

Watershed Health Panel

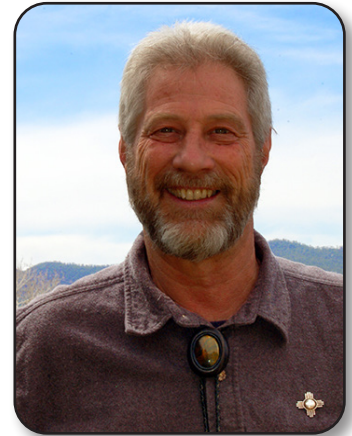
Connecting Communities and Watersheds and Watershed Health

Panel Moderator

Ron Gardiner, Land and Water Clinic

Ron Gardiner has an Honorary Doctorate of Sciences from UNM for his work in the fields of watershed policy, planning and management where he studied in the community planning dept. He has a unique field level view having worked as a wilderness ranger and watershed technician on all the six federal wilderness areas in the Upper Rio Grande Basin. In 1996 he performed all the post-fire BAER monitoring for the Hondo Lama Fire while a watershed technician with the Carson National Forest.

His field experience has served to inform his 15 years of service to the New Mexico Legislature and the water and natural resources committees as legislative bill analyst and the committee's chief of staff. Ron has been involved as a watershed community planner for the Taos County CWPP CORE Team for the past 10 years. Currently is researching and a writing book, "John Wesley Powell's Vision in a 21st Century New Mexico," a Decision Makers Guide to Connecting Communities and Watersheds. Ron lives in Questa, NM.



"In the region of country where land is more abundant than water, the value inheres in the water, not the land."

-- **John Wesley Powell**

"To build a better motor we tap the uttermost powers of the human brain; to build a better countryside we throw dice."

-- **Aldo Leopold**

"No long-term management regime, however technically correct or grounded in the 'best' science, is likely to succeed without public support and understanding."

-- **William du Buyes**

Figure 1. Introductory quotes.

Eating the Elephant in Our Watersheds

Brent Racher, Restoration Solutions, LLC

Brent Racher is a manager or partner for two natural resource management companies in New Mexico, Racher Resource Management and Restoration Solutions; and two woody biomass supply/utilization/development companies, Western Biomass and Southwestern Biomass. After receiving his BS from New Mexico State University in range science, he completed an MS and PhD specializing in range ecology, fire ecology/behavior, and range improvements from Texas Tech University.



Brent's knowledge and experience in fire behavior, fire ecology, and the land managers' need for expertise in prescribed burning prompted him to start Racher Resource Management, LLC. In this endeavor, he has provided private and government entities with expert fire management for planning and operations, much of the time as a turn-key service. Once in private industry, he also realized that vegetation and habitat management in rangelands, forests, and riparian ecosystems largely lacked the capitalized resources that could obtain a set of objectives and implement them. So, he helped form Restoration Solutions, LLC to bring a combination of the most progressive mechanical and chemical vegetative manipulations to the land managers in need of that expertise. Currently, Brent is collaborating to expand renewable energy resources in the West through the utilization of ecologically unbalanced biomass in forests, woodlands, and non-native phreatophyte communities. He is currently serving as the President of the New Mexico Forest Industry Association.

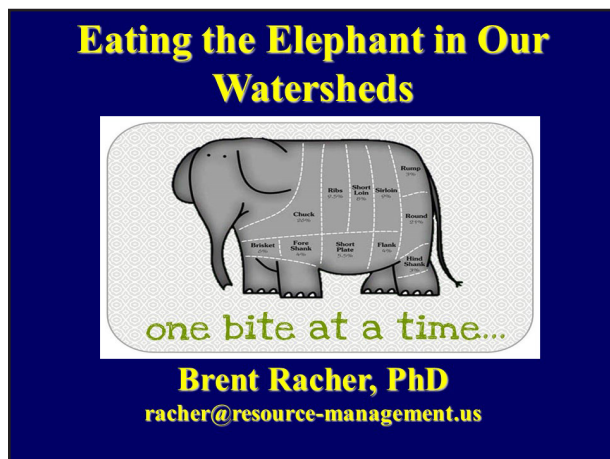




Figure 1. Introduction.



Figure 2. Evidence to act.

RIO GRANDE
WATER FUND
A Wildfire and Water Source
Protection Project

**Forest Treatments Can Increase
Snowpack and Water Yield**

- **Thinning can reduce snow sublimation by up to 50% (Veatch et al. 2009)**
- **Winter sublimation in burned areas reduces snowpack by 50% (Harpold et al. 2013)**




Figure 3. Forest management practices can impact snowpack yield.

The Elephant...

	Total Acres	Treating 40% (Finney et al.)	20-yr Goal = 2% per year	Cost
Frequent Fire Forested Watersheds	6.9 Million	2.7 Million	135,000	\$95 Million
All Watersheds – Top to Bottom	25 Million	10 Million	500,000	

Figure 4. The elephant metaphor.

We are already getting some done...

- **2014**
- Estimate 33,000 acres restored in frequent-fire forests
- \$30+ Million spent
- Much more in the entire watershed

- **2015**
- **MORE** is getting done (just not sure how much, yet)

Figure 5. Current progress on forest management.

How do we eat more...

- **Prioritize...to describe the path forward**
- **Increase resources allocated**
- **Coordination**
- **All Hands on Deck**

Ranking Criteria

1. Wildfire Risk
2. Water Quality/Supply
3. Economic Opportunity
4. Forest Health
5. Fish & Wildlife



Figure 6. Possible management solutions.

Keep eating... Long-term

- **Monitoring**
 - Scientific needs
- **Planning**
- **Action**
 - Consistent implementation funding
 - Adaptive



Figure 7. Possible long-term management solutions.



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Which is our future?



Figure 8. Forest variations for the future.

Can Science Help Us Be Creative and Innovative in Managing Our Watersheds?

Susan Rich, New Mexico Energy, Minerals and Natural Resources Department

Susan Rich is the Forest and Watershed Health Coordinator for New Mexico State Forestry. Her career spans three decades working in natural resource management for local governments and conservation districts, as well as for the state. In her current position, Susan works closely with the other Forestry Division offices and with partner agencies and organizations to implement New Mexico's Forest and Watershed Health Plan and State Forest Action Plan. Those plans identify key issues facing landowners and natural resource managers in New Mexico, lay out actions for restoring ecosystems across jurisdictional boundaries, and provide science-based models for designing and prioritizing work. Susan is involved in activities ranging from public outreach and policy issues to coordinating landscape-scale projects at the executive level through the state Watershed Management Coordinating Group.



Figure 1. Introduction.

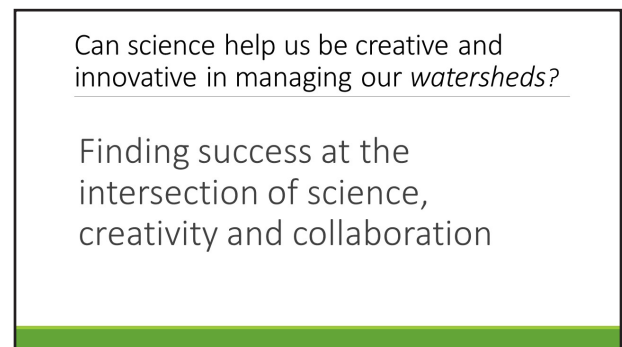


Figure 2. Working and finding success by using a combination of science, creativity, and collaboration.

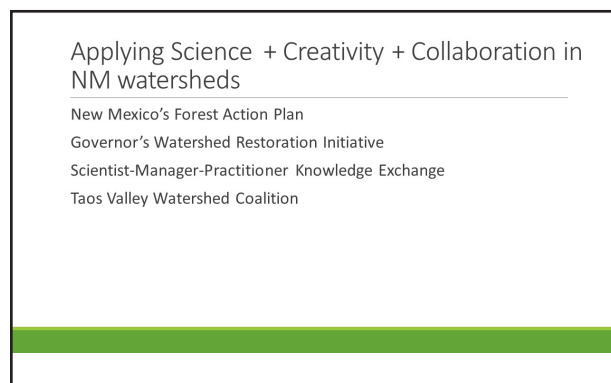


Figure 3. Applying science, creativity, and collaboration in NM watersheds.

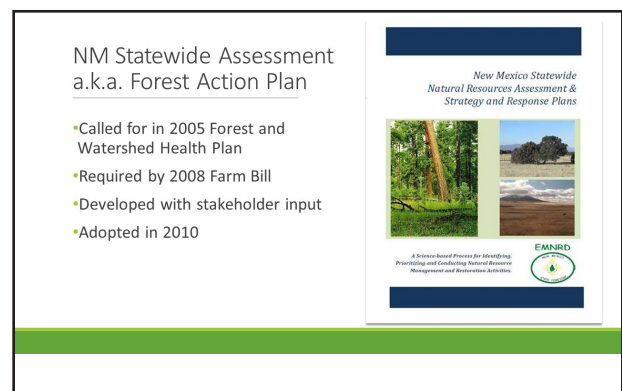


Figure 4. NM Statewide Assessment. The Forestry Division's Statewide Natural Resource Assessment was a true collaborative effort. It was developed in close partnership with The Nature Conservancy and Forest Guild. We also relied heavily on input from nearly 100 stakeholders.

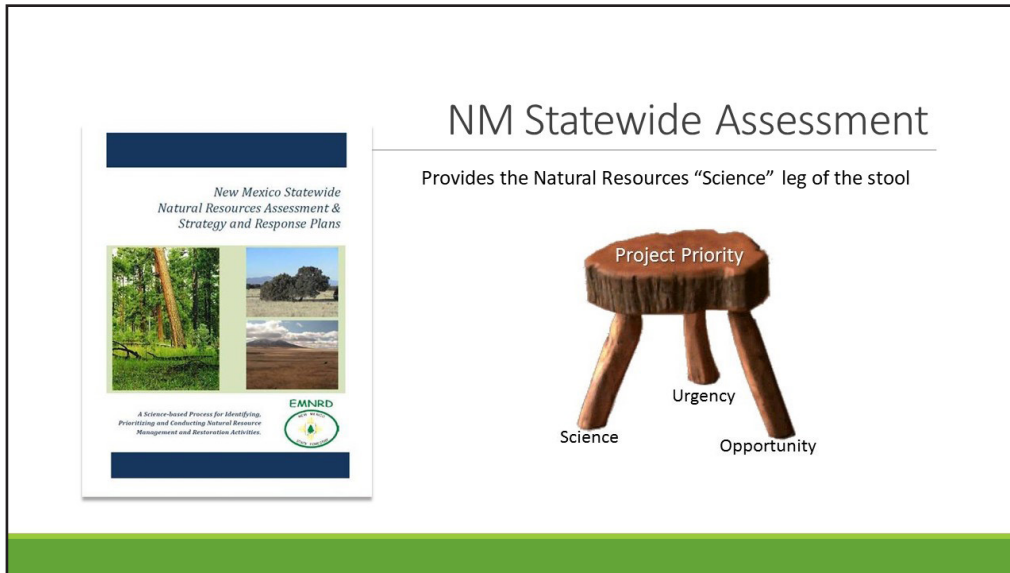


Figure 5. NM Statewide Assessment. Three-legged stool represents the three factors for decision-making and priority-setting: Opportunity, Urgency, and the Science that informs us about natural resource conditions and needs. The state's Forest Action Plan (FAP) provides the science for choosing what work we do.

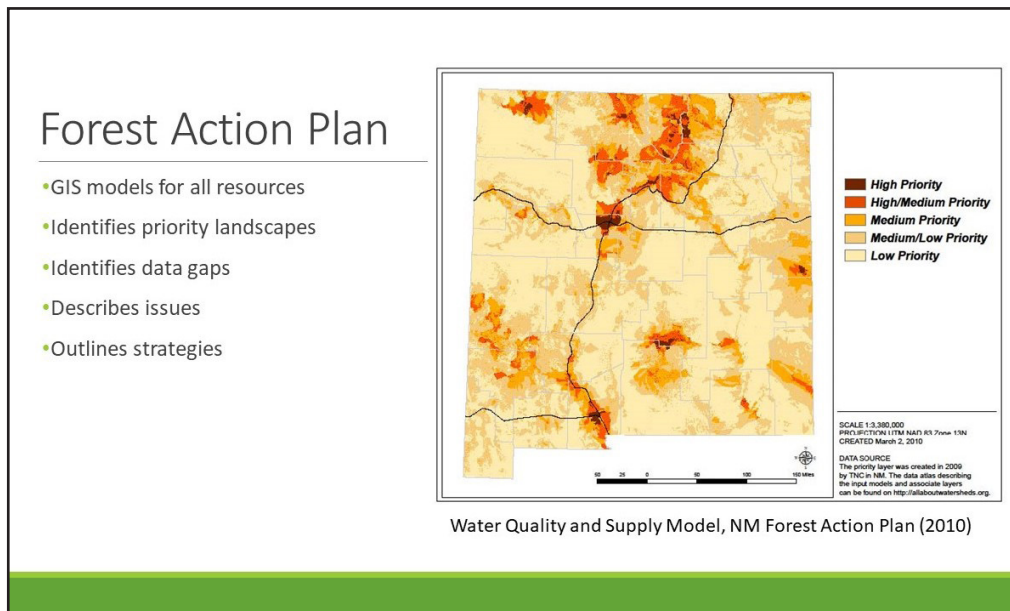


Figure 6. Forest Action Plan. GIS models are the heart of the forest action plan. They're used for priority-setting: internal, external, multi-jurisdictional projects. The FAP also identified data gaps. Since 2010, some of the data gaps have been filled (FIA), others are in the process of being filled. That leads to updated and improved models, and better decision-making. Another important result is that having the science elicits better understanding and more public support for actions. It also helps to bring in money because science-backed priorities and strategies are a plus in grant writing.

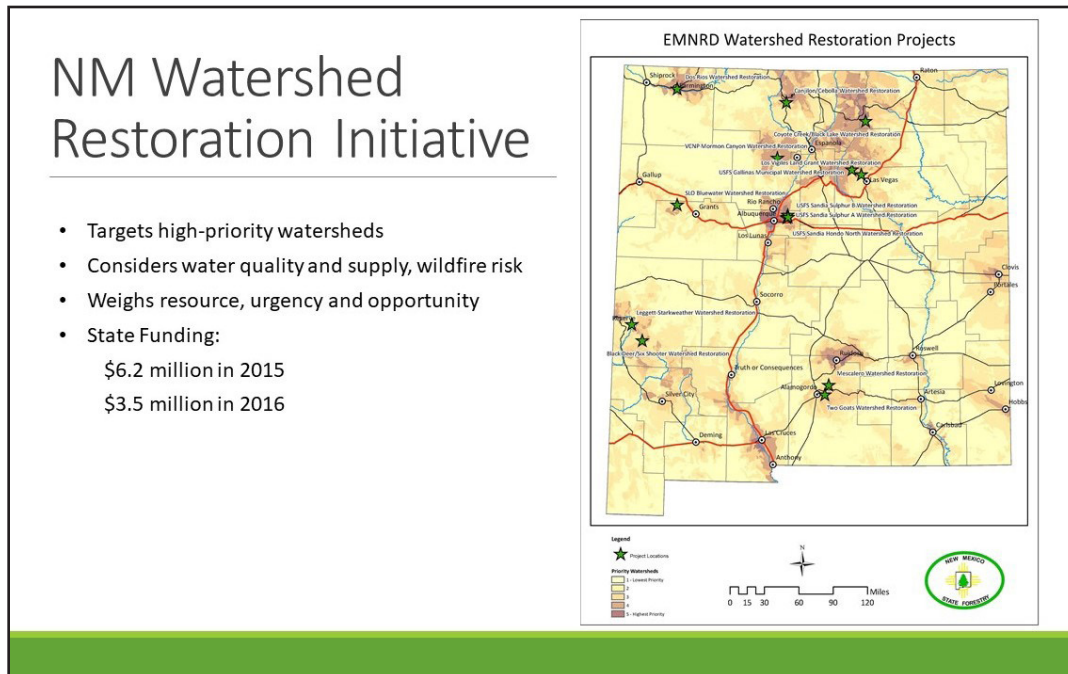


Figure 7. NM Watershed Restoration Initiative. One success that grew out of FAP is Governor Martinez’ Watershed Restoration Program. It pays for projects on public lands with a watershed benefit downstream. Fifteen projects were funded in 2015 are now underway. Having that funding available really kicked into gear our year planning for cross-jurisdictional projects. It also inspired agencies to create innovative partnership agreements. New Mexico’s creativity and success is attracting national attention.

Scientist-Manager-Practitioner Knowledge Exchange

Examples:

- Institutes for knowledge synthesis and transfer (WRRI, FWRI)
- Southwest Fire Science Consortium

- Managers and practitioners identify science needs
- Scientists conduct needed research
- Science provided in clear terms and practical formats

Figure 8. Knowledge exchange between scientist, manager, and practitioner. Institutions like WRRI and the Forest and Watershed Restoration Institute (FWRI) find creative ways to bridge the knowledge gaps by working with everyone: scientists, the public, managers, even politicians. Another example is the Southwest Fire Science Consortium (SWFSC). It’s one of 13 consortia in the national Joint Fire Science Program (JFSP). The whole purpose is to bring science to the people doing the work on the ground, and to find out what managers’ science needs are, so that researchers can answer our real-life questions.



Figure 9. Fires of Change. SWFSC is involved with one great example of a current event combining science, creativity and collaboration called “Fires of Change.” We teamed with the Landscape Conservation Initiative and the Flagstaff Arts Council, brought artists from NM and AZ to a Fire Science Boot Camp. The artists have works showing now in an exhibit in Flagstaff, reaching a whole different audience. One of the artists is from right here in Taos.

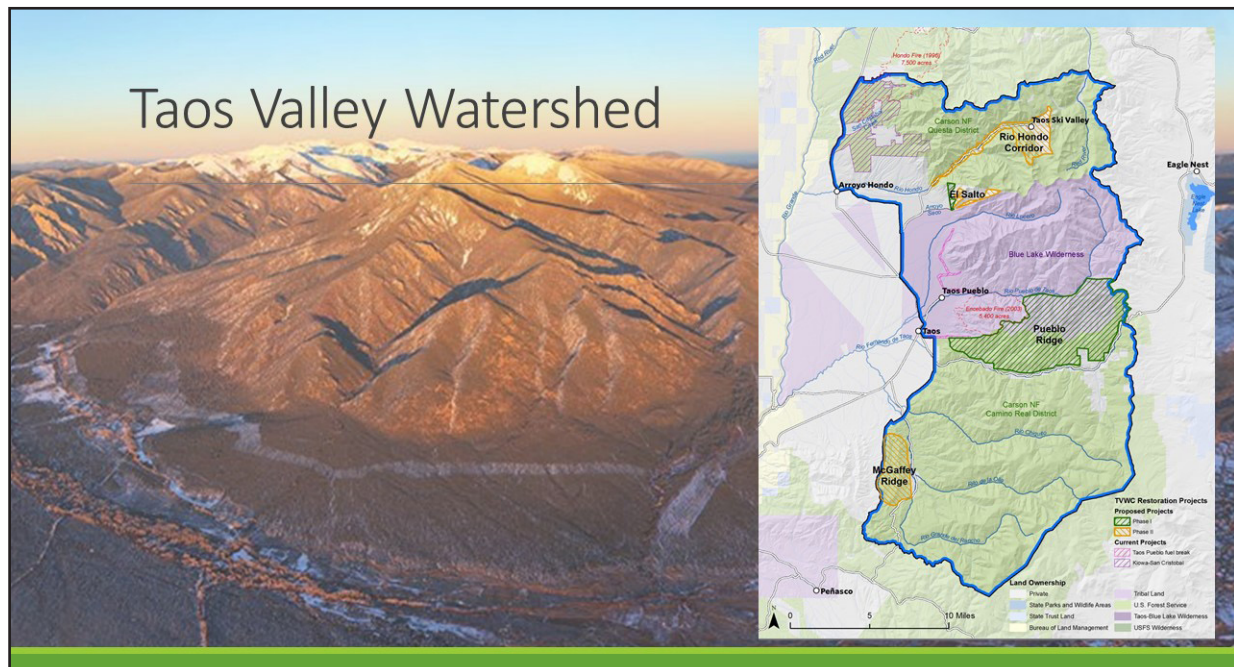


Figure 10. Taos Valley Watershed. The Taos Valley Watershed is a specific example where science + creativity + collaboration is leading to success. Collaboration was there, the shared vision was there, but the steps to get started on the ground were not all that clear. The Rio Grande Water Fund (RGWF) brought in scientists who brought the Coalition the information that they needed. Having the science framework made tough decisions like where to work first and what to do next easier to make. The Taos Valley Watershed Coalition (TVWC) produced a sound, science-backed plan.

The Gritty Interface of Science and Policy – Nonpoint Source Pollution in New Mexico

Abe Franklin, New Mexico Environment Department

Abe Franklin works for the Surface Water Quality Bureau of the New Mexico Environment Department, where he manages the Watershed Protection Section, a technical team with offices in Santa Fe, Las Cruces, and Silver City. He and his section implement parts of New Mexico's Nonpoint Source Management Program and Wetlands Program, working towards the protection and improvement of New Mexico's aquatic resources using the framework of the Clean Water Act and state initiatives such as the River Stewardship Program.

Abe's previous work experiences include project development and management within the Watershed Protection Section, remote sensing research and development for a small engineering company, marine fisheries observation on Alaskan factory trawlers, bicycle mechanics, and lab assistance in environmental microbiology and forestry. His degrees are in environmental biology from New Mexico Tech (B.S.) and natural resources management from the University of Nevada in Reno (M.S.), where he developed riparian vegetation mapping methods using high-resolution remote sensing.



The Gritty Interface of Science and Policy – Nonpoint Source Pollution in New Mexico

New Mexico Environment Department
Surface Water Quality Bureau
Abe Franklin, Program Manager



Figure 1. Introduction.

- Clean Water Act (CWA) Sec. 303(d) - “Each State shall identify those waters within its boundaries for which the effluent limitations ... are not stringent enough to implement any water quality standard applicable to such waters.”
- CWA Sec. 319(b) – “The Governor of each State ... shall ... prepare and submit ... a management program ... for controlling pollution added from nonpoint sources.”
- NM Water Quality Act 74-6-4 NMSA – The Water Quality Control Commission shall:
 - “Adopt water quality standards for surface and ground waters...based on credible scientific data”
 - “Adopt a comprehensive water quality management program”
 - “Assign responsibility for administering its regulations to constituent agencies”

Figure 2. Legal authority.

- Clean Water Act (CWA) Sec. 303(d) – NMED collects water quality data and assesses standards attainment, on a statewide basis. 8-year rotating surveys. NMED develops total maximum daily loads (TMDLs) to characterize and allocate loading. WQCC and EPA review and approve TMDLs.
- A stream’s impairment status may change without demonstrating that water quality changed.
- CWA Sec. 319(b) and 319(h) – NMED targets streams that don’t meet standards (and have TMDLs developed) for further planning and implementation to meet standards.
- EPA asks states to report nonpoint source “Success Stories” tied to EPA strategic planning and performance measures.

Figure 3. In practice.

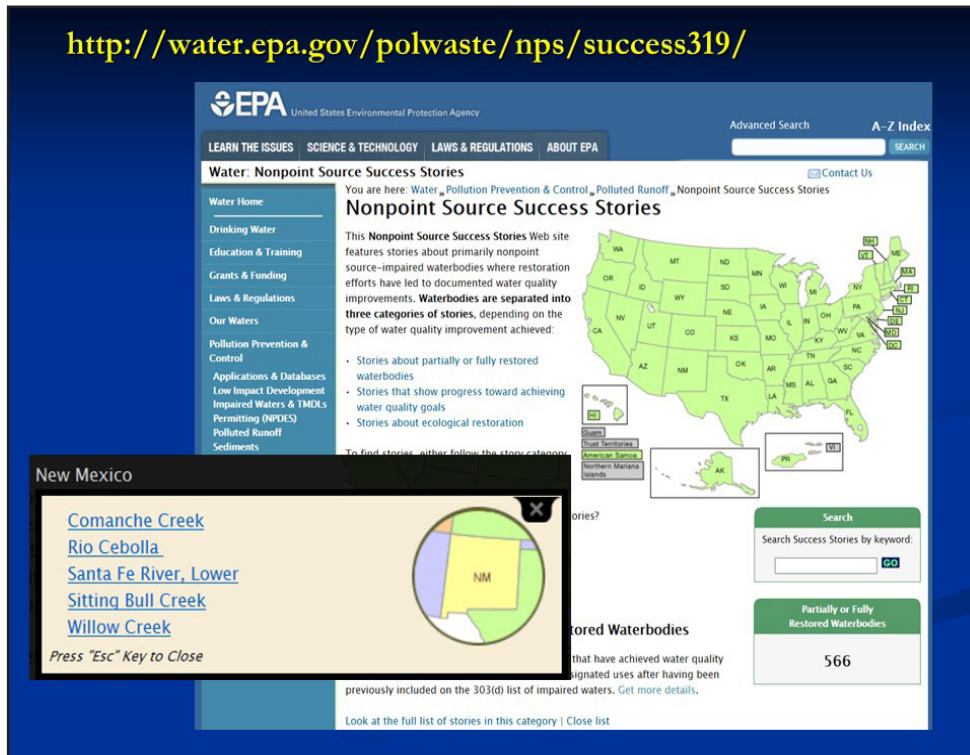


Figure 4. Nonpoint source success stories on EPA's website.

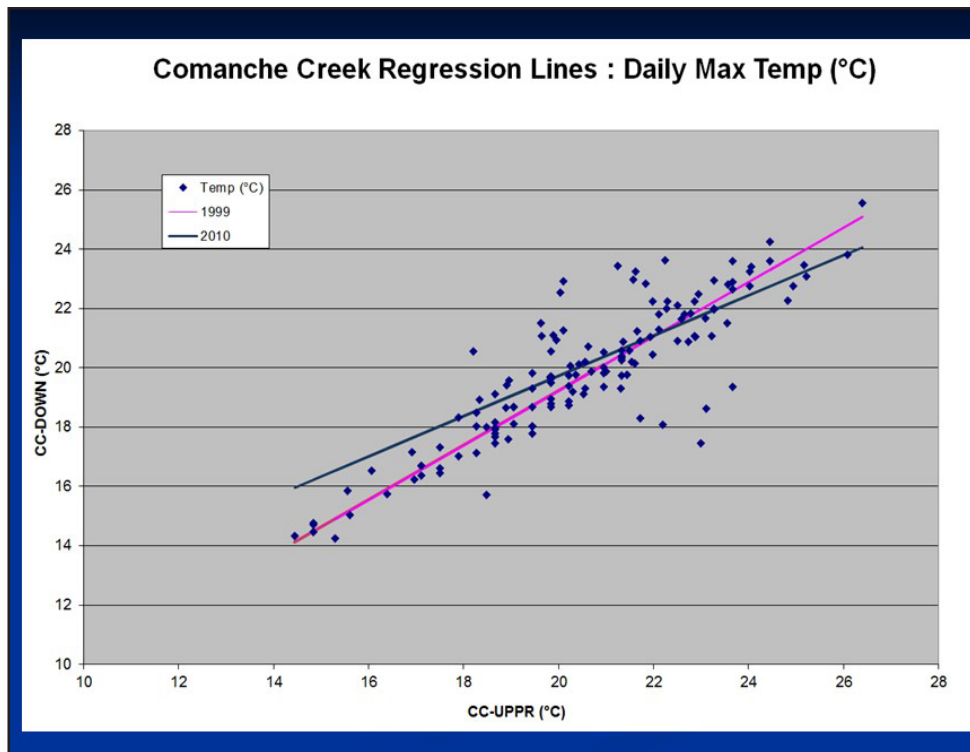


Figure 5. Graph showing Comanche Creek regression lines: daily max temp (°C).

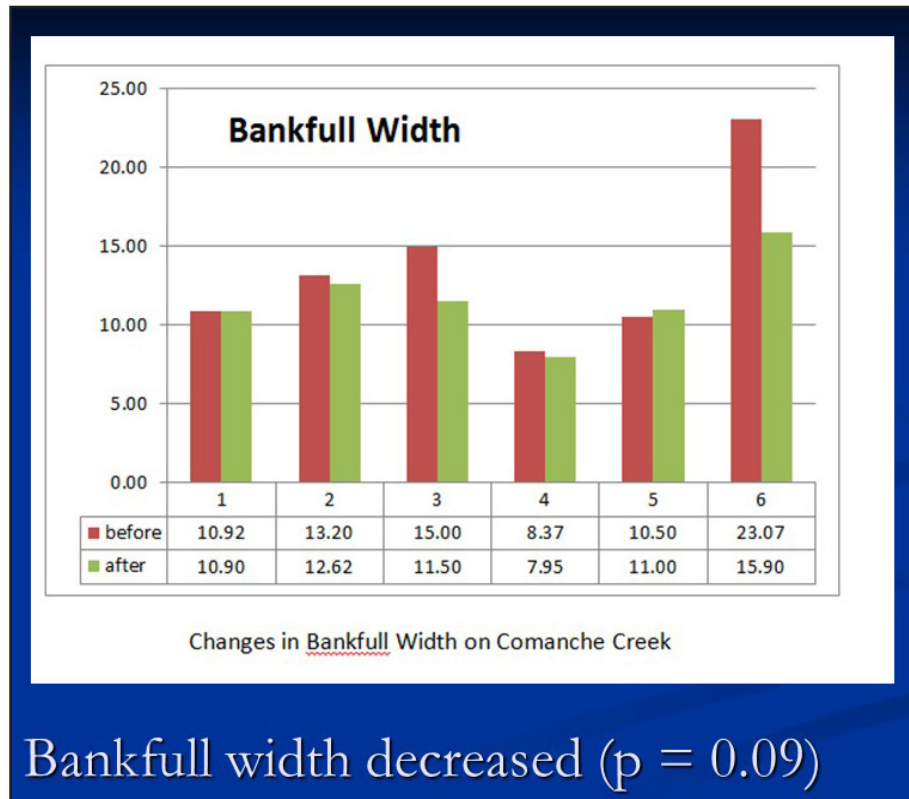


Figure 6. Graph showing bankfull width on Comanche Creek.

From the 2008-2010 303(d)/305(b) Integrated Report Record of Decision:

2008 Action: This AU was surveyed during 2006 to establish baseline conditions as soon as possible after ONRW status was established for surface waters in the Valle Vidal. 2006 thermograph data confirmed the existing [temperature] listing. There were only 3% fines measured at station Comanche Creek above Costilla Creek, and the M-SCI score for benthic macroinvertebrates was 59. Therefore, according to the 2008 assessment protocol for sedimentation, this AU was determined to be full support for sedimentation/siltation.

Figure 7. Comanche Creek Delisting.

Setting Restoration Priorities on a Watershed Scale

Gus Holm, Cimarron Watershed Alliance and Vermejo Park Ranch

Gus Holm is the General Manager at Vermejo Park Ranch and the President of the Cimarron Watershed Alliance. Vermejo Park Ranch a 585,000-acre Ranch in northeast New Mexico encompassing six ecoregions from short-grass prairie to alpine tundra owned by Turner Enterprises Inc. The operation encompasses fishing, hunting, nature tourism, a sustainable forestry operation, bison production, coal bed natural gas development, and endangered species restoration. Gus is responsible for managing this diverse operation and supporting the TEI mission “To manage Turner Lands in an economically sustainable and ecologically sensitive manner while promoting the conservation of native species.”



The Cimarron Watershed Alliance (CWA) is a non-profit organization dedicated to the health of our local watershed along the Cimarron River. The Cimarron Watershed Alliance (CWA) was formed in 2001 to provide local input on water quality issues in the Cimarron Watershed in northeastern New Mexico. Most recently the CWA has completed a Watershed Based Plan that incorporates 671,144 acres and 28 sixth level HUC’s, is actively working on Stream Restoration on Ponil Creek under an EPA 319 Grant, and has just started work on a Wetlands Action Plan in the Moreno Valley Headwaters of the Cimarron River.

Gus graduated from Fort Lewis College with a BS in Geology in 1991. He began working at Vermejo Park Ranch in 2001 in the Natural Resources Division, which focused on managing its diverse ecosystem, and was promoted to General Manager in 2014. Gus has been active in stream restoration since 2002 when he first started attending Quivira stream workshops with Bill Zeedyk. In 2009 he began the Dave Rosgen PhD series for stream restoration and completed the classes in 2012 with River Restoration and Natural Channel Design. Currently Gus is involved with riparian restoration projects on the Vermejo River and Ponil Creek.



Figure 1. Introduction.

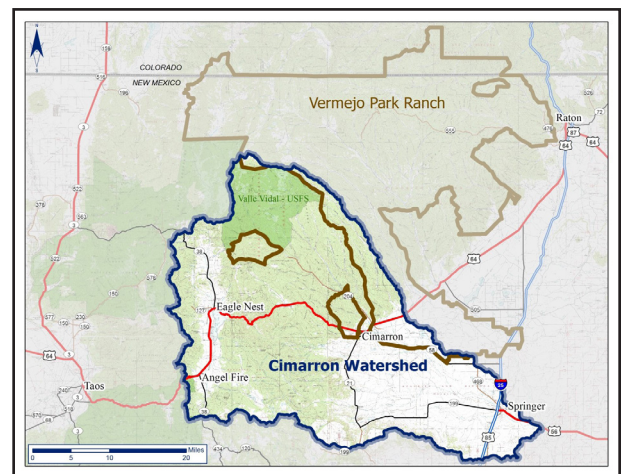


Figure 2. Cimarron Watershed.

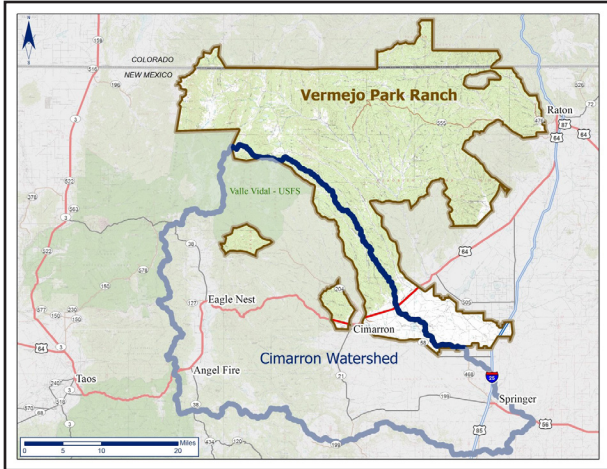


Figure 3. Vermejo Park Ranch area map.

- Watershed Based Plan completed in December 2012, prepared by Joanne Hilton, P.G. in cooperation with the CWA and the Quivira Coalition
- Encompasses 671,144 acres and 28 - 6 Level HUCs
- Follow up to the CWA's Watershed Restoration Action Strategy (WRAS) from 2003
- Incorporates input from a wide based stakeholder group including ranchers, local businesses, community members, and representatives from County, State and Federal agencies
- Primary focus of the WBP is to address the root causes of impairment that affect the designated uses of water within the watershed

Figure 4. Cimarron Watershed Alliance Watershed Based Plan (WBP).

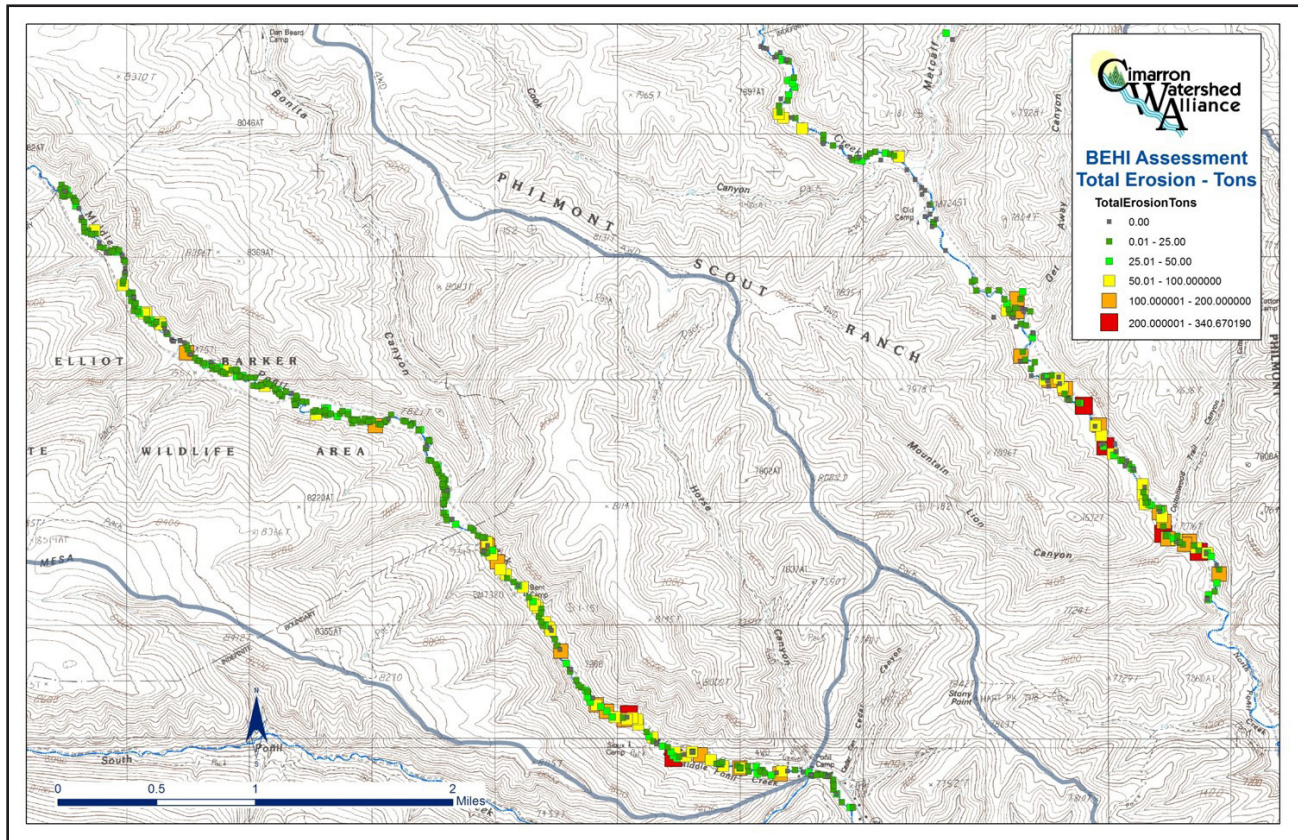


Figure 5. Watershed assessment of river stability and sediment supply (WARSSS).

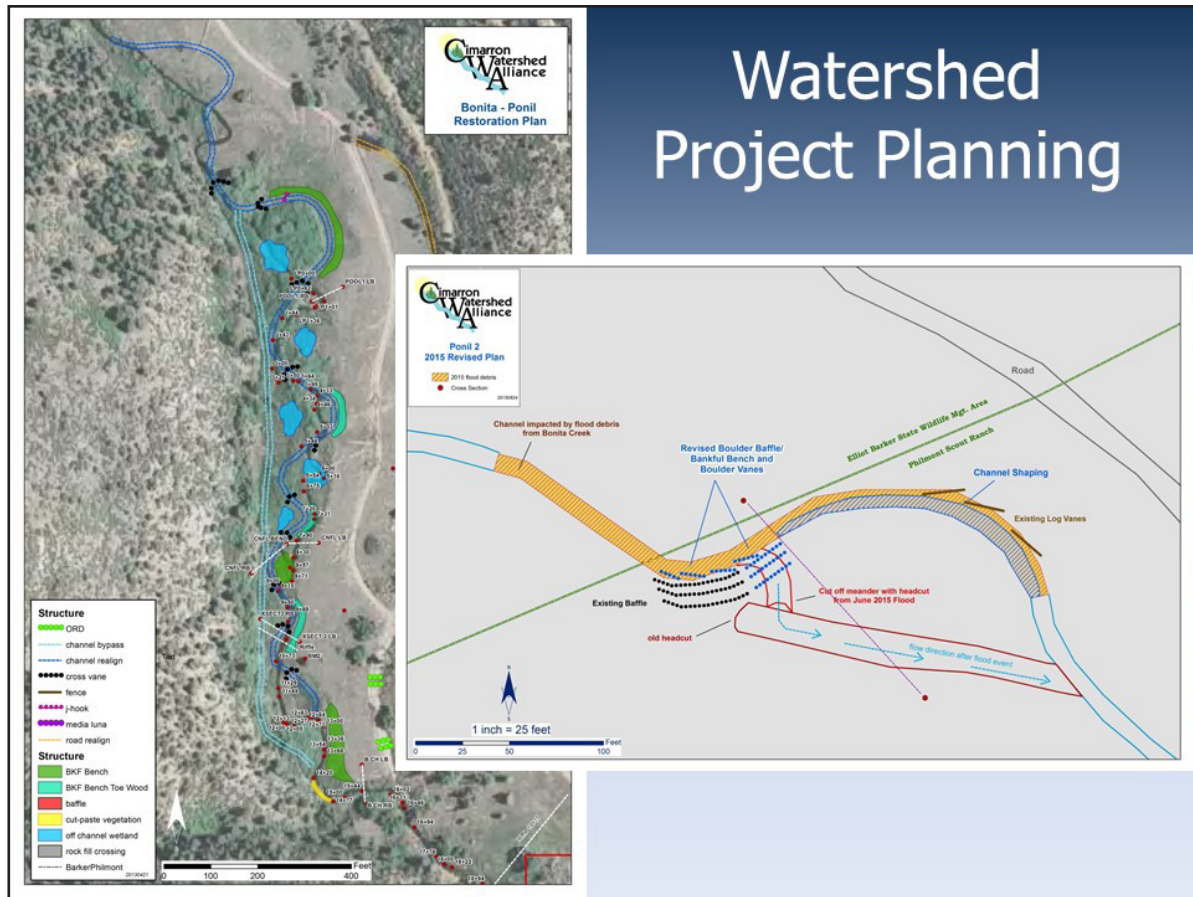


Figure 6. Watershed project planning.

Vermejo Park Ranch Riparian Restoration Initiative

- Developed by VPR in 2009 with the goal of restoring impacted riparian systems.
- Priorities Established
 - Focus on cold water fisheries to support native species (i.e. Rio Grande cutthroat trout)
 - Protect existing wetlands
 - Restore riparian biodiversity
 - Address riparian impacts from roads

Figure 7. Vermejo Park Ranch Riparian Restoration Initiative.

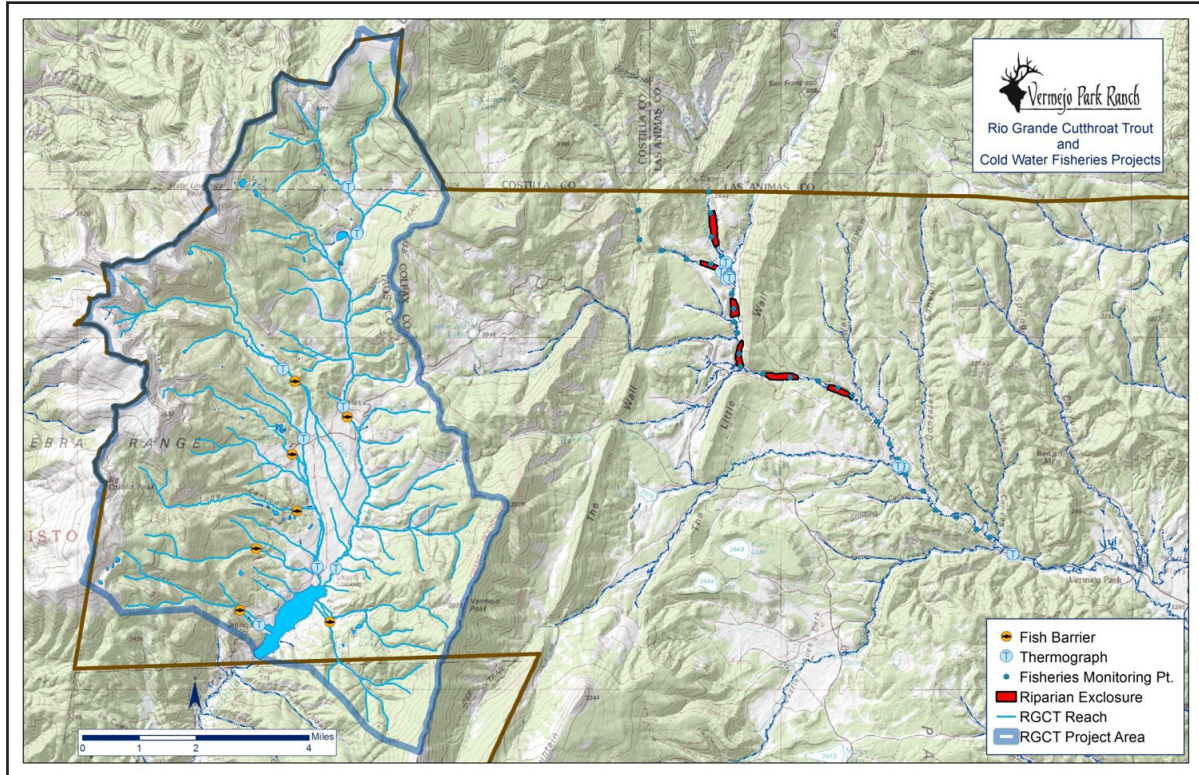


Figure 8. Vermejo Park Ranch coldwater fisheries.

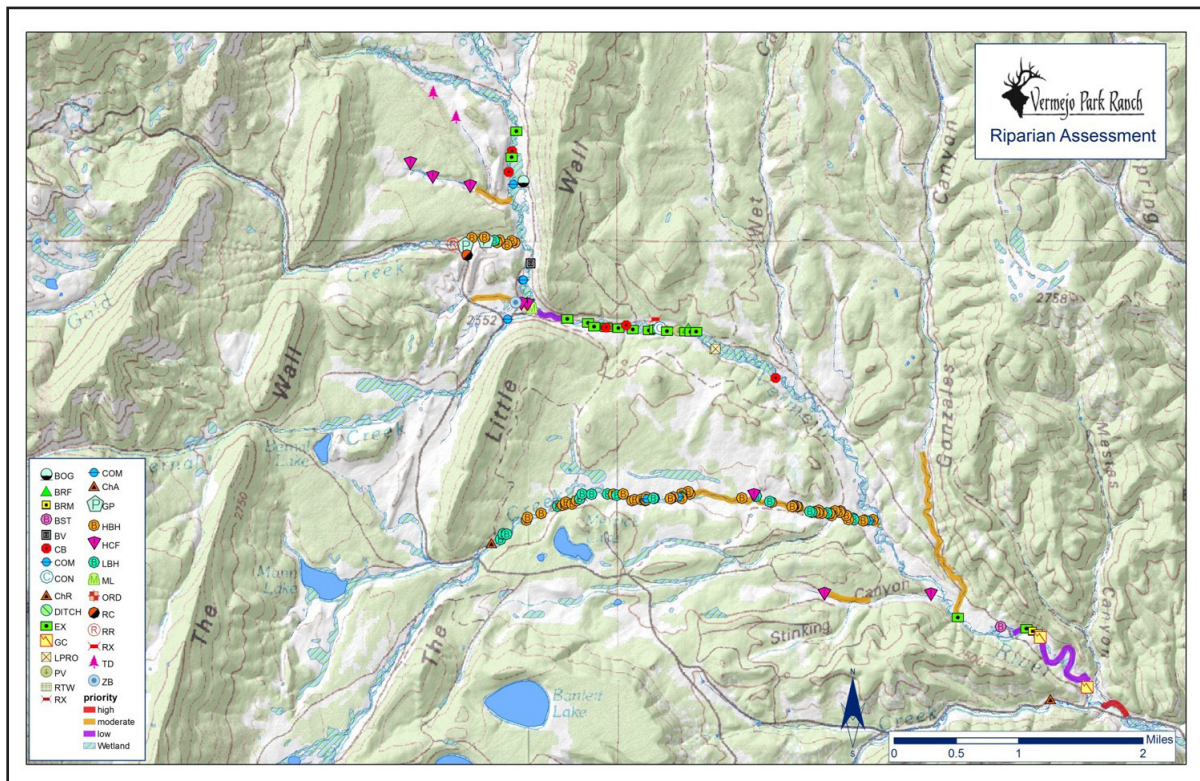


Figure 9. Riparian survey and wetlands inventory.