Amended AGENDA
IDAHO WATER RESOURCE BOARD

Board Meeting No. 10-19
November 14, 2019
8:00 a.m.
Water Center
Conference Room 602 B, C & D
322 E. Front St.
BOISE

1. Roll Call
2. Executive Session – Board will meet pursuant to Idaho Code §74-206(1) subsection (d), for the purpose of considering records that are exempt from disclosure. Topic: Idaho Code §42-1737. Executive Session is closed to the public. Following adjournment of Executive Session – meeting reopens to the public.
3. Agenda & Approval of Minutes 7-19, 8-19, 9-19*
5. Boise River Feasibility Study Update
6. Priest Lake Water Management Project
   a. Program Update
   b. Lakes Commission Comments
7. Palouse Basin Aquifer Committee Update
8. ESPA Recharge
   a. Program Update
   b. Upper Valley Large Recharge Project Presentation
   c. Dye Trace Presentation
9. Water Transactions*
10. Potential Legislation of Interest
11. Administrative Rules Process Update
12. Director’s Report
13. 2020 Proposed Meeting Dates
14. Other Items for Discussion
15. Next Meeting & Adjourn

The Board will break for lunch at approximately 11:45 a.m.

* 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 jennifer.strange@idwr.idaho.gov or by phone at (208) 287-4800.
Chairman Chase called the work session meeting to order at 8:00 a.m. Roll Call: all Board members were present.

IDWR staff members present were: Brian Patton, Cynthia Clark Bridge, Neeley Miller, Wesley Hipke, Mathew Weaver, Matt Anders, and Mike McVay.

Guests present were: Michael Orr, Jerry Rigby, John Simpson, Roland Springer, Alan Jackson, Mel Kunkel, Shaun Parkinson, Lynn Tominaga, Scott Breeding, Randy Brown, Shaun Maupin, and Rex Wade.

During the Work Session the following items were discussed:

- The Board convened into Executive Session pursuant to Idaho Code §74-206(1) subsection (f) to discuss the topic of Lemhi River Water Right Applications. Mr. Alberdi moved that the Board resolve into executive session. Mr. Van Stone seconded. Roll call vote: Mr. Alberdi, aye; Mr. Barker, aye; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 8 ayes, motion passed.

At 8:50 a.m. Mr. Alberdi made a motion to resolve out of executive session. Chairman Chase seconded. Roll call vote: Mr. Alberdi, aye; Mr. Barker, aye; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 8 ayes, motion passed.

- A presentation by Jerry Rigby, John Simpson, and Alan Jackson from the Committee of Nine Tribal Rights Subcommittee.
- An update on the Boise River Feasibility Study by Cynthia Bridge Clark and Roland Springer.
• A presentation on the Cooperative Cloud Seeding Program was provided by Cynthia Bridge Clark, Matt Anders, and Mel Kunkel from Idaho Power.
• An update on Flood Management Grants by Neeley Miller.
• Information related to a loan request from Milner Irrigation District was provided by Rick Collingwood.
• A brief update on the Priest Lake Water Management Project by Neeley Miller.
• An update on Bear Lake by Vice Chair Raybould.
• A presentation on the North Fremont Canal System Project by Rick Collingwood, with comments from Shawn Maupin and Rex Wade.

No actions were taken by the Board during the Executive Session or the Work Session. The meeting adjourned at 11:45 a.m., after which, the Board broke for lunch and then went on a field trip to the North Fremont Canal System Project.

July 26, 2019
Board Meeting No. 7-19

At 8:00 a.m. Chairman Chase called the meeting to order. All members were present.

Agenda Item No. 1: Roll Call

Board Members Present
Roger Chase, Chairman
Vince Alberdi, Secretary
Bert Stevenson
Jo Ann Cole-Hansen

Jeff Raybould, Vice-Chairman
Pete Van Der Meulen
Dale Van Stone
Albert Barker

Staff Members Present
Mathew Weaver, Deputy Director
Cynthia Bridge Clark, Water Projects Section Manager
Rick Collingwood, Water Projects Staff Engineer

Brian Patton, Executive Officer
Neeley Miller, Senior Planner
Wesley Hipke, Recharge Project Mgr.

Guests Present
Representative Britt Raybould
Lynn Tominaga IGWA
Roland Springer, US Bureau of Reclamation
Megan Sloan, US Bureau of Reclamation
Brian Yeager, City of Hailey Public Works

John Williams, BPA
Shaun Parkinson, Idaho Power Company
David Stephenson, BWCC
Travis Thompson, A&B Irrigation
Paul Hansen, Island Park HOA

Agenda Item No. 2: Public Comment

Travis Thompson, representing A & B Irrigation and Twin Falls Canal Company, informed the Board that a funding request will be coming for recharge purposes in the Mid-Snake.

Brian Yeager from the City of Hailey expressed gratitude to the Board for the 2018 Flood Control Grants provided. He gave some information on the projects and presented a brief video.

John Williams provided an update on Bonneville Power Administration activities. Lynn Tominaga of the Idaho Ground Water Association thanked the Board for the hearing held and the work involved, and that IGWA would be supportive of the Board’s decisions.
**Agenda Item No. 3: Agenda & Approval of Minutes**
Mr. Barker moved to approve meeting minutes 5-19. Mr. Alberdi seconded. Voice vote. All in favor. Motion carried.

**Agenda Item No. 4: Financial Report**
Neeley Miller provided a financial report on the Board’s funds. Mr. Patton stated the numbers were as of June 30, 2019.

**Agenda Item No. 5: Lemhi River Basin**
Mr. Patton reminded the Board that they received information on this agenda item in the previous day’s meeting. There was a resolution presented for the Board’s consideration.

The resolution would authorize staff and counsel to retain technical consultants and experts to support the Board’s protests to applications for permits to divert from tributaries to the Upper Lemhi River. Mr. Barker made a motion to accept the resolution. Mr. Van Stone seconded. **Roll call vote:** Mr. Alberdi, aye; Mr. Barker, aye; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 8 ayes, motion passed.

**Agenda Item No. 6: Flood Management Grants**
Mr. Miller provided a brief recap of the current status of the Flood Management Grants program.

Before the Board was a resolution to award funds through the Flood Management Grants Program. Mr. Raybould moved to adopt the resolution with an attached table listing the 2019 projects and a note that item 3 information will be used in making land use planning decisions. Mr. Barker seconded. **Roll call vote:** Mr. Alberdi, aye; Mr. Barker, aye—abstain with regard to Item 6, as it pertains to Board of Controls Irrigation; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 8 ayes, motion passed.

**Agenda Item No. 7: Milner Irrigation District Loan Request**
Mr. Patton and Mr. Collingwood provided a summary of the loan request by Milner Irrigation District.

Before the Board was a resolution to authorize funding to construct new main irrigation conveyance pipelines for the Milner Irrigation District. Mr. Alberdi moved to adopt the resolution. Mr. Stevenson seconded. **Roll call vote:** Mr. Alberdi, aye; Mr. Barker, abstain; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 7 ayes, motion passed.

**Agenda Item No. 8: Series 2005 Revenue Bonds**
Mr. Patton provided history on the Bonds. New owners of some properties would like to enter into an agreement with the Board and the bond trustee. A resolution would authorize negotiations. Mr. Raybould asked if this action would affect the Board’s future ability to issue revenue bonds. Mr. Patton affirmed that this action would not negatively impact the Board. There was some discussion and clarification.

Mr. Raybould moved to adopt the resolution. Mr. Alberdi seconded. **Roll call vote:** Mr. Alberdi, aye; Mr. Barker, aye; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 8 ayes, motion passed.
**Agenda Item No. 9: ESPA Managed Recharge**

Mr. Hipke reminded the Board that a presentation related to this topic had been given at the recent committee meeting, and there was a resolution for consideration. Mr. Barker asked about a timeline for the resolution price structures. There was discussion about setting a time. Mr. Hipke suggested adding a line that these go for 5 years.

Mr. Alberdi moved to adopt the resolution with the added clarification of up to 5 years. Mr. Raybould seconded. **Roll call vote:** Mr. Alberdi, aye; Mr. Barker, nay; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 7 ayes. 1 nay. Motion passed.

An Upper Valley resolution was provided to the Board. There was discussion on whether to table the resolution or just not act. Mr. Raybould said more information was needed and recommended that the current fee structure remain in place for the Upper Valley. Mr. Stevenson asked about the length of the contracts in the Upper Valley. Mr. Hipke confirmed that the contracts are for one year. Mr. Raybould advised that the memorandum of intent related to those contracts are longer term. Mr. Hipke added that term is 20 years. The Board moved on to the next agenda item without action.

**Agenda Item No. 10: Cooperative Cloud Seeding Program**

Ms. Clark summarized the resolution before the Board to commit additional funds for the Cooperative Cloud Seeding Program which was the topic of a lengthy discussion during the work session. She provided program budget information and Shaun Parkinson provided additional data. There was discussion about the commitment and the funding for the program.

Mr. Raybould moved to adopt the resolution to approve funds for the Cooperative Cloud Seeding Program on a year-to-year basis and a statement about benefits. Ms. Cole-Hansen seconded. **Roll call vote:** Mr. Alberdi, aye; Mr. Barker, aye; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 8 ayes, motion passed.

**Agenda Item No. 11: Mountain Home AFB Sustainable Water Project Update**

Mr. Patton updated the Board on the Mountain Home AFB Sustainable Water Project. Included in the board books were a memo, a letter, and a draft MOA received from the Federal government. He listed some of the concerns with the memorandum.

**Agenda Item No. 12: Henry’s Fork Stream Alteration Approval**

Mr. Miller presented a resolution to grant a stream channel alteration permit application. IDWR stream channel alteration staff had reviewed the project and indicated that they would issue the permit, pending Board approval. Two members of the HOA who applied for the permit were in attendance. Dr. Paul Hansen appeared before the Board and provided more details for the requested permit. There was some discussion about private and public use.

Mr. Van Stone moved to adopt the resolution to approve stream alteration permit No. 21-20108. Mr. Barker seconded. **Voice vote:** all were in favor. Motion carried.

**Agenda Item No. 13: IDWR Eastern Regional Manager Update**

Mr. Cefalo provided an update in Eastern Regional activities. Bear Lake has become an increasingly busier area for new water right applications; flow meter installation for the ESPA groundwater agreement has kept Eastern staff busy; and transfer applications have increased for the region, resulting in an increase in application protests. Finally, he suggested that the Bear River needs to be adjudicated.
Agenda Item No. 14: Administrative Rules Process Update
Mat Weaver updated the Board on the administrative rules process and the Red Tape Reduction Act. He shared the public comments that had been received related to the proposed rules, which prompted the scheduling of three hearings. Public hearing requests were included in the book materials. Board members had been invited to participate in the hearings.

Agenda Item No. 15: Director’s Report
Deputy Director Mat Weaver provided an update on IDWR activities. He supported Mr. Cefalo’s comments that staff across the state have been very busy. He discussed the fact that several retirements were pending, and he informed the Board of the Office of IT Services (OITS) plan to centralize IT across state agencies. There was discussion about potential problems and issues of uncertainty. Next, there was an update on the ESPA groundwater management order. He identified the three oppositional parties, to which the Director requested supporting briefs related to the opposition. Finally, there was an update on the Northern adjudication activities.

Agenda Item No. 16: Non-Action Items for Discussion
No items were presented.

Agenda Item No. 17: Next Meeting and Adjourn
The next scheduled meetings were September 19-20, 2019 and November 14-15, 2019. Mr. Stevenson moved to adjourn. Mr. Raybould seconded. Voice vote. All in favor. The meeting adjourned.

Respectfully submitted this _____ day of November, 2019.

________________________________________
Vince Alberdi, Secretary

________________________________________
Jennifer Strange, Administrative Assistant II
Board Actions:

1. Mr. Barker moved to approve meeting minutes 5-19. Mr. Alberdi seconded. Voice Vote. All in favor. Motion passed.

2. Mr. Barker moved to adopt Resolution #14-2019 approving funds up to $40,000 to retain technical consultants and experts to support the Board’s protests. Mr. Van Stone seconded. Roll Call Vote. 8 Ayes. Motion carried.

3. Mr. Raybould moved to adopt Resolution #15-2019 to award Flood Management Grants. Mr. Barker seconded. Roll Call Vote. 8 Ayes, with an Abstention related to attached table item number 6. Motion carried.

4. Mr. Alberdi moved to adopt Resolution #16-2019 approving a loan up to $2,000,000 to Milner Irrigation District to construct new main irrigation conveyance pipelines. Mr. Stevenson seconded. Roll Call Vote. 7 Ayes. 1 Abstain. Motion carried.

5. Mr. Raybould moved to adopt Resolution #17-2019 to enter into an agreement to release certain development revenue bonds. Mr. Alberdi seconded. Roll Call Vote. 8 Ayes. Motion carried.

6. Mr. Alberdi moved to adopt Resolution #18-2019 approving ESPA managed recharge program standards and processes for the Lower Valley. Mr. Raybould seconded. Roll Call Vote. 7 Ayes. 1 Nay. Motion carried.

7. Mr. Raybould moved to adopt Resolution #19-2019 approving funds for the Cooperative Cloud Seeding Program in the Upper Snake, Wood and Boise River Basins. Ms. Cole-Hansen seconded. Roll Call Vote. 8 Ayes. Motion carried.

8. Mr. Van Stone moved to adopt Resolution #20-2019 approving stream alteration permit no. 21-20108. Mr. Barker seconded. Voice Vote. All were in favor. Motion carried.
MINUTES
MEETING NO. 8-19

Idaho Water Center
Conference Rooms 602 B, C, D
322 East Front Street, 6th Floor
BOISE

September 19, 2019
Work Session

Chairman Chase called the work session meeting to order at 8:00 a.m. All Board members were present. IDWR staff members present were: Brian Patton, Cynthia Clark Bridge, Neeley Miller, Wesley Hipke, and Craig Tesch. Guests present were: Peter Anderson, Lynn Tominaga, Dan Temple, Bill Bosworth, and Fernando Castaneda.

During the Work Session the following items were discussed:

- The Board convened into Executive Session pursuant to Idaho Code §74-206(1) subsection (f) to discuss the topic of Lemhi River Water Right Applications.
- A training by Deputy Attorney General Darrell Early on Open Meeting Law and Ethics.
- A presentation on the Raft River Basin Hydrologic Investigation by Craig Tesch.
- An update on the ESPA Recharge by Wesley Hipke.
- An update on the Priest Lake Water Management Project by Neeley Miller.
- An update on the Boise River Feasibility Study was introduced by Cynthia Bridge Clark, with presentation planned during the board meeting by Roland Springer. There was some discussion among the board members.

No action was taken by the Board during the Work Session. The session adjourned at 11:45 a.m., after which, the Board broke for lunch and then on to a field trip to Anderson Ranch Dam.
At 8:30 a.m. Chairman Chase called the meeting to order. All members were present.

**Agenda Item No. 1: Roll Call**

*Board Members Present*
- Roger Chase, Chairman
- Vince Alberdi, Secretary
- Bert Stevenson
- Jo Ann Cole-Hansen
- Jeff Raybould, Vice-Chairman
- Pete Van Der Meulen
- Dale Van Stone
- Albert Barker

*Staff Members Present*
- Gary Spackman, Director
- Cynthia Bridge Clark, Water Projects Section Manager
- Rick Collingwood, Water Projects Staff Engineer
- Ann Vonde, Deputy Attorney General
- Brian Patton, Executive Officer
- Neeley Miller, Senior Planner
- Wesley Hipke, Recharge Project Mgr.

*Guests Present*
- Braden Jensen, ID Farm Bureau
- Alexis Clark, Idaho Geological Survey
- Roland Springer, US Bureau of Reclamation
- Megan Sloan, US Bureau of Reclamation
- Peter Anderson, Trout Unlimited
- Lynn Tominaga IGWA
- David Stephenson, BWCC

**Agenda Item No. 2: Public Comment**

David Stephenson from the Big Wood Canal Company (BWCC) mentioned to the Board that they are planning to conduct a study to raise the dam at Magic Reservoir. BWCC has asked engineers to informally estimate the amount of increased storage (acre-feet) if the dam were raised. His company wanted any comments or recommendations from the Board. Mr. Alberdi commended the group on their initiative. There were questions and some discussion.

**Agenda Item No. 3: Financial Report**

Mr. Miller provided a financial report on the secondary aquifer fund, the revolving development fund and the water management account. Chairman Chase asked about Dworshak funds. Mr. Patton answered.

**Agenda Item No. 4: ESPA Recharge**

Mr. Hipke briefed the board on the two resolutions related to ESPA recharge. There was some discussion about the costs of the project. Mr. Stevenson had concerns that the irrigation companies were not putting any money in the projects. Mr. Hipke said he would check the amount of money contributed by other parties. The first resolution approves funds from the secondary aquifer fund and provide signatory authority in the matter of the A&B Irrigation district’s recharge injection wells.

Mr. Van Stone moved to adopt the resolution. Mr. Raybould seconded. *Roll call vote:* Mr. Alberdi, aye; Mr. Barker, abstain; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; and Chairman Chase, aye. 7 ayes, motion passed.
The second recharge resolution approves funds from the secondary aquifer fund and provides signatory authority in the matter of the Twin Falls Canal Company’s recharge injection wells. Mr. Raybould moved to adopt the resolution. Mr. Van Der Meulen seconded. Roll call vote: Mr. Alberdi, abstain; Mr. Barker, abstain; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; and Chairman Chase, aye. 6 ayes, motion passed.

Mr. Barker recused himself from both votes. Mr. Stevenson made a statement that his son has water rights in A&B Irrigation, but that he would be voting. Mr. Alberdi recused himself from the vote of the second recharge resolution, as he is a stock holder in Twin Falls Canal Company.

**Agenda Item No. 5: Priest Lake Water Management Project**

Mr. Miller provided a brief update on the Priest Lake project. The Board had a resolution to commit funds and provide signatory authority in the matter of Priest Lake Water management project, final engineering and design. Mr. Van Stone made a motion to accept the resolution as recommended. Mr. Van Der Meulen seconded. Roll call vote: Mr. Alberdi, aye; Mr. Barker, aye; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 8 ayes, motion passed.

**Agenda Item No. 6: Boise River Feasibility Study**

Mr. Patton stated that the speaker for this agenda item had not yet arrived. There was discussion to move the agenda item until Mr. Springer arrived. Mr. Barker moved to push agenda item 6 back until Mr. Springer arrived. Mr. Alberdi seconded the motion. Voice vote: all in favor.

Rejoining of the topic: Following the completion of Agenda Item 7, Ms. Clark introduced Roland Springer of the Bureau of Reclamation (BOR). Mr. Springer updated the Board on the progress of the study. BOR issued notice of intent to prepare the Environmental Impact Statement, the deadline for comment was September 9. Public meetings were held in Pine, Boise, and Mt. Home. Most comments related to access during construction, recreation and fishery impacts, and water supply to Elmore County. The final installment of the Board’s initial commitment of $3M to share study costs was received and appreciated. He stated there are challenges with the federal budgeting process, but the project is included in the budget that is currently before the US Congress. If there are problems with the proposed budget, then regional budgets can cover BOR’s project cost obligation.

BOR anticipates continued cooperation with the Board and IDWR as well as meeting the concerns of the tribes. During the next six-months they will prepare the draft feasibility study and environmental impact statement (EIS).

Ms. Clark and Mr. Springer spoke before the Board for action to commit additional funding for the feasibility study and EIS. The original project cost projection was $6M. Mr. Springer explained that total estimated project costs had increased by $1-1.5M, in part due to the accelerated project schedule and delays in the federal budgeting process. The resolution reflected authorization to commit up to an additional $550,000 for project expenses from the Board. Chairman Chase asked if the numbers presented today are likely to remain. Mr. Springer indicated that they are reasonably confident the project will remain under $7.5M total. Ms. Cole-Hansen asked about known endangered plant/animals. Mr. Barker added that there are some species of concern that will need to be evaluated. Mr. Springer said that other than Bull Trout, there were no known endangered plants or animals in the area. The US Fish and Wildlife Service is working with BOR to consult on those issues. Mr. Springer stated that they would know by next summer whether additional funds are needed. Concerns regarding campground space was discussed. BOR plans to address this issue in the study, by working with the Forest Service.
Before the Board was a resolution to commit additional funding for the feasibility study and provide signatory authority in the matter of the Boise River Basin Feasibility Study. Mr. Barker moved to adopt the resolution. Mr. Raybould seconded. Roll call vote: Mr. Alberdi, aye; Mr. Barker, aye; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 8 ayes, motion passed.

**Agenda Item No. 7: Mountain Home AFB Water Sustainability Project**
Mr. Patton updated the board on the status of this project. He described that the project is at an institutional impasse between the Federal and State governments. The Governor sent a follow-up letter (included in materials). As it stands, Mr. Patton stated that the next move related to a Memorandum of Agreement between the state and Air Force/DOD is currently with the Air Force Base. There was some discussion related to where Federal funding is still available.

The board moved back to agenda item 6, as the speaker had arrived.

**Agenda Item No. 8: Bear Lake Update**
Vice Chairman Raybould updated the Board on the Bear Lake activities. He stated there have been ongoing meetings with representatives from Wyoming, Utah and PacifiCorp. There is a late October meeting scheduled to review the status of the modeling work to date. Mr. Van Stone asked whether an adjudication has been scheduled for Bear River Basin. Mr. Patton said that an adjudication process has not been initiated. There was further discussion about Bear Lake issues related to flood releases and spinning reserves.

**Agenda Item No. 9: Raft River Basin Hydrologic Investigation**
Mr. Patton reminded the Board that a presentation related to this topic had been given the previous day in the Work Session, and there was a resolution for consideration.
Mr. Barker moved to adopt the resolution. He further stated that if the DOE funding doesn’t come through, then a strong justification will need to be presented. Mr. Raybould seconded.
Roll call vote: Mr. Alberdi, aye; Mr. Barker, aye; Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, aye; Mr. Van Stone, aye; Chairman Chase, aye. 8 ayes, motion passed.

**Agenda Item No. 10: IDWR Western Regional Manager Update**
Nick Miller addressed the Board on Western Regional activities. He noted an increase in permit filings and an increase in permit & transfer protests. He discussed some of the notable applications in the region, including: Board’s Anderson Ranch Dam project, MHAFB, Cat Creek, Elmore County and Micron.

**Agenda Item No. 11: Director’s Report**
Director Spackman reported on several issues and updates. He provided some history and discussed an ongoing issue with Ada County about outages at Barber Dam that affect Boise River flows and downstream irrigators. There have been discussions with Ada County. A Notice of Violation had been issued in response. Other options have been considered because the problem happened another time.

The Director and Mr. Springer from BOR discussed a problem with Arrowrock Dam gates. Some gates were not closing and upon further investigation, it appeared that 2-3 of the gates will need repair. As a result, water was released from Anderson Ranch Dam to maintain levels to protect Bull Trout. Mr. Springer confirmed that there is an issue and that gate repairs will need to be made. An extra
5,000-10,000 acre feet of storage will need to be released to facilitate the repairs, which will create a shortfall in storage water.

Next, the Director stated the refill settlement on the Boise River is almost concluded. IDWR is awaiting Judge Wildman’s decision. Mr. Barker replied that absent any further protests, Judge Wildman will vacate, per very recent order.

There was a brief update about controversy related to “reset date” at the Walcott/Minidoka facility.

From public meetings in Northern Idaho, adjudications will move forward. Additionally, Mark Gibbs has stated he will bring forth Bear River Basin adjudication legislation.

Related to the ESPA GW Management Area, there is a pre-hearing scheduled.

Finally, an update on the Department’s budget was provided. The Director reported that the Department had been asked to remove all enhancements from the General Fund, and further, a potential 5% reduction of the General Fund FY2020 budget was required.

**Agenda Item No. 12: Non-Action Items for Discussion**
No items were presented.

**Agenda Item No. 13: Next Meeting and Adjourn**
The meeting adjourned at 11:15 a.m. The next scheduled meetings were November 14-15, 2019.

Respectfully submitted this _____ day of November, 2019.

________________________________________
Vince Alberdi, Secretary

________________________________________
Jennifer Strange, Administrative Assistant II
Board Actions:

1. Mr. Van Stone moved to adopt Resolution #21-2019 approving funds up to $202,000 to ABID to develop injection wells for recharge purposes. Mr. Raybould seconded. Roll Call Vote. 7 Ayes. 1 Abstain. Motion carried.

2. Mr. Raybould moved to adopt Resolution #22-2019 approving funds up to $178,000 to TFCC to develop injection wells for recharge purposes. Mr. Van Der Meulen seconded. Roll Call Vote. 6 Ayes. 2 Abstain. Motion carried.

3. Mr. Van Stone moved to adopt Resolution #23-2019 approving funds up to $653,000 for the final engineering and design phase of the Priest Lake Water Management Project. Mr. Van Der Meulen seconded. Roll Call Vote. 8 Ayes. Motion carried.

4. Mr. Barker moved to push Agenda Item 6 back until the presenter arrived. Mr. Alberdi seconded. Voice Vote. All Ayes. Motion passed.

5. Mr. Barker moved to adopt Resolution #24-2019 approving funds up to $550,000 to continue the feasibility study of the Boise River Basin. Mr. Raybould seconded. Roll Call Vote. 8 Ayes. Motion carried.

6. Mr. Barker moved to adopt Resolution #25-2019 approving funds up to $204,000 for one year of the Raft River Basin Hydrologic Project. Mr. Raybould seconded. Roll Call Vote. 8 Ayes. Motion carried.
At 1:30 p.m. Chairman Chase called the meeting to order.

**Agenda Item No. 1: Roll Call**

Board Members Present by telephone
- Roger Chase, Chairman
- Vince Alberdi, Secretary
- Jo Ann Cole-Hansen
- Jeff Raybould, Vice-Chairman
- Bert Stevenson

Board Members Not Present
- Al Barker
- Dale Van Stone
- Peter Van Der Meulen

Staff Members Present
- Brian Patton, Executive Officer
- Mathew Weaver, Deputy Director

**Agenda Item No. 2: Administrative Rules**

Deputy Director, Mat Weaver said the Board needed to adopt temporary and proposed administrative rules as pending rules. The deadline for adoption of the rules was prior to October 16, 2019. Public hearings were held and comments were accepted related to the proposed rules.

There was discussion related to the resolution. Chairman Chase asked if there were any questions.

Bert Stevenson made a motion to approve the resolution. Mr. Alberdi seconded the motion. Roll Call vote: Mr. Alberdi, aye; Mr. Barker, absent;
Ms. Cole-Hansen, aye; Mr. Raybould, aye; Mr. Stevenson, aye; Mr. Van Der Meulen, absent; Mr. Van Stone, absent; and Chairman Chase, aye. 5 Ayes, Motion Passes.

**Agenda Item No. 3 Non-Action Items for Discussion**
Mr. Weaver said the Legislature may have more work to complete this issue in the upcoming session as they plan to review the rules adopted.

**Agenda Item No. 4 Adjourn**
Motion to adjourn was made by Mr. Raybould. Seconded by Mr. Stevenson. Voice vote. All in favor. Meeting adjourned at 1:45 p.m.

Respectfully submitted this _____ day of November, 2019.

________________________________________
Vince Alberdi, Secretary

________________________________________
Jennifer Strange, Administrative Assistant II
Board Actions:

1. Mr. Stevenson made a motion to adopt the resolution to adopt and publish the IWRB’s current and proposed rules as pending rules. Mr. Alberdi seconded. Roll Call Vote. 5 Ayes. Motion passed.
Memorandum

To: Idaho Water Resource Board
From: Brian Patton & Neeley Miller, Planning & Project Bureau
Date: November 4, 2019
Re: Financial Status Report

As of September 30, 2019 the IWRB’s available and committed balances are as follows:

Secondary Aquifer Fund:
- Committed/earmarked but not disbursed: $18,616,909
- Uncommitted Balance: $3,485,604

Revolving Development Account:
- Committed/earmarked but not disbursed: $22,069,439
- Loan principal outstanding: $26,716,514
- Uncommitted Balance: $3,767,424
- Anticipated loanable funds available next 1 year: $7,267,424

Water Management Account
- Committed/earmarked but not disbursed: $21,297,549
- Uncommitted Balance: $300,758

Total committed/earmarked but not disbursed: $61,983,897
Total loan principal outstanding: $26,716,514
Total uncommitted balance: $7,553,786

- The committed/earmarked balance in the Water Management Account includes the remainder of the FY 2018 $1M legislative appropriation for the Flood Management Grant Program per HB 712. It also includes the $21M legislative appropriation per HB 285 to the IWRB’s Water Management Account for the Anderson Reservoir Enlargement and/or MHAFB Water Supply Project ($20 M), the FY 2019 Flood Management Grant Program ($800K) and for the Mid-Snake Water Quality Monitoring and Modeling effort ($200K).
Idaho Water Resource Board
Budget and Committed Funds
as of September 30, 2019

SECONDARY AQUIFER PLANNING, MANAGEMENT, & IMPLEMENTATION FUND

<table>
<thead>
<tr>
<th>FYE 2019 Cash Balance</th>
<th>20,839,665.33</th>
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</table>

**FY 2020 Revenue**

- Interest Earned State Treasury: $144,754.47
- HB547 - State Recharge & Aquifer Stabilization (SRAS): $9,131.18
- HB295, Section 4 - Water Sustainability: $128,826.94
- Department of Energy Grant ($2.068M): $23,600.00
- TOTAL FY 2019 REVENUE: $5,168,354.47

**FY 2020 Expenditures**

<table>
<thead>
<tr>
<th>Description</th>
<th>Budget</th>
<th>Amended</th>
<th>Obligated</th>
<th>Expenditures</th>
<th>Carry forward</th>
<th>Committed</th>
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<tbody>
<tr>
<td>SRAS Equipment &amp; Supplies - FY 20</td>
<td>$492,000.00</td>
<td>$492,000.00</td>
<td>$398,500.00</td>
<td>($93,500.00)</td>
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<td>SRAS Site Monitoring - FY 20</td>
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<td>SRAS Regional Monitoring - FY 19</td>
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<td>Big Wood Canal Company (CON01291 - Dietrich Drop Power Plant Improvements Project)</td>
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<td>Elsing Drilling &amp; Pump Co Inc (CON01365 - Wilson Canyon Recharge Basin Improvements Projects - monitoring wells)</td>
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<td>Quadrant Consulting Inc (CON01398 - MP29 Managed Recharge Site Engineering Services)</td>
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<td>The Ferguson Group (FY 2019 Budget)</td>
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<td>The Ferguson Group (FY 2020 Budget)</td>
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<td>Steve Stuebner (FY 2020 Budget) - Media Services</td>
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<td>Elzabeth Cresto (CON01390)</td>
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<td>Elmore County (CON01251 - Canyon Creek Recharge Site)</td>
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<td>Travel Costs for IWRB and staff</td>
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<td>WS Hydrology Monitoring - FY 20</td>
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<td>USGS - 1663 (Big Wood River Modeling)</td>
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<td>Wood River Model Misc Expenditures (room rentals, refreshments, etc.)</td>
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<td>University of Idaho (CON01341, GIS)</td>
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<tr>
<td>Lost Valley Reservoir Company (CON01282 - Northern Idaho Ground Squirrel Study)</td>
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<td>Brown &amp; Caldwell (CON01320 - Treasure Valley Managed Recharge Feasibility Study)</td>
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<td>Department of Interior - Boise River Feasibility Study (FY2010)</td>
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<td>Department of Energy Grant expenditures (ESPA costs) 29871</td>
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<td>Department of Energy Grant expenditures (Big Lost costs) 29872</td>
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<td>Down Right Drilling &amp; Pump Inc (CON01369, SE Boise GWMA) 29873</td>
<td>$872,614.71</td>
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**TOTAL FY 2020 EXPENDITURES**

| | ($3,905,407.29) |

| FY 2020 Cash Balance | 22,102,512.51 |

**COMMITTED FUNDS THRU FY 2018**

<table>
<thead>
<tr>
<th>Description</th>
<th>Budget</th>
<th>Amended</th>
<th>Obligated</th>
<th>Expenditures</th>
<th>Carry forward</th>
<th>Committed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative Weather Modification Program (Cloud Seeding - CON01109)</td>
<td>$492,000.00</td>
<td>$492,000.00</td>
<td>$398,500.00</td>
<td>($93,500.00)</td>
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<td>$427,000.00</td>
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<td>Department of Energy SEP grant ($251,000)</td>
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<td>$200,000.00</td>
<td>$251,000.00</td>
<td>$50,000.00</td>
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<td>Mountain Home Air Force Base (PCA 29800)</td>
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<td>$900,000.00</td>
<td>$1,000,000.00</td>
<td>($1,000,000.00)</td>
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<td>$735,732.35</td>
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<td>Remaining Initial Funds</td>
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<td>($1,770,185.29)</td>
<td>$0.00</td>
<td>$872,614.71</td>
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</tbody>
</table>
## ESPA Managed Recharge Infrastructure

- **Milk-Gooding Dietrich Drop hydro plant bypass (CON01281)**
  - Budget: $50,000.00
  - Obligated: $1,450,000.00
  - Expended: $1,500,000.00
  - Amortized: $497,403.33
  - Budget (as approved): $1,002,595.67

- **Egin Lakes Recharge Project, Phase II (CON01225)**
  - Budget: $500,000.00
  - Obligated: $80,000.00
  - Expended: $580,000.00
  - Amortized: $75,275.75
  - Budget (as approved): $504,724.25

**Total ESPA Managed Recharge Infrastructure**
- **WEISER BASIN**
  - Budget: $5,360,436.45
  - Obligated: $2,330,000.00
  - Expended: $7,690,436.45
  - Amortized: ($4,316,042.63)
  - Budget (as approved): ($1,887,073.90)
  - Budget (as approved): $1,507,319.92

### STATEWIDE STUDIES & PROJECTS

#### TREASURE VALLEY

- **Treasure Valley Modeling (USGS 6605) Year 2 of 5**
  - Budget: $500,000.00
  - Obligated: $500,000.00
  - Expended: $446,594.27

**Total TREASURE VALLEY**
- **WEISER BASIN**
  - Budget: $53,405.73
  - Obligated: $53,405.73

#### WOOD RIVER VALLEY

- **Wood River Valley Aquifer GW Model (USGS 6601)**
  - Budget: $200,000.00
  - Obligated: $200,000.00

- **Elmore County - Canyon Creek Recharge Site (CON01251)**
  - Budget: $50,000.00
  - Obligated: $90,000.00
  - Expended: $140,000.00
  - Amortized: ($135,978.53)

**Total WOOD RIVER VALLEY**
- **WEISER BASIN**
  - Budget: $4,021.47
  - Obligated: $4,021.47

#### WEISER BASIN

- **Lost Valley Reservoir - Northern Idaho Ground Squirrel Study (CON01282)**
  - Budget: $30,000.00
  - Obligated: $30,000.00
  - Expended: ($24,759.00)

- **Ground water conservation grants in priority aquifers (CON01205 & CON01223)**
  - Budget: $200,000.00
  - Obligated: $200,000.00
  - Expended: ($62,484.03)
  - Amortized: ($112,515.97)

**Total Statewide Studies & Projects**
- **WEISER BASIN**
  - Budget: $25,000.00
  - Obligated: $25,000.00

**Total Managed Recharge Investigations**
- **WEISER BASIN**
  - Budget: $257,208.98
  - Obligated: $257,208.98

**Total ESPA Managed Recharge Infrastructure**
- **WEISER BASIN**
  - Budget: $6,950,000.00
  - Obligated: $6,950,000.00
  - Expended: $7,100,000.00
  - Amortized: ($2,826,052.45)
  - Budget (as approved): ($2,688,941.69)
  - Budget (as approved): $1,258,889.20

**Total COMMITTED FUNDS THRU FY 2018**
- **WEISER BASIN**
  - Budget: $8,841,788.27
  - Obligated: $3,438,000.00
  - Expended: $12,330,788.27
  - Amortized: ($7,686,043.75)
  - Budget (as approved): ($2,688,941.69)
  - Budget (as approved): $1,955,802.83

### FY 2019 BUDGET

#### ESPA Managed Recharge Operations

- **Equipment & Supplies**
  - Budget: $89,000.00
  - Obligated: $89,000.00

- **Conveyance Cost**
  - Budget: $3,500,000.00
  - Obligated: $3,500,000.00

- **Regional Monitoring**
  - Budget: $200,000.00
  - Obligated: $200,000.00

**Total ESPA Managed Recharge Operations**
- **WEISER BASIN**
  - Budget: $4,254,550.00
  - Obligated: $4,254,550.00

#### ESPA Managed Recharge Infrastructure

- **North Side CC - Wilson Canyon Recharge Basin (CON01331, CON01368, CON01378)**
  - Budget: $1,750,000.00
  - Obligated: $1,750,000.00

- **AFRI2 MP29 Site**
  - Budget: $2,150,000.00
  - Obligated: $2,150,000.00

- **AFRI2 MP29 Hydro Plant Taibaly - Big Wood Canal (CON01293)**
  - Budget: $1,000,000.00
  - Obligated: $1,000,000.00

- **South Fork & other small Upper Valley sites (CON01297 & CON01298)**
  - Budget: $1,000,000.00
  - Obligated: $1,000,000.00

**Total ESPA Managed Recharge Infrastructure**
- **WEISER BASIN**
  - Budget: $2,826,052.45
  - Obligated: $2,826,052.45

#### Managed Recharge Investigations

- **North Side CC - Recharge Sites (CON01301)**
  - Budget: $200,000.00
  - Obligated: $200,000.00

- **MP 29 Managed Recharge Site (CON01296 & CON01337)**
  - Budget: $300,000.00
  - Obligated: $300,000.00

**Total Managed Recharge Investigations**
- **WEISER BASIN**
  - Budget: ($7,900,000.00)
  - Obligated: ($7,900,000.00)

**Total Managed Recharge Investigations**
- **WEISER BASIN**
  - Budget: $257,208.98
  - Obligated: $257,208.98

#### ESPA Hydrologic Monitoring

- **Hydrologic Monitoring (DOE - Year 1 of 3 = $928K)**
  - Budget: $310,000.00
  - Obligated: $310,000.00

**Total ESPA Hydrologic Monitoring**
- **WEISER BASIN**
  - Budget: $257,208.98
  - Obligated: $257,208.98
<table>
<thead>
<tr>
<th>Description</th>
<th>FY 2020 Budget</th>
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<tbody>
<tr>
<td><strong>TREASURE VALLEY</strong></td>
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<tr>
<td>Treasure Valley Modeling Year 3 of 5 (USGS 6605)</td>
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<tr>
<td>Boise River Storage Studies (final payment)</td>
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<td>Southeast Boise Groundwater Management Area Monitoring</td>
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<td>Treasure Valley Recharge Study (CON01320)</td>
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<td><strong>STATE-WIDE</strong></td>
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<tr>
<td>Aquifer monitoring network enhancements in priority aquifers</td>
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<td>Cooperative Cloud Seeding Program</td>
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<td><strong>TOTAL FY 2019 BUDGETED FUNDS</strong></td>
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<td><strong>ESPA Managed Recharge Operations</strong></td>
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<td>Recharge Monitoring</td>
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<td>Regional Monitoring</td>
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<td><strong>Total ESPA Managed Recharge Operations</strong></td>
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<td><strong>ESPA Managed Recharge Infrastructure</strong></td>
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<td>North Side CC - Eden Projects</td>
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<td>Large Upper Valley Investigations</td>
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<tr>
<td>Small Upper Valley Sites</td>
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<td>A&amp;B Irrigation - Injection Wells</td>
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<td><strong>Total ESPA Managed Recharge Infrastructure</strong></td>
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<td><strong>Managed Recharge Investigations</strong></td>
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<td>Big/Little Wood Sites</td>
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<td><strong>Total Managed Recharge Investigations</strong></td>
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<td>Hydrologic Monitoring (DOE - Year 2 of 3 = $928K)</td>
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<td><strong>TREASURE VALLEY</strong></td>
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<td>Water Sustainability Projects</td>
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<td>BEAR RIVER BASIN TOTAL</td>
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<td>COOPERATIVE CLOUD SEEDING PROGRAM</td>
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<td>Operations &amp; Maintenance (1/3 of total annual cost for O&amp;M)</td>
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<tr>
<td>Capital Expenditures (HPC - Year 1 of 2, Total = $700K)</td>
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<tr>
<td>Program Development Activities</td>
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<td>COOPERATIVE CLOUD SEEDING PROGRAM TOTAL</td>
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<tr>
<td>STATE-WIDE</td>
</tr>
<tr>
<td>Administrative expenses (public information, staff training, etc)</td>
</tr>
<tr>
<td>Hydrological monitoring hardware and software</td>
</tr>
<tr>
<td>Professional Assistance for securing Federal Funding</td>
</tr>
<tr>
<td>Aquifer monitoring network enhancements in priority aquifers</td>
</tr>
<tr>
<td>Northern Idaho</td>
</tr>
<tr>
<td>Southern Idaho (non-ESPA)</td>
</tr>
<tr>
<td>STATE-WIDE TOTAL</td>
</tr>
<tr>
<td>Unspecified Projects in Other Areas or Carry-over</td>
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<tr>
<td>TOTAL FY 2020 BUDGETED FUNDS</td>
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### REVOLVING DEVELOPMENT ACCOUNT

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<tr>
<th>Description</th>
<th>Amount</th>
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<tr>
<td>Legislative Appropriation FY90-91</td>
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<tr>
<td>Legislative Appropriation FY91-92</td>
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<tr>
<td>Legislative Appropriation FY93-94</td>
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<td>Legislative Appropriation 2001, SB1239.</td>
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<td>Legislative Appropriation 2004, HB843, Sec 12</td>
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<td>Loan Interest</td>
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<td>Interest Earned State Treasury (Transferred)</td>
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<td>Water Supply Bank Receipts</td>
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<td>Transferred to/from Water Management Account</td>
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<td>Filing Fee Balance</td>
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<td>Bond Fees</td>
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<td>Series 2000 (Caldwell/New York) Pooled Bond Issuers fees</td>
<td>$43,657.93</td>
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<td>2012 Ground Water District Bond Issuer fees</td>
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<td>Bond Issuer fees</td>
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<td>Pierce Well Easement</td>
<td>$2,000.00</td>
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<tr>
<td>Transfer from Aquafill Hatchery Sub-Account</td>
<td>$1,117,800.85</td>
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<td>Transfer from Pristine Springs Sub-Account</td>
<td>$564,852.10</td>
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<td>Legislative Audits</td>
<td>($49,404.45)</td>
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<td>IWRR Bond Program</td>
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<td>IWRR Studies and Projects</td>
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<td>Arbitrage Calculation Fees</td>
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<td>Protest Fees</td>
<td>($995.00)</td>
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<td>Attorney fees for Jughandle LID (Skinner Fawcett)</td>
<td>($3,600.00)</td>
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<td>Attorney fees for A &amp; B Irrigation (Skinner Fawcett)</td>
<td>($4,637.50)</td>
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<td>Lemhi Basin Protest Costs - Attorney General's Office</td>
<td>($5,514.00)</td>
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<td>Weiser Galloway Study - US Army Corps of Engineers</td>
<td>($1,555,450.71)</td>
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<td>Boise River Storage Feasibility Study</td>
<td>($333,000.00)</td>
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<td>Geotech Environmental (Transducers)</td>
<td>($5,402.61)</td>
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<td>Priest Lake Improvement Study (16-Mar-16)</td>
<td>($370,393.26)</td>
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<td>Treasureton Irrigation Ditch Co</td>
<td>($5,000.00)</td>
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<tr>
<td><strong>Mountain Home AFB Water Sustainability Project (29514)</strong></td>
<td>$4,000,000.00</td>
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<tr>
<td>Legislative Appropriation 2014, HB 479 Sec 1 and 2</td>
<td>($2,500,000.00)</td>
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<td>JR Simplot - WR Purchase</td>
<td>($10,500.00)</td>
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<td>LeMoyn Appraisal LLC</td>
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<td>Integrated Delivery Solutions - Mark Alpert</td>
<td>($34,459.18)</td>
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<td>Brown &amp; Caldwell - Owner's Advisor</td>
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<td>SPF Engineering - WR Transfer</td>
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<td>Skinner-Fawcett - Bond Counsel</td>
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<td>Pillsbury, Winthrop, &amp; Shaw - DBO Counsel</td>
<td>($79,839.30)</td>
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<td>Project Costs (mailings, travel, teleconference calls)</td>
<td>($1,769.91)</td>
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<td>Trexeter Water District 02 Assessments</td>
<td>($1,648.16)</td>
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<tr>
<td><strong>Boise River (Arrowrock Enlargement) Feasibility Study (HB479)</strong></td>
<td>$1,500,000.00</td>
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<td><strong>Balance Boise River (Arrowrock Enlargement) Feasibility Study (HB479)</strong></td>
<td>$1,500,000.00</td>
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<td><strong>Island Park Enlargement (28620)</strong></td>
<td>$2,500,000.00</td>
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<tr>
<td>Legislative Appropriation 2014, HB 479 Sec 1 and 2</td>
<td>($174,170.00)</td>
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<td>Island Park Enlargement Costs (HB 479)</td>
<td>$174,170.00</td>
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<td><strong>Balance Island Park Enlargement (HB 479)</strong></td>
<td>$2,225,630.00</td>
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<td><strong>Water Supply Bank Computer Infrastructure (29519)</strong></td>
<td>$500,000.00</td>
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<tr>
<td>Legislative Appropriation 2014, HB 479 Sec 1 and 2</td>
<td>($497,350.75)</td>
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<td><strong>Balance Water Supply Bank Computer Infrastructure (HB 479)</strong></td>
<td>$2,649.25</td>
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<td>Cash Balance of Legislative Appropriation 2014, HB 479 Sec 1 and 2</td>
<td>$4,203,770.57</td>
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<td><strong>Minidoka Dam Enlargement/Teton Dam Replacement Studies (29510)</strong></td>
<td>$1,800,000.00</td>
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<td>Legislative Appropriation 2008, SB1511 Sec 2, Minidoka/Teton Studies</td>
<td>($1,229,460.15)</td>
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<td><strong>Balance for Minidoka Dam Enlargement/Teton Dam Replacement Studies</strong></td>
<td>$570,539.82</td>
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<td><strong>Priest Lake Water Management Project (29521)</strong></td>
<td>$4,555,708.89</td>
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<td>Legislative Appropriation 2018, HB 677 Sec 5</td>
<td>($511,941.07)</td>
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<td>Legislative Approval (2018, HB 677 Sec 6)</td>
<td>$2,419,580.50</td>
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<td>Bonner County Contribution</td>
<td>$160,000.00</td>
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<td>Interest Earned State Treasury</td>
<td>$88,068.06</td>
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<tr>
<td>2012 Contract Expenditures - Mott Engineering</td>
<td>($370,393.26)</td>
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</tbody>
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### IDAHO WATER RESOURCE BOARD

Sources and Applications of Funds

as of September 30, 2019
### Bell Rapids Water Rights Sub-Account
- Legislative Appropriation 2005, HB392 ................................................................. $21,300,000.00
- Bureau of Reclamation Payments Received ......................................................... $29,446,335.46
- Remaining balance in ESPA Sub-Account .............................................................. $341,759.55
- Interest Earned State Treasury ................................................................................. $698,613.04

**Total Bell Rapids Water Rights Sub-Account Revenue** ........................................ $51,786,708.05

- Bell Rapids Purchase .................................................................................................. $22,041,697.55
- Transfer to General Fund - P&I ............................................................................... ($22,072,052.06)
- Payment to US Bank for Alternative Financing Note ............................................... ($7,118,125.86)
- Payment for Water District 02 Assessments ............................................................ ($75,882.82)
- Payment for Ongoing Bell Rapids Finance Costs (trustee fees, water bank) ........ ($6,740.10)

**Cash Balance Bell Rapids Water Rights Sub-Account** ........................................ $472,209.66

**Committed Funds**
- Ongoing Bell Rapids Finance Costs (trustee fees, WD02) ......................................... $472,209.66

**Uncommitted Bell Rapids Water Rights Sub-Account Balance** ............................ $0.00

### Pristine Springs Project Sub-Account
- Rental Payments to be Transferred to Secondary Aquifer Fund ................................. $861,675.10
- Loan Interest .............................................................................................................. $2,369,601.05
- Loan Principal from Magic Valley & North Snake GWDC ........................................ $5,379,030.89

**Total Pristine Springs Project Revenue to be Transferred** ...................................... $8,709,307.04

**Cash Balance Pristine Springs Sub-Account** ........................................................ $7,04

**Uncommitted Pristine Springs Sub-Account Balance** ........................................ $0.00

### Rathdrum Prairie CAMP & Treasure Valley CAMP Sub-Account
- Pristine Springs Hydropower and Rental Revenues ................................................ $271,672.34
- Total Rathdrum Prairie CAMP & Treasure Valley CAMP Sub-Account Revenue .... $872,245.45
- Spokane River Forum ................................................................................................ $23,000.00
- Total Rathdrum Prairie CAMP & Treasure Valley CAMP Sub-Account Expenditures ........................................................................................................ $123,500.00

**Cash Balance Rathdrum Prairie CAMP & Treasure Valley CAMP Sub-Account** .......................................................... $148,745.45

**Committed Funds**
- Spokane River Forum ................................................................................................ $0.00

**Uncommitted Rathdrum Prairie CAMP & TV CAMP Sub-Account Balance** ........ $148,745.45

### Upper Salmon/CBWT Sub-Account
- Water Transaction Projects Payment Advances from CBWT/ Accord ....................... $6,812,271.88
- PCSRF Funds for Admin of Non-Diversion Easements on Lemhi River ................... $222,457.16
- Total Upper Salmon/CBWT Sub-Account Revenue ................................................ $7,034,729.04
- Transfer to Water Supply Bank ................................................................................. $107,877.30
- Change of Ownership ............................................................................................... ($600.00)
- Appraisals/Closing Costs .......................................................................................... ($13,905.95)
- Payments for Water Acquisition .............................................................................. ($2,646,624.74)

**Total Upper Salmon/CBWT Sub-Account Expenditures** ........................................ $2,769,306.02

**Cash Balance CBWT Sub-Account** .................................................................... $4,356,312.10

**Committed Funds**
- Administration of Non-Diversion Easements on Lemhi River ................................ $141,540.61
- Bayhorse Creek (Peterson Ranch) .............................................................................. $28,952.25
- Badger Creek (OWBP) WSB ................................................................................... $10,511.60
- Beaver Creek (DOT LLP) ........................................................................................ $114,994.78
- Big Timber Tyler (Leaders Land Partners) ................................................................. $417,694.87
- Bohannon Creek DJ (Barbara Stokes) ...................................................................... $878,989.77
- Bohannon Creek BS (Betty Stokes) ......................................................................... $432,248.42
- Canyon Creek (Big Timber Creek (Beyeler)) ......................................................... $301,518.09
- Carmen Creek (Bill Slavin) ..................................................................................... $219,588.89
- Carmen Creek (Bruce Slavin) .................................................................................. $131,506.75
- Fourth of July Creek (Defiance Investments) ........................................................... $15,671.59
- Iron Creek (Konzc) .................................................................................................... $189,065.83
- Kenney Creek Source Switch (Gail Andrews) ........................................................ $22,324.44
- Lemhi - Big Springs (Merrill Beyeler) ..................................................................... $55,154.49
- Lemhi River & Little Springs Creek Kauer (McFarland Livestock Co) ................... $18,813.48
- Little Springs Creek (Snyder) ................................................................................... $251,630.25
- Lower Eighteenmile Creek (Ellsworth Angus Ranch) ............................................. $1,777.78
- Lower Lemhi Thomas (Robert Thomas) .................................................................. $900.00
- P-8 Bowles (River Valley Ranch) ............................................................................ $224,924.63
- P-9 Charlton (Sydney Down) .................................................................................. $16,596.07
- P-9 Dowton (Western Sky LLC) ................................................................................ $196,787.89
- P-9 Etlinga (Etlinga) ............................................................................................... $245,990.49
<table>
<thead>
<tr>
<th>Description</th>
<th>Amount Loaned</th>
<th>Principal Balance</th>
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</thead>
<tbody>
<tr>
<td>Patterson-Big Springs PBSC9 (Silver Blk Angus/S Whithworth)</td>
<td>$3,500,000.00</td>
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<td>Pole Creek (Salmon Falls Land)</td>
<td>$540,592.57</td>
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<td>Pratt Creek (Malkey)</td>
<td>$82,209.89</td>
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<tr>
<td>Spring Creek (Richard Beard)</td>
<td>$2,576.35</td>
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<td>Spring Creek (Ellie Beard)</td>
<td>$3,775.81</td>
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<tr>
<td>Whitman (Leadore Land Partners)</td>
<td>$147,479.89</td>
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<tr>
<td><strong>Total Committed Funds</strong></td>
<td><strong>$5,066,459.50</strong></td>
<td>($712,147.50)</td>
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### Water Supply Bank Sub-Account

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount Loaned</th>
<th>Principal Balance</th>
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</thead>
<tbody>
<tr>
<td>Interest Earned State Treasury</td>
<td>$27,128.81</td>
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<tr>
<td>Payments received from renters</td>
<td>$4,084,682.44</td>
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<td>Payments made to owners</td>
<td>($3,481,751.05)</td>
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<td><strong>Total Committed Funds</strong></td>
<td><strong>$630,060.20</strong></td>
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### Cash Balance Water Supply Bank Sub-Account

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount Loaned</th>
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<tr>
<td>Uncommitted Water Supply Bank Sub-Account Balance</td>
<td>$802,931.39</td>
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<td><strong>Total Committed Funds</strong></td>
<td><strong>$271,128.81</strong></td>
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### Eastern Snake Plain Sub-Account

<table>
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<tr>
<th>Description</th>
<th>Amount Loaned</th>
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<tbody>
<tr>
<td>Legislative Appropriation 2005, HB392</td>
<td>$7,200,000.00</td>
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<tr>
<td>Legislative Appropriation 2005, HB392, CREP Program</td>
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<td>Interest Earned State Treasury</td>
<td>$2,048,414.71</td>
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<td>Loan Interest</td>
<td>$270,791.25</td>
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<td>Reimbursement from Commerce &amp; Labor W-Canal</td>
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<td>Reimbursement from WVGW &amp; NSGW-Dristal Plains</td>
<td>$1,000,000.00</td>
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<td>Reimbursement from Water District 1 for Recharge</td>
<td>$159,764.73</td>
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<tr>
<td>Reimbursement from BOR for Palisades Reservoir</td>
<td>$2,381.12</td>
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<tr>
<td>Black Canyon Exchange Project Revenues</td>
<td>$23,800.00</td>
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<tr>
<td><strong>Eastern Snake Plain Sub-Account Revenue</strong></td>
<td><strong>$13,779,861.58</strong></td>
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### Cash Balance Eastern Snake Plain Sub-Account

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount Loaned</th>
<th>Principal Balance</th>
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</thead>
<tbody>
<tr>
<td>Loans and Other Commitments</td>
<td>$337,594.00</td>
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<tr>
<td>Commitment - Palisades Storage O&amp;M</td>
<td>$3,221.64</td>
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<td>Commitment - Additional recharge projects preliminary development</td>
<td>$342,252.65</td>
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<td><strong>Total Loans and Other Commitments</strong></td>
<td><strong>$783,068.59</strong></td>
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### Eastern Snake Plain Sub-Account Balance after Commitments

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<tr>
<th>Description</th>
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<tr>
<td>CREP Loans Outstanding:</td>
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<tr>
<td>American Falls-Aberdeen GWD (CREP)</td>
<td>$47,192.85</td>
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<td>Bonneville Jefferson GWD (CREP)</td>
<td>$31,612.12</td>
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<td>Magic Valley GWD (CREP)</td>
<td>$44,981.79</td>
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<tr>
<td>North Snake GWD (CREP)</td>
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<td><strong>TOTAL ESP CREP LOANS OUTSTANDING</strong></td>
<td><strong>$123,785.76</strong></td>
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### Uncommitted Eastern Snake Plain Sub-Account Balance

<table>
<thead>
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<th>Description</th>
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<tbody>
<tr>
<td><strong>Eastern Snake Plain Sub-Account Balance</strong></td>
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### Dworshak Hydropower Project

<table>
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<tr>
<th>Description</th>
<th>Amount Loaned</th>
<th>Principal Balance</th>
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</thead>
<tbody>
<tr>
<td>Power Sales &amp; Other</td>
<td>$10,790,892.73</td>
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<tr>
<td>Interest Earned State Treasury</td>
<td>$786,880.84</td>
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<td><strong>Total Dworshak Project Revenue</strong></td>
<td><strong>$11,577,773.57</strong></td>
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### Cash Balance Dworshak Hydropower Project

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<th>Description</th>
<th>Amount Loaned</th>
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<tbody>
<tr>
<td>Dworshak Project Committed Funds</td>
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<td>FERC Fee Payment Fund</td>
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<td><strong>Total Dworshak Project Committed Funds</strong></td>
<td><strong>$1,872,962.73</strong></td>
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### Uncommitted Dworshak Hydropower Project Sub-Account Balance

<table>
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<th>Description</th>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$29,425,792.52</strong></td>
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<tr>
<td>Company Name</td>
<td>Loan Amount</td>
<td>Outstanding Amount</td>
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<tr>
<td>Clearview Water Company (July 20, 2012; pipeline project)</td>
<td>$50,000.00</td>
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<td>Consolidated Irrigation Company</td>
<td>$500,000.00</td>
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<td>Dalton Water Association (14-Jul-06; Pipeline project)</td>
<td>$1,036,800.00</td>
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<td>Enterprise Irrigation District</td>
<td>$37,270.00</td>
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<td>Evans Water Corporation &amp; HOA</td>
<td>$20,000.00</td>
<td>$15,260.86</td>
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<td>Foothill Ranch Homeowners Association (7-oct-11; well rehab)</td>
<td>$150,000.00</td>
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<td>Goose Lake Reservoir Corp. (IGWA)</td>
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<td>Idaho Ground Water Appropriators (9-May-2008 Well Replacement)</td>
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<td>Last Chance Canal Company (14-July-2015, diversion dam rebuild)</td>
<td>$2,500,000.00</td>
<td>$1,883,428.89</td>
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<td>Lava Hot Springs, City of................................</td>
<td>$347,510.00</td>
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<td>Lindsay Laterlal Association (Engineering Design Project &amp; Pipeline Study)</td>
<td>$18,700.00</td>
<td>$5,836.02</td>
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<td>Marsh Center Irrigation Company (13-May-05; Hawkins Dam)</td>
<td>$236,141.00</td>
<td>$22,446.02</td>
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<td>Marysville Irrigation Company (15-May-07, Pipeline Project Phase 1)</td>
<td>$825,000.00</td>
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<td>Marysville Irrigation Company (9-May-08, Pipeline Project Phase 2)</td>
<td>$1,100,000.00</td>
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<td>North Fremont Canal Company (Pipeline Project Phase 3)</td>
<td>$4,300,000.00</td>
<td>$3,800,000.00</td>
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<td>North Side Canal Company (Phase 1 - canal rehab project)</td>
<td>$1,846,092.61</td>
<td>$1,692,448.59</td>
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<td>North Side Canal Company (Phase 2 &amp; 3 - canal rehab project)</td>
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<td>$2,635,311.07</td>
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<td>Outlet Water Association (22-Jan-16; new well &amp; improvements)</td>
<td>$100,000.00</td>
<td>$77,750.03</td>
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<td>Pinehurst Water District (23-Jan-15)</td>
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<td>$47,565.79</td>
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<td>Point Springs Grazing Association (July 20, 2012; stock water pipeline)</td>
<td>$48,280.00</td>
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<td>Producers Irrigation Company</td>
<td>$102,127.50</td>
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<td>Skin Creek Water Association</td>
<td>$188,258.00</td>
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<td>St. Johns Irrigating Company (14-July-2015; pipeline project)</td>
<td>$1,417,905.22</td>
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<td>Sunset Heights Water District (17-May-13, Exchange water project)</td>
<td>$48,000.00</td>
<td>$9,962.26</td>
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<td>Twin Lakes Canal Company (Winder Lateral Pipeline Project)</td>
<td>$500,000.00</td>
<td>$168,758.73</td>
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<td>Valley County Local Improvement District No. 1/Jughandle HOA (well projec</td>
<td>$907,552.00</td>
<td>$474,142.36</td>
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<tr>
<td><strong>TOTAL LOANS OUTSTANDING</strong></td>
<td><strong>$21,971,757.92</strong></td>
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<tr>
<td><strong>Loans and Other Funding Obligations:</strong></td>
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<tr>
<td>Senate Bill 1511 - Teton Replacement and Minidoka Enlargement Studies</td>
<td>$678,161.82</td>
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<td>Weiser-Galloway Study (28-May-10)</td>
<td>$461,620.87</td>
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<td>Milner Irrigation District (pipeline replacement)</td>
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<td>Monument Ridge Ranch Subdivision HOA</td>
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<td>North Fremont Canal Company</td>
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<td><strong>TOTAL</strong></td>
<td><strong>$29,425,792.52</strong></td>
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(1) Actual amount needed may vary depending on final determination of water actually purchased and interest income received.
Sources and Applications of Funds
as of September 30, 2019

WATER MANAGEMENT ACCOUNT

Grants and Other Funding Obligations

<table>
<thead>
<tr>
<th>Source Type</th>
<th>Grant Amount</th>
<th>Expenditures</th>
<th>Remaining Balance</th>
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<tr>
<td>Flood Control District 9 (CON01303)</td>
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<td>Clearwater Soil &amp; Water Conservation Dist (CON01309)</td>
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<td>Flood Control District 10 (CON01310 - Leighton &amp; Wells Gravel Removal)</td>
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Total Grants and Other Funding Obligations: $21,598,306.44
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<td>Nez Perce Soil &amp; Water Conservation Dist (CON01328)</td>
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<td>Carryover from HB712 Year 1 to HB285 Year 2</td>
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<td>Flood Management Program grants - Year 2 (HB285, Sec 3, 2019)</td>
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<td>Flood Control District No. 10 (CON01402)</td>
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<td>Idaho Soil and Water Conservation District (CON01403)</td>
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<td>Blaine County (CON01405)</td>
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<td><strong>Committed for Flood Management Grants</strong></td>
<td>$1,796,667.04</td>
<td>(715,118.07)</td>
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<td><strong>Other Funding Obligations</strong></td>
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<td>ESPA Settlement Water Rentals (HB 843, 2004)</td>
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<td>Legislative Appropriation (HB 265, Sec 1, 2019)</td>
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<td><strong>Uncommitted Funds</strong></td>
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<td>$300,757.47</td>
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<td><strong>TOTAL COMMITTED FUNDS BALANCE</strong></td>
<td></td>
<td></td>
<td>$21,297,548.97</td>
</tr>
</tbody>
</table>

*Bold and italicized indicates that project is completed and entity has received final payment*
Mr. Roger Chase  
Chairman  
Idaho Water Resource Board  
322 East Front Street  
Boise, ID  83702  

Mr. Roland Springer  
Area Manager  
Snake River Area Office  
230 Collins Road  
Boise, ID  83702  

Subject:  Boise River Basin Feasibility Study Status Update, Boise Project, Idaho  

Dear Messrs. Chase and Springer:  

This status update is being sent in preparation for the Idaho Water Resource Board (IWRB) meeting on November 14 and 15, 2019. 

The IWRB and the Bureau of Reclamation have partnered to complete a feasibility study of new surface water storage options on the Boise River (Study). The Study includes an evaluation of small raises of the three large dams on the Boise River system: Anderson Ranch, Arrowrock, and Lucky Peak Dams, and is now focused on Anderson Ranch Dam. 

**Current Status**

- IWRB and Reclamation signed a modification to the reimbursable Memorandum of Agreement on October 25 and 30, 2019, respectively. This modification documents the increased project projections and the Resolution passed by IWRB at the September board meeting.

- Recent project activities include:
  
  - September 18, 2019 – Reclamation conducted a site visit with IWRB and Reclamation’s lead Designer to discuss design elements of the proposed dam raise.
  
  - September 30-October 4, 2019 – Reclamation completed a technical review of the draft Biological Assessment for the proposed dam raise.
  
  - October 14-18, 2019 – Reclamation completed a coordinated technical review with U.S. Fish and Wildlife Service of the draft Biological Assessment for the proposed dam raise.
October 18, 2019 – Reclamation briefed the Department of Interior Environmental Impact Statement (EIS) Review Team on the scoping period and received approval to proceed with the draft EIS.

- Ongoing project activities include:
  - Reclamation is completing water modeling of water supply scenarios to analyze potential fill of the new space in Anderson Ranch Reservoir in relation to other potential projects in the area.
  - Reclamation and Consultant are conducting environmental compliance analyses and consultations in accordance with Secretarial Order 3355. The Draft EIS is tentatively scheduled to be released in February 2020.
  - Reclamation and Consultant are working to complete remaining design and cost estimating, benefits and cost analyses, and feasibility report. The Draft Feasibility Report is tentatively scheduled to be released in February 2020.
  - Reclamation and IWRB are discussing the approach for identifying potential spaceholders and contracting for space.

**Key Milestones**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov 2017 - Jan 2019</td>
<td>Reclamation completed initial screening of the three potential dam raise alternatives and developed the Project Management Plan.</td>
</tr>
<tr>
<td>July 27, 2018</td>
<td>IWRB passed a resolution supporting the narrowed focus of the Study to a raise at Anderson Ranch Dam.</td>
</tr>
<tr>
<td>August 28, 2018</td>
<td>Reclamation and IWRB hosted a Legislative Infrastructure Tour to discuss large water infrastructure projects in Idaho with representatives from Idaho’s Congressional delegation.</td>
</tr>
<tr>
<td>November 8, 2018</td>
<td>Reclamation and IWRB hosted an informational public open house on the Study in Boise, Idaho.</td>
</tr>
<tr>
<td>December 3-7, 2018</td>
<td>Reclamation conducted a Value Planning Study with a final Accountability Report received in February 2019.</td>
</tr>
<tr>
<td>December 25, 2018</td>
<td>Reclamation awarded an Indefinite Delivery/Indefinite Quality contract for architect and engineering services to Sundance-EA Joint Venture (Consultant) to complete the Study and environmental compliance activities.</td>
</tr>
<tr>
<td>June 7, 2019</td>
<td>IWRB filed a water right permit application for the potential additional storage (Water Right No. 63-34753).</td>
</tr>
<tr>
<td>June 19, 2019</td>
<td>Reclamation’s Technical Service Center completed feasibility-level design and cost estimates completed for Anderson Ranch Dam raise.</td>
</tr>
<tr>
<td>August 9, 2019</td>
<td>Reclamation published the Notice of Intent for an EIS in the Federal Register.</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>February 3-7, 2020</td>
<td>Reclamation design, estimate, and construction review of the alternatives.</td>
</tr>
<tr>
<td>February 2020</td>
<td>Draft EIS Public Comment meetings in Mountain Home and Boise, Idaho.</td>
</tr>
<tr>
<td>July 2020 - Aug 2020</td>
<td>Department of the Interior review and approval of the recommended plan.</td>
</tr>
</tbody>
</table>

Thank you for this opportunity to provide an update on the Boise River Basin Feasibility Study project. If you have any questions, please contact me at 208-383-2222 or via email at msloan@usbr.gov.

Sincerely,

Megan Sloan  
Project Manager
Figure 2. Primary resource concerns identified during Public Scoping

Excerpt from the Boise River Basin Feasibility Study Scoping Summary Report
October 2019
Memorandum

To: Idaho Water Resource Board (IWRB)
From: Neeley Miller & Rick Collingwood, Planning & Projects Bureau
Date: November 4, 2019
Re: Priest Lake Water Management Project Update

ACTION: No action requested

Background
As a result of limited water supply and drought conditions in northern Idaho in 2015 and 2016 (and 2019) it has been difficult to maintain required lake pool levels and downstream flow in the Priest River during the recreational season.

Phase 1: The Priest Lake Water Management Study was completed in February 2018. The study included the following recommendations:

- Temporarily raising the surface level of Priest Lake up to 6 inches during the recreational season for dry years and integrating real-time streamflow data to allow more operational flexibility
- Outlet dam structural and operational improvements
- Replacing the current existing porous breakwater with an impervious breakwater structure and dredging a portion of the Thorofare channel

Phase 2: As scheduled, the Priest Lake Water Management Project – Preliminary Engineering & Design concluded in the fall 2019. The status of the tasks are completed, with some regulatory permitting continuing over to phase 3.

Phase 3
Final Engineering & Design which includes finalizing regulatory permitting and bidding assistance began in November 2019.

Schedule
- NTP Sept 28th and begin work by Nov 4th
- Submit 70% design in late Dec for review by IWRB staff
- 70% review by IWRB staff early Jan
- 90% design scheduled to begin late Jan pending permit receipt by IDWR Dam Safety
- Finalize 90% by late March. Assumes a 2-week review on 90%
- Finalize 100% by early-May
- Bidding (after 100% design is completed), with construction anticipated in the fall/winter of 2020/2021.
Funding Status

- $2,400,000 (Legislature Approved Funding via HB677) + $2,419,600 (Legislature Repurpose of CREP via HB 677) + $285,000 (Priest Lake Local Contribution) = $5,104,600 Total Project Funding
- $600,000 (Phase 2, Preliminary Engineering) + $652,717 (Phase 3, Final Engineering) + $2,128,069 (Outlet Dam Construction and Construction Management w/10% contingency) + $1,985,052 (Thorofare Improvements Construction and Construction Management w/10% contingency) = $5,365,838 Total Estimated Funding Needed for Design and Construction
- $261,238 Funding Deficit (+/- $400K with 10% contingency)

Outlet Dam Operations Plan

- IDWR hydrologist developing operations plan, including rule curves for use by the 2021 recreational season (post-construction). IWRB staff plans regular meetings with hydrologists and Doug Jones (Northern Regional manager) to plan for operations during the upcoming season.
Representatives from the Lakes Commission will provide the IWRB with comments on 2019 Priest Lake outlet dam operations.
November, 12, 2019

To: Idaho Water Resource Board  
Chair Roger Chase  
Idaho Department of Water Resource Director  
Director Gary Spackman

Re: Priest Outlet Dam Operations 2019 and Operational Plan

Dear Chairman Chase and Director Spackman,

On behalf of the Lakes Commission and our local stakeholders, we are writing to you in the hopes of facilitating a collaborative conversation regarding the operations of Outlet Dam, Priest Lake/River, Idaho. Our charge is to study, investigate and select ways and means of controlling the water quantity and water quality as they relate to the waters of Lake Pend Oreille, Pend Oreille River, Priest Lake and Priest River for the communities’ interests of the State of Idaho and for the survival of native fish species contiguous with the Pend Oreille Basin. We are statutorily directed to work with relevant state agencies to accomplish this. We have been actively involved in water related issues in the Priest area since our inception in 2003, and are well versed in the complexities that exist with Outlet Dam operations and the hydrology of the Priest watershed.

Over the nearly 70 plus years that Outlet Dam has been in operation, the communities and resource managers have come to know and expect specific operations. These include established processes that are necessary to facilitate the seasonal tourist economy, maintain functional waterfront infrastructure and provide for fisheries in both Priest Lake and Priest River. It wasn’t until the record drought of 2015 that a noticeable deviation from these historic operations occurred.

The result of the 2015 drought resulted in the recognition of the need for low water year operation changes, to include a potential six-inch higher lake level, and the funding and approval to upgrade the dam. Due to these statutory changes, the communities expected changes to occur, but when they ultimately did, it caused concern and confusion. As the Governor’s appointed board charged with representing the interests of communities and the State of Idaho in Priest Lake and Priest River, we, along with numerous community members were caught off guard, as
there did not appear to be a system in place for making procedural decisions, a known or available process to find information or a process to facilitate a meaningful discussion.

These changes also generated very valuable conversations and ideas that we think are of great benefit to both your agencies and to the impacted communities and that appear to have created a consensus.

The difference in operations this year that generated these discussions were:

1. An almost six-inch rise in Priest Lake between approximately June 21st and July 6th. This was an unprecedented occurrence that took place as the summer tourist season ramped up. We know that there was thought it would be a low water year, so lake was held a bit higher. We know that a rain event took place early July that was not predicted, which spiked the lake level. We were unaware that this situation could occur and we were unaware of these outcomes until we heard from the community and subsequently reached out to IDWR for information. We were also unaware that this 6-inch rise would generate concerns from community.

2. The above event resulted in a quick release of that extra water to the Priest River. This generated the legitimate question from Priest River landowners as to where the water was coming from, considering snow melt was complete. The flows themselves were not seen as negative; the lack of understanding was the concern.

3. On August 21, the Priest River dropped to 32 cfs or below for almost a week. We know that the gauge went off line and we know that the gauge cannot be read when flows are around 32 and below. This was a historic event, as even in 2015 flows didn’t go below 45 cfs. It is still unclear as to whether this could have been prevented. We think a balance can be found between the statutory lake level and maintaining adequate flows to Priest River for the benefit of the fishery and property values.

4. The fall/winter drawdown began Oct 1st, which was earlier than the community is accustomed to and it was drafted very slowly. Both of these operations have implications to waterfront business operations, private property owners winterizing infrastructure and boats, and the potential of dewatering kokanee spawning beds.
5. The replacement of Karl Duncan, the lifelong dam operator with abundant institutional knowledge of the hydrologic nuances of the Priest Watershed. Not only did Karl keep things running smoothly, he was a known point of contact for the community.

Knowing that upgrades are forthcoming and public awareness necessary, we think that the development of an Operation Plan and decision tree that incorporates the input provided over the last year by the community and resource managers would result in better lake levels and flow outcomes, would lessen the current community concerns, and would provide IDWR staff with useful tools for decision making. Also, in understanding that the expertise of Karl Duncan is not assured in the future we also suggest you consider utilizing Karl Duncan for at least one more year, in order to fully understand his procedural decisions and the hydrology in the area. Ideally his strategies can be put in writing.

We appreciate IDWR’s time and dedication to the task at hand and truly hope you see this input as helpful and encouraging. To clarify, the three main topics we want to discuss are the differences in operations this year from past, the protocol for communicating with the public, and an Operational Plan for the future.

We truly appreciate you taking the time to earnestly consider this request. We look forward to speaking with you about the future operations of Outlet Dam.

Very truly yours,

Ford Elsaesser
Chair, Lake Pend Oreille, Pend Oreille River, Priest Lake, Priest River Commission

The Lake Pend Oreille, Pend Oreille River, Priest Lake and Priest River Commission ("Lakes Commission") is an advisory board appointed by the Governor of Idaho. The Commission is comprised of five local community leaders, as well as representatives from U.S. Fish & Wildlife Service, the Attorney General’s Office, and the State of Montana. The Commission is charged with “studying, investigating, and selecting ways and means of controlling the water quality and quantity as they relate to waters of Lake Pend Oreille, Pend Oreille River, Priest Lake, and Priest River for the communities’ interests and the interests of the State of Idaho, and for the survival of native species of fish contiguous to the Pend Oreille Basin.”
Suggested Operational Guidelines for Outlet Dam

Low water year planning

Lake
- Unless there is a severe drought stay at 3.5" or less
- Determine volume in acre feet/inches to cfs over a month or weeks in order to make that operational decision when low water year determined.
- Understand flows into Priest Lake by using USGS gauges, ideally installed on the largest tributaries East, West and North (Thorofare) portions of lake.
- Predict and stay on top of rain events and understand volume associated with those events.

Priest River Flows
- Adequate flows might be an option if prediction tools in place
- 60 cfs to river should be the very bottom - worst case scenario
- Additional gauges on river important to determining more accurate river flow data independent of lake flows. When flows predicted to be low, lake level could be held at established height to meet adequate flows through a drought.

October Drawdown Date and Speed
- The first Monday after a full week in October.
- Let out flows quickly at an average 900 or more cfs to reach winter lake level, preventing dewatering kokanee spawning beds. See Photos.

Setting Up a System for Communication
- Because Priest is so remote and known for sudden storm events, provide local operators with specific weekly guidelines and tools for operating decisions so they can react quickly.
- If public understood how procedural decisions are made, it would alleviate community concerns and reduce amount of emails and calls to IDWR staff.
- Website – regularly updated
- Email Updates
- The Lakes Commission is here to help with public communication in anyway that you might find useful.
Memorandum

To: Idaho Water Resource Board (IWRB)
From: Neeley Miller
Date: November 4, 2019
Re: Palouse Basin Aquifer Committee (PBAC) Update

Representatives from the Palouse Basin Aquifer Committee (PBAC) will discuss recent efforts towards developing a long terms sustainable water supply with the IWRB.
Memorandum
To: Idaho Water Resource Board
From: Wesley Hipke
Date: November 5, 2019
Re: ESPA Managed Recharge Program Status Report

REQUIRED ACTION: No action is required at the November 15, 2018 IWRB meeting.

I. IWRB Managed Recharge Executive Summary

ESPA Managed Recharge – Natural Flow

The IWRB’s Snake River recharge water rights came into priority below Minidoka Dam on October 22 and IWRB recharge activities started on October 24, 2019. Twin Falls Canal Company (TFCC), North Side Canal Company (NSCC), and Southwest Irrigation District (SWID) are conducting IWRB recharge and plan to continue through the winter. American Falls Reservoir District #2 (AFRD2) is planning to start recharge in December after construction of the headgates for the new MP29 recharge site is complete and the Milner-Gooding canal is open. Table 1 provides a summary of the Program’s natural flow recharge.

Table 1. IWRB Managed Recharge Summary

<table>
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<tr>
<th>Water Source</th>
<th>Area</th>
<th>Start</th>
<th># Days</th>
<th>Current Rate (cfs)</th>
<th>Median Rate (cfs)</th>
<th>Total Recharged (Acre-feet)*</th>
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<td>Snake River</td>
<td>Lower Valley</td>
<td>Oct. 24</td>
<td>13</td>
<td>308</td>
<td>244</td>
<td>5,467</td>
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* As of November 5, 2019 – Reported recharge volumes are preliminary and subject to change.

Managed Recharge for other Entities

The IWRB supports water user recharge efforts intended to improve and recover groundwater levels in the ESPA. As such, the IWRB is currently recharging storage water supplied by the Surface Water Coalition (SWC) and the Coalition of Cities (Cities). The IWRB is on track to recharge the total volume of 64,808 acre-feet (af) of storage water in the Upper Valley (above Minidoka Dam) by the end of November. The majority of the IWRB’s partners assisting with the conveyance of recharge water stopped activities as of October 31. The Fremont Madison Irrigation District plans to continue conducting recharge through most of November. Table 2 provides a summary of the total volume of storage water the IWRB has recharged to date.
Table 2. Storage Water Recharged Summary for Other Entities

<table>
<thead>
<tr>
<th>Water Source</th>
<th>Area</th>
<th>Start</th>
<th># Days</th>
<th>Current Rate (cfs)</th>
<th>Median Rate (cfs)</th>
<th>Total Recharged (Acre-feet)*</th>
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<tbody>
<tr>
<td>Storage Water</td>
<td>Upper Valley</td>
<td>Aug. 22</td>
<td>76</td>
<td>250</td>
<td>369</td>
<td>58,011</td>
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* As of November 5, 2019 – Reported recharge volumes are preliminary and subject to change.

The SWC donated 58,500 af of storage water on August 22, 2019 to the IWRB for recharge in accordance with settlement agreements with the Idaho Ground Water Association (IGWA) and the Water Mitigation Coalition (WMC) (50,000 af and 8,500 af of storage water respectively).

In addition, the City of Pocatello contracted with the IWRB to recharge storage water to meet the terms of the Cities’ settlement agreement with SWC. The City of Pocatello transferred 6,308 af of storage water on October 7, 2019 to the IWRB for recharge as part of this year’s requirements.

II. 2019/2020 IWRB Natural Flow Recharge

Natural Flow Water Availability:

The IWRB Snake River recharge water rights came into priority on October 22, 2019 below Minidoka Dam. The Bureau of Reclamation (USBR) plans to keep flows from American Falls and Minidoka Dam at minimal levels (approximately 370 cfs and 550 cfs, respectively). The USBR will reevaluate operations in December/January based upon snow pack conditions. At the end of irrigation season the reservoir system was 48% full. Currently the system is 53% full. USBR reservoir operations will determine if and when the IWRB’s water rights will come into priority in the Upper Valley (above Minidoka Dam).

At the time of this report, flow past Milner Dam was 175 cfs. There was an initial spike of 1,000 cfs at the start of the recharge season as the Milner Pool was drained to conduct inspections on the dam. USBR intends to fill the Milner Pool to normal winter operational levels and will account for managed recharge diversions in its operations. Figure 1 summarizes IWRB recharge activities as of November 1, 2019.

Lower Valley IWRB Recharge Status:

The IWRB recharge rights on the Snake River came into priority in the Lower Valley (below Minidoka Dam) on October 22, 2019. New five-year conveyance contracts reflecting the new conveyance payment schedule for the Lower Valley have been executed with all of the IWRB’s current recharge partners in the Lower Valley.

TFCC: After conducting canal inspections, TFCC started IWRB recharge on Oct 24. TFCC is not planning any further shutdowns. Throughout the recharge season, TFCC normally averages recharge over 30 cfs; currently it is recharging approximately 50 cfs.

NSCC: NSCC completed its canal maintenance activities ahead of schedule, and began recharge on October 25. Testing of the new Wilson Canyon site started on October 30. At the time of this report NSCC was diverting approximately 200 cfs and approximately 100 cfs was being routed into the Wilson Canyon Site. Full pool level is 30 feet; currently the pool level is holding at 8 feet. Diversion into the site will be increased slowly to determine a steady-state maximum diversion rate.
**SWID**: IWRB recharge was started on October 29 after the new conveyance contract was executed. SWID is recharging over 55 cfs and plans to continue recharge activities throughout the recharge season.

**AFRD2**: Stopped irrigation deliveries on October 15 and will be conducting canal maintenance along with constructing the new MP29 recharge site. AFRD2 is planning to start recharge activities in December.

Over 260 cfs/day is currently being recharged under the IWRB’s program. As the Wilson Canyon site is fully developed this rate is expected to increase. Once the Milner-Goodying Canal is operational, the IWRB’s potential program capacity in the Lower Valley is estimated to be around 1,200 cfs. Actual recharge rates will be dependent on water availability, weather conditions, canal operations, and other variables the IWRB may take into consideration.

![Graph showing natural flow recharge rates](image.png)

**Figure 1**: IWRB daily natural flow recharge flows for the 2019/2020 season.

---

**III. 2019 Managed Recharge for Other Entities**

Over the past five years the IWRB has developed partnerships, infrastructure, and an administrative structure to conduct managed recharge throughout the ESPA. The IWRB also supports other water user recharge efforts consistent with ESPA aquifer stabilization objectives.

Table 3 and Figure 2 summarize IWRB recharge efforts for the other entities as of November 1, 2019.
<table>
<thead>
<tr>
<th>Storage Water Source</th>
<th>IWRB Partner</th>
<th>Start</th>
<th>End</th>
<th>Avg. Rate (cfs)</th>
<th>Total Recharged (af)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWC – IGWA/WMC</td>
<td>Aberdeen-Springfield CC</td>
<td>Aug 24</td>
<td>Oct 13</td>
<td>198</td>
<td>20,000</td>
</tr>
<tr>
<td></td>
<td>New Sweden ID</td>
<td>Aug 23</td>
<td>Oct 15</td>
<td>34</td>
<td>3,681</td>
</tr>
<tr>
<td></td>
<td>Idaho ID</td>
<td>Sept 14</td>
<td>Oct 25</td>
<td>5</td>
<td>436</td>
</tr>
<tr>
<td></td>
<td>Progressive ID</td>
<td>Oct 12</td>
<td>Oct 29</td>
<td>73</td>
<td>2,598</td>
</tr>
<tr>
<td></td>
<td>Snake River Valley ID</td>
<td>Aug 30</td>
<td>Oct 29</td>
<td>36</td>
<td>4,359</td>
</tr>
<tr>
<td></td>
<td>Farmers Friend IC</td>
<td>Aug 24</td>
<td>Oct 31</td>
<td>35</td>
<td>4,007</td>
</tr>
<tr>
<td></td>
<td>Fremont-Madison ID</td>
<td>Aug 22</td>
<td></td>
<td>111</td>
<td>8,632</td>
</tr>
<tr>
<td></td>
<td>Great Feeder CC</td>
<td>Sept 7</td>
<td>Oct 25</td>
<td>94</td>
<td>7,979</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>51,703</strong></td>
</tr>
</tbody>
</table>

| Cities               | Fremont-Madison ID      | Oct 7 |       | 105             | 6,308                |

* As of November 1, 2019 – Reported recharge volumes are preliminary and subject to change.

**SWC – IGWA/WMC Settlement Agreements:**

The SWC receives a total of 58,500 af of storage water from IGWA (50,000 af) and WMC (8,500 af) as part of their settlement agreements. Any of the storage water not utilized for irrigation is to be used for targeted conversion projects and managed recharge as determined by the parties to the agreements. As in previous years, the IWRB has agreed to recharge this storage water.

The IWRB worked with eight of its partners in the Upper Valley to conduct this recharge, which started on August 22 and is expected to continue through the later part of November. Most of the IWRB’s partners finished recharging in October. In some cases, recharge was terminated when an entity maximized its allotted recharge volume, and in other cases recharge was stopped due to canal maintenance, severe cold weather, and/or limitation due to the USBR Winter Water Savings stipulation related to Palisades Storage Water contracts. The Fremont Madison Irrigation District (FMID) is scheduled to recharge the remaining volume of water in the month of November after completing recharging the water from the Cities.
**Coalition of Cities-SWC Settlement Agreement:**

The settlement agreement between the Cities and the SWC requires a commitment of 7,650 af on average per year to be used for aquifer enhancement projects on the ESPA. The agreement outlines criteria for various aquifer enhancement projects including providing water to the IWRB for managed recharge in the ESPA. The City of Pocatello supplies storage water to the Cities to meet their obligation and has contracted with the IWRB to conduct managed recharge for some of the water. This year, Pocatello transferred 6,308 af of storage water to the IWRB for recharge.

Most of the IWRB’s partners in the Upper Valley will stop recharge activities on October 31 to comply with the Winter Water Savings Stipulation associated with Palisades Reservoir storage water contracts. The Fremont Madison Irrigation District is not subject to this stipulation and plans to continue recharging through most of November. All of the water associated with the Cities’ agreement has been recharged in the FMID system.

**Figure 2.** IWRB daily recharge flows for all storage water from other entities, Fall 2019.
IV. ESPA Recharge Program Projects and Buildout Activities

The IWRB has actively supported development of additional recharge capacity throughout the ESPA to meet the managed recharge goal of an average 250,000 af/yr. For managed recharge projects involving infrastructure improvements to which the IWRB provided funding, a Memorandum of Intent (MOI) was developed to establish a long-term agreement (twenty years) between the IWRB and the entity implementing the project. The MOI acknowledges: 1) the IWRB provided financial assistance for a project; and 2) the entity agreed to deliver and prioritize delivery of the IWRB’s recharge water as compensation for financial assistance from the IWRB.

**ESPA Managed Recharge Infrastructure Project Summary:**

The IWRB allocated over $20 million dollars from 2013 through fiscal year 2020 for infrastructure improvements to increase managed recharge throughout the ESPA. In fiscal year 2020, the IWRB budgeted $5 million for development of managed recharge infrastructure throughout the ESPA. The status of the current projects in the Lower and Upper Valleys is included in Tables 2 and 3, respectively. A summary of the projected recharge projects is presented in Table 4.
<table>
<thead>
<tr>
<th>IWRB Partner</th>
<th>Project Name</th>
<th>Project Type</th>
<th>Status</th>
<th>Approved Funds</th>
<th>Scheduled Completion</th>
<th>Description / Key Items</th>
</tr>
</thead>
</table>
| AFRD2        | Dietrich Drop Hydro Plant Winter By-pass | Design / Construction | Active | $1,500,000 | Dec 2019 | Winter recharge by-pass of the Dietrich Drop Power Plant  
• Finalize cost and project schedule – May 2018  
• Constr. of tail race gate & bypass improv. – Jan 2019  
• Final FERC submittal for forebay improv. – Sept 2019  
• Construction of forebay improv. – Oct/Nov 2019 |
| AFRD2        | MP 28 Hydropower Plant Tailbay Winterization Project | Construction | Active | $1,400,000 | Nov 2019 | Tailbay isolation and forebay improvements for winter recharge  
• Design Completion – Sept 2018  
• Start Construction – Oct 2018  
• Tailrace Building – Oct/Nov 2019 |
| AFRD2        | MP 29 Recharge Site | Construction | Active | $640,000 | Mar 2020 | Construction of new site  
• Survey data - Feb 2018  
• Design & Contractor hired – July/Aug 2019  
• GW Quality Monitoring Plan & Wells – Fall 2019  
• Start construction – Oct 2019  
• In canal construction complete – Dec 2019 |
| North Side CC | Wilson Canyon Site | Design / Construction | Active | $1,900,000 Est. Cost $1.33 M. | Nov 2019 | Design & construction of recharge site  
• Design completed & Bid advertisement – Sept 2018  
• BLM ROW & constr. outside the canal – Mar 2019  
• Completion of monitor wells – June/July 2019  
• Final Testing of infrastructure – Nov 2019 |
| TFCC         | TFCC Injection Wells | Construction | Active | $178,000 | Mar 2020 | Construction of recharge site  
• Well Permitting & Easements – Fall/Winter 2019  
• Start construction – Fall/Winter 2019  
• Testing injection well – Winter 2019/Spring 2020 |
| A&B ID       | A&B Injection Wells | Construction | Active | $202,000 | Spring 2021 | Construction of recharge site  
• USBR easements / project transfer – Spring 2020  
• Well Permitting – Summer 2020  
• Start Construction – Fall 2020  
• Testing injection well – Winter 2020/Spring 2021 |
<table>
<thead>
<tr>
<th>IWRB Partner</th>
<th>Project Name</th>
<th>Project Type</th>
<th>Status</th>
<th>Approved Funds</th>
<th>Scheduled Completion</th>
<th>Description / Key Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fremont-Madison ID</td>
<td>Egin Lakes Phase II</td>
<td>Construction</td>
<td>Active</td>
<td>$580,000</td>
<td>Fall/Winter 2019</td>
<td>Construction of Egin Lakes Phase II - recharge capacity expansion&lt;br&gt;• BLM approval – Oct 2018&lt;br&gt;• Finish construction on new areas – May 2019&lt;br&gt;• Testing of Site - Summer/Fall 2019&lt;br&gt;• Constructing Berms in new area – Fall/Winter 2019</td>
</tr>
<tr>
<td>Great Feeder Canal Co.</td>
<td>Ward Site</td>
<td>Construction</td>
<td>Active</td>
<td>$120,000</td>
<td>Complete Oct 2019</td>
<td>Construction of recharge site&lt;br&gt;• Evaluation of area complete – Jan 2018&lt;br&gt;• Finish of site construction – Apr 2019&lt;br&gt;• Submit GW monitoring plan – Apr 2019 (est. completion Sept 2019)&lt;br&gt;• Drilling &amp; equipping monitor well – Oct 2019</td>
</tr>
</tbody>
</table>
## Table 4. Projected Lower & Upper Valley - IWRB ESPA Managed Recharge Projects

<table>
<thead>
<tr>
<th>IWRB Partner</th>
<th>Project Name</th>
<th>Project Type</th>
<th>Status</th>
<th>Approved Funds</th>
<th>Scheduled Completion</th>
<th>Description / Key Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Side CC</td>
<td>Additional Managed Recharge Sites below Wilson Lake</td>
<td>Survey, Design</td>
<td>Planning</td>
<td>None at this time</td>
<td>2020</td>
<td>Preliminary Design of potential recharge site</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Staff Evaluation and additional survey data – Summer 2018</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• LiDAR Survey Data – Nov 2018</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Analysis of survey – Mar 2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• IWRB feedback on potential sites – Apr 2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Design and Cost Estimate – After test of Wilson Canyon</td>
</tr>
<tr>
<td>IWRB</td>
<td>Upper Valley – Large Scale Recharge Project</td>
<td>Evaluation</td>
<td>Planning</td>
<td>None at this time</td>
<td>2020?</td>
<td>Evaluation of the Upper Valley to determine the potential of developing a large scale managed recharge project</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Ranking of best areas – Spring 2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Field evaluation of potential areas – Summer 2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Analysis of available data &amp; report of potential areas – Aug/Sept 2019</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• IWRB/Aquifer Stabilization Committee input on potential sites – Nov 2019</td>
</tr>
</tbody>
</table>
IWRB Managed Recharge Program

IWRB Board Meeting

Wesley Hipke
IWRB Recharge Program Manager

November 14, 2019
Total Natural Flow Water Recharged
11,545 af

Start Recharge - Oct 24

Diversion Rate
Current: 387 cfs
Median: 268 cfs
Lower Valley Recharge – 2019/2020 Capacity

Potential Winter Capacity
1,000 – 1,400 cfs

LEGEND
- Construction
- Proposed
- Recharge Sites
- Canals

AFRD2
Start Recharge
~Dec 14

200 cfs

600 cfs

350* cfs

30 cfs

56 cfs

NSCC

TFCC

SWID

NOTE: (*) Proposed Installation

Big W. River
Little Wood River
Potential Impacts to Recharge:

- Water Availability
- Weather
  - Freezing Conditions
  - Warming Conditions
- Canal Operations / Infrastructure Issues
- Others??

ESPA Managed Recharge Program
IWRB Recharge Of Storage Water for SWC Agreements - Fall 2019

Total Volume of Recharge = **64,530 af** (August 22, 2018 to November 13, 2019)

**Donated or Contracted Storage Water for Recharge:** 64,808 af
- Donated from SWC agreement with IGWA: 50,000 af
- Donated from SWC agreement with Water Mitigation Coalition: 8,500 af
- Contract recharge for the Coalition of Cities as per SWC agreement: 6,308 af
IWRB Managed Recharge for SWC Agreements – Fall 2019

Total Storage Water Recharged
64,530 af

Completed – Nov. 13

Diversion Rate
Median: 371 cfs

Donated or Contracted Storage Water for Recharge: 64,808 af
- Donated from SWC agreement with IGWA 50,000 af
- Donated from SWC agreement with Water Mitigation Coalition 8,500 af
- Contract recharge for the Coalition of Cities as per SWC agreement 6,308 af
Questions
Memorandum

To: Idaho Water Resource Board
From: Randall Broesch P.E.
Date: October 31, 2019
Re: Large Recharge Project in the Upper Valley of the ESPA

REQUIRED ACTION: No action required.

Project Concept
Develop a large recharge project in the upper valley of the Eastern Snake Plain Aquifer (ESPA) for the purposes of expanding current recharge operations to stabilize aquifer levels across the ESPA.

Project Update
April 23rd, 2019 Aquifer Stabilization Committee Meeting – In the meeting, staff presented the results of a modeling analysis using recharge related criteria such as depth to water, retention time, and land use to identify 6 possible large scale recharge areas across the ESPA. Those areas were Lake Walcott, Aberdeen-Springfield, New Sweden, and the Mud Lake/Egin Bench/Butte Market Lake areas. At the conclusion of the meeting staff notified the committee members field reconnaissance would occur in the spring and summer months to gather more information regarding the capability for large recharge efforts to occur in these areas.

Spring/Summer 2019-Staff gathered topographic information regarding basins identified in each area as well as any features that may be impacted from a large recharge project. While out in the field, visual observations were noted of the surface geologic features indicative of potential recharge sites (i.e. rocky porous depressions capable of accepting large volumes of water). Also, physical depth to water measurements were made in the areas if wells happened to be nearby.

Summer/Fall 2019-Staff contacted the Bureau of Land Management (BLM) to verify whether there were any conflicting land uses in project areas identified earlier in the spring. Using the information provided by the BLM, all the information was compiled into the analysis model and the project areas were screened for the capability to develop a large recharge project.

Staff will present the results of the analysis and solicit feedback from the Board regarding the findings of the analysis and how to proceed with the project. Project areas are highlighted below:
Picture 1 Recharge Areas Identified Across the ESPA
Planning & Development
For a
Large Recharge Project

November IWRB Board Meeting No. 10-19

Randy Broesch P.E. • Staff Engineer • November 14, 2019
Purpose: Report Findings and Solicit Feedback from the Board

Development of Project Areas (Recap)
Large Recharge Project Development
Large Recharge Project Development

Legend
- Depth to Water less than 50'
- Retention less than 15%
- Combined DTW & Retention Limitations

Randy Broesch P.E. • Staff Engineer • November 14, 2019
Large Recharge Project Development

Legend:
- Irrigated Lands
- Depth to Water less than 50'
- Retention less than 15%
- Combined DTW & Retention Limitations

Randy Broesch P.E. • Staff Engineer • November 14, 2019
ESPA Large Recharge Project Areas
• Additional Information Gathered:
  • BLM Land Use Information
  • Field Reconnaissance/Investigation
ΔH = 37 ft

Depth of Basin = 21 ft

No High Leakage Geologic Features

High Leakage Features

Ground Water Depth = 88 ft (measured)

Depth to Ground Water Criteria: 50 ft or greater

1.7 miles
Walcott-Surface Features

Leakage Feature High on Basin Shoulder

Sediments Filling in Open Areas in Basin Floor
Walcott-Summary

**Advantages:**
- Meets DTW Criteria
- Retention: 73%
- Land Uses (Grazing)
- High leakage geologic features high on the basin shoulders

**Disadvantages**
- No high leakage geologic features on the basin floor
- Elevated Basin from the water supply
- Power lines in the inundation area
- Stockwell in the inundation area
- Basin spills towards railroad tracks
Aberdeen Springfield Project Area

Retention: 22%

BLM Grazing

50ft Depth to Water (DTW)
Aberdeen Springfield Concept

Ground water depth \( \Delta H = 5 \text{ ft} \) (estimated)

Depth of Basin = 8 ft

Depth = 3 ft

High Leakage Geologic Feature Filled w/ Sediment

No High Leakage Geologic Features

Aberdeen-Springfield Canal @ Capacity

1,000 ft

Gravity Option

Depth to Ground Water Criteria: 50 ft or greater
Aberdeen Springfield-Summary

- **Advantages:**
  - DTW meets criteria
  - Water Supply in close proximity
  - Gravity conveyance possibility
  - Land Use-BLM Grazing

- **Disadvantages**
  - Retention: 22%
  - No Observed high leakage geologic feature
  - Groundwater gradient trends to the springs
  - Location High Leakage Geologic features
  - Basin observed to be filled with sediment
  - Species of Concern (Potential Land Use Limitations)
  - Powerlines located in the basin
New Sweden Project Area

Hell’s Half Acre WSA

Retention: 26%
New Sweden Features
New Sweden Advantages/Disadvantages

• **Advantages:**
  - Retention: 26%
  - High Leakage Geologic Features at Land Surface

• **Disadvantages**
  - Hells Half Acre WSA
  - Water availability during recharge season (urban influence)
  - Elevated Basin from the water supply
  - Sub-surface clay layer identified in surrounding well logs
  - Species of Concern
Egin Bench Concept

 Depth to Water = 47 ft (measured)

 Depth to Ground Water Criteria: 50 ft or greater

 ΔH = 21 ft
 Nine Mile Knoll

 6 miles

 No High Leakage Geologic Features

 St. Anthony Canal

 Nine Mile Knoll

 Egin-Hamer Road

 No High Leakage Porous Features

 Depth of Basin = 6 ft

 6 miles

 No High Leakage Geologic Features

 Randy Broesch P.E. • Staff Engineer • November 14, 2019
Egin Bench Advantages/Disadvantages

**Advantages:**
- Retention: 60%
- Basin is lower than water supply

**Disadvantages**
- Nine mile knoll is located between water supply and basin
- DTW
- Species & Habitat of Concern
- High leakage geologic features not observed
- Land Use Limitations
- Importance of Egin-Hamer Road Year Round Usage
West Market Lake/Sage Junction/ Egin Bench
Ground Water Depth = 38 ft (measured)

Depth of Basin = 9 ft

No Indication of High Leakage Geologic Features

Ground Water Depth = 38 ft (measured)

Depth to Ground Water Criteria: 50 ft or greater

7.33 Miles

Snake River

\[ \Delta H = 45 \text{ ft} \]
Sage Junction Advantages/Disadvantages

- **Advantages:**
  - Retention: 59%
  - No observed infrastructure

- **Disadvantages**
  - No observed high leakage geologic features
  - DTW Shallow for a Large Recharge Project
  - Land use limitations
  - Species of concern/cultural sites along railroad
  - Elevated basin from the water supply
West Market Lake

Retention: 41%

Depth to Water (DTW) 50ft

BLM Grazing

Market Lake WMA

IDaho Water Resource Board

Randy Broesch P.E. • Staff Engineer • November 14, 2019
West Market Lake

Depth to Water $= 200$ ft

$\Delta H = 33$ ft

Depth of Basin $= 12$ ft

No High Leakage Geologic Features at Land Surface

Snake River

Depth to Ground Water Criteria: 50 ft or greater

Subsurface geologic features potentially suitable for Recharge

Depth to Water $= 200$ ft (estimated)

8 miles

Randy Broesch P.E. • Staff Engineer • November 14, 2019
West Market Lake Advantages/Disadvantages

- **Advantages:**
  - Meets DTW Criteria for a Large Recharge Project
  - Retention Value: 41%
  - Sub-Surface Geology
  - Land Use (BLM Grazing)
  - No Existing Infrastructure in the Area
  - No Species of Concern

- **Disadvantages:**
  - Elevated Basin from the water supply
  - High leakage geologic features were not observed at land surface
## Area of Interest

<table>
<thead>
<tr>
<th>Basin Features</th>
<th>Walcott</th>
<th>Aberdeen</th>
<th>New Sweden</th>
<th>Egin Bench</th>
<th>Sage Junction</th>
<th>West Market Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth to Water (DTW)</td>
<td>+</td>
<td>o</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Retention</td>
<td>+</td>
<td>o</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Geologic Features</td>
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<td>-</td>
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<tr>
<td>Limited Land Use/No Species of Concern</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>No Impacts to Existing Infrastructure</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Location on ESPA</td>
<td>-</td>
<td>-</td>
<td>o</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
Area of Interest

Legend:
- Area of Interest
- IDFG Wildlife Management Areas
- Wilderness Study Area
- Area of Critical Env. Concern (ACEC)
- Dunes Sand
- Creek Winter
- Clouie Areas
- BLM Grazing...
Guidance from the Board to Staff & Questions/Discussion
Cooperative ESPA Dye Tracing Program
– 10 Year Review –
by:
Neal Farmer, Idaho Department of Water Resources
and
David Blew, Idaho Power Company
for
Idaho Water Resource Board
November 14, 2019
Dye tracer studies were initiated in response to the Swan Falls Reaffirmation Agreement between Idaho Power and the State of Idaho and the Completion of ESPA CAMP.

Data from tracers can provide information on:

- Ground water velocities
- Estimates of hydraulic conductivity
- Direction of flow
- Pollutant source and transport
- Potential impacts of recharge and other management practices

Initial efforts were to develop an understanding of near canyon aquifer characteristics:

- Spring discharge comprises a significant portion of the flow in the Snake River below Milner Dam
- Important for maintaining hydropower production
- Important for maintaining and improving water quality of the Snake River
- Springs are important habitats for many species
- Allowed for the development of technique and skills that could be utilized on a larger scale

Background of the Dye Tracer Studies
The first 5-years allowed for the development of the skills and techniques which have benefited the recharge program over last 5-years.

- Large-scale tracers from recharge sites
- Targeting and placement of monitoring wells
- Improved monitoring and management at recharge sites
Traces Completed
• 13 Locations
• 24 Traces
• 1,100 ft to Over 19 Miles
Development of High Resolution Ground Water Maps

- In the fall of 2011, IDWR and Idaho Power participated in a cooperative effort to develop a high resolution water table map for the western edge of the ESPA.
- In one week, through this cooperative effort, approximately 300 wells were measured and GPS’ed with high accuracy survey grade quality.
- Data collection efforts included depth to water, temperature and electrical conductivity.
- The development of high resolution maps is now part of our tracing protocol.
Additional Efforts Undertaken to Support Tracer Studies

Development of High Resolution Ground Water Maps

- From this effort, IDWR acquired high accuracy GPS and continued to develop protocols for high accuracy ground water elevations.
Water Table Contours of the Western Edge of the ESPA
Electrical Conductivity of the Western Edge of the ESPA

Kriging Conductivity Prediction Map

Wells and Springs 2012

Conductivity µS/m

- 167 - 250
- 250 - 300
- 300 - 350
- 350 - 400
- 400 - 450
- 450 - 500
- 500 - 550
- 550 - 600
- 600 - 989

Study Area

Surveyed Wells/Springs

Contours

Date: 3/21/2012

Vicinity Map

NEVADA

IDaho

OREGON

Utah

TWIN FALLS
Additional Efforts Undertaken to Support Tracer Studies

Construction of Long-Term Near Rim Monitoring Wells

• The 2011 synoptic measurement effort noted a lack of near rim monitoring wells
• Few near rim wells for tracer monitoring or dye injection
• Idaho Power was developing a monitoring program for the ESA listed Bliss Rapids Snails
  ▪ Utilize ground water levels as a surrogate for flow at small spring sites
  ▪ However, there were few near rim wells near spring sites to measure ground water table elevations.
Additional Efforts Undertaken to Support Tracer Studies

Construction of Long-Term Near Rim Monitoring Wells

• From 2013 through 2017 IDWR and Idaho Power have cooperatively developed 14 monitoring wells
  ▪ Drilled 6 new monitoring wells
  ▪ Retrofitted 5 unused wells
  ▪ Equipped 3 existing domestic wells
Additional Efforts Undertaken to Support Tracer Studies

Development of Long-Term Near Rim Monitoring Wells

• For the Wilson Canyon trace, 5 additional monitoring wells have been established at:
  • Blue Lakes,
  • Shoshone Falls
  • Vineyard Creek
  • Hansen Bridge
  • Old Rest Area Well
Development of Real-Time Ground Water Data

- In 2015, we began experimenting with the telemetry of real-time ground water data.
- Idaho Power purchased 10 telemetry units and through a cooperative effort with IDWR installed them in select wells on the ESPA.
- IDWR has adopted this technology in approximately 18 wells and at recharge diversions.
- Idaho Power provides access to IDWR for all of their telemetry data and vice versa.
- This cooperative effort spearheaded collecting hourly water level data which has been adopted by some at IDWR.
Financial Contributions for Tracers

Idaho Power
- $97,000 - Direct Payments to IDWR since 2009
- $30,000 – Five C3 Fluorometers
- Labor and Other In-Kind Services

Idaho Department of Water Resources
- $54,700 - Lab Analysis
- $16,200 – Dye and materials
- $13,150 – 4 Cyclops Fluorometers
- $6,285 – C3 Fluorometers
- Labor, Vehicle, and Other In-Kind Services

These costs do not include expenditures on monitoring wells or telemetry
This is a Certification that these products conform to the ANSI/NSF Standard 60 for potable water as set forth by the EPA in The Clean Water Act.

* Official listing as Certified by NSF detailed on back of certification.

This product is NSF/ANSI/CAN 60 Certified. It meets the requirements for water treatment chemicals as specified in the ANSI/NSF Standard 60 for Drinking Water Treatment Chemicals - Health Effects.

If you manufacture, sell or distribute water treatment chemicals in North America, your products are required to comply with NSF/ANSI/CAN 60. Drinking Water Treatment Chemicals - Health Effects by most governmental agencies that regulate drinking water supplies. Developed by a team of scientists, industry experts and key industry stakeholders, NSF/ANSI/CAN 60 sets health effects criteria for many water treatment chemicals including:

- Corrosion and scale inhibitors
- Coagulants and flocculants
- Distribution and oxidation chemicals
- pH adjustment, softening, precipitation and scavenging chemicals
- Waxing and scaling agents
- All other specialty chemicals used in drinking water treatment
Sampled East MW for 44 hours straight after dye released.
March 3, 1st dye detected 8 miles west. (67 days since dye release)

March 22 (3 months post dye release), recharge water starts to spill past the check dam.
0.01 ppb FL (water) at 15 miles

#24

MV=393 ft/day
DV=256

#46

MV=597 ft/day
DV=336

#22

MV=543 ft/day
DV=383

#31

MV=653 ft/day
DV=417
Mile Post 31 Trace – July 2017 Water Sample Results
(6 months post dye release)
Mile Post 31 Trace – July 2017 Water Sample Results
(6 months post dye release)
Mile Post 31 Trace – July 2017 Water Sample Results
(6 months post dye release)
season is from late-May to mid-July, depending upon winter snowpack and recent local rainfall. By the end of July the Main Salmon was at what is locally referred to as "low runnable", which can be very misleading - I am not certain I would even want to be on that river in a loaded solo boat at a higher level. On the third day of our drive up to Idaho we navigated a long, dirt road that ran parallel to and in full view of the river from Salmon to our put-in at Corn Creek where the permit section begins. My friend Randy Stovall had been here the previous year and loved this river, so he was champing at the bit to go again. Randy was rowing his cataraft, his wife Libbi was rowing a 14-foot self-bailing raft and carrying Josh Newton whose father Carey was paddling a Perception Dancer kayak (and carrying NO gear whatsoever!) At the last minute my friends Tom Taylor and Stan Pully rounded out our group of seven, them and me each in our SOAR inflatable canoes.

With every rapid we saw driving to the campground at Corn Creek we grew more excited about what was in store for us. We watched large rafts bucking the huge waves and skirting deep holes, and even from the road above we could tell that we were in for the rides of our lives. Unlike most pool and drop rivers the Main Salmon has almost as much drop as pool, and that is a major change from our Texas topography of shallow gradients and a lot more flatwater than whitewater. We knew that this would be a really super trip even before we hit the water (or before the water hit us!) For the record, the Main Salmon drops about 1,910 feet in 151 miles at an average gradient of about 12 feet per mile, which means the water flows as a steady current.

Arriving at Corn Creek Campground, we immediately went to the boat ramp to survey our access, then chose a vacant campsite for the night before our launch. Then, we proceeded back to the boat ramp where we unloaded the cataraft and raft so that Randy and Libbi could start rigging for the next day. It took a long time just to unload the pieces and lay them out so that we could begin assembling the boats. Our SOARs, and Carey's kayak, were much easier to prepare - Carey merely had to put his boat on the river and we had to inflate three tubes on each SOAR before loading them for our trip, and our loading time was about 30 minutes, so we elected to inflate our SOARs in camp and bring them down the morning of our launch.

On July 22, we finished preparing boats, got our orientation, checkout and campsite assignments from the Ranger, and then were on the water around 1:00 PM, which may seem like a late start, but we only had about 13 miles to go and the water was fast, so we were in great shape. The one truly unexpected encounter was the Idaho summer heat, which was rivaling what we left behind in Texas - we had daytime
Breakthrough Curves from Progressively Longer Flow Paths Illustrating Longitudinal Dispersion

- 0.4 mile Ashmead trace #3 at CL-404 (0.5 lbs.) yr. 2013
- 0.5 mile Riddle Trace #2 at MG-3 (2 lbs. RWT) yr. 2010
- 0.7 mile Conklin trace #2 at MG-11 (6 lbs. FL) yr. 2011
- 1 mile Hopper Trace #2 at MG-3 (5 lbs. FL) yr. 2010
- 2.25 mile Meyer Trace #2 at Bench spr. (14 lbs. FL) yr. 2011
- 3 mile Victor Trace #2 2013 at MG-12 (21 lbs. FL)
- 3.25 Mile Shoshone Trace #2
- 8 mile MP31 trace to Prescott stock well 2016 (124 lbs. FL)
Tracer Dominant Velocity and GW Gradient

\[ y = 40956x + 237.06 \]

\[ R^2 = 0.8593 \]

3-Year Calculation of Groundwater Flow

760 days, or 26 months

20 ft drop per mile

395 days, or 13 months

11.5 ft drop per mile

Dom. Tracer Velocity (feet/day)

GW Gradient

(less steep)

(steeper)
Shoshone Dye Trace June 15
(59 pounds FL)

160 ppb FL
Shoshone Trace 3.25 miles
(Depth to Water Table is 190 feet)

MV=1,500 ft./day
DV=640 ft/day

South MW WQ not representative of Recharge Water.
Dye Tracing Study

Project Details

<table>
<thead>
<tr>
<th>PRODUCT(S)</th>
<th>Cyclops-7 Logger</th>
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<tbody>
<tr>
<td>APPLICATION</td>
<td>Freshwater</td>
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<tr>
<td>PARAMETER</td>
<td>Fluorescein dye</td>
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<tr>
<td>LOCATION</td>
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<td>ORGANIZATION</td>
<td>Idaho Department of Water Resources</td>
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<tr>
<td>RECOGNITION</td>
<td>Neal Farmer, Idaho Department of Water Resources, Turner Designs</td>
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Case Study Description

The Cyclops-7 Logger was used to detect Fluorescein dye in a dye tracing study near Clear Lakes, Idaho. The Fluorescein dye was injected into the bottom of a well and was later detected by the logger 18 hours after the injection began. It was discovered that the Fluorescein dye traveled over a linear distance of roughly 2,150 feet with a maximum velocity of 119 feet/hour. The logger was set to sample Fluorescein dye every 30 minutes. PME provides software that produces visual plots of the data collected. The plot for this study illustrated that the peak Fluorescein concentration was at approximately 2.6 ppb, and that the range changed from x100 (Low) to x10 (Medium) due to an increase in Fluorescein concentration.
Traces in 10 years

<table>
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<tr>
<th>Date</th>
<th>Trace Name</th>
<th>Trace Distance (miles)</th>
<th>Max GW Velocity (ft./day)</th>
<th>Dominant Flow Velocity (ft./day)</th>
<th>Ave. GW Velocity (ft./day)</th>
<th>Hydraulic Conductivity K=(Pe*Vdom)/l (Lowman 1972) Pe=0.08 (Heath 1983 &amp; ESPAM 2.2) (ft./d)</th>
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<td>Park picnic</td>
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<td>0.2</td>
<td>5,280</td>
<td>1st peak = 2,112 2nd peak = 754</td>
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<td>R. Riddle 1</td>
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<td>839</td>
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<td>1.0</td>
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<td>July 11, 2011</td>
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<td>Mar. 9, 2014</td>
<td>Mile Post 31</td>
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<td>April 20, 2015</td>
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<td>3,550</td>
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<td>Dec. 21, 2016</td>
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<td>MP31 to Prescott Office</td>
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<td>June 15, 2017</td>
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<td>3.1</td>
<td>1,500</td>
<td>641</td>
<td>428</td>
<td>8836</td>
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Wilson Canyon Trace Preparation

(contours = 2 foot intervals.)
Summary

- Tracks Groundwater Flow for improved characterization of the aquifer.
- Cooperative effort between Idaho Power, IDWR, IWRB.
- Dye tracing has eliminated monitor wells that were previously thought to be in the flow path of recharge water and assist with WQ data interpretation.
- Dye tracing has confirmed some monitor wells are indeed in the flow path of recharge waters.
- Dye tracing has provided a strategic approach to locate new WQ monitoring wells.
- What we’ve learned at a local scale: using empirical data from dye tracing, water levels and water quality provides important information for developing and monitoring individual recharge sites, and can help improve a regional or sub-regional model.
- Tracing shows where the water flows but not necessarily the area influenced by water level rise due to recharge.
- The Tracing Program has pioneered the initiation of developing new field methods and equipment and instruments by private industry.
REVIEW OF THE DYE TRACING PROGRAM CONDUCTED BY THE IDAHO DEPARTMENT OF WATER RESOURCES AND IDAHO POWER.

May 30, 2018

Thomas Aley, PHG & PG
President, Ozark Underground Laboratory, Inc.
Protem, MO 65733

A report prepared for the Idaho Department of Water Resources and Idaho Power.
Purpose

This review was requested by Mr. Neal Farmer of Idaho Department of Water Resources (IDWR) with the concurrence of Mr. David Blew of Idaho Power (IP). The objective of the review was to evaluate the dye tracing program and recommend improvements that should be considered. The review and this report were conducted by the author (Tom Aley). I am a Professional Hydrogeologist certified by the American Institute of Hydrology and I am licensed as a Professional Geologist in Missouri, Arkansas, Kentucky, and Alabama.

I have extensive experience in dye tracing studies and have been involved with about 4,000 groundwater traces in the United States and abroad during the last 50 years. The vast majority of these traces have used fluorescent tracer dyes including the dyes that have routinely been used in the IDWR/IP tracing work. Most of the tracing work has been focused on problem-solving rather than research studies, and has included tracer studies conducted on behalf of a wide range of public and private entities. My resume is included as Attachment A.

Review Work Conducted

I spent the period from the evening of March 18 until the early afternoon of March 22, 2018 in Idaho. This includes 2.5 days in the offices of IDWR (including time in their laboratory facilities) and one long and highly productive day in the field looking at locations where tracing work has been conducted or is ongoing.

The laboratory is very nice and includes a wide range of basic laboratory equipment. It does not include (and was not expected to include) a spectrofluorophotometer that can be operated under a synchronous scan protocol. This equipment provides the best available method for accurately separating fluorescent tracer dyes from background fluorescence and for separating and quantifying multiple dyes in the same sample. Neal Farmer has allocated space in the laboratory adequate for basic laboratory work he might need to conduct. The laboratory facilities are fully adequate for the dye tracing work that Mr. Farmer needs to conduct.

The office time involved well organized explanations of the groundwater tracing work that Neal Farmer and Dave Blew have conducted since about 2008. The first report that had both Neal Farmer’s and Dave Blew’s names as authors was dated 2009. I was given a very comprehensive, well organized short-course on ten years of groundwater tracing investigations in the Snake Plain aquifer. A large multi-colored table about 1 foot by 3 feet presented data on up to 34 parameters for each of the traces conducted to date; I found it very informative.

As a part of the review I presented brief case-history information from four large scale and highly productive dye tracing investigations I have been involved with elsewhere in the
United States. The cases I selected had features with similarities to tracing work in the Snake Plain aquifer. These included:

- **Tracing to Big Spring in the south central Missouri Ozarks.** This is a karst aquifer developed primarily in dolomitic rocks. The mean annual flow rate of Big Spring is 435 cfs. The longest traced distance through the groundwater system was 39.5 miles. The mean groundwater travel rate based on 10 traces was 9,870 feet per day. All of these traces used fluorescein dye and primary sampling reliance was based on activated carbon samplers.

- **Tracing to Silver Springs, Ocala, Florida.** There are approximately 30 individual spring openings (locally called “vents”) with a combined mean flow rate of about 1,000 cfs. This is a karst aquifer with appreciable secondary and tertiary porosity. The longest traced distance was 8.5 miles. MODFLOW capture zone analysis for Silver Springs estimated a 200 year travel time for a trace that actually covered the most distant half of the total distance in 188 days. The mean travel rate for 16 successful traces was 456 feet per day. The dyes used were fluorescein, eosine, rhodamine WT, and sulforhodamine B; all dyes were successfully detected using activated carbon samplers.

- **Tracing in the Barton Springs Segment, Edwards Aquifer, Austin, Texas.** Mean flow of Barton Springs is 53 cfs. This segment of the Edwards Aquifer is federally designated as a Sole Source Aquifer and provides groundwater for a population of 44,000 plus important recreational facilities. Barton Springs also provides habitat for a federally endangered salamander. At low flow conditions groundwater extraction from production wells in the delineated recharge area for the spring is about 50% of spring flow. We have had many successful traces to production wells. The longest traced distance has been 14.9 miles and first arrival times for dyes have ranged from 11 feet per day to greater than 4.3 miles per day. Traces from several sites initially proposed for artificial recharge have demonstrated that much of any water that might be artificially recharged in these locations would rapidly reach and discharge from Barton Springs. Primary sampling reliance has been placed on activated carbon samplers with secondary reliance on water samples for shorter distances traces using larger amounts of dye. Fluorescein, eosine, and rhodamine WT have been the primary dyes used.

- **Tracing through fractured andesite and rhyolite overlain by thick alluvium and colluvium in southern New Mexico.** All traces were to wells, and most were to non-pumping monitoring wells with short screened intervals. There were a total of 16 successful traces during the first two years of the study with underground travel distances ranging from 2,800 to 14,650 feet; the mean travel distance was 7,260 feet. The mean groundwater velocity for first dye arrivals was 60 feet per day; it ranged from 4 to 500 feet per day. Fluorescein, eosine, rhodamine WT and sulforhodamine B dyes were all successfully used. Primary sampling reliance was based on activated carbon samplers except in multiport wells where only water samples could be collected. At a number of wells sampled with both carbon samplers and grab samples of water dye was detected.
in the carbon samplers but not in the water samples. This is because dye concentrations in the well water were below the detection limits for the dyes in water samples.

An important discussion related to the case histories focused on public acceptance and use of the resulting information. The work in the Edwards Aquifer has received more public and scientific attention than the other projects and has been very well received by professionals and the public. There have been numerous reports and publication prepared, and land and water resource decisions have made substantial use of the results. The Ozark Underground Laboratory (OUL) has been an integral part of the tracing work and has conducted all of the laboratory analysis for tracer dyes. All field work has been conducted by well trained and experienced personnel; this is important since sampling is routinely conducted at both public and private water supplies and maintaining good and professional relationships with the owners or managers of wells and water supplies is critical to this and other programs. A high priority is given to maintaining sampling schedules, and these schedules are primarily based on data needs. The program is operated cooperatively by the Watershed Management Department, City of Austin and by the Barton Springs Edwards Aquifer Conservation District.

Reviewed Documents

I was provided with copies (and have reviewed) the following reports:


Farmer, Neal; David Blew; and Tom Aley. 2014. Fluorescent dye tracer tests from the Victor Well south east of the Malad Gorge State Park. IDWR Open-file report. 55p.


Comments on the Reviewed Documents

Comment 1. The tracing program and the individual traces have been well planned and conducted. The team of Farmer and Blew started with relatively simple and short distance traces and used these to develop approaches tailored to the hydrogeologic environment of the Snake Plain aquifer. The acknowledgement section of Farmer and Blew (2009, p. 20) credits multiple agencies and entities. This clearly shows that input and cooperation was requested and received from many sources. This is a very commendable strategy.

Comment 2. In some of the earliest tracing work by Farmer and Blew (2010) they used dye mixture in which the dye equivalent (the percent of actual dye) in the mixture was unknown. As is typical, this information was not available in MSDS sheets provided by the dye supplier. While this did not detract from the quality of the study, it identifies an important point that persons planning dye tracing studies or using the resulting data need to understand. Commercial grade dye mixtures used for groundwater tracing are never 100% dye; they are always mixtures. The dye mixtures are used for many commercial purposes and dye tracing underground water is not one of the major uses. In fact, most of the companies that market “tracer dyes” are focused on supplying plumbers and others working with sewers with a colorful tracer that they can visually detect. In my experience most of the sellers of dye mixtures do not accurately know the dye equivalent values for their products. Additionally, the actual percent of dye in a mixture varies slightly from batch to batch as manufacturers standardize the performance of their product by adjusting the non-dye portion of the mixture. In summary, dye mixtures for groundwater tracing investigations must be purchased from a supplier that carefully controls the quality of the product provided. Unless you know the dye equivalent value in different mixtures you cannot credibly compare the costs. Finally, dye analysis standards must be made from the dye mixtures used, and reported dye concentrations must be based on the dye mixture used rather than the approximate dye equivalent in the mixture.

Comment 3. Flow paths indicating small transverse dispersion are supported by the data, but care should be taken to not unduly limit future sampling plans that would be capable of detecting much broader transverse dispersion. As an illustration, much early groundwater
tracing in karst aquifers assumed that dye would discharge from a single spring and sampling of 
other springs was sometimes halted prematurely once dye was detected at a particular spring.
More extensive spatial and temporal sampling in karst aquifers has often demonstrated that 
multiple springs and wells receive at least some dye from individual dye introduction points.
Study plans for future tracing work in the Snake Plain aquifer should give adequate 
consideration to the possibility of broader and more complex flow paths downgradient of dye 
introduction points than is suggested by the studies reviewed.

Comment 4. All of the reports reviewed are of very good professional quality. They all 
include both basic data and interpretations based on the data.

Review of the Design and Conduct of Tracer Tests

First, I want to identify and briefly discuss important strong points in the program.

1. The program is clearly a science-based program. The various traces near the Malad Gorge 
State Park are a good example. The first traces were simple and short-distance traces. They 
provided data which were used in designing and conducting subsequent traces. Distances 
subsequently traced increased as the team of Farmer and Blew gained experience with 
tracing and with the performance of the aquifer. Open-file reports were prepared on each 
of the traces. Information and experience gained in the Malad Gorge area has provided a 
strong foundation for subsequent larger scale tracing efforts.

2. The same individuals have been involved throughout the program. This has provided a very 
important continuum. Furthermore, Farmer and Blew have made the contacts with owners 
or users of wells and springs and they also do the sampling. In my experience this level of 
personal and professional contact is very important. I also think it is desirable to have a 
team of two people doing the sampling, especially when some of the sampling is done on 
private property and even sometimes inside people’s homes. The team of two 
professionals sends a message to the cooperating landowner that important work is being 
conducted and that his cooperation in the project is appreciated.

3. So far as I can determine all facets of the tracing work are done with great care and 
professionalism. The methods for dye introductions in wells are excellent. The sampling is 
also done very carefully.

Next, I have a list of suggestions for actions that I believe could strengthen the dye 
tracing program.

1. I recommend preparing a table for inclusion in subsequent open-file dye tracing reports that 
briefly describes each sampling station where activated carbon samplers are used. The 
table would indicate as accurately as possible how private water wells were sampled. This
is important because the amount of dye in a carbon sampler is a function of the concentration of dye in the water in contact with the carbon sampler and the amount of time that the carbon sampler has been exposed to the water. Activated carbon adsorbs dye from water in contact with the carbon particles. Water in contact with the carbon needs to be at least slowly replaced with water in which there has been little or no dye lost due to adsorption onto carbon. If this condition is not met then the carbon sampler in place in such water will not adsorb as much dye as a carbon sampler in identical water if that water were adequately circulated. Activated carbon samplers placed in toilet tanks are likely to underestimate the magnitude of passing dye pulses or potentially miss detecting small concentration dye pulses. In my experience such a table would help the authors and report readers understand why some sampling stations detect less dye than nearby stations.

2. A good way to sample a well is to place a carbon samplers in a PVC sample holder at the end of a garden hose and let water pass through it at a rate of about one gallon per minute. If well owners do not want to pump this much water a timer such as used in cities that allow lawn watering only on certain days and certain times during the day works well. This approach is superior to placing carbon samplers in toilet tanks, yet the toilet tanks are better than no sampling at all.

3. The open-file reports would be strengthened if there were a table summarizing all dye analysis results from activated carbon samplers. The table should be organized by sampling station and would indicate the following columns:
   a. Date and time of sampler placement
   b. Date and time of sampler recovery
   c. Dye concentration in sampler
   d. Mean daily dye concentration in sampler
   e. Additional columns similar to columns c and d can be used if more than one dye is in use.

4. The open-file reports would be strengthened if there were a table summarizing all dye analysis results from water samples. The table should be organized by sampling station and would include date and time of sample collection and dye concentration present.

5. More frequent sampling at more or less evenly spaced intervals would be beneficial. While this increases the workload and costs, this is a very valuable program that is developing information previously unavailable and information that will be of great long-term value. Having two or more samples that contain no detectable dye from a location, followed by several sampling periods where dye is detected, is clear proof of a hydrologic connection to the dye introduction point.

6. The narrow dye paths demonstrated by six separate traces in the Malad Gorge area (Farmer and Blew, 2012) are noteworthy and important in assessing the potential for contaminant transport in the Snake Plain aquifer. The flow paths are much narrower than those
commonly encountered in other hydrogeologic environments where comprehensive groundwater tracing projects have been conducted. It is important to determine if these conditions are typical in the Snake Plain aquifer and, if they are, that they are not an artifice of an inadequate breadth of sampling points or an inadequate sampling duration.

7. While I do not believe it has caused any problems in the past, custody of samples in the field could be improved. The findings of the tracing studies will have important current and future value and all facets of the work must be carefully conducted. Sampling materials, and especially collected samples, should always be in the control of at least one of the people doing the sampling. One approach is to lock the vehicle every time you leave it; that can be uncomfortable in hot summer weather. An easier approach would be to put collected samples in a cooler that is kept inside a locked box or locked compartment in the truck. I have testified a number of times in court cases involving dye tracing studies and custody of samples is often a major topic of court examination. A little extra care with samples protects the integrity of the resulting data.

8. Another custody issue involves the use of activated carbon samplers. They are not in the custody of the people doing the study when they are left in a spring or some other unlocked sampling location. Their credibility as accurate samples is enhanced if:
   a. Multiple samples are collected from sampling stations and the dye concentrations all appear reasonable. This may mean more frequent sampling than might otherwise be necessary, especially at critical locations.
   b. An additional and very well hidden carbon sampler is routinely used and analyzed at critical springs. The results should be consistent with those from the primary sampler.
   c. Grab samples of water are collected and analyzed and those results are consistent with the findings from carbon samplers.

9. A good approach is to collect and replace activated carbon samplers at equal time intervals so that dye concentrations can be directly compared. For many reasons this is not always possible. Carbon samplers adsorb and retain the tracer dyes. The standard activated carbon samplers produced by the OUL contain 4.25 grams of activated carbon. Manufacturer’s data indicates that there is over an acre of surface area on that amount of carbon. As dyes and other materials are adsorbed on the carbon the amount of available sites for more dye to be adsorbed decreases. However, the rate of decrease is relatively small given the large amount of surface area in the sampler. As a result, dye concentration values from carbon samplers can be normalized by dividing the dye concentration by the number of days the sampler was in place and calculating a mean dye concentration per day value.

10. Values from carbon samplers at a particular sampling station can be added together to create a cumulative dye breakthrough curve (see Figure 1). In this case fluorescein and rhodamine WT dyes were both injected at the same time and location, both were
discharging from a monitored spring, and both were detectable during a 58 day sampling period in both grab samples of water and in carbon samplers.

Figure 1

11. The tracing work under review is primarily sampling relatively clean water so activation sites on carbon remain available for a longer period of time than is the case when sampling in contaminated water. As general guidance I recommend that carbon samplers not be left in place for longer than about one month at springs nor longer than about two months at wells. Samplers left in place for longer periods are still valuable, but I have less confidence in mean daily dye concentration values from such samplers.

12. When sampling water from homes that have water treatment equipment it is best to sample prior to the treatment, but this is often not reasonable. In my experience the home treatment methods do not remove all of the dye and many of them may not remove most of it. When sampling homes with such systems the existence of the systems must be noted in the reporting since it might result in false-negative data. I also recommend that samplers at such wells not be left in place for longer than one month.

13. I was very impressed by the dye traces from artificial recharge basins at Mile Post 31 and at the Shoshone Recharge Basin. Using dye traces to assess the downgradient movement of water from the basins provides valuable information. One possible improvement in the design of recharge basin traces would be to restrict the dye introduction to one or two localized parts of the basins where recharge rates are expected to be the highest. If
reasonable, once the dye is introduced allow most of it to enter the subsurface and then apply most of the recharge water to flush the dye into and through the groundwater system. This approach will concentrate and localize the dye plume and reduce losses to surficial soils, sunlight degradation, and dilution. The result will be more efficient use of the dye and larger dye concentrations at downgradient sampling locations.

14. Consideration should be given to conducting two or three dye introductions at or near the same time and utilizing many of the same sampling stations. With spectrofluorophotometer analysis using synchronous scan protocols fluorescein, eosine, and rhodamine WT dyes can be detected and each quantified in a single sample with a single analytical charge. The amounts of each dye to be used must be balanced so that a large concentration of one dye does not obscure a small concentration of another dye. As a general rule of thumb for traces of equal distance and complexity, and using standard dye mixtures supplied by the OUL, use about 1.5 times as much eosine dye mixture as fluorescein mixture and about 5 times as much rhodamine WT mixture as fluorescein mixture. The need to use larger quantities of eosine and rhodamine WT dye mixtures can be overcome if rhodamine WT is used for the shortest distance traces, eosine for the intermediate distance traces, and fluorescein for the longest traces. As an example, fluorescein could be introduced into a recharge basin, eosine in a well 5 miles downgradient of the basin, and rhodamine WT in another well 10 miles downgradient of the basin. Rhodamine WT concentrations at detection sites would likely have substantially decreased before any eosine arrives, and eosine would likely have substantially decreased before any fluorescein arrives. There are other strategies that can be used to trace with multiple dyes concurrently. A benefit of concurrently tracing with multiple dyes is that it increases the information gained with only small increases in the cost of sampling and analysis.

15. Recognize that dye standards deteriorate with time. The approach used at the OUL is to make 10 ppb standards for eosine and fluorescein in water each day that dye analysis is done. These standards are made from 1 ppm stock solutions. Fresh 1 ppm stock solutions are made monthly from 100 ppm stock solution which are made once a year. For rhodamine WT in water 100 ppb standards are made daily from 10 ppm stock solutions. A fresh stock solution is made monthly from a 1,000 ppm stock solution that in turn is made once a year. If you are doing any quantitative dye analysis in the lab in Boise I recommend the above frequency for making standards.

16. Control stations are sampling locations where no dyes are expected. Control stations should be established and routinely sampled for tracer dyes using activated carbon samplers. Consideration should be given to establishing control stations periodically along irrigation canals that pass through areas where groundwater tracing is occurring and where dyes are likely to be detected in sampled wells. Such control stations demonstrate that dye detected in nearby wells is not derived from dye that was somehow present in the canals and that the dye introduction point is the only credible source for detected dyes. I see no indication that the absence of control stations has adversely impacted any of the tracer studies conducted by the team of Farmer and Blew.
17. At springs and surface water sampling locations it is a good protocol to place a carbon sampler and a duplicate. It takes very little time to routinely place, collect, and replace duplicate samplers. The duplicates are extremely valuable if the original sampler is lost or damaged. The team of Farmer and Blew places carbon samplers in a porous container to protect them from animals that occasionally damage them. The duplicate carbon sampler could be attached to the outside of this container or could be separately anchored. Duplicate samplers can be placed in the same collection bag as the original sampler. If one sampler is damaged or has been partially washed out of the spring being sampled the other sampler is doubled and a note is placed on the custody sheet telling the laboratory to analyze the folded sample.

18. Mean Relative Percent Difference (RPD) values for dyes eluted from duplicate carbon samplers in field studies are about 40%. The shape of breakthrough curves for dye concentrations in carbon samplers can be smoothed if the carbon sampler and its duplicate are both analyzed each time dye is detected at the sampling station. When the data are graphically displayed, the mean dye concentration from the two samplers is used as the plotted value.

19. Some very important work utilizing some novel approaches has been conducted. While the open-file reports are a good way of disseminating the information and preventing it from being lost, efforts should be made to publish results of the tracing studies in other places as well.

20. High quality field work is essential in groundwater tracing programs. I recommend that the team of Farmer and Blew continue to do the field work rather than delegate it to people with less commitment to high quality and comprehensive work.

Summary and Conclusions

The dye tracing studies conducted by Neal Farmer and Dave Blew are excellent. The studies are very well designed, very well conducted, and the reporting is both thorough and of high technical quality. The findings are providing important and highly credible information about the hydrologic functioning of the extremely valuable Snake Plain aquifer. An expansion of the program would be desirable, but such an expansion should not be allowed to degrade the basic quality of the work.

I very much enjoyed the opportunity to provide this program review.

Thomas Aley, PHG & PG
President and Senior Hydrogeologist
Ozark Underground Laboratory, Inc.
Resume of Thomas Aley

PERSONAL DATA


EDUCATION

University of California, Berkeley. B.S. in Forestry (1960).
University of California, Berkeley. M.S. in Forestry with emphasis in forest influences and wildland hydrology. (1962).
University of California, Berkeley. Department of Geography (1962-1963); emphasis in hydrology and geology.
University of Arizona, Tucson. Department of Watershed Management (1963-1964); emphasis in wildland hydrology.

PROFESSIONAL CERTIFICATION & REGISTRATION

Registered Geologist, State of Missouri Registration Number 0989. Issued 1998.
Registered Water Tracer #038, State of Missouri.

PROFESSIONAL SOCIETY MEMBERSHIPS

American Institute of Hydrology
Association of Ground Water Scientists and Engineers
Society of American Foresters
Missouri Consulting Foresters Association
National Speleological Society

HONORS AND AWARDS

1961. Membership in Xi Sigma Pi, honorary forestry society.
1972. Award for outstanding performance, United States Forest Service.
1972. U.S. Forest Service nominee for the American Motors Conservation Award.
Resume of Thomas Aley

1973. Lester B. Dill Award for significant contributions to speleology. Mississippi Valley-Ozark Region of the National Speleological Society.
1979. J Harlan Bretz Award for outstanding contributions to the study of speleology in the state of Missouri. Missouri Speleological Survey.
1981. Outstanding Service to Education Award. Phi Delta Kappa honorary educational fraternity for southwest Missouri.

EMPLOYMENT HISTORY

1973 to Present. Director and President. Ozark Underground Laboratory, Protem, Missouri. Conducts or directs consulting and contract studies in hydrogeology, cave and karst related issues, and natural resource management of karst regions.


1964 to 1965. Chief Hydrologist. Toups Engineering, Inc., Santa Ana, California. Duties included basic data collection and analysis for plaintiffs in Santa Ana Basin adjudication and similar work for defendants in San Gabriel Basin adjudication; these were both ground water basin adjudication suits. Directed technical work on ground water basin management and artificial recharge.


1960 to 1963. Teaching Assistant and Research Assistant. School of Forestry, University of California, Berkeley. Teaching in aerial photogrammetry, photo interpretation, and forest influences. Research assistant in the same fields.

SUMMARY OF EXPERIENCE

53 years of professional experience in ground water and surface water hydrology, pollution control investigations, and land management issues with particular emphasis on soluble rock landscapes. The following projects are representative examples.
Resume of Thomas Aley

1. Hydrologic studies for land management and spring protection with particular emphasis on soluble rock regions. Numerous studies of this type have been conducted for local, state, and federal agencies in Missouri, Arkansas, Alabama, Florida, Kentucky, Illinois, Tennessee, Alaska, and Wyoming.

2. Expert witness testimony on pollution potential of underground injection of hazardous wastes into deep-lying soluble rocks in Oklahoma.

3. Expert witness testimony in ground water and surface water hydrology in Missouri, Arkansas, Oklahoma, Kansas, California, Alabama, Maryland, Washington, and Indiana.

4. Expert witness testimony on riverbank stability problems in Missouri before U.S. Senate Committees at request of Senator John Danforth of Missouri.

5. Member of 6-member review panel on the adequacy of testing to determine radionuclide migration from a radioactive waste disposal site at the Idaho National Engineering Laboratory, Idaho. Served as the only hydrogeologist on the panel.

6. Member of 6-member expert hydrogeology panel on hydrological issues associated with the St. Louis Airport Radioactive Waste Site.

7. Chairman of a 4-member "blue ribbon" panel established by the U.S. Forest Service to assess the significance of cave and karst resources in southeastern Alaska. The panel also assessed the extent to which land management activities were adversely impacting the resources.

8. Hydrologic consultant to St. Charles County, Missouri on clean-up of radioactive wastes at Weldon Spring Site, a former Atomic Energy Commission processing facility. Advised on actions to protect county well field from radioactive contaminants dumped in an abandoned quarry.


12. Hydrologic investigations to determine sources of pollutants that caused fish kills at commercial fish farms in Missouri and Arkansas.

13. Hydrogeologic site investigations (and sometimes testimony) on municipal landfills with emphasis on site suitability and probability of ground water contamination. 23 sites in Arkansas, Missouri, Wisconsin, Tennessee, Alabama, and Alaska.

14. Hazardous waste remediation investigations with emphasis on hydrogeology. Sites in Missouri, Arkansas, Oklahoma, Colorado, Kentucky, Pennsylvania, Maryland, New York,
Resume of Thomas Aley

Alabama, Tennessee, and California. Second opinion review of projects in Missouri, Kansas, and New York.

15. Impacts of food processing wastes on surface and ground water quality. Various projects in Arkansas and Missouri.


17. Assessment of the hydrologic impacts of proposed geothermal energy development on the Santa Clara Indian Reservation, New Mexico.

18. Investigations on the extent and sources of sewage contamination in about 100 springs at Eureka Springs, Arkansas. Work involved the delineation of recharge areas for most of these springs and the identification of sewer line segments which had the greatest leakage problems.

19. Hydrogeologic hazard area mapping for proposed sewer line corridors in a sinkhole plain area south of Mammoth Cave, Kentucky. Work included hydrologic recommendations for minimizing exfiltration and monitoring strategies.

20. Hydrogeologic mapping of Greene County, Missouri to identify areas where sinkhole flooding and serious ground water contamination could result from land development.

21. Assessment of impacts of proposed highways on springs, caves, and endangered cave-dwelling species, Arkansas, Missouri, Indiana, Virginia, West Virginia, and Alaska. Similar work for airports in Missouri and Arkansas, and for coal-fired power plants in Missouri and Arkansas.


25. Investigations and management recommendations for reducing TCE vapor intrusion into the air of two show caves in Missouri


27. Evaluation of 19 sites for designation as National Natural Landmarks; sites are in Indiana, Missouri, Arkansas, Iowa, Ohio, and New Mexico.


29. Assessment of the impacts of deep mining on regional hydrology. Missouri.


32. Groundwater tracing at four nuclear power plants, USA.

33. Feasibility study for creation of a national-scale American Cave and Karst Museum.
Resume of Thomas Aley

34. Instructor in numerous professional short-courses. These have included:
   1) Over 20 four-day courses in karst hydrogeology and groundwater monitoring sponsored by the Association of Ground Water Scientists and Engineers and by Environmental Education Enterprises;
   2) Two courses on groundwater site investigation techniques for health department professionals in Washington State; and

PUBLICATIONS

Resume of Thomas Aley

30.  1977.  The Ozark Underground Laboratory.  IN Sloane, Bruce; Editor.  Cavers, caves, and caving.  Rutgers Univ. Press, pp. 140-158.
Resume of Thomas Aley


37. ___ and Kenneth C. Thomson. 1981. Hydrogeologic mapping of unincorporated Greene County, Missouri, to identify areas where sinkhole flooding and serious groundwater contamination could result from land development. Mo. Dept. of Natural Resources, map folio and project summary.


Resume of Thomas Aley


53. ____. Some thoughts on environmental management as related to cave use. *Australian Cave and Karst Management Association Jour.* Vol. 17, pp. 4-10.


Resume of Thomas Aley


73. _____. 2000. Water and land-use problems in areas of conduit aquifers. IN: Klimchouk, Alexander; Derek C. Ford; Arthur N. Palmer; and Wolfgang Dreybrodt (Editors). *Speleogenesis; evolution of karst aquifers.* National Speleological Society, Huntsville, AL. Pp. 481-484.


Resume of Thomas Aley


Resume of Thomas Aley


105. ______. 2016. Using activated carbon samplers to improve detection of fluorescent tracer dyes in groundwater remediation studies. Tenth International Conference on Remediation of
Resume of Thomas Aley


MEMORANDUM

To: Streamflow Enhancement and Minimum Streamflow Committee

From: Sarah Lien, Friends of the Teton River

Date: October 30, 2019

Re: Teton River Basin Water Transactions Program – Teton River Flow Transaction

Action Requested: Committee vote recommending that the transaction be presented to the Idaho Water Resource Board for a vote on the associated funding resolution

I. Transaction Summary:

This two-year pilot project aims to generate flow and temperature conditions in the mainstem Teton River to support Yellowstone Cutthroat Trout by increasing flow levels and decreasing temperature during the hottest, driest months of the year. This will be accomplished by conducting managed groundwater recharge efforts, utilizing water from tributary streams during the months of April, May, and June, which will in turn improve flow levels and temperature conditions in the Teton River, via return flows, during the months of June, July, August, September, and October. See, attached map depicting approximate location of recharge sites and location of expected response in Teton River.

II. Transaction Overview:

Friends of the Teton River (FTR), in partnership with the Teton Water Users Association (TWUA), present the following flow restoration proposal. See, attached document entitled “Description of Teton Water Users Association,” which describes the Teton Water Users Association and provides a list of participating entities. This water transaction proposal aims to generate more favorable conditions for native Yellowstone Cutthroat Trout (YCT) in the Teton River by: (1) stabilizing flow conditions; and (2) decreasing water temperature during the warmest months of the year.

Historically, flow restoration efforts in the Teton River watershed have focused on restoring flows in tributary streams to the Teton River. Those efforts will continue, yet it is critically important to generate favorable conditions for YCT in the Teton River itself. The Teton River is never completely dewatered like most of the tributaries in the watershed, but it is subject to
annual low flow conditions and elevated temperatures, particularly during the latter part of the summer when ~90% of fluvial YCT in the watershed are holding in its waters.

Eight to ten months per year the tributaries to the Teton River are disconnected from the mainstem river itself, limiting the chance to add water via surface flow inputs and demanding the development of an alternative strategy. The watershed demonstrates a three month return flow period, meaning that approximately three months after water seeps into the ground, it will re-emerge as return flow in the Teton River. In short, water recharged during a 60-day window in the spring (April 15 - June 15) will increase base flows and drive down temperatures in the Teton River from June 15 - October 31. Information regarding the groundwater-surface water model upon which this transaction is premised is detailed in a document entitled “Teton Valley Groundwater Surface Water Model,” authored by Dr. VanKirk, which is available upon request.

Utilizing the information derived from Dr. VanKirk’s model, the TWUA worked to generate water management strategies, appropriate for the Teton River watershed specifically, which will stabilize the local aquifer while improving flow and temperature conditions in the Teton River. As a result, the TWUA implemented an initiative, in 2018 and 2019, that aimed to increase the number of acres being flood irrigated throughout the watershed, in recognition that flood irrigation methods support groundwater levels and, through return flows, have the potential to improve flow and temperature conditions in the Teton River. The TWUA intends to continue this flood irrigation initiative into the foreseeable future.

This two-year pilot project, the subject of this project proposal, builds upon the flood irrigation initiative discussed above through the implementation of a managed groundwater recharge program. Each year of the two-year pilot period, the TWUA aims to recharge 10,000 acre-feet of water, above and beyond any incidental recharge which may result from the flood irrigation initiative. By recharging 10,000 acre-feet of water, the groundwater-surface water model projects an increase in Teton River base flows of ~15-18 cfs from June 15-October 31. The model projects that an additional 4,322 acre-feet of water will accrue to the Teton River, annually, during that June 15-October 31 time period.

The Idaho Department of Water Resources (“IDWR”) issues Temporary Water Right Permits, on an annual basis, that allow irrigators to recharge water when the waters of the State of Idaho are abundant. FTR will work with the relevant irrigation entities to apply for, and secure, a Temporary Water Right Permit for the purpose of conducting managed recharge. These permits will be applied for each year of the project and will serve as the legal vehicle by which water is diverted for managed recharge purposes as part of this pilot project. The TWUA anticipates that if this pilot project proves to be a worthwhile effort that it will work with individual irrigation entities to apply for managed recharge water rights.

Friends of the Teton River is actively working with Idaho Department of Environmental Quality to develop appropriate groundwater quality monitoring protocol for this pilot project.

Participating irrigation entities will be contracted to deliver water to identified groundwater recharge sites. The irrigation entities will sign water delivery contracts which specify how water
is to be diverted and delivered to accrue maximum flow and temperature benefits in the Teton River.

III. Transaction Cost and Pricing Information:

Sixty thousand six hundred dollars ($60,600) is available through the Columbia Basin Water Transaction Program, over the two-year term, to support this transaction. Each year three hundred dollars ($300) will be utilized to pay the fees associated with applying for Temporary Water Right Permits, while thirty thousand dollars ($30,000) will be made available for payment to participating irrigation entities.

The pricing structure for this two-year pilot project is as follows:

- If the total quantity of managed recharge in any given year is 7,500 acre-feet or less, participants will be compensated at a rate of $4/acre-foot recharged.
- If the total quantity of managed recharge in any given year exceeds 7,500 acre-feet, participants will receive a portion of a $30,000 funding pool, equal to their individual contribution to the total quantity of water recharged. By way of example, for the purpose of illustrating how compensation shall be determined, the following facts are assumed: (1) a participant recharges 750 acre-feet of water; (2) the total quantity of recharge is 10,000 acre-feet; and (3) the funding pool is $30,000. Compensation shall be calculated as follows:
  1. 750 AF (participant’s recharge)/10,000 AF (total recharge) = 0.075
  2. 0.075 x 100 = 7.5% = participant’s percentage of recharge
  3. $30,000 x 7.5% = $2,250 = participant’s compensation

This hybrid payment structure aims to incentivize participation, while simultaneously avoiding the potential that participants may be compensated at a rate in excess of market.

IV. Committee Action Requested:

The transaction has been reviewed by the Columbia Basin Water Transaction Program’s technical advisory committee and funding to support the transaction has been authorized.

At this time, FTR requests that the Committee vote to support the transaction and recommend that it be presented to the Idaho Water Resource Board for a vote on the associated funding resolution.
Teton River Flow Restoration Pilot Program

Geographic Extent of Anticipated Return Flow Emergence and River Response

Anticipated base-flow response will continue downstream.

Data Sources: NRCS, IDWR, US Census, FTR

Friends of the Teton River
October 2017

- General Location of Recharge Activity
- Location of River Response
- Location of Return Flow Emergence
Description of Teton Water Users Association

Water has long played a central role in the cultural and economic prosperity of the Teton River watershed, and currently supports robust agricultural and recreational economies. Yet, there are several emerging water issues that promise to shape a future water management paradigm that looks dramatically different from the past. These factors include declines in Idaho’s aquifer and river levels, climate variability and prolonged drought, development pressure to convert farmland to subdivisions, mitigation and water-supply concerns for growing cities and rural areas, continued declines of Yellowstone cutthroat trout distribution and abundance, water-quality concerns, potential changes in Rule 50, and the formation of a Groundwater Management Area for the Eastern Snake Plain Aquifer.

In response to these issues, the Teton Water Users Association (TWUA) formed in the fall of 2015, bringing together individuals who can, collectively, identify solutions that satisfy the needs of all constituents within the community – farmers who depend on water for crop and livestock production, municipalities that require clean and adequate water for residents, and conservation interests seeking water for fish and wildlife. The TWUA currently works exclusively in Teton Valley in Teton County Idaho. The TWUA is a collaboration of interests and is represented by a true cross-section of Teton Valley’s population, being comprised of approximately 50% agricultural water users, 30% conservation water users, and 20% municipal water users.

The mission of the TWUA reflects its diversity by addressing problems and implementing projects that:

- Keep working lands working by securing and maintaining a reliable and affordable supply of water to sustain agriculture.
- Protect and restore stream flows and water quality in the Teton River and its tributaries, for the benefit of fish, wildlife, and people.
- Secure and maintain a safe, affordable, and high-quality water supply for municipalities and residential water users.

Participants in the TWUA include: Teton County Farm Bureau; NRCS; Teton Soil Conservation District; Water right holders and canal companies that utilize water from the following areas: Trail Creek, Fox Creek, Darby Creek, Mahogany Creek, Spring Creek, South Leigh Creek, and Middle Leigh Creek; Friends of the Teton River; Teton Regional Land Trust; Henrys Fork Foundation; City of Victor; City of Driggs; City of Tetonia; Teton County, Idaho; Idaho Fish and Game; Wyoming Game and Fish; US Wildlife Service; US Forest Service, and Idaho Department of Environmental Quality.
BEFORE THE IDAHO WATER RESOURCE BOARD

IN THE MATTER OF THE
TETON RIVER WATER TRANSACTION AGREEMENTS

RESOLUTION TO MAKE A FUNDING COMMITMENT

WHEREAS, the Teton River provides quality habitat for fluvial and resident Yellowstone cutthroat trout, but is flow and temperature limited at certain times of the year; and

WHEREAS, it is in the interest of the State of Idaho to increase stream flow and decrease temperature in the Teton River and its tributaries to encourage the recovery of Yellowstone cutthroat trout, which are managed as an Idaho Species of Greatest Conservation Need; and

WHEREAS, the Idaho Water Resource Board (IWRB) is authorized to expend Bonneville Power Administration funds for flow restoration through the Columbia Basin Water Transaction Program; and

WHEREAS, IWRB staff (staff) has developed a two-year groundwater recharge pilot program to improve flow and temperature conditions for fish in the Teton River; and

WHEREAS, staff has developed water delivery agreements with local water users to deliver water to identified groundwater recharge sites for the purpose of improving stream flow in the Teton River; and

WHEREAS, a proposal in the amount of $60,600.00 has been submitted to the Columbia Basin Water Transaction Program to be used to fund water delivery agreements with irrigators in the Teton River watershed ($60,000.00) and the administrative fees associated with securing Temporary Water Right Permits ($600.00); and

WHEREAS, staff anticipates the funds being placed into the IWRB’s Revolving Development Account for annual payment to support the pilot program; and

WHEREAS, the two-year groundwater recharge pilot program and water delivery agreements are in the public interest and in compliance with the State Water Plan.

NOW THEREFORE BE IT RESOLVED that the IWRB authorizes the Chairman to enter into water delivery agreements for the purpose of conducting managed recharge, using an amount not to exceed $60,600.

NOW THEREFORE BE IT FURTHER RESOLVED that this resolution is subject to the
conditions that the IWRB receives the requested funding from the Columbia Basin Water
Transaction Program in the amount of $60,600, temporary water right permits authorizing the
diversion of water for managed recharge are secured, and an appropriate Ground Water
Monitoring Program is developed with Idaho Department of Environmental Quality.

DATED this 14 day of November, 2019.

____________________________________
ROGER W. CHASE, Chairman
Idaho Water Resource Board

ATTEST ________________________________
VINCE ALBERDI, Secretary
Memorandum

To: Idaho Water Resource Board
From: Brian Patton
Date: November 4, 2019
Re: Potential legislation of Interest

Garrick Baxter of the Attorney General’s office will brief the Board on potential legislation proposed by IDWR as well as potential legislation of interest proposed by others.
Proposed legislation from IDWR

1. Filing of Statutory Claims
   • This legislation proposes to remove the June 30, 1988, limitation from the beneficial use claim filing exception in Idaho Code § 42-245. With the change, claiming a water right pursuant to Idaho Code § 42-243 would not be required if a claim to the water use is filed in the northern Idaho adjudications or any future general water rights adjudication.
   • IWUA support for legislation.

2. Records Management
   • This legislation amends Idaho Code § 42-1805 to give the Director explicit authority to receive, file, record, or retain documents on media other than paper.
   • Makes clear that IDWR can use media other than paper for long term storage of documents.
   • IWUA support for legislation.

3. Water Districts
   • The legislation amends Chapter 6, Title 42, Idaho Code (which deals with water districts) to consolidate language and reduce duplication of sections related to the collection of water district assessments; create flexibility for counties to collect water district assessments; correct errors; consolidate the requirements for watermaster reporting into one section; authorize watermasters to estimate the amount of water delivered to water users where actual delivery data are not available for purposes of assessment; and amend requirements for water district annual meeting notices.
   • Work in progress. When raised at the IWUA Legislative Committee meeting, the proposed legislation was referred to a workgroup.
DEQ Legislation

1. Emergency Response
   - Authorizes state or local emergency response teams to divert water without a water right if necessary to clean up releases of hazardous substances that threaten public health or the environment.
   - IWUA support for legislation.

Municipal Legislation Proposed By City of Twin Falls

1. Reasonably Anticipated Future Needs (RAFN) Water Rights
   - This legislation modifies the current process for licensing RAFN water rights.
   - The development period for a RAFN water right can extend many years – 15, 20 or more. However, under the current statute, the Department often has to issue a license well before the end of that development period.
   - The legislation authorize the Director to license the water right in incremental steps based on actual beneficial use.
   - Work in progress. Has been referred to a IWUA workgroup.

Idaho Ground Water Appropriators

1. Ground Water Management Areas
   - This legislation proposes to amend Idaho Code § 42-233b. It modifies the process for designating a GWMA, requires the creation of an advisory committee, and establishes committee make-up.
   - Work in progress. Has been referred to a IWUA workgroup.

Adjudication

1. Bear River Basin Adjudication
Memo

To: Idaho Water Resource Board
From: Mat Weaver, Brian Patton
Date: November 1, 2019
Re: Administrative Rules Status Update

Requested Action Item
No request at this time.

Background
The Idaho Water Resource Board (IWRB) is the executive branch entity with statutory oversight and authority over 11 chapters of Administrative Rules in IDAPA 37, including:

- IDAPA 37.01.01 Rules of Procedure of the IDWR
- IDAPA 37.02.01 Comprehensive State Water Plan Rules
- IDAPA 37.02.03 Water Supply Bank Rules
- IDAPA 37.02.04 Shoshone Bannock Tribal Water Supply Bank Rules
- IDAPA 37.03.03 Rules and Minimum Standards for the Construction and Use of Injection Wells
- IDAPA 37.03.04 Drilling for Geothermal Resources Rules
- IDAPA 37.03.05 Mines Tailing Impoundment Structures Rules
- IDAPA 37.03.06 Safety of Dams Rules
- IDAPA 37.03.07 Stream Channel Alteration Rules
- IDAPA 37.03.09 Well Construction Standards and Rules
- IDAPA 37.03.10 Well Driller Licensing Rules

Several other sets of rules related to water right processes are under the control of the Director of the Idaho Department of Water Resources (IDWR).

Issue at Hand
Idaho Code § 67-5292, states, “every adopted rule shall automatically expire on July 1 of the following year unless the rule is extended by statute.” The extension of Idaho’s administrative rules by statute requires the Idaho Legislature to pass a bill every year, reauthorizing Idaho’s administrative rules for another year before adjourning the legislative session. The 2019 Legislature adjourned without reauthorizing Idaho’s existing administrative rules, including Title 37.

On April 23, because the legislature did not reauthorize Idaho’s administrative rules, the Governor directed all agencies to review all of their rules and prepare temporary and proposed rules to be published in a special Administrative bulletin in June 2019. In response to the Governor’s direction, the IWRB has undertaken the following activities:

- Comprehensively reviewed all rules and eliminated approximately 20% of rules because they were ineffective, outdated, contrary to existing Idaho Code, contrary to federal law, or contrary to current court rulings;
- Published revised rules as temporary and proposed rules on June 19, 2019, in a special edition of the Idaho Administrative Bulletin;
- Received written comments from the public regarding its proposed rules;
• Held three public hearings in September to receive public testimony regarding its proposed rules;
• Coordinated rulemaking with the Idaho Water Users Association in May, July, September, and October;
• Fully considered all written and public comments received regarding its proposed rules; and
• Submitted a *Notice of Omnibus Rulemaking – Adoption of Pending Rules* and a *Notice of Omnibus Rulemaking – Adoption of Pending Fee Rules* to the Division of Financial Management (DFM) on October 16, 2019, for publication on November 20, 2019, in a special edition of the Idaho Administrative Bulletin.

**Next Steps**
The IWRB adopted its pending rules on October 4, 2019. DFM will formally publish the pending rules on November 20, 2019. Idaho Code Section 67-52-1(14) defines a pending rule as a rule that has been adopted by an agency under regular rulemaking procedures and remains subject to legislative review before becoming final and effective. The pending rules are the final versions of the rules that are submitted for legislature review and final approval.

The next step in the process is for the legislature to review the IWRB’s pending rules during the 2021 Legislative Session. Following legislative review, unless rejected, the rules will become final. The legislature has yet to determine its review process for its unprecedented comprehensive review of the Idaho Administrative Code. To prepare agency staff for the upcoming legislative review, DFM is requiring training for all “agency personnel who will present a rule to the 2020 legislature.” The training will cover “unique aspects of legislative review of omnibus rules as well as executive branch expectations for presentation.” Appropriate IDWR staff will receive training on December 12 or December 18.

**Becoming a Final Rule**
The Idaho Administrative Procedures Act (APA) defines a “final rule” as one that has been adopted by an agency under regular rulemaking procedures in accordance with the APA and is of full force and effect. Final rules are sometimes referred to as permanent rules (although no rule is ever permanent), and it is these rules, for the most part, that comprise the Administrative Code.

According to Idaho Code Section 67-5224(5), a pending rule will become “final and effective”...

(a) *upon conclusion of the legislative session at which the rule was submitted to the legislature for review or as provided in the rule, but no pending rule adopted by an agency shall become final and effective before the conclusion of the regular or special legislative session at which the rule was submitted for review. A rule which is final and effective may be applied retroactively, as provided in the rule.*

(b) *when the legislature approves a pending rule pursuant to section 67-5291, Idaho Code, the rule shall become final and effective upon adoption of the concurrent resolution or such other dates specified in the concurrent resolution.*

(c) *except as set forth in sections 67-5226 and 67-5228, Idaho Code, no pending rule or portion thereof imposing a fee or charge of any kind shall become final and effective until it has been approved by concurrent resolution.*

In its review, where the legislature finds that an agency rule is inconsistent with the legislative intent of the statute being implemented or prescribed, it may adopt a concurrent resolution rejecting the entire rule, or any subpart of the rule deemed inconsistent.
## 2020 Tentative Board Meeting Dates

<table>
<thead>
<tr>
<th>Month</th>
<th>Proposed Dates</th>
<th>Concurring Events/Field Trip</th>
<th>Location</th>
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<tbody>
<tr>
<td>January</td>
<td>23rd &amp; 24th</td>
<td>IWUA(1/20-1/23, 2020)</td>
<td>BOISE</td>
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<tr>
<td>March</td>
<td>19th &amp; 20th</td>
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<td>BOISE</td>
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<tr>
<td>May</td>
<td>28th &amp; 29th</td>
<td>Field Trip in Magic Valley</td>
<td>TWIN FALLS Hilton Garden</td>
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<tr>
<td>June: IWUA</td>
<td>8th &amp; 9th</td>
<td>Water Law &amp; Resource Issues Seminar</td>
<td>SUN VALLEY Sun Valley Resort</td>
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<td>July</td>
<td>30th &amp; 31st</td>
<td>Field Trip to Avista Facilities</td>
<td>COEUR D'ALENE Red Lion, Post Falls</td>
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<td>September</td>
<td>17th &amp; 18th</td>
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<td>BOISE</td>
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<tr>
<td>November</td>
<td>19th &amp; 20th</td>
<td></td>
<td>BOISE</td>
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