

OVERVIEW

*The Irrigation Modernization Program (IMP) is a comprehensive approach to helping farmers and irrigators repair and replace aging infrastructures. Irrigation modernization is one of the greatest agricultural, environmental, and local energy development opportunities in the western United States.*

WHY MODERNIZATION MATTERS

Aging agricultural infrastructure, an expanding population, persistent droughts, and declining fish populations are stressing scarce water resources. Farmers in the western United States rely on irrigation to grow food. But the dams and canals that capture and convey this water from rivers to farms are inefficient. In many scenarios, farmers and rivers don't get the water they need. By replacing leaky, open canals with closed pipe systems, farmers can do much more with much less.

BY THE NUMBERS

			
DIVERSIONS IN WESTERN U.S.	DIVERSIONS FOR AGRICULTURE	AGE OF INFRASTRUCTURE	WATER LOSS VIA CANAL DELIVERY
<b>1 Million</b>	<b>80%</b>	<b>75-125 yrs</b>	<b>30-70%</b>

ABOUT THE IMP

With the support of Energy Trust of Oregon, FCA launched the Irrigation Modernization Program in 2015. The program designs optimal irrigation systems that utilize the best available technologies to provide reliable water, reduce operation and maintenance costs, and increase local energy generation. Through this work, FCA assists districts in navigating the complex world of agricultural priorities, regulatory requirements, funding, and environmental concerns. Each irrigation group is provided with a road map to implementation, including how to obtain public and private sector investment and navigate permitting requirements. In using a scalable, thoughtful approach, the Irrigation Modernization Program positions rural communities for long-term sustainability.

THE IMPACT

By addressing fundamental problems in aging water infrastructure, irrigation modernization provides unifying solutions for rural farming communities and the environment. Water saved from seepage below and evaporation above is then able to support both farms and wildlife conservation, while the gravity-pressured water eliminates the need for farmers to maintain costly pumps. In addition, the pressurized piped systems allow for the implementation of hydroelectric power, providing both a new clean energy source for rural communities and a new revenue source for irrigation districts, helping to mitigate costs. Irrigation modernization creates opportunities for communities to:

- ◆ **INCREASE WATER RELIABILITY**
- ◆ **DEVELOP LOCAL RENEWABLE ENERGY RESOURCES**
- ◆ **STRENGTHEN RURAL COMMUNITIES**
- ◆ **IMPROVE FISH AND WILDLIFE HABITAT**

Modernization is the solution to the societal and environmental challenges of food security, sustainable communities, and healthy rivers.

LEARN MORE

*Farmers Conservation Alliance is a nonprofit organization focused on creating agricultural, environmental, and community benefits through the modernization of irrigation systems.*

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# Projected Impact Analysis

## IRRIGATION MODERNIZATION PROGRAM

Farmers Conservation Alliance is working to enable and accelerate the modernization of irrigation infrastructure with multiple irrigation districts in Oregon. Once modernized, the result of this work will be trillions of gallons of water conserved annually, thousands of miles of stream improved for fish, MWh of energy created as well as conserved, and millions of dollars in economic development. The following chart represents the potential collective impact of implementing these modernization projects.

IMPACT												TOTAL
	ARNOLD IRRIGATION DISTRICT	CENTRAL OREGON IRRIGATION DISTRICT	EAST FORK IRRIGATION DISTRICT	LONE PINE IRRIGATION DISTRICT	NORTH UNIT IRRIGATION DISTRICT	OCHOCO IRRIGATION DISTRICT	SWALLEY IRRIGATION DISTRICT	TUMALO IRRIGATION DISTRICT	WALLOWA LAKE IRRIGATION DISTRICT	ROGUE RIVER IRRIGATION DISTRICT	23 PENDING IRRIGATION DISTRICTS	
Water Saved (cfs)	46.0	156.0	13.0	8.8	205.4	72.2	20.1	48.0	17.4	*	*	557.0
Stream Miles Improved	118	118	22	118	107	75	45	169	40	*	*	208
Energy Conserved (MWh/year)	1,015	10,438	*	0	40,360	2,688	1,146	4,003	6,565	*	*	59,650
Renewable Energy Generated (MW)	0.0	9.7	1.5	0.0	25.8	0.0	0.2	0.9	0.8	*	*	38.0
Ag Land Protected (acres)	3,963	17,336	9,600	2,369	58,350	18,480	4,333	7,002	15,668	*	*	111,833
Landowners Benefited	646	1,855	1,100	19	961	606	668	667	146	*	*	5,422
Avoided Carbon Emissions (tons CO <sub>2</sub> )	482	25,056	*	0	62,666	1,277	831	3,334	*	*	*	93,646
Economic Development (\$)	27.3M	166.5M	*	4M	558.9M	114.4M	8.8M	23.9M	*	*	*	903.9M
Jobs Supported (short-term)	590	3,600	*	110	14,760	3,020	190	520	*	*	*	22,790
Canals Converted (miles)	39	74	*	14	258	108	17	69	44	*	*	579
Improved Water Quality	💧	💧	💧	💧	💧	💧	💧	💧	💧	*	*	
Threatened or Endangered Species	🐟	🐟		🐟	🐟	🐟	🐟	🐟		*	*	
Project Costs (\$)	46.8M	284.9M	*	9.8M	1.3B	276.4M	15M	40.9M	78.5M	*	*	2B

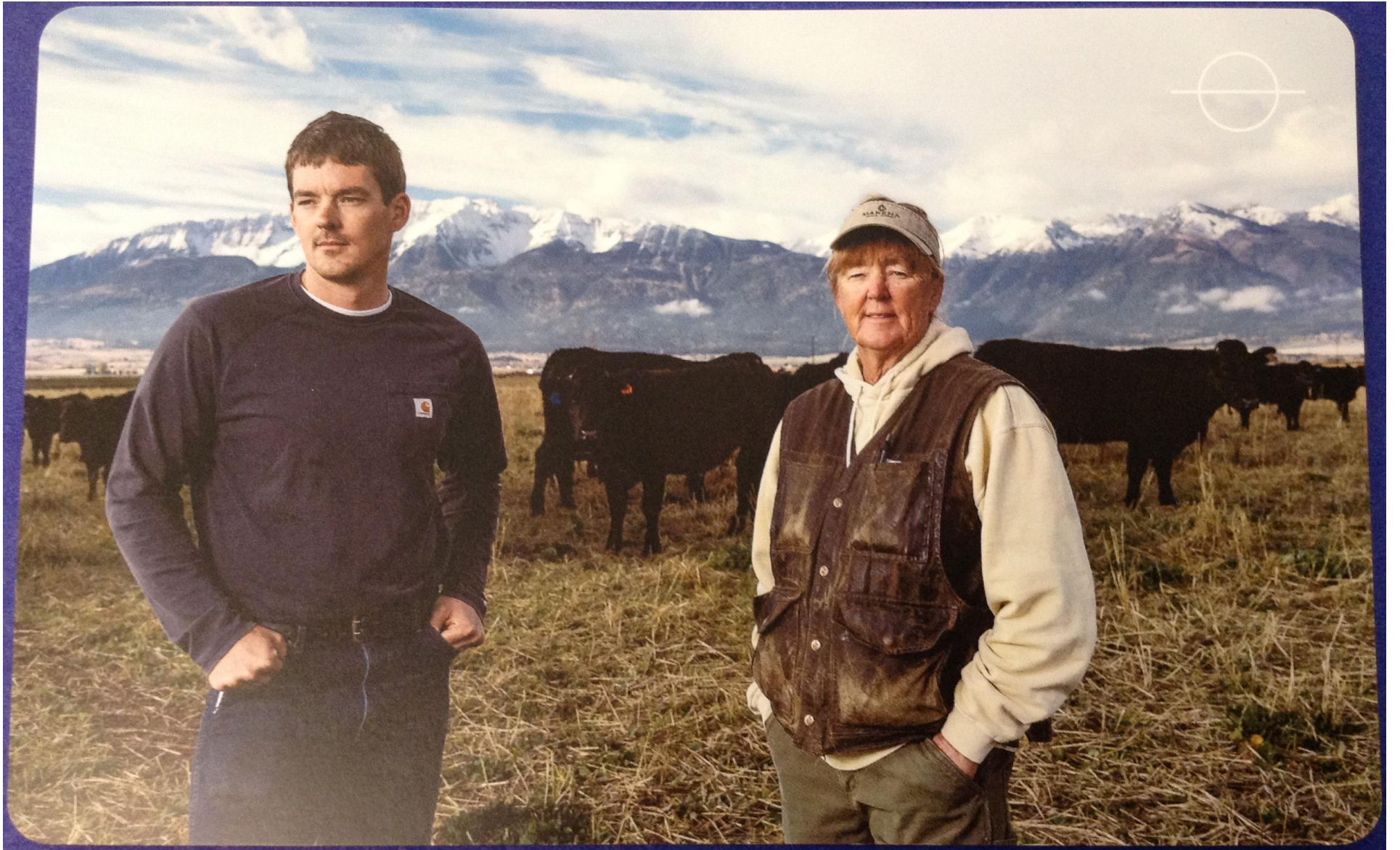
All numbers accurate as of April 2018

\*Data collection still underway

**TO LEARN  
MORE**



FCA's Irrigation Modernization Program works with irrigation districts to develop and implement modernization strategies.  
[IRRIGATIONMODERNIZATION.FCASOLUTIONS.ORG](http://IRRIGATIONMODERNIZATION.FCASOLUTIONS.ORG) 541.716.6085 + [info@fcasolutions.org](mailto:info@fcasolutions.org)



## NO LONGER CHILD'S PLAY.

Joe's fascination with sprinkler pipes began as a child, when he was the youngest of three and spending summers outside helping on the family farm. The farm, located in the high plateaus of the Wallowa Mountains, is now Joe's responsibility (a family tradition three-generations deep), and water is still on his mind. As snowpacks fluctuate and drought threats become more frequent, Joe sees the opportunity to modernize irrigation infrastructure as the key to sustaining their livelihood for the next generation.

Just as his parents moved their fields from flood irrigation to hand-line and wheel-line pipe, Joe's first infrastructure upgrade was converting those sprinkler pipes to highly efficient pivot irrigation systems and replacing leaking open ditches with seepage-free underground pipe. What once required fourteen days of work to irrigate now only takes three, not to mention a \$20 per acre decrease in utility cost. Creating those efficiencies in labor and water delivery across multiple farms has a ripple effect. Without those conservation projects, years with low snow packs could mean water supplies that don't last the whole summer and economic value lost throughout the valley.

FCA is working with farmers like Joe in Wallowa Lake Irrigation District to create a strategy for broad scale irrigation modernization throughout the region. Greater efficiency in all of their irrigation systems will allow them to sustain thriving farms despite a changing climate – and prepare the next generation to weather the storm.

## GREAT THINGS ARE HAPPENING.

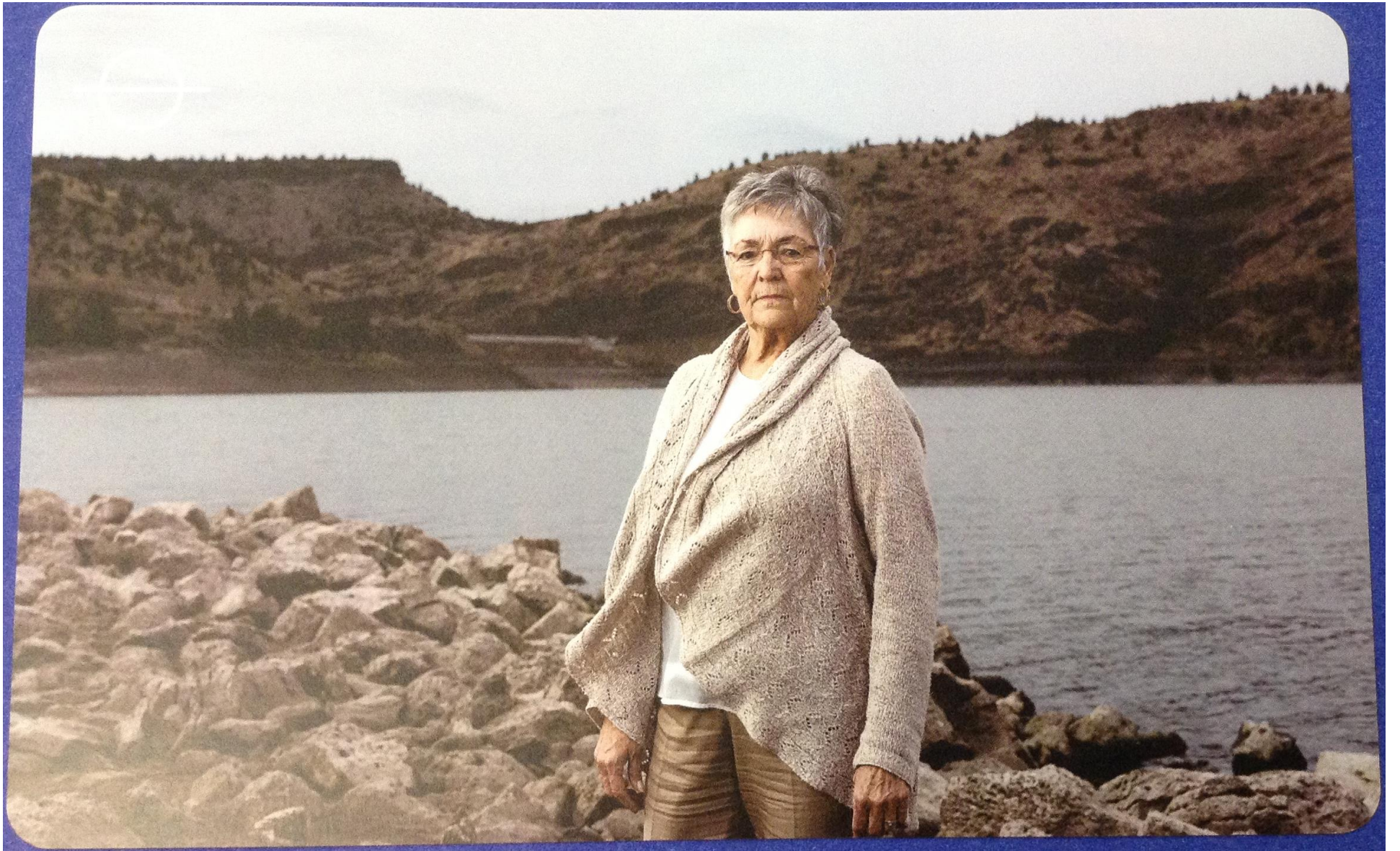
### Wallowa Lake Irrigation District (WLID)

Joseph, Oregon

*Pictured are Joe Dawson and his mother Denny. Their ranch is a member of the newly formed Wallowa Lake Irrigation District near Joseph, Oregon.*

PHOTO AARON HEWITT

  
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## THE PRIDE OF PRINEVILLE.

The cowboy, can-do spirit runs deep in Prineville. When the railroads bypassed their town 100 years ago, its citizens voted 355 to 1 to build their own railway and raised the money to connect their town to the main line 19 miles away. The margin of victory was nearly as impressive when Betty Roppe won her first re-election as Prineville's mayor in 2012, with 95 percent of the vote.

A life-long rancher and great-grandmother to nine, Mayor Roppe takes the responsibility of protecting her town's interests to heart. In Central Oregon's oldest community, that means ensuring the security of its agricultural industry, where 86 percent of the county land is used for farming and grazing.

With an irrigation infrastructure that's as old as those community-funded railroad tracks, Roppe sees an opportunity to decrease the water leakage and maintenance costs of the antiquated system by installing seepage-free underground pipe. Such improvements mean farmers in this high-desert terrain could increase their hay cuttings, and ranchers' feed for their livestock will be more secure. It also means more water for nearby Ochoco Creek, where steelhead fry started appearing for the first time in 40 years thanks to a region-wide restoration effort.

The Irrigation Modernization Program is supporting communities like Prineville in realizing their goals for greater efficiency and protecting all their residents, both big-fish farmers and little fry alike. Achieving water security for both the environment and agriculture is the kind of victory Prineville is accustomed to having.

## GREAT THINGS ARE HAPPENING.

### Ochoco Irrigation District (OID)

Prineville, Oregon

*Pictured is Betty Roppe, mayor of Prineville. Prineville lies within the Ochoco Irrigation District, which supplies water to 20,062 acres in the Prineville area.*

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## A FLOOD OF OPPORTUNITY.

When Farmers Irrigation District (FID) of Hood River, Oregon, lost its irrigation infrastructure to a severe flood in 1996, they were unable to deliver water to their farmers or generate revenue with hydroelectricity plants. Such a setback might have stopped some in their tracks, but FID saw it as an opportunity. Rebuilding from the ground up, they brainstormed ways to not just replace but also enhance their infrastructure, including improved fish screens.

After ten years of research and testing, FID created the Farmers Screen: a self-cleaning, horizontal screen that protects fish and manages debris. Sensing the impact that invention could have in other communities, FID patented the technology, and Farmers Conservation Alliance (FCA) was formed to take the screen to market and protect the interests of the common good.

But trying to install modern fish screens on diversions that were often a century old was no easy task. FCA realized there was a need for comprehensive support to assist irrigators in upgrading their entire systems, and in 2015 launched the Irrigation Modernization Program.

Today FCA works with farmers, agencies, and organizations to design, finance, and implement large-scale solutions that improve water supplies, reduce operation and maintenance costs, generate fish-friendly hydropower, and benefit the environment. Leading the charge are many of the original team members behind the Farmers Screen – a testimony to their commitment to finding solutions for both agriculture and the environment, despite the obstacles.

## GREAT THINGS ARE HAPPENING.

### Farmers Irrigation District (FID) and FCA Hood River, Oregon

*Pictured are members of the teams that developed the Farmers Screen and continue to grow FCA. The installation of 42 Farmers Screens has opened hundreds of river miles.*

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PHOTO KATE SCHWAGER

  
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## A HISTORY THAT NEEDS REPEATING.

As the owners and managers of the dam that enlarged the beloved Wallowa Lake Dam nearly a century ago, members of the Wallowa Lake Irrigation District are ready to make history once again. They are facing the future as they always have: with stoic resolve and a lot of hope. Whether theirs becomes a tale of woe or a story of success is yet to be determined.

Set under snow-capped peaks in remote eastern Oregon, the lake is recognized as a state treasure by locals and visitors alike. Its beauty is rivaled only by its utility. The dam sustains the thriving agricultural community by reserving the seasonal snow melt for the hot, dry growing season and also allows farmers to keep water instream for fish.

One tremor from a significant earthquake and the dam is projected to burst, releasing millions of gallons of water onto the town and surrounding farmlands with devastating effects.

All over the American West, critical irrigation infrastructure like the Wallowa Dam is in need of repair that no irrigation district can afford to fix alone. Members of the Wallowa Lake Irrigation District are working with FCA's Irrigation Modernization Program to amass the funding needed to rebuild the dam their forefathers had the vision to create. Without it, more than just a pretty lake is at stake.

## GREAT THINGS ARE HAPPENING.

### Wallowa Lake Irrigation District (WLID)

Wallowa, Oregon

*Pictured are father and son farmers Tom and Dan Butterfield. Tom is holding a historical photo picturing the building of the first Wallowa Lake Dam in 1916.*

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