The Liquid Assets Project

Mobilizing Impact Investment Capital for Agricultural Water Sustainability

PHOTO: TROUT UNLIMITED

Project Summary

The Liquid Assets Project explored the potential for impact-focused, private-capital investments to deliver environmental, social, and financial returns. Supported by a Conservation Innovation Grant (CIG) from the Natural Resources Conservation Service (NRCS), **the Liquid Assets Project developed and examined a variety of innovative financing mechanisms that included private capital participation to promote sustainable water use in water-scarce river basins in the western US.** The Project investigated farm and ranchland investments in land purchases, crop switching, and joint ventures with agricultural producers to improve the profitability of their operations and generate environmental benefits, particularly with respect to water management, stream health and soil health.

Over the course of the project, emphasis shifted from developing a pipeline of projects for one large investment fund to a focus on particular strategies or geographies that rose to the top in diligence analysis. The Liquid Assets team and partners will be pursuing those projects going forward. In addition, the project investigations demonstrated that while private capital will be important to solving water challenges in the U.S. West, it will have to be combined with more risk-tolerant capital from philanthropic and government sources, at least initially. In large part, that need is driven by a disconnect between land prices and agricultural production margins and high transaction costs and risks where water rights are involved.

> Innovative financing mechanisms and private capital participation can promote sustainable water use.

About the Liquid Assets Project

The Liquid Assets Project is a first-of-its-kind partnership among a private capital investment firm, a leading western water law firm, and a conservation non-profit, supported in part through the NRCS CIG program. This unique partnership allowed the Project to develop new conservation finance vehicles in the complex, multi-faceted area of western water use and drought resilience.

Encourage Capital is an investment firm that deploys private capital into systemic solutions to address pressing environmental and social challenges. The firm's role in the Liquid Assets Project was to both cultivate relationships and interest from potential investors and to bring its significant due diligence capacity and expertise to bear on assessing and removing barriers to investment opportunities.

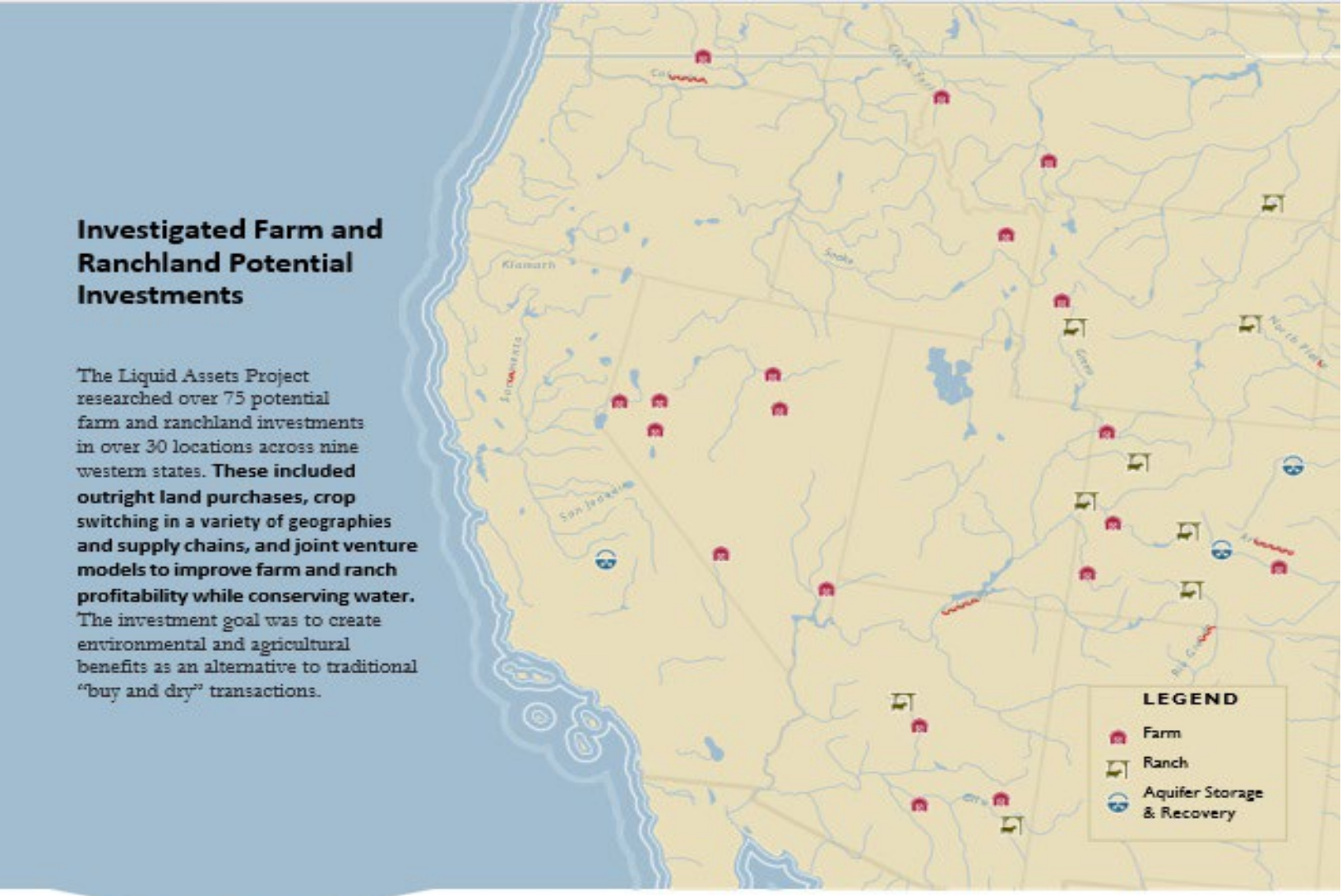
The western natural resource law and policy attorneys at Culp & Kelly, LLP directed the investigative work, synthesized results, and linked these results with their expertise in structuring financial and business vehicles.

Trout Unlimited brought to the table relationships with farmers and ranchers across the West, built through stream restoration and water conservation partnerships on working lands, and dozens of experienced field staff in rural, western communities to help ground-truth results.

USDA United States Department of Agriculture
Natural Resources Conservation Service

Investigated Farm and Ranchland Potential Investments

The Liquid Assets Project researched over 75 potential farm and ranchland investments in over 30 locations across nine western states. **These included outright land purchases, crop switching in a variety of geographies and supply chains, and joint venture models to improve farm and ranch profitability while conserving water.** The investment goal was to create environmental and agricultural benefits as an alternative to traditional "buy and dry" transactions.



The Project analyzed about 20 of these potential investments in more detail through field visits, collection of detailed agricultural and water use information, and interviews with farm owners, ranch managers, and other experts.

From these, the Liquid Assets Project team developed three specific conservation finance strategies that are ripe for further on-the-ground development with producers:

1. **Ranching Stewardship:** An enterprise model for ranch stewardship services focused on sustainability, environmental improvements, and increased profitability;

2. **Natural Water Storage** through Artificial Beaver Dams: An enterprise model to advance artificial beaver dams to restore watershed function and improve ranch profitability; and

3. **Central Arizona:** A combined investment in water infrastructure, water sharing, and crop switching in the Colorado River Basin.

In addition, further site-specific investigation of crop switching is warranted in areas where **strong local partnerships** are present, such as developing opportunities for heirloom apples & orchards in Colorado.

PHOTO: TROUT UNLIMITED

1 Conservation Finance Strategy
Ranching Stewardship

Over 40% of the rangeland in the western U.S. is privately owned. These private ranchlands contribute to U.S. food security, generate local economic activity in rural communities, anchor the West's natural heritage and landscape, and—*when well-managed*—protect watershed health and provide habitat for a wide variety of fish and wildlife. Maintaining the benefits of these millions of acres of private ranchland is challenging, but innovative new ranch stewardship strategies could help provide solutions to these challenges.

The Liquid Assets Project has partnered with a well-established ranch stewardship provider to develop a new approach. The provider would partner with existing ranch owners through negotiated stewardship agreements. Under such an agreement, the provider would take actions to improve grassland and soil conditions and water management, thereby **increasing ranch productivity** and generating increased ecological benefits. In return, the stewardship provider might receive favorable lease terms for running its own cattle or share in the increased profits. This new model would help stewardship providers become more profitable over the long-term, thus attracting investment to grow their operation to serve more ranches. It would also provide an opportunity for land-rich/cash-poor ranch owners to employ stewardship practices that might otherwise be unavailable to them, and it is often these ranches where improved stewardship can provide the greatest ecological and ranch productivity gains.

A Montana ranch crew examines the effects of timber encroachment on grazing and riparian areas.
PHOTO: RANCH ADVISORY PARTNERS

2 Conservation Finance Strategy
Natural Water Storage

Aerial photos of Camp Creek, a tributary to Silvies River in Eastern Oregon, demonstrate conversion from sagebrush (pre-restoration, top) to wet meadow and increased riparian area (post-restoration, bottom) after installation of artificial beaver dam structures.

Incised stream channels across range lands in the American West represent the loss of natural hydrologic function. However, they also present an opportunity to reverse-engineer that loss in a way that provides myriad ecological benefits. Over three hundred years ago, beavers were instrumental in maintaining the connection between streams and floodplains. Today, cutting-edge restoration techniques recreate these beneficial, hydrologic functions by mimicking beaver dams both in construction and function. In the process, "artificial beaver dams" placed in restoration projects create working landscapes **more resilient to floods** (the "sponge" of re-connected floodplains absorb high flows); **more resilient to drought** (increased groundwater elevation supports riparian wetlands, enhanced pasture grasses and plants, and increased stock watering options); and **more resilient to wildfire** (wet valley bottoms create natural fire breaks and provide critical refugia for livestock and wildlife during fires).

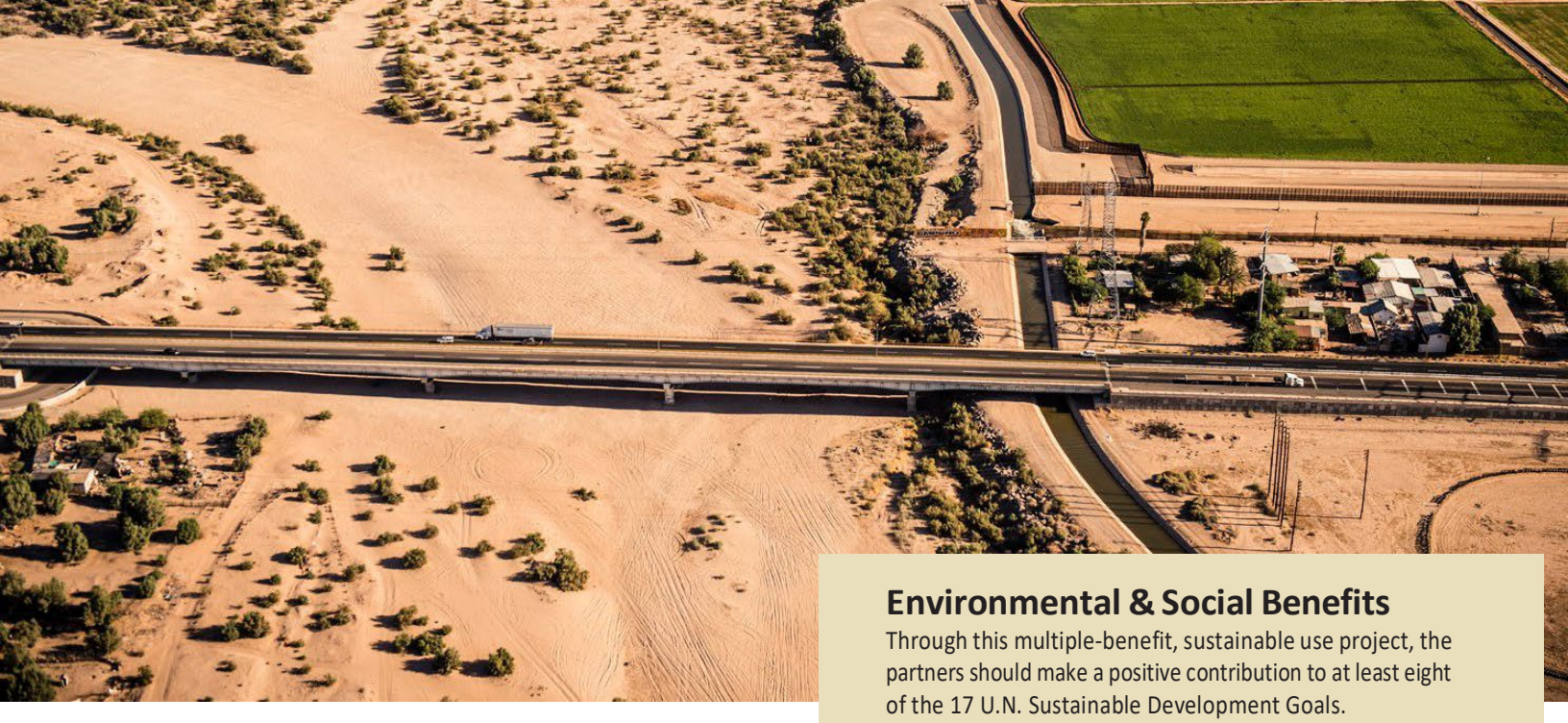
Working with a large cattle ranch in eastern Montana's Tongue River basin, the Liquid Assets Project is test-driving a shared enterprise between ranch owner and restoration team. In this demonstration project, collection of pre-restoration, baseline data on ranch productivity and stream conditions will be compared with post-restoration data. This analysis can help demonstrate whether the benefits of increased grazing pasture productivity and improved cattle operations can balance out the up-front restoration costs.

Restoration expert Caroline Nash, Ph.D., (with orange field notebook) leads site tour of potential artificial beaver dam structure placement in incised stream channel.

Dr. Nash and Peter Culp survey sites for artificial beaver dam structure placement in incised stream channel.

TU Volunteers build a beaver dam analog structure in Utah. This technique is working well across the West to help reconnect streams to their floodplains.

PHOTOS: TROUT UNLIMITED



3 Conservation Finance Strategy
Central Arizona

Central Arizona farmers are facing a host of challenges associated with their Colorado River water supply. In May 2019, Congress approved a plan developed by the seven basin states that is intended to help stabilize levels in the two major supply reservoirs, Lake Mead and Lake Powell. To help stabilize Lake Mead, Arizona agreed to steep cuts in water deliveries based on levels in the reservoir: the lower the level of Mead, the steeper the cuts. Central Arizona agricultural users rely heavily on low-priority water rights from the Colorado River, which makes them vulnerable to reduced deliveries under this plan.

The Liquid Assets Project has been working with irrigation districts, municipalities, the state of Arizona and the Environmental Defense Fund (EDF) to develop options combining federal, state, and private funding to support an approach that eases agricultural water shortages; facilitates conversion to lower water use crops; and provides municipalities with new avenues for storing and recovering water for long-term reliability purposes. Environmental benefits would include **avoidance of groundwater overdraft and subsidence**, while social benefits would include improvements in **long-term agricultural viability**, **job creation**, and a model of regional **municipal/agricultural cooperation** in an area facing serious water scarcity challenges.

Environmental & Social Benefits

Through this multiple-benefit, sustainable use project, the partners should make a positive contribution to at least eight of the 17 U.N. Sustainable Development Goals.

Protect and restore water-related ecosystems; support local communities in improving water management

Increase substantially the share of renewable energy in the global energy mix

Achieve higher levels of economic productivity through diversification, technological upgrading and innovation

Promote inclusive and sustainable industrialization; retrofit industries to make them sustainable, with increased resource-use efficiency

Support positive economic, social and environmental links between urban, peri-urban and rural areas

Achieve the sustainable management and efficient use of natural resources

Integrate climate change measures into strategies and planning

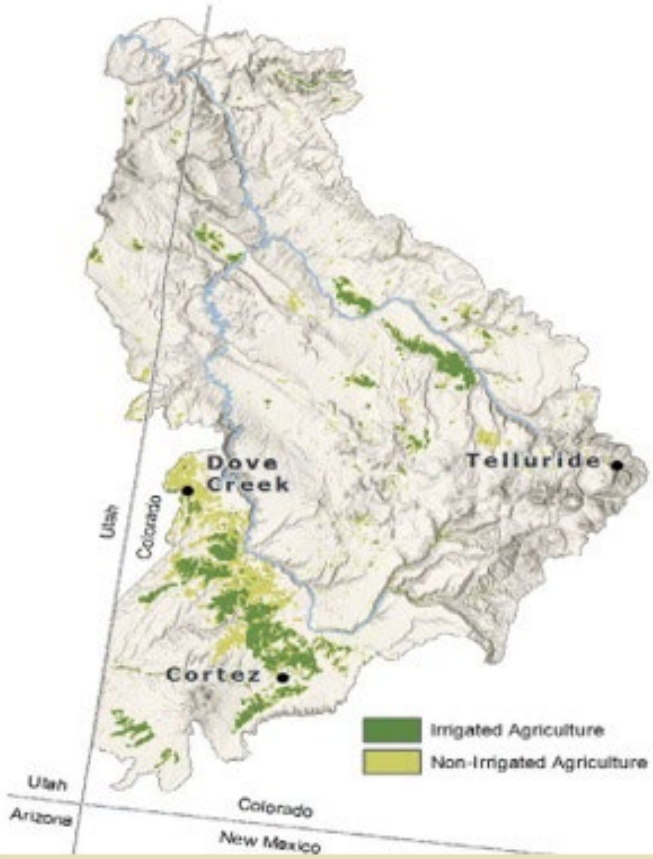
Ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems; promote sustainable management of forests and reduce the degradation of natural habitats

Green US farmland separated from the dry desert by the USA/Mexico border and an irrigation canal.
PHOTO FROM THE NATURE CONSERVANCY. © NICK HALL

Local Partnerships for Crop Switching
Heirloom Apples & Orchards

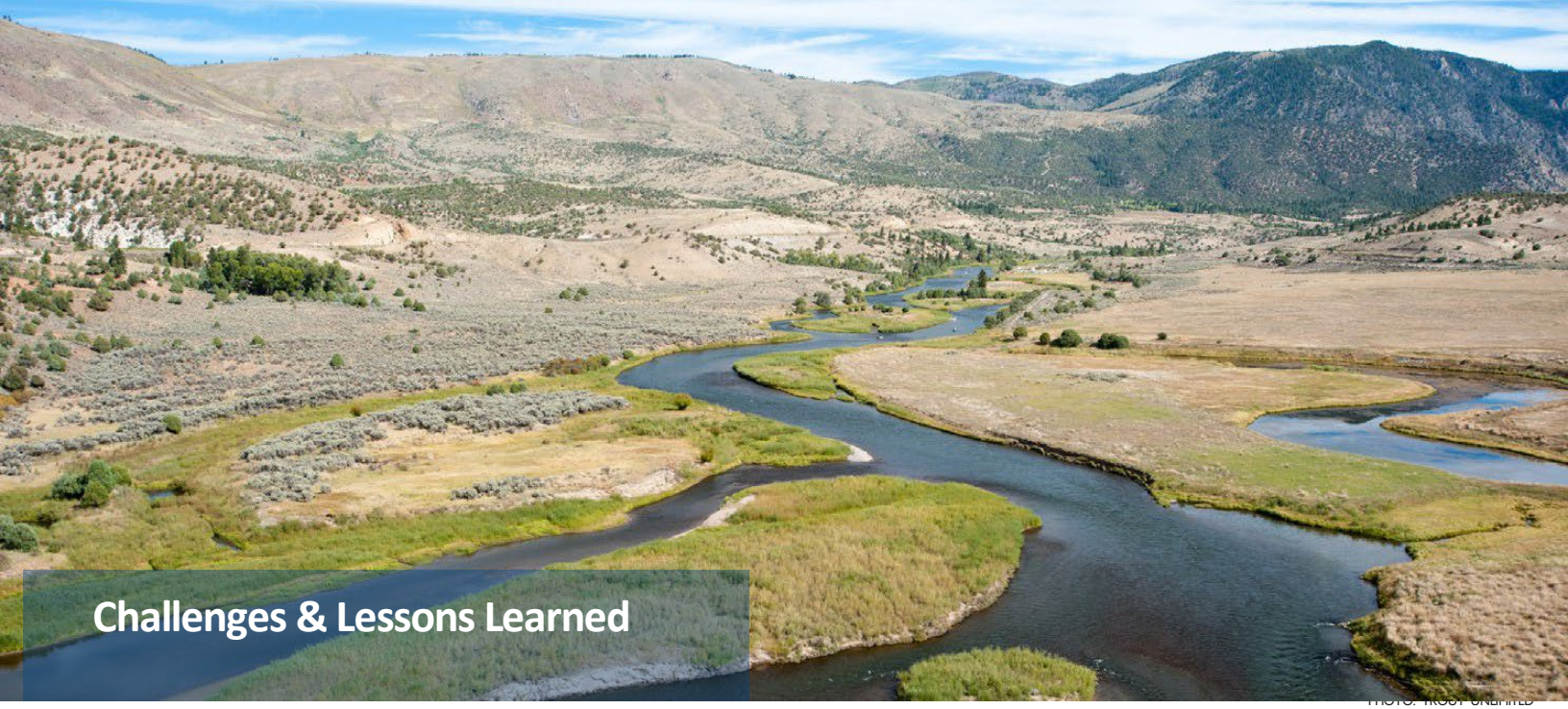
The Nature Conservancy (TNC) completed a crop switching market analysis to determine the feasibility for agricultural producers on Colorado's Western Slope to grow a low water use crop that meets an established market demand and leaves more water in the river for nature. Work over the past two years suggests there may be one such possibility with heirloom and historic apple varieties that were planted in southwestern Colorado over 100 years ago but are no longer a material component of the farm economy in the region. While apple crops, on average, consume 10% less water than crops like alfalfa in areas where both are grown in the West, their potential for increased profitability may also allow local producers to generate more income with fewer irrigated acres.

Today, the hard apple cider market in the US is growing rapidly and both local and national hard cider vintners need heritage apple cider juice from the variety of apples historically grown in southwestern Colorado for their brews. Despite challenges, including gaps in the supply chain and extreme variability in crop yields due to late spring freezes, the feasibility work completed to date shows promise for apples. TNC is continuing due diligence work with local partners, exploring strategic market interventions to support and revitalize the region's orchard economy. One of these key partners is the Montezuma Orchard Restoration Project (MORP), a local non-profit organization that works to preserve Colorado's fruit-growing heritage and restore an orchard culture and economy in southwestern Colorado. TNC and MORP are working to purchase land to establish a genetic bank of historic apple varieties and assess consumptive water use from a working orchard. This project hopes to demonstrate how water conservation, precision irrigation, and alternative crops can increase the resiliency of the local agricultural economy in response to ongoing aridification and water stress in the region.



Current Crop Distribution	Acres
Grass/Pasture	121,000
Alfalfa	100,000
Winter Wheat	22,000
Fallow/Idle Cropland	18,000
Dry Beans	12,500
Other Hay/Non Alfalfa	6,500
Other Crops	8,500

The map above shows the current makeup and distribution of irrigated and non-irrigated cropland in Southwestern Colorado. Crop-switching has the potential to change those cropping patterns in order to reduce irrigation demand for the region and improve agricultural profitability.



Challenges & Lessons Learned

The Liquid Assets Project began with an ambitious goal of creating a large investment fund with a steady pipeline of investment opportunities to bring private capital to bear on western water challenges, with a focus on environmental and social benefits. Developing new financial models and creating investment vehicles and markets where none exist, especially in the context of complicated water laws and water right allocations, presents more uncertainty and risk than is attractive to most investment capital. While the Liquid Assets Project recognized those challenges at the outset, the detailed investigations uncovered several factors that mitigated against developing a "pipeline" of potential investments and led instead to a focus on specific, conservation-finance demonstration projects.

One factor was the time and presence required to develop trust and relationships with key on-the-ground players in order to tailor solutions to the specific problems facing particular geographic areas. Over the course of the grant, the Liquid Assets Project chose to focus on the opportunities that held the most promise rather than continuing to develop a large pipeline of investment opportunities.

This shift was also driven by economic factors, including declining margins on cattle and on most crops grown in the West over the last few years while land values remained high or increased. The disconnect between land values and the economics of farming and ranching, particularly in areas of potentially high environmental outcomes, was, in many cases, difficult to reconcile with an investment approach based solely on risk-adjusted private capital.

In many cases, including the strategies being pursued now, it is clear that more risk-tolerant capital such as philanthropic program-related investments, low-interest loans, and government grants will be needed to help fund large-scale demonstrations.

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Looking Ahead

The need to bring private capital to bear on western water challenges remains. The scale of the problems and the cost of solutions cannot be borne by government or philanthropy alone, but will take a combination of public, private and philanthropic resources to evolve viable and tailored solutions to the variety of water challenges facing the western U.S. There is no silver bullet approach.

The Liquid Assets Project's work has identified opportunities to pursue project-specific investments that are either geographically-focused (e.g. the Central Arizona project) or theme-focused (e.g. artificial beaver dams and ranching stewardship) and crop switching. Success in developing and funding these specific projects will help show that innovative financing approaches can work when properly tailored to the conditions and water challenges, and hopefully provide models that can be scaled up or replicated by others.

Upper Green River tributary
PHOTO: TROUT UNLIMITED

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