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HOBACK RIVER WATERSHED, LEVEL I STUDY

PREPARED FOR

WYOMING WATER DEVELOPMENT COMMISSION



November 14, 2022

EXECUTIVE SUMMARY

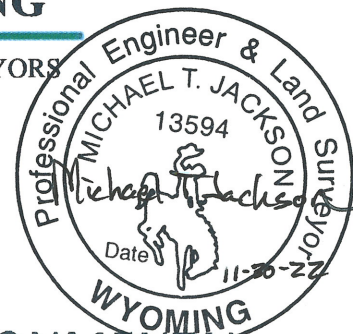
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water wetlands, ecological consulting

PROJECT PURPOSE

In 2020, the Sublette County Conservation District (SCCD), Teton Conservation District (TCD), and Star Valley Conservation District (SVCD) as joint sponsors, presented a request to the Wyoming Water Development Commission (WWDC) for a Level I Study of the Hoback River Watershed, which also includes the entirety of the Greys River Watershed and a portion of the Snake River Watershed from Hoback Junction to Alpine, WY. This joint request was made by the sponsors to include those regions in northwest Wyoming that had not been previously included in a comprehensive study. The sponsors end goal was to generate a study that would allow vested stakeholders the opportunity to implement projects that improve the overall condition and function of the watershed. The evaluation of watershed function, associated resource evaluations, water rights mapping, and identification of improvement opportunities are the key objectives of this study. Related information regarding climate, hydrology, surface water, groundwater, geology, land cover, fish and wildlife, and anthropogenic systems are also evaluated and described herein. Ultimately, the data and accompanying spatial properties gathered during this study were compiled and included within a comprehensive GIS geodatabase.

WATERSHED CHARACTERISTICS

The Hoback River Watershed, with a tributary area of approximately 1,145 square miles, is highly dependent on snowmelt to supply surface water. Surface water in the Hoback River Watershed principally originates in the Wyoming, Salt River, and Gros Ventre Ranges. The Snake, Hoback and Greys River are the three largest streams in the watershed and are all principally fed by snowmelt. During a normal flow year, average monthly flows in the Hoback, Snake, and Greys River, peak at 2,388 cfs (144,106 acre-feet), 12,760 cfs (769,925 acre-feet), and 1,842 cfs (111,163 acre-feet), respectively. The months of May and June combined account for 41%, 54%, and 48% of annual flow in the Hoback, Snake, and Greys River, respectively.

The Hoback River Watershed can be described as a high-altitude mountainous area with distinct flow patterns. Most streams within this watershed are perennial streams, and flow year-round. The most notable of these streams being the Snake River, Hoback River, and Greys River. These streams provide water to agricultural and municipal users, along with supply to the Palisades Reservoir.

The Snake River originates near the Continental Divide inside of Yellowstone National Park from mountain streams created by runoff. The Snake River ultimately flows into the Palisades Reservoir near the state line between Wyoming and Idaho before continuing northwest, eventually feeding into the Columbia River. The Hoback River originates in the northern section of the Wyoming Range from mountain streams created by runoff. It then flows northerly to its confluence with the Snake River at Hoback Junction, WY. The Greys River begins in the central portion of the Wyoming Range where it then flows northerly (between the Salt River Range and Wyoming Range) to its subsequent confluence with the Snake River at the upper reaches of Palisades Reservoir.

The vast majority of the watershed is under USFS jurisdiction (96%). The BLM administers 0.3% of the overall study area, locally concentrated southeast of Bondurant, WY. The BOR administers 0.2% of the land (near Alpine, WY), private lands makeup 3.4%, and State owned lands equal 0.1% of the overall watershed. Most of the private lands within the watershed are located at the lower elevations and in proximity to the main streams and larger tributaries.

PHYSICAL SYSTEMS

Streamflow

- **Greys River**

Gage 13023000 is near the mouth of the Greys River, approximately 3 miles upstream from where it becomes a tributary of the Snake River. Because of its location, the streamflow measured at 13023000 measures nearly all surface water produced in the HUC10. With the exception of Mill Creek, there is no other stream confluence with the Greys River between 13023000 and the mouth of HUC 10. Therefore, the wet/normal/dry streamflow values developed for gage 13023000 are representative of the entire HUC10.

From 1977 to 2020, average annual production during wet, normal, and dry years, respectively, is 660,815, 449,935, and 10,090 acre-feet. Monthly streamflow peaks in June, ranging between 183,215 acre-feet in an average wet year and 27,955 acre-feet in an average dry year. Monthly streamflow is lowest in January, ranging between 14,919 acre-feet in an average wet year and 12,097 acre-feet in an average dry year. The reported flow data is natural flow developed from observed flow at 13023000.

- **Upper Hoback River**

The Hoback River is the main river that all creeks and streams contribute to in the Upper Hoback HUC10 watershed. The Upper Hoback River tributary area is similar to the Greys River tributary area in annual precipitation, topography, and elevation. As such, the production of upstream section of the Hoback River can be estimated by prorating it to the gaged flow at 13023000 using tributary area and annual precipitation data. The Upper Hoback River tributary area is 261.6 square miles in area and averages 20.8 inches of precipitation annually. The tributary area of gage 13023000 is 455 square miles and averages 34.75 inches of precipitation annually. From this, Upper Hoback River is expected to produce approximately 8% as much runoff as the Greys River.

From 1978 to 2020, the average annual production of Upper Hoback HUC10 during wet, normal, and dry years, respectively, is 4,383, 2,985, and 1,990 acre-feet. Monthly streamflow peaks in June, ranging between 19,108 acre-feet in an average wet year and 4,693 acre-feet in an average dry year. Monthly streamflow is lowest in January, ranging between 1,508 acre-feet in an average wet year and 631 acre-feet in an average dry year. Due to the wet/normal/dry year flows being prorated to the Greys River, the wet/normal/dry years would correlate with gage 13023000.

- **Lower Hoback River**

Stream gage 13019500 is located near the mouth of the Hoback River, where it flows into the Snake River. Due to a limited amount of data at gage 13019500, the Wyoming Water Development Office modeled reach outflow in the Hoback River in the Salt/Snake River Basin Plan Update, 2012. Therefore, the wet/normal/dry streamflow values developed in this model are representative of the entire HUC10.

The period of record in the Salt/Snake River Basin Plan Update, 2012 report is from 1971 to 2010. During this period of record, WWDO determined the average annual flow during wet, normal, and dry years, respectively, is 696,694, 500,351, and 336,482 acre-feet. Modeled monthly streamflow

peaks in June, ranging between 224,538 acre-feet in an average wet year and 63,312 acre-feet in an average dry year. Modeled monthly streamflow is lowest in February, ranging between 11,183 acre-feet in an average wet year and 11,214 acre-feet in an average dry year.

- **Snake River – Fall Creek**

The Wyoming Water Development Office's Salt/Snake River Basin Plan Update, 2012 modeled flow at the Snake River before the Greys River confluence. Because of its location, the streamflow models most of the surface water produced in the HUC10. Therefore, the wet/normal/dry streamflow values modeled are representative of the entire HUC10.

The period of record of the study for the Salt/Snake River Basin Plan Update, 2012 report is from 1971 to 2010. During this period of record, WWDO determined the average annual flow in the Snake River above the Palisades Reservoir during wet, normal, and dry years, respectively, to be 4,438,246, 3,124,912, and 2,428,571 acre-feet. According to this study, monthly streamflow peaks in June, ranging from 468,957 acre-feet in an average dry year to 1,241,472 acre-feet in an average wet year. Modeled monthly streamflow is lowest in February, ranging between 104,241 acre-feet in an average wet year and 78,286 acre-feet in an average dry year.

The Salt/Snake River Basin Plan Update, 2012, modeled flows were adjusted to take into account flow requirements of Jackson Lake operations, and other downstream appropriations. After the flows were adjusted, the annual flow during wet, normal, and dry years, respectively, is 4,049,867, 2,717,548, and 1,775,752 acre-feet. Adjusted monthly streamflow is highest in June, ranging between 88,691 acre-feet in an average wet year and 346,712 acre-feet in an average dry year. Adjusted monthly streamflow is lowest in February, ranging between 88,691 acre-feet in an average wet year and 58,070 acre-feet in an average dry year.

Snake River Compact

Located in the Pacific Northwest Basin, the Snake River is ultimately governed by the Snake River Compact and associated laws and agreements. The main purposes of the Snake River Compact, in accordance with Article I thereof, is to provide the most efficient use of waters of the Snake River for multiple purposes; to promote interstate comity; to recognize that the most efficient utilization of such waters is required for the development of the drainage area of the Snake River and its tributaries in Wyoming and Idaho; and to promote joint action by the United States in the development/use of such waters and the control of floods. The state of Wyoming and Idaho senates ratified this compact in 1950.

As of the date of the compact, all existing rights in Wyoming were recognized. The compact permits Wyoming unlimited use for domestic and stock uses, providing that all stock reservoirs do not exceed 20 acre-feet. It also permits Wyoming to divert up to 4% of the Wyoming-Idaho State line flow of the Snake River for new developments. Water use is limited strictly to diversions within the Snake River drainage basin, unless both states agree otherwise. Preference for use of water is given to domestic, stock, and irrigation uses rather than storage for generation of power.

Regional Geology

- ***Hoback River***

The Upper Hoback River Watershed encompasses about 262 square miles and is characterized by many moderate relief unchanneled colluvial valleys in both the Wyoming Range to the west and the Gros Ventre Range to the northeast. These channels eventually meet the alluvial plain of the Hoback River and flow northwest through the community of Bondurant. The Lower Hoback River Watershed encompasses about 306 square miles and is characterized by steep valley walls of the Hoback canyon. A northeast-southwest extending ridge between the two mountain ranges separates the Hoback River Watershed from the Green River Basin which encompasses much of southwestern Wyoming. The Upper and Lower Hoback River Watershed boundaries follow the Gros Ventre Range to the northwest, Deadman Mountain to the southwest, Grayback Ridge of the Wyoming Range to the west, and Pyramid peak to the north. The highest point of elevation in both the Upper and Lower Hoback River Watershed is located at the summit of Doubletop Peak (11,720 feet) and the lowest is located at the confluence of the Hoback River and the Snake River at Hoback Junction (5,894 ft). The Upper and Lower Hoback River Watersheds have the lowest mean slope angle of 39° due to gentler sloping alluvial plains in the center of the upper watershed.

- ***Greys River***

The Greys River watershed is characterized by north-south trending ranges separated by narrow, alluvium-filled valleys and a mean slope angle of 43°. The drainage pattern is typically trellis with high stream dissection evidenced by narrow floodplains and over steepened valley walls. The Greys River Watershed boundary follows the Grayback Ridge of the Wyoming Range to the east, to Elk and Bradley Mountain to the north, to the Salt River Range to the west, to Wyoming Peak and Mount Coffin to the southeast, and to Mount McDougal to the east. The highest point of elevation in the Greys River Watershed is located at the summit of Wyoming Peak in the Wyoming Range (11,383 feet) and the lowest is located where the Greys River drains into the Palisades Reservoir in the Town of Alpine (5,634 feet).

- ***Snake River - Fall Creek***

This watershed is characterized by deeply incised bedrock river valleys which drain into the Palisades Reservoir. The Fall Creek-Snake River watershed boundary follows the Grayback Ridge of the Wyoming Range to the east, to Deadhorse Peak to the northwest, to Palisades Reservoir to the west, and to Bradley and Elk Mountain to the south. The highest point of elevation in the Fall Creek-Snake River watershed is located at the summit of Red Peak (9,771 feet) and the lowest is located where the Snake River drains into the Palisades Reservoir near the Town of Alpine (5,632 feet). The highest mean slope angle of 48° is found in the Fall Creek-Snake River watershed as a result of the deeply incised river valleys.

Climate, Air Temperature, and Precipitation

Conditions in the Hoback River Watershed are climatically described as high alpine areas with open canopy coniferous forests. High alpine areas receive nearly 23 inches of precipitation annually and experience average monthly high temperatures ranging between 50-degrees and 16-degrees Fahrenheit. The southeastern more arid lands, which is described by a climate station near Big Piney, WY that is not within the watershed boundary, receive only 11 inches of precipitation annually and experience monthly high temperatures ranging between 55-degrees and 21-degrees Fahrenheit.

The growing season greatly depends upon location, as lower elevations within the watershed will have longer growing seasons and higher elevations will have shorter growing seasons. Like most of Wyoming, the Hoback River Watershed has a short growing season, which ranges from 20 to 130 days for each given year. The average last freeze of the year is dependent on location within the watershed due to elevations varying between 6,000 and 9,000 feet. There is one weather station (Bondurant) within the watershed boundary that collects first/last freezes of each year and three weather stations (Big Piney Airport, Bedford 3 SE WY, and Jackson Airport AWOS) are close, but not within the watershed boundary that can help describe the growing season. The Bondurant climate station had the shortest growing season with an average last and first freeze of the year being July 25th and August 4th, respectively. The Big Piney Airport and Bedford 3 SE WY climate stations record nearly identical average last and first freezes. The average last and first freeze at the Big Piney Airport are June 26th and August 24th, respectively. At Bedford 3 SE WY station, the average last freeze is June 25th, and the average first freeze is August 27th. Jackson Airport AWOS climate station has an average last freeze of June 24th, and an average first freeze of September 3rd.

BIOLOGICAL SYSTEMS

Fish and Wildlife

The waterbodies within the Hoback River Watershed support a diverse population of fish. Two species have been listed as Species of Greatest Conservation Need, bluehead sucker (*Catostomus discobolus*) and Snake River Cutthroat Trout (*Oncorhynchus clarkii spp.*). The Wyoming Game and Fish Department (WGFD) classifies fisheries resources based on the productivity of trout per mile measured in each river reach segment. The watershed consists mostly of Green Ribbon tributaries which flow into the Hoback, Greys, and Snake Rivers. The Hoback and Greys River are classified as Yellow Ribbon and the section of the Snake River within the Hoback River Watershed (Snake River Canyon) is classified as Blue Ribbon. There are also tributaries designated as Clear with no trout present. The WGFD has not identified any Red or Orange Ribbon stream segments within the Hoback River Watershed.

Proghorn, Mule Deer, Elk, and Moose are species that inhabit the Hoback River Watershed. A small portion of the Watershed in and around Bondurant, WY is considered habitat (spring-summer-fall range) for pronghorn (*Antilocapra americana*). There are also two identified migration routes that join this area with higher elevations east of the Continental Divide.

Mule deer (*Odocoileus hemionus*) habitat and migration routes are present throughout the entire Hoback River Watershed. Small portions of the watershed are characterized as winter/year-long range by WGFD within the Snake River Canyon and along the Greys River. There is one section of WGFD designated crucial winter/year-long range along the lower section of the Hoback River and confluence with the Snake River.

According to the Wyoming Migration Initiative, deer migrate from the Hoback River Watershed southeast to the Red Desert in southwest Wyoming. Western Wyoming supports the largest and most diverse ungulate populations in North America due to its capacity for seasonal migration routes. Ungulate populations cover wide ranges as they seasonally migrate from low-elevation winter ranges to high-elevation summer ranges in order to store fat and energy for the long Wyoming winters. The mule deer Red Desert to Hoback migration corridor is the longest migration

ever recorded (150 miles) in the Lower 48. This migration corridor is protected by the State of Wyoming as a Wyoming Governor Designated Migration Corridor (State of WY, Order 2020-1).

Elk (*Cervus canadensis*) habitat and migration routes are also present throughout the Hoback River Watershed. Areas in the eastern portion of the watershed and along the Snake River Canyon are characterized as crucial winter/year-long range by WGFD. The majority of the Greys River and portions of the Hoback River are designated as crucial winter/year-long range. A small portion of the area around the confluence of the Hoback and Snake River is considered crucial winter range. There are several WGFD managed elk winter feed grounds within the watershed.

Moose (*Alces alces*) are also present throughout the Hoback River Watershed. A large swath of the eastern portion of the watershed along the Hoback River and smaller areas along the Snake and Greys Rivers are characterized as crucial winter/year-long range by WGFD. Crucial winter/year-long range is designated along the Greys River and Snake River Canyon. Migration corridors are depicted in the northern part of the watershed around the Greys and Snake Rivers. There are no WGFD designated parturition areas within the watershed.

ANTHROPOGENIC SYSTEMS

This section of the document describes those systems affected by or resulting from the influence of human activity. These systems are more particularly defined as Agricultural Land Use, Domestic Water Use, Water Storage, and Land. Each component was inventoried and further analyzed to define the inherently complex effects that human activity has had on relative physical systems within the Hoback River Watershed.

Agricultural Water Use

The majority of water use within the Hoback River Watershed evolves around irrigation and primarily occurs along the tributary and main stem drainage corridors therein, which coincides with patented private lands that were born from availability of water use for agricultural purposes. These lands are generally situated in proximity to their respective points of diversion due in large part, to geographic constraints and cost. Stock water supply reservoirs, spring developments, and stock water well developments are also prevalent within this watershed. Due to the relatively short growing season therein, these watering sources are extremely important to livestock and crop producers alike.

A grand total of 80 tributaries, and each of the main-stem rivers within the Watershed contain permitted water rights. The place of use for all adjudicated water rights within the overall watershed boundary were mapped according to the original application maps and certificate records, which were used in combination to determine what specific lands in each aliquot part have been adjudicated. This gathered information has been manually re-tabulated to calculate individual tributary adjudications and to track any changes made since the last State update was compiled (2016).

Regarding ground water irrigation supply, the inventory and mapping includes sources of additional supply. The State Engineer's Office e-Permit System was utilized as the primary research tool for completing the associated surface and ground water rights research.

Surface Water

The following tabulation breaks down the adjudicated original supply contained within each of the three major basins of the defined Watershed.

- *Hoback River Watershed*: 7,035.85 acres having adjudicated original supply, with a permitted diversion rate of 105.24 cubic feet per second (cfs). Additionally, there are 1,382.43 acres permitted for supplemental supply.
- *Greys River Watershed*: 387.10 acres having adjudicated original supply, with a permitted diversion rate of 7.86 cubic feet per second (cfs). Additionally, there are 153.60 acres permitted for supplemental supply. The Wyoming Water Development Commission is also the appropriator of an instream flow segment (1) within the Greys River for fishery purposes that is not to exceed the following rates: 204.0 cfs from October 1 through March 31; 350.0 cfs from April 1 through June 30; 204.0 cfs from July 1 through September 30 throughout the defined 10.1 mile stream mile segment as defined in CR No. 84, Page 9.
- *Snake River Watershed (Subject Portion)*: 784.94 acres having adjudicated original supply, with a permitted diversion rate of 95.08 cubic feet per second (cfs). Additionally, there are 7.64 acres permitted for supplemental supply.

Instream Flow Segments: The Wyoming Water Development Commission, as requested by the WGFD, has funded an instream flow feasibility study within the Greys-Hoback Basin Area where Temporary Filing Numbers have been assigned by the WSEO to ten (10) stream segments

Trans-Watershed Diversions

There is one (1) trans-watershed diversion that impacts the Hoback River Watershed. The Enl. Ames Ditch, P1227.0E (C.R. 42, Pg 586) conveys water from the Salt River to lands adjacent to and within the town of Alpine, WY. Said ditch conveys original & stock water supply to approximately 253 acres within the bounds of the defined watershed.

Ground Water

Regarding adjudicated ground water sources for irrigation, there are 28.00 acres permitted for additional supply. In terms of irrigation use, the total appropriation for ground water is 100.00 gallons per minute (GPM). The total appropriated flow comes from a single source and involves the original permit and subsequent enlargement of the Simpson Well No. 2 (P99304.0W and P180992.0W).

Irrigation Systems

As part of the research and mapping process mentioned above, point of diversion (POD) and means of conveyance (MOC) information was also compiled, checked for geographic accuracy, and included as part of the GIS deliverable of this Level I study. Initially, all POD's and MOC's were mapped using the existing SEO e-Permit database, utilizing the ArcGIS Tool developed by the WWDC. The imported data was then cross-examined for accuracy and modified to reflect the actual situation on the ground. This type of database amendment was conducted in order to accurately reflect actual field conditions and to aid in successive water rights research by the end user(s).

The areas where pivot irrigation methods are utilized were also mapped. Pivot and sprinkler irrigation is sparsely utilized within the watershed, whereas the majority of lands are irrigated using conventional flood irrigation methods. Specific to the Hoback Junction region of the

watershed, many small acreage irrigation systems utilize a pump and pipeline configuration to divert water from the Hoback River onto private properties. These systems are generally used due to the high level of subdividing that has occurred over time along the banks of the Hoback River, making conventional ditches impracticable.

Domestic Water Use

Many of the permitted wells within the Hoback River Watershed have multiple beneficial uses, including Domestic and/or Stock, Irrigation, Industrial, Miscellaneous, Monitoring, or Test Well use. There are 488 permitted wells for Domestic Use. The Watershed is largely defined as being rural with limited private lands, which are primarily located along drainage corridors. Potable water in the area is derived from groundwater sources by means of water well development or by spring development.

There are distinct areas within the watershed that have proven to be difficult in terms of well drilling. Issues with water exist in the Hoback Junction area. Based on interviews with residents in this area, both water quantity and quality have been a problem for many. The region in and around Hoback Ranches, is also susceptible to non-producing wells.

Water Storage

Within the Hoback Watershed, small reservoirs are prevalent however, there are no major reservoirs or irrigation districts located therein. Several factors contribute to the lack thereof, more particularly outlined below:

- No streams within the Hoback River Watershed study area have been put into state regulation within the last 26 years, with the single exception of Crow Creek, tributary of Greys River.
- The general topography within the study area does not lend itself to providing for economically viable large storage projects due to tributary/main stem gradients and typically narrow canyons.

While this watershed does not have any major reservoirs within its boundary, it is worth noting that Jackson Lake Dam is upstream of the defined watershed, which affects streamflow in the Snake River. The Jackson Lake Dam was constructed in 1916 and is capable of storing 847,000 acre-feet of water.

Upland Water Storage

There are 14 adjudicated reservoirs within the Hoback River Watershed, with a combined storage capacity of 129.41 acre-feet. There are an additional 18 reservoirs that are designated as complete but not adjudicated. The combined storage within these unadjudicated reservoirs (or enlargements) total 61.97 acre-feet. Additionally, there are 14 adjudicated stock water reservoirs within the Watershed. The total storage of all stock reservoirs combined is 78.566 acre-feet.

WATERSHED MANAGEMENT AND REHABILITATION PLAN

The focus of this task was to bring forward recommendations that will ultimately improve watershed condition and function. The Sponsors emphasized the need to develop this list and associated recommendations. Input from stakeholders was paramount in the process of identifying

the listed watershed improvement opportunities. The following section contains detailed information relative to each.

Over the course of this study, 30 projects were identified by interested stakeholders. There are 18 projects that fall under Account I (New Development Projects) and the remaining 12 projects fall under Account II (Rehab Projects). As part of the management and rehabilitation plan, conceptual-level designs were prepared. These designs were primarily utilized to gain an understanding of individual project scope, project cost, associated permitting requirements, and to assist in identifying any fatal flaws. The full set of designs can be found in the Final Report. Each project was assigned an individual identification number.

There were 6 projects that involved developing (or further developing) water sources for stock water use, 1 Diversion Rehabilitation Project, 2 Environmental Projects, 4 Irrigation Projects, 5 Storage Projects, 4 Spring Rehabilitation Projects, 3 Conveyance Facility Projects, 1 Solar Platform Project, and 3 Fire Suppression Projects.

Cost estimates and permitting requirements were also developed for each individual project. The average estimated cost for the listed projects was calculated to be \$62,116.67. Each project identified during the management and rehabilitation phase of this study was also analyzed to determine what permit(s) would be necessary, both prior to commencement of construction and in some cases, post construction.

CONCLUSIONS AND RECOMMENDATIONS

This study was completed in order to evaluate the current state of the Hoback River Watershed and to plan for implementation of projects and/or management practices that can improve the overall health of the watershed. The information contained in the final report will enable the Wyoming Water Development Commission and the Sublette/Teton/Star Valley Conservation Districts to more effectively delineate prospective projects that will aid in the conservation and efficient use of the water resources available in this watershed. The following list itemizes key outcomes and recommendations that are supported by the contents of this study:

- Groundwater is a vital resource that largely impacts the health and function of rangeland, wildlife, livestock, and anthropogenic systems throughout the watershed. Specifically, groundwater is essential for domestic use. Results of that ongoing Hoback Junction groundwater contamination investigation conducted by the WDEQ will be beneficial in understanding root causes of the elevated nitrate levels. These results may also dictate the course of action pertaining to water district formation in the area and ultimately, further investigative work and project designs for a centralized public water system.
- Surface water is largely influenced by winter precipitation that falls within the Gros Ventre Range, Wyoming Range, and Salt River Mountains. Very little storage exists within the Watershed but records indicate that regulation is an extremely rare occurrence.
- Many areas of interface between livestock pasture lands and riparian areas show increased levels of erosion and sedimentation. Possible solutions for these affected areas include the construction of fenced water gaps, partnering with federal and state agencies on stream restoration projects, and collaborative efforts to manage grazing operations.
- Water rights research and documentation provided in this report will allow constituents to effectively plan for future water resource projects, identify upland water shortages, and to

plan for conservation measures that will benefit their respective operations and the Watershed as a whole.

- Those segments of the Hoback River and Jack Creek located in the Bondurant Basin are generally unstable whereby massive shifts in water course are common. This phenomenon in geomorphology causes issues with historic irrigation diversions, riparian areas, and other anthropogenic improvements. The SWPP program will continue to be a valuable asset for local stakeholders in addressing issues such as these.
- The rehabilitation and management plan contained in this report identifies opportunities to improve watershed function. This is not an exhaustive list however, the final report may also be utilized to plan for future/alternative projects and to streamline the planning process. The funding opportunities listed therein may also be used as a general guideline for landowners considering future project implementation. The individual project information contained within Appendix E will allow the sponsors to efficiently conduct the necessary research to complete applications on behalf of the varying constituents who expressed interest during the course of this study.

