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Managing Water in the West

Anderson Ranch Dam Raise
Informational Meeting
May 10, 2016



U.S. Department of the Interior
Bureau of Reclamation

Agenda

- Purpose
- Background
- Updated Hydrologic and Climate Change Modeling
- Feasibility Authority
- Feasibility Study Process, Estimated Schedule and Cost
- Non-Federal Interest
- Funding Strategy
- Participation Commitment
- Next Steps
- Questions

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Purpose

Provide sufficient information to enable non-Federal entities to determine whether to support and 50% fund a feasibility study to increase the storage in Anderson Ranch Dam

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Background

- Authorized for flood control, irrigation, and power generation, with fish and wildlife benefits
- IDWR's 2001 DCM&I Study
 - ~96,000 acre-feet of water needed over next 25 years
- Extrapolated study results through 2050
 - >150,000 acre-feet of water
- As population increases, water demands will increase
- Climate variability
 - decreased summer flows and snowpack
 - winter flows occurring earlier with higher peaks

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Background (cont.)

Feb 2005 Hydrologic Analysis of the Refill Probabilities Associated with Increasing the Storage Capacities of Anderson Ranch and Arrowrock Reservoirs

“There is around a 60% probability of delivering about 35,000 acre-feet and around an 80% probability of delivering over 30,000 acre-feet of additional storage if Anderson Ranch was raised 6 feet and Arrowrock was raised 2-feet.”

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Background (cont.)

- In July 2006 Reclamation completed the *Boise/Payette River Basins Water Supply Assessment Study*
 - 50 year planning horizon
 - “Areas of interest” identified
 - Increase water supply storage
 - Reduce flood risk
 - Provide ancillary environmental benefits
- Anderson Ranch Dam raise identified as possible alternative
 - USACE evaluated effectiveness using four criterion
 - Doesn't provide needed flood reduction
 - Not considered further by USACE

Background (cont.)

- Reclamation's July 2006 *Boise/Payette River Basins Water Supply Assessment Study*
 - Identified raising Anderson Ranch Dam by six feet to create approximately 29,000 acre-feet of additional storage
 - Annual refill probability near 80%
- 2009 - P.L. 111-11 provided Reclamation with feasibility study authority
- 2015 - Reclamation initiated coordination among Federal and non-Federal stakeholders; less than 50% interest level received
- 2016 - Reclamation completed preliminary hydrologic and climate change modeling
 - Utilized current modeling software and data
 - Completed at request of State

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Preliminary Hydrologic and Climate Change Modeling Results (Apr 2016)

Study Objective

- Evaluate the probability of filling an additional 28,954 acre-feet of storage space (7% increase) in Anderson Ranch Reservoir given historical and future climate change hydrology

Boise Planning Model (RiverWare)

- Daily time-step (October 1982 - September 2009)
- Simulates competing water demands
- Adheres to legal water right and physical constraints
- Recently updated to reflect current reservoir operational objectives (Boise General Investigation Study, 2015)

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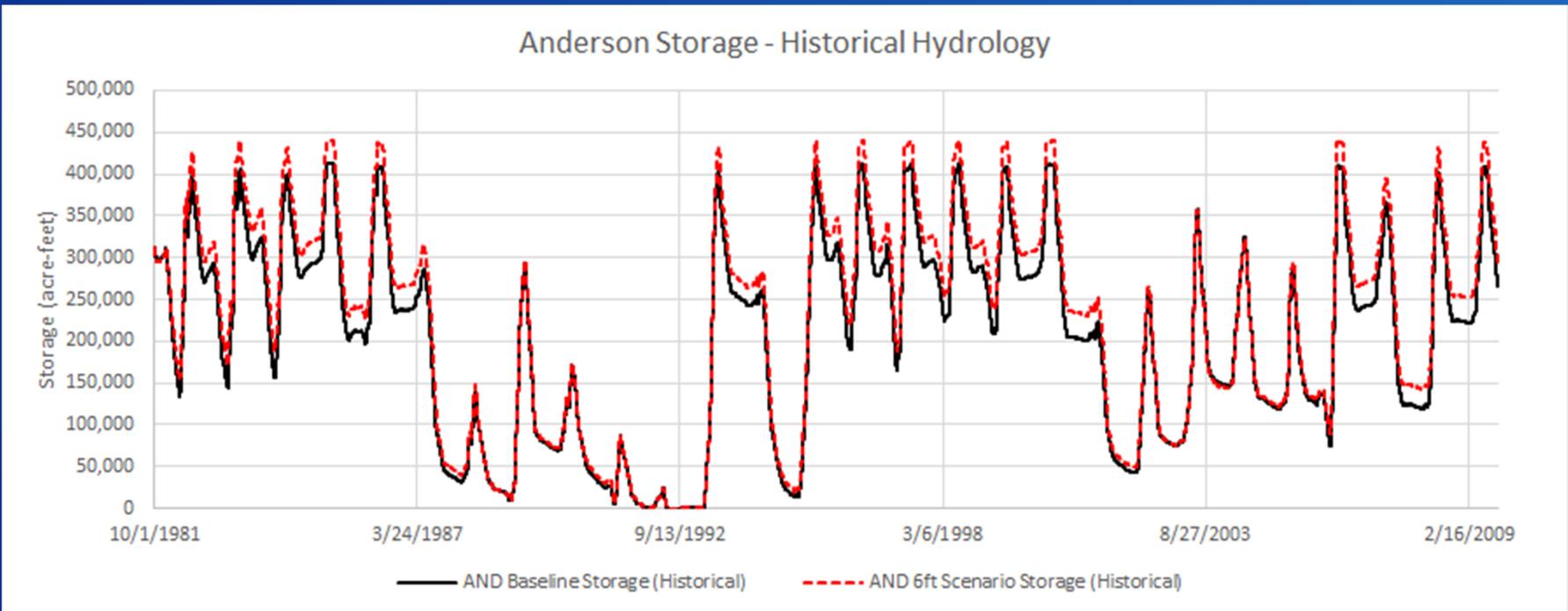
Preliminary Hydrologic and Climate Change Modeling Results (Apr 2016)

Study Approach and Assumptions

- 2 storage scenarios x 2 hydrology scenarios = 4 model runs
 - Baseline Storage/Historical Hydrology
 - Expanded Storage/Historical Hydrology
 - Baseline Storage/Projected 2080s Climate Change Hydrology
 - Expanded Storage/Projected 2080s Climate Change Hydrology
- Model is based on current reservoir operations and historical demands (these have changed over time and may change in the future)
- New space starts out empty each year (i.e., carryover benefit was not evaluated)

Storage - Historical Hydrology

Baseline and Six Foot Raise

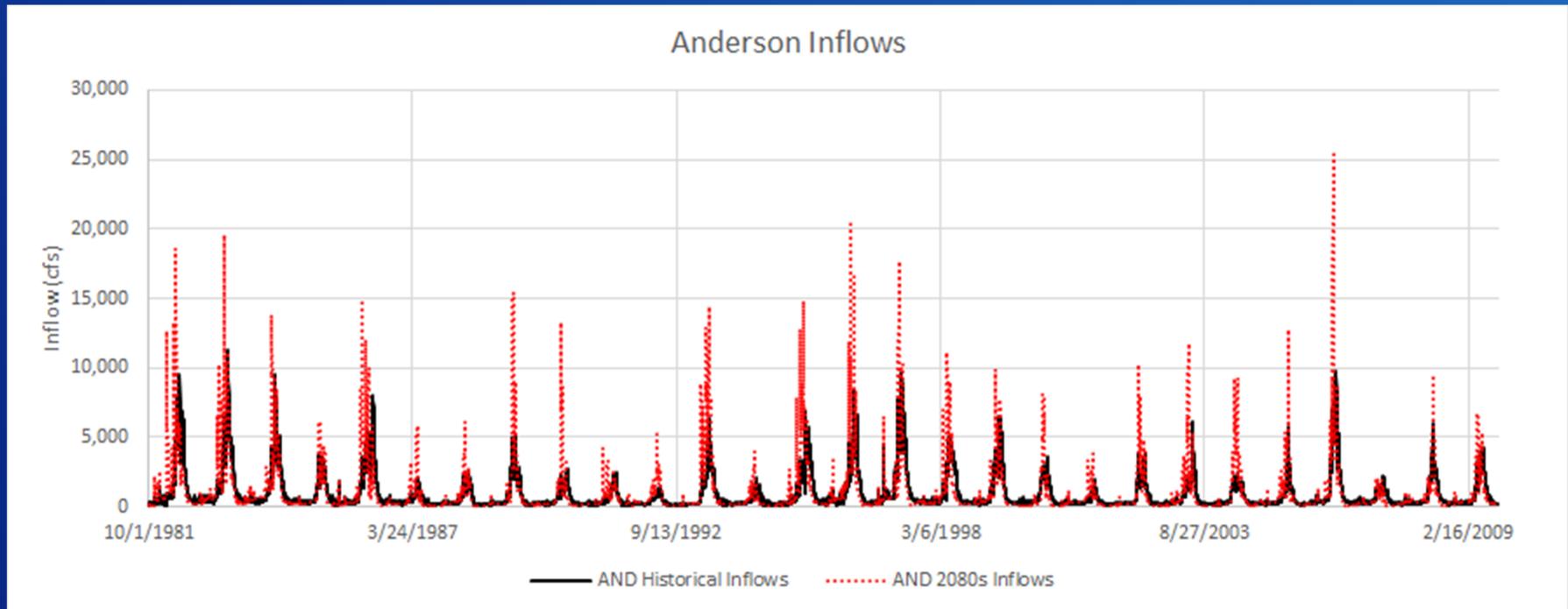


- Years with large enough inflows to fill existing space are also large enough to fill new storage space

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Inflows

Historical vs. 2080s Median Climate Change Scenarios

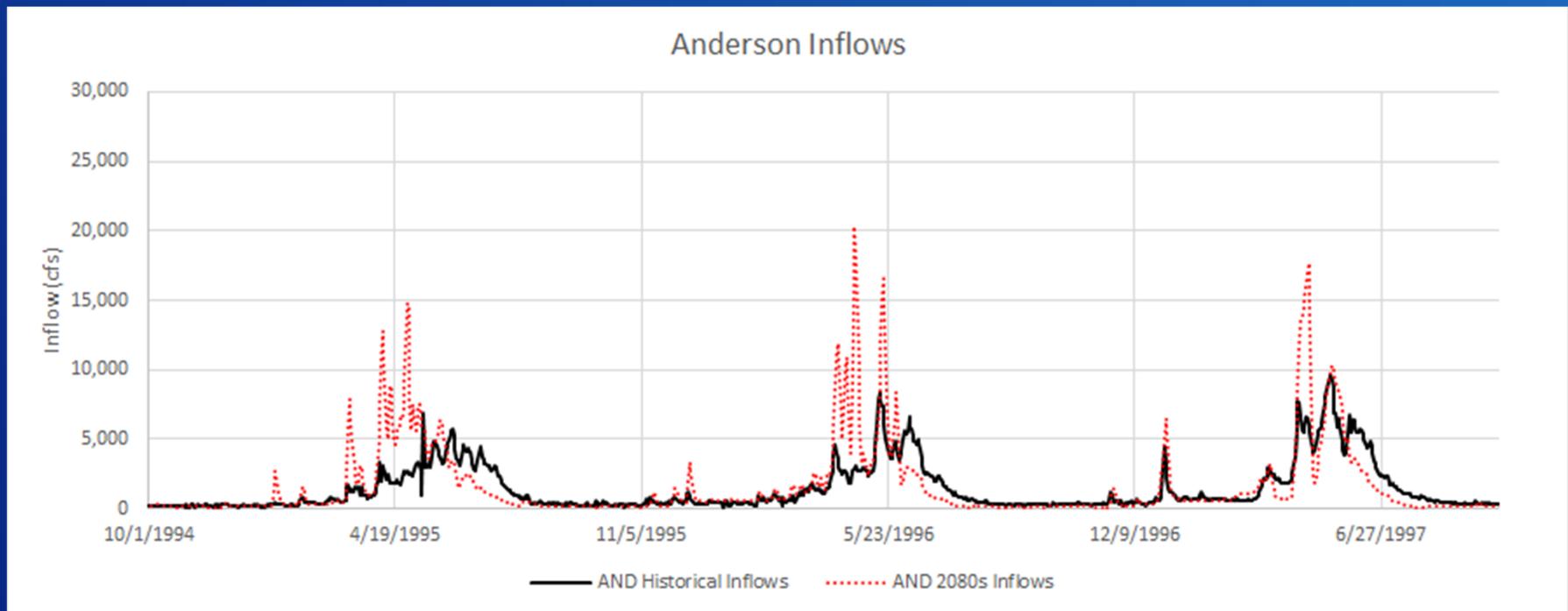


- Projected larger and earlier peak inflows in the 2080s Median climate change scenario

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Inflows

Historical vs. 2080s Median Climate Change Scenarios

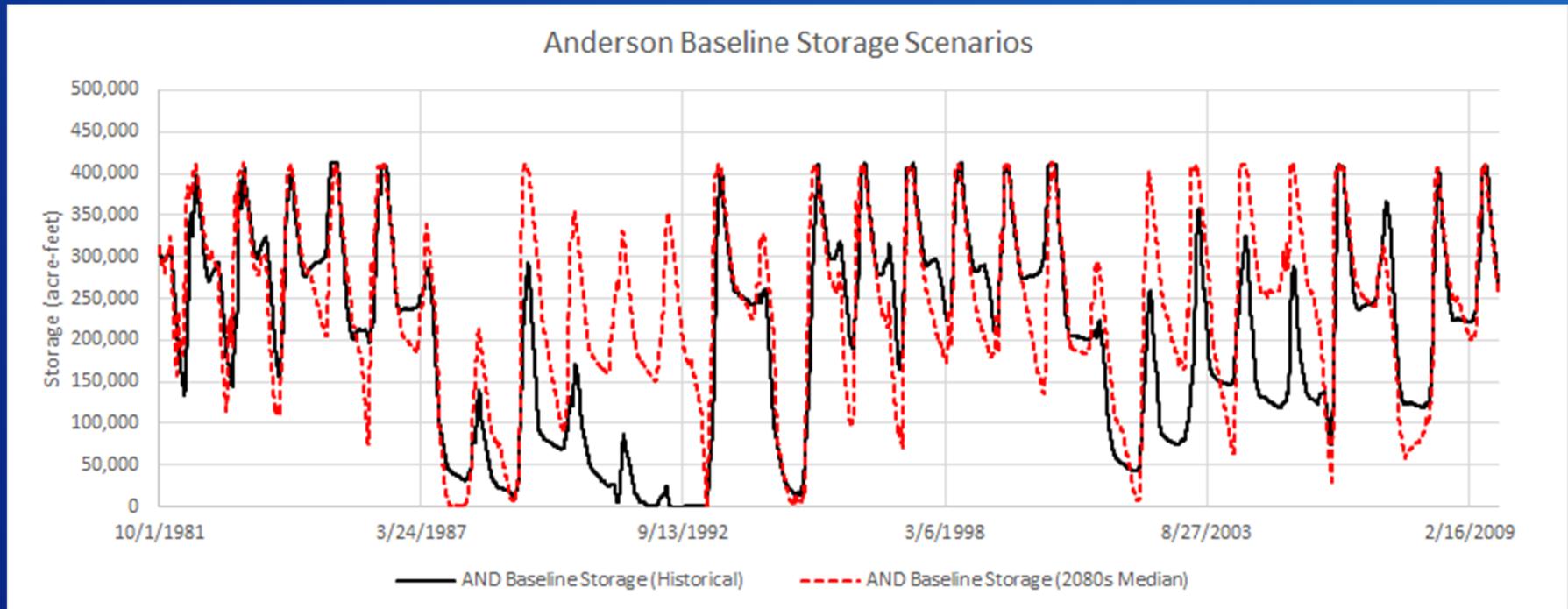


- Projected larger and earlier peak inflows in the 2080s Median climate change scenario

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Baseline Storage Scenario

Historical vs. 2080s Median Climate Change

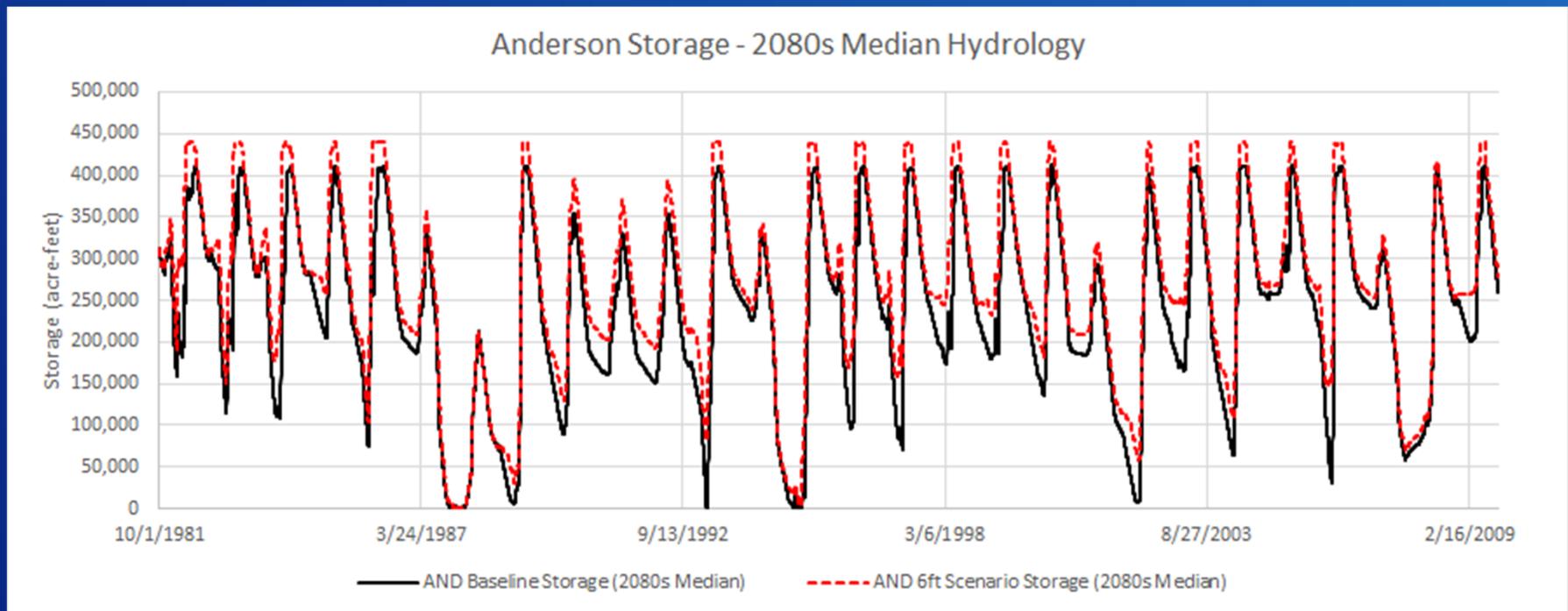


- Larger and earlier inflows impact refill of the baseline storage space

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Storage - Climate Change Hydrology

Baseline and Six Foot Raise



- Baseline storage vs. expanded storage under future climate change scenario
- Years large enough to fill existing space are large enough to fill new space

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Preliminary Hydrologic and Climate Change Modeling Results (Apr 2016)

Key Findings:

- Annual refill probability of both existing and additional storage space using historical hydrologic conditions is approximately 50%
- Earlier and greater peak runoff in 2080s Median climate change scenario increases probability of filling existing and new space to 68%
- In general, if the existing space fills, there would be enough runoff to fill the proposed new space as well

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Preliminary Hydrologic and Climate Change Modeling Results (Apr 2016)

Key Findings (cont.):

- Increased operational flexibility provided by the expanded space improves refill of the existing system storage space

		Historical Hydrology		2080s Median Climate Change Hydrology	
% of Years	No. of Years	Volume (AF)	% Fill	Volume (AF)	% Fill
4%	1	28,954	100.0%	28,954	100.0%
7%	2	28,954	100.0%	28,954	100.0%
11%	3	28,954	100.0%	28,954	100.0%
14%	4	28,954	100.0%	28,954	100.0%
18%	5	28,954	100.0%	28,954	100.0%
21%	6	28,954	100.0%	28,954	100.0%
25%	7	28,954	100.0%	28,954	100.0%
29%	8	28,954	100.0%	28,954	100.0%
32%	9	28,954	100.0%	28,954	100.0%
36%	10	28,954	100.0%	28,954	100.0%
39%	11	28,954	100.0%	28,954	100.0%
43%	12	28,954	100.0%	28,954	100.0%
46%	13	28,954	100.0%	28,954	100.0%
50%	14	15,851	54.7%	28,954	100.0%
54%	15	0	0.0%	28,954	100.0%
57%	16	0	0.0%	28,954	100.0%
61%	17	0	0.0%	28,954	100.0%
64%	18	0	0.0%	28,954	100.0%
68%	19	0	0.0%	28,954	100.0%
71%	20	0	0.0%	25,772	89.0%
75%	21	0	0.0%	17,284	59.7%
79%	22	0	0.0%	15,391	53.2%
82%	23	0	0.0%	0	0.0%
86%	24	0	0.0%	0	0.0%
89%	25	0	0.0%	0	0.0%
93%	26	0	0.0%	0	0.0%
96%	27	0	0.0%	0	0.0%
100%	28	0	0.0%	0	0.0%

Summary of simulated fill to the new six-foot dam raise storage space in terms of the percent of years a particular fill volume / percent is equaled or exceeded between 1982 and 2009

Scenario	% Years Filled	% Years 0 Fill	Average Annual Benefit (AF)
Historical Hydrology	46	50	14,009
2080s Median Climate Change Hydrology	68	21	21,735

Summary of average annual benefit

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Feasibility Authority

Reclamation authority is from the Omnibus Public Land Management Act of 2009, PL111-11 SEC. 9001

- *“The Secretary of the Interior, acting through the Bureau of Reclamation, may conduct feasibility studies on projects that address water shortages within the Snake, Boise, and Payette River systems in the State of Idaho, and are considered appropriate for further study by the Bureau of Reclamation Boise Payette water storage assessment report issued during 2006...”*
- Appropriated ceiling \$3M
- Authority expires March 30, 2019

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Feasibility Study Process

Overview

- Supports formulation and evaluation of alternative plans to meet established objective
- Leads to selection of recommended plan
- Assesses of environmental impacts as required by NEPA
- Analyzes increasing water surface elevation by six (6) feet; adding ~29,000 acre-feet
- Analyzes other alternatives

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Feasibility Study Process

Phase	Estimated Start	Estimated Duration	Estimated Cost
Selection of Appraisal Plans for Feasibility Study	Complete		
Receive >50% Firm Funding Commitment	May 2016	3-5 months (end Sep 2016)	
MOAs Executed; Study Team Formed	Oct 2016	3-6 months (end Mar 2017)	\$250,000 to \$500,000
Feasibility Scoping / Initiate NEPA Process	Apr 2017	12 months (end Mar 2018)	\$600,000 to \$1,000,000
Alternative Formulation and Evaluation	Apr 2018	12 months (end Mar 2019)	\$600,000 to \$1,000,000
Recommended Plan to DEC and Policy Reviews / Feasibility Report	Apr 2019	12 months (end Mar 2020)	\$500,000

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Feasibility Study Process

Phase	Estimated Start	Estimated Duration	Estimated Cost
Reclamation's Feasibility Study Authority Expires* <i>*Reclamation would need Cost Share Partners support to extend feasibility study authority</i>	Mar 2019		
Washington, DC Reviews	Apr 2020	6 months (end Sep 2020)	
Record of Decision Issued and Submitted to Congress	Oct 2020	6 months (end Mar 2021)	\$500,000
Congressional Authority to Design and Construct	Apr 2021		

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Estimated Costs

Total Estimated Cost of Feasibility Study - \$3.5M

- Approximately \$121/AF
- 50% Reclamation share - \$1.75M
- 50% Non-Federal Cost Share Partner share - \$1.75M

Total Estimated Cost Range of Construction - \$31M*

- Approximately \$1,070/AF
- All non-Federally funded

** From the 2006 Boise/Payette Water Storage Assessment Report \$16M - \$26M; adjusting for inflation is a range of \$19M - \$31M*

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Non-Federal Interest

Potential Space	Name
~25%	Nampa & Meridian Irrigation District
~10%	Suez (formerly United Water)
~5%	City of Meridian
<1%	Rocks Water
TBD	Elmore County
TBD	Idaho Water Resource Board
TBD	Simplot
TBD	Tree Top Ranches

Funding Strategy

- Need MOAs for 50% non-Federal funding for the feasibility study in form of MOAs before the feasibility study can commence
- Firm funding commitment from non-Federal cost share partners needed for the duration of the study
- Reclamation is budgeting for 50% cost share

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Participation Commitment Needed

- Commitment letters requested by July 10, 2016
- If 50% or more non-Federal cost share is identified, Reclamation will develop funding MOAs with interested parties and obtain monies
- If MOAs are executed by October 31, 2016, the feasibility study would likely complete in 2021
- Support for extension of feasibility authorization

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Next Steps

- Complete MOAs
- Initiate feasibility study (August 2016)
- Refine schedule and budget
- Initiate plan of study
- Establish project team
- Secure service provider commitments
- Perform Study

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Questions

Website

<http://www.usbr.gov/pn/studies/andersonranch/index.html>

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