

EXHIBIT D - MANAGEMENT PLAN

**Sweetwater River Conservancy
Greater Sage-Grouse Habitat Bank, LLC
Management Plan**



Sweetwater River Conservancy Greater Sage-Grouse Habitat Bank, LLC
36695 West Highway 220
Alcova, Wyoming 82620



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INTRODUCTION

The Sweetwater River Conservancy Greater Sage-Grouse Habitat Bank, LLC (Sweetwater River Conservancy) is proposing a large-scale habitat conservation bank on approximately 50,576 deeded ac. of prime habitat for the “Covered Species,” greater sage-grouse (*Centrocercus urophasianus*), within the Pathfinder Ranch¹ in central Wyoming. Pathfinder Ranch has associated grazing leases and permits on approximately 181,000 ac. of state and federal land. The Sweetwater River Conservancy Conservation Bank (SRCCB) currently supports a healthy, intact greater sage-grouse (hereafter sage-grouse) population as evidenced by the large number of active leks on and near the SRCCB. Most of the SRCCB is classified as core sage-grouse habitat by the State of Wyoming.

In addition to sage-grouse, a diverse and abundant assemblage of wildlife has been documented on the SRCCB, attesting to the area’s superb value as wildlife habitat. Crucial winter range for elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*) occur within the SRCCB. Fifty-three species of songbirds have been documented to breed on the SRCCB, 7 species of raptors (including bald (*Haliaeetus leucocephalus*) and golden (*Aquila chrysaetos*) eagles) nest there, and 16 species of raptors use the SRCCB at some point during the year. The SRCCB also provides habitat for 34 species of waterfowl, waterbirds, and shorebirds. Portions of some streams are occupied by beaver (*Castor canadensis*), and the presence of large numbers of rabbits and other small mammals support a diverse assemblage of predators, including coyote (*Canis latrans*), red fox (*Vulpes vulpes*), swift fox (*Vulpes velox*), mountain lion (*Puma concolor*), bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), American badger (*Taxidea taxus*), and weasel (*Mustela* spp.). Several thousand acres of prairie dog (*Cynomys* spp.) towns have been mapped within the SRCCB, providing important habitat for many declining species of grassland and shrub steppe wildlife. Bats have been documented across the SRCCB using acoustic survey techniques, including several areas where they were very abundant. Reptiles and amphibians are an important component of the wildlife community, with numerous species documented on the SRCCB.

¹ The “Pathfinder Ranch” consists of lands owned separately by the Pathfinder Bummer Ranch, LLC, Pathfinder Cardwell Ranch, LLC, Pathfinder Cardwell Access Ranch, LLC, Pathfinder Miracle Mile Ranch, LLC, Pathfinder Pathfinder Ranch, LLC, Pathfinder Perkins Ranch, LLC and Pathfinder Two Iron Ranch, LLC, (collectively referred to as the property owners) in Natrona and Carbon Counties, Wyoming, approximately 50 miles west of the City of Casper, Wyoming, and south of Wyoming State Highway 220 (property). The property is identified in **Exhibit A** and described in **Exhibit B** of the CBA. The property owners, by affixing their signature to the CBA, authorize Sweetwater River Conservancy to enter into and implement the CBA and this management plan on the property and serve, for purposes of the CBA, as the sponsor of the SRCCB.

This management plan was prepared as part of the Sweetwater River Conservancy Greater Sage-Grouse Habitat Bank, LLC Conservation Bank Agreement (CBA) between Sweetwater River Conservancy and the U.S. Fish and Wildlife Service (USFWS). According to USFWS habitat conservation bank guidance (U.S. Fish and Wildlife Service 2003), the ultimate goal for any management plan is to maintain habitat for continued use by the species conserved on-site (in this case the sage-grouse). The amount of credits earned by a bank and available for sale are implicitly contingent on use of appropriate management to safeguard, in perpetuity, the species or habitat conservation values upon which credits are based (U.S. Fish and Wildlife Service 2003). Management plans are also required to assist with determining the appropriate amount of funding necessary to manage the property. Management plans should include activities necessary to implement biological goals and objectives of the SRCCB. The purpose of this management plan is to identify habitat or other management activities, permitted activities, and monitoring and reporting requirements associated with the management objectives.

Purpose

The SRCCB is being established to serve as a landscape-level conservation bank to compensate for impacts to, and conserve and protect, the habitat of the Covered Species. The Sweetwater River Conservancy or its successors and assigns will preserve, restore, create, and/or enhance habitat for the Covered Species and then manage and maintain that habitat in accordance with the CBA and this management plan.

The Sweetwater River Conservancy and USFWS (collectively referred to as the Parties to the CBA) and property owners mutually agree the Sweetwater River Conservancy and its successors and assigns are permitted to manage the SRCCB to preserve and/or enhance the habitat of elk, mule deer, pronghorn, bald and golden eagles, other raptor species, migratory birds, and other wildlife and promote improved water quality and quantity within the SRCCB, while irrigating crop and range lands in a manner that permits the property owners to retain the water rights that have been allocated to those lands pursuant to Wyoming law and regulation.

Further, the Parties and property owners mutually agree that the Sweetwater River Conservancy and its successors and assigns are permitted to manage the SRCCB to maintain open space, enhance recreational opportunities, improve range health through livestock grazing, conduct agricultural activities and engage in other activities that are not inconsistent with the CBA.

At the discretion of the Sweetwater River Conservancy, habitat enhancements to generate ecological “lift” that accrue additional credits may be pursued. Lift is defined as, “sustained improvement in the habitat of the Covered Species without reliance on continued application of mechanical means to maintain such improvement.” The Sweetwater River

Conservancy anticipates this initial CBA and management plan, which focuses on the conservation of the existing sage grouse habitat, serving as the baseline for efforts to significantly improve the sage grouse habitat in the future (creation of “lift”). The Sweetwater River Conservancy understands such efforts to create and monitor for lift and capture additional credits would require additional approvals pursuant to the terms of CBA and amendments to the management plan. Neither the CBA nor the management plan request any prior approvals from the Conservation Bank Review Team (CBRT) for efforts related to “habitat lift.”

With some modification the “habitat” covered by the CBA and management plan lend themselves to conservation efforts related to a wide variety of species including elk, mule deer, pronghorn, bald and golden eagles, other raptor species, migrating birds and numerous other wildlife species. Again, such efforts are beyond the scope of this management plan and CBA. No authorization in these areas is currently requested from the CBRT.

The Parties are establishing this large-scale conservation bank as it constitutes a significant benefit to sage-grouse, and it may help preclude the need to list the bird as threatened or endangered under the Endangered Species Act. If, however, sage-grouse are ultimately listed as threatened or endangered, the SRCCB will greatly assist in recovery of the species.

Biological Goals and Objectives

The SRCCB is designed to maintain existing habitats necessary to meet all lifecycle needs of the sage-grouse population on Pathfinder Ranch properties. Sweetwater River Conservancy will also evaluate the potential to enhance lower-quality sage-grouse habitat in the future to generate additional credits where feasible within the SRCCB. To ensure lifecycle needs of sage-grouse are met, the SRCCB has been developed using ‘functional units’, defined as contiguous blocks of land that provide habitat for lekking, breeding, late-summer brood-rearing, and winter use. Functional units were defined by combining habitat mapping data and sage-grouse telemetry locations in a comprehensive Resource Selection Function (RSF) analysis (see Exhibit E to Conservation Bank Agreement - Credit Valuation). Minimum quantities of seasonal habitat were determined based on the landscape configuration near known leks and habitat use data from radio-marked birds.

The SRCCB will ensure long-term protection of habitat for a sage-grouse population. Conservation of sage-grouse is best served by maintaining well distributed, secure populations across the species’ continental range. The purpose of the SRCCB is not to simply provide acre-for-acre mitigation for local projects, but to conserve the species at a landscape scale. Therefore, it is appropriate that the service area for SRCCB also be large and include all sage-grouse range within Wyoming and other habitat in the current range of the species (see Exhibits H-1 and H-2 to Conservation Bank Agreement – Service Area).

The specific objective of the SRCCB is to preserve and maintain existing habitats for sage-grouse in perpetuity, by minimizing direct and indirect threats to the species. This guiding objective is consistent with preserving and maintaining:

1. Habitats for elk, mule deer, pronghorn, bald and golden eagles, other raptor species, migratory birds, and all other wildlife.
2. Water quality and quantity while irrigating crop and range lands in a manner that permits the property owners to retain water rights allocated to those lands pursuant to Wyoming law and regulations; and
3. Maintaining open space, enhancing recreational opportunities, and maintaining range health through livestock grazing, agricultural activities, and other uses consistent with conservation values within the affected area

PROJECT AREA

Geographical Setting and Land Ownership

Pathfinder Ranch is located in south-central Wyoming approximately 50 mi. southwest of the City of Casper within southern Natrona County and northern Carbon County (Figure 1). Pathfinder Ranch is bounded by Highway 220 to the north and northwest, the Seminoe/Ferris Mountain Ranges to the south and southwest, and Highway 77 to the east (Figure 1). The North Platte River enters Pathfinder Ranch in the south and flows to Pathfinder Reservoir. The Sweetwater River enters Pathfinder Ranch in the north and flows to Pathfinder Reservoir. The area evaluated for developing sage-grouse habitat credits within the SRCCB includes approximately 183,308 ac., referred to as the “analysis area” (see map in Exhibit E to CBA - Credit Valuation). Data on vegetation and sage-grouse use within the study area were used to map sage-grouse habitat quality and determine the number of sage-grouse habitat credits within the SRCCB using the Resource Selection Function (RSF) analysis described in Exhibit E to CBA - Credit Valuation.

Land ownership within Pathfinder Ranch includes 50,576 ac. owned by the property owners, 32,297 ac. of Wyoming State Trust Land, and 142,951 ac. of federal land (Bureau of Land Management (BLM) - 122,980.60 ac., USFWS - 9,124.08 ac., and Bureau of Reclamation - 10,845 ac., Table 1, Figure 2). Deeded acres include lands on Pathfinder Ranch, Cardwell Ranch, Miracle Mile Ranch, Perkins Parcel, East Cardwell, Bummer, and Two Iron Ranch, although this management plan refers to all properties as the Pathfinder Ranch.

Table 1. Surface ownership within the Pathfinder Ranch portion of the Sweetwater River Conservancy Habitat Conservation Bank.

Surface Ownership	Acres
Sweetwater River Conservancy Deeded	50,575.72
State of Wyoming	32,297.10
BLM	122,980.60
USFWS	9,124.08
Bureau of Reclamation	10,845.63
Total	225,823.13

The landscape is comprised of sagebrush valleys surrounded by mountain ranges. Most of the project area drains into the North Platte River and Pathfinder Reservoir (Figure 1) lying within the Wyoming Basin Level III Eco-region. The climate is semi-arid, receiving an average of approximately 9.9 in. (25 cm.) annual precipitation. Elevations range from 5,476-10,030 ft. (1,669-3,057 m.).

Adjacent Land Uses

Pathfinder Ranch lies within a relatively undeveloped, rural area. Dominant land uses include livestock grazing and recreation. Lands surrounding the ranch include a mix of deeded, federal, and state lands. Sweetwater River Conservancy also has an ownership interest in the Sun and Dumbell Ranches adjacent to Pathfinder Ranch (Figure 3). These properties may be considered as additional parcels for inclusion in the SRCCB at a future time. Pathfinder National Wildlife Refuge and Pathfinder Reservoir are located within northern portions of Pathfinder Ranch. The reservoir is popular for fishing and flatwater recreation.

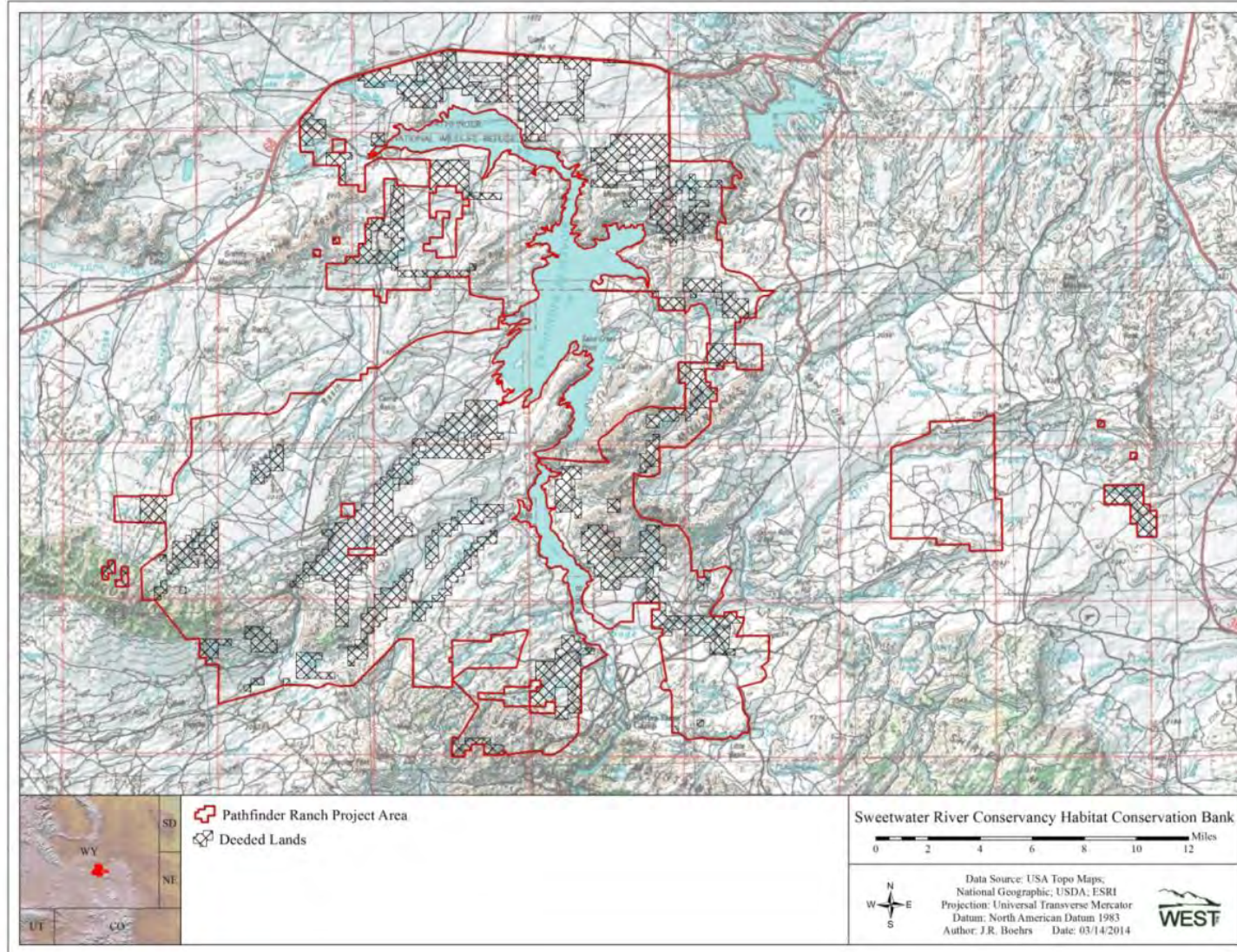


Figure 1. Location of the Pathfinder Ranch and deeded acres to be included in the Sweetwater River Conservancy Conservation Bank.

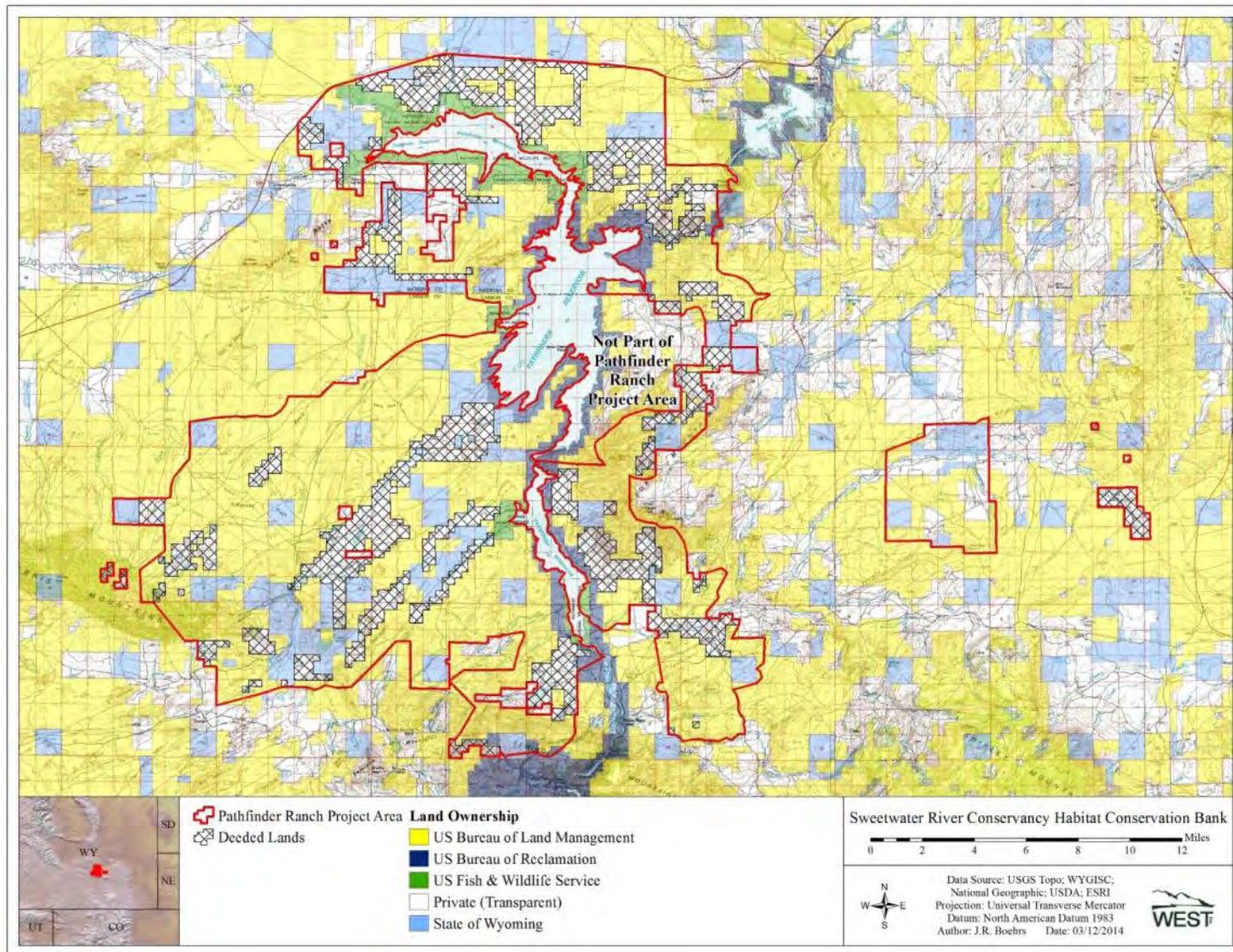


Figure 2. Land status in the vicinity of the Sweetwater River Conservancy Conservation Bank.

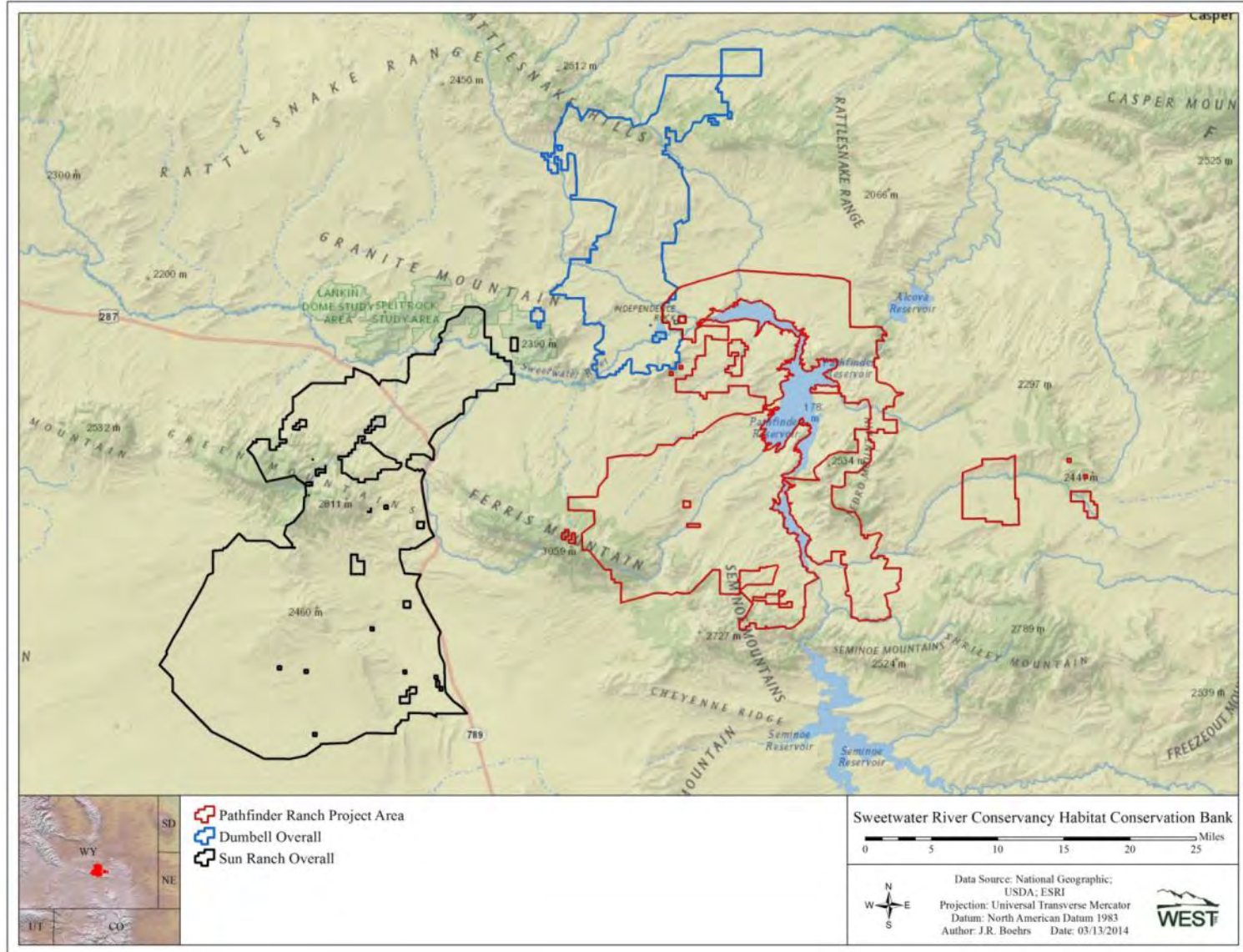


Figure 3. Location of the Pathfinder, Sun, and Dumbell Ranches.

Although most ranches in the vicinity of the project area are intact livestock operations, a low-density housing project (Lake Ridge Estates) is being developed immediately east of Pathfinder Ranch. This development includes 240 ac. that are being subdivided into ranchettes averaging 11 ac. in size.

Geology and Soils

Primary geologic formations within Pathfinder Ranch include sandstone, granitoid, dune sand, and unconsolidated composite (Figure 4). BLM reviewed the potential for oil and gas and other mineral development potential in Glover (2013) and U.S. Bureau of Land Management (2014, Exhibit G in Conservation Bank Agreement – Mineral and Water Rights Review). The west and central portions of Pathfinder Ranch are in the Granite Mountains Geologic Province, while the eastern portion is within the Shirley Basin Geologic Province. The Granite Mountains Geologic Province is comprised of largely Precambrian crystalline rock with a thin cover of Tertiary-Recent sediments, while the Shirley Basin Geologic Province is a small Tertiary sedimentary basin (Love and Christiansen 1985). Neither of these geologic provinces has a history of significant oil or gas production. No successful producing oil or gas wells have been drilled in the area, and all known wells are permanently abandoned. Based on its review, U.S. Bureau of Land Management (2014) concluded, “In summary, the low geologic potential for a petroleum system, the lack of historic oil and gas production, and the low potential for oil and gas development indicates that any future oil and gas activity within the Pathfinder Ranch Project Area is highly unlikely.” BLM also evaluated potential for uranium and other hardrock mineral development. It found no significant potential for commercial deposits of uranium, bentonite, limestone, trona, or gypsum. There is one active mining claim within the boundaries of Pathfinder Ranch, a lode claim of 20.66 ac. to mine semi-precious gems.

Soils within Pathfinder Ranch are primarily loamy, although stabilized sand dunes are also present (Figure 5). Detailed soils data to a depth of 20 in. (51 cm.) were collected in association with vegetation sampling conducted at 237 data points. These data may be used for fine scale mapping and development of specific habitat management plans. Soils data are maintained in files owned by Sweetwater River Conservancy.

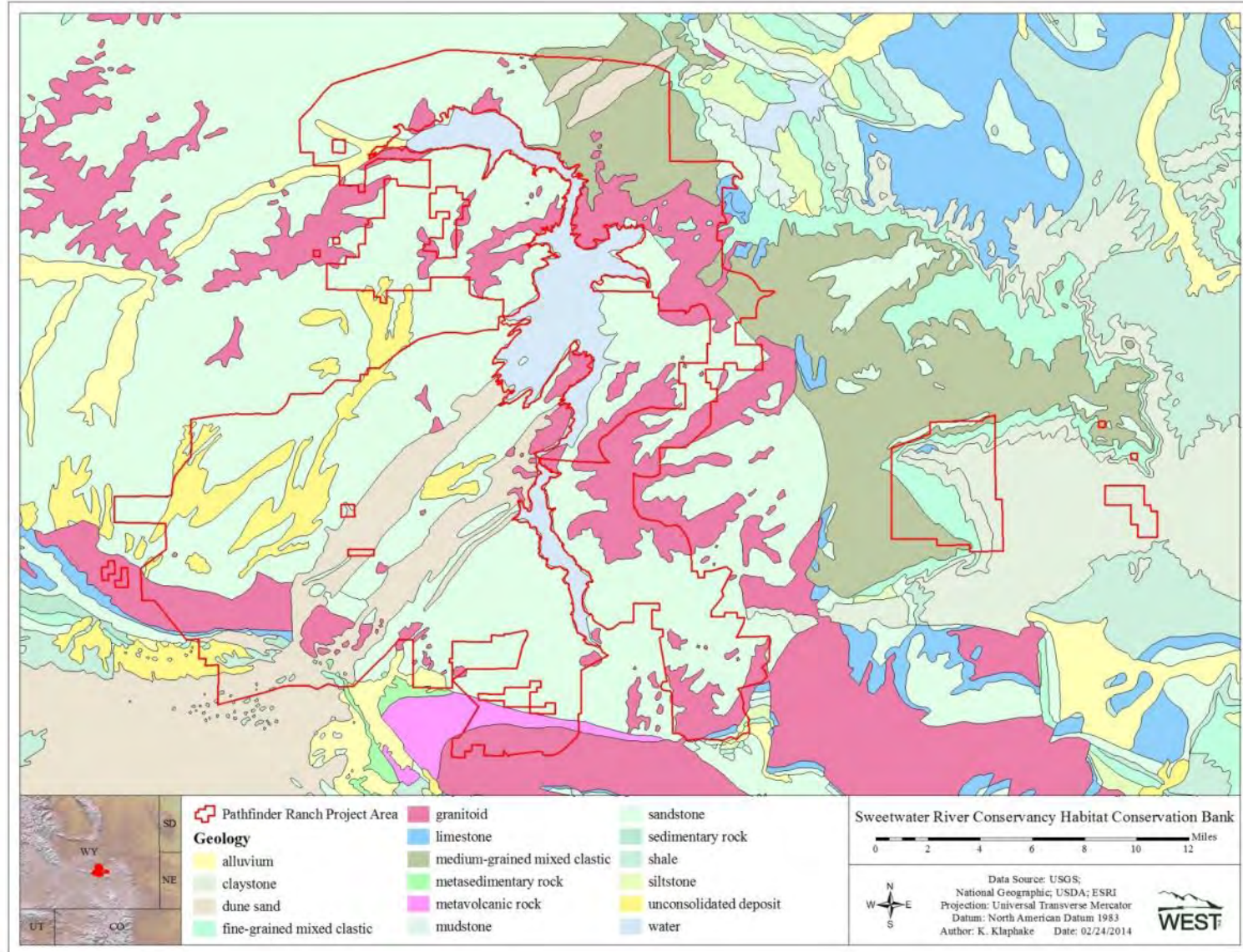


Figure 4. Geology of the Pathfinder Ranch.

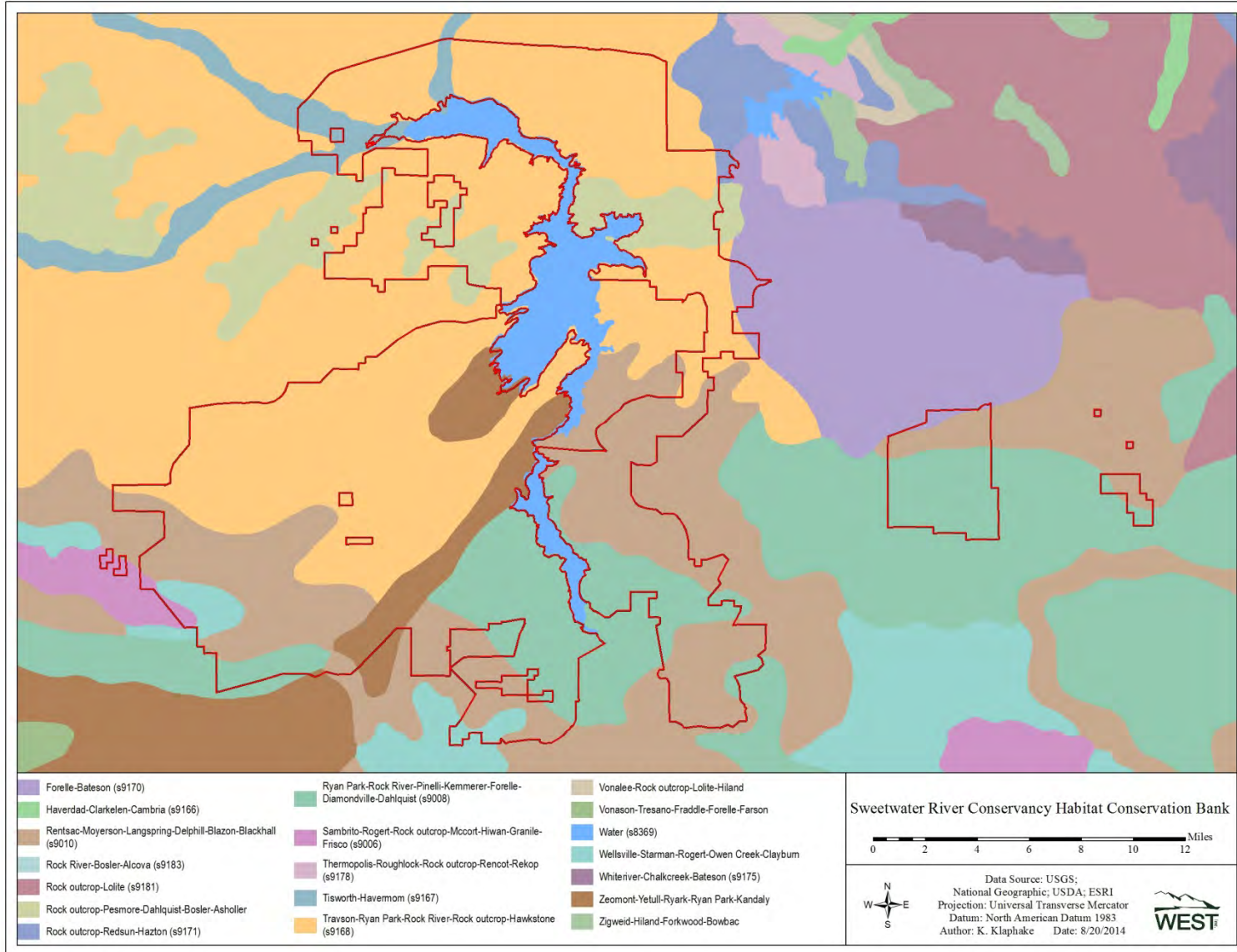


Figure 5. Soil types of the Pathfinder Ranch.

Cultural and Historic Features

Pathfinder Ranch is located in an area rich in historic sites and cultural resources. The primary historic feature is the Oregon/Mormon/Pioneer/California Trail, collectively referred to as the Emigrant Trail, which traverses through the northern portion of Pathfinder Ranch (Figure 6). The Oregon Trail is a 2,000 mi. historic east-west large-wheeled wagon route from the Missouri River to Oregon. The Oregon Trail was first established by fur trappers and traders from 1811-1840. From the early- to mid-1830s, the Oregon Trail and its many offshoots were used by about 400,000 people. Use of the trail declined when the first transcontinental railroad was completed in 1869. The Mormon Trail is a 1,300-mi. route that members of the Church of Jesus Christ of Latter-Day Saints traveled from 1846-1868 between Illinois and Salt Lake City, Utah. The California Trail was 2,000 mi. long and stretched from the Missouri River to California. The California Trail was heavily used from 1845-1869. The trail was used by about 2,700 settlers through 1849. During the California Gold Rush beginning in 1848, over 250,000 people used the California Trail.

A prominent feature along the Oregon Trail was Independence Rock, located in the extreme northwest corner of Pathfinder Ranch (Figure 6). Independence Rock is a large granite outcropping 1,900 feet long, 700 feet wide, and 128 feet tall. Its name comes from a party of fur trappers who camped there on July 4, 1824. Over a 30-yr. period, nearly 500,000 people on the Emigrant Trail passed Independence Rock. Because it is located at the approximate mid-point between the Missouri River and the Pacific Coast, Independence Rock was a milestone for travelers on the Oregon Trail. While camped here, many emigrants inscribed their names on the smooth granite. The Jesuit missionary, Pierre Jean De Smet, is credited with giving it the name "Great Register of the Desert." Names were placed on the rock through engraving or by painting them with wagon grease, tar, or a combination of buffalo grease and glue. Over time, many of these names have flaked off or been obscured by lichens. Still, thousands of names remain and Independence Rock is visited by thousands of travelers each year who climb the rock to view the names.

A more recent historic site associated with Pathfinder Ranch is Pathfinder Dam. Pathfinder Dam was named after John C. Fremont, an early explorer and map maker who was nicknamed "The Pathfinder". Pathfinder Dam was considered a significant engineering feat for the early twentieth century. The dam is 214 feet high and has capacity to store over one million ac.-ft. of water. Construction of the dam was completed in 1909 and is on the National Register of Historic Places.

Martin's Cove is located approximately 6 mi. west of Pathfinder Ranch and listed on the National Register of Historic Places. In November 1856, approximately 500 Mormon emigrants in the Martin Handcart Company were stranded for 5 days in Martin's Cove by a blizzard and extreme cold while on their way to Salt Lake City. Over 100 members of the company died while stuck at the cove during the storm.

Devil's Gate is located approximately 5 mi. west of Pathfinder Ranch. Although a natural rock formation, it has cultural significance because it was a major landmark on the Oregon Trail.

The properties comprising Pathfinder Ranch have played a significant role in the ranching and cultural history of the Sweetwater River country (see Appendix A). Pathfinder Ranch was founded in the 1880s by A.J. Bothwell. In the 125 yrs. since Mr. Bothwell came to the area, the Sanfords, Arctic Investment Group, Stevensons, Berras, and Sweetwater River Conservancy have owned Pathfinder Ranch. The current lessees and ranch managers, Haney and Ruth Stevenson, have worked Pathfinder Ranch for over 30 yrs. Jim Stevenson purchased the ranch in 1977. Operating it in unison with his sons, the family named it "Double S" for Stevenson and Sons.

John Berra, a native of St. Louis, Missouri, acquired the Stevenson's holdings in 1989. It was under Berra's ownership that the ranch came to be known as Pathfinder Ranch. Berra was responsible for adding the main ranch house, the riding arena, and the church to the ranch. The small white church, complete with steeple, sits near the ranch yard with Steamboat Rocks as its backdrop. In 2008, Sweetwater River Conservancy purchased Pathfinder Ranch from Berra's heirs. Sweetwater River Conservancy provided the Stevenson family an opportunity to move from ranch managers to leaseholders. Haney and Ruth Stevenson, their daughter and son-in-law Keith and Dee Burgess and their son and daughter-in-law Tyler, and Mandy Stevenson, have become partners in Pathfinder Cattle Company. The Stevenson family currently runs approximately 3,000 cattle on Pathfinder Ranch. Although it is primarily a cow-calf operation, some yearlings are also produced. The Stevenson family is using the Bar J Bar brand that has been associated with Pathfinder Ranch for the past several years. The Stevensons run mostly Angus cows, crossing them with composite bulls carrying Salers and Angus bloodlines. The disposition of the Salers breed makes them a better fit in the area where it takes over 50 ac. to carry a cow for the year.

The other cattle operation on the SRCCB is the Cardwell Ranch, located east of Pathfinder Ranch. Cardwell Ranch is operated by Bob and Sharon Cardwell. Bob Cardwell is a 4th generation rancher whose grandfather homesteaded the area in 1895. The ranch headquarters was established at its present location around 1900, and also served as an early post office. Cardwell Ranch was a sheep operation until 1949, when it switched to cattle. Hereford cattle were run on the ranch until the mid-1970s, before the ranch switched to Black Angus. The Cardwells also raise horses on the ranch and produce all of their own saddle horses. Because they do not use ATVs, they maintain 2-3 horses for everyone working on the ranch. Even though holistic ranching is a relatively new term, the Cardwells are passionate about their role as stewards of the land and have been practicing holistic ranching for generations. Cardwell Ranch was purchased by Sweetwater River

Conservancy in 2009, but the grazing and ranch buildings were leased back to the Cardwells.

Biological Resources

Vegetation

Vegetation on Pathfinder Ranch consists of shrub steppe plant communities on plains and hills, open woodlands on rocky ridges, and coniferous forest on mountain slopes. Shrub steppe communities are dominated by various species of sagebrush including Wyoming big sagebrush (*Artemisia tridentata* var. *wyomingensis*), black sage (*Artemisia nova*), and plains silver sage (*Artemisia cana* var. *cana*). Woodland canopies are characterized by sparse occurrences of limber pine (*Pinus flexilis*), Rocky Mountain juniper (*Juniperus scopulorum*), and ponderosa pine (*Pinus ponderosa*). Higher elevation forest communities are dominated by lodgepole pine (*Pinus contorta*), subalpine fir (*Abies lasiocarpa*), and ponderosa pine (Rodemaker et al. 2014).

Based on extensive vegetation sampling conducted by Rodemaker et al. (2014), 41 land cover types were identified on Pathfinder Ranch (Figure 7). The dominant land cover types are Wyoming big sagebrush with 16-25% canopy cover (27.0%), black sagebrush (24.7%), and plains silver sagebrush (14.7%). In all, there are 168,652 ac. of sagebrush-dominated cover types, comprising 72.7% of Pathfinder Ranch (Table 2). Mixed sagebrush cover types (i.e., black greasewood (*Sarcobatus vermiculatus*)-sagebrush, saltbush (*Atriplex* spp.)-sagebrush, antelope bitterbrush (*Purshia tridentata*)-sagebrush)) total 10,062 ac. and comprise an additional 4.3% of Pathfinder Ranch. Areas dominated by other shrubs (i.e., black greasewood and rabbitbrush (*Chrysothamnus* spp.)) comprise 2.3% of the project area.

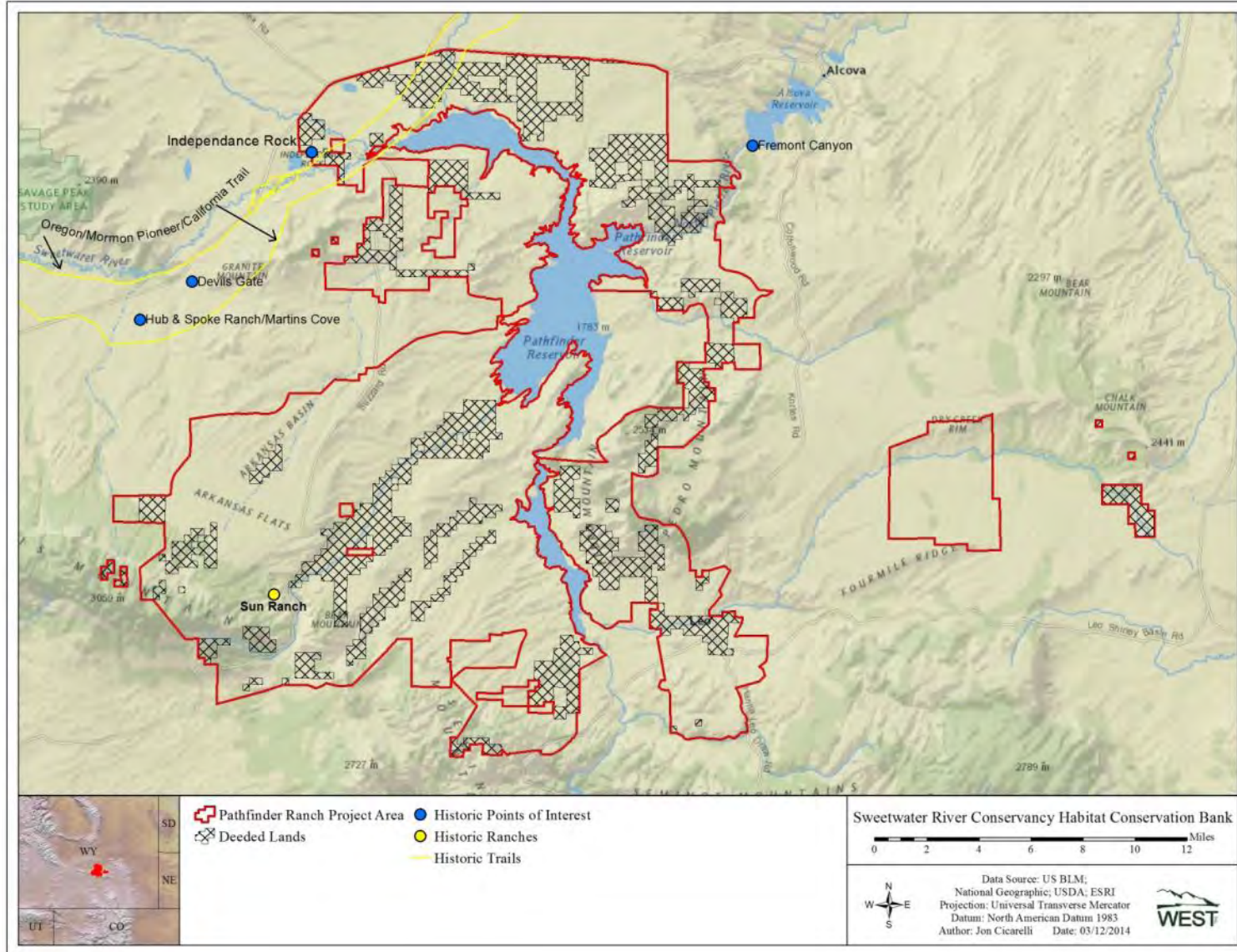


Figure 6. Historic features associated with the Pathfinder Ranch.

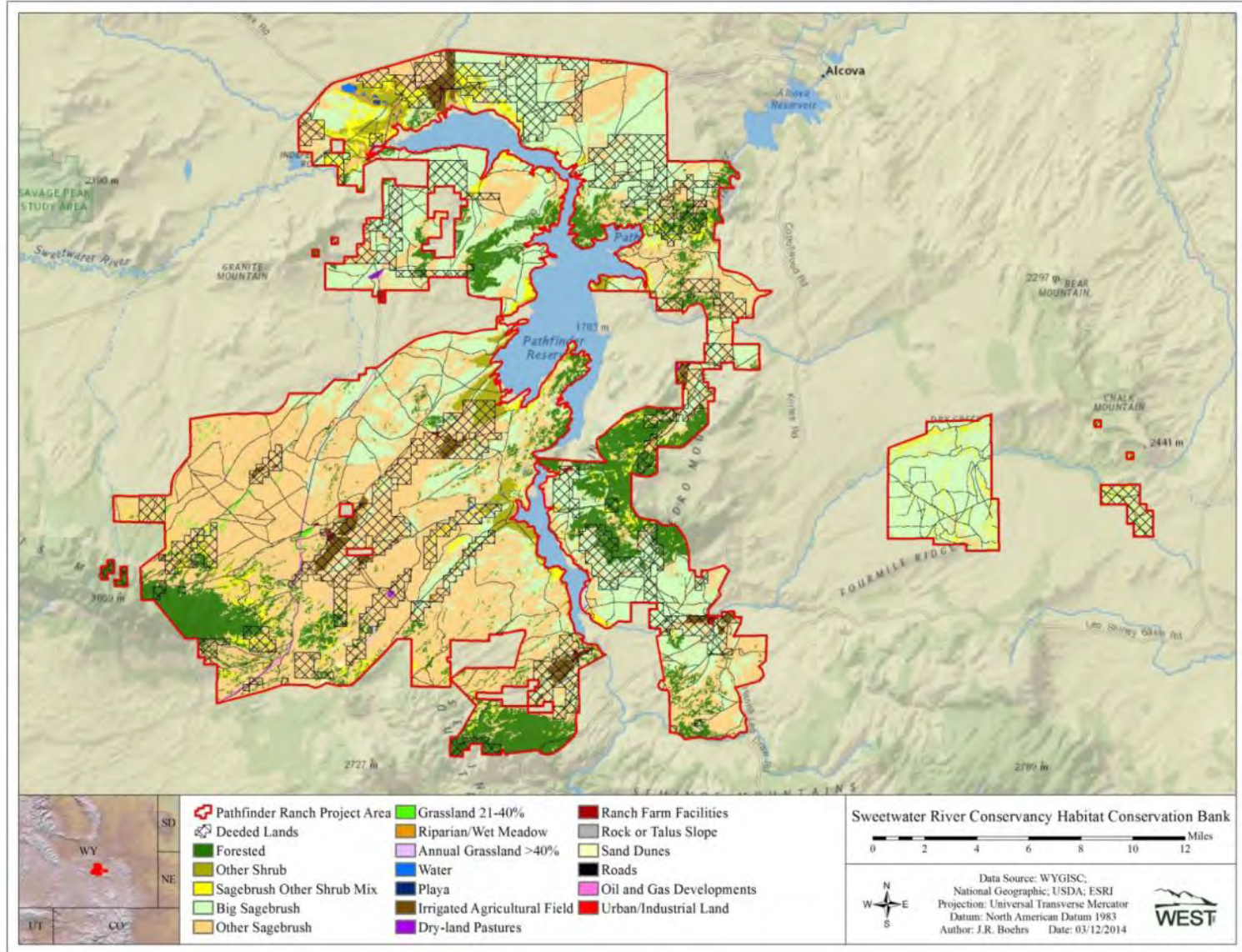


Figure 7. Land cover types of the Pathfinder Ranch and deeded acres to comprise the Sweetwater River Conservancy Conservation Bank.

There are 31,197 ac. of forested areas including areas dominated by lodgepole, limber and ponderosa pine, Rocky Mountain juniper, and aspen (*Populus tremuloides*) that comprise 13.4% of Pathfinder Ranch. Pathfinder Ranch contains 2,547 ac. of grassland, comprising 1.1% of the total land cover. Wetlands and waterbodies are minor components, with 290 ac. present. There are 2,963 ac. of irrigated agricultural fields and 126 ac. of pasture, which together comprise 1.3% of the ranch. Very minor cover types include sand dunes, rock or talus slopes, and ranch facilities (Table 2).

Table 2. Land cover types of the Pathfinder Ranch.

Cover Type	Acres	Cover Type	Acres
Lodgepole Pine >67%	8.90	Black Sagebrush	57,353.20
Lodgepole Pine-Subalpine	133.88	Wyoming Three-tip Sage	2611.58
Lodgepole Pine-Subalpine	1058.38	Plains Silver Sagebrush	34,186.30
Ponderosa-Limber Pine	4375.84	Rabbitbrush	3329.47
Ponderosa-Limber Pine	799.07	Bitterbrush-Sagebrush	4231.06
Limber Pine 20-32%	6300.67	Grassland 21-40%	519.74
Limber Pine 33-67%	565.33	Riparian/Wet Meadow	762.37
Ponderosa Pine - Juniper	5274.98	Annual Grassland >40%	1264.54
Mixed Conifer 33-67%	123.43	Water	205.72
Aspen 33-67% closure	320.69	Playa	84.07
Juniper-Sage	3302.34	Irrigated Agricultural	2963.19
Juniper-Limber Pine	8933.38	Dry-land Pastures	126.10
Greasewood	1930.83	Ranch Farm Facilities	319.80
Greasewood-Sagebrush	5828.08	Rock or Talus Slope	579.78
Saltbush-Sagebrush	2.67	Sand Dunes	165.02
Basin Big Sagebrush >25%	579.12	Roads	9360.38
Wyoming Big Sage 5-16%	3617.70	Oil and Gas Developments	549.32
Wyoming Big Sage 16-25%	62,725.80	Urban/Industrial Land	25.35
Wyoming Big Sage >25%	916.93	Background	3.78
Mountain Big Sage 16-25%	221.73	Wyoming Big Sage - Black Sage	4562.21
Mountain Big Sage >25%	1877.68	Total	232,100.39

To further assess sage-grouse habitat suitability of the Pathfinder Ranch and determine the acreage of disturbance to be excluded from the bank, a Density Disturbance Calculation Tool (DDCT) analysis was conducted following procedures outlined in the Governor's Greater Sage-Grouse Executive Order (EO) 2011-5. DDCT is used to determine the amount of disturbance in an area. Based on scientific literature, habitat is suitable for sage-grouse if the maximum amount of disturbance is <5% of the DDCT area and density of disruptive activities (defined by the Governor's EO as mines or oil and gas wells) is <1 disturbance per 640 ac. All areas of disturbance and disruptions within Pathfinder Ranch were digitized (Figure 8) and results of this effort were reviewed and approved by the Wyoming Geographic Information System Science Center (WYGISC).

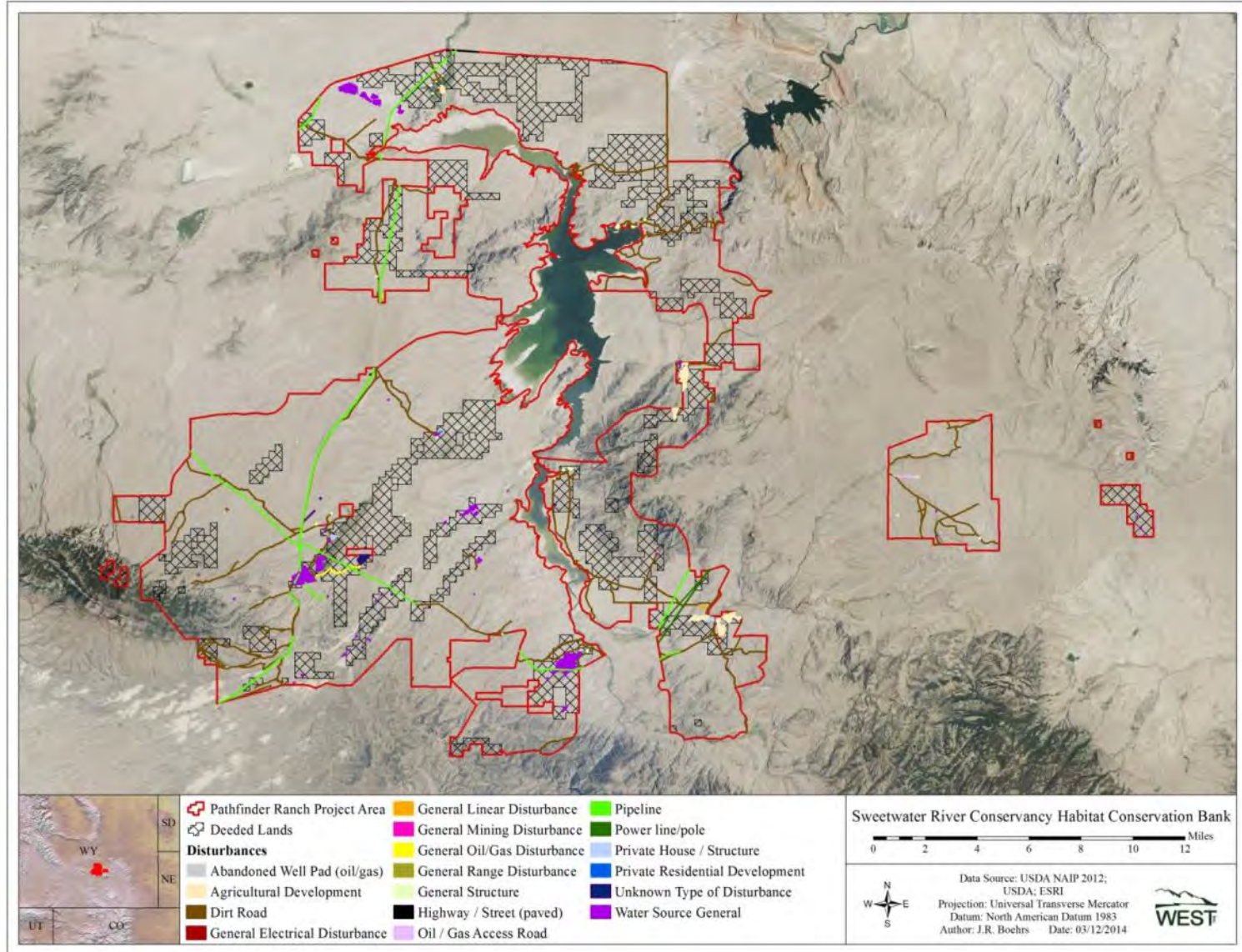


Figure 8. Digitized disturbances on the Pathfinder Ranch and deeded acres to comprise the Sweetwater River Conservancy Conservation Bank.

Based on DDCT analysis, the total area of disturbance within Pathfinder Ranch was 1.04%, well below the 5% disturbance threshold identified to potentially impact sage-grouse habitat suitability (Table 3). The primary sources of disturbance identified were man-made water sources (853.55 ac.), gravel roads (708.69 ac.), agricultural developments (354.85 ac.) and pipelines (324.80 ac.; Table 3). There were no disruptive activities (i.e., active mines or oil and gas wells) present.

Table 3. Types and acreage of disturbance within the Pathfinder Ranch.

Disturbance Type	Acres
Unknown Type of Disturbance	74.26
Highway / Street (paved)	1.55
Dirt Road	708.69
Oil / Gas Access Road	3.83
General Structure	45.10
Private House / Structure	22.47
Private Residential Development	0.58
Agricultural Development	354.85
General Range Disturbance	2.18
Water Source General	853.55
General Oil/Gas Disturbance	11.12
Abandoned Well Pad (oil/gas)	4.34
Pipeline	324.80
General Mining Disturbance	1.17
General Electrical Disturbance	0.98
Power line/pole	7.52
General Linear Disturbance	4.12
Total Disturbance	2421.11
Pathfinder Ranch Project Area	232,109.80
% Disturbed	1.04%
Mean # disruptions/640 acres	0

Wildlife

General Wildlife

Pathfinder Ranch provides important habitat for elk, mule deer, and pronghorn. Portions of the ranch are designated crucial winter range by Wyoming Game and Fish Department (WGFD) for all 3 species. Pathfinder Ranch also provides non-crucial winter and winter/yearlong range for elk (Figure 9), spring/summer/fall, yearlong, winter, and winter/yearlong range for mule deer (Figure 10), and winter/yearlong, spring/summer/fall, and winter/yearlong range for pronghorn (Figure 11).

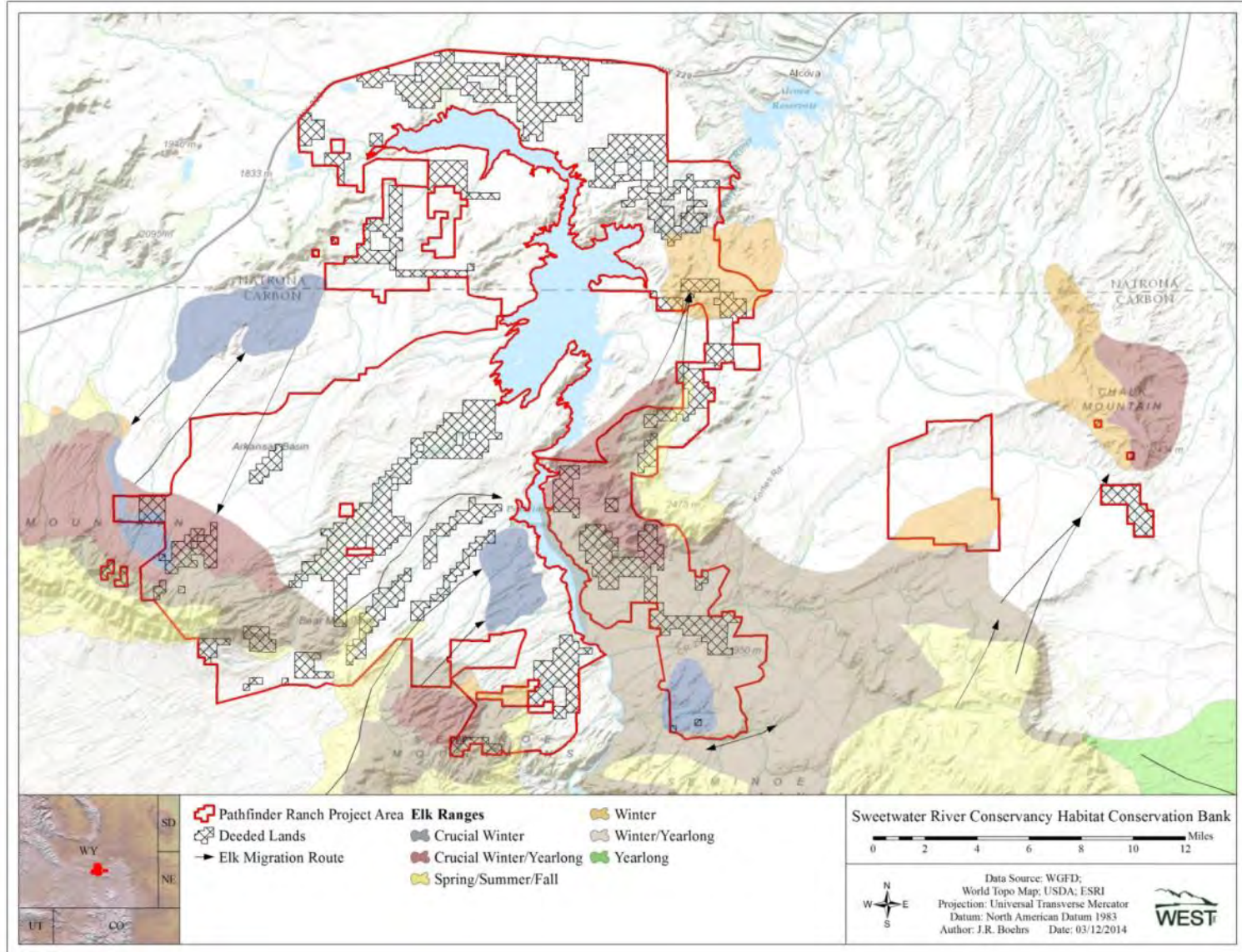


Figure 9. Seasonal elk ranges on the Pathfinder Ranch.

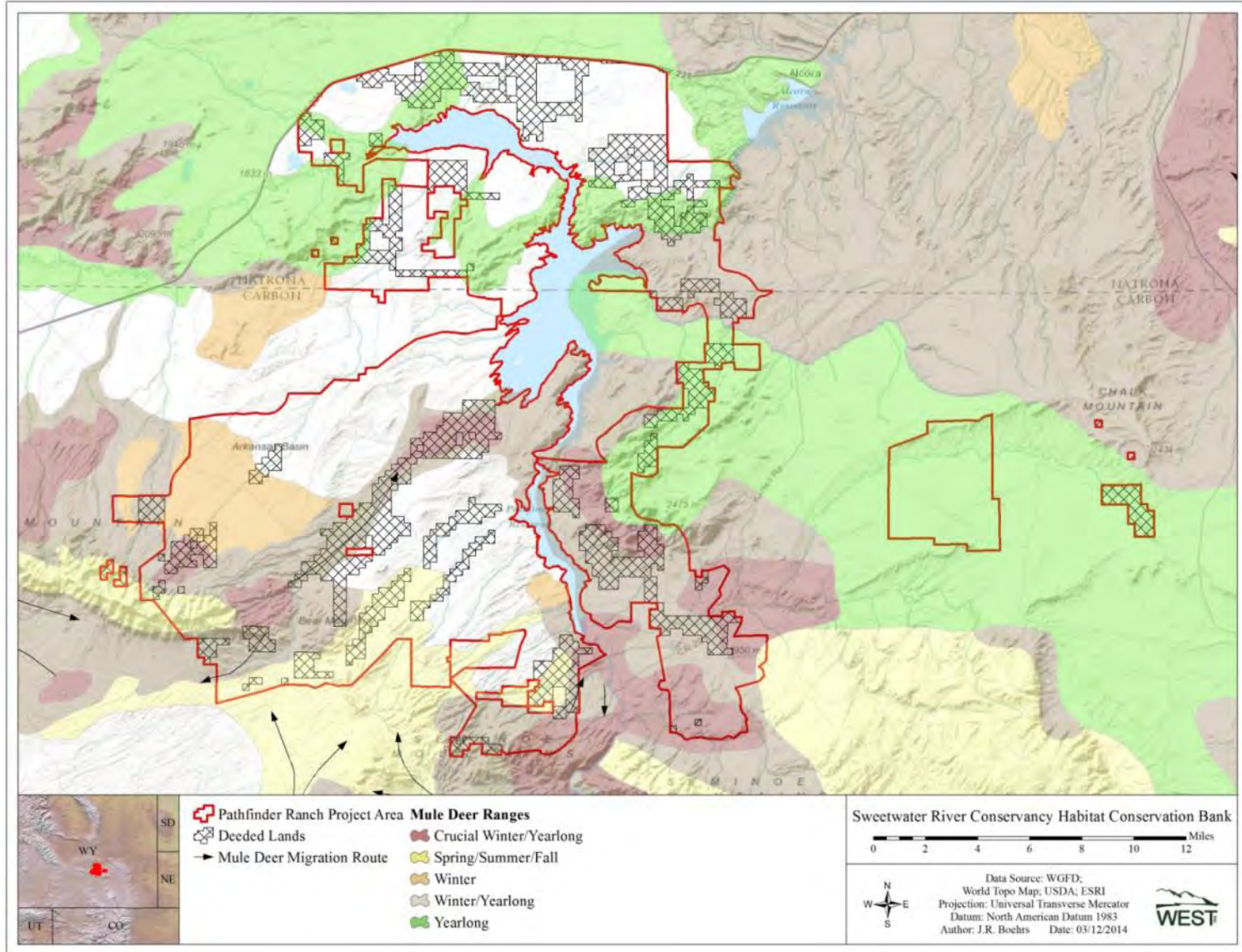


Figure 10. Seasonal mule deer ranges on the Pathfinder Ranch.

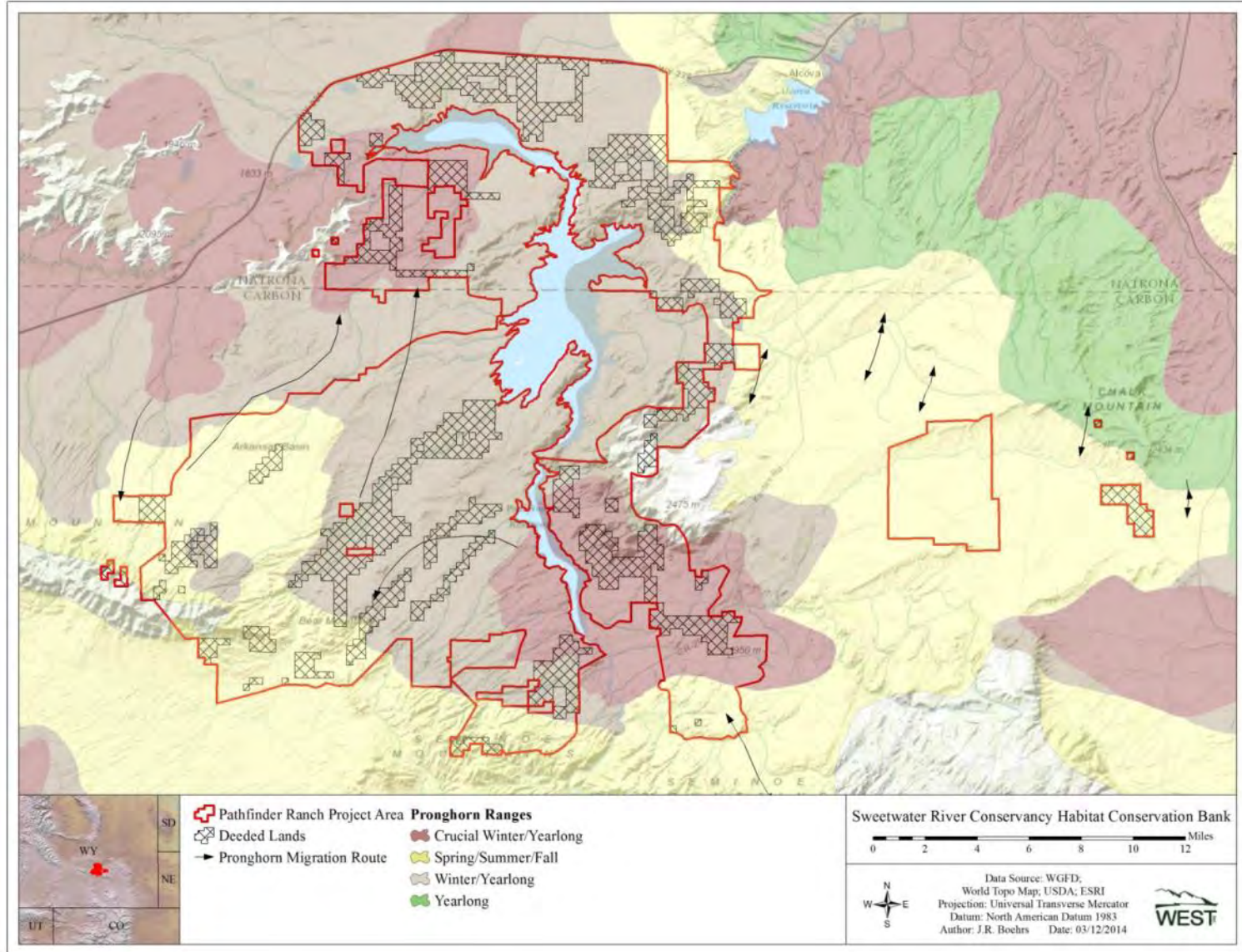


Figure 11. Seasonal pronghorn ranges on the Pathfinder Ranch.

From 2009-10, numerous wildlife surveys of Pathfinder Ranch and the surrounding area were conducted. Data from these surveys are in files maintained by Sweetwater River Conservancy. These surveys documented a diverse and abundant assemblage of wildlife on Pathfinder Ranch, including both game and non-game species. Songbird surveys in upland and riparian areas documented 53 species of songbirds breeding on or adjacent to Pathfinder Ranch.

Great horned owls (*Bubo virginianus*), peregrine falcons (*Falco peregrinus*), prairie falcons (*Falco mexicanus*), Swainson's hawks (*Buteo swainsoni*), red-tailed hawks (*Buteo jamaicensis*), bald eagles, and golden eagles were also documented nesting on the project area. Additional surveys conducted during migration, summer, and winter documented the presence of 16 species of raptors, including 15 species during fall migration, 11 during spring migration, 10 during summer, and 8 during winter.

Surveys conducted in spring along the shoreline of Pathfinder Reservoir and at other streams in the project area documented 15 species of waterfowl, sandhill cranes (*Grus canadensis*), 9 species of shorebirds, and 10 species of other waterbirds.

Active beaver colonies occur along Long Creek. Scent station surveys with trail cameras and winter driving transect surveys recorded the presence of coyote, red fox, swift fox, mountain lion, bobcat, raccoon, striped skunk, American badger and weasel on Pathfinder Ranch. Based on prairie dog colony mapping efforts, several thousand acres of white-tailed (*Cynomys leucurus*) and 41 ac. of black-tailed (*Cynomys ludovicianus*) prairie dog colonies were mapped within Pathfinder Ranch. Rabbit surveys indicated cottontails (*Sylvilagus* spp.) and white-tailed (*Lepus townsendii*) and black-tailed (*Lepus californicus*) jackrabbits are abundant on Pathfinder Ranch. Mobile bat acoustic surveys conducted in 2010 detected bats at multiple locations throughout Pathfinder Ranch. Mist-netting surveys resulted in the capture of 1 Townsend's big-eared bat (*Corynorhinus townsendii*).

Finally, transect and audio surveys for amphibians documented the presence of northern leopard frogs (*Rana pipiens*), boreal chorus frogs (*Pseudacris maculata*), spadefoot toads (*Spea* spp.), Woodhouse's toads (*Bufo woodhousei*), and Great Plains toads (*Bufo cognatus*) on Pathfinder Ranch. In some areas along Sand Creek, northern leopard frog abundance was estimated to be as high as 212.5 frogs/mi. of stream.

Greater Sage-Grouse

Sage-grouse Core Areas, as defined and mapped in Wyoming Governor's Greater Sage-Grouse EO 2011-5, overlap a portion of Pathfinder Ranch (Figure 12). Sage-grouse surveys were initiated on Pathfinder Ranch and surrounding areas in 2009 and continue through present. All data are contained in files maintained by Sweetwater River Conservancy. Baseline sage-grouse and vegetation data were collected on 245,000 ac. owned or leased by Pathfinder Ranch on the east and west sides of Pathfinder Reservoir and the North Platte

River. These surveys included sage-grouse VHF radio and GPS telemetry studies (Figure 12), habitat surveys at sage-grouse use points, winter and late-brood driving surveys (Figure 13), and opportunistic observations concurrent with other ecological studies. Results indicate sage-grouse use Pathfinder Ranch extensively throughout their life history. A RSF analysis based on sage-grouse telemetry observations and habitat characterization indicates that most of Pathfinder Ranch provides suitable habitat for sage-grouse (Figures 14-16; Exhibit E to Conservation Bank Agreement – Credit Valuation).

Sweetwater River Conservancy initiated a new telemetry study in spring 2014 to obtain additional data on sage-grouse use of Pathfinder Ranch. The objective of monitoring sage-grouse within Pathfinder Ranch is to document use near leks not targeted for capture during the previous study period, increase sample sizes for estimating habitat selection, and monitor bank performance. Fifty female sage-grouse were captured on active leks within the Pathfinder study area, specifically targeting leks that were not trapped in previous study years. Capturing and monitoring methods were similar to previous telemetry studies. Sage-grouse were caught using ATVs and hoop nets and all captured female sage-grouse were equipped with VHF telemetry necklaces. VHF telemetry units have a battery life of approximately 666 days to allow for nearly 2 years of monitoring. All capture and monitoring methods were in accordance with WGFD directives. Additional telemetry data will be used to further document breeding, nesting, brood-rearing, summer, and winter habitat use within Pathfinder Ranch. To date, Habitat Conservation Credits (HCC) have been developed for the breeding and summer seasons (Figure 14-15). Additional HCC will be developed for the winter season once data from the 2014/15 winter period have been collected.

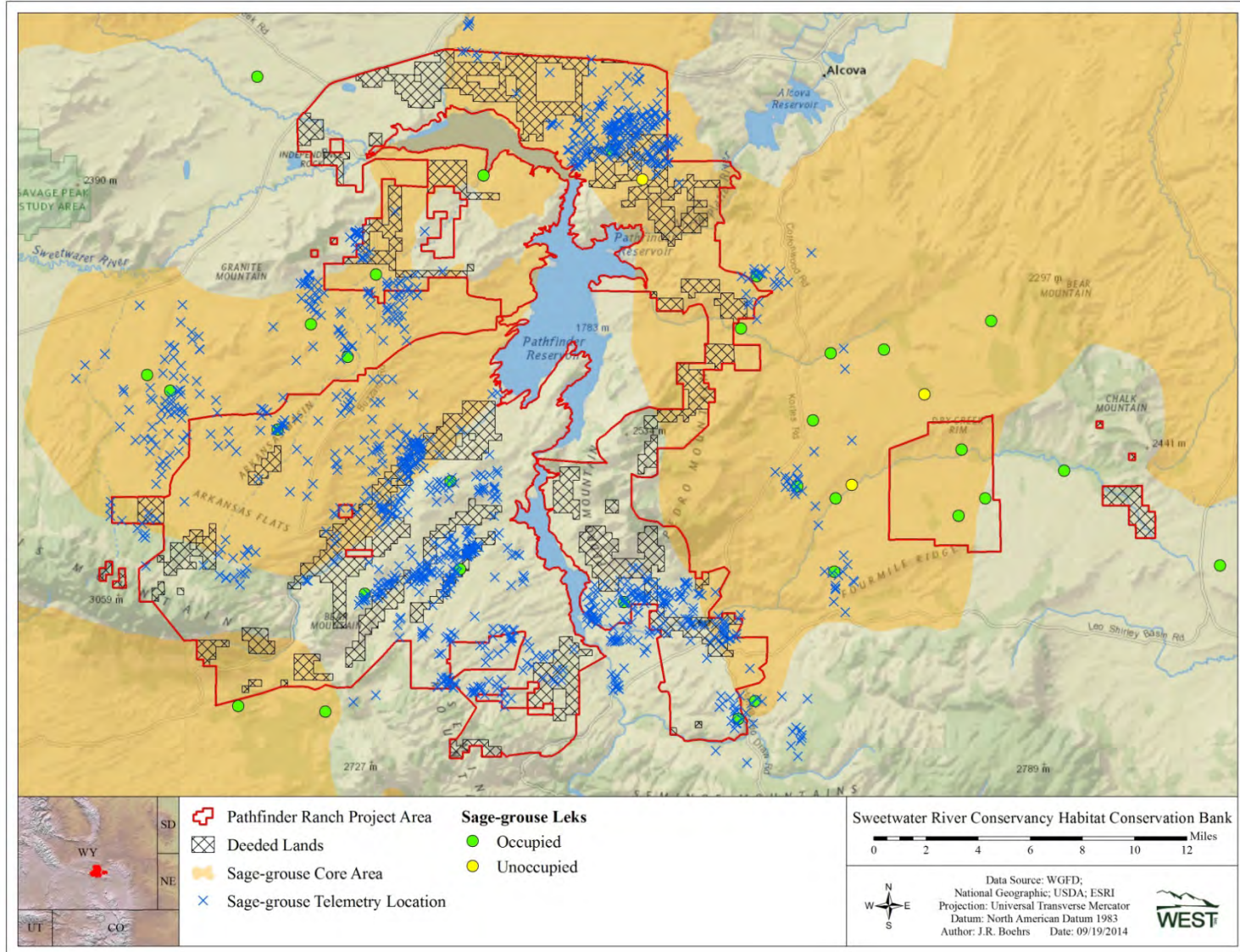


Figure 12. Greater sage-grouse Core Areas, leks, and telemetry locations on the Pathfinder Ranch based on data collected in 2010-2011 and April 1 to August 31, 2014.

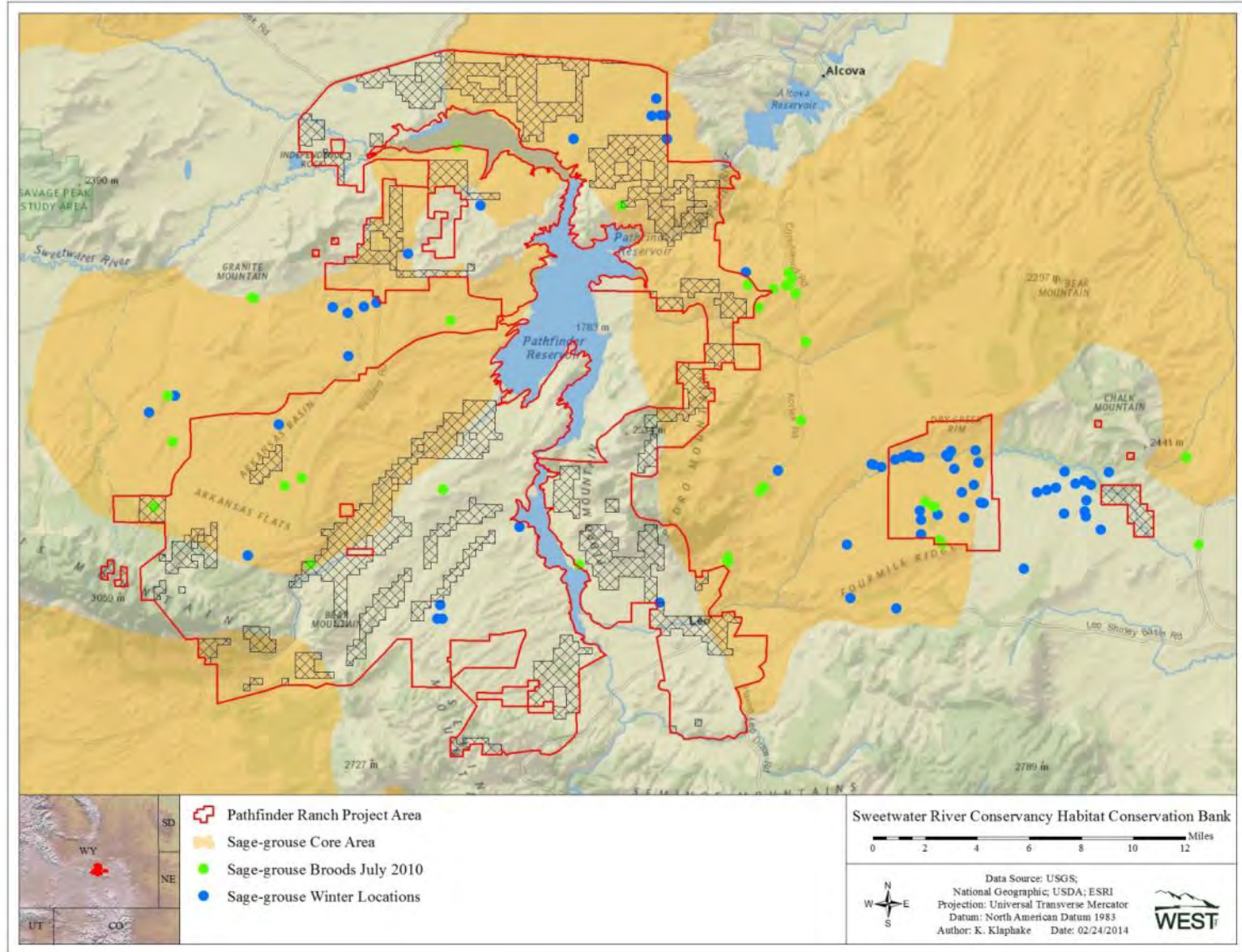


Figure 13. Greater sage-grouse 2009-10 winter and 2010 late brood locations on the Pathfinder Ranch based on driving transect surveys.

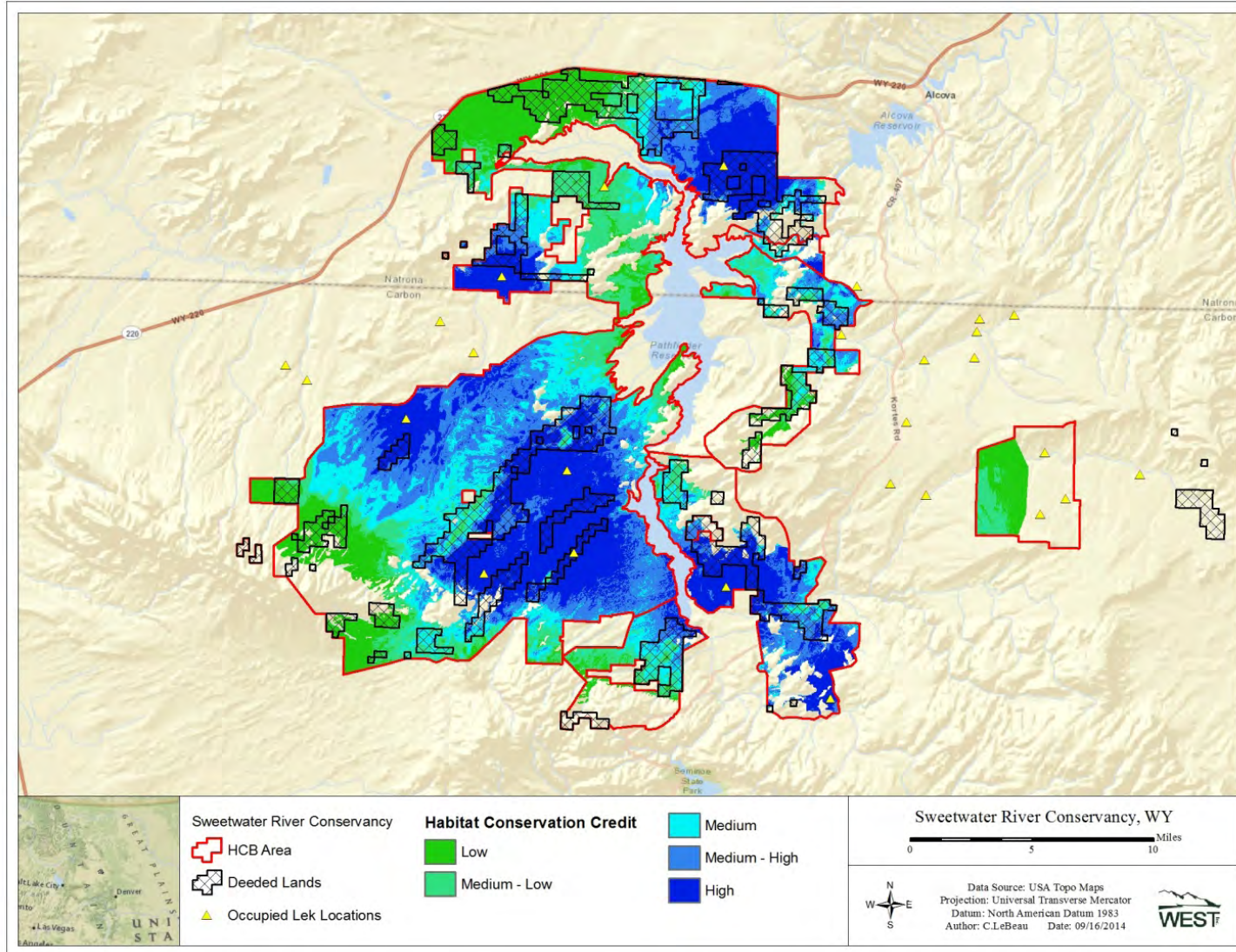


Figure 14. Relative probability of sage-grouse use during the breeding season within the Pathfinder Ranch based on 2010-2011 and 2014 telemetry data.

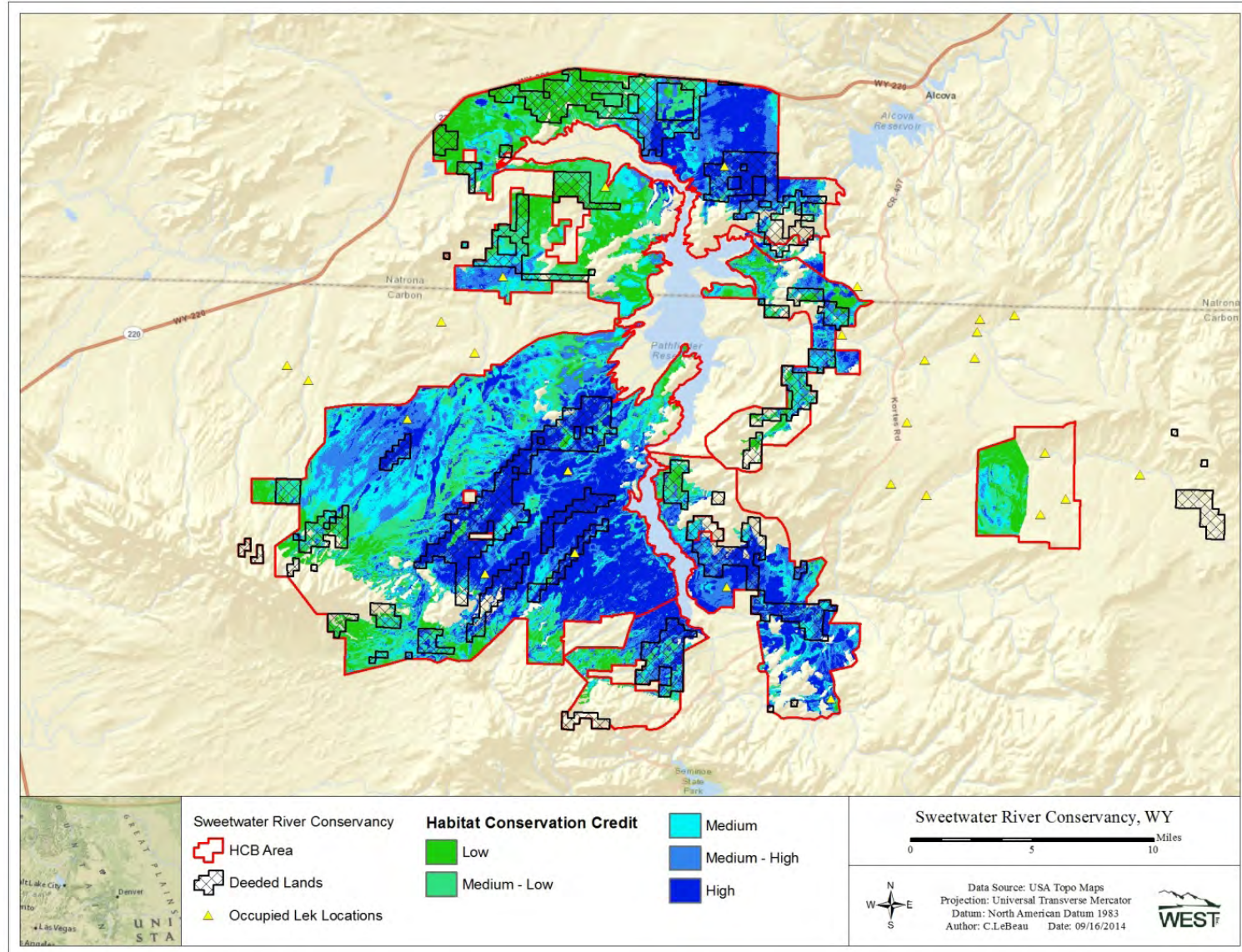


Figure 15. Relative probability of sage-grouse use during the summer season within the Pathfinder Ranch based on 2010-2011 and 2014 telemetry data..

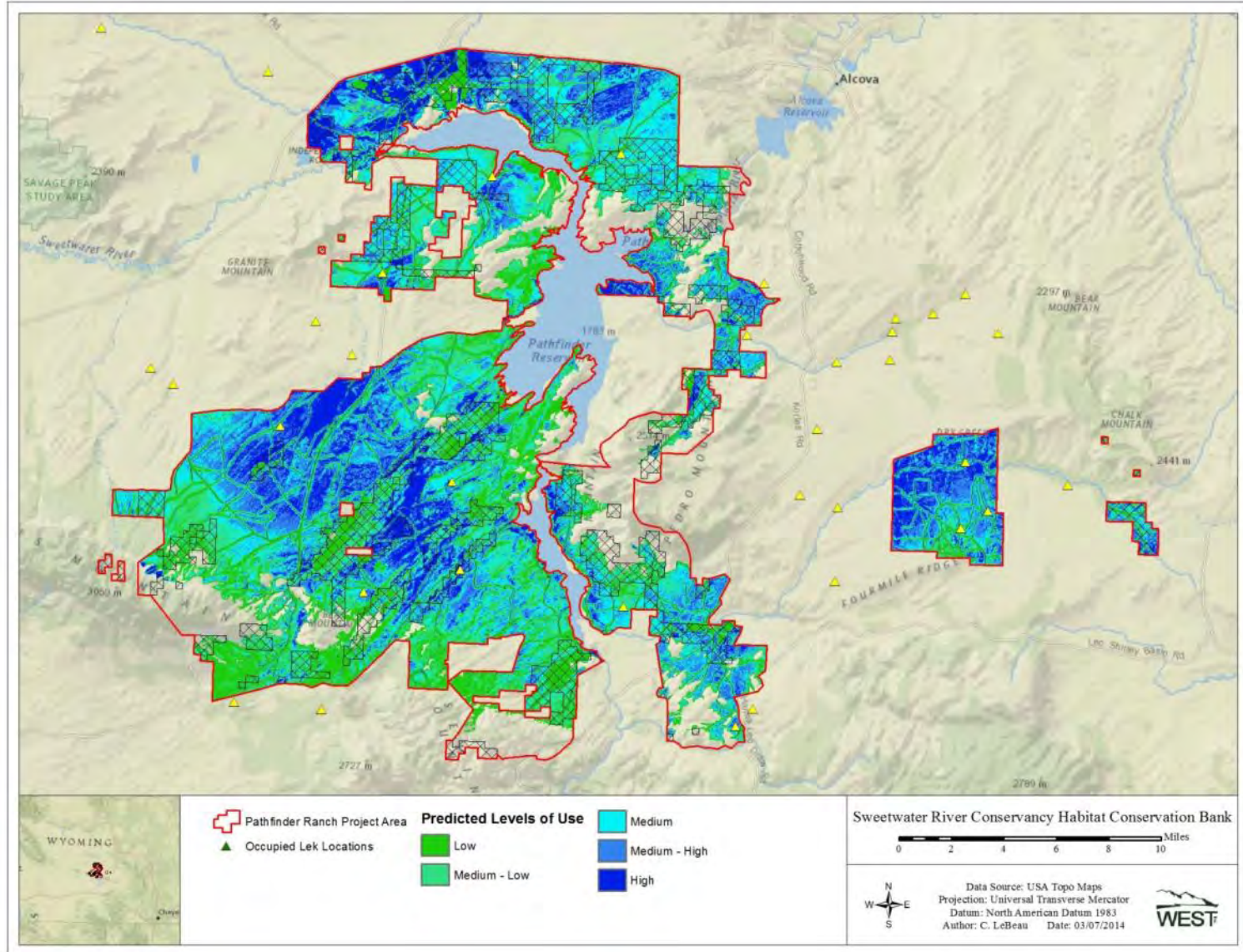


Figure 16. Relative probability of sage-grouse use during the winter season within the Pathfinder Ranch based on 2010-2011 telemetry data.

Twenty-six occupied leks occur on or within 4 mi. of deeded lands on the SRCCB (Figure 17). Birds from these 26 leks are most likely to use seasonal habitats within the SRCCB (Holloran and Anderson 2005, Schroeder et al. 2004). Of these 26 leks, the number of leks monitored annually by WGFD and BLM during the 28-year period of 1985-2013 ranged from 8-23, and the total number of males counted ranged from 88-747 (Table 4; Figure 18). The mean number of males/lek on these 26 leks fluctuated around 10 from 1985 to 1997. The population then grew fairly steadily after 1997 before peaking in 2005 and 2006, when the mean number of males/lek was 53 in each of these 2 years (Table 4). The mean number of males/lek has been declining since 2006, reaching a low of 10 in 2013, when 198 males were counted on 19 monitored leks (Figure 19). This trend is very similar to trends in males/lek within the rest of Wyoming. The mean number of males/lek statewide was approximately 30 in 2000, increased to 42 in 2006, and then decreased to approximately 18 in 2012 (Christiansen 2013). No new development or significant changes in grazing management occurred during the period 2006-13 within the SRCCB, suggesting factors responsible for the statewide decline of sage-grouse during this period were also likely influencing sage-grouse populations on the SRCCB.

MANAGEMENT PLANNING CONSIDERATIONS

Numerous conservation measures have been developed to conserve sage-grouse habitat. The latest conservation measures and their associated conservation benefits to sage-grouse are thoroughly described in the Greater Sage-Grouse Umbrella CCAA for Wyoming Ranch Management (2012), developed by numerous state and federal agencies. Several of these agencies have representatives on the CBRT established for the SRCCB and comprised of individuals from USFWS, WGFD, BLM, U.S. Natural Resource Conservation Service (NRCS), Wyoming Office of State Lands and Investments (OSLI), and Wyoming Department of Environmental Quality. These conservation measures generally form the basis for most of the management actions included in this document. The methods have proven effective at conserving sage-grouse habitat, and Sweetwater River Conservancy anticipates they will prove effective for managing sage-grouse habitats on the SRCCB. If conservation measures described in this plan do not achieve intended results, adaptive management techniques will be evaluated to guide development of further conservation measures.

Table 4. Maximum male sage-grouse counts on occupied leks on or within 4 miles of SRC deeded lands included in conservation bank

Lek Name (see Figure 17)	Year														
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
2683214	0	0	0	0	1	0	0	0	0	5	0	0	0	5	0
2683281	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2780282	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2781044	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2783254	0	0	0	0	12	0	0	0	0	0	0	0	0	2	0
Annis	6	21	15	32	20	34	35	15	0	6	0	0	0	0	0
Arkansas	9	34	32	48	34	48	63	36	26	25	16	16	25	29	40
Arkansas Basin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	33	34	37	36
Bear Mountain	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5	0	0
Beulah Belle Lake	0	0	0	0	0	0	0	0	0	8	0	8	0	11	0
Bishop Point	21	28	24	51	45	51	62	66	34	28	17	4	1	24	22
Canyon Creek	17	29	33	0	19	25	32	18	0	0	10	3	0	28	43
Canyon Creek Lower	NA	NA	6	0	0	0	0	0	0	0	0	0	0	0	0
Childers Reservoir	0	0	0	0	0	0	0	0	0	0	0	0	0	29	28
Coal Springs	NA	NA	29	19	19	11	13	21	19	9	8	0	13	13	18
Deweese	26	16	12	0	27	27	23	26	35	9	28	9	16	30	31
E. Stock Tank	25	0	0	0	0	0	0	0	0	0	0	0	0	72	45
Emilys	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferris	NA	NA	NA	NA	NA	NA	NA	NA	NA	13	10	9	0	16	18
Flattop	20	18	18	15	16	28	12	19	0	4	12	6	3	8	9
Fremont Canyon South	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gooseberry Creek	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Junk Hill	NA	NA	NA	NA	NA	NA	NA	NA	NA	20	0	0	0	0	0
Kortes Road	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0
Point East	14	7	1	0	0	0	0	0	0	0	0	0	0	0	0
2782124	0	0	0	0	35	0	0	0	0	0	3	0	0	0	0
Stock Tank	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	72	45
Number leks monitored	15	15	17	17	17	17	17	17	17	19	19	20	21	22	22
Total # males	138	153	170	165	228	224	240	241	114	127	104	88	97	376	335
Mean # males/lek	9	10	10	10	13	13	14	14	7	7	5	4	5	17	15

Table 4 (continued). Maximum male sage-grouse counts on occupied leks on or within 4 miles of SRC deeded lands included in conservation bank

Lek Name (see Figure 17)	Year													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
2683214	NA ^a	NA	NA	6	4	16	12	NA	NA	30	20	15	24	NA
2683281	NA	NA	NA	NA	NA	NA	12	NA	NA	3	4	2	NA	NA
2780282	NA	NA	NA	NA	NA	32	NA	NA	NA	10	4	0	NA	NA
2781044	NA	NA	NA	NA	NA	21	22	NA	NA	NA	0	0	NA	1
2783254	28	30	NA	15	53	107	112	84	46	75	NA	28	NA	NA
Annis	NA	NA	NA	NA	NA	NA	NA	NA	0	NA	0	0	NA	0
Arkansas	30	29	44	54	52	85	68	29	21	13	7	NA	NA	NA
Arkansas Basin	48	2	34	76	82	105	117	64	56	16	59	72	0	28
Bear Mountain	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	NA	0
Beulah Belle Lake	NA	NA	NA	13	10	41	NA	42	18	25	57	21	17	8
Bishop Point	NA	NA	NA	NA	NA	NA	NA	57	51	45	35	3	15	11
Canyon Creek	43	43	31	37	43	68	132	54	41	75	40	32	46	22
Canyon Creek Lower	NA	NA	NA	NA	NA	NA	NA	2	3	12	65	3	0	0
Childers Reservoir	34	NA	31	37	24	46	56	56	59	38	31	15	7	3
Coal Springs	27	18	NA	7	27	27	16	34	NA	11	16	18	NA	14
Deweese	28	32	19	8	9	NA	NA	NA	NA	1	44	24	NA	12
E. Stock Tank	32	NA	22	19	12	39	32	29	16	28	32	25	23	18
Emilys	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	14	7	NA	0
Ferris	53	18	26	40	29	39	41	25	38	22	26	25	24	14
Flattop	5	9	9	9	NA	NA	NA	NA	NA	0	11	5	NA	6
Fremont Canyon South	NA	NA	NA	1	NA	NA	3	4	7	NA	2	0	0	0
Gooseberry Creek	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	33	27	23	16
Junk Hill	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kortes Road	NA	NA	NA	NA	15	59	36	64	56	53	8	15	NA	13
Point East	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stock Tank	40	NA	57	43	32	62	79	67	52	41	51	38	36	32
Number leks monitored	11	8	9	14	13	14	14	14	14	19	23	23	12	19
Total # males	368	181	273	365	392	747	738	611	464	504	559	375	215	198
Mean # males/lek	33	23	30	26	30	53	53	44	33	27	24	16	18	10

^a NA – lek not counted.

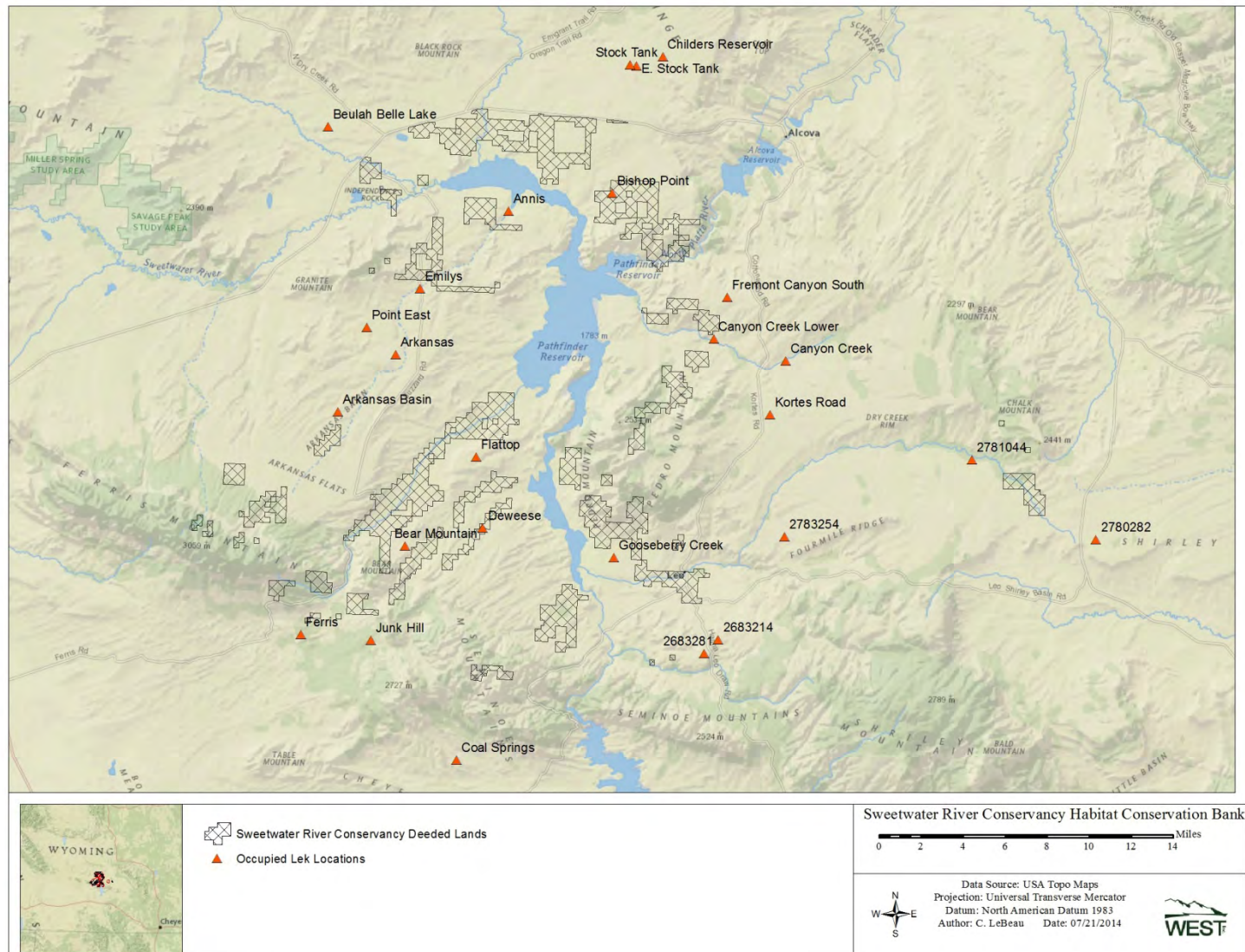


Figure 17. Locations of occupied sage-grouse leks on and within 4 miles of SRC deeded lands within the Pathfinder Ranch.

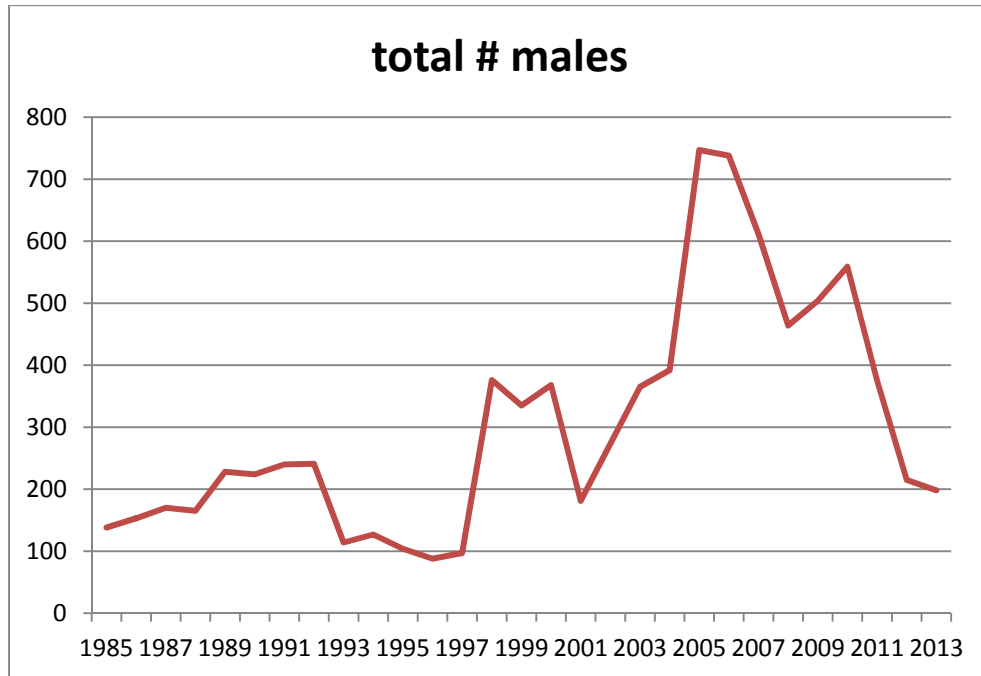


Figure 18. Trends in the total number of male sage-grouse counted on occupied leks on and within 4 miles of SRC deeded lands within the Pathfinder Ranch

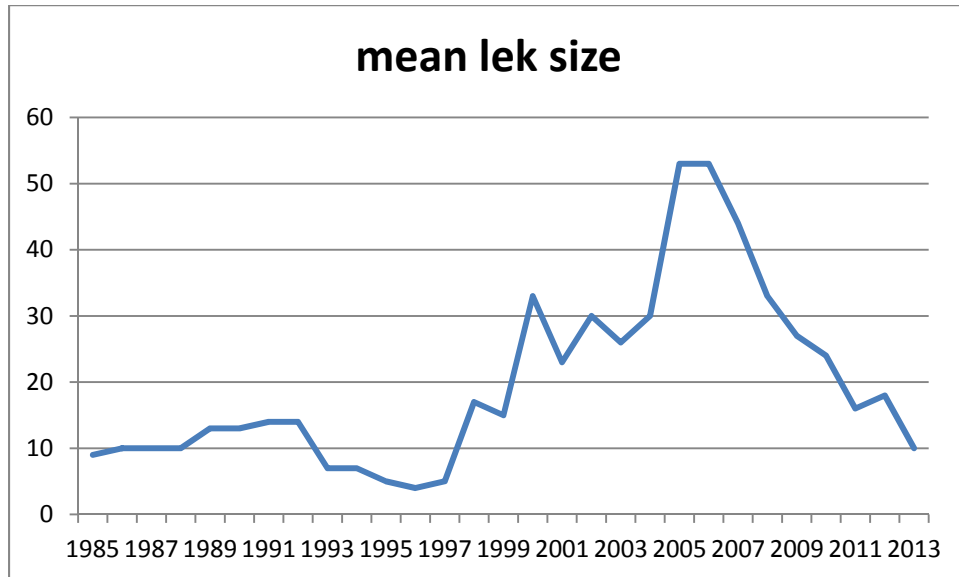


Figure 19. Trends in the mean number of male sage-grouse/lek on occupied sage-grouse leks within 4 miles of SRC deeded lands within the Pathfinder Ranch

BANK ADMINISTRATION

Sweetwater River Conservancy will supervise, manage, and maintain the SRCCB in perpetuity to preserve sage-grouse habitat values according to terms of the CBA, including implementation of this management plan. Financial assurances to administer the SRCCB are included in the CBA. Responsibilities of Sweetwater River Conservancy will be to provide security, implement this management plan including all adaptive management measures, and provide USFWS with reporting describing results of management and monitoring activities described in this management plan.

RESOURCE MANAGEMENT AND MONITORING COMPONENTS

Management of the SRCCB

Based on existing habitat quality, the main management technique to preserve sage-grouse habitat on the SRCCB will be to place the SRCCB under deed restrictions followed by a conservation easement to preclude development and other activities harmful to sage-grouse habitat. The other primary management technique will be to implement a grazing management plan that generally follows a framework developed by NRCS to maintain existing sage-grouse habitat quality. Other management activities will include management of fire, noxious weeds, predators, West Nile virus, and recreation to benefit sage-grouse habitat.

To facilitate implementation of the management plan and associated monitoring, Sweetwater River Conservancy may employ one full-time SRCCB Manager. The SRCCB Manager would have responsibility to ensure that all management, monitoring, and reporting activities described in this management plan are implemented. It is anticipated this individual would also conduct sage-grouse surveys, vegetation monitoring associated with implementing NRCS grazing management, and all other required management and monitoring activities described in this plan. He/she would also prepare all required monitoring reports.

Livestock Management

Sweetwater River Conservancy recognizes grazing management is a valuable and efficient tool to maintain and improve livestock operations and provide quality sage-grouse habitat. Grazing management is managing and manipulating the grazing animal-forage plant-soil complex to obtain specified objectives (Valentine 1990). Objectives established in this management plan are designed to: 1) protect and/or improve sage-grouse habitat, where feasible; 2) improve or maintain optimum levels of quality forage that ensure livestock health; and 3) maintain economic profitability for the ranches' lessees. Current livestock operations on the SRCCB have resulted in areas of quality sage-grouse habitat, but there are areas where changes in livestock management will result in improved habitat for this

species and produce a higher quality of forage for livestock by improving productivity of the herbaceous plant community.

Use of grazing management as a tool to manage sage-grouse habitats will require coordination with OSLI and BLM since all grazing allotments within the SRCCB include federal, state, and deeded lands. Fortunately, Sweetwater River Conservancy holds state grazing leases and federal grazing permits on all allotments within the SRCCB, which will facilitate development of a coordinated grazing management plan. Sweetwater River Conservancy intends to continue to use grazing on private and leased and permitted lands as the primary tool to manage sage-grouse habitat. The objectives of Sweetwater River Conservancy (i.e., to protect existing quality sage-grouse habitats) and the lessees (i.e., to operate a sustainable and profitable livestock operation) are compatible. Sweetwater River Conservancy will evaluate all proposed changes to current livestock management for potential impacts to livestock operations and agreements related to BLM permits and State land leases. Although the implementation of new grazing management plans may result in reduced livestock use of some pastures during certain seasons over what it has been in the past once rotation grazing is implemented, these changes to benefit sage-grouse habitat will hopefully not result in significant injury to the lessees and allow grazing leases and permits to remain whole.

While existing grazing practices within the SRCCB have maintained quality sage-grouse habitat, Sweetwater River Conservancy will develop grazing plans that incorporate livestock production and sage-grouse habitat goals and objectives going forward. These grazing plans will generally follow recommendations of the NRCS for grazing management to benefit sage-grouse habitat (U.S. Natural Resource Conservation Service 2008, 2012, 2014a, 2014b), as summarized below. Sweetwater River Conservancy will estimate forage production using methodology consistent with the NRCS National Range and Pasture Handbook, Chapter 4. Resulting estimates of production will be used to develop and manage livestock rotation to maintain an overall balance between produced forage and livestock forage demand on private lands within the SRCCB. This strategy will generally adhere to NRCS recommendations for developing and monitoring grazing lands, because credits associated with the SRCCB will be maintained in perpetuity on private land holdings. NRCS conservation practices are developed for private lands and assume flexibility related to infrastructure development and personal financial commitments which may not be available on BLM permits and State land-associated leases. In addition, if improvements to sage-grouse habitat occur as a result of implementing the NRCS grazing plan, and these improvements can be quantified through vegetation monitoring (see monitoring section below), additional credits may be generated.

Ultimately, the value of the lands encompassed by the SRCCB is fundamentally tied to their utility in providing secure and quality sage-grouse habitat. Thus, if the livestock operation is determined to be causally tied to the diminution of that habitat, the

Sweetwater River Conservancy is fully aware that the livestock operation may have to altered, even if such changes result in reduced or changed livestock grazing opportunities. Further, the Sweetwater River Conservancy acknowledges that the BLM and Wyoming Board of Land Commissioners retain all of the rights and obligations associated with the respective federal grazing permits and state grazing leases associated with SRC property, as prescribed by those permits, leases and federal and state law and regulation.

In addition to grazing management, infrastructure associated with livestock operations can affect sage-grouse by disrupting mating behavior or causing potential collision/drowning risks. Therefore, Sweetwater River Conservancy will:

1. Construct new livestock facilities (i.e., livestock troughs, fences, corrals, handling facilities, dusting bags, etc.) at least 0.6 mi. (1 km.) from leks to avoid concentration of livestock, reduce collision hazards to flying birds, or eliminate avian predator perches, where appropriate and feasible.
2. Place escape ramps in all existing and new livestock water tanks.

Fire Management

Because the SRCCB is within an area that receives an average 10 in. (25 cm.) of precipitation/yr. and is grazed by cattle, herbaceous cover is typically not dense enough to carry fires. No fires larger than a few acres have burned within the SRCCB over the last 37 yrs. (Haney Stevenson, Ranch Manager, pers. communication.). Although large wildfires do not appear to pose a significant risk to the SRCCB, there is some potential for small fires to occur. Once sagebrush habitats are burned, they may not provide suitable sage-grouse habitat for decades. Therefore, wildfire prevention and quick suppression of any wildfires that do occur are top priorities for managing and monitoring the SRCCB. Numerous procedures will be put in place to reduce the possibility of wildfires including:

1. A fire truck (tanker, brush truck) will be maintained at Pathfinder Ranch headquarters within the SRCCB, and the ranch manager/all ranch employees will be trained in fire suppression to ensure rapid response to any wild fires.
2. Smoke detectors and fire extinguishers will be maintained and available in every occupied building within the SRCCB to reduce potential for unintended fires.
3. All ranch vehicles will be required to carry shovels and fire extinguishers. In no instance will vehicles be parked on areas where catalytic converters could start fires.
4. Camp fires will not be allowed within the SRCCB subject to the terms of the Deed Restrictions and/or Conservation Easements on the property at any time.
5. No burning of trash or other burning will be conducted within the SRCCB.

6. Existing roads within the SRCCB will be maintained as fire-breaks. Due to potential for habitat fragmentation, no clearing of vegetation will be allowed to provide fire breaks unless it is necessary to contain an existing fire.
7. Cheatgrass (*Bromus tectorum*) infestations that pose a significant risk for wildfire on the SRCCB will be controlled and eliminated, if possible and practical.

If a wildfire does occur, steps will be taken to immediately suppress any fires on SRCCB or adjacent lands controlled by the property owners of the ranches that comprise Pathfinder Ranch. Sweetwater River Conservancy will work with BLM, OSLL, fire dispatchers and other potential first responders to set wildfire suppression priorities related to the SRCCB. The bank manager will be trained in wildfire prevention and suppression and will carry contact information for all first responders. Areas damaged by wildfire may be restored to the extent practicable.

Prescribed fire fragments and reduces available sagebrush stands and increases the risks for cheatgrass and other invasive weed establishment, leading to negative impacts to sagebrush habitat and long-term impacts to sage-grouse populations. Therefore, burning to enhance sage-grouse habitat is currently not recommended in any areas that receive ≤ 12 in. (30.5 cm.) annual precipitation (Sage and Columbian Sharp-tailed Grouse Technical Committee 2009). Since mean annual precipitation at Pathfinder Ranch is 10 in. (25 cm.), there are no plans to use prescribed burning for habitat enhancement on the SRCCB at this time.

Undesirable Plants and Insects

Monitoring and management of noxious weeds and other undesirable plant species is important because these species can result in significant loss or degradation of sage-grouse habitat. While existing habitat and range conditions on the SRCCB are very good, preventing the introduction and spread of noxious weeds and other undesirable plants is one of the most effective tools for preserving or improving habitat. The goal of undesirable plant monitoring and management is to prevent the degradation of high quality sage-grouse habitat due to introduction and/or spread of noxious weeds and other undesirable plant species and to improve low quality habitat by eradicating noxious weeds and other undesirable plant species.

Early Detection-Rapid Response (EDRR) protocols will be a cornerstone of Sweetwater River Conservancy's undesirable plant monitoring and management program by allowing the Conservancy to target and prioritize its weed prevention and eradication efforts. EDRR uses a variety of methods to detect new invasive species and enact an appropriate rapid response to prevent the species from becoming established and difficult to control/eradicate. Management actions will be species-specific and may include use of herbicides and physical, biological, and cultural methods. Physical methods may include mowing, tilling, or physical

removal of certain individual plants (i.e., juniper). Biological methods may include use of targeted grazing or pathogens including fungi known to be effective at controlling cheatgrass. Cultural control methods may include frequent washing of all vehicles and equipment used on the ranch, avoiding excessive disturbance on ranch lands, and using certified weed-free seed and hay when possible.

To ensure the most current and effective management practices related to noxious weed control are used, Sweetwater River Conservancy will work with the Wyoming Weed Management Association and be involved in local Weed and Pest District Offices for Carbon and Natrona Counties. Sweetwater River Conservancy will cooperate with OSLI under its Weed and Pest Program, which provides a cost-share program to grazing lessees for approved weed control projects. Other opportunities to collaborate on weed control projects may be available through the BLM's Challenge Cost Share program and with other entities such as the South Central Sage-Grouse Local Working Group and Wyoming Wildlife and Natural Resources Trust Board.

Management of noxious weeds and other undesirable plants on the SRCCB will be prioritized to focus effort and resources on those species that degrade sage-grouse habitat. Threadleaf sedge (*Carex filifolia*) and cheatgrass currently are high priority species because they are known to occur on the SRCCB and have detrimental effects on sage-grouse habitat. Cheatgrass is difficult to control when established. However, there are several chemical and fungal treatments that may be utilized, as appropriate. Threadleaf sedge cannot currently be controlled through grazing management or herbicides. The Sweetwater River Conservancy has conducted some trial plots where the soil was pitted and bunchgrasses were seeded to try to establish bunchgrasses in threadleaf sedge dominated communities. If these trials prove successful, widespread treatment of threadleaf sedge may be possible.

While juniper encroachment into sagebrush habitats can have a detrimental impact on sage-grouse, it is not a problem on the SRCCB at present. However, juniper will be monitored and addressed as needed.

Although grasshopper and cricket outbreaks occur occasionally and could temporarily damage rangelands, grasshopper control is generally considered detrimental to sage-grouse as it reduces insect biomass for dependent chicks (Johnson 1987, Johnson and Boyce 1991). Therefore, Sweetwater River Conservancy does not anticipate control of grasshoppers or crickets unless there is a catastrophic outbreak that could have substantial habitat impacts.

Common Raven Management

One cause of sage-grouse population declines may result from reduced nest success due to egg depredation by common ravens (*Corvus corax*). Ravens have substantially increased in

abundance due to changes in human land use practices (Coates and Delehanty 2004). Previous studies have found nest success is negatively correlated with raven abundance (Dinkins 2013) and controlling ravens leads to increased nest success (Coates and Delehanty 2004, Dinkins 2013). To discourage use of the SRCCB by common ravens and other corvids, no new garbage or livestock carcass piles will be allowed within the SRCCB. If any garbage or carcass piles occur within 0.6 mi. (1 km.) of occupied leks, nesting, or brood-rearing habitat, they will be managed as necessary.

If sage-grouse nests are being unacceptably impacted by common ravens, control of this species may be considered. Control would most likely be conducted using domestic chicken eggs treated with DRC-1339, which is lethal to adult birds. Control of ravens would be conducted under a permit from USFWS and with concurrence from the CBRT. If monitoring data indicate other predators are causing substantial impacts to sage-grouse, additional predator control may be considered if approved by the appropriate federal and state agencies and with concurrence from the CBRT. Predator control would be contracted to USDA APHIS Wildlife Services.

West Nile Virus and Other Diseases

West Nile virus (WNV) moved into the northeastern United States in 1999 and rapidly spread across North America causing millions of wild bird deaths (U.S. Fish and Wildlife Service 2008). The virus is largely transmitted from mosquitoes to birds, but bird-to-bird transmission has been documented in several species, including sage-grouse. Sage-grouse have high susceptibility to WNV and experience high levels of mortality when exposed. Most WNV transmission in sage-grouse occurs during July and August when birds congregate in mesic habitats along riparian areas and near springs. To date, no confirmed WNV mortalities of radio-equipped sage-grouse have occurred within the SRCCB indicating WNV is not prevalent. However, measures will be taken to ensure that WNV outbreaks do not occur within the SRCCB.

In coordination with USFWS, dead sage-grouse that are found during normal bank management and monitoring activities will be collected and submitted for testing at the Wyoming State Veterinary Laboratory. If WNV is confirmed or suspected, mosquito larvae in known or suspected water sources may be treated using *Bacillus thuringiensis* or appropriate chemicals. In permanent or semi-permanent stock ponds and tanks within the outbreak area, long-term biological control of mosquito larvae may be conducted by introducing fathead minnows (*Pimephales promelas*). Research in northeast Wyoming documented promising results in reducing mosquito larvae using this approach. Where new pond construction is proposed for watering livestock, ponds will be designed to prevent establishment of aquatic vegetation (i.e., avoid steep sides and pipe water to trough offsite). In addition, any sources of standing water potentially used for breeding by mosquitoes (old tires, buckets, etc.) may be removed from the SRCCB.

Recreation

The primary recreational activity within the SRCCB is hunting big game (elk, mule deer, and pronghorn). Concentrated or overabundant big game populations can harm plant communities important to sage-grouse, reducing habitat quality and quantity (Wyoming Bureau of Land Management, et al. 2012). Sweetwater River Conservancy will continue to allow public hunting to help manage big game herds within the SRCCB. Sweetwater River Conservancy currently conducts big game surveys and consults with WGFD to determine an appropriate number of hunters to be allowed on the ranch for each big game species. Hunters are allowed access to the ranch on a “first come-first served” basis until the desired number of hunters has been reached for the season. Sweetwater River Conservancy may increase the number of hunters allowed on the ranch as necessary to manage big game while minimizing conflicts with ranch operations. To help facilitate hunter access, Sweetwater River Conservancy is developing a substantial signage and designated parking plan. To ensure additional raptor perches are not created in the SRCCB, signs will be limited to placards placed on fences below the top wire or will have perch guards mounted on them if placed on stand-alone poles. Sweetwater River Conservancy will coordinate with WGFD to establish an appropriate level of harvest and hunter opportunities on the ranch.

Sweetwater River Conservancy will continue to allow controlled public access for hunting waterfowl and small game. Historically, there has been much less demand for this type of hunting within the SRCCB, and no restrictions on the number of hunters have been necessary. Sweetwater River Conservancy does not contemplate allowing access to the SRCCB for sage-grouse hunting.

Other public recreational activities will include fishing, wildlife observation, rock collecting, and hiking. Demand for this type of recreational activity has been low and restrictions on the number of people have not been required. Signage and parking also will be used to manage these recreational activities, while minimizing conflicts with normal ranch operations. In addition, some restrictions will be placed on access to the ranch in the vicinity of sage-grouse leks and nesting habitat during spring and early-summer to prevent disturbance to lekking and nesting birds. Off-Highway Vehicle use shall be managed consistent with the Deed Restrictions and/or Conservation Easements.

Monitoring of the SRCCB

Greater Sage-Grouse

To monitor overall health of the population, trends of sage-grouse on the SRCCB will be monitored through conducting lek surveys and/or counts. Although the SRCCB is a habitat-focused bank, monitoring the sage-grouse population through lek counts/surveys, combined with vegetation monitoring as part of the grazing management plan (see below),

will provide an indicator of habitat quality and ensure it is being maintained into perpetuity.

To monitor sage-grouse populations within and near the SRCCB, ground-based lek counts/surveys will be conducted every year using WGFD protocols. Aerial surveys will be conducted every 5th year from fixed-wing aircraft to search for new leks. Aerial survey design will follow WGFD protocols.

Habitat

As part of the NRCS-derived grazing plan to be implemented on the SRCCB, monitoring of vegetation will be required. Sweetwater River Conservancy will work with BLM and NRCS to design monitoring plans that are appropriate for the stated objectives in prescribed grazing plans. The primary technique used to monitor habitats on the SRCCB will include:

1. Establishing vegetation monitoring sites based on ecological sites using NRCS soils mapping units; and
2. Maintaining photo points following procedures in Wyoming Rangeland Monitoring Guide (2008).

Adaptive Management

Adaptive management has been described variously as "learning by doing, and adapting based on what's learned," "management in the face of uncertainty, with a focus on the reduction of that uncertainty," and "management that recognizes uncertainty in its consequences and seeks to improve understanding so as to improve decision making." Adaptive management is seen as a systematic approach for improving natural resource management, with an emphasis on learning about management outcomes and incorporating what is learned into ongoing management. Adaptive management is a structured, iterative process of robust decision making in the face of uncertainty, with an aim to reducing uncertainty over time with monitoring. Use of adaptive management is based on the premise that the answers to all management questions are not known *a priori* and that data and information necessary to develop specific management actions are often not available. Adaptive management also involves a commitment to change management practices as new data and information become available, suggesting that such changes are warranted.

According to the Department of the Interior (Williams et al. 2009), adaptive management should be implemented in the following way:

1. Ensure stakeholder commitment to adaptive management for duration of the enterprise (i.e., conservation bank);
2. Identify clear, measurable, and agreed-upon objectives;

3. Evaluate management effectiveness over time;
4. Identify management actions for decision making;
5. Model different benefits and costs as outputs of management through time; and
6. Design and implement a monitoring plan.

Numerous conservation measures have been developed to conserve sage-grouse. The latest conservation measures and their associated conservation benefits to sage-grouse are thoroughly described in the Greater Sage-Grouse Umbrella Candidate Conservation Agreement with Assurances for Wyoming Ranch Management (Wyoming Bureau of Land Management et al. 2012). These conservation measures have been developed by numerous state and federal agencies, including Wyoming BLM, NRCS, WGFD, Wyoming Department of Agriculture, Wyoming Association of Conservation Districts, U.S. Forest Service, and USFWS. These methods have proven effective at conserving and enhancing sage-grouse habitat, and it is anticipated that they will prove effective for managing sage-grouse habitats on the SRCCB. If, however, the conservation measures described in this plan do not achieve their intended results, adaptive management will be used to guide development of further conservation measures.

Monitoring will ultimately identify areas where alterations to the management plan should be considered. At that point, Sweetwater River Conservancy will adapt its management to address monitoring results.

REPORTING

Sweetwater River Conservancy will submit an annual report to USFWS on or before August 15th of each year following the Bank Establishment Date until bank closure. Each annual report shall cover the period from July 1 of the preceding year (or if earlier, the Bank Establishment Date for the first annual report) through June 30th of the then-current year (the Reporting Period). The annual report will contain an itemized account of the management tasks conducted during the Reporting Period in accordance with this management plan, including the following:

1. The time period covered, (i.e., the dates “from” and “to”);
2. A description of each management task conducted;
3. The total dollar amount expended for management tasks conducted during the reporting period; and
4. Biological status reports detailing the results of monitoring conducted pursuant to the CBA and this management plan.

After closure of the SRCCB, Sweetwater River Conservancy will submit status reports once every 5 yrs. that describe all management tasks and dollar amounts expended for management tasks over the previous 5-yr. period.

CONSERVATION BANK OPERATIONS: MANAGEMENT EXPENDITURES AND FUNDING

Management and monitoring of the SRCCB will be funded through the sale of sage-grouse habitat conservation credits. A portion of the proceeds from the sale of conservation credits will be deposited into a non-wasting endowment that will fund management of the SRCCB. A description of the endowment and the endowment fund is provided in the CBA.

The initial assessment of management and monitoring costs is provided in Table 7 below. This assessment assumes that the full-time SRCCB manager would be responsible for all aspects of managing and monitoring the bank, and includes costs of labor, overhead, housing, vehicles, equipment and supplies, plus the cost to contract a pilot for aerial lek surveys.

MANAGEMENT PLAN AMENDMENT AND MODIFICATION

This management plan may be amended or modified only with the written approval of the Sweetwater River Conservancy and USFWS before closure of the SRCCB. During such time, all proposed amendments and modifications must be consistent with current USFWS banking guidance and guidance for conservation of habitat for the Covered Species in effect at the time of the amendment. In the event there is a conflict between the CBA and this management plan, the CBA shall control. In the event there is a conflict between the deed restriction(s) and this management plan, the deed restriction(s) shall control.

This management plan may not be amended, modified, or rescinded except upon written consent by the Grantor and Grantee of the conservation easement(s) and the USFWS after closure of the SRCCB. In the event there is a conflict between the conservation easement(s) and the management plan, the conservation easement shall control.

If the Sweetwater River Conservancy elects to place a conservation easement on all or a portion of the property prior to closure of the SRCCB, for that portion of the property burdened by the conservation easement, this management plan may not be amended, modified, or rescinded except upon written consent by the Grantor and Grantee of the conservation easement(s) and the USFWS. In the event there is a conflict between the conservation easement(s) and the management plan, the conservation easement shall control.

Table 5. Estimated Annual Costs of Management and Monitoring for the Sweetwater River Conservancy Conservation Bank.

Management Plan Component	Responsible Individual	Prorated Annual Cost
Management		
Livestock Management	Sweetwater River Conservancy Bank Manager in Cooperation with livestock operator	\$22,000
Fire Management	Sweetwater River Conservancy Bank Manager	\$3,700
Noxious Weeds	Sweetwater River Conservancy Bank Manager	\$22,000
Predator Management	Sweetwater River Conservancy Bank Manager	\$4,000
West Nile Virus	Sweetwater River Conservancy Bank Manager	\$4,000
Recreation	Sweetwater River Conservancy Bank Manager	\$8,700
Monitoring		
Sage-grouse lek surveys (annual ground-based survey and aerial survey every 5 years)	Sweetwater River Conservancy Bank Manager and Aerial Contractor	\$3,200
Habitat (NRCS grazing plan monitoring)	Sweetwater River Conservancy Bank Manager	\$32,600
Total		\$100,200

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**Appendix A. History of the Ranches comprising the Sweetwater River Conservancy
Habitat Conservation Bank**

A History of the
PATHFINDER RANCHES



Pioneer Tales, Cattle and Cattlemen are Central to the Pathfinder's History

Cattle, horses, cowboys and cowgirls lace the tales of central Wyoming's historic Pathfinder Ranch. From founder A.J. Bothwell, who settled in Wyoming Territory in the 1880s, to the Stevenson family that now lives on the ranch, the Pathfinder is home to those who enjoy Wyoming's open landscapes and western ways.

In the 125 years since A.J. Bothwell came to the area known as the lower Sweetwater along the pioneer trails corridor, the Sanfords, Arctic Investment Group, the Stevensons, the Berras and now a group led by managing partner Jeff Meyer, have owned the Pathfinder Ranch. It wasn't called the Pathfinder until it came under the ownership of John Berra, Sr. When the remainder of the Stevenson family left the ranch in the early 1980s, Haney Stevenson and his wife Ruth stayed on as Berra's ranch managers and have considered the Pathfinder their home for over 30 years.

"A cattlemen's dream has always been, and always will be 'MORE LAND AND MORE CATTLE,'" wrote Ethel Sanford in her 1977 memoir, "As I Remember."

"Steward Sanford was no exception, and with four sons, he wanted to set them all up in the cattle business," wrote Ethel, wife to Steward's son Gordon. "Colorado land was being settled by homesteaders so fast now, that the days of expansion were gone."

In the spring of 1916 the desire to grow the family's agricultural interests drew Steward and his eldest son Archie to Wyoming to look at the Buzzard Ranch. Upon arriving they discovered that former Wyoming Governor B.B. Brooks (Governor of Wyoming from 1905-1911) was negotiating on the ranch, located at the east end of Ferris Mountain, that would become home to his daughter and son-in-law, Roy and Melissa Spurlock.

Springtime weather delayed the Sanfords' return trip to Colorado and they spent the night at the Bothwell Ranch. Ranch owner A.J. Bothwell, a Harvard law graduate with a civil engineering degree, upon learning of the Sanfords' goals, offered to sell them the ranch he'd founded in 1888.

Bothwell, according to Tom Rea's book *Devil's Gate: Owning the Land, Owning the Story*, settled in central Wyoming during planning of the railroad. In hopes that the rail would pass near the present-day Pathfinder Ranch, he aspired to create the town of Bothwell, Wyo., and in doing so filed a plat with Carbon County. Natrona County hadn't yet been created.

Rea wrote, "The town's first — and, as it would turn out, only — residents were Isaac Speer, one of the investors and an agent of the town company, and H.B. Fetz, editor of the *Sweetwater*



Ranch founder A.J. Bothwell mows hay at the Bothwell Ranch, later to become the Pathfinder Ranch, in this undated photo. Photo courtesy of the Casper College Western History Center

Chief."

Early in April 1889, according to Rea, a printing press was shipped to Bothwell, Wyo. in what later proved to be a failed effort to spur the community's growth. The railroad didn't pass through the area and the community of Bothwell never took root.

Persistent upon selling his ranch to the Sanfords, A.J. Bothwell traveled to Colorado. "I remember Mr. Bothwell as a very distinguished looking man of about 60 with grey hair and a grey Vandyke beard. He was a very convincing talker and he was there to sell his ranch in Wyoming, and he wasn't going to give up," wrote Ethel Sanford.

"It took a return trip for Dad Sanford and Archie

to look it over more carefully," wrote Ethel Sanford. "They found that there was plenty of water, as Horse Creek ran through the ranch, and would supply water for the meadows that would produce hay, and that there were lots of wide-open spaces with no fences, the thing they were looking for. Pathfinder Dam had just been completed a few years before then, and was just below the ranch. And where the Sweetwater River ran into the North Platte River, to go into the dam, it caused a back up of water on the ranch, making a lake, which was a beautiful sight with the mountains in the background."

In June of 1916 the A.J. Bothwell Ranch became the Sanford Ranch. The Sanfords took over Bothwell's TW brand and called the ranch the TW Ranch.

In the spring of 1917 the Sanford family shipped



Archie "Heavy" Sanford, sitting center on the tailgate, and his wife Lillian operated the Sanford Ranch in partnership with Gordon and Ethel Sanford until 1941. At that time the Sanford Ranch came under the management of Heavy and Lillian and their three sons Stan, Leonard "Bud," and Wayne. Photo courtesy of the Sanford family

1,000 head of cattle from Colorado to Wyoming. They were trailed from the ranch to Eaton, Colo., loaded on Union Pacific trains and unloaded at Rawlins, Wyo. "They were trailed from Rawlins across country, and through the Ferris Mountains at Whiskey Gap, and down the Sweetwater country to the ranch," recalled Ethel Sanford. Over the course of the following two years the Sanfords lost many of the cattle, which weren't acclimated to Wyoming's harder conditions.

"There was much sadness in the Sanford family in 1921 when the fact had to be faced that one of the ranches would have to go," wrote Ethel Sanford. "Mr. Bothwell held the mortgage on the Double Bar SS (the family's Colorado ranch) and was only too happy to take it over."

For the nearly two decades that followed Gordon and Ethel ranched in partnership with Archie and Lillian on the ranch that grew to 200,000 acres in size. The brothers added what they called the CRI on Fish Creek (now the Rattlesnake Grazing Association) and the Indian Grove Ranch near the Pedro Mountains to the main ranch property.

Gordon and Ethel left the ranch in July of 1941, selling their shares to Archie's family and moving to town where Gordon worked as a cattle buyer and later as a brand inspector. Archie and Lillian Sanford continued to ranch with their three sons — Leonard "Bud," Wayne and Stan, and their families.

Sharon Sanford, Wayne's daughter, married Dick Jarrard in 1963 and the young couple spent the next 11 years on the Pathfinder Ranch. "They were great stockmen," recalls Dick of the Sanfords. "Everything

was done with horses." Come haying season Dick recalls nine teams with mowers working in the field simultaneously.

Branding crews made the rounds early summer and round-up crews in the fall. "They had 100 head of horses in the horse cavy when we branded," recalls Sharon. Each cowboy had six or more horses. The horses, both draft and saddle, were ranch-raised and in later years the family hosted a horse sale.



Haney Stevenson. Mandy Stevenson photo

Mike Sanford, whose father was Stan Sanford, says the crews slept in canvas tents and were fed from a wagon called the "Cooster."

Artic Investment Group purchased the Sanfords' three ranches, including the Pathfinder, in 1973.

Jim Stevenson, who had moved his family from New Mexico to Wheatland, Wyo. in 1964, purchased the Pathfinder Ranch in 1977. Operating it in unison with his sons, the family named it Double S for Stevenson and Sons. "Ruth and I moved here on Jan. 1, 1977 and it

THE BUZZARD

While today's 30-mile trip down dirt roads makes the Buzzard Ranch seem remote, at the turn of the last century it was the center of much activity.

"Buzzard" isn't only the name of the ranch, but the community that preceded it. Located near the east end of Ferris Mountain, in pioneer days the town of Buzzard was on the road from Casper to Rawlins. The Buzzard Ranch is one unit, or one of the ranches, that make up the larger Pathfinder Ranch.

According to Ruth Beebe in her book *Reminiscing Along the Sweetwater*, "James Cantlin came here from Illinois, and went into partnership in livestock with John Mahoney. They sold their business to Harry Chapman and I.C. Miller about 1902." In 1912 a Nebraska company by the name of Merriot and Welsh purchased the ranch.

Beebe says Buzzard had its own champion polo team. "A polo team was organized on Sand Creek, composed of Harry Chapman, Sam Johnson, William Weaver and Cal Shuler. They went and played as far away as Cheyenne," says Beebe's book. Recent residents of the ranch say polo balls can still be found in the fields.

In 1916 the Sanford family made the trip from their Colorado home to central Wyoming to consider purchasing the ranch, but Wyoming Governor B.B. Brooks (1905-1911) beat them to the punch. Brooks sealed the deal in 1917 and the ranch became home to his daughter and son-in-law, Roy and Melissa Spurlock.

In 1948 the ranch was sold to the Leroy Moore Company. Haney Stevenson remembers Ty Moore running the ranch when he arrived in the area. The polo field, recalls Stevenson, became a golf course. "He had those old pull type grass cutters that didn't have a motor." The machines were used to maintain the course.

"Ty Moore had the place when we bought it in 1979," says Haney of the transaction that made the Buzzard part of the Pathfinder Ranch. Haney's daughter Dee Burgess and her husband Keith now live at the Buzzard.

The two-story house built by the Brooks family fell into disrepair and has been torn down. Few remnants of the Buzzard community remain at the old town site where Keith and Dee's home is located. Broken glass, says Dee, indicates the former location of the bar and an old cellar remains functional.



Not every horse raised on the Pathfinder Ranch was "ranch horse material." Horses like "Peacock," shown here, were taken to the Rawlins rodeos in the 1920s for use as bucking stock. Photo courtesy of Dick and Sharon Jarrard

was 20 below zero," says Haney Stevenson. The couple's oldest daughter, Dee, was three years old.

In 1979 the Stevensons purchased the neighboring Buzzard Ranch (see sidebar) from the Moore family.

John Berra, a native of St. Louis, Mo., acquired the Stevenson's holdings in 1989. It was under Berra's ownership that the ranch came to be known as the Pathfinder Ranch.

Berra, who Haney recalls as "a builder," passed away in recent years. Berra was responsible for adding the main ranch house, the riding arena and the church to the ranch.

"John Berra wanted to build a church so we built a church," says Haney. "We did the construction on it and everything." The little white building, complete with a steeple, sits near the ranch yard with Steamboat Rocks as its backdrop.

In 2008 Jeff Meyer, along with business partners, purchased the Pathfinder Ranch from Berra's heirs. Meyer provided the Stevenson family an opportunity to move from ranch managers to leaseholders. Haney and Ruth Stevenson, their daughter and son-in-law Keith and Dee Burgess and their son and daughter-in-law Tyler and Mandy Stevenson have become partners in Pathfinder Cattle Company.

"When John Berra had it we ran up to 3,700 mother cows," says Haney. "When Jeff bought it he leased it to us and we're running our own cattle." In addition to their own mother cows, Haney says they're taking in some pasture cows and summer yearlings. The family is using the Bar J Bar brand that has been associated with the Pathfinder Ranch for the past several

years.

The first loads of Pathfinder Cattle Company calves were shipped Fall 2009 after selling on the video auction. By purchasing the mother cows that were already on the ranch, Haney says the family was able to maintain cattle that know the country and continue marketing the genetics they'd built on the ranch over the last three decades.

The Stevensons run mostly Angus cows, crossing them with Composite bulls carrying Salers and Angus bloodlines. Producing a terminal cross,

Haney says they purchase replacement cows for the ranch.

Ruth says the disposition of the Salers makes them a better fit in their country where it takes over 50 acres to carry a cow for the year. "We have more calves live because of their dispositions," she says.

"We pasture calve all of our cows," says Dee noting calving season on the ranch gets underway mid-April.

"We wait until green grass is coming," says Haney. While they do put up some hay and buy a little, he says they're usually done feeding hay by the time calving starts.

Hunting is another of the opportunities that the Stevensons say Meyer has presented them. Keith acquired the appropriate licensing through the Wyoming Outfitters and Guides Association. Offering hunts for elk, antelope and deer, Keith says Pathfinder Ranch Outfitters' clients had successful hunts Fall 2009. Each of the elk harvested on the ranch scored over 300. A trophy antelope, measuring 70 inches, is also among this year's hunting success stories.

Much like the Sanford family before them, the Stevensons are horsemen. "We have two studs and a handful of mares," says Dee. In their free time, the family competes in area rodeos.

Cattle, horses, cowboys and cowgirls have a long history on the Pathfinder Ranch. They also have a bright future as three generations of the Stevenson family work side by side with the Pathfinder Ranch's new owners for the benefit of the land, the wildlife, the livestock and the future of Wyoming and Cowboy State citizens.



Keith Burgess. Mandy Stevenson photo



Ruth Stevenson. Mandy Stevenson photo

COVER PHOTO



The photo featured on the cover is a photo of Wayne, Bud and Stan Sanford who operated the Sanford Ranch, later called the Pathfinder Ranch, until the family sold it in 1973. Photo courtesy of the Sanford family

Dumbell Ranch History Spans Pioneer Days to Cowboy's Heyday

Located along the Sweetwater River, just downstream from Devils Gate, the historic Dumbell Ranch is laced with American and Wyoming history as well as unique scenery. The ranch headquarters lie just across the highway from Independence Rock and along the Oregon Trail's route across Central Wyoming.

Edgar P. Schoonmaker, whose presence in the Cowboy State dates back to the 1880s, founded the Dumbell Ranch. Like many Wyoming ranches, it began with the filing of homesteads by multiple members of the family including Edgar, his wife Jeanette and their daughter Harriet. Through a series of owners interested in expanding the Dumbell, the ranch grew to the sizable presence it has in Sweetwater Country today.

Schoonmaker, who nearly graduated from medical school before ill health forced him to move West, was a native of Troy, Penn. According to Ruth Beebe's book, *Reminiscing Along the Sweetwater*, "He and his friends formed a company called the Wyoming Central Improvement Company...Later he became the sole owner." The company's holdings included the Dumbell and land on the north side of the Rattlesnake Mountains.

The Schoonmaker family owned the Dumbell Ranch until the spring of 1919 when it was sold to William "Bill" Grieve. Historically running sheep, when Bill and his wife Isabel moved to the Dumbell they made the switch to cattle and branded what they called the "sunset."

"The first winter was so bad," says Bill's biography in the *Historic Encyclopedia of Wyoming*, "that he shipped 1,200 head of cattle to North Platte, Neb. He later brought back 600 head."

In 1940 Bill Grieve moved his ranching operation to Miles City, Mont. and sold the Dumbell Ranch to his nephews James "Jimmie" and Benjamin "Bun"

Grieve. Jimmie and Bun were raised on the neighboring UC Ranch, once part of the expansive and historic Diamond Ring Ranch.

"Availability of land," says Ellen Alley, Jimmie Grieve's oldest daughter, brought the family to central Wyoming around the time of statehood in 1890.

Among the operations added to the Dumbell Ranch by the Grieve family were the Claytor Ranch and Pete Fisher's ranch, both along Dry Creek. Pete Fisher was truly an old

➤ SWEETWATER COUNTRY ➤

SWEETWATER RIVER...Just the name evokes images of the remote watershed making its beginnings atop the Continental Divide near South Pass, Wyoming. It runs 238 miles before emptying into Pathfinder Reservoir on the Pathfinder Ranch. Eventually the waters make their way into the Atlantic Ocean.

The Sweetwater River was a source of reprieve for early day pioneers traveling the Oregon, Mormon Pioneer and Pony Express trails through "Sweetwater Country." By the mid 1800s it was a primary corridor and provided pioneers water and grass for their stock. Traveling through the area, pioneers would cross the river about nine times as they made their way to South Pass. On average, they spent 10 to 20 days along the river during their treks west. More plentiful water, feed and wildlife were a welcome respite for the weary travelers.

As rich in American history as it is natural resources, Sweetwater Country is home to important national treasures like Independence Rock and Devils Gate. Independence Rock lies just across

the highway from the Dumbell Ranch and Devils Gate serves as its scenic backdrop.

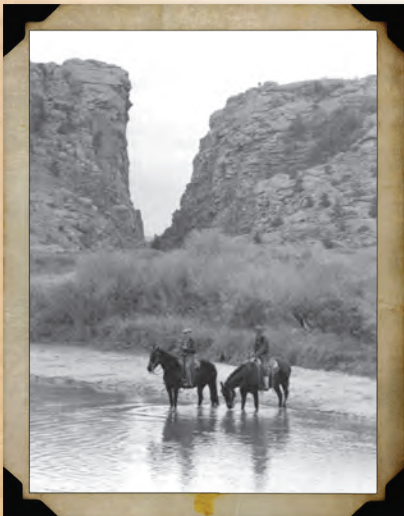
According to one historic tale retold in Tom Rea's book *Devil's Gate*, area Native Americans called Devils Gate the equivalent of "the Portico of Pandemonium." Legend has it that an enormous and tasked beast was causing pandemonium by gorging itself on game, drinking streams dry and tearing up the countryside. A prophet arrived telling the Native Americans that they'd have to work together to overcome the beast. In the Valley of the Sweetwater, surrounded by mighty mountains, the Indians shot the beast full of arrows. Enraged, he roared plowing into the mountain and throwing rocks. With his great tusks he opened a frightful gap and galloped away never to be seen again. Today that gap is called Devils Gate.

The Sweetwater River flows through Devils Gate via a 100-meter deep slot in the granite ridge. The gorge formed over millions of years, with the river first making its way through the sediment-filled valley. Over time it began eroding its way through the granite, bringing the river to its present-day course.

Located amidst central Wyoming's Granite Mountains, the country surrounding the Sweetwater River is a vast expanse of sagebrush-covered prairie accented with interesting geographical features and resource-rich watersheds.



The Sweetwater River flows through Devils Gate just above the Dumbell Ranch headquarters, creating a scenic and historically rich backdrop.



Jimmie Grieve and Dumbell Ranch cowboy Neil Williams water their horses from the Sweetwater River between Devils Gate and the Dumbell Ranch headquarters. The ranch's main buildings are just across the highway from Independence Rock State Historic Site and along the route of the Oregon Trail.



timer. He was born at Ft. Laramie, Wyoming Territory on March 14, 1868. In later years Mr. Fisher, using a team of 20 horses, hauled freight for the construction of Pathfinder Dam. Fisher was also among those who signed the petition that earned Wyoming admission as a state.

In 1953 the Grieve brothers added Lance Roper's Oilcan Ranch to the Dumbell holdings. Roper had previously served as foreman for Schoonmaker at the Dumbell Ranch, later establishing a ranch of his own. He's described as one of the best cowboys ever to hit the Sweetwater Valley.

The Dumbell was home to Jimmie Grieve, his wife Gloria Mae (McCleary) and their daughters Ellen, Edna



Jimmie and Gloria Grieve's daughters — Ellen, Carolyn and Edna — fondly recall their younger years on central Wyoming's Dumbell Ranch. "We had so much freedom," recalls Carolyn of their hours spent playing, exploring and learning.

and Carolyn. Continuing as a cattle operation, Jimmie Grieve used the sunset brand much as his uncle Bill had before him on the ranch.

"I have always contended there was no better way to grow up," says Edna Hamrick, the couple's middle daughter who now lives near Wheatland. "Even though we were three girls, we were very independent. We would play out in the rocks and trees for hours and hours. It didn't ever seem to me that mother was concerned."

"Devils Gate was our back yard and Independence Rock our front yard," says Carolyn Grieve of Cheyenne and the youngest of the three girls. She says their father was instrumental in seeing that Independence Rock was fenced and preserved for future generations to enjoy.

Edna recalls, "We had a cook that cooked for the whole ranch. They had a meat house where meat would hang, whether it was a deer or a steer. The cook would go there every day and get the cut of meat she'd prepare for everybody." The sisters would often cut a piece of meat from the carcass and pack it for their day's excursion.

Quite often, says Carolyn, they could be found in what they called the "couch cave," located between the ranch headquarters and Devil's Gate. Three boulders situated

DOGIE STEED A SWEETWATER COWBOY

"Curmudgeon," "grumpy," and "bow-legged" are terms often used by people describing long-time Sweetwater country cowboy Dogie Steed. Equally present, however, is recognition of what a fantastic cowboy Dogie was. He spent several years working on the UC Ranch, but like any cowboy of his era, Dogie worked at numerous ranches across the region.



Dogie Steed

A traveling cowboy of the day, a vagabond in spurs, Dogie worked on whatever ranch suited him at the time. Dennis Sun remembers Dogie working for his grandfather Tom Sun, James Grieve, Jr. at the Dumbell Ranch and Dr. Stuckenhoff when he owned the BB Brooks Ranch on Hat Six Road near Casper.

Bun Grieve's son Glenn, who spent the first six years of his childhood at the UC

Ranch, recalls Dogie as a resident of the UC Ranch bunkhouse.

"I remember him with a curved pipe," says Dennis Sun.

Dogie was a member of the last generation of cowboys that "rode the grub line," making their living with a horse, a saddle and a rope.

While you might find the likes of Dogie haying or fencing in the summer, they typically had a reputation for carrying out such jobs with little enthusiasm. Such was the case with Dogie Steed. One, however, has to remember that the bulk of Dogie Steed's cowboy career took place on the open range in the days when fences were a rarity.

TOD JORDAN

"I started about 160 head, I counted them up one time," says Tod Jordan of his days as a ranch cowboy, part of which were spent in central Wyoming's Sweetwater Country. Born in Peru, Nebraska in 1920, Tod moved to central Wyoming in the late 1930s. When he went to work for the Grieve family he was making \$6 a month.

"I wasn't forked enough to get up and kick the wild out of them," says Tod of his days breaking horses, "so I just gentled them and trained them. That made a better horse in the end."

Jordan was among the cowboys who worked for the Grieve family and considered Bun Grieve his best friend. "It was a good time and I married a girl that I thought was outstanding," says Tod. Bun and Tod married sisters, Lance and Vena Roper's daughters Barbara and Nancy.

During springtime branding and the fall roundup he remembers sleeping in tents on the range, but he says the temperature was usually decent and there was plenty to eat. "A guy would rope single calves out of the herd and call the brand. They'd put the same brand on it as was on the cow," he recalls. "There'd be a cook, a mechanic and several hands. Usually they had two or three kids along to do the footwork."

When Tod's wife and unborn son died during the polio epidemic that swept the nation in the middle of the last century, he left Sweetwater Country and the cowboy lifestyle behind. At 92 years old, he now resides in a retirement center in Missoula, Mont.

together with a hole in the top, a portion of the cliff hung out over the Sweetwater River. "We'd get pots and pans from the dump, eggs from the chicken hutch and Jello from the pantry," recalls Carolyn. They'd explore in the rocks, swim in the river, slide down the irrigation ditch, cook their lunch over a fire in the cave and catch fish using bent needles from their mother's sewing kit.

"We'd saddle our horses and be gone all day," says Edna. A ringing of the dinner bell at the ranch house meant it was time for them to return home.

Six to eight men worked on the ranch at any given time. "There were more in the summer and less in the winter," recalls Ellen. Much of June was spent branding the year's calves. In the fall the ranch crew would gather the cows and cut off those cattle destined for market.

Ellen also recalls gathering wild horses with her father and other Sweetwater Country cowboys from what was known as the Ben Roberts herd. Her father took care to keep her safe, but close enough to enjoy the tremendous amount of action. As the herds neared the specially built corrals at a high lope, the cowboys attempted to cut the stallions back. It wasn't uncommon, she recalls, for a stallion to chase after a saddle horse with its teeth bared. Younger horses joined the ranks of ranch geldings or became rodeo stock, particularly those that refused to be trained.

Ellen remembers her father as a man who asked ranch employees about the day's work rather than delivering orders. Always willing to take the outer circle, Carolyn recalls him mounted on his horse Apache, stating, "If it's not worth doing horseback, it's not worth doing."

In 1963, after selling the Dumbell Ranch, Jimmie and Gloria moved their family to Wheatland where they continued ranching. Upon leaving the Dumbell the Grieve brothers made headlines for shipping 2,337 head of cattle from the ranch to the Denver Stockyard via truck. It took 17 Neumann trucks to accomplish the job.

Jack Vanier of Salina, Kansas owned the Dumbell for 50 years following the Grieve Family's departure. It is now part of the Pathfinder Ranch.

THE OILCAN RANCH

"I grew up on a small ranch, the Oilcan," says Dorothy Roper Daly. "It was a ranch that was in between some very large ranches, the Grieve Ranches, the Sun Ranch and the Sanford Ranch. To the north was Ben Roberts, who had a big ranch." The Grieve family owned the Dumbell and the UC Ranch, the Suns the Hub and Spoke Ranch and the Sanfords owned what is today the Pathfinder Ranch.

At 90 years young and living in Scottsbluff, Neb., Dorothy shares the story of how the Oilcan Ranch came to be.

Lance Roper reported to Washington State expecting to be sent into action in World War I. Military officials, noticing the multiple broken bones he'd received from being thrown from horses, discharged him from the military. Lance made his way to the Bates Creek country near Casper where he spent a short time living with his aunt Hattie Clark and her husband Raleigh. While there he met and married schoolteacher Vena Hayworth.

Lance took out a homestead (later traded for the Oilcan along Dry Creek) and worked for various ranches in Natrona County. He moved camp for early day sheep man John Tobin and later served as foreman for Edgar P. Schoonmaker, Dumbell Ranch founder.

"For some years he worked as a foreman for some of the larger cattle outfits, but he had two stipulations," says Dorothy noting that he asked to run his own cattle amidst the ranch herd and that his wife was never to serve as cook. She often provided schooling to the ranch children. Prior to Schoonmaker selling the Dumbell Ranch to the Grieve family, Lance and Vena moved to the Oilcan Ranch where they raised their four daughters — Dorothy, Barbara, Mary Lou and Nancy.

"He was never a big cattleman," says Dorothy. "I think my Dad's herd amounted to all of 600 head, but in those days you could make a living on that." Dorothy, Barbara, Mary Lou and Nancy received their early education on the ranch, later boarding in Casper to attend high school. Dorothy recalls trips to the library in town, where they'd check out a box full of books, a month's reading material.

Exploring the countryside horseback and with a great deal of freedom, Dorothy recalls a wonderful childhood that provided a solid foundation for life's future endeavors. Quickly completing each level of her education, as World War II broke out Dorothy was graduating from the University of Wyoming with a degree in economics. She received an appointment as an economist in Washington, D.C. where she went on to have a very interesting career with the federal government. Upon his return from World War II, she married Tim Daly, also a Casper native.

Vena Hayworth Roper, Lance's widow, eventually sold the Oilcan Ranch to the Grieve family, making it part of the larger Dumbell Ranch.



Dorothy Roper Daly



James Grieve, Sr., who lived on the UC Ranch neighboring the Dumbell, brands a calf during the spring roundup. James preferred sheep to cattle. A gift of two bum lambs, a ram and ewe, to his granddaughters started them in the sheep business and provided spending money for several years.

SUN FAMILY'S RANCHING TRADITION CONTINUES AT THE TURKEY TRACK RANCH

Four cabins situated near Central Wyoming's Sweetwater River stand in testimony to a young man's dream of becoming a Wyoming rancher.

D.A. Beaton, born in Canada in 1868, came to Wyoming just prior to statehood in 1890 and went to work "cow-punching." Beaton founded the Quarter Circle Block Ranch, now the Split Rock Ranch located in Upper Sweetwater Country.

In 1917, following the death of his wife, Beaton sold the Split Rock Ranch to the McIntosh family. Given his love for Sweetwater Country, he soon purchased the Turkey Track Ranch along the Lower Sweetwater. The Turkey Track lies just up the Sweetwater River from the Sun family's original Hub and Spoke headquarters.

"Donald Beaton, Sr. was my grandfather," says Donald Eugene "Gene" Beaton, who now lives in Casper. "He built a lot of buildings along the

Sweetwater River all the way up to Sweetwater Station," says Gene of his grandfather, an early day carpenter in Sweetwater Country. Among his projects was the Sweetwater Schoolhouse, now on display at the Carbon County Museum in Rawlins, Wyo.



Tom Sun, Jr. and his wife Ellen, who went by Nellie, were the second generation of the Sun family to ranch in central Wyoming's Sweetwater Country. Circa 1913. Courtesy photo

Gene says four homestead cabins, a sign of his grandfather's desire to grow the family's ranch holdings, remain standing along the course of the Sweetwater River. Donald Beaton, Sr. oversaw the construction of the four cabins, placing them on separate homesteads for each of his four children. One of the cabins, which belonged to Donald's daughter Eva Beaton, sits very near the road to the Turkey Track Ranch. Gene's father, Donald Beaton, Jr., lived in his cabin while he

"proved up," meeting the requirements to take ownership of the land. He later left the ranch, spending much of his life in the Sheridan area.

"We used to go to the ranch in the summertime," says Gene, who was raised in Sheridan. The Beatons originally sold the Turkey Track to B.B. Brooks Livestock Company of Casper, but were forced to take it back with the arrival of the 1930s Great Depression. They began leasing the ranch to the neighboring Sun family.

The Sun family added the property to their Hub and Spoke Ranch in 1950. The Sun's headquarters were located just west of Devil's Gate and a short distance from the Turkey Track.

In 1995 when the Sun's Hub and Spoke Ranch was divided among members of the Sun family, Tena Sun and her brothers ended up with the Turkey Track as their new headquarters. The Turkey Track is home to Tena, her husband Toby Wingert and her brother Joe. Tena's brother Tom lives in Casper.

The Church of Latter Day Saints acquired around one-fifth of the Hub and Spoke Ranch and the headquarters near Devils Gate where they've built a visitor's center to commemorate the Mormon pioneers who fell victim to winter weather and inadequate supplies while traveling through the area in 1856.

"It includes some other ranches and this," says Tena Sun from her home on the Turkey Track Ranch. "We're a cow-calf operation." The ranch's cattle summer west of the Turkey Track toward Rawlins, Wyo. on federal land managed by the Bureau of Land Management. Tena says they also lease quite a bit of grazing land to other ranchers across the area.

"Just look around," Tena replies when asked what's kept her in the country all these years. Out each window of her house, rocks line the horizon with vast grass prairies spanning the wide, open spaces.

Tena, Tom and Joe received their early schooling on

— PONY EXPRESS —

150 years ago this April Pony Express riders raced through central Wyoming's Sweetwater Country delivering the nation's mail from Missouri to the west coast and back again. While the Pony Express' presence on the landscape lasted a mere 18 months, its story lives on as an American legend.

On April 4, 1860 a young man left St. Joseph, Mo. carrying a mochila (Spanish for pouch) including mail destined for California and numerous places in between. St. Joseph marked the westernmost local on the telegraph route. Using a relay team of young cowboys, news could travel from Missouri to California in the then record speed of 10 days.

The first westbound mochila arrived in San Francisco on April 14, 1860 at 1 a.m. While the 1,900-mile trip averaged 10 days, the mochila was delivered in a record eight days and 14 hours when Lincoln was elected president on Nov. 7, 1860. Pony Express owners Russell, Majors and Waddell made elaborate preparations for the event, positioning riders with fresh horses every 10 miles along the route.

The Pony Express announced its closure on October 26, 1861, two days after the transcontinental telegraph line reached Salt Lake City, Utah and connected Omaha, Neb. and Sacramento, Calif.

Beginning on June 6 and spanning through June 26, 2010 the National Pony Express Association will conduct its 150th anniversary re-ride. A rider carrying a mochila will leave San Francisco, Calif. on June 6 at 8 a.m. The relay will reach Wyoming on June 14 passing through central Wyoming's Sweetwater Country on June 16. Much like the early day riders they commemorate, this year's riders will pass by Devil's Gate, Independence Rock, the Sun family's Turkey Track Ranch and the Pathfinder Ranch. Through Sweetwater Country the Pony Express followed the same route as the Oregon Trail.



the family ranch and later attended boarding school in Canon City, Colorado. Tena went on to attend college in Arizona and then at the University of Wyoming where she received a degree in statistics. She spent a short time researching land titles for the oil and gas industry and worked for Casper-based True Companies before returning to the ranch full time.

An appreciation for the remote lifestyle and working in the outdoors has inspired Tena to continue her family's long-time ranching tradition. Her home is around 60 miles from town, but as a lifelong resident of Sweetwater Country she's used to the wide-open spaces that make up the landscape.

Summer months, says Tena, are filled with irrigating and haying. The Turkey Track's irrigation water originates from the Turkey Track dam to the north on the Sweetwater River. Calving takes place near the ranch headquarters in the spring and pairs are shipped to summer pasture near Rawlins. In the fall she says they trail the cows home to save on shipping costs.

In 2009 the Suns became a partner ranch with Pathfinder Renewable Wind Energy, LLC. "He's a neighbor and a nice guy," says Tena of Jeff Meyer, Pathfinder Renewable Wind Energy Managing Partner. The Turkey Track is part

of the company's conservation bank called the Sweetwater River Conservancy.

Tena admires the company's approach to protecting cultural resources. "He's going to keep the Oregon Trail pristine. We're working to protect the trail and that's important to me." The Oregon and Mormon Pioneer trails pass through the Turkey Track Ranch, as does the route of the Pony Express.

As a youngster Tena guided history enthusiasts through a museum her grandparents' built at the Hub and Spoke Ranch. Over the years she gained a great appreciation for the Sweetwater Country's history and its cultural treasures. Ranchers, says Tena, have done a great deal to protect the area's abundant cultural resources.

Neither Tena, nor her brothers, have any children. Long-term, she says, "I'd like to see the Turkey Track Ranch become a wildlife sanctuary." The ranch is home to a wealth of wildlife including sage grouse, mule deer and elk.

Sweetwater Country is Tena's home. Memories of branding, gathering and days spent horseback fill the countryside. As she says, one need only "look around" to see how wonderful it is to call "Sweetwater Country" home.

➤ TOM SUN: TRAPPER, SCOUT AND COWBOY ➤

Eager and determined young lads frequent Wyoming's pioneer tales. Destined for western states, often as very young men, they lived the American dream, working hard and establishing themselves as cowboys, ranchers and western businessmen. Their life's accomplishments can be seen throughout Wyoming today in the form of businesses, family ranches and thriving communities.

Tom De Beau Soliel was one such lad. Born Oct. 24, 1846 to French Canadian parents, Tom lost his mother at a young age. Encouraged by a dislike for his stepmother, he left his Vermont home at age 11 in 1857.

When Tom reached the Missouri River he met a French trapper named Le Fever, also referred to as Dakota or Descoteaux in the history books. In his book "History of Wyoming and the Far West," author C.G. Coutant wrote: "Descoteaux was a trapper in Wyoming and in the 1830s and was regarded as a man of great personal courage." During a trip to St. Louis, wrote Coutant, "...he met a lad who appeared to be friendless and alone and he at once told the boy that if he would go with him he would be taken care of. The lad accepted the kind offer of the big-hearted trapper and from that day the two became inseparable."

Dakota (Le Fever) taught Tom to live amidst the Native Americans, to survive on the plains and to make a living trapping along the streams and rivers across the region. While working on an Army construction crew during the Civil War Tom De Beau Soliel shortened his name to Tom Sun.

Following the Civil War, Tom met Napoleon Bonaparte Earnest, a man who became his lifelong friend. The two served as government scouts and guides for the soldiers based at Ft. Fred Steele, which was located east of present day Rawlins, Wyo. It was during this time period that the duo met William F. Cody. Sun and Earnest taught Cody to be a government scout and how to live on the western plains.

Following their tenure as government scouts Sun and Earnest guided dignitaries on Wyoming hunting trips. Both men went on to become ranchers. Earnest's ranch is among those abandoned with the 1908 construction of Pathfinder Reservoir. Today it lies beneath the reservoir's waters.

Tom Sun entered the ranching business in 1872 at age 26. He built a cabin along the Sweetwater River near Devil's Gate. Devil's Gate is just west of Independence Rock and a short distance from the Pathfinder Ranch.

While working on the cabin Tom spent his nights in a dugout along the river, avoiding hostile Indians by digging a fresh hole each night. The Sun's ranch, called the Hub and Spoke, was one of the first established in Wyoming and the first to be established in central Wyoming's Sweetwater Country.

In 1883 Tom Sun, Sr. married Mary Agnus Helliham. Their eldest child and only son, Tom Sun, Jr., returned to the ranch and took over full management when his father died in 1909. Tom and Mary had three daughters, only one of whom, Adelaide, lived to adulthood. Adelaide married George Smith of Buffalo, Wyo. and the couple lived at the 66 Ranch Unit of the Hub and Spoke Ranch for a time.

At its zenith the Sun's Hub and Spoke Ranch encompassed over a half million acres. The historic Wyoming ranch reached from Pathfinder Reservoir 90 miles west to pastures located north

of Wamsutter, Wyo.

Tom Sun, Jr. married Ellen "Nellie" Lynch on June 3, 1913 in Rawlins, Wyo. The couple had five children — Thomas, George, John Hugh, Bernard and Adelaide. Bernard married Noeline Esponda of Buffalo. Two of their children — daughter Tena and son Joe — continue to live and ranch in Sweetwater Country, carrying on the family's nearly 140-year ranching tradition from their new headquarters at the Turkey Track Ranch.



Tom Sun, Sr. established the Hub and Spoke Ranch in Sweetwater Country in 1872. Before becoming a rancher Sun worked as a trapper, served on a bridge building crew during the Civil War, worked as a government scout and guided hunting parties in central Wyoming. Courtesy

CARDWELL FAMILY HAS A RICH HISTORY IN ALCOVA COUNTRY

For nearly as long as Wyoming has been a state, members of the Cardwell family have lived and ranched near the central Wyoming community of Alcova. Situated southeast of Pathfinder Reservoir, the Cardwell Ranch headquarters are nestled against the Pedro Mountains.

"My great-grandfather came here from Carbon and bought land just above here in 1895," says Bob Cardwell, who is among the fourth generation of his family to call the Cardwell Ranch home. "In 1900 he homesteaded up the creek a quarter of a mile from here. He had two

sons. Roy was my great uncle and my grandfather was Henry C. They both homesteaded east on the next drainage, Sand Draw. There were also two other brothers of my great-grandfather who homesteaded here."

Bob says, "Over the years they bought homesteads from folks and parcels of land. The last land added was in the late 1970s when my folks bought the land where we summer." Bob's parents were Bob and Mary Cardwell.

"There was a lot of land on our original holdings that cost less than a dollar an acre," says Bob. While it seems cheap by today's standards, Wyoming pioneers struggled to make purchases at those prices. Bob tells of his grandfather declining an offer to purchase a neighboring ranch for \$1,000 for fear he couldn't afford it.

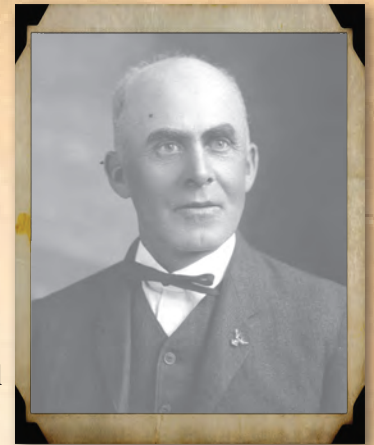
"After they came here and my granddad homesteaded, he helped survey a lot of this country and was a blacksmith and wheelright," says Bob. "For a long time the road that connected all of this country west of here together, came right through here. He had a blacksmith shop right there on the creek." The ranch headquarters, established at their present location around 1900, also served as a post office.

"I was born here and went through the 8th grade here," says Bob. "The schoolhouse was between this ranch and the ranch next door. The people who owned that ranch at the time, the Mrs. was a schoolteacher and she taught their kids and my brother, my sister and I."

Bob says, "It was just a half mile up there. It was up hill both ways, just like they say. We normally carried our lunch up there. I guess it was just because we thought we should. The teacher came out and played softball or football with us at lunch time." When it came time for junior high and high school Bob and his siblings boarded with his grandmother in Alcova.

When the winter of 1964 hit, Bob says they found themselves unable to get to the ranch. At Easter the county plowed the road into the ranch, as well as the neighboring ranch, and Bob and his siblings were able to come home for the holiday. The homesick children were relieved when winter set back in and they were snowed in at home for two weeks. To this day, being snowed in is just something the Cardwell family expects and prepares for each winter. Bob says improved equipment over the years has helped.

Sharon was raised on a farm in Iowa. "I went to work for a rancher down in Bates Hole," says Sharon of her



Robert Cardwell and his family made their living cutting meat in the railroad town of Carbon in the late 1800s. In 1895 they purchased land and began filing for the homesteads that make up the present day Cardwell Ranch. Photo courtesy of the Cardwell family

JOHN C. FREMONT EXPLORER EARNS 'PATHFINDER' MONIKER

In 1841 the United States Congress appropriated \$30,000 to pay early American explorer John C. Fremont to lead an expedition to map the Oregon Trail. The journey, which took place in 1842, earned Fremont the "Pathfinder" moniker and Pathfinder Reservoir and the Pathfinder Ranch, located along the Oregon Trail in central Wyoming, were later named in his honor. Several other western locals carry the Fremont name.

According to author Tom Chaffin's book, "Pathfinder: John Charles Fremont and the Course of American Empire," the Oregon Trail had been in use 17 years prior to Fremont's expedition. "In fact," wrote Chaffin, "Fremont's party, along the way, stumbled upon campsites and artifacts left behind by others. At Independence Rock that August, for example, the men would find a bloodstained pair of trousers with a pipe still in the pocket, the artifact, the men assumed of a 'straggler' from an emigrant party recently ambushed by Indians."

After exploring the Wind River Mountains, a trip beyond Fremont's orders from Congress to reach South Pass, the expedition party returned to Independence Rock. "On August 23, the morning of the party's planned departure from Independence Rock," wrote Chaffin, "Fremont reminded everyone that their orders called on them to survey the North Platte River watershed if possible. That same day, he ordered the India rubber boat inflated, and he and several others tried without success to sail it down the Sweetwater River's too shallow channel." Prior to the expedition, Fremont purchased the boat, along with the equipment to make minor repairs for \$190.98.

Sailing conditions were more favorable, or at least more water was present, when the party reached what Robert Stuart called the Firey Narrows during his 1812 expedition and what is today called Fremont Canyon. "We cleared rock after rock, and shot past fall after fall, our little boat seeming to play with the cataract," later wrote Fremont. "We became flush with success and familiar with danger; and yielding to excitement of the occasion, broke forth together into a Canadian boat song. Singing, or rather shouting, as we dashed along; and were, I believe, in the midst of the chorus when the boat struck a concealed rock immediately at the foot of a fall, which whirled her over in an instant."

The boat was damaged and much of the party's equipment lost, including Fremont's journal and one of his moccasins. Fremont made the downstream hike to reunite with the remainder of his party with only one shoe. His journal was retrieved downriver from the boat accident.

Fremont went on to serve as one of California's first two United States Senators and run for president of the United States as the Republican Party's first candidate. He passed away on July 13, 1890, the same year Wyoming achieved statehood.

arrival in Wyoming. "It was a girlhood dream of mine to come work on a ranch." She spent her first summer out of high school working at a guest ranch in Colorado and made plans to return to the West after attending junior college. "They knew I liked the West and wasn't going to stay and be a corn farmer," laughs Sharon of her parents' reaction.

"We ranch because there isn't any of it that we don't like," says Bob. "We bought my family out in 1983. That's everybody's dream, or it used to be of kids on these farms and ranches, to carry on the operation and they couldn't wait to get home to do it. We've watched a lot of good people come and go in this community. It's a tough life."

Mother Nature gave Bob and Sharon a tough welcome to their new business. They spent their first calving season fighting the winter weather and lost 25 percent of their calf crop in a late April blizzard.

Branding is a long-held tradition in the community and one Bob says he's always looked forward to. "When I was a kid people didn't start branding until a little later. From June 10 to the Fourth of July we'd go to brandings. It was as much a get-together as a branding."

Up until 1949, the same year Bob was born, he says the Cardwell Ranch was a sheep operation. Starting that year they began running Hereford cattle and did so until the mid-1970s when Bob and his brother purchased the ranch's first Black Angus bulls.

"My brother and I thought we ought to be crossbreeding," recalls Bob of the transition from Hereford cattle to Angus. "One of the neighbors was an Angus breeder and had some nice cows. He was planning a bull-buying trip." Bob and his brother asked the neighbor to pick them up a couple of nice Black Angus bulls. Their father knew they were in the process of buying bulls, but he was expecting his preferred Herefords, not black cattle. When the bulls arrived, Bob says his dad, not wanting to offend a neighbor he respected, agreed to keep the bulls. He says, "We've been running black bulls ever since."

As a kid Bob says the cattle buyers would come through the neighborhood knocking on doors in late September and early October. "They drove around because we didn't have Internet or telephones," he recalls. "We either had to haul them to the salebarn, which we did some, but normally they sold to a buyer." Calves were sold by the head since people didn't have nor could they justify the expense for scales.

The Cardwells raise the horses they use on the ranch. "We have our own stud horse, Doc Bar bred," says Bob. "We just try to raise a few horses to keep our-

selves in saddle horses. We do all of our cow work horseback. We don't use ATVs so we need two to three horses a piece for everybody riding or guests when we're branding. Most of the horses we're riding are horses we raised."

Bob says, "Our horses aren't fancy, but they'll turn a cow and they'll hold a calf when you catch him and they'll buck you off if you're not watching."

In recent years the family treated a large section of land with Spike to thin the sagebrush. "It's really made a big difference,"

says Bob of the increased forage. The project was done in partnership with the Rawlins office of the Bureau of Land Management. The Cardwells say the grass has improved immensely where the application was made and they'd like to see more sagebrush treated in the years to come.

The Cardwells are passionate about their role as stewards of the land. "A number of years ago they called it holistic ranching," says Bob.

"That's what we've been doing for generations. You try not to overgraze your country and you try to leave grass when you come out. In lean years you don't do as much and fatter years you try to do more. It's a whole ranch approach; it's not any one thing."

Bob and Sharon love to ranch, saying there's nothing they'd rather do. "I like to ride my own colts. Calving time is special, shipping time is special and haying

time is special to us. Each season is special in its own way for me," says Bob.

In 2009 Jeff Meyer, along with business partners, purchased the Cardwell Ranch and leased the grazing and the ranch buildings back to the Cardwell family. Meyer and Pathfinder, who also own the Pathfinder Ranch, located across the reservoir from the Cardwell Ranch, are working to bring a visionary approach to the growing interest in harvesting Wyoming wind to generate power.

The Pathfinder approach meets America's growing need for energy while enhancing the wildlife habitat, the cultural resources, the communities and the economy of Wyoming. Beyond the Pathfinder Ranch, the Cardwell Ranch and neighboring properties, additional Wyoming ranchers have joined the effort to see the Pathfinder's unique vision for green energy production reach fruition.



Bob and Sharon Cardwell at their Ranch. The Cardwell family built the barn in the background in the 1920s.



The Cardwells raise their own horses and start them on the ranch. "...they'll turn a cow and they'll hold a calf when you catch him and they'll buck you off if you're not watching," says Bob Cardwell.

THE HEART OF WYOMING WATER

Standing on the banks of the North Platte River as it makes its way through Wyoming, it's hard to imagine the state's mightiest river began with a snowflake in the mountains of Colorado.

Near the north central Colorado community of Walden, the North Platte River begins its 680-mile journey in an area known as North Park. It flows north to Wyoming, making its way along the western side of the Medicine Bow Mountains and through communities like Saratoga, Wyo. Along its course, as it gains steam from tributaries that contribute to its volume, the river's water benefits crops, communities and recreation.

When the North Platte River reaches Seminoe Reservoir in Central Wyoming's "Alcova country," it's joined by the Medicine Bow River. From Seminoe Reservoir the water flows downstream to Kortes Reservoir and through the stretch of the Platte River known as the Miracle Mile. As it reaches Pathfinder Reservoir, the waters of the Platte join the Sweetwater River and other smaller tributaries, before their release downstream to Alcova Reservoir and on down the North Platte River Valley. The North Platte River completes its journey in eastern Nebraska where the confluence of the North and South Platte rivers become the Platte River.

At the direction of the U.S. Congress, the reservoirs and dams were added to the North Platte River system to provide flood control, irrigation, recreation, water storage and hydroelectric power. The water developments in the countryside around the Three Man Ranch are the lifeblood of communities located along the North Platte River Valley

from Wyoming to Nebraska.

Seminoe Reservoir, located to the south of the Three Man Ranch, has a total capacity of just over a million acre-feet of water. Kortes Reservoir, named for the Kortes family that ranches in the area to this day, holds 4,640 acre-feet. Like Seminoe, Pathfinder Reservoir holds over a million acre-feet of water. Pathfinder Reservoir was one of the first reservoirs Congress instructed the U.S. Bureau of Reclamation to build.

Some of the largest hydroelectric power plants along the North Platte River are in Alcova country including Seminoe, Kortes, Fremont Canyon and Alcova. Two others, located further down the North Platte River, also help meet the nation's energy needs.

Pathfinder Dam, located just a short distance from the Three Man Ranch, is listed in the National Register of Historic Places and is a Wyoming Historic Civil Engineering Landmark. Construction on the

dam was launched in 1905 and completed in 1909. According to the Wyoming Water Development Commission's state water plan for the Platte River Basin, "the dam contains over 60,000 cubic yards of masonry and more than 55,000 barrels of cement, all of which were transported overland from Casper, nearly 50 miles away."

"The dam," according to the U.S. Bureau of Reclamation, "is in a granite canyon on the North Platte River about three miles below its junction with the Sweetwater River... It is made of granite quarried from nearby hills and is faced with large rectangular blocks laid in horizontal courses. It is an arch dam with a gravity-type section, and has a structural height of 214 feet."



Pathfinder Dam Construction

*We hope you enjoyed these
stories about the historic*

PATHFINDER RANCHES