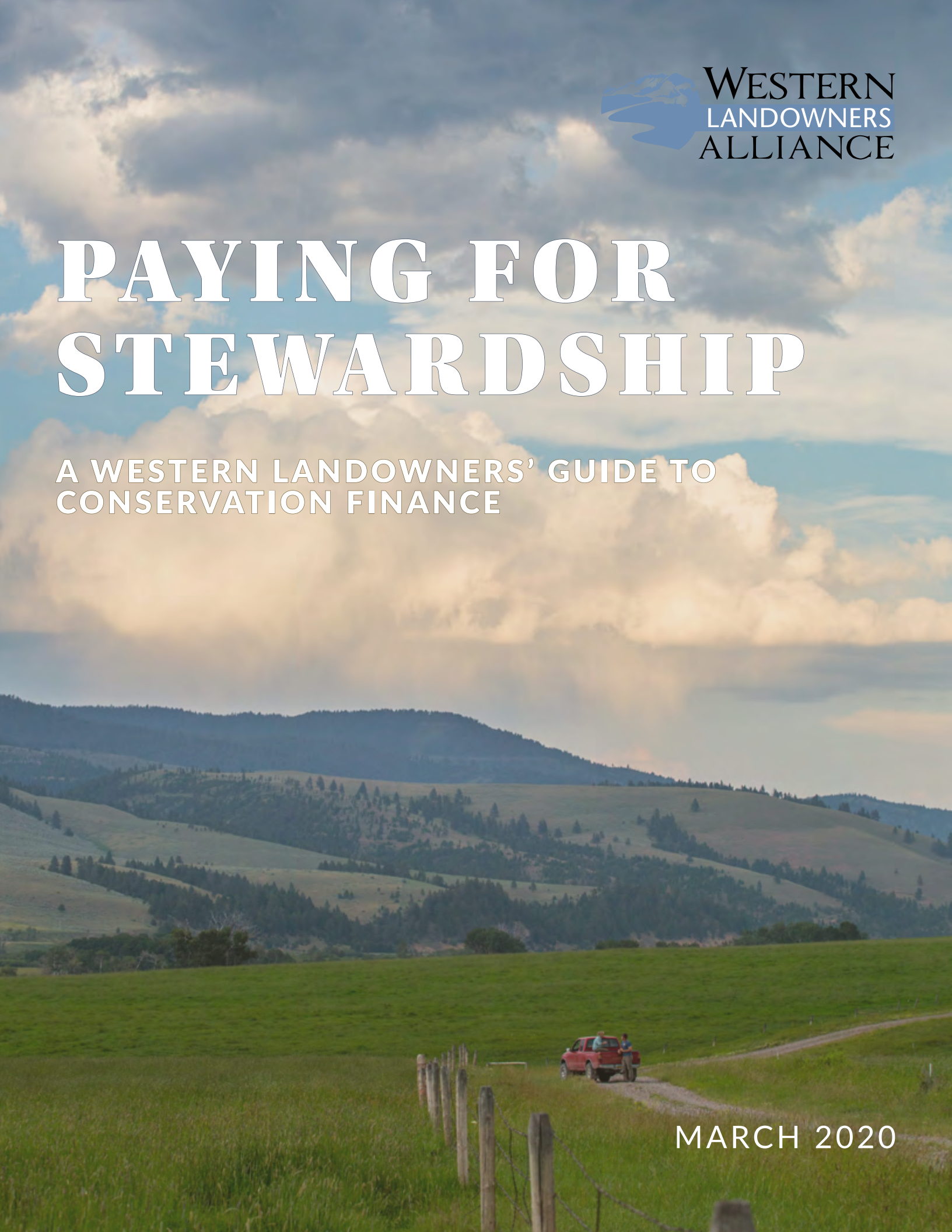

WESTERN LANDOWNERS ALLIANCE

PAYING FOR STEWARDSHIP

A WESTERN LANDOWNERS' GUIDE TO CONSERVATION FINANCE

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Western Landowners Alliance was founded and is led by landowners dedicated to the health and prosperity of working lands in the American West. We offer solutions for whole and healthy western landscapes informed by experienced land stewards. We advance policies and practices that sustain working lands, connected landscapes, and native species.

For more, visit westernlandowners.org

WRA is a national leader in wetland and species banking and conservation finance. We bring technical and market expertise to our network of landowners, investors, nonprofits and public agencies to achieve positive financial and environmental outcomes. Our team includes experts in mitigation, habitat restoration, conservation finance, land management, and credit sales. We also leverage in-house biologists, design, permitting, and GIS specialists to provide a full suite of services for conservation and mitigation projects. WRA is pioneering new monetization approaches across carbon, wetland, water, and species markets.

Conservation Investment Management is a private equity and financial advisory company focused on investments that improve our natural environment and preserve the Western agricultural heritage. Our clients are sophisticated investors who are looking for investment opportunities aligned with both their values and their return expectations. CIM partners with landowners to help them improve the profitability of their farms and ranches and increase the conservation values of their land, while maintaining the Western way of life. CIM also works closely with a number of land trusts across the West.

The Ruckelshaus Institute, a division of the Haub School of Environment and Natural Resources at the University of Wyoming, advances the understanding and resolution of complex environmental and natural resources challenges and supports stakeholder-driven solutions to environmental challenges by conducting and communicating relevant research and promoting collaborative decision making.

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INTRODUCTION

Landowners can be paid for conservation and stewardship activities while maintaining agricultural and ranching operations on their land. This is the premise of conservation finance. A variety of approaches, including conservation easements, wetland mitigation banking, grassland carbon sequestration and watershed investment funds, pay landowners for the ecological services they provide. Conservation finance can help landowners increase and diversify their cash flows, amid societal pressures to produce agricultural goods in greater quantities and of higher quality. This publication is intended to help landowners throughout the West understand various conservation finance approaches and evaluate different opportunities for their own properties.

Conservation finance is underpinned by a few key concepts. First, conservation finance approaches are typically "outcome-based." For example, landowners may be paid for the clean water (i.e. outcome) they deliver to a community, similar to how they are paid for a crop they deliver to a buyer. These environmental outcomes may be measured against pre-defined metrics, which may entail using an established assessment tool. Practices employed to achieve the environmental outcomes may be prescribed or may be up to the discretion of the landowner, depending on the program. The "outcome-based" requirement sets conservation finance apart from many other conservation payment programs, although outcome-based approaches are growing in popularity with funders, including governments.

A second underlying concept of conservation finance is that of "additionality." This refers to the notion that landowners are only paid for the ecological services they provide that go above and beyond what they would have provided under a business-as-usual scenario, which may be characterized by existing regulations or current land management practices. For example, if a landowner is already receiving payments for conservation practices under a government program, they would need to implement practices that result in additional environmental outcomes in order to receive conservation finance payments. Many conservation finance approaches incorporate particular rules or protocols to address additionality considerations.

Another integral feature of most conservation finance programs is the recognition that ecological services are most valuable when they are provided over the long-term. For example, an ecological services buyer, such as a water agency, has an interest in ensuring that payments they make to local farmers for improved water quality will result in cleaner water over several years, not for just a few months. Furthermore, if farmers are allowed to continually opt in and out of the payment program, the water agency would face increased administrative costs and variable water quality conditions, undermining the integrity and efficiency of the conservation finance program. Longer-term commitments also protect the producer because they are ensured payments over a predetermined time period, which lowers exposure to risk when changing management practices or making other investments in the project. Depending on the program, the temporal commitment can be handled through a contract, a deed restriction or a perma-

nent conservation easement and can vary from a few years to perpetuity. While conservation finance payments are based on environmental outcomes, in most cases, landowners can receive payments before the ecological value is entirely delivered. Additionally, the contracts are often secured by assurances that cover the risk of an environmental disaster, such as a fire, or of a breach of contract by the landowner. Assurances can be provided in the form of a financial instrument, such as an individual insurance policy, an insurance pool with contributions from program participants, a bond or a letter of credit.

Conservation finance transactions can take several forms. In some cases, the mechanism operates in an entirely voluntary system where a buyer pays a landowner for an environmental outcome based on risk, efficiency, profitability or corporate social responsibility considerations. In other cases, the mechanism operates within a regulatory framework where the buyer is motivated to pay for the environmental outcomes in order to meet regulatory requirements. In either case, the landowners' participation is voluntary. In some cases, investors will contribute capital to a project in exchange for financial returns and environmental outcomes in the future. Conservation finance buyers and investors typically include corporations, high net-worth individuals, family offices, foundations and public entities. A conservation finance project may entail a one-off transaction between a buyer and seller, involve several or ongoing sales, or could be part of an overarching program.

This publication includes a section on each of the conservation finance topics listed below.

1. Conservation Easements
2. Wetland and Stream Mitigation Banking
3. Species Conservation Banking and Habitat Exchanges
4. Carbon Crediting
5. Payments for Watershed Services
6. Water Rights for Restoration
7. Agro-forestry
8. Hunting and Angling

Each section will provide the reader with an understanding of key concepts, market players and trends, potential benefits and risks to the landowner and land management considerations particular to that topic. The sections will also include illustrative case studies and a quick checklist for landowners to use to evaluate their own property for that specific conservation finance opportunity.

(following spread)
Moving cattle on the range in central Montana. Photo by Alexis Bonogofsky.

1

PAYING FOR STEWARDSHIP

CONSERVATION EASEMENTS

IN COLLABORATION WITH ERIK GLENN, EXECUTIVE DIRECTOR OF THE COLORADO CATTLEMEN'S AGRICULTURAL LAND TRUST

PAYING FOR STEWARDSHIP

How do conservation easements work?

A conservation easement is a voluntary commitment by a landowner to limit development of a property and protect resources like wildlife habitat, open space, agriculture, historic landmarks and scenic vistas. Each easement is tailored to the unique conservation values of the property and can be designed to encourage the continuation of farming and ranching activities or recreational uses like hunting and fishing. The legal agreement is made between the landowner and a qualified organization that will act as the easement holder. This organization is typically a land trust or a government agency, which the landowner may select. Conservation easements are permanent and remain in place regardless of changes in land ownership.

(***Previous page***)
Photo courtesy of Erika Peterman.

How can a landowner put a conservation easement on their property?

A landowner who is interested in putting a conservation easement on their property should contact their local or regional land trust to request information about the easement application process and associated costs. The land trust will evaluate whether or not the property meets their organization's selection criteria based on the application submitted by the landowner and a site visit. If the property is selected for an easement, the terms of the agreement will be negotiated between the land trust and the landowner and, in some instances, third party funders. The landowner is advised to consult legal counsel when negotiating a conservation easement. Before the conservation easement can be conveyed, the following due diligence reports must be completed: title, conservation easement appraisal, an assessment of the likelihood of surface mineral development and a baseline report of the condition of the property. In most cases, the landowner is responsible for hiring and paying professionals to complete these reports. Finally, the closing of the conservation easement is managed by a title company and is recorded in county records.

What is the difference between donated and purchased conservation easements?

In most cases, a landowner donates the full-appraised value of the conservation easement to the land trust (i.e., a donated conservation easement) and in return receives tax benefits, as described below. If funding is available and the property is a high priority for conservation, the land trust will sometimes raise funds through external grants to purchase a portion or all of the foregone development rights (i.e. a purchased conservation easement). When the land trust pays for a portion of the development rights this is referred to as a "bargain sale.

What are the benefits to the landowner?

Conservation easements play a critical role in preserving agriculture and ranching in rural communities and avoiding conversion of these lands to development. Donated easements may be treated as a charitable gift, in which case the landowner receives a federal tax deduction for the appraised value of the easement. Easements also often result in the reduction of estate taxes due to the reduction in the value of the property under easement and an exclusion value currently allowed under federal tax law. These tax benefits can relieve financial pressures and make it easier for families to maintain working lands amid development pressures. Some landowners who receive tax benefits associated with conservation easements are better positioned to save for retirement, education or healthcare. It is important to note, however, that federal and state tax laws change and landowners should discuss the current status of tax laws with their financial advisors and land trust staff. Sixteen states, including California, Colorado and New Mexico, also offer conservation easement tax credits that can be used by the landowner to offset their tax bill. In Colorado and New Mexico, these tax credits can be sold to other taxpayers who can benefit from a tax deduction if the landowner would prefer cash to tax deductions. Finally, as mentioned above, in some cases the easement is purchased by the land trust with grant funding, in which case the landowner receives a cash payment.

How are conservation easements appraised?

The appraisal value of a conservation easement is the starting point for calculating tax benefits or other financial incentives associated with conservation easements. A conservation easement is appraised by valuing its “before” and “after” values. The appraisal process for the before value is the same as a conventional real estate appraisal, such as what would be conducted in the process of seeking a mortgage on a property and represents the fair market value of the property before the easement is granted on the property. The after value is the expected fair market value of the property after the easement is granted on the property. The after value is less than the before value since the property will have some restrictions placed on it that limit its development potential. Appraisers typically estimate the after value by analyzing sales of similar properties with easements, although this is more challenging than the before value appraisal since there are far fewer comparable sales of properties with easements. The difference between the before and after values is the appraised value of the conservation easement. In the hypothetical scenarios on page 16, the conservation easement results in a 40% reduction (or diminishment) in the before value of the property resulting in an appraised value of $800,000.

What does it cost to complete a conservation easement?

Costs vary by state and region and are based on the property and complexity of the easement, but typically range between $50,000 and $150,000. The landowner is responsible for paying these costs. There may be opportunities to work with a land trust to apply for grants to reduce or pay for the transaction costs of the conservation easement.

How long does it take to convey a conservation easement?

The conveyance of a conservation easement typically takes between 9 and 18 months, but can take up to 5 years in the case of purchased easements if there is a need to raise funds.

What are the requirements for maintaining a conservation easement on the property?

If a conservation easement includes specific management requirements, they will be spelled out either in the conservation easement or an associated management plan. Management requirements vary from land trust to land trust and are often a condition of grant funding. All easements will require that the landowner allow for annual monitoring of the property by the land trust. These site visits are coordinated with the landowner in advance and the landowner typically accompanies land trust staff on site. The duration of a site visit depends on the size of the property. The land trust has the right to enforce restrictions on the use of the land in accordance with the easement terms.

What are the potential downsides and risks to the landowner?

When a conservation easement is put on a property, the property loses development rights and the land is devalued accordingly. Typically, a conservation easement will reduce the value of the property by 35% to 65% depending on the location, the type of property and the deed restrictions. A landowner may still sell the property; however, the financial opportunity of a potential future sale is reduced because of the forgone development rights. Once a conservation easement is in place, the property may no longer be eligible for a wetland or species bank, or other land monetization opportunity. Given these constraints and risks, a conservation easement is most appropriate for a landowner who wishes to main-

Mountain Island Ranch (left and right)
A conservation easement protects both the ranch operation and the wildlife habitat on this property on the Colorado/Utah border from development. Photos by Kenyon Fields.

tain the agricultural heritage and conservation values of the land, as opposed to converting the land to another use or selling the land for residential development. Furthermore, a conservation easement is suitable for a landowner who does not want to invest in a potentially more complicated and costly land monetization options, like a wetland mitigation bank. That said, negotiating the conservation easement deed can also be complex and time consuming.

Finally, an additional risk is that the regulatory authorities (e.g. Internal Revenue Service for federal tax deductions) may not approve of the conservation easement as a charitable donation. While rare, this could occur if, for example, the landowner is already obligated to place an easement on their property as part of a transaction or permitting process. In this case, the landowner would earn no tax benefits from the easement and the land would remain encumbered in perpetuity. The easement cannot be reversed once it is conveyed.

> If a conservation easement includes specific management requirements, they will be spelled out either in the conservation easement or an associated management plan. Management requirements vary from land trust to land trust and are often a condition of grant funding. Finding the right land trust partner is therefore critical.

How do I decide whether to put a conservation easement on my property?

Ultimately, a conservation easement will need to be approved by the land trust based on their priorities and selection criteria. However, there are several screening questions that a landowner can answer to decide whether or not to apply for a conservation easement. If you answer "yes" to all of the questions on the following page, you may be a strong candidate for a conservation easement.

Question	Yes/No
IS THE PROPERTY LOCATED IN AN AREA WITH DEVELOPMENT PRESSURE?	
ARE YOU WILLING TO WORK WITH A THIRD PARTY ENTITY TO MONITOR THE PROPERTY AND ASSESS CONSERVATION VALUES?	
IS THE PROPERTY FREE FROM ANY EXISTING OBLIGATIONS THAT ALREADY LIMIT DEVELOPMENT?	
ARE YOU WILLING TO FORGO THE RIGHT TO FURTHER DEVELOP YOUR LAND?	
HAVE YOU RULED OUT WETLAND AND SPECIES BANKING ON YOUR PROPERTY?	

Piojo Ranch in New Mexico.
Photo by Adam Schallau.

Conservation easement financial scenarios

Scenario 1: A Donated Conservation Easement

Although tax laws change and it is important for easement donors to consult with qualified financial advisors, an easement donor can deduct up to 50% of their Adjusted Gross Income (AGI) per year under 2019 federal tax laws. If the full easement donation is not deducted in the first year, the donor can carry forward the remaining deduction for an additional 15 years. Easement donors earning more than 50% of their income from farming or ranching can deduct up to 100% of their AGI per year and carry forward unused deductions for 16 years.

The net financial benefits of federal income tax deductions vary widely depending on each easement donor's personal financial situation. In the hypothetical scenario below, the easement donors are a married couple filing their taxes jointly with an AGI of $100,000 and they earn over 50% of their income from ranching. They would be able to deduct their entire AGI each year for 8 years realizing a total financial benefit of $69,496 in avoided taxes, assuming they had no other itemized deductions.

Hypothetical financial benefit

Adjusted Gross Income: $100,000

Total Tax Deduction: $800,000

Time to Deduct Full Amount: 8 years

Annual Avoided Taxes: $8,687

Net financial benefit ($8,687 x 8 years): $69,496

Scenario 2: Bargain Sale of a Conservation Easement

A bargain sale differs from a donated conservation easement in that the landowners are paid for a portion of the appraised fair market value of the easement. The percentage of the easement's value that is purchased is negotiated between the landowners and the land trust and often depends on the requirements of external grants that are the source of funding to purchase the easement. The portion of the easement that is not purchased is donated and eligible for an income tax deduction. In the hypothetical scenario below, the landowners sold 80% of the easement value and donated the remaining 20%. This resulted in a direct payment of $640,000. It is important to note that the payment for the easement may be subject to capital gains taxes depending on the landowner's basis in the property. Assuming a relatively low basis in the easement portion of the property of $140,000 and a 15% capital gains rate (2019 rate for some tax brackets), the landowner would pay $75,000 in capital gains. The landowners could also claim a federal income tax deduction for the $160,000 portion of the easement that was donated. The net financial benefits to the landowners in this scenario is $577,959.

Conservation Easement Value: $800,000

Bargain Sale Value (80% of easement value): $640,000

Donated Easement Value: $160,000

Hypothetical financial benefit

Bargain sale payment: $640,000

- Capital gains: $75,000

+ Net benefit from income tax deduction: $12,959

Net financial benefit: $577,959

Scenario 3: A Donated Conservation Easement in Colorado

Several states provide additional state tax incentives for the donation of conservation easements. In the Western U.S., Colorado and New Mexico have transferable state tax credit programs. Unlike a federal income tax deduction, which reduces the amount of income taxed, state tax credits offset state tax liabilities dollar for dollar. The transferability of these credits is also a critical characteristic of Colorado and New Mexico's programs and allows easement donors to sell all or a portion of the tax credit to another entity, since many landowners do not have significant state tax liability. Using Colorado as an example, an easement donor can claim a tax credit worth 75% of the first $100,000 of an appraised conservation easement and 50% of the remaining easement value up to a maximum tax credit of $5,000,000. Tax credits can be sold directly to other taxpayers with high state income tax liability or marketed through specialized tax credit brokers. In order to incentivize tax credit buyers, tax credits typically sell for $0.80 to $0.85 per $1 of tax credit value. Easement donors claiming a state tax credit are also able to claim a federal tax deduction for the full donated value of the easement. After donating a conservation easement, selling the associated tax credits and claiming a federal tax deduction, the landowner receives a net financial benefit of $409,496.

Hypothetical financial benefit

Conservation Easement Value: $800,000

Value of CO State Tax Credits ($100,000 x 75%) + ($700,000 x 50%) = $425,000

+ Net benefit after sale of state tax credits (sold at 80% of value): $425,000 x 80% = $340,000

+ Net benefit from federal income tax deduction (additional deduction is $460,000): $39,020

Net financial benefit: $409,496

Warner Valley view
Desert wildflowers bloom near St. George, Utah. Photo by Maria Jeffs/Adobe Stock.

WETLAND AND STREAM MITIGATION BANKING

A restored wetland on Troutstalker Ranch in New Mexico. Photo by Adam Schallau.

Troutstalker rainbow (previous spread)
Photo by Adam Schallau.

How does wetland and stream mitigation banking work?

Under the federal Clean Water Act and certain state regulations, streams and wetlands are protected resources and cannot be filled or dredged without a permit from the U.S. Army Corps of Engineers (USACE) or state agencies. Impacts to aquatic resources are required to be fully compensated. In practice, this means that a developer who, abiding by avoidance and minimization measures to the extent practicable, paves over a wetland, is responsible for creating or restoring another wetland to compensate for that impact. Non-compliance with permitting and compensation requirements by some developers has resulted in heavy fines and even prison sentences.

However, regulators have also recognized that not all developers have the capacity to create and restore wetlands. In that case, developers can purchase wetland mitigation credits that fulfill the regulatory obligations outlined in their permit. Once the developer, or other permitted impact entity, has purchased the credits and USACE has approved the transaction, the developer no longer carries any liability associated with the compensatory mitigation. For that reason, and because of the convenience, developers are typically willing to pay a premium for mitigation credits. Credit buyers are usually a mix of public entities, such as a department of transportation or school districts, and private developers for residential, commercial and industrial projects. In the West, large-scale infrastructure projects linked to transportation, water, energy, and mining, are a big source of demand for wetland mitigation credits.

> The U.S. Clean Water Act protects certain stream ands wetland and requires a permit for filling, dredging or other impact activities from the U.S. Army Corps of Engineers. Impacts to aquatic resources are required to be fully compensated. In practice, this means that a developer who paves over a wetland is responsible for creating or restoring another wetland to compensate for the impact.

How can a landowner create mitigation credits?

Some rural landowners are well-positioned to create and sell mitigation credits. Once a landowner has identified a piece of property that is suitable for developing mitigation credits, they will go through an entitlement process similar to the conservation easement process (see Chapter One). This includes surveying the current ecological value of the property and reviewing the title, mineral rights and water rights. Mitigation credits are usually granted for improving the ecological quality of a stream or wetland. For that reason, the entitlement also includes a construction plan and a maintenance and monitoring plan that describes the activities that are required of the landowner.

Examples of activities include: fencing off a portion of a riparian area to

restrict cattle access, removing invasive plants or planting native plant species. Finally, as part of the entitlement process, the property is required to be protected and managed in perpetuity through a conservation easement, a long-term management plan and a perpetual endowment that will pay for the long-term costs of the project. If the entitlement process is successful, the property will become an approved mitigation bank that can produce valuable mitigation credits. This process can be complex and time intensive. Many landowners will hire an environmental consultant and may partner with external investors to limit the risks and upfront financial burden.

The time and investment needed to successfully permit a mitigation bank varies greatly from state to state and from one type of project to another. However, a landowner should expect to spend between 2 and 5 years and between $200,000 and upward of $1 million before the first credit may be sold.

What are the benefits to the landowner?

Landowners are often attracted to mitigation banking because it may allow them to generate significant additional revenue from the land without selling it. However, just as in any other real estate deal, mitigation banking is dependent on having the right property and the right location. In some cases, mitigation banking is compatible with farming and ranching production, such as rotational grazing, and in most cases, a mitigation bank can be located on the less productive area of a farm, such as the wet low spots and areas near rivers. When converted into mitigation credits, these low producing acres can be worth many times the value of the raw land.

For example, in some parts of Colorado, two acres of raw land worth less than $2,000 can generate a mitigation credit worth over $100,000 net of costs. In addition, a mitigation banking project can enhance the value of a ranch by improving wildlife and fish habitat. Some landowners are attracted to mitigation banking because it requires a perpetual conservation easement that guarantees the land will not be developed. Easements can be structured to require the continuation of agricultural activity on the land as well. Finally, the mitigation bank is required to set aside an endowment fund, usually from the sale of credits, which can be used in perpetuity by the landowner to maintain the property. If the landowner decides to do the work, this can represent a guaranteed, permanent source of income.

What are the potential downsides and risks to the landowner?

The potential risks vary depending on the landowner's involvement in a mitigation bank; some landowners will only commit their land while others will also commit money and time to manage the endeavor. The main downsides of

mitigation banking are the conservation easement, which reduces the value of the land, and the management plan, which may increase the costs of operation. If the mitigation bank is not as successful in selling credits as expected, the landowner may end up paying more in added costs than what is gained in additional income. If there is an "act of god", such as a catastrophic fire, the landowner will not be responsible for replacing the lost credits, but may be prevented from selling more credits, potentially reducing the financial upside of the project. If a landowner chooses to partner with investors, they must clearly understand the terms of agreement and how risks and compensation are allocated to the different partners.

As noted above, the amount of time and money needed for mitigation bank development can also be uncertain. Although mitigation banking has existed as an industry for over 30 years, unforeseen technical or regulatory complications may arise and it is not unusual for mitigation bank development projects to go significantly over budget or take much longer to be approved than anticipated. Another area of potential uncertainty is the mitigation credit market. In some states, there is a vibrant marketplace; credit prices are well established and it is easier to assess the demand for specific credits. In areas where there is not a proven market, mitigation bankers should start with a small project, if possible, to test their assumptions before committing large amounts of land and money to mitigation banking.

Finally, it is important to recognize that running a mitigation bank is a business and as such it requires time and attention. The owner of the mitigation bank will need to manage consultants, coordinate with regulatory agencies, market mitigation credits and work with potential credit buyers. Some of these responsibilities can be managed by third parties for a fee.

How do I know if my land could qualify for a mitigation bank?

If you are interested in determining whether or not your land could qualify as a financially-viable mitigation bank, complete the checklist on the following page. If you respond "yes" to all questions, your land may be a strong candidate for a mitigation bank.

Question	Yes/No
IS THE PROPERTY OVER 50 ACRES IN SIZE (DEEDED GROUND ONLY)?	
DOES STREAM OR WETLAND HABITAT EXIST (OR DID IT EXIST IN THE PAST) THAT COULD BE RESTORED?	
IS THE MAJORITY OF THE PROPERTY FREE FROM CONSERVATION EASEMENTS OR OTHER ENCUMBRANCES THAT COULD PREVENT DEVELOPMENT?	
IS THE PROPERTY WITHIN 100 MILES OF A LARGE POPULATION CENTER (OVER 1 MILLION INHABITANTS) OR CLOSE TO A LARGE ENERGY OR MINING DEVELOPMENT?	
ARE YOU WILLING TO PLACE A CONSERVATION EASEMENT ON YOUR PROPERTY AND ALLOW THIRD PARTIES TO ACCESS YOUR PROPERTY OCCASIONALLY FOR MONITORING, AFTER GIVING PROPER NOTICE?	
CAN YOU AFFORD TO WAIT AT LEAST 3 YEARS BEFORE RECEIVING ANY SIGNIFICANT PAYMENT FOR CONSERVATION CREDITS?	
IS THERE NO HISTORY OF SIGNIFICANT DEVELOPMENT OR WASTE STORAGE ON THE PROPERTY?	

Rancho del Oso Pardo in New Mexico.
Photo by Adam Schallau.

Petersen Ranch
In the Antelope Valley, outside of Los Angeles, CA, on the edge of the Mojave Desert. The Petersen Ranch Mitigation Bank was established in 2016.

CASE STUDY

Petersen Ranch Stream and Wetland Mitigation Bank

The Petersen Ranch Mitigation Bank (PRMB) is a 4,200+ acre property located in the Antelope Valley of the western Mojave Desert, outside of Los Angeles, California. Land Veritas bought the property in 2011 and established PRMB in 2016. The property hosts valuable natural resources, including a series of seasonal wetland pools, streams and washes and hundreds of acres of sensitive plant communities and riparian habitats. In addition, canyons drain onto the property in large alluvial fan complexes, which support thriving arid and semi-arid plant ecosystems. PRMB currently sells a variety of wetland and stream credits.

To generate wetland and stream mitigation bank credits, Land Veritas restored the property's seasonal wetlands and re-established the natural communities and hydrologic processes of a large alluvial fan complex on the property. Land Veritas restored the seasonal wetlands by ceasing artificial pumping into ponds, removing artificial berms and planting over 150,000 native wetland and riparian plants. To re-establish the alluvial fan complex, an artificial dam, originally constructed across the mouth of a major drainage canyon, was lowered to restore natural hydrology to the area, and the alluvial fan complex was seeded with native plants. In addition, the entire property is managed to control non-native invasive plant species.

It took over five years for PRMB to receive regulatory approval from the Interagency Review Team (IRT), which included the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the California Regional Water Quality Control Board and the California Department of Fish and Wildlife (called the entitlement process). Given the size of the property, the complexity of the restoration activity, the variety of credit types and the bank's location in the regulatorily stringent state of California, a five-year entitlement timeline is consistent with similar mitigation banking projects in the state. Land Veritas is developing the bank in phases, such that the restoration and management plans are approved upfront, but conservation easements are recorded over separate areas of the property incrementally, at which point credits begin to be generated. The conservation easements restrict development on the property, though cattle grazing and hunting are still allowed. This phased approach limits risk and allows for credits to be generated in response to market demand.

Environmental consultants, including WRA, Inc., specializing in large scale restoration and mitigation projects carried out the majority of project planning and implementation for PRMB. A deep understanding of the biological, hydrological and physical characteristics of the property was required in order to design and execute restoration and management plans and gain regulatory approval for the mitigation bank. Legal and engineering consultants were involved in the project as well. Land Veritas paid the consultant fees, as is typical in mitigation bank development.

Hydrological, vegetation and grazing grass levels are monitored annually at PRMB, costing about $100,000 per year. Excluding land acquisition costs, the total process including the bank entitlement, restoration, management and endowment costs exceeded several million dollars.

PRMB sells a variety of wetland and stream credits. The majority of the credits at PRMB are wetland upland or riparian buffer preservation credits priced at $8,500 per acre. In addition to market risk (i.e., the ability to sell credits), Land Veritas is legally responsible for the functioning of the natural resources onsite, in perpetuity. If the resources onsite do not achieve certain predefined performance criteria, credits will not be awarded by the regulatory agencies, regardless of the capital that has been invested into the restoration. Further, the IRT could require remedial actions to address any deficiencies in achieving the performance criteria, which Land Veritas would have to pay for as the bank sponsor.

The keys to success have been effective restoration design and execution, experienced and responsive staff to oversee maintenance and management operations, strong relationships with regulatory agencies, and a naturally rich and large property.

Maria Lake, near Walsenburg, CO
The wetland ecosystem of Maria Lake made it a great candidate for a mitigation bank. The stunning views make it a great location for a non-profit partnership with Healing Waters, offering disadvantaged youth opportunities for outdoor experience.

CASE STUDY

Maria Lake Wetland Mitigation Bank

The Maria Lake Wetland Mitigation Bank (ML Bank) was funded by two landowners, Don Siecke and Sam Perry, on their ranch near Walsenburg in southern Colorado. In addition to cattle production, the ranch has been used for years to provide respite to wounded soldiers and their families through a partnership with Healing Waters, a nonprofit organization. Additionally, the ranch offers opportunities for children from urban disadvantaged communities to have their first outdoor experience fishing in the lake and observing wildlife. Don and Sam were looking for a source of income that would allow them to maintain this legacy and the service that the ranch renders to the community. In 2013, Don and Sam decided to develop a wetland mitigation bank on the property by initially carving out a small 49-acre section along the river that had been invaded by weeds. Following bank entitlement and restoration activity, the bank began selling credits in late 2018. As of 2019, this section was on track to sell out of credits, and the landowners are planning much more extensive restoration of some of the wetland areas that were ditched to allow better hay production.

The landowners could have monetized environmental values on the ranch by turning the lake into a for-profit recreational operation. However, because they were attached to the non-profit programs they had started, they decided to focus on the existing wetlands on the property and worked with the U.S. Army Corps of Engineers (USACE) to permit the wetland bank under the federal Clean Water Act. A state-specific methodology, called FacWet, was developed for Colorado wetland quality assessments and to facilitate restoration planning. The owners also explored adding protected species credits such as bald eagle habitat to the bank, but market research indicated that demand would not be sufficient to warrant the investment in developing species credits. The landowners retained Conservation Investment Management to oversee the project and WRA, Inc was in charge of the biological and regulatory consulting.

Regulators, particularly the USACE, were heavily involved in permitting the mitigation bank. Since it was the first mitigation bank permitted in the Albuquerque district of the USACE, this was a learning experience for all involved. Now that the bank has entered into the monitoring stage and restoration work is completed, the USACE involvement is expected to be limited to an annual visit to discuss progress and provide technical advice as needed. The USACE required that the landowners place a conservation easement on the bank area and exclude cattle grazing, except where grazing is used to manage invasive plant species.

Because this was the first mitigation bank in the district, it took close to 5 years from the initial feasibility study to the final approval of the bank. The entire approval process cost around $300,000. In addition, the landowners incurred costs related to fencing the bank area and funding the endowment that is associated with the easement. The next phases of the bank are expected to be approved more quickly and at lower cost. However, the next phases will also likely include significant construction costs that could amount to several million dollars. Credit revenues have exceeded expectations. This is largely due to a growing recognition among developers and regulators of the efficiency and low risk advantages of bank credits.

The main risk associated with the Maria Lake Bank is the market. Colorado is an arid state and does not have many wetlands. For that reason, the sales could be slow during certain years if impacts to wetlands are limited.

Keys factors that made this opportunity viable included:

- Good market environment – The bank is located in an area with good growth prospects (close to Colorado Springs and Pueblo) without another mitigation bank to compete with.
- Supportive regulators – Although it was the first bank for the Albuquerque district of the USACE, the local office was very supportive and took the time to learn alongside the landowners and their advisors.
- Patience – Mitigation bank approval is a long process that can be frustrating at times.

Swans paddling on O'Dell Creek on Granger Ranch
In the Antelope Valley, outside of Los Angeles, CA, on the edge of the Mojave Desert. The Petersen Ranch Mitigation Bank was established in 2016.

CASE STUDY

O'Dell Creek Restoration on Granger Ranches

The O'Dell Creek Headwaters Project is not a wetland mitigation bank, rather it provides an example of how wetland restoration can be monetized through private-public partnerships and result in a variety of ecosystem services and economic benefits. While managing partner Jeff Laszlo notes that wetland and stream mitigation opportunities were explored for the Granger Ranches, the market conditions were unfavorable and the private-public partnership emerged as a promising alternative.

The O'Dell Creek Headwaters Project is lauded as the largest private wetland restoration effort in Montana and the resulting species benefits are remarkable. Since the completion of the initial restoration work, the presence of waterfowl has increased 900% and waterfowl species diversity has risen 600%. The property now hosts 15 species of concern, including the largest known population of primrose (primula incana), trumpeter swans, Arctic grayling and 2,000 sandhill cranes. As a result of the stream channel restoration, flows have increased, temperatures decreased and the fishery is thriving with all age classes of trout.

This project was implemented on the 13,000-acre Granger Ranches in Montana's Madison Valley, which operates a 400 head cow-calf operation. Not only have ranching and restoration worked in concert, but according to Laszlo, the improved grazing management, vegetation regeneration, forage productivity and diversity resulting from the restoration project have directly benefited the ranches' cattle operation.

Laszlo is proud of the improved water quality and habitat benefits and believes this is also a benefit to the surrounding communities and the local economy. O'Dell Creek is a tributary of the Madison River, so water quality improvements, and increases in waterfowl, migratory birds and fish populations, are felt throughout the valley. As avian and fish numbers grow, the fishing, hunting and tourism industries benefit as well.

While the O'Dell Creek Headwaters Project has yielded many multi-faceted and impressive benefits, getting to this point has not been easy or simple. Laszlo will be the first to tell you that restoration is complicated and time consuming, and the results cannot be guaranteed. The goal of the project was to restore the natural hydrology and habitats of the property, which had been altered over decades by ditching, draining and conventional grazing practices. Since 2005, 1,000 acres of wetland and 12 miles of stream have been restored, costing about $3.2 million. According to Laszlo, the work is only half done.

Sixteen different agencies, nonprofits and consulting companies have been involved in the project and funding has been provided through a variety of private and public sources, including the Granger Ranches families. Public funding sources included a United States Department of Agriculture (USDA) Farm Bill program and Northwestern Energy (formerly Montana Power and Light; NWE), which has been a consistent funding partner. NWE has provided funding in part to satisfy licensing requirements of the Federal Energy Regulatory Commission (FERC) for its nine hydro-power developments on the Missouri and Madison Rivers in Montana. Additionally, Laszlo worked with the Trust for Public Land and Montana Land Reliance to put a conservation easement over the property to protect the land (and restoration work) in perpetuity. Laszlo consulted with the U.S. Fish and Wildlife Service and the Montana Fish, Wildlife and Parks throughout project planning and implementation and found the agencies easy to collaborate with. Multiple wetland and stream consulting companies were involved in project design and implementation: River Design Group has been the primary firm leading this project for several decades.

The O'Dell Creek Headwaters Project on Granger Ranches exemplifies how private-public partnerships and blended conservation finance can produce environmental, community and economic benefits on private working lands. While the restoration work does require some acceptance of risk and encumbrances, public funding sources can help assist in costs. A diversified income stream and an improved ranching operation can result from this kind of conservation effort.

Restored O'Dell Creek wetland habitat (top left)
Since 2005, 1,000 acres of wetland and 12 miles of stream have been restored, costing about $3.2 million. According to the managing partner, the work is only half done.

Valley elderberry longhorn beetle (bottom left)
The Sacramento River Ranch covers 3,690 acres along the Sacramento River in Yolo County, California, including a 234 acre valley elderberry longhorn beetle habitat mitigation bank. Photo: Brian Hansen, USFWS.

Sacramento River winter-run chinook salmon (bottom right)
Riparian areas on the Sacramento River Ranch were restored through planting and improved channels, increasing the habitat for this ESA-endangered species. The salmonid bank allowed the landowner to monetize an area that is close to the river, prone to regular floods and not well suited for cultivation. Photo: Steve Martarano, USFWS.

CASE STUDY

Sacramento River Ranch

The Sacramento River Ranch, developed by Wildlands, Inc., has been named USDA Farm of the Future because it successfully incorporates for-profit environmental conservation with a profitable farming operation. The Sacramento River Ranch covers 3,690 acres along the Sacramento River in Yolo County, California.

The Ranch combines 1,000 acres of walnut trees, 670 acres of organic hay and around 1,000 acres of row crops (mainly wheat, corn and sunflower) with a 114-acre wetland mitigation bank, a 100-acre salmonid conservation bank, and a 234-acre valley elderberry long-horn beetle conservation bank. In addition, the property also contains foraging habitat for Swainson's hawks. The salmonid bank allowed the landowner to monetize an area that is close to the river, prone to regular floods and not well suited for cultivation. The riparian areas were restored through planting and improved channels increased the habitat for young salmon. The wetlands bank utilized an area of the farm that had a very high groundwater table and was too wet for many crop types. The Swainson's hawk habitat is principally focused in agricultural areas (such as hay and alfalfa fields) and does not disrupt the farming operation.

The landowners, Resource Land Holdings, LLC, a real asset investment firm out of Denver, CO, partnered with Wildlands, a longstanding leader in the mitigation and conservation banking industry in the West. Wildlands developed and managed the conservation and mitigation banks on behalf of the partnership.

All portions of the ranch that have been used to generate conservation and mitigation credits are now covered by a permanent conservation easement that guaranties that the ranch will not be developed. The partnership also funded a perpetual endowment that compensates the landowner for any cost of maintaining the conservation values on the property, such as replacing fences or conducting wildlife surveys.

Gaining approval for this entire project required managing a whole range of agencies from the USACE to EPA to state wildlife agencies. However, Wildlands separated each component (wetland mitigation bank and different conservation banks) into manageable pieces that only involved a more limited number of agencies. For example, the wetland mitigation bank was the most complex piece and involved the USACE, EPA, the local water board and the California Department of Fish and Wildlife. The permitting of the wetland bank started in 2009 and construction was completed by 2014.

Permitting and building mitigation and conservation banks in California has proven costly and relatively time consuming compared to other states. For a landowner to develop a project similar to the Sacramento River Ranch in 2019, they should expect costs in excess of $1 million for the approval and the design. In addition, several million dollars would be needed to construct the different components of the bank and fund the perpetual endowment .

All wetland bank credits that were eligible for release through 2019, representing approximately 55% of the total authorized credits, sold out in 2019 – 9 years after it was permitted and 5 years after construction. The price for wetland credits is not publicly available but is estimated to be in the $100,000-$150,000 per credit range. The revenue from the wetland bank alone will likely be between $10 and $15 million.

The main risks the landowners faced in this endeavor were:

- The easement is permanent and would be very difficult to remove. It prevents most other uses of the property such as residential development or farming of row crops. For that reason, the value of land covered by an easement can be reduced by 20% and 70%, depending on the stipulations.
- Although there are clear benefits from combining different types of conservation and mitigation banks with an active agricultural operation, it creates a level of complexity that can be difficult to manage. Landowners typically manage these challenges by hiring consultants or bringing in a partner who knows the local agencies and has mitigation banking expertise.
- The sale of mitigation credits is contingent upon the market. There is no guarantee that the credits will sell at a good price, or even sell at all. For example, although the wetland mitigation bank was a clear success on the Sacramento River Ranch, the market for Valley Elderberry Longhorn Beetle has proven softer than expected and the sales have been lagging.

The key for the success of this project was a partnership between a well-capitalized and sophisticated landowner with an experienced mitigation banking firm. Even when partnering with an experienced mitigation banking firm, however, landowners must be sure to understand the mitigation bank permitting documents and easements and the associated constraints, risks and rewards.

Source: EcoAgriculture Partners (2011) Farm of The Future - Working lands for ecosystem services - Sacramento River Ranch, Yolo County, California. https://ecoagriculture.org/publication/sacramento-river-ranch/ `

PAYING FOR STEWARDSHIP

SPECIES CONSERVATION BANKING AND HABITAT EXCHANGES

How does species conservation banking work?

The Federal Endangered Species Act (ESA), as well as some other federal and state regulations, prevents the destruction and harassment of protected wildlife and plant species. This protection also extends to the habitat these species use throughout their life, such as habitat for nesting, rearing young, foraging and migrating. A landowner who seeks to modify a parcel that contains protected species habitat will often be required to obtain a permit from the U.S. Fish and Wildlife Service (USFWS) and other regulatory agencies. In contrast to wetland and stream mitigation, where the impact is typically limited to the exact footprint of the ground disturbance, impacts to protected species can potentially extend well beyond the location of the actual project. For example, a mining project can generate noise and dust that pushes wildlife miles away from the site. Certain species, like the greater sage grouse and mule deer – though neither are listed species – are particularly sensitive to this type of land disturbance.

Federal agencies recognize that it is not always possible to avoid impacts to species and their habitats; however, impacts are required to be offset such that the overall quality and quantity of species populations are maintained. In most of the country, with the notable exception of California, offsets have been mainly provided in-kind by project proponents through the purchase of conservation easements on properties with comparable habitat. However, similar to wetland and stream banking, project proponents are increasingly opting to purchase species conservation credits because of expedited project approvals and severance of liability for the compensatory mitigation.

> **Creating species conservation credits is often much easier than creating wetland or stream mitigation credits. Landowners will go through an entitlement process with the USFWS or other regulatory agency that will result in a conservation banking agreement (CBA). Depending on the state, the full process – including environmental studies and negotiations with regulatory agencies – may take as few as 6 months.**

As further described below, species conservation credits can be created on private or public lands by conserving species habitat and obtaining regulatory approval to create credits. Those credits can be used by project proponents within a pre-approved region called a service area to offset the impacts of their proposed project. There are more than 130 species banks that have been approved by the USFWS across the U.S. These banks provide credits for more than 70 listed species and have protected over 160,000 acres of habitat.

In addition to species banking in the U.S., a number of foreign countries including England, Germany, France, Columbia, Peru, Brazil and South Africa, have developed or are currently developing "biodiversity offset systems," as they are known abroad.

A greater sage grouse during its characteristic mating display (previous spread)
This species is a common cause of ranchland habitat banking, as it is protected by state mandates in many of the 11 western states. It plays a role in both of the case studies in this chapter.

A northern spotted owl (previous page)
This federally listed species has led to a strong habitat credit market in the Pacific Northwest.

How can a landowner create conservation credits?

Creating species conservation credits is often much easier than creating wetland or stream mitigation credits. Landowners will go through an entitlement process with the USFWS or other regulatory agency that will result in a conservation banking agreement (CBA). Depending on the state, the full process – including environmental studies and negotiations with regulatory agencies – may take as few as 6 months. However, landowners should expect the entire process to take at least two years.

The CBA spells out the obligations of the landowner, how credits are actually created and can be purchased by credit users. In most cases, creating species conservation credits does not require a large restoration effort. Instead the landowner is expected to implement a management plan that will preserve and enhance the habitat for the target species. Very often, landowners find these management plans to be compatible with existing uses of their property, particularly ranching, hunting and recreation. In some cases, grazing can even be required on the property as part of the long-term management plan. Properties used to create the species conservation credits must be protected in perpetuity by a conservation easement. In addition, the landowner is obligated to set aside some of the credit sale proceeds and establish an endowment to provide funding for the long-term management of the property.

What are the benefits to the landowner?

Credit sales can provide substantial additional income for the landowner that is not tied to commodity prices and therefore provides diversification benefits. The value of species credits can vary from a few thousand dollars to over $200,000, depending on the type of species and the credit market. If the landowner decides to sell the conservation bank, the additional income from the future credit sales will be reflected in the value of the land. The endowment funded through credit sales provides annual income to be used for maintenance of the property and its facilities, such as fencing, troughs, and roads, decreasing maintenance costs for generations of future landowners. Finally, the conservation easement placed on the land guarantees that the land will not be developed and may ensure the continued agricultural use of the land.

What are the potential downsides and risks to the landowner?

The land used to generate credits must be protected by a conservation easement that will limit future development opportunities and could impact the sale of the property, should the landowner choose to sell it. Although the management plan for a species bank is usually compatible with agricultural use, it may conflict with some practices or constrain the timing of these practices. For example, the management plan could mandate that the property be grazed or rested during certain time periods.

The risk of species bank failure due to a change in weather patterns or a design flaw is low because species banking does not typically require an intensive land restoration effort. If the target species for the bank were delisted, (i.e. no longer protected by federal or state law) the market for that type of credit would be eliminated. However, the risk of delisting is also considered low because it rarely occurs. Furthermore, delisting entails lengthy agency review processes and is likely to take several years.

There are financial risks associated with species conservation banking. Federal or state agencies may not approve the conservation bank, which could result in a loss of the capital invested in the initial biological studies and entitlement process. The cost of preparing these documents can range from $200,000 to over $1 million for a very complex bank.

Finally, the market may not materialize as expected leading to slower sales and lower revenues than expected. A landowner interested in investing in a species conservation bank should conduct a market analysis prior to committing to the project to gauge credit demand, supply and estimated credit sales rates.

What about habitat exchanges?

A habitat credit exchange is a type of compensatory mitigation mechanism that can create new revenue streams for private landowners. The additional revenue can fund improvements to habitat, the property, as well as to the agricultural operation. Habitat exchanges are similar to species banks in that they are designed to provide streamlined habitat mitigation and are largely compatible with agricultural and ranching operations. However, habitat exchanges differ in that they provide a programmatic framework for multiple landowners to enroll and create species credit projects across a designated region. Additionally, habitat exchanges have been developed for non-listed candidate species, whereas species banks are typically for state or federally protected species only.

Habitat exchanges often use sophisticated habitat metrics and performance requirements to assess the quantity and quality of habitat for which credits are awarded. The exchanges are intended to provide streamlined enrollment, admi-

nistration and transactions so that landowners can provide habitat cost-effectively and development and energy project proponents can fulfill mitigation requirements efficiently.

Although habitat exchanges can provide new revenue streams for ranchers and farmers, they may also be required to take on significant financial liability for maintaining the quality of the habitat. Understanding market dynamics and crediting potential can require significant technical capabilities and experience, so landowners should consult with restoration, finance and legal professionals prior to enrolling their land in an exchange.

How do I know if my land could qualify for a species bank?

If you are interested in determining whether or not your land could qualify for a species conservation bank, complete the checklist on the following page. If you respond "yes" to all questions, you may be a strong candidate for a conservation bank.

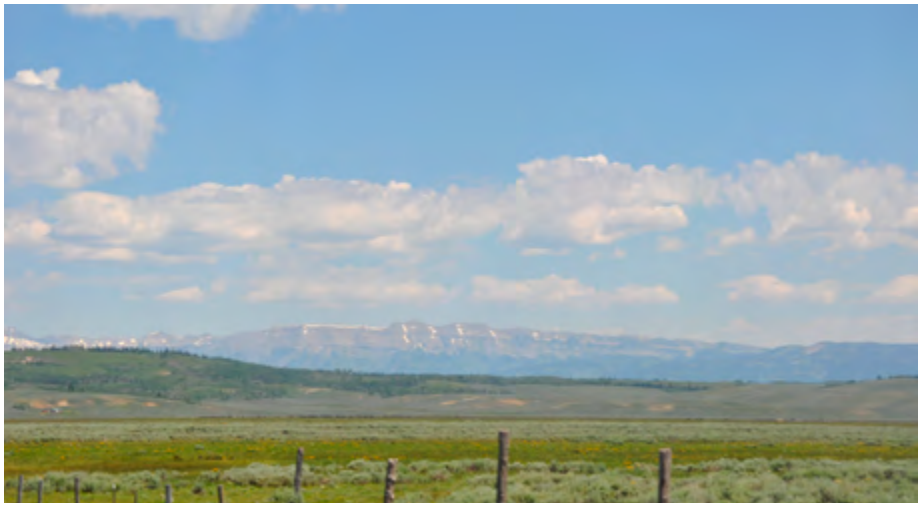
Please note that some properties may be eligible for a dual wetland and species bank, as illustrated by the Sacramento River Ranch case study on page 29.

The endangered southwestern willow flycatcher (next page)
Photo: Adobe Stock.

The Sagebrush Sea (below)
This critical habitat for the greater sage grouse is disappearing across the West. The Upper Green River Conservancy is investing in its protection, and working to make that investment pay off financially. See the case study on page 38. Photo: Dave Showalter.

Question	Yes/No
IS THE PROPERTY OVER 50 ACRES IN SIZE (DEEDED GROUND ONLY)?	
IS THE PROPERTY LOCATED IN A CRITICAL HABITAT AREA FOR ANY PROTECTED SPECIES OR WITHIN 5 MILES OF A GREATER SAGE-GROUSE LEK, OR DOES YOUR PROPERTY SUPPORT, OR DO NEIGHBORING PROPERTIES SUPPORT, ENDANGERED SPECIES?*	
IS THE MAJORITY OF THE PROPERTY FREE FROM CONSERVATION EASEMENTS OR OTHER ENCUMBRANCES THAT COULD PREVENT DEVELOPMENT?	
IS THE PROPERTY WITHIN 100 MILES OF A LARGE POPULATION CENTER (OVER 1 MILLION INHABITANTS) OR CLOSE TO A LARGE ENERGY OR MINING DEVELOPMENT?	
ARE YOU WILLING TO PLACE A CONSERVATION EASEMENT ON YOUR PROPERTY AND ALLOW THIRD PARTIES TO ACCESS YOUR PROPERTY OCCASIONALLY, AFTER GIVING PROPER NOTICE?	
CAN YOU AFFORD TO WAIT AT LEAST 3 YEARS BEFORE RECEIVING ANY SIGNIFICANT PAYMENT FOR CONSERVATION CREDITS?	
IS THERE NO HISTORY OF DEVELOPMENT OR WASTE STORAGE ON THE PROPERTY?	

*You may have to consult with an environmental consultant, a state agency or USFWS to answer this question.



Upper Green River Conservancy
The URGC has pioneered collaborative conservation in Wyoming, and is now pioneering innovations in conservation finance as well.

CASE STUDY

Upper Green River Conservancy

The Upper Green River Conservancy (UGRC) is a for-profit organization located in Wyoming that developed a new concept of a cooperative bank where landowners can enroll specific parcels of land in order to generate species credits. The cooperative bank model provides a streamlined process that reduces costs, timelines and regulatory uncertainty. While the cooperative bank may be expanded to other species and geographies, UGRC initially focused on the greater sage grouse (GSG) in the Green River Valley of Wyoming.

Mitigation for GSG in Wyoming is managed by the State, and not by a federal agency. The State is currently revising its compensatory mitigation regulations, and the expectation is that ranch acres that currently support GSG habitat could generate a credit for habitat preservation. In order to generate preservation credits, the landowner would need to commit to not develop the property (including oil and gas development) for an agreed period of time, in alignment with development impacts (often at least 5 years and possibly in perpetuity). In addition, the State may grant additional credits to incentivize activities that would restore or enhance GSG habitat. Restoration credits will likely require activities such as tree removal, protection of wet meadows and sagebrush management. UGRC worked with Cedar Creek Associates, a wildlife habitat consultant, to determine appropriate management plans for the land that has been enrolled into the cooperative bank.

The entitlement process for a GSG bank is managed by the State, which can request assistance and advice from federal agencies. Because the process is new, it has taken over 5 years for UGRC to get through the approval process. Approval is anticipated in 2020. As the process becomes more streamlined, the State expects that a new bank could be approved in as little as 2 or 3 years. The State requires banks to present GSG habitat survey data for at least 2 years before the bank can be permitted. When landowners join the cooperative bank, they can use the protocols and management plans that have been already approved, which can reduce the permitting timeline. The conservation easement placed on the land would prevent any development (e.g. subdivision, paved roads, oil and gas, mining) outside of pre-agreed envelops. The deed restriction for the 25 year-option would carry similar restrictions.

Because the cooperative bank is still in development, there is little data on total project costs and revenues. However, a landowner seeking approval for an individual bank outside of the cooperative bank should expect costs in the $100,000s and several years of biological studies. The costs would include legal advice, consultants for survey and management plan and negotiations with a land trust. Revenues to the landowners after costs and potentially a profit share with investors are expected to be significantly above appraised value for the easement or temporary deed restriction.

Landowners who enroll in the cooperative bank model benefit from reduced risk during the permitting phases, enhanced regulatory and operational expertise of the bank sponsor and efficiency of offtake transactions. Additionally, the GSG usually thrive in well managed cattle ranches and the management plan can help increase production by increasing the amount of bunch grass and reducing invasive species. The main risks for the landowners are the potential lack of market for credits and any restrictions that may accompany an easement placed on their land. Landowners are advised not to place an easement or a deed restriction on their land until they have an enforceable contract with a credit buyer.

There were three key factors that made this opportunity viable for the first landowner involved in the cooperative bank:

- The ranch is already very well managed and currently provides habitat for GSG. This greatly reduces the upfront costs or the need to drastically change the ranch management.
- UGRC's team had already identified a buyer interested in purchasing credits before starting the development of the bank.
- UGRC's team had experience with the regulatory and legislative process in Wyoming.

Close up of the greater sage grouse
Photo: Bob Wick, USFWS

CASE STUDY

Nevada Conservation Credit System

The Nevada Conservation Credit System (CCS) is a voluntary market-based program run by the state that is focused on protecting greater sage-grouse habitat. The program provides incentives for habitat improvement projects on private and public lands. These improvements are quantified into "credits" which can be sold to compensatory mitigation buyers. Similarly, unavoidable anthropogenic disturbances to sage-grouse habitat are quantified and credits can be purchased to compensate for those impacts. The CCS provides the overarching programmatic structure, quantification tool and reporting mechanism to facilitate these transactions, enabling landowners to be paid for the habitat benefits they provide and allowing industry groups to satisfy their mitigation obligations.

The CCS employs its own habitat quantification tool, which is used to calculate credits based on habitat quantity and quality. Credits are generated by activities that improve sage-grouse habitat like prescribed grazing, removing conifers or eradicating cheatgrass. Credit projects require a 30-year management commitment from the credit project developer. A conservation easement is not required, but increases the number of credits generated by a project because of the added protection provided. The state's Sagebrush Ecosystem Technical Team (SETT) is in charge of administering the program and will provide technical assistance to credit project developers as requested.

Landowners interested in participating in the CCS must complete a validation checklist to demonstrate that the project meets programmatic eligibility requirements. One such requirement is that the property is located within greater sage-grouse habitat defined by the state. Next, the landowner works with a certified CCS Verifier to complete a habitat assessment, calculate credits and develop a draft management plan. The landowner signs a participant contract with the SETT once credit prices and terms are finalized and the credits are transferred to the credit buyer. The SETT provides guidance and review throughout the process.

Two million dollars of seed funding has been provided by the state to credit project developers for project design, assessment and implementation. Once a credit sale occurs, the credit project developer is required to reimburse the state for the funding provided.

The primary risk that a landowner incurs by enrolling in the CCS is that the cost associated with implementing a project is not compensated for because a credit sale either does not occur or does not occur at a price point that covers the cost of the project. For now, the state has taken on this risk by providing seed funding, but once the market matures and credit demand increases, seed funding is expected to cease. The CCS does not require the credit project developer to sign a contract committing themselves to the 30-year project term until a credit purchase is negotiated, which helps limit the risk to the credit project developer.

As of 2019, all credit transactions have been "permittee responsible mitigation," whereby the entity in need of mitigation implements a habitat improvement project on their own property to generate credits to offset their impacts. For example, the first transaction, which occurred in late 2017, was between Kinross Gold Corporation and the state. Kinross enrolled 10,000 acres of their privately-owned ranch into the CCS program and generated over 4,000 credits. Kinross then purchased the credits through the CCS in order to offset their planned mine expansion.

While compensatory mitigation requirements for federally-permitted impacts to sage-grouse habitat have recently been rolled back at the federal level, Nevada has adopted state regulations that cover development on federal lands. Any new permit for development on Bureau of Land Management (BLM) land that impacts greater sage-grouse habitat must use a federally approved mitigation approach or the CCS. The SETT is also working on defining rules for developing credit projects on public lands. These state rules should help drive demand for habitat improvement projects as compensatory mitigation.

As of the summer of 2019, about a dozen landowners were in the process of enrolling in the CCS and several mining companies have expressed interest in using the program to satisfy compensatory mitigation requirements.

CARBON CREDITING

IN COLLABORATION WITH JOSH STRAUSS AND
BEN PARKHURST, BLUESOURCE LLC

PAYING FOR STEWARDSHIP

What is a carbon credit?

A carbon credit is a unit of measurement that represents the removal of one metric ton of carbon dioxide equivalent (tCO_2e) from the atmosphere. Carbon credits are typically calculated using protocols developed by internationally recognized standards organizations, such as The Gold Standard, the American Carbon Registry, the Verified Carbon Standard, the Climate Action Reserve and the California Air Resources Board (California's air regulatory agency). Carbon credits can be calculated for different types of projects. Forestry project types include: avoided conversion, afforestation/reforestation, improved forest management and urban forestry, while grassland projects are focused on avoided conversion of grasslands to row crops.

How are carbon credits sold?

Forest carbon credits may be sold in voluntary or compliance markets. Grassland credits can currently only be sold in the voluntary market, although grassland crediting protocols may soon be approved for use in the compliance market as well. In the voluntary market, private or public entities or individuals choose to purchase credits in order to offset their carbon footprint. Voluntary credit buyers are often motivated by corporate social responsibility objectives or by the expectation of regulation in the future. While the voluntary market is not regulated, standards organizations exist to set project rules and ensure that credits produced are credible, additional, and will exist over the long-term. A project must be developed in accordance with standards, validated and verified on the ground (initially and over time) before credits can be serialized and issued through an established registry. Once issued, credits are sold directly between carbon project owners, credit end-users and intermediary brokers.

> **Grassland carbon projects are simpler to develop than forest projects. They do not require inventories or onsite verification activities, though voluntarily conducting site-based verification work can boost the credit potential of a property.**

In a compliance market, regulated industries like the power or transportation sectors are required to reduce greenhouse gas emissions and can purchase credits to satisfy part of their emissions reduction obligation. While a variety of compliance mechanisms exist across the U.S. and internationally, the most relevant to western landowners is the California compliance market, which accepts credits from projects located across the country. That said, the percentage of California emissions reductions that may be satisfied using credits is being reduced over time and a higher proportion of credits will be required to come from California-based projects as of 2020. California compliance market credits must be produced using a protocol that is approved by the California Air Resources Board.

Carbon is stored abundantly in both the wood of trees and in healthy grassland soils (previous spread)
Several projects are working to standardize carbon credits for soil in perennial grasslands, to allow these credits to be sold in compliance markets. For now, they are only available in voluntary markets.

A grassfed cow (previous page)
Grassland carbon projects are compatible with grazing activity.

How can a landowner develop a carbon project on their property?

Developing a forest carbon project entails conducting an inventory to assess carbon stocks, modeling forest growth and calculating credit yield, creating a forest management plan, undergoing third-party verification and submitting all documentation to a registry for approval. The conditions of the property must be evaluated by a third-party verifier before the first credit sale and periodically, over time. Once the registry approves of the project and associated fees have been paid to the registry, the credits can be listed for sale. Most often landowners hire project developers to manage this process and conduct the technical forestry work, modeling, documentation drafting and ultimately to sell the project's offsets on the project owner's behalf. Project developers will also prepare financial analyses in advance of project commencement to estimate project costs and revenues.

Grassland carbon projects are simpler to develop than forest projects. They do not require inventories or onsite verification activities, though voluntarily conducting site-based verification work can boost the credit potential of a property. Nonetheless, it is advisable for landowners to work with a project developer to help navigate grassland project protocols and credit registration and sales.

What are the management requirements for a carbon project?

The requirements of the project depend on the standards, protocol and project type. For example, improved forest management projects may require certain harvesting practices or a specific duration in harvest rotations. Grassland projects require less active management compared to forestry projects and are more focused on monitoring and maintenance of site conditions. The length of the project term also depends on the standards and protocol, but generally projects are intended to be long-term. Voluntary projects typically have a shorter project term requirement (e.g. 40 years), whereas compliance projects may require a 100-year or greater project term.

Is a conservation easement required?

Conservation easement requirements depend on the protocol and project type. Typically, grassland projects do require an easement specifying that the property be maintained as grassland, whereas forest carbon projects, with the exception of avoided conversion forest projects, usually do not necessitate the establishment of a conservation easement. However, in the case of a forest carbon project, placing a conservation easement on your property can lower the

risk of project failure from the perspective of the registry and increase the project's credits as a result. If you already have a conservation easement on your property that restricts timber harvests, however, this may disqualify you from participating in the carbon market because the carbon credits would not be considered "additional" relative to the status quo.

Is there a minimum or maximum size for a carbon project?

Developing a forest carbon project is expensive, although project developers will often cover all of the project expenses so that there is no up-front investment needed from the landowner. That being said, properties of 5,000 acres or greater are best positioned to achieve the economy of scale necessary for a project to be profitable. However, there are a few emerging efforts across the country to enable forest carbon projects on smaller privately-owned forests. These include the Carbon Cooperative that is being developed by WRA, Inc. and Sempervirens Fund with support from the Betty and Gordon Moore Foundation in the Santa Cruz Mountains of California to aggregate smaller individually owned properties into larger financially viable projects for forest carbon crediting. Similarly, Forest Carbon Works provides a platform and smartphone-based tools for streamlining forest carbon project development and lowering costs to better enable small landowners to participate in the carbon market.

Grassland projects are not as expensive as forest carbon projects; however, grasslands also generate fewer credits per acre than forests, which means that grassland projects also require parcels to be at least several thousand acres in size, if not tens of thousands of acres.

What are the costs and revenues associated with a carbon project?

The costs and revenues associated with a carbon project are highly dependent on property characteristics (e.g. size of the property, location, conditions/quality and accessibility), the project type and the credit market. If the risks and returns are appropriate, a project developer will often cover the upfront costs of developing a carbon project in exchange for a portion of the credit sale proceeds. In the 2018/19 voluntary market, the average price of domestic forest or grassland credits is about $8, but can range from less than $4 to $15 or more. Projects that are verified by a reputable standard, are located in the U.S. and also provide social or other environmental benefits tend to sell credits at higher prices. The California compliance market credit price has fluctuated around $12 in recent years, although prices are expected to increase to about $18 per credit over the next few years as emissions allowances and offset credits become scarcer

in response to changing policies. While project-specific factors such as current forest stocking and project location greatly influence the credit generation of improved forest management carbon projects, anywhere between one and ten credits per acre, per year may be generated, on average, over the first ten years of a project. In contrast, grassland projects will often generate between one half and two credits per acre, per year, on average, over the first ten years.

What if there is a fire on the property?

Most standards require an insurance mechanism that covers the loss of credits in the event of a natural disaster, such as a fire. This insurance often comes in the form of "buffer credits," which are credits set aside by the registries every time there is an issuance of credits. In the case of a fire, landowners are not required to repay the value of these credits (because they will have already contributed to the insurance), but if the impact of the fire is severe, the landowner's property may no longer be eligible for generating carbon credits, in which case no additional credit sales would occur.

What if the landowner decides to sell the property, or terminate the project?

If a landowner sells a property that is enrolled in a carbon project, the terms of the project contract remain attached to the land. The value of the land may be impacted if certain development or timber harvest rights are restricted by the specifications of the project. If the new landowner (or previous landowner) decides to terminate the project, they will be responsible for repaying the value of the credits the project has generated and may be subject to a penalty fee, depending on the protocol used. Voluntary market protocols tend to be more lenient in this regard.

What are the opportunities to develop a carbon project on grasslands, croplands and wetlands?

Agricultural and ranchlands are increasingly being recognized as an important component of land-based greenhouse gas solutions and associated protocols are gaining traction. There are currently approved methodologies for greenhouse gas reduction crediting on grasslands and rice fields (the Climate Action Reserve), wetland creation, restoration and management (the Verified Carbon Standard) and for adoption of sustainable agricultural land management, soil carbon quanti-

fication and livestock and manure management (Verified Carbon Standard). Most of these methodologies are restricted to the voluntary market and require several thousands of acres to be financially viable. However, projects are being developed under these different methodologies and certain buyers are demonstrating a particular preference for charismatic projects on agricultural and ranchlands.

How do I know if a carbon project is viable on my property?

Ultimately, a landowner will need to consult with a project developer to fully understand the carbon sequestration capacity of their land and the financial viability of a project. This type of consultation is generally provided free of charge and the associated analysis can often be carried out in as little as two weeks. However, there are several screening questions that a landowner can answer to decide whether or not to pursue a carbon project. If you answer "yes" to all of these questions, you may be a strong candidate for a carbon project.

Question	Yes/No
IS THE PROPERTY OVER 5,000 ACRES IN SIZE?	
ARE YOU WILLING TO ALLOW THIRD-PARTY CONTRACTORS ONTO THE PROPERTY EVERY FEW YEARS FOR VERIFICATION?	
IS THE PROPERTY FREE FROM ANY EXISTING OBLIGATIONS THAT LIMIT DEVELOPMENT OR TIMBER HARVESTS IN THE CASE OF FORESTRY PROJECTS?	
IS THE PROPERTY WITHIN 100 MILES OF A LARGE POPULATION CENTER (OVER 1 MILLION INHABITANTS) OR LOSE TO A LARGE ENERGY OR MINING DEVELOPMENT?	
ARE YOU WILLING TO FORGO THE RIGHT TO FURTHER DEVELOP YOUR LAND IN EXCHANGE FOR CARBON CREDIT PAYMENTS?	
ARE YOU WILLING TO COMMIT TO A CONSERVATION EASEMENT IF REQUIRED?	
IS YOUR FOREST WELL-STOCKED FOR ITS REGION OR HAS YOUR PROPERTY BEEN UNDER GRASSLAND COVER FOR 10 YEARS OR MORE?	

The Santa Cruz mountains contain spectacular coast redwood (*sequoia sempervirens*) forests, one of the most carbon-dense temperate forest biomes in the world. Photo by Luke Mummert.

CASE STUDY

Santa Cruz Mountains Carbon Cooperative

Forest landowners owning less than several thousand acres have historically been excluded from the carbon market because project development, monitoring and transaction costs have exceeded potential credit revenues. The Santa Cruz Mountains Carbon Cooperative (Co-op) aims to address this challenge. The Co-op will enable widespread participation of relatively small forest landowners in the carbon market, so as to provide forest stewardship revenues to landowners and incentivize improved forest management and conservation.

The Co-op will create cost efficiencies by employing a new aggregation methodology and providing an overarching programmatic structure to reduce administrative and transaction costs, a key barrier to participation of landowners of smaller properties. The new aggregation methodology will allow for multiple properties of different ownerships to be grouped together into one project under the Co-op. Landowners will be organized into cohorts based on geography, forest characteristics and time of enrollment. While carbon stocks and emission reductions will be calculated per cohort, inventories and verifications will be conducted across the project as a whole, using a statistically sound sampling method, so as to increase cost efficiencies. Credits will be calculated and issued through one project account. In this way, flexibility and autonomy is maintained for landowners, while the benefits of standardization and scale enable financial viability.

While the Co-op is being developed in the Santa Cruz Mountains of California, and will only be available to landowners in that region, the aggregation methodology could be used for forest carbon projects across the country. The aggregation methodology fits within the American Carbon Registry's (ACR) Improved Forest Management protocol. ACR has provided an initial review of the aggregation methodology, with final review and approval expected in 2020. Following approval of the methodology, the Co-op is expected to formally launch.

Landowners who volunteer to participate in the Co-op will commit to not harvesting their trees for 40 years. Consistent with ACR's protocol, enrolled properties will be inventoried and monitored every five years to assess carbon stocks and ensure compliance over time. Credits will be awarded relative to ACR's defined baseline, which is a timber harvest scenario that maximizes financial value, while remaining within legal limits. To ensure that credits are awarded for conserving forests that could otherwise be harvested for timber, properties must be zoned for timber production in order to be eligible for program enrollment. Based on local regulation, properties zoned for timber production are typically at least 40 acres; therefore, a minimum size of 40 acres has been set for participation in the Co-op. There is no maximum size limit, though the program is intended to primarily serve small landowners.

Credits are expected to be generated over 10 years per property at a rate of about 2.5 credits per acre and landowners will be paid annually based on the number of acres enrolled. At the end of the crediting period, landowners can renew their contract and additional landowners are expected to continually enroll in the program over time. According to initial conversations with credit buyers, the anticipated credit price is $15 per credit, with the potential to increase to $20 to $30 per credit over time. These credit price projections exceed the average North American forestry credit price for 2019 because of the many co-benefits associated with the project (e.g. habitat conservation, water quality improvements, recreational opportunity) and the proximity to Silicon Valley, where many prominent credit buyers are headquartered. Voluntary corporate credit buyers have demonstrated a preference for credit projects located "close to home."

The Co-op will manage all interactions with ACR, such as collecting project documentation, submitting associated fees, coordinating with third party verifiers and ensuring that credits get issued. The Co-op will also negotiate with the credit buyer(s) and is responsible for collecting credit payments. Other than a modest initial application fee, the landowner will not incur any costs associated with the project, but does relinquish a portion of the credit value to the Co-op to cover programmatic and project management costs.

Each landowner will have an individual participant contract with the Co-op. As such, landowners will not be subject to the risk of other landowners reneging on their contracts. If a landowner sells their land, the terms of the Co-op contract will be passed on to the subsequent owner. If an unforeseen and unavoidable event occurs on an enrolled property, such as a wildfire, and a landowner's credits are invalidated, the landowner will not be held responsible for those credits. The Co-op will establish an insurance mechanism, as required by ACR, to replace lost credits resulting from a "force majeure" event. If a landowner chooses to leave the program, they will be responsible for repaying the value of the credits awarded to them to date plus a penalty fee to cover administrative costs, consistent with the terms of their contract.

While under the current program design landowners will not be required to implement specific management practices, the Co-op plans to provide discounted forest management assistance services, referrals and educational resources to aid landowners in managing wildfire risk, nonnative species and improving forest health. The Carbon Co-op will also create a network for landowners in the Santa Cruz Mountains to connect and share information and resources.

The Bitter Creek Badlands of Carroll Ranch in Montana
The Carroll family is committed to continued grassland habitat stewardship, in combination with livestock production. They have realized ranch income from their stewardship commitment thanks to avoided grassland conversion (AGC) carbon credits.

CASE STUDY

Avoided Grassland Conversion Projects and Carroll Ranch

Soils that have supported grasslands for extended periods of time contain large amounts of carbon, which are released into the atmosphere if converted to row-crop cultivation. For this reason, preventing the conversion of grasslands to row-crop agriculture provides significant climate benefits. Avoided grassland conversion (AGC) projects can generate carbon credits that may be sold in the voluntary carbon market. Depending on the protocol used, there may be project eligibility requirements associated with property location and soil type, for example. In addition to carbon sequestration, the avoided conversion of grasslands may provide a host of co-benefits, such as the avoidance of heavy fertilizer use, reduction in water usage for irrigation and the maintenance of a ranching culture and vocation.

When an AGC project is initiated, a conservation easement is put in place, ensuring the project area will be maintained as grassland into perpetuity. No specific management actions are required, although the easement may be designed to prevent overgrazing, which could include a vegetation management plan, a grazing management plan or required monitoring of specific conservation values. The project must be verified by an external third party every six years, during the crediting period. After the crediting period, a monitoring report must be submitted every three years and verification occurs on 15-year intervals. Project development typically lasts 18 months, from easement establishment to credit issuance.

One example of an AGC project is the Carroll Ranch, which is being developed in the Bitter Creek badlands of northeastern Montana. The project commenced in late 2016 in conjunction with the completion of a conservation easement with The Nature Conservancy. Through this easement, the Carroll family took on a legally binding commitment that prevents the conversion of grassland on the property to an alternate form of land use.

Utilized consistently for cattle grazing for over 50 years, the 16,000-acre Carroll Ranch supports a vibrant and unique grassland ecosystem. The property plays an important role in supporting the region's avian ecology, providing habitat for 20 species of breeding grassland birds, including nine which are considered species of conservation concern and a stop along the migration route for the greater sage grouse. Carroll Ranch also sits along a major migration corridor for pronghorn and provides winter habitat for mule deer.

Grassland acres in the region surrounding the Carroll Ranch have been subject to conversion to non-grazing based agricultural uses over recent years, but, despite economic pressures, the Carroll family has remained dedicated to preserving the ecological integrity of the property. With the combination of income gained via the sale of the conservation easement and the development of carbon credits on the property, the ranch will be maintained in its current working state into perpetuity.

The costs of developing an AGC project are highly variable and depend upon the size of the project and the number of credits generated. Typically, the cost to establish the project, verify and issue credits is at least $40,000. The project developer for Carroll Ranch, Bluesource, covered all of the project expenses required to get the credits registered up front in exchange for a share of revenue, and contracted with buyers prior to the issuance of credits so that the landowner realized the carbon credit revenue upon first issuance. Credits tend to sell for $8 to $10 per credit, with projects that benefit other conservation goals, such as conserving important wildlife habitat, selling at higher prices. On average, AGC projects generate between one half and two credits per acre, per year, over ten years. The Carroll Ranch project will comply with the Climate Action Reserve's (CAR) new AGC protocol and will generate over 120,000 offset credits for the ranch over the next decade.

AGC project offset credits are sold directly between parties, or via brokers, who have accounts on the carbon registry under which the project was developed. If a landowner develops the project on their own, they are responsible for marketing the credits and there is no guarantee of sale. If a landowner works with a project developer or credit broker, it is possible to transfer the risk of sale in exchange for commission.

Sieben Livestock in Montana
Finding ways to compensate ranchers, like Cooper Hibbard, manager of the Sieben Livestock Company, for the carbon storage, biodiversity, and clean and abundant water benefits of their stewardship practices, is the central premise of the Ecosystem Services Market Consortium.

CASE STUDY

The Ecosystem Services Market Consortium

The Ecosystem Services Market Consortium (ESMC) is a voluntary pay for performance system that is being developed to incentivize farmers and ranchers to improve soil health, which benefits agricultural production and society at large. Producers will be rewarded for soil carbon sequestration, water quality and water conservation outcomes that they generate on their farms and ranchlands. The program is expected to be financed by a variety of food and agriculture corporations and nonprofit organizations, many of which are motivated to pay for soil heath and water outcomes in order to address supply chain sustainability concerns and achieve corporate social responsibility goals. The ESMC was initiated by the Noble Research Institute and is currently housed within the Soil Health Institute.

The ESMC is being developed with consideration of past environmental market failures, in particular the frequent disconnect between supply and demand. The program prioritizes producers' needs and operational efficiency first and foremost. Secondly, the ESMC directly engages food and agriculture corporations to ensure that the environmental outcomes generated meet specific corporate social responsibility goals. In sum, the ESMC is being tailored to the supply and demand actors it seeks to serve.

Early support for the ESMC was provided by the Walton and McKnight Foundations. In 2018, 11 private sector companies and nonprofit organizations joined the ESMC, including ADM, Bunge, Cargill, General Mills, Indigo Agriculture, McDonald's USA, Noble Research Institute LLC, Soil Health Institute, The Nature Conservancy and Mars Incorporated. An additional eight organizations became members in June 2019: Nutrien Ag Solutions, Bayer, National Farmers Union, American Farmland Trust, National Association of Conservation Districts, Soil Health Partnerships, the Fertilizer Institute and Tyson Foods.

Producers who choose to participate in the ESMC would commit to a 20-year contract period. They will be paid for the verified environmental outcomes they produce and will not be responsible for marketing or selling the credits. If the anticipated environmental outcomes are not realized, the producer will not be paid. The program provides decision support tools and technical assistance to help producers determine which practices are best suited to their property and what to expect in terms of environmental outcomes and farm and ranch productivity.

The ESMC members that will pay for the environmental outcomes or "credits" join a soil health "buyers club" with a 5-year renewable contract. The buyers agree to a price floor, so as to minimize price volatility in the market and ensure that payments to producers and the cost of capital are covered. Prices are determined based on what the producers are willing to accept and payments are financed through an environmental impact bond.

The ESMC has developed a program-specific protocol for quantifying soil carbon sequestration and water quality and water efficiency benefits. The benefits or "credits" produced are primarily designed to meet the needs of the buyers club members and their associated supply chain and corporate social responsibility goals. However, the ESMC will also produce a second tier of credits that could be used in external voluntary or compliance markets. The second tier carbon credits will be sold through the Gold Standard registry. This approach will enable the ESMC to produce carbon credits that meet the level of rigor required by their target buyers, without incurring the high costs of existing protocols that have been prohibitive for the majority of producers.

The water quality benefits will be quantified using a method that is consistent with the Natural Resource Conservation Services' (NRCS) Water Quality Index, which relates soil health practices to water quality outcomes. Similar to the carbon credits, a second tier of water quality benefits is envisioned, which would quantify pollutant load reductions and could be incorporated into water quality trading compliance markets. The ESMC will also quantify benefits associated with water efficiency improvements, such as reducing source withdrawals for irrigation. The ESMC's combined monetization of soil carbon, water quality and water efficiency benefits are intended to bolster the economic viability of soil health improvement projects.

The draft ESMC protocol was completed in December 2018 and was expected to be piloted in late 2019 on 50,000 ranch and farmland acres in Texas and Oklahoma. Once the protocol has been tested in other locations across the country, and feedback from credit buyers and producers has been collected, the protocol will be refined and released for public comment. The final protocol is expected to be published in 2020. The ESMC Steering Committee is refining their business plan, strategic plan, operations and governance structure in summer 2019. The national program launch is planned for 2022, with the goal of enrolling 250 million acres by 2030 and 650 million acres by 2050.

PAYING FOR STEWARDSHIP

PAYMENTS FOR WATERSHED SERVICES

IN COLLABORATION WITH JEFF CORBIN OF RESTORATION SYSTEMS, LLC.

PAYING FOR STEWARDSHIP

Payments for watershed services totaled $24.7 billion globally in 2015, according to a 2018 report, *The Global Status and Trends of Payments for Ecosystem Services*.* Payments for watershed services dominate global environmental markets, both in terms of growth and market value. There is a wide variety of payments for watershed services approaches, and programs can be developed in forest, agricultural, wetland, grassland or other ecosystem types. The underpinning concept of watershed services programs is that landowners implement practices that result in a quantifiable water quality benefit in exchange for a payment from entities that are subject to regulatory requirements or wish to voluntarily lower business costs or risks related to water quality.

This chapter does not address water rights markets, as it is covered in the next chapter.

How do watershed services programs work?

Watershed services programs are typically developed in response to regulatory and business incentives. For example, in a regulatory context, if pollutant levels—as defined under the Clean Water Act—are exceeded in a water body, then the local wastewater utility faces noncompliance penalties and is incentivized to reduce pollution. Instead of installing new treatment technology, the utility could pay landowners to implement practices that reduce pollution levels in the water body. In other cases, there may not be a clear regulatory driver to address a water quality issue, but companies may choose to mitigate water quality risks because of perceived threats to their business. Examples of water-dependent industries include tourism, food and beverage, and even manufacturing.

Watershed services schemes often address water quality issues associated with sedimentation, nutrient loading, temperature or salinity. Some programs are designed to address watershed risks like catastrophic wildfires and floods. More often than not payments to landowners are made by national, state or local governments; however, there are many examples of private contributions as well, particularly from private developers, the food and beverage industry and foundations. The payers may contract directly with landowners or pay into a collective water fund or government program. Unlike the carbon market, there is no centralized platform for purchasing watershed services (or credits) and transactions tend to occur within watershed boundaries or other local jurisdictions.

What management practices may landowners be asked to implement?

Some watershed services schemes allow for landowners to choose the management practice, as long as the desired water quality outcome is achieved. Other schemes prescribe particular practices, examples of which are provided below:

Simple water systems installed on the Piojo Ranch in New Mexico (previous spread)
Simple structures constructed using onsite timber help restore healthy stream flows.

A restored stream (previous page)
Downstream water users receive value from this project. Payment for watershed services models create markets for that value.

* Salzman, J., Bennett, G., Carroll, N. et al. The global status and trends of Payments for Ecosystem Services. Nat Sustain 1, 136–144 (2018). https://doi.org/10.1038/s41893-018-0033-0

- Planting trees or other vegetation to reduce erosion, reduce pollutant loadings or increase shade and reduce water temperature.
- Thinning forests to reduce the risk of catastrophic wildfires that lead to sedimentation.
- Building fences to keep livestock out of riparian areas and reduce nutrient and pathogen loading.
- Restoring streams and low flow dams to reduce sedimentation, nutrients and pathogens.
- Implementing agricultural practices and/or minimizing use of fertilizers to reduce nutrient loading.

How can a landowner participate in a watershed services program?

Typically a watershed services program is set up by a local public entity in response to a water quality issue. In some cases, a nonprofit will establish the program on behalf of a local community and manage the administrative processes and technical components. The program developers usually reach out to landowners to solicit their involvement during the design of the program.

What can a landowner expect to be paid for participating in a watershed services program?

Landowner payments are highly dependent on the local program and market. If the program is developed in response to a clear regulatory driver and economic conditions are driving the need for mitigation, payments are likely to be higher and more consistent. In the case of nutrient banking, for example, if demand for nutrient credits is high, a landowner could feasibly make over a million dollars over 10 to 20 years on a several-hundred-acre property. Although, returns depend on a variety of market factors. Additionally, landowners may benefit from improved land management and water quality on their own property, and lower risks associated with fire or erosion, as a result of the new practices associated with some watershed services programs.

What costs should a landowner expect to incur for participating?

Costs incurred will depend on the program, new land management practices or land conversion required and the landowners' particular property and current land uses. If the program requires certain agricultural management practices, the landowner may need to absorb the cost of any new equipment and forgo prior

practices and associated revenues. In some cases, the transition to new management practices could also lead to increased product revenues in addition to watershed services payments.

What risks should a landowner be aware of?

Depending on the type of program, the landowner may be required to commit to participation over the long-term. In the case of nutrient banking, a perpetual conservation easement would be required. Other schemes require that the land be leased for the implementation of certain management practices. A long-term encumbrance of the property can limit a landowner's options for future land use and therefore increase risk associated with participation. In terms of monetary risk, payments to the landowner may be made up front, after management practices have been implemented, or after water quality outcomes are demonstrated. Each of these options present different levels of risk to the landowner.

> Typically a watershed services program is set up by a local public entity in response to a water quality issue. If a program is not already being established in your area, we suggest that you reach out to your local government and/or conservation organization to discuss potential opportunities and express interest.

Am I a candidate for a watershed services program?

Given the variability of watershed services programs and the need for a local entity to champion the development of the program and coordinate landowners and payers, it is more difficult to determine the opportunity for a specific landowner in this space, compared to other environmental markets. If a program is not already being established in your area, we suggest that you reach out to your local government and/or conservation organization to discuss potential opportunities and express interest.

Trees planted alongside the Rogue River near Medford, Oregon (left)
Approximately 27 acres of trees, or 3.6 miles of stream, have been planted with native plants as part of the Medford Water Quality Trading Program. Photo courtesy of The Freshwater Trust.

The Rogue at sunset downstream of Medford (bottom)
The Rogue flows over 200 miles through Oregon from the Cascades to the Pacific Ocean. Photo by Evan Smogor on Unsplash.

CASE STUDY

Oregon Temperature Water Quality Trading

In 2011, the City of Medford, Oregon was grappling with a water quality problem. As the population grew, the wastewater treatment plant discharged increasingly warm (but clean) effluent into Oregon's Rogue River. In order to avoid non-compliance with the Clean Water Act, the city faced a $15 million cost to upgrade their cooling infrastructure. However, the city learned of an alternative approach the would cost less than half of the new infrastructure at an estimated $6.5 million. The alternative was a payment for watershed services program, which they implemented with the help of The Freshwater Trust (TFT), an Oregon-based nonprofit.

Under the program, TFT arranged 20-year leases with landowners to plant and maintain trees on their properties to shade the streams and cool the water of the Rogue River. The temperature reduction is quantified using a tool called the "Shade-a-lator" that is maintained by the Oregon Department of Environmental Quality. Temperature reductions were tracked relative to the city's permit requirements. By 2017, 27 acres (i.e. about 3.6 miles of riparian areas had been planted with trees. Additionally, Chinook salmon and steelhead trout were benefiting from the improved habitat in the river.

Keys to this program's success include:

- The clear cost-effectiveness of implementing the watershed payments program instead of installing new infrastructure;
- The involvement of a local nonprofit to establish and run the program; and
- The importance of a tool for measuring water quality outcomes relative to regulatory requirements.

You can learn more about this program on The Freshwater Trust's website, www.thefreshwatertrust.org/case-study/medford-water-quality-trading-program.

A lawsuit on a number of Oregon's temperature Total Maximum Daily Loads (TMDLs) stalled temperature permitting from 2013 to 2018. The Department of Environmental Quality and Environmental Protection Agency were in the process of negotiating settlements as of summer 2019. Meanwhile, the Medford program has continued and will be fully implemented in 2020. Other Oregon cities, such as Ashland, are developing similar tree planting programs with TFT for managing temperature requirements at wastewater treatment plants.

Smoke from the 2011 Las Conchas fire seen from Española, New Mexico (left) This catastrophic fire burned more 156,000 acres of forest in the Jemez Mountains, leading to massive ash and debris runoff into the Rio Grande river. Photo by Jerry Friedman.

An island in the Rio Grande from the North Valley, in Albuquerque (bottom) The Rio Grande flows directly through New Mexico's largest city, so keeping it clean and free of debris is an especially valuable investment. Photo by Alan Gross.

CASE STUDY

Rio Grande Water Fund

Catastrophic wildfires lead to erosion and sedimentation that impair downstream water supplies for communities and businesses. Water funds provide a vehicle for downstream stakeholders to collectively pay for forest health treatments that increase watershed resiliency against catastrophic fire. Water utilities as well as water-dependent businesses, nonprofits and community members may pay into the water fund and the financing is used to pay private landowners or public land managers to thin forests, conduct prescribed burns or implement other practices that reduce the risk of fire. Forest health treatments are funded in priority areas, based on fire risk assessments and in some cases risk reduction outcomes are measured and reported to the payers.

Water funds have been developed and implemented by The Nature Conservancy, a nonprofit conservation organization, in communities around the globe. One example is the Rio Grande Water Fund in New Mexico, which was established in 2014 and aims to restore 600,000 acres of forest over 20 years to benefit 1 million people in northern New Mexico. The program was inspired by the 2011 Las Conchas fire that burned 156,000 acres of forest in the Jemez Mountains, which led to massive ash and debris runoff and contamination of the Rio Grande and reservoirs that communities depend on. Following this hardship, a variety of county governments, foundations, federal agencies, and private companies came together to invest in a water fund and prevent further catastrophic fires and improve water security in the watershed.

Between program launch in 2014 and the end of 2018, 108,000 acres were treated with thinning, controlled burns and managed natural fires. $40 million of public funding and $4.55 million of private funding has been invested. In 2018 alone, more than 400 acres were thinned on 10 private ranches and 14,000 acres were thinned in total, while another 19,000 acres were treated with controlled burns. Private landowners are engaged through water fund coalition partners, such as the Chama Peak Land Alliance, if their land is located in a high priority fire risk area. As of 2019, 80 private and public entities have joined the water fund's coalition. Key funders include the Albuquerque Water Authority and a variety of foundations, cities, councils, the USDA Forest Service, state agencies, and breweries.

WATER RIGHTS FOR RESTORATION

IN COLLABORATION WITH BILL WOMBACHER OF RYLEY CARLOCK & APPLEWHITE

If you own water rights and are interested in selling or leasing them to restore stream flows and habitat, this chapter will help you navigate potential opportunities. The chapter includes an overview of water rights, an explanation of how water rights may be used for instream benefits and considerations for water rights transactions. While much of the information is broadly applicable to landowners in most western states, the majority of the examples provided in this chapter are from Colorado.

What is a water right?

A water right is essentially a legal entitlement to use water from a body of water. It is often, but not always, tied to real estate ownership. There are two fundamental systems governing water rights law in the United States, one in the East and one in the West. In the eastern U.S., water rights are governed by the *riparian doctrine*, which basically states that landowners living near a water body have a reasonable right to use that water. A "reasonable right" implies that one landowner's use of the water does not interfere with other landowners' ability to use the water. In the western U.S., where water resources are more scarce and there is often a need to divert water away from the source for agriculture, mining and other commercial and residential uses, the *prior appropriation doctrine* underpins most states' water law. The prior appropriation doctrine indicates that whoever started using the water first, is first in right to the water. Water rights owners with an older right are considered "senior water rights owners" relative to "junior water rights owners." In arid or drought stricken locations, not everyone who is entitled to water will actually obtain water. The water regulator may issue calls for water that force junior water rights owners to stop diverting water so that it is available for senior water rights owners.

While states generally follow the applicable regional doctrine, individual states have added their own rules to create unique water law systems. For example, California's system blends the riparian and prior appropriation approaches. In contrast, Colorado maintains perhaps the purest interpretation of a prior appropriation system. In order to better understand water law in your state, you can usually find public information about water law administration on your state's Division of Water Resources or State Engineer's webpage.

How can water rights be used for stream restoration?

In some states landowners can voluntarily sell, lease or donate their water right to improve river or stream flows and enhance habitat. Using water rights for instream benefit is particularly valuable in arid regions or amid drought conditions. However, it is important to structure this type of transaction properly so that the

Water that has historically been used for irrigation can be returned to stream flow for multiple benefits (previous spread)
But water rights holders must be careful, as such "transfers" can require the approval of the state water court or risk vacating the water right. Adobe Stock.

A cascade on the Upper Navajo River on a private ranch in Colorado (previous page)
The water rights holders are committed to allowing ample stream flow for wildlife and recreation on this tributary of the San Juan River. Photo by Lesli Allison.

instream use is recognized as a beneficial use under the applicable water law. If not, the water right could be considered vacated and could be lost.

Colorado is one such state that allows for water rights to be used for stream restoration. The Colorado Water Trust is a private organization that works with water rights owners, on a voluntary basis, to restore flows to streams and rivers through water rights sale, lease or alternative transfer methods (ATMs). These agreements typically require approval by the water court and the Colorado Water Conservation Board (CWCB), which is the sole entity that can hold water rights for the purpose of instream flows in the state. Additionally, legislation was recently passed in Colorado that allows large reservoir operators to enter into agreements with the CWCB to structure reservoir releases in a way that benefits the environment, in terms of seasonal timing or flow rates.

Other states are also exploring innovative ways to apply water rights law in a way that benefits the environment and compensates water rights owners for those benefits. Water rights owners who are interested in using their water rights for stream restoration should become well-acquainted with their state's water laws and consult with a water rights attorney to ensure that they will not be subject to any water law penalties, as described below.

How can a landowner sell or lease their water rights?

When a landowner sells (or donates) their water rights for instream flows this is considered a permanent transfer of the water right. The transfer will likely require approval by a state entity (such as the State's Engineer's Office) or a water court. A donation of a water right is likely to be tax deductible. A landowner can also lease their water right for a specific season over a fixed number of years. A lease is a more flexible mechanism for the landowner than a sale or donation since it is temporary in nature.

Note: The "transfer" of a water right can also refer to a change in the designated use of a water right, as opposed to the sale or lease of a water right.

What can a landowner expect to be paid for water rights?

Water right payments are highly variable and depend on several key factors:

- In the West, the more "senior" the water right, the more money the water rights owner can expect to receive. As described above, seniority refers to how old the water right is relative to other water rights users for the same water body. A more senior water right is more likely to yield the allocated amount and thereby provide a more reliable water supply.

- If the physical yield of the water right is inconsistent, either due to drought or upstream withdrawals, this will reduce the value of the water right.
- A water right will attract a higher price if it is located near municipalities and water districts that are in short supply of water, as dictated by common supply and demand principles. For example, for a senior water right near the Front Range of Colorado (where water is in high demand and development is booming) a water right owner could reasonably be paid $10,000 per acre-foot of water.

Some of the most flexible and expensive water rights in the state of Colorado are sold by the Northern Colorado Water Conservancy District from the Colorado-Big Thompson (CBT) Project, a federal water diversion project that provides water to the Front Range. The average price of CBT units have neared $30,000 in recent years and parties often look to CBT units to set the price of other water rights. (One unit generates 0.74 acre-feet of water.) For irrigation and municipal water leases in this area, a water rights owner is likely to be paid about $200 per acre-foot per year.

> **Water rights owners who are interested in using their water rights for stream restoration should become well-acquainted with their state's water laws and consult with a water rights attorney to ensure that they will not be subject to any water law penalties.**

What costs should a landowner expect to incur from selling/leasing a water right?

Water rights transaction costs are also highly variable and depend on the complexity of the situation. In many instances, the only cost would be to retain a water rights attorney to perform due diligence by evaluating the water right and identifying any potential risks or opportunities, which may cost the landowner around $2,000. However, if there is a need to change the water right's use (as would likely be the case if a water right owner is reducing irrigation in order to increase instream flows) this can be a more complicated and costly process. In a highly contentious situation, costs could easily exceed $100,000 in legal and engineering fees. For this reason, water rights owners should consult with a water rights attorney early on in the process to gauge difficulty, cost and risk associated with the particular situation. An experienced water rights attorney could also likely provide information on recent water transactions in a particular area to give a sense of potential price.

What risks should a landowner be aware of when selling/leasing a water right?

As mentioned above, changing a water right use (from irrigation to instream flows, for example) can require the approval of the state water court. Presenting the water right to a water court and requesting a change in use can open up the water right to scrutiny, which could potentially result in a reduced or eliminated water right. For example, the water court may analyze the historical beneficial use of the water and find that it is less than the amount stated in the water rights decree, which could result in a lower allocation for the water rights user going forward. This is referred to as the "use it or lose it" principle. Given this risk, it is again important to evaluate the water right with a water attorney and assess historical beneficial use information before presenting the request to the water court or State Engineer's office.

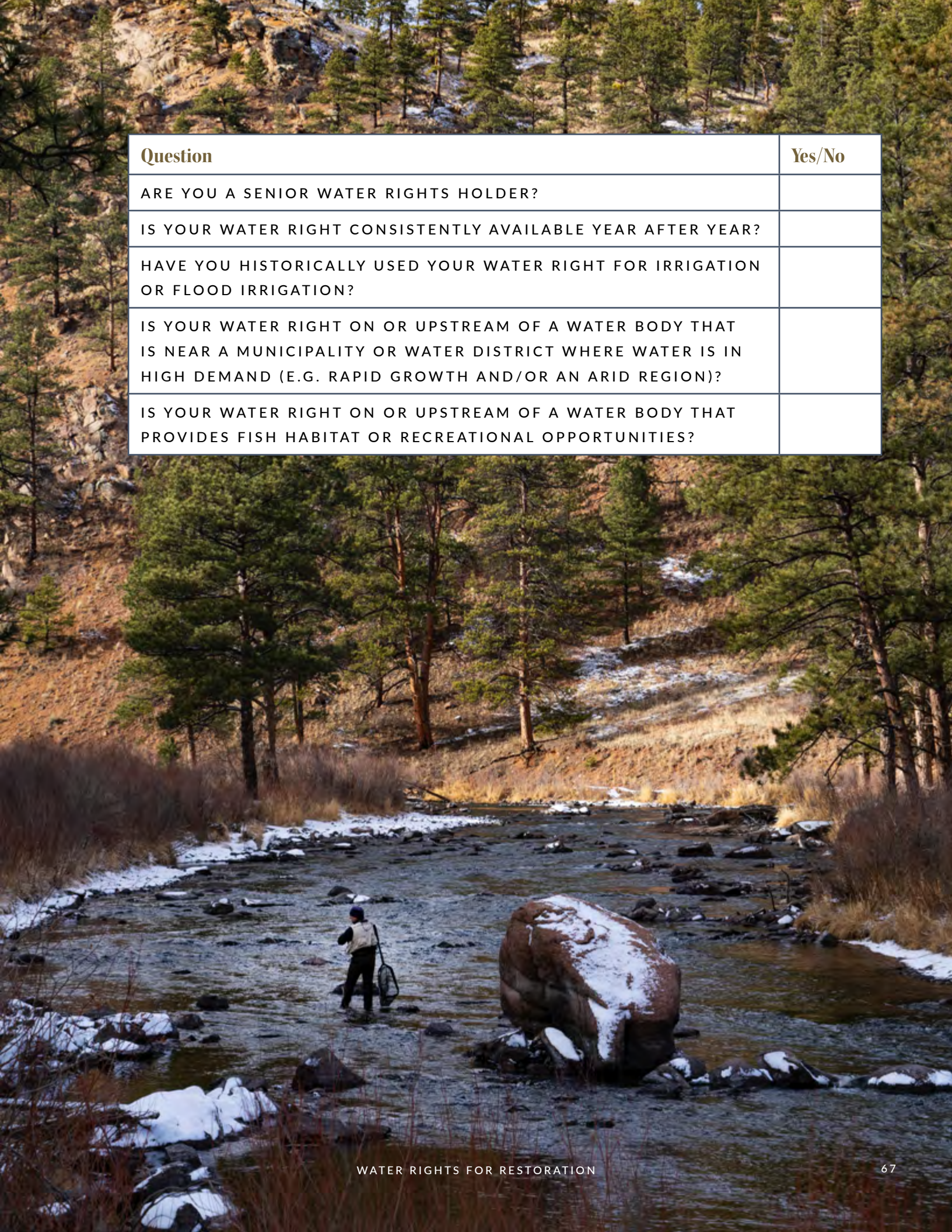
How will this effect irrigation and agricultural activities on the property?

Using a water right for beneficial instream use does not require a "buy and dry" scenario where the water right is permanently sold and the land can no longer be used for irrigated agriculture. A landowner can use an alternative transfer method (ATM) as described in the Colorado Water Trust case study. ATM approaches can be tailored to a landowner's needs such that the water right is dedicated for instream use for one portion of the year, while the landowner can still use the water for irrigation in other seasons. These arrangements are made for certain years over a multi-year period.

Am I a candidate for water rights sale or lease?

If you answer "yes" to all of the questions in the table on the following page, you may be a strong candidate for a water rights sale or lease for instream flow or habitat restoration.

An angler tries his luck on West Creek in central Colorado (next page)
Restoring stream flows can have beneficial economic impacts on recreation opportunities like angling, incentivizing communities to compensate water rights holders for forgoing withdrawals at certain times of year or in particularly low-water years.



Question	Yes/No
ARE YOU A SENIOR WATER RIGHTS HOLDER?	
IS YOUR WATER RIGHT CONSISTENTLY AVAILABLE YEAR AFTER YEAR?	
HAVE YOU HISTORICALLY USED YOUR WATER RIGHT FOR IRRIGATION OR FLOOD IRRIGATION?	
IS YOUR WATER RIGHT ON OR UPSTREAM OF A WATER BODY THAT IS NEAR A MUNICIPALITY OR WATER DISTRICT WHERE WATER IS IN HIGH DEMAND (E.G. RAPID GROWTH AND/OR AN ARID REGION)?	
IS YOUR WATER RIGHT ON OR UPSTREAM OF A WATER BODY THAT PROVIDES FISH HABITAT OR RECREATIONAL OPPORTUNITIES?	

The Cimarron River flows from the San Juan Mountains in western Colorado (above)
A first-of-its-kind split-season water agreement on the McKinley Ditch and Little Cimarron River has restored more than 50 million gallons of water to the Cimarron watershed through 2018.

CASE STUDY

The Colorado Water Trust

The Colorado Water Trust (CWT) works with landowners who are interested in selling or leasing their water rights for stream flow restoration. CWT is the only organization in Colorado that solely focuses on market-based solutions for conservation, using water rights. In some cases, CWT will employ a split-season approach where the water right is used for instream flows in the late summer and early fall, and for irrigation in the spring and early summer. In contrast to what some call "buy and dry," a split-season agreement allows for the continuation of agricultural operations on the land. CWT conducts both permanent and temporary water rights deals, which can be tailored to the needs of the landowner.

CWT's McKinley Ditch Project was the first permanent split-season water use agreement in Colorado to benefit agriculture and the environment. In 2014, CWT purchased 5.8 cubic feet per second of the McKinley Ditch to help restore late summer flows to the Little Cimarron River, located in western Colorado. The goal of the project is to reconnect aquatic and riparian habitat while keeping agricultural fields irrigated. In order to use the ditch water for instream flows during certain times of the year, CWT worked with the landowner and partners to file for a change of water right in the Colorado Water Court. Through 2018, the McKinley Ditch Project has restored 50.6 million gallons (155.4 acre-feet) to the Little Cimarron River.

CWT works with the state's instream flow program and other partners to determine appropriate flows to support the natural environment. Water rights transactions can be made for streams that have been identified as in need of flow restoration. CWT does not typically reach out to landowners directly to make deals. Rather, they are often approached by local organizations and landowners as they identify streams in need of restoration and present on water rights transactions tools around the state. CWT also invites voluntary water offers from willing water rights owners through their Request for Water Process.*

In Colorado, if the water rights deal is long-term or permanent, the water right use must be changed through the water court. This process can take up to 3 years or more, depending on the complexity of the specific water rights involved. CWT can fundraise to support this legal process; however, landowners are encouraged to also maintain their own council. As with all water court change proceedings, water rights owners may be exposed to some risk of diminishment. Careful project design can limit this risk, and Colorado statutes offer protections for implementation of instream flow projects. There are flow restoration tools in Colorado that avoid water court, such as temporary leases, which can limit owners' risk.

Payments for water rights sales or leases are highly variable and depend on the market rate, location and historic use. Similarly, the amount of water sold or leased is negotiated and will depend on the geography and the flow needs of the stream to be restored.

CWT's projects are possible because of Colorado's water law, which allows for water to be shared across multiple uses. Further, these approaches are supported by the State Water Plan. While the McKinley Ditch Project was the first of its kind, CWT has completed various water sharing projects since 2011 that have restored flows across Colorado. These projects range from simple water conservation programs with minimal regulatory review, to short term leases of a few months, to long-term transactions.

CWT staff believe water sharing agreements (otherwise known as alternative transfer methods) to be the way of the future for water conservation in the state. Alternative transfer methods are not unique to Colorado. Other entities in the Pacific Northwest, Montana, and the multi-state Colorado River Basin area actively using voluntary water rights transfers for stream flow restoration.

* REQUEST FOR WATER PROCESS 2020. Colorado Water Trust. http://coloradowatertrust.org/request-for-water

PAYING FOR STEWARDSHIP

AGRO-FORESTRY

What is agroforestry and how do agroforestry projects work?

Agroforestry combines one or more tree crops with another agricultural practice such as row crop farming or ranching. The tree crop can include timber species that will be harvested after several decades or nut trees and fruit trees that will provide a regular crop after they are established. In some cases, trees are primarily used to benefit the underlying crop, for example as a wind break, erosion or run-off controls, nitrogen fixation for fertilization, or shade and supplemental forage for cattle. Although this technique has been used for millennia and is still extensively used in developing countries, it is rare in the U.S. where specialized monocultures are prevalent. However, there are many situations where agroforestry can make an agricultural enterprise more resilient to environmental and economic risks.

What benefits can agroforestry provide to landowners?

The benefits of agroforestry for landowners are twofold: direct economic benefits from the tree production and indirect benefits that improve the existing farming or ranching operation. Landowners can derive direct additional revenues from the trees that are planted on their property when they produce timber, biomass, nuts, or fruits. This income can be substantial and is not directly linked to traditional farm and ranch production. Income diversification makes the operation more resilient to market changes. Indirect benefits of planting trees can be diverse: from providing shade to cattle during warm months, to creating windbreaks for grain crops to limiting erosion and the run-off of nutrients. Finally, trees generally increase the aesthetic and wildlife habitat values of properties.

What types of properties are prime for agroforestry?

Because agroforestry can be tailored to the needs of a specific landowner, the range of properties appropriate for agroforestry is broad. The main limitation is that trees need enough water. For that reason, properties that receive less than 25 inches of rain a year, or that don't have good irrigation water rights, are not usually good candidates for this approach. Because of the economies of scale, properties below 25 acres are unlikely to be profitable enough to justify using this approach. A wide range of trees can be used depending on the growing conditions and of the goals of the landowner, from fruit trees to nut trees to timber. In addition, willows can also be used to produce feedstock for biomass energy plants.

Sheep graze in an orchard (previous spread)
This form of agroforestry, called silvopasture, typically requires intensively managed grazing to avoid damaging the trees. Adobe Stock.

Timber from the farm woodlot (previous page)
On farm trees can provide valuable biomass for heating and contruction material, along with ecosystem benefits. Photo by Mat Reding.

How much work is required from a landowner?

Different approaches will require varying levels of involvement by the landowner. All approaches require soil preparation and the planting and care of young trees. If producing timber, the on-going work is limited to thinning and inventories until harvest, when significant labor is required. Much of this work can be contracted out and would require limited involvement from the landowner. On the opposite side of the spectrum, fruit trees require regular maintenance, such as spraying for pests and fertilizing. Additionally, harvest and marketing of the products will require a considerable amount of time. Nut trees are a middle of the road option that require some management from the landowners. If the landowners want a more hands-off approach, contractors are generally available to manage the different steps of the process. This approach saves time but may come at a significant cost.

> Landowners can derive direct additional revenues from the trees that are planted on their property when they produce timber, biomass, nuts, or fruits. This income can be substantial and is not directly linked with traditional farm and ranch production. Income diversification makes the operation more resilient to market changes.

What are the risks of agroforestry for landowners?

There are also risks associated with agroforestry. Growing trees can be technical and requires understanding the specifics of a property. The soils or the rain patterns may not be conducive to certain trees species and there may not be a market or local market infrastructure for certain products. This approach also requires a large upfront investment while revenues may not be available for years, or decades in the case of timber. By the time products are available for sale the market conditions may have shifted and profits can be significantly different than expected. In the case of acts of god, such as a fire or a disease, some of the losses can be covered by the USDA tree assistance program. However, these payments may not cover all the replacement costs or the lost income.

Am I a candidate for an agroforestry project?

If you answer “yes” to all of the questions in the table on the following page, you may be a strong candidate for an agroforestry project.

Empire Cherry Orchard (next page)
Photo by Abigail Miller.

Question	Yes/No
DO YOU RECEIVE 25 INCHES OR MORE OF WATER ANNUALLY OR DO YOU HAVE IRRIGATION WATER RIGHTS THAT ARE CONSISTENTLY AVAILABLE?	
IS YOUR PROPERTY 25 ACRES OR GREATER IN SIZE?	
ARE YOU WILLING TO USE SOME OF YOUR CURRENT PRODUCTIVE ACREAGE AND REPLACE IT WITH TREES TO GENERATE BENEFITS SUCH AS ADDITIONAL INCOME AND ENVIRONMENTAL IMPROVEMENTS?	

CASE STUDY

Propagate Ventures approach to agroforestry investment

Propagate Ventures is a startup that aims to make agroforestry available to U.S. farmers and ranchers by reducing both the complexity and the risk associated with the approach. We asked Jeremy Kaufman, Propagate Ventures' CEO to explain how producers can benefit from their program.

After a producer contacts Propagate Ventures, their team first conducts an assessment of the property by conducting a site visit with the landowner and using a proprietary algorithm that allows them to identify properties that would benefit from specific agroforestry approaches. This assessment is usually paid for by the landowner, although financial aid may be available through NRCS and other rural development agencies. At the end of the assessment, Propagate Ventures prepares a management plan that meets the expectations of the landowner and the capacity of the property to profitably grow trees.

After the assessment, landowners have the choice between two options: a pay as a service model or a lease model. In the pay as a service option, the landowner retains Propagate Ventures to implement the approved management plan and coordinate with nurseries and contractors for a fee. In the co-investment model, the landowner would enter into a lease agreement with Propagate Ventures whereby the landowner provides access to the land while the company covers all the costs linked to the operations. At the landowner's discretion, they may enter into an agreement with the company to conduct some of the maintenance activities (such as spraying or thinning) in exchange for a fee. In addition, landowners who opt for the lease agreement receive a share of the profit received on the tree operations. The company selects trees for their specific genetics that provide additional benefits when used in association with other crops. These enhanced trees will be available to the company's customers.

HUNTING AND ANGLING

PAYING FOR STEWARDSHIP

What kind of opportunity does hunting and angling provide landowners?

Hunting and angling industry generates over $200 billion annually in economic activity in the United States.* Landowners with significant wildlife resources are well positioned to tap into this industry and capitalize on their resources through a range of options. These include leasing their land to hunters, anglers, or outfitters on an annual or seasonal basis, providing short-term access to specific individuals, and providing all-inclusive guided services, including lodging and meals.

How do leasing arrangements work?

A hunting or angling lease is an agreement between a landowner and an individual or group of hunters and anglers where the landowner agrees to provide access for a set period of time in exchange for a fee. The specific terms of the lease and the fee can vary significantly from property to property and regionally. Landowners can tailor the lease terms to fit their needs and the characteristics of the property. Lease agreements should be written documents that spell out how and when hunters and anglers can access the property and any constraints on use, such as species that may be hunted. Many sportsmen will often want exclusive hunting or fishing access as part of their lease so it may limit opportunities to sell access to other parties on a short-term basis, or for the landowners to hunt or fish the property themselves. Marketing leasing opportunities can be a challenge, but there are professional brokers that help connect landowners with potential lessees. The American Hunting Lease Association provides additional resources to help landowners work through the details of leasing their property.†

Are there opportunities for other services?

In addition to providing access through leases or shorter term arrangements, there are often opportunities to offer lodging, meals, and guiding services into larger packages and develop more profitable enterprises. Accommodations vary widely from simple bunk houses and tents to luxury cabins with associated variation in pricing. These additional services often produce more income than simply providing or leasing access, but are also more time consuming and may require additional investments from the landowner.

A bull elk on the move (previous spread)
Trophy elk can be a lucrative draw for hunters willing to pay for a chance to harvest one. Photo by Anukrati Omar.

The fish bite year round (previous page)
With the right combination of amenities, paying anglers could be lured to your land at any time of year. Photo by Jeremy Bishop.

* National Wildlife Federation. "Hunters and Anglers: Fueling Our Nation's Economy and Paying for Conservation". 2014. https://www.nwf.org/~/media/PDFs/Water/WOTUS%20Econ%20fact%20sheet%203252014.pdf

† American Hunting Lease Association. "I am a Landowner". https://ahuntinglease.org/landowners

How do hunting licenses and landowner tags fit into these opportunities?

Some states provide tags specifically to landowners that can be sold or included as part of a larger outfitting package. In these states, the tags on properties with high quality wildlife resources, such as trophy caliber elk and deer, can be worth more than the cumulative value of access, accommodations, and guiding services. Opportunities to develop hunting enterprises are often greater in these states where landowners can also monetize the value of their hunting tags.

There are still significant opportunities to develop hunting and fishing related income in states that do not provide landowner tags, such as Montana and Wyoming. For instance, it is not uncommon for a week long elk hunting package in Wyoming to be priced at $8,000 or more per person down to $2,000 for a two-day pronghorn hunt, not including tags. In these states, hunters need to acquire their own licenses for the game management area through the state wildlife management agency. Landowners are often expected to understand the license application process in their location and can help hunters navigate the system as part of the services they provide.

What risks or other concerns should landowners consider?

A major concern for many landowners is liability risk from accidents that may occur on the property. Liability insurance specific to hunting and fishing access and general umbrella insurance policies are available for several hundred to several thousand dollars depending on the size, location, and other characteristics of the property. It is important for landowners to seek their own legal counsel to understand their risk exposure and ensure adequate protection.

Another consideration is making sure the market opportunity is sufficient for the time and resources invested. Marketing hunting and fishing opportunities and managing guests can be time consuming and may not be the best focus for a landowner if the wildlife resources and market demand do not justify the effort.

Are there resources to help landowners connect with hunters and anglers?

New online platforms and apps, such as Land Trust, Huntable, Rare Waters and EntryG8 work like Airbnb and can streamline the process for landowners and help them connect with individuals looking for access. Landowners can control specific dates available for access, the cost, and details of how to access their land while the platforms typically take a set percentage of the transaction (e.g., 10%).

Similar to Airbnb and other sharing economy platforms like Uber, both parties rate each other so that future users have feedback on the experience. Some of these platforms require customers to agree to hold landowners harmless for anything that happens on their land and may include additional liability insurance above what a landowner already carries. These added benefits can provide another layer of liability protection and give landowners additional piece of mind when pursuing these opportunities.

The guided hunting experience (above)
The Rockin' 7 Ranch provides meals, lodging, guiding, and meat processing services for deer, antelope, elk, and buffalo hunts.

CASE STUDY

Rockin' 7 Ranch Outfitters

Brad Reese grew up with a passion for hunting and guided his first hunt when he was just 12 years old. He went into the outfitting business full time after he returned to his family's ranch after graduating from college and needed to add value to the operation. Ranching was his grandpa's and father's dream; hunting was his passion. He and his wife, Heather, now run the full service outfitting operation east of Casper, Wyoming called Rockin' 7 Outfitters. The most useful support Brad received was from an employee's father who ran a fishing lodge in Montana for over 30 years. Personal insight and advice was extremely valuable to the Reeses in the early years of developing their business. While there are industry associations and state agencies that aim to support entrepreneurs, Brad found advice and insight from peers with deep experience in the industry to be the most helpful.

The Rockin' 7 Ranch provides meals, lodging, guiding, and meat processing services for deer, antelope, elk, and buffalo hunts. Staff prides itself on taking care of every detail from assisting clients with hunting licenses to providing advice on taxidermy services. Hunts range from two to five days, depending on the species.

The hunting operation on the Rockin' 7 began with Brad simply charging hunters several hundred dollars for trespass onto the ranch. He next moved to providing tent lodging, and eventually built a lodge and started providing full guiding services. After local meat processors became too busy to reliably take their clients' game, the operation expanded by adding a meat shop. The ranch has five year-round, full-time employees. During hunting season these employees change their cowboy hats for camo and are joined by guides, cooks, and meat cutters, expanding ranch staff to between 15 and 20 employees.

A key challenge for new hunting operations is accurately and competitively pricing outfitting or access services. Since each year's assessment is based on how the operation performed in previous years, pricing, and profitability, has improved as they gain experience. For instance, if they were fully booked for certain hunts in one year, they assume some additional demand for that hunt and increase the price a little the following year. They also consider the success rates of their hunters when estimating the animal resources in the area and adjust pricing and availability accordingly. Finally, the ranch uses progressive pricing with discounts for early bookings and increasing prices closer to the hunting season.

The ranch relies almost exclusively on their website for marketing with some supporting social media including a Facebook page and Instagram feed. According to Brad, it is essential for outfitters to understand how to maximize their website to ensure it shows up high in Google searches. Word of mouth and repeat customers are also core to their strategy. Brad attributes repeat customers and their progressive pricing strategy to their success at gaining early bookings: the Rockin' 7 was already 40% booked for the 2020 season in October 2019.

The biggest risk for ranches getting into hunting operations are accidents and incidents with guests. It is essential to have good outfitting insurance. Brad says, "it's expensive, but you have to do it." Fortunately, the Rockin' 7 Ranch has never had to use it. Ranch staff at the Rockin' 7 practice and preach safety every day, but when you are guiding hunters, guns do go off. Brad says they have had holes shot in pickups and even guns accidentally go off in the lodge. Safety is always on his mind.

For the Rockin' 7, the cattle business is still core to the ranch, but outfitting is a nice compliment to its agricultural operations. Brad estimates that roughly 20% of the ranch's gross income comes from outfitting, but the net income is slightly higher since outfitting typically has higher profit margins. The key, according to Brad, is to identify the break-even volume for your hunting operation. For the Rockin' 7, it is nearly the same amount of work to host five hunters in a season as it is to host 20. Brad suggests if an operation cannot see a sustainable path to profitable volume, then launching a self-funded hunting operation is not a good idea. In this case, landowners could consider leasing to another outfitter or simply charging trespass fees for access for self-guided hunts.

While Brad says there are many lessons to learn in the outfitting business, he highlighted a couple of critical insights. First, it is essential that someone getting into the business have the right personality for it. Outfitting requires an outgoing personality that is open to taking phone calls from potential customers and being positive and energetic when guiding hunters, which can be draining. This is not the norm for most ranchers, according to Brad, who often prefer to be out on their land alone. If a landowner does not have an outgoing personality, it is probably best for them to just lease their land to an outfitter. Next, outfitters are spokespeople for hunting. Hunters hire outfitters because they do not have the experience to organize a hunt themselves. Brad mentioned that many of their clients have not shot their gun all year or are not even holding their rifles correctly. As a guide, it is important to support these clients and ensure that they have a fun and safe experience that represents hunting culture well. Finally, Brad emphasizes that passion is key. For him, that passion is hunting and sharing his experiences with others. "If you have passion, it doesn't count as work," Brad concluded. "Money is part of it, for sure. If you're making money it helps, but at the end of the day, passion is really key."

CONCLUSION

This document provided an overview of eight of the more common conservation finance approaches that enable landowners to be paid for implementing stewardship practices on their land. Each section addressed anticipated revenues and costs, risks, regulatory and legal issues, project examples and a checklist for landowners to evaluate opportunities on their property. This final section presents conservation finance highlights and outlines how and why landowners may choose to evaluate the conservation finance potential of their land.

To review, conservation finance payments are typically made for improved conservation outcomes that are provided above and beyond what would have existed in a business-as-usual scenario, and these outcomes are ensured over the long-term. Some conservation finance approaches, like wetland mitigation and species conservation banking, operate under specific regulatory frameworks. Carbon crediting, habitat exchanges and payments for watershed services can occur in both regulatory and voluntary markets.

Conservation finance approaches can offer significant financial opportunities for landowners. Wetland credit prices can exceed $1 million and species credit prices can reach $200,000. Carbon credits sell for about $15 per credit in the compliance market, but more credits are generated per acre than wetland or species banks, potentially resulting in multi-million dollar carbon projects. Conservation finance revenues can enable landowners to diversify income streams and may result in tax benefits as well. Additionally, conservation finance approaches are usually compatible with farming, ranching and timber management.

However, the costs and risks associated with conservation finance approaches should not be underestimated. For example, in some states, developing a mitigation bank can cost more than $1 million upfront, not including ongoing monitoring and management costs. Even the simplest conservation finance approach will likely take at least a couple of years to implement. The need for regulatory approval throughout the development process can usually be counted on to cause delays: patience is a prerequisite for making conservation finance projects work. Most conservation finance approaches require a long-term commitment, if not a perpetual conservation easement, which limits future development opportunities and can reduce the appraised value of the land. Lastly, market, regulatory and environmental conditions change, which can impact the conservation finance outcomes for better or for worse. Given these costs and risks, landowners must thoroughly evaluate a conservation finance opportunity, ideally with professional assistance, before investing significant time and resources or making a long-term commitment.

While the specific parameters will depend on the conservation finance approach of interest, the following critical factors must be considered when determining the suitability of each approach on an individual's land:

- Size of the property;
- Location of the property;
- Quantity and quality of natural resources on site;
- Existing encumbrances on the property;
- Market conditions, development pressures and regulatory context in the region.

Landowners who are interested in pursuing a conservation finance opportunity on their land will most often benefit from an environmental assessment conducted by professional consultants. For example, if their interest is in carbon crediting, a carbon project developer can quantify the credit potential and financial projections for their property. Typically, a high-level assessment can be performed remotely, sometimes free of charge, while a more in-depth evaluation will require a site visit. The in-depth assessments are likely to include on-site inventories, growth modeling, credit yield calculations and financial projections.

Similarly, wetland mitigation and species conservation bank developers can determine the potential value of a bank on a landowner's property, either through an initial desktop analysis or a more rigorous evaluation involving site visits. These valuations are typically based on the natural resource potential of the property, a quantification of credits, and mitigation bank market conditions and credit price trends particular to the region. This information is not always publicly discernible, which is why engaging an experienced consultant to provide the analysis and professional opinion can be advantageous.

If a landowner is interested in a conservation easement, their local or statewide land trust would be in the best position to discuss opportunities with them. The land trust will evaluate their property based on required due diligence reports, relative to their predetermined selection criteria and the preferences of third-party funders, as appropriate.

Landowners who have no interest in implementing a conservation finance project but wish to sell their land may also benefit from an understanding of the potential conservation finance values on their property. Landowners who have some indication that their land is rich in conservation values, in particular, may have an environmental assessment conducted as part of their property appraisal process. If the conservation finance opportunity, such as a wetland mitigation bank, proves to be the most valuable potential use of the land (i.e. highest and best use) it will be used as the basis for the appraisal. Therefore, an understanding of potential conservation finance opportunities can greatly influence real estate transactions to the benefit of the landowner.

CONTRIBUTORS

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Ben Guillon is the founder and CEO of Conservation Investment Management, a private equity and financial advisory company focused on conservation finance. A large animal veterinarian by training, Ben married into a ranching family from the northwestern corner of Colorado where he was introduced to ranchland conservation and to the western agricultural heritage. Ben holds a charter from the Chartered Financial Analyst Institute and is a registered investment adviser. He uses his financial expertise and his knowledge of environmental markets to design investment strategies that improve the profitability of ranches and farms, while also improving their conservation values. Ben is also a agricultural land broker with the Mirr Ranch Group where he helps landowners and buyers take advantage of the growing market for conservation properties.

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Jane Rice designs, implements and evaluates innovative market-based approaches for natural resource management. Jane's experience in environmental markets spans habitat exchanges, species and wetland banking, carbon offsets, water quality trading and payment for ecosystem service programs. Jane has worked with a variety of clients across public, private and non-profit sectors. Jane earned her master's degree in environmental economics and policy at the Nicholas School of the Environment at Duke University.

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Erik Glenn is the Executive Director of the Colorado Cattlemen's Agricultural Land Trust (CCALT). Erik has facilitated more than sixty conservation easement transactions since 2008 and secured more than $10M in grants for the purchase of conservation easements throughout the state.

Chapter 1 - Conservation easements

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Jeff Corbin is responsible for expanding Restoration Systems, LLC's visibility in water quality markets across a multi-state region. Prior to joining RS, for six years he served two EPA Administrators (Lisa Jackson and Gina McCarthy) as Senior Advisor for the Chesapeake Bay and Anacostia River. In that role he coordinated all aspects of the agency's Chesapeake Bay restoration efforts and served as the chief liaison among the Office of the Administrator and numerous federal, state and local agencies and organizations. While at EPA, Jeff was an avid and outspoken advocate for the use of market-based conservation approaches.

Chapter 5 - Payments for watershed services

Chapter 6 - Water rights for restoration

Bill Wombacher

Attorney, Ryley Carlock & Applewhite

William D. (Bill) Wombacher focuses his practice on helping clients with complex water rights issues throughout Colorado, including adjudications, litigation, well permitting, and water planning. His experience includes securing new and protecting existing water rights through the adjudication process including drafting water court applications, statements of opposition and water court decrees and negotiating stipulations with other water users.

Editors

Hallie Mahowald

Programs Director, Western Landowners Alliance

Hallie Mahowald is programs director at Western Landowners Alliance, where she manages people and strategy to support private stewardship across the West. Previously, in her role as Stewardship Services Director, Hallie led the creation of a number of critical WLA guidance documents and science-to-practice reviews for land stewardship. Prior to joining WLA, Hallie was an environmental professional at Los Alamos National Laboratory, where she handled compliance with the National Environmental Policy Act (NEPA) and Endangered Species Act (ESA), collaborated on the site-wide sustainability plan, and banded birds for biological resources monitoring. She currently serves on the board of directors of the Central Colorado Conservancy, a land trust based in Salida, Colorado.

Louis Wertz

Communications Director, Western Landowners Alliance

Louis Wertz is communications director at Western Landowners Alliance, where he leads editing, design and production of WLA publications and all print and digital communications. He grew up taking long road trips across the American West in the family minivan. Since, he has been obsessed with listening to and telling the stories of the land stewards who protect and regenerate the amazing places he fell in love with. Louis holds a Bachelor of Science in Journalism degree from Northwestern University and a Master's of Science in World Heritage Studies from the Brandenburg Technical University in Cottbus, Germany, where he focused on holistic approaches for managing heritage sites.

WESTERN LANDOWNERS ALLIANCE

Western Landowners Alliance advances policies and practices that sustain working lands, connected landscapes, and native species.

PAYING FOR STEWARDSHIP

A WESTERN LANDOWNERS' GUIDE TO CONSERVATION FINANCE

Restoring habitat, water courses, and soils have costs, and unfortunately, mainstream agricultural policy passes them not to taxpayers or consumers, but to farmers and ranchers. This guide presents some ways landowners can earn compensation for their stewardship efforts directly or indirectly—schemes sometimes referred to as payments for ecosystem services, ecosystem services markets, or conservation finance. It goes beyond description to provide illustrative case studies of these strategies at work.