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

* 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.

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 • 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

* 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.
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
Aquifer Water Balance

\[ \text{Inflow} - \text{Outflow} = \Delta \text{Storage} \]

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

**ESPMA 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
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

-1,600,000 AF

602 Wells
Water Level Change - Spring 1980 To Spring 2002

-3,100,000 AF

577 Wells
Water Level Change - Spring 1980 To Spring 2008

-4,800,000 AF

536 Wells
Water Level Change - Spring 1980 To Spring 2013

-6,000,000 AF

444 Wells
Water Level Change - Spring 1980 To Spring 2018

Water Level Change (ft)

-5,000,000 AF

403 Wells
Changes in Volume of Water Stored in the ESPA

Cumulative Storage Change (acre-feet)

- 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

1952 – 2017 ≈ 13,000,000 AF total removed from storage
1952 – 2017 ≈ 190,000 AF/yr average removed from storage
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).
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
Water Level Change - Spring 2016 To Spring 2017

Water Level Change (ft)

660,000 AF

346 Wells
Water Level Change - Spring 2017 To Spring 2018

1,700,000 AF

308 Wells
Water Level Change - Spring 2018 To Spring 2019

-50,000 AF

377 Wells
Surface Water Supply Index (SWSI): 2015 - 2019
ESPA Volume of Water and Thousand Springs Discharge

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
Water Level Change - Spring 2015 To Spring 2019

1,800,000 AF

315 Wells
Settlement Agreement Sentinel Wells
Annual Ground Water Level Index from Settlement Agreement Sentinel Wells

Year

Ground Water Index (feet)
Water Level Change - Spring 2016 To Spring 2017
Sentinel Wells

Water Level Change (ft)

-10  -8  -6  -4  -2  0  2  4  6  8  10  12  14  16  18  20

[Map showing the water level changes with contour lines and color gradient for sentinel wells.]
Water Level Change - Spring 2017 To Spring 2018
with Sentinel Well Locations

1,400,000 AF

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

Water Level Change (ft)

1,800,000 AF

315 Wells
Annual Ground Water Level Index from Settlement Agreement Sentinel Wells
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

- Non-irrigated recharge: 0.7 MAF
- Tributary basin underflow: 1.1 MAF
- Non-Snake River seepage: 0.6 MAF
- Canal seepage: 2.9 MAF
- Recharge on surface water irrigated lands: 2.4 MAF
- SPR, exchange, and Mud Lake well pumping: -2.2 MAF
- Wetlands ET: -0.2 MAF
- Urban pumping: -0.1 MAF
- Net reach gains/losses above Winifred: -1.0 MAF
- Spring and base flow discharge below Kimbery: -4.4 MAF
- Released from aquifer storage: 0.3 MAF

Modeled aquifer water budget
Water Level Change - Spring 2017 To Spring 2018
with Well Locations

SWSI 2017 = 3.5
SWSI 2018 = 2.3

1,700,000 AF

354 Wells
Water Level Change - Spring 2015 To Spring 2016 with Well Locations

Water Level Change (ft)

-200,000 AF

333 Wells
Water Level Change - Spring 1980 To Spring 2015

-7,500,000 AF

162 Wells
Water Level Change - Spring 1980 To Spring 2002 with Well Locations

-3,100,000 AF

577 Wells

Water Level Change (ft)

-120
-115
-110
-105
-100
-95
-90
-85
-80
-75
-70
-65
-60
-55
-50
-45
-40
-35
-30
-25
-20
-15
-10
-5
0
5
10
15

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

Water Level Change (ft)

-4,800,000 AF

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

Water Level Change (ft)

-6,000,000 AF

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

Water Level Change (ft)

-7,500,000 AF

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

Water Level Change (ft)

-5,000,000 AF

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

Water Level Change (ft)

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

Water Level Change (ft)

-1,300,000 AF

951 Wells
Water Level Change - Spring 2002 To Spring 2008

-2,300,000 AF

868 Wells
Water Level Change - Spring 2008 To Spring 2013
with Well Locations

Water Level Change (ft)

-470,000 AF

803 Wells
Discharge from ESPA

Legend
- Spring
- Blackfoot to Minidoka Reach
- Aquifer Flow
- River
- City
- ESPA Model Boundary
- ESPA GW Contour (50 ft)
Spring Discharge on ESPA
Spring Discharge on ESPA

- Springs occur where 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 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

ESPA Change in Volume of Water and Thousand Springs Discharge

- Calculated Thousand Springs Discharge
- IDWR Water Level Volume Change
- USGS Water Budget Volume Change
Spring Discharge – Murphy Gage
Swan Falls Agreement Flows

- Minimum Streamflow
- Snake at Murphy Minimum of Record (1981 - 2018)
- Snake River at Murphy Median of Record (1981 - 2018)
- Snake River at Murphy Gage
- AADF - 3 Day Average

Murphy Gage – Adjusted Average Daily Flow (AADF)
Near Blackfoot-Minidoka Reach Gains

Legend
- Sping
- Blackfoot to Minidoka Reach
- Aquifer Flow
- River
- City
- ESPA Model Boundary
- ESPA GW Contour (50 ft)
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
Questions?

Matt Anders
(208) 287-4932
matthew.anders@idwr.idaho.gov
### Estimated Progress Towards ESPA CAMP Targets: DRAFT FOR DISCUSSION

#### MANAGED RECHARGE

<table>
<thead>
<tr>
<th>Description</th>
<th>AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>IWRB Recharge</td>
<td>190,000</td>
</tr>
<tr>
<td>Current Average Annual natural flow recharge capacity</td>
<td></td>
</tr>
<tr>
<td>(verify)</td>
<td></td>
</tr>
<tr>
<td>SWID Recharge</td>
<td>6,550</td>
</tr>
<tr>
<td>SWID-SWC Settlement - in addition to IWRB recharge</td>
<td></td>
</tr>
<tr>
<td>(verify)</td>
<td></td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>196,550</strong></td>
</tr>
</tbody>
</table>

#### DEMAND REDUCTION

<table>
<thead>
<tr>
<th>Description</th>
<th>AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGWA-SWC Settlement Agreement</td>
<td>240,000</td>
</tr>
<tr>
<td>Reduction via SWC Settlement (verify)</td>
<td></td>
</tr>
<tr>
<td>SWID-SWC Settlement Agreement</td>
<td>5,200</td>
</tr>
<tr>
<td>2,378 acres set-aside results in about 5,200 AF (2.2 AFA) (verify)</td>
<td></td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>245,200</strong></td>
</tr>
</tbody>
</table>

#### GW-SW CONVERSIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWID Conversions</td>
<td>93,000</td>
</tr>
<tr>
<td>SWID-SWC Settlement Agreement (per Jaxon Higgs)</td>
<td></td>
</tr>
<tr>
<td>A&amp;B ID Conversions</td>
<td>6,600</td>
</tr>
<tr>
<td>ABID-SWC Settlement (verify) - conversions on 3,000 acres results in about 6600AF</td>
<td></td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>99,600</strong></td>
</tr>
</tbody>
</table>

#### CLOUD SEEDING

<table>
<thead>
<tr>
<th>Description</th>
<th>AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative Cloud Seeding Program</td>
<td>??</td>
</tr>
<tr>
<td>How much from Upper Snake and Wood contributes to Aquifer?</td>
<td></td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>??</strong></td>
</tr>
</tbody>
</table>

#### OTHER

<table>
<thead>
<tr>
<th>Description</th>
<th>AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Water from SWC-IGWA Settlement</td>
<td>17,000</td>
</tr>
<tr>
<td>up to 50,000 AF contributed for recharge if not needed by SWC - assume 1/3 on average provided for recharge (verify)</td>
<td></td>
</tr>
<tr>
<td>Storage Water from SWC-Cities-IGWA Settlement</td>
<td>7,650</td>
</tr>
<tr>
<td>average of 7,650 AF provided for recharge</td>
<td></td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>24,650</strong></td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Managed Recharge Area(s)</th>
<th>Recharge Capacity (cfs)</th>
<th>5-yr Retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southwest ID</td>
<td>Injection wells</td>
<td>60</td>
<td>54%</td>
</tr>
<tr>
<td>Twin Falls Canal Co</td>
<td>Canal only</td>
<td>30</td>
<td>43%</td>
</tr>
<tr>
<td>North Side Canal Co</td>
<td>Canal &amp; 1 recharge site&lt;sup&gt;1&lt;/sup&gt;</td>
<td>230</td>
<td>40%</td>
</tr>
<tr>
<td>Big Wood Canal Co</td>
<td>Canals &amp; 2 recharge sites</td>
<td>157</td>
<td>40%</td>
</tr>
<tr>
<td>American Falls Reservoir Dist. #2</td>
<td>Canal &amp; 3 recharge sites&lt;sup&gt;2&lt;/sup&gt;</td>
<td>1,160</td>
<td>35%</td>
</tr>
</tbody>
</table>

<sup>1</sup> Wilson Canyon estimated recharge capacity of 100 cfs.
<sup>2</sup> 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:

<table>
<thead>
<tr>
<th>Fee Structure</th>
<th>“Normal” Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 25 days</td>
<td>$3/af</td>
</tr>
<tr>
<td>26 - 50 days</td>
<td>$5/af</td>
</tr>
<tr>
<td>51 – 80 days</td>
<td>$7/af</td>
</tr>
<tr>
<td>81 – 120 days</td>
<td>$10/af</td>
</tr>
<tr>
<td>&gt;120 days</td>
<td>$14/af</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Payment/af</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 1st – Nov. 15th</td>
<td>$7/af</td>
</tr>
<tr>
<td>Nov. 16th – Feb. 15th</td>
<td>$10/af</td>
</tr>
<tr>
<td>Feb. 16th – Jul. 31st</td>
<td>$5/af</td>
</tr>
</tbody>
</table>
**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.

<table>
<thead>
<tr>
<th>Lower Valley Conveyance Plan Comparison Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Capacity</td>
</tr>
<tr>
<td>Recharge Volume</td>
</tr>
<tr>
<td>Fee Structure/Plan</td>
</tr>
<tr>
<td>Current Plan</td>
</tr>
<tr>
<td>Proposed Plan</td>
</tr>
</tbody>
</table>

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 Program’s 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.

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

<table>
<thead>
<tr>
<th>5-yr Retention</th>
<th>Fee Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;40% =</td>
<td>$6/af</td>
</tr>
<tr>
<td>20% to &lt;40% =</td>
<td>$5/af</td>
</tr>
<tr>
<td>15% to &lt;20% =</td>
<td>$4/af</td>
</tr>
</tbody>
</table>

**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

**Upper Valley - Comparison of Payment Structures:**

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.

<table>
<thead>
<tr>
<th>Upper Valley Conveyance Plan Comparison Table</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum Capacity</strong></td>
</tr>
<tr>
<td><strong>Payment Plan</strong></td>
</tr>
<tr>
<td>Current</td>
</tr>
<tr>
<td>Winter/High Ret.</td>
</tr>
</tbody>
</table>

**Figure 2:** Upper Valley Fee Structure Cost 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 DISTRIBUTION 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
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
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**

<table>
<thead>
<tr>
<th>Current Structure:</th>
<th>$/af</th>
<th>“Normal” Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 25 days =</td>
<td>$3</td>
<td>late-Oct to mid-Nov</td>
</tr>
<tr>
<td>26 - 50 days =</td>
<td>$5</td>
<td>mid-Nov to early/mid-Dec</td>
</tr>
<tr>
<td>51 – 80 days =</td>
<td>$7</td>
<td>mid-Dec to mid-Jan</td>
</tr>
<tr>
<td>81 – 120 days =</td>
<td>$10</td>
<td>mid-Jan to late-Feb</td>
</tr>
<tr>
<td>&gt;120 days =</td>
<td>$14</td>
<td>late-Feb to end of season</td>
</tr>
</tbody>
</table>

**Winter Incentive:**

- Aug. 1st – Nov. 15th: $7
- Nov. 16th – Feb. 15th: $10
- Feb. 16th – Jul. 31st: $5
# Lower Valley – Fee Structure Comparison

## Comparison Table

<table>
<thead>
<tr>
<th>Recharge Volume</th>
<th>Maximum Capacity</th>
<th>“Normal” Water Availability</th>
<th>Minimum Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>463,000 af</td>
<td>250,000 af</td>
<td>150,000 af</td>
</tr>
<tr>
<td>Payment Plan</td>
<td>Cost ($)</td>
<td>$/af</td>
<td>Cost ($)</td>
</tr>
<tr>
<td>Current Plan</td>
<td>$4,034,000</td>
<td>$8.71</td>
<td>$2,385,000</td>
</tr>
<tr>
<td>Proposed Plan</td>
<td>$3,736,000</td>
<td>$8.07</td>
<td>$1,974,000</td>
</tr>
</tbody>
</table>

- Cost reduction in wet years
Lower Valley – Fee Structure Comparison

- Less Wet Years - More Dry Years
<table>
<thead>
<tr>
<th></th>
<th>Current Plan</th>
<th>Proposed Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-year Average:</td>
<td>$3,500,000</td>
<td>$3,200,000</td>
</tr>
<tr>
<td>Minimum:</td>
<td>$950,000</td>
<td>$1,400,000</td>
</tr>
<tr>
<td>Maximum:</td>
<td>$5,960,000</td>
<td>$4,950,000</td>
</tr>
</tbody>
</table>

**Potential Considerations:**

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

Questions?

Resolution
ESPAA 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) 1\textsuperscript{st} priority is to the areas with the highest retention.
2) 2\textsuperscript{nd} 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.
Upper Valley – Water Availability – “Wet” Year

Water Availability / Recharge (cfs)

- Aug: 382
- Sep: 735
- Oct: 6195
- Nov: 3101
- Dec: 4209
- Jan: 0
- Feb: 0
- Mar: 0
- Apr: 0
- May: 0
- Jun: 0
- Jul: 0

Water Available
# Upper Valley – Conveyance Fee Structures

## Current Plan

<table>
<thead>
<tr>
<th>5-year Retention</th>
<th>$/af</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;40%</td>
<td>$6</td>
</tr>
<tr>
<td>20% - 40%</td>
<td>$5</td>
</tr>
<tr>
<td>15% - 20%</td>
<td>$4</td>
</tr>
</tbody>
</table>

## Proposed Plan

<table>
<thead>
<tr>
<th>5-year Retention</th>
<th>$/af</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;40%</td>
<td>$7</td>
</tr>
<tr>
<td>20% to &lt;40%</td>
<td>$6</td>
</tr>
</tbody>
</table>

### Additional Incentives:

- **Cold Weather Incentive** $1/af
  - Dec. 1\textsuperscript{st} to Mar. 31\textsuperscript{st}

- **Delivery Incentive** $1/af
  - >75% of the time
Upper Valley – Fee Structure Comparison

Comparison Table

<table>
<thead>
<tr>
<th>Payment Plan</th>
<th>Maximum Capacity</th>
<th>“Normal” Water Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recharge Vol. (af)</td>
<td>Cost ($)</td>
</tr>
<tr>
<td>Current Plan</td>
<td>389,000</td>
<td>$2,440,000</td>
</tr>
<tr>
<td>Proposed Plan</td>
<td>308,000</td>
<td>$2,083,000</td>
</tr>
</tbody>
</table>

- 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.

![Graph showing fee structure comparison between Original Plan and New Proposed Plan from 2002 to 2018.](image)
### Upper Valley – Conveyance Fee Structures

<table>
<thead>
<tr>
<th></th>
<th>Current Plan</th>
<th>Proposed Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>10-year Average:</strong></td>
<td>$633,000</td>
<td>$635,000</td>
</tr>
<tr>
<td><strong>10-year Average Wet Years:</strong></td>
<td>$904,000</td>
<td>$907,000</td>
</tr>
<tr>
<td><strong>Minimum:</strong></td>
<td>$1,700</td>
<td>$2,100</td>
</tr>
<tr>
<td><strong>Maximum:</strong></td>
<td>$1,540,000</td>
<td>$1,600,000</td>
</tr>
</tbody>
</table>

**Potential Considerations:**

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

Questions?

Resolution