

TESPA and the Texas Hill Country Carbon Narrative

By Jim Blackburn, Robin Rather, and Christy Muse

Note: The following is a write-up of an oral presentation by Jim Blackburn at the November 6, 2022, fundraising event for TESPAs. The images shown here are from that Powerpoint presentation.

Executive Summary

Life in the Hill Country begins with the thousands of fragile springs that provide the water which feeds our rivers. Land management practices have a profound effect on spring flow and water quality. Healthy, connected, and unfragmented landscapes are essential for sustainable water systems. Rapid growth and land development alongside with detrimental land management practices are contributing to the loss of springs, which will ultimately effect regional water supply.

Protecting the springs of the Texas Hill Country is a grand challenge that requires coordinated effort from landowners, public agencies, and nonprofit organizations. There are several programs in place today, and more that are emerging, to incentivize landowners for practices that benefit springs and water systems. These “ecosystem service” markets have been developing for years.

In the Hill Country there is a great need for funding to support innovative conservation and regenerative land stewardship activities, not only to benefit landowners who want to protect their land but also to stimulate the many public benefits of protected lands in our region, such as water quality, water supply, air quality, scenic vistas, and even carbon sequestration.

Carbon sequestration brings a new source of funding to the region. Nature-based solutions in the carbon market include strategies such as planting trees, regenerative agriculture, range management to benefit healthy grasslands and soils, improved forest management, wetland and riparian restoration and conservation, and other activities that enhance nature’s capacity to drawdown carbon dioxide.

When the value of carbon sequestration for a specific project is measured and verified, a carbon credits registry such as BCarbon, based here in Texas, can issue certified credits. These credits then become available for purchase on the voluntary carbon market (VCM).

We are exploring the development of a local market for sequestering carbon dioxide through best land management practices right here in the Texas Hill Country. This market will be a place where local trusted nonprofits connect landowners with companies, investors, and public agencies to work together to protect this region we love.

Report to the Board of TESPAs and the Public

Recently, the Trinity Edwards Springs Protection Association (TESPA) funded Christy Muse, a long-time advocate for the environment of the Texas Hill Country, to help us stimulate a discussion and potentially action to create a carbon market concept specific to the Texas Hill Country. To date, that effort has been extremely successful, and a consensus has emerged among various stakeholders that a Hill Country carbon marketing concept should be pursued. This short white paper lays out the work that Christy has accomplished and the ideas that resulted from her efforts.

The basic idea being developed is to create a Hill Country carbon credit concept that meets buyer requirements for scientific validity and credibility that also works for landowners. Before going into

detail about Christy’s work, a brief discussion of carbon credits and their emerging role in fighting the atmospheric buildup of carbon dioxide might be useful.

Every corporation involved in most business efforts is now deep into the energy transition that the world must accomplish to reduce the build-up of carbon dioxide in the atmosphere. In Figure 1, the steps of corporate thinking are set out. Almost no industry is doing business as usual relative to carbon emissions like they were in 2019. Since January of 2020 when BlackRock financial announced its changed investment philosophy relative to carbon, the pace of change in industry and business circles has been very fast. As shown on this diagram, carbon reduction is the first progression, but most companies have already committed to zero emissions from their operations (e.g., reduction in direct emissions and purchased electrical emissions) and many have now committed to zero emissions from the use of their products which has the potential of significantly increasing the emission reduction requirements. Ultimately, many companies will strive to become carbon neutral and engage in the emerging circular economy of the future. This change is not based on conjecture but on fact.

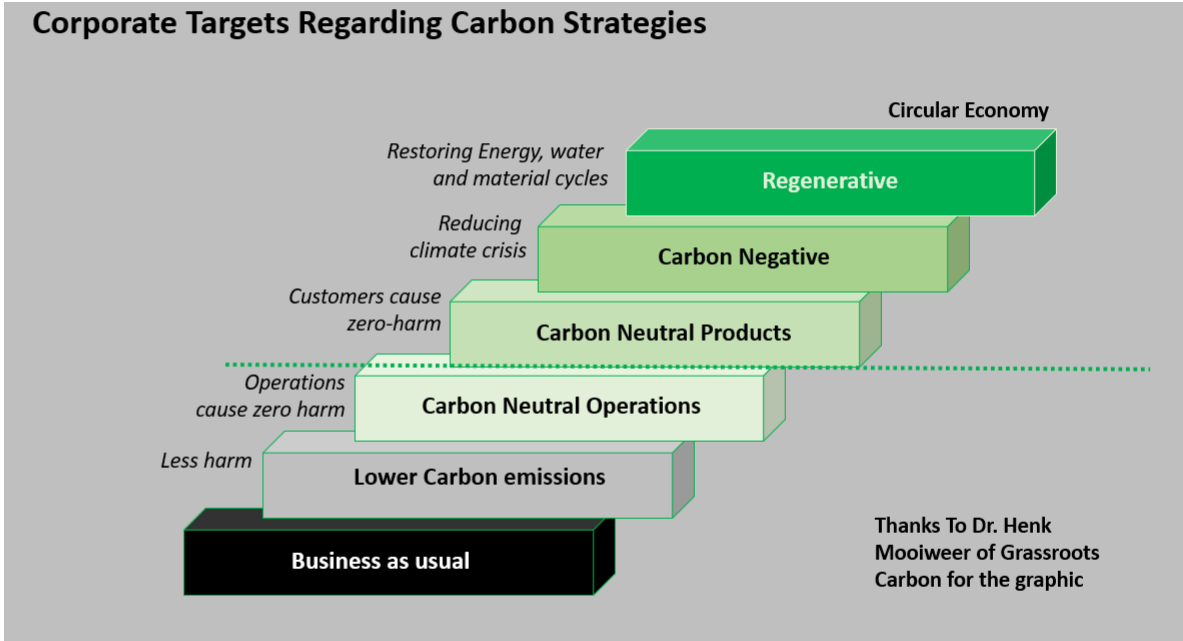


Figure 1. Corporate staircase of carbon strategies. Graphic from Dr. Henk Mooiweer, GRC.

Given this change, there is substantial focus on carbon emission reduction strategies. Most companies are currently pursuing options to either avoid or minimize carbon emissions. These efforts involve wind or photovoltaic power sources as well as all types of efficiency actions within the business operations. But there is a limit on how far and how fast zero emissions can be achieved, even with the impact of the Inflation Reduction Act (IRA). Most major corporations have pledged to reach a 50% reduction in carbon emissions by 2030. If one considers both existing reduction pledges and the new activity spurred by the IRA, recent projections indicate that in the United States there is still a gap of 600,000 to 1.5 million tons of carbon to be reduced. There are only two ways to bridge this gap— either by direct air capture, which is quite expensive, or by nature-based credits, which are much less expensive but much less well understood.

The Hill Country carbon strategy is based on the creation of nature-based carbon credits for the market that will likely emerge in the period from 2025 to 2030 as companies move to secure their commitments prior to 2030. At this time, less than 100,000 tons of nature-based credits are generated each year, yet the demand will easily increase by six to tenfold in the next eight years. This is the market that the Hill Country carbon strategy is poised to address.

As part of her research for TESPA, Christy Muse interviewed a large number of potential buyers, potential landowner participants, and environmental groups active in the Texas Hill Country along with potential project developers. These interviewees were invited to an initial stakeholder meeting at the City of Austin municipal building in September 2022, and to another meeting at Austin Chamber of Commerce in October 2022. A partial list of stakeholders includes Texan by Nature, Hill Country Conservancy, the Hill Country Conservation Network, Selah Bamberger Ranch Preserve, TerraPurezza, Texas Agricultural Land Trust, HEB, the City of Austin, UT's Bureau of Economic Geology, Texas Water Trade, Carbon Better, and Tree Folks.

The first stakeholder meeting focused on discussions of what is involved in a carbon market and what ideas might work for the Texas Hill Country. All nature-based credit programs originate with landowner participation. Landowners own the property upon which photosynthesis occurs, and photosynthesis is nature's technology for carbon capture and removal. Most landowners will work with a project developer to assist them in undertaking necessary measurements and preparing a credit application.

Additionally, project developers generally are responsible for finding and contracting with buyers. All carbon credits are issued by a registry such as BCarbon. A registry receives a project developer's application, reviews it against the rules for credit issuance (a so-called protocol), and determines if the application meets those requirements. If it does, credits are issued to the project developer who then transfers them to the buyer in exchange for money. This money flows from the buyer to the project developer and then to the landowner. This process is set out in Figure 2.

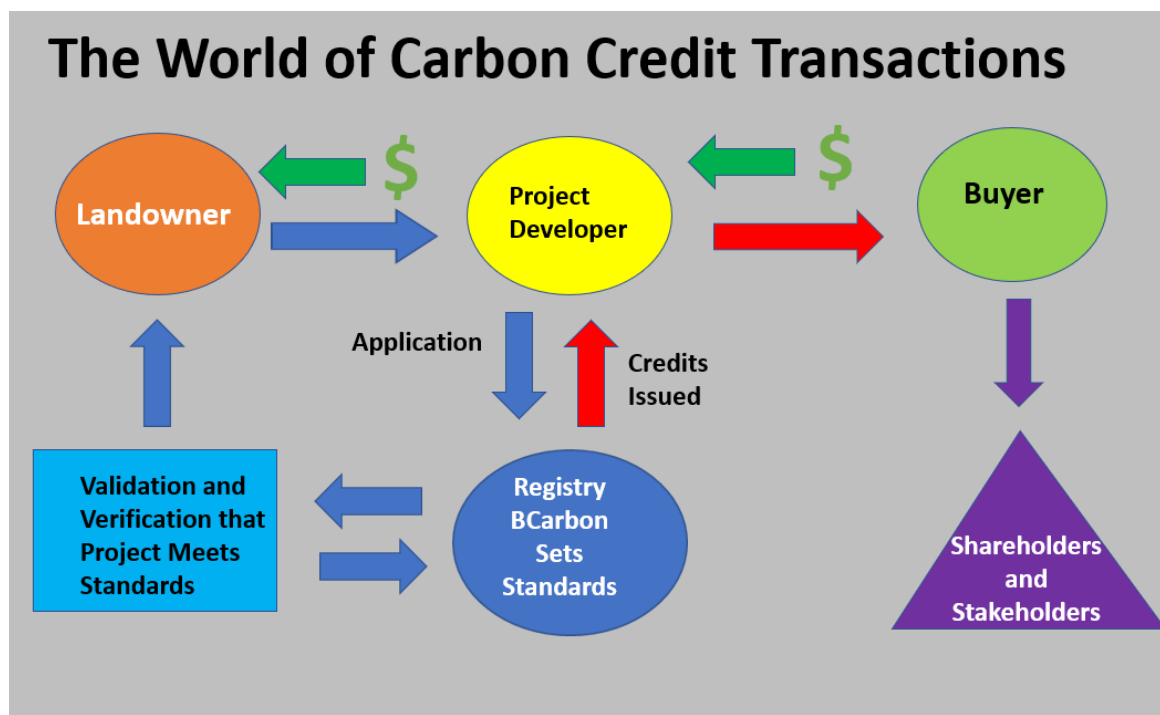


Figure 2. Flow diagram of the parties involved in the development and sale of carbon credits. Image from BCarbon.

At the initial meeting, participants discussed the general concept of the Hill Country carbon credit program. There was widespread agreement that a credit program specific to the Hill Country would be an excellent addition to the inventory of available carbon credits. Many buyers indicated that they would like to have the option of locally produced carbon credits. An initial assumption about Hill

Country carbon credits is that they might be linked in some way to the protection of springs and waterways of the Texas Hill Country in keeping with the overall purposes of TESP. That concept was widely embraced, but the group wanted more.

The City of Austin indicated that their water supply comes from Lake Travis which receives about 25% of its inflow from the Pedernales Watershed and others expressed interest and concern about the Blanco River and Jacobs Well and other springs. There was also interest in protecting and preserving various iconic Hill Country places as well as an emphasis on biological diversity and endangered species. In all, the first meeting was quite successful and led to the convening of a second meeting to solidify these concepts.

From these two meetings, a consensus emerged that carbon credits can be very useful in attaining important land use goals by paying landowners to protect and better manage for carbon production and thereby preventing land use change. Given this consensus, the group was united in its desire to create a Hill Country specific carbon credit targeted at protecting key water catchment areas, springs, points of interest, and biological diversity, and BCarbon has agreed to work with the group to tailor a protocol for the Hill Country.

In the Hill Country, there are two types of saleable nature-based carbon credits. There are credits arising from photosynthetic capture and storage of carbon in the wood and roots of trees of the oak-juniper forests and in the soil of prairie grasslands. These are referred to as “drawdown” credits. Credits may also be issued for preserving existing stocks of carbon that are under threat of destruction.

Given the incredibly fast pace of land development coming southwest out of Austin, north and northwest out of San Antonio, and west from Interstate 35, ample evidence exists that much of the Hill Country is under threat of being converted to housing and larger land holdings broken into smaller ones with associated burning of stored carbon as shown in Figure 3. This provides a basis for credit issuance for the amount of carbon stored in the forest on site.



Figure 3. Texas Hill Country development burn pile. Photo courtesy Texas A&M Agri-Life.

As envisioned by the consensus, a protocol would be developed based on avoided conversion of stored carbon in tracts threatened by development as well as for the annual drawdown of protected land areas.

Data from Texas A&M, as shown in Figure 4, indicates that the oak-juniper forest can drawdown about three tons of carbon dioxide per acre per year. Exact amounts will vary based on the age of the forest and the density of trees, but there is certainly carbon drawdown potential in the oak juniper forest. The exact drawdown and stored carbon on site will be determined based on measurement requirements forthcoming from the protocol.

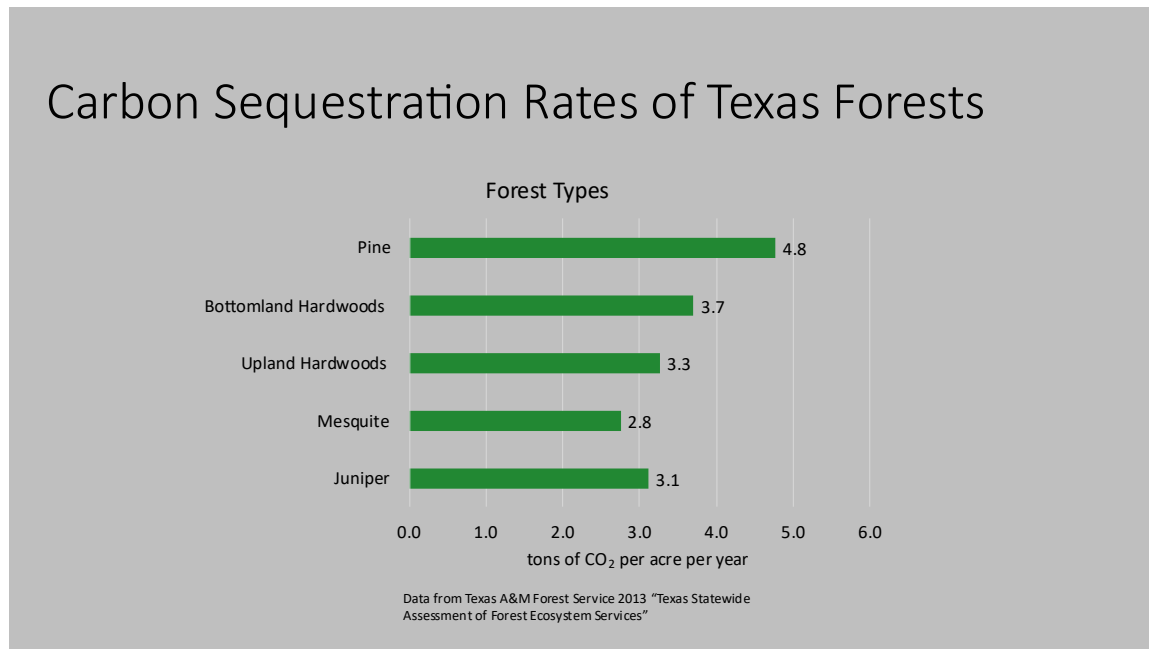


Figure 4. Carbon sequestration rates of Texas forests. Source; Texas A&M Forest Service, 2013.

To give some idea about how this system might work, a series of images were developed by Spatial Analytics and Research Consulting (SPAARC), a geologic information consulting company. Figure 5 shows the basic geographic framework for the Texas Hill Country credit concept, focusing on the Pedernales and Blanco River water catchments and including the location of springs and certain iconic Hill Country places of interest. The key takeaway is the role of these water catchments as water supply areas, as well as providing recreational venues.

It is of great importance to protect the water supply for Austin and downstream to the Texas coast. At this point, the carbon credit is being relied upon to also provide water supply, water quality, and recreational and habitat values, although the long-term hope is that these additional ecosystem services will be rolled into an all-inclusive biological diversity credit.

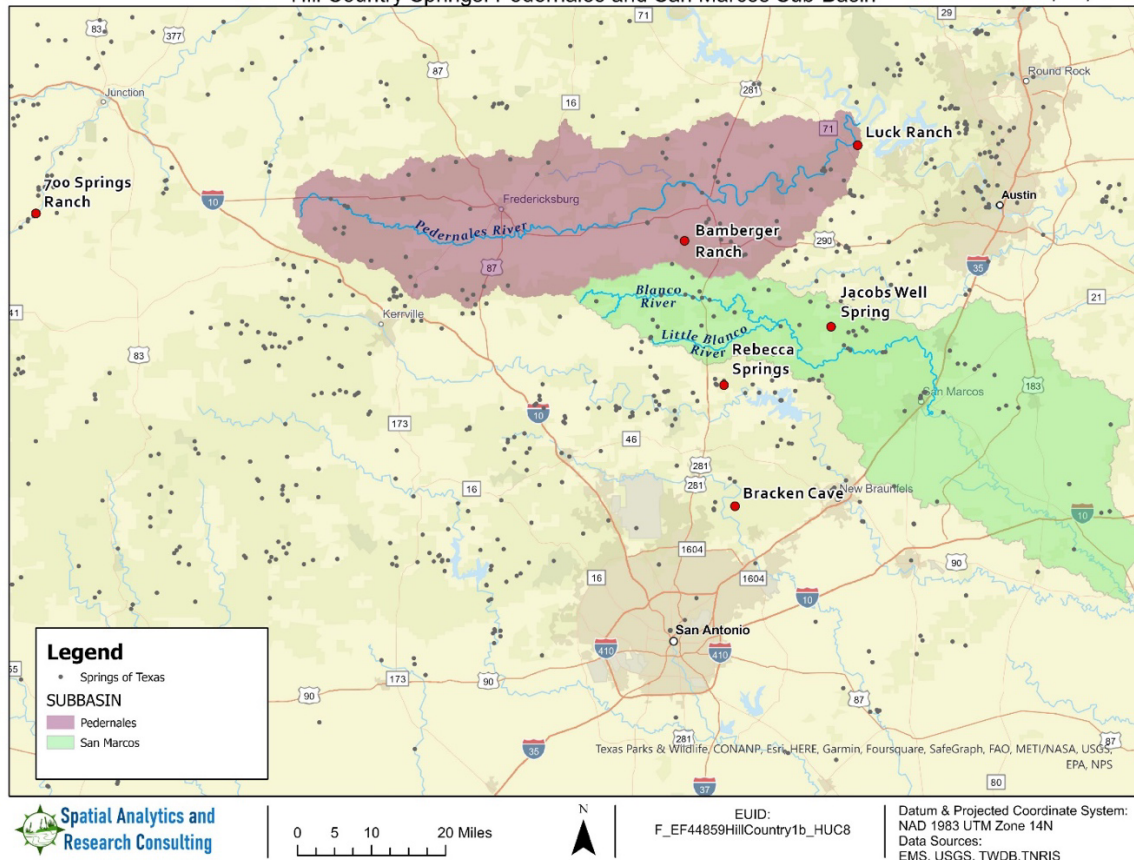


Figure 5. The Pedernales water catchment is shown reddish-brown, and the Blanco River water catchment is shown in green, along with publicly known springs and the location of iconic places of interest. Map by SPAARC.

Within the water catchments and around these points of interest, existing development patterns, forest cover, and grassland cover are extremely important. Looking at the land use in the Pedernales water catchment and surrounding Jacob's Well in Figures 6 and 7, one would identify key parcels and landowners to enroll in the carbon credit program which would include non-development requirements for land and groundwater usage. The Jacob's Well springshed identified by the Hays Trinity Groundwater Conservation District can be used to identify where carbon credits have the greatest potential for protecting the flow in the spring.

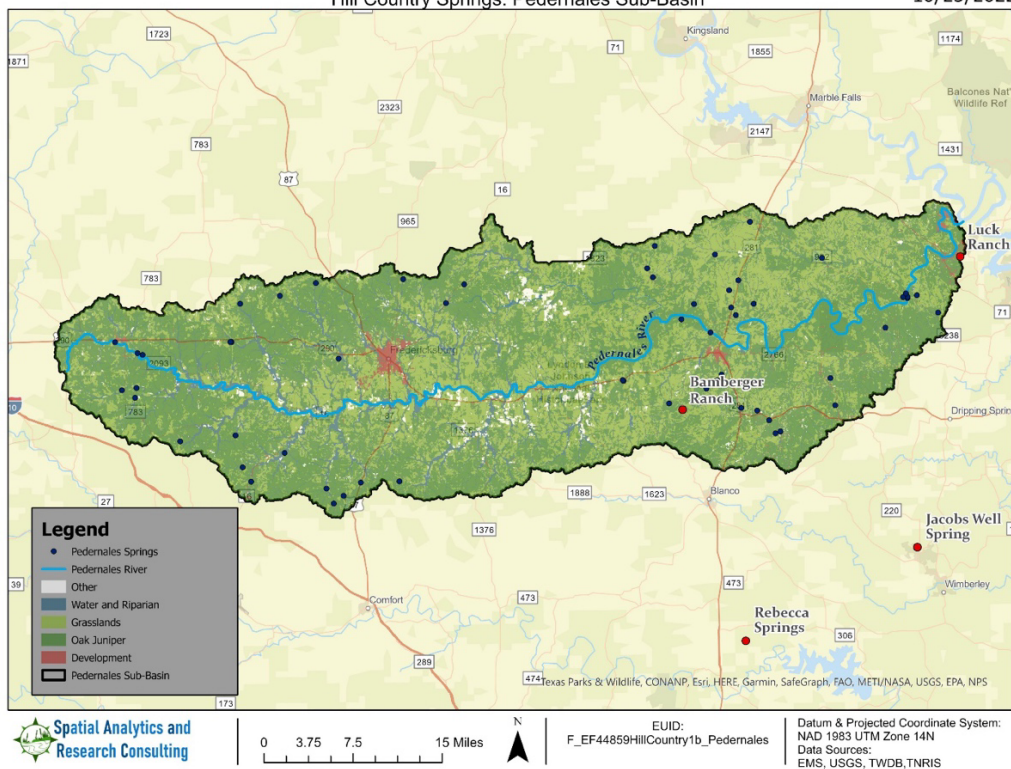


Figure 6. The land use within the Pedernales River watershed. Image by SPAARC.

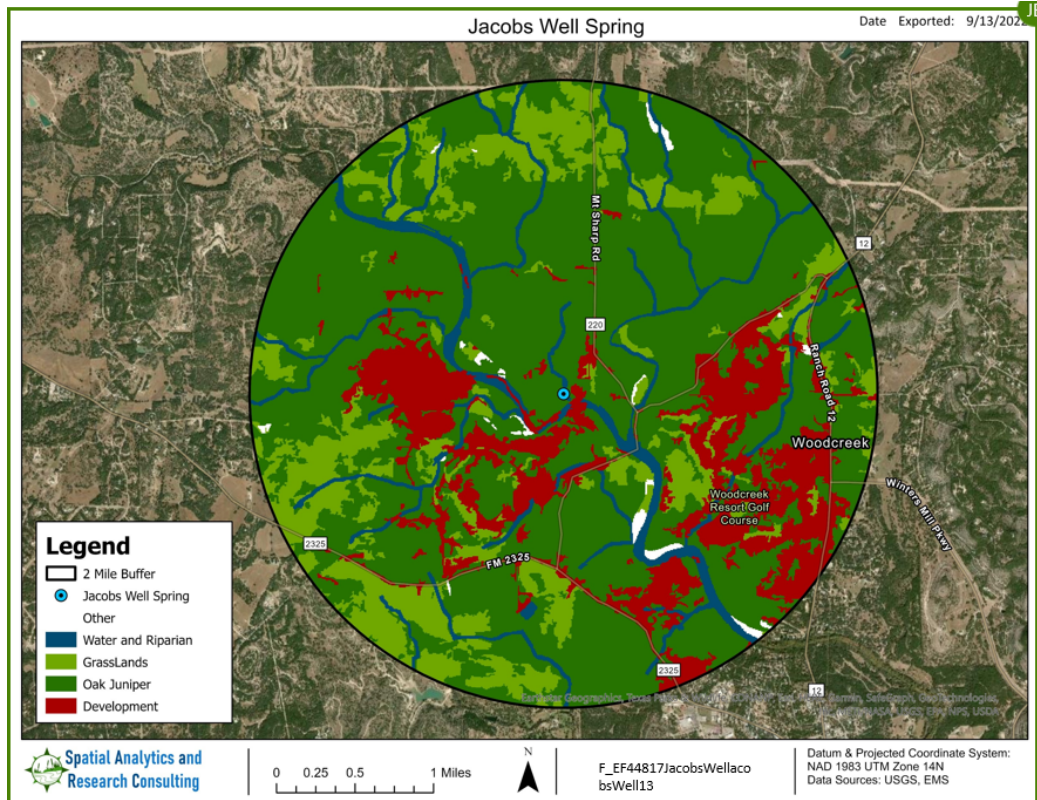


Figure 7. Land use and vegetation surrounding Jacobs Well. Figure by SPAARC.

The bottom line is that this process, instigated by TESPAs, has led to a consensus to pursue and develop a Texas Hill Country carbon credit process. TESPAs will now turn this concept over to other entities to move forward. BCarbon will work with the stakeholders to develop a defensible carbon credit protocol while project developers will come forward and begin to work with various geographic areas and environmental groups to develop the inventory of credits for the burgeoning carbon market in both Austin and San Antonio. Hopefully, carbon buyers will emerge and use this Hill Country carbon project as one of the sources for their carbon credits for the future.

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