AGENDA

IDAHO WATER RESOURCE BOARD

Finance Committee Meeting No. 4-23
Friday, June 2, 2023
10:00 a.m. (MT) / 9:00 a.m. (PT)

Water Center
Conference Rooms 602 C&D / Online Zoom Meeting
322 E. Front St.
BOISE

Board Members & the Public may participate via Zoom
Click here to join our Zoom Meeting
Dial in Option: 1(253) 215-8782
Meeting ID: 897 3541 7066 Passcode: 051960

1. Introductions and Attendance
2. North Fremont Canal Systems Pipeline Project
3. Lewiston Orchards Exchange Project
4. Treasure Valley Water Supply Assessment Project
5. American Falls Spillway Rehab
6. Other Items
7. Adjourn

Committee Members: Chair Jo Ann Cole-Hansen, Jeff Raybould, Dean Stevenson, Dale Van Stone, and Marc Gibbs.

* Action Item: A vote regarding this item may be made at this meeting. Identifying an item as an action item on the agenda does not require a vote to be taken on the item.

Americans with Disabilities
The meeting will be held in person and online. 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.

North Fremont Canal Systems Inc.

Phase 5 Gravity Pressurized Pipeline Project

Sean Maupin-President

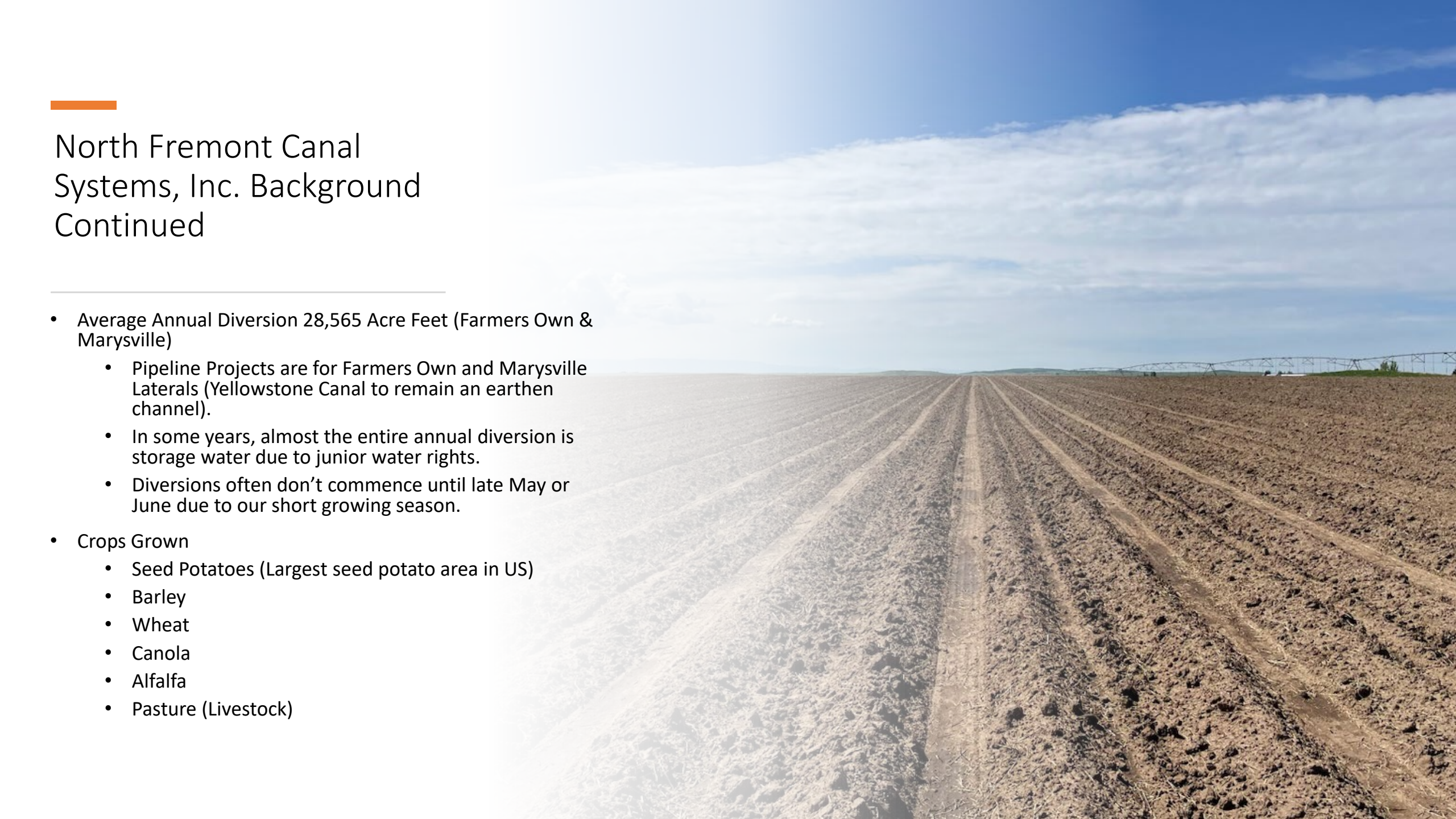
North Fremont Canal Systems, Inc. Background

- North Fremont Canal Systems, Inc. was formed in 1987 to coordinate efforts between the three main canals north of the Fall River. The three canal companies are Marysville, Farmers Own and Yellowstone Canal Companies. We are a water delivery entity.
  - The three canal companies were formed in the 1890's and construction began soon after. These canals were built through difficult terrain and had to be built on side-hills to maintain grade with significant elevation change. The settlers that built these canals were certainly intelligent, determined and full of spirit.
- NFCS delivers water to over 500 diversions covering 31,539 acres. NFCS has relatively junior natural flow water rights which makes us highly dependent on storage water. This makes water conservation all the more important.
- Water Rights

	Natural Flow (CFS)	Storage Water (AF)
NFCS	384	29,564 (Fremont-Madison ID)

North Fremont Canal Systems, Inc. Background Continued

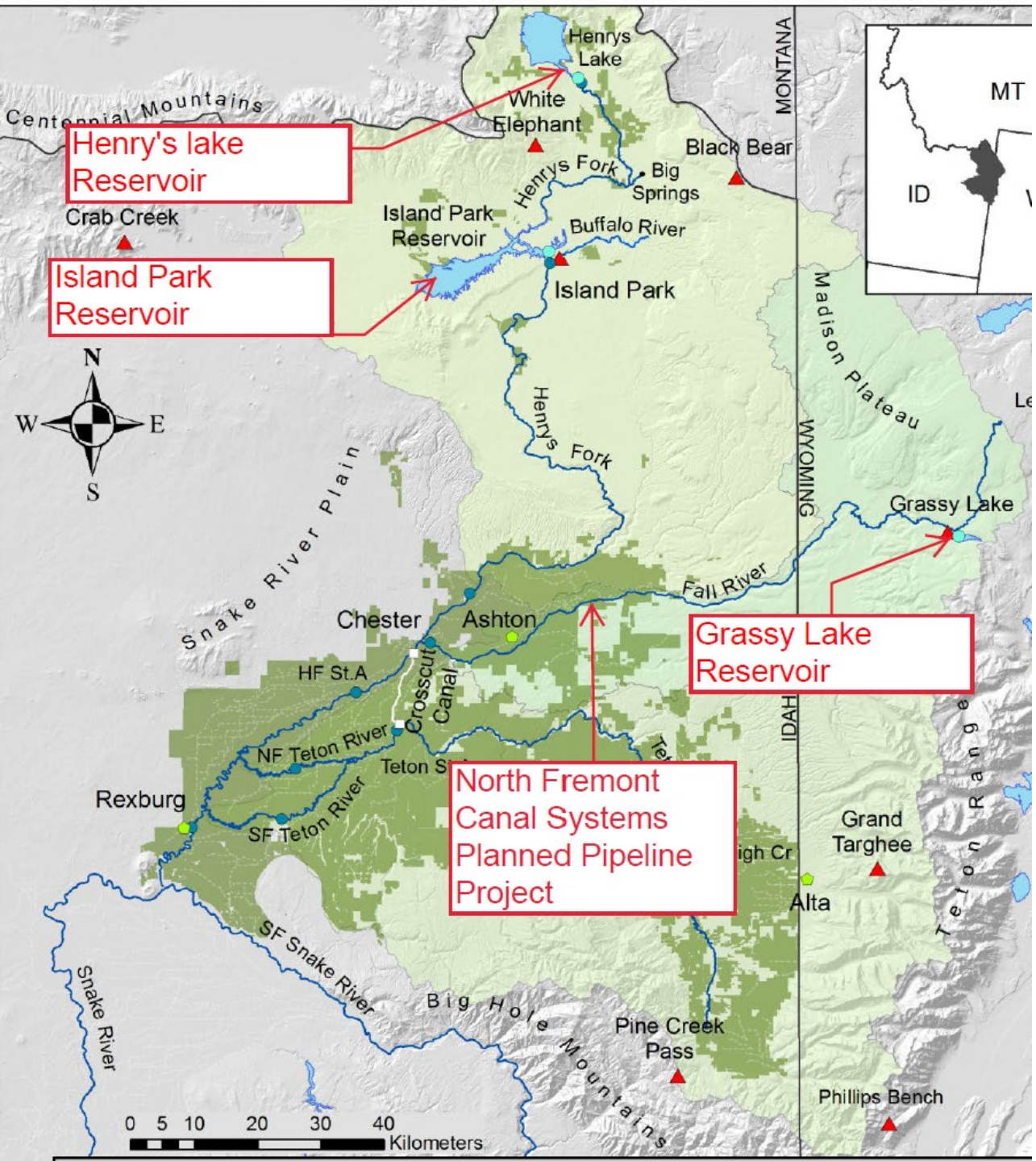
- Average Annual Diversion 28,565 Acre Feet (Farmers Own & Marysville)
  - Pipeline Projects are for Farmers Own and Marysville Laterals (Yellowstone Canal to remain an earthen channel).
  - In some years, almost the entire annual diversion is storage water due to junior water rights.
  - Diversions often don’t commence until late May or June due to our short growing season.
- Crops Grown
  - Seed Potatoes (Largest seed potato area in US)
  - Barley
  - Wheat
  - Canola
  - Alfalfa
  - Pasture (Livestock)



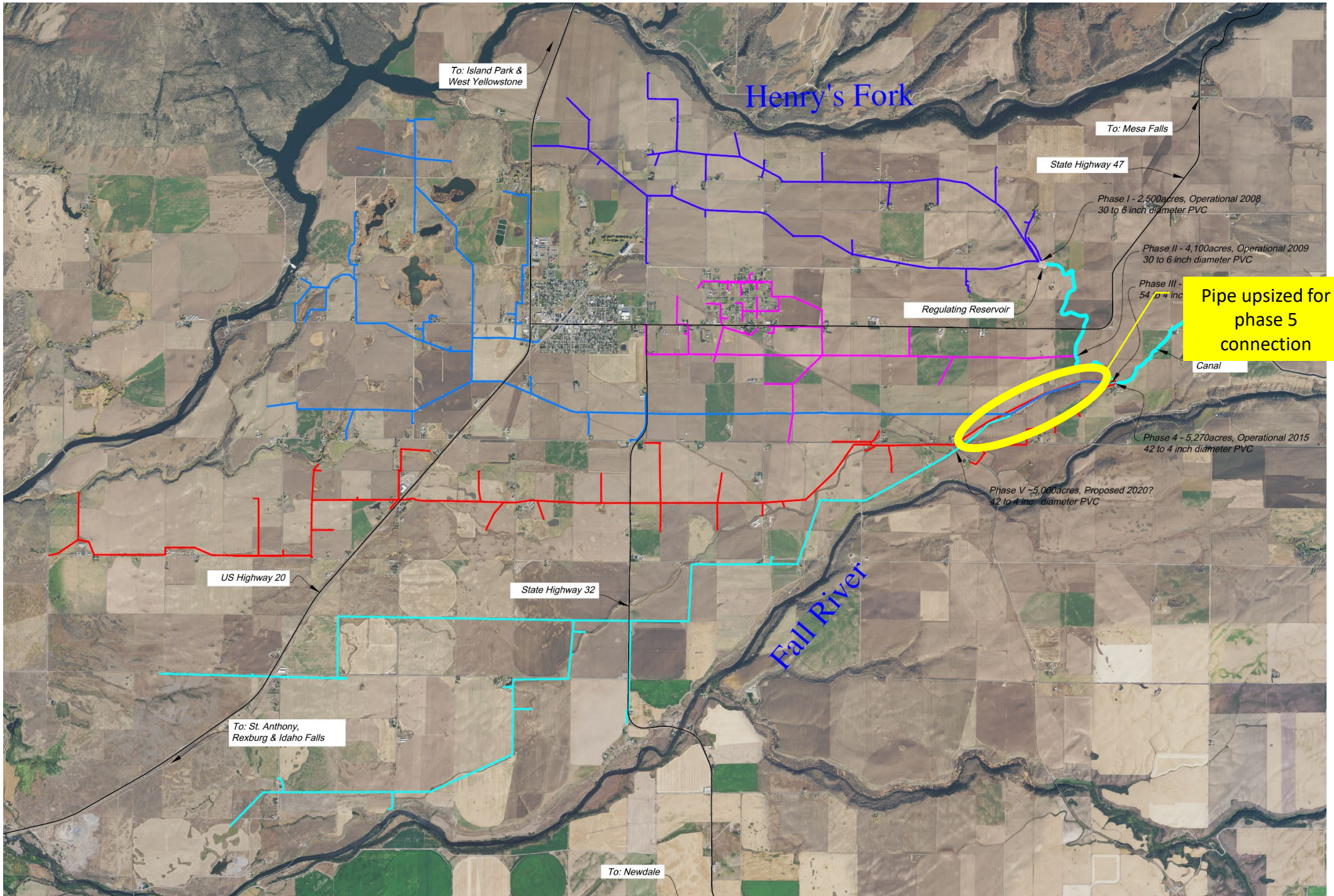
North Fremont Canal Systems, Inc. Background Continued

- The primary revenue source is shareholder assessments. We do have part ownership in a hydropower plant which is located on our canal, and we generate a small amount of revenue from power production.
- NFCS owns and operates over 50 miles of pressurized pipelines and open canal channels.

Existing Pipeline Intake



Project Location


To: Island Park & West Yellowstone
Henry's Fork
To: Mesa Falls
State Highway 47
Phase I - 2,500acres, Operational 2008
30 to 6 inch diameter PVC
Phase II - 4,100acres, Operational 2009
30 to 6 inch diameter PVC
Phase III -
54 to 4 inc
Regulating Reservoir
Pipe upsized for phase 5 connection
Canal
Phase 4 - 5,270acres, Operational 2015
42 to 4 inch diameter PVC
Phase V ~5,000acres, Proposed 2020?
42 to 4 inc diameter PVC
US Highway 20
State Highway 32
Fall River
To: St. Anthony, Rexburg & Idaho Falls
To: Newdale

Project Background

- Started with Phase 1 in 2004
- 4 out of 5 phased complete and in use
- 377ft of elevation fall. The entire Phase 5 project will be pressurized via gravity.
- Phase 5 is shovel ready; we were ready to start construction back in 2020 prior to COVID hitting
    - Impacted Product Availability
    - Project Price up 84%

Phase 3 installation-Winter of 2018-19

Project Benefits-
Water Savings and Improved Water Management

Fremont-Madison ID June 2022 Forecast

Canal	Total Storage Allocation (AF) (2022)	Average Storage Diversion 2001, 2007, 2013 (AF) (Analog Years)	Balance
Farmers Own (NFCS)	4,618	6,998	-2,480
Marysville (NFCS)	11,249	18,721	-7,472
Total	**15,867**	**25,719**	**-9,852**

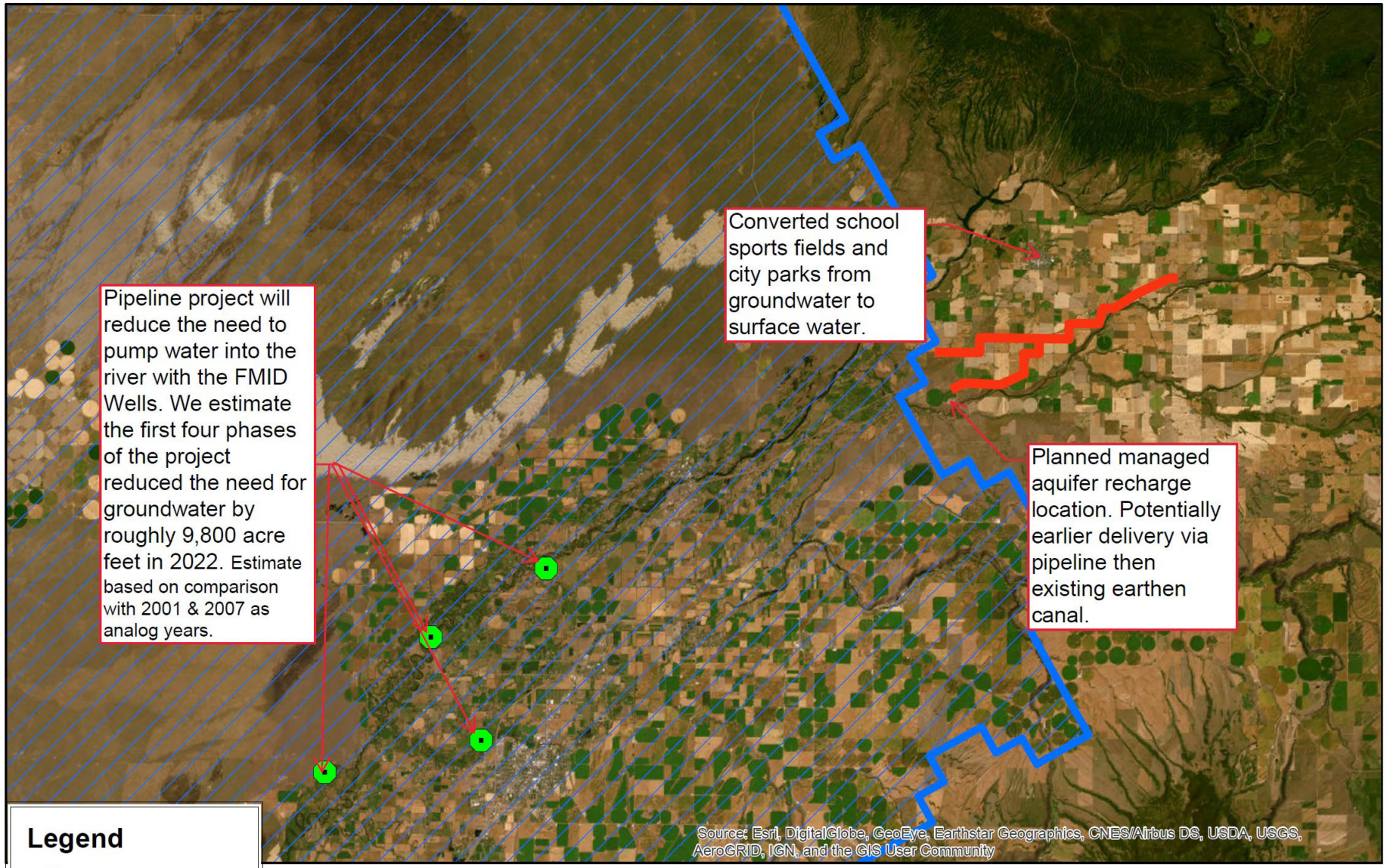
Total storage diversion in 2022 was 15,257 Acre Feet

Water shortfalls in the NFCS system are made up for by Fremont-Madison Irrigation District pumping groundwater into the river.

Project Benefits- Phases 1-4 Water Savings

Prior to Pipeline Installation	After Phases 1-4 had been installed		
1995-2005 Average Diversion	2018-2022 Average Diversion	Average Annual Savings	Percent Savings
34,854 AF	28,564 AF	6,289 AF	18%

North Fremont Canal Systems Phase 5 Pipline-Aquifer Considerations



Incidental Loss Offsets

- Connection to a Recharge Site. (IWRB members and staff visited in 2022)
- Reduced Groundwater Diversion from Fremont-Madison Wells
- Conversion from groundwater to surface water for school district sports fields and city parks.

Project Benefits- Reduced Energy Use

- The pipeline will provide gravity pressure, resulting in the removal of 30 old irrigation pumps and their electricity use.
- Phase 5 alone is estimated to reduce power use by 1,761,300 kWh annually.
- Every pump on phase 5 will be removed, phase 5 will be fully gravity pressurized.

Project Benefits- Replacement of Aging Infrastructure

- Removal of 31 check structures (most are 30-40yrs old)
- Removal of dozens of old headgate and turnout structures

Project Benefits- Wildlife

The Henry's Fork is a world-famous fly-fishing destination, contributing 50 million to our local economy annually, not including an additional 14 million in property tax revenue from second homeowners in Island Park.

- Reduced water delivery from Island Park Reservoir during the irrigation season will increase winter flows in the Henry's Fork. These winter flows are the single most important factor for trout survival on the Henry's Fork (See HFF letter of support).
- Reduced Diversion from the Fall River- Increases River Flow.

Project Benefits- Hydropower

- Benefits to existing hydropower facility
- Potential for future hydropower development in pipe
- Leave more water in the river for downstream power generation

Marysville Hydropower Plant (Marysville Canal)

Project Benefits-Water Quality

- This project will eliminate return flows from the canals that are sediment and nutrient rich which can degrade water quality.
- Low water temperatures in the rivers are critical for trout survival in the Henry's Fork and its tributaries. The proposed pipeline will eliminate warm water return flows from the canal to the river.
- Less need for delivery from Island Park results in less sediment transport from the reservoir to the river. (See HFF letter of support)
- NFCS worked with the city of Ashton and the school district to connect their irrigation systems for parks and sports fields to the pipeline reducing the amount of water the city has to run though their nitrate treatment facility.

Project Benefits-Reginal

- NFCS reduced storage water diversion will increase carryover and subsequent allocations from Fremont-Madison Irrigation District in years Island Park and Grassy Lake's storage rights don't fill.
  - This will benefit 44 canal companies and over 2,200 individual storage water holders.
- Additional carryover in the Upper Snake System may increase the likelihood of recharge water rights coming into priority the following spring.
- This project will reduce our required diversion during the spring when the reservoirs are filling. There are several pastures at the end of our system that require water early in the year. The earthen canal requires significant push water. With a pipeline we could divert only what they need for their irrigation systems and deliver the water without any loss.

Project Benefits-Local

- The pipeline will be equipped with hookups for firetrucks
- Dangerous open channels near roads and homes will be closed reducing drowning risk
  - In previous phases, open channels near schools have been closed

Broad Stakeholder Support

- Included as an alternative to conserve water in the Henry's Fork Drought Management Plan.
    - Signers to the plan include Fremont-Madison Irrigation District, North Fork Reservoir Company, The Henry's Fork Foundation, Trout Unlimited, The Nature Conservancy and the Bureau of Reclamation.
- Letter of support from the City of Ashton
- Letter of support from the Henry's Fork Foundation
- Also received verbal support from Fish and Game. They have committed to provided a letter of support.

HENRY'S FORK
WATERSHED COUNCIL

Broad Stakeholder Support Continued

Idaho Water Users Association Resolution

- 2023-7: North Fremont Gravity Pressure Irrigation Project WHEREAS, North Fremont Canal System, Inc. is continuing to plan and construct the North Fremont Gravity Pressure Irrigation Project (Project) located near Ashton, Idaho which will incorporate irrigation water from three (3) canals into a gravity pressure pipeline; and WHEREAS, The Project is projected to significantly reduce transmission loss, eliminate 15,000 installed electric horsepower, for an estimated savings of about 20,000 megawatt hours of power annually, and provide an opportunity to develop approximately 36,000 megawatt hours of hydro-electric energy production; and WHEREAS, The Project will also provide irrigation efficiencies and improve streamflows and water quality in Fall River and the Henry's Fork of the Snake River. NOW, THEREFORE, BE IT RESOLVED, That the Idaho Water Users Association supports the North Fremont Canal System, Inc. in its efforts to fund, plan and build the North Fremont Gravity Pressure Irrigation Project.

Project Budget

Summary of Funding Sources	
Source	**Amount**
NRCS	$7,157,988.00
IWRB(Request)	$7,811,056.00
NFCS	$4,800,000.00
Total	**$19,769,044.00**

Timeline

Milestone	Date
Design Complete (Approved)	January 2024
Pipe Construction Commenced	August 2024
Pipe Construction Complete	Winter 2024
Grassed Water Way	October 2023

THE VOICE OF THE RIVER
SINCE 1984
HENRY'S FORK
FOUNDATION

May 31, 2023

Dear Idaho Water Resource Board,

The Henry's Fork Foundation (HFF) is a 501(c)3 nonprofit organization based in Ashton, Idaho, with a membership of 2,200 individuals worldwide. However, 22% of our membership is from Idaho, and over half of our membership lives within a five-hour drive of the Henry's Fork. Founded in 1984, the HFF is the only organization whose sole purpose is to conserve the unique fisheries and water resources of the Henry's Fork and its watershed. The Henry's Fork supports irrigation delivery to southern Idaho farms, water for growing cities, hydropower production, and world-class wild trout fisheries. It is a working river and is simultaneously one of the most famous angling destinations in the country. Any proposed activities that potentially affect this unique resource positively are of great importance to HFF and our constituency. We are genuinely excited at the prospects of the North Fremont Canal Systems Inc. (NFCS) receiving cost share to finish the Phase Five Pipeline Project.

Here are a few highlights of the previous phases of the NFCS Pipeline Project and the proposed project's impact on water availability and watershed health.

1. In 2009, Dr. Rob Van Kirk's (HFF Science and Technology Director) students measured seepage loss from the reach of the Marysville Canal proposed to be converted to pipe. He reviewed their raw data and calculations, and the estimate of water savings is the same as NRCS estimated for NFCS, roughly 5,500 ac-ft/year for this final phase. HFF believes that the level of water savings is exceptionally beneficial to the watershed.

2. Over 98% of the current "loss" occurs as seepage into the aquifer, all of which returns to the surface water system somewhere in the upper Snake River basin. However, Dr. Van Kirk and Dr. Christina Morrisett have found no statistical evidence for dependence of streamflow in Fall River or the Henry's Fork on diversion in the NFCS system. The return flows lag and attenuate enough that the effect of removing this source of seepage will not have a measurable impact on streamflow in the Henry's Fork watershed. In theory, if fully attenuated, 5,500 ac-ft/year = 7.6 cfs reduction in streamflow year-round. During irrigation season (June-Sept on the NFCS system), the savings is 23.1 cfs. This calculation provides a net 15.5 cfs additional streamflow in the river due to the project at the cost of 7.6 cfs for the rest of the year.

3. The 15.5 cfs net savings during irrigation season results in around 3,600 ac-ft less draft from Island Park Reservoir. This water savings is equivalent to:
- 17 cfs of additional winter flow below IP Dam (increased trout survival)
- 36 additional trout/mile in Box Canyon (~3% improvement over pre-2018 average)
- 175 additional fish in upper Henry's Fork as a result of better reservoir habitat (22% improvement over pre-2018 average)
- 23 fewer tons of suspended sediment export from Island Park Reservoir into the river downstream (2% less than 2016-2022 average)

4. Since NFCS began implementing their pipeline project in 2004, diversion into the Farmers Own and Marysville Canals has averaged 4,850 ac-ft/year less than expected based on water supply. Accounting for the lost return flows in the same way as above, the net savings during irrigation season is about 3,175 ac-ft. The result is 15 cfs of winter flow and 32 additional fish in Box Canyon.

5. These averages apply over the whole irrigation season and are corroborated by multiple ways of calculating them. Real-time savings on an hourly or daily basis are more complex to estimate due to better management afforded by modern infrastructure. However, Dr. Van Kirk's day-to-day experience of monitoring diversion and streamflow daily during the past six irrigation seasons is that modern infrastructure allows changes to be made quickly in real time as demand changes. Each time a given headgate or other system node is upgraded (NFCS system, Egin Bench Canals, Henry's Lake Outlet, Teton Splitter, etc.), the Henry's Fork Foundation notices an increase in management precision. The season-long effects are realized in total savings in Island Park Reservoir, but on a day-to-day basis, increased precision results in more stable streamflows, which benefits irrigators and wild trout fisheries during the summer. As an example, Dr. Morrisett quantified this increased precision on the lower HF in response to establishing and utilizing a precise flow target at the Parker/Salem Bridge. The new target has conserved water in Island Park Reservoir.

HFF is wholeheartedly supportive of the successful realization of this project and has undertaken a similar project with the Conant Creek Canal Company to attain positive results for the Henry's Fork watershed. These types of projects are beneficial to the citizens of Idaho and represent good stewardship of a finite resource. So again, we are grateful for your consideration of NFCT's financial support request.

Sincerely,

Brandon Hoffner, Executive Director

PO Box 550, Ashton, ID 83420 Tel: 208.652.3567 henrysfork.org

City of Ashton
P.O. Box 689
Ashton, ID 83420
(208)652-3987

May 30, 2023

To Whom It May Concern,

The City of Ashton and the North Fremont Canal System (NFCS) have worked together for many years as one of the canals that make up the NFCS is located within the City of Ashton. Through the last few years, the NFCS has been working to conserve water and energy by putting the canals of the NFCS in a pipeline.

As the NFCS installed the latest phase of their pipeline, they worked with the City and the Fremont County School District in helping to take pressure off the City wells and infrastructure. There are two schools located in the City of Ashton. Ashton Elementary School and North Fremont High School both have extensive green areas for playgrounds and sports fields. These areas take a lot of water for irrigation. The City of Ashton's water system includes a nitrate treatment plant and a well that is nearing capacity. Irrigation water does not need to be treated for nitrates. As NFCS was able to add the school green areas to their irrigation system, saving energy with no treatment or pumping required as well as lessoning capacity concerns.

The City of Ashton supports the North Fremont Canal System in their efforts to continue to move from open ditches into a pipeline. We appreciate their willingness to work with us to better serve the water users of the City of Ashton.

Sincerely,

Cathy Stegelmeier
City Clerk/Treasurer

City of Ashton
P.O. Box 689
Ashton, ID 83420
(208)652-3987

May 30, 2023

To Whom It May Concern,

The City of Ashton and the North Fremont Canal System (NFCS) have worked together for many years as one of the canals that make up the NFCS is located within the City of Ashton. Through the last few years, the NFCS has been working to conserve water and energy by putting the canals of the NFCS in a pipeline.

As the NFCS installed the latest phase of their pipeline, they worked with the City and the Fremont County School District in helping to take pressure off the City wells and infrastructure. There are two schools located in the City of Ashton. Ashton Elementary School and North Fremont High School both have extensive green areas for playgrounds and sports fields. These areas take a lot of water for irrigation. The City of Ashton's water system includes a nitrate treatment plant and a well that is nearing capacity. Irrigation water does not need to be treated for nitrates. As NFCS was able to add the school green areas to their irrigation system, saving energy with no treatment or pumping required as well as lessoning capacity concerns.

The City of Ashton supports the North Fremont Canal System in their efforts to continue to move from open ditches into a pipeline. We appreciate their willingness to work with us to better serve the water users of the City of Ashton.

Sincerely,

Cathy Stegelmeier
City Clerk/Treasurer

THE VOICE OF THE RIVER
SINCE 1984
HENRY'S FORK
FOUNDATION

May 31, 2023

Dear Idaho Water Resource Board,

The Henry's Fork Foundation (HFF) is a 501(c)3 nonprofit organization based in Ashton, Idaho, with a membership of 2,200 individuals worldwide. However, 22% of our membership is from Idaho, and over half of our membership lives within a five-hour drive of the Henry's Fork. Founded in 1984, the HFF is the only organization whose sole purpose is to conserve the unique fisheries and water resources of the Henry's Fork and its watershed. The Henry's Fork supports irrigation delivery to southern Idaho farms, water for growing cities, hydropower production, and world-class wild trout fisheries. It is a working river and is simultaneously one of the most famous angling destinations in the country. Any proposed activities that potentially affect this unique resource positively are of great importance to HFF and our constituency. We are genuinely excited at the prospects of the North Fremont Canal Systems Inc. (NFCS) receiving cost share to finish the Phase Five Pipeline Project.

Here are a few highlights of the previous phases of the NFCS Pipeline Project and the proposed project's impact on water availability and watershed health.

1. In 2009, Dr. Rob Van Kirk's (HFF Science and Technology Director) students measured seepage loss from the reach of the Marysville Canal proposed to be converted to pipe. He reviewed their raw data and calculations, and the estimate of water savings is the same as NRCS estimated for NFCS, roughly 5,500 ac-ft/year for this final phase. HFF believes that the level of water savings is exceptionally beneficial to the watershed.

2. Over 98% of the current "loss" occurs as seepage into the aquifer, all of which returns to the surface water system somewhere in the upper Snake River basin. However, Dr. Van Kirk and Dr. Christina Morrisett have found no statistical evidence for dependence of streamflow in Fall River or the Henry's Fork on diversion in the NFCS system. The return flows lag and attenuate enough that the effect of removing this source of seepage will not have a measurable impact on streamflow in the Henry's Fork watershed. In theory, if fully attenuated, 5,500 ac-ft/year = 7.6 cfs reduction in streamflow year-round. During irrigation season (June-Sept on the NFCS system), the savings is 23.1 cfs. This calculation provides a net 15.5 cfs additional streamflow in the river due to the project at the cost of 7.6 cfs for the rest of the year.

3. The 15.5 cfs net savings during irrigation season results in around 3,600 ac-ft less draft from Island Park Reservoir. This water savings is equivalent to:
- 17 cfs of additional winter flow below IP Dam (increased trout survival)
- 36 additional trout/mile in Box Canyon (~3% improvement over pre-2018 average)
- 175 additional fish in upper Henry's Fork as a result of better reservoir habitat (22% improvement over pre-2018 average)

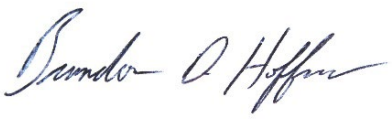
- 23 fewer tons of suspended sediment export from Island Park Reservoir into the river downstream (2% less than 2016-2022 average)

4. Since NFCS began implementing their pipeline project in 2004, diversion into the Farmers Own and Marysville Canals has averaged 4,850 ac-ft/year less than expected based on water supply. Accounting for the lost return flows in the same way as above, the net savings during irrigation season is about 3,175 ac-ft. The result is 15 cfs of winter flow and 32 additional fish in Box Canyon.

5. These averages apply over the whole irrigation season and are corroborated by multiple ways of calculating them. Real-time savings on an hourly or daily basis are more complex to estimate due to better management afforded by modern infrastructure. However, Dr. Van Kirk's day-to-day experience of monitoring diversion and streamflow daily during the past six irrigation seasons is that modern infrastructure allows changes to be made quickly in real time as demand changes. Each time a given headgate or other system node is upgraded (NFCS system, Egin Bench Canals, Henry's Lake Outlet, Teton Splitter, etc.), the Henry's Fork Foundation notices an increase in management precision. The season-long effects are realized in total savings in Island Park Reservoir, but on a day-to-day basis, increased precision results in more stable streamflows, which benefits irrigators and wild trout fisheries during the summer. As an example, Dr. Morrisett quantified this increased precision on the lower HF in response to establishing and utilizing a precise flow target at the Parker/Salem Bridge. The new target has conserved water in Island Park Reservoir.

HFF is wholeheartedly supportive of the successful realization of this project and has undertaken a similar project with the Conant Creek Canal Company to attain positive results for the Henry's Fork watershed. These types of projects are beneficial to the citizens of Idaho and represent good stewardship of a finite resource. So again, we are grateful for your consideration of NFCT's financial support request.

Sincerely,

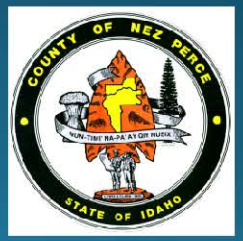


Brandon Hoffner, Executive Director

LEWISTON ORCHARDS PROJECT
Water Exchange

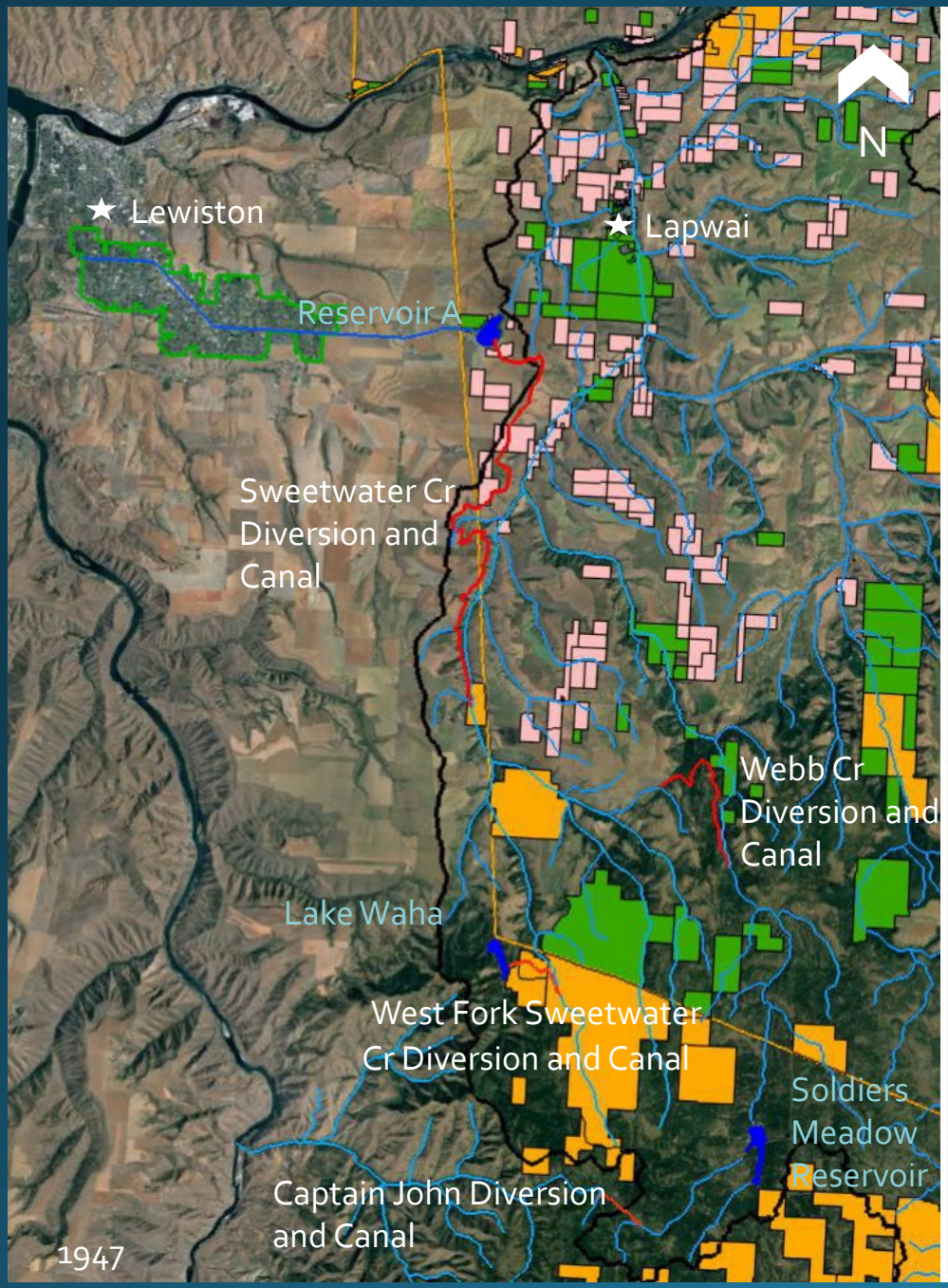
2023 Idaho Water Resource Board Presentation

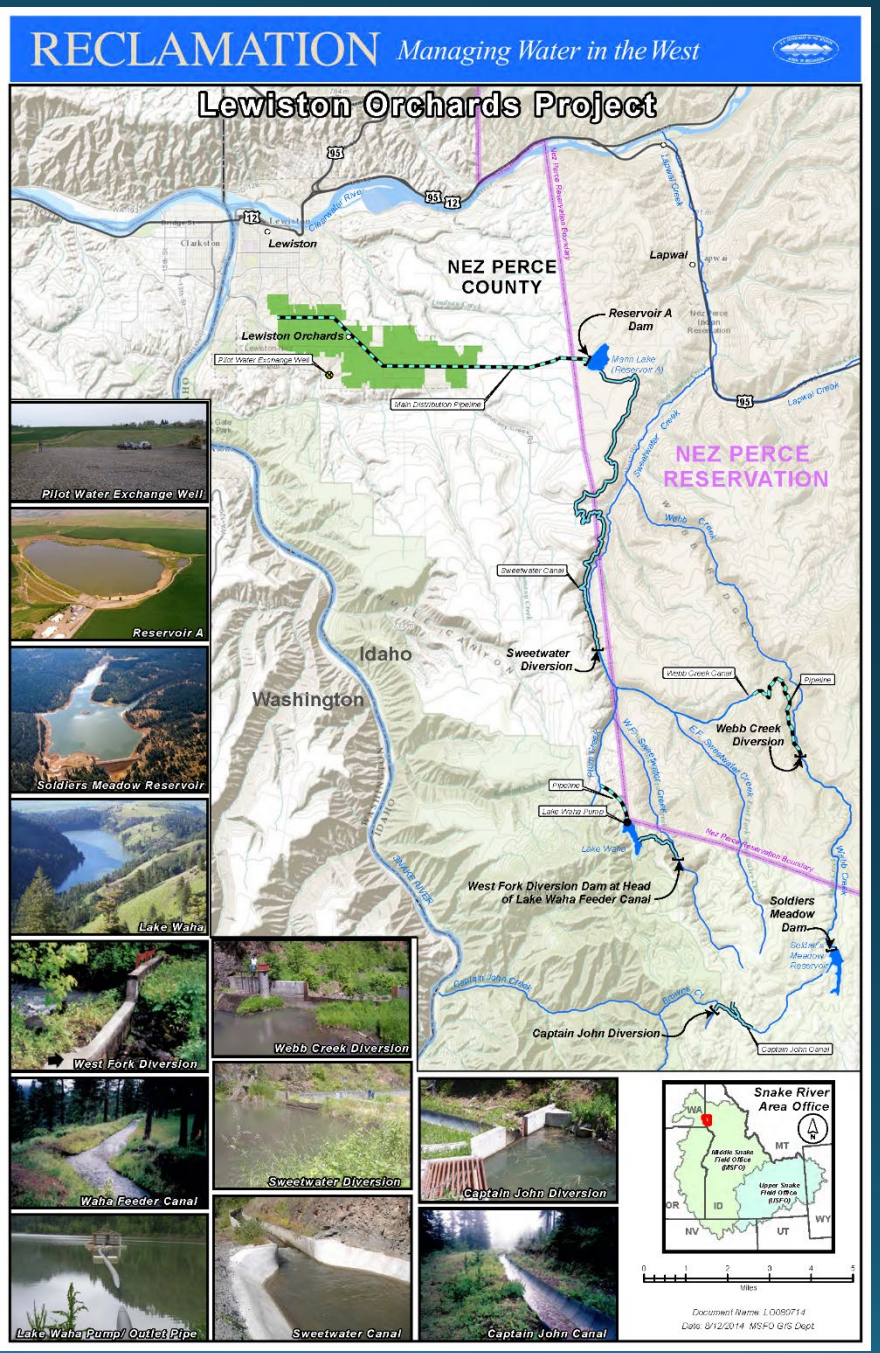
A collaborative, consensus-based effort…



… with the support and involvement of many partners …

- Active Participants
  - Senator Crapo
  - Senator Risch
  - Congressman Fulcher
- Formal letters of support for concept
  - Governor Otter
  - University of Idaho Waters of the West Program
  - NOAA Fisheries Northwest Region
  - Columbia River Inter-Tribal Fish Commission
  - Trout Unlimited


N
★ Lewiston
★ Lapwai
Reservoir A
Sweetwater Cr Diversion and Canal
Webb Cr Diversion and Canal
Lake Waha
West Fork Sweetwater Cr Diversion and Canal
Soldiers Meadow Reservoir
Captain John Diversion and Canal
1947


RECLAMATION Managing Water in the West
Lewiston Orchards Project
NEZ PERCE COUNTY
NEZ PERCE RESERVATION
Lewiston
Lapwai
Reservoir A Dam
Lewiston Orchards
Pilot Water Exchange Well
Main Distribution Pipeline
Sweetwater Canal
Sweetwater Diversion
Webb Creek Canal
Webb Creek Diversion
Pipeline
Lake Waha Pump
West Fork Diversion Dam at Head of Lake Waha Feeder Canal
Soldiers Meadow Dam
Captain John Diversion
Captain John Canal
Idaho
Washington
Pilot Water Exchange Well
Reservoir A
Soldiers Meadow Reservoir
Lake Waha
West Fork Diversion
Webb Creek Diversion
Waha Feeder Canal
Sweetwater Diversion
Captain John Diversion
Lake Waha Pump/ Outlet Pipe
Sweetwater Canal
Captain John Canal
Snake River Area Office

How did we get to where we are at now?

- Water Rights & Congressional Action 1906, 1915, 1922, 1947
- 1972 LOID bond for pumping station fails
- 2003 LOP-Concept project removed from SRBA
- 2005 – 2010 series of Biological Assessments, Biological Opinions, and challenges to those by the Nez Perce Tribe
- 2008 – Jerry Klemm initiates meetings which leads to the Lower Clearwater Exchange Project.
- 2012 Appraisal Study looked at 33 alternatives and recommended 3 options: pumping station on the Snake River, pumping station on Clearwater River, or Tammany Well Field.
- 2013 Reclamation proposes a Pilot Well with bucket-for-bucket water exchange.
- 2014 LOID applies for new groundwater right of 8,500 acre feet.
- 2014 – 2017 Pilot Well is constructed
- 2017 irrigation season is first bucket-for-bucket water exchange.
- 2015 – 2017 Reclamation performs NEPA with a Final EA and Finding of No Significant Impact.

OBJECTIVES

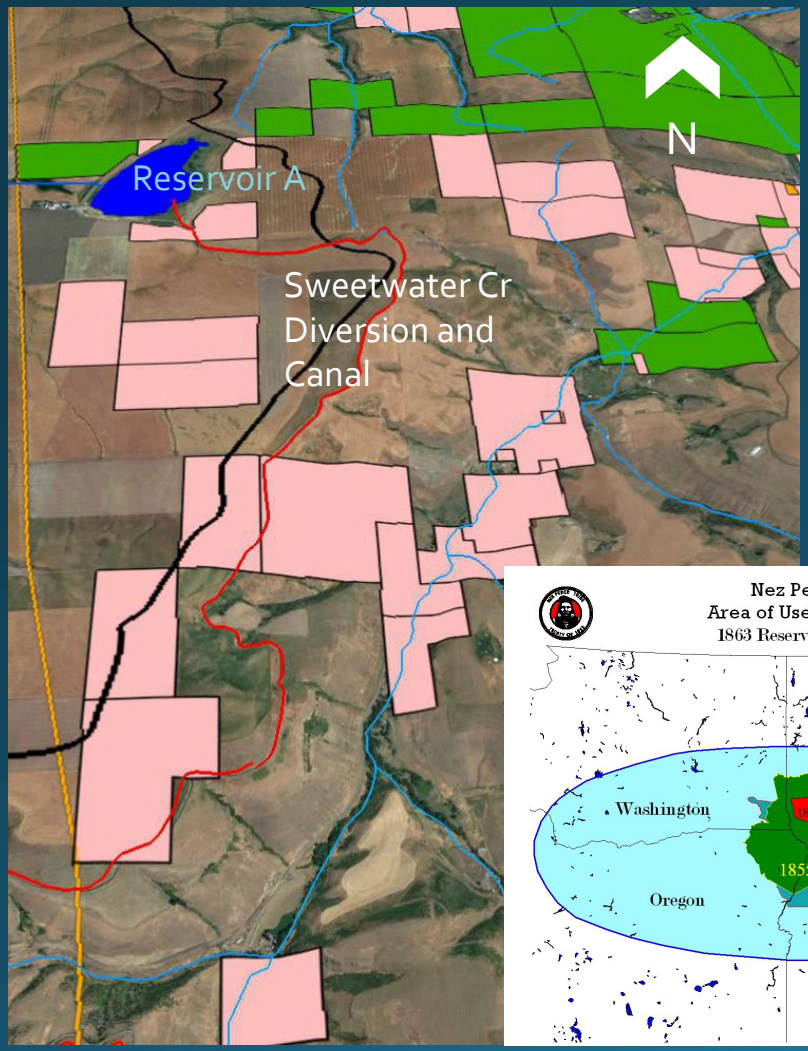
Permanently solve 3 long-standing problems with existing Lewiston Orchards Project

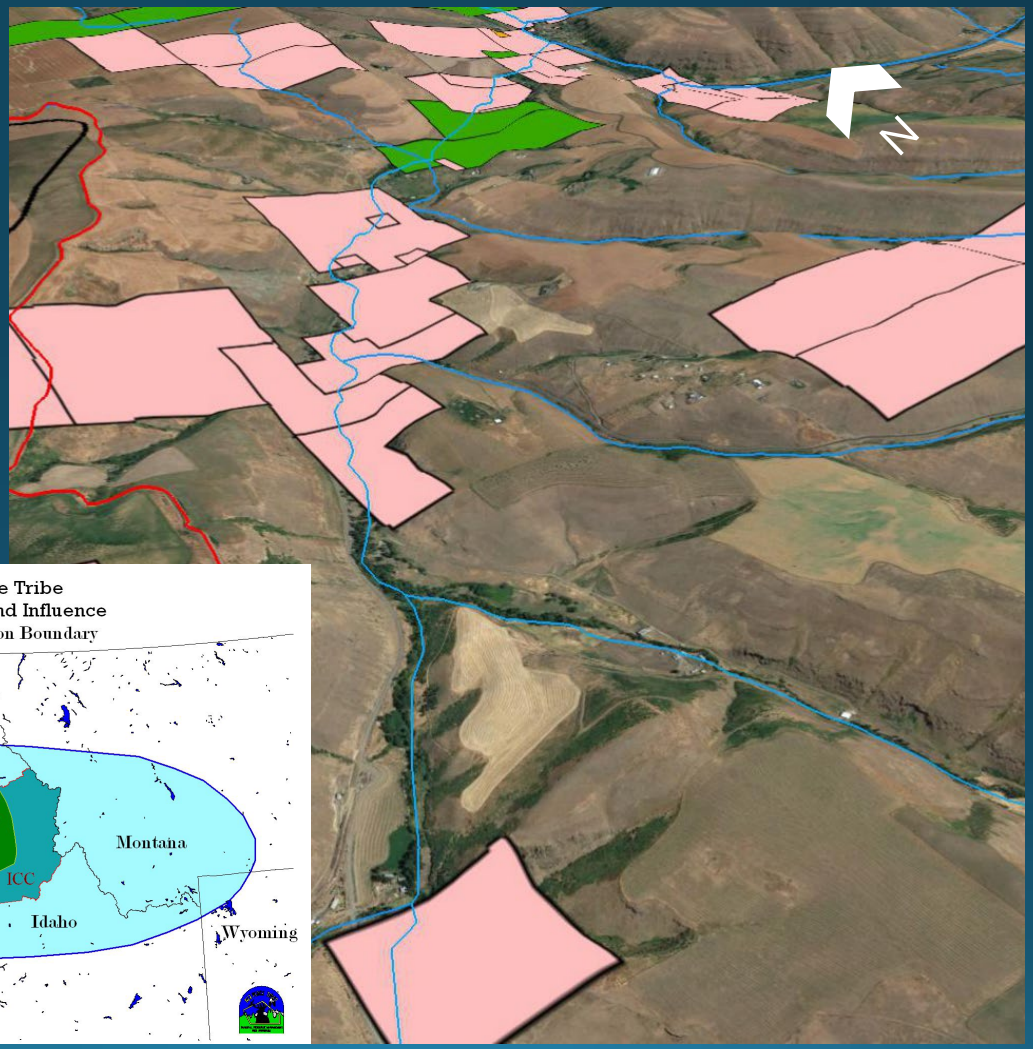
- (1) Inadequate water quantities, quality, and reliability for Lewiston Orchards Irrigation District.
- (2) Adverse effects on the Nez Perce Tribe and its people, including impacts to natural resources and to cultural and religious water uses, resulting from predominant location of the LOP on the Nez Perce Reservation.
- (3) Adverse effects on ESA listed Snake River A-run steelhead from the existing LOP and its location on ESA-designated critical habitat.

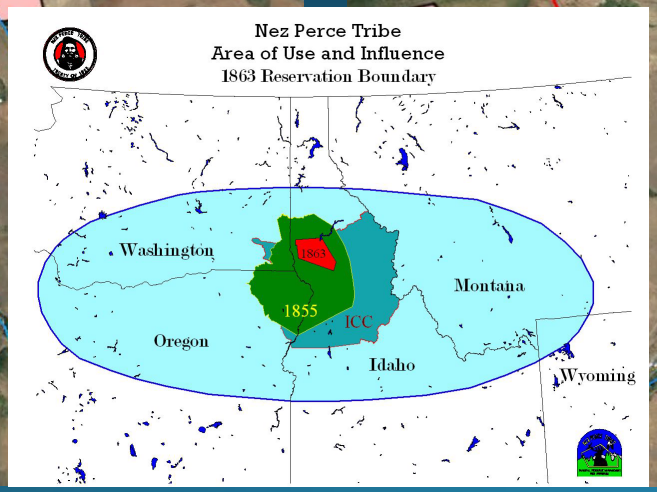
(1) Inadequate water quantities, quality, and reliability for Lewiston Orchards Irrigation District.

- Provides water to approximately 22,000 patrons in a 3,828 - acre service area
- LOID has never delivered the water it is contracted with Reclamation
- 2010 Minimum flows established in Sweetwater and Webb Creeks reducing availability to patrons
- Since 2000 patrons have been placed on restrictions at times.
- Craig Mountain area is predicted to go from snow to rain events with climate change.
- Early runoff can not be captured as diversion right is from Feb-Oct
- 2014 LOID applies for a groundwater permit from IDWR

(2) Adverse effects on the Nez Perce Tribe and its people, including impacts to natural resources and to cultural and religious water uses, resulting from predominant location of the LOP on the Nez Perce Reservation.







(3) Adverse effects on ESA-listed Snake River steelhead from the existing LOP and its location on ESA-designated critical habitat.

Key points moving forward

- BOR, BIA, NPT, LOID, LCEP continue to work together to fund and install remaining wells to perfect 18.0 cfs groundwater right or change direction.
- Wells are in operation resulting in 9.0 cfs added to the minimum flows.
- Removal of Lower Granite Dam will reduce the operating levels of the regional aquifer
- Project is key to address climate change in the Lower Clearwater basin by providing a cold water refugia.

Nez Perce Settlement

- LOID's project was specifically removed from the agreement
- The Lewiston Orchards Project was specifically called out for action outside of the settlement which allowed the Lewiston Orchards Project to be filed against and litigated
- USBR/LOID are awaiting our fourth BiOp for continued operations for anadromous fish
- The LOP was a sacrifice by the stakeholders to ensure a solution that the rest of the state could operate with more certainty

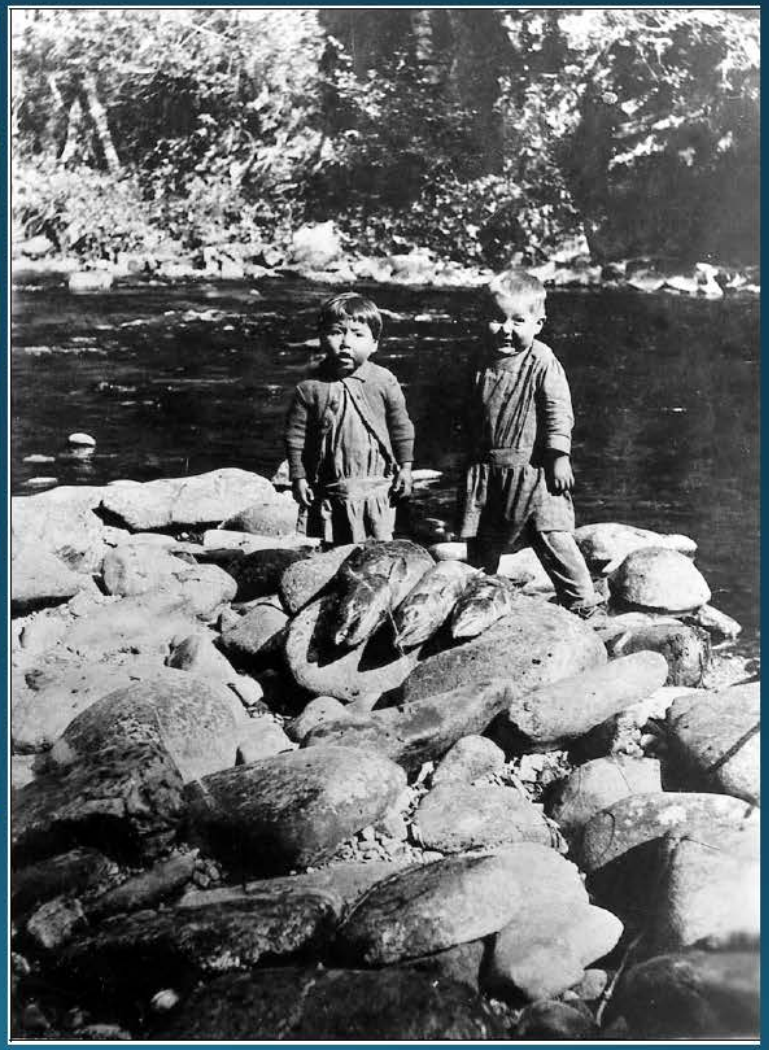
Costs

- A solution from the Clearwater River will be near $60 million
- The LOID has completed a 10% engineering for a path and feasibility of how the project will look
- $20 million from the Water Resource Board, $5 million in kind from the LOID, and additional funding from our partners will help make this project a success

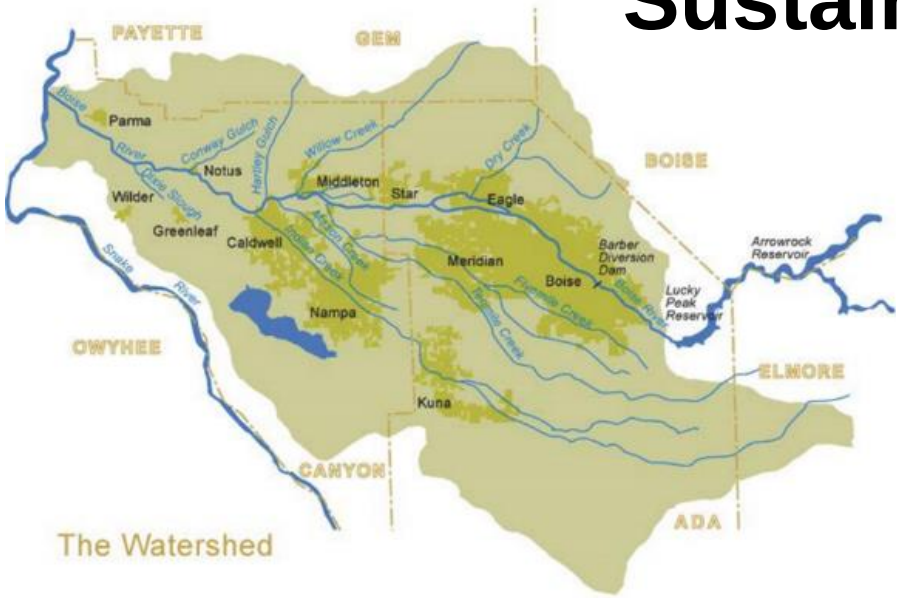
Recap of why we are a good fit

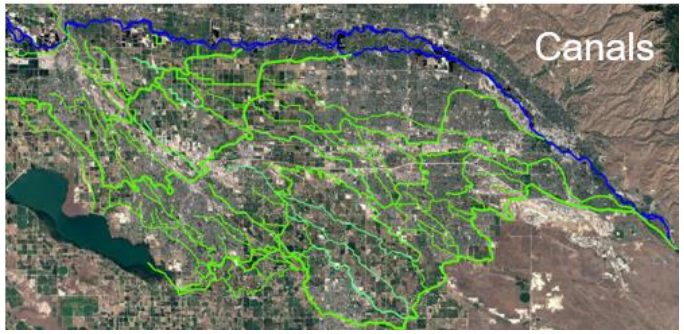
- This project helps achieve water sustainability for a north central Idaho and helps with multiple public benefits
- This project is collaborative from the Federal Government, Congressionals, Local, Tribal, Environmental Partners, and LOID patrons
- This project will protect our local groundwater, using surface water first for irrigation and fire suppression, and not contribute to a Critical Groundwater Management area being worsened.
- The Lewiston Orchards Project sacrificed for the Nez Perce Settlement for the entire state, we are reaching out for help now

Questions

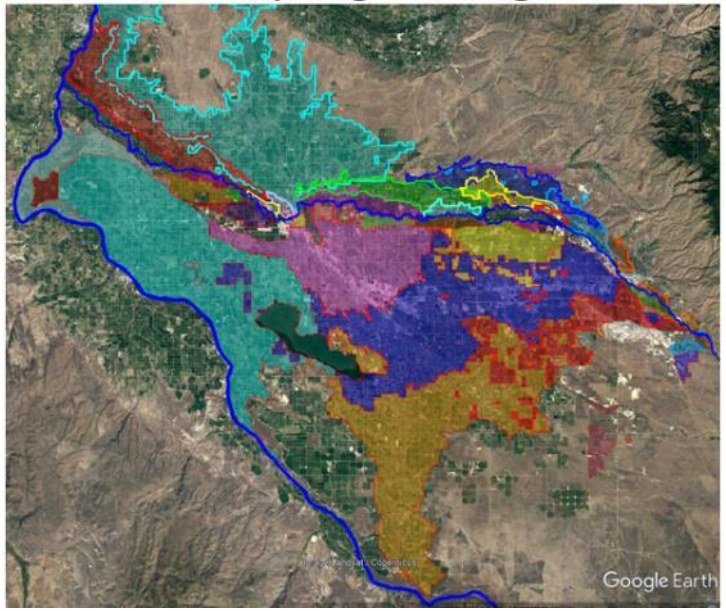


Treasure Valley Water Supply Assessment and Sustainability Project



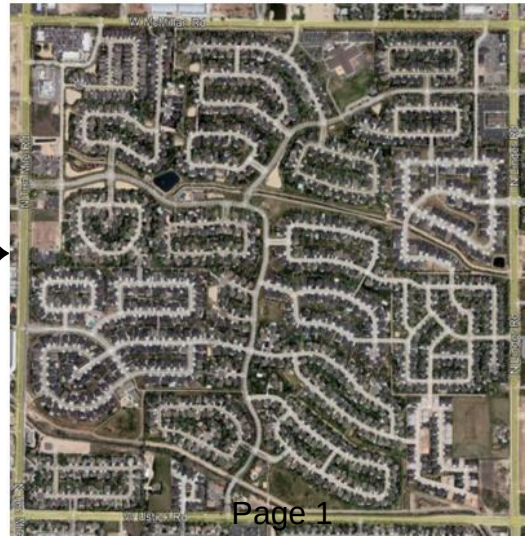


Treasure Valley Irrigation Organizations



Urbanization

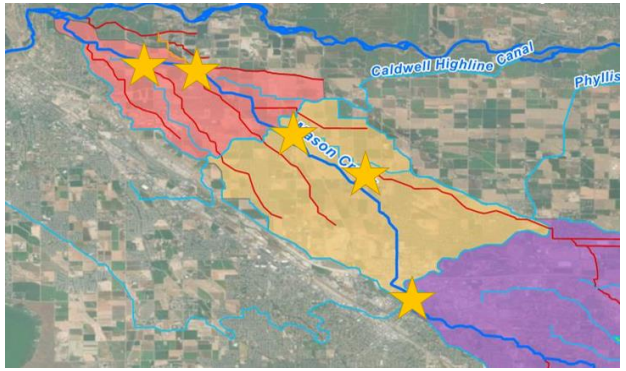
→



Treasure Valley Water Supply Assessment and Sustainability Project

Phase 1: Initiate Robust Drain Monitoring, Hydrologic Analysis & Online Data Hub (2023-2024)

- Project development
- Install measuring stations in unmeasured drains
- Collect and analyze flow data
- Develop Boise River mass balance & trend analysis



Phase 2: Continue Monitoring & Analysis, Develop Land Use/Hydrologic Modeling & Online Data Hub (2024-2027)

- Correlate changes in land use and other factors to measured changes in drain flows
- Develop and integrate hydrologic models to estimate and forecast water supply changes
- Develop online data hub for monitoring data, hydrologic analysis, and modeling

Phase 3: Identify, Evaluate & Recommend Water Supply Management Alternatives (2023-2028)

- Manage/mitigate hydrologic impacts of land use changes
- Groundwater management and mitigation (e.g. managed recharge)
- Surface water supply management and mitigation
- Water conservation incentives

Project Cost Summary

Phase 1 Costs (2023-2024)

➢ Project Development	**$ 15,000**
➢ Start-up Costs:	**$131,000**
➢ Annual Maintenance:	**$130,000**
➢ Analytics:	**$50,000**
	$326,000

Phase 2 Costs (2024-2027)

➢ Annual Maintenance:	**$130,000**
➢ Annual Analytics & Modeling:	**$200,000**
	$330,000

Phase 2 Total ($990,000)

Phase 3 Costs (2023-2028) **(TBD)**

Project Start Up & Annual Maintenance Costs

Start Up Costs	
Transducers, Recording, and Telemetry Equipment	$75,000 ($1,500 per site x 50 sites)
Installation (WD63 Wages)	$6,000 ($120 per site x 50 sites)
Flow Measurement Equipment	$50,000 ($25,000 per ADCPx2)
Total Start Up Costs	**$131,000**

Annual Maintenance Costs	
General Equipment Maintenance	$10,000 ($200 per site x 50 sites)
Data Collection and Storage	$50,400 ($84 per site per month x 50 sites x 12 months)
Website Maintenance	$40,000
WD63 Wages	$30,000
Estimated Annual Maintenance	**$130,000**

Project Sponsors & Funding

Treasure Valley Water Supply Assessment and Sustainability Project Phase 1: Potential Project Supporters (as of 5/26/23)

Project Supporter	Funding Request	Commitment	Received
1. Water District 63 (irrigation organizations)	$ 71,000.00	$ 36,000.00	
2. Treasure Valley Water Users Association (Project Development)	$ 15,000.00	$ 15,000.00	$ 13,675.00
3. Flood Control District No 10	$ 5,000.00	$ 10,000.00	
4. Idaho Water Resource Board	$ 155,500.00		
5. Ada County	$ 50,000.00		
6. Canyon County	$ 20,000.00		
7. City of Boise	$ 5,000.00		
8. City of Caldwell	$ 5,000.00		
9. City of Eagle	$ 5,000.00		
10. Garden City	$ 5,000.00		
11. City of Middleton	$ 5,000.00		
12. City of Nampa	$ 5,000.00		
13. Idaho Power	$ 5,000.00		
14. Veolia Water	$ 5,000.00		
TOTAL:	**$ 356,500.00**	**$ 61,000.00**	**$ 13,675.00**

TIMELINE

Before Irrigation: * The Boise River Landscape outside the Boise River flood plain was a desert
* Five Mile, Ten Mile, and Indian Creeks were ephemeral, flowing only for a month during spring snowmelt
* Mason Creek, Three Mile, Eight Mile, Nine Mile, and other smaller drains did not exist prior to irrigation

1864-1904 Private canal construction, irrigation development, water rights perfected

1900 * Seepage from flood irrigated fields and canal systems created the shallow aquifer
* Large, previously ephemeral Creeks flowed throughout the year, new creeks formed & flowing

1904-1910 Treasure Valley land areas waterlogged or entirely submerged, extensive ag. lands unproductive

1905 Bureau of Reclamation, Boise Project

1912-1918 BOR/water users drainage planning, contracts and drain construction/enlargement
(Five Mile, Ten Mile, Nine Mile, Mason Creek, Dixie, Wilson, Elijah, Purdam, and many others)

1920s & 30s Additional smaller drain construction

1918 to present * Drains become the primary source of water for the Boise River downstream of Middleton
* Use/reuse of water developed in drains for agricultural and urban (pressurized) irrigation

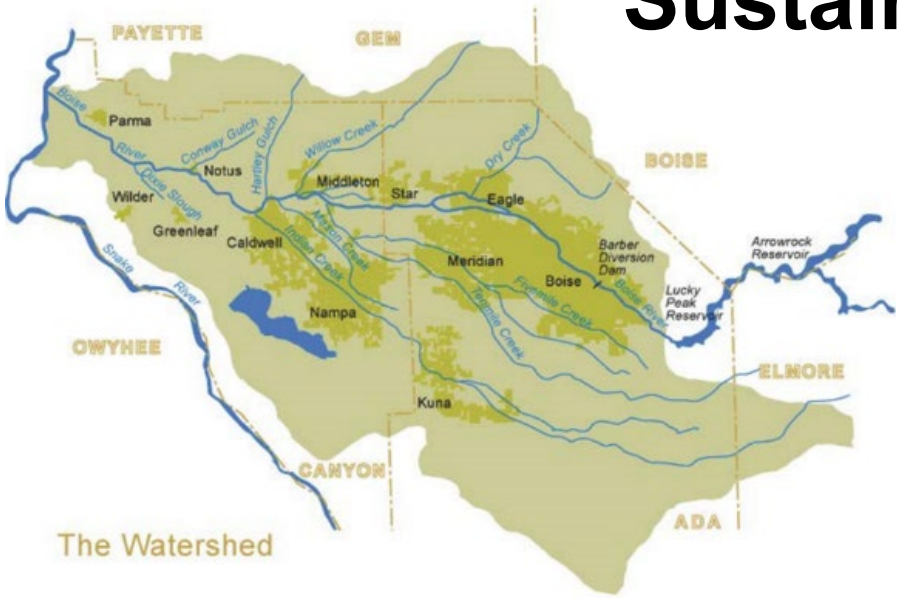
Urbanization 1990s to present:

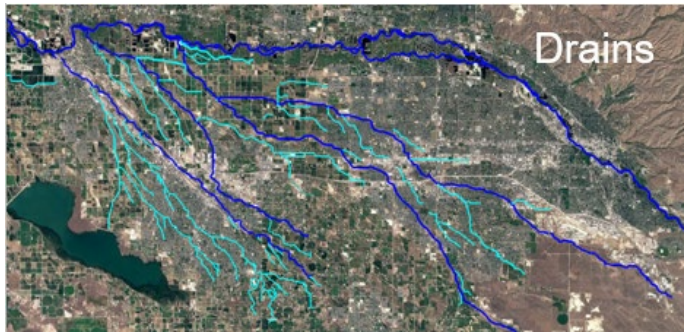
**** 2001-2016 (long term), 46,859 acres that drain to Boise River developed (2% per year)***
**** 2016-2020 (recent) 4,006 acres (3%-4% per year) developed major drainages (Fifteen Mile, Mason Cr., Indian Cr.)***
**** Water Supply Impacts:***
-> elimination of flood irrigation, piping ditches
-> Reduced field and canal seepage to the shallow aquifer
-> Reduced shallow ground water flow into drains
-> Reduced surface return flows to drains
-> Water managers observe declining drain flows
-> Water managers supplement drain flows with water from canal systems to supply drain deliveries (ag. & urban)

2008	USBR "Distributed Parameter Water Budget Data Base for the Lower Boise Valley," * On-farm field seepage averages 520 kaf per year (51% of 1,012 KAF) * Canal seepage averages 492 kaf per year (49% of 1,012 KAF total groundwater infiltration)
2009-2023	* LBWC ag. TMDL implementation: Federal and State grants to convert 5,221 ag. acres from flood to sprinkler * Significant additional conversion without grants (proliferation in hops fields)
2014	Dave Shaw's estimate of reductions in major drain discharges after elimination of flood irrigation
2017-2021	***USGS measurements of drains shows declining trends***
2020	IWRB "Treasure Valley Managed Recharge Feasibility Study"
2020-2022	Delineation of Treasure Valley canal systems, drainage systems, drainsheds, remaining agricultural acres and developed acres that drain to the Boise River
2022	* IWUA Urbanization Resolution * June 30, natural flow in Boise River, Caldwell to Notus reach inadequate to supply water rights -> storage released for flow augmentation delivered * Water District 63, Treasure Valley Water Users Association and HDR: -> begin to correlate Boise River flow shortages with drain flow declines -> formulate TV Water Supply Assessment and Sustainability Project
2023	* TV Water Supply Assessment and Sustainability Project added to IWRB Regional Sustainability Priority List * Process to engage TV stakeholders and supports begins
2023-2024	Phase 1: Initiate Robust Drain Monitoring, Hydrologic Analysis & Online Data Hub Development
2024-2027	Phase 2: Continue Monitoring & Analysis, Develop Land Use/Hydrologic Modeling & Online Data Hub
2023-2028	Phase 3: Identify, Evaluate & Recommend Water Supply Management Alternatives

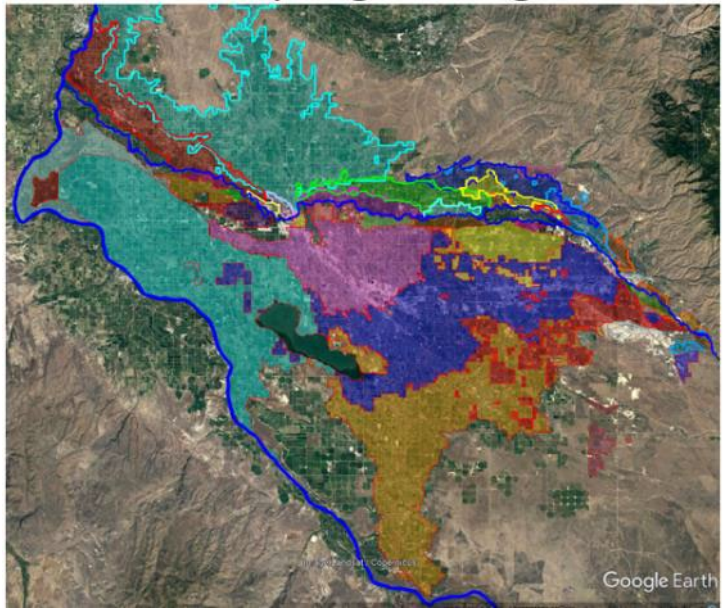
Phases 2 and 3 will utilize the Treasure Valley Groundwater Model in consultation with USGS and IDWR

Treasure Valley Water Supply Assessment and Sustainability Project

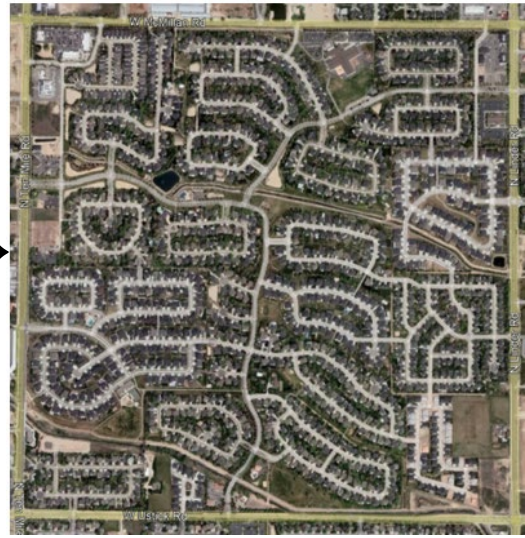




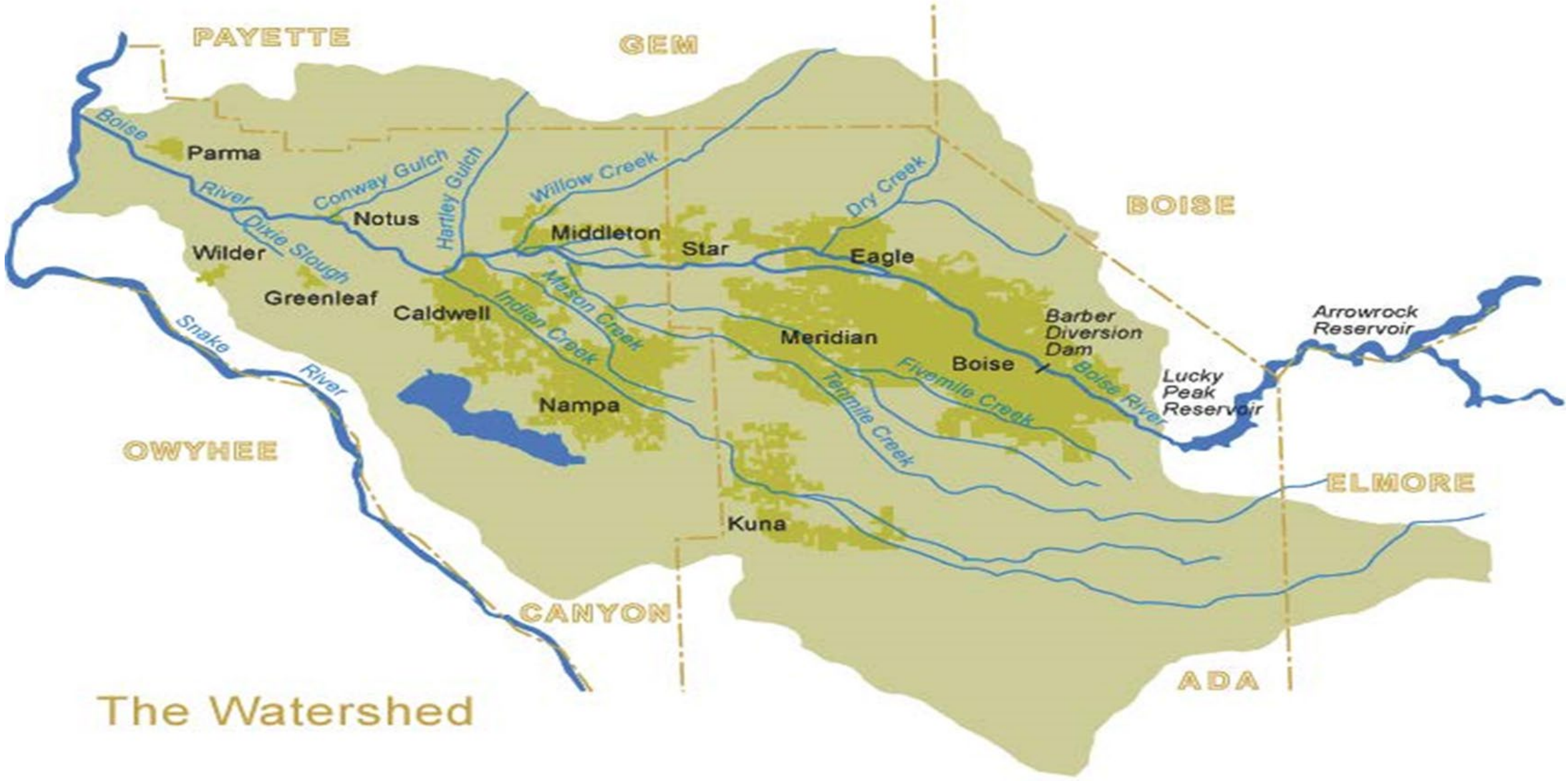
Treasure Valley Irrigation Organizations



Urbanization



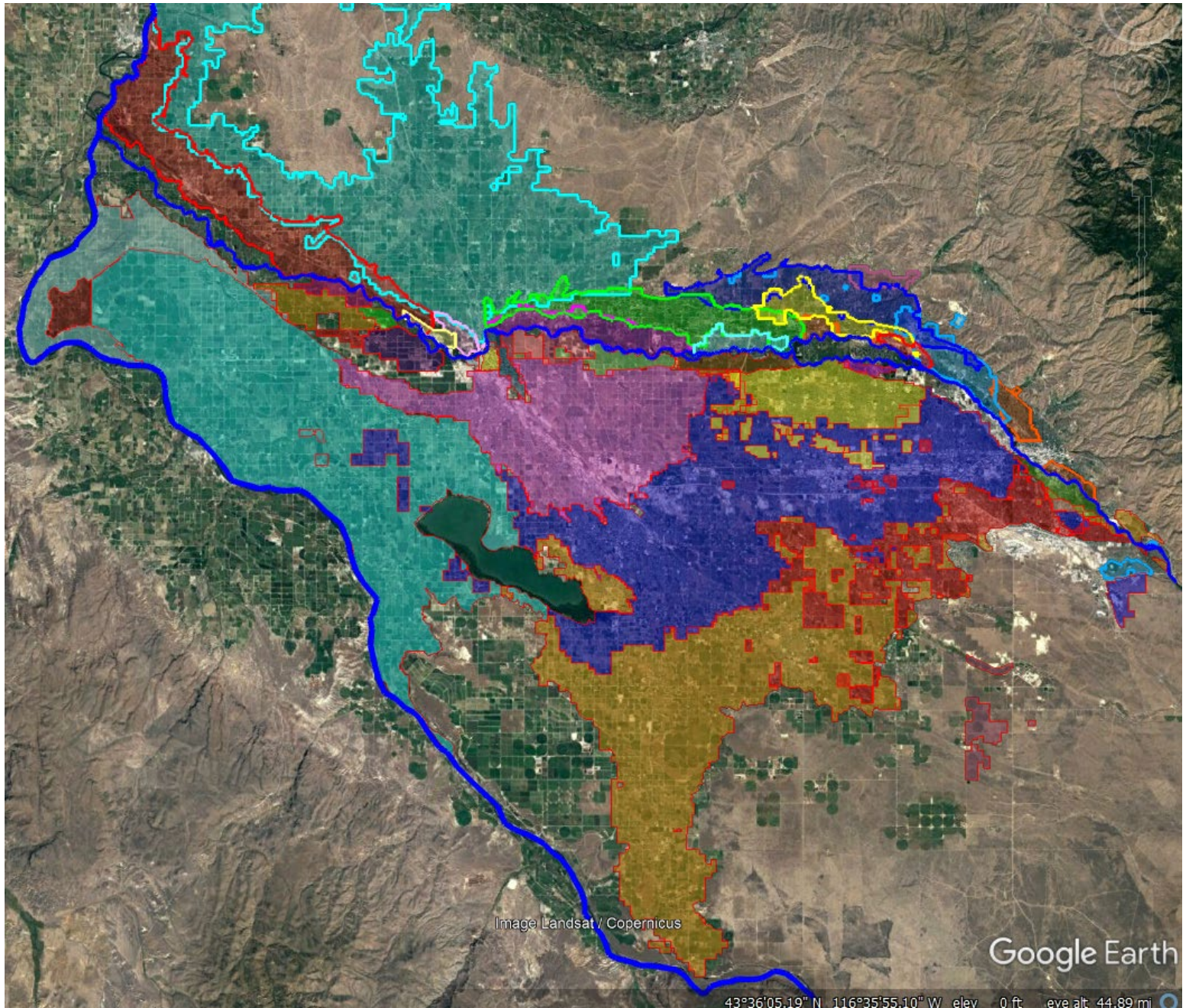
Treasure Valley Watershed



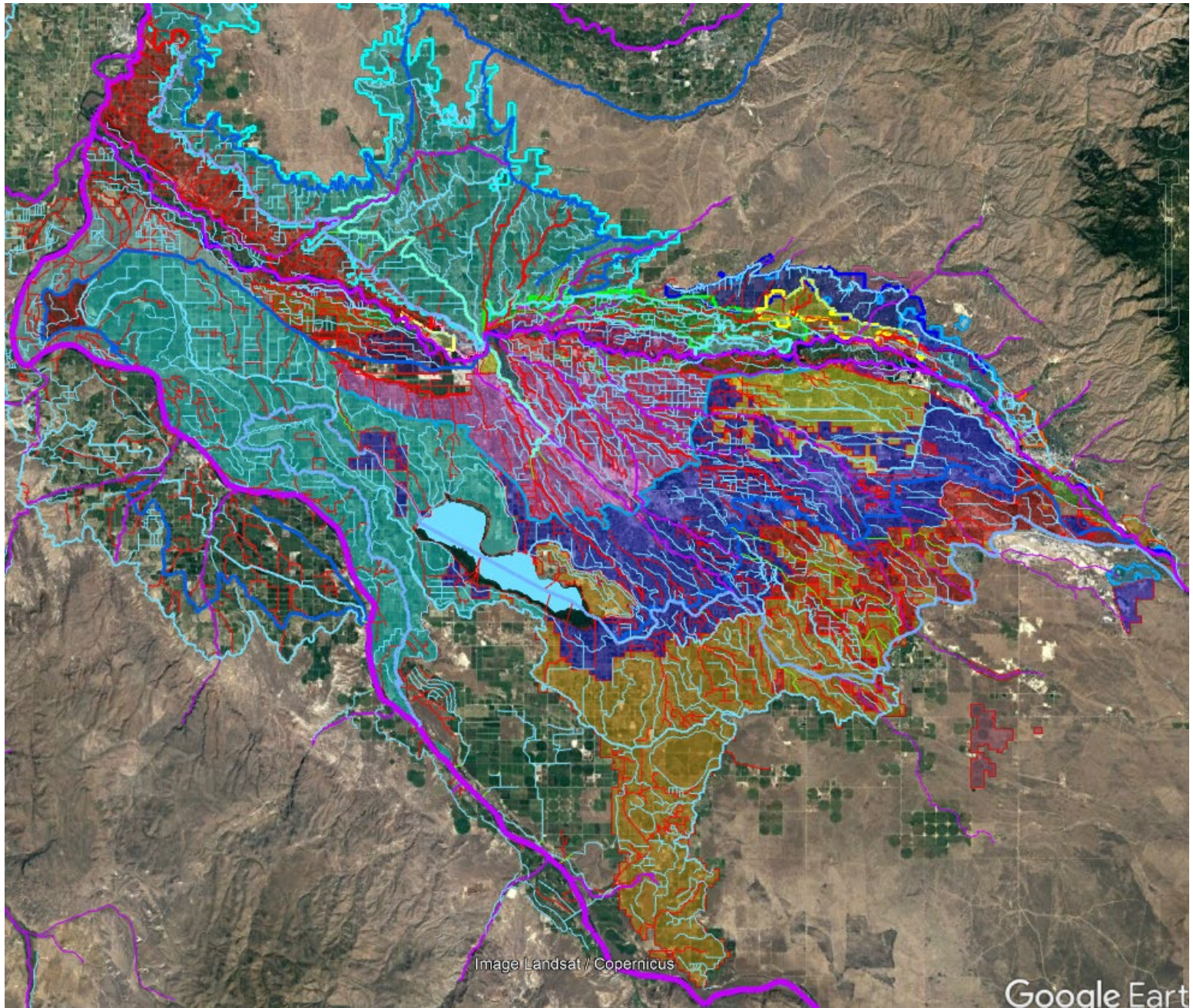
Treasure Valley Water Supply Assessment: Why Focus on Drains?

- Drains are the primary source of supply for the Boise River below Middleton
- Water deliveries from drains are a major source of irrigation water in the Treasure Valley
- Drains are a bellwether Treasure Valley water supplies:
  - shallow groundwater levels
  - surface return flows
  - recharge
  - impacts of urbanization on water supplies

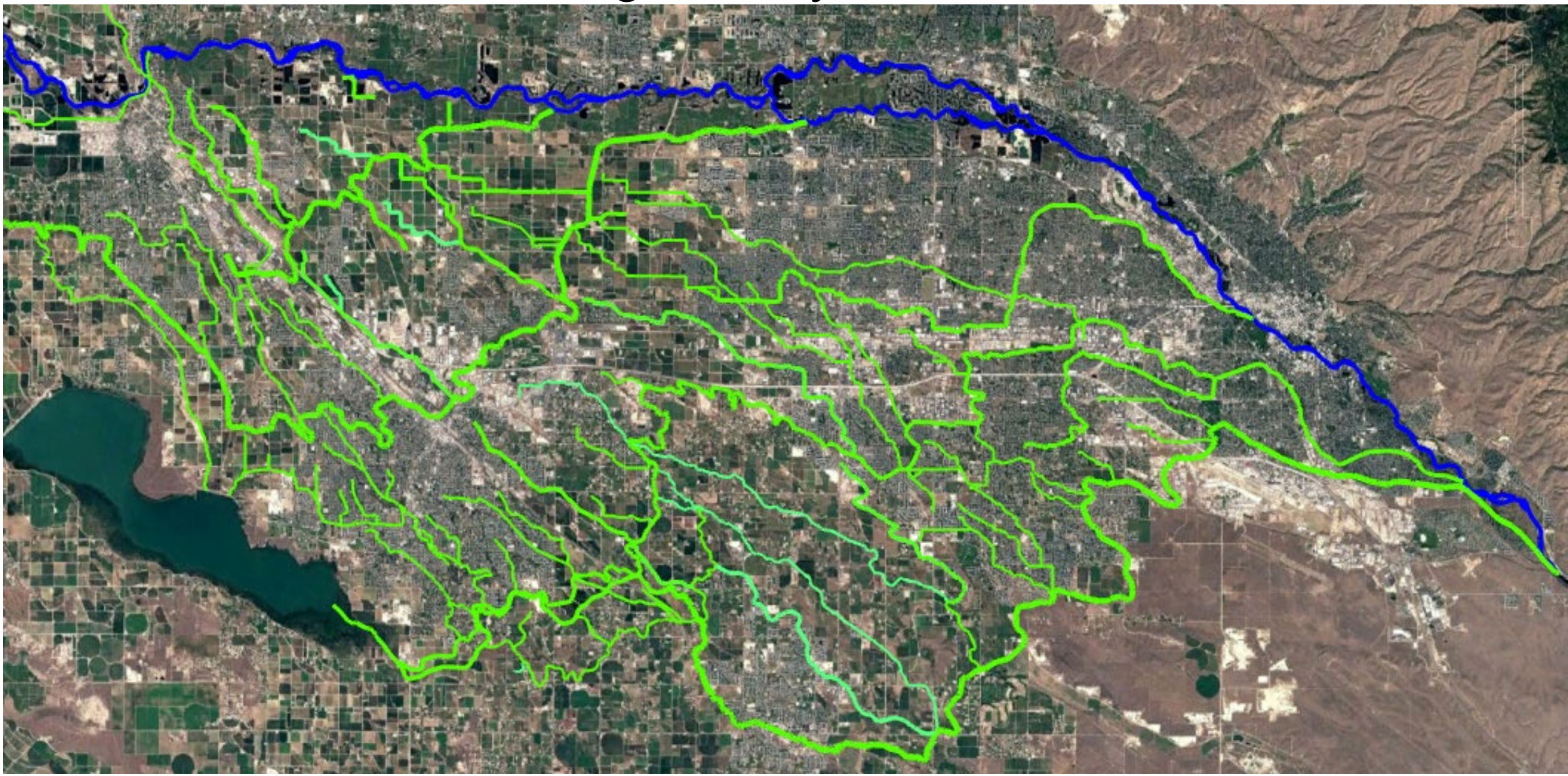
Treasure Valley Irrigation

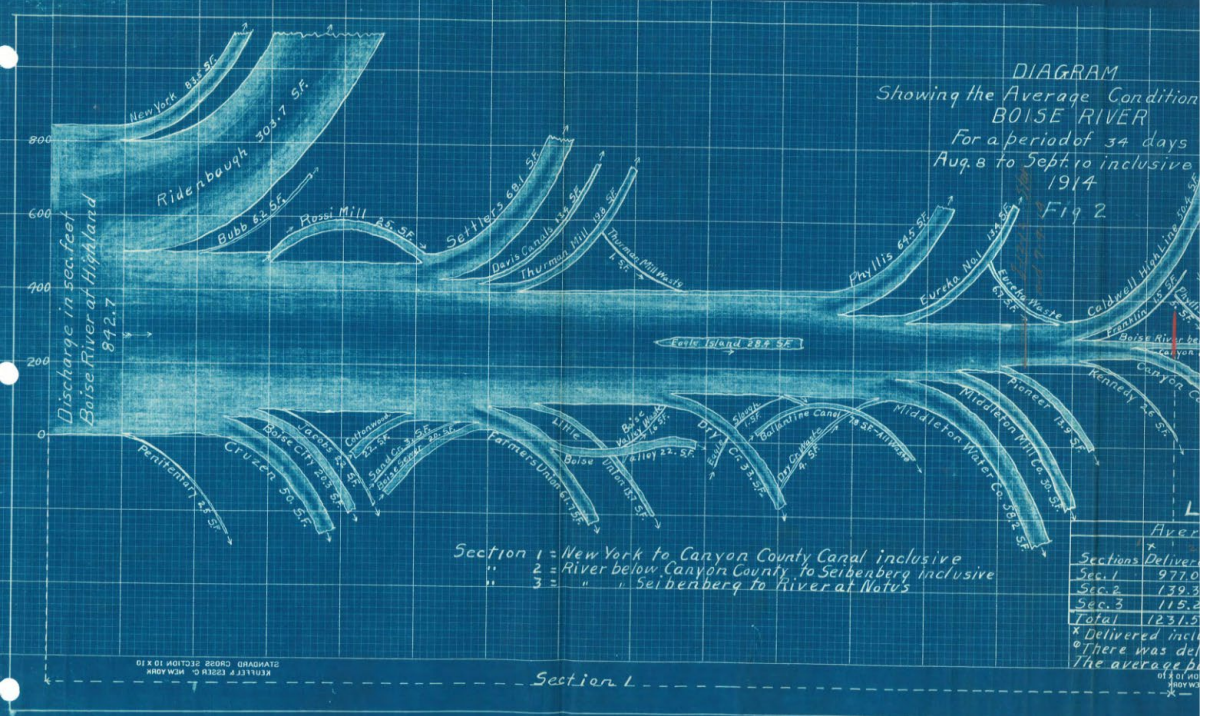


Treasure Valley Irrigation systems



Irrigation Systems





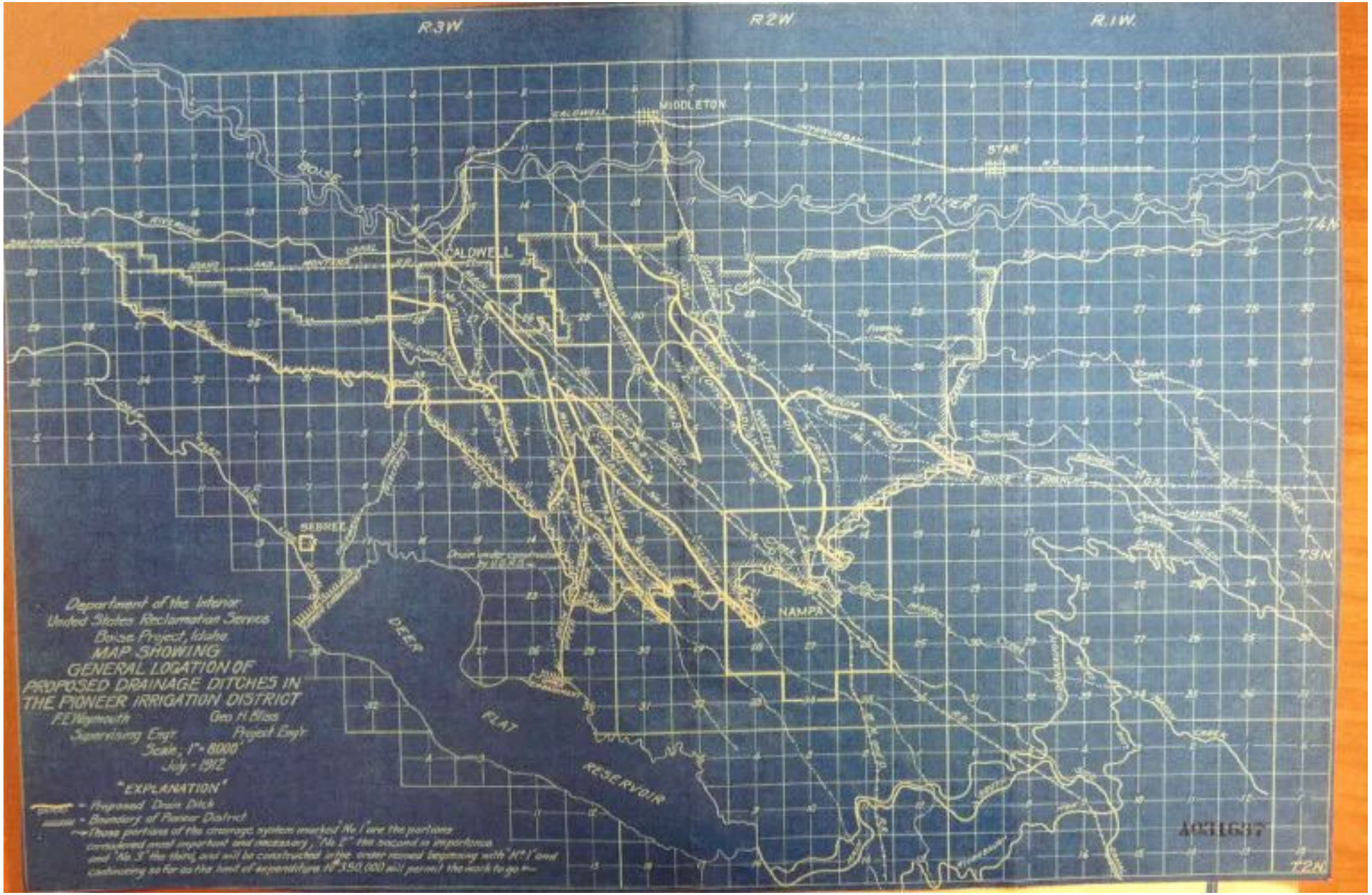
Need of Careful Management.

It is very evedent from a study of the conditions on the river that the water must be very carefully handled in order to make the best and most equitable use of it. It is like the management of a great railroad system. Suppose

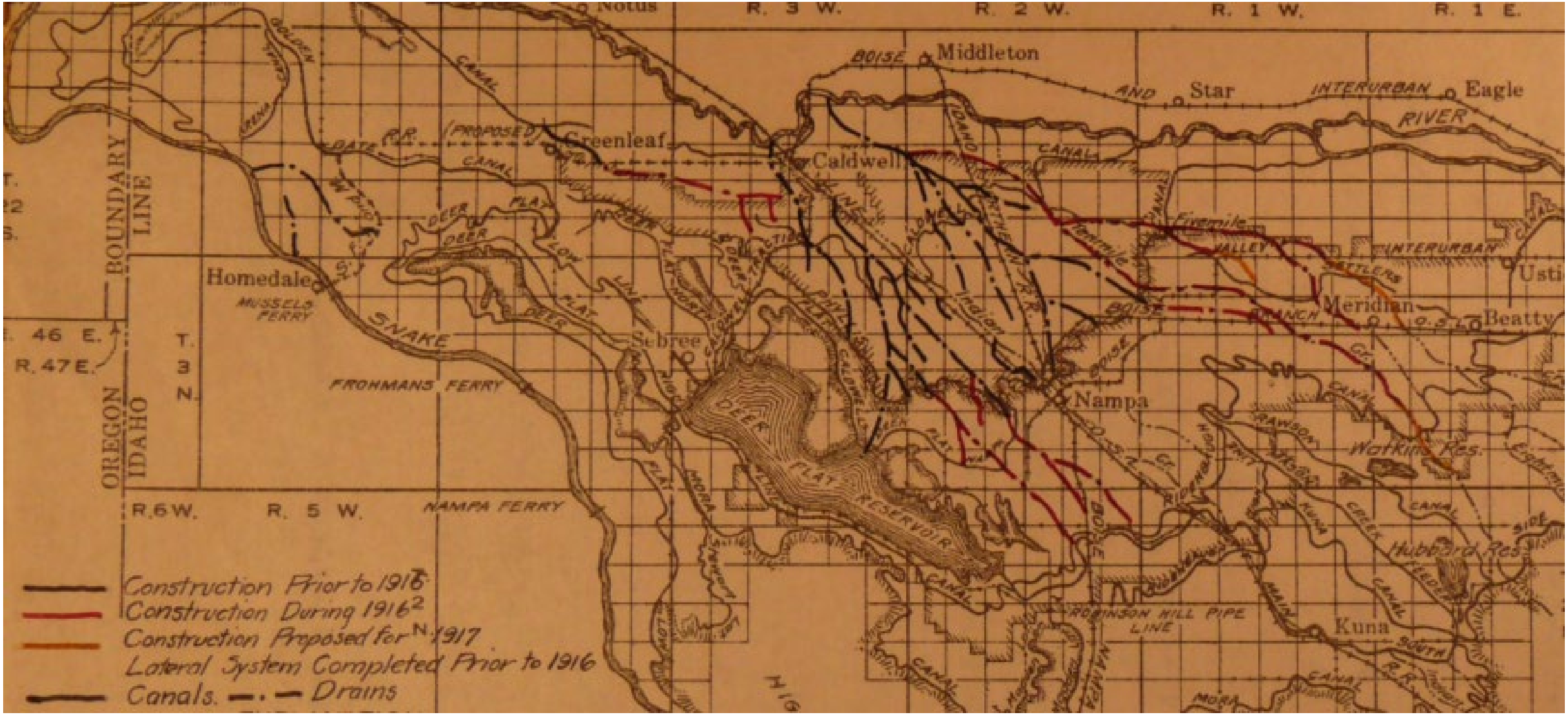
1914 Report - conclusions

- Tributary flow and seepage flow are important items to be considered in managing the Boise River
- River needs careful managements- like managing “a great railroad system”
- Tributary and seepage water should be considered as part of the available water supply
- Diversions downstream of Star depend on tributary and seepage water

1912-1918: Drain System Construction



1912-1918: Drain System Construction

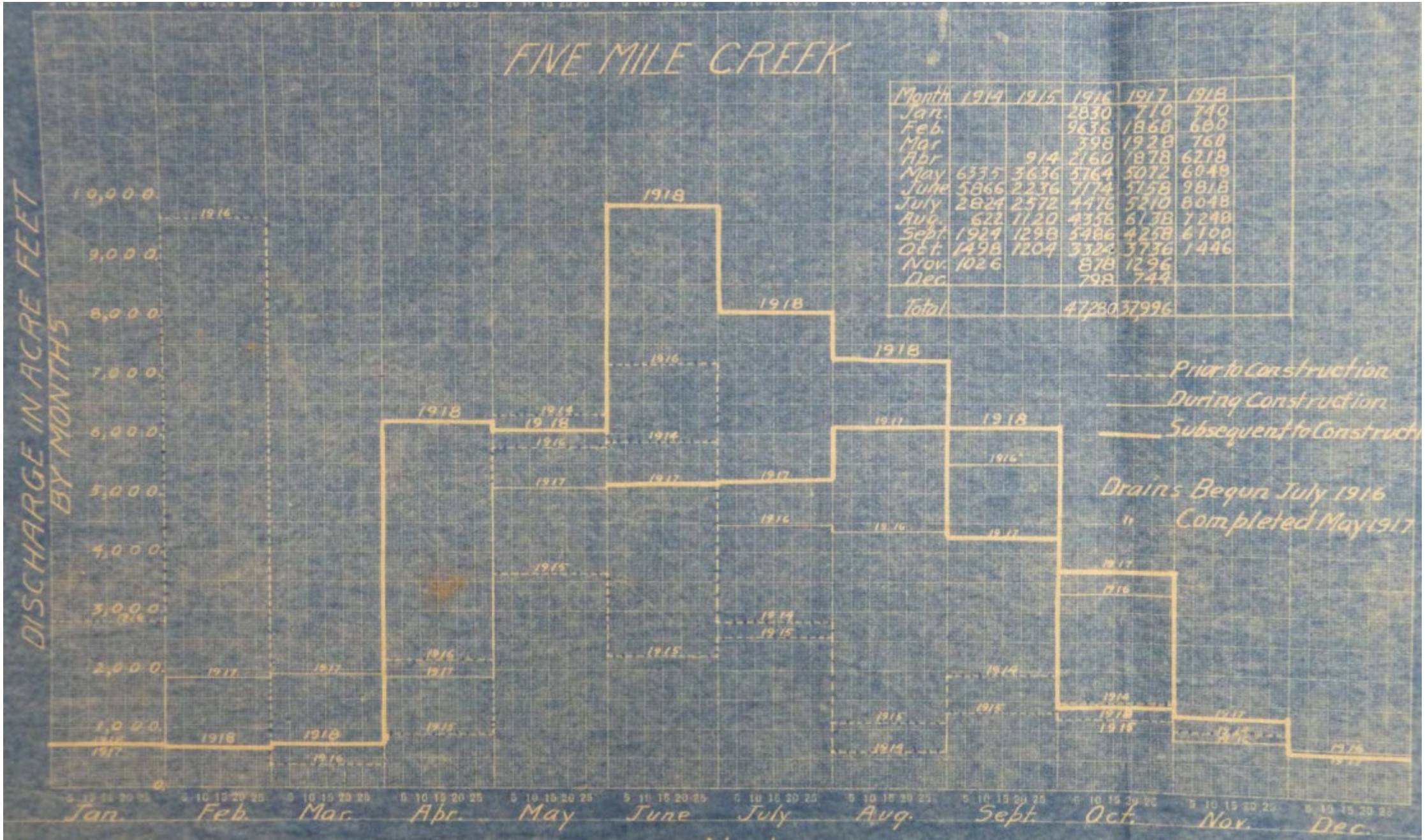


1913-1917 Drain System Development

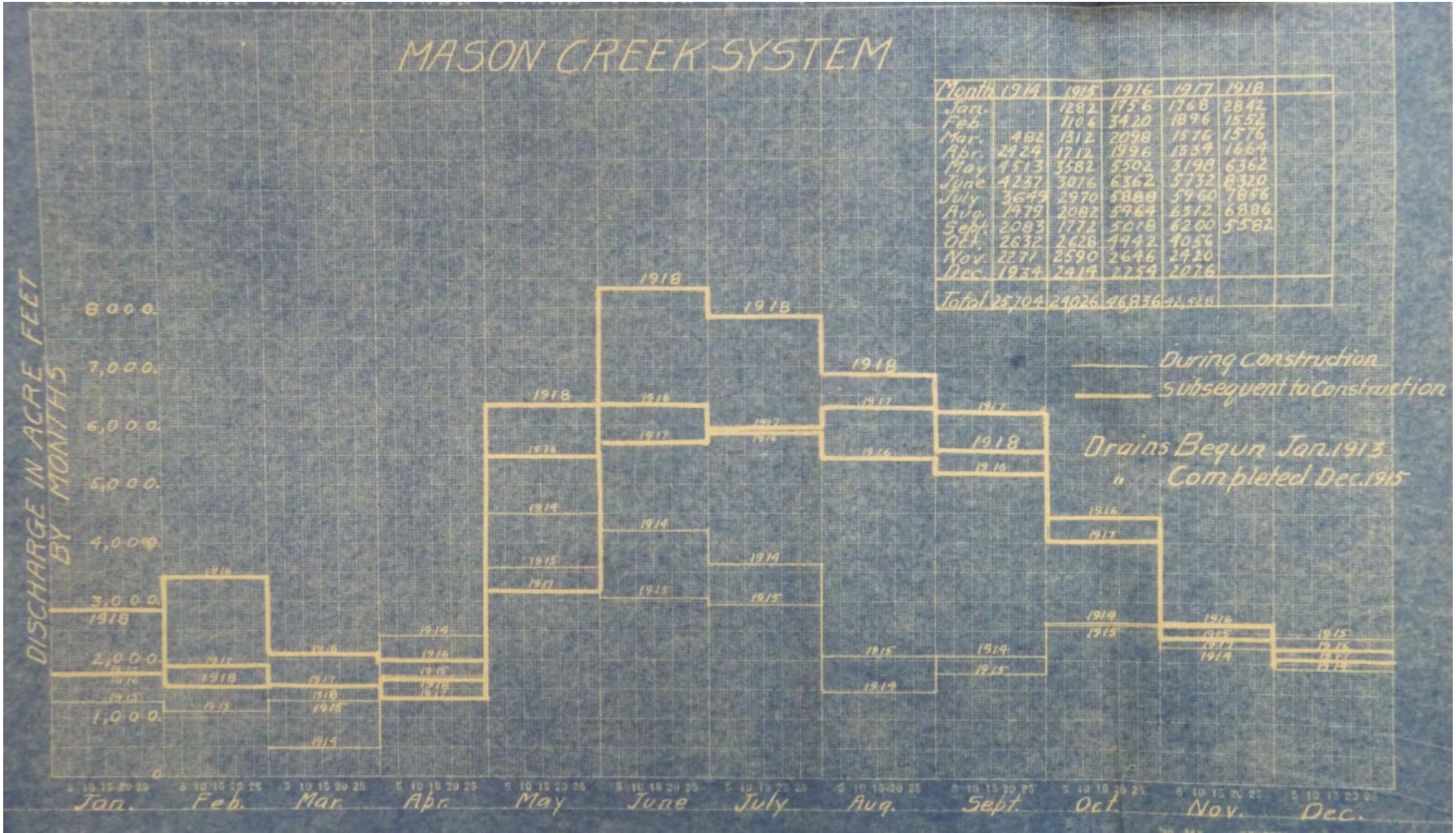
- Reclamation analyzed drain network
- Excavated, straightened, and expanded natural drainages
- By 1920’s, many submergence issues had been addressed

1912-1918: Drain System Construction

1912-1918: Drain System Construction

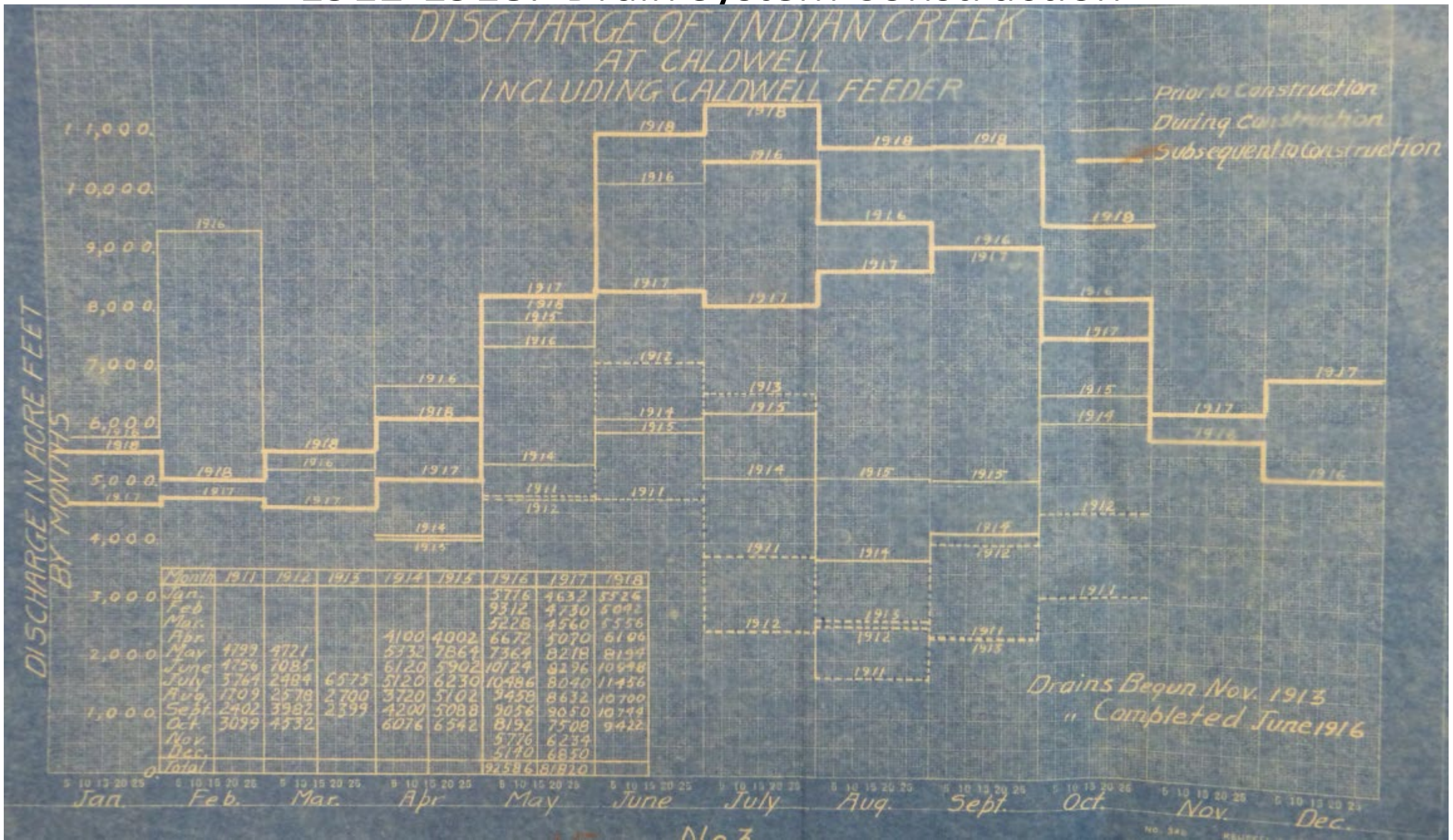


1912-1918: Drain System Construction



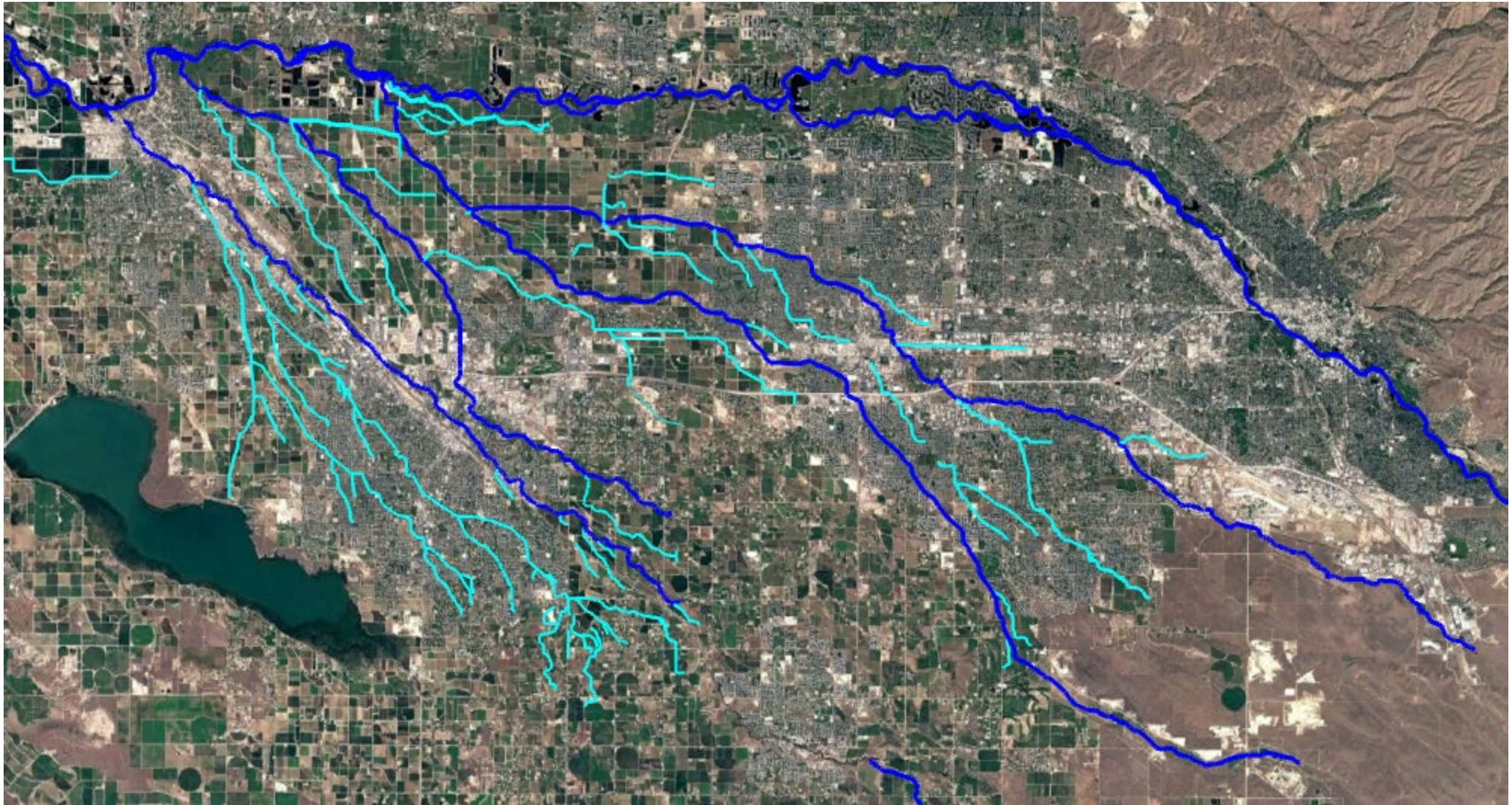
Month	1914	1915	1916	1917	1918
Jan.		1282	1736	1768	2842
Feb.		1106	3420	1896	1552
Mar.	482	1312	2098	1576	1576
Apr.	2429	1712	1996	1334	1664
May	1513	3582	5502	3198	6362
June	4237	3076	6362	5732	8320
July	3649	2970	5888	5960	7856
Aug.	1979	2082	5964	6312	6886
Sept.	2083	1772	5018	6200	5582
Oct.	2632	2628	4942	4056	
Nov.	2271	2590	2646	2420	
Dec.	1934	2414	2259	2076	
Total	25,704	24,026	46,836	42,910	

1912-1918: Drain System Construction

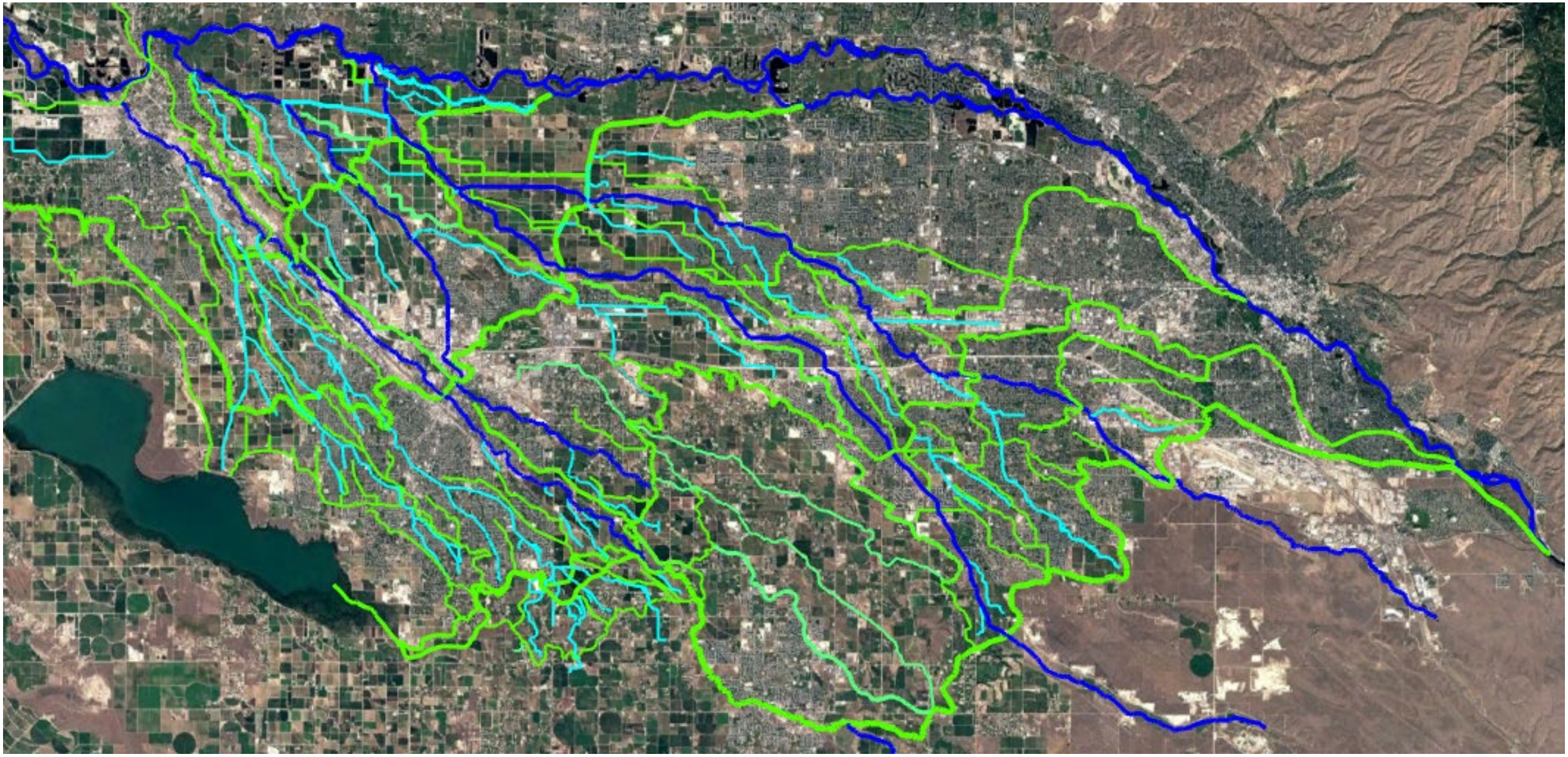


Month	1911	1912	1913	1914	1915	1916	1917	1918
Jan.						5776	4632	5526
Feb						9312	4730	6042
Mar.						5228	4560	5556
Apr.				4100	4002	6672	5070	6106
May	4799	4721		5332	7864	7364	8218	8194
June	4756	7085		6120	5902	10124	9296	10498
July	3764	2484	6575	5120	6230	10486	8040	11456
Aug.	1709	2578	2700	3720	5102	9458	8632	10700
Sept.	2402	3982	2399	4200	5088	9056	9050	10749
Oct.	3099	4532		6076	6542	8192	7508	9422
Nov.						5776	6234	
Dec.						5140	6850	
Total						92586	81820	

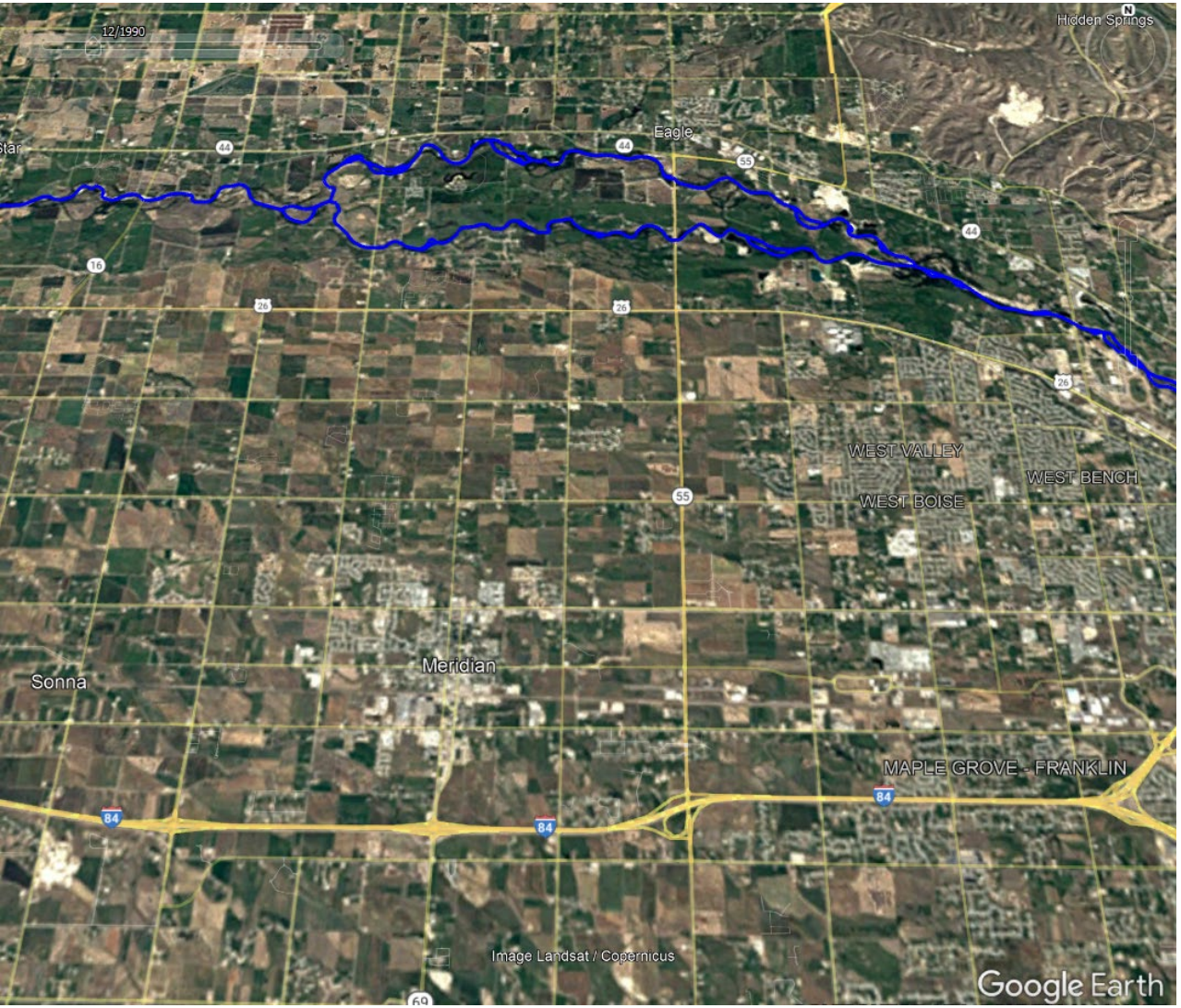
Drainage Systems

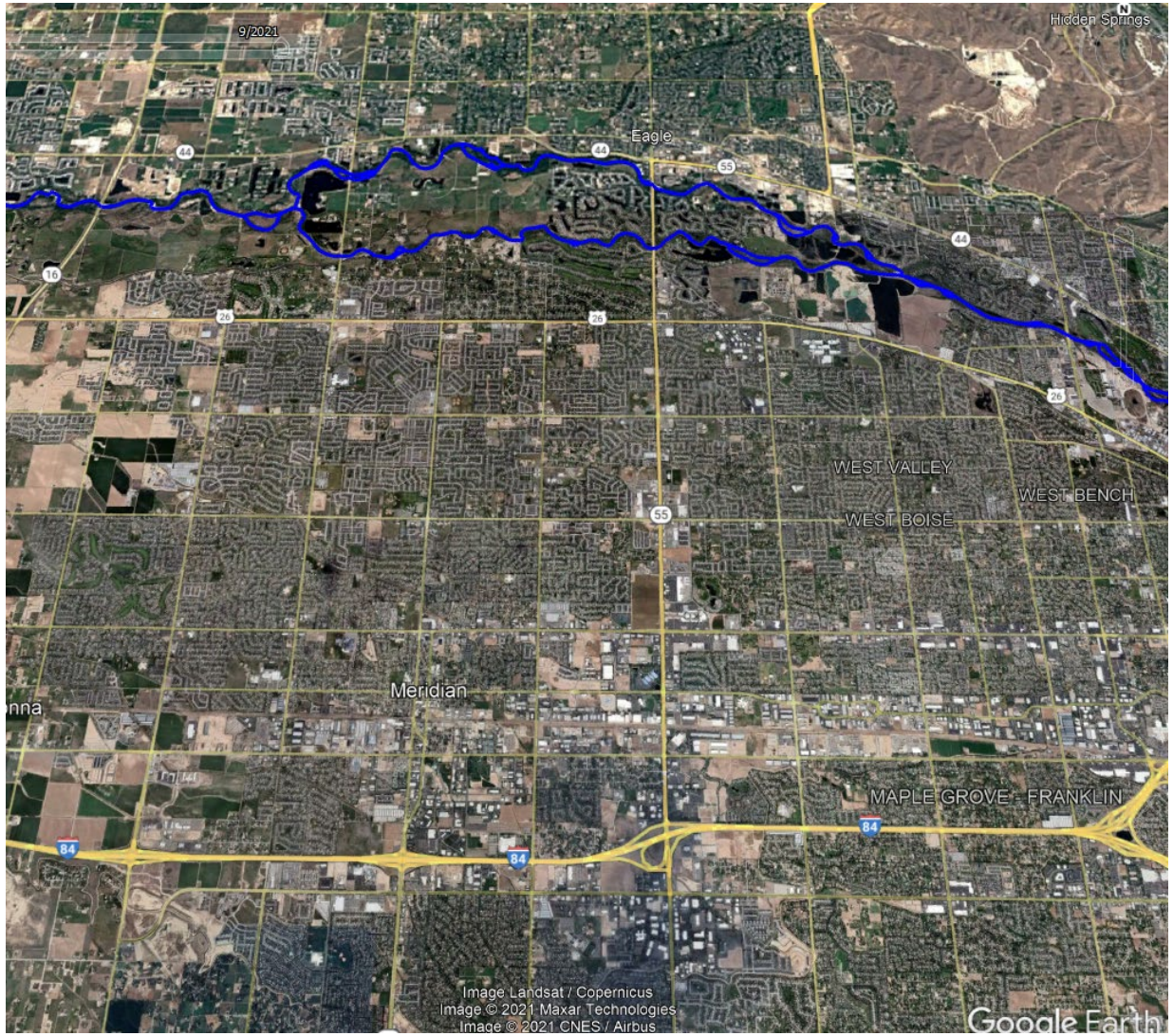


Irrigation & Drainage Systems

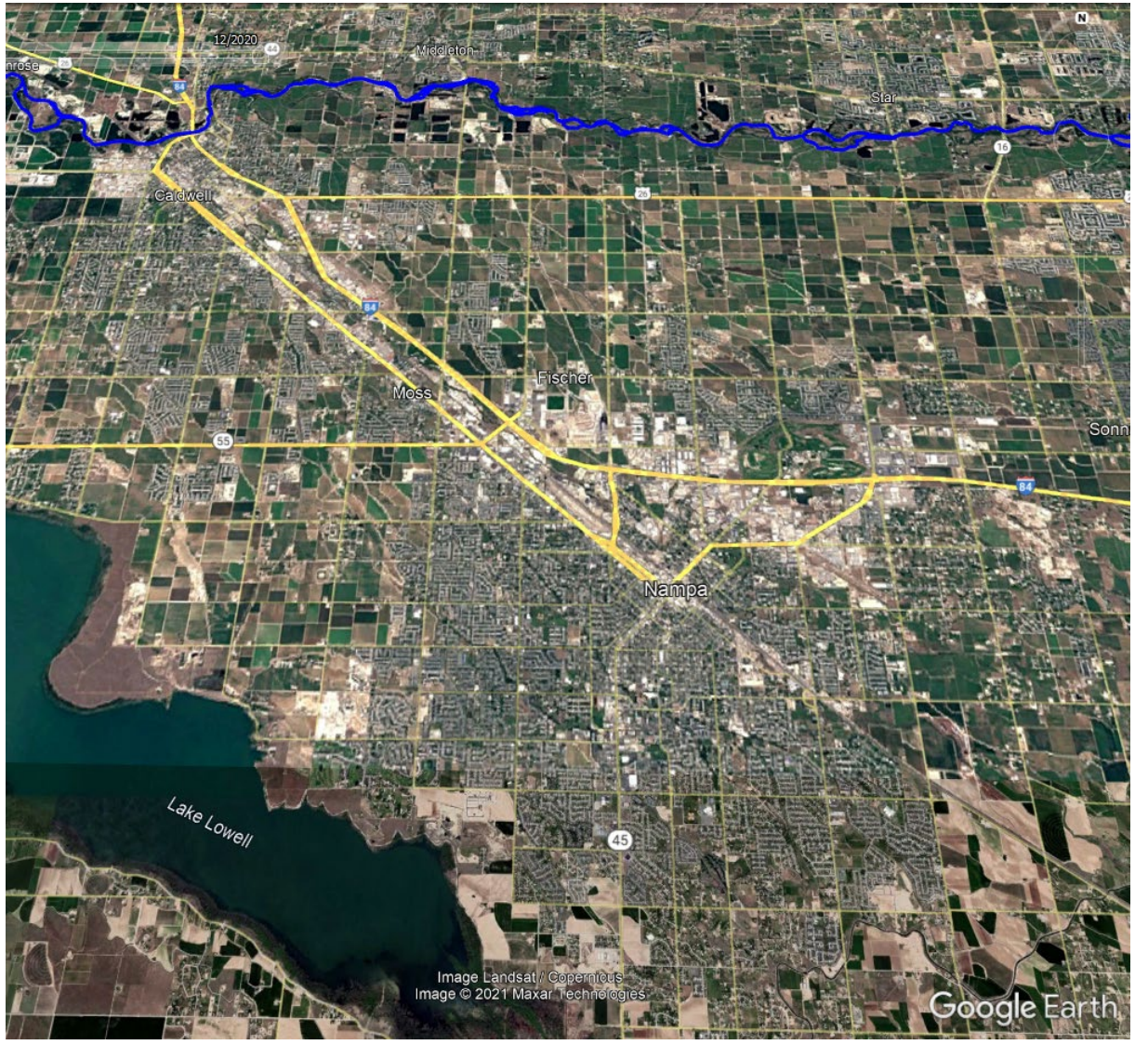


Ada County Urbanization: 1990 - 2021





Canyon County Urbanization: 1990 - 2021



Water Supply Effects of Urbanization:
Ag. Flood Irrigation Conversion to Urban Sprinkler

Water Supply Effects:
Conversion to Sprinkler Reducing Field Seepage

Water Supply Effects:
Piping Reducing Canal Seepage

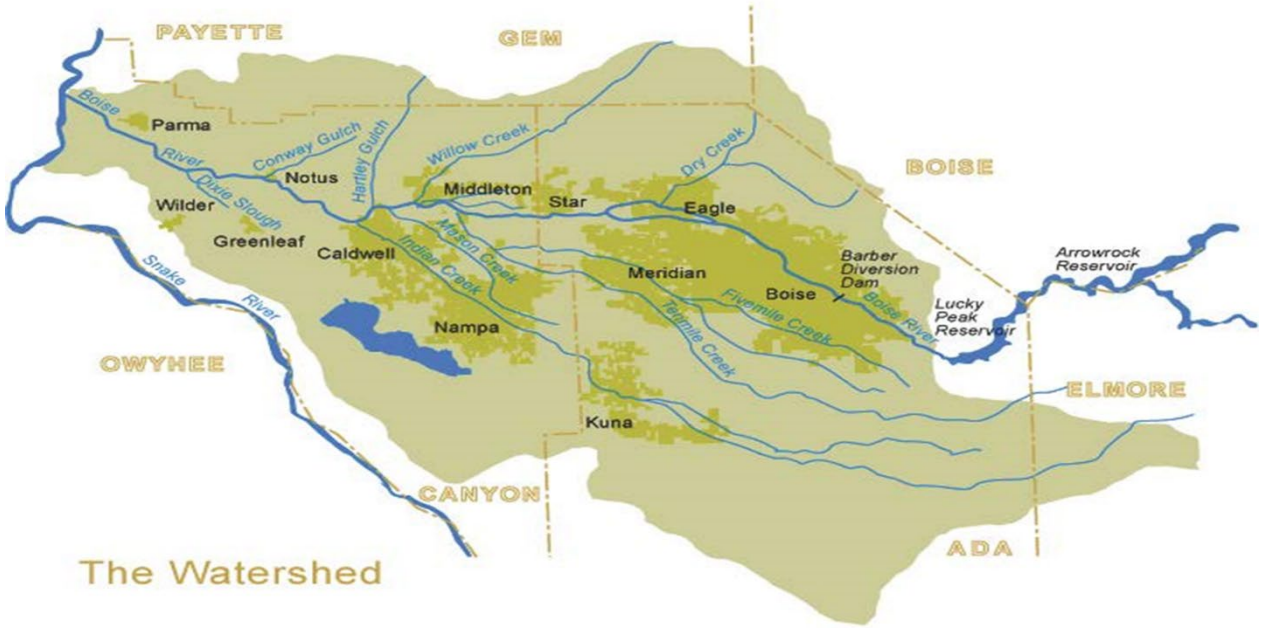
Estimates of Impacts on Lower Boise Valley Drain Discharge with Elimination of Gravity Irrigation (*Dave Shaw,* ERO Resources Corporation, 2014)

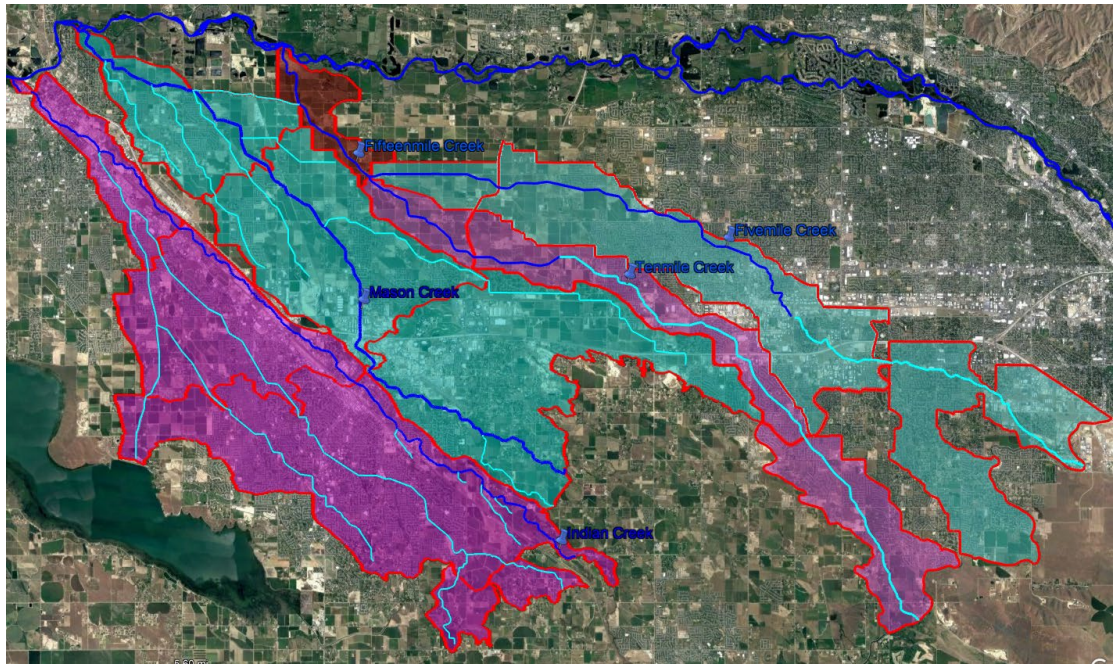
- Based on "A Distributed Parameter Water Budget Data Base for the Lower Boise Valley," (USBR, 2008)
  - **on-farm field seepage averages 520 kaf per year (51% of 1,012 KAF)**
  - **canal seepage averages 492 kaf per year (49% of 1,012 KAF total groundwater infiltration)**
- Estimates drain discharges after ***100% conversion of agricultural irrigation to sprinkler within 4 drainages***
- ***Does not evaluate impact of canal piping and reduced canal seepage loss***
- ***Reductions from less extensive conversion may be estimated proportionately from this analysis***
- ***Need to update data & analysis***

Estimates of Impacts on Lower Boise Valley Drain Discharge with Elimination of Gravity Irrigation (*Dave Shaw,* ERO Resources Corporation, 2014)

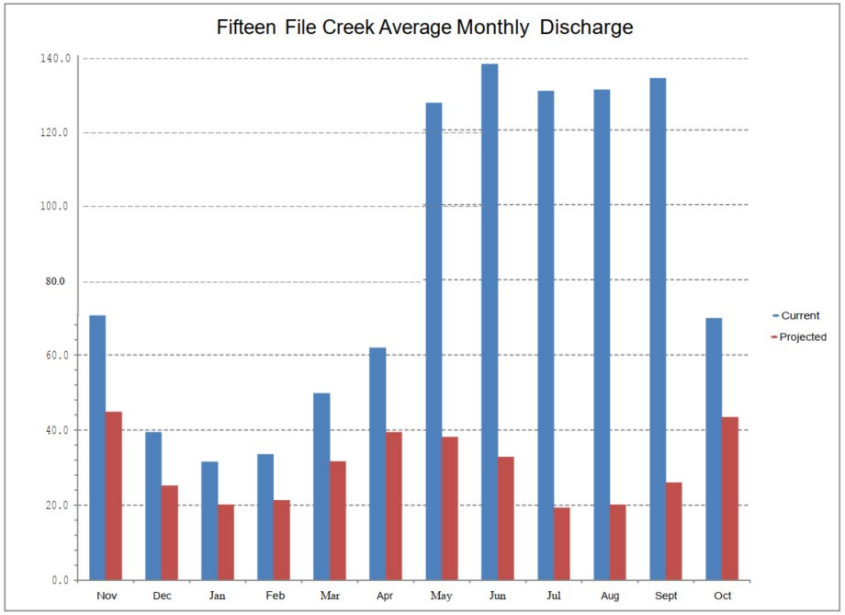
	Fifteen Mile Creek	Indian Creek	Mason Creek	Sand Hollow Creek
Current Surface Water (ac-ft)	27,128	46,770	35,500	54,959
Current Ground Water (ac-ft)	34,360	55,427	43,134	45,132
Current Total Discharge (ac-ft)	61,488	102,197	78,634	100,091
Projected Drain Discharge (ac-ft)	21,886	35,230	18,842	30,708
Percent Reduction	64%	66%	76%	69%

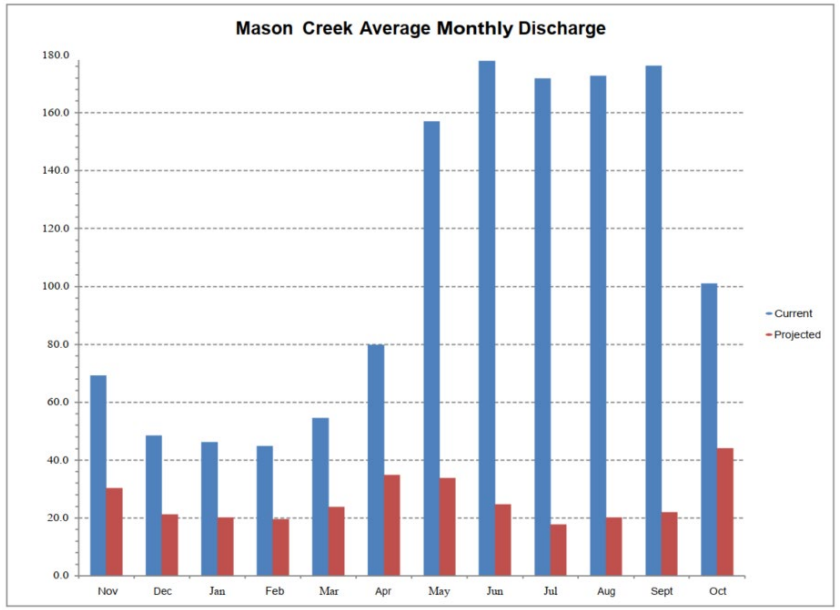
Table 2. Current and Projected Drain Discharge

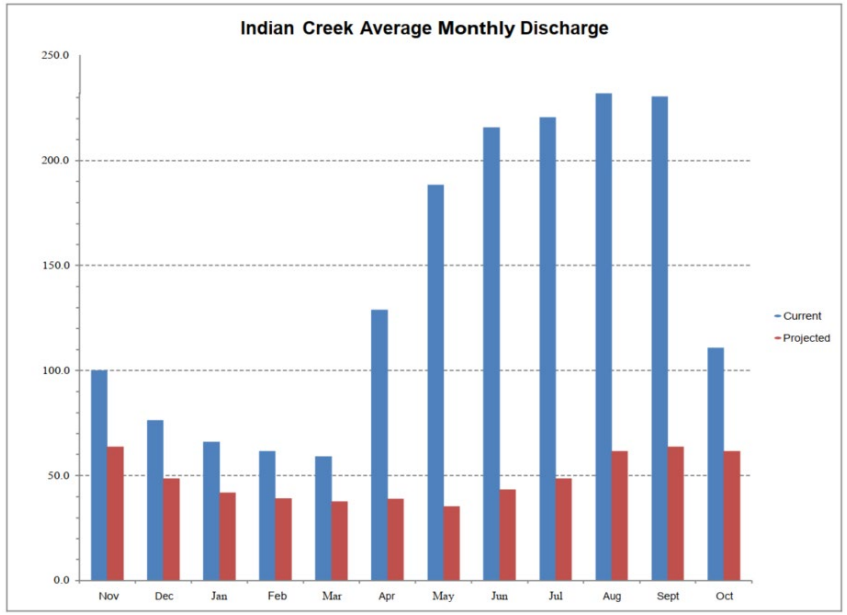


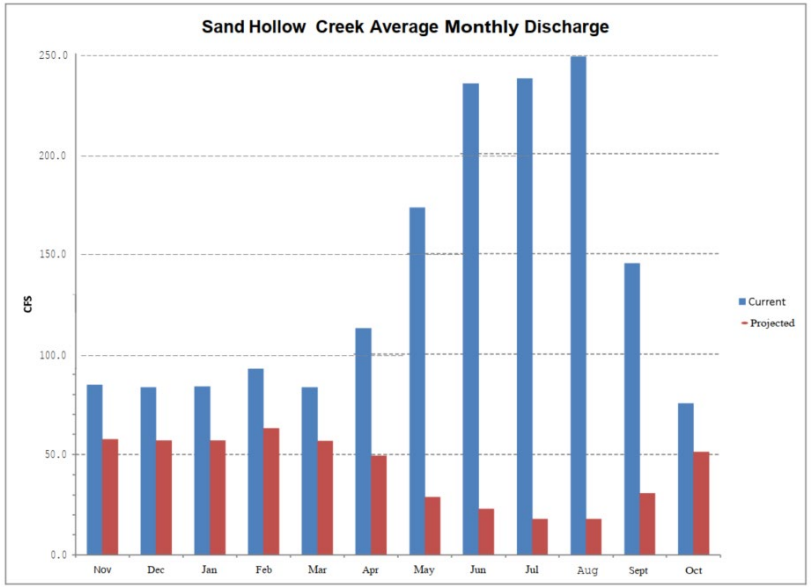


Estimates of Impacts on Lower Boise Valley Drain Discharge with Elimination of Gravity Irrigation (*Dave Shaw*, ERO Resources, 2014)

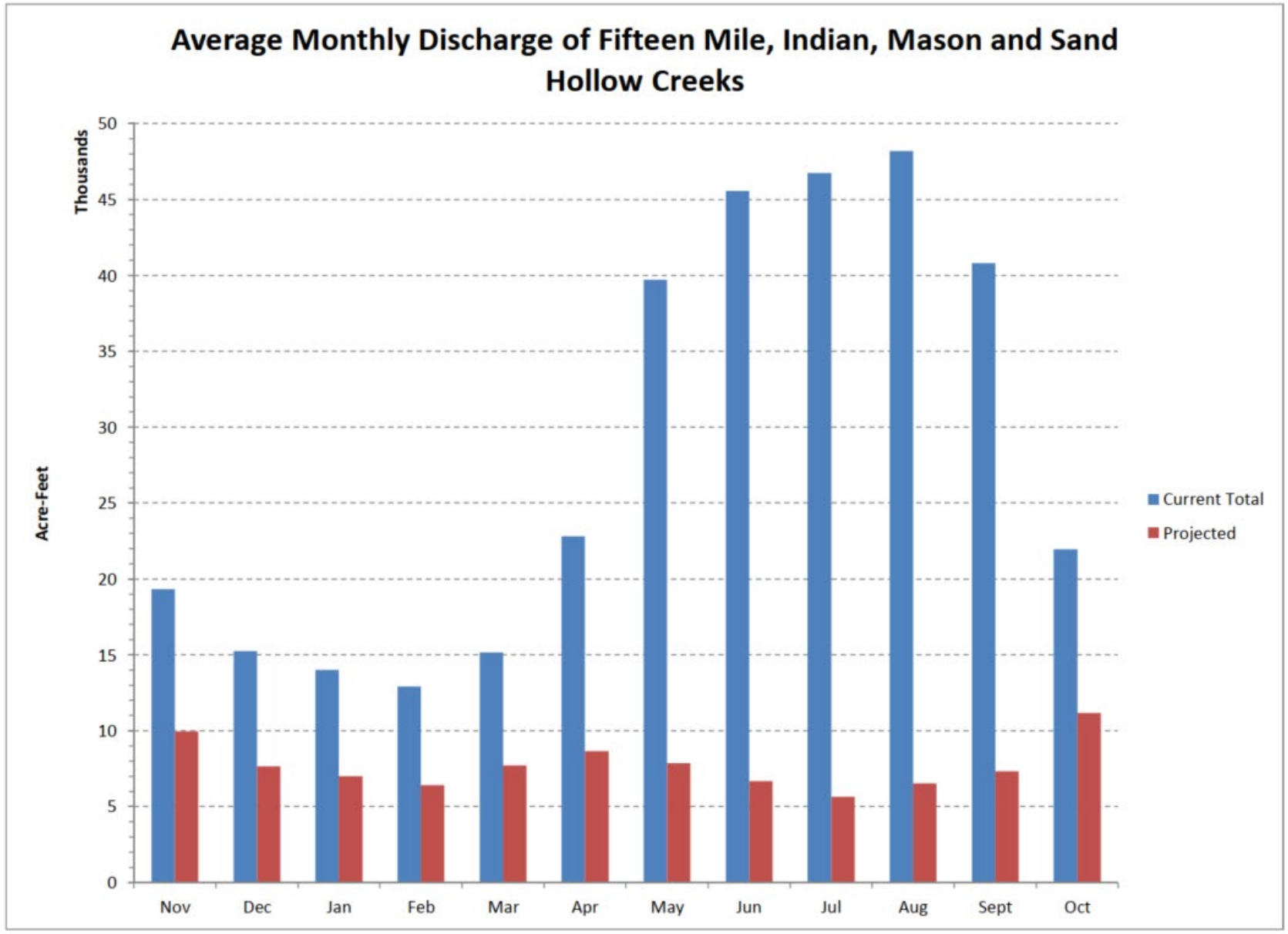




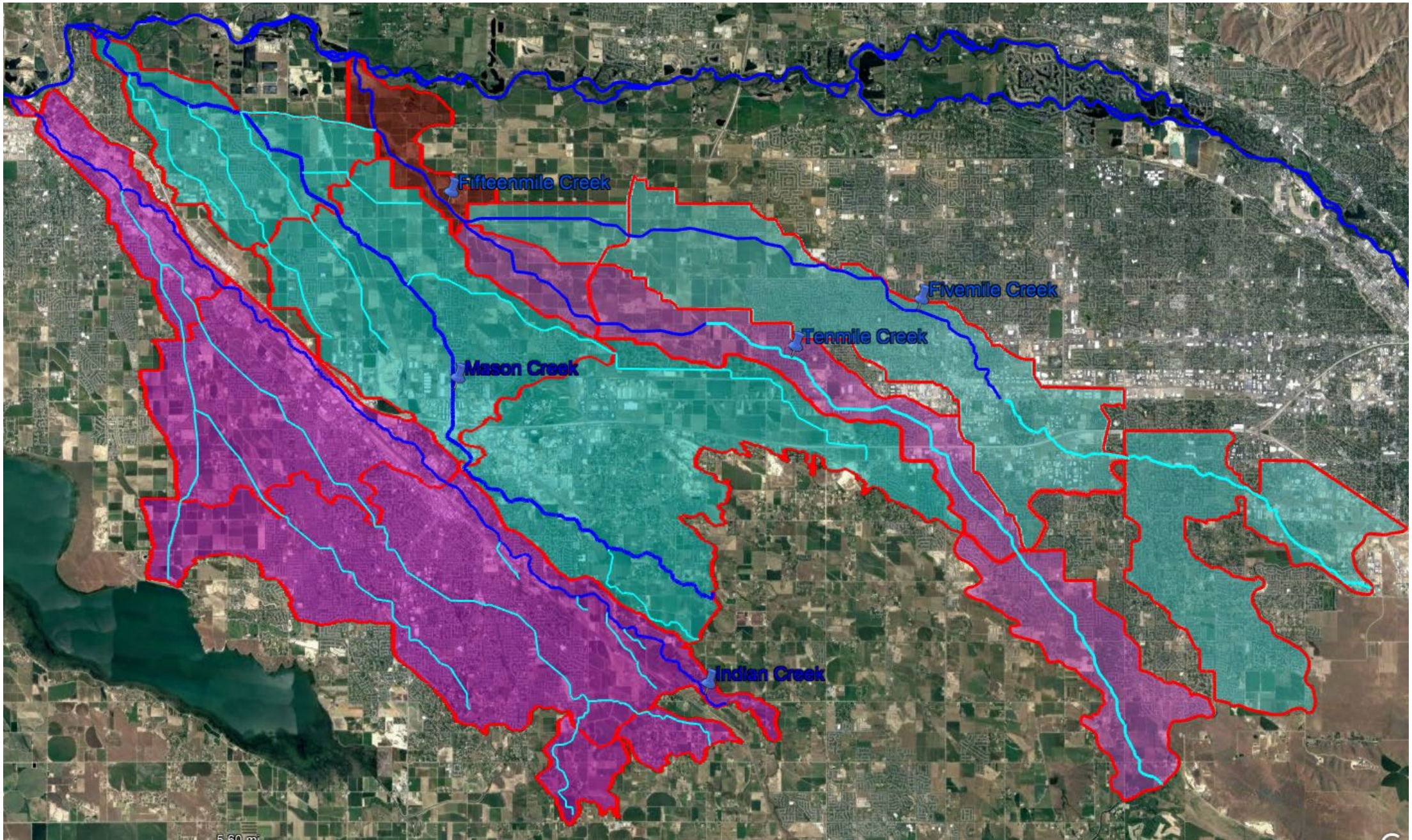




Estimates of Impacts on Lower Boise Valley Drain Discharge with Elimination of Gravity Irrigation (*Dave Shaw,* ERO Resources Corporation, 2014)

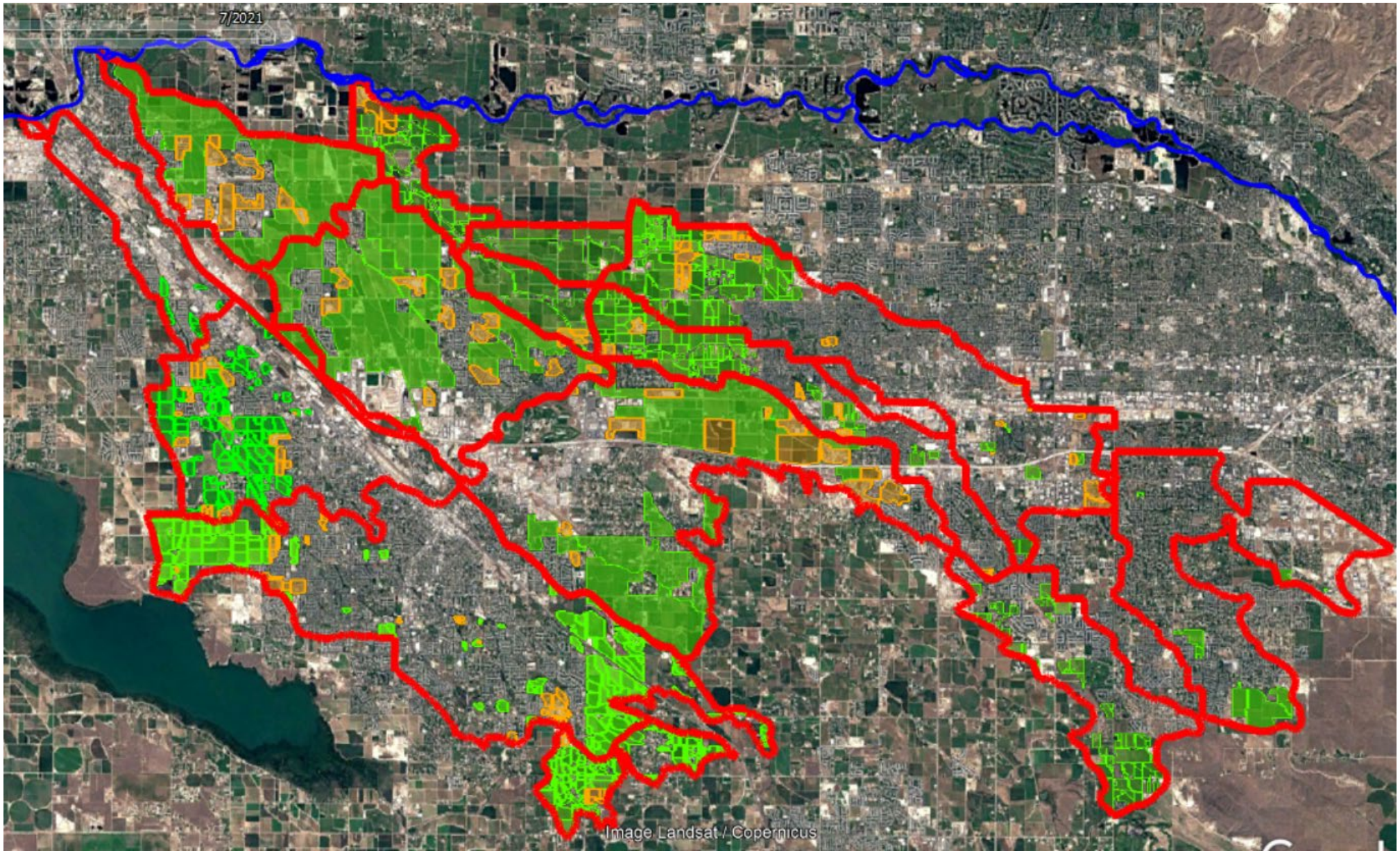


Accounting for Change: Subwatersheds (Fifteenmile, Mason, Indian)

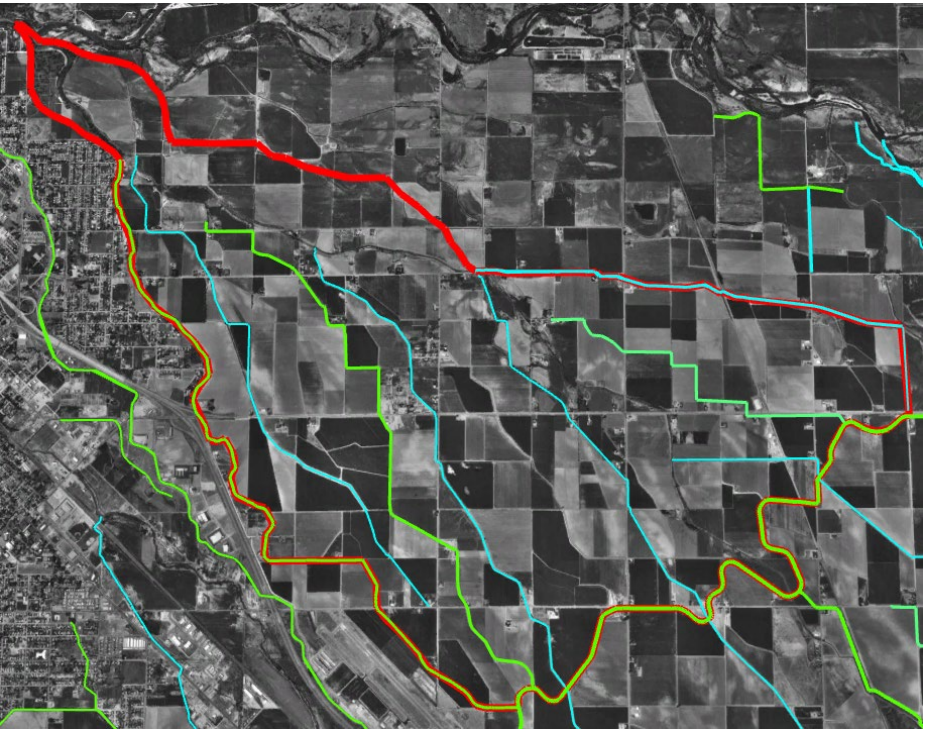


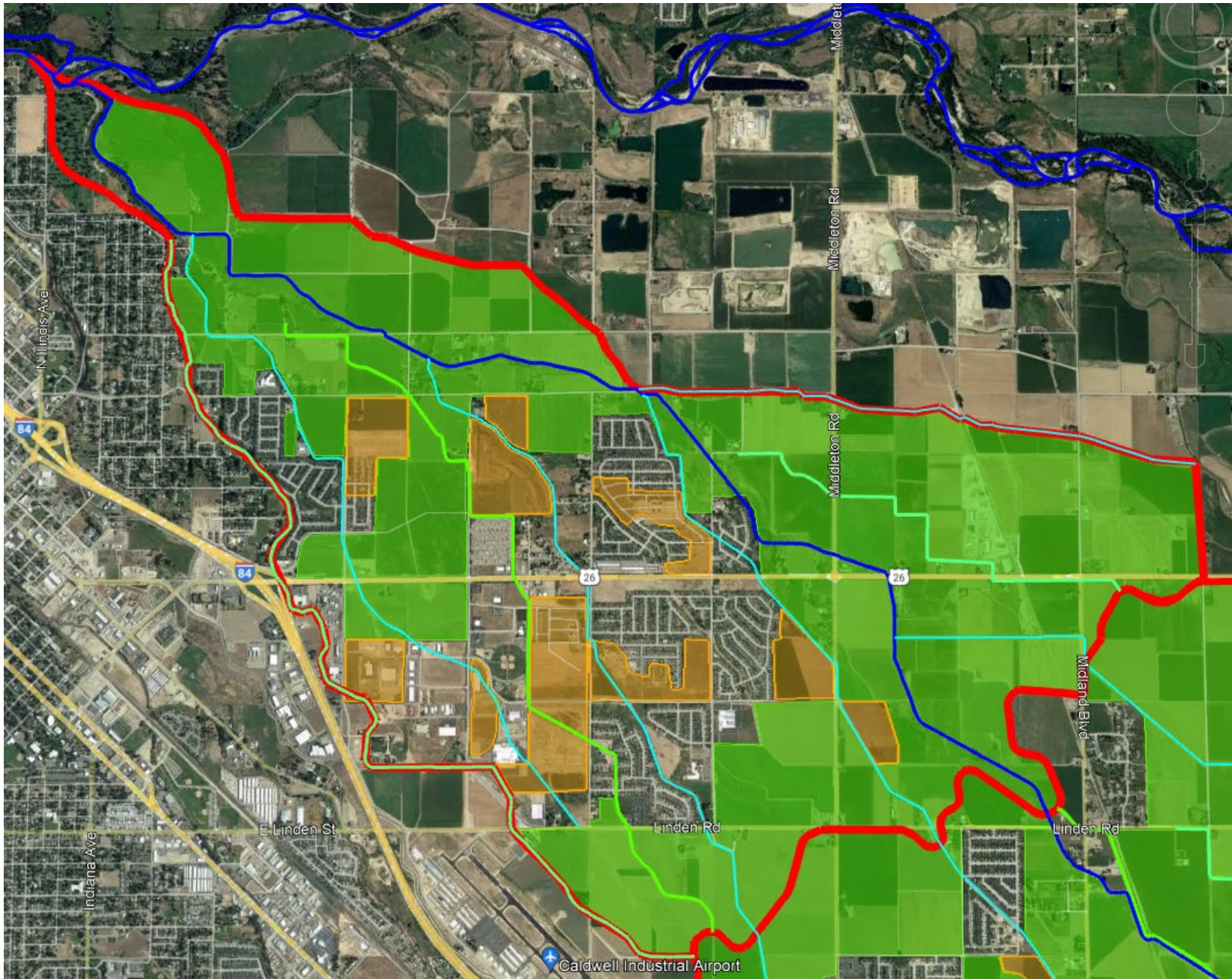
Accounting for Change: Ag. Delineation

2016-2020 conversions (orange) **2020 Ag. (green)**



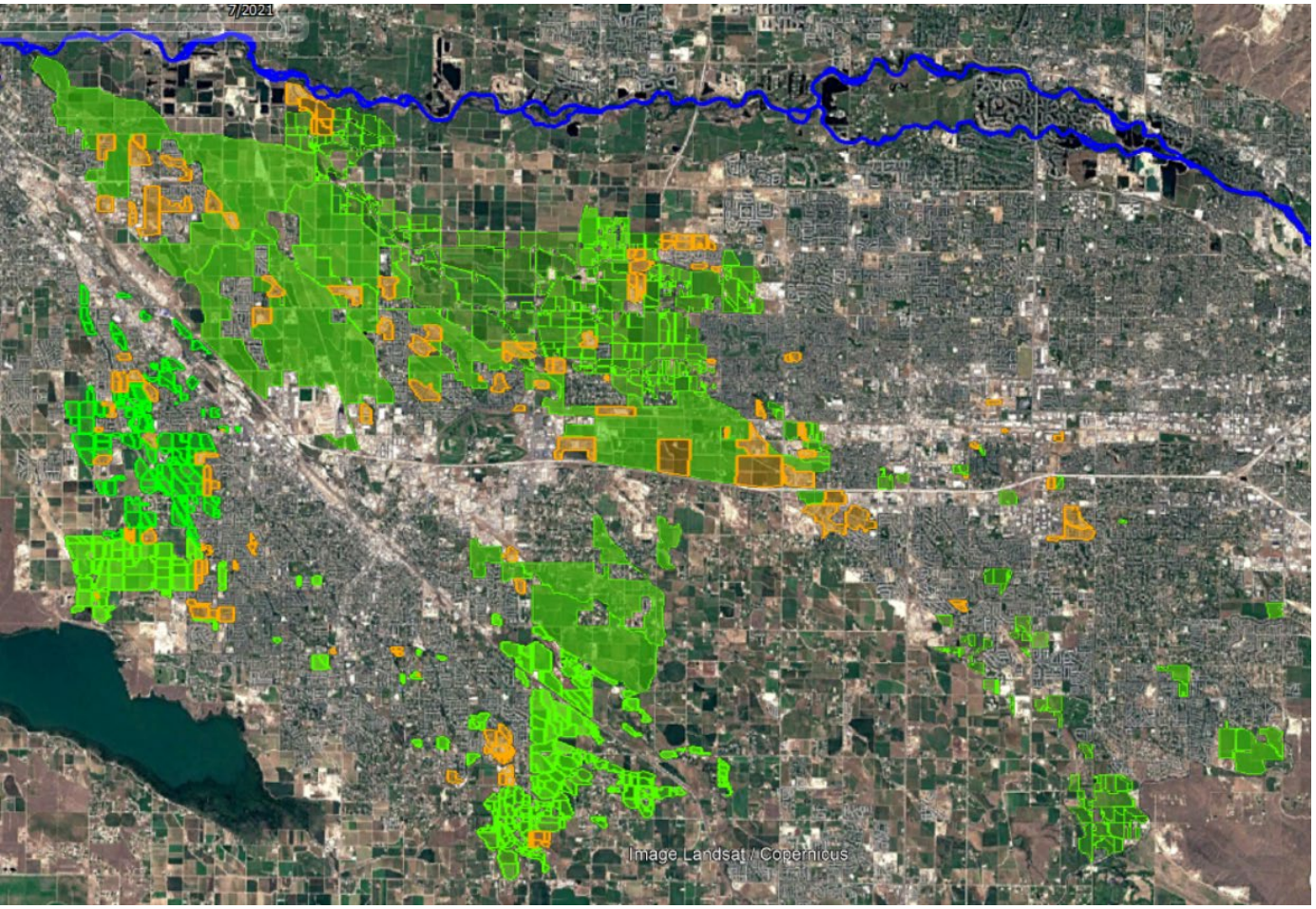
Segment Ag. Land Use: converted 2016-20 (orange), ag. (green)



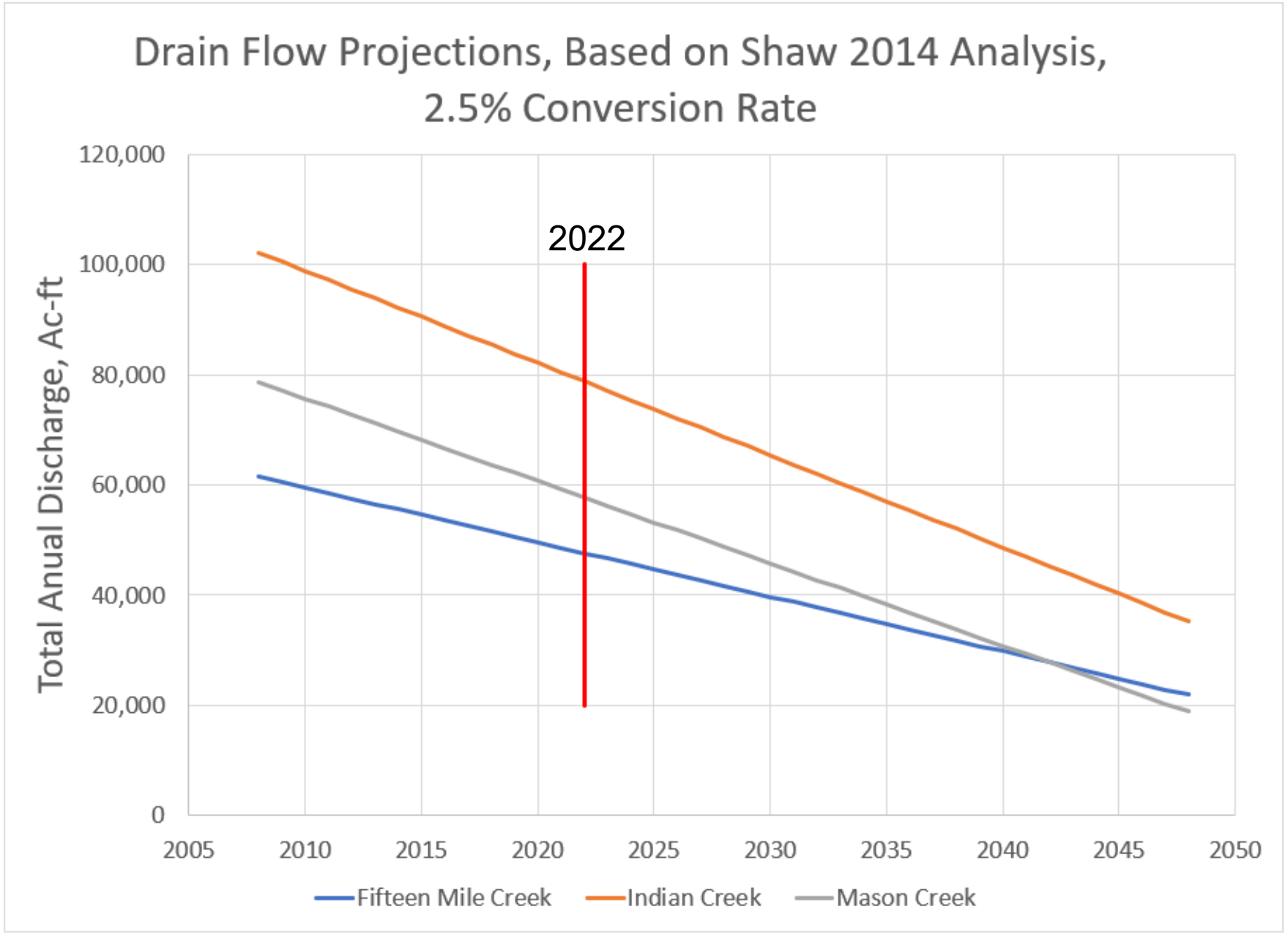


Accounting For Change: Ag. to Urban Conversions

		Total Acres	Total %	Annual %
Long-Term (2001-2016, Watershed):		46,859 acres	29%	2%
Recent (2016-2020):				
	Fifteen:	1,998 acres	16%	4%
	Mason:	1,351 acres	15%	3%
	Indian:	657 acres	12%	3%



Projecting Water Supply Effects from Ag. to Urban Conversions



Boise River June 30, 2022 Low Flow

On June 10th of 2022 Water District 63 did not have enough water in the Boise River to supply the demand below Caldwell. The only reason we where able to deliver water to 5 different canal companies and farmers was that we had BOR flow augmentation water in the river. Looking at the accounting, we were approximately 150 CFS short in the river.

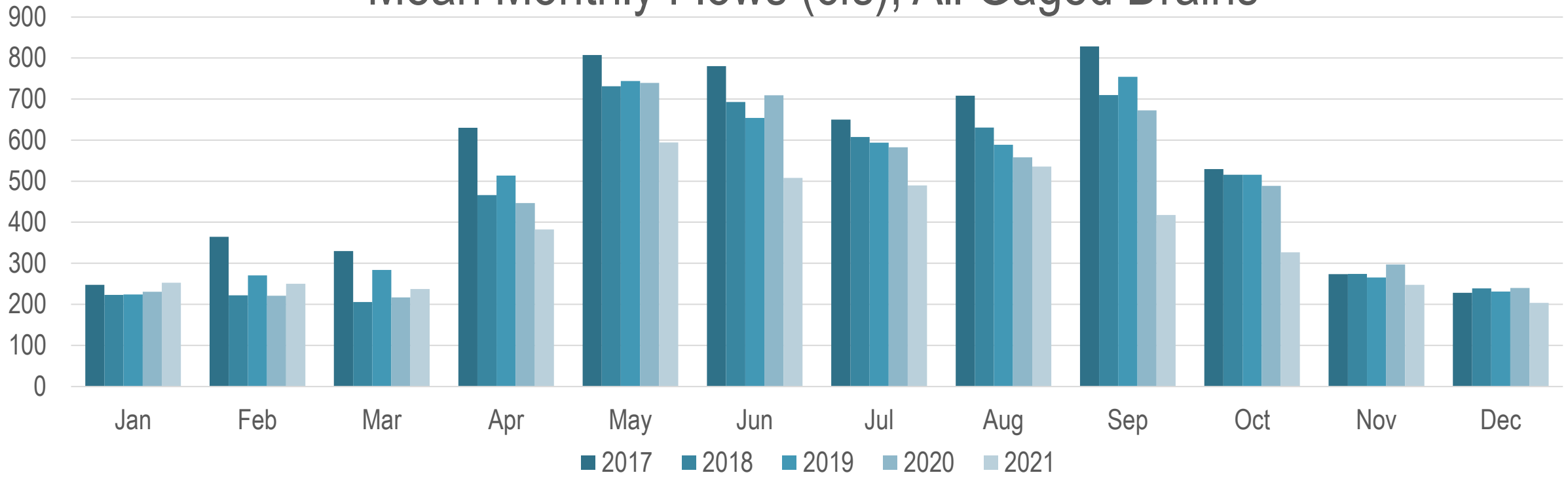
WATER DISTRICT 63 - BOISE RIVER FLOW ACCOUNTING (VER 2.1.2.126) - Jun 30, 2022 20221004

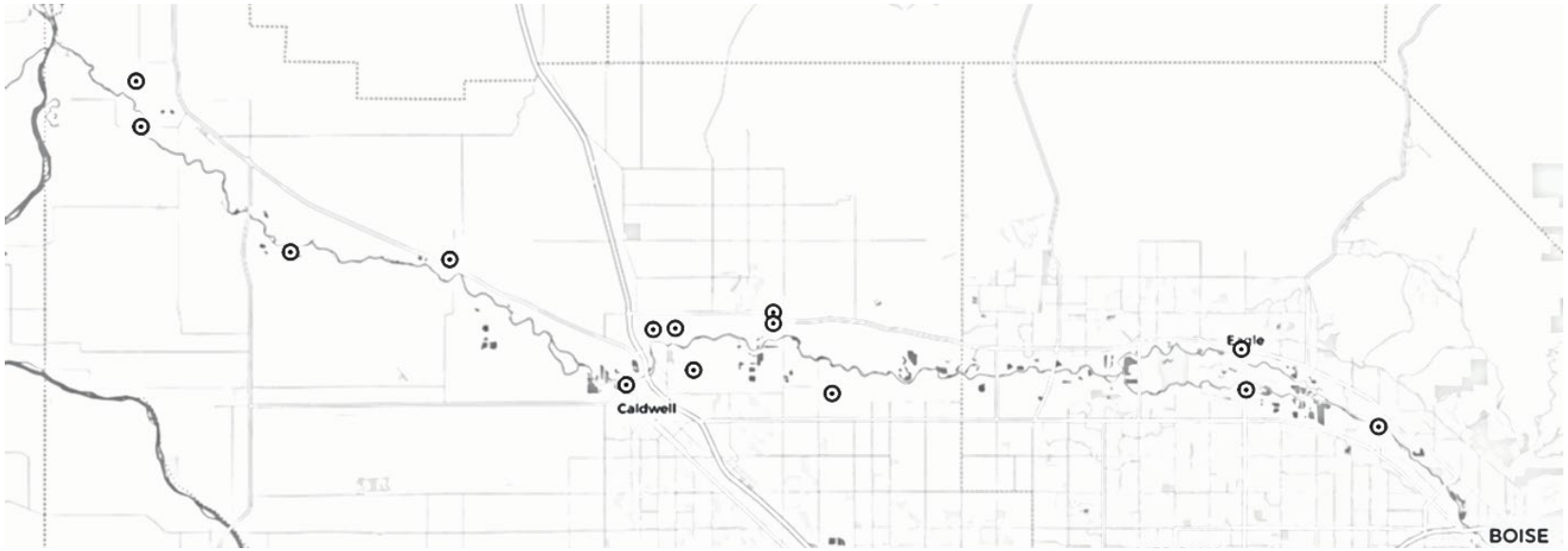
REACH FLOWS IN CFS		ACTUAL DATE	NATURAL FLOW	ACTUAL FLOW	RMAINING NAT FLOW	OPERATN FLOW	STORED RESRVOIR FLOW	NATURAL EVAP	TOTAL FLOW DIV	TOTAL RCH DIV	REACH GAIN	LAST RIGHT
TWIN SPRINGS		Jun 30	2052.	2050.	2050.	0.	0.	0.	2.	2.	2052.	19031214
FEATHERVILLE		Jun 30	1101.	1090.	1091.	0.	-1.	0.	10.	11.	1101.	19031214
FTHRVL TO ANDERSN RANCH		Jun 30	1168.	585.	1158.	0.	-573.	22.	0.	0.	67.	19031214
ANDSN RANCH TO ARROWROCK		Jun 30	3298.	4042.	3286.	0.	755.	14.	0.	0.	78.	19031214
MORES CREEK		Jun 30	187.	182.	182.	0.	0.	0.	4.	5.	187.	19031214
ARROWROCK TO LUCKY PEAK		Jun 30	3500.	4293.	3484.	0.	809.	14.	0.	1.	15.	19031214
LUCKY PEAK TO DIVSN DAM	*	Jun 30	3430.	2181.	1628.	0.	553.	0.	1786.	2112.	-70.	19031214
DIVSN DAM TO BOISE	*	Jun 30	3430.	1730.	1180.	0.	550.	0.	448.	450.	0.	19031214
BOISE TO GLENWOOD BR		Jun 30	3274.	1320.	776.	0.	544.	0.	248.	254.	-156.	19031214
GLENWOOD BR TO MIDDLTN*		Jun 30	3391.	794.	0	250.	544.	0.	643.	644.	117.	19031214
MIDDLETON TO CALDWELL		Jun 30	3800.	721	127.	50.	544.	0.	481.	481.	409.	19500511
CALDWELL TO NOTUS	*	Jun 30	4055.	578.	0.	50.	528.	0.	383.	398.	255.	19500511
NOTUS TO PARMA		Jun 30	4532.	764.	378.	0.	387.	0.	149.	197.	476.	20220101
								TOTALS:	4154.	4555.	4532.	

* - INDICATES FLOW ESTIMATED, NOT MEASURED

**Below Middleton, Boise River Flows are largely dependent on drain discharges*

Mean Monthly Flows (cfs), All Gaged Drains



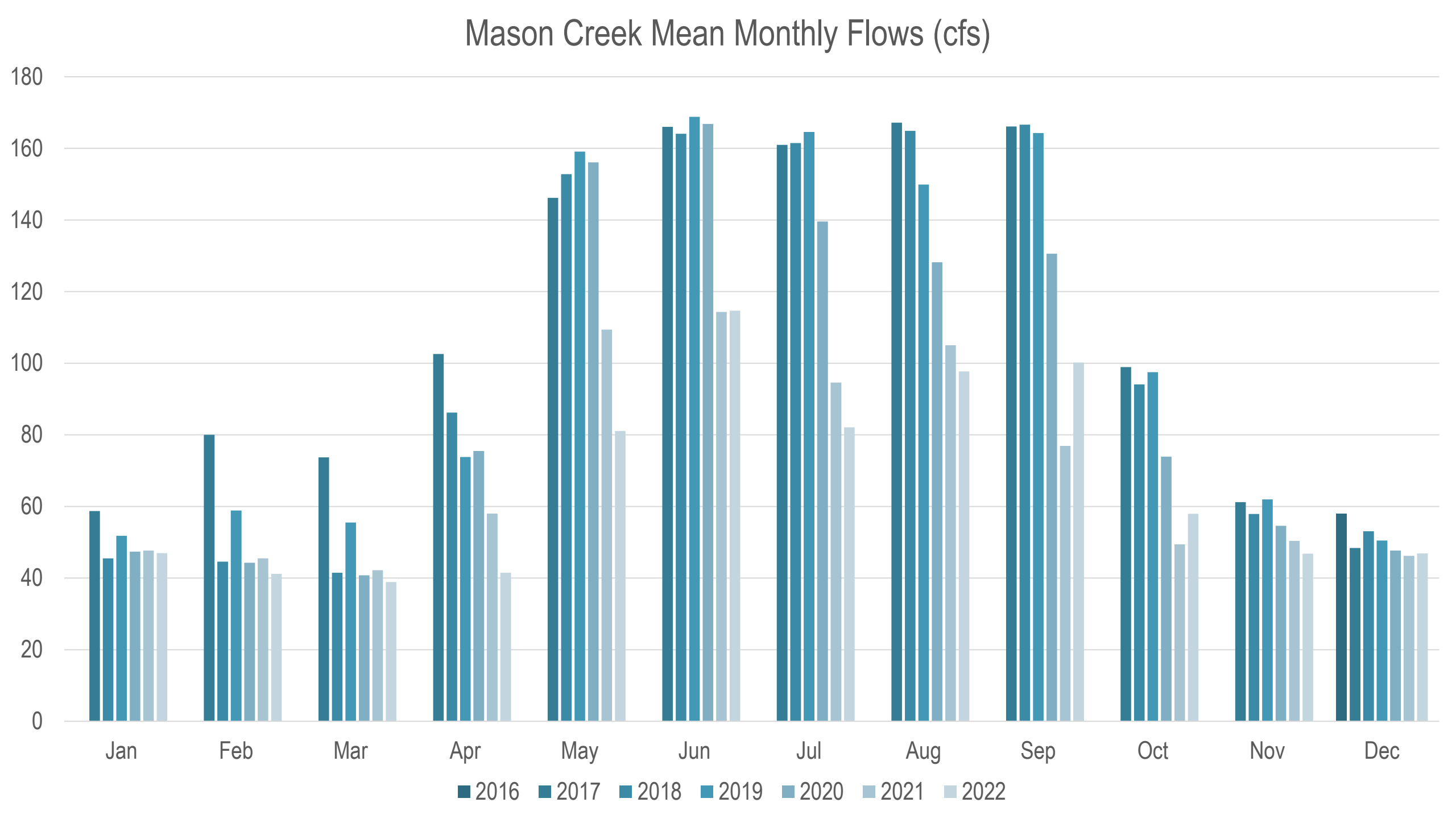


USGS Stream Flow Gages (2017-present)

Eagle Drain
Fifteen Mile Creek
Mason Creek
Mill Slough
South Middleton Drain
East Hartley Gulch
West Hartley Gulch
Conway Gulch
Dixie Drain

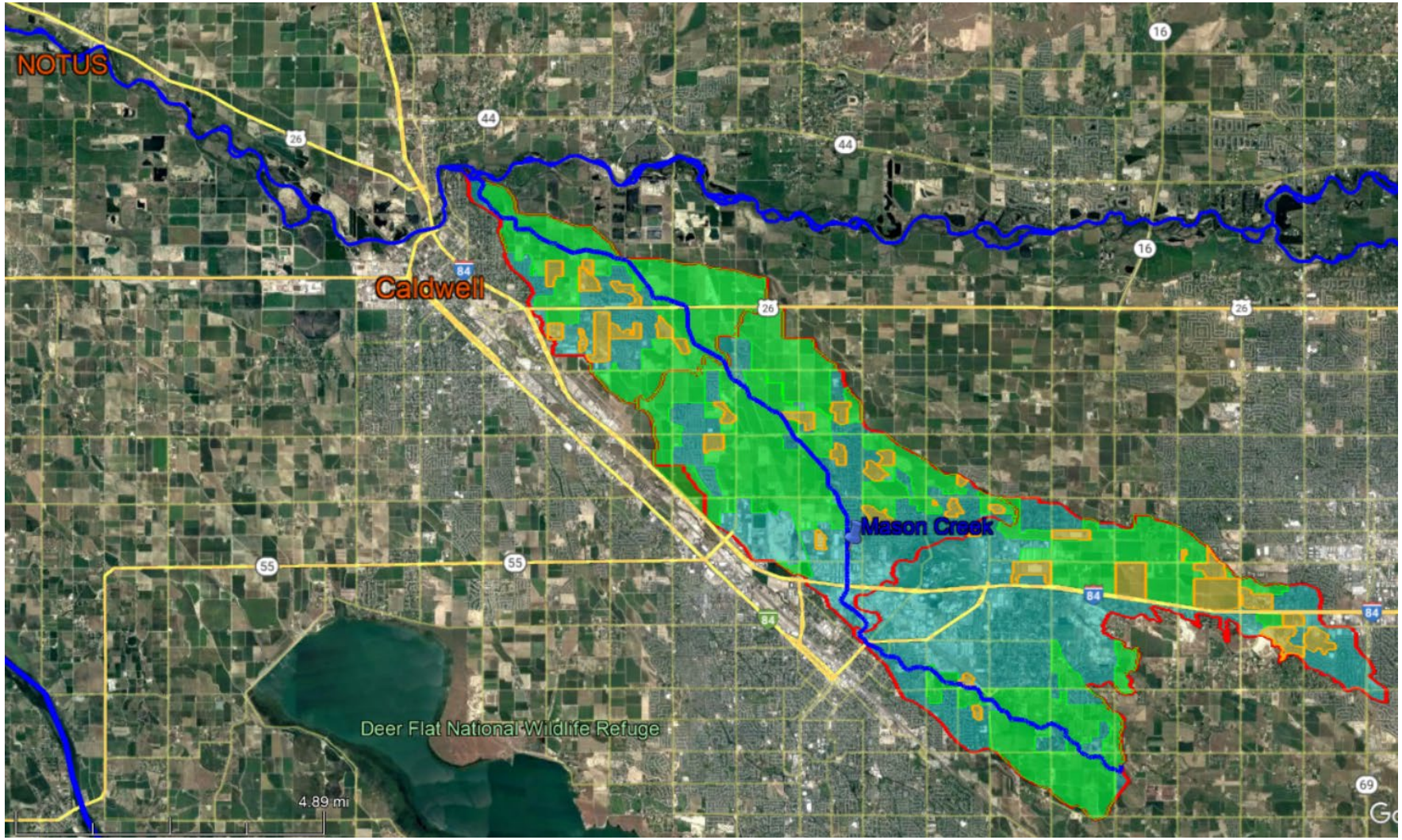
June 30, 2022

Drain	June 30 Mean Daily Flow, 2017-2022 (cfs)	June 30, 2022 Mean Flow (cfs)	Difference (cfs)
Eagle Drain	34	40	+6
Fifteen Mile Creek	103	97	-6
N Middleton Drain (Mill Slough)	38	25	-13
S Middleton Drain	71	43	-28
Mason Creek	151	75	-76
West Hartley Gulch	21	12	-9
East Hartley Gulch	55	47	-8
Conway Gulch	31	27	-4
Dixie Drain	160	135	-25
TOTAL	**664**	**501**	**-163**


Mason Creek Mean Monthly Flows (cfs)
180
160
140
120
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2016
2017
2018
2019
2020
2021
2022

Mason Creek Drainage Land Use Conversion (orange) & Discharge Above Boise River, Caldwell to Notus Reach

	Total Conversions	Total %	Annual %
Land Use Conversion 2016-2020:	1,351 acres	15%	3%



Lessons from June 30, 2022

- Boise River would have approached zero flow between Caldwell and Notus if this occurred outside flow augmentation
- Deliveries downstream of Caldwell rely on return flows and groundwater inflow
- Water supply reliability and security requires an understanding of future drain flows and groundwater flows to Boise River

If this trend continues…

1. **Downstream water rights will be shorted**
2. **State law may require administering water rights on the Lower Boise River and its tributaries**

Water Supply Effects: IWUA 2022 Urbanization Resolution

- **Effects/Issues**:
  - Piping and lining canals, laterals and drains:
    - reduces seepage loss
    - reduces ground water recharge
    - increases water supply in canal systems
  - Urban development alters drainage patterns
  - Conversion from flood irrigation to pressure irrigation eliminates or reduces:
    - field seepage that recharges aquifers and replenishes surface water sources
    - irrigation return flows that
      - replenish surface water sources
      - carry sediment and nutrient loads that can adversely impact water quality
  - Consequently, urban development reduces water available for recapture and reuse

Water Supply Effects: IWUA Resolution

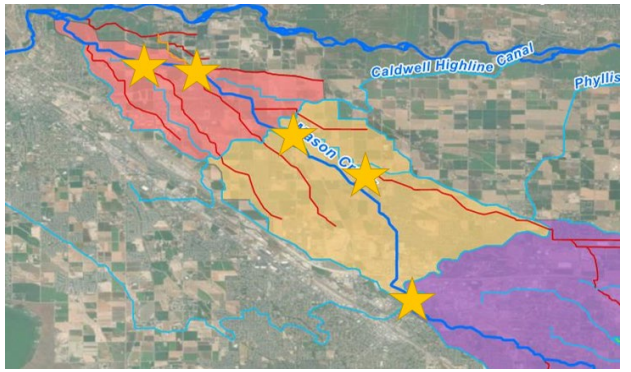
- **Action**: Seek funding assistance for technologies for monitoring, assessment and modeling to assess, plan for and manage the hydrologic impacts of land use changes on surface drainage, return flows, water reuse, ground water recharge and aquifer levels, water supplies and water quality

- January, 2023: IWUA Legislative Committee supports development and pursuit of funding for the Treasure Valley Water Supply & Assessment Project

Treasure Valley Water Supply Assessment and Sustainability Project

Phase 1: Initiate Robust Drain Monitoring, Hydrologic Analysis & Online Data Hub (2023-2024)

- Project development
- Install measuring stations in unmeasured drains
- Collect and analyze flow data
- Develop Boise River mass balance & trend analysis



Phase 2: Continue Monitoring & Analysis, Develop Land Use/Hydrologic Modeling & Online Data Hub (2024-2027)

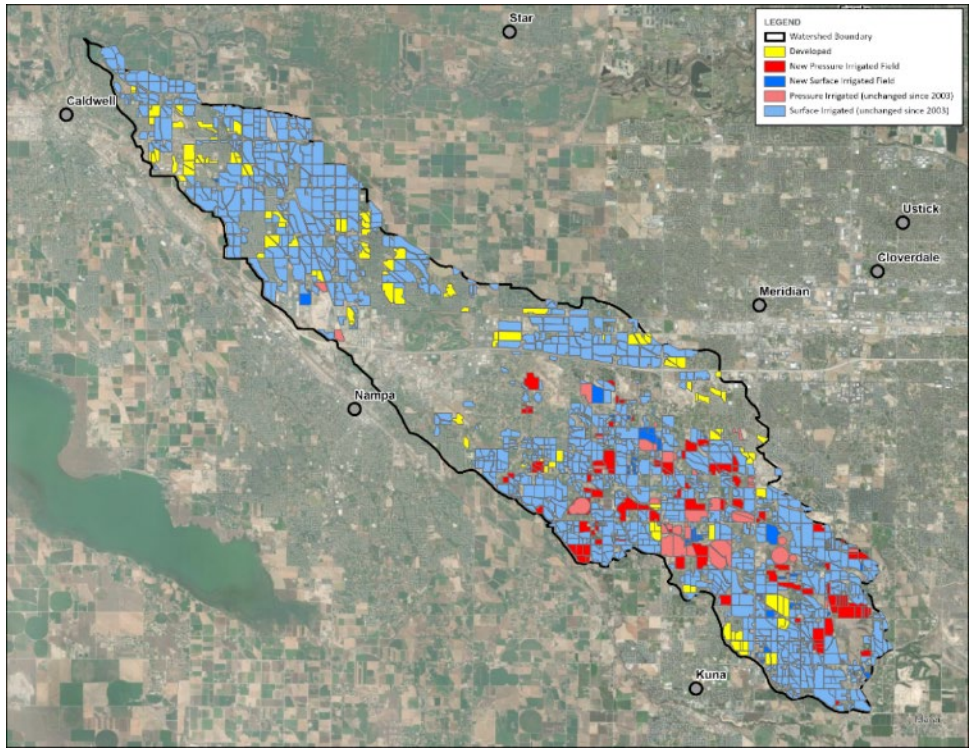
- Correlate changes in land use and other factors to measured changes in drain flows
- Develop and integrate hydrologic models to estimate and forecast water supply changes
- Develop online data hub for monitoring data, hydrologic analysis, and modeling

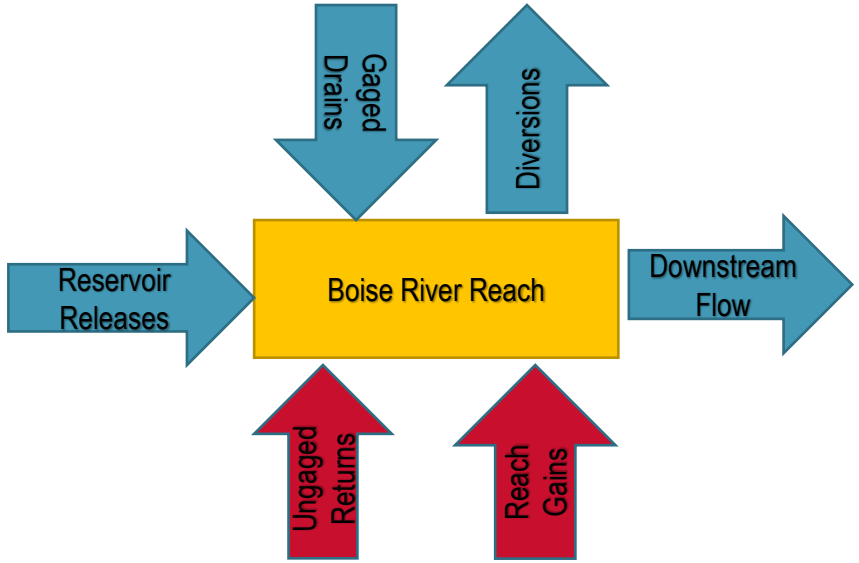
Phase 3: Identify, Evaluate & Recommend Water Supply Management Alternatives (2023-2028)

- Manage/mitigate hydrologic impacts of land use changes
- Groundwater management and mitigation (e.g. managed recharge)
- Surface water supply management and mitigation
- Water conservation incentives

Phase 1: Collect and Analyze Flow Data

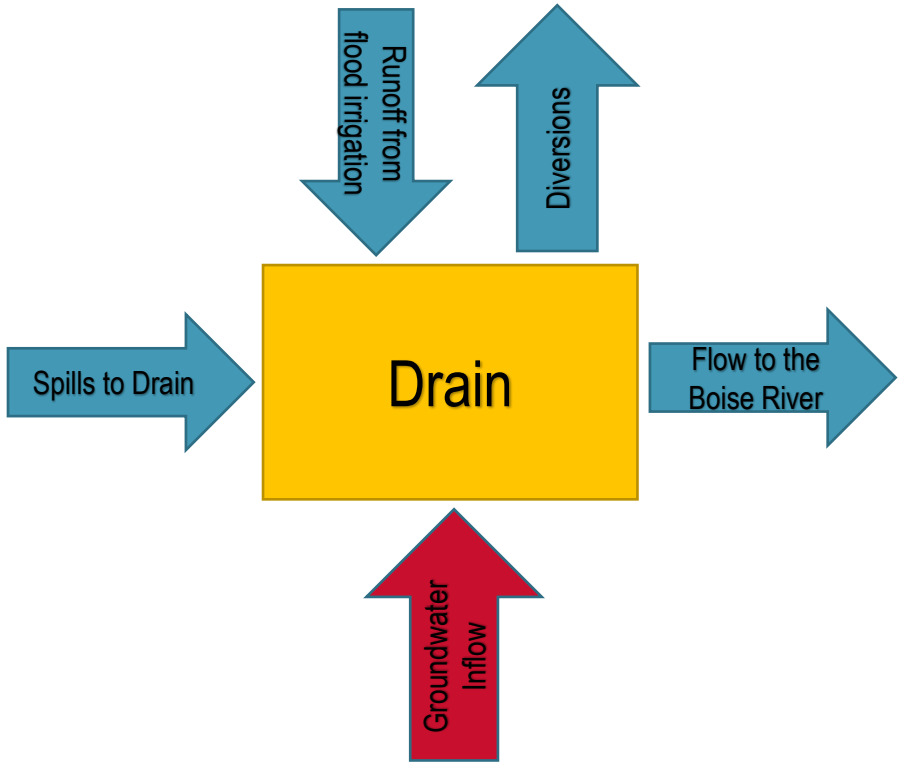
- Monitor inflows and outflows within each drainshed
  - Large Drains and Subdrains
  - Diversions
  - Key Canal Crossings
  - Coordinate with water managers
  - Develop long-term plan to install and maintain network
- Develop Boise River Mass Balance
  - Measured inflows
  - Recorded diversions
  - Determine what isn't being measured
- Complete Drain Flow Trend Analysis
  - Quantify changes in drains
  - Evaluate correlation with changes in land use, management, and water use





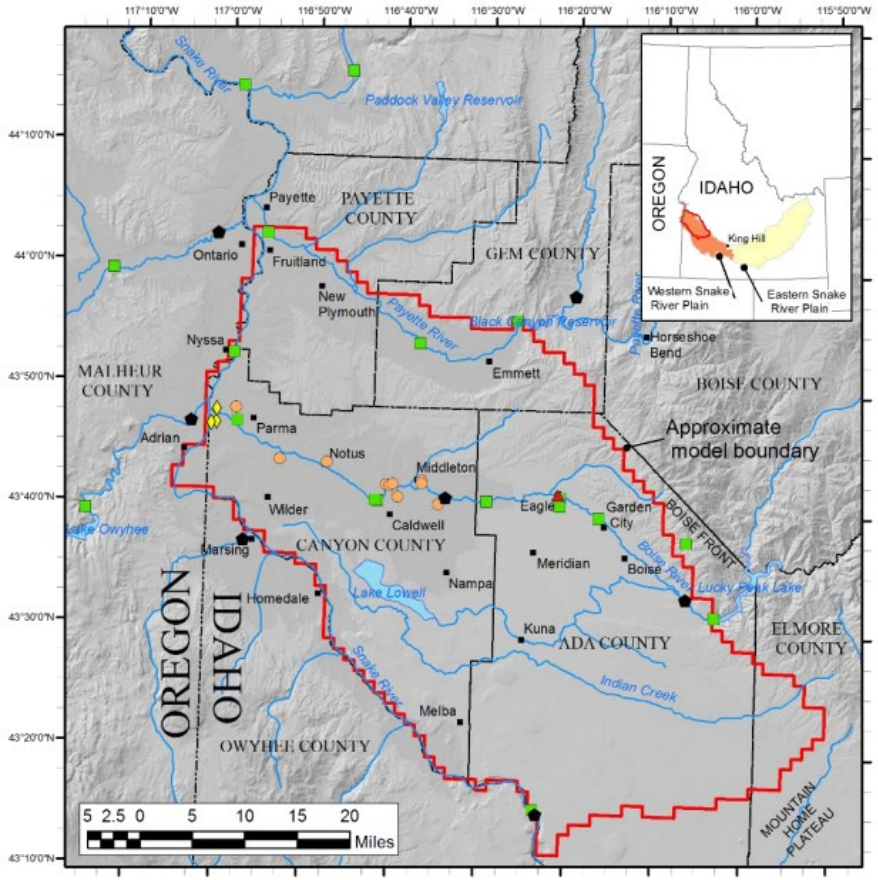
Phase 2: Modeling Drain Flow: Completing the Hydrologic Picture

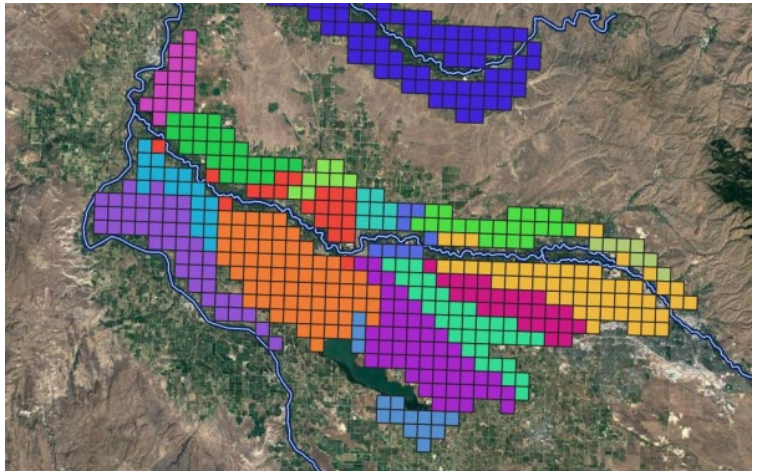
- Builds on TVGFM
  - Groundwater flow to drains
  - Land use/ET data
- Incorporates changes to direct runoff and water delivery operations
- Provides data to surface water delivery entities on current and future drain flows



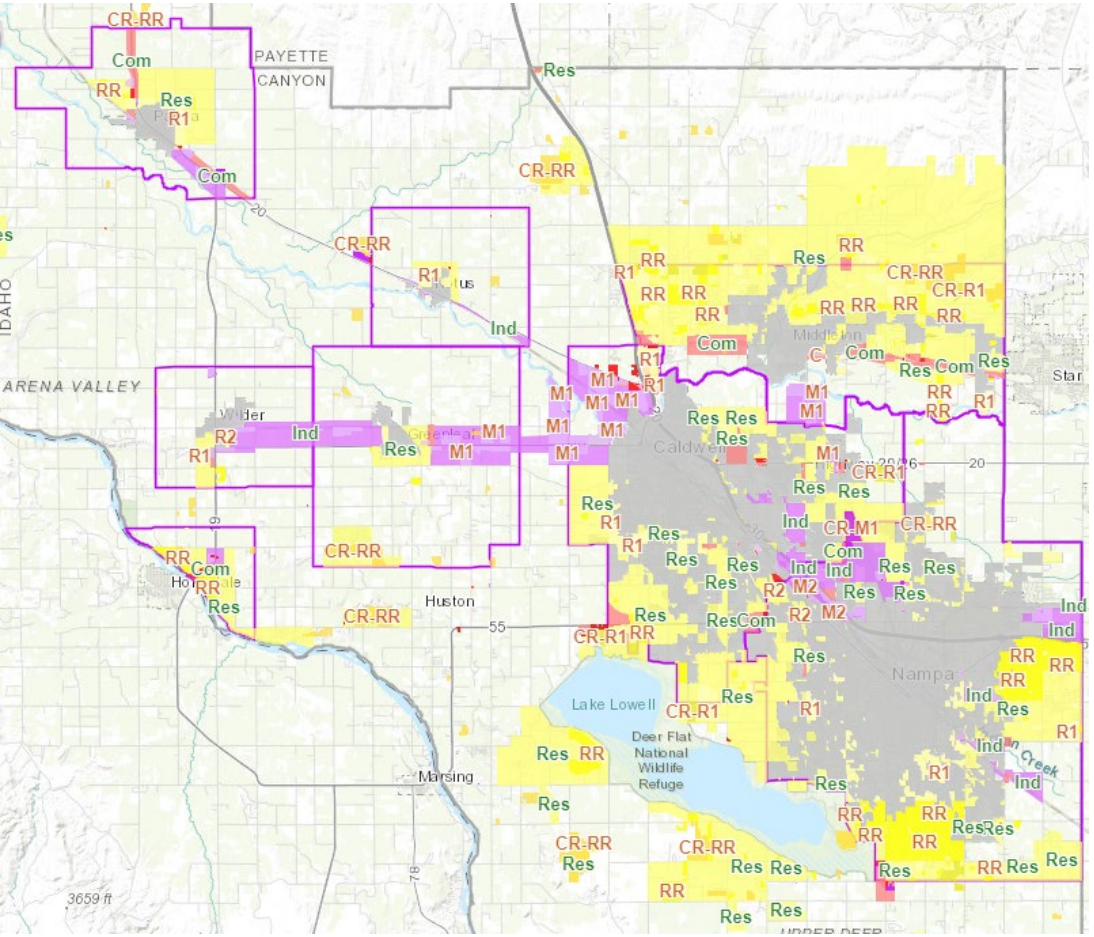
Phase 2: Building on the Treasure Valley Groundwater Flow Model

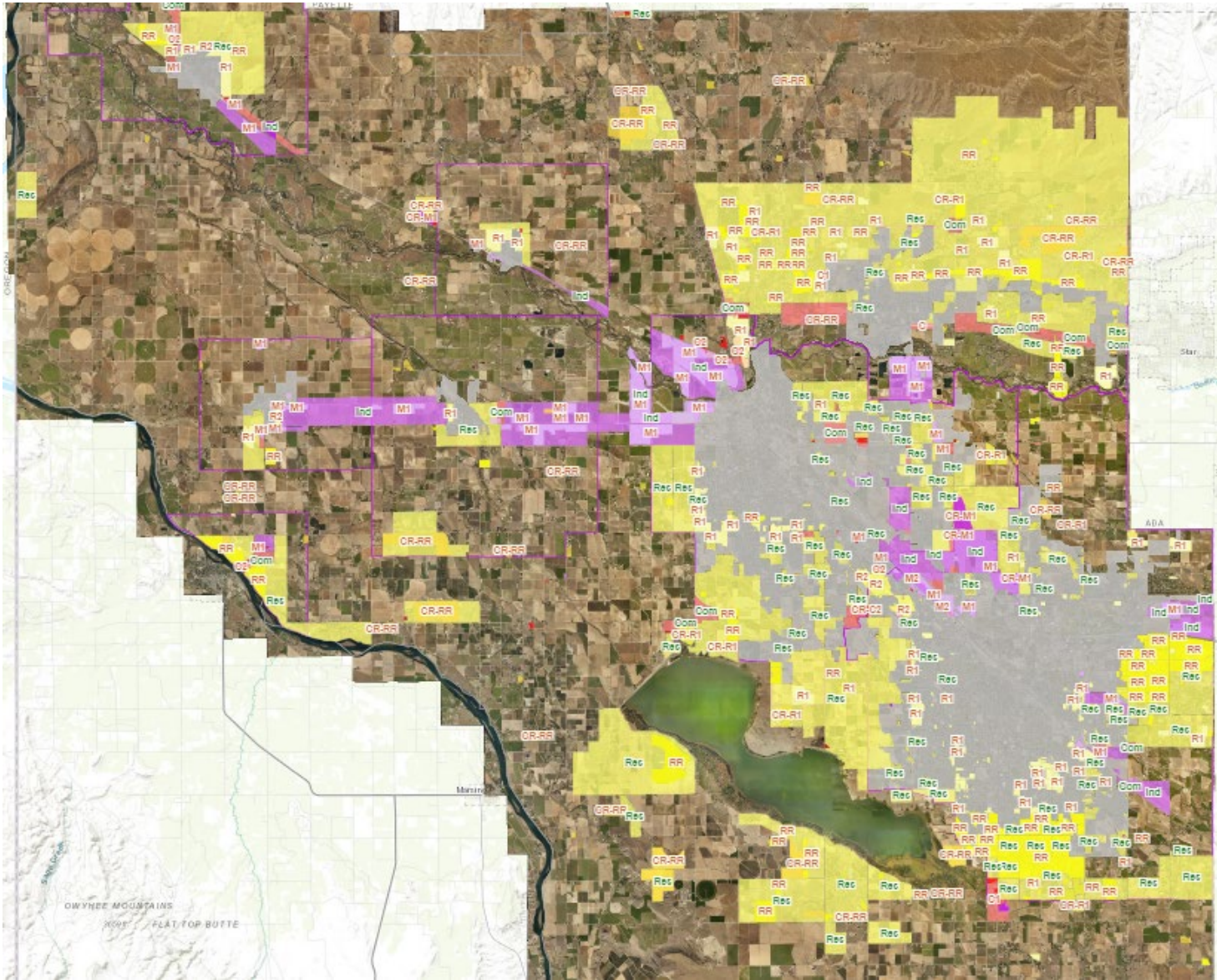
- Flow for groundwater to drains is approximated in TVGFM, calibrated outside irrigation season
  - Important input for this analysis
  - Incomplete to calculate drain flow in irrigation season
- Other data from TVGFM that will support this work
  - Stream gages at major drains
  - Land use and ET data
- Consultation with USGS & IDWR



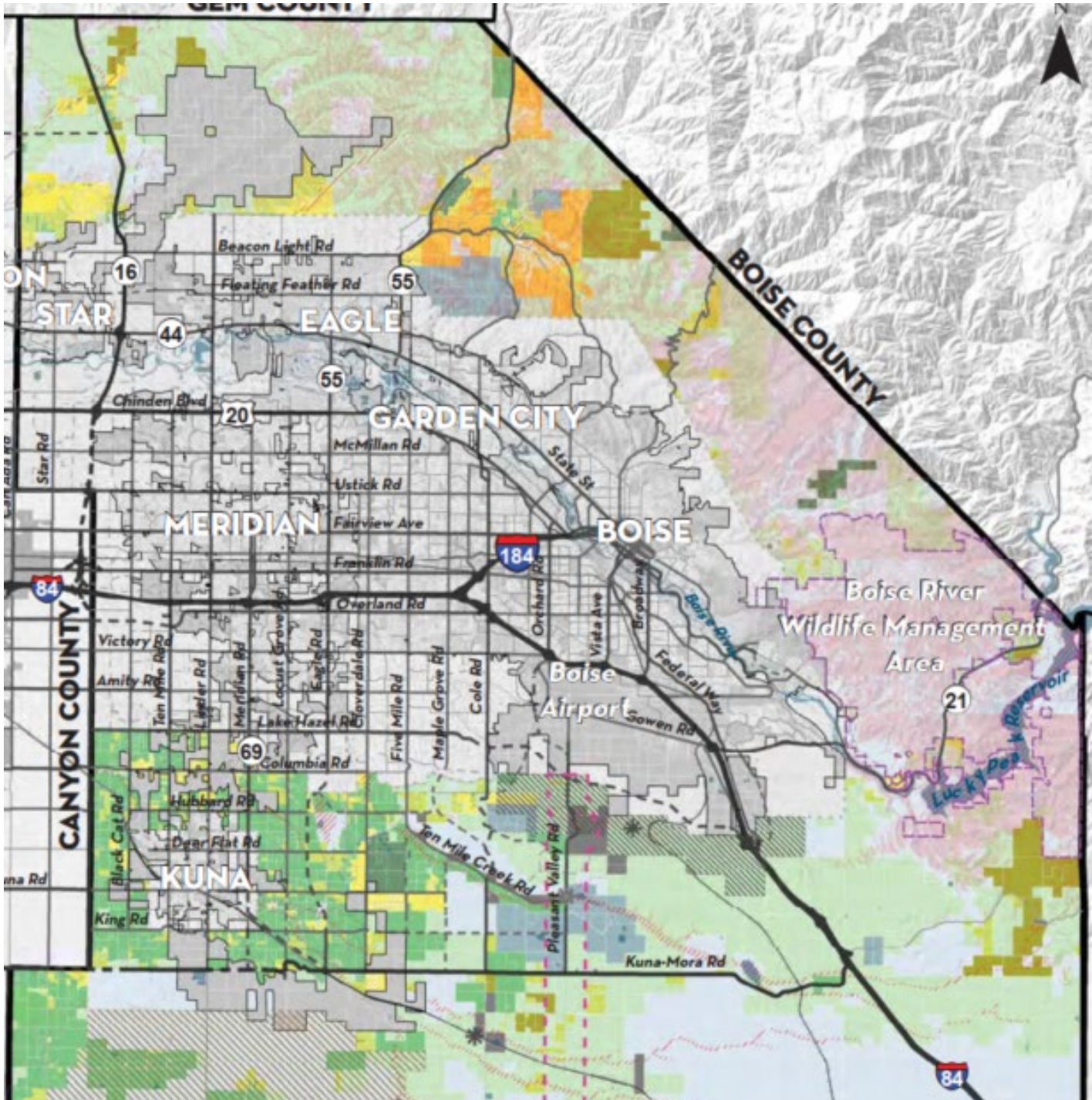


Phase 2 - Forecasting Hydrologic Impacts of Urbanization: Canyon County Land Use Plan



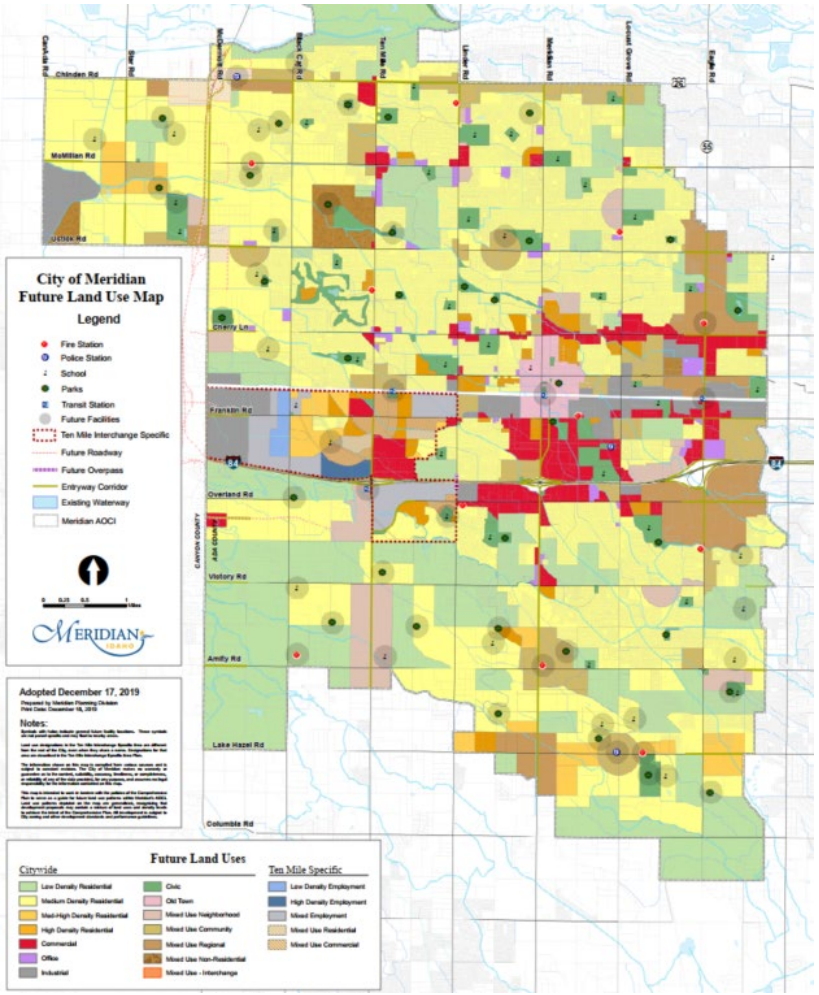


Phase 2 - Forecasting Change: Ada County Land Use Plan

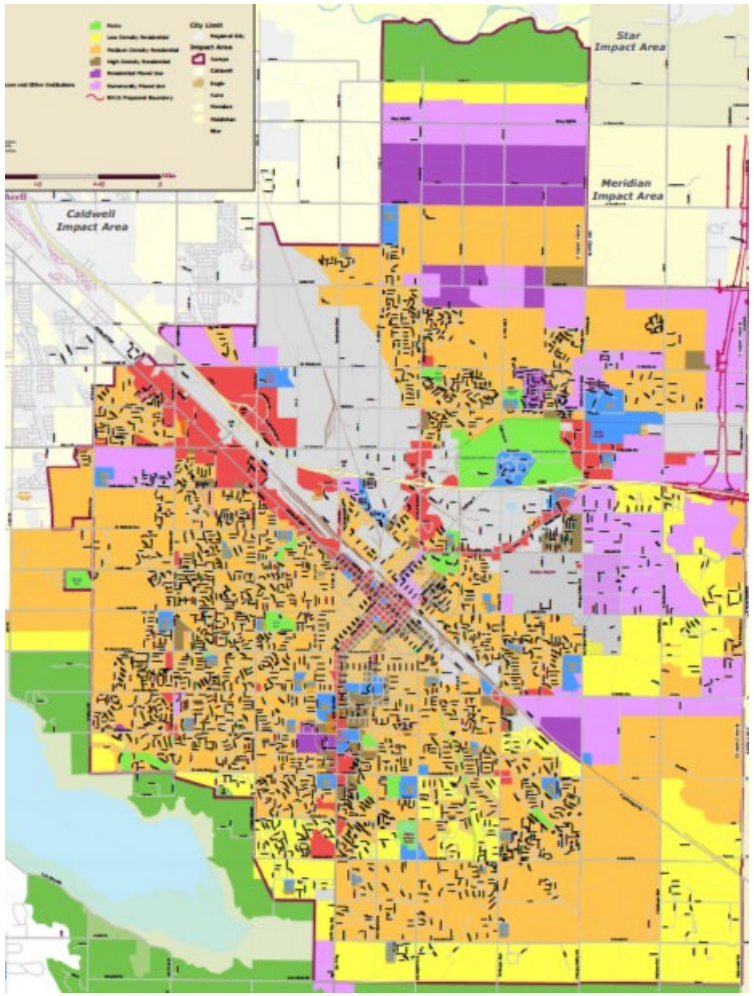


Phase 2 - City Land Use Plans

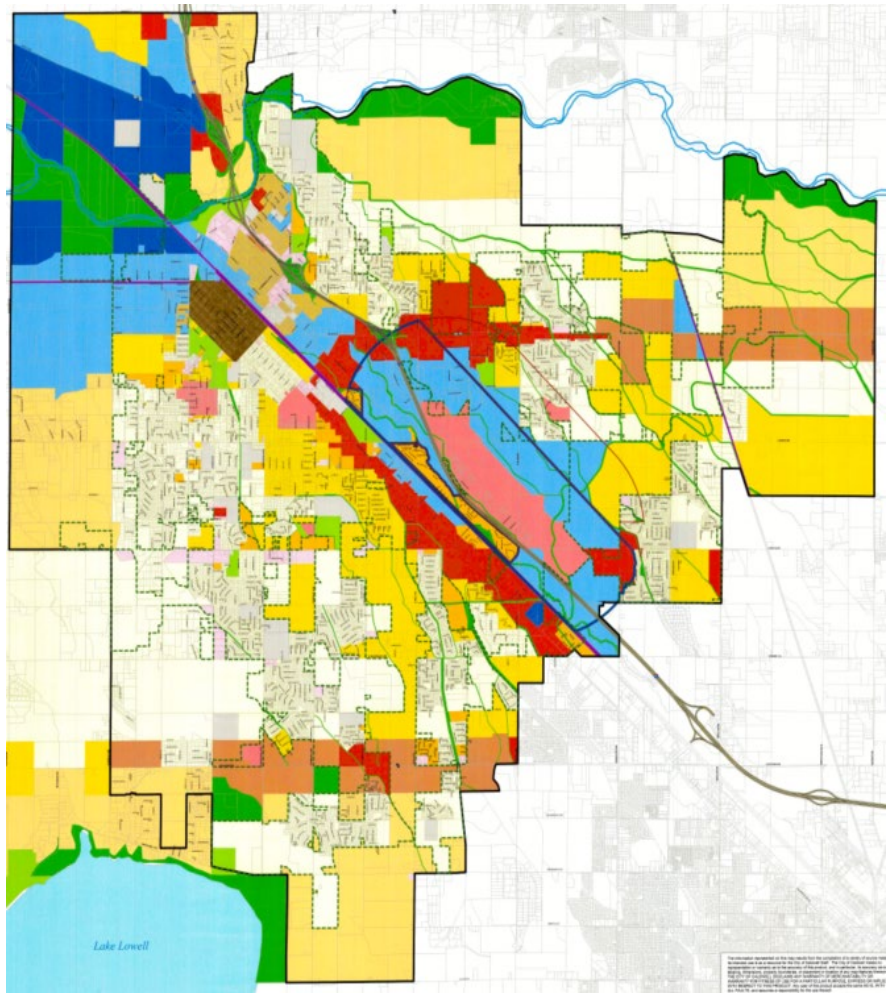
Meridian



Nampa

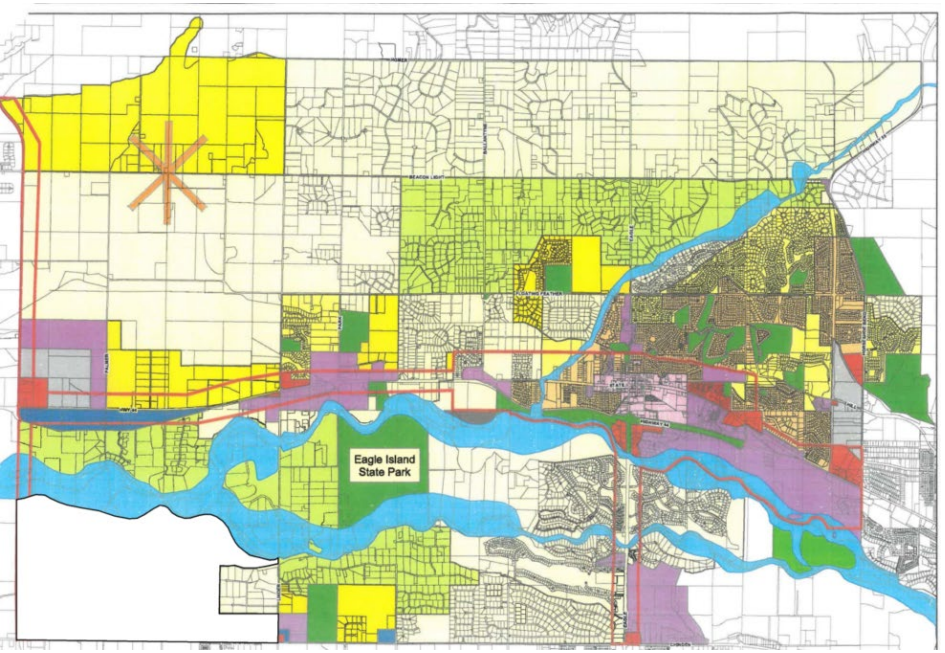


Caldwell

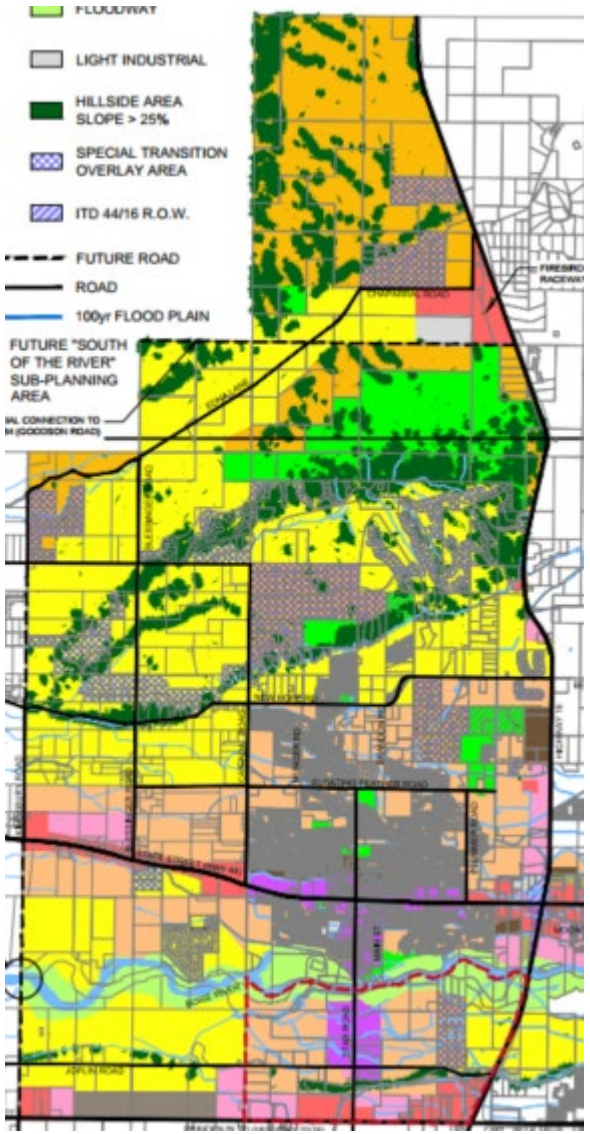


Phase 2 - City Land Use Plans

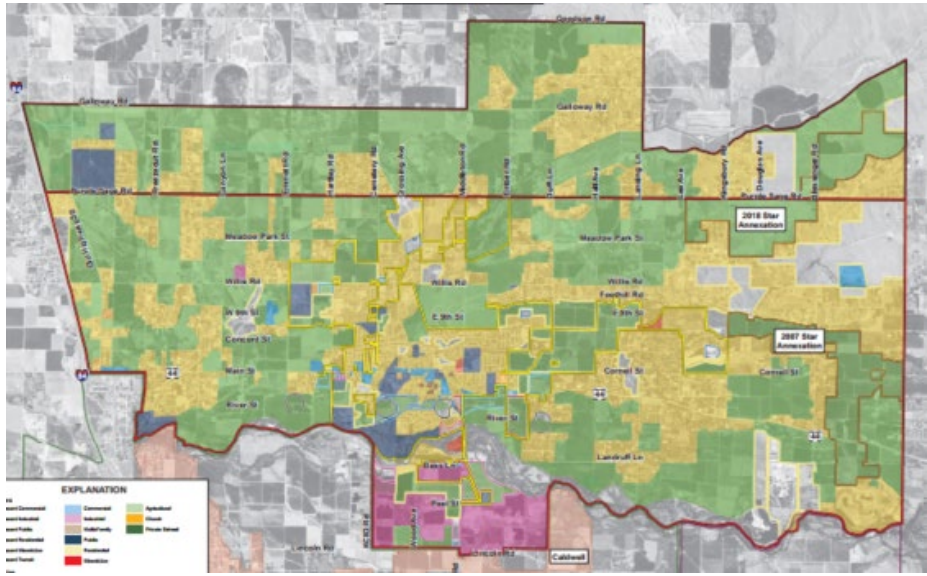
Eagle



Star



Middleton

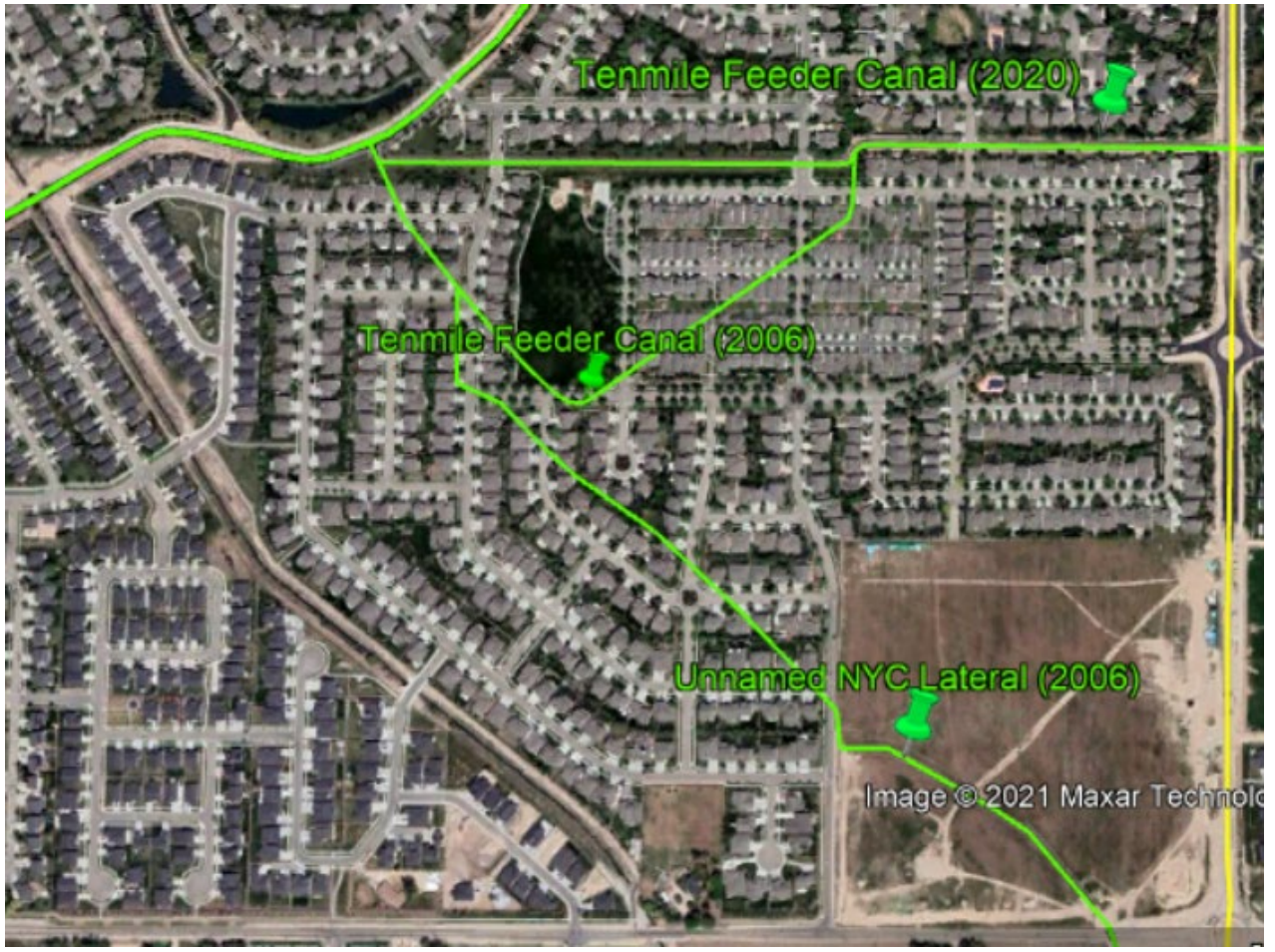


Phase 3 – Water Management & Mitigation Options

- Manage/mitigate hydrologic impacts of land use changes
- Groundwater management and mitigation (e.g. managed recharge)
- Surface water supply management and mitigation
- Water conservation incentives

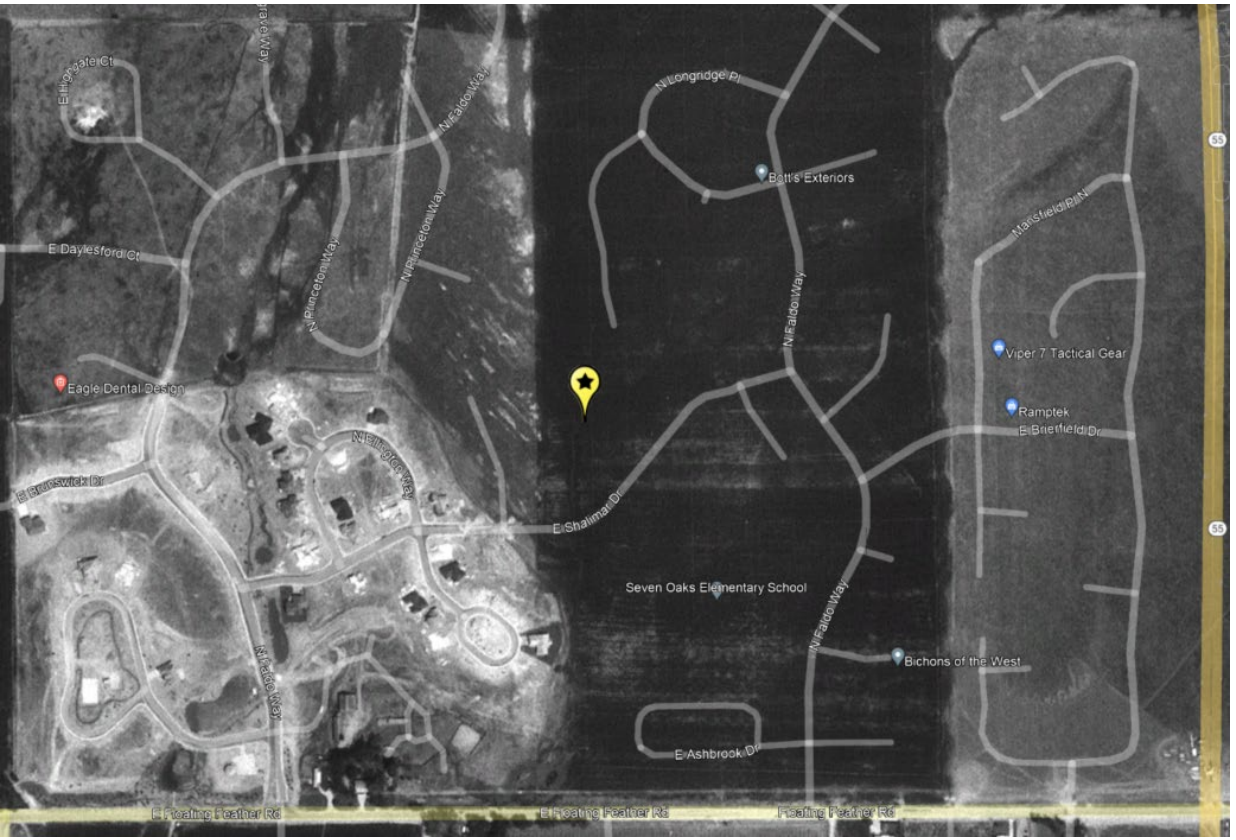
Phase 3 – Water Management & Mitigation Options: Subdivision Planning

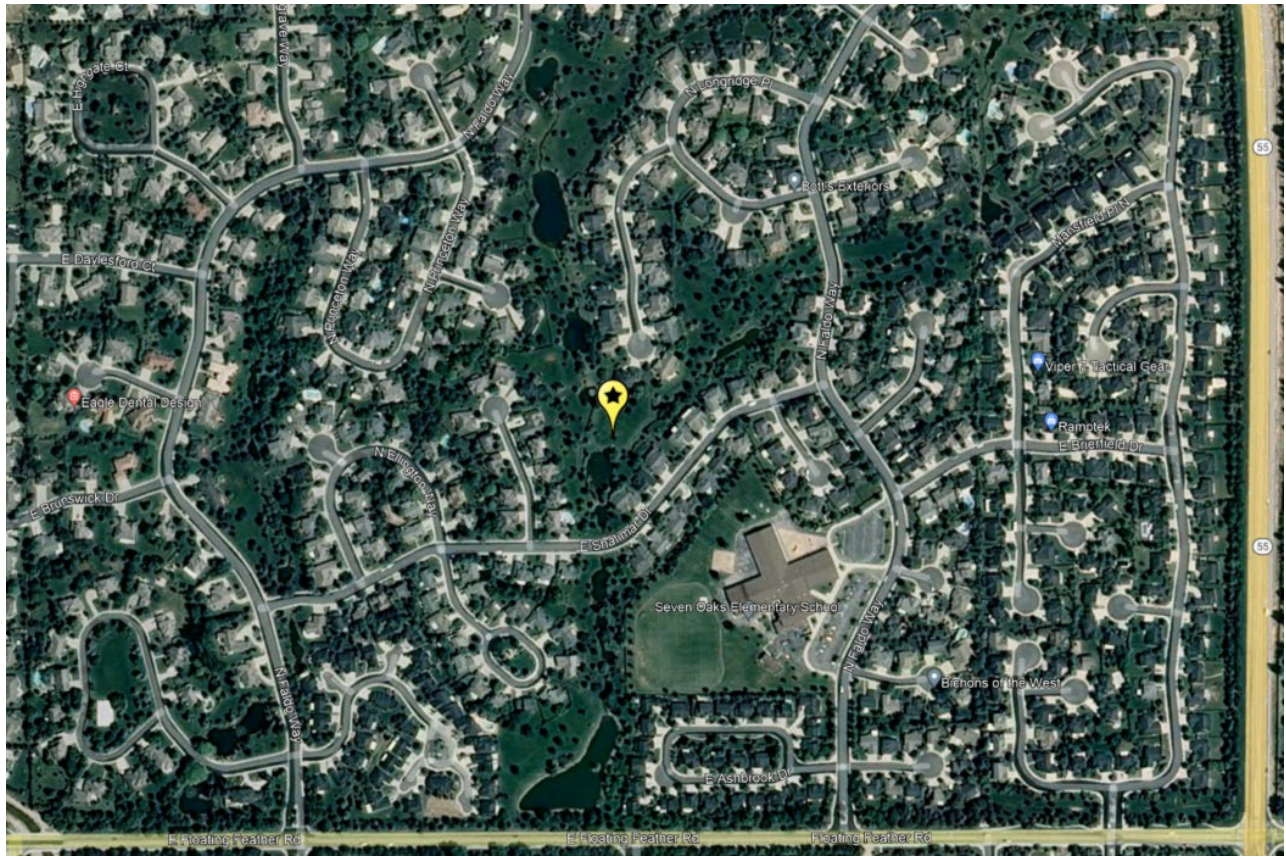
- Retain unlined canals & laterals?



Phase 3 – Water Management & Mitigation Options: Subdivision Planning

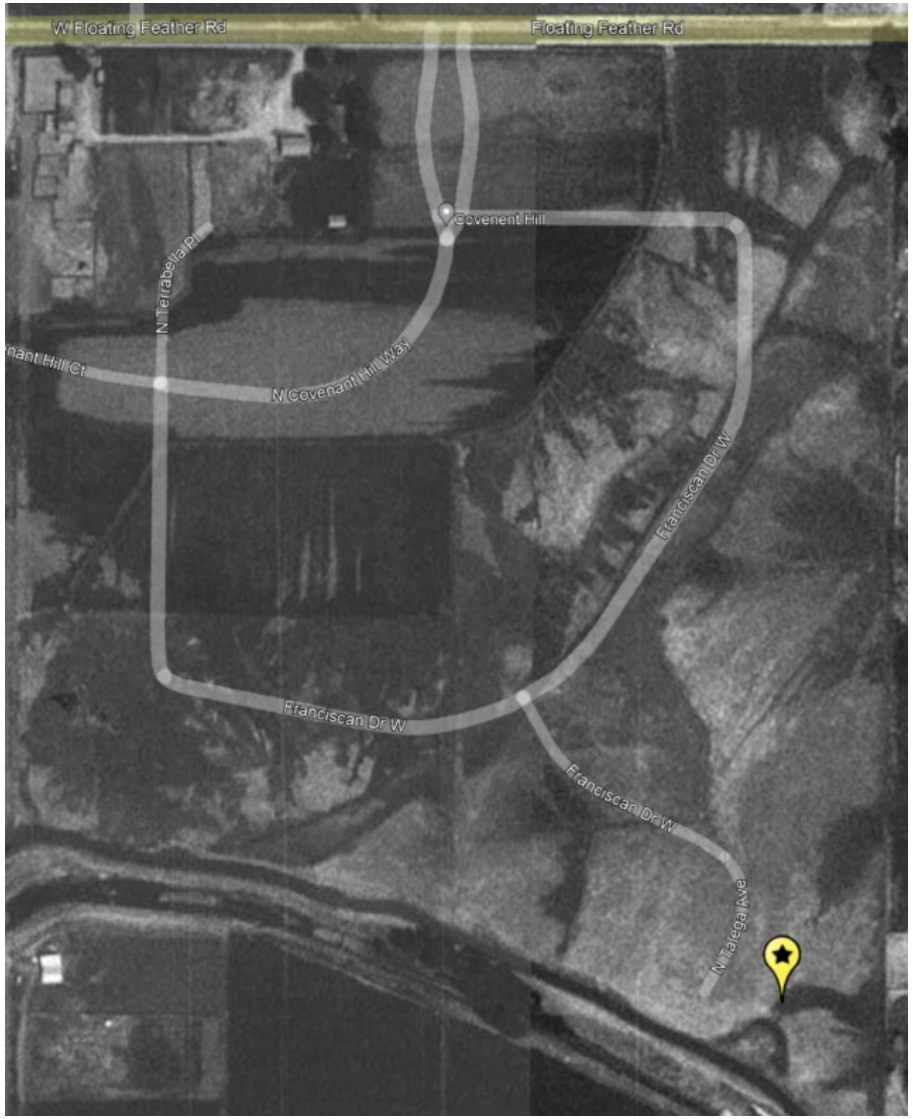
- Retain unlined canals & laterals?
- Diversion ponds?





Phase 3 – Water Management & Mitigation Options: Subdivision Planning

- Diversion ponds?



Project Cost Summary

Phase 1 Costs (2023-2024)

➢ Project Development	**$ 15,000**
➢ Start-up Costs:	**$131,000**
➢ Annual Maintenance:	**$130,000**
➢ Analytics:	**$50,000**
	$326,000

Phase 2 Costs (2024-2027)

➢ Annual Maintenance:	**$130,000**
➢ Annual Analytics & Modeling:	**$200,000**
	$330,000

Phase 2 Total ($990,000)

Phase 3 Costs (2023-2028) **(TBD)**

Project Start Up & Annual Maintenance Costs

Start Up Costs	
Transducers, Recording, and Telemetry Equipment	$75,000 ($1,500 per site x 50 sites)
Installation (WD63 Wages)	$6,000 ($120 per site x 50 sites)
Flow Measurement Equipment	$50,000 ($25,000 per ADCPx2)
Total Start Up Costs	**$131,000**

Annual Maintenance Costs	
General Equipment Maintenance	$10,000 ($200 per site x 50 sites)
Data Collection and Storage	$50,400 ($84 per site per month x 50 sites x 12 months)
Website Maintenance	$40,000
WD63 Wages	$30,000
Estimated Annual Maintenance	**$130,000**

Project Sponsors & Funding

Treasure Valley Water Supply Assessment and Sustainability Project Phase 1: Potential Project Supporters (as of 5/26/23)

Project Supporter	Funding Request	Commitment	Received
1. Water District 63 (irrigation organizations)	$ 71,000.00	$ 36,000.00	
2. Treasure Valley Water Users Association (Project Development)	$ 15,000.00	$ 15,000.00	$ 13,675.00
3. Flood Control District No 10	$ 5,000.00	$ 10,000.00	
4. Idaho Water Resource Board	$ 155,500.00		
5. Ada County	$ 50,000.00		
6. Canyon County	$ 20,000.00		
7. City of Boise	$ 5,000.00		
8. City of Caldwell	$ 5,000.00		
9. City of Eagle	$ 5,000.00		
10. Garden City	$ 5,000.00		
11. City of Middleton	$ 5,000.00		
12. City of Nampa	$ 5,000.00		
13. Idaho Power	$ 5,000.00		
14. Veolia Water	$ 5,000.00		
TOTAL:	**$ 356,500.00**	**$ 61,000.00**	**$ 13,675.00**

Thank you for your time

American Falls Joint Water Sustainability Grant Application

American Falls Reservoir District – Alan Hansten and Kevin Lakey

Idaho Power – Kresta Davis

US Bureau of Reclamation – Nicole Carson and Ryan Bliss

June 2, 2023

Project Background

History:

- The first power plant was built in 1902 on the falls and was acquired by the Idaho Power Company in 1916.
- Located on the American Falls Dam, which created the American Falls Reservoir, both owned and operated by the U.S. Bureau of Reclamation.
- There have been two American Falls Dams. The first was built from 1925-1927 and the second from 1974-1978.
- American Falls Dam is a 94-foot-high composite concrete gravity dam on the Snake River near American Falls, Idaho.
- In 1976, the Idaho Power Company built the dam's current power plant which consists of three generators with a capacity to produce 92,340 kilowatts of hydroelectricity.
- During reconstruction, the reservoir area was surveyed and the total storage capacity is now 1,672,600 acre-feet.

Today:

- American Falls Reservoir and Dam primarily used for irrigation and secondarily for power production, recharge, recreation (including fishing, boating, wildlife, picnicking, etc.) and incidental flood control.

Project Sponsor

American Falls Reservoir District 2

- 100% of AFRD2 water is delivered from the American Falls Reservoir (via water right 01-6) **AFRD2 owns no other water in Water District 01*
  - This water serves 62,361 irrigated acres

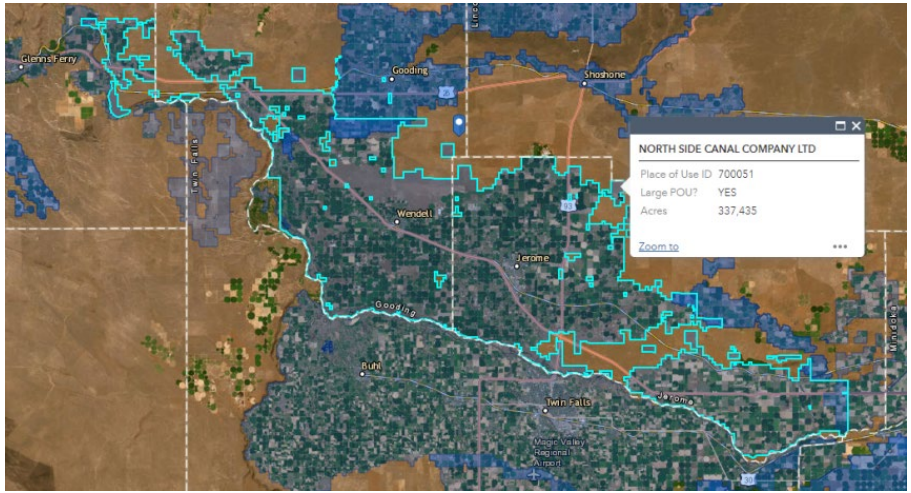
- Additional beneficial uses
  - Hydropower production within AFRD2's system generates $1-2M annually
  - AFRD2 is a major contributor to the State's managed recharge program
    - In 2022/2023 AFRD2 recharged over 90,000-acre feet to the ESPA

- AFRD2 is a major partner in the annual American Falls Reservoir shoreline riprap project, ensuring the integrity of the reservoir
  - Contributing labor and equipment

Project Sponsor

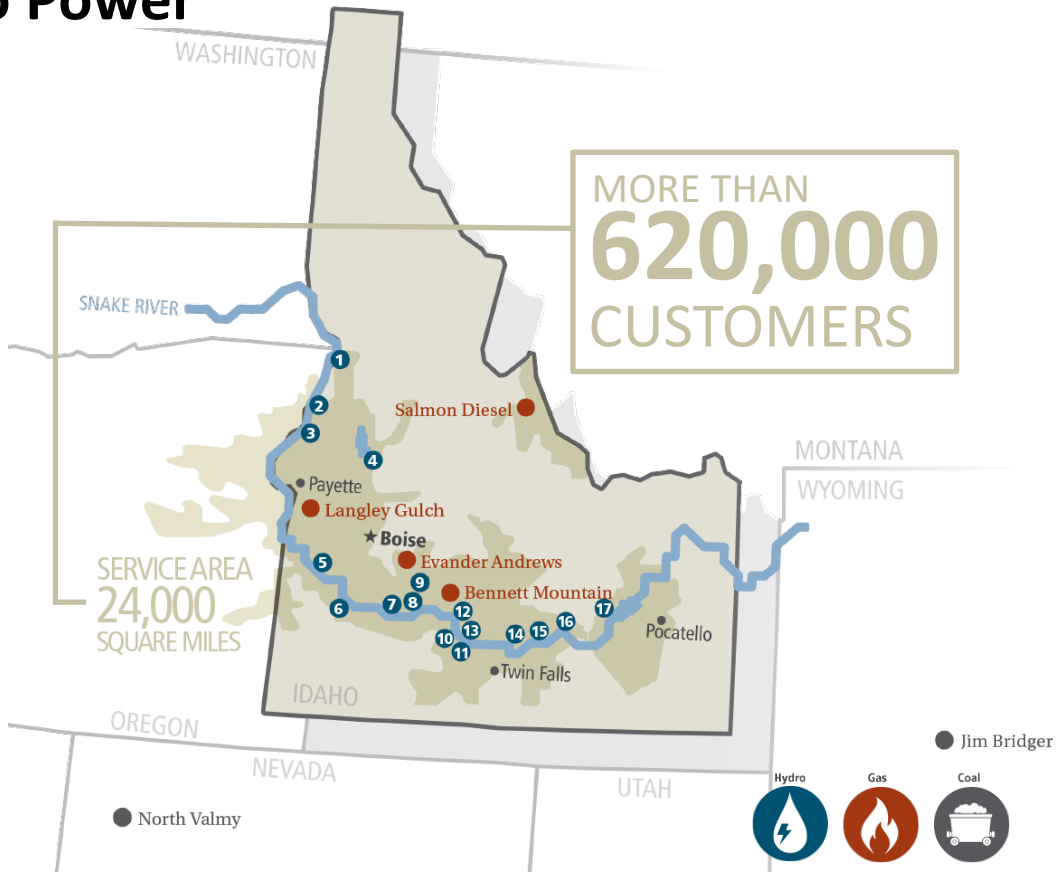
North Side Canal Company, Ltd.

- 160,000 Irrigated Acres - Hazelton to King Hill
- 5 Power Plants - 106,000 MWH's/year for 10,000 homes
- 113,000 Acre-Feet of ESPA Recharge for 2021/2022 Season
- 1 MAF of Irrigation Water Used Annually
- 431,000 Acre-Feet in Am. Falls Res. (43% of total annual supply)
- Lead Contractor on Annual Shoreline Rip-Rap Projects for 38 years



Project Sponsor

Idaho Power

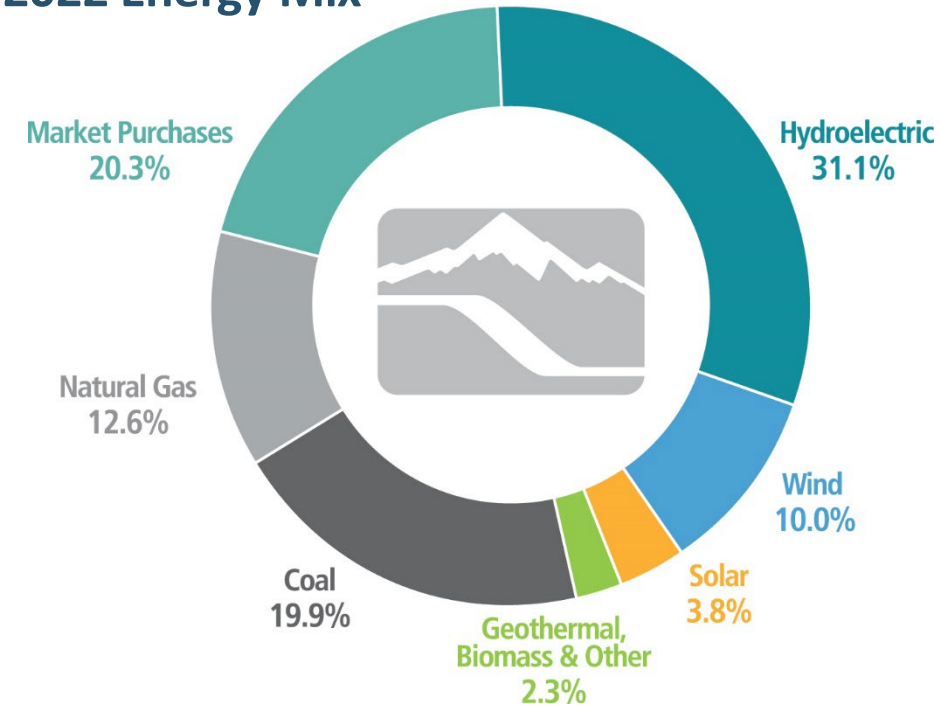


1	Hells Canyon	391,500 kW
2	Oxbow	190,001 kW
3	Brownlee	675,000 kW
4	Cascade	12,420 kW
5	Swan Falls	27,170 kW
6	C.J. Strike	82,800 kW
7	Bliss	75,038 kW
8	Lower Malad	13,500 kW
9	Upper Malad	8,270 kW
10	Lower Salmon	60,000 kW
11	Upper Salmon	34,500 kW
12	Thousand Springs	6,800 kW
13	Clear Lake	2,500 kW
14	Shoshone Falls	14,729 kW
15	Twin Falls	52,898 kW
16	Milner	59,448 kW
17	American Falls	92,340 kW

Project Sponsor

Idaho Power

2022 Energy Mix



This shows the energy we generate from company-owned resources and energy we buy through long-term contracts with wind, solar, biomass, geothermal and small-scale hydro generators.

The mix does not represent the energy delivered to customers for two reasons.

- We participate in the wholesale energy market and sell energy to other utilities and to retail customers.
- Some of our purchased power from renewable sources comes with a Renewable Energy Credit, or REC, which we sell to keep customer prices low.

Project Description – American Falls Spillway Repair

Background - American Falls Dam, a 94-foot-high composite concrete and earth gravity-type dam on the Snake River in Power County, near the town of American Falls, underwent a multi-year spillway rehabilitation project. Construction activities addressed the need for replacement and repair of the 45-year-old dam, which had experienced degradation over the years. Construction began summer 2020 and was scheduled to be completed fall 2021. Due to unforeseen issues and delays, the original construction contract was terminated in March 2021, and a new contract was awarded to Ames Construction in June 2022. Construction resumed July 2021 and completed September 2022

Description/Scope

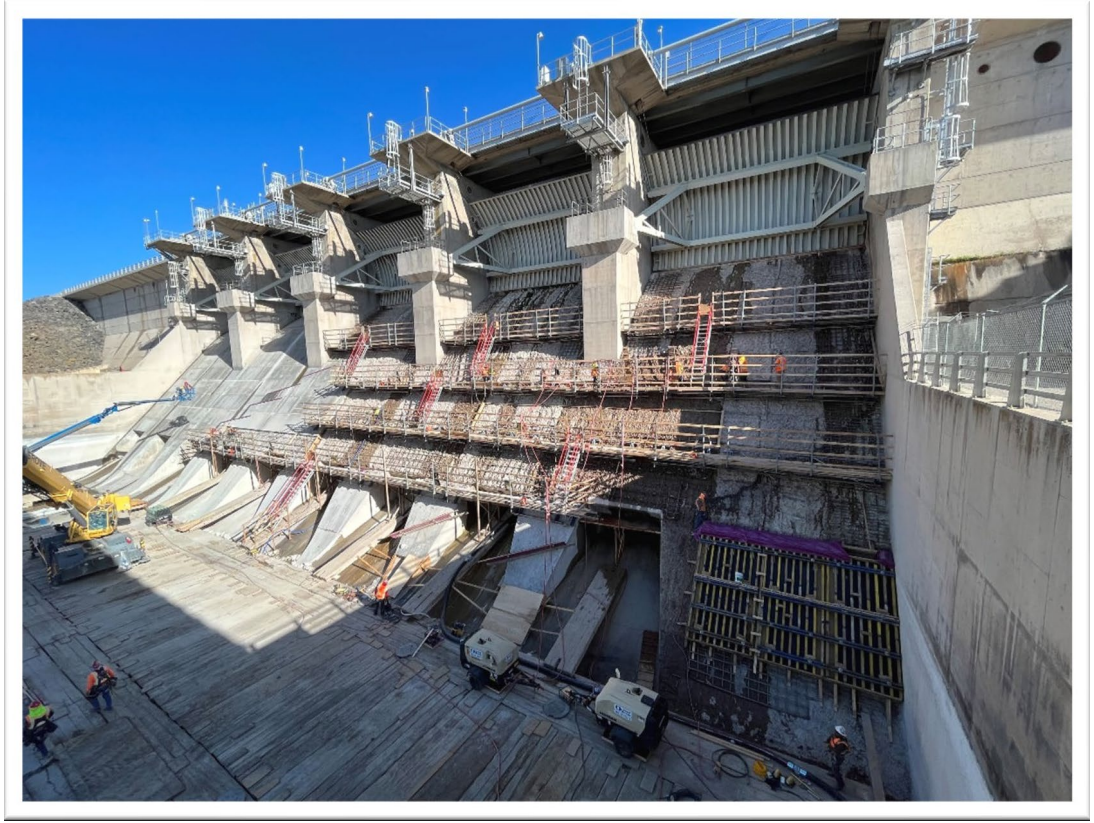
- Original - Demolition, removal, and replacement of existing damaged concrete on the spillway face, stilling basin floor, dam face, dam entrances and operator gate decks.
- Revised (Sept 2021) - Demolition, removal, and replacement of existing damaged concrete on the spillway face, dam face and dam entrances.

Project Description – American Falls Spillway Repair

Current Phase: Closeout

Schedule

- FY15 – Planning
- FY16-17 – Design
- FY18-19 – Acquisitions
- FY 20-22 – Construction
- FY 23 - Closeout



Cost Estimate – Spillway Repair

(2015-2022)

AMF Spillway Repair Budget Update

- Project Budget - $12,100,000 (revised September 2021)
  - 27.81% Appropriated - $3,364,405
  - 33% Idaho Power (direct) - $3,993,000
  - 39.20% Spaceholders - $4,742,595

- Original Contract Bond Credit - $(5,293,936)
  - 33% Idaho Power (direct) - $(2,419,834)
  - 39.20% Spaceholders - $(2,874,102)

- Redistributed Project Budget- $12,100,000 (revised August 2022)
  - 71.56% Appropriated - $8,658,341
  - 13% Idaho Power (direct) - $1,573,166
  - 15.44% Spaceholders - $1,868,493

- *Reclamation will continue to refine this budget estimate with new information as received*

Project Description – Radial Gate Trunnion Pin Replacement

Background: The trunnion pins and bushings (two per gate) in the housings on the five radial gates at American Falls Dam are binding causing the inboard thrust washers to break. The right trunnion pin in gate #4 appears bound in the bushing. This has caused the trunnion pin to rotate during operation of the gate resulting in sheared bolts in the cover plate which has fallen off. The trunnion pins, bushings, and thrust washers will need to be removed and replaced with new components. The installation timeframe of the new pins and components is limited to between August through December, due to water operations and reservoir levels in the Snake River system.

Description/Scope

- Crane Pads - Install two crane pads on each side of the stilling basin prior to the radial gate trunnion pin work beginning, a self erecting crane will be used to complete the repairs on the five radial gates. Work is being completed by Reclamation's Provo Construction Group.
- Trunnion Pins - The pins, bushings, and thrust washers (10 total) will be removed and replaced on each of the five radial gates. One gate will be completed each year between August and December. Work is being completed by Tennessee Valley Authority.

Project Description – Radial Gate Trunnion Pin Replacement

Current Phase: Execution/Installation

Schedule:

- FY21- Planning
- FY22 – Design
- FY23 – Acquisitions, Gate 4 installation begins August 2023
- FY 24-27 – Complete Gate 4 installation, Gate 1, 2, 3, 5 construction (one gate per year CY, construction window August-December)
- FY 27 - Closeout

Cost Estimate (funding plan, cost allocation):

- Total: $7,347,000
- 27.81% appropriated, 33% Idaho Power Company (falling water), 39.2% water users

Project Description – Guard Gate Inspection and Repair

Background - The low-level Guard and Service Gates are leaking water in the closed position and need maintenance. These gates are about 45 years old and this is the first major maintenance that has been done.

Description/Scope:

- The on-site maintenance staff is de-watering each set of gates by installing a bulkhead and performing an in-depth inspection and maintenance to include repairs to the alignment, seals, and coatings.

Current Phase: Work is on-going through 2031

Project Description – Dam Intakes Replacement

Background - The powerplant intake gates are original to the construction of the dam and are hydraulic cylinder operated. The current gates have issues drifting closed and have developed some oil leaks. The gate guides below the top deck are severally corroded and need replacement.

Description:

- This project will replace the operators and install new guides for the bulkhead to follow.

Current Phase: Planning

Project Description – Guard Gate Inspection and Repair

Schedule:

- Each year the in-house staff are completing this maintenance on 1 set of gates (Guard and Service). The work will be completed between 2022 to 2031. The first set of gates were completed in 2022-2023.

Cost Estimate (funding plan, cost allocation):

- Total - $450,000 (each set of gates are estimated to cost $50k per year)
- 27.81% appropriated, 33% Idaho Power Company (falling water), 39.2% water users

Project Description – Dam Intakes Replacement

Schedule:

- 2028 Design
- 2029 Contracting
- 2030-2032 Construction, the on-site work will replace one intake gate operator and guides per year in the non-irrigation season.
- 2033 Closeout

Cost Estimate (funding plan, cost allocation):

- Total - $5.9M
- 27.81% appropriated, 33% Idaho Power Company (falling water), 39.2% water users

Cost Estimate – Total Remaining Repair

(2024-2032)

Year	Project	Estimated Cost
2024	Trunnion Pin Replacement (Construction)	$1,845,000
2025-2027	Trunnion Pin Replacement (Construction)	$1,400,000/yr
2024-2031	Guard Gate Frame Inspection/Repair (1 gate per year)	$50,000/yr
2028	Dam Intakes Replacement (Design)	$250,000
2029	Dam Intakes Replacement (Acquisitions)	$100,000
2030-2032	Dam Intakes Replacement (Construction)	$1,450,000/yr

- Estimates above represent full cost, not just spaceholder portion
- Powerplant Intake Metal Work Replacement and Powerplant Fixed Wheeled Gate Operators have been combined into a new project titled *Dam Intake Works Replacement*

IWRB Water Sustainability Grant Assistance

Project	2015-2023	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Spillway Repair	$ 12,100,000										
Trunnion Pin Replacement		$ 1,302,000	$1,845,000	$1,400,000	$1,400,000	$1,400,000					
Guard Gate Frame Inspection/Repair		$80,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	
Dam Intakes Replacement (Design)							$250,000				
Dam Intakes Replacement (Acquisitions)								$100,000			
Dam Intakes Replacement (Construction)									$1,450,000	$1,450,000	$1,450,000
Annual Total	$12,100,000	$1,382,000	$1,895,000	$1,450,000	$1,450,000	$1,450,000	$300,000	$150,000	$1,500,000	$1,500,000	$1,450,000
Reclamation Appropriated (27.8%)	$3,363,800	$384,196	$526,810	$403,100	$403,100	$403,100	$83,400	$41,700	$417,000	$417,000	$403,100
Spaceholder (39.2%)	$4,743,200	$541,744	$742,840	$568,400	$568,400	$568,400	$117,600	$58,800	$588,000	$588,000	$568,400
Idaho Power Falling Water (33%)	$3,993,000	$456,060	$625,350	$478,500	$478,500	$478,500	$99,000	$49,500	$495,000	$495,000	$478,500
Spillway Credit	$ (5,293,936)										
Spaceholder and Falling Water Annual Total	$3,442,264	$997,804	$1,368,190	$1,046,900	$1,046,900	$1,046,900	$216,600	$108,300	$1,083,000	$1,083,000	$1,046,900

Spillway, Trunnion Pins and Guard Gates Repairs and Dam Intakes Replacements

Spaceholder and Falling Water Total $12,486,758

Questions

American Falls Dam MP Allocation (5664/AUC)

	%		Cost breakout
Enter Total Project Cost Here >>>>>>>>>>>>>>>		$	1,000,000.00
Federal	27.81%	$	278,050.00
Idaho Power Portion	33.00%	$	330,000.00
Water Users	39.20%	$	391,950.00

Water User Breakout			
A & B IRRIGATION DISTRICT	0.026704	$	10,466.63
ABERDEEN-SPRINGFIELD CANAL CO.	0.018276	$	7,163.28
AMERICAN FALLS RES	0.254198	$	99,632.91
AMERICAN FALLS RES #2	0.224438	$	87,968.47
LLOYD BROWN	0.000107	$	41.94
ARTESIAN IRRIGATION, INC.	0.001593	$	624.38
BUREAU OF INDIAN AFFAIRS	0.026764	$	10,490.15
BLACKFOOT IRRIG. CO.	0.007161	$	2,806.75
BURGESS CANAL & IRRIGATING CO.	0.005328	$	2,088.31
BURLEY IRRIGATION DISTRICT	0.088621	$	34,735.00
BUTTE AND MARKET LAKE CANAL CO.	0.002618	$	1,026.13
CLEMENT BROTHERS PRODUCE	0.000040	$	15.68
CORBETT SLOUGH DITCH COMPANY	0.001905	$	746.66
DILTS IRRIGATION CO., LTD.	0.000497	$	194.80
ENTERPRIZE CANAL CO., LTD.	0.005007	$	1,962.49
ENTERPRISE IRRIGATION DIST.	0.005716	$	2,240.39
FALLS IRRIGATION DISTRICT	0.013074	$	5,124.35
HARRISON CANAL AND IRRIGATION CC	0.006747	$	2,644.49
HILLSDALE IRRIGATION DISTRICT	0.023087	$	9,048.95
IDAHO IRRIGATION DISTRICT	0.012855	$	5,038.52
IDAHO POWER COMPANY	0.071388	$	27,980.53
LENROOT CANAL COMPANY	0.002170	$	850.53
MILNER IRRIGATION DISTRICT	0.025635	$	10,047.64
MINIDOKA IRRIGATION DISTRICT	0.046887	$	18,377.36
NEW SWEDEN IRRIGATION DISTRICT	0.015564	$	6,100.31
NORTH SIDE CANAL COMPANY, LTD.	0.066422	$	26,034.10
OSGOOD CANAL COMPANY	0.002242	$	878.75
PEOPLES CANAL AND IRRIGATION CO.	0.012016	$	4,709.67
POPLAR IRRIGATION DISTRICT	0.000378	$	148.16
PROGRESSIVE IRRIGATION DISTRICT	0.007005	$	2,745.61
REID CANAL COMPANY	0.001430	$	560.49
RUDY IRRIGATION CANAL COMPANY, I	0.001486	$	582.44
SALMON RIVER CANAL CO., LTD.	0.003717	$	1,456.88
SNAKE RIVER VALLEY IRRIGATION DIST	0.014795	$	5,798.90
UNION CANAL COMPANY	0.000737	$	288.87
WOODVILLE CANAL COMPANY	0.003392	$	1,329.49
USBR	0.000477	$	186.96