Eastern Snake Plain Aquifer (ESPA)

Comprehensive Aquifer Management Plan

Progress Report: Overview & Accomplishments 2009 - 2012

IDAHO

Water Resource Board

January 2013

Cover Photo Credit (clockwise starting in upper left hand corner): operation of the Hazelton Butte Conversion project's east pump on the Main North Side Canal; construction of the diversion head gate at the Milepost 31 off-canal recharge site; and late season recharge at the Nielson off-canal recharge site.

EASTERN SNAKE PLAIN AQUIFER MANAGEMENT PLAN

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2012 SIGNIFICANT ACCOMPLISHMENTS

Demand Reduction - Fish Hatchery Buy Outs

In 2012 the Idaho Ground Water Association (IGWA) purchased three fish hatcheries that utilized spring water: Blue Lakes, Rim View, and Clear Lake. The combined purchase cost of the hatcheries was approximately $34 million dollars. IGWA financed the purchases through revenue bonds issued by the IWRB with ground water users to repay the debt service over a period of 20 years. The purchase of the hatcheries directly resolved several of the largest delivery calls in the ESPA as well as providing IGWA with flexibility and assets to address future delivery calls.

Blue Lake hatchery facility in the Twin Falls area.

Conversions – Hazleton Butte Project

The Hazleton Butte conversion project represents the largest ground water to surface water conversion project that has occurred on the ESPA. This project provides surface water to 5,400 acres that were historically irrigated with ground water and reduces ground water pumping by about 10,000 acre-feet. The total cost of this project was approximately $2.2 million dollars with 75% coming from the NRCS AWEP funds (as overseen by the IWRB), 25% coming from the private landowners, and the IWRB providing funding for all measurement devices.

Hazelton Butte Conversion Project, west pump station.

Recharge – Mile Post 31 Project

In 2012 the IWRB accomplished nearly 126,000 acre-feet of ground water recharge. In addition, the Board adopted a resolution to provide $35 thousand dollars to the American Falls Reservoir District No. 2 to construct the Mile Post 31 (MP31) recharge project on the Milner-Gooding Canal. The IWRB anticipates that the MP31 site, at full construction build out, will have a capacity of about 500 cfs making it one of the largest off-canal recharge sites in the ESPA.

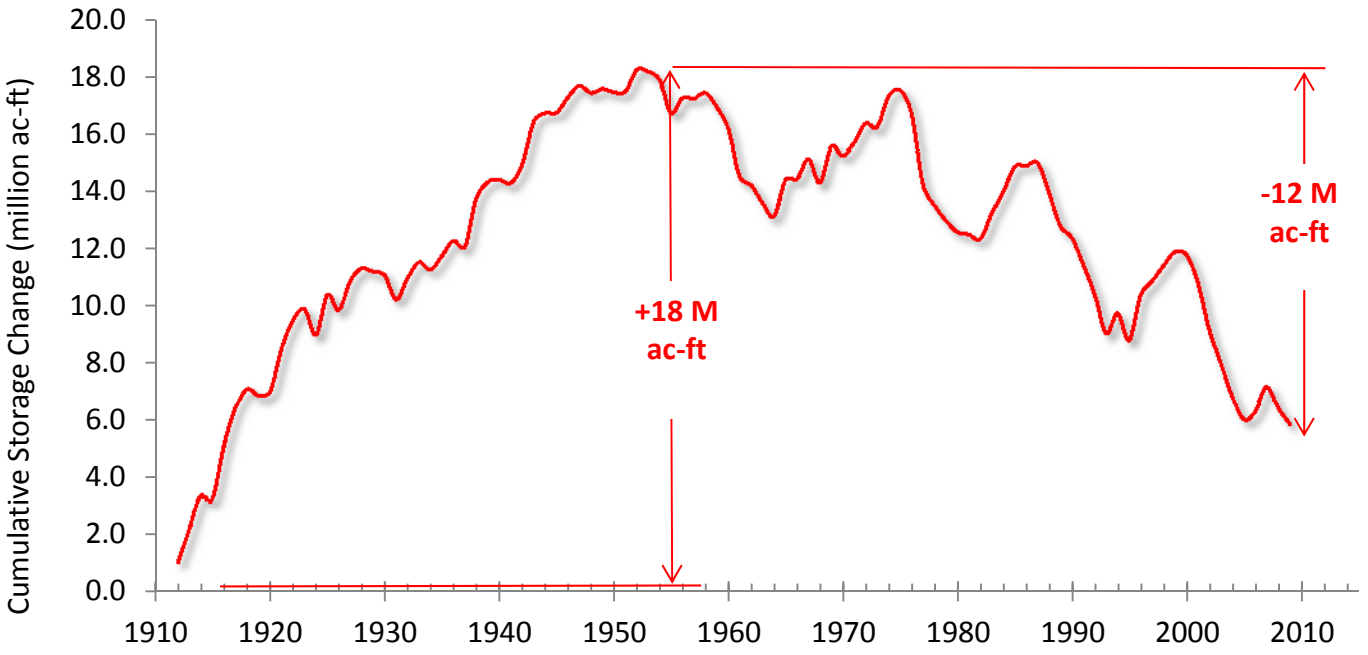
Excavation of the Milner-Gooding canal bank at the MP31 site.

INTRODUCTION AND BACKGROUND

Between 1912 and 1952, 17 million acre-feet of water were added to storage in the Eastern Snake Plain Aquifer (ESPA). This water was added to the aquifer primarily through the construction and operation of unlined canal systems over the aquifer, resulting in leakage that enhanced the aquifer (incidental recharge). During this period, many factors, including climate and irrigation practices, contributed to increasing aquifer storage.

Since 1952 several changes have taken place that have resulted in declining storage in the aquifer. These include canal systems and irrigators becoming more efficient in the delivery and application of water, the development of ground water pumping for irrigation and other uses, drought events, and long term climate change. Refer to the figure below for illustration of the cumulative change in the ESPA storage content.
This decrease in aquifer storage resulted in declining water levels in the ESPA, and declining spring flows from the ESPA, resulting in numerous water use conflicts that had the potential to disrupt the economy of the area. The ESPA region accounts for about 21% of Idaho's economic output.

After a three year-long process led by the Idaho Water Resource Board (IWRB) involving key leaders and stakeholders from the region, the Legislature and Governor Otter enacted House Bill 264 in 2009. This legislation approved the Eastern Snake Plain Comprehensive Aquifer Management Plan (CAMP) and established the goals for the aquifer management of the ESPA.



ESPA - Cumulative Change in Aquifer Storage

ESPA MANAGEMENT ACTIONS AND PROGRESS

The ESPA CAMP established four main strategies for effecting a positive change to the ESPA, including: managed aquifer recharge, conversions (ground water to surface water irrigation and irrigation to dry land), demand reductions, and weather modification. The management strategies are designed to stabilize the aquifer. The IWRB, together with program partners, has made significant progress towards the goals of each strategy. Individual strategy goals, as well as accomplished progress towards each goal, are summarized in the table below.

Late season recharge diversions into the Main North Side Canal, November 2012.

Strategy	Goal	Progress Since Plan Approval (Early 2009)
Managed Recharge	100,000 ac-ft/yr	Average of 117,111 ac-ft/yr since 2009
Conversions: Ground Water to Surface Water	100,000 ac-ft/yr	Approximately 11,612 acres converted, including 614 acres associated with three projects approved in 2013, resulting in a combined groundwater use reduction of about 15,950 ac-ft/yr.
Demand Reduction	95,000 ac-ft/yr	Approximately 43,644 ac-ft/yr of demand reduction through CREP. Additional reductions in demand on the aquifer have been achieved through structural improvements in the Thousand Springs area and hatchery buy-outs.
Weather Modification	5-year pilot program with analysis of results	Idaho Power has installed 19 remote operated ground generator stations since 2009 to supplement the cloud seeding efforts of the High Country RC&D. In addition to providing meteorological support.

Note: Recharge by entities other than the Board, 2009-2011 Average: 22,786 ac-ft/yr

SUMMARY OF EXPENDITURES

The IWRB has been successful in capturing federal funds to help achieve management goals for the ESPA. In addition, significant contributions have been made by the Idaho Power Company and various water users. This has resulted in a significant leveraging of the State's investment to achieve a total expenditure of nearly $52 million for aquifer management efforts.

Idaho Power Company remote cloud seeding generator.

Summary of 2012 Expenditures

Strategy	State (IWRB)	Federal	Idaho Power	Water Users	Totals
Managed Recharge	$344,000			$62,000	$406,000
Conversions: Ground Water to Surface Water	$16,000	$227,000		$76,000	$319,000
Demand Reduction		$2,272,000		$33,980,000	$36,252,000
Weather Modification	$12,000		$300,000	$93,000	$405,000
Aquifer Monitoring	$313,000				$313,000
Totals	$685,000	$2,499,000	$300,000	$34,211,000	$39,695,000

Summary of 2009-2013 Cumulative Expenditures

Strategy	State (IWRB)	Federal	Idaho Power	Water Users	Totals
Managed Recharge	$1,096,000			$162,000	$1,258,000
Conversions: Ground Water to Surface Water	$18,000	$4,207,000		$1,406,000	$5,631,000
Demand Reduction		$8,519,000		$34,467,000	$42,986,000
Weather Modification	$12,000		$900,000	$301,000	$1,213,000
Aquifer Monitoring	$980,000				$980,000
Totals	$2,106,000	$12,726,000	$900,000	$36,336,000	$52,068,000

LOOKING AHEAD

The IWRB has developed strategies for moving forward with conversions, demand reduction, and weather modification. The IWRB is currently working on its strategy for maximizing the benefits of managed recharge, and on a policy of cost-sharing managed recharge. The large amount of federal dollars that have been captured for this program has allowed the IWRB to defer use of most of the available state funds, while making significant progress toward the program goals. Although the use of these state funds has been deferred, there remains a large need for them as shown on the attached list of aquifer management projects that are in preliminary development, which total $13.7 million.

An operating end gun on the Fort Hall Indian Reservation, 2012.

Strategy	Water Board Policy
Managed Recharge	The IWRB continues to develop policy and strategies for the location and cost sharing details of recharge. Utilize IWRB funds as a catalyst to build coalitions to undertake recharge infrastructure projects in high-priority locations.
Conversions: Ground Water to Surface Water	Maximize federal (NRCS) funds through 2013 for additional large-scale conversion projects. Utilize IWRB funds as a catalyst to build coalitions to undertake projects that can't be done through NRCS funds. Seek other federal funds as appropriate for projects.
Demand Reduction	Maximize federal (NRCS) funds through 2013 for structural demand reduction projects in Thousand Springs area. Seek other federal funds for these projects as appropriate. Deploy the recently developed end-gun removal plan in concert with the NRCS. Through the IWRB financing programs continue to support voluntary efforts by water users to buy-out water rights.
Weather Modification	Rely on Idaho Power to complete 5-year pilot program together with the High Country RC&D and evaluate results, after which a future course can be decided.

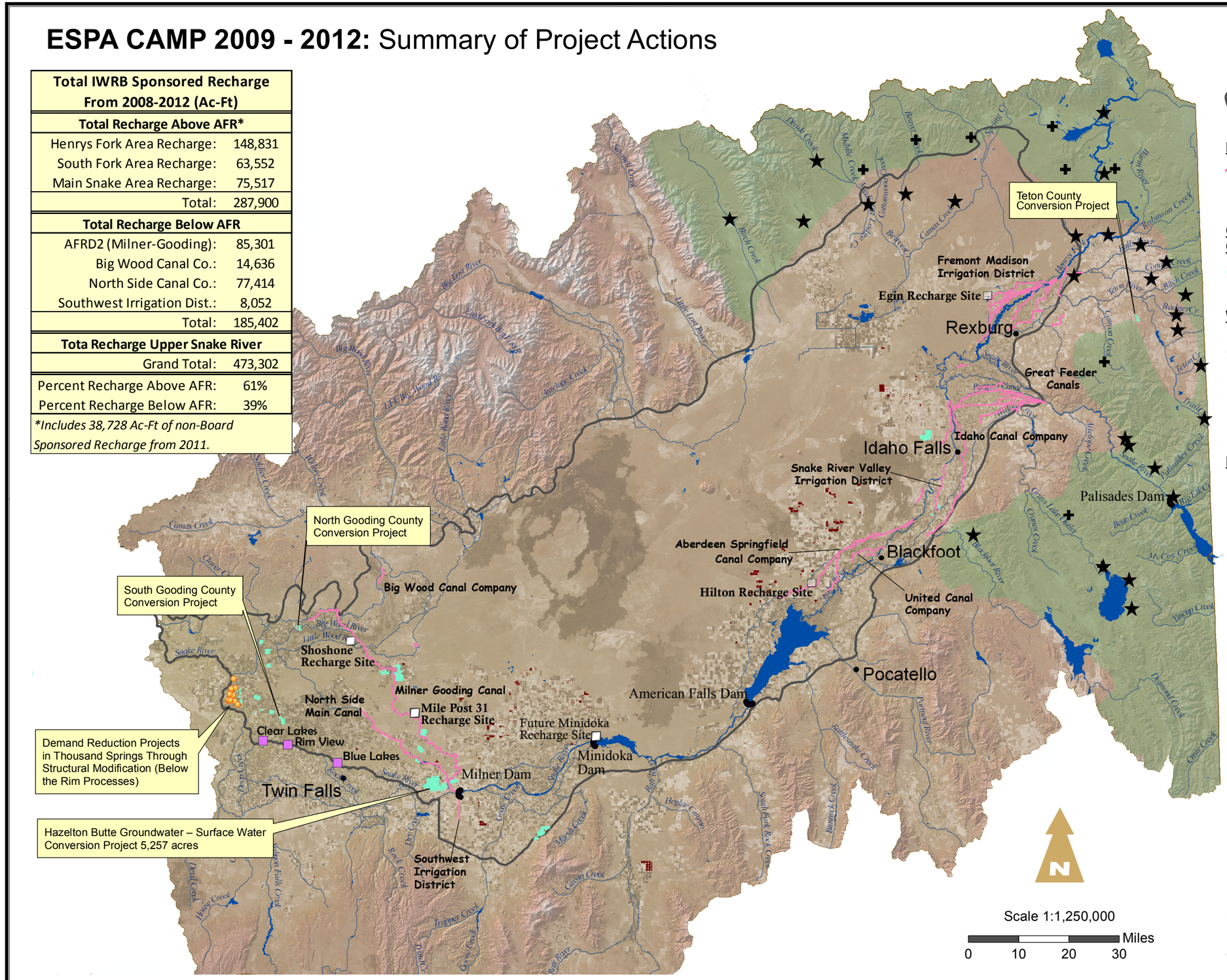
Eastern Snake Plain Aquifer Management Projects in Preliminary Development

Project	Estimated Cost	Status
5-Year Managed Recharge Pilot Project	$1.2 million	Board resolution passed in January of 2012, first year of operations completed with four more years left to conduct.
A&B Irrigation District ground water to surface water conversion	$2.0 million	A&B has identified approximately 1,500 acres of ground water irrigation to be converted to surface water irrigation serviced by a new pump station off the Snake R. Project includes the development of a series of ground water injection wells for recharge.
Lake Walcott Recharge Site	$2.0 million	Board is working with Bureau of Reclamation to find a viable path forward for recharge at this site. Magic Valley Ground Water District has agreed to cover all O&M costs. A&B Irrigation District has agreed to provide in-kind resources towards construction.
Nielsen Recharge Site	$25,000	The Lower Snake Area Recharge District in conjunction with the Board and the North Side Canal Company is looking to increase capacity at the Nielsen off-canal recharge site.
Raft River ground water to surface water conversion	$6.0 million	Raft River Ground Water District (RRGWD) has identified 10-15 thousand acres of ground water irrigation to be converted to surface water irrigation. RRGWD has completed conceptual engineering of 10-miles of pipeline and two regulating reservoirs and is currently pursuing access easements to the Snake R.
SE Dietrich ground water to surface water conversion	$0.5 million	On-going investigation is underway to find a viable source of replacement surface water for approximately 1,600 acres of ground water irrigated area.
End Gun Removal Program	$2.0 million	Implementation of the recently adopted end gun removal plan as part of the NRCS AWEP program is currently underway. In the plan irrigators will receive financial incentive to eliminate demand associated with the use of end guns in their irrigation practices.
Expansion of Upper Snake cloud seeding program into Wyoming tributaries of the Snake R. (Salt & Grey Rivers)	Unknown	On-going investigation and implementation is currently under way by Idaho Power Company and High Country RC&D.

ESPA CAMP 2009 - 2012: Summary of Project Actions

Total IWRB Sponsored Recharge From 2008-2012 (Ac-Ft)	
Total Recharge Above AFR*	
Henrys Fork Area Recharge:	148,831
South Fork Area Recharge:	63,552
Main Snake Area Recharge:	75,517
Total:	287,900
Total Recharge Below AFR	
AFRD2 (Milner-Gooding):	85,301
Big Wood Canal Co.:	14,636
North Side Canal Co.:	77,414
Southwest Irrigation Dist.:	8,052
Total:	185,402
Tota Recharge Upper Snake River	
Grand Total:	473,302
Percent Recharge Above AFR:	61%
Percent Recharge Below AFR:	39%

**Includes 38,728 Ac-Ft of non-Board Sponsored Recharge from 2011.*



ESPA Area of Common Groundwater Supply

Managed Aquifer Recharge

- Canals Participating in Managed Recharge
- Off-Canal Managed Recharge Sites

Groundwater-to-Surface Water Conversion Projects

- Conversion Projects

Weather Modification (Cloud Seeding)

- Cloud Seeding Target Area
- Idaho Power Remote-Operated Cloud Seeding Generators
- High Country RC&D Manually Operated Cloud Seeding Generators

Demand Reduction

- CREP Land
- Demand Reduction Projects in Thousand Springs Area Through Structural Improvements
- Hatcheries Purchased by IGWUA Financed by IWRB