

Executive Briefing Paper
Weiser-Galloway Project Studies
November 4, 2013



Project Background: Water storage on Weiser River and at the Galloway site has been studied for decades -- the Corps first received a study authorization resolution for the Galloway Project from the U.S. Senate Public Works Committee in 1954; and, in the early 1970s Federal lands for the potential Galloway dam and reservoir site were classified and withdrawn for hydropower purposes by the Federal Power Commission (now the Federal Energy Regulatory Commission). In 2008, the IWRB was directed by the Idaho Legislature through House Joint Memorial 8 (HJM 8) to investigate water storage projects statewide, including the Weiser-Galloway Project. Potential project benefits include flood risk reduction, hydropower, additional water storage, pump back, irrigation, regional economic development, recreation and flow augmentation requirements for anadromous fish recovery.

Gap Analysis (March 2011): In response to HJM 8, the IWRB partnered with the Corps to publish the *Weiser-Galloway Gap Analysis, Economic Evaluation and Risk-Based Cost Analysis Project* (Gap Analysis), completed in March 2011. The Gap Analysis was a comprehensive review of earlier studies of the potential Galloway Dam and Reservoir site by the Corps from 1983-1994. It provided an analysis of gaps in information in the earlier studies and incorporated events, knowledge and information affecting Idaho and the Snake River Basin that have developed since the earlier studies were performed. Its focus was on the future water supply and management needs of Washington and Adams Counties, the City of Weiser, the State of Idaho, and the Weiser and Snake Rivers.

The gap analysis was specifically designed to inform decision makers of critical gaps to be addressed before deciding whether to move forward with comprehensive new environmental, engineering and economic feasibility studies. The analysis examined 181 gaps and identified two critical gaps that required resolution: 1) Determine the safety, suitability and integrity of geologic structures at the potential dam and reservoir site; 2) Evaluate whether basin and regional benefits would be realized by analyzing a series of system operating scenarios with new storage on the Weiser River.

On July 29, 2011, the Idaho Water Resource Board authorized expenditure of up to \$2 million to analyze the forgoing gaps. Both studies are being conducted jointly between the IWRB and the Corps.

Geologic Investigation (September 2013): The *Foundation Investigation and Evaluation, Weiser-Galloway Potential Damsite, September 2013* is intended to determine the suitability of the geologic structures at the potential dam and reservoir site. Clays, tuffs, and ash were found by the Corps during limited 1984 core drilling of dam site abutment structure. To rule out potential structural weakness and seepage potential for the dam and reservoir site, additional core drilling and geologic investigation was performed. Findings of the geologic investigation will be presented at the IWRB's November 19, 2013 work session. The general scope of the analysis included the following:

- Six holes and 1537.8 feet of core were drilled in the abutments of the potential dam site;
- Permeability, strength and materials testing was performed on selected core samples and possible embankment materials located near the site;
- Geologic mapping was performed, as well as investigation of foundation conditions, seepage and permeability, slope stability, seismic hazards, potential borrow areas at and around the dam reservoir site;
- Evaluation of possible dam types (e.g. embankment dam) and modifications to the structure proposed in the 1980's Corps studies (including areas of potential cost savings);
- Cost figures were updated;
- Identification of data gaps and recommendations for additional technical analysis to be pursued during a design phase.

Operational Analysis (Ongoing): The *Snake River System Operational Analysis Project* will analyze a range of scenarios that seek to optimize system operation with approximately 750,000 acre-feet of new water storage capacity on the Weiser River. The analyses will consider the needs of the Hells Canyon Complex, Snake River System, and the Weiser

River Basin including Washington and Adams Counties. Coordination and validation by IPCO and BOR is critical to the process. The analysis will schedule and shape the new storage to maximize:

- Flood risk reduction, irrigation, recreation and hydropower benefits for Weiser, and surrounding areas in Washington and Adams Counties;
- Supplemental water supply for local canal and irrigation companies;
- Economic benefits to the water storage systems on the Boise, Payette and Upper Snake Rivers through potential substitution and relief of up to 240,000 acre-feet of water currently released from those basins to meet anadromous fish flow augmentation requirements;
- Potential benefits to the Lower Snake for temperature reduction during the summer;
- Positive and/or negative impacts to hydropower for the Middle Snake and Hells Canyon Complex generating facilities and Lower Snake/Columbia River system;
- Integration with State water management policy including obligations set forth in the 2004 Snake River Water Rights Agreement (Nez Perce Agreement) regarding salmon flow augmentation, the 2009 Swan Falls Reaffirmation, and the Hells Canyon relicensing criteria.

Budget and Timeline (for recent and ongoing studies)

1. Geologic Investigation:
 - \$1.3 million (includes federal matching funds - Corps and IWRB partnership)
 - Drilling was completed in November 2012; results and final report presented in November 2013.
2. Operational Analysis:
 - \$700,000 (includes federal matching funds - Corps and IWRB partnership)
 - Initiation of the operational analysis was held until preliminary results of geologic study were available.
 - Completion is anticipated by spring 2015.

Quick Project Facts (based on original 1987-89 USACE studies)

1. Located on the Weiser River, approximately 13.5 miles east of Weiser, Idaho, and its confluence with the Snake River.
2. Project consisted of a potential 300 foot high, 1,200 foot long, earth and rock-fill embankment dam, and approximately 900,000 acre-feet of water storage (a slightly smaller structure is being considered in the current studies based on the updated yield analysis).
3. Reservoir at full capacity would potentially inundate 6,918 acres of land (4,608 acres of private lands, 2,017 acres of federal lands, and 293 acres of former Northern Pacific Railroad – now the Weiser River Trail).
4. The total current project cost is estimated to be \$502 million (2011). Some 78% of this cost is for contingencies per the Corps cost-risk calculation methodology. Without contingencies, the costs are estimated to be some \$310 million. (Approximately \$350 to \$550 per acre-foot capital cost).

Additional Information

1. The Weiser River Trail, managed by the Friends of the Weiser River Trail, is recognized as a National Recreational Trail. Relocation of the trail will be evaluated enable its continued recreational use.
2. Geothermal exploration will likely occur in the general project area as evidenced by several geothermal leases on private and federal lands in the area.
3. The former Idaho Almaden Mine which overlooks the project area was opened in 1939 and closed in 1972. It functioned as a mercury mine, mill and refinery. Comprehensive reports on the history of the mine, and analysis of residual mercury contamination, were completed by the Idaho Geological Survey and the Idaho Department of Environmental Quality in 2000 and 2007. The reports found no migration of mercury from the mine site.
4. Exploratory drilling for gold has continued at the old Almaden Mine site. Some 900 core holes totaling 100,000 feet of core have been drilled over the past ten years.

Proposed Galloway Dam and Reservoir Site

Legend

- Crane Creek Hot Springs
- ~ River or Stream ~ Canal
- + Weiser River Trail (former Railroad)
- Proposed Galloway Dam Site
- Galloway Inundation Boundary*
- Township Section

0 0.5 1 2 Miles



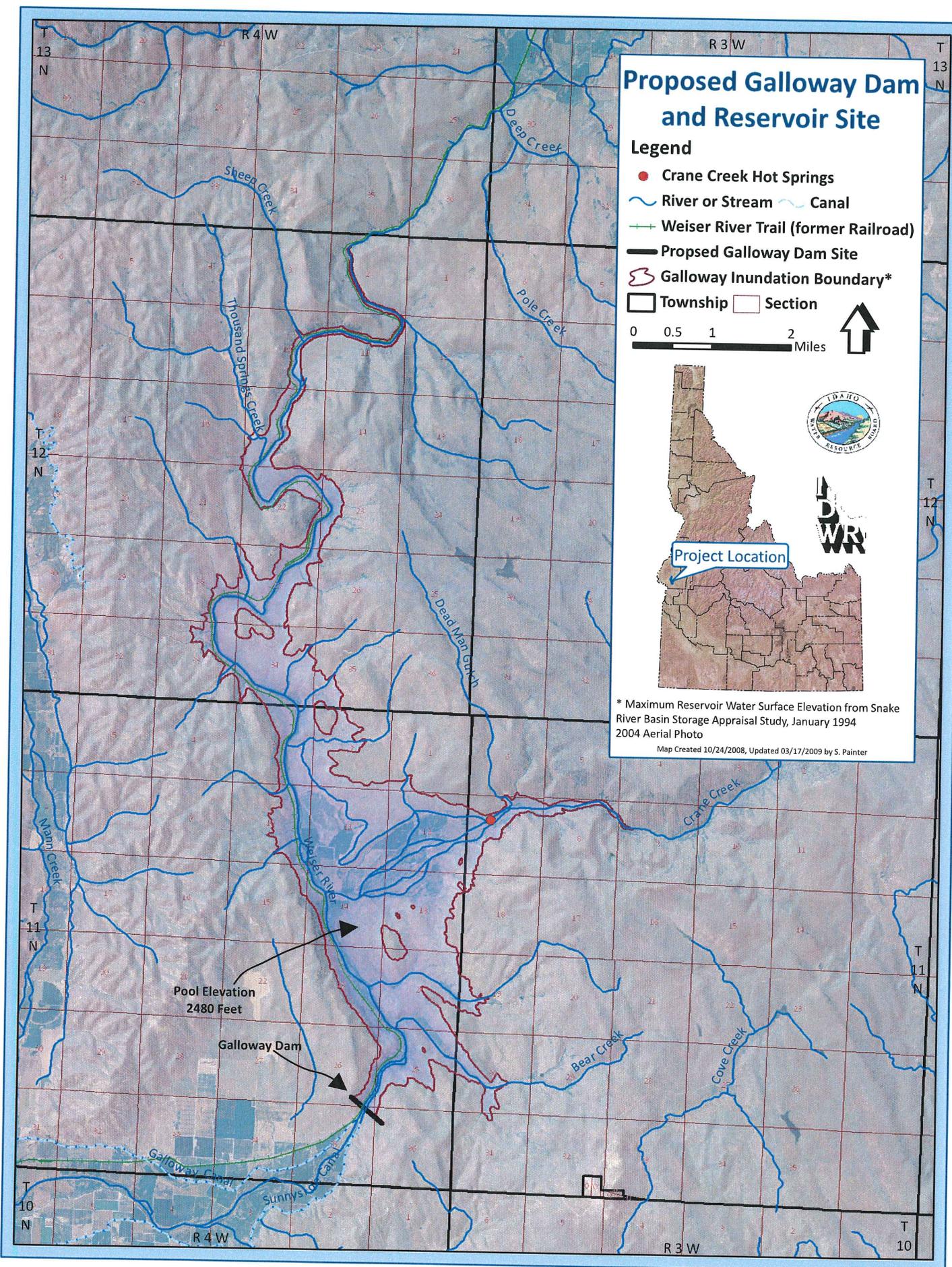
Project Location

* Maximum Reservoir Water Surface Elevation from Snake River Basin Storage Appraisal Study, January 1994
2004 Aerial Photo

Map Created 10/24/2008, Updated 03/17/2009 by S. Painter

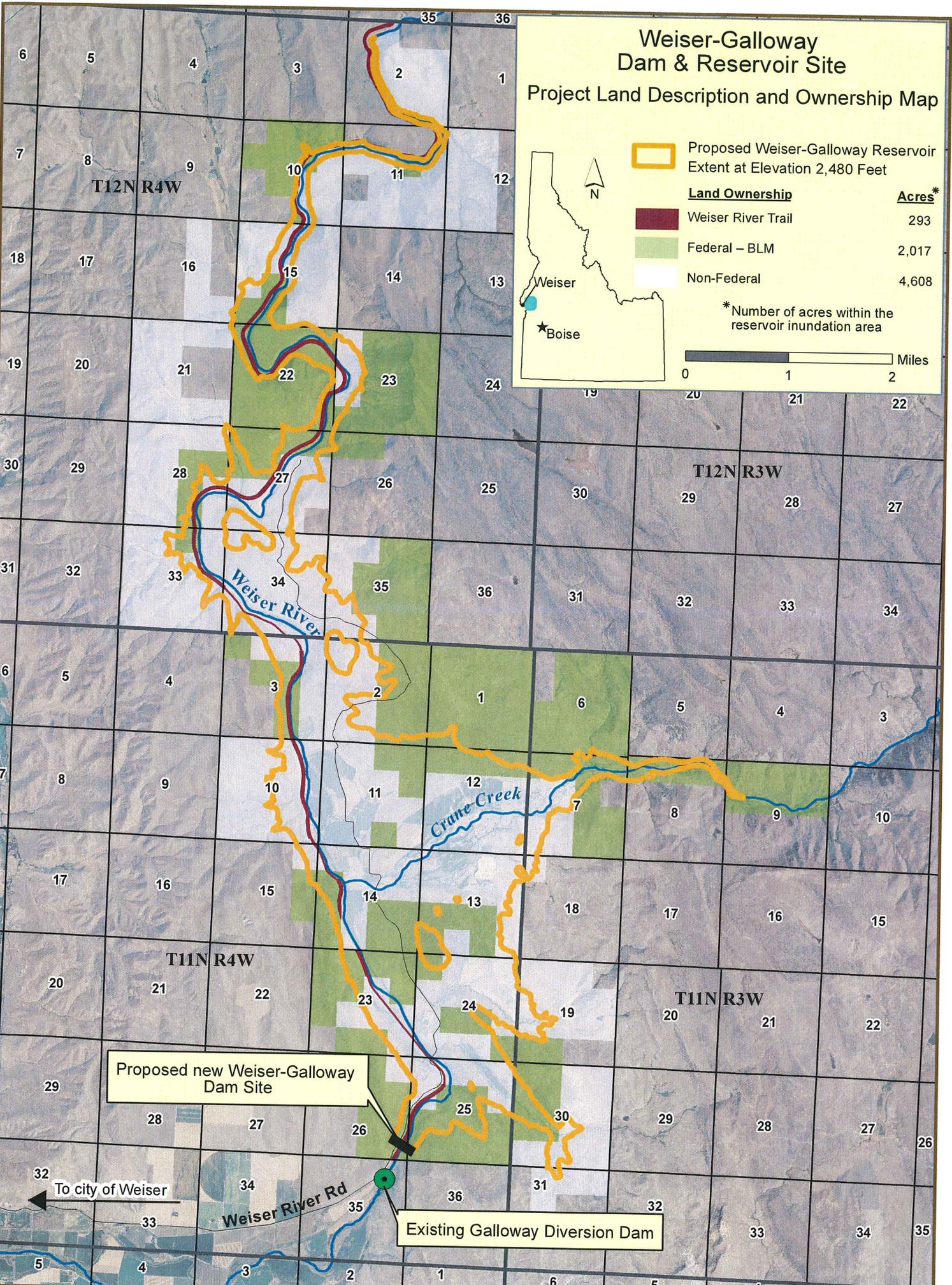
Pool Elevation
2480 Feet

Galloway Dam



Weiser-Galloway Dam & Reservoir Site

Project Land Description and Ownership Map



Proposed Weiser-Galloway Reservoir Extent at Elevation 2,480 Feet

Land Ownership		Acres*
	Weiser River Trail	293
	Federal - BLM	2,017
	Non-Federal	4,608

* Number of acres within the reservoir inundation area

Miles
0 1 2

T12N R4W

T12N R3W

T11N R4W

T11N R3W

Proposed new Weiser-Galloway Dam Site

Existing Galloway Diversion Dam

To city of Weiser

Weiser River Rd

Flow Augmentation and Hydropower in the Snake River Basin

Dam Owner

- U.S. Bureau of Reclamation
- U.S. Army Corps of Engineers
- Private
- Proposed Weiser-Galloway Reservoir

5-Year Average Flow Augmentation (2006-2010)

40,000

1,200,000

162,000

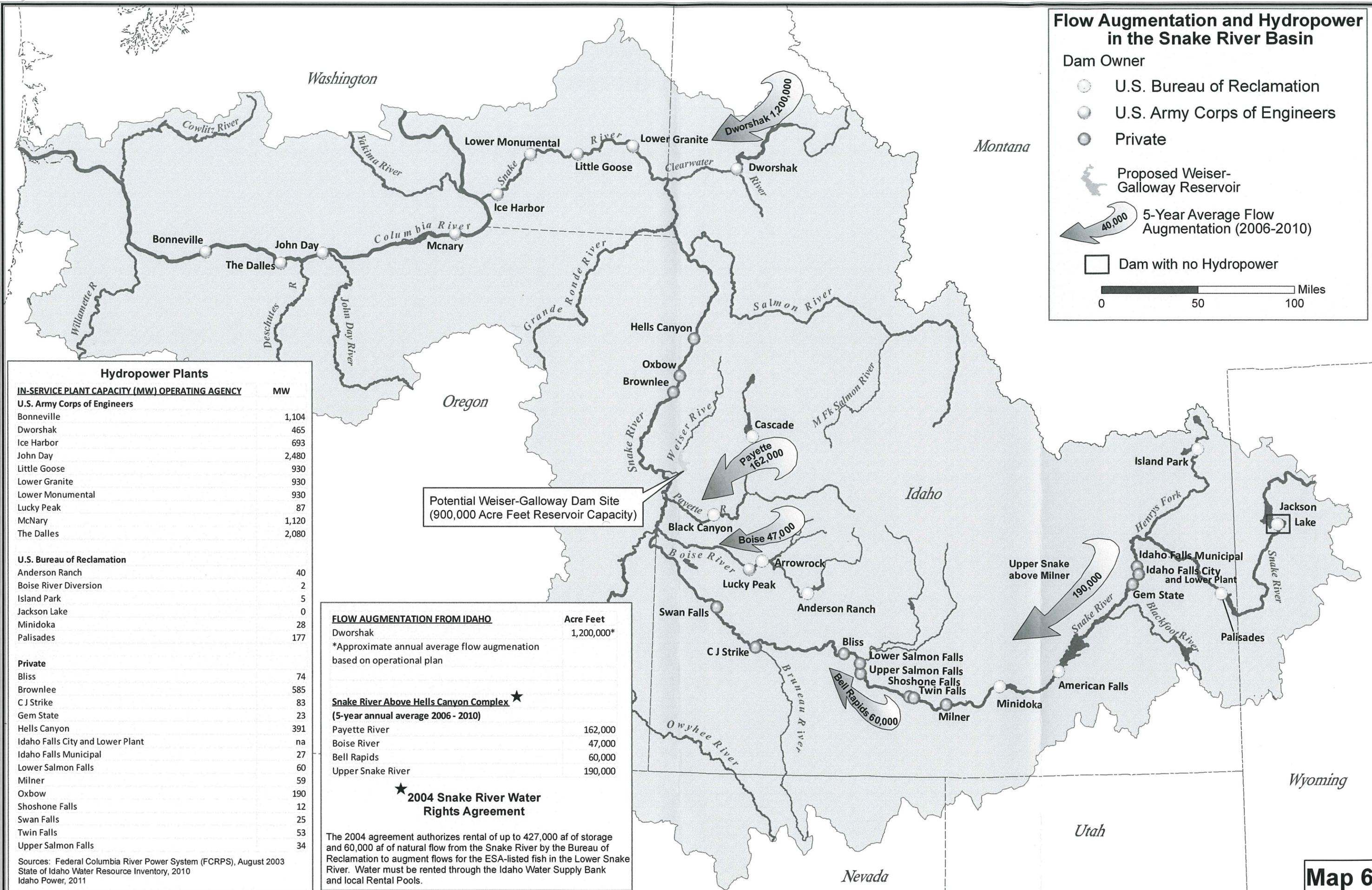
47,000

60,000

190,000

□ Dam with no Hydropower

0 50 100 Miles



Hydropower Plants

IN-SERVICE PLANT CAPACITY (MW) OPERATING AGENCY	MW
U.S. Army Corps of Engineers	
Bonneville	1,104
Dworshak	465
Ice Harbor	693
John Day	2,480
Little Goose	930
Lower Granite	930
Lower Monumental	930
Lucky Peak	87
McNary	1,120
The Dalles	2,080
U.S. Bureau of Reclamation	
Anderson Ranch	40
Boise River Diversion	2
Island Park	5
Jackson Lake	0
Minidoka	28
Palisades	177
Private	
Bliss	74
Brownlee	585
C J Strike	83
Gem State	23
Hells Canyon	391
Idaho Falls City and Lower Plant	na
Idaho Falls Municipal	27
Lower Salmon Falls	60
Milner	59
Oxbow	190
Shoshone Falls	12
Swan Falls	25
Twin Falls	53
Upper Salmon Falls	34

FLOW AUGMENTATION FROM IDAHO

	Acre Feet
Dworshak	1,200,000*

*Approximate annual average flow augmenation based on operational plan

Snake River Above Hells Canyon Complex ★
(5-year annual average 2006 - 2010)

Payette River	162,000
Boise River	47,000
Bell Rapids	60,000
Upper Snake River	190,000

★ **2004 Snake River Water Rights Agreement**

The 2004 agreement authorizes rental of up to 427,000 af of storage and 60,000 af of natural flow from the Snake River by the Bureau of Reclamation to augment flows for the ESA-listed fish in the Lower Snake River. Water must be rented through the Idaho Water Supply Bank and local Rental Pools.

Sources: Federal Columbia River Power System (FCRPS), August 2003
State of Idaho Water Resource Inventory, 2010
Idaho Power, 2011