The Water Report™

Water Rights, Water Quality & Water Solutions in the West

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MANAGED AQUIFER RECHARGE

BENEFITS OF PUBLIC-PRIVATE PARTNERSHIP

by David R. Tuthill, Jr., Hal N. Anderson, Idaho Water Engineering (Boise, ID)
and Michael Comeskey (Boise, ID)

INTRODUCTION

Demands on water are increasing worldwide, including the western United States. Supplies in many basins are fully allocated and competition is rapidly increasing to secure future needs. Conservation and improved efficiency, while helpful, will not provide enough savings to satisfy all future needs. Additional storage is needed to maximize water management and enhance precious water supplies. Natural storage in snowpacks is depleting earlier in the year and the best surface water storage sites have already been developed. Remaining surface sites face decreasing public funding and new environmental requirements. **M**anaged **a**quifer **r**echarge (MAR), which uses aquifers to store water for later use, is an increasingly viable storage solution.

This is the final of a three-part series in *The Water Report* exploring issues related to MAR. Part 1 (Mortimer, *TWR*# 127) provided a brief technical background and an overview of laws affecting MAR in Arizona, California, Colorado, and Idaho. Part 2 (Tuthill & Mortimer, *TWR* #129) explored legal issues specifically related to MAR in these four states. This third article focuses on the potential to implement MAR, with a special emphasis on public-private partnerships. This article builds on a discussion of conjunctive administration and conjunctive management challenges described in a 2013 article in *The Water Report* — Tuthill, Rassier & Anderson, *Conjunctive Management in Idaho, TWR* #108 (PDF versions of back issues are available to *TWR* subscribers upon request, email: thewaterreport@yahoo.com).

This article discusses: needs for mitigation water for existing and new uses; threatened uses of water; opportunities for water development; examples of MAR; and current developments in the use of MAR in Idaho. These Idaho developments may well illustrate a path forward for other western states.

THE IDAHO EXPERIENCE

Background

Idaho is similar to other fast-growing western states in experiencing increased demands of water. Expanding uses are particularly associated with urbanization, environmental purposes (e.g., endangered species), and energy production. Some recent uses have only developed in the last 50 years, while prior established water uses were primarily for agriculture. The recently increasing frequency of drought conditions across the West has resulted in lower average water yield in many basins. The literature is beginning to predict that present drought conditions over much of the western United States could be part of a long-term trend.

Adding complexity to the scarcity of water supplies is an increasing awareness of the interface between groundwater and surface water. As an example, the recently completed Snake River Basin Adjudication (SRBA) resulted in the decree of more than 158,000 water rights covering 87% of Idaho. The SRBA Court found that every groundwater

Managed Aquifer Recharge

Conjunctive Management

Curtailment

Economic Impacts

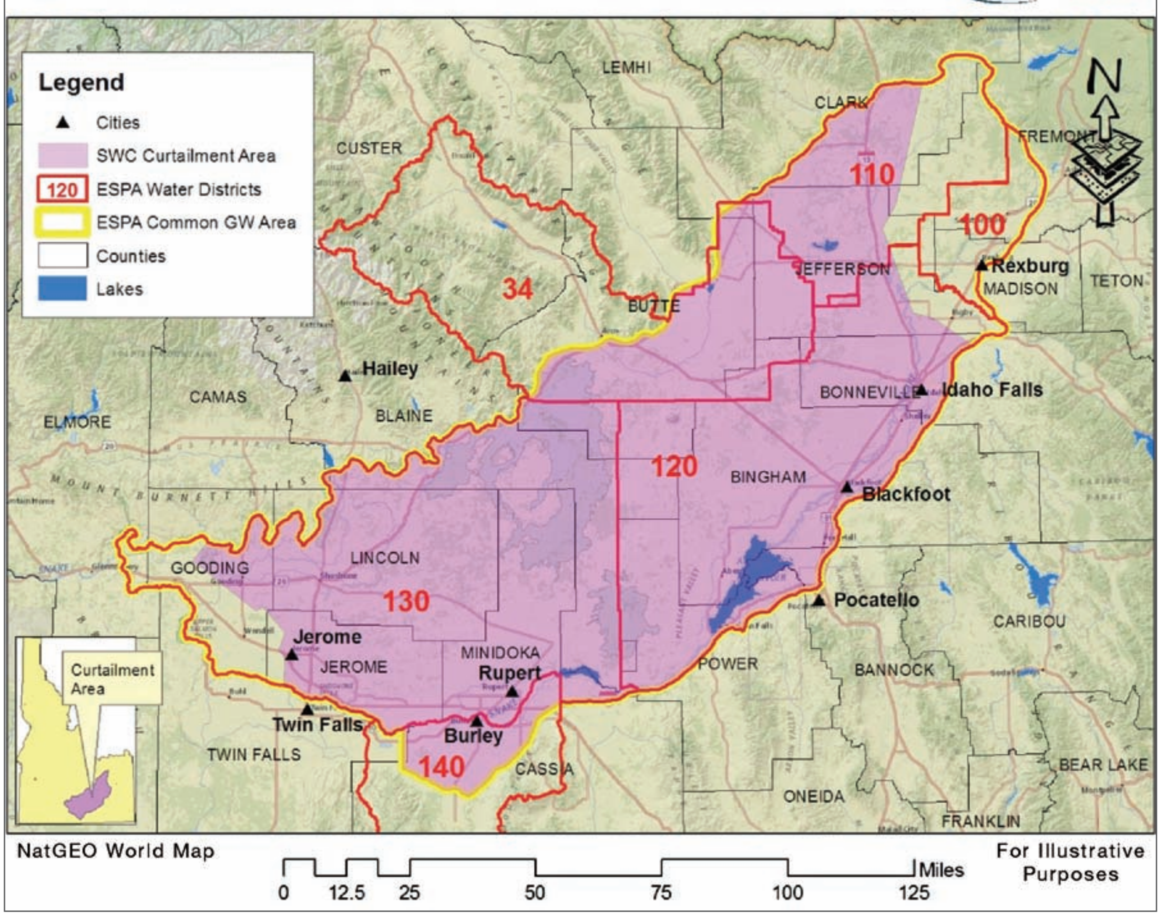
right decreed in the SRBA is connected to surface water. Consequently, the State of Idaho is engaged in a process of administering an increasing number of basins conjunctively as required by state law. Tuthill, Rassier & Anderson,, *TWR* #108. Conjunctive administration or management means that surface water rights and groundwater rights are regulated together (conjunctively) based on their respective priority dates, rather than as separate sources of water. In Idaho, junior groundwater rights avoid curtailment under conjunctive administration by providing mitigation.

Needs for Mitigation Water – Existing Uses

To find an example of the potential impact of conjunctive administration on delivery of groundwater rights, one must merely examine activities in the Upper Snake River Basin early in 2014. The water supply outlook for 2014, considering both snowpack and surface reservoir carryover (remaining storage water) caused many to be concerned. Thus on January 28, 2014, the Director of the Idaho Department of Water Resources sent a letter to more than 1,000 holders of groundwater rights in the basin warning of the potential for curtailment during 2014. The Director's letter stated that based on computed predictions, there was a 50% chance that no curtailment would be required and a 30% chance that groundwater rights with priority dates junior to May 31, 1989, would be curtailed to satisfy a delivery call made by the Surface Water Coalition (SWC). The SWC consists of seven large irrigation companies and irrigation districts that have senior surface water rights in the lower reaches of the Upper Snake River Basin. *See* www.idwr.idaho.gov/news/curtailment/2014/01Jan/Curtailment_WarningLtr012714_Final.pdf. This letter was accompanied by a map similar to the one shown in **Figure 1**, describing the area impact of the SWC delivery call. Note that the area extends about 70 miles by about 120 miles — covering most of the Eastern Snake Plain Aquifer.

It would be difficult for any groundwater user to survive a year without the right to divert water. Thus, literally hundreds of farming operations had a 30% chance of facing bankruptcy, or at best serious economic impacts due to this delivery call. Ultimately, generous late winter and early spring precipitation obviated the need for curtailment during 2014. However, based on the law of averages it is only a matter of time before curtailment or significant mitigation expense will be required. In a sequence of years where the basin precipitation is significantly below the 30-year average water supply, mitigation requirements become increasingly more difficult for groundwater users to meet through the purchase of unused surface storage.

Figure 1. Map of Potential Surface Water Coalition Curtailment Area



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260 North Polk Street,
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Editors: David Light
David Moon

Phone: 541/ 343-8504
Cellular: 541/ 517-5608
Fax: 541/ 683-8279
email:
thewaterreport@yahoo.com
website:
www.TheWaterReport.com

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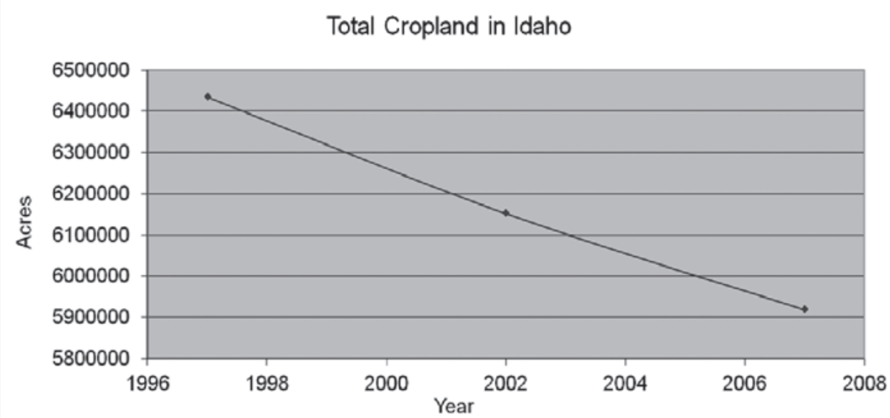
Managed Aquifer Recharge

Needs for Mitigation Water – New Uses

The Eastern Idaho Water Rights Coalition was formed to find new sources of water to satisfy growing demand in the eastern portion of the state. This organization has worked for the past seven years to actively promote alternatives to the "buy and dry" technique of drying up valuable farmland to provide water for other uses. Municipalities, subdivisions, commercial users, industrial users, and irrigation entities comprise the Board of Directors for this organization, which has been a champion of MAR over the years.

Figure 2. Idaho's Declining Farmed Land

Source: USDA Census of Agriculture for Idaho



Losses from 1997 to 2007: - 516,547 acres of crop land (8.0%)
234,916 acres of irrigated farmland (6.9%)

The combination of "buy and dry" and federal crop set-aside programs has reduced irrigated acreage in Idaho over the years. The US Department of Agriculture periodically develops census data for agricultural production. Their 1997 and 2007 census reports are particularly troubling relative to the farm sector given that agriculture is still a large segment of the state economy. As depicted in **Figure 2** the decline in farmland has been significant.

Concerns about declining farm acreage have also been expressed by those who understand the significance of losing markets and market share. An article in the Twin Falls Times News on October 26, 2014 ("*Loss of Crop Land to Development Worries County Officials*") describes the discussions among members of the Twin Falls County Planning and Zoning Commission as they consider the impacts of loss of crop land production to other urban uses.

Water Transfers

THREATENED USES OF WATER

Most water distribution from natural water sources in the western United States follows the major principle of western water law's prior appropriation doctrine. Under prior appropriation, "first in time is first in right"— i.e., those earliest to put water to beneficial use retain a prioritized right to use the amount of water needed for that use, before use by subsequent water developers. However, water rights are real property rights and ultimately water flows to uses with the highest ability to pay via sales and transfers. One only needs to look at the thriving and growing municipalities in the driest portions of the West to see this occurring. Better financed municipal uses will ultimately acquire agricultural water over time. Further, the addition of environmental water demands, including endangered species, places more stress on already-depleted systems and drives water prices beyond agriculture's ability to pay. **Table 1** depicts selected water uses, sorted in order of volume used in column 1, and by ability to pay in column 3. Quantification of values for column 3 will differ from area to area.

Table 1. Volumes Used and Ability to Pay for Selected Water Uses

Use, sorted by Volume of Use in 2010	**Volume of Use** in 1000s of acre-feet*		**Ability to Pay, sorted by Highest to Lowest**
Thermoelectric Power	180,200		Self-Supplied Domestic
Agriculture (Irrigation, Livestock, Aquaculture)	141,840		Public Supply
Public Supply	47,000		Self-Supplied Industrial
Self-Supplied Industrial	17,900		Mining
Mining	5,960		Thermoelectric Power
Self-Supplied Domestic	4,040		Environmental
Environmental	Not shown		Agriculture (Irrigation, Livestock, Aquaculture)

*US Geological Survey, 2014, "Estimated Use of Water in the United States in 2010"

Managed Aquifer Recharge

This shift from agriculture, which often has the senior priority water rights, to other uses erodes the capability in the western US to produce food at a time when demand for food and commodity prices are steadily rising in world markets. Agriculture has provided a steady economic base for Idaho and other states during the recent recession and will be a vital segment of our national economy long into the future. Needed support for agriculture will require better water management, including enhanced storage. Because surface water storage sites are scarce and associated costs prohibitive, MAR represents a highly viable management option that can help meet existing and future needs — including agriculture.

OPPORTUNITIES FOR WATER DEVELOPMENT

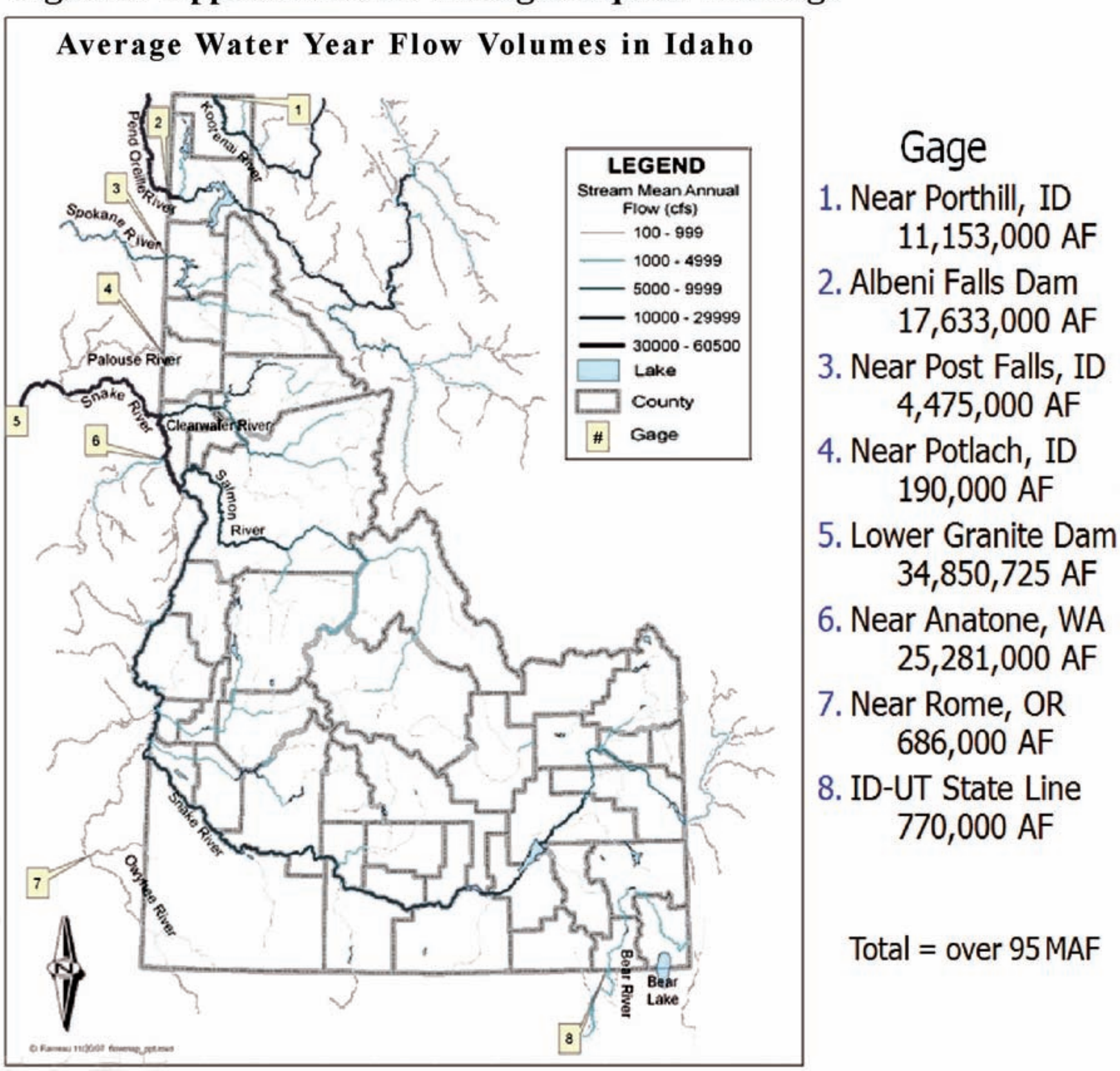
THE IDAHO EXAMPLE

Spring Runoff

For many water sources in the western US, there are times during the year when available water supplies exceed demands — even in basins where supplies are believed to be "fully appropriated" and additional water rights are unavailable. This is true for both major river drainages and smaller ephemeral systems. In Idaho, some streams are totally depleted by existing uses every summer, but during the spring runoff water flows downstream in excess of all recorded uses. Some of this water, if stored, could provide for beneficial uses later in the year or in subsequent years. Idaho, a mountainous state with abundant headwaters, has ample annual runoff — as depicted in **Figure 3**.

Flow Volumes

Figure 3. Opportunities for Managed Aquifer Recharge



Storage Purpose

While these flows are large, it is important to note that water shortages are experienced by surface water users in many parts of the state during years when the basin water yield is below average. Storage of additional water is needed during times of plenty to enable delivery during time of scarcity.

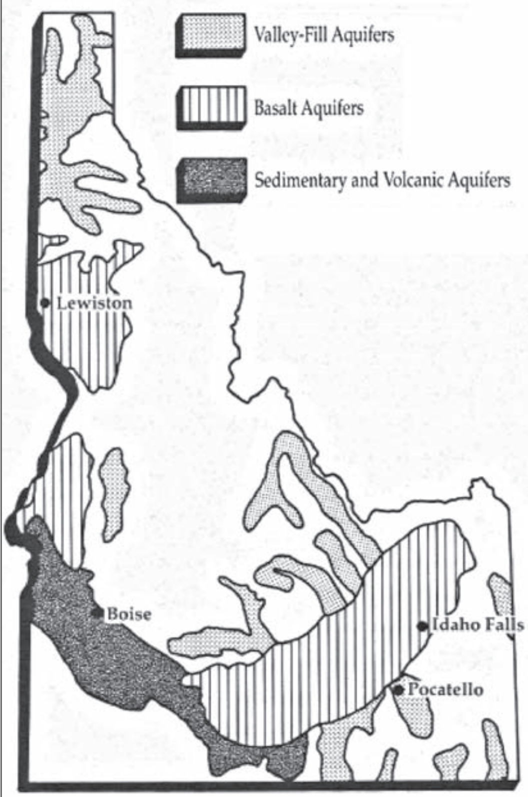


Figure 4. Principal Aquifers in Idaho
Adapted from Idaho Department of Environmental Quality website

Nearly five million **a**cre-**f**eet (AF) of surface water surface storage has been constructed in the Upper Snake River Basin since 1906. These storage facilities provide additional water, including supplemental irrigation supplies during late summer when base flows are insufficient to meet irrigation requirements. The Teton Project was first studied in the 1960's and was authorized to store over 300,000 AF of unappropriated water. This reservoir was constructed during the early 1970s but failed during its first fill in 1976. Ever since this tragic failure many have continued to argue for reconstruction. Recently the State of Idaho sponsored a review of options for storage in the Teton basin. The study was instructive because it placed in doubt the construction of any future surface storage under the Federal Reclamation Act. The costs of surface storage are simply too high to be justified and approved by Congress. New surface reservoir construction anywhere in the western US is equally unlikely. Thus the only water management option remaining is to retain more water in the subsurface reservoirs we call aquifers.

Taking Idaho as an example we find many aquifers that might provide storage opportunities, as depicted in **Figure 4**. Volume of the potential storage is measured in millions of acre-feet, thus the potential for storage is vast.

MAR provides an opportunity to store large volumes of additional water without evaporation losses. While this water is not as readily measured as is surface storage, modern groundwater modeling techniques enable tracking of water within aquifers. MAR projects should be as conducive to **p**ublic-**p**rivate **p**artnerships (PPPs) as the surface storage projects that were built under the 1902 Reclamation Act (see *Conjunctive Management in Idaho, TWR* #108). Case studies provide snapshots of how PPPs have been successfully implemented in some western states.

CASE STUDIES

Encouraging Investment

State of Arizona

The State of Arizona has the most advanced laws and procedures for MAR among the western states. While described in more detail in Parts 1 and 2 of this three part series (*TWR*s #127 and #129), as the most successful case of state programs available, we mention it again here. **Figure 5** depicts the relationship established between the State of Arizona, the Central Arizona Project, and the private sector. This relationship has resulted in an encouraging climate for private investment for both recharging water to aquifers and applying the resulting "credits" to a range of beneficial uses. *See* also, *Gila River Water Storage,* page 20, this *TWR*.

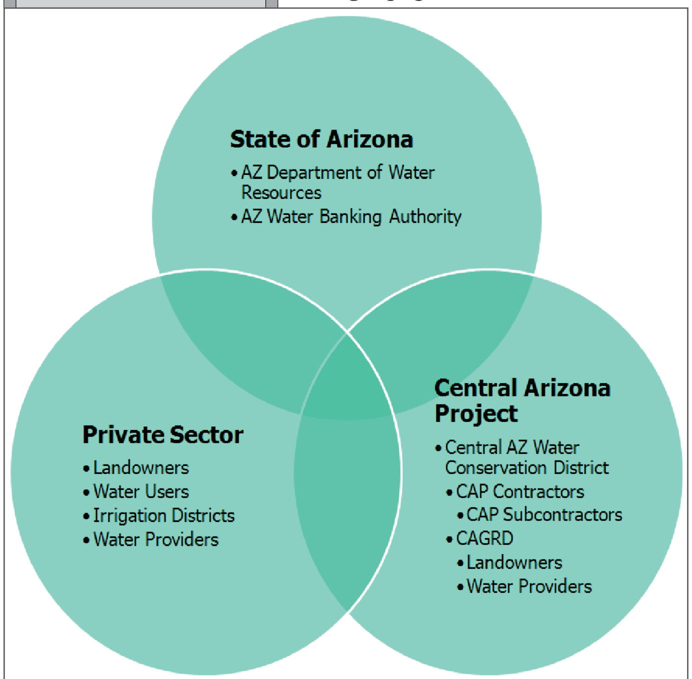


Figure 5. Public-Private Partnerships in Arizona

City of Santa Paula, California

The City of Santa Paula (City), California obtains its drinking water from the Santa Paula Groundwater Basin (Basin), a sub-basin of the Santa Clara River Valley Basin (City of Santa Paula Water Supply Facts at: http://limoneira-4ec70e40.s3.amazonaws.com/PDF/City-of-Santa-Paula-Water-Supply-Facts-8-14-13.pdf). In 2007, the Los Angeles Regional Water Quality Control Board gave the City a deadline to bring its wastewater treatment facility into compliance with state discharge requirements or face $8 million of fines. *See* Santa Paula Water, LLC, at: www.santapaulawater.com/aboutus.html.

In May 2008, the City awarded a 30-year PPP contract to Santa Paula Water, LLC, a joint venture between PERC Water Corporation and Alinda Capital Partners, to **d**esign, **b**uild, **o**perate, and **f**inance (DBOF) a new membrane bioreactor wastewater treatment facility (www.water-technology.net/projects/santapaularecyclingf/). Under the terms of the DBOF contract, Santa Paula Water was responsible for the design and construction of the new facility using only privately-raised funds. By utilizing private capital, the City avoided issuing bonds during an economically unstable period when municipal bond rates were falling rapidly. After construction, Santa Paula Water would also be responsible for operating the facility for a period of thirty years, with specific performance and cost guarantees built into the contract.

Managed Aquifer Recharge

Recycled Water Savings

Private Funding

Partnership

Aquifer Depletion

Santa Paula Water met the City's goals, which included: no capital outlay by the City; the creation of local jobs; meeting effluent permit requirements; and reducing the City's energy costs. The contract between the City and Santa Paula Water limits the risk to the City of increased costs from rising energy prices. The energy cost risks have been transferred from the rate payers to the Santa Paula Water. In addition, any energy savings are split between the City and the vendor.

When complete, the City avoided $18 million in construction costs, increased the design capacity by 25%, and reduced the energy consumption by 30%. The City also avoids $1.8 million per year in current operating costs. Once the plant's wastewater is treated, the effluent is held in percolation ponds to recharge the Basin. The plant is currently producing 2,200 acre-feet per year of recycled water. *See*: *Public-Private Partnership Created Substantial Savings For the Citizens of Santa Paula* at: http://waterindustry.org/Water-Facts/Santa%20Paula-1.htm.

The City of Santa Paula PPP was the first to take advantage of California Government Code Section 5956.10, which states, "[I]t is the intent of the Legislature that local governmental agencies have the authority and flexibility to utilize private investment capital to study, plan, design, construct, develop, finance, maintain, rebuild, improve, repair, or operate, or any combination thereof, fee-producing infrastructure facilities." It was also the first water recycling facility in the US built with only private funds. Minnick, F. (2011). *Water PERCs - CA Firm Builds First Privately Funded Water Recycling Facility*. Integration Quarterly, pp. 16-17. As depicted in **Table 2**, this PPP adds private participation to many facets that are traditionally in the public sector for this type of project.

Table 2. Roles and Responsibilities in City of Santa Paula Public-Private Partnership

	Design	Bid	Build	Operate	Maintain	Finance	Regulate
Traditional Public Works	Public	Public	Public	Public	Public	Public	Public
City of Santa Paula	Private	Private	Private	Private	Private	Private	Public

Columbia Basin Development League

The Columbia Basin Development League (League) is a private-public partnership formed in 1964 to support the completion of the Columbia Basin Project, a multi-purpose project providing irrigation to Adams, Franklin, and Grant Counties in Washington State. The League is focused on protecting Project water rights and educating the public about the Project's benefits. *See*: *Columbia Basin Development League* at: www.cbdl.org/facts-cbdl_304.html.

As depicted in **Figure 6**, the League is a PPP between the federal government, the State of Washington, irrigation districts, private landowners, and **n**on-**g**overnmental **o**rganizations (NGOs) representing landowner interests. In this case, the PPP is not a network of contracts between public and private organizations for the construction of public works, but rather a true partnership that exists for the benefit of the stakeholders involved. The US Bureau of Reclamation owns the Project's infrastructure, the State of Washington permits the diversion of irrigation water from the Columbia River, three irrigation districts operate and maintain most of the Project facilities, and the landowners make up the governing boards of the irrigation districts.

Figure 6. Columbia Basin Public-Private Partnership

Many of the landowners in the eastern Columbia Basin Project area irrigate with groundwater drawn from the Odessa Aquifer (*see* www.odessarecord.com/story/2014/11/13/news/aquifer-project-progresses/2965.html?m=true). Recognition that the aquifer was being depleted at an unsustainable rate spurred a call for expansion of the Columbia Basin Project to replace groundwater irrigation with surface water supplied by the Project. The Odessa Subarea Special Study identified 90,000 acres of land that will be supplied with 164,000 AF of water from the expanded Project. *See* Odessa Groundwater Replacement Program at: www.ecy.wa.gov/programs/wr/cwp/cr_odessa.html. In response, the League has opened an office to coordinate the design and implementation of the Project expansion and to identify delivery alternatives that maximize the benefits of interested landowners. Because the League has an established record of partnership and coordination between the public and private interests involved in the Project, they are uniquely suited to facilitate the negotiation of new water delivery.

Managed Aquifer Recharge

The Columbia Basin Development League is a model for the type of public-private partnerships that will become increasingly necessary as the nation's infrastructure ages. Fixed infrastructure will require rehabilitation, replacement, or adaptation to changing conditions and demands, which will require the cooperative efforts of all parties involved. By applying the PPP model to both the infrastructure and the modification of water rights, the stakeholders in the Columbia Basin Project have established conditions to successfully mitigate for the increased demands that were causing aquifer depletion.

MANAGED AQUIFER RECHARGE IN IDAHO

Canal Infiltration

MAR has long been contemplated in Idaho, with studies conducted by the US Bureau of Reclamation, the US Geological Survey and the State of Idaho as far back as 1962. The program evolved when the Idaho Water Resource Board (IWRB) acquired water right permits for 1200 **c**ubic **f**eet per **s**econd (cfs) from the Snake River and 800 cfs from the Wood River. During the 1990s, the Idaho Legislature provided funding to enable early and late season filling of canals. The recharge efforts were administered by Water District 01. The Water District efforts resulted in the recharge to the aquifer of approximately 500,000 AF of water. More importantly this process resulted in a "proof of concept" that can be used for future groundwater recharge efforts. Dedicated recharge projects are rare and most of the MAR conducted to date has been dependent upon the use of existing canals for infiltration.

Annual Recharge

As shown in **Figure 7**, average annual recharge for the past six years has totaled almost 80,000 AF. Note the majority of recharge from the Snake River to the aquifer during these years was conducted upstream from American Falls. This is consistent with recommendations in the Eastern Snake Plain Aquifer Comprehensive Aquifer Management Plan that was adopted by the IWRB and approved by the Idaho Legislature in 2009 (*see*: www.idwr.idaho.gov/WaterBoard/WaterPlanning/CAMP/ESPA/PDFs/ESPA_CAMP_lowres.pdf p.19.

State Projects

While state-sponsored MAR has been helpful, the amount of recharge has been insufficient to insure enough water for all current needs. As noted above, this was demonstrated by the letter sent to groundwater users by the IDWR Director on January 28, 2014, concerning the potential for curtailment of their rights. During good water years the Snake River provides more water than can be recharged using the IWRB's 1200 cfs water right. In 1998, the IWRB filed applications to appropriate additional water for groundwater recharge. These applications were protested and still have not been approved. Another impediment to the adequacy of state-sponsored recharge is a lack of funding. Currently the IWRB provides $3.00 per acre-foot to deliver water to a recharge site. Recently the IWRB did receive additional legislative funding for recharge and has increased the water delivery amount for selected entities to encourage winter recharge.

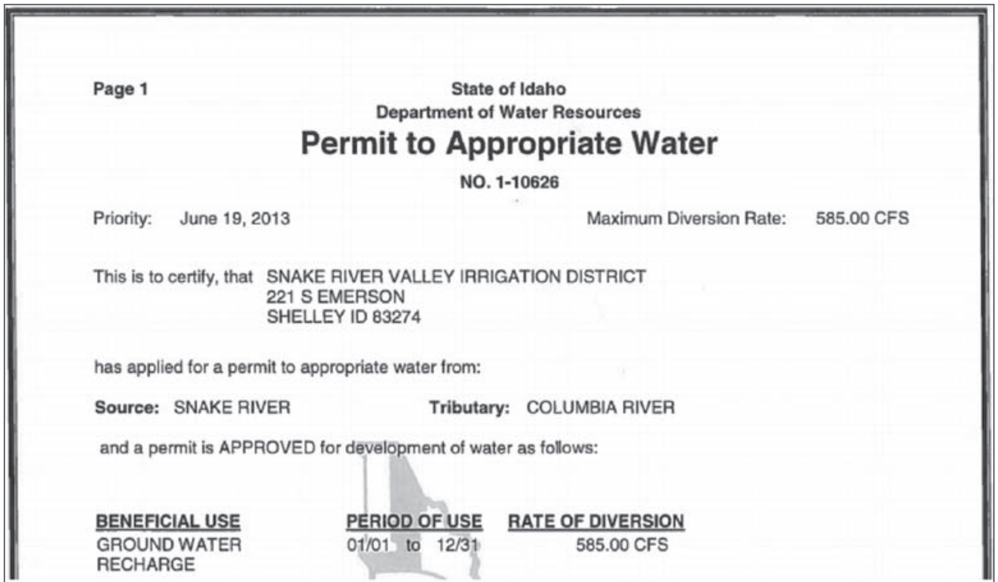
Idaho's recharge program is helpful in providing some additional water to enhance overall aquifer levels. However, state funding is not anticipated to be sufficient to provide for future water needs. On June 19, 2013, two aquifer storage applications were filed by non-governmental entities. The intent of these applications was to appropriate water for MAR as privately held aquifer storage. The applications, filed by the Peoples Canal and Irrigation Company and the Snake River Valley Irrigation District, were advertised by IDWR and protests were filed. Stipulated withdrawals of the protests were obtained by the applicants, and IDWR issued

ESPA Recharge – what has been done?
Since ESPA CAMP Approval in 2009

	Below American Falls	Above American Falls	Total
2009	46,708	77,828	**124,536**
2010	5,595	55,913	**61,508**
2011	77,614	40,430	**118,044**
2012	54,671	70,147	**124,818**
2013	3,867	0	**3,867**
2014	10,435	0	**10,435**
Average	**33,148**	**40,720**	**73,868**

Figure 7. Managed Aquifer Recharge in the Eastern Snake Plain Aquifer (slide provided by the Idaho Water Resource Board)

permits for both water rights on October 6, 2014. As depicted in **Figure 8** the purpose/use of the water is for groundwater recharge and the season of use is year-around, whenever it is available in priority.



Page 1

State of Idaho
Department of Water Resources

Permit to Appropriate Water

NO. 1-10626

Priority: June 19, 2013 Maximum Diversion Rate: 585.00 CFS

This is to certify, that SNAKE RIVER VALLEY IRRIGATION DISTRICT
221 S EMERSON
SHELLEY ID 83274

has applied for a permit to appropriate water from:

Source: SNAKE RIVER Tributary: COLUMBIA RIVER

and a permit is APPROVED for development of water as follows:

BENEFICIAL USE	PERIOD OF USE	RATE OF DIVERSION
GROUND WATER RECHARGE	01/01 to 12/31	585.00 CFS

Figure 8. Snake River Valley Irrigation District Permit for Ground Water Recharge

Figure 9. Diversion to Ground Water Recharge by Snake River Valley Irrigation District November 4, 2014

Snake River Valley Irrigation District (SRVID) began diverting water from the Snake River for groundwater recharge under this permit on October 30, 2014. **Figure 9** is a photgraph showing flows being diverted to MAR during November, 2014 by SRVID.

Recharging the aquifer with river flows is just one step in the MAR process. **Figure 10** provides a flowchart of the primary steps in achieving a private MAR as depicted by Recharge Development Corporation (RDC), a private corporation created to implement MAR projects. RDC initially is contracting with entities that are capable of providing water for recharge. This is made possible by specific recipients who have a need for privately held aquifer storage. The associated modeling and storage tracking provides for optimizing the benefits of recharge events. Recharge facilities can be either corporation-owned or owned by other entities. RDC conducts technical analysis, administrative processing, and provides all documentation to IDWR to demonstrate the adequacy of mitigation needed by recipients.

While MAR can be achieved by a public or private entity, a more optimum solution can be achieved by the two entities working together. This helps to minimize duplication and competition, and maximize efficiency while maintaining the independence and objectives of each group. Both entities necessarily must understand the value of enhanced water management. The development of private aquifer storage entitlements creates a vehicle for economic growth, which always benefits government. Government, on the other hand, has funding and administrative mechanisms that can encourage and facilitate private investment. As depicted in **Figure 11**, this is a case of the joint activity being more productive than the sum of the parts. The market-based need to satisfy customer demand, combined with the public need to enhance and manage public water supplies, has the potential of achieving positive results as shown in the case studies above. Public-private partnerships result in a powerful combination of: minimizing regulatory impediments; leveraging efforts and investments; enhancing efficiencies; and maximizing returns on investments.

Figure 10. Recharge Development Corporation Business Model

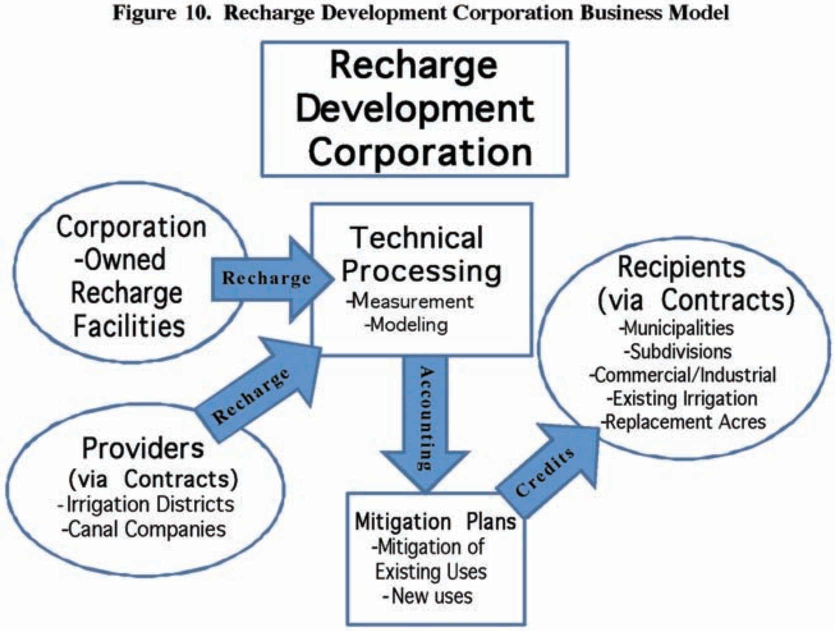
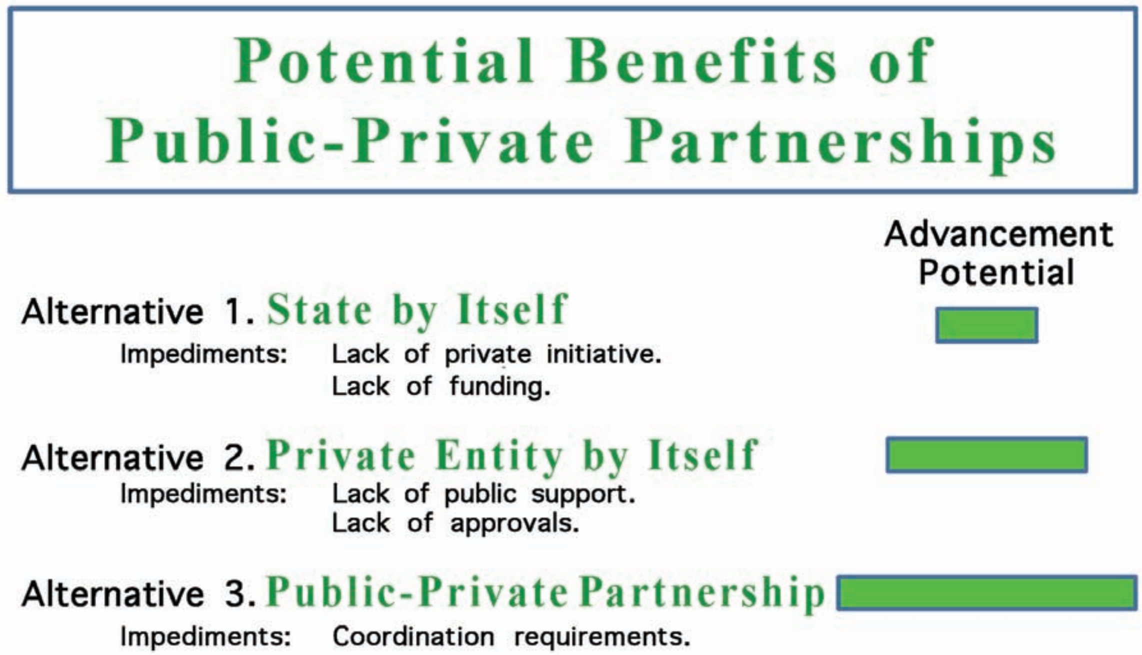


Figure 11.



The long-term nature of major MAR projects requires staged development, as depicted in **Figure 12**. Staging enables project participants to achieve definable interim milestones while moving toward the long-term goal. This is particularly important to provide transparency and visibility by the public participants and private investors. Any joint operations need to clearly establish milestones for project tracking and contracting purposes.

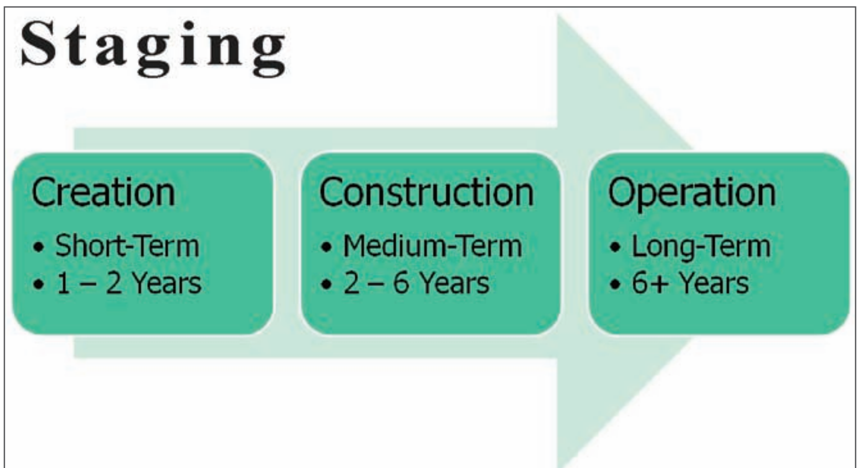


Figure 12. Staging Steps for Public-Private Partnership Implementation

CONCLUSION

Demands on water will continue to increase in the western United States. Competition for supplies is becoming more acute, hindering economic development and polarizing the water use sectors. Conservation and improved efficiency, while helpful, will not satisfy all current and future water needs. Short-term storage in snowpack is always variable. In recent years, many basins have experienced more precipitation as rain than snowfall, which results in flashier runoff with surpluses occurring earlier in the spring and shortages in the fall. Most viable surface water storage sites have already been developed and a benefit-to-cost analysis for new surface storage is rarely found to be positive. The current financial and environmental requirements effectively remove additional surface storage as a vehicle for future water management.

Managed Aquifer Recharge

Enhanced Management

Managed aquifer storage (MAR) on the other hand is an increasingly viable solution. MAR is certainly not the only option to enhance water resource management but in many areas it can provide a viable and cost-effective tool. Implementation of MAR can be significantly enhanced by public-private partnerships when compared with public or private efforts accomplished independently.

In eastern Idaho, water is available for appropriation if we develop more storage facilities. Retaining water that would otherwise be lost from the basin enhances both “management” and “storage.” Absent improved management, however, water supply conflicts will undoubtedly multiply and Idaho will continue to be unable to fully utilize precious water supplies.

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For Additional Information:
Dave Tuthill, Idaho Water Engineering , 208/ 378-1513 or dave@idahowaterengineering.com

Dave Tuthill is a principal in Recharge Development Corporation, which represents the vanguard of private managed aquifer recharge in Idaho. Dave has worked in the field of water resources throughout his career. He worked for the Idaho Department of Water Resources from 1976 through his retirement from the State of Idaho in 2009. During the period from January 1, 2007 through June 30, 2009, he served as Director of the agency. In this capacity he was a member of the Cabinet of Governor C.L. “Butch” Otter, charged with the responsibility for planning and administration of water resources in the State of Idaho. In 2009, he founded Idaho Water Engineering, LLC, which now consists of more than a dozen water professionals located around the State of Idaho. Idaho Water Engineering provides a wide variety of water resource engineering services including water rights analysis and solutions, and water measurement, automation and telemetry.

Michael Comeskey has worked in the water and wastewater industry for more than ten years. Michael graduated in 2002 from Washington State University with a Bachelor of Science in Biology and is a 2014 graduate of Boise State University’s Executive MBA program. A generalist, Michael has developed innovative methods for integrating business and technology into the technical management of wastewater systems. Michael was an Environmental Health Specialist for four years in western Washington and, most recently, Michael managed the business, GIS, and IT functions of the Bench Sewer District in Boise, Idaho. Michael is now the Utilities Asset Manager for the City of Boise Public Works Department and is developing the City’s strategic asset management plan and integrated asset management system.

Hal Anderson began his Idaho career in 1975 at the University of Idaho in the College of Natural Resources (CNR), after completing a four year tour of duty in the US Air Force. Hal was on staff at CNR and after completing his Masters degree came to the Idaho Department of Water Resources (IDWR) in 1981. Hal served in a variety of increasingly responsible positions within IDWR. Hal was Technical Services Bureau Chief for 12 years prior to his promotion to Planning and Technical Services Division Administrator in 1999. As division administrator Hal managed and supervised the hydrogeologists, hydrologists, planners, modelers, engineers and GIS specialists that provided the technical support to IDWR and the Water Board. Hal also served as the lead staff person for the Idaho Water Resource Board. As lead staff person Hal managed Board programs, represented the Board in various professional and political capacities including working directly with the Governor’s Office and the Idaho Legislature. Hal is currently Managing Partner of Idaho Water Engineering, LLC.

