US Army
Corps of Engineers
Walla Walla District

BOISE RIVER FEASIBILITY STUDY
Ada and Canyon Counties, Idaho

November 2013

BACKGROUND

- In May 2009, the U.S. Army Corps of Engineers (Corps) and Idaho Water Resource Board (Board) signed a cost share agreement and associated project management plan to initiate a feasibility study. The current agreement includes tasks to begin, but not complete, the feasibility study. (The table in the attachment lists the deliverables and analyses that are included in the current agreement.) Before the Corps could request authorization from Congress to construct a project, additional tasks and analyses are required to complete a feasibility study and a decision document.
- In May 2012, Walla Walla District's Commander Lieutenant Colonel David Caldwell and staff gave a presentation to the Board about the significant risk and consequences associated with flooding on the Boise River. Lieutenant Colonel David Caldwell suggested that the Board's cost share partnership with the Corps and its interest in increasing surface water storage in the Boise watershed could complement flood risk reduction solutions while meeting future water supply and demand.
- Recent policy changes at Corps Headquarters aimed at streamlining feasibility study execution (SMART Planning) provided an opportunity for the Board to complete a feasibility study more efficiently and cost effectively. The Corps requested that the Board consider expanding the scope of the current cost share agreement to include tasks to complete the feasibility study. Otherwise, there was a risk that the study would not be funded by the Corps in future budget cycles.
- At the May 2012 meeting, the Board directed Idaho Department of Water Resources (IDWR) staff to work with the Corps study team to develop an expanded cost share agreement and project management plan that would comply with the SMART Planning guidelines and result in a completed feasibility study that evaluated solutions to meet water supply and flood risk reduction objectives.

RECENT PROJECT ACTIVITIES

- The study team has completed a working draft of an expanded cost share agreement and project management plan that identifies tasks, estimates costs, and proposes a schedule for completing a feasibility study and the required environmental compliance. The table in the attachment compares the study scope described in the current agreement to the proposed expanded agreement to complete a feasibility study.
- The study team further developed the Arrowrock Dam raise concept to allow the team to identify specific tasks and analyses that will be required to complete the feasibility study. Concept development included estimating construction quantities for a proposed dam raise concept, assessing existing site conditions to develop assumptions associated with construction and operations during construction, and developing a strategy to evaluate water supply and flood risk benefits when conducting the benefit-cost analysis.
- Geotechnical engineering team members completed a field investigation, in coordination with Bureau of Reclamation, at the Arrowrock Dam site to search for possible construction material sources (aggregate), conduct a field-level analysis of existing area geology, and examine existing site conditions to determine logistics for future geotechnical surveys and potential construction. The team determined that granite bedrock sources that can be used for aggregate are likely located upstream and downstream of the existing dam site and that sand can be obtained from the existing reservoir banks. The team noted that topography and current site conditions provide limited areas for staging equipment and would present some challenges during surveying and construction.

- Preliminary concepts were developed for other options that may be evaluated in the feasibility study, including identifying locations and strategies to estimate preliminary costs and benefits. These analyses were completed to allow the study team to identify possible alternatives and analyses that will need to be completed during the feasibility study.
- The study team biologist completed a site visit of the lower Boise River and met with U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, Idaho Department of Environmental Quality, Idaho Rivers United, and Trout Unlimited to discuss potential study alternatives, identify available data and understand potential environmental concerns.

ATTACHMENT

Deliverables/Analyses in Current Partnership Agreement	Deliverables/Analyses Proposed in Expanded Agreement to Complete Feasibility Study
Total Estimated Cost: $1.74 Million ($425K expended to date and $500K pre-agreement credit) • Water Storage Analysis - Assess 12 potential sites and identify top three (The Arrowrock Dam site was identified as the top ranked option.) - Preliminary engineering design and cost estimates for up to three options (The level of detail is appropriate for making comparisons but not for seeking construction authorization from Congress.) • Flood Damage and Economic Analysis - Update floodplain model and floodplain map for Boise River from Diversion Dam to head of Eagle Island (16-mile reach) - Update economic data to calculate flood damages and benefits associated with upstream surface water storage • Alternative Development - Inventory existing conditions - Identify problems, planning objectives and constraints - Describe future conditions for a no action alternative • Public Information Meetings and Agency Coordination • Interim Report - Alternatives development - Summary of water supply and demand (provided by IDWR staff) - Water storage assessment - Interim flood damage and economic analysis - Scope of work (project management plan) with tasks, analyses, estimated costs, and proposed schedule to complete feasibility study	Total Estimated Cost: $2.8 Million • Engineering and Cost Engineering Appendices - Geotechnical surveys - 30% engineering design, quantities, and cost estimates for selected alternative - Cost estimates, assumptions, and cost risk analysis for alternatives - Hydrologic/hydraulic modeled analyses and GIS analyses used to support design assumptions and calculation of benefits (Modeled analysis would include Boise River from Lucky Peak Dam to its confluence.) - Failure mode analysis • Economic Appendix - Estimated flood damages/benefits and water supply benefits for alternatives - Benefit:cost ratio for alternatives • Real Estate Appendix - Real estate maps and requirements (lands, easements, utility relocations, rights-of-way, etc.) for recommended alternative - Gross appraisal • Feasibility Report - Document identification of, analysis and comparison of alternatives - Recommend alternative for implementation - Documentation to support recommendation • Environmental Impact Statement and Other Environmental Compliance Documents - Evaluation of potential environmental and social impacts of proposed alternatives - Documents and activities to comply with National Environmental Policy Act, Endangered Species Act, National Historic Preservation Act, and other environmental laws • Public and Agency Outreach - Public information and public comment meetings - Agency and Tribal coordination and consultation - Written summaries of public comment • Chief's Report (Required to support request to Congress to authorize construction.)

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Reader's View: Time to talk solutions for Idaho's roads

Reader's View: More storage might be necessary as water levels fluctuate

Published: September 20, 2013

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By TIM PAGE

It is obvious, the last three years had been more than enough water to supply the needs of the Valley. However, 2013 has been a different story due to the less-than-adequate precipitation during the last two months of 2012 and the first four to five months of this year.

The Boise Project Board of Control has approximately 85 percent of storage in Arrowrock and Anderson Ranch Reservoir and utilizes Lake Lowell as a holding pond for approximately 47,000 acres below the lake. Lucky Peak is a flood control reservoir including recreational use where Boise Project has no storage space.

During good years, the river produces enough surface water to fill these reservoirs and keep the river flowing with adequate water for downstream and upstream users sometimes until June or early July.

The question that has been asked a number of times this year is why some landowners, rotations and/or subdivisions served by the Boise Project Board of Control do not have enough surface irrigation water to get them through the irrigation season. And the answer is in the above-mentioned comments.

The reservoir system did not fill and the river did not produce as much as it has in the past. Due to those reasons, the Board of Control had to set an allotment early at the beginning of the season at 1 foot per acre. It then increased it to 1.4 feet per acre on June 8th after the majority of the snow pack had melted.

One way to have sufficient surface irrigation water for the Valley in the future is to capture most, if not all, of the runoff on a normal or above-normal year during the spring runoff, requiring additional storage.

It was a high water year in 2010 and Boise River levels were at flood stage (7,500 cubic feet per second) for large portions of June. Without Arrowrock, Anderson Ranch and Lucky Peak, we would have likely seen flooding like the floods of 1943 that prompted the construction of Lucky Peak Reservoir.

Besides the obvious benefits of flood control for the Treasure Valley, Boise was able to build the Greenbelt, rafters and floaters were able to float the river, irrigation water was available, and power was created by these reservoirs.

Even though we have one of the earliest water turnoffs in a while (Sept. 5), we wouldn't have this had it not been for the storage in Anderson Ranch, Arrowrock, Lucky Peak and Lake Lowell in Canyon County. These four storage areas have helped homeowners and farmers alike keep their lawns green and crops growing for another summer.

It's evident that the storage in place is critical for the population numbers we already have in this valley. It becomes more evident every year that with the growing population and the concurrent demands for water that additional storage is probably necessary. There might be those that are opposed to this idea, but the

major swings in water availability over the last several years is a clear demonstration that Boise would have been ravaged by floods during the higher precipitation years and would have suffered economy-killing drought during the less than adequate precipitation years.

Tim Page is project manager for the Boise Project Board of Control.

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Reader's View: Idaho needs to figure out how to help all of its citizens

Reader's View: Invest in a more efficient water system

Published: October 16, 2013

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By LIZ PAUL

In this arid climate, Treasure Valley communities depend on three Boise River reservoirs that together provide nearly a million acre feet of water storage. The storage is usually adequate to meet the need for irrigation water, but this year, some of the valley's irrigation districts and canal companies stopped delivering water to farms, schools and subdivisions in early September because of low water supplies.

While uncommon and unfortunate, short water years are not unexpected or unprecedented. The Treasure Valley has experienced numerous droughts, but changing climate patterns may decrease the reliability of winter snowfall even further.

On Sept. 20, the Idaho Statesman printed an opinion by Tim Page, manager of the Boise Project Board of Control. Page described the shortage his irrigation districts endured this year and appropriately expressed concern for future drought. Page suggested more reservoir storage may be needed.

New or higher dams, however, won't create new water; even our smartest engineers can't make it snow. So instead of depending on Congress to appropriate millions to study and design new storage space, we need to invest those dollars into implementing changes to eliminate inefficiencies and make the best use of every acre foot of water we have.

One way to do this would be to stop diverting more water than needed to serve suburban and commercial areas. Buildings, roads and parking lots occupy thousands of acres that were farmed in the 20th century. Development happened so fast and so extensively that irrigation entities haven't had the chance to work with municipalities and homeowners associations to make the adjustments necessary to ensure excess water isn't diverted.

When water is plentiful, few take time to worry about efficiency, but this year it wasn't. This year, delivering water as if farms dominated the landscape exacerbated the impacts of a low snowpack.

The premise here is straightforward: Irrigation districts and canal companies should divert only the amounts necessary to deliver water to the lands in their service areas that are actually irrigated. Rather than pushing as much as two times more water than a given parcel can use, the irrigation entities should leave the water in reservoir storage or in the river for other users who, in turn, would not have to call on storage as often or as early. Diverting more than is needed means water flows past subdivisions unused and ends up back in the river via drains and creeks.

The irrigation districts and canal companies may recite various justifications for diverting as much water as they do, but before more money is spent studying additional storage, critical information needs to be shared.

How many acres of irrigable land do the irrigation interests serve? How much water is being diverted per irrigated acre? Which subdivisions use a timed rotation to share water supplies? How much water is showing up in drains or as increased river flows at the state line?

Irrigation accounts for more than 90 percent of the Treasure Valley's water diversions. Bringing suburban lawn and landscaping irrigation into line with the per-irrigated-acre diversions that apply to the Valley's farmers would yield significant water savings. This course of action provides reliable insurance against drought and allows local stakeholders to act now instead of waiting indefinitely for Congressional appropriations to build new storage to capture runoff from snow that may never fall.

Improved efficiency is the quickest, cheapest and most reliable way to drought-proof the Treasure Valley.

Liz Paul is Boise River Campaign Coordinator tor Idaho Rivers United.