 To Spring 2018 with Sentinel Well Locations

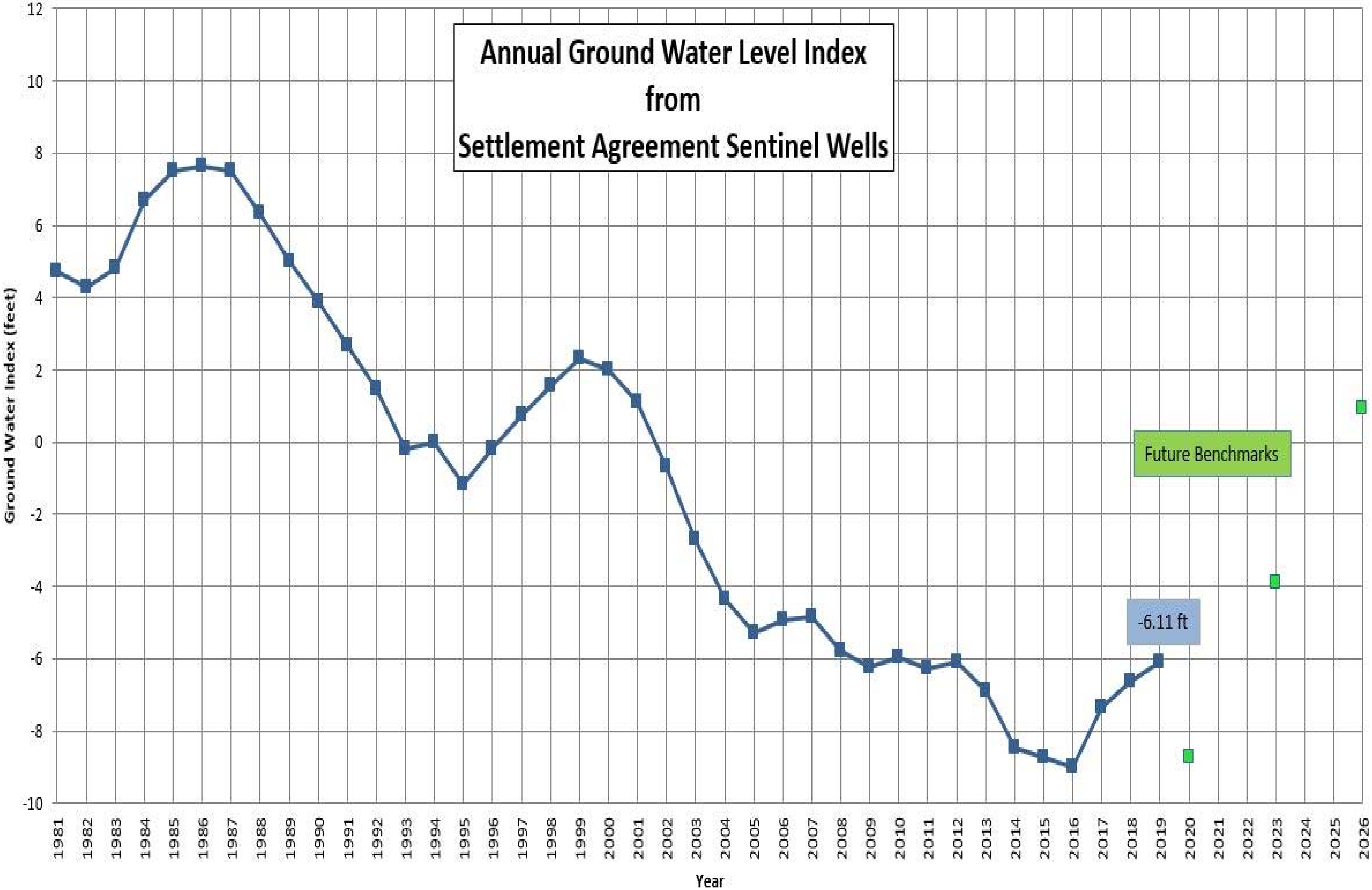


Water Level Change - Spring 2018 To Spring 2019 with Sentinel Well Locations



Water Level Change - Spring 2015 To Spring 2019 with Sentinel Well Locations



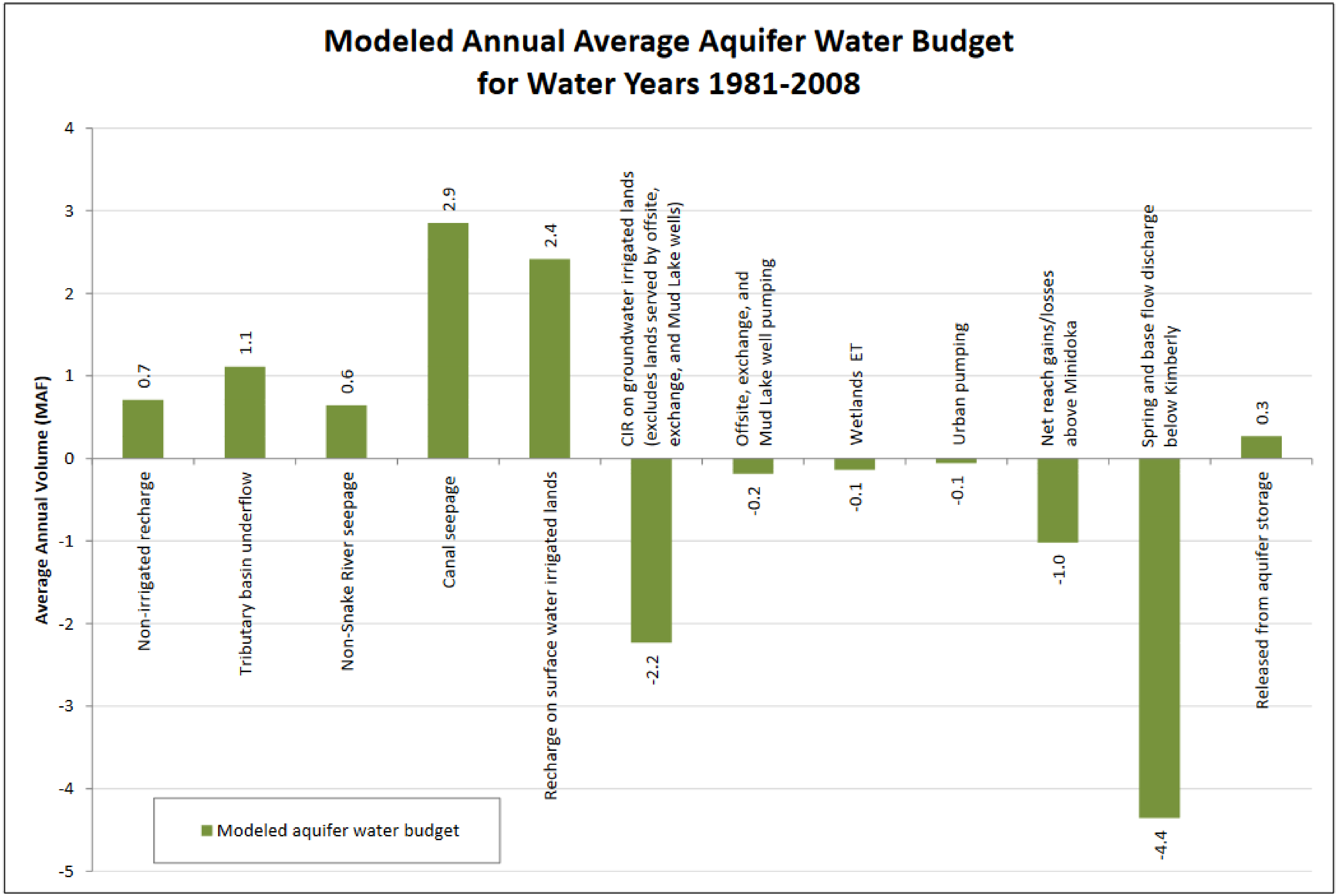


Annual Ground Water Level Index
from
Settlement Agreement Sentinel Wells
Future Benchmarks
-6.11 ft
Ground Water Index (feet)
Year
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026

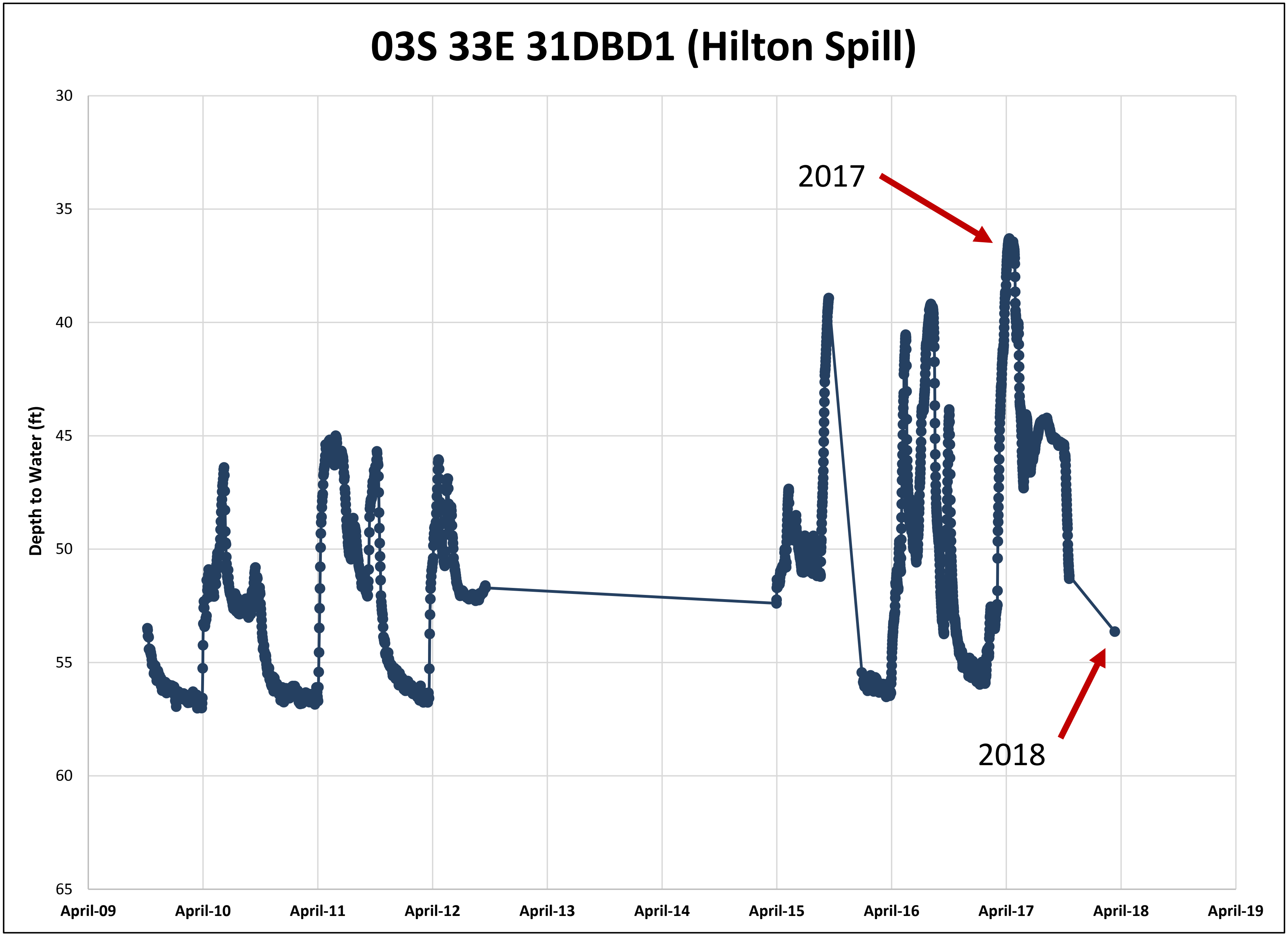
Synopsis

1. The overall water levels in the ESPA rose significantly from 2016 to 2017 and 2017 to 2018.
   a. Partly due to recharge and demand reductions.
   b. Largely due to exceptional precipitation.
2. The overall water levels in the ESPA dropped slightly in 2019.
   a. Due to relatively less precipitation during 2018 to 2019.
3. The large increases in ESPA storage from 2016 to 2019 represent a good start to a long-term solution.
   a. Undulations due to weather are to be expected.
   b. The ESPA leaks, and aquifer-storage gains are fleeting.

Discussion

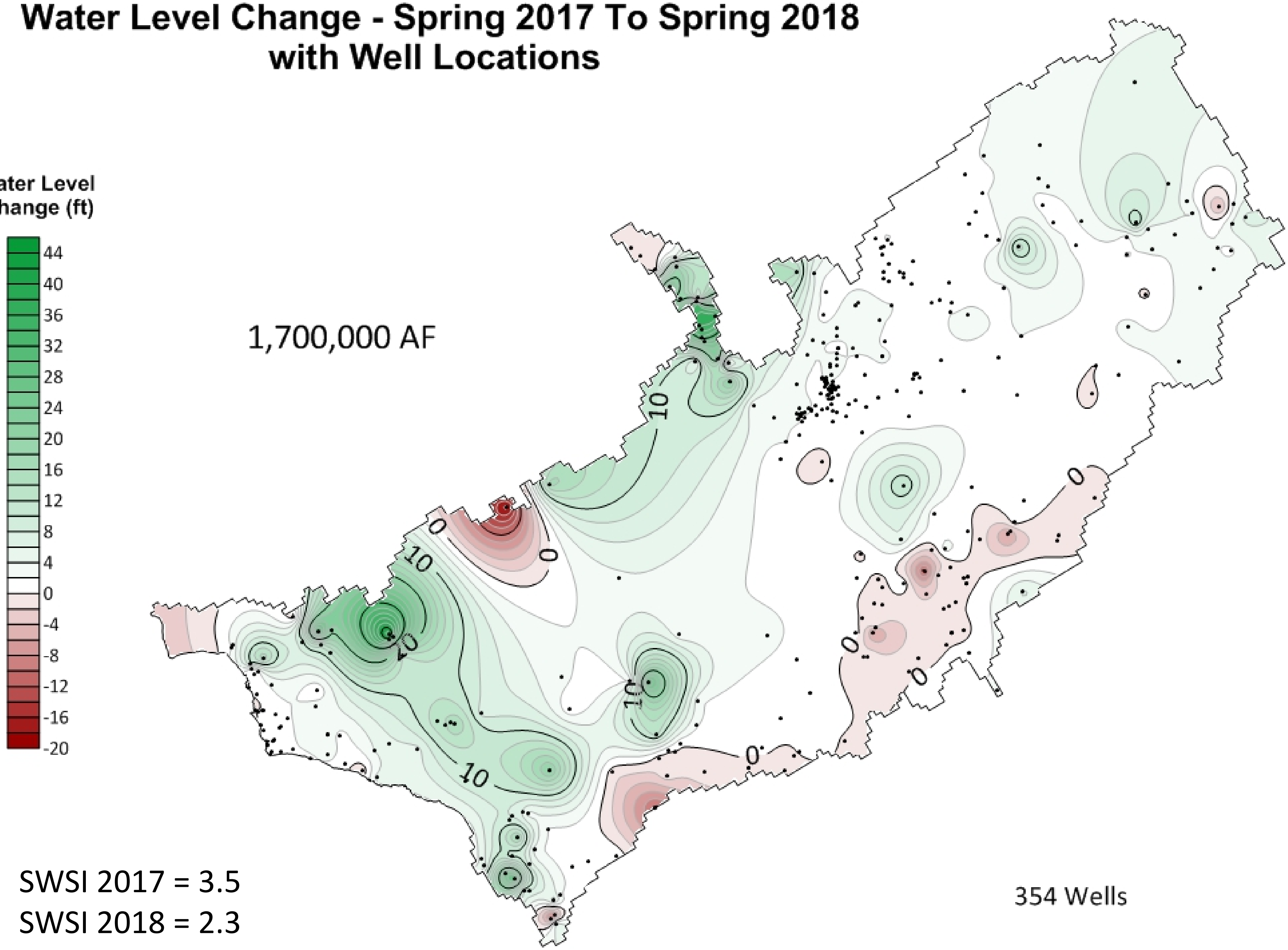


Modeled Annual Average Aquifer Water Budget
for Water Years 1981-2008
Average Annual Volume (MAF)
4
3
2
1
0
-1
-2
-3
-4
-5
Non-irrigated recharge
0.7
Tributary basin underflow
1.1
Non-Snake River seepage
0.6
Canal seepage
2.9
Recharge on surface water irrigated lands
2.4
CIR on groundwater irrigated lands (excludes lands served by offsite, exchange, and Mud Lake wells)
-2.2
Offsite, exchange, and Mud Lake well pumping
-0.2
Wetlands ET
-0.1
Urban pumping
-0.1
Net reach gains/losses above Minidoka
-1.0
Spring and base flow discharge below Kimberly
-4.4
Released from aquifer storage
0.3
Modeled aquifer water budget



03S 33E 31DBD1 (Hilton Spill)
Depth to Water (ft)
30
35
40
45
50
55
60
65
April-09
April-10
April-11
April-12
April-13
April-14
April-15
April-16
April-17
April-18
April-19
2017
2018

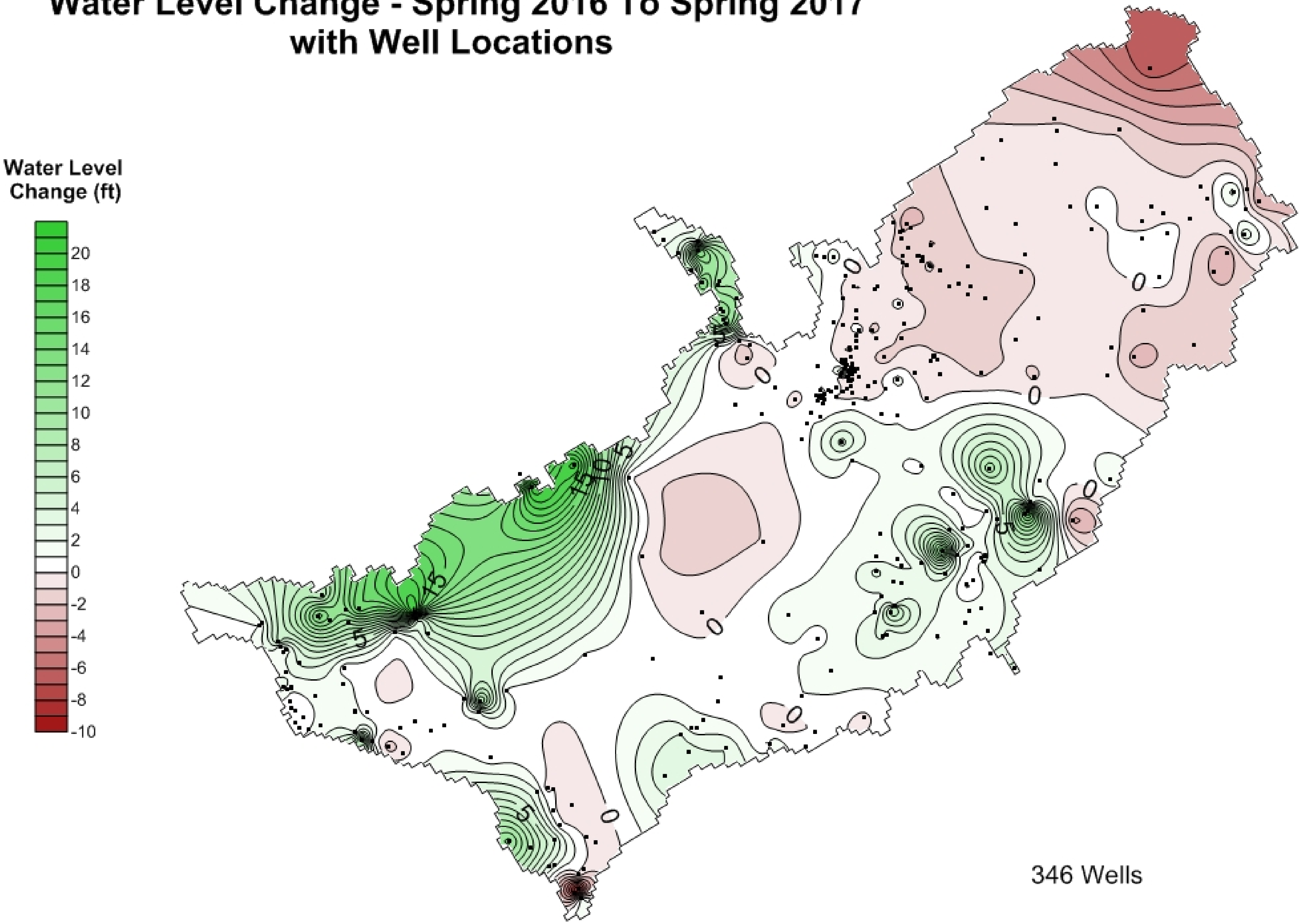
Water Level Change - Spring 2017 To Spring 2018 with Well Locations

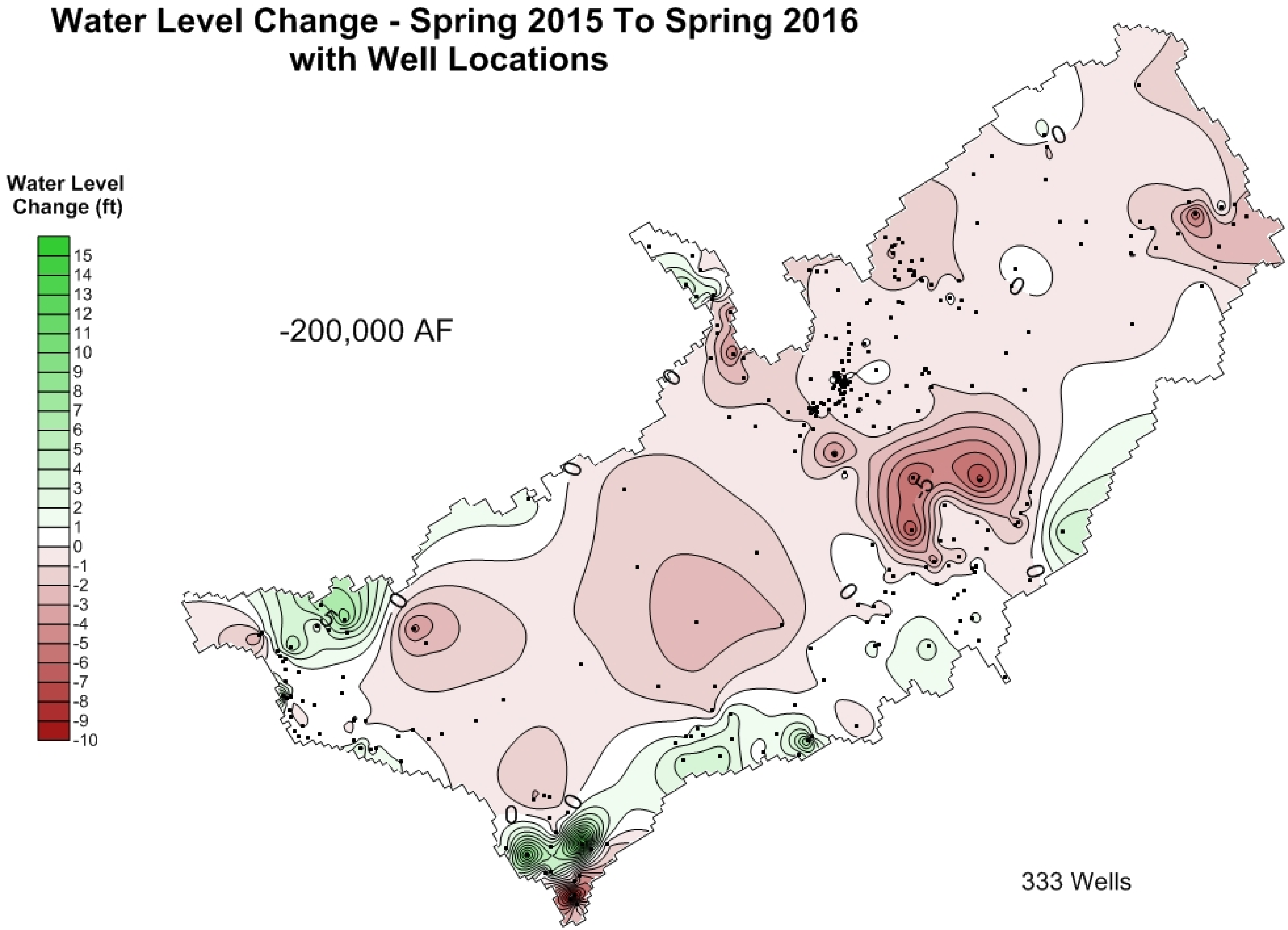


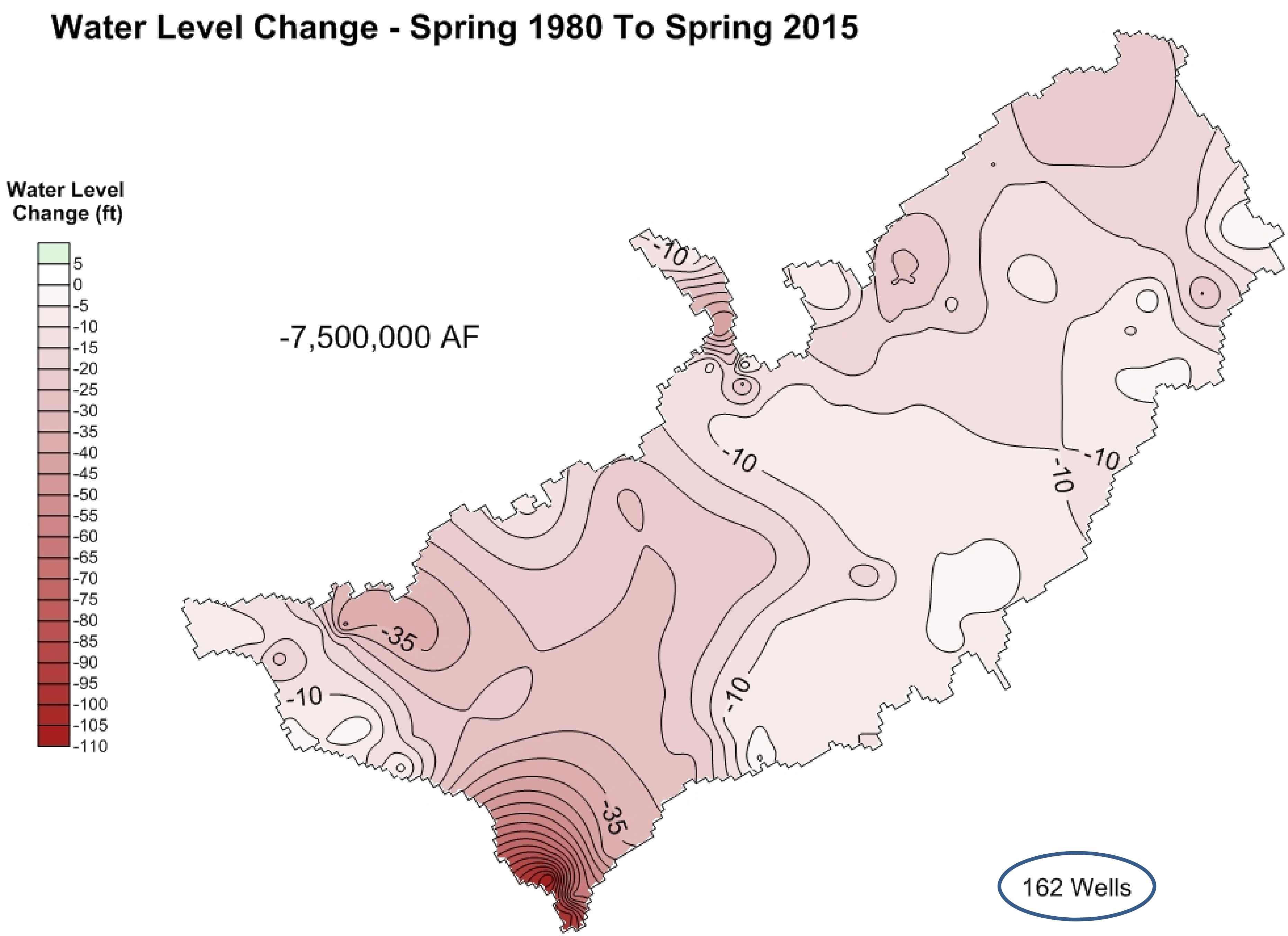
SWSI 2017 = 3.5

SWSI 2018 = 2.3

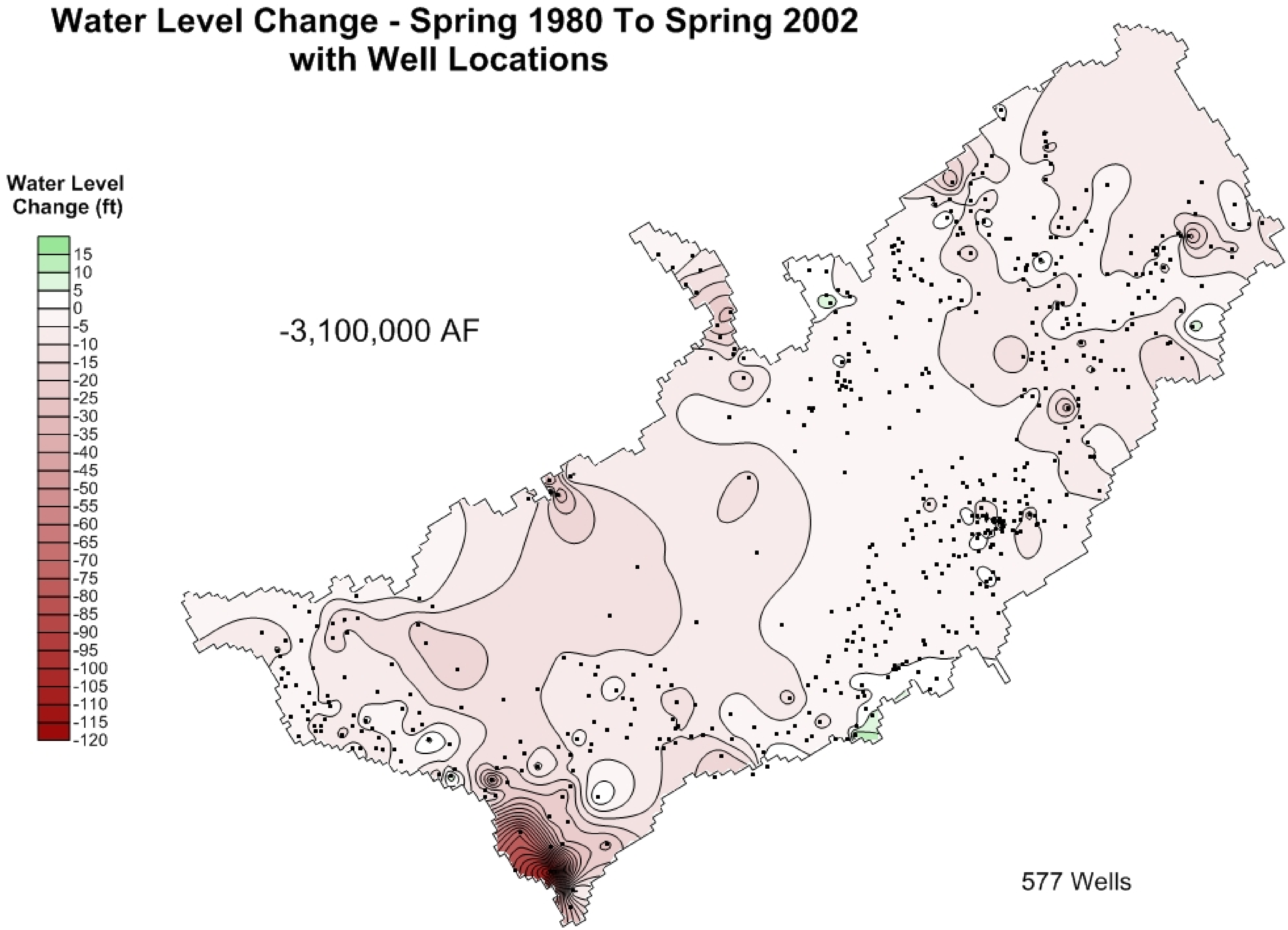
Water Level Change - Spring 2016 To Spring 2017 with Well Locations



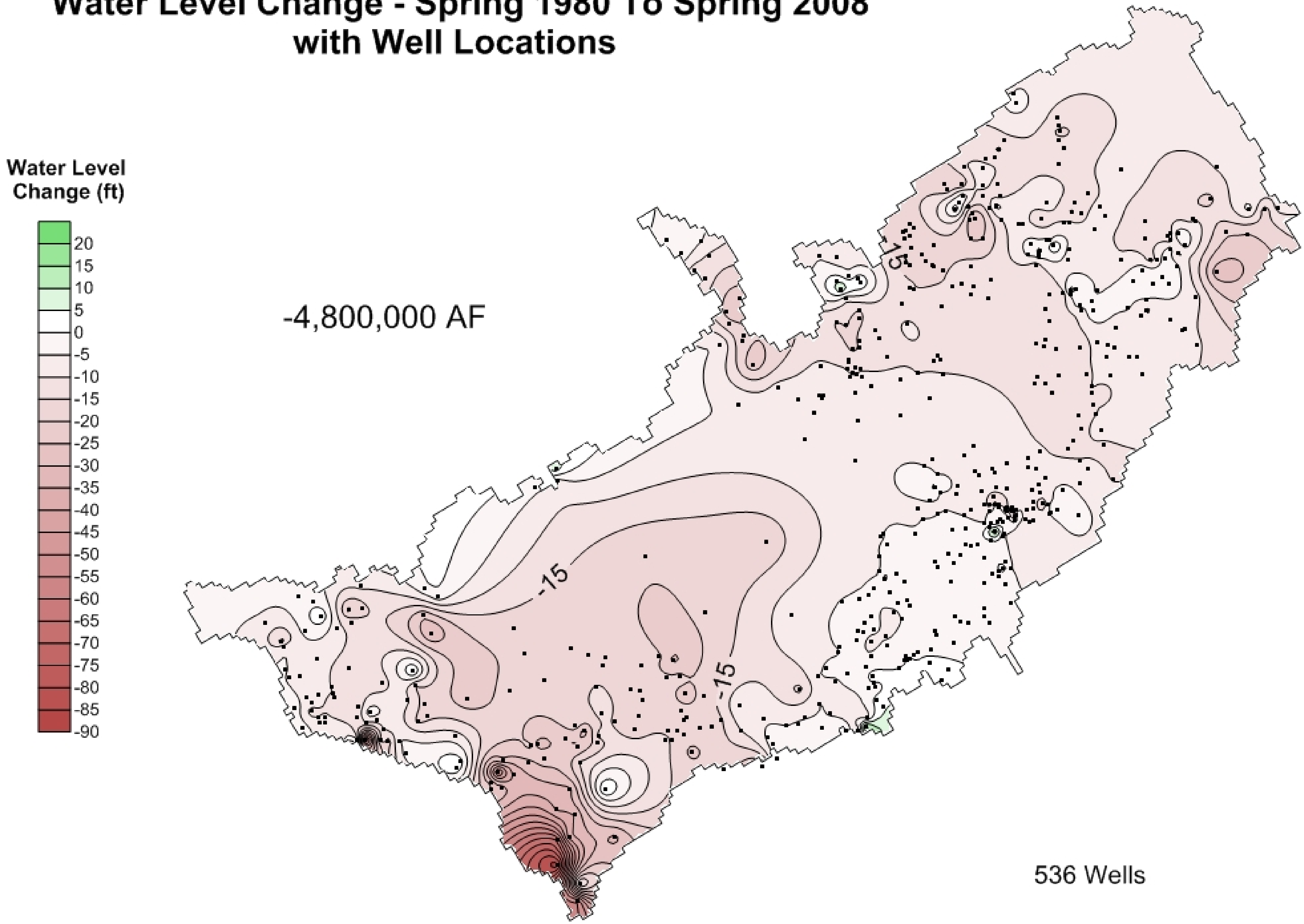

Water Level Change - Spring 2015 To Spring 2016
with Well Locations
Water Level
Change (ft)
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
-200,000 AF
333 Wells



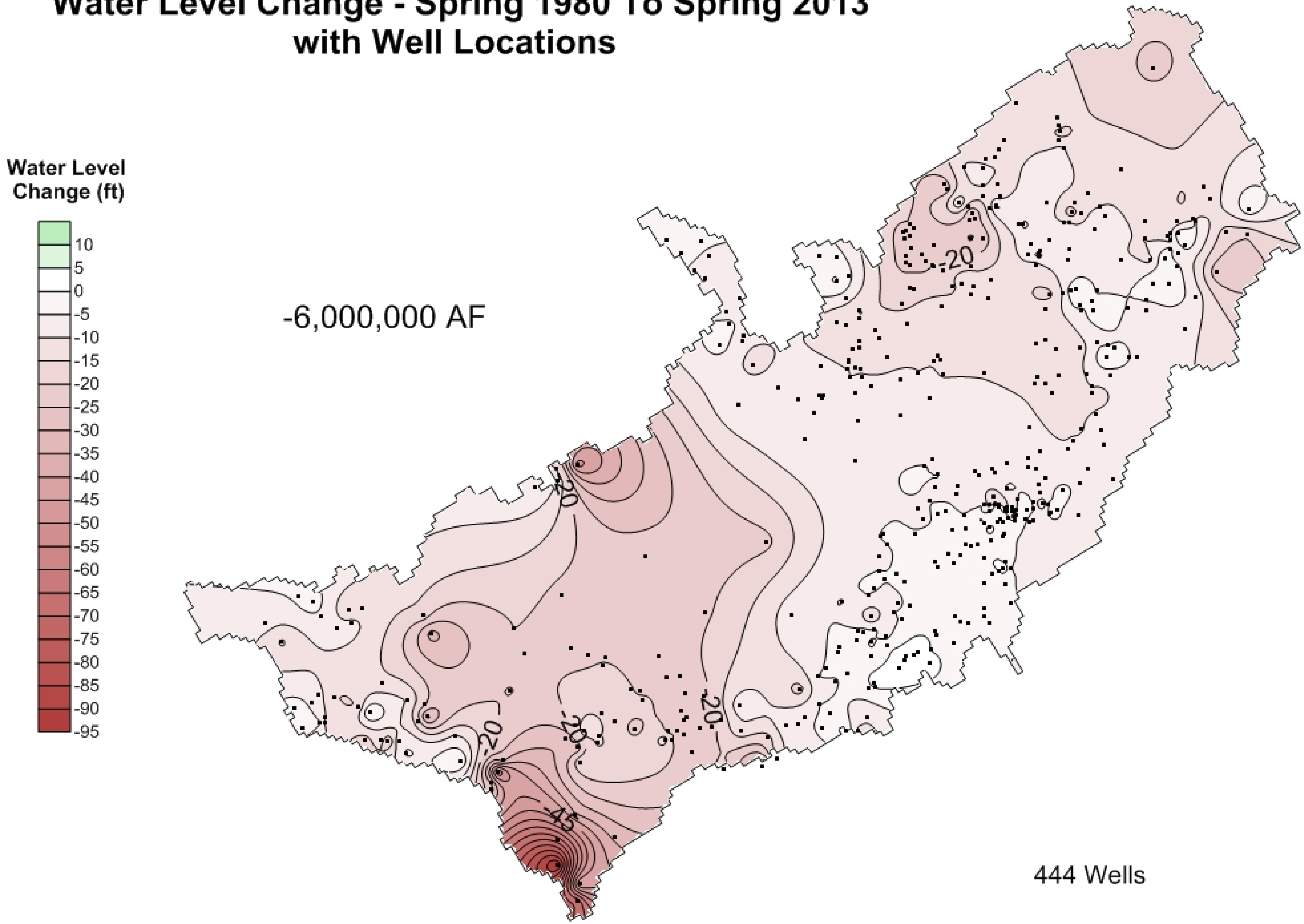
Water Level Change - Spring 1980 To Spring 2015
Water Level Change (ft)
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-100
-105
-110
-7,500,000 AF
-10
-10
-10
-10
-10
-10
-35
-35
162 Wells


Water Level Change - Spring 1980 To Spring 2002
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
-85
-90
-95
-100
-105
-110
-115
-120
-3,100,000 AF
577 Wells

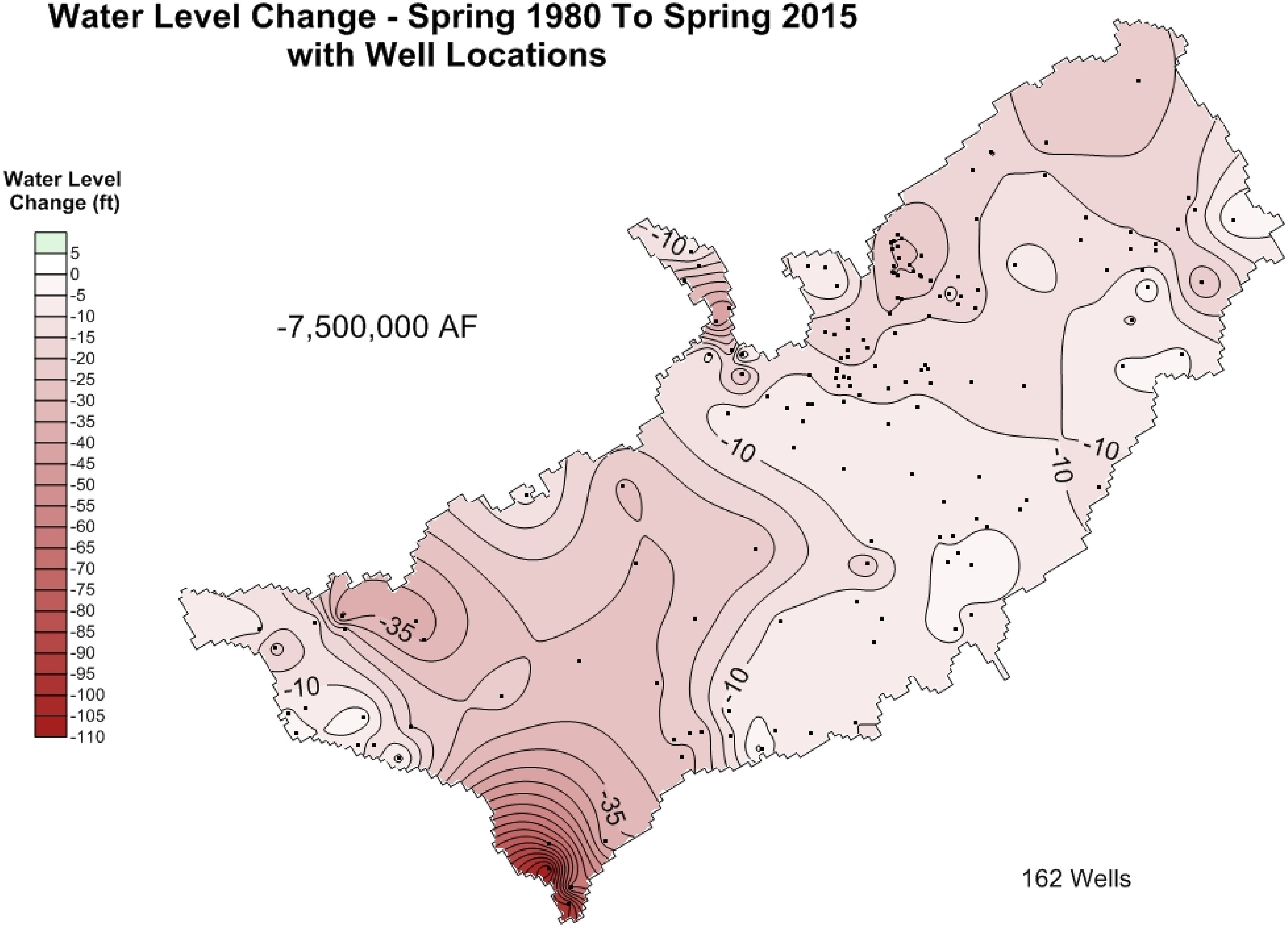
Water Level Change - Spring 1980 To Spring 2008 with Well Locations



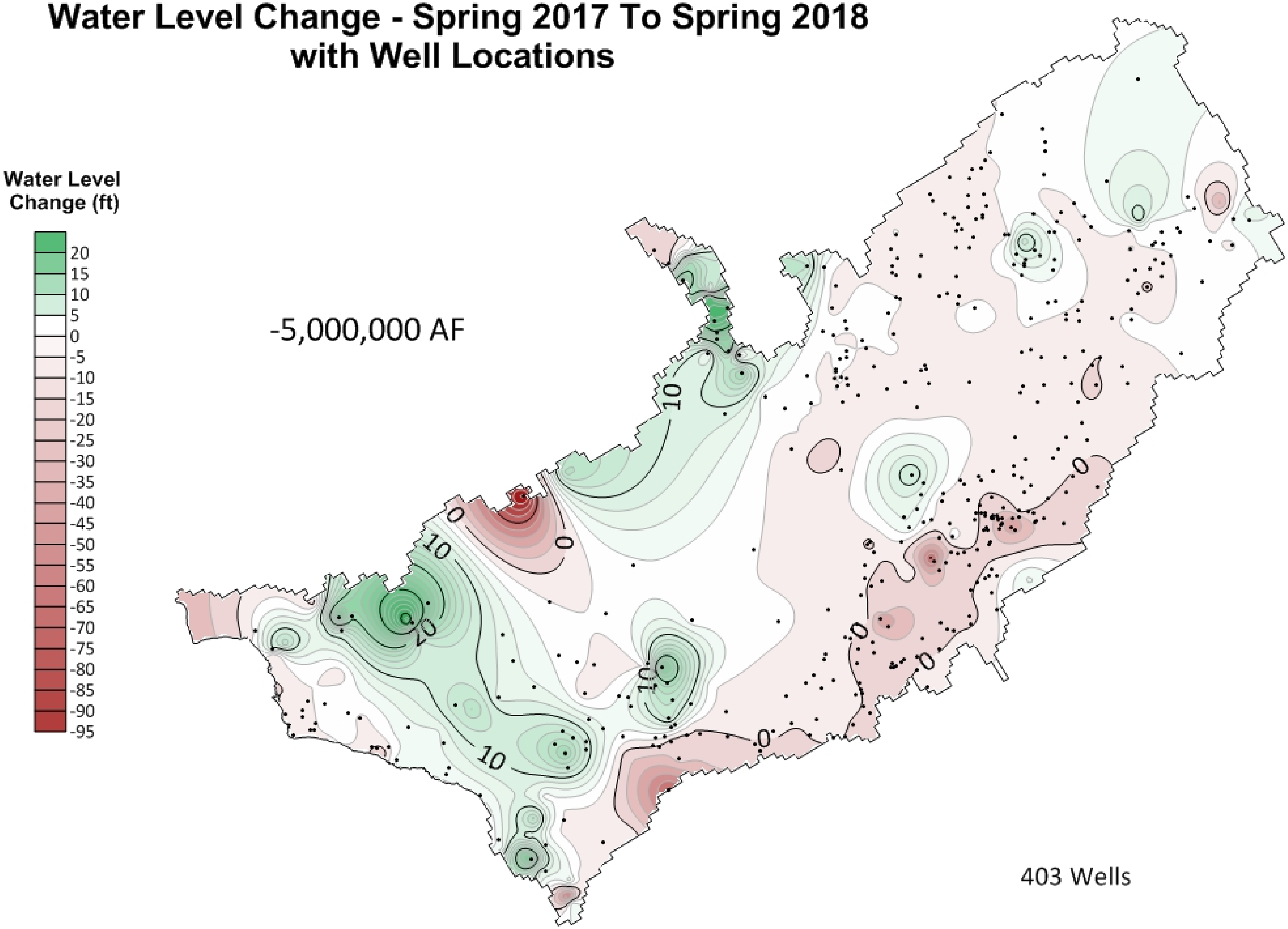
Water Level Change - Spring 1980 To Spring 2013 with Well Locations



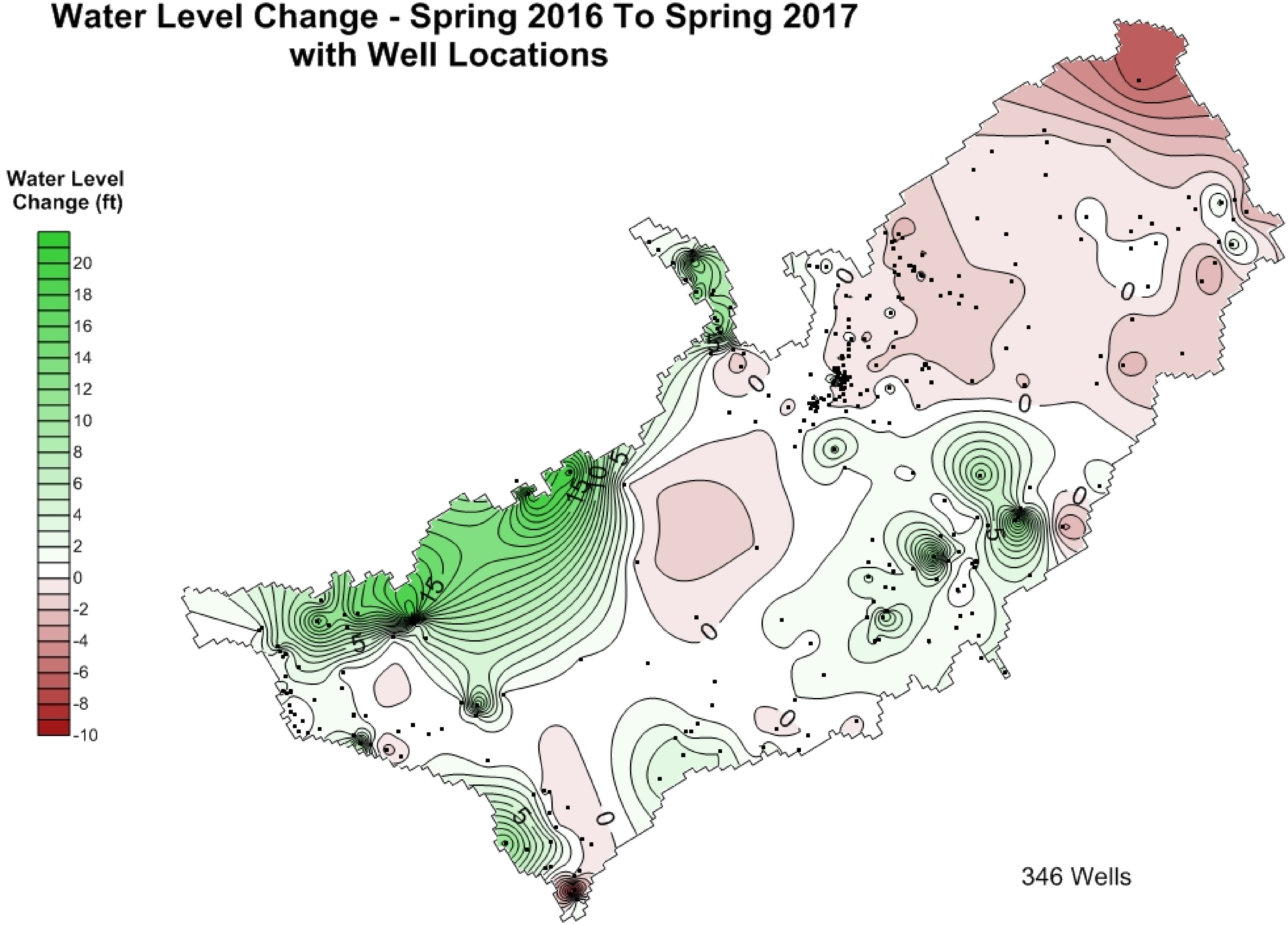
Water Level Change - Spring 1980 To Spring 2015 with Well Locations



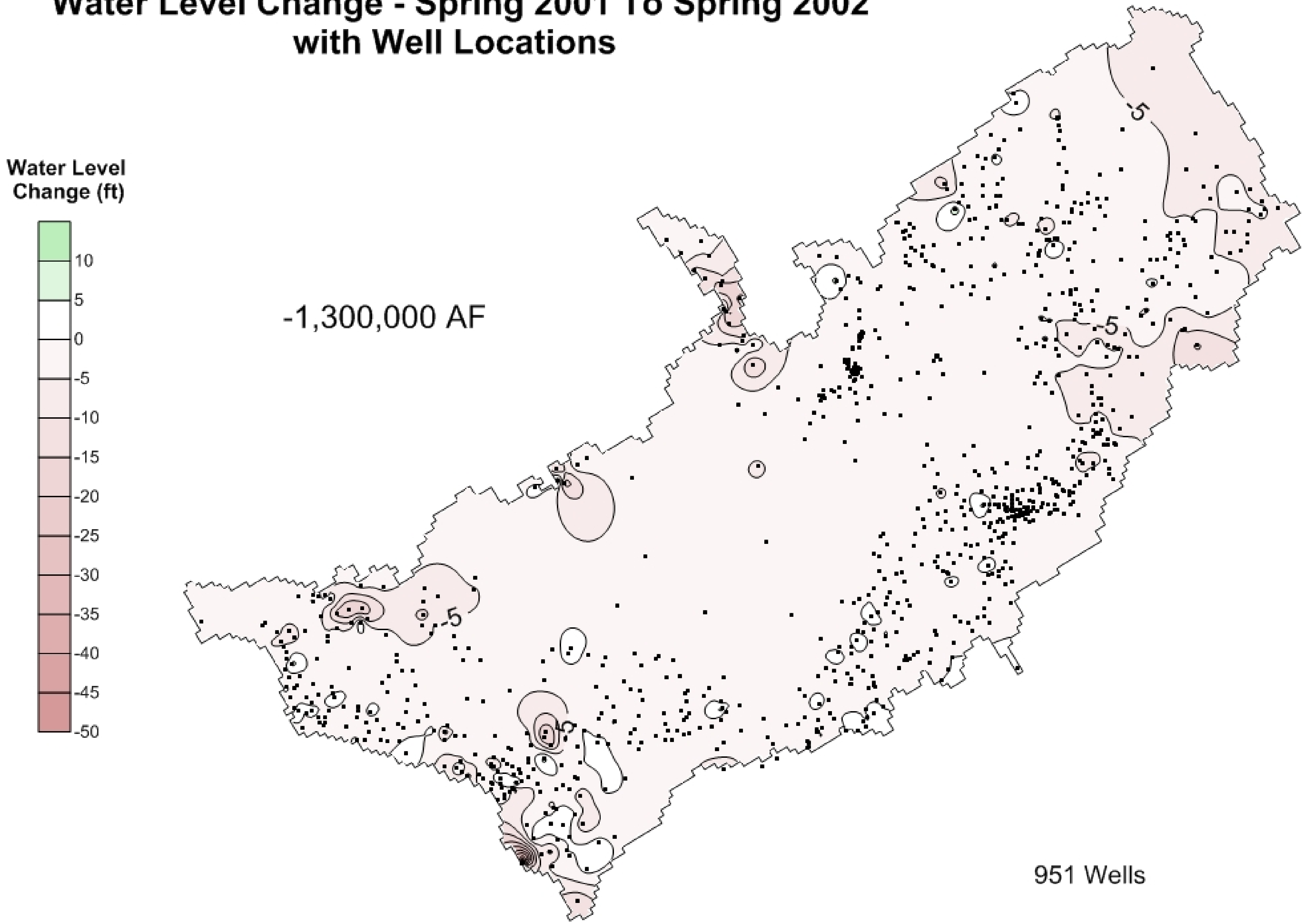
Water Level Change - Spring 2017 To Spring 2018 with Well Locations

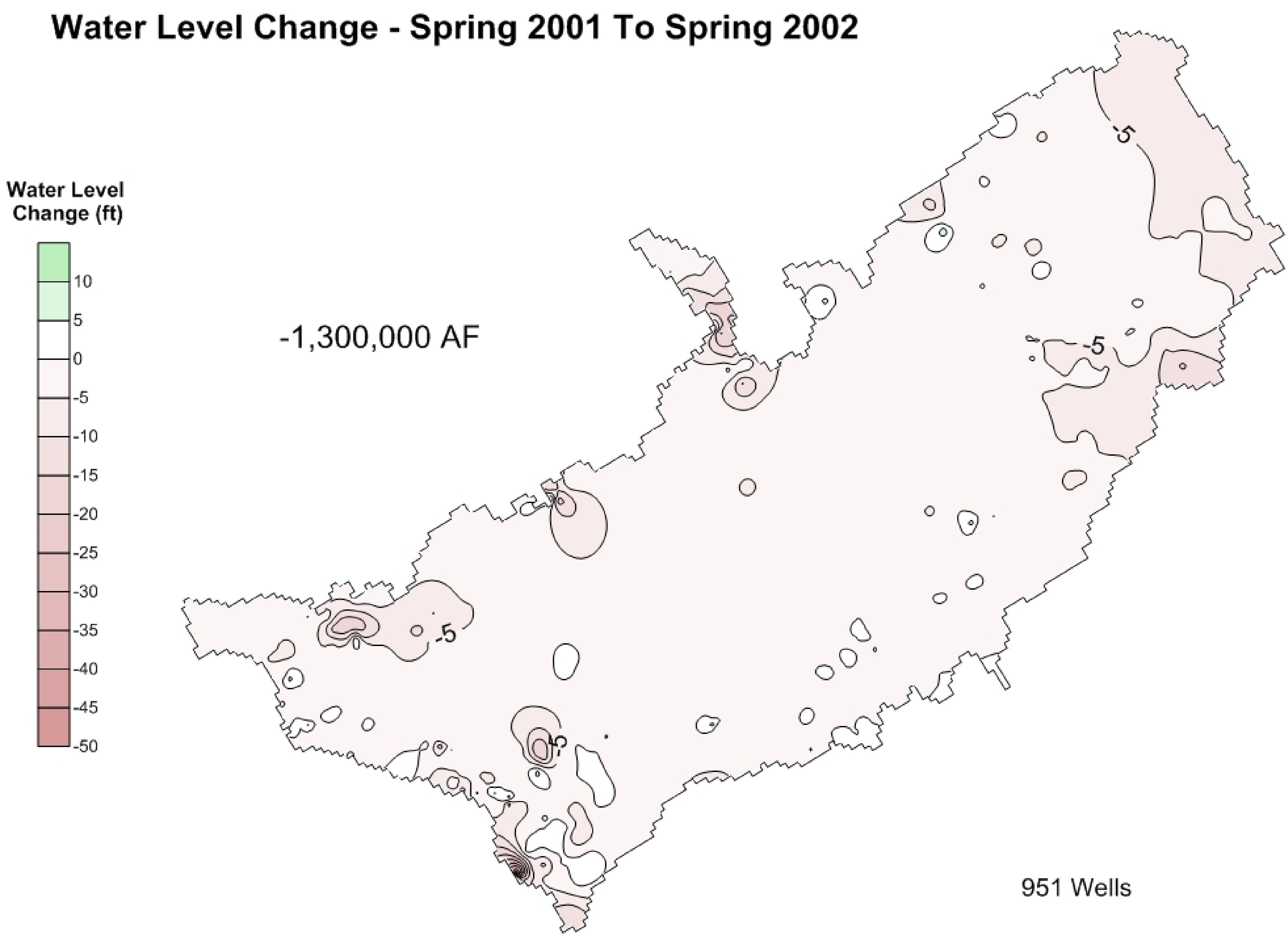


Water Level Change - Spring 2016 To Spring 2017 with Well Locations

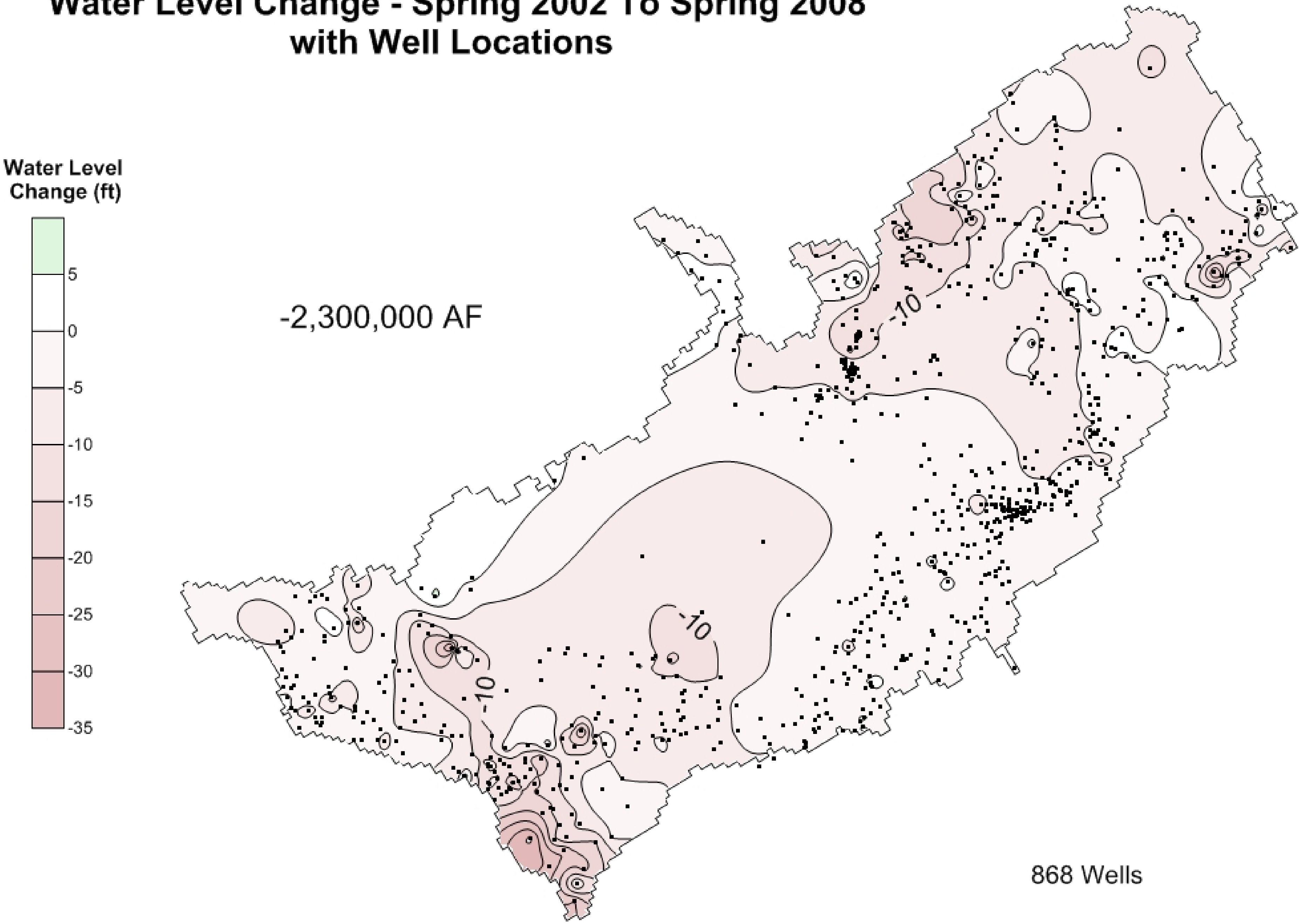


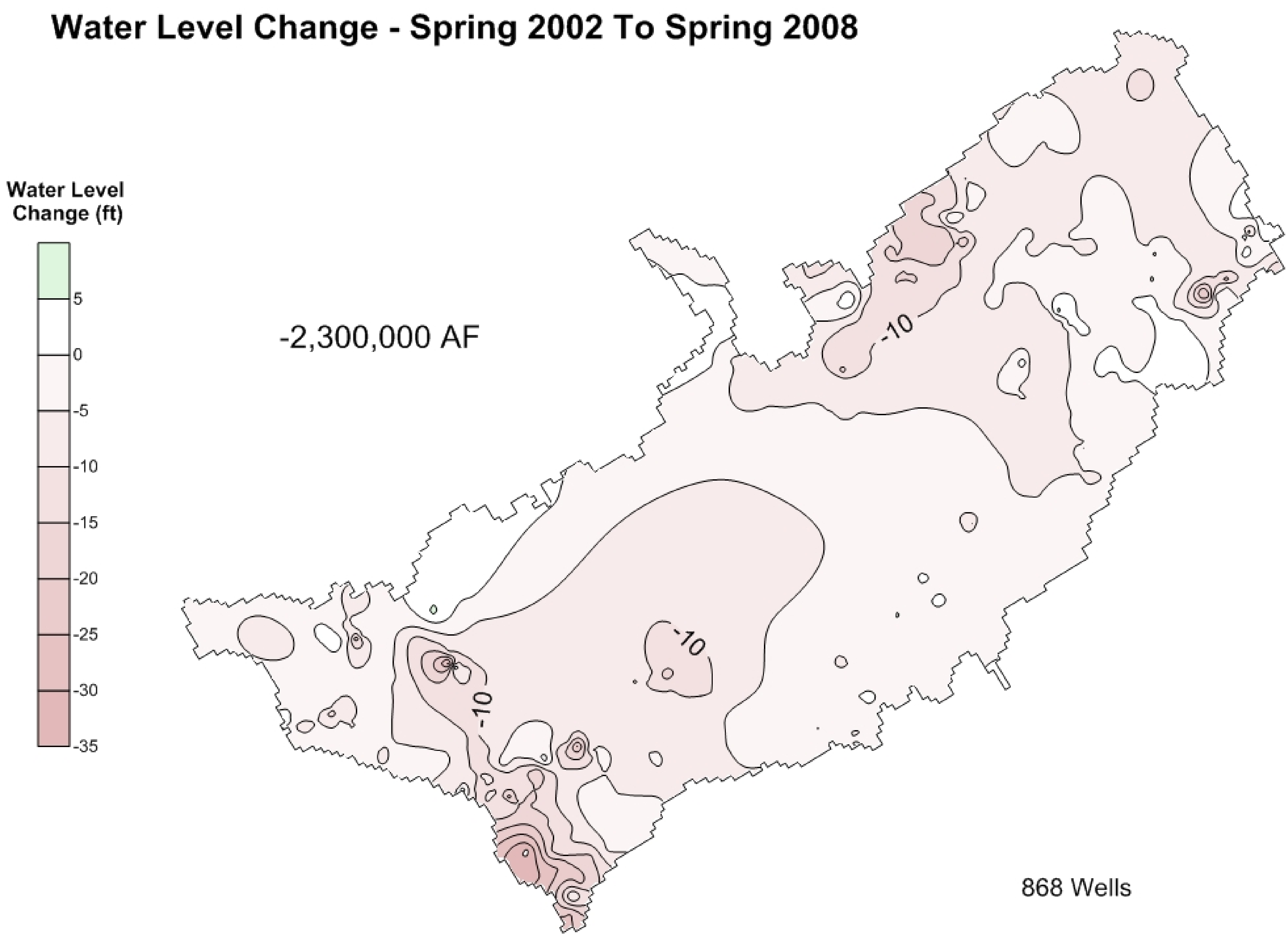
Water Level Change - Spring 2001 To Spring 2002
with Well Locations

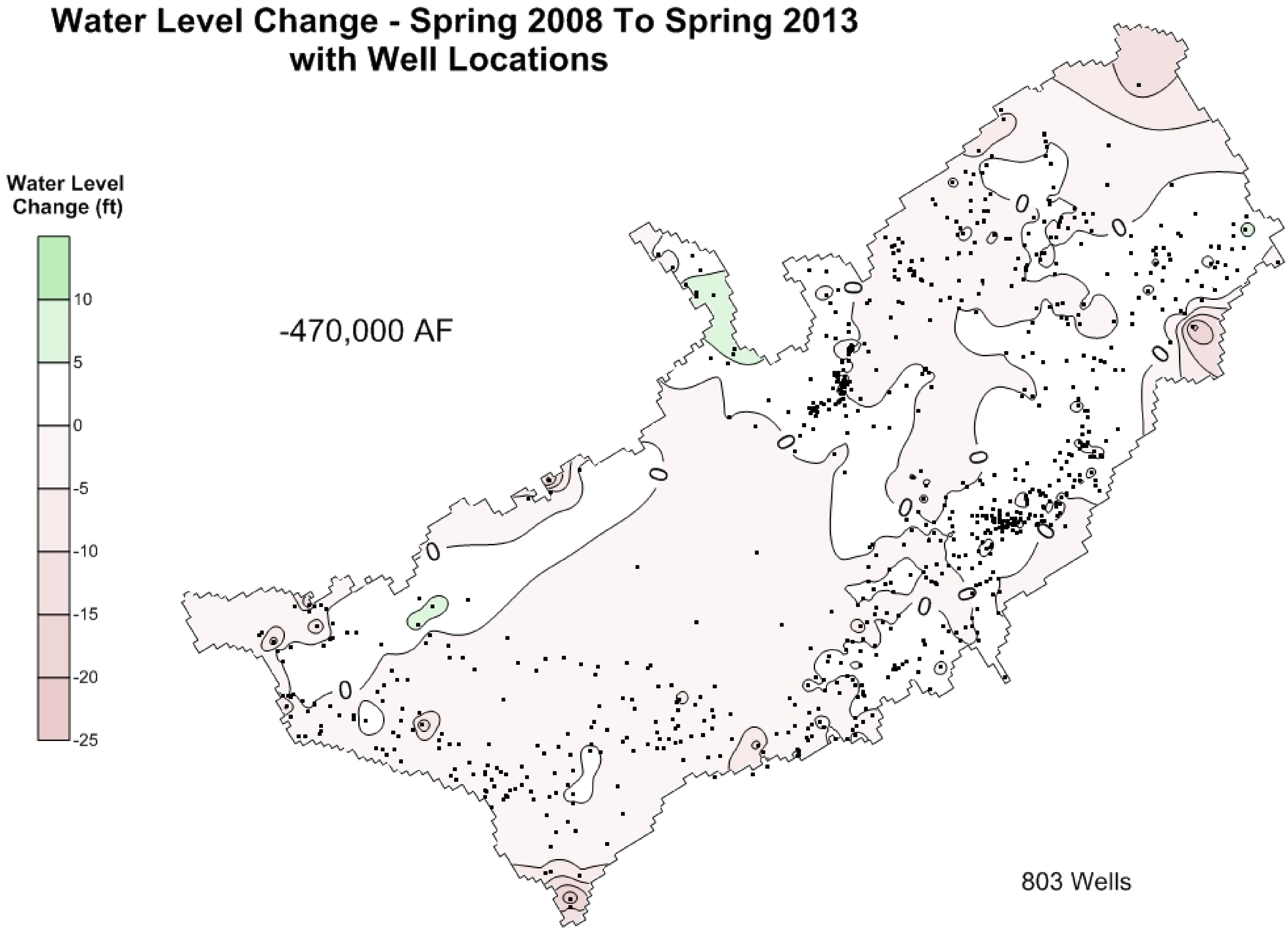



Water Level Change - Spring 2001 To Spring 2002
Water Level
Change (ft)
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-1,300,000 AF
-5
-5
-5
-5
0
951 Wells

Water Level Change - Spring 2002 To Spring 2008 with Well Locations

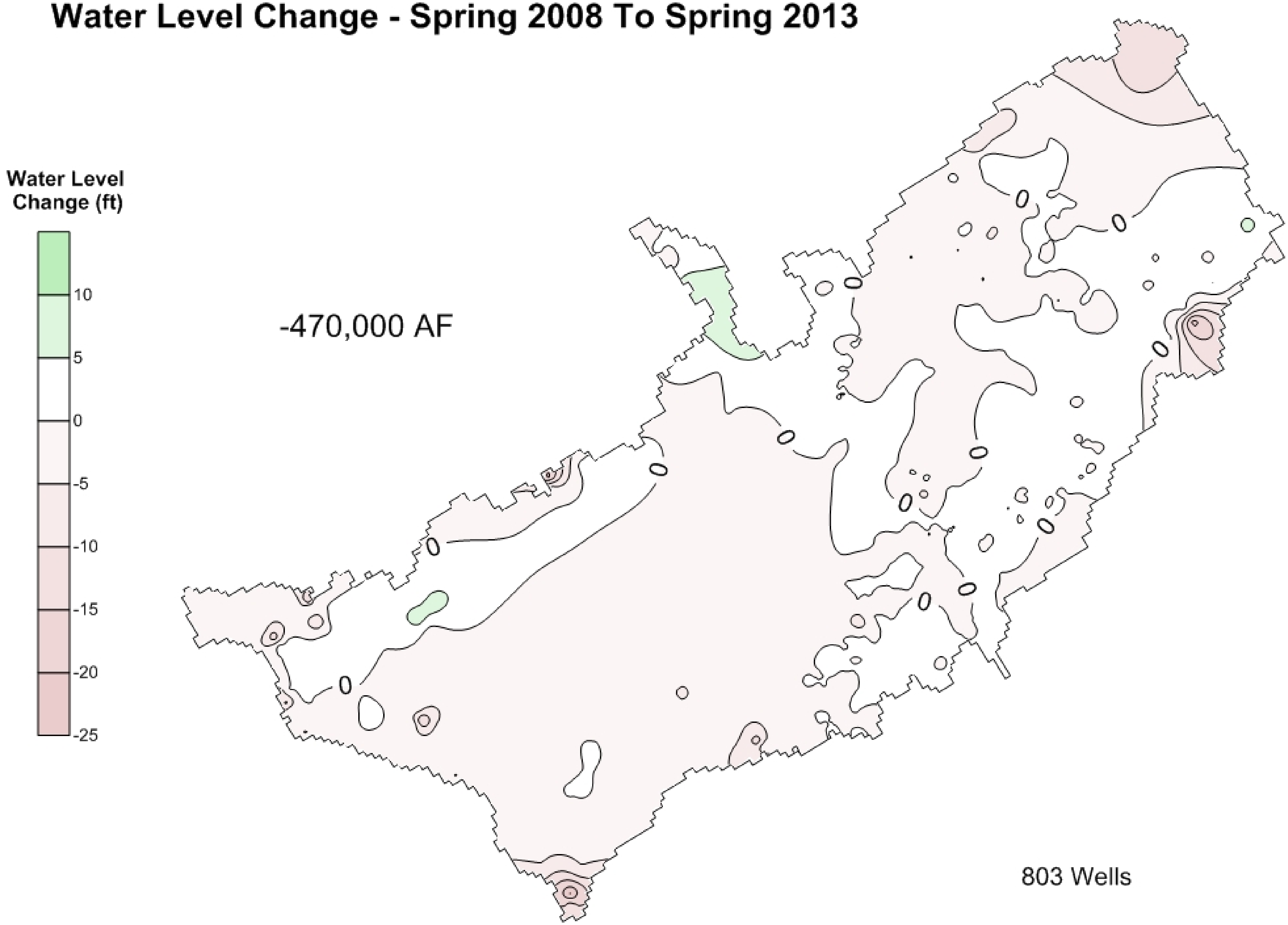



Water Level Change - Spring 2002 To Spring 2008
Water Level Change (ft)
5
0
-5
-10
-15
-20
-25
-30
-35
-2,300,000 AF
-10
-10
-10
868 Wells



Water Level Change - Spring 2008 To Spring 2013
with Well Locations
Water Level
Change (ft)
10
5
0
-5
-10
-15
-20
-25
-470,000 AF
803 Wells

Water Level Change - Spring 2008 To Spring 2013

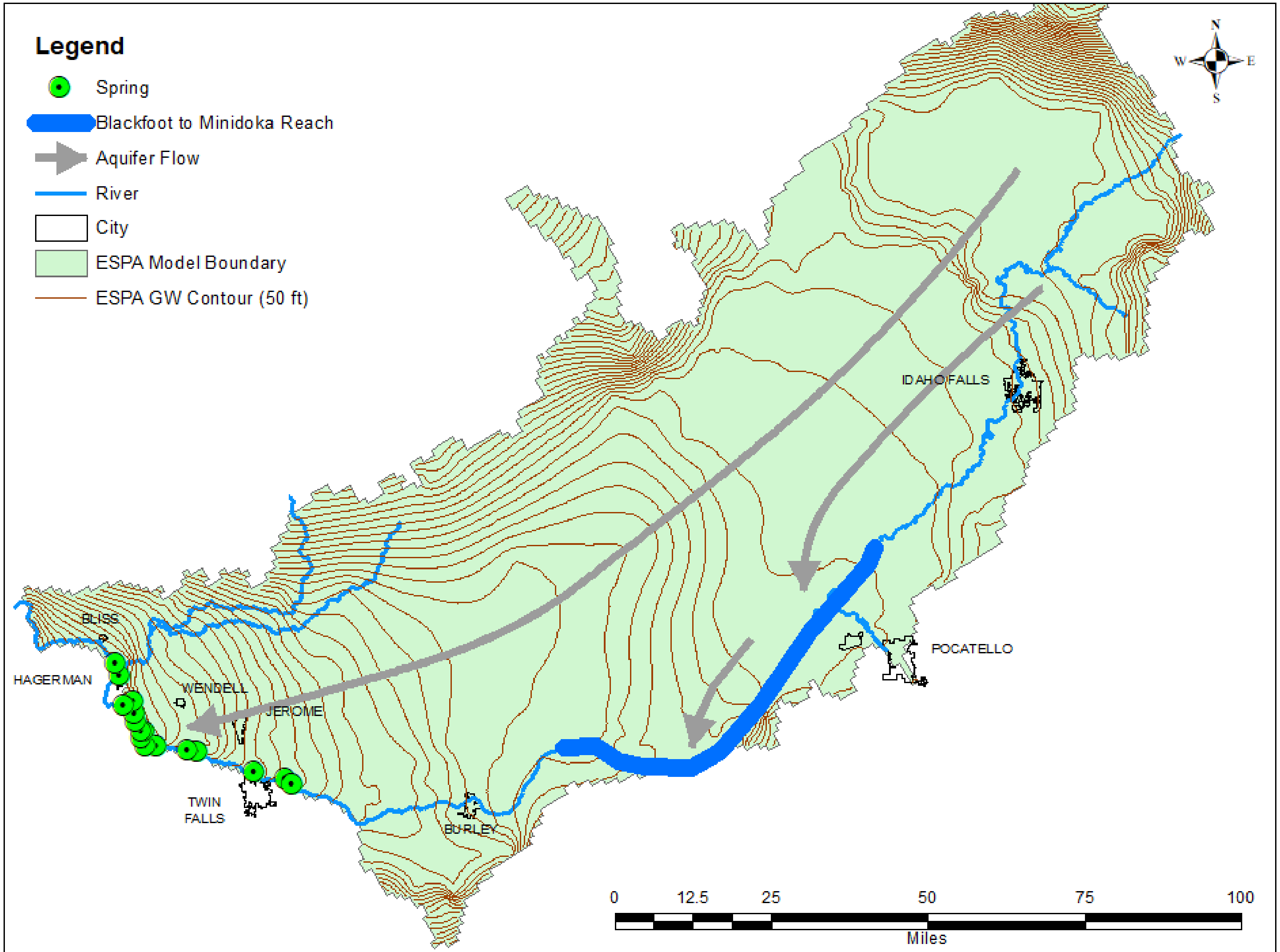


ESPA Discharge

Presented by: Matt Anders

Date: 7/24/2018

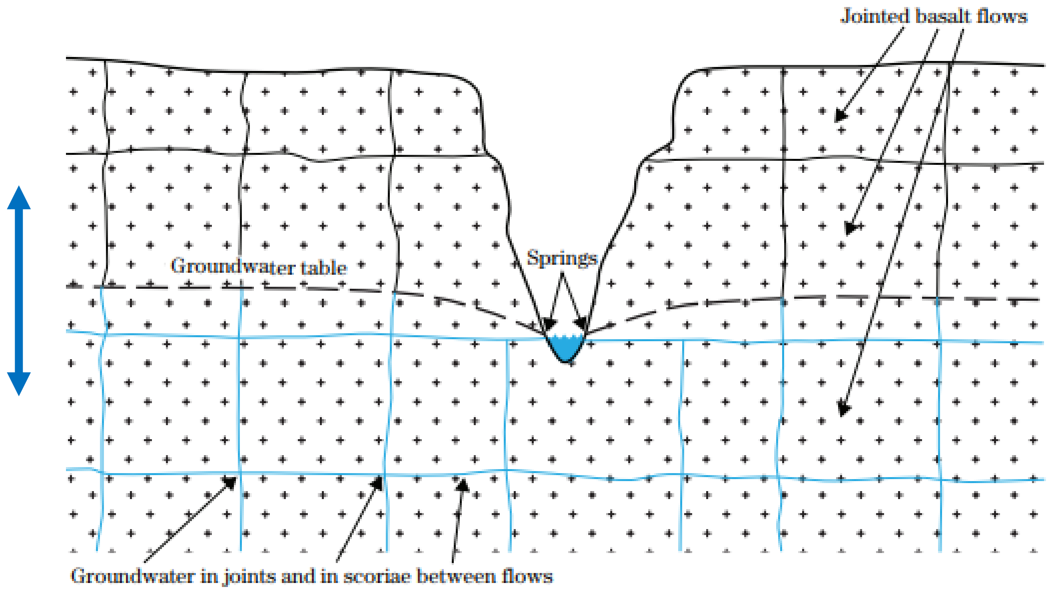
Discharge from ESPA



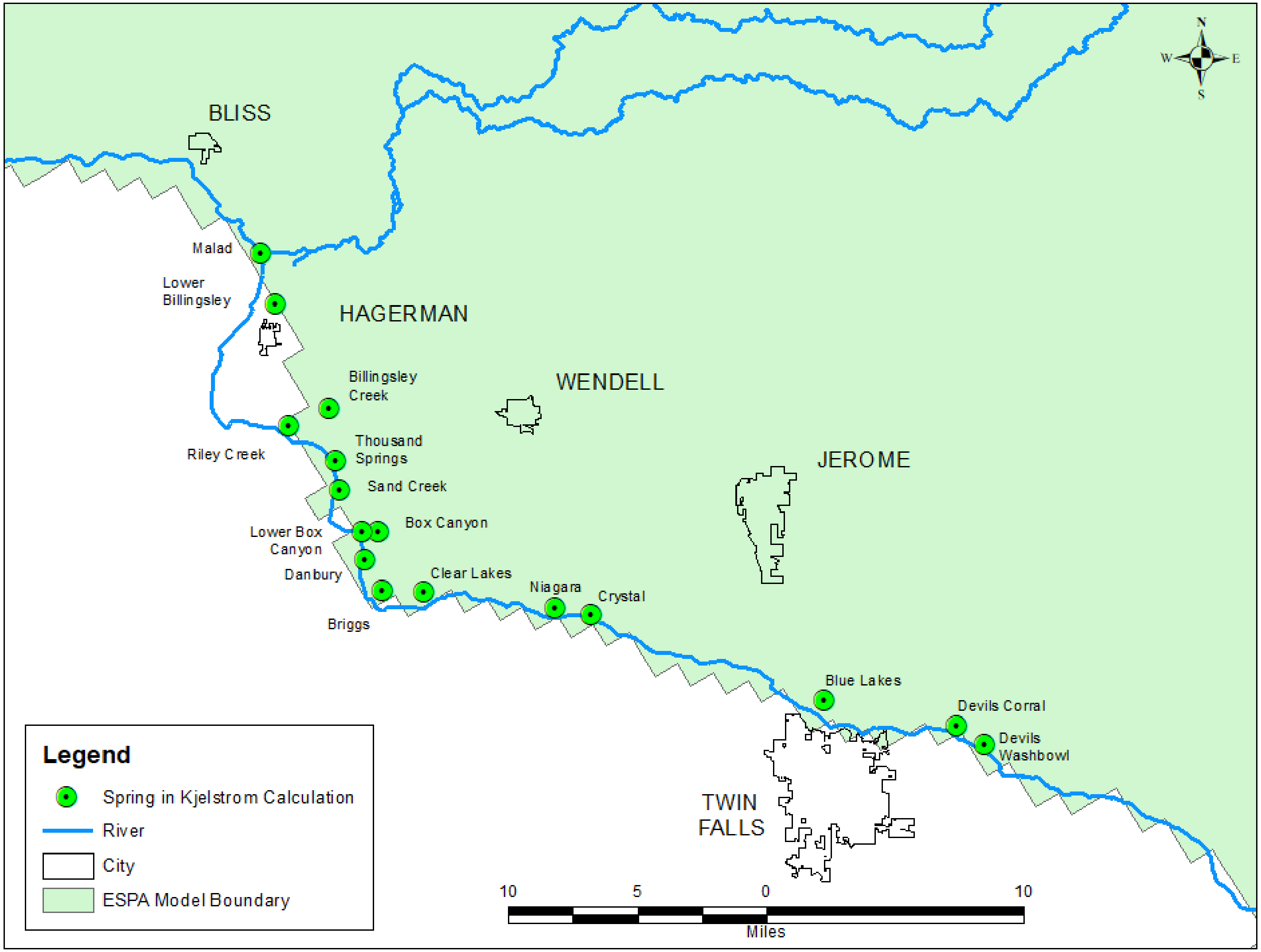
Spring Discharge on ESPA

Spring Discharge on ESPA

- Springs occur the groundwater table intersects the land surface or canyon wall.
- Discharge from springs is controlled by the water level in the ESPA. Higher water levels in the aquifer increase discharge at springs, and vice versa.



Thousand Springs Reach



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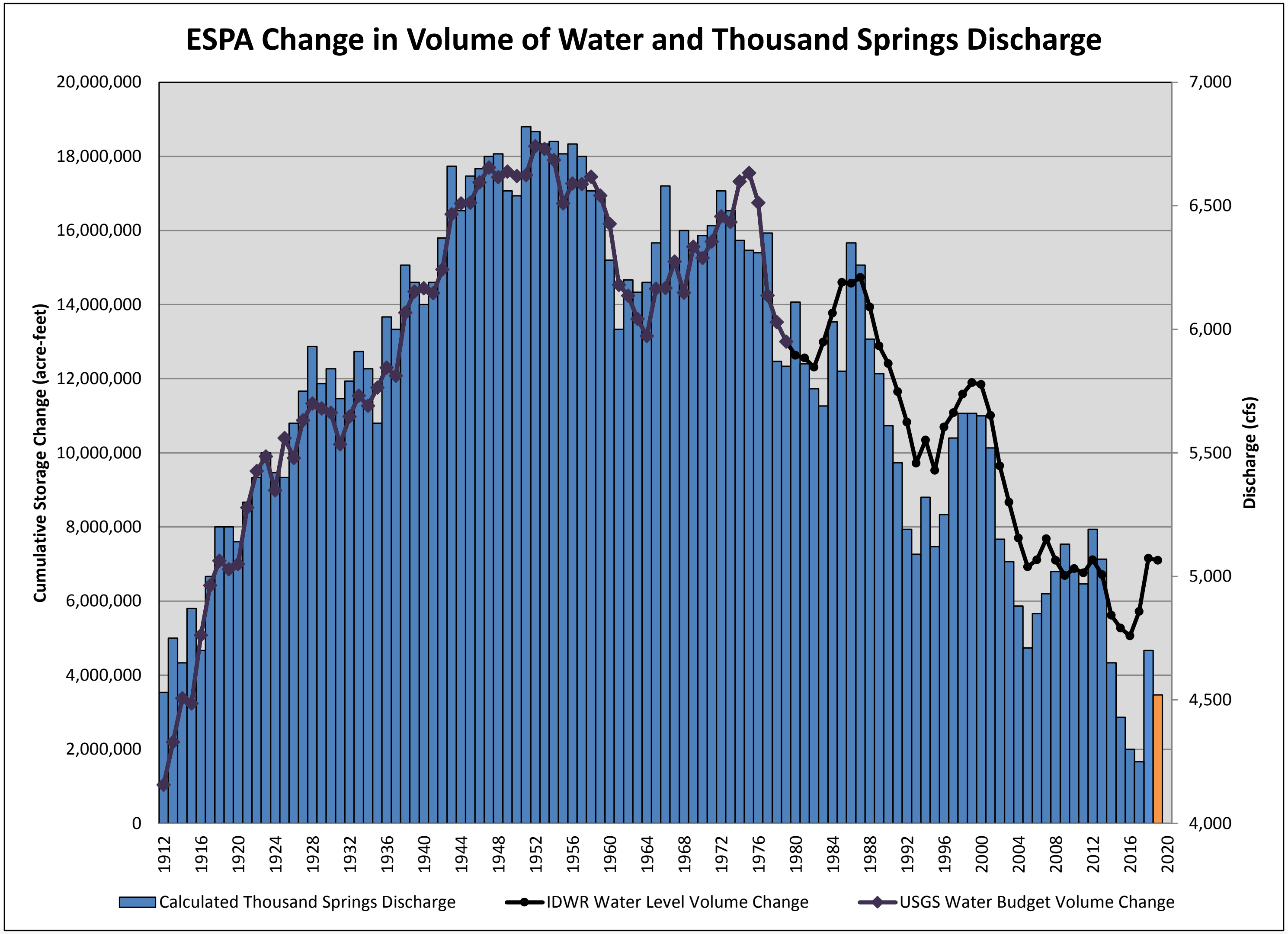
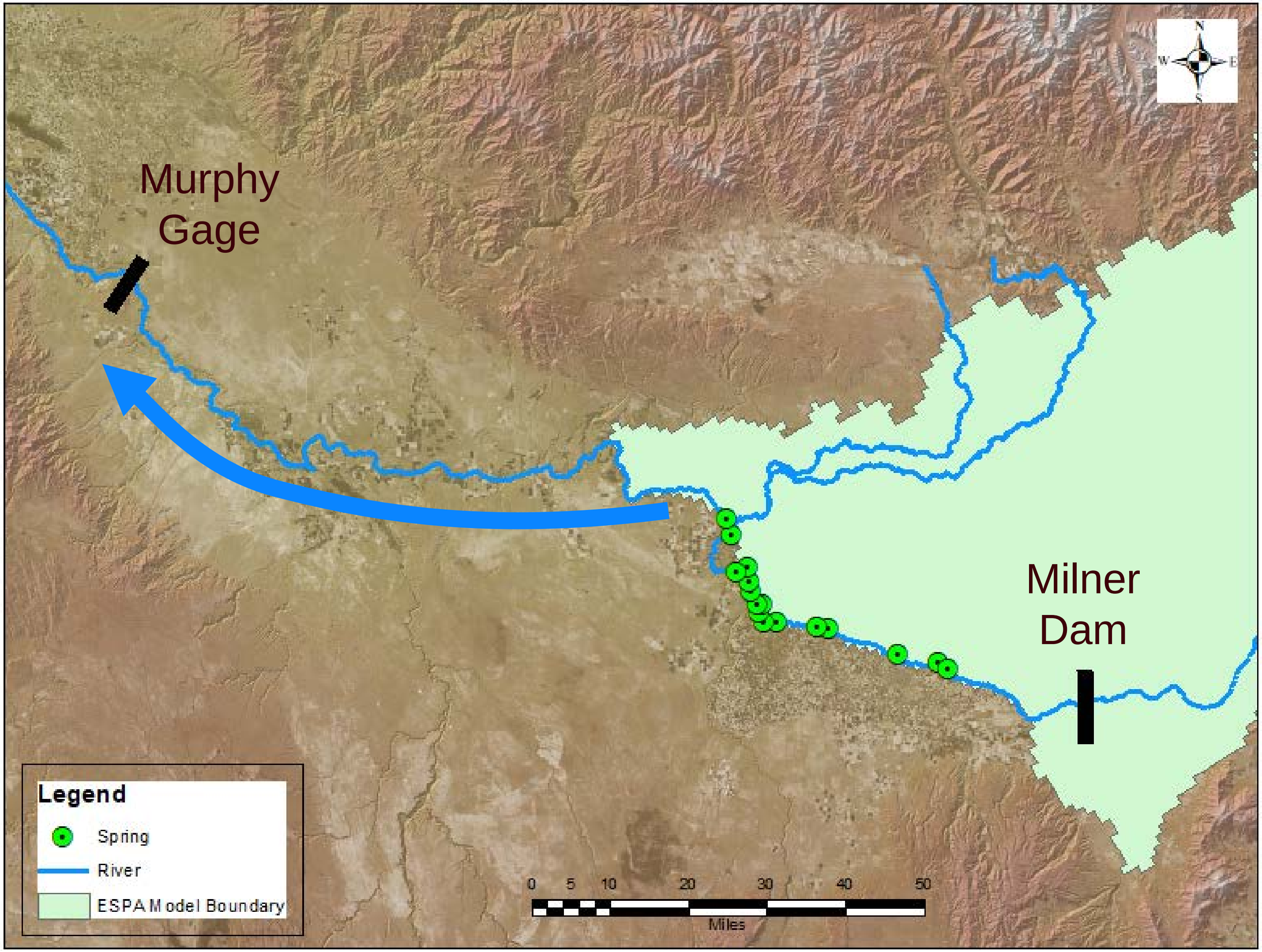
Thousand Springs Reach Discharge Estimation

- Calculation method developed by Luther Kjelstrom (USGS) in 1995.
- Springs in the Milner to King Hill reach of Snake River
- 17 discharge values for springs, springs complexes, and spring fed creeks
- Discharge values used in calculation are from discrete measurements in March-April or derived using regression equations.

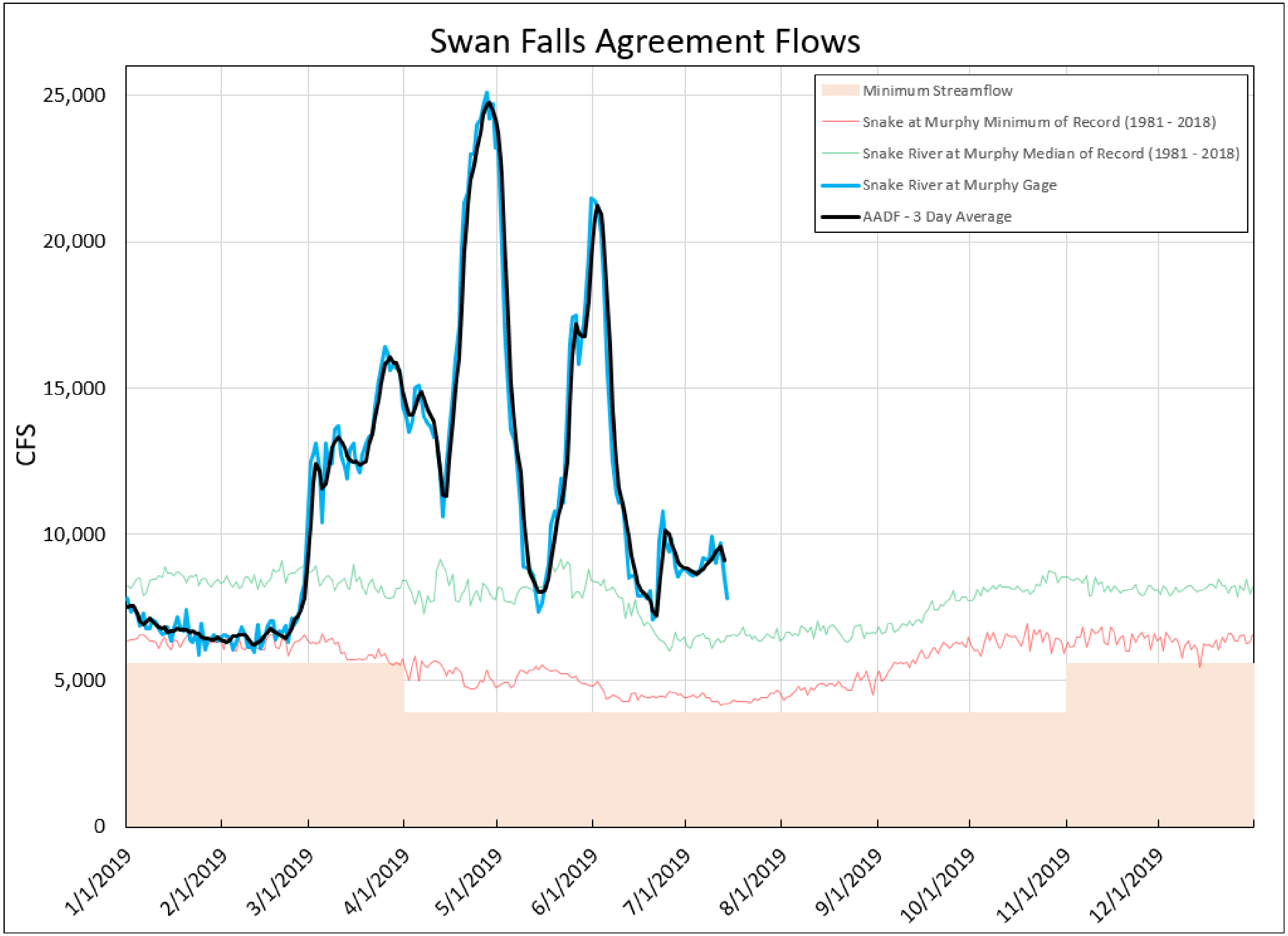
Spring Discharge – 1912 to 2019



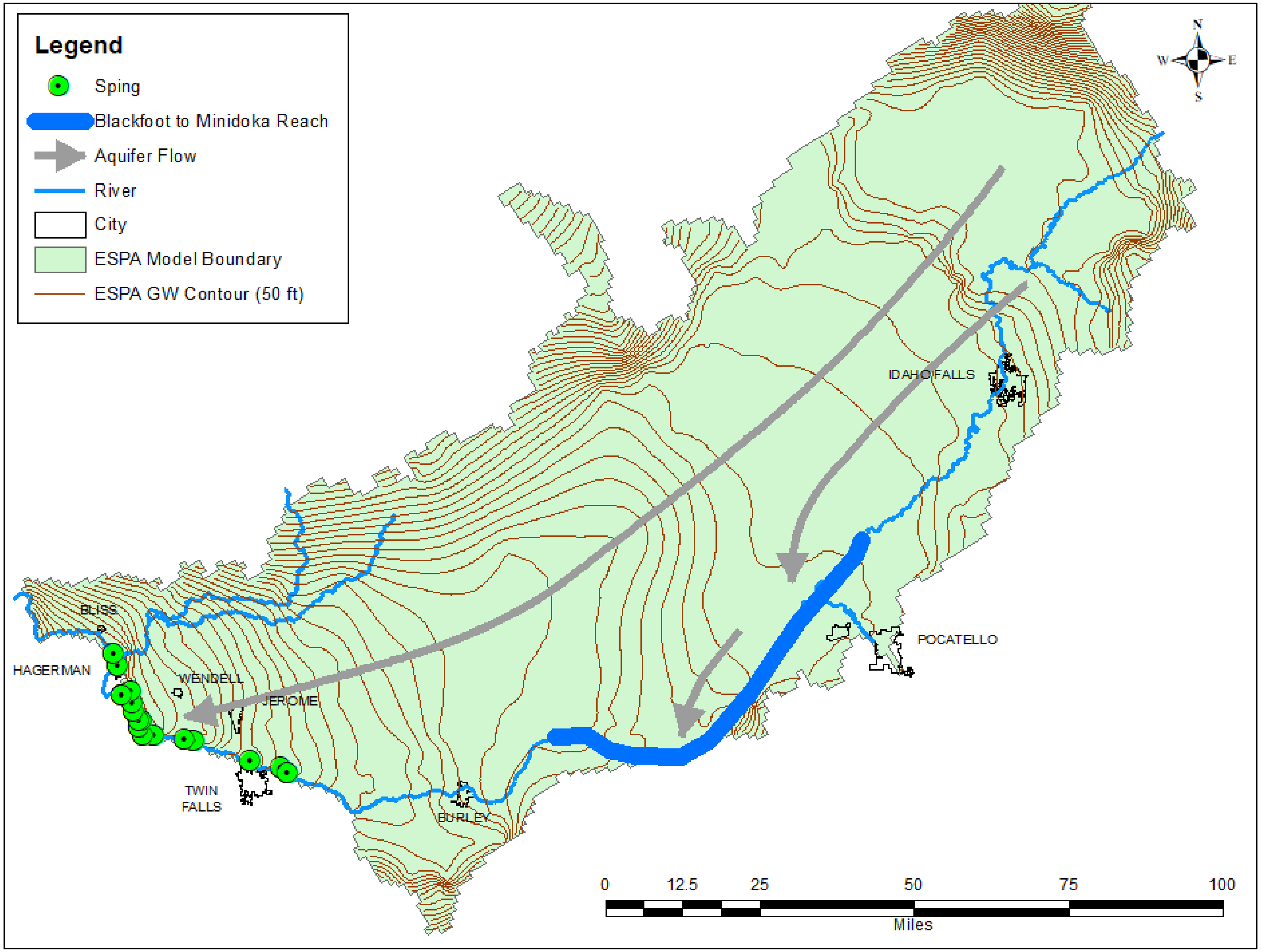
Spring Discharge – Murphy Gage



Murphy Gage – Adjusted Average Daily Flow (AADF)



Near Blackfoot-Minidoka Reach Gains



Reach Gains

- The gain or loss of water between the beginning and ending of a river reach.

- Reach Gain = Outflow - Inflow + Diversions + Reservoir Change in Content + Reservoir Evaporation - Return Flow

Outflow is the river discharge at the end of the river reach.

Inflow is the river discharge at the beginning of the river reach.

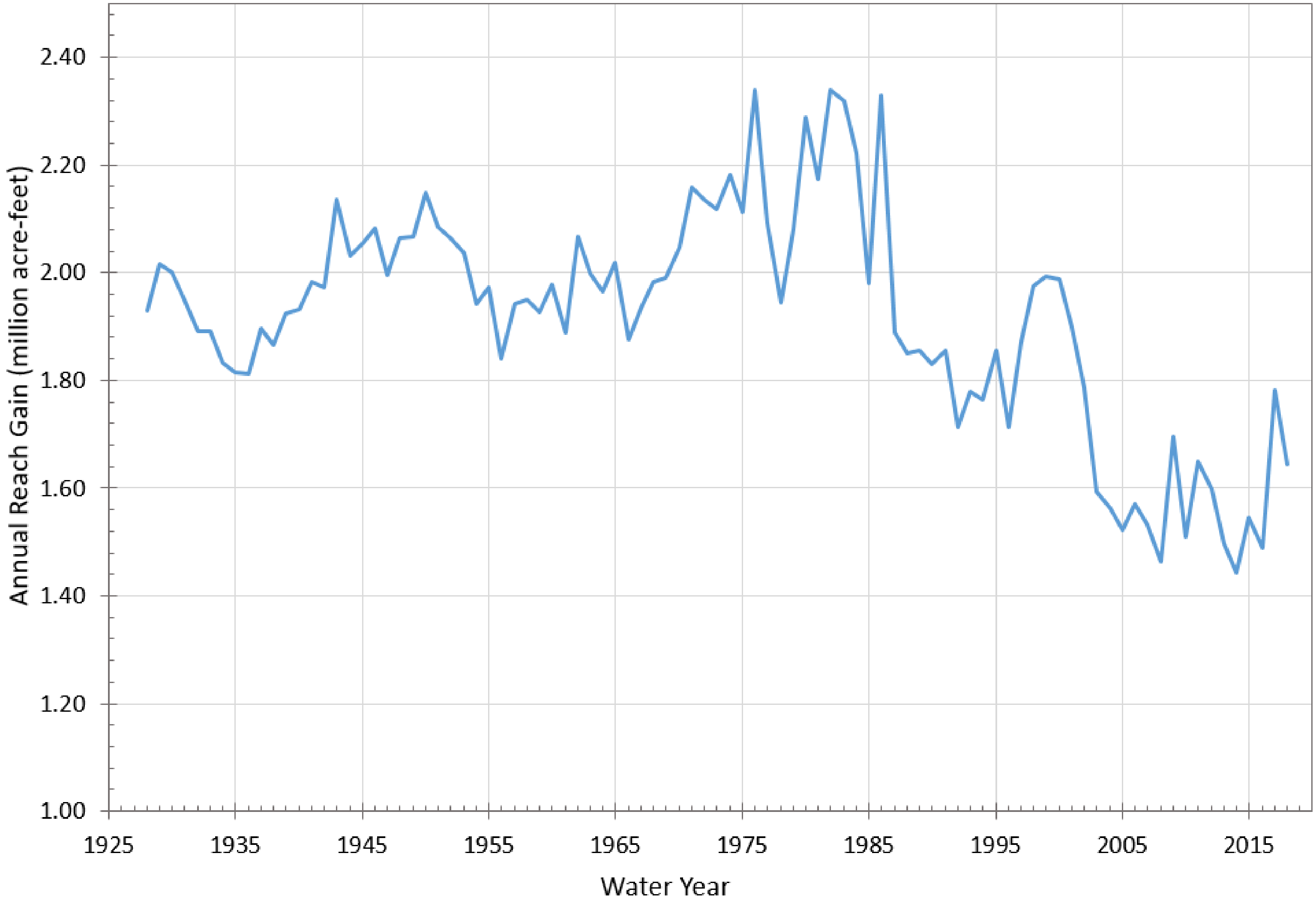
Diversions is the sum of canal and pump diversions from the river reach.

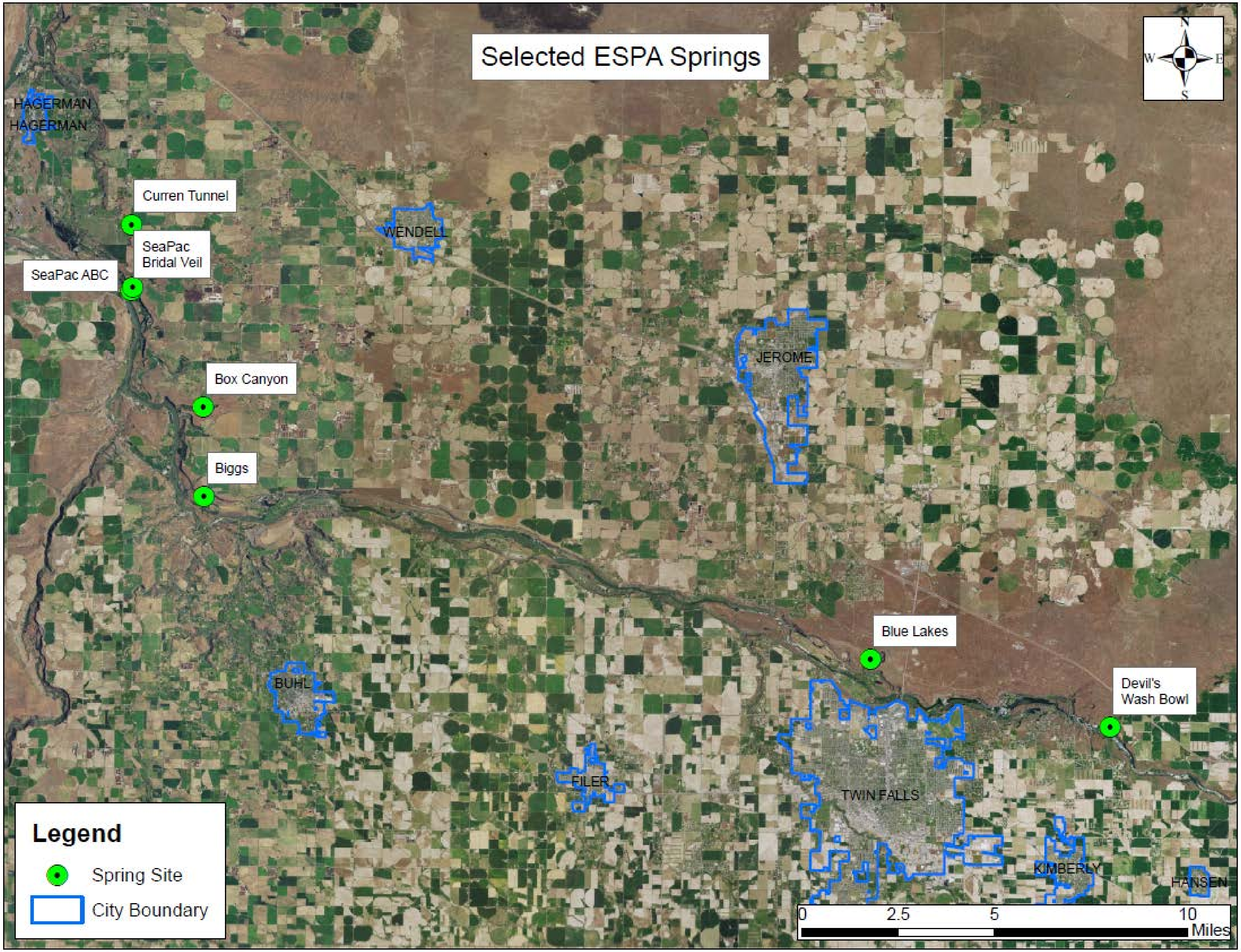
Reservoir Change in Content is the daily increase or decrease in physical content of any reservoirs within the river reach.

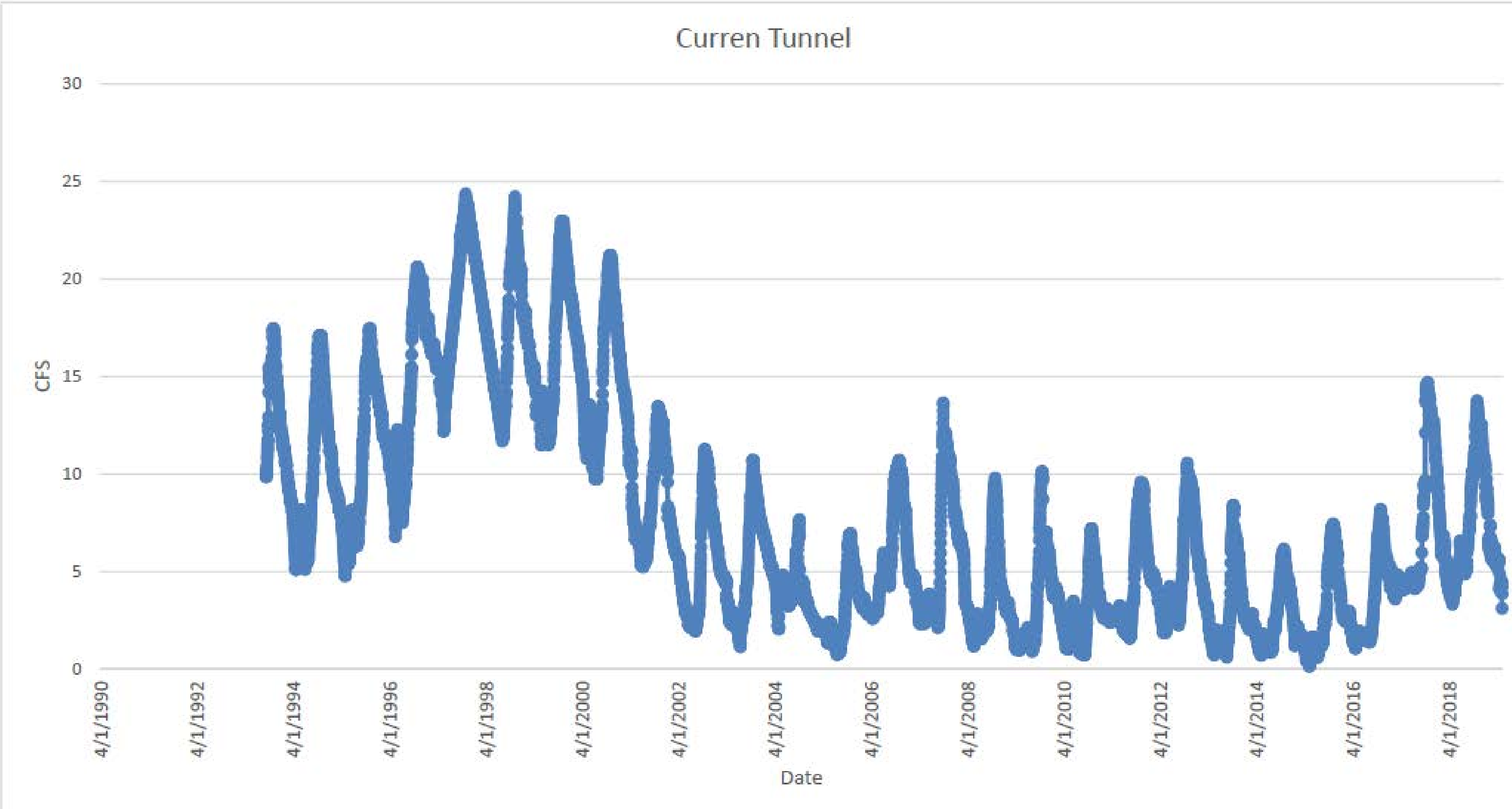
Reservoir Evaporation is the calculated evaporative losses from the reservoir.

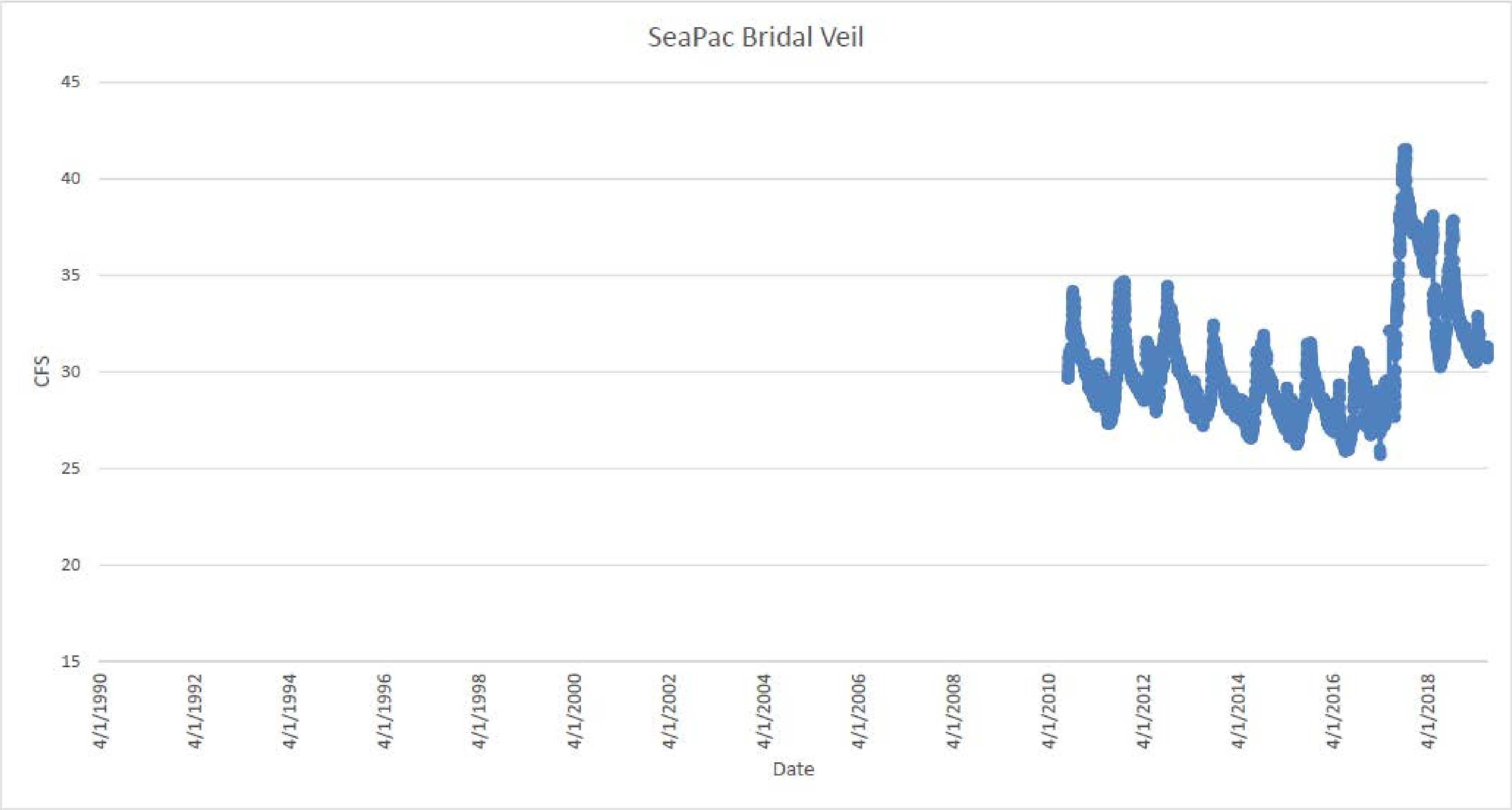
Return Flow is the unused irrigation diversion returning to the river.

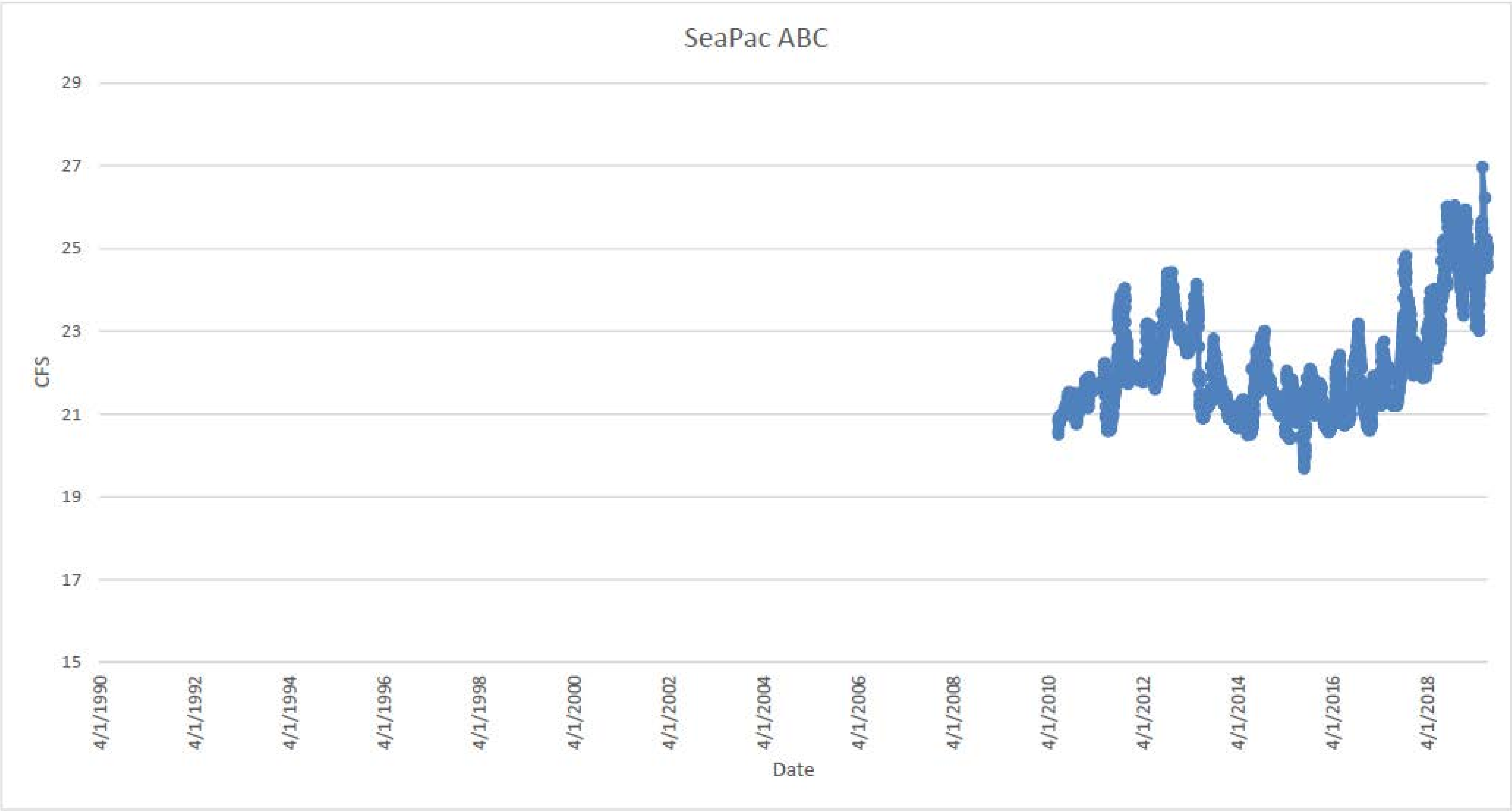
Near Blackfoot to Minidoka Reach Gains – 1928 to 2018

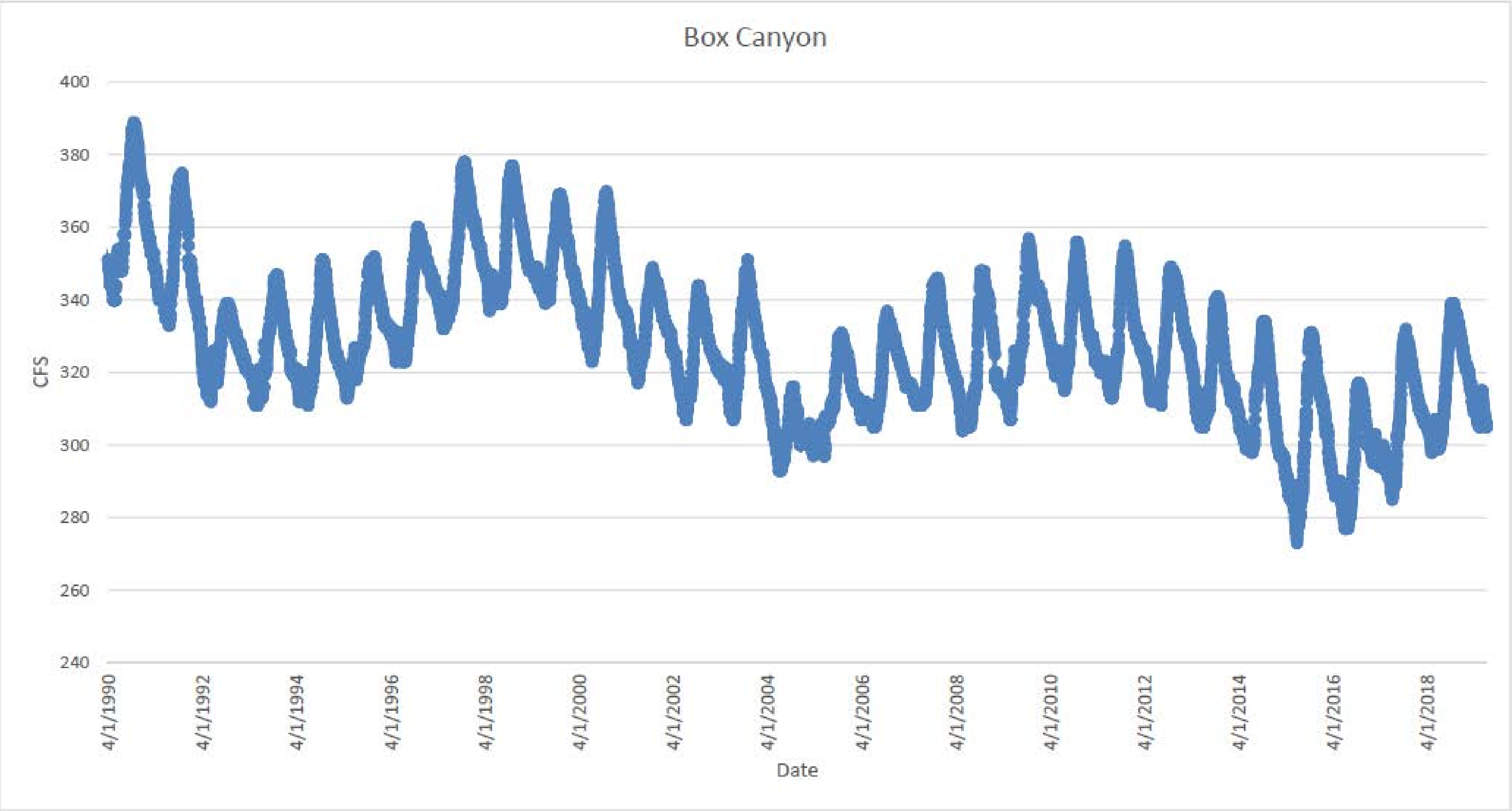


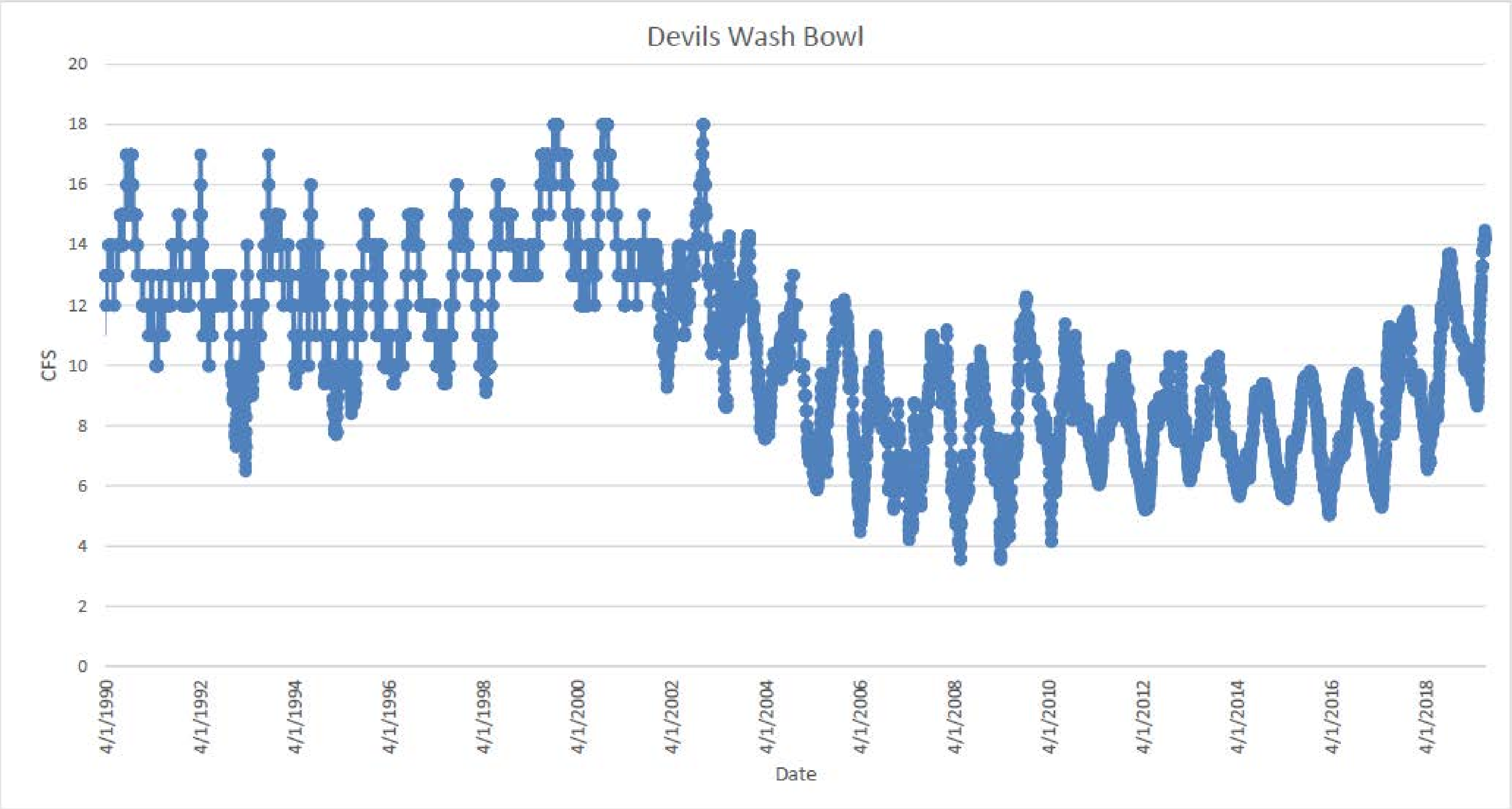

Selected ESPA Springs
HAGERMAN
HAGERMAN
Curren Tunnel
SeaPac Bridal Veil
SeaPac ABC
WENDELL
Box Canyon
Biggs
JEROME
Blue Lakes
Devil's Wash Bowl
BUHL
FILER
TWIN FALLS
KIMBERLY
HANSEN
N
S
E
W
Legend
Spring Site
City Boundary
0
2.5
5
10
Miles

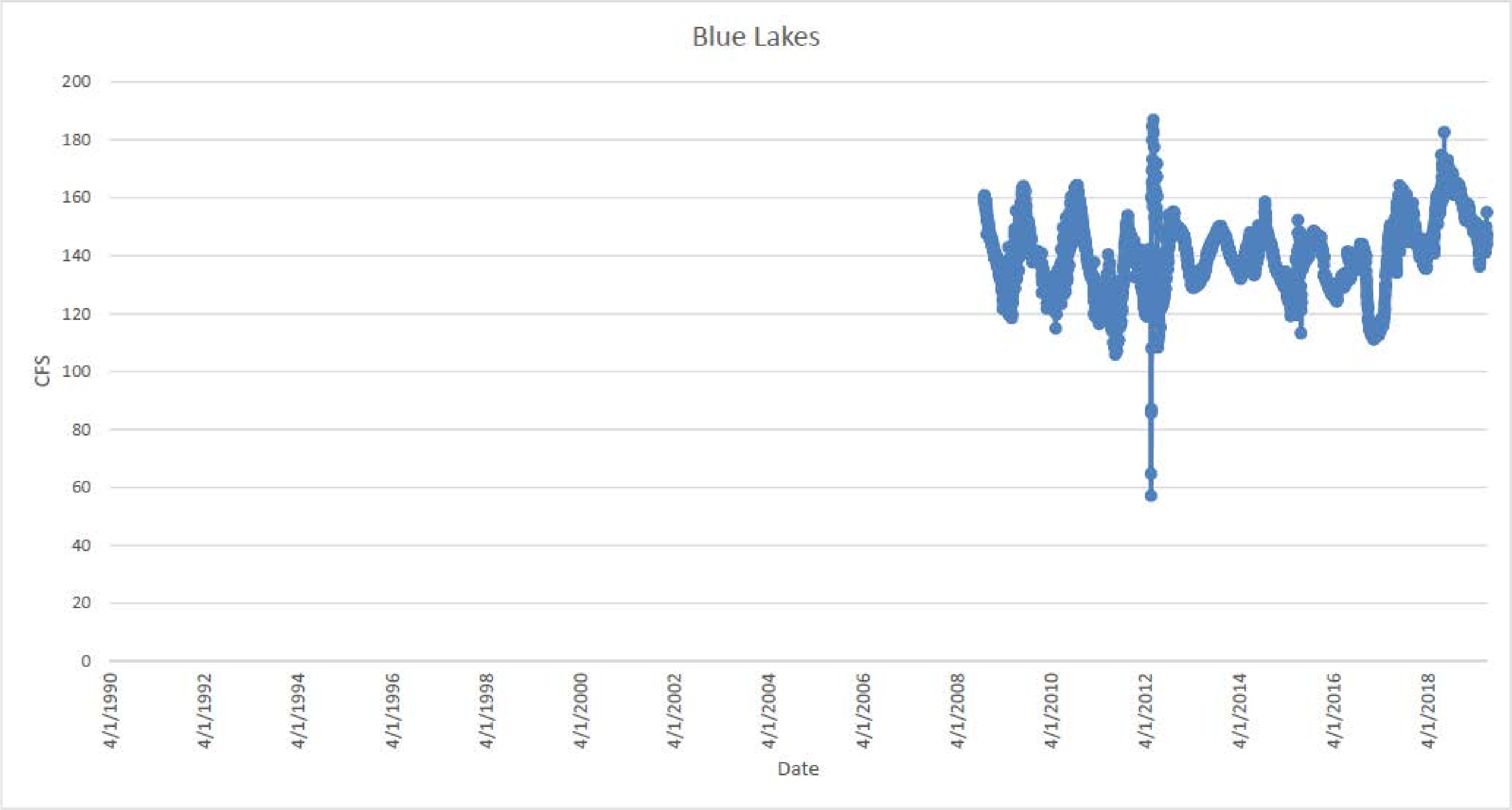

Curren Tunnel
30
25
20
15
10
5
0
CFS
4/1/1990
4/1/1992
4/1/1994
4/1/1996
4/1/1998
4/1/2000
4/1/2002
4/1/2004
4/1/2006
4/1/2008
4/1/2010
4/1/2012
4/1/2014
4/1/2016
4/1/2018
Date


SeaPac Bridal Veil
45
40
35
30
25
20
15
CFS
4/1/1990
4/1/1992
4/1/1994
4/1/1996
4/1/1998
4/1/2000
4/1/2002
4/1/2004
4/1/2006
4/1/2008
4/1/2010
4/1/2012
4/1/2014
4/1/2016
4/1/2018
Date


SeaPac ABC
29
27
25
23
21
19
17
15
CFS
4/1/1990
4/1/1992
4/1/1994
4/1/1996
4/1/1998
4/1/2000
4/1/2002
4/1/2004
4/1/2006
4/1/2008
4/1/2010
4/1/2012
4/1/2014
4/1/2016
4/1/2018
Date


Box Canyon
CFS
400
380
360
340
320
300
280
260
240
4/1/1990
4/1/1992
4/1/1994
4/1/1996
4/1/1998
4/1/2000
4/1/2002
4/1/2004
4/1/2006
4/1/2008
4/1/2010
4/1/2012
4/1/2014
4/1/2016
4/1/2018
Date


Devils Wash Bowl
20
18
16
14
12
10
8
6
4
2
0
CFS
4/1/1990
4/1/1992
4/1/1994
4/1/1996
4/1/1998
4/1/2000
4/1/2002
4/1/2004
4/1/2006
4/1/2008
4/1/2010
4/1/2012
4/1/2014
4/1/2016
4/1/2018
Date


Blue Lakes
200
180
160
140
120
100
80
60
40
20
0
CFS
4/1/1990
4/1/1992
4/1/1994
4/1/1996
4/1/1998
4/1/2000
4/1/2002
4/1/2004
4/1/2006
4/1/2008
4/1/2010
4/1/2012
4/1/2014
4/1/2016
4/1/2018
Date

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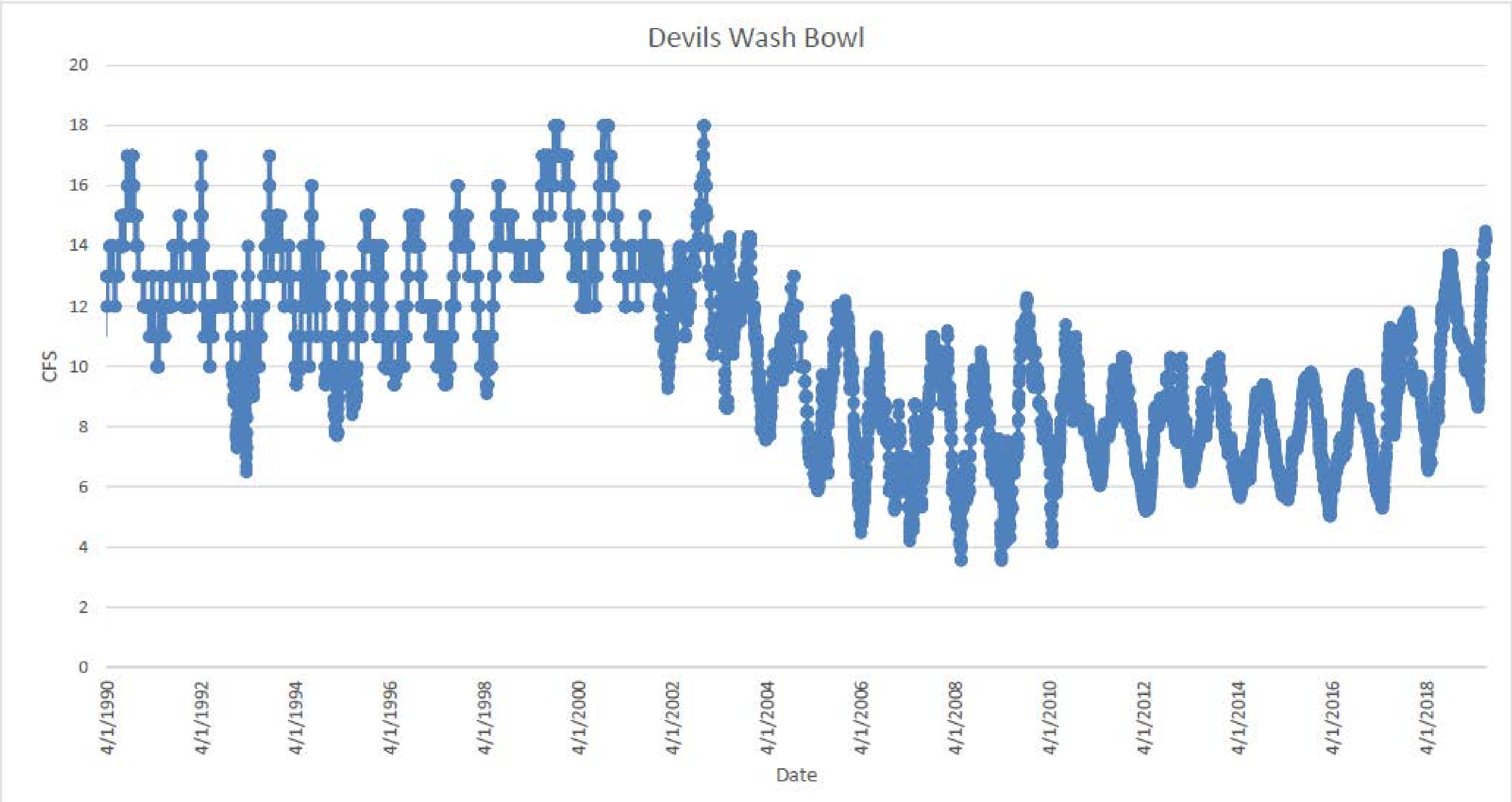

Questions?

Matt Anders
(208) 287-4932
matthew.anders@idwr.idaho.gov

Estimated Progress Towards ESPA CAMP Targets: DRAFT FOR DISCUSSION

MANAGED RECHARGE

		AF
IWRB Recharge	Current Average Annual natural flow recharge capacity **(verify)**	190,000
SWID Recharge	SWID-SWC Settlement - in addition to IWRB recharge **(verify)**	6,550
	SUB-TOTAL	**196,550**

DEMAND REDUCTION

IGWA-SWC Settlement Agreement	Reduction via SWC Settlement (verify)	240,000
SWID-SWC Settlement Agreement	2,378 acres set-aside results in about 5,200 AF (2.2 AFA) **(verify)**	5,200
	SUB-TOTAL	**245,200**

GW-SW CONVERSIONS

SWID Conversions	SWID-SWC Settlement Agreement **(per Jaxon Higgs)**	93,000
A&B ID Conversions	ABID-SWC Settlement **(verify)** - conversions on 3,000 acres results in about 6600AF	6,600
	SUB-TOTAL	**99,600**

CLOUD SEEDING

Cooperative Cloud Seeding Program	How much from Upper Snake and Wood contributes to Aquifer?	??
	SUB-TOTAL	**??**

OTHER

Storage Water from SWC-IGWA Settlement	up to 50,000 AF contributed for recharge if not needed by SWC - assume 1/3 on average provided for recharge (verify)	17,000
Stroage Water from SWC-Cities-IGWA Settlement	average of 7,650 AF provided for recharge	7,650
	SUB-TOTAL	**24,650**

	TOTAL	**566,000**

Process & Schedule - Joint Aquifer Stabilization & Planning Committee meetings

Staff proposes a series of Joint Aquifer Stabilization & Planning Committee meetings between now and the next legislative session to undertake this effort:

June 26th; Jerome Fish and Game Offices

Agenda Items: Letter from Speaker Bedke, Idaho Power Letter, proposed process for ESPA Progress Report, schedule, discussion of where we think we are at in terms of meeting the plan targets, CAMP funding, and discussion of ESPA settlements

July (Wednesday the 24th) in Rexburg

Agenda Items: aquifer storage analysis, reach gains upstream of Milner, spring flows downstream of Milner, sentinel wells

September (target 18th) in Boise

Agenda Items: managed recharge (where we are at now, average annual calculations)

October (date and location TBD)

Agenda Items: weather modification/cloud seeding (how much from program contributes to aquifer water budget change/aquifer management), discussion of GW-SW conversions, rough draft of progress report

November (target 13th) in Boise

Agenda Items: report conclusions, wrap-up items, refined draft of progress report

December

Complete final report in preparation of submission to legislature in January 2020

Memorandum

To: Aquifer Stabilization Committee

From: Wesley Hipke

Date: July 22, 2019

Re: Lower Valley – Recharge Water Distribution Plan and Conveyance Fee Structure

Executive Summary:

A resolution is provided for the Aquifer Stabilization Committee (Committee) to consider altering the conveyance fee structure for managed recharge conducted in the Lower Valley

After consultation with the IWRB's recharge partners in the Lower Valley the ESPA Managed Recharge Program (Program) is suggesting the following changes to the Conveyance Payment Structure for the Lower Valley (below Minidoka Dam on the Snake River plus the Big and Little Wood Rivers).

Proposed ESPA Managed Recharge Conveyance Fee Structure:

The following fee structure provides the greatest incentive during the winter months when conducting managed recharge presents the most challenges. The fees for the spring recharge are reduced taking into account this is usually the period with the least amount of challenges to conducting managed recharge.

- Aug. 1st – Nov. 15th = $7/af
- Nov. 16th – Feb. 15th = $10/af
- Feb. 16th – Jul. 31st = $5/af

An annual meeting will be help in the fall with the IWRB recharge partners to determine a recharge/distribution plan for the forthcoming recharge season. The intent is to optimize the IWRB natural flow recharge taking into account projected water availability, required maintenance/ infrastructure improvements during the recharge season, along with the operations and maintenance on the Milner Pool that could affect conducting managed recharge for the upcoming season.

The proposed fee structure would result in an average conveyance cost of approximately $3.5 million to $3.2 million, based on the water availability over the past ten years.

Lower Valley Managed Recharge:

As general background concerning managed recharge in the Lower Valley (downstream of Milner Dam), the area has relatively large off-canal recharge sites and there is usually water available for managed recharge throughout the winter. The minimum amount of water available for managed recharge in the Lower Valley is at least 500 cfs. Figure 1 shows the median amount of water available per month based on data from 1991 through 2017. There can be an increase in the water available for recharge depending on the snowpack and the volume of water stored in the reservoir system. In most years the increase in water availability occurs after the first of the year.

For reference, the following table provides a summary of recharge capacity and the average 5-year retention rates (as determined by the ESPAM 2.1 groundwater flow model) of the entities that currently conduct managed recharge for the IWRB.

Entity	Managed Recharge Area(s)	Recharge Capacity (cfs)	5-yr Retention
Southwest ID	Injection wells	60	54%
Twin Falls Canal Co	Canal only	30	43%
North Side Canal Co	Canal & 1 recharge site[1]	230	40%
Big Wood Canal Co	Canals & 2 recharge sites	157	40%
American Falls Reservoir Dist. #2	Canal & 3 recharge sites[2]	1,160	35%

[1] Wilson Canyon estimated recharge capacity of 100 cfs.

[2] MP 29 estimated recharge capacity of 300 cfs.

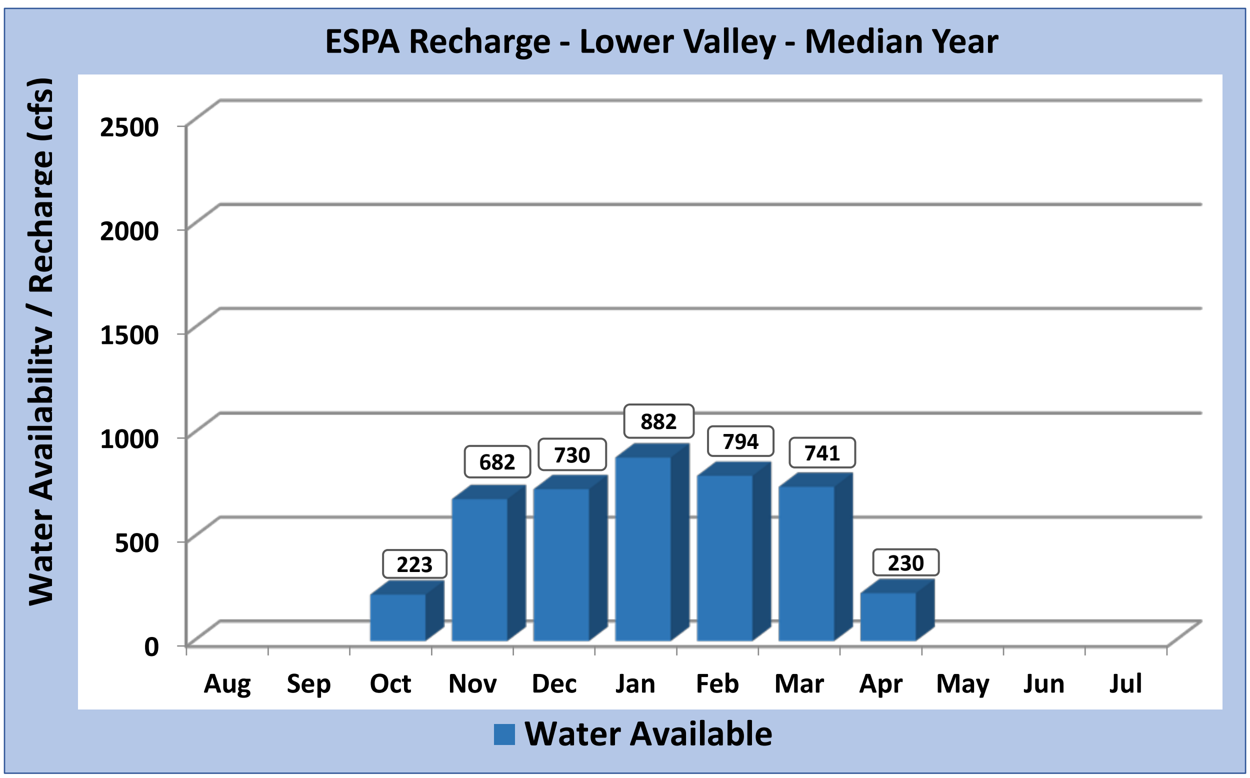

Figure 1: Median water available per month using data from 1991 through 2017 for the "median" years in the Lower Valley.

Potential Lower Valley Distribution Plan

The ability to convey and perform recharge can vary from year to year and during the recharge season. Weather conditions and infrastructure maintenance can significantly impact an entities' ability to deliver water for managed recharge. To optimize managed recharge activities the Program is proposing a meeting every fall before the start of the recharge season. The intent of the meeting is to work with our recharge partners to develop a plan for conducting managed recharge to maximize managed recharge while also allowing with our partners to conduct their required maintenance on their systems. This meeting also provides an opportunity to determine the distribution of water for recharge when recharge capacity exceeds availability. The intent of the plan is to prioritize conducting recharge in areas of higher retention and to potential apply water across a larger and/or more dispersed area.

Lower Valley Conveyance Fee Plans

Current Fee Structure:

The current Lower Valley conveyance fee structure is a sliding scale which increases the payment per acre-foot of recharge based on the number of days managed recharge is conducted:

Fee Structure		"Normal" Time Period
• 1 - 25 days =	$3/af	late-Oct to mid-Nov
• 26 - 50 days =	$5/af	mid-Nov to early/mid-Dec
• 51 – 80 days =	$7/af	mid-Dec to mid-Jan
• 81 – 120 days =	$10/af	mid-Jan to late-Feb
• >120 days =	$14/af	late-Feb to end of season

Proposed New Fee Structure:

After reviewing a number of alternative payment options, the following recharge conveyance payment plan is provided for consideration by the ASC. Under this structure, the highest amount of compensation for recharge would occur during the winter months, December 16th through February 15th, when water delivery conditions are generally the most challenging. The fall rate was increased compared to the spring rate to incentive our partners in recharging as much as possible when water is available. The increased fall rate also acknowledges conducting recharge in the fall can also be challenging due to weather conditions. Conducting spring recharge is the lowest on the pay scale during this period weather conditions usually are not an issue and there is usually more water available for recharge.

- Aug. 1st – Nov. 15th = $7/af
- Nov. 16th – Feb. 15th = $10/af
- Feb. 16th – Jul. 31st = $5/af

Lower Valley - Comparison of Payment Structures:

Two different methods were used to compare the different payment plans. The first was comparing the payment structures using three different scenarios, a maximum recharge capacity, a typical or normal water availability, and a minimum water availability. The second method used the water availability in previous years to compare the different payment plans, illustrated in Figure 2 below.

The three water availability scenarios used in the first analysis are:

1) Maximum Capacity – This scenario assumes sufficient water is available for the current canals to run at full recharge capacity (1,420 cfs) from late October through most of March. From the end of March through mid-May managed recharge was continued at off-canal sites and taking into account reduced capacity due to the delivery of irrigation water.
2) "Normal" Water Availability – This scenario represents a more typical year with minimum water availability at the start of the recharge season, with increased water availability throughout the recharge season, and managed recharge ending in late March.
3) Minimum water Availability – This scenario assumes the minimum of 500 cfs is available throughout the recharge season from the end of October through late March.

Lower Valley Conveyance Plan Comparison Table						
	Maximum Capacity		"Normal" Water Availability		Minimum Availability	
Recharge Volume	463,000 af		250,000 af		150,000 af	
Fee Structure/Plan	**Cost ($)**	**$/af**	**Cost ($)**	**$/af**	**Cost ($)**	**$/af**
Current Plan	$4,034,000	$8.71	$2,385,000	$9.54	$1,220,000	$8.13
Proposed Plan	$3,735,500	$8.07	$1,974,000	$7.90	$1,243,700	$8.29

This plan shows a reduction in conveyance cost in most "wet" years and a slight increase in most "dry" years (above table and Figure 2). The biggest reduction occurs during the wet years where conveyance fee could be reduced by over $1.3 million but on average over $700,000. During the "dry" years conveyance fees on average are increased by approximately $300,000. The biggest impact is to the higher entities conducting the highest volume of recharge. AFRD2 and NSCC see reductions of 10% to 30% in conveyance fees, whereas, TFCC and SWID would see reductions of around 2% in most of the scenarios analyzed. Under this plan conveyance fees in the Lower Valley would range between $1.4 million to almost $5 million.

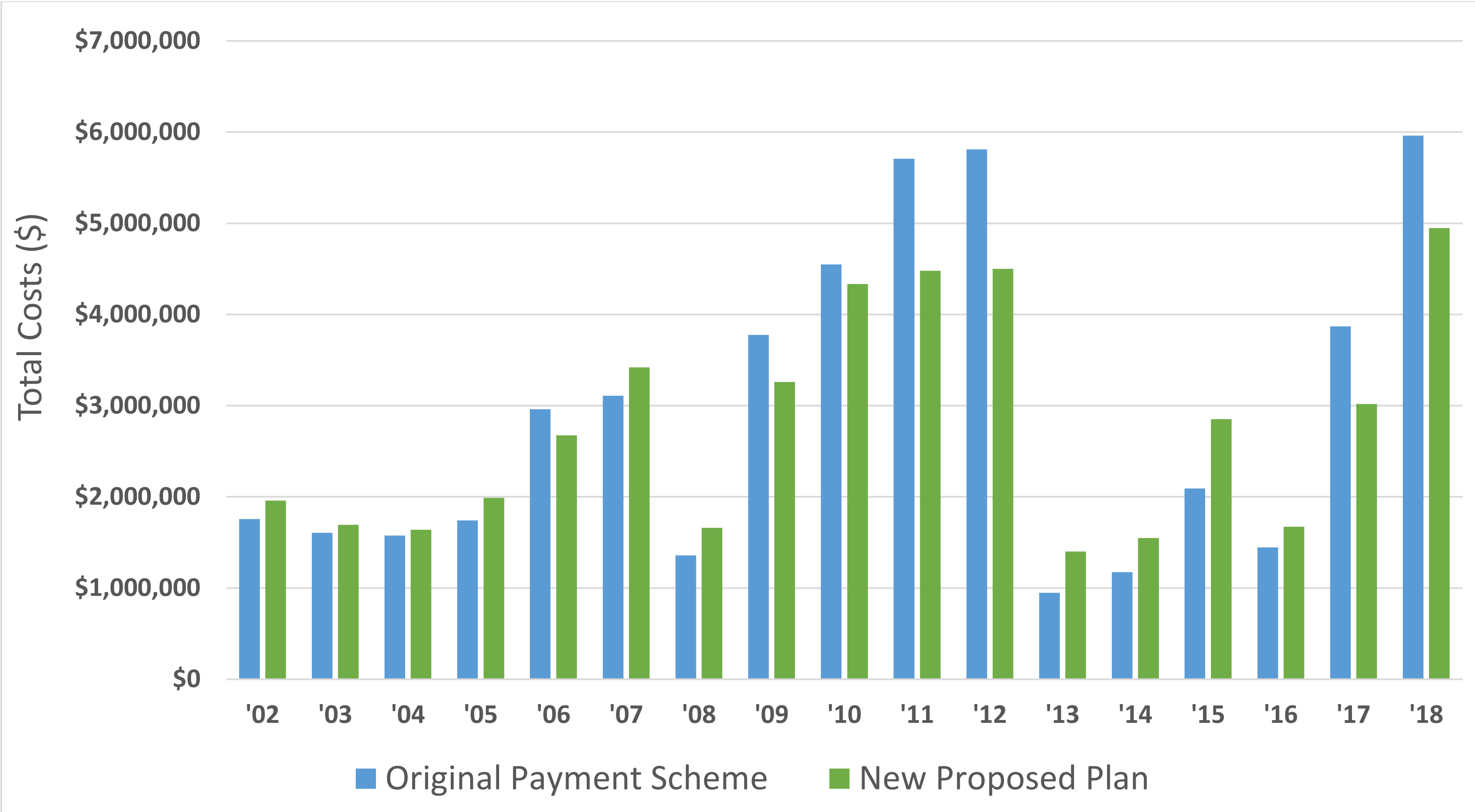

Figure 2: Lower Valley Fee Structure Comparison using historic water availability.

Memorandum

To: Aquifer Stabilization Committee

From: Wesley Hipke

Date: July 16, 2019

Re: Upper Valley – Proposed Recharge Water Distribution Plan and Conveyance Payment Structure

Executive Summary:

A resolution will be provided for the Aquifer Stabilization Committee (Committee) to consider altering the conveyance fee structure for managed recharge conducted in the Upper Valley.

The ESPA Managed Recharge Program (Program) staff is suggesting the following changes to the Conveyance Payment Structure for the Upper Valley (above Minidoka Dam).

The following proposed fee structure limits IWRB recharge in the fall and winter to areas with 5-year retention rates 20% or greater. The cost per acre-foot (af) is increased during the winter to compensate entities for the challenges of conducting recharge during this time. The IWRB would pay for recharge in the spring at a similar rate schedule as the fall and include recharge in areas with retention rates 15% or greater.

- Aug. 1st – Nov. 15th :
  - i. >40% = $7/af
  - ii. 20% to <40% = $6/af
- Nov. 16th – Mar. 15th:
  - i. >40% = $10/af
  - ii. 20% to <40% = $8/af
- Mar. 16th – Jul. 31st:
  - i. >40% = $7/af
  - ii. 20% to <40% = $6/af
  - iii. 15% to <20% = $5/af

Staff also suggest distributing the available water for recharge using the following priorities:

1) When IWRB's recharge water will be distributed as follows:
   - Preference given to the highest five-year retention,
   - Preference given to entities with long-term conveyance contracts with the IWRB,
   - An individual entity's diversion rate will be determined based on the entity's capacity to divert (maximum diversion rate) at that time the water available for recharge is distributed.

As entities are able to increase their diversion rate or new entities are able to conduct managed recharge, any excess natural flow water available for recharge not already assigned will be distributed on a first come basis based on the criteria listed in No. 1.

Introduction

The ESPA Managed Recharge Program (Program) has just completed its fifth year of full-scale operations. During this period the Program has been actively expanding to meet the goals set out in the Eastern Snake Plain Aquifer (ESPA) Comprehensive Aquifer Management Plan (CAMP), the Idaho State Water Plan, and by the State of Idaho. The primary purpose of the Program is to stabilize the ESPA by recharging on average 250,000 acre-feet per year.

One of IWRB's basic strategies to stabilize the ESPA has been to prioritize managed recharge in higher retention areas thus storing the water in the aquifer for longer periods. Previous studies have demonstrated that conducting recharge in the higher retention areas has the greatest impact on maintaining and increasing aquifer levels, therefore, enhancing ground and surface water supplies over the long term. To determine the retention time the ESPA groundwater model (ESPAM 2.1) was used to determine a 5-year retention time throughout the ESPA. The Program has also prioritized recharging water, when it is available, that would otherwise leave the Eastern Snake River Plain and in most cases the State.

The IWRB has asked staff to look at alternate conveyance fee structures for the Upper Valley (above Minidoka Dam). In looking at potential conveyance fee structures the staff took into account the following factors/information:

- Information and data gathered over the past 5 years of full-scale operations.
- Developing a distribution and conveyance fee plan that would support the Programs efficacy in meeting the goal of stabilizing the aquifer.
- Developing a distribution and conveyance fee plan that would assist in developing long-term (5-year) contracts in the Upper Valley.

Upper Valley

Conducting managed recharge in the Upper Valley is highly variable and unpredictable. The status of the IWRB's water right being in priority can change quickly combined with the volume of water available for recharge can increase or decrease rapidly. In addition, delivery of recharge water is heavily dependent on weather conditions and IWRB's partner's ability to conduct annual infrastructure maintenance.

Water availability for managed recharge in the Upper Valley can range from zero (historically, this occurs for 50% of the years) to over 6,000 cfs during "wet" years. The following figure shows the median amount of water available per month for the "wet" years using data from 1991 through 2017.

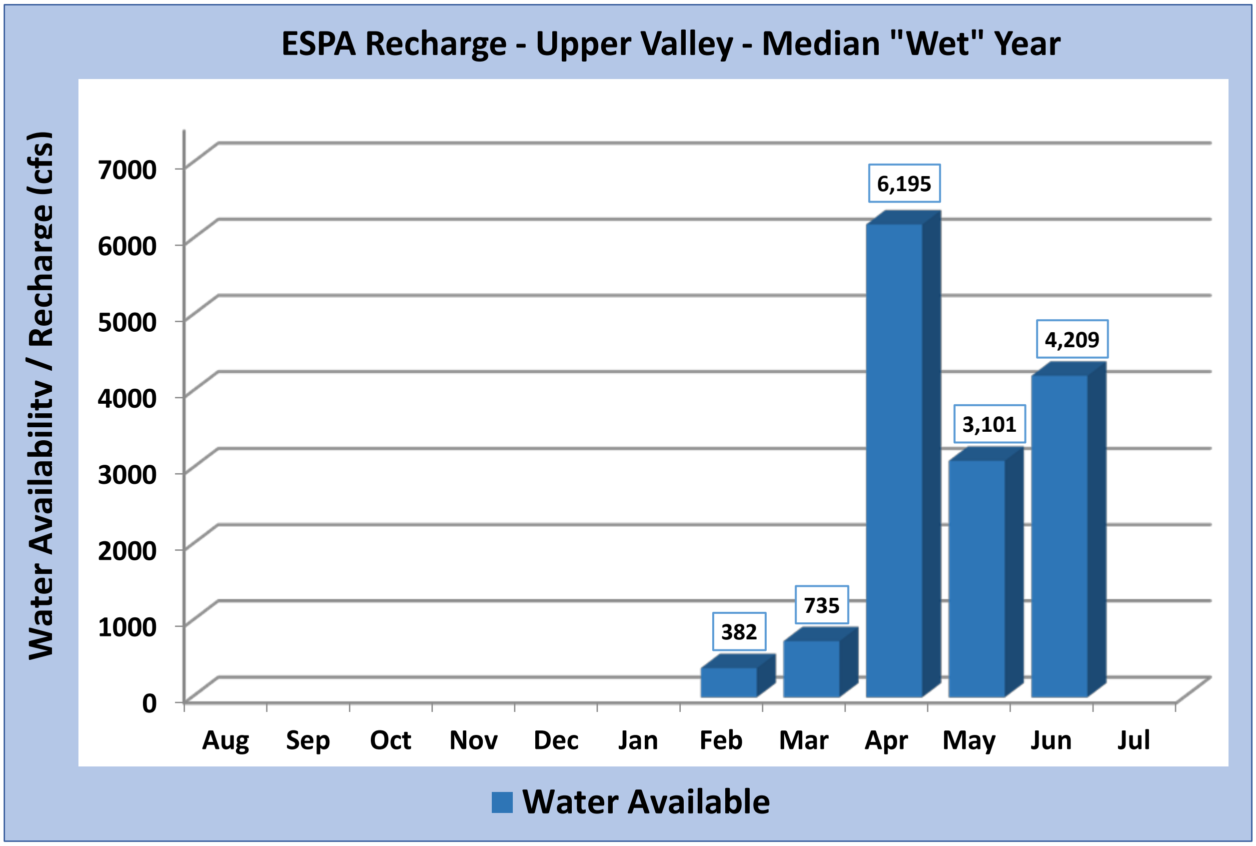

Figure 1: Median water available per month using data from 1991 through 2017 for the "wet" years in the Upper Valley.

If water is available before the irrigation season, the canals can recharge a significant volume of water. However, once irrigation deliveries begin (around the middle of April) managed recharge is limited to off-canal sites. Off-canal recharge capacity is limited in the Upper Valley as demonstrated in the table below. The following table provides a summary of recharge capacity, in-canal and off-canal, plus the average five-year retention rates of the entities that currently conduct managed recharge for the IWRB.

Entity	Managed Recharge Area(s)	Canal Recharge Capacity (cfs)	Off-Canal Capacity (cfs)	5-yr Retention
Aberdeen-Springfield Canal Co.	Canal & recharge site	500	80-200	22%
New Sweden ID	Canal & recharge site	180	30	22%
Snake River Valley ID	Canal & recharge site	160	40	19%
Idaho ID	Canal only	30	-	20%
Progressive ID	Canal only	180	-	19%
Farmers Friend Irrigation Co.	Canal & recharge site	100	15	20%
Enterprize Canal Co.	Canal only	40	-	19%
Great Feeder Canal Co.	Canal only	600	-	17%
Sunnydell ID	Canal only	35	-	27%
Reid Canal Co.	Canal only	25	-	39%
Fremont-Madison ID	Canal & recharge site	470	100-150	46%

Upper Valley Distribution Plan

The proposed distribution plan for the Upper Valley prioritizes recharging in locations with higher aquifer retention when possible. The aquifer retention zones in the Upper Valley can vary significantly from below 5% to over 50%. The IWRB's current policy is to recharge in areas with a five-year retention period of greater than 15%.

The following plan is intended to optimize managed recharge in the following order of priorities:

1) Recharging in areas of higher retention,
2) Recharging excess water that would otherwise flow out of the system to enhance surface water supplies or storage through return flows to the river.

In addition, preference will be given to entities with long-term contracts to conduct managed recharge with the IWRB, particularly when water supply for recharge is limited.

IWRB's natural flow water would be distributed for recharge in the Upper Valley as follows:

2) When IWRB's recharge water right comes into priority, the available natural flow water will be distributed as follows:
    - Preference given to the highest five-year retention,
    - Preference given to entities with long-term conveyance contracts with the IWRB,
    - An individual entity's diversion rate will be determined based on the entity's capacity to divert (maximum diversion rate) at that time the water available for recharge is distributed.
2) As entities are able to increase their diversion rate or new entities are able to conduct managed recharge, any excess natural flow water available for recharge not already assigned will be distributed on a first come basis based on the criteria listed in No. 1.

Upper Valley Conveyance Fee Plans

Performing managed recharge in the Upper Valley is challenging due to variability of available flow and accessibility of canals and recharge sites. Diversion of water through the canals can be difficult during the winter months due to snow and freezing condition. Delivery of recharge to off-canal sites can also be limited depending on the canals capacity and demands for irrigation water.

Historically the majority of the water available for managed recharge occurs after the irrigation season has begun. Recent there have been years where natural flow water was available in the fall, however, historically this has not been the case. In general over the last several years, canal managers have maximized recharge in the fall after diversions are terminated, shut down the canal system during the winter, and optimized recharge in the spring by delaying irrigation deliveries as long as possible.

Current Fee Structure:

The current IWRB conveyance fee structure in the Upper Valley is based on the five-year retention rate, along with timing and duration of recharge performance. An initial base rate is determined by the 5-year retention percentage. The rate is increased by one dollar per acre-foot if the recharge occurs in the winter months (January through March) to address the challenges of conducting winter-time recharge, and an additional dollar per acre-foot if the entity recharges 75% of the period from the notice to proceed to the date when water ceases to be available for recharge. The current base rate based on the 5-year retention is:

5-yr Retention	Fee Structure
• >40% =	$6/af
• 20% to <40% =	$5/af
• 15% to <20% =	$4/af

Potential Winter/High Retention Fee Structure:

The following alternative recharge conveyance payment plan is provided for consideration by the Aquifer Stabilization Committee/IWRB. This plan limits IWRB recharge in the fall and winter to areas with 20% or greater 5-year retention rates. Conducting managed recharge in the higher retention areas has the greatest potential for long-term benefit to the aquifer. The overall cost per acre-foot (af) is increased for the winter period to compensate entities for the challenges of operating canal systems during this time. The spring/summer period includes a payment for 5-year retention rates 15% or greater to encourage diversion of excess natural flow water that would otherwise leave the basin/state.

- Aug. 1st – Nov. 15th :
  - iii. >40% = $7/af
  - iv. 20% to <40% = $6/af
- Nov. 16th – Mar. 15th:
  - iii. >40% = $10/af
  - iv. 20% to <40% = $8/af
- Mar. 16th – Jul. 31st:
  - iv. >40% = $7/af
  - v. 20% to <40% = $6/af
  - vi. 15% to <20% = $5/af

<u>Upper Valley - Comparison of Payment Structures:</u>

Three different methods were used to compare the different payment plans. The first compares the current and proposed payment plan using two scenarios, a maximum water availability and a scenario representing "normal" water availability and timing for water availability in the Upper Valley. The second method uses the timing and volumes that were recharged the last five years to compare the cost and volumes recharged between the two plans (Figure 2 and 3, respectively). The third method compares the two plans using the water availability in previous years to provide the potential impact over the long term, illustrated in Figure 4 below.

The two water availability scenarios used in the first analysis are:

1) Maximum Capacity – This scenarios assumes water availability would be sufficient for the current canals conducting recharge to run at full recharge capacity from the later part of October through mid-April and only off-canal sites from mid-April through mid-May.

2) "Normal" Water Availability – This scenarios represents a more typical "wet" year and assumes water is not available for recharge until mid-February and only off-canal sites from mid-April to mid-May.

Upper Valley Conveyance Plan Comparison Table						
	Maximum Capacity			"Normal" Water Availability		
Payment Plan	Recharge Volume (af)	Cost ($)	$/af	Recharge Volume (af)	Cost ($)	$/af
Current	393,000	$2,013,000	$5.12	170,000	$1,071,000	$6.30
Winter/High Ret.	308,000	$2,083,000	$6.76	166,000	$999,000	$6.02

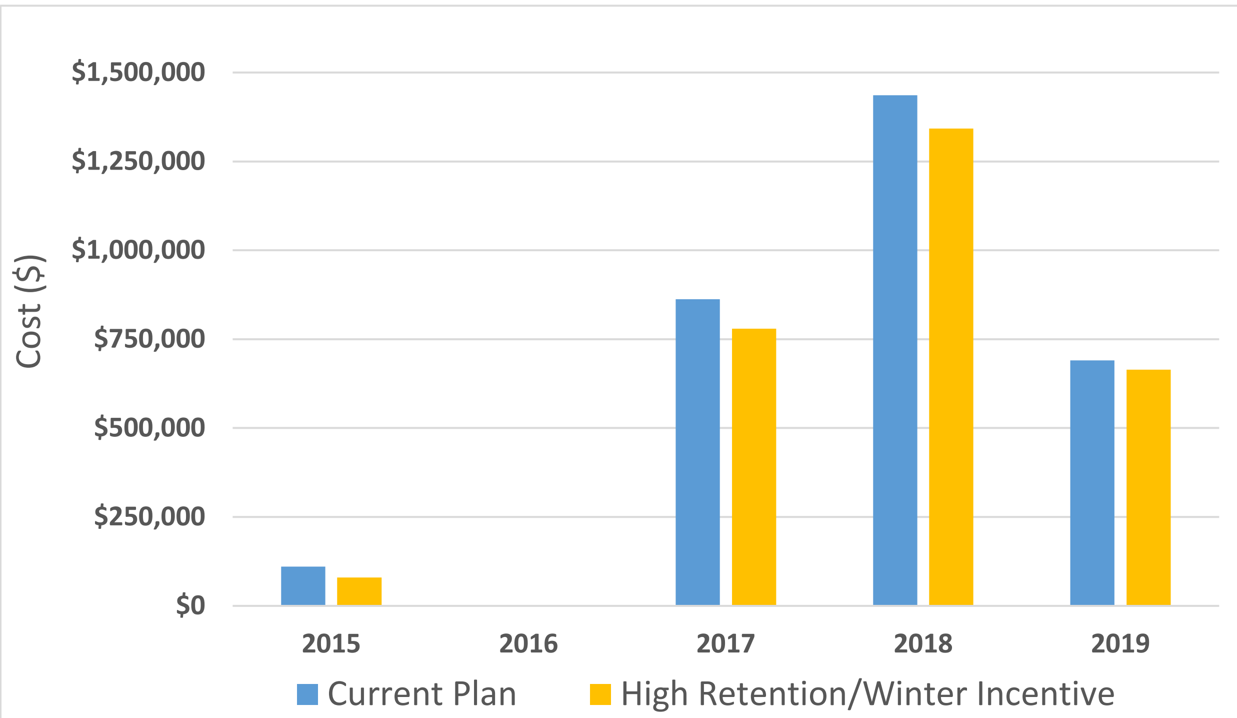

Figure 2: Upper Valley Fee Structure Cost comparison using recharge volumes and timing for the past five years.

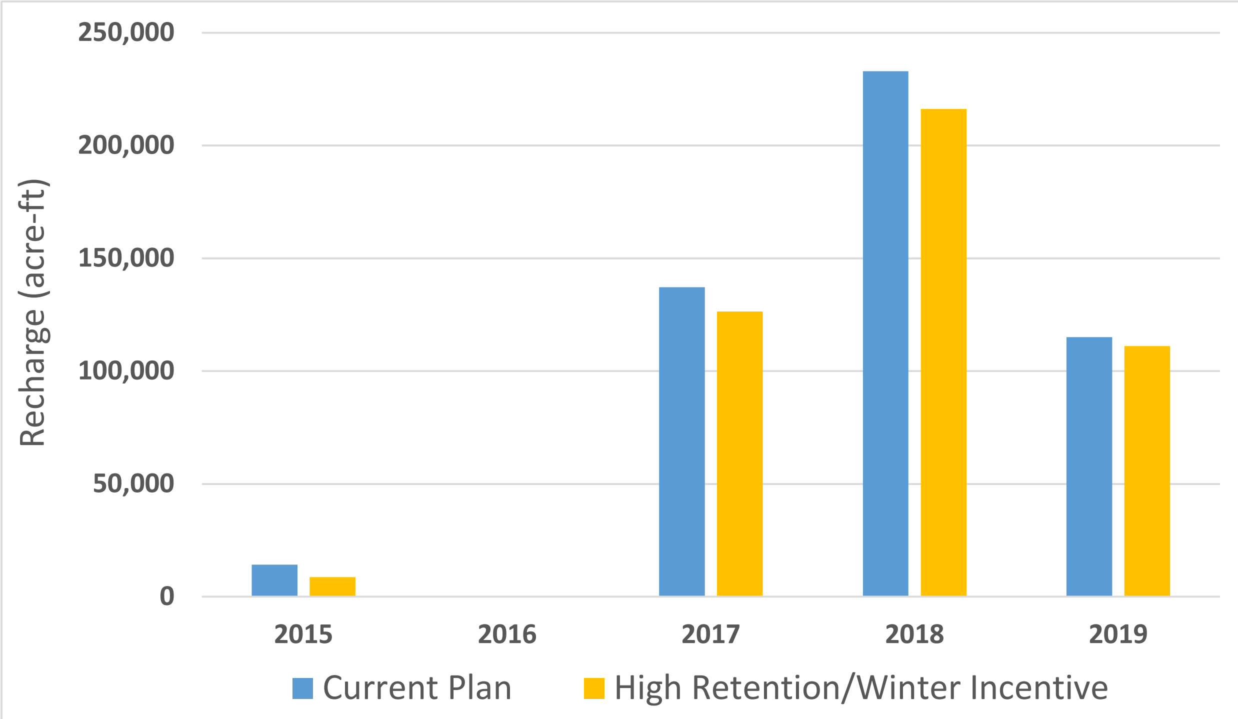

Figure 3: Upper Valley Fee Structure Recharge comparison using recharge volumes and timing for the past five years.

The Winter/High Retention Incentive Payment Plan

The overall conveyance cost between the two plans is similar. The differences in the analysis emphasize how variable recharge can be in the Upper Valley. When applying the payment plans to the historic data there is a slight increase in conveyance cost with the new plan (on average $6,000). However, when using the actual recharge data from the last five years the analysis showed the new plan resulting in a reduction of over $40,000 in conveyance cost (Figure 2). Average conveyance cost using historic water availability is $769,000 with the current plan and $775,000 with the Winter/High Retention plan. As Figure 4 demonstrates in both plans there is a wide range of conveyance cost ranging from around $2,000 to over $1.5 million. In most scenarios limiting recharge to areas above 20% retention except for in the spring would result in a 6% reduction in Upper Valley recharge on average.

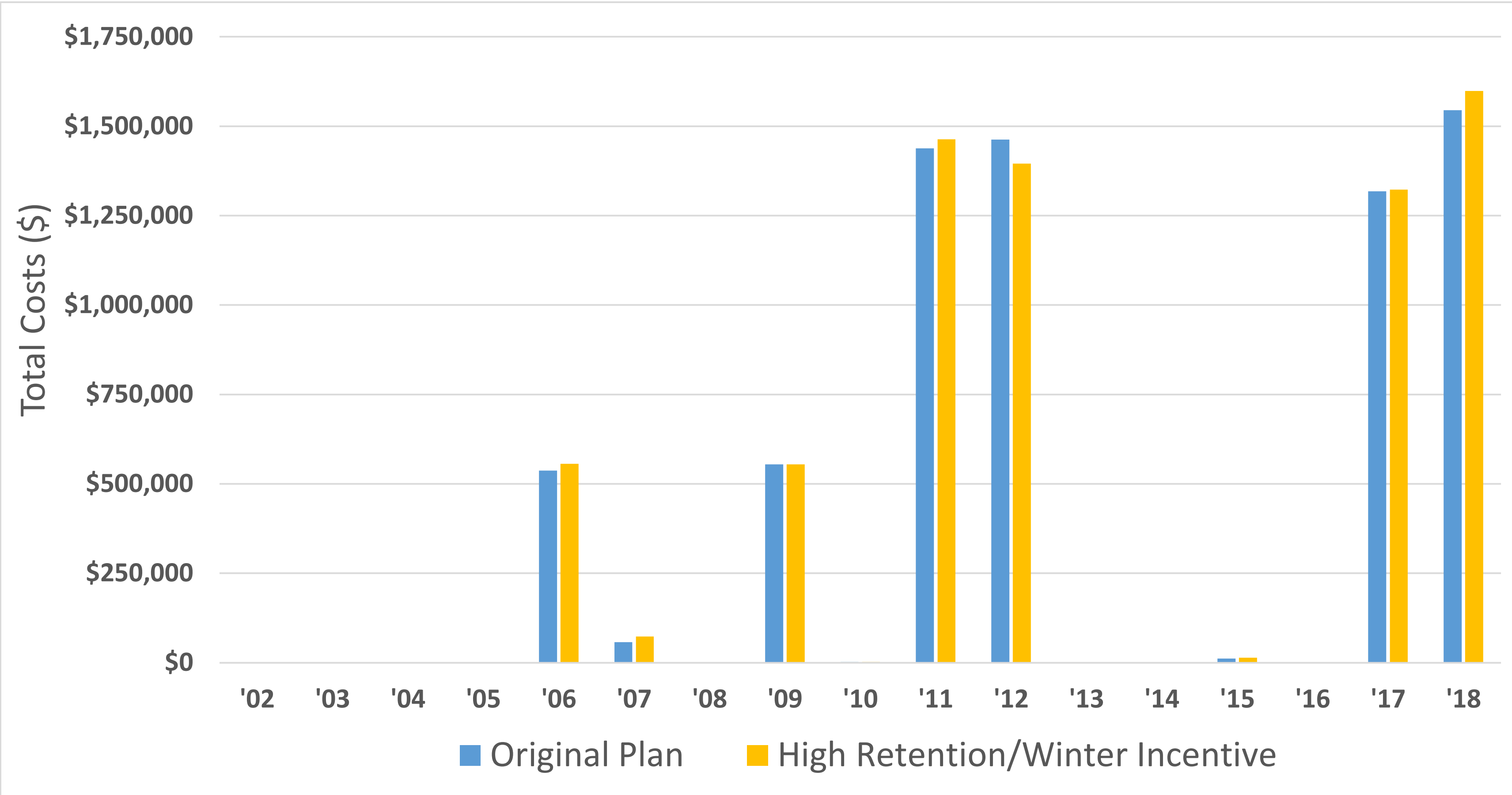

Figure 4: Upper Valley Fee Structure comparison using historic water availability.

BEFORE THE IDAHO WATER RESOURCE BOARD

IN THE MATTER OF ESTABLISHING A RECHARGE CONVEYANCE PAYMENT STRUCTURE AND DISTRIPUTION PLAN FOR THE LOWER VALLEY	RESOLUTION TO APPROVE ESPA MANAGED RECHARGE PROGRAM STANDARDS AND PROCESSES

WHEREAS, the Eastern Snake Plain Aquifer (ESPA) has been losing approximately 216,000 acre-feet annually from aquifer storage since the 1950's resulting in declining ground water levels in the aquifer and declining spring flows from the aquifer; and

WHEREAS, the State of Idaho relies on spring discharge from the ESPA through the Thousand Springs to assist in meeting the minimum streamflow water rights at the Murphy Gage that were established under the Swan Falls Agreement; and

WHEREAS, the ESPA Comprehensive Aquifer Management Plan (CAMP) and the Idaho State Water Plan established managed recharge as being an appropriate means to enhance ground and surface water supplies, help maintain and increase aquifer levels, and change the timing and availability of water supplies to meet demand; and

WHEREAS, the 2016 Idaho Legislature passed and approved Senate Concurrent Resolution 136 directing the Idaho Water Resource Board (IWRB)to develop the capacity to achieve 250,000 acre-feet of annual average managed recharge to the ESPA by December 31, 2024; and

WHEREAS, House Bill 547 passed and approved by the 2014 legislature allocates $5 million annually from the Cigarette Tax to the IWRB for statewide aquifer stabilization; and

WHEREAS, Senate Bill 1402 passed and approved by the 2016 Legislature allocated $5 million in ongoing General Fund dollars and $2.5 million in Economic Recovery Reserve Funds to the IWRB's Secondary Aquifer Fund for statewide water sustainability and aquifer stabilization; and

WHEREAS, the IWRB intends to provide financial incentives to maximize recharge of water available under its water right permit.

NOW, THEREFORE BE IT RESOLVED that the IWRB adopts the following recharge delivery payment structure for canals that divert below Minidoka Dam (Lower Valley):

- Aug. 1st – Nov. 15th = $7/af
- Nov. 16th – Feb. 15th = $10/af
- Feb. 16th – Jul. 31st = $5/af; and

NOW, THEREFORE BE IT FURTHER RESOLVED that the IWRB shall have an annual meeting in the fall with the IWRB recharge partners to determine the recharge distribution plan for the upcoming recharge season to optimize IWRB natural flow recharge.

NOW, THEREFORE BE IT FURTHER RESOLVED that the IWRB will offer conveyance and operational contracts of up to 5-year terms; and

NOW, THEREFORE BE IT FURTHER RESOLVED that the IWRB's ESPA managed recharge program will be coupled with a continuous monitoring program to verify the effects of managed recharge, and if necessary, modify the recharge program based on evaluation of the effects; and

NOW, THEREFORE BE IT FURTHER RESOLVED that the IWRB authorizes its chairman or designee, Brian Patton, Executive Officer to the IWRB, to execute the necessary agreements or contracts for IWRB ESPA Managed Recharge Program conveyance and operational fees.

DATED this 26th day of July, 2019.

____
ROGER W. CHASE, Chairman
Idaho Water Resource Board

ATTEST ______________________________________
VINCE ALBERDI, Secretary

BEFORE THE IDAHO WATER RESOURCE BOARD

IN THE MATTER OF ESTABLISHING A RECHARGE CONVEYANCE PAYMENT STRUCTURE AND DISTRIPUTION PLAN FOR THE UPPER VALLEY	RESOLUTION TO APPROVE ESPA MANAGED RECHARGE PROGRAM STANDARDS AND PROCESSES

WHEREAS, the Eastern Snake Plain Aquifer (ESPA) has been losing approximately 216,000 acre-feet annually from aquifer storage since the 1950's resulting in declining ground water levels in the aquifer and declining spring flows from the aquifer; and

WHEREAS, the State of Idaho relies on spring discharge from the ESPA through the Thousand Springs to assist in meeting the minimum streamflow water rights at the Murphy Gage that were established under the Swan Falls Agreement; and

WHEREAS, the ESPA Comprehensive Aquifer Management Plan (CAMP) and the Idaho State Water Plan established managed recharge as being an appropriate means to enhance ground and surface water supplies, help maintain and increase aquifer levels, and change the timing and availability of water supplies to meet demand; and

WHEREAS, the 2016 Idaho Legislature passed and approved Senate Concurrent Resolution 136 directing the Idaho Water Resource Board (IWRB) to develop the capacity to achieve 250,000 acre-feet of annual average managed recharge to the ESPA by December 31, 2024; and

WHEREAS, House Bill 547 passed and approved by the 2014 legislature allocates $5 million annually from the Cigarette Tax to the IWRB for statewide aquifer stabilization; and

WHEREAS, Senate Bill 1402 passed and approved by the 2016 Legislature allocated $5 million in ongoing General Fund dollars and $2.5 million in Economic Recovery Reserve Funds to the IWRB's Secondary Aquifer Fund for statewide water sustainability and aquifer stabilization; and

WHEREAS, the IWRB intends to provide financial incentives to maximize recharge of water available under its water right permit.

NOW, THEREFORE BE IT RESOLVED that the IWRB adopts the following recharge delivery payment structure for canals that divert below Minidoka Dam (Lower Valley):

- Aug. 1st – Nov. 15th :
    - i. >40% = $7/af
    - ii. 20% to <40% = $6/af
- Nov. 16th – Mar. 15th:
    - i. >40% = $10/af
    - ii. 20% to <40% = $8/af
- Mar. 16th – Jul. 31st:
    - i. >40% = $7/af
    - ii. 20% to <40% = $6/af

iii. 15% to <20% = $3/af; and

NOW, THEREFORE BE IT FURTHER RESOLVED that the IWRB adopts the following recharge distribution plan for the Lower Valley:

1) When IWRB's recharge water right comes into priority, the available natural flow water will be distributed as follows:
    a) Preference given to the highest five-year retention.
    b) Preference given to entities with long-term conveyance contracts with the IWRB
    c) Diversion rate for the initial distribution will be determined based on the entity's capacity to divert (maximum diversion rate) at that time of distribution.
2) As entities are able to increase the diversion rate or new entities are able to conduct managed recharge, any excess natural flow water not already assigned will be distributed on a first come basis based on the criteria listed in no. 1; and

NOW, THEREFORE BE IT FURTHER RESOLVED that the IWRB will offer conveyance and operational contracts of up to 5-year terms; and

NOW, THEREFORE BE IT FURTHER RESOLVED that the IWRB's ESPA managed recharge program will be coupled with a continuous monitoring program to verify the effects of managed recharge, and if necessary, modify the recharge program based on evaluation of the effects; and

NOW, THEREFORE BE IT FURTHER RESOLVED that the IWRB authorizes its chairman or designee, Brian Patton, Executive Officer to the IWRB, to execute the necessary agreements or contracts for IWRB ESPA Managed Recharge Program conveyance and operational fees.

DATED this 26th day of July, 2019.

____
ROGER W. CHASE, Chairman
Idaho Water Resource Board

ATTEST ____________________________________
VINCE ALBERDI, Secretary

IDAHO
Water Resource Board

ESPA Managed Recharge Program

Aquifer Stabilization Committee Meeting

Wesley Hipke
IWRB Recharge Program Manager

July 24, 2019

ESPA - IWRB Managed Recharge Program

- **ESPA CAMP – Managed Recharge - appropriate tool:**
  - Enhancing ground and surface water supplies,
  - Help maintain and increase aquifer levels,
  - Change the timing and availability of water supplies to meet demands.
- **Goal**
  - Develop a program to recharge, on average, 250,000 af/yr in the ESPA.
- **Strategies:**
  - Prioritize recharge in areas of high retention that will have the most benefit to the aquifer.
  - Maximize the use of natural flow water that would otherwise leave the area / state.

ESPA Managed Recharge Program - Implementation

Lower Valley

- Significant volume of water available all winter
- Good retention time in the areas used for managed recharge
- Develop new sites and improve infrastructure for winter deliveries
- Incentivize canals to maximize managed recharge diversions

Lower Valley – Suggested Distribution Plan

Intent:

- Maximize the effectiveness of the Program
- Prioritize areas of higher retention

Potential Distribution Plan:

1) Annual fall meeting with recharge partners to determine a recharge/distribution plan for the forthcoming recharge season.

2) Optimize managed recharge and the benefit to the aquifer.

3) IWRB will have final say in the distribution of available water supplies for managed recharge.

Lower Valley – Conveyance Fee Structures

Current Structure:	$/af	"Normal" Time Period
1 - 25 days =	$3	late-Oct to mid-Nov
26 - 50 days =	$5	mid-Nov to early/mid-Dec
51 – 80 days =	$7	mid-Dec to mid-Jan
81 – 120 days =	$10	mid-Jan to late-Feb
>120 days =	$14	late-Feb to end of season

Winter Incentive:

Aug. 1st – Nov. 15th:	$7
Nov. 16th – Feb. 15th:	$10
Feb. 16th – Jul. 31st:	$5

Lower Valley – Fee Structure Comparison

Comparison Table						
	Maximum Capacity		"Normal" Water Availability		Minimum Availability	
Recharge Volume	463,000 af		250,000 af		150,000 af	
Payment Plan	**Cost ($)**	**$/af**	**Cost ($)**	**$/af**	**Cost ($)**	**$/af**
Current Plan	$4,034,000	$8.71	$2,385,000	$9.54	$1,220,000	$8.13
Proposed Plan	$3,736,000	$8.07	$1,974,000	$7.90	$1,244,000	$8.29

- Cost reduction in wet years

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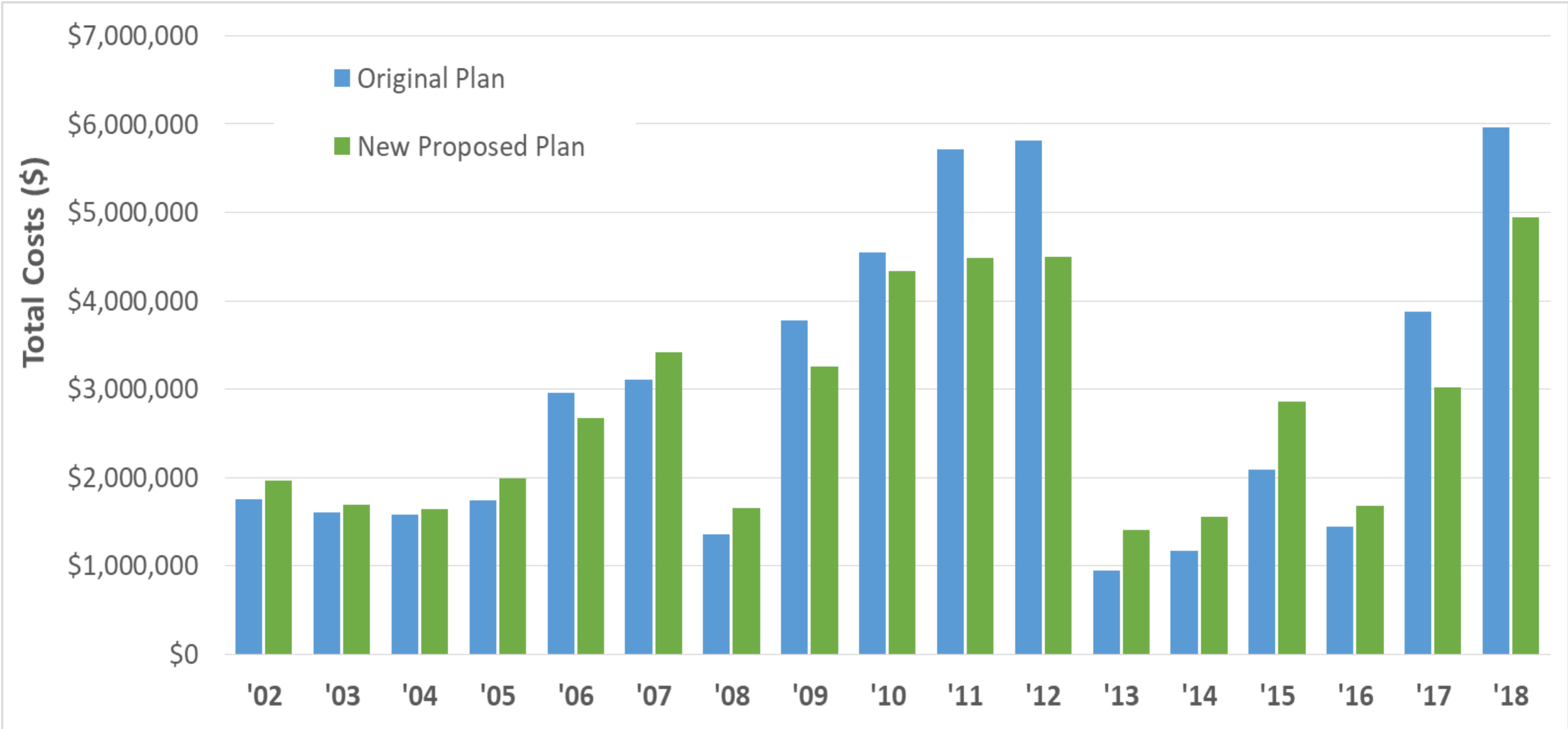
Lower Valley – Fee Structure Comparison

- Less Wet Years - More Dry Years



Lower Valley – Conveyance Fee Structures

	Current Plan	Proposed Plan
10-year Average:	$3,500,000	$3,200,000
Minimum:	$950,000	$1,400,000
Maximum:	$5,960,000	$4,950,000

Potential Considerations:

- Canal Deliveries vs Pumping Deliveries
- Storage Water Recharge
- 1-2 year test contracts

Lower Valley

Questions?

Resolution

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ESPA Managed Recharge Program - Implementation

Upper Valley

- Water only available approximately 50% of the years
- Large volumes of water when available
- Wide range of retention rates – prioritize recharge in high retention areas
- Develop new sites and improve infrastructure for recharge deliveries
- Incentivize canals to conduct managed recharge when available

Upper Valley – Potential Distribution Plan

Intent:

- Maximize the effectiveness of the Program in a very unpredictable system
- Prioritize areas of higher retention

Potential Distribution Plan:

1) 1st priority is to the areas with the highest retention.
2) 2nd priority is to entities with long-term IWRB conveyance contracts.
3) Diversion rates per entity will be determined by the maximum rate the entity can do at the time.
4) Increases in diversion rates or new entities will be allocated remaining IWRB natural flow water on a “first come” bases with high retention and IWRB long-term contracts being given priority.

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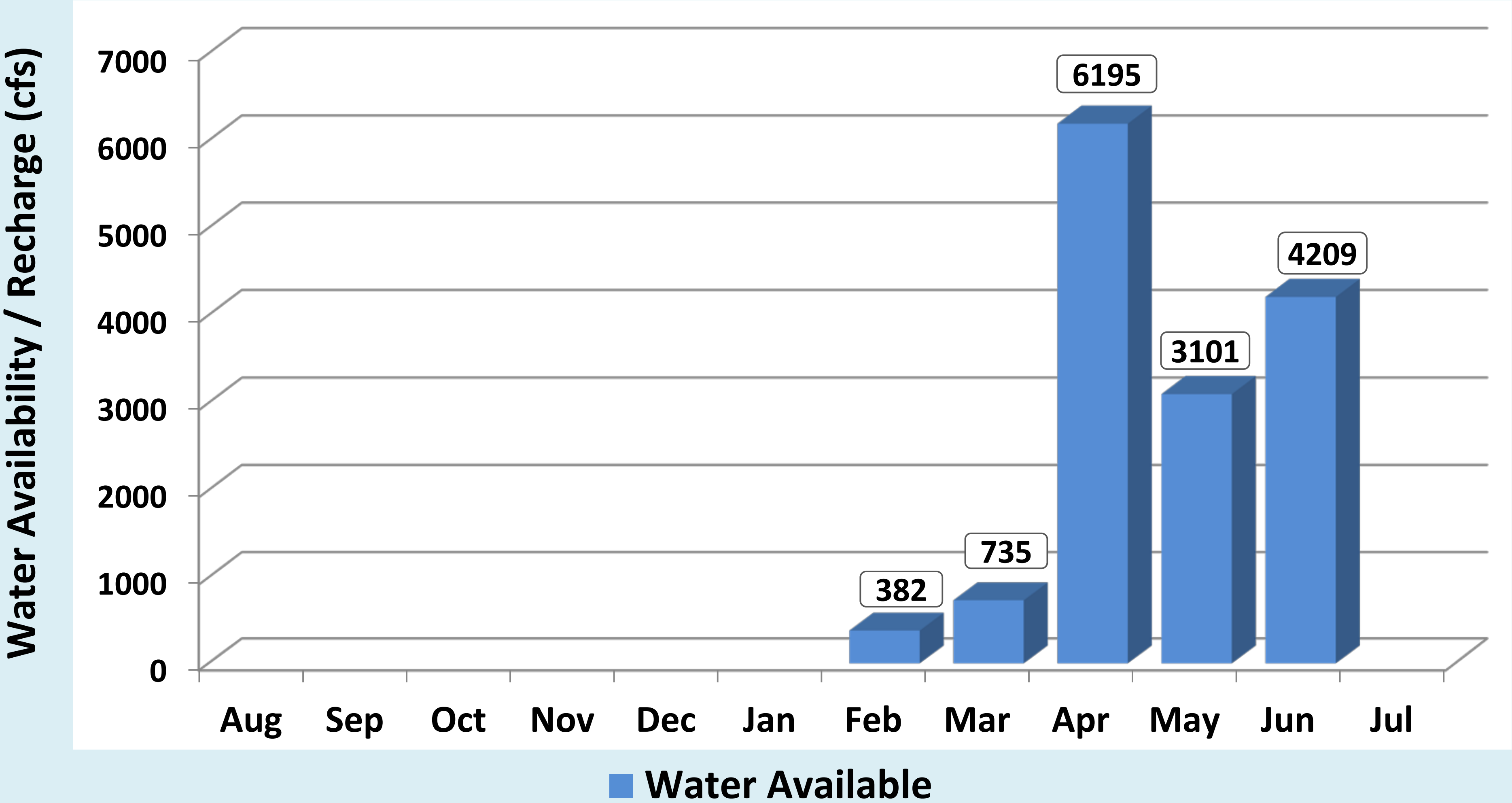
Upper Valley – Water Availability – "Wet" Year



Upper Valley – Conveyance Fee Structures

Current Plan

5-year Retention	$/af
o >40%	$6
o 20% - 40%	$5
o 15% - 20%	$4

Additional Incentives:

- Cold Weather Incentive $1/af
  - o Dec. 1st to Mar. 31st
- Delivery Incentive $1/af
  - o >75% of the time

Proposed Plan

	5-year Retention	$/af
Aug. 1st – Nov. 15th :	>40% =	$7
	20% to <40% =	$6
Nov. 16th – Mar. 15th:	>40% =	$10
	20% to <40% =	$8
Mar. 16th – Jul. 31st:	>40% =	$7
	20% to <40% =	$6
	15% to <20% =	$5

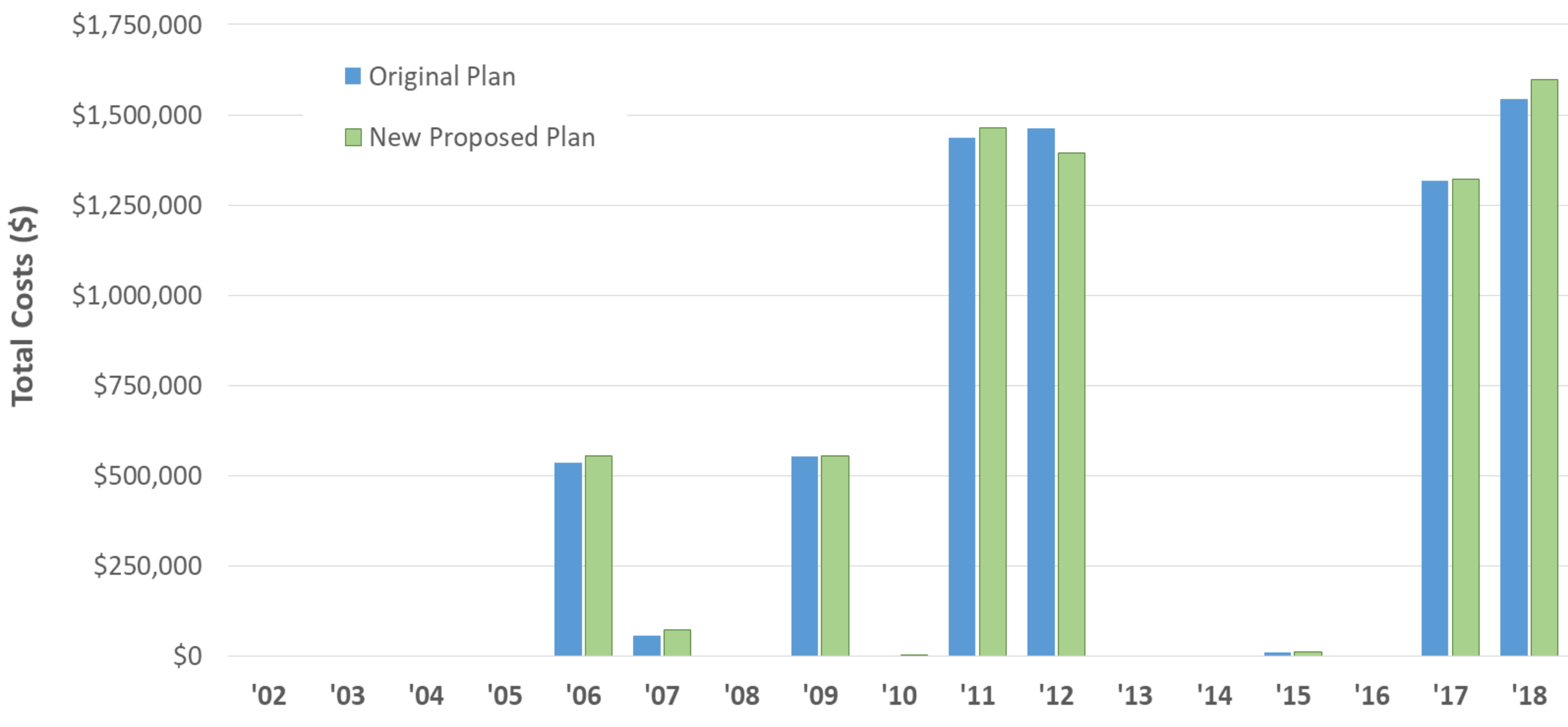
Upper Valley – Fee Structure Comparison

Comparison Table						
	Maximum Capacity			"Normal" Water Availability		
Payment Plan	Recharge Vol. (af)	Cost ($)	$/af	Recharge Vol. (af)	Cost ($)	$/af
Current Plan	389,000	$2,440,000	$6.28	170,000	$1,070,000	$6.30
Proposed Plan	308,000	$2,083,000	$7.11	166,000	$1,000,000	$5.47

- Reduced recharge as a result of limiting managed recharge in areas below 20% except for in the spring.

Upper Valley – Fee Structure Comparison

- Variable times and volumes for managed recharge.



Upper Valley – Conveyance Fee Structures

	Current Plan	Proposed Plan
10-year Average:	$633,000	$635,000
10-year Average Wet Years:	$904,000	$907,000
Minimum:	$1,700	$2,100
Maximum:	$1,540,000	$1,600,000

Potential Considerations:

- Storage Water Recharge
- Grandfathered in sites/areas?
- 1-2 year test contracts

Upper Valley

Questions?

Resolution

Questions