



AGENDA

IDAHO WATER RESOURCE BOARD

Aquifer Stabilization Committee Meeting No. 1-22

Friday, February 11, 2022

1:00 p.m. (MT)

Water Center

Conference Rooms 602 C & D / Online Zoom Meeting

322 E. Front St.

BOISE

Brad Little

Governor

Jeff Raybould

Chairman

St. Anthony

At Large

Roger W. Chase

Vice-Chairman

Pocatello

District 4

Board Members & the Public may participate via Zoom

[Click here to join our Zoom Meeting](#)

Dial in Option: 1(253) 215-8782

Meeting ID: 861 4738 3904 Passcode: 857849

Jo Ann Cole-Hansen

Secretary

Lewiston

At Large

Dale Van Stone

Hope

District 1

Albert Barker

Boise

District 2

Dean Stevenson

Paul

District 3

Peter Van Der Meulen

Hailey

At Large

Brian Olmstead

Twin Falls

At Large

1. Introductions and Attendance
2. Large Upper Valley Recharge Projects Update
3. Smaller Upper Valley Project Prioritization
4. Groundwater Model Development Status
5. Other Items
6. Adjourn

Committee Members: Chair Dean Stevenson, Al Barker, Brian Olmstead, and Pete Van Der Meulen

* 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 telephonically. 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.

322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098

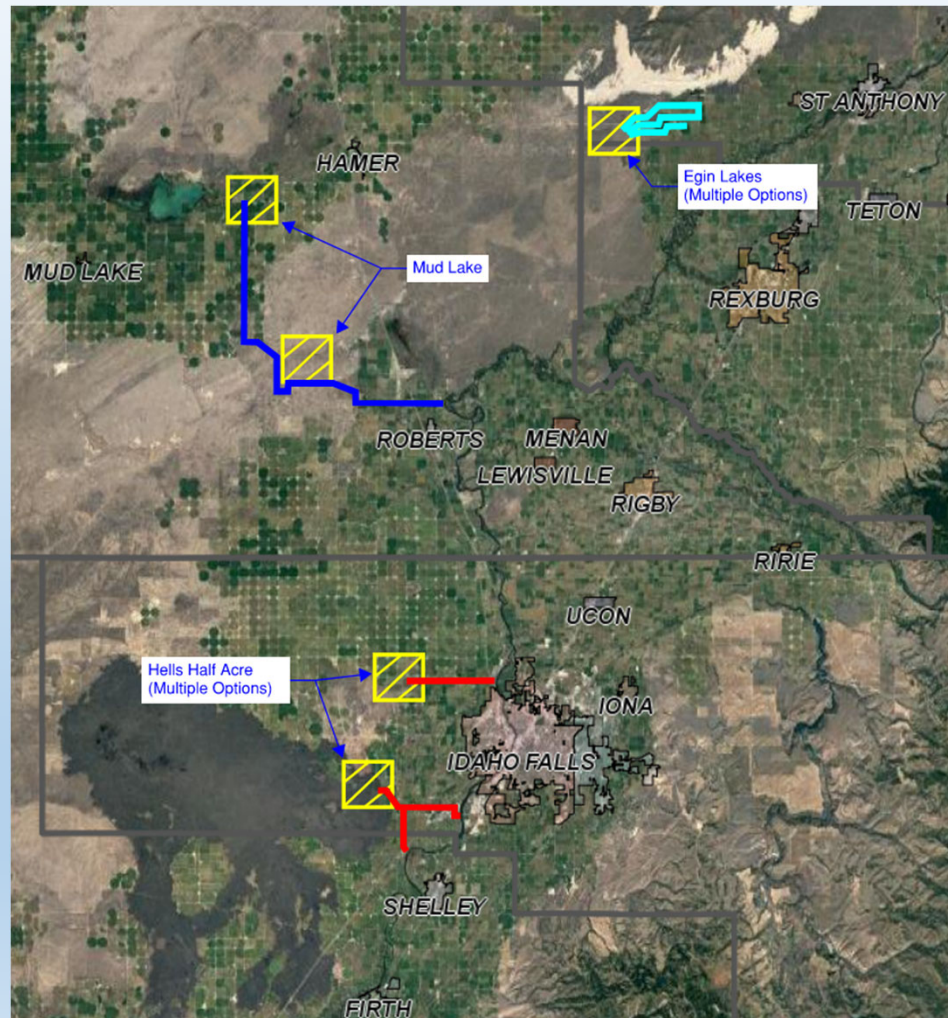
Phone: (208) 287-4800 Fax: (208) 287-6700 Website: idwr.idaho.gov/IWRB/

Upper Valley ESPA Recharge Project Investigation



Idaho Water Resource Board
February 11, 2022

Recharge Project Sites

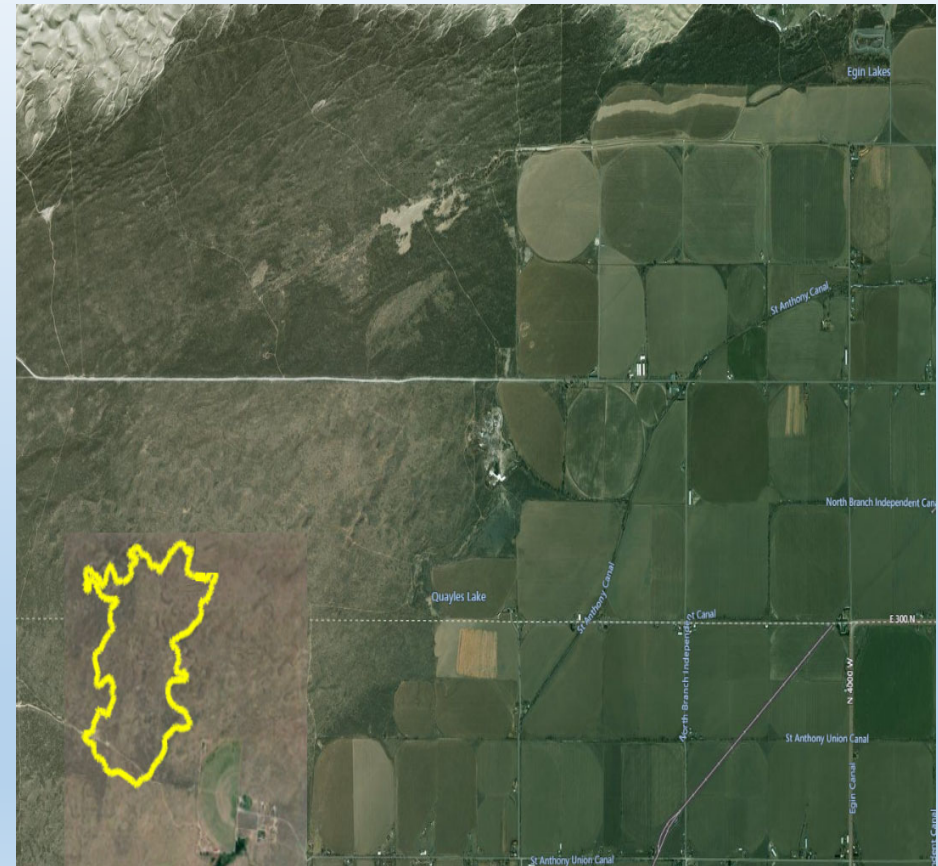


Egin Lakes – St. Anthony Canal Overview



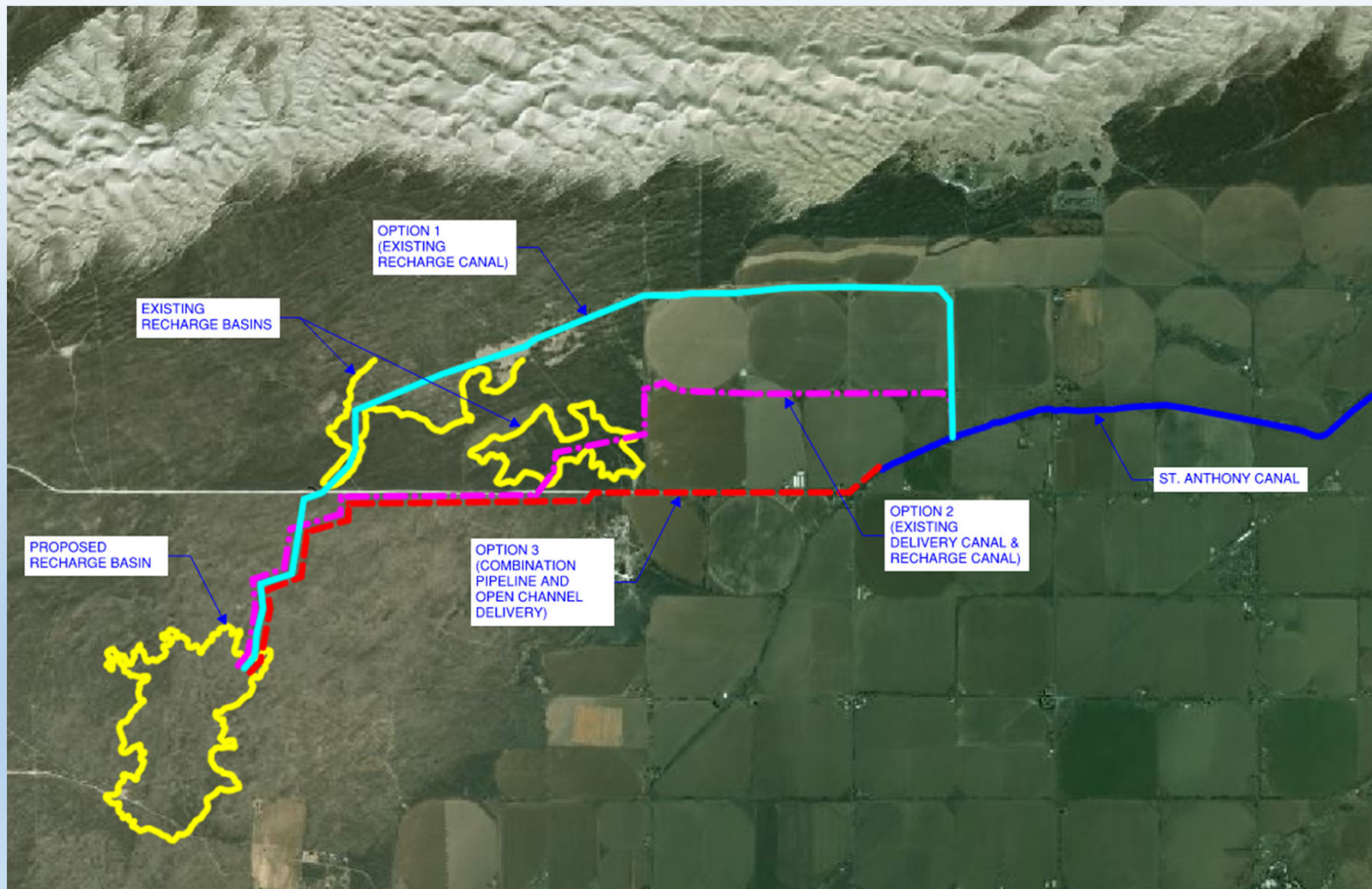
Egin Lakes - Project Summary

- Current Maximum Summer Irrigation Delivery: 425+/- CFS
- Additional Target Peak Recharge Flow: 200 CFS
- Basin Size: 291 +/- Acres
- Expected Recharge Potential: 1/3 – 1/2 (Acre-Feet/Acre/Day)
- Maximum Water Depth in Basin: 20 feet

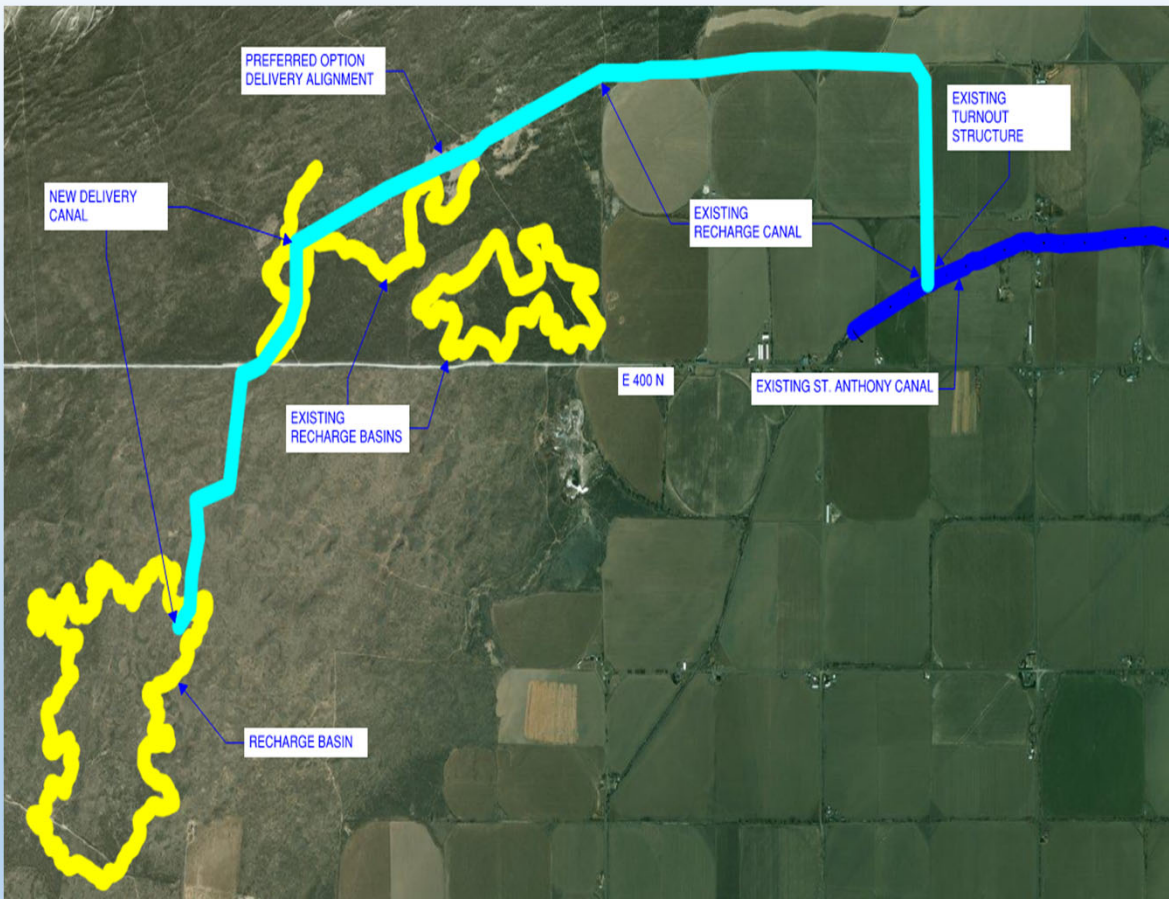


Proposed Recharge Basin

Egin Lakes – Delivery Options

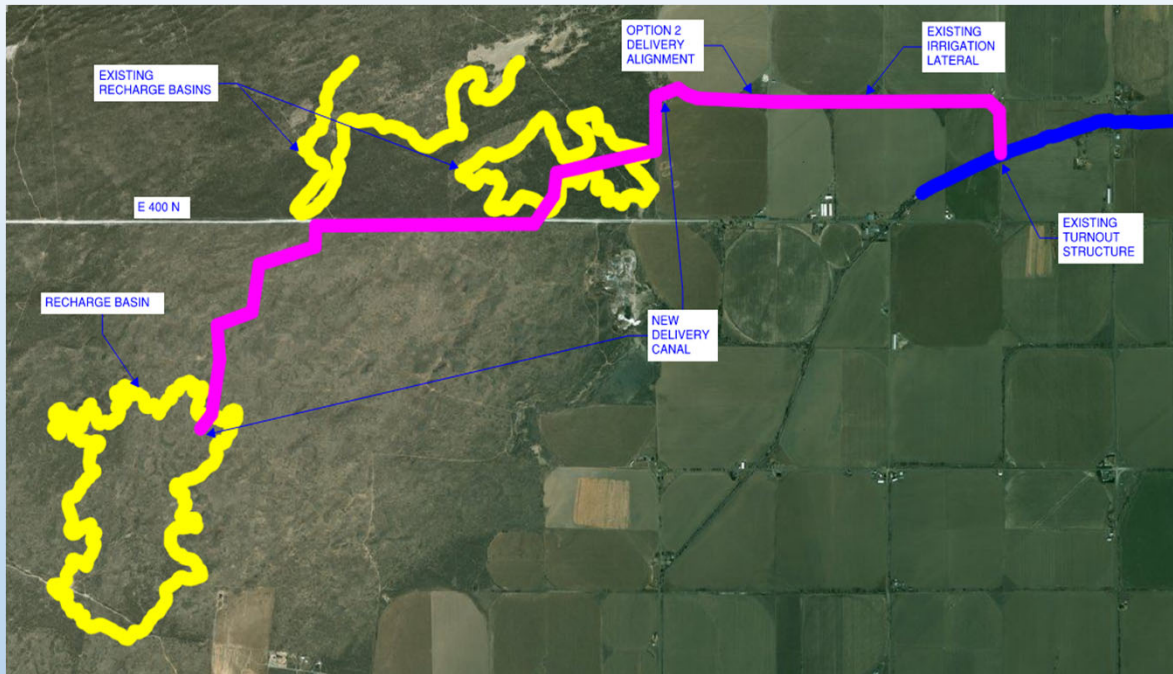


Egin Lakes – Option 1 Delivery Alignment



- Increase capacity of 12,000 LF existing recharge canal from 150 CFS to 350 CFS
- 7,750 LF of new canal construction
- 92,000 CY rock excavation
- Channel width 15 feet
- Average rock cut depth \approx 15 feet, 20 feet maximum

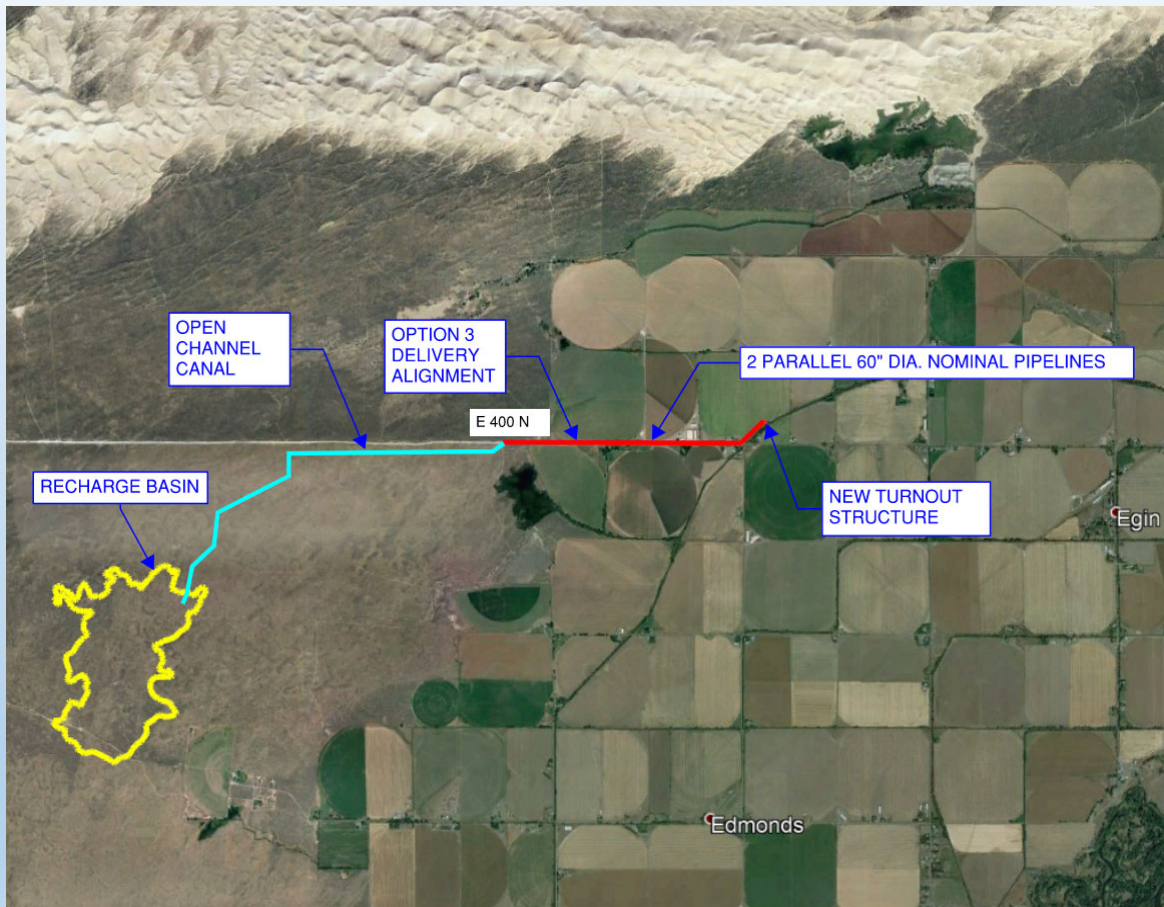
Egin Lakes – Option 2 Delivery Alignment



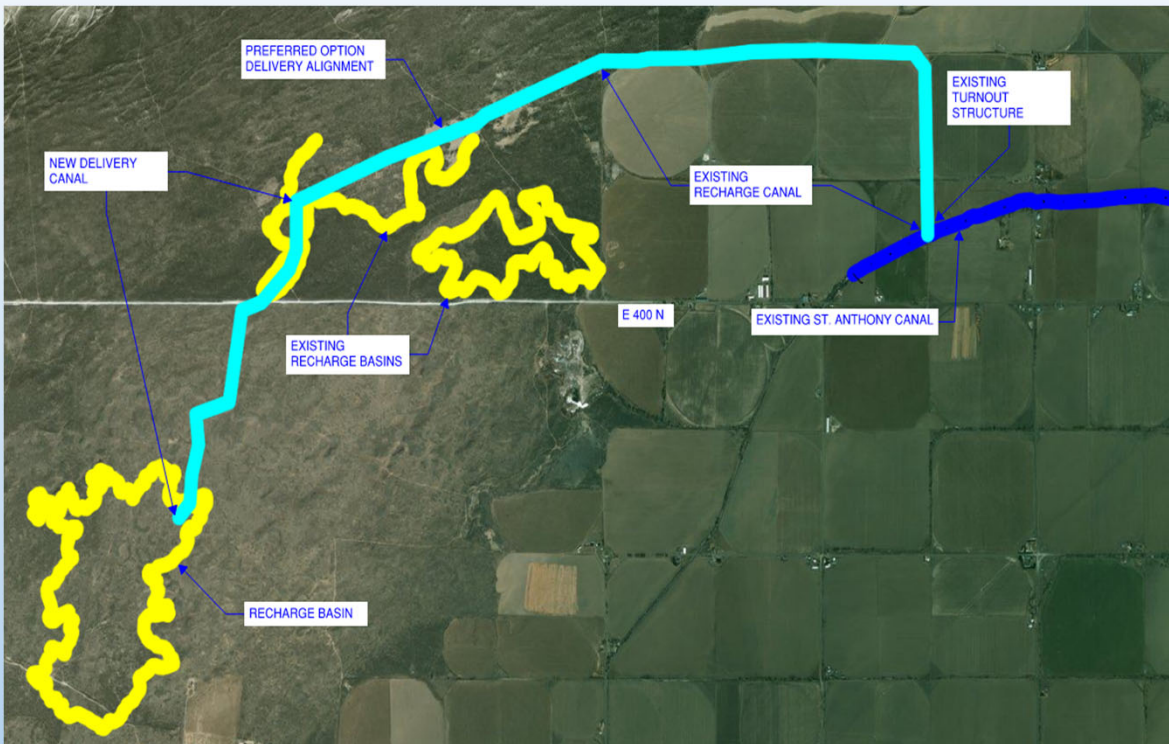
- Increase capacity of 8,000 LF existing irrigation lateral
- Increase capacity of 1,000 LF of existing recharge canal from 150 CFS to 350 CFS
- 12,000 LF new canal construction
- 125,000 CY rock excavation

Egin Lakes – Option 3 Delivery Alignment

- 15,600 LF 60" Dia. Pipeline
- 12,200 LF new canal construction
- 130,000 CY rock excavation



Egin Lakes – Preferred Delivery Alignment



- Option 1
- Estimated Project Cost ≈ \$13,500,000

Egin Lakes – Potential St. Anthony Canal Improvements



- Capacity and management constraints in existing canal
 - Upgrade up to 12 undersized public & private bridges
 - Widen/Clean 11,000 LF main canal
 - Upgrade and automate up to 25 main canal control structures
- Additional Project Cost \approx \$7,500,000

Egin Lakes

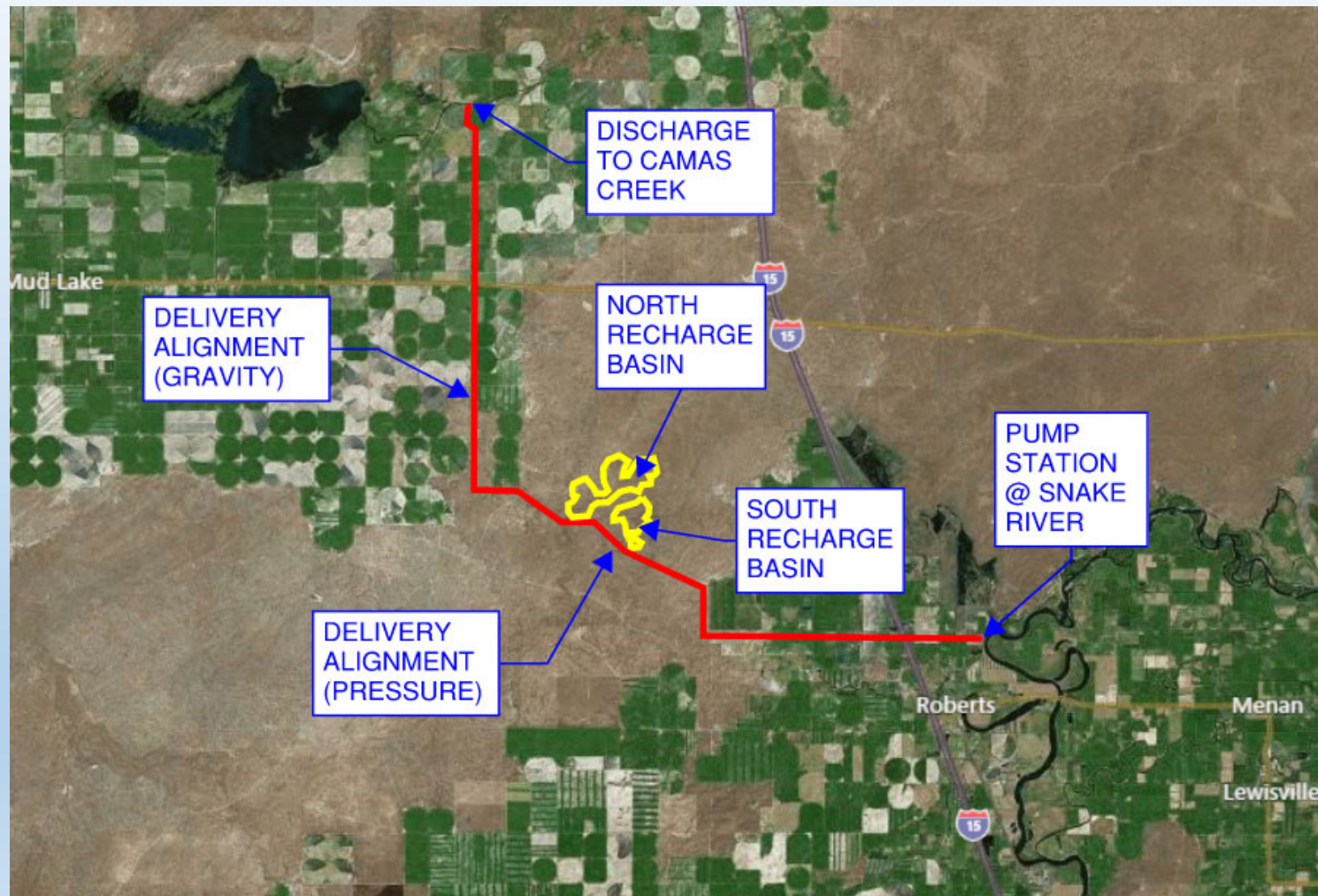
Preferred Option

Cost Detail



Item	Quantity	Unit	Unit Cost	Extended Cost
General Conditions				
Mobilization/Overhead	1	LS	\$ 843,500.00	\$ 843,500.00
Performance/Payment Bonds	1	LS	\$ 253,000.00	\$ 253,000.00
SWPPP Implementation/Maintenance	1	LS	\$ 50,000.00	\$ 50,000.00
Subtotal				\$ 1,146,500.00
Existing St. Anthony Canal Improvements				
Control/Gate Structure Improvements	25	EA	\$ 50,000.00	\$ 1,250,000.00
Main Canal Gate/Structure Automation & Telemetry	50	EA	\$ 54,000.00	\$ 2,700,000.00
Network Control/SCADA	1	EA	\$ 225,000.00	\$ 225,000.00
Network Communications System	1	EA	\$ 85,000.00	\$ 85,000.00
Private Bridge Replacement/Upgrades	7	EA	\$ 70,000.00	\$ 490,000.00
County Road Bridge Replacement/Upgrades	5	EA	\$ 150,000.00	\$ 750,000.00
Canal Widening/Vegetation Removal	11,000	LF	\$ 7.50	\$ 82,500.00
Canal Bank Stabilization	2,000	CY	\$ 50.00	\$ 100,000.00
Subtotal				\$ 5,682,500.00
Existing Recharge Canal Improvements				
Bridge Improvements	4	EA	\$ 50,000.00	\$ 200,000.00
Intake Structure Improvements	1	LS	\$ 75,000.00	\$ 75,000.00
Canal Widening	11,600	LF	\$ 20.00	\$ 232,000.00
Subtotal				\$ 507,000.00
Recharge Basin Delivery Canal & Access				
Rock Excavation/Removal	92,000	CY	\$ 100.00	\$ 9,200,000.00
County Road Box Culvert	50	LF	\$ 1,500.00	\$ 75,000.00
County Road Repair	1	LS	\$ 2,000.00	\$ 2,000.00
Recharge Basin Access Road Improvements	120,000	SF	\$ 2.00	\$ 240,000.00
Public Land Restoration/Revegetation	12	AC	\$ 1,000.00	\$ 12,000.00
Subtotal				\$ 9,529,000.00
Construction Subtotal				\$ 16,865,000
+20% Contingency				\$ 3,373,000
Total Construction Cost Estimate				\$ 20,238,000
Environmental Permitting				\$ 200,000
Surveying/Engineering/Const. Oversight (3.5% of Construction Subtotal)				\$ 590,300
Total Project Cost Estimate				\$ 21,028,000

Mud Lake - Project Overview



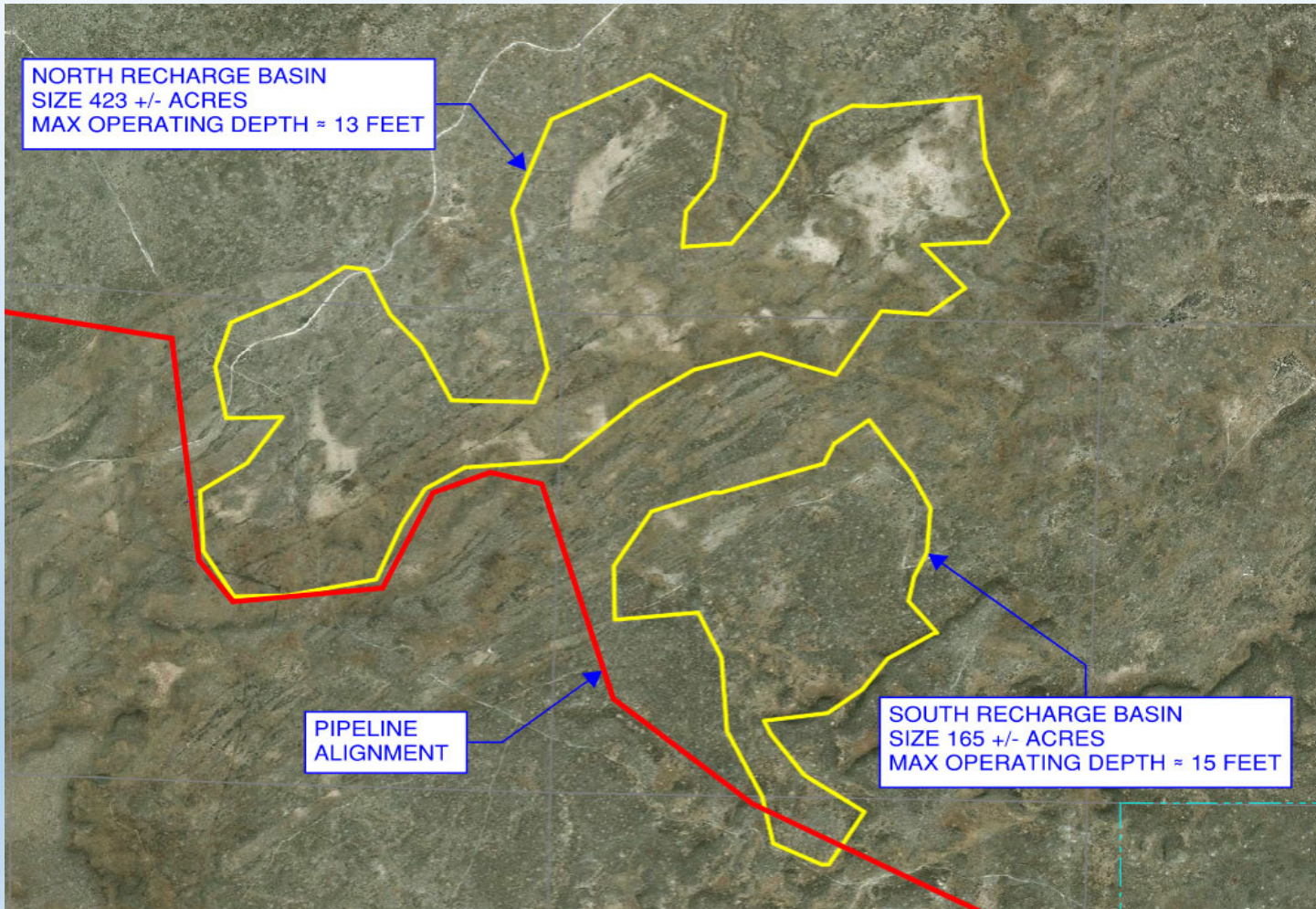
Mud Lake – Project Summary

- Design Flow: 500 CFS
- Combined Basin Size: 588 +/- Acres
- Expected Recharge Rate Unknown
(Investigation Pending)
- Max. Elevation Change: 60+/- Vertical Feet
- Project Length:
 - Snake River to Recharge Basins - 50,000 LF
 - Recharge Basin to Camas Creek - 50,000 LF
- 4 parallel 72" Dia. Pipelines to Recharge Basins
- 2 parallel 72" Dia. Pipelines from Recharge Basins to Camas Creek



South Recharge Basin

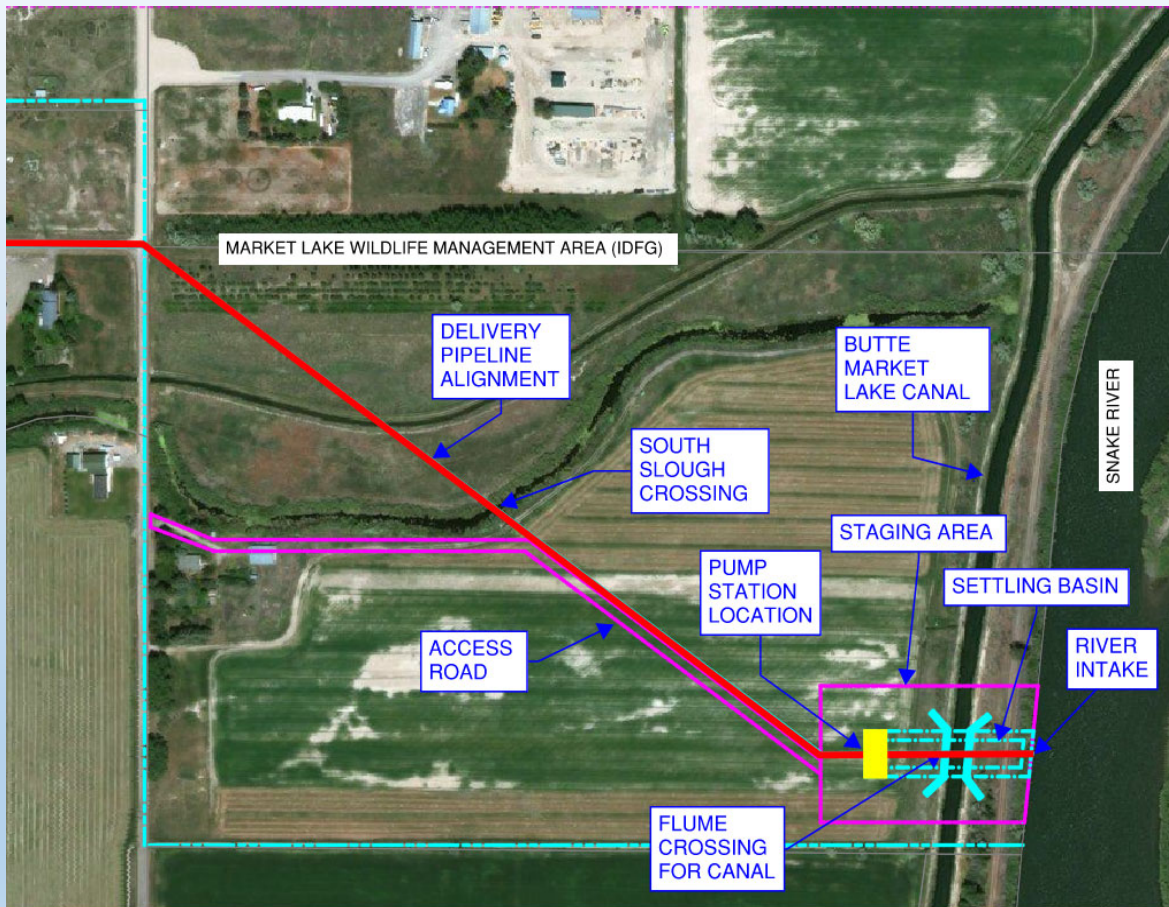
Mud Lake - Recharge Basin Overview



Mud Lake - Pump Site

Pump Station Summary

- 4 pumps @ 100 CFS each (45,000 GPM)
- 2 pumps @ 50 CFS each (22,500 GPM)
- Total maximum power demand = 9,800 HP
- Variable Frequency Drive (VFD) control for single 50 CFS pump



Mud Lake – Project Cost Summary



- Estimated Project Cost ≈ \$376,000,000
- Estimated Project Cost (with 20% Contingency) ≈ \$448,000,000
- Cost includes Survey/Data Collection, Engineering, Permitting, Construction & Construction Oversight

Mud Lake, Source: Idaho Fish and Game

Mud Lake

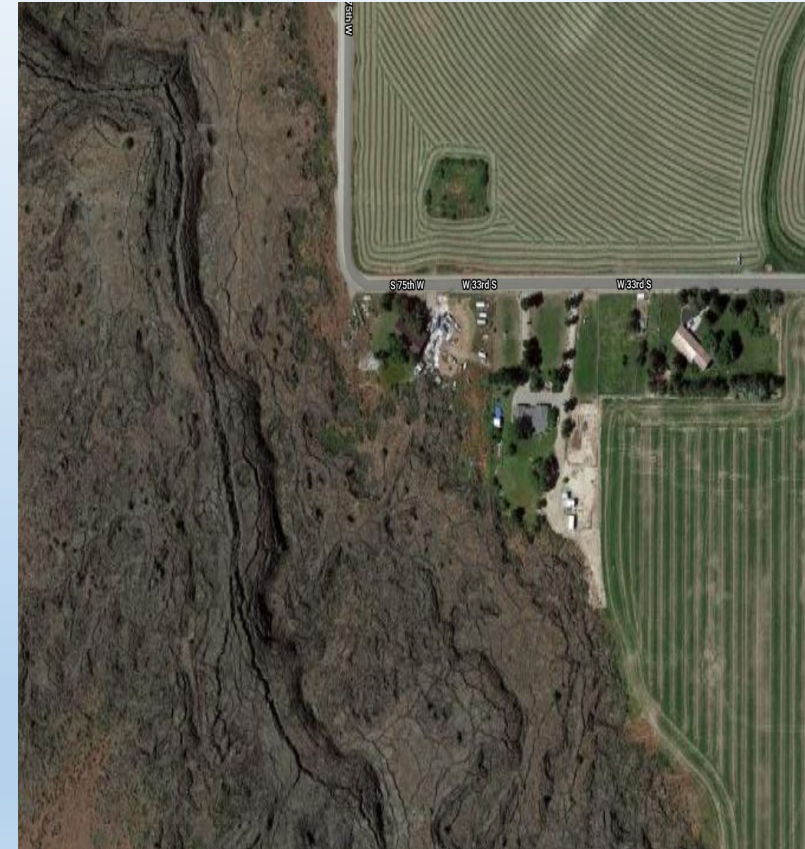
Cost Detail



Item	Quantity	Unit	Unit Cost	Extended Cost
General Conditions				
Mobilization/General Conditions Costs	1	LS	\$ 18,000,000.00	\$ 18,000,000.00
General Contractor Overhead/Profit	1	LS	\$ 18,000,000.00	\$ 18,000,000.00
Performance/Payment Bonds	1	LS	\$ 5,400,000.00	\$ 5,400,000.00
Stream Management/Dewatering	1	LS	\$ 250,000.00	\$ 250,000.00
SWPPP Implementation/Maintenance	1	LS	\$ 500,000.00	\$ 500,000.00
Subtotal				\$ 42,150,000.00
Snake River Intake				
Intake Structure	1	LS	\$ 1,000,000.00	\$ 1,000,000.00
Canal Gates/Controls	6	EA	\$ 50,000.00	\$ 300,000.00
Butte Market Lake Canal Flume	1	LS	\$ 540,000.00	\$ 540,000.00
Sediment Basin Excavation	15,000	CY	\$ 12.00	\$ 180,000.00
Bank Stabilization Riprap	1,000	CY	\$ 100.00	\$ 100,000.00
Subtotal				\$ 2,120,000.00
Pump Station & Appurtenances				
45,000 GPM Vertical Turbine Pump	4	EA	\$ 1,115,000.00	\$ 4,460,000.00
22,500 GPM Vertical Turbine Pump	2	EA	\$ 530,000.00	\$ 1,060,000.00
Pump Station Controls/Electrical	1	EA	\$ 2,300,000.00	\$ 2,300,000.00
Pump Enclosure/Intake Structure	2,600	SF	\$ 250.00	\$ 650,000.00
Pump Manifold/Misc. Piping	1	LS	\$ 150,000.00	\$ 150,000.00
Gravel Access Road/Maintenance Yard	140,000	SF	\$ 3.00	\$ 420,000.00
Subtotal				\$ 9,040,000.00
Primary Power Service				
Primary Power Extension	5.5	MI	\$ 1,500,000.00	\$ 8,250,000.00
Primary Power Termination/Substation Improvements	1	LS	\$ 1,250,000.00	\$ 1,250,000.00
Subtotal				\$ 9,500,000.00
Distribution Pipeline				
72" Diameter Steel Pipe (Procurement)	300,000	LF	\$ 650.00	\$ 195,000,000.00
Pipeline Appurtenances (Air Vents/Drains/Vacuum Relief)	300	EA	\$ 15,000.00	\$ 4,500,000.00
Trench Excavation/Backfill	862,000	CY	\$ 30.00	\$ 25,860,000.00
Asphalt Pavement Repair	1,052,000	SF	\$ 6.00	\$ 6,312,000.00
Gravel Road Repair	371,000	SF	\$ 3.00	\$ 1,113,000.00
Traffic Control	1	LS	\$ 1,500,000.00	\$ 1,500,000.00
Miscellaneous Utility Relocation	1	LS	\$ 1,000,000.00	\$ 1,000,000.00
Pipe Backfill (Public Lands)	1,057,500	CY	\$ 40.00	\$ 42,300,000.00
Gravel Access Road (Public Lands)	577,000	SF	\$ 2.00	\$ 1,154,000.00
I-15 Crossing	1	LS	\$ 12,000,000.00	\$ 12,000,000.00
Railroad Crossing	1	LS	\$ 4,000,000.00	\$ 4,000,000.00
Large Canal Crossing	3	EA	\$ 150,000.00	\$ 450,000.00
Small Canal Crossing	2	EA	\$ 25,000.00	\$ 50,000.00
Recharge Basin Outlet Works	2	EA	\$ 75,000.00	\$ 150,000.00
Camas Creek Outlet Works	1	EA	\$ 50,000.00	\$ 50,000.00
Subtotal				\$ 295,439,000.00
Surface Restoration				
Roadside Restoration	30	AC	\$ 1,000.00	\$ 30,000.00
Public Lands Restoration	120	AC	\$ 1,000.00	\$ 120,000.00
Subtotal				\$ 150,000.00
Construction Subtotal				
Construction Subtotal			\$ 358,399,000	
+20% Contingency			\$ 71,680,000	
Total Construction Cost Estimate				\$ 430,080,000
Environmental Permitting				
Environmental Permitting			\$ 250,000	
Surveying/Engineering/Const. Oversight (5% of Construction Subtotal)			\$ 17,920,000	
Total Project Cost Estimate				\$ 448,250,000

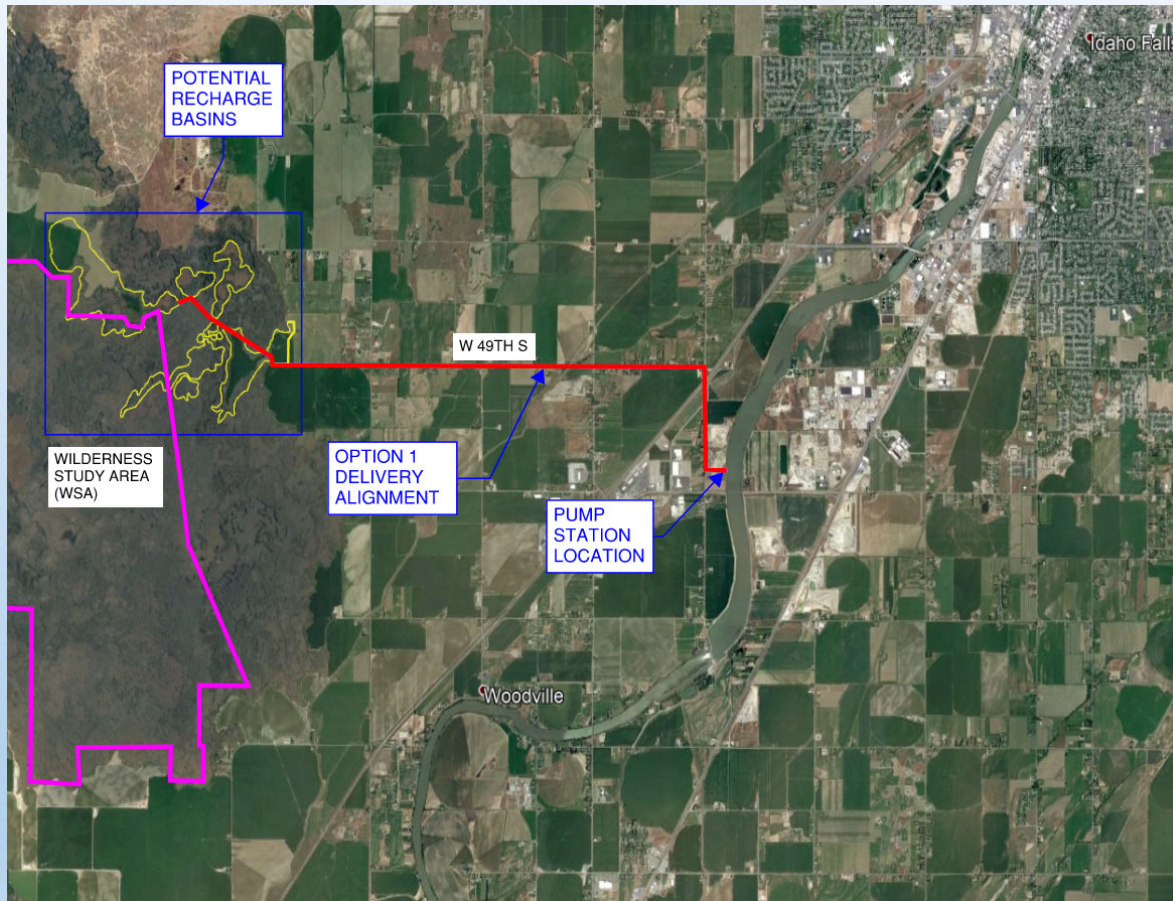
Hells Half Acre - Project Summary

- Design Flow: 200 CFS
- Basin Size (Multiple Options):
 - 582 +/- Acres Maximum (Options 1 & 3)
 - 550 +/- Acres Maximum (Option 2)
- Max. Elevation Change: 30-120 +/- Vertical Feet (Option Dependent)
- Project Length: 23,800 – 31,000 LF (Option Dependent)
- Project Constraints
 - Unknown infiltration potential
 - Basalt fractures could lead to nuisance water issues
 - Basin options encroach into Wilderness Study Area (WSA)



Hells Half Acre Fractured Basalt

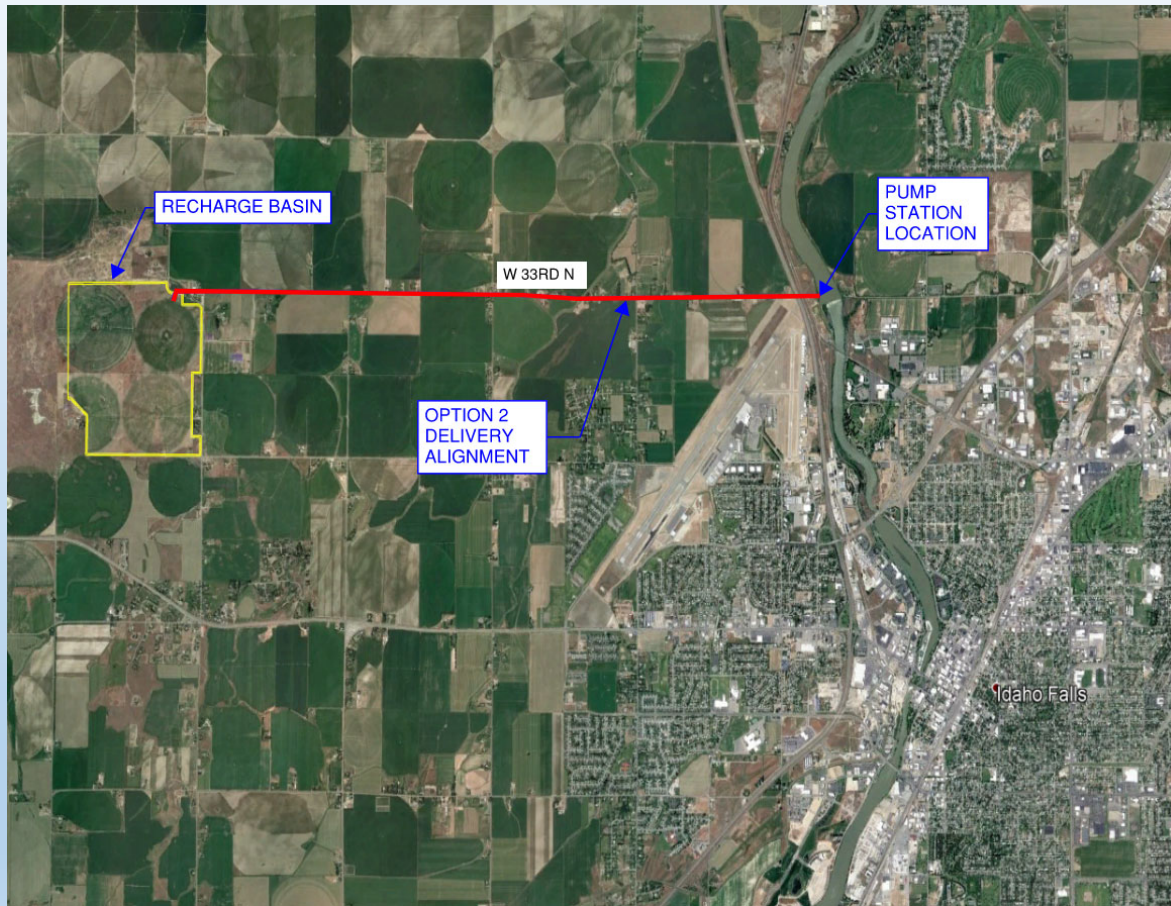
Hells Half Acre - Option 1 Delivery Alignment



Project Summary

- 1 pump @ 100 CFS each (45,000 GPM)
- 2 pumps @ 50 CFS each (22,500 GPM)
- Total maximum power demand = 2,250 HP
- 2 Parallel 60" Dia. delivery pipelines @ 31,000 LF each
- Pump station at State owned gravel pit

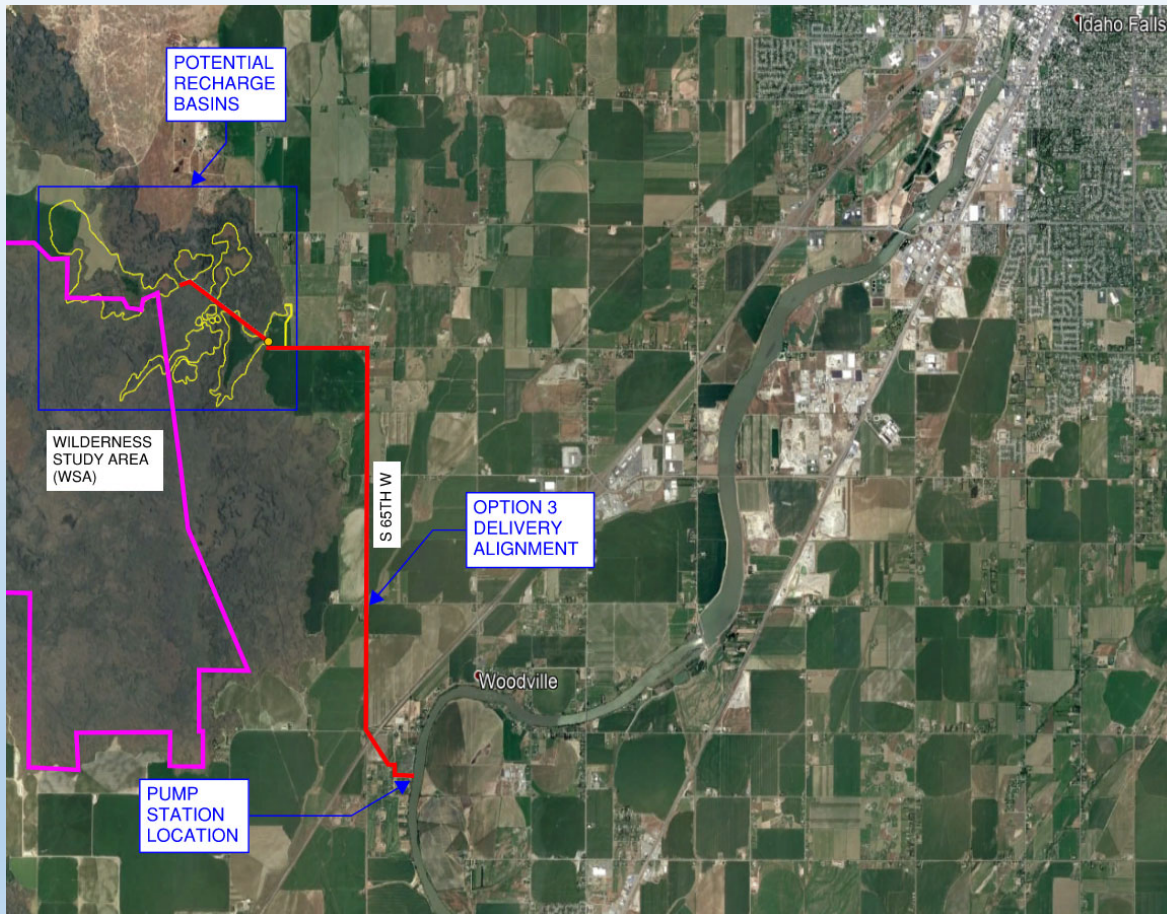
Hells Half Acre – Option 2 Delivery Alignment



Project Summary

- 1 pump @ 100 CFS each (45,000 GPM)
- 2 pumps @ 50 CFS each (22,500 GPM)
- Total maximum power demand = 2,250 HP
- 2 Parallel 60" Dia. delivery pipelines @ 23,800 LF each
- Recharge basin located on private land

Hells Half Acre – Option 3 Delivery Alignment



Project Summary

- 1 pump @ 100 CFS each (45,000 GPM)
- 2 pumps @ 50 CFS each (22,500 GPM)
- Total maximum power demand = 2,250 HP
- 2 Parallel 60" Dia. delivery pipelines @ 29,500 LF each
- Pump station located within partially developed subdivision

Hells Half Acre Options – Cost Summary

- Option 1: \$69,000,000 - \$82,000,000
- Option 2 - \$72,000,000 - \$86,000,000
- Option 3 - \$69,000,000 - \$82,000,000



Hells Half Acre

Option 1 Cost Detail



Item	Quantity	Unit	Unit Cost	Extended Cost
General Conditions				
Mobilization/General Conditions Costs	1	LS	\$ 3,282,000.00	\$ 3,282,000.00
General Contractor Overhead/Profit	1	LS	\$ 3,282,000.00	\$ 3,282,000.00
Performance/Payment Bonds	1	LS	\$ 660,000.00	\$ 660,000.00
Stream Management/Dewatering	1	LS	\$ 250,000.00	\$ 250,000.00
SWPPP Implementation/Maintenance	1	LS	\$ 200,000.00	\$ 200,000.00
Subtotal				\$ 7,674,000.00
Snake River Intake				
Intake Structure	1	LS	\$ 750,000.00	\$ 750,000.00
Canal Gates/Controls	4	EA	\$ 50,000.00	\$ 200,000.00
Sediment Basin Excavation	15,000	CY	\$ 12.00	\$ 180,000.00
Bank Stabilization Riprap	1,000	CY	\$ 100.00	\$ 100,000.00
Subtotal				\$ 1,230,000.00
Pump Station & Appurtenances				
45,000 GPM Vertical Turbine Pump	1	EA	\$ 1,100,000.00	\$ 1,100,000.00
22,500 GPM Vertical Turbine Pump	2	EA	\$ 615,000.00	\$ 1,230,000.00
Pump Station Controls/Electrical	1	EA	\$ 1,400,000.00	\$ 1,400,000.00
Pump Enclosure/Intake Structure	1,600	SF	\$ 250.00	\$ 400,000.00
Pump Manifold/Misc. Piping	1	LS	\$ 100,000.00	\$ 100,000.00
Gravel Access Road/Maintenance Yard	90,000	SF	\$ 3.00	\$ 270,000.00
Subtotal				\$ 4,500,000.00
Primary Power Service				
Primary Power Extension	0.2	MI	\$ 1,500,000.00	\$ 300,000.00
Primary Power Termination/Transformers	1	LS	\$ 500,000.00	\$ 500,000.00
Subtotal				\$ 800,000.00
Distribution Pipeline				
60" Diameter HDPE Pipe (Procurement)	62,000	LF	\$ 550.00	\$ 34,100,000.00
Pipeline Appurtenances (Air Vents/Drains/Vacuum Relief)	65	EA	\$ 15,000.00	\$ 975,000.00
Trench Excavation/Backfill	175,000	CY	\$ 30.00	\$ 5,250,000.00
Asphalt Pavement Repair	268,500	SF	\$ 6.00	\$ 1,611,000.00
Gravel Road Repair	163,000	SF	\$ 3.00	\$ 489,000.00
Traffic Control	1	LS	\$ 500,000.00	\$ 500,000.00
Miscellaneous Utility Relocation	1	LS	\$ 500,000.00	\$ 500,000.00
Pipe Backfill (Public Lands)	37,500	CY	\$ 40.00	\$ 1,500,000.00
Gravel Access Road (Public Lands)	64,100	SF	\$ 2.00	\$ 128,200.00
I-15 Crossing	1	LS	\$ 6,000,000.00	\$ 6,000,000.00
Large Canal Crossing	2	EA	\$ 75,000.00	\$ 150,000.00
Small Canal Crossing	2	EA	\$ 25,000.00	\$ 50,000.00
Recharge Basin Outlet Works	3	EA	\$ 50,000.00	\$ 150,000.00
Subtotal				\$ 51,403,200.00
Surface Restoration				
Roadside Restoration	6.5	AC	\$ 1,000.00	\$ 6,500.00
Public Lands Restoration	12.5	AC	\$ 1,000.00	\$ 12,500.00
Subtotal				\$ 19,000.00
Construction Subtotal				\$ 65,626,200
+20% Contingency				\$ 13,130,000
Total Construction Cost Estimate				\$ 78,756,000
Environmental Permitting				\$ 150,000
Surveying/Engineering/Const. Oversight (5% of Construction Subtotal)				\$ 3,280,000
Total Project Cost Estimate				\$ 82,190,000

Questions?

Nick Kraus, PE
Principal
nick@quadrant.cc

Quadrant Consulting, Inc.
1904 W. Overland Rd.
Boise, ID 83705

208 342 0091

www.quadrant.cc



The background of the slide is a photograph of a wide river, likely the Snake River, flowing through a valley. The sun is low in the sky, creating a bright reflection on the water's surface. The banks are covered in dry, brownish vegetation.

Small Upper Valley ESPA Recharge Project Investigation

Aquifer Stabilization Committee Meeting

Wesley Hipke
IWRB Recharge Program Manager

February 11, 2022

ESPA - Upper Valley Recharge Capacity

Current off Canal Recharge Capacity:

Total = 450 cfs

IWRB Partners = 200 cfs

Goal – Add 500 cfs of Recharge Capacity:

Large Project(s) = 250 cfs

Small Projects ~50 cfs (5 +) = 250 cfs



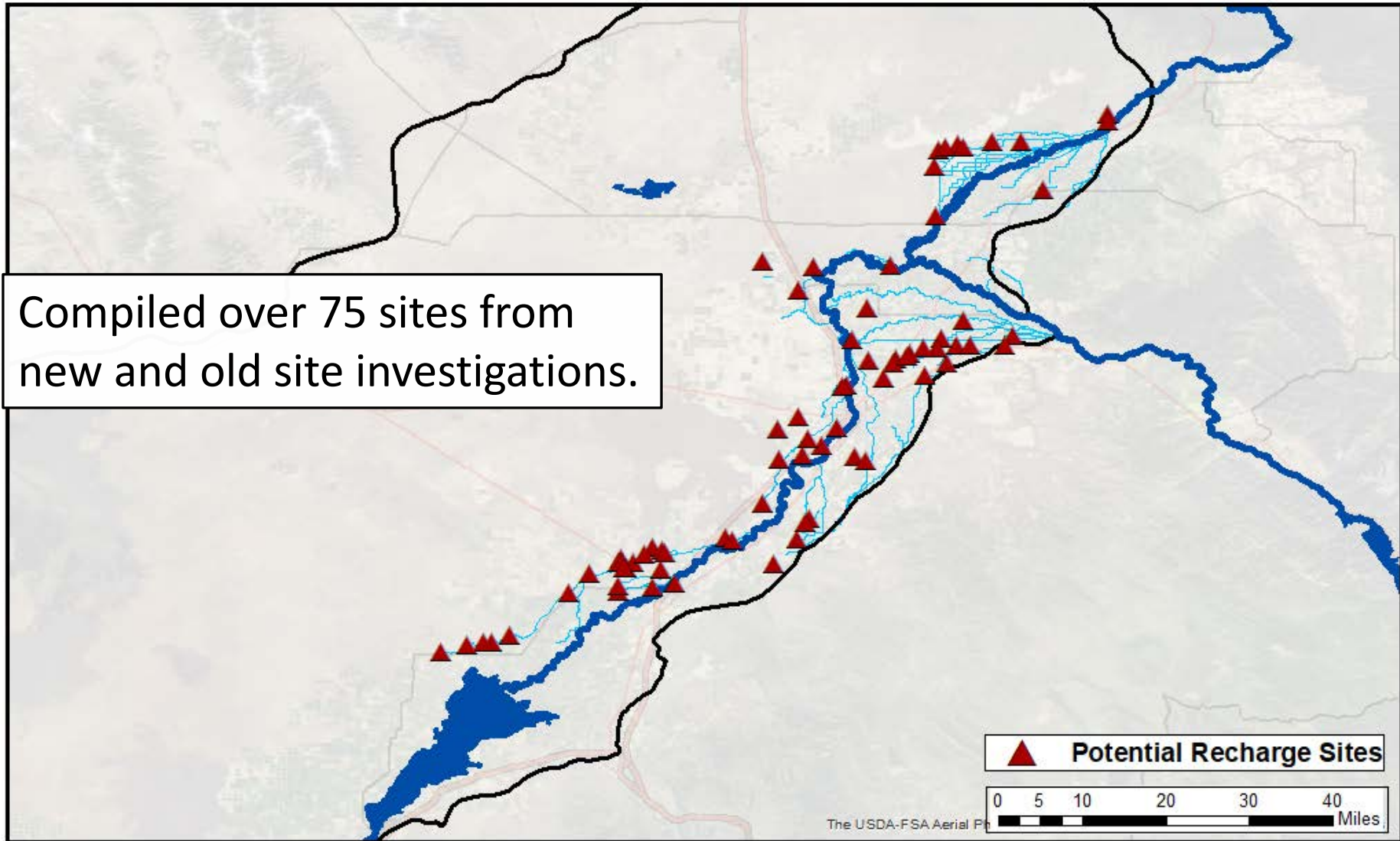
Determining & Prioritizing Potential Recharge Project

Considerations:

- Review of potential sites from previous reports & site investigations by staff.
- Response Time Criteria – the time it takes for 50% of the water to discharge to the river or streams is greater than 3 months.
- 5-year Retention – the percentage of water remaining in the aquifer after 5 years.
- Estimated recharge capacity greater than 40 cfs.
- Proximity to existing delivery infrastructure.

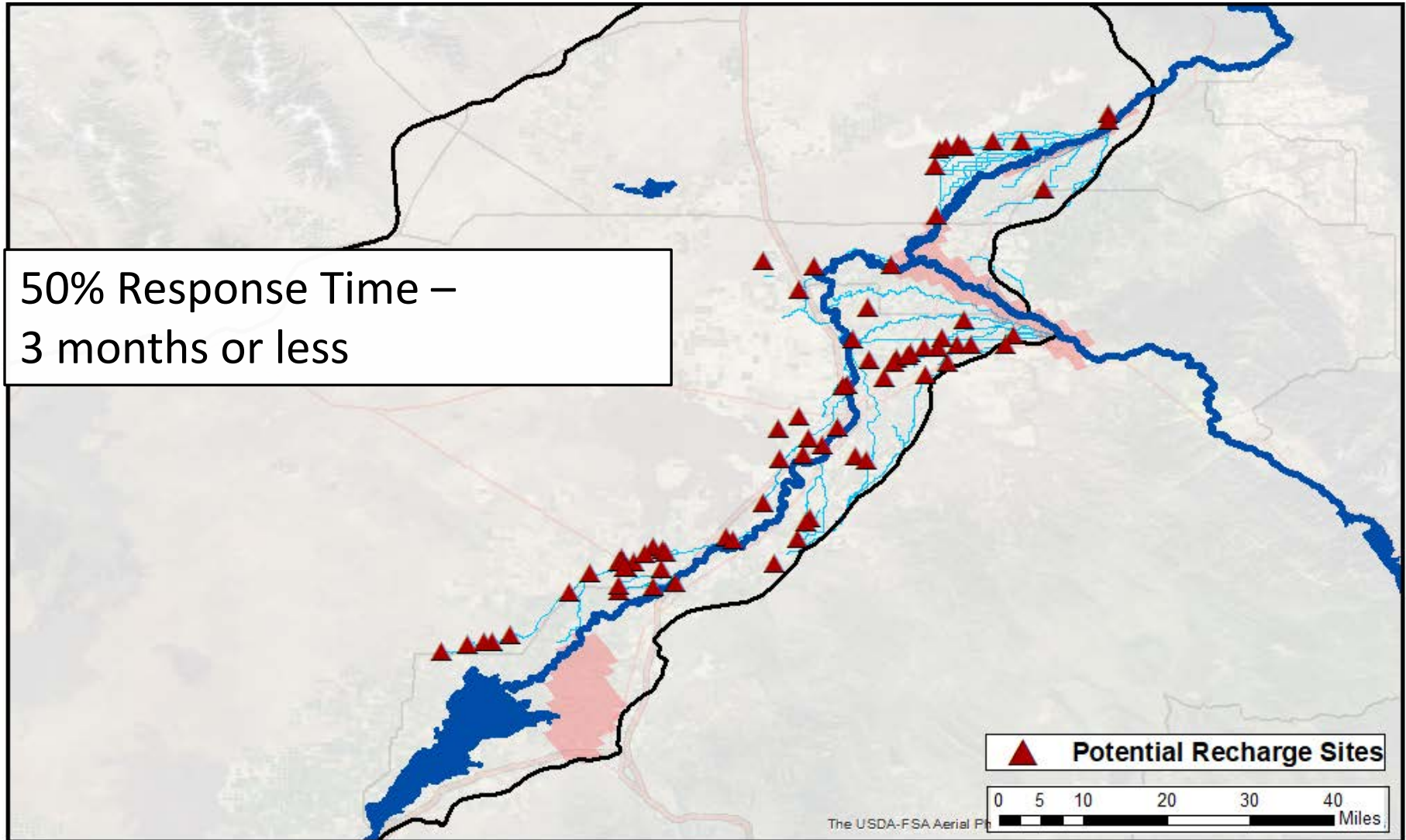
Potential “Small” Upper Valley Recharge Sites

Compiled over 75 sites from
new and old site investigations.

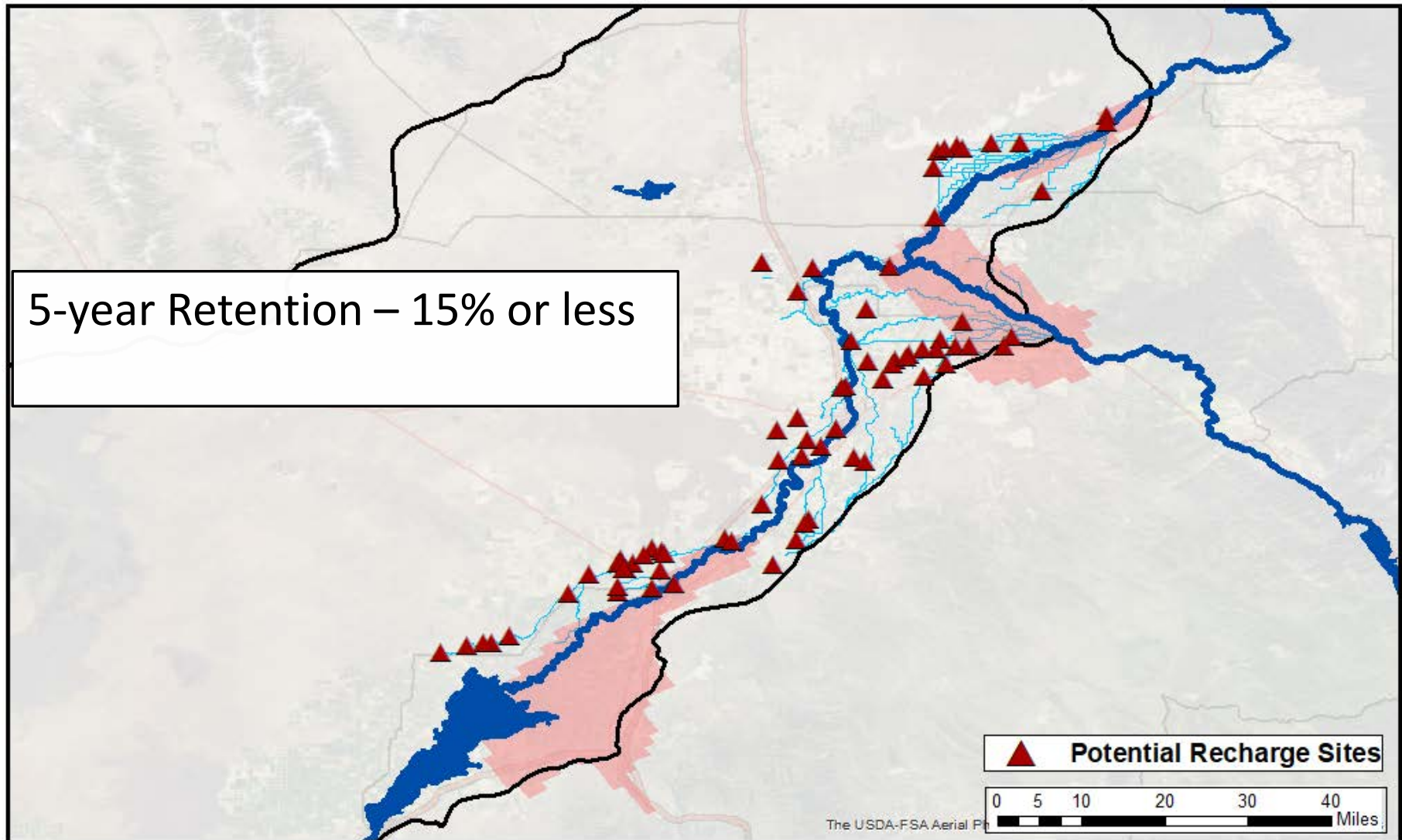


Potential “Small” Upper Valley Recharge Sites

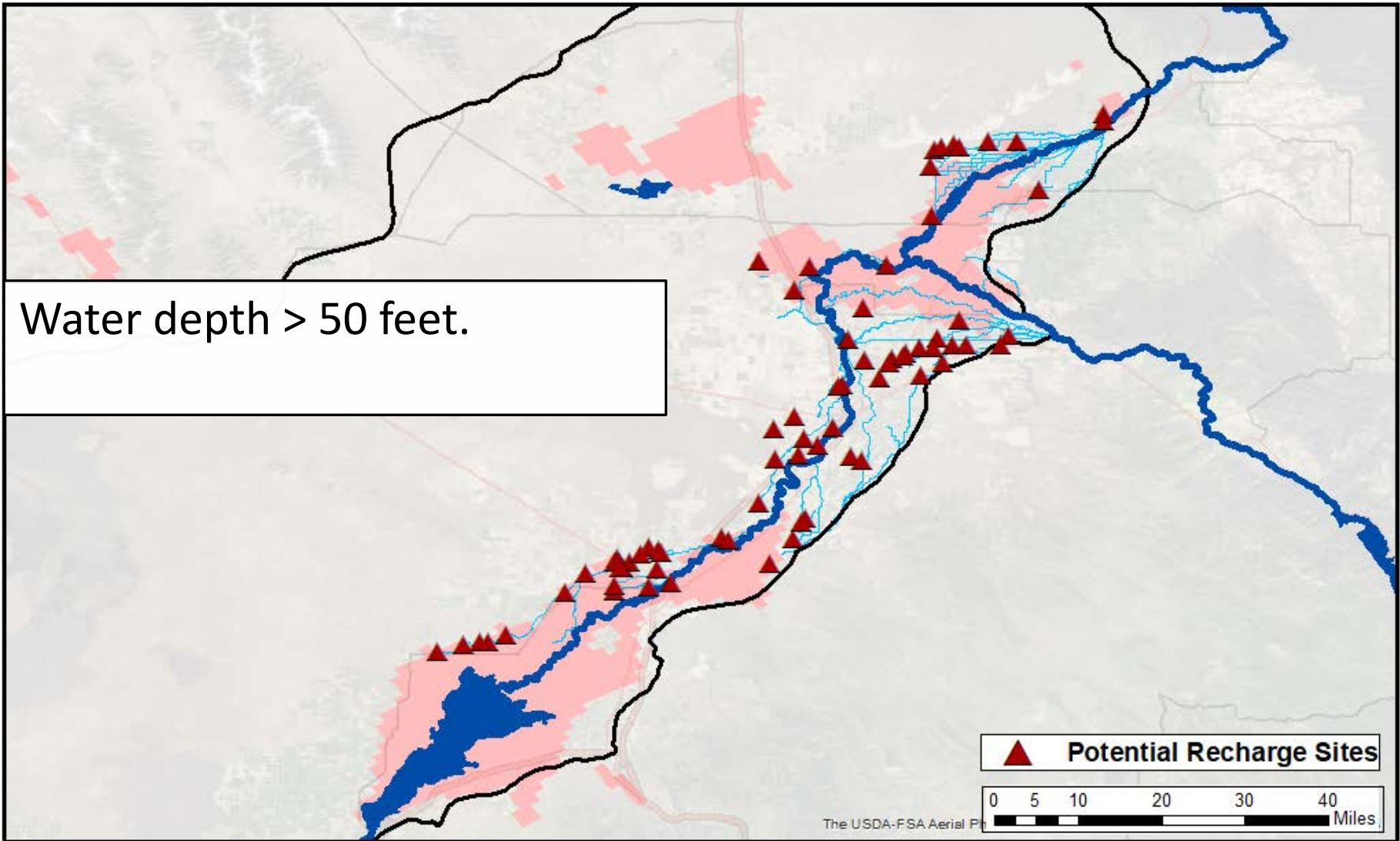
50% Response Time –
3 months or less



Potential “Small” Upper Valley Recharge Sites



Potential "Small" Upper Valley Recharge Sites



Water depth > 50 feet.

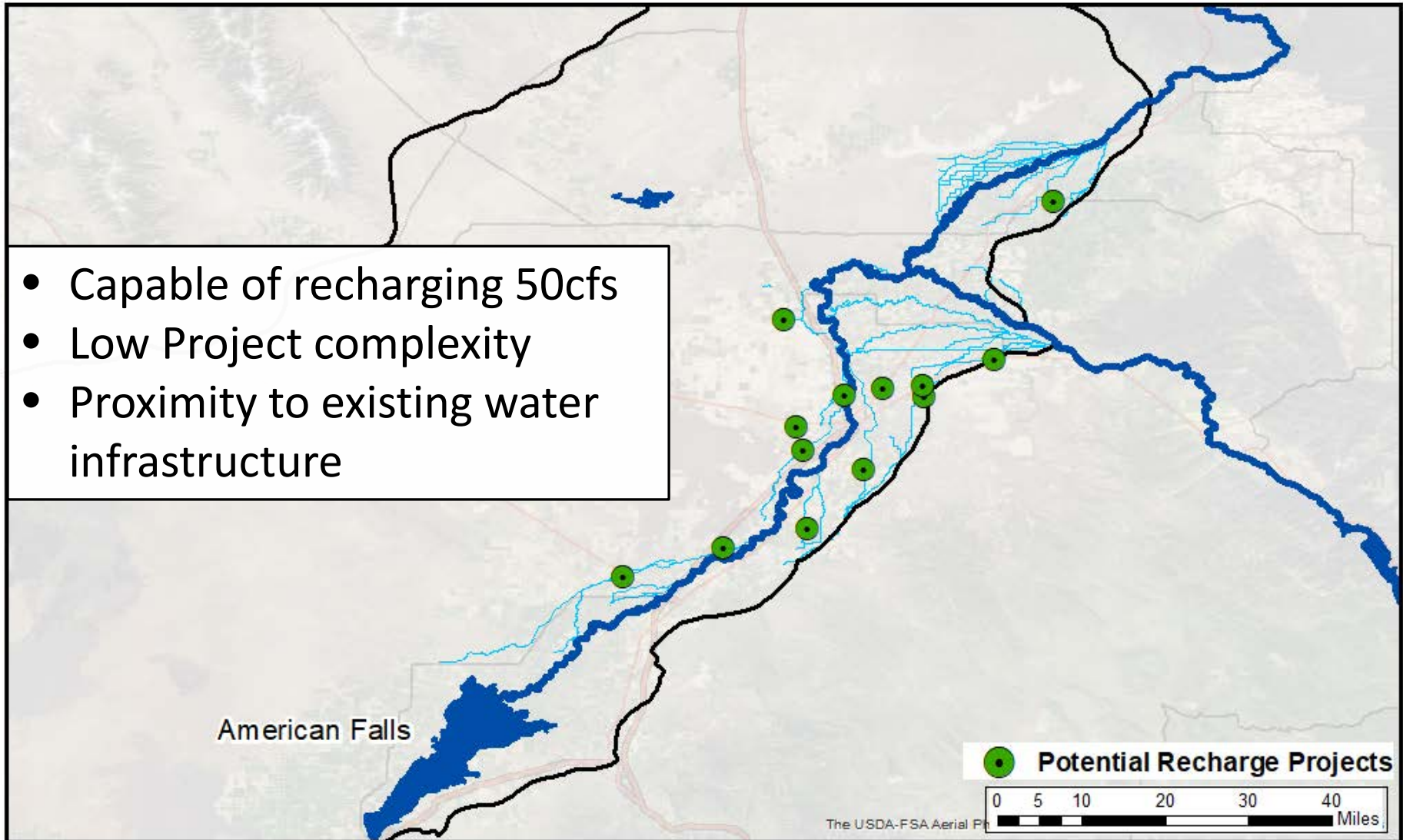
▲ Potential Recharge Sites

0 5 10 20 30 40 Miles

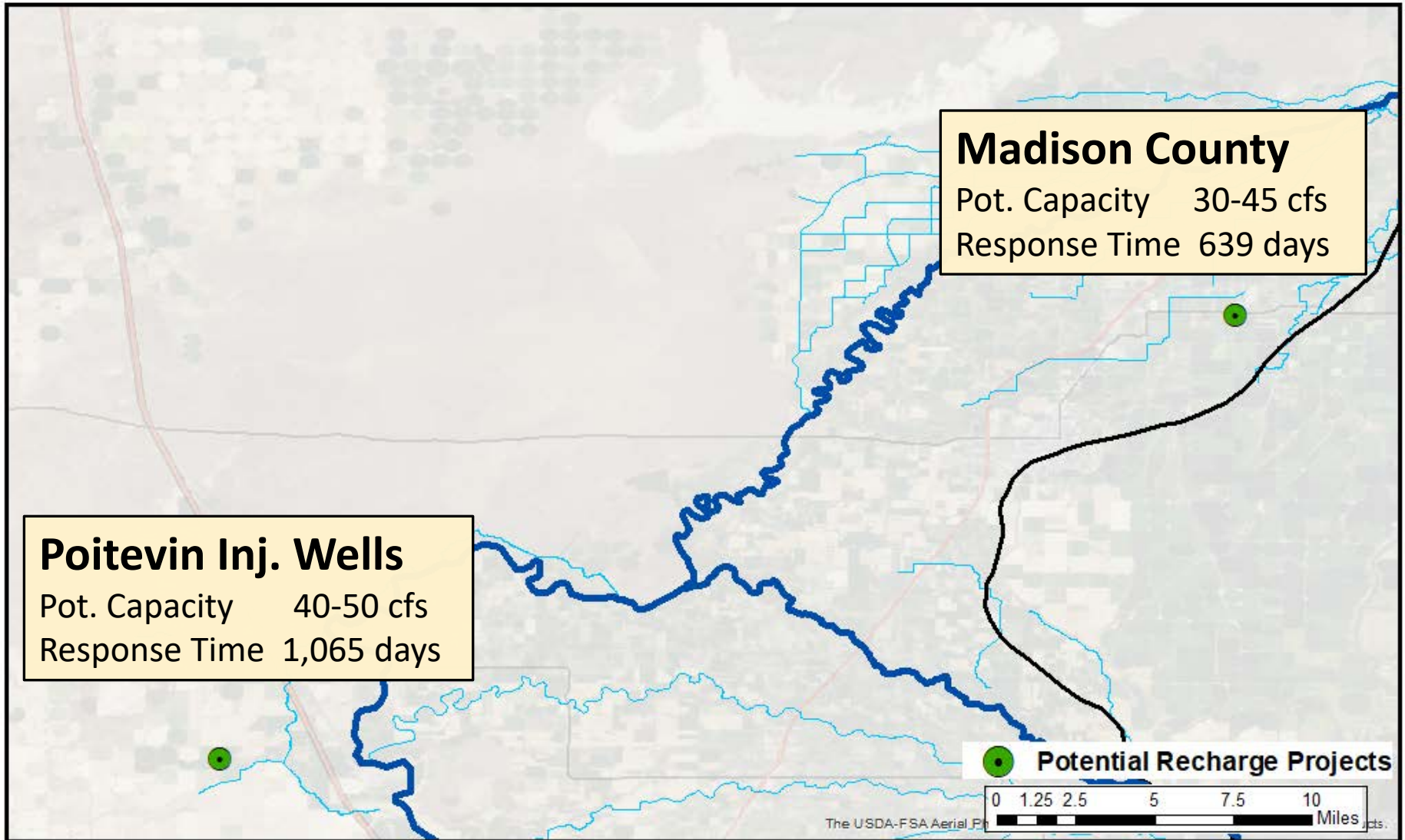
The USDA-FSA Aerial Photo

Potential “Small” Upper Valley Recharge Sites

- Capable of recharging 50cfs
- Low Project complexity
- Proximity to existing water infrastructure



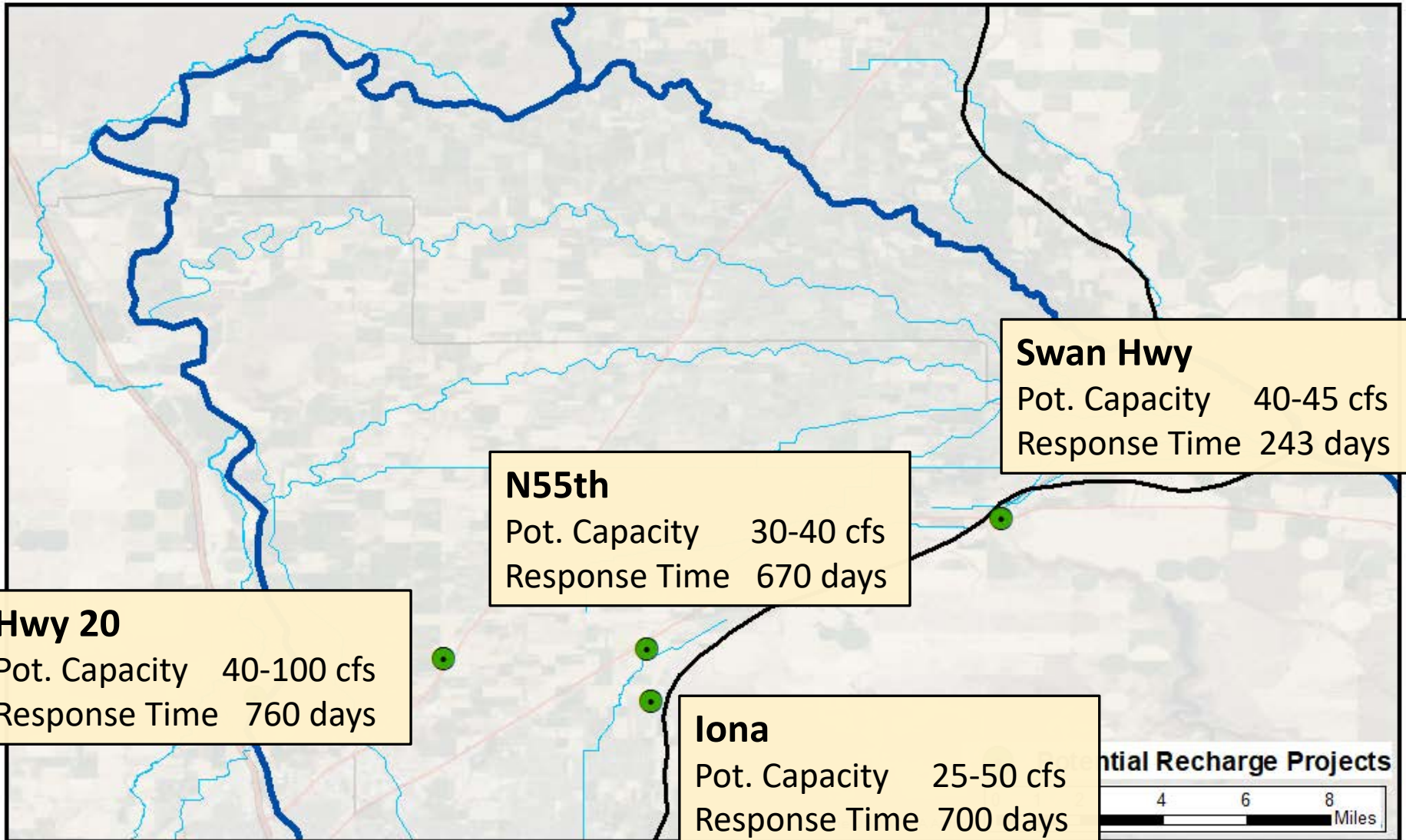
Potential Recharge Sites – Upper Snake/Henry's Fork



Upper Snake/Henry's Fork

Site	Canal	Area (acres)	DTW (feet)	50% Response Time (Days)	5-yr Ret.	Recharge Capacity (cfs)	Next Steps
Poitevin Injection Wells (5)	BMLCC	-----	160-264	1065	30%	40-50	<ul style="list-style-type: none"> • Delivery capacity/Canal improvements • Determine up to 5 sites
Madison Co.	FMID	109	45-65	517	19%	40-80	<ul style="list-style-type: none"> • Hydrogeology • Land Ownership • Project partnership • Delivery capacity

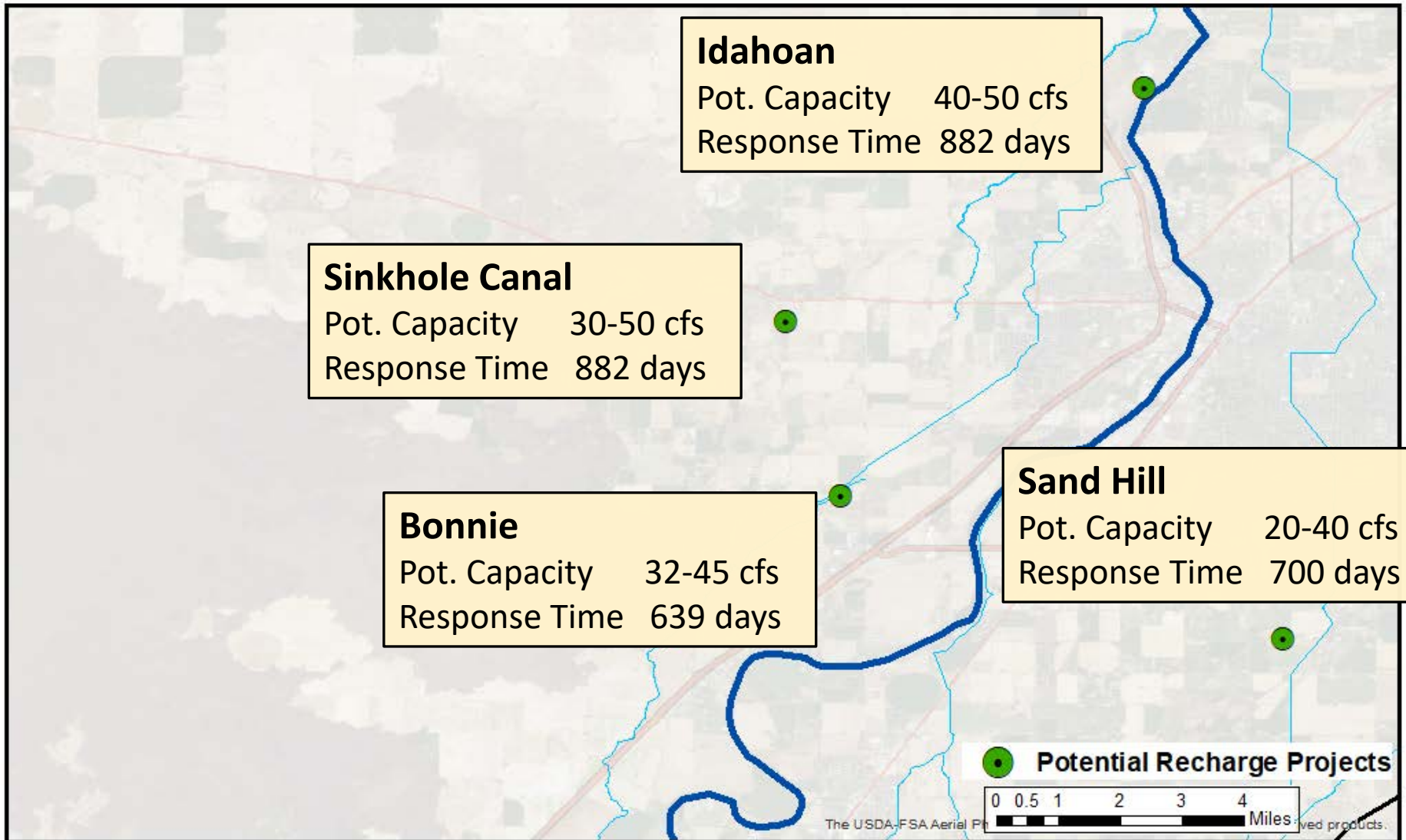
Potential Recharge Sites – South Fork



South Fork

Site	Canal	Area (acres)	DTW (feet)	50% Response Time (Days)	5-yr Ret.	Recharge Capacity (cfs)	Next Steps
Swan Valley North & South	ECC	9.5	122-184	243	10%	40-45	<ul style="list-style-type: none"> Finalize Design/Cost
N55th	Willow Creek	6.5	40-119	670	20%	30-40	<ul style="list-style-type: none"> Land Ownership Delivery capacity Hydrogeology
Iona	PID	10	87-119	700	21%	25-50	<ul style="list-style-type: none"> Land Ownership Delivery capacity Hydrogeology
Highway 20	PID	38	107-125	760	22%	40-100	<ul style="list-style-type: none"> Delivery capacity Hydrogeology

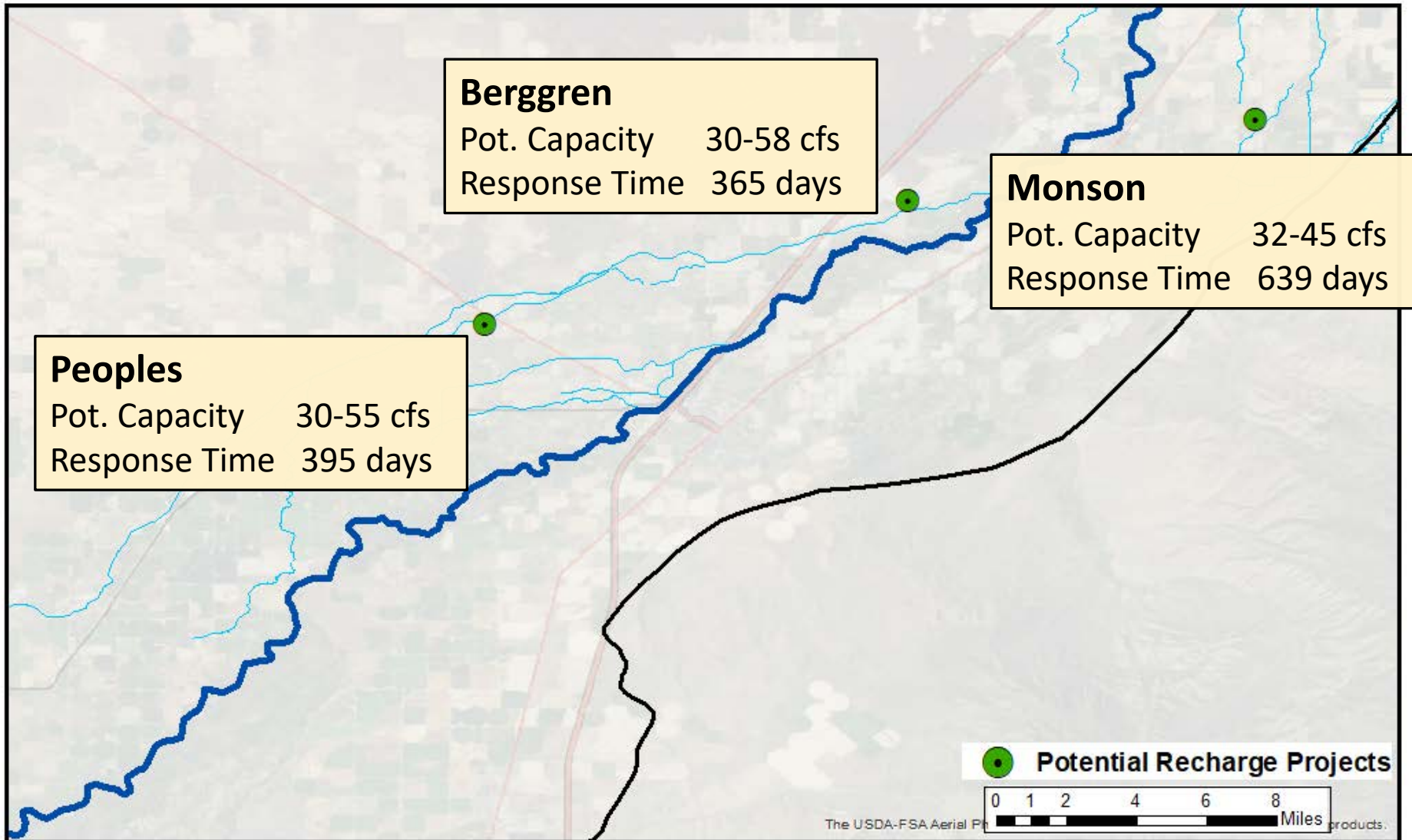
Potential Recharge Sites – Upper Mid-Snake



Upper Mid-Snake

Site	Canal	Area (acres)	DTW (feet)	50% Response Time (Days)	5-yr Ret.	Recharge Capacity (cfs)	Next Steps
Idahoan	--	20	138-151	882	25%	40-50	<ul style="list-style-type: none"> • Project Partnership • Diversion Design/Cost • Hydrogeology
Sinkhole Canal	NSID	--	165-190	882	26%	30-50	<ul style="list-style-type: none"> • Infrastructure • Site Development • Hydrogeology
Sand Hill	IID	10	87-120	700	21%	20-40	<ul style="list-style-type: none"> • Potential shallow injection Well • Delivery capacity
Bonnie North & South	NSID	19	31-75	760	23%	38-50	<ul style="list-style-type: none"> • Land Ownership • Infiltration investigation • Delivery capacity

Potential Recharge Sites – Lower Mid-Snake



Lower Mid-Snake

Site	Canal	Area (acres)	DTW (feet)	50% Response Time (Days)	5-yr Ret.	Recharge Capacity (cfs)	Next Steps
Monson	SRVID	18	31-75	639	18%	32-45	<ul style="list-style-type: none"> Land Ownership Delivery capacity Hydrogeology
Berggren Pits	NSID	15	21-64	365	16%	30-38	<ul style="list-style-type: none"> Delivery capacity Hydrogeology Land Ownership
Peoples	ASCC	22	35-45	395	18%	30-55	<ul style="list-style-type: none"> Hydrogeology Land Ownership



Questions?



Groundwater flow modeling update

Presented to the Idaho Water Resource Board Aquifer Stabilization Committee by Sean Vincent
February 11, 2022



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WATER RESOURCES

Overview

- GW model development project elements
- Status of groundwater modeling projects
 - ✓ Existing groundwater flow models (3)
 - ✓ Ongoing modeling projects (3)
 - ✓ New project
 - ✓ Proposed project

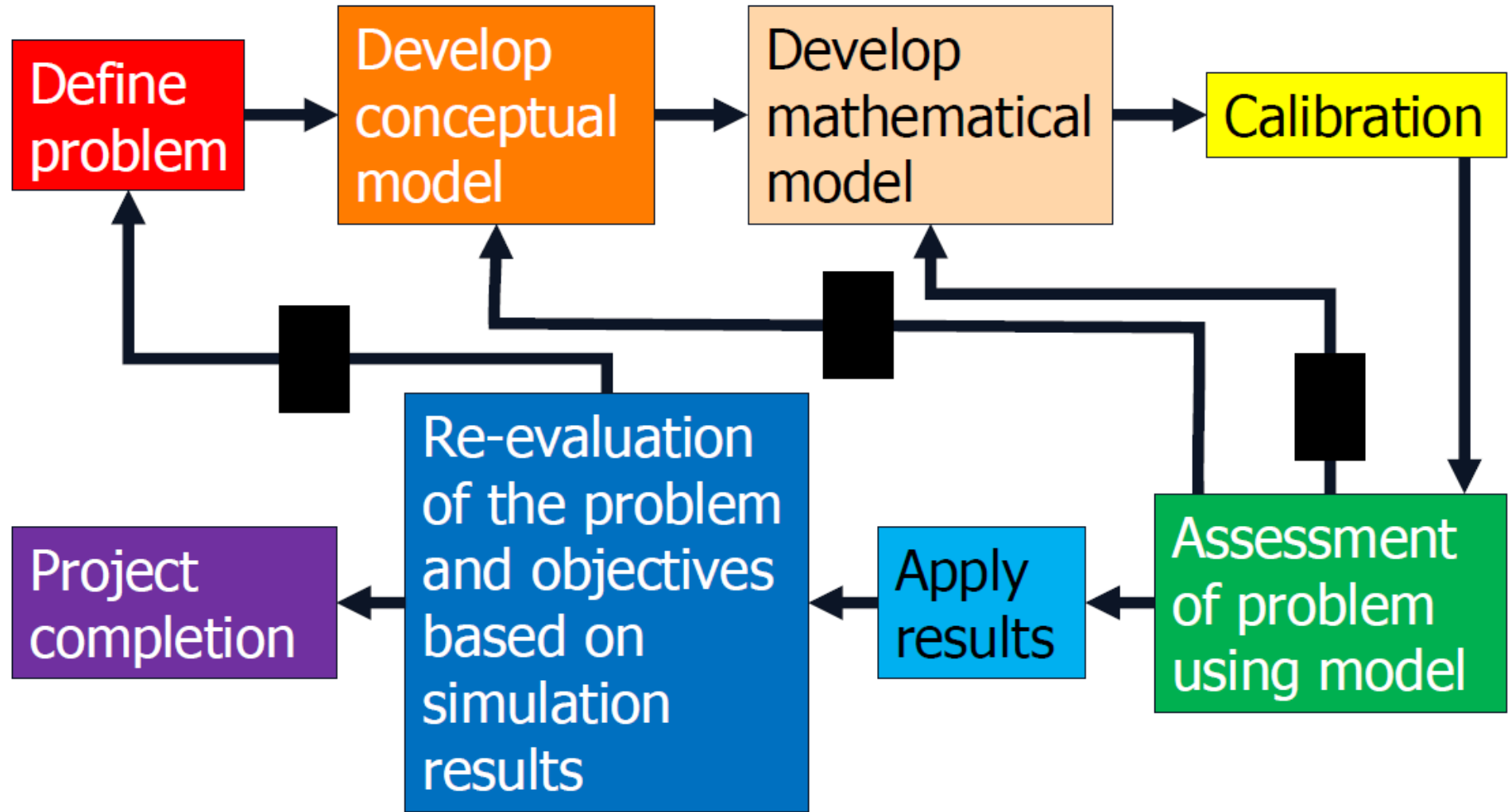


GW Modeling Project Elements

- Define problem/establish modeling objectives
- Data collection/conceptual model development
 - ✓ Geology, water level, streamflow, diversion, seepage survey, precip, & METRIC ET data
- Numerical model construction and calibration
- Model application
 - ✓ Conjunctive administration & planning
- Model recalibration (~ 1X/5 yrs.) to maintain status as “best available science”



The Modeling Process



Existing GW Flow Model #1 - SVRP

- EPA sole source aquifer
- Interstate resource
- Developed by USGS in collaboration w/ the states
- Data collection ongoing but model recalibration on hold by agreement w/ State of Washington
 - ✓ Meet annually w/ Washington DOE



Existing GW Flow Model #2 - ESPAM

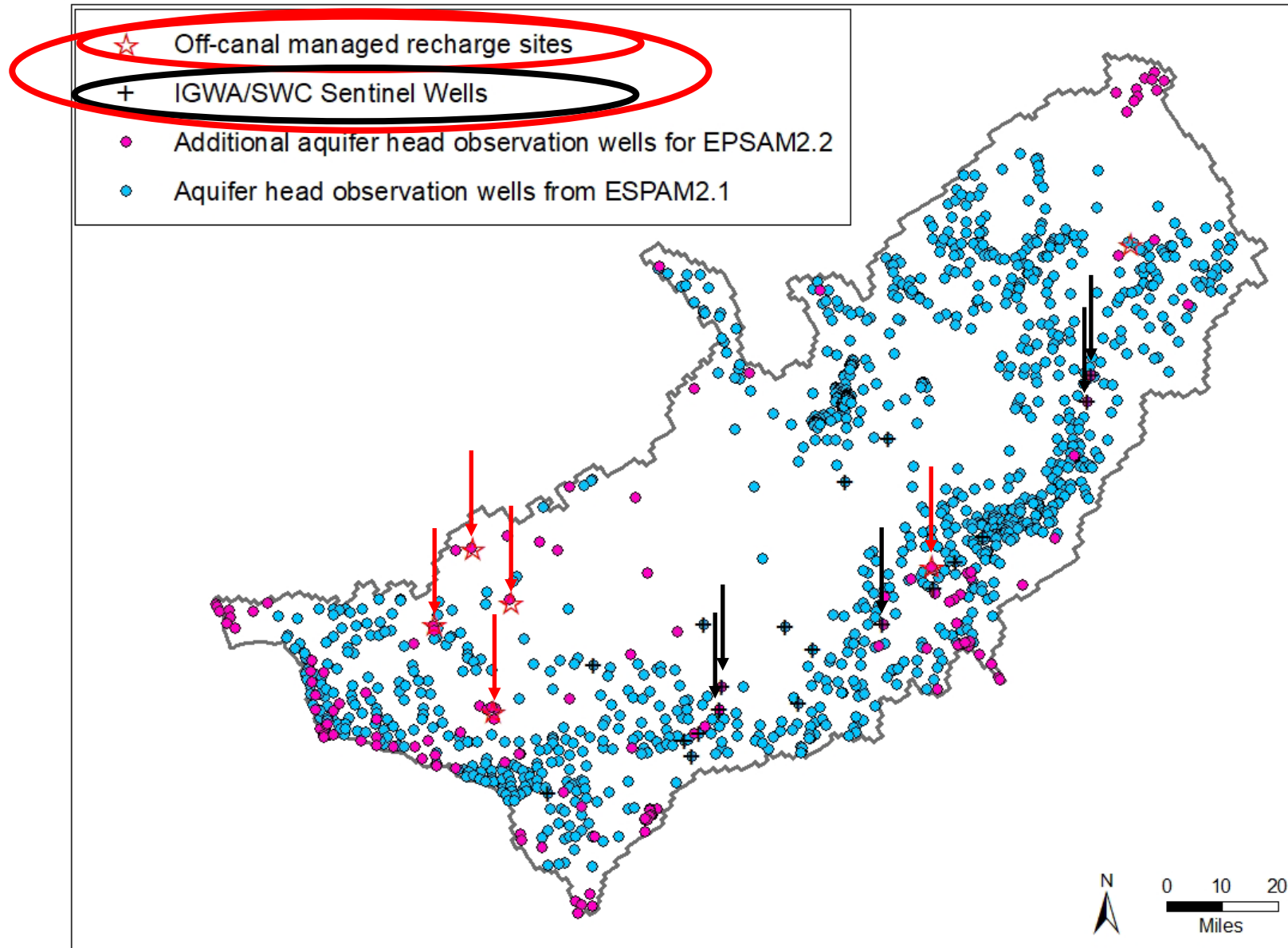
- ESHMC agreed by consensus to adopt latest calibration run as new model version 2.2 at October 2020 meeting
 - ✓ v2.2 response functions incorporated into Swan Falls Predictive Tool
 - ✓ ESPA Transfer Tool also updated w/ v2.2
 - ✓ Incorporating v2.2 response functions into Upper Snake RiverWare model
- Last meeting on January 12
 - ✓ Priorities for next model version
- Next meeting is May 11



ESPAM refinements - extended calibration period

- ▶ Extended model calibration period to include water years 2009 through 2018
 - ▶ Additional variation in climate, water supply, and water use
 - ▶ Early years of the new era of managed recharge projects
 - ▶ Early years of the SWC/IGWA settlement agreement
 - ▶ New aquifer-head observation locations associated with the IWRB managed recharge program, SEP-funded well construction, and collaboration with water users
 - ▶ New return flow measurement sites established in collaboration with water users
 - ▶ New reach gain measurement locations established in collaboration with the Shoshone-Bannock Tribes
 - ▶ 10 years of additional data collected as part of IDWR and IWRB's ongoing ESPA monitoring program
- ▶ Calibration period increased from 23.5 years to 33.5 years
- ▶ Weighted calibration targets increased from 51,679 to 76,331 observations

ESPAM refinements – new head calibration targets



Existing GW Flow Model #3 - WRV

- Version 1.0 documented in 2016
- Version 1.1 documented in 2019
 - ✓ Incorporates high frequency head & flow measurements collected between 2011 and 2014 & extends calibration period to 20 years (Jan 1995 - Dec 2014)
 - ✓ v1.1 applied to evaluate pumping curtailment scenarios for Basin 37 matter
- Kick off 2nd model recalibration w/ MTAC meeting on March 3



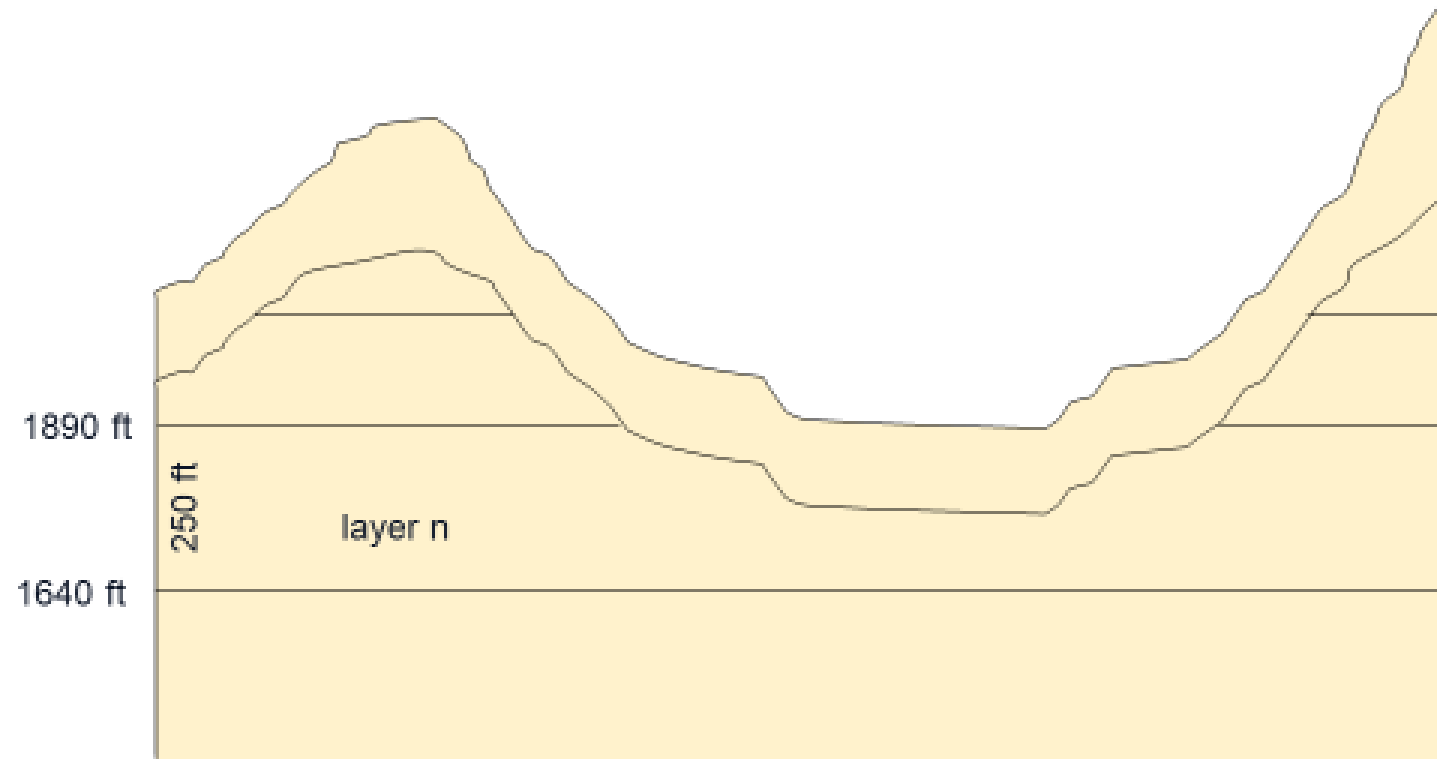
Ongoing Project #1 – Treasure Valley

- New transient model builds on steady-state TVHP model
- Collaboration w/ U.S. Geological Survey
- MTAC for stakeholder input and data sharing
- Nearing finish line on initial model development



Ongoing Project #1 - 6-layer model w/ layering based on geology and vertical water level gradients

Flow model
layer



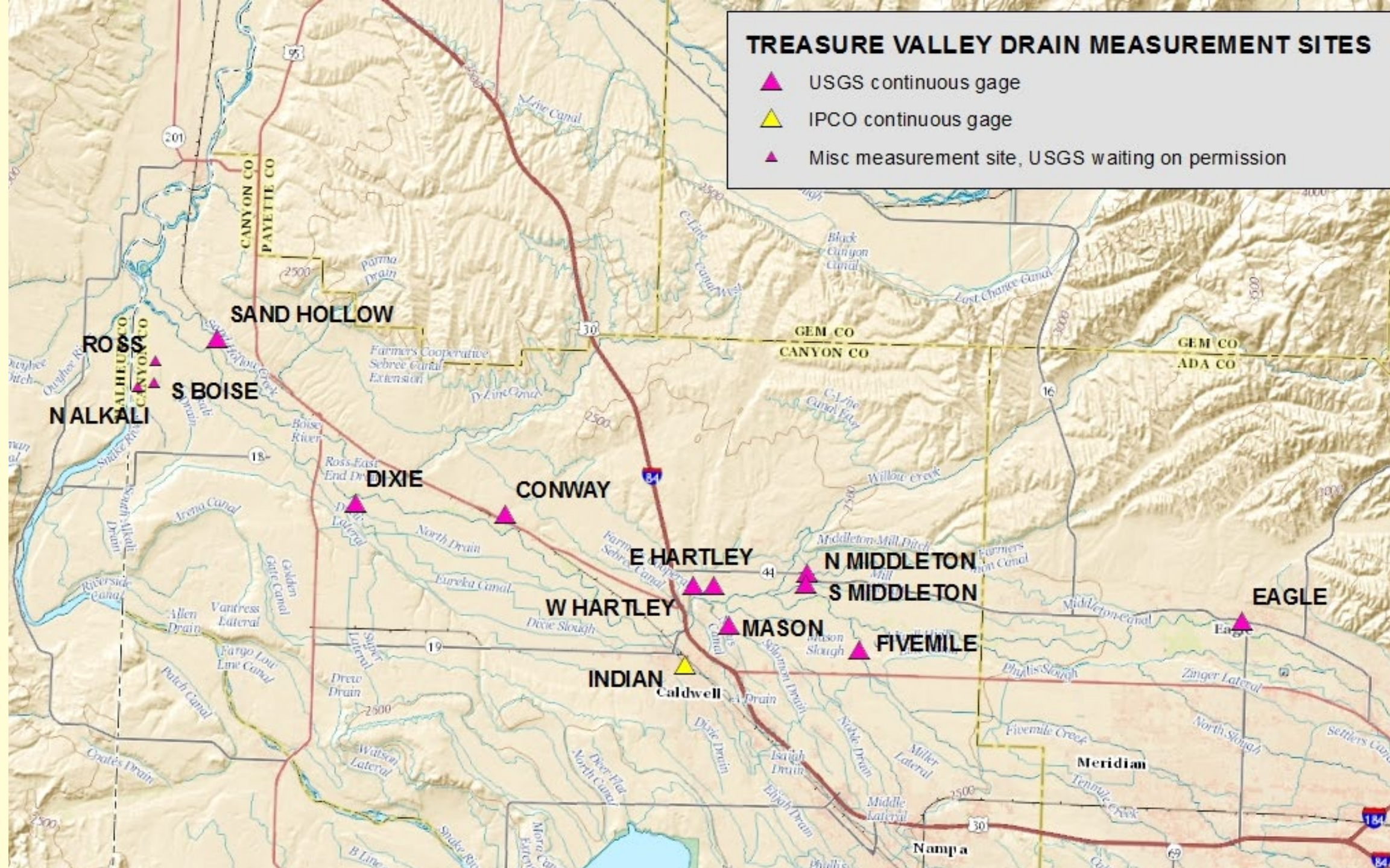
Ongoing Project #1 – Treasure Valley (cont'd)

- Data gathering will continue to support model recalibration in the future (“care & feeding”)
- Established agricultural drain monitoring network at the beginning of the project → drain discharge is most significant aquifer outflow
- Planning to present a resolution at March Board meeting to continue funding drain gage O&M by the USGS



TREASURE VALLEY DRAIN MEASUREMENT SITES

- ▲ USGS continuous gage
- ▲ IPCO continuous gage
- ▲ Misc measurement site, USGS waiting on permission

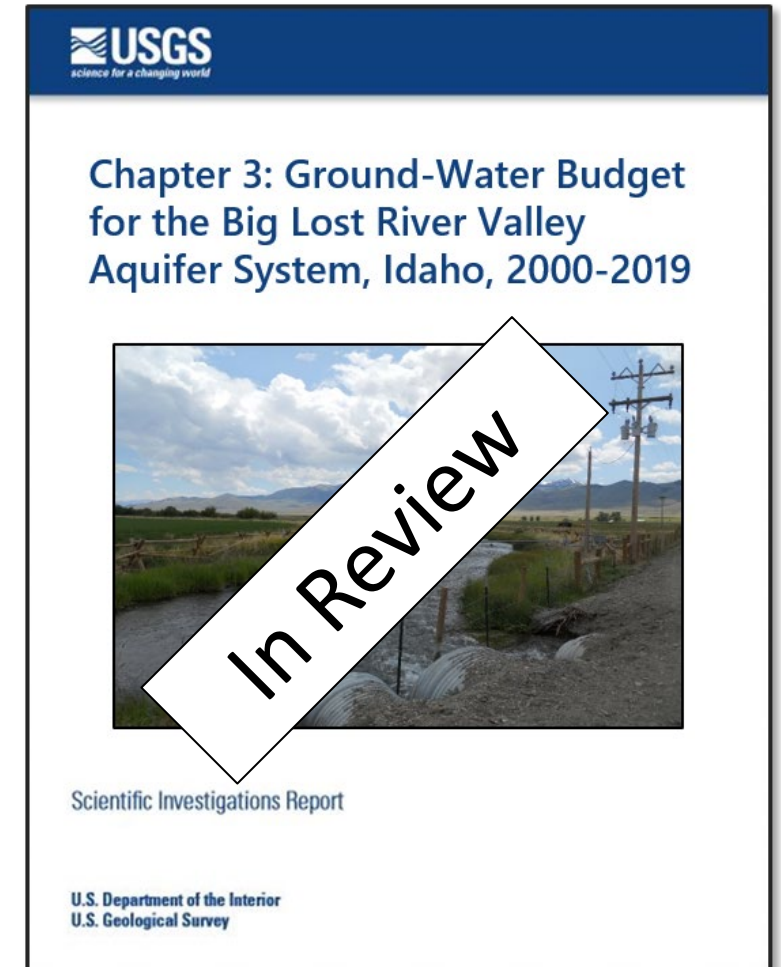
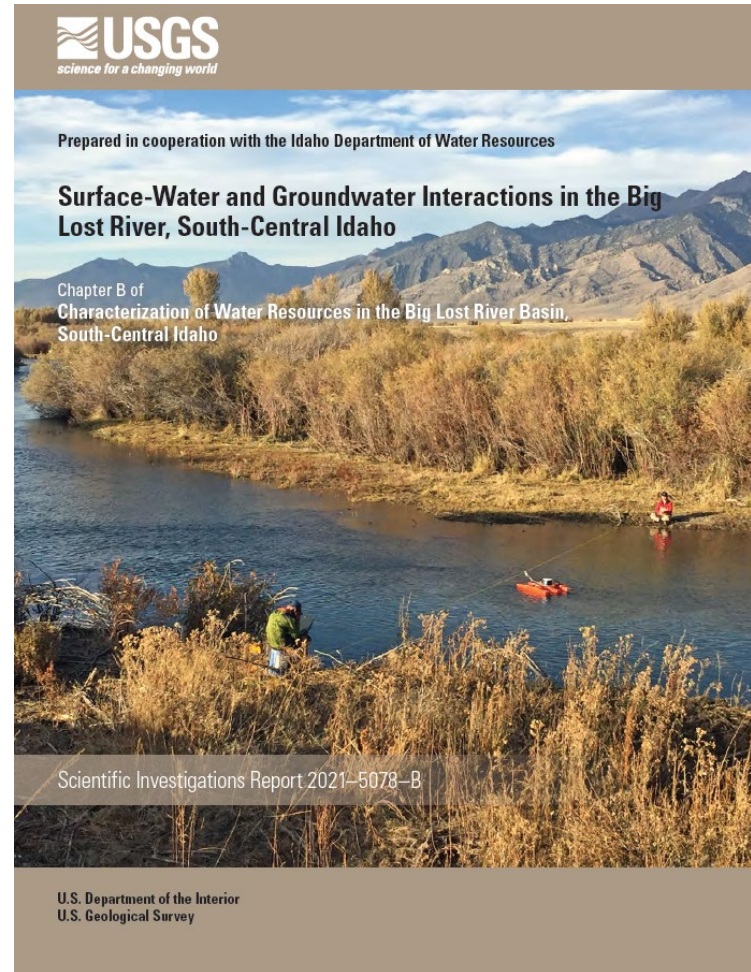
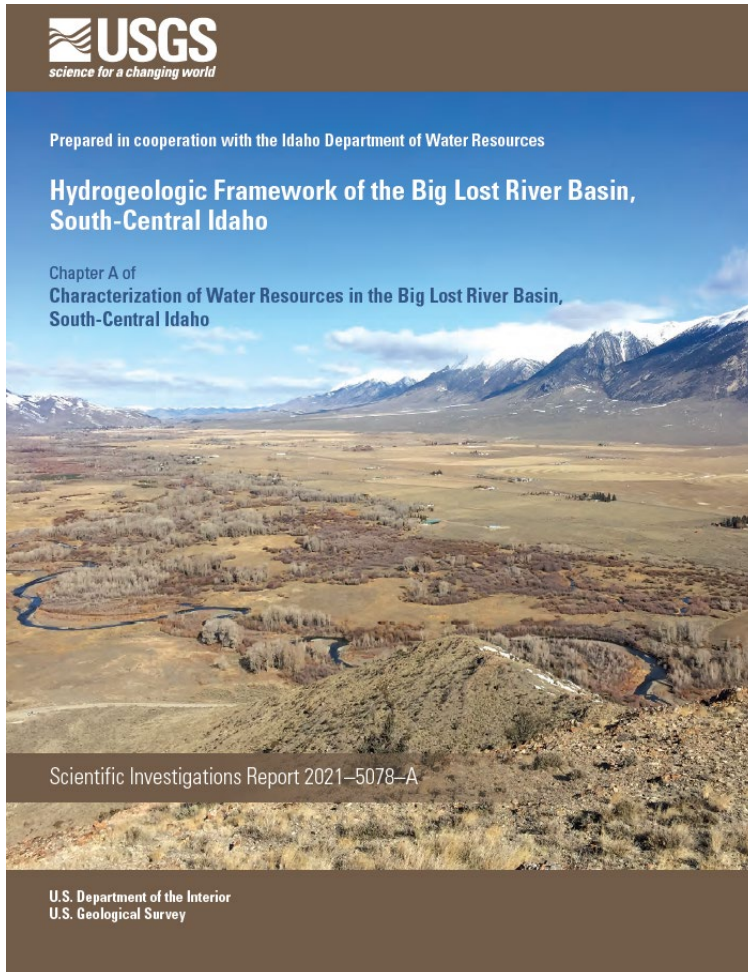


Ongoing Project #2 – Big Lost

- Aquifer system is tributary to ESPA
- Big Lost water users
 - ✓ petitioned Director to establish CGWA in 2016
 - ✓ petitioned for GWMA (instead of CGWA) in 2017
- Initiated 3-component hydrogeologic study by the USGS & IGS in 2018 using DOE SEP #2 funds
- 2 USGS reports published & 3rd report in review



Big Lost River Basin Reports



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Ongoing Project #2 – Big Lost (cont'd)

- Planning to present resolution at March Board meeting to have USGS begin 3-yr model development project upon completion of TV model v1.0

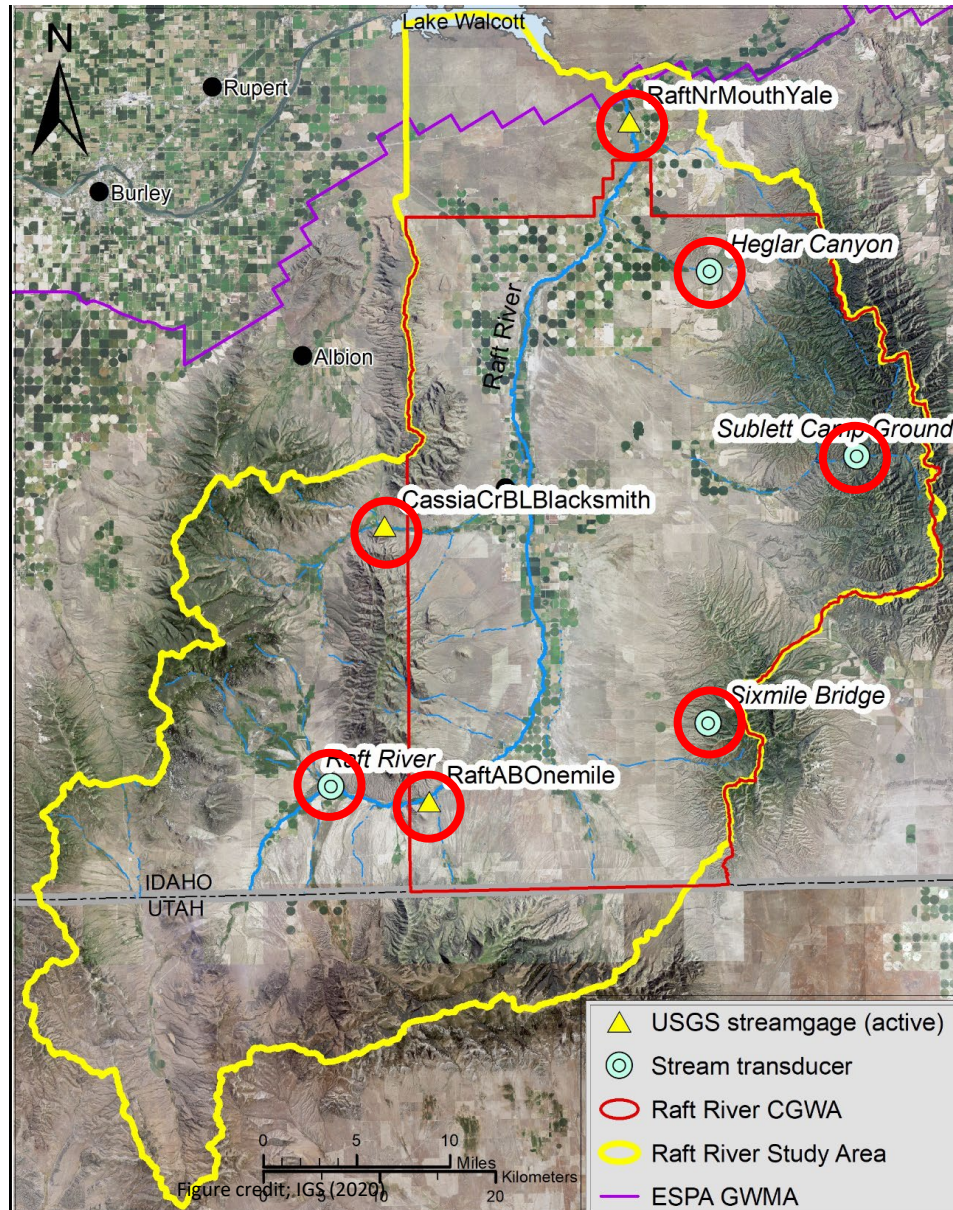


Ongoing Project #3 – Raft River

- CGWA designated in 1963
- In third year of 4-yr study of hydrogeology/water resources
- ~50/50 cost share between IWRB and US DOE
 - ✓ \$832 K from US DOE for well drilling
 - ✓ IWRB funding development of Water Budget and Hydrogeologic Framework by IGS
 - ✓ IDWR funding expansion of surface water monitoring network



Ongoing Project #3 – Raft River (cont'd)



Surface water monitoring instrumentation (2020)

- Existing USGS streamgage
 - ✓ Raft River (above Onemile)
- New USGS streamgages (2 locations installed in 2020)
 - ✓ Raft River (nr mouth)
 - ✓ Cassia Creek
- Pressure transducers (4 sites)

New Project – Mtn Home Plateau

- Mountain Home Plateau contains both a GWMA and CGWA
- Groundwater level declines of ~120 feet over the last 35 years in the southwest area of the Cinder Cone CGWA (~3.5 ft/yr)
- Groundwater level declines of ~50 feet over the last 35 years near the Air Force base (~1.4 ft/yr), which is in the GWMA



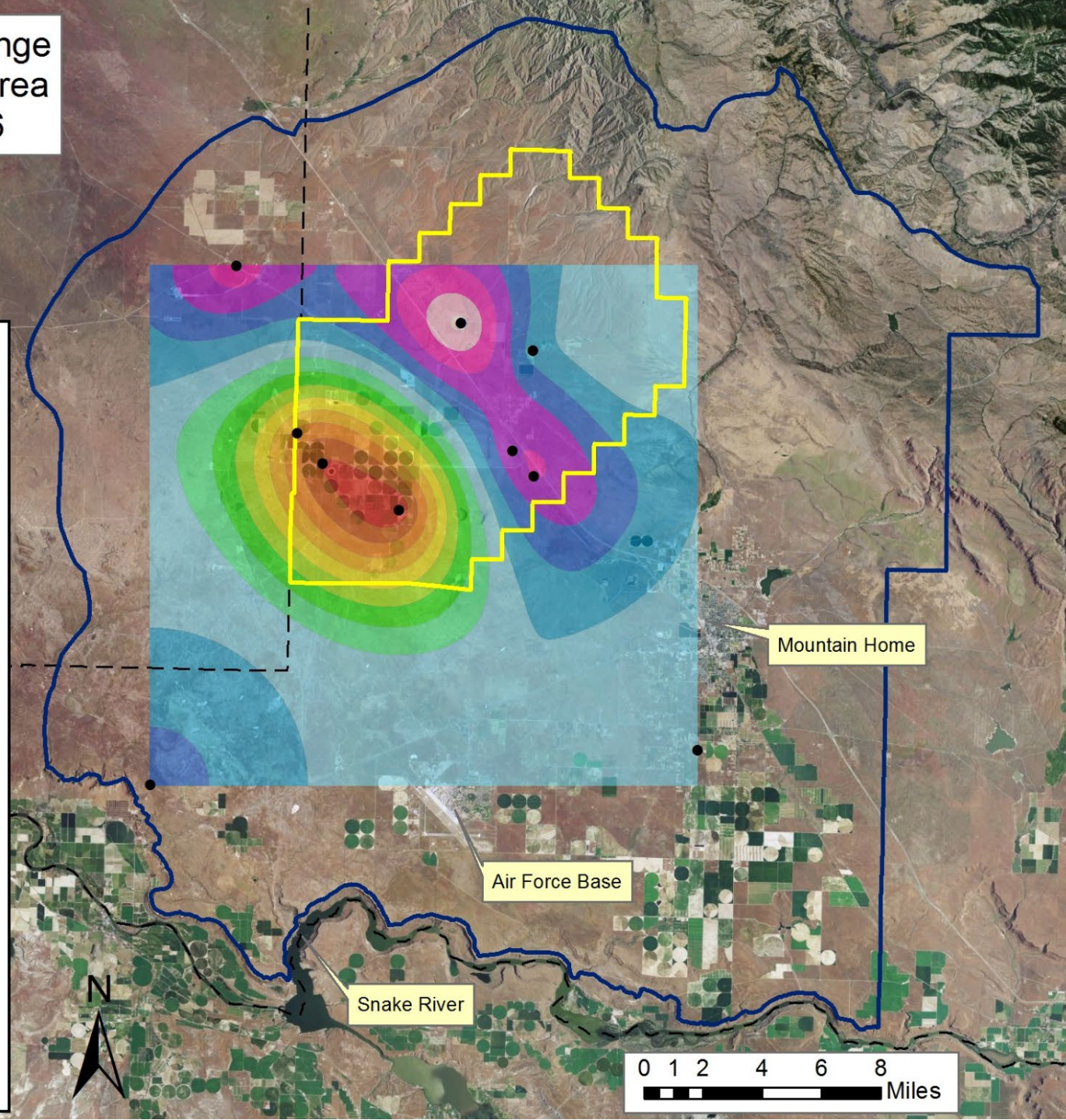
Groundwater Level Change in the Mountain Home Area Fall 1981 to Fall 2016

Legend

- IDWR Monitoring Wells
- Cinder Cone Butte CGWA Boundary
- Mountain Home GWMA Boundary
- - - County Boundary

Water Level Change (ft)

- Declines 120 to 130
- Declines 110 to 120
- Declines 100 to 110
- Declines 90 to 100
- Declines 80 to 90
- Declines 70 to 80
- Declines 60 to 70
- Declines 50 to 60
- Declines 40 to 50
- Declines 30 to 40
- Declines 20 to 30
- Declines 10 to 20
- Declines 0 to 10
- Rises 0 to 10
- Rises 10 to 20



Elmore County Request to Expand the Treasure Valley Groundwater Model to the Mountain Home Plateau

IDAHO WATER RESOURCE BOARD

MAY 21, 2021

TERRY SCANLAN, P.E., P.G.
SPF WATER ENGINEERING, LLC

New Project - Mtn Home Plateau (cont'd)

- Board approved resolution at the January meeting to move ahead with 4-yr study of the Mtn Home Plateau
 - ✓ JFA w/ USGS for Hydrogeologic Framework and Water Budget
 - ✓ Planning a separate JFA for spring and fall water level synoptic measurements
 - ✓ Planning to start well drilling summer of 2023
- IDWR staff will begin ET data processing and irrigated/non-irrigated land delineation work ASAP



Proposed Project – Camas Prairie

- BWRGWMA Advisory Committee Term Sheet includes provision to petition IDWR Director to initiate study of Camas Prairie aquifer system
- Camas Prairie is w/in the BWRGWMA
- On average, ~1/3 of Magic Reservoir inflow comes from Camas Creek



Proposed Project – Camas Prairie

- BWRGWMA Advisory Committee Term Sheet includes provision to petition IDWR Director to initiate study of Camas Prairie aquifer system
- Camas Prairie w/in BWRGWMA
- On average, ~1/3 of Magic Reservoir inflow comes from Camas Creek
- Study objectives would include determining/documenting impacts of groundwater pumping on fill of Magic Reservoir



Groundwater Modeling

	Fiscal Year																		since FY2017	
ACTIVE/PROPOSED MODELING PROJECT	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	# of contracts	Dollar amount
Spokane Valley - Rathdrum Prairie Aquifer	SVRP 1.0 (ongoing data collection only)																		0	-
Eastern Snake Plain Aquifer	ESPAM 1.1		ESPAM 2.0 / ESPAM 2.1						ESPAM 2.2				ESPAM 3.0		41	\$2,697,115				
Wood River Valley				hydro framework / model construction			WRV 1.0		WRV 1.1			WRV 1.2			3	\$231,445				
Treasure Valley								hydro framework / model construction				TV 1.0			TV 1.1	8	\$2,469,360			
Big Lost River									hydro framework (DOE SEP #2)			model construction		BL 1.0		9	\$1,575,140			
Raft River											hydro framework (DOE SEP #3)		model construction			4	\$1,714,500			
Mountain Home Plateau													hydro framework		model construction		3	\$1,200,000		
Camas Prairie														hydro framework / model construction (= term sheet component)		3	\$1,000,000			
																		TOTAL	71	\$10,887,560

Questions?

