Appendix 2: History of Dolores River Water Use, the Dolores Project, the Rise of Environmental Consciousness Nationally and Locally, and Stakeholder Collaboration to Promote Conservation of Lower Dolores River Natural Resources

The Dolores Project has been a boon to local economic development and stability in the Montezuma Valley, McElmo Creek basin, and surrounding areas while also being the key structure in discussions of environmental issues of concern on the Lower Dolores River. Central to understanding the importance of the Dolores Project is the history of settlement and water use along the Dolores River in the Montezuma Valley prior to the construction of the Project; the commitments made by the U.S. Congress, Federal agencies, and local entities – the Montezuma Valley Irrigation Company ("MVIC"), the Dolores Water Conservancy District ("DWCD") and the Ute Mountain Ute Indian Tribe – necessary to make the Project a reality; and the responsiveness of stakeholders to evolving issues in the community and nationally. This appendix explains how Colorado water law, particularly the prior appropriation doctrine, trans-basin diversion issues and MVIC's senior water rights, and Dolores Project contracts and other Bureau of Reclamation (BOR) responsibilities, impact Dolores Project water use and the Dolores River. This appendix also discusses the evolution in conservation ethos and environmental awareness that coincided with Project development.

The objective in creating this appendix is to provide factual background information that undergirds the Dolores River Dialogue (DRD) purpose statement:

> … to explore management opportunities, build support for and take action to improve the ecological conditions in the Dolores River downstream of McPhee Reservoir while honoring water rights, protecting agricultural and municipal water supplies, and the continued enjoyment of boating and fishing.

Thus, the appendix discusses rights to be honored; the nature of a water right under Colorado law; the necessity for agricultural and municipal water supplies; the history of Dolores River water use; the development of the Dolores Project; the rise of environmental consciousness nationally and locally; and the recognition of and response to downstream Dolores River ecological impacts. Improved understanding of this background can help formulate opportunities and build support for actions to improve the ecological conditions in the Lower Dolores River, including its water quality.

A Brief Historical Overview of Pre-European Settlement

Ancient peoples, referred to as the Anasazi or Ancient Puebloan Ancestors, occupied areas around the southwestern United States. The Four Corners area has the highest concentration of archaeological sites in the United States, with archaeological evidence showing several eras of occupation and construction, from 1 A.D. to 1200 A.D. The reasons for the Anasazi leaving large area settlements, built over many decades of labor-intensive investment, to move to New Mexico and Arizona are still not definitively known. A long-held hypothesis,

which seems to be demonstrated by tree ring data, is that a succession of droughts and climate change over a sufficiently long time, in combination with resource depletion, significantly contributed to their departure. Interestingly, the Anasazi diverted and stored water for both irrigation and domestic uses, indicating the need for water storage that would be required of future southwestern Colorado communities.

Subsequent to the Ancestral Puebloans leaving the area, various bands of Utes were present across the Colorado Plateau by1600, including most of Utah and Colorado and across the Four Corners into Arizona and New Mexico. Later Spanish expeditions, travelling northwards to explore for gold or to seek a route from New Mexico to settlements in California, interacted with the Utes. In 1776, the Dominguez-Escalante expedition visited and named the Rio de Nuestra Senora de los Dolores, or River of our Lady of Sorrows, now the Dolores River, recognizing that arable land which could support agrarian settlement lay south of the river, over a ridge in the Montezuma Valley. The search for resources, specifically gold and other minerals, on these trips would spur the arrival of new settlers less than 100 years later.

The Dolores Archaeological Project (DAP), completed under a BOR contract by the University of Colorado between 1978 and 1985, investigated and recovered cultural resources and data from 1,626 sites discovered in the vicinity of McPhee Reservoir prior to the completion of its construction. The DAP became the largest single archaeological investigation and cultural resource mitigation project completed in the United States, receiving five times the usual 1% of project costs allocated by BOR. It led to BLM's construction of the Anasazi Heritage Center in Dolores, Colorado, to house and interpret native American cultural resources from the area and elsewhere in the southwest.

Broader Colorado History and the Settlement of Montezuma and Dolores ("Montelores") Counties

The 1803 Louisiana Purchase brought the first portions of the Colorado territory into the U.S. The Arkansas River was ultimately established as the southern border with Spain, later Mexico. Subsequent to the Lewis and Clark expedition, the federal government sent numerous survey parties into the new U.S. territory, from the 1806 Pike expedition through John Wesley Powell's surveys of 1869 to 1872. Early European settlors seemed to bypass Colorado for Oregon and Washington on the Oregon Trail, with excursions to California and Utah from 1835 to 1869, when the trail was replaced by the transcontinental railroad. Some trading occurred between St Louis and Santa Fe, in Mexico, through Bent's Fort, located on the north (U.S.) side of the Arkansas River near present day La Junta, Colorado, from 1833 to 1849. But permanent European settlement in Colorado remained sparse.

Eventually war with Mexico and the resulting Treaty of Hidalgo in 1848 brought most of the southwest into the United States, including the rest of Colorado. After the resolution of some Texas claims, Colorado was eventually carved out of Utah, Kansas, New Mexico and Nebraska in 1859 as the Territory of Jefferson. In 1861, it became the Territory of Colorado. Miners seeking gold drove early interest in Colorado. Interest accelerated after minerals were discovered in 1858 east of the Continental Divide. Though early miners may have intended to

claim their riches and leave, additional settlers followed the miners to provide food and cattle for their support, with a much longer stay in view. While the Civil War kept the country occupied and limited westward expansion, in the late 1860s, soon after the War, westward expansion continued.

Eastern Colorado was settled first, with many South Platte towns starting around 1858, often in support of miners. More permanent agrarian settlements, such as Greeley, were established in 1870. Homestead Acts, starting in 1862, encouraged permanent settlement by allowing individual farmers to settle for free or very inexpensively. Those Acts and their goals continued into the 1930's and the New Deal. The Acts, along with the acquisition by the federal government, via purchase and war, of western land, continue to impact western land uses and development today.

The arrival of miners early in Colorado's history, aside from encouraging more permanent settlements, lead to new water law doctrines to provide access to the water needed to develop mineral resources. The "first in time, first in right" doctrine protected first users of water from subsequent takers in a manner similar to the protection of their mineral claims. These practices created a foundation for the prior appropriation doctrine. In 1851, a group of New Mexican Spanish settled Conejos in the San Luis Valley, bringing with them several hundred years of irrigation practices and leading to Colorado's oldest water right, the People's Ditch of San Luis, built in 1852.

The rapid westward European expansion conflicted with the culture and practices of Native Americans in southwest Colorado, as in other areas of the western United States. By 1868, bands of Utes had been forced into Western Colorado by European settlement in Eastern Colorado. Continued European settlement pressure soon hit the western slope, as gold and silver were discovered in the San Juan Mountains in 1873. The Utes were then confined to ever smaller areas. By 1881, the Utes were forced to settle on their two current reservations in Southern Colorado, extending into Utah and New Mexico. Separate Ute bands were located on several reservations in east central Utah. The Weeminuche Band, based in Towaoc, Colorado, was ultimately integral to the completion of the Dolores Project.

As the 20th century approached, European settlement in southwest Colorado grew. Miners developed the mineral resources discovered in 1873. The Town of Rico was established in 1876, followed by the establishment of Telluride, Silverton, Ophir and many settlements that are now ghost towns. Similarly, farmers and ranchers soon followed, with the intent of establishing permanent roots. Along with railroads, a thriving timber industry was established. The new settlers soon re-discovered the reality of the arid West, as had been recognized by the Anasazi and the Dominguez and Escalante expedition.

The Dolores River Valley had the best local supply of water, but had only limited land available for cultivation. The Montezuma Valley had arable land, but lacked a reliable water supply. Settlers moving into the Cortez area during the late 1870s survived using the extremely limited natural Mitchell Springs as a domestic water source. Entities soon began to rectify this situation with late 19th century technology. First, a one mile long tunnel, started in 1886 and completed by 1889, brought water into the Montezuma Valley for irrigation. Cortez was laid out

by the same firm that constructed the tunnel to support land sales by providing the necessary domestic water supply. By July, 1890, a three-mile long flume was bringing Dolores River water to Cortez. By 1886, a second effort had begun to bring water to Montezuma Valley through a canal at the Great Cut, supplying water to the north and western parts of the Valley. These undertakings experienced a series of changes in ownership, but finally were combined under Montezuma Valley Irrigation Company (MVIC) by 1920.

There was tremendous outside investor interest in westward expansion of European settlement in the U.S. In southwest Colorado, as in other western areas, early water development was often funded by investors from the eastern United States and Europe looking for profit. The investors commonly sold bonds or shares in a venture to raise the money necessary to make large capital improvements, such as the Great Cut and the original MVIC tunnel. Such financing was also common in mining and land development ventures. Water and land were often linked, as in the Montezuma Valley. Outside companies generally proved unsuccessful, however, demonstrating that local control of water and land was necessary for their profitable and beneficial use.

Four exploratory geological surveys were conducted shortly after the Civil War in this area by Hayden, King, Powell and Wheeler. The Hayden survey was conducted from 1873 through 1876, with maps published in 1877. It mapped all of Colorado's drainages, an important first step to water development. Locally, survey maps showed the Dolores Plateau and the Ute Indian Reservation across western Colorado, with an area carved out for the mineral rich San Juan Mountains. The closest settlement was Animas City, near present day Durango, Silverton and other mining settlements. The maps show Pegasus Springs, near Cortez, but not the upstream Mitchell Springs that supplied the first water to Cortez. The map also shows the Old Spanish trail heading northwesterly directly through ruins overlooking the Dolores River, possibly Escalante Ruins.

John Wesley Powell's *Report on Arid Lands of 1879*, though not the first survey report documenting western arid reality, remains an important compilation describing the physical constraints on western development to a national audience and policy makers, which otherwise had no experience in such arid land. This aridity can be demonstrated in several ways. First, the average rainfall generally drops below 20 inches near the 100th meridian. Second, the pattern of precipitation, only partially described by the average, does not provide sufficient moisture at the times needed during the growing season. Third, western topography keeps the bulk of winter and spring precipitation locked up in mountain snow packs, often referred to as the real reservoirs of the west. These patterns require the capture and storage of water during spring runoff, which may then be released later in the year for the reclamation of otherwise dry lands. Because of the lack of natural precipitation to support agrarian communities west of the 100th meridian, new forms of local governance were necessitated that differed from the traditional forms in the eastern U.S.

In addition to federal exploration and survey impacts, other federal efforts continued to affect Colorado with the establishment of the Territory of Colorado in 1861, admission into the U.S. as the State of Colorado in 1876, and other legislative acts, including the Mining Act of 1866, that expressly affirmed the right to water use developed by local custom and sanctioned

the appropriation of water on public lands. An 1870 amendment to the Mining Act recognized the prior appropriation doctrine as a valid appropriation method. The Desert Lands Act of 1877, covering most western states, also confirmed the prior appropriation doctrine and applied it to public lands for the uses of irrigation, mining, and manufacturing, subject to existing rights. In 1935, the U.S. Supreme Court extended the reach of this Act to all lands within the public domain.

Bureau of Reclamation and Western Reclamation Projects

As early settlers saw spring and early summer runoff flow away, with demand outstripping the supply available from early diversions, settlers wanted to store the runoff that otherwise flowed downstream and was unusable. Early private efforts at storage development failed for lack of funding and/or engineering skill, thus leading to mounting pressure for the Federal Government to take the lead in developing water resources. Irrigation "reclamation" projects were seen as a way to reclaim or subjugate western arid lands for human use. Federal legislation, in addition to the 1866 and 1877 Acts, included funding in 1888 for the U.S. Geological Survey (USGS) to study irrigation, and 1890 and 1891 legislation to reserve rights-of-way for reservoirs, canals and ditches from land in the public domain. By 1900, both political parties had pro-irrigation platforms. President "Teddy" Roosevelt suggested a "conservation" ethic, the sustained exploitation of natural resources through careful management for the good of the many. These efforts were perceived as supporting homemaking and the Jeffersonian agrarian ideal: family farms extending across the American landscape.

On June 17, 1902, the Reclamation Act established the U.S. Reclamation Service (USRS) under the USGS. Importantly, the Act included a "savings clause" requiring the USRS to comply with a wide variety of state legal codes, interstate compacts and international treaties related to water use. Between 1903 and 1906, the first 25 USRS projects were authorized, funded through the "Reclamation Fund" via the sale of land in the west. A variety of difficulties attended these projects, including the need for consistent funding; escalating and unforeseen project costs leading to unaffordable repayment terms for farmers; soil problems; economic viability; climatic limitations, waterlogging and the lack of practical farming experience by the end users.

By 1923, the USRS was renamed the U.S. Bureau of Reclamation (BOR). In 1924, a major review, "The Fact Finder's Report," spotlighted the agency's early difficulties and financial problems. Recommendations in that Report ultimately resulted in the the Boulder Canyon Act of 1928, ratifying the Colorado River Compact, authorizing Boulder (now Hoover) Dam and the All-American Canal, and resulting in the first major appropriations from the general fund for reclamation projects. This started an era of expanded reclamation activity across the 17 western states, ultimately leading to the development of the Dolores Project.

Congress authorized another 40 Reclamation projects during the Great Depression, bringing the total to 70 prior to World War II. After the War, development took off, with large basin wide programs, including Pick Sloan Missouri Basin Project in 1944 and the Colorado River Storage Project (CRSP) in 1956. CRSP authorized Glen Canyon, the Aspinall Unit

(Currecanti, Blue Mesa), Navajo Reservoir and Flaming Gorge Reservoir as major Upper Basin storage. Navajo and Flaming Gorge were notable for their size and the multiple projects they ultimately generated. In 1968, the last major Congressional project authorization under the Colorado River Basin Project Act, included the Central Arizona Project, Dolores Project, Animas La Plata Project and Central Utah Project.

BOR has constructed over 180 projects in the 17 western states that deliver irrigation to 10,000,000 acres, about 1/3 of the U.S.'s total irrigated acres, which produce a significant percentage of total U.S. agricultural production, including 60% of all vegetables and 25% of all fruits and nuts. Additionally, BOR delivers municipal and industrial water supplies to 1/3 of the population of the western U.S. and has constructed 56 hydroelectric power plants that produce 34.7 billion KWH annually. These projects also offer fishing and other recreational opportunities to millions of visitors every year.

Western Reclamation and the Environment: Evolution of the Conservation Ethos

The creation of Yellowstone National Park by an Act of Congress, and the subsequent signing into law by President Ulysses S. Grant in 1872, marked a turning point in both ideas and policies about how the United States would maintain its natural resources. During most of the 1800s, the policies of the United States encouraged westward expansion through the conveyance of land and natural resources to individuals and corporations. It was not long until it became apparent that the seemingly limitless supply of each was dwindling and policymakers would need to make decisions to ensure they were not used to exhaustion. During this time period, photographers, writers, and elected officials were traveling the western US, considering the importance of these immense landscapes, and sharing their experiences with others. Beginning in the late 1800s a new land ethic began to emerge in our decisions regarding public lands and natural resources: conservation of resources for future generations.

In 1891 Congress passed the Forest Reserves Act granting the President authority to establish forest reserves on public lands under the management of the Secretary of the Interior. This began a period of establishment of many forest reserves, national parks and monuments, and national wildlife reserves. President Theodore Roosevelt (1901–1909) is widely credited with the institutionalization of the conservation movement in the United States. His championing of the outdoors for recreation, hunting, and fishing, and his commitment to ensuring that abundant natural resources would remain available for future generations popularized many of the North American models of conservation that we use today. The turn of the century also saw the rise of preservationists such as the writer and naturalist John Muir, who advocated for the protection of natural landscapes in their pristine state. These two ideas, timeless preservation of important landscapes and conservation of resources for multiple sustained uses, are part of the ongoing dialogue necessary for balancing the current needs of society with preserving the integrity of the natural environment to sustain future generations.

While the first half of the 20th century saw the creation of many important wildlife conservation policies and conserved lands, continued development and industrialization, and the parallel rise in consumption and emissions, also put additional pressures on natural resources and

the environment. Greater scientific understanding of ecological systems and wildlife led to landmark policies that protected wildlife, for example the first Migratory Bird Act in 1913 and the Migratory Bird Hunting Stamp Act in 1934. At the same time, the increased pace of resource extraction to fuel our growing population and economy, and impacts from pollution from industry, automobiles, and the widespread use of chemicals began to bring new concerns about the environment into the public conscience. In 1962, the book *Silent Spring* was published by Rachel Carson, clearly illustrating the impacts of unregulated pesticide use on humans and wildlife. A few years later, in 1969, the Cuyahoga River caught fire and national news coverage of the event accelerated a growing awareness of the need for regulations to ensure life safety and environmental health.

This era marked another turning point in the evolution of the conservation movement, with the following decades seeing a host of new regulations aimed at protecting and improving the environment. Congress passed numerous pieces of legislation, including the Wilderness Act in 1964, the Wild and Scenic Rivers Act of 1968, the National Environmental Policy Act of 1969, the Clean Water Act of 1972, the Endangered Species Act of 1973, the Safe Drinking Water Act of 1974, the Federal Land Policy and Management Act of 1976, along with the National Forest Management Act of 1976, Nuclear Waste Policy Act of 1982, and the amended Safe Drinking Water Act of 1986.

A Historical Perspective on Human Use of Rivers

Rivers have been valued and used in many ways throughout history. During the days of European settlement of North America, navigability was on the forefront of river uses. Since its inception, the U.S. federal government has asserted its interest and control over the navigability of waterways to support commerce and to this day, several river systems remain important pathways for the transportation of goods. Another early use of rivers was to control flooding through the development of dams, diversions, dredging, and channelization, thereby promoting the settlement of agriculturally productive floodplains.

As westward expansion into the arid regions of the west took place, rivers took on a new use, irrigation. Beginning in 1869, John Wesley Powell led a series of expeditions to explore and survey the waterways of the West. He reported back to Congress that a huge amount of water was released in the rivers after snowmelt and spring rains, but then for the rest of the year there was not adequate rainfall to support enough agriculture to sustain human life except through irrigation systems. The federal government pushed forward with “reclaiming” these arid lands, leading to the National Reclamation Act of 1902. The Act provided the funding for irrigation projects in the arid lands of the American West; and not long after, the hydroelectric potential of rivers and dams was realized and the Federal Power Act of 1920 was passed with the purpose of coordinating the development of hydroelectric projects in the United States. The big dam building era had begun, which led to the eventual damming of practically every major Western River.

Major dam building efforts continued through the 1960s but enthusiasm waned in the 1970s. Congress stopped approving major new reclamation projects in response to public

concerns about the severity of environmental and recreation impacts to river systems coupled with concerns about safety and the diminishing economic return of new large dams. The Carter and Reagan administrations also advocated cutting federal reclamation budgets and restructuring and downsizing already approved projects, including the Animas-La Plata Project in southwestern Colorado.

Overview of the Wild & Scenic Rivers Act, Endangered Species Act, and Clean Water Act

The Wild and Scenic Rivers Act of 1968

Toward the end of the dam building era, Congress enacted the Wild and Scenic Rivers Act, acknowledging that current dam building policies needed to be balanced by a policy that would preserve selected rivers or river segments in their free-flowing condition. The National Wild and Scenic Rivers System was created with the passage of this Act "to preserve certain rivers with outstanding natural, cultural, and recreational values. . . for the enjoyment of present and future generations." The Wild and Scenic Rivers Act created a new era of river protection. Since Lyndon B. Johnson signed the Wild & Scenic Rivers Act into law, 213 rivers or segments of rivers and 12,551 river miles have been included in the National Wild and Scenic Rivers System classified as wild, scenic, or recreational.

The Wild and Scenic Rivers Act intentionally strove to balance dam building on some river segments with the protection of other segments as free-flowing rivers. The Act is set up to accomplish this by prohibiting federal support for water development projects that would harm the river's free-flowing condition, and other projects that would negatively impact water quality or outstanding resource values. Congress intended to protect both remote rivers and rivers flowing through urban areas, however, designation of rivers under the Act does not prohibit recreational uses, agricultural practices, or residential development or give the federal government control over private property. The Wild and Scenic Rivers Act does foster river management across political boundaries and promote public participation in the development of goals for river protection. Designation can also give the United States authority to acquire a water right under state law.

Rivers or portions of rivers are added to the National Wild and Scenic Rivers System through two main channels: (1) an act of Congress or, (2) by order of the Secretary of the Interior upon official request from an individual state. The rivers added to the system are classified as Wild, Scenic, or Recreational.

The Endangered Species Act of 1973

When Congress passed the Endangered Species Act of 1973 (ESA), it recognized that our rich natural heritage is of "esthetic, ecological, educational, recreational, and scientific value to our Nation and its people." It also recognized that this heritage was in danger due to the many species of animals and plants that were in danger of disappearing. The ESA was created to protect and recover imperiled species and the ecosystems upon which they depend. The U.S.

Fish and Wildlife Service has responsibility for implementing the ESA for terrestrial and freshwater organisms.

Under the ESA, a species may be listed as either endangered or threatened. “Threatened” means a species is likely to become endangered within the foreseeable future. “Endangered” means a species is in danger of extinction throughout all or a significant portion of its range. When a species is listed, its “critical habitat” is established and a recovery plan is created with the ultimate goal being the restoration of healthy populations and habitat of the listed species and the eventual de-listing of the species.

The Clean Water Act

The Clean Water Act (CWA) provides the structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The CWA began as the Federal Water Pollution Control Act of 1948. It was significantly reorganized and expanded into the 1972 Clean Water Act, then further clarified and expanded with the addition of the Water Quality Act of 1987. Waters of the United States is defined as all waters with a "significant nexus" to "navigable waters." The phrase "significant nexus" remains open to judicial interpretation and has led to controversy over the years.

Under the authority of the CWA, the EPA has implemented pollution control programs such as setting wastewater standards for industry and setting water quality standards for all contaminants in surface waters. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained from the EPA. Point sources are distinct conveyances such as pipes or man-made ditches. Congress exempted some water pollution sources from the point source definition in the 1972 CWA, and was unclear on the status of some other sources. These sources were therefore considered to be nonpoint sources that were not subject to the permit program. Agricultural stormwater discharges and irrigation return flows were specifically exempted from permit requirements. Stormwater runoff from industrial sources, municipal storm drains, and other sources were also not specifically addressed.

In the Water Quality Act of 1987 (WQA) Congress responded to the stormwater problem by requiring that industrial stormwater dischargers and municipal separate storm sewer systems obtain permits. The permit exemption for agricultural discharges continued, but Congress created a nonpoint source pollution demonstration grant program at EPA to expand the research and development of nonpoint controls and management practices. The Section 319 Nonpoint Source Management Program was also created in the 1987 WQA. It provides grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects.

Evolution of conservation thinking on the Dolores River, and WSR ORVs and the NCA

The Dolores River watershed in Southwestern Colorado contains an impressive diversity of landscapes, from its pristine high-altitude headwaters in the Lizard Head Wilderness to the red sandstone canyons at its confluence with the Colorado River 230 miles downstream. The river sustains rare riparian plant communities, wild trout and native warm-water fish species, and diverse recreational opportunities. Historically, the region's economy had been based primarily upon mining and agricultural operations, the latter of which are dependent on large out-of-basin diversions of water supplies, impacting the streamflow-dependant values that make the Dolores River so remarkable.

The Dolores River has had significant modifications to its flow regime over the last 120 years. The first was the trans-basin diversion of water beginning in the 1880s, which allowed a sizable portion of the spring runoff to continue down-river but diverted most of the flow of the river during irrigation season leaving only tributary inflow and leakage through the diversion structure in the river below. The second significant modification was the construction of McPhee Dam beginning in 1984. McPhee Reservoir stores most of the flow of the river throughout the entire year with spills only occurring during spring on years when the reservoir cannot store all the inflows. The Dolores Project also includes a storage allocation for a fishery pool that provides for perennial baseflow below the dam. McPhee Reservoir provided for an increase in irrigated acreage, satisfied long-standing water rights obligations to the Ute Mountain Ute Tribe, and firmed water supplies for existing farms and municipalities, resulting in significant changes in the culture and the economy of the surrounding communities. However, both the historic diversions and McPhee Dam have resulted in changes in downstream river processes that once maintained healthy ecological and recreational habitats.

Despite the transbasin diversion through Main Canal No. 1, recreational boating on the Dolores River emerged in the 1930s and gained significant popularity by 1970s as another use of the river's water. Commercial and non-commercial rafters enjoyed the annual runoff for what is commonly described as one of the most pristine and continuous wilderness river experiences in the west. Incredible scenery, solitude, and the thrill of whitewater attract boaters from across the country to experience a river canyon second only to the Grand Canyon of the Colorado. With the construction of McPhee Dam, boating opportunities were reduced as the timing, reliability, and magnitude of boating releases were impacted by Project operations.

Around the same time that recreational boating peaked on the Dolores River, there was a growing recognition of the value of natural environments as an important element of community character and of the significant economic value that can be generated when these natural values are conserved. Official recognition of the recreational, scenic and wilderness qualities of the Dolores River corridor first came in 1976 during a federal planning review, which found the river downstream of McPhee Dam suitable for inclusion into the National Wild and Scenic Rivers System under the 1968 Wild and Scenic Rivers Act. That study assumed that the Dolores Project would be built.

Many of the above-mentioned changes in awareness and law were in place when the Dolores project was built. This meant that it was one of the first major BOR projects with a complete EIS. The DPR/EIS for the project studied and collected public comment on environmental and economic issues in an attempt to mitigate some of the damages that were going to occur. Since there were few large downstream water rights and the Dolores Project was a trans-basin diversion, a significant portion of the Project's yield, but relatively small portion of the total basin yield, was allocated to the downstream of McPhee river environment. There were high expectations for a tail water trout fishery below the dam and a number of recreational facilities were constructed for the expected use of these project amenities. While these were big steps in the right direction, it is fair to say that everyone involved had expectations for the success of these actions that have not been matched by realities over time.

An increased awareness and concern over the decline of native fish has led to local groups, NGOs, and federal agencies to continue to work with the community and the BOR in search of solutions. Specifically, changes to the downstream hydrology and the timing and magnitude of flows have affected the ecology of the river. Dependable high flows downstream of the original diversion prior to the construction of the dam had cleaned silt and mud from pools and riffles, and helped maintain diverse instream habitats that native fish need to find food, escape predators, and reproduce. Additionally, the reproductive success of native fish is closely linked to natural cycles of springtime runoff and warming water temperatures. The timing of these cycles was altered by the dam, which captures most of the spring inflows and has reduced the frequency and size of "spill" releases. Another factor currently affecting native fish populations is smallmouth bass, which were inadvertently introduced to the river through a spillway release while the gates were under repair. Smallmouth bass are voracious predators, and when flows are low, fish concentrate in available pools and native species have less room to escape. Additionally, as with any reservoir, there are alterations to the sediment transport regimen that have affected water quality, mainly due the river's infrequent ability to transport sediment delivered from tributaries and clean and prepare cobble beds for spawning habit and food (macroinvertebrate) production.

In December 2007, the San Juan Public Lands Center (USFS and BLM) released a draft update to federal planning documents and again found the Dolores River below McPhee Reservoir to be "preliminarily suitable" for inclusion in the National Wild and Scenic Rivers System. This determination reflected a similar finding to the 1976 federal planning review, and re-ignited local concerns over federal intervention in water management under the Wild and Scenic Rivers Act. The agency recognized the roundtail chub native fish species and whitewater boating, among others, as "outstanding remarkable values" (ORVs) for their WSR determination.

All of these factors have laid the foundation for the Dolores River Dialogue (DRD), which was created in 2004 through a partnership between the San Juan Citizens Alliance and the Dolores Water Conservancy District. The DRD strove to collaboratively address the environment downstream of McPhee Dam while honoring water rights and recreation. Stakeholders have acknowledged that the most constructive way to address lower Dolores River issues is to not lay blame, but to try and find positive actions that can be implemented that will improve the ecology of the downstream river. At the invitation of the San Juan Public Lands Center, the DRD initiated the Lower Dolores Plan Working Group (LDPWG) in December of

2008, which brought an even larger and broader group of stakeholders than those of the DRD together to discuss how the river corridor could be managed to balance community needs with the requirements of the federal land planning process and specifically, the protection of all ORVs identified by the landscape inventories. The focus of the LDPWG became crafting a management strategy that would serve as an alternative to the lower Dolores River's inclusion in the Wild and Scenic Rivers System, protect previously identified outstandingly remarkable river values, and permanently remove a 'suitability' determination for this reach of the Dolores River. After 18 months of intensive deliberation, the LDPWG decided to begin the process of establishing a National Conservation Area (NCA) that encompassed most of the Dolores River corridor from below McPhee Dam to roughly the town of Bedrock, Colorado. A legislative subcommittee made up of members of the LDPWG created an outline for the NCA legislation that included conceptual agreements about minerals and mining, grazing, travel, property rights and outstandingly remarkable value protections, but could not come to agreement on how to address water management. In an effort known as "A Way Forward," three independent fish experts were commissioned to review existing scientific and hydrologic information to articulate the status of native fish species found in the Dolores River, and to identify opportunities for improvement. The A Way Forward report provided the foundation for a new management plan that would put the recommendations of the scientists into a strategic framework for consideration by the entities with authority and responsibility for managing water resources and fisheries in the basin.

The initial version of the Implementation, Monitoring and Evaluation Plan (IP) for implementing, monitoring, and evaluating the effects of, the science-based recommendations was released in August of 2012, with the intent of identifying how streamflow management can sustain the flow-dependent ORV's of the Dolores River. Significant contributions from local water-users, recreation interests, fisheries experts, and conservation groups have resulted in changes to how we think about meeting the needs of fish, riparian ecosystems, and recreation, while recognizing existing water rights and contracts. While the first version of the IP contained many important management tools and concepts, some generated significant controversy with many members of the water using community. The Implementation Team (IT) is currently collecting detailed feedback from all stakeholders and community members and will be incorporating it in the next release of the IP.

Among the benefits of the Plan are release guidelines for how the Bureau of Reclamation can more closely mimic a natural hydrograph with the releases of water from McPhee Dam within the constraints defined by Project allocations, contracts and existing water rights. While dynamic streamflows are the single most valuable resource in the Lower Dolores River, the efforts of each interest involved in developing the new Management Plan are critically important to restoring the health of the Dolores River. At the time of completion of this Watershed Plan, the legislative subcommittee of the Lower Dolores Plan Working Group continues to move closer to an NCA proposal, while the Implementation, Monitoring, and Evaluation Plan for the Lower Dolores is under modification in response to stakeholder input. The broad political support that the DRD process has been building is essential for the legislation and flow recommendations to move forward.

Status of Native Fish in the Colorado Basin and in the lower Dolores

History of how natives became a concern and proposed NCA

Similar to other 'working rivers' throughout the Colorado River Basin, populations of the roundtail chub *(Gila robusta),* flannelmouth sucker *(Catostomus discobolus),* and bluehead sucker *(C. latipinnis)* in the Dolores River between McPhee Dam and the San Miguel River confluence have been trending downward since the early 1990s. Interpretation of trends, and finding an appropriate baseline to monitor adaptive actions from, are complicated on the Dolores River by the different "river eras" (1-MVIC era, 2-DoloresProject construction era, and 3-full Dolores Project water utilization era) that overlap the collection of the data as well as the relative lack of data from the MVIC era. Some reaches of the Dolores River below the dam that were occupied by native fish before and soon after the Dolores Project was completed have been abandoned, such as the first 12-miles below McPhee Dam and most of the next 20 miles between Bradfield Bridge and the Dove Creek Pumps. Below the Dove Creek Pumps, the roundtail chub population appears to be relatively stable, though numbers diminish below the 'Pyramid' park area. Populations of flannelmouth and bluehead suckers above the San Miguel River confluence are depleted and not vigorous, based on CPW fishery monitoring data, and because of their dependence on swifter-flowing run and riffle habitats, are severely challenged by drought or shortage allocations of Project fish pool water from McPhee Reservoir, especially when predatory fish occupy the same habitats (e.g. smallmouth bass).

Regional data from throughout the Colorado Basin also show diminishing range for these three species, with only about half of historical habitat currently occupied. Dewatering, habitat fragmentation, re-timing of native flows, and threats from introduced predatory sportfish are cited most frequently as causes for the regional declines observed in fishery data. In addition, flannelmouth and bluehead suckers are also susceptible to hybridization (genetic dilution) with the non-native white sucker, which now occupies most of the river basins historically occupied by native suckers. Hybridization is a growing threat as the number of white suckers and hybridized fish increase in sampled rivers, although the Dolores River appears to be the only major tributary of the Colorado River where no white suckers have been sampled. The threat of a federal listing of these native, warmwater fish under the Endangered Species Act (ESA) necessitates the continuance of efforts to reverse current population trends.

Natives as an Outstanding Remarkable Value in Bureau of Land Management inventory

Due to the regional downward trends in population data for the roundtail chub throughout the Colorado River basin and the increasing pressures from the threats mentioned above, the San Juan Public Lands Office (which included the BLM's Tres Rios Field Office) inventories included the roundtail chub as an ORV in their 2007planning inventory. Downstream BLM offices (Montrose, Grand Junction) also conducting planning inventories included the two sucker species with the roundtail chub in their eligibility reports of ORVs. The BLM Moab field office did not include the flannelmouth sucker as an ORV within their planning area. BLM is required to manage their resource areas so that no diminishment of the ORVs occurs. The process outlined by the Lower Dolores River Working Group to craft an alternative to inclusion of the

Dolores River within the Wild and Scenic River system requires that the roundtail chub be protected. That process is working to describe an adaptive management program for flows and fish that can be expected to provide the means of protection for the roundtail chub. In addition, the community recognizes that the native sucker species are also important components of the downstream ecosystem, so the Plan being crafted to protect the roundtail chub ORV will also address monitoring and evaluation of flannelmouth and bluehead suckers.

Overview of the range-wide conservation agreement and strategy for roundtail chub *Gila robusta*, bluehead sucker C*atostomus discobolus*, and flannelmouth sucker *Catostomus latipinnis*

The 'Rangewide Conservation Agreement and Strategy for Roundtail Chub (*Gila robusta)* , Bluehead Sucker (*Catostomus discobolus)*, and Flannelmouth Sucker (*Catostomus latipinnis*)' (3-Species Agreement) was developed to provide a framework for the long-term conservation of the three species throughout their ranges through a collaborative and cooperative effort amongst resource agencies in Wyoming, Utah, Colorado, New Mexico, Nevada and Arizona. The 3-Species Agreement, given the current status and threats to these fisheries, emphasizes protection and enhancement measures for all three species rather than simply maintenance of existing stocks of fish. The goal of the signatories to the 3-Species Agreement, including the State of Colorado, is to establish a program that combines data collection, research, and information sharing with community-based, voluntary efforts that can diminish threats and improve populations of all three species. If successful, listing of these species as Threatened or Endangered under the ESA would not be warranted and would protect existing and potentially new uses of water. However, establishment of a credible and effective program to pre-empt potential listing of any of these species is expected to require the cooperation and assistance of water managers and communities throughout their occupied range, as well as stepped-up efforts by State fishery managers to monitor and manage for this native warm-water species assemblage.

Enhancing the native fishery in the lower Dolores River will involve monitoring the fishery for not only the presence of fish but also for indicators that will allow for managers to detect changes in the abundance, distribution, and population structure of the three species. Tracking of data over time will include the following indicators:

- presence of young of year fish (indicator of successful spawning)
- distribution of age classes, sizes and body condition (recruitment of new fish)
- density and abundance of fish ('vigor' of population)
- geographic distribution (range of populations)
- presence/ absence of non-native competitors, predators, or stressors (e.g., white suckers, smallmouth bass, other competitors or predators in overlapping habitats)

Collectively, these data will allow detection of trends and stressors to the fishery and will be correlated with management actions taken, either those specific to fishery management (e.g., predator removal, stocking, angling regulations) or flow management from McPhee (e.g., thermal supression, spill management for flushing or habitat needs, or changes to baseflow management).

The Dolores River riparian area between McPhee Dam and Bradfield Bridge has been significantly improved over pre-dam conditions, based on vegetative transects and aerial photography showing a narrowing channel and greater abundance of riparian vegetation. Below the Bradfield Bridge, changes in the riparian condition are less well known, and until recently, the expansion of the non-native tamarisk (aka, saltcedar) upstream from the Colorado River posed a significant threat to native riparian plant communities, including native cottonwood and New Mexico privet. The release of the tamarisk leaf beetle (*Diorhabda carinulata*) beginning in 2007 has significantly reduced the vigor and threat from tamarisk invasion. In addition, the Dolores River Restoration Partnership (DRRP) was formed as a riparian-oriented collaborative effort leveraging resources from multiple BLM Area Offices in Colorado and Utah, The Tamarisk Coalition, The Nature Conservancy, and other public and private entities and works in conjunction with multiple western slope Youth Corps work groups to actively kill tamarisk and other non-native forb species (e.g., whitetop, various thistle species, kochia, russian knapweed, perennial pepperweed, cheetgrass...). This has been a massive, multi-year effort that has significantly improved riparian conditions on both private and public lands within the river corridor and floodplain. The DRRP continues to abate weed infestations, monitor treated sites, and is in the midst of developing a long-term, sustainable management plan for restoration and continued recovery of over 150 miles of the Dolores River riparian corridor.

Colorado Water Law

Settling Colorado, with its arid climate, required the development of new legal doctrines to govern the development and use of water resources. Territorial laws of 1861 established a right to divert water from streams across lands not owned by the appropriator to irrigate lands not adjacent to a stream, which differed from the pre-existing "riparian" doctrine (i.e., only landowners adjacent to a stream may divert its water so long as the use is reasonable). In 1864, the Territorial Legislature expressly recognized the prior appropriation doctrine, or the "Colorado Doctrine," that was upheld by the early Territorial Supreme Court's first major water law ruling. Colorado's version of the prior appropriation system, embodied in the State's Constitution, statutes, judicial decisions and administrative policies, is designed to promote certainty and the optimum use of the State's water resources. It was not until recently that Colorado water law was amended to allow appropriations for strictly environmental and recreational purposes.

Colorado water law promotes certainty and investment by administering diversions of water in the order of priority by which they were confirmed by the water court, i.e., "first in time, first to court, first in right." A holder of a water right with a senior appropriation date that is not receiving its full court-decreed diversion amount can "call out" junior rights until the full amount is available so long as the calling right is put to its decreed beneficial use. Certainty is also achieved by allowing individuals who wish to invest in water projects to adjudicate conditional water rights, guaranteeing a water right with a certain priority, as long as the owner of the right develops the water project with reasonable diligence. Detailed rules governing water rights and administered by water courts, in and of themselves, also promote certainty because all parties can understand how the system works and predict the legal consequences of various actions.

Optimal use is promoted in several ways. A water right holder cannot divert water unless it will be put to beneficial use. To prevent waste, no more water than is reasonably necessary for the intended use may be diverted ("duty of water"). A water right cannot be perfected, except to the extent that the owner has demonstrated its use for the intended benefit. A conditional water right, under the anti-speculation doctrine, cannot be granted unless the applicant demonstrates a non-speculative purpose and that the appropriation will be perfected within a reasonable time. All groundwater is presumed to be tributary to surface water, ensuring that their hydrological connection is recognized. Groundwater that is proven to be non-tributary is administered conservatively to promote a long-term supply and limit irreversible depletions. Notice is provided to the public whenever a water right is subject to adjudication so that all interested parties may object.

Water rights are adjudicated in an adversarial setting to ensure that an applicant's claims are tested by all interested parties, including the Colorado Division of Water Resources. Legal standards and procedures allow existing holders of water rights to change their rights to new uses and places of use so that individuals and entities may buy and sell water rights according to a value set by the marketplace. Such water court changes are limited to the amount and timing of historical use of the water right and must also ensure that other water rights will not be injured by the change. The possibility of use changes has allowed the Colorado water rights system to respond to increasing municipal demands and an evolving economy. Temporary leases and changes in water rights are also permitted enabling entities to secure additional supplies in time of drought.

The principle of optimum use has been broadened in recent decades to include environmental and recreational uses. In 1973, the Colorado General Assembly authorized the Colorado Water Conservation Board ("CWCB") to acquire water rights for "instream flow" use. Whereas, theretofore, recognized beneficial uses required a diversion or a structure to perfect an appropriation, the CWCB may appropriate water to be left in a stream "to preserve the natural environment to a reasonable degree." Today, instream flow appropriations are generally supported by modeling that estimates the flow required to maintain a certain amount of aquatic habitat. Similarly, to provide for recreational water use, in 2001 the Colorado General Assembly authorized certain governmental entities to appropriate "Recreational In-Channel Diversions" ("RICDs"), minimum stream flows to support recreational uses such as kayaking and rafting. Instream flow and RICD water rights are adjudicated in the priority system, as junior to all pre-existing water rights. But even such junior water rights give the CWCB and government entities standing to object in all subsequent water rights cases in a basin and to ensure that appropriators are held to strict proof in water rights actions, including compliance with the anti-speculation doctrine. The CWCB and private organizations such as the Colorado Water Trust are increasingly pursuing voluntary agreements with existing water rights holders to transfer or lease additional water for instream and other environmental purposes.

Interstate Water Issues and The Colorado River Compact

In the first half of the 20th century, the uncertainty associated with having the U.S. Supreme Court determine the division of water resources between states compelled western states to negotiate "compacts" to apportion interstate waters for their respective uses. The objective was to provide states some level of certainty, allowing them to develop water on their own schedule and under their sovereign control. While generally effective for this goal, in many cases the compacts were negotiated before there were reliable long-term records of basin runoff and before patterns of development could be reliably predicted.

The Colorado River Compact of 1922 apportioned estimated yields of Colorado River water between the River's Upper Division (i.e., Colorado, New Mexico, Utah and Wyoming) and the Lower Division (i.e., Nevada, Arizona and California). The Compact requires the Upper Basin states not to deplete the flow of the Colorado River below 7,500,000 AF per year during any period of ten consecutive years. With historical gage records available in 1922, showing an average Colorado River yield of 16.4 million AF per year, the Compact was designed to allow a roughly equal division of water between the two Divisions. Estimates now, however, indicate that average yield in the basin is closer to 13-14 million AF per year. The *Upper Colorado River Basin Compact of 1948* apportioned the Upper Basin's share among its four states, with Colorado receiving just over 50 percent.

The Dolores Project, within the Upper Colorado River Basin, is subject to the Colorado River Compact. To date, the Compact has generally promoted certainty and development while disputes and litigation have mostly been avoided. It has had only a limited effect on the Dolores Project. But is not clear how the Dolores Project's water rights and supply will be impacted if the lower Colorado River Basin states were to place a call on the Colorado River (i.e., a "Compact Call"). Colorado water officials and entities are even now planning for a Compact Call and how the State might respond. The federal government has issued interim guidelines for operating federal storage projects on the Lower Colorado River and allocating water there in times of shortage.

Federal Reserved Water Rights for Indian Reservations

In 1908, the U.S. Supreme Court, in *U.S. v. Winters*, determined that the federal government had implicitly reserved water rights to meet the needs of any land set aside as a federal reservation. The Winters Doctrine reserves the minimum amount of water necessary to achieve the primary purposes of a federal reservation when any land is reserved from the public domain, such as for Indian reservations, national parks, wildlife reserves, monuments, forests, and rangeland. Although several early BOR projects supplied Indian reservation needs, most BOR projects were to benefit non-Indian settlers. The potential for various Indian tribes to assert federal reserved water rights claims ultimately impacted several BOR water development projects, including the Dolores Project, Central Arizona Project, and the Animas-La Plata Project. The process to resolve Indian reserved water rights claims continues today for the Navajo Nation, the Hopi Tribe, and other Tribes across the west.

The Dolores Project helped to resolve a portion of the Ute Mountain Ute Tribe's reserved water rights claims, dating to the 1868 establishment of the Ute Mountain Ute reservation. The Tribe agreed to settle its reserved water rights claims on the Mancos River, in part based on receiving a Dolores Project allocation of 23,300 Acre Feet ("AF") of irrigation water and 1,000 AF of domestic water. These terms became part of the Colorado Ute Indian Water Rights Settlement Agreement in 1986, approved by Congress in 1988.

The Local Reclamation Era: Constructing the Dolores Project

Irrigation of the Montezuma Valley

The first permanent settlers arrived in the Dolores Valley in about 1877 to ranch and farm, capitalizing on the needs of the miners in Rico, a lucrative market for vegetables, meat and hay, even though the Valley was isolated from the rest of Colorado, and even Durango. An ambitious irrigation project was proposed as early as 1878, but low settlement numbers, restricted transportation, and limited financial resources failed to support the project. Cortez, established in the neighboring, drier Montezuma Valley in 1886, needed a dependable water supply. In February 1886, the Montezuma Valley Water Supply Company commenced work on a canal to, and a tunnel through, the narrow ridge that separated the Dolores River from Montezuma Valley. The tunnel allowed much needed domestic and irrigation water to reach Cortez and the Montezuma Valley. Completed in November 1889, it was dubbed "one of the greatest irrigation enterprises, not only in the state, but in the West," by *The Durango Herald*.

As this 5,400-foot tunnel was nearing completion, another diversion, 4,000 feet long by 40 feet deep, the "Great Cut," was being constructed to serve the same market through a low divide west of the tunnel. The Dolores Number Two Land and Canal Company, formed by B.S. Lagrange of Greeley, started constructing a six-mile canal, the Morton Flume and Great Cut, in April 1887, to serve lands west and north of those served by the tunnel. Together the two diversions had a combined 1,300 cfs capacity. When both companies faced bankruptcy, they consolidated their efforts into the Colorado Consolidated Land and Water Company ("CCL&W") in 1889. By 1890, over 100 miles of canals had been built throughout the Montezuma Valley to distribute water; an early Narraguinnep Reservoir of approximately 6,000 AF had been partially constructed; and diversion dams channeled the flow of water from the Dolores River. Water reached the Town of Cortez in July of 1890 via a three-mile long Cortez flume. By 1892, the combined CCL&W had received a surface water rights decree for 1,300 cfs. The CCL&W planned to serve Cortez, predicted to grow to 50,000 people, and to irrigate 200,000 acres.

Years of financial difficulty led to changing company ownership, looming bankruptcy and farmers facing water shortages. Efforts to provide the farmers with storage capacity and a reliable water supply spurred the formation of the Montezuma Valley Irrigation District (MVID), which developed an irrigation system under the Irrigation District Law of 1901, allowing it to levy taxes, issue bonds, and purchase, construct and maintain canals. The first meeting of the Board of Directors was held on January 7, 1902, but MVID did not buy the water company from the company's debt holders until April 30, 1907. MVID floated a bond for $795,000 to buy the

water rights and rebuild the irrigation system, including an enlargement of Narraguinnep Reservoir to 9,000 AF and a new, small Groundhog Reservoir (later breached by MVID in 1920). The High Line Canal, also known as the Mesa Verde Lateral, was leased to the U.S. Government to supply water to the Ute Mountain Ute Tribe. When many factors led to the downfall of MVID, the Montezuma Valley Irrigation Company (MVIC) was incorporated in 1920 to operate the irrigation system, by a vote of 209 for and 20 against.

In 1938, MVIC initiated plans to replace the breached Groundhog Reservoir receiving funding through the Works Progress Administration, to construct 21,700 AF of storage. During the 1950's and 1960's, MVIC again enlarged Narraguinnep, increasing its capacity to 19,000 AF. Other system improvements included repairing or replacing flumes, canals and delivery turnouts and constructing the 3,000 AF Totten Reservoir in 1965. These improvements to increase storage capacity and improve delivery sought to ensure MVIC irrigators a full water supply. Those efforts, however, still did not provide the irrigators with a late irrigation season supply. MVIC's diversion of water for trans-basin use during the irrigation season left the Dolores River nearly dry immediately downstream of MVIC's points of diversion once spring runoff subsided. Dolores River flows started dropping in June and by July and were less than MVIC's demand. Therefore, to have irrigation water available during the second half of the irrigation season, domestic water, and water for fish and wildlife habitat would require a larger storage reservoir.

Trans-Basin Diversions and Montezuma Valley

In the Montelores area, most of the arable land lies outside of the Dolores River Valley in the Montezuma Valley. Although early ranchers and farmers settled in the Dolores River Valley close to the available water, the Valley's limited land area constrained the amount and vitality of agriculture in Montezuma and Dolores Counties. This condition, and the desire to sell land to settlors, led to projects to divert Dolores River water outside of the River basin and into Montezuma Valley.

In Colorado, the demand to place water to beneficial use on land located outside of basins with a plentiful supply led to the development of many trans-basin diversion projects constructed over through low divides, similar to the Great Cut. While several trans-basin projects were constructed by BOR, many were locally developed. Technology and federal financing increased the complexities associated with trans-basin diversions and increased such amounts diverted in newer projects.

The development of trans-basin diversions also resulted in unique law and policy to govern them. Typically, any water diverted from a stream, "belongs" to that stream except to the extent that it is lawfully appropriated: a diverter pulls water from the river, makes the decreed beneficial use, and then returns any excess to the river of origin. Excess water includes, but is not limited to, water seepage from earth lined delivery channels and water diverted but not actually consumptively used by crops. Any water diverted, but not consumed by beneficial use, is owed back to the river. These return flows may seep slowly through the ground or run back to the river, but will be available for other appropriators (i.e., one person's return flow is another's

supply). This practice ensures an adequate supply to the first diverter while enhancing groundwater levels, which may provide a buffer against water-short periods.

Water imported into a different basin, such as MVIC's trans-basin diversions from the Dolores River to the Montezuma Valley, does not belong to the receiving basin. The importer of water diverted from the stream of origin in priority pursuant to decree terms, has the right to use and re-use to extinction the imported water, regardless of priorities on the receiving stream, as long as the importer maintains dominion and control over the imported water. Once the importer loses control of the imported water, the excess imported water becomes part of the receiving stream, subject to appropriation in priority in that stream. Although water rights can be obtained for return flows of imported water when available, such appropriations have no right to the continued importation and water use practices that initially made that water available.

MVIC's importation of water to the Montezuma Valley is intertwined with the use of MVIC return flows by farmers on McElmo Creek and its tributaries. Farmers along McElmo Creek and its tributaries, not directly party to the trans-basin diversions from the Dolores River to Montezuma Valley, early on anticipated making use of return flows of imported Dolores River water. The first McElmo water rights filings were made in 1888, within a few years after construction of the tunnel and Great Cut began. In addition, every draw in the north MVIC system is a tributary to McElmo Creek, and most or all farms located along those draws divert and use MVIC return flows. Some farmers have adjudicated water rights for those return flows, but some do not. Further, many landowners within the MVIC service area hold both shares in MVIC and separate individual water rights for return flows. Therefore, while some McElmo Creek farmers likely do not have an enforceable right to continued reliance on trans-basin water diversions, some do own stock in MVIC and all have relied on trans-basin diversions to provide return flows for their historical irrigation practices and livelihood.

A 2011 proposal to MVIC's shareholders to lease Company water for release downstream on the Dolores River exemplifies the connection between MVIC diversions and farming in the McElmo Creek drainage. A key concern of MVIC shareholders and neighboring landowners with the proposal was the impact it might have on the continued viability of their individual water rights for return flows and on their property values. Many had witnessed an unintended consequence of more water-tight delivery and irrigation systems: declining water tables required their obtaining more surface water to irrigate land than they were accustomed to. Because of these concerns and others, the shareholders voted down what could have been a financially lucrative MVIC water lease by a wide margin.

Mutual Ditch Companies and MVIC

Ditches and canals historically delivered water to meet the needs of the early Colorado settlers, especially to land not adjacent to a river. Because individual farmers generally did not have the resources to effectively build the large canals necessary to efficiently convey the water needed to irrigate acreage away from a stream, the mutual ditch company developed as a form of cooperative venture under Colorado law. Mutual ditch companies are "special purpose" nonprofit corporations formed to furnish water to shareholders and manage a company's water distribution system to carry out their delivery charge. The company issues shares of stock that

represent a portion of a water right and a corresponding interest in the ditches, canals, reservoirs and other works by which the water right is utilized.

Specific statutes allow a mutual ditch company's water delivery to be conditioned upon the company's payment of annual assessments, approved by the company's shareholders, to pay for the company's operational expenses and debt. A company's articles of incorporation and/or by-laws authorize issuance of stock shares and other ownership entitlements, such as voting. Each stock certificate represents a *pro rata* share in the use of the mutual ditch company's water rights and facilities as well as a tenant-in-common ownership responsibility for the mutual ditch company's liabilities. Shares are transferable personal property, whereas, the mutual ditch company's underlying water rights are real property, in essence held in trust by the company for the benefit of its shareholders.

Formation of the Dolores Water Conservancy District

Realizing the need for a reliable late growing-season water supply, a volunteer economic development committee called Cortez Bootstraps was formed in the late 1950's, primarily to promote the Dolores Project (Project). BOR had been investigating the Dolores River/McPhee site for a large water storage facility. The Project had been authorized by the Colorado River Storage Project Act of 1956. When Rep. Wayne Aspinall, Chairman of the House Interior Committee, visited the area he suggested that Cortez Bootstraps form a water conservancy district under Colorado law in order to be entitled to obtain funding for the Project.

On November 20, 1961, the Dolores Water Conservancy District (DWCD) was created by decree of the Colorado District Court, Montezuma County, to support, organize and manage the nascent Project, and to contract with the BOR as a public entity under the Colorado Water Conservancy District Act, C.R.S. § 37-45-001, *et seq*. With the DWCD's support and a finding of Project feasibility by the BOR, the Project's Definite Plan Report (DPR) and final Environmental Impact Statement (EIS) were completed in 1977. The DWCD contracted with BOR to perform the Project's operation, maintenance and replacement ("OM&R") obligations and to deliver water to all of the Project's users. Water deliveries through McPhee are controlled by contracts, although MVIC also retains its private water rights. On February 8, 1977, registered voters within the DWCD approved, by a 94% margin, the DWCD's Project repayment contract with the U.S., to be supported by an ad valorem tax. Project construction began in the spring of 1978. When President Carter included the Dolores Project on his "hit list," construction was suspended on all BOR projects in the western United States. In part because of support of the Ute Mountain Ute Tribe, the Dolores Project was the first BOR project to be removed from the "hit list." Construction proceeded in 1979.

Dolores Project as a Cooperative Venture with MVIC

MVIC is a mutual ditch company that holds MVIC's 19th century surface water rights. Individual MVIC shares represent the necessary beneficial use component of the water rights. The Southwestern Water Conservation District did not file for the original water rights for the Dolores Project until 1947, once the Project's construction seemed imminent. Because MVIC held direct flow irrigation rights from the Dolores River, senior to the water rights for the Dolores Project, the Project could not have been constructed without MVIC's cooperation.

There was much discussion about how MVIC might participate in a federal water project, i.e., how best to serve MVIC's late season water needs but allow MVIC to retain control of its delivery system and adjudicated water rights. Ultimately, MVIC retained its private water rights, keeping the early priority of its direct diversions from the Dolores River, while obtaining a supplemental water supply from the Dolores Project, principally under the 1977 Contract between DWCD and MVIC. By contrast, Project full service irrigators receive their full water supply from the Project, pursuant to individual petitions (contracts) with DWCD. Reducing the MVIC/DWCD arrangement to writing was a complex, lengthy negotiating process, as the contract discussions below indicate. Negotiation issues included how water would be delivered to MVIC using Project facilities; how much Project water would be delivered to MVIC each year consistent with MVIC's direct flow rights; how MVIC's Project repayment and OM&R payment obligations would be determined; how much of MVIC's non-Project water MVIC can use for other than irrigation purposes; and other issues. The 1977 contract allows MVIC an amount of Project water, which varies annually depending on the availability of MVIC's non-Project adjudicated water rights. The 1977 Contract also includes numerous limitations on MVIC's use of its non-Project water rights.

Construction of the Dolores Project

McPhee Dam and some Project facilities were completed by 1986. While Project water was made available to Cortez and MVIC at that time and the first Project full service irrigators started their sprinkler irrigation systems with Project water in June of1987, the majority of the Project was not fully on line until the mid-1990s with completion of the facilities to serve Ute Mountain Ute Tribe lands. By 1999, essentially all of the Project's components had been completed. Project construction thus covered a span of 20 years, from September 20, 1979, through October 10, 1999. With the completion of Project construction, the DWCD's assumed responsibility for the OM&R of Project facilities, delivery of water from Project works for irrigation, municipal and industrial ("M&I"), and fish and wildlife purposes, and for repayment of certain Project costs.

The cost of the Project, including interest during construction, totaled $752.4 million. Reimbursable costs of the Project, totaling $426.5 million, are paid by a combination of CRSP power revenues, local Project water users yearly assessments over 50 years, and taxes from landowners within the DWCD. Non-reimbursable costs of the Project, which do not have to be repaid by the local population, include archeological mitigation, fish and wildlife mitigation and enhancement, recreation, salinity and facility relocation. As Project construction wound down, Cortez and Dove Creek realized that they had subscribed to larger municipal allocations of Project water than they would probably need. In 1996, the DWCD electorate voted to tax itself to cover the repayment cost of excess Cortez and Dove Creek municipal supplies to have a sufficient M&I supply for the entire community in the future.

The Dolores Project was the last federal project constructed as part of the Colorado River Storage Project (CSRP) until the completion of the Animas-La Plata Project in 2011. The Project is unique in that it incorporates two purposes that have not historically been part of a BOR project. First, it assisted in satisfying the Ute Mountain Ute Tribe's reserved

water rights claims. Second, it provided for a McPhee Reservoir fishery release, the second largest use of Dolores Project water stored in McPhee Reservoir.

A Timeline of the Dolores Project

Reclamation projects are massive undertakings. The following, although not all-inclusive, provides a sense of the long term effort, many hurdles and significant participant coordination required to complete a BOR project the size of the Dolores Project.

1942	BOR drills 10 exploratory holes at McPhee Dam & First Feasibility Study
March 1943	"Geological Report of the McPhee Dam Site"
May 1954	Dolores Project, Colorado, Status Report
April 1956	Colorado River Storage Project Act directs BOR to prioritize completion of the planning reports for the Dolores Project
November 20, 1961	Dolores Water Conservancy District formed
September 30, 1968	Dolores Project authorized by the Colorado River Storage Project Act
February 1973	"Feasibility Geological Report, McPhee Dam and Reservoir Site"
December 1974	"Geologic Feasibility report – Great Cut Dike and Pumping Plant Sites"
January 3, 1975	Wild and Scenic Rivers Act amended to authorize accelerated study of the Dolores River for inclusion in the system
October 20, 1975	Dolores River instream flow decreed to Colorado Water Conservation Board for 78 cfs from McPhee Dam to the confluence with the San Miguel River with priority date of May 1, 1975
October 13, 1976	BOR completes preconstruction design drilling program for the proposed sites at McPhee, Great Cut Dike and GCPP
November 1, 1976	Filing of Draft Environmental Statement for Dolores Project
November 4, 1976	Final Environmental Statement for Proposed Dolores National Wild and Scenic River finds 105-mile segment of the River is eligible for inclusion with McPhee Dam considered "in place"
December 4, 1976	Public Hearing on Environmental Statement for Dolores Project
May 9, 1977	Final Environmental Statement for Dolores Project filed with Council on Environmental Quality
July 5, 1977	Definite Plan Report approved
July 22, 1977	Contract awarded to NECO, Inc., for Construction Materials Exploration
September 1977	U.S. Army Corps of Engineers Section 404 Permit issued
September 23, 1977	Repayment contract between DWCD and BOR executed and validated by the District Court
September 23, 1977	DWCD/MVIC Contract for the Adjustment of Water Rights and the Use of Irrigation Water
September 24, 1977	Project groundbreaking ceremony held
March 7, 1978	Regional agreement executed between the BOR & U.S. Fish & Wildlife Service
March 31, 1978	An interagency agreement executed between the BOR and U.S. Forest Service for planning and design of recreational facilities and McPhee Reservoir
May 1978	Construction begun on access roads to construction sites

June 6, 1978	Contract awarded to University of Colorado for the Dolores Archaeological Project (DAP)
November 3, 1978	First part of McPhee Dam access road complete
November 6, 1979	BOR renamed Water and Power Resources Service
June 26, 1980	Contract executed with CSU for demonstration farm
July 8, 1980	Contract to Guy F. Atkinson for McPhee Dam
August 13, 1980	Construction begins on McPhee
February 1981	Bradfield Bridge completed
February 24, 1981	Right-of-way tunnel holed through
May 18, 1981	Water and Power Resource Service renamed Bureau of Reclamation
June 18, 1981	Supplemental DPR for two power plants approved
July 1981	Work started at Barlow Creek riprap site
April 15, 1982	Contract award for Dolores tunnel and canal to Ohbayashi-Gumi
May 25, 1982	Calf and Plateau Creek Bridges contract awarded
June 1, 1982	Markey Construction completed all grave relocations
1986	McPhee Dam, Great Cut Dike and Dolores Tunnel complete
April 1986	MVIC receives irrigation water through Dolores Project facilities
1987	Great Cut Pumping Plant completed
July 1987	First irrigation deliveries to Dolores Project Full Service Area at Fairview block
1988	Ute Mountain Ute Tribe receives M&I water at Towaoc
1993	Ute Farm & Ranch Enterprise begins receiving irrigation water
1993	McPhee and Towaoc Power plants produce electricity
1996	Change of McPhee Fishery Release to Fishery Pool: Environmental Assessment & FONSI completed
1997	Dove Creek Block (final Project lands) receives first water
2000	Final Project Cost Estimate, BOR/DWCD Operating Agreement executed

Dolores Project Accomplishments

The Dolores Project supplies supplemental water that firms up MVIC's late season supply. With this late season supply, MVIC's irrigation patterns have shifted from early spring, when water is first available, towards the late growing season when water is more beneficial to crop consumptive needs. These changes have improved MVIC's access to its full water supply, a goal MVIC and its predecessors had pursued for over 100 years. All Dolores Project users benefit from McPhee Reservoir carry-over storage; thus allowing the conservation of water during years of plenty for use during the inevitable dry years. Carry-over storage is critical to sustain a viable agricultural economy and guarantee a reliable community domestic supply.

To stretch the available water supply to assist in settling the Ute Mountain Ute Tribe's reserved water rights claims, BOR designed the full service irrigation delivery system for maximum efficiency. By coincidence of topography, this allowed gravity pressure from the Towaoc/Highline Canal to the Ute Farm and Ranch Enterprise fields. Within northern Montezuma and Dolores Counties' full service area, this meant mechanical pumps to lift and pressurize the irrigation water. The Great Cut pumping plant lifts the water into the earth lined

Dove Creek Canal at rates of up to 350 CFS. The water then travels via gravity down the canal, controlled by check structures, to local pumping plants that deliver the water through over 100 miles of piped laterals under pressure to the Project's farmers. This technology provides efficient deliveries, with delivery losses limited to about 5% versus 25% or more for older systems without piped, pressurized delivery. Additionally, Project farmers have maximum flexibility in how and when to take their Project water, which allows greater on-farm efficiencies than under historic irrigation practices. These design decisions allowed the use of pivot and side roll irrigation on the 100% pressurized Project system. These improvements involve significant technical complexity including fiber communications, computerized control systems and significant high voltage electrical power systems. This infrastructure design requires the staffing of DWCD with highly trained craftsmen to carry out round-the-clock irrigation season deliveries.

The Dolores Project helped to achieve one of the earliest Indian reserved water rights settlements and preserved the water rights status quo on the Mancos River in eastern Montezuma County. The settlement provided, for the first time, a safe domestic water supply to Towaoc, the Ute Mountain Ute Tribe's principal town, late in the 20th century. Delivery of a safe drinking water supply substantially improved life on the Ute Mountain Ute Reservation and eliminated the need for the hauling of water for over 1,000 people.

The Dolores Project provided funding for the largest single archaeological investigation and cultural resource recovery project completed in the United States. The DAP added tremendous resources for the study of the Anasazi, resulting in hundreds of published professional papers. Further, the BLM Anasazi Heritage Center allows continued research, public education and support for the local tourist economy. Many of the original DAP archaeologists still remain in Montezuma and Dolores Counties.

McPhee Reservoir, with its large body of flat water for recreation, is important to the local community. Significant Reservoir improvements were made for boat ramps and camping, with the operation of recreation facilities turned over to the U.S. Forest Service. Today, the Reservoir fishery, managed by Colorado Parks and Wildlife (CPW), provides summer recreation to visitors from near and far. Although the recreation season is relatively short, summer boating and fishing are valued by the community.

Resource development has played a large role in the West, including in southwest Colorado, starting with the development of the Rico mining district that led to opening the area to extensive European settlement. Various extractive industries came, grew and shrank but industries remaining today include timber logging, oil exploration, uranium mining, carbon dioxide drilling and possibly natural gas to support the local economy. The DWCD provides industrial water in support of some of these activities. Extractive industries leave an area upon depletion of the desired commercial resource. The permanent settlement of the area depended on agricultural communities to provide a long term stable economic base. The Dolores Project aided these reclamation efforts by doubling the local irrigated agriculture within the DWCD's service area, including irrigation in Dolores County of approximately 7,600 allocated acres; irrigation of 19,600 allocated acres and 37,500 supplementally irrigated acres in Montezuma County, and a full irrigation supply for 7,700 acres to the Ute Mountain Ute Tribe's Farm and Ranch Enterprise. This new and improved irrigated acreage has brought improved economic

stability and vitality. Irrigated agriculture brings at least three times more production than traditional dry land farming. Based on NRCS commodity prices, the Project's full service area, representing only 40% of the irrigated area, brings in over $14 million in direct revenues to the local economy.

Dolores Project Downstream Impacts

Because the Dolores Project was built soon after the enactment of landmark environmental legislation in the 1960s and 1970s, perhaps more attention was paid to the Project's downstream impacts than in any prior BOR project. In the pre-Dolores Project era, MVIC effectively diverted all the flows of the Dolores River, after the spring runoff, although there was some leakage, monsoon storms and minor side canyon inflows from Beaver and Plateau creeks into the Dolores River below MVIC's points of diversion. Putting water back into the Dolores River during such periods was considered important for the downstream fishery. Because McPhee dam releases cold water, the trout fishery below McPhee was also a major consideration of the Project's EIS. CPW continues to stock Rainbow trout downstream, with non-native Brown trout having become self-sustaining. However, the fishery has not been able to sustain high enough populations to be considered a quality trout fishery.

For most reservoirs, releases of excess water are made through large gates at the top of a dam, a "traditional spill." McPhee Dam's spillway was built primarily for emergencies, and has been used only once since the dam's construction. The Dam's outlet works were constructed with release capacities up to 5,000 cfs, generally sufficient to manage the Dolores River inflows into McPhee. The outlet works were also constructed with multiple inlets from the Reservoir at various heights so that Dam operators could manage the temperature of released water. Unfortunately, the one emergency release through the spillway allowed non-native reservoir fish species to escape to the River downstream, some of which likely prey upon or compete with native cold- and warm-water species. Because of concerns with non-native fish escapement, water is released only from the lowest inlet, and, therefore, water released downstream is generally the coldest water in the Reservoir.

The Project's impact on white water boating was identified in Project documents. Many pre-Project public comments received by BOR discussed this issue. Both the DPR and the EIS concluded that the Project, by storing much of the annual spring runoff, would reduce average annual launching days from 54.6 to 23.9. In addition to an average loss of boater days, the number of years that the project has a downstream release has been significantly reduced. To mitigate that impact of the Project, the EIS suggested management of McPhee releases such that the availability of boating water would be more predictable and opportunities for boating on the lower Dolores would continue to the extent compatible with Project purposes. McPhee releases, in anticipation of flood inflows, would be made on a scheduled basis, with advance public notice of these intended releases so that white-water boaters could plan their use of the River. Reservoir operations would help to control flood water downstream along the Dolores River by controlled releases from McPhee to make room for flood flow storage. Releases and spills were estimated to average 76,100 AF annually, occurring generally in April through July. Operationally, this originally meant water was supposed to be released from McPhee at

prescribed times for as long as possible to provide predictable "boatable" flows. Such releases came from excess water that cannot be stored in McPhee when there is sufficient snowpack and resulting runoff.

Initially releases were timed to start before the Reservoir fills and end as it tops out, based on forecast runoff estimates and experience. Because forecasts are not perfect, it is difficult for Project managers to provide early releases and still ensure the filling of McPhee. Thus on small to medium small spill years, boating use has become even less viable than the reduced flows and release years indicate. These changes have led to the near disappearance of commercial boating on the lower Dolores. Requests to vary release flows and ramping rates continue to be reviewed with the objective of balancing the needs of white water boaters and downstream native fish, while minimizing the risk that the Reservoir will not fill. There is an effort to improve communications and release scheduling to allow maximum planning time for boating trips while still supporting a full Reservoir. The achievement of these goals remains dependent on year-to-year inflow fluctuations and receives continued attention for potential improvement.

Despite the year-round flows, the reduced magnitude and frequency of releases from the Project has had negative impacts to the downstream ecology. The yearly maintenance of the pools and riffles by spring runoff, which is important for providing spawning and rearing habitat as well as food production, has become inconsistent. Additionally, timing of releases may be affecting the ability of native fish to successfully spawn and recruit new young of the year fish. This is compounded by base flows that limit the amount of available aquatic habitat.

Dolores Project Enabling Legislation, Water Rights Decrees, Contracts, and other Project Commitments

Many decrees, contracts and agreements, along with federal and State statutes, govern Dolores Project operations and the DWCD's obligations in meeting Project purposes. The following is a list of these documents, together with document summaries.

Enabling Legislation

The Dolores Project is a Federal Reclamation project authorized as part of the Colorado River Storage Project Act of April 11, 1956 (Public Law 84-485) and the Colorado River Basin Project Act of September 30, 1968 (Public Law 90-537). Public Law 84-485, 1956, authorized the Secretary of the Interior to construct, operate and maintain a variety of dams, power plants, reservoirs and related works, including Glen Canyon, Navajo, Flaming Gorge and the Aspinall Project. The purposes of those projects included regulating the flow of the Colorado River; storing water for beneficial consumptive use; making it possible for the States of the Upper Colorado River Basin to utilize the apportionments made to and among them; providing for the reclamation of arid and semiarid land; controlling floods; and generating hydroelectric power. The 1956 Act also directed the Secretary of the Interior to prioritize completion of planning reports for the Dolores Project, among others. Public Law 90-537, 1968, authorized the Secretary of the Interior to provide a program for the further comprehensive development of the

water resources of the Colorado River Basin and for the provision of additional and adequate water supplies, including for the Dolores, Animas-La Plata, Dallas Divide and other Projects. These projects are to regulate the flow of the Colorado River; control floods; improve navigation; provide for the storage and delivery of Colorado River water for the reclamation of lands, including supplemental water supplies for M&I and other beneficial purposes; to improve water quality; provide for basic public outdoor recreation facilities; improve conditions for fish and wildlife, and generate and sell electrical power as an incident of the foregoing purposes. The Interior Secretary was directed to develop, after consultation with affected States and appropriate Federal agencies, a regional water plan to serve as the framework under which projects in the Colorado River Basin were to be coordinated and constructed so that an adequate supply of water would be made available for such projects.

Colorado's Water Conservancy District Act, C.R.S. § 37-45-101 *et seq*., and Civil Action No. 3451 – Decree for the formation of the Dolores Water Conservancy District In the District Court in and for the County of Montezuma and State of Colorado, November 20, 1961. Under the Water Conservancy District Act, the DWCD is considered a quasi-governmental corporation. It was created by decree of the Colorado District Court, Montezuma County, on November 20 1961, to support, organize and manage the Project. The District operates under the Colorado Sunshine Law, C.R.S. § 24-6-101, *et seq*, concerning open records and open meetings. The Water Conservancy District Act delineates a District's purpose, policy and Board responsibilities, which include (1) providing for the conservation of water resources within a District to insure the greatest beneficial use of water within the District and (2) encouraging and assisting in the construction of water projects to benefit the residents of the District and the State, including industry, municipalities, and irrigation. The DWCD's activities are intended to increase taxable property valuation within its boundaries. Towards these ends, the DWCD Board's policies seek to promote beneficial use of water for domestic, manufacturing, irrigation, power and other uses; to cooperate with the State of Colorado in obtaining from water available to the DWCD the highest duty for domestic uses and irrigation of lands in the DWCD within the terms of interstate compacts; to cooperate with the United States Government for the construction and financing of works in the DWCD and for the OM&R thereof, and to promote the greater prosperity and general welfare of the people of the DWCD.

Primary Contracts, Decrees, Agreements and Supporting Documents for the Dolores Project

Montezuma County District Court, Water District Number 34, Civil Action Number 967, July 19, 1962 – Adjudication of Priorities of Water Rights for the Dolores Project by the Southwestern Water Conservation District (SWCD). The SWCD filed for water rights for the Project before the DWCD was organized, and later transferred the rights to the DWCD. Storage structure claims included those for McPhee Reservoir, Monument Creek Reservoir, and Dawson (Draw) Reservoir, with an appropriation date of September 10, 1940, the date Project survey work commenced. The amount of water decreed includes a direct flow right of 585 cfs and a McPhee storage right of 400,000 AF, with annual use of 250,000 AF and 100,000 AF of refill, from the Dolores River and pertinent tributaries. The decreed uses include irrigation, domestic, M&I, recreation, and fish and wildlife. Thirty-five thousand acres of previously dry land was to be brought under cultivation with a full water supply, and 29,000 acres of land, already under cultivation, was to receive a supplemental supply.

Dolores Project Definite Plan Report (DPR), April 1977 with Appendices A-Design & Estimates OM&R; B-Water Supply; C-Project Lands, Drainage; D- Agricultural Economy, Social Assessment; E-Financial and Economic Analysis, Plan Formulation. This study summarizes the extensive BOR work conducted up to April 1977, in support of the development of the Dolores Project, through documenting existing conditions, studying impacts, estimating post-construction effects and informing local parties. The DPR determined the Project's Benefit/Cost ratio needed to meet the federal criteria for Project approval. The DPR supported the Project's EIS, determined likely future conditions, and provided a basis for the many contracts that followed. In November 1981, a supplement to the DPR supported the addition of power plants to the Project. A final 1988 DPR supplement recognized the combined Towaoc-Highline Canal salinity improvements and deleted or modified other Project facilities.

Final Environmental Impact Statement ("EIS"), May 9, 1977. In conjunction with the DPR and with public participation, BOR produced the Final Project EIS, after several drafts, to allow Dolores Project construction to move forward. The EIS looked at the Project's many social and physical impacts and recognized the following: (1) agricultural production and incomes would increase with the resulting growth in the local economy; (2) construction would make a short, but important boost to the economy; (3) forty-one families would need to be relocated; (4) annual flows in the Dolores River would be reduced while flows in the San Juan Basin would increase, with a combined net decrease of an estimated 80,900 acre feet annually; (5) over 15 miles of what was considered "limited" to "poor" fish habitat would be flooded; (6) new trout fisheries would be available in the reservoir and for 11 miles below McPhee dam; (7) approximately 45 miles of warm water fishery would be provided in the Dolores River; (8) inundation of wildlife habitat would be mitigated by the acquisition of land and other measures; and (9) while white water boating opportunities would decrease, additional recreational opportunities below the dam and at Project reservoirs would be provided. A 1989 Final Supplement To The Final Environmental Impact Statement covered the Project's power plants, the Towaoc Highline Canal Project, salinity feature and modifications to Project facilities.

Contract Number 7-07-40-W0470, Between U.S. Bureau of Reclamation and the Dolores Water Conservancy District, September 23, 1977, Providing for Project Repayment. This contract, required before BOR could start investing funds in Project construction, was signed by the DWCD after DWCD voters approved the ad valorem tax for repayment of Project costs. The contract (1) contains the repayment responsibilities of all Project participants for their portion of the Project; (2) provides definitions, including those for Project and non-Project water; (3) describes the facilities contemplated and those later modified for financial reasons; (4) covers applicable Colorado water law and federal Reclamation law; (5) establishes BOR's relationship with a single governmental contractor, DWCD, which has administrative responsibility for all Project financial functions, such as billing and water accounting, while also establishing DWCD OM&R responsibilities after transfer of those responsibilities from BOR; (6) provides CRSP power for Project pumping; (7) defines shortage sharing and establishes the Project's municipal supply as having priority over other water uses, such that it is not shorted; (8) defines MVIC's variable Project supply based on its annual non-Project supply; (9) defines the UMUT supply; (10) defines the amounts of water reserved for fish and wildlife, including an average annual 25,400 AF for discharge downstream of McPhee dam; and (11) establishes public use of McPhee

and precludes the carryover in McPhee of individual allocations across water years. The numbers used in the contract came from the Dolores Project 1977 DPR.

Contract Between the Dolores Water Conservancy District and the Montezuma Valley Irrigation Company for Adjustment of Water Rights and Sale of the Use of Irrigation Water, September 23, 1977. This contract works in conjunction with the BOR/DWCD Repayment contract and is also based on information and assumptions in the DPR. It details MVIC's non-Project water rights and defines how MVIC is to receive its Project water; defines limitations on MVIC's use of its non-Project rights, including 707.7 cfs absolute of direct flow Main Canal irrigation rights, 87.3 cfs conditional Main Canal direct flow rights, and rights for Groundhog, Narraguinnep and Totten reservoirs. The contract requires that MVIC's excess water rights be transferred to the DWCD, with the DWCD to provide an amount of Project water occurring annually based on MVIC's annual need and a defined water allocation formula related to the classified irrigable acres within MVIC's system. MVIC's annual repayment to the DWCD is generally fixed, based on an average estimate of need. Other contract terms cover such issues as Colorado water law, Reclamation law, administrative details, and Project operations.

Decrees in Case Nos. 83CW45, Water Division 7, and 83CW14, Water Division 4, *In the matter of the Application for Water Rights of the United States of America in the Dolores River, in Montezuma, Dolores and San Miguel Counties* (Paradox Augmentation Plan. The Pardox Valley Augmentation Plan changes the historical consumptive use of irrigation ditch water rights owned by BOR (a total of 19.32 cfs) inundated by McPhee Reservoir to storage use in McPhee to replace depletions in the Dolores River from the out-of-priority pumping of one or more of 24 wells at the Paradox Valley Salinity Control Unit. The water released from McPhee is delivered to a specific point. The changed water can be stored only when there is space available in McPhee, i.e., non-fill and non-spill years. It was anticipated that the amount released from McPhee would range from 71 AF/year to 924 AF/year. DWCD has agreed, on an interim basis, to release 700 AF annually to be managed as part of the fishery pool. This provides more certainty for releases available to the downstream fishery and for the operation of the Paradox Augmentation Plan.

Amendments to the Repayment Contract, Dated February 25, 1986, Conformance with the Reclamation Reform Act of 1982 (Public Law 97-293). This amendment brings the 1977 Repayment contract into alignment with the 1982 Reclamation Reform Act. That Act included a provision increasing land allocations in the West to 960 acres per ownership before being defined as excess lands. In recognition of local soil characteristics, different from elsewhere in the West, these contract amendments set that number at about 1,320 acres.

Contract Number 9-07-40-R0730, Between the United States of America Bureau of Reclamation, the Dolores Water Conservancy District, the Montezuma Valley Irrigation Company and the Ute Mountain Ute Tribe, April 21, 1989, Providing for the Adjustment of Water Rights and for the Rehabilitation, Operation, Maintenance and Replacement of Facilities to Reduce Salinity Inflow to the Colorado River ("T/HC Contract"). This contract recognizes BOR's change of the DPR to deliver UMUT irrigation water through the Towaoc Highline Canal ("T/H Canal"), combining Towaoc deliveries with those of the historic MVIC Highline and Rocky Ford canals to provide economies of scale for efficient deliveries and

salinity benefits. Salinity legislation funded some of the improvements. The contract established T/H Canal OM&R governance by all those contract signatories to pay for T/H Canal OM&R costs. It provided for storage of some of MVIC's direct flow water in McPhee ("Call Water") to help MVIC receive its water rights in full. It defined the excess water rights initially mentioned in the 1977 MVIC/DWCD contract, primarily conditional rights, to be transferred from MVIC to the DWCD. It abandoned the use of Totten Reservoir for irrigation water, providing MVIC with the equivalent quantity of Totten storage in McPhee Reservoir.

Contract Number 9-07-40-R0720, Between the United States of America Bureau of Reclamation and the Ute Mountain Ute Tribe, April 21, 1989, Providing for Project Repayment. This contract (1) aligns the Project's commitments to the UMUT with those in other Project Contracts, primarily the 1989 T/HC Contract, and those to the UMUT in the reserved water rights settlement among the federal government, the Tribe and others, and (2) defines the Tribe's repayment obligation to the federal government for Project water.

Agreement Among the Dolores Water Conservancy District and the Montezuma Valley Irrigation Company, and Landowners in the Upper Dolores River Drainage for Water Operations on the Upper Dolores River in conjunction with Case Nos. 95CW104 and 96CW49, District Court, Water Division 7. The agreements, under Case No. 96CW49, between the DWCD, MVIC and owners of water rights upstream of McPhee preserve the upstream historical irrigation practices that existed before McPhee's construction, and prevent their expansion to the detriment of the Project water supply. The agreements under Case No. 95CW104 between DWCD and owners generally of small upstream parcels, provide augmentation water for small domestic developments upstream of McPhee, such as for wells. MVIC's Groundhog reservoir provides the necessary exchange/augmentation water with MVIC receiving an equivalent supply of water from McPhee. DWR administers these upstream operations.

Environmental Assessment (1996) ("EA") and Finding of No Significant Impact ("FONSI"), ***Proposal to Modify the Operation of McPhee Reservoir and Acquire Additional Water for Release Downstream to the Dolores River for Fish and Wildlife Purposes, Dolores Project, Colorado***. The 1977 DPR established how Dolores Project water use would be developed, providing supporting data for contracts to solidify future operations. The DPR planned releases from McPhee to benefit the fishery downstream of McPhee of 20 CFS, 50 CFS or 78 CFS depending on annual water conditions of dry, average or wet, respectively. The DWCD/BOR Repayment contract provided that an average annual storage amount of 25,400 AF was needed to deliver the low, medium, and high fishery flows. The amount needed to deliver water in a low-flow year was 14,600 AF.

In the first "dry" year of 1990, under terms of the original 1977 Project EIS, releases of only 20 CFS were mandated to be made in late spring. Since this might have detrimentally impacted the downstream trout fishery, BOR began seeking alternatives to the regime prescribed in the DPR and EIS. BOR and the DWCD, with the State of Colorado, federal agencies and private organizations, determined that using a managed pool of water to make downstream fish and wildlife releases would allow better management of available Project water than would the EIS flow release criteria. The result was a proposal to turn the flow regime into a pool regime with

releases directed by a Biology Committee, subject to BOR approval, to maximize McPhee power plant electrical production. It also made more water available for the downstream fishery by reallocating additional Project water to the fishery and modifying accounting of fishery releases

In the BOR flow to pool conversion process documented by the EA, it was discovered that an additional 3,900 AF of water was required to complete the estimated average fishery release under the DPR, or a total of 29,300 AF (i.e., 25,400 + 3,900). The additional 3,900 AF was taken from Dolores Project supplies to bring the fishery pool up to its pre-Project estimated total on an average annual basis. BOR modified the accounting for fishery releases so that releases during managed spills would not count against the fishery pool allocation. Finally, in years when a full Project water supply is not available, BOR decided that shortages would be shared *pro rata* among all Project uses, including the fishery, except M&I.

The fishery pool provided more flexibility to manage downstream releases for the benefit of the fishery than the flow requirement, while also increasing the total amount of water available to be released for fish in "low" years (*see also* the discussion of the Paradox Valley Salinity Control Project augmentation water releases below, which effectively added 700 AF to the fishery pool). In exchange, the decision evaluated in the EA granted DWCD certain additional funding as part of the final Project settlement.

Contract Number 99-WC-40-R-6100, Between the United States of America Bureau of Reclamation and the Dolores Water Conservancy District, April 25, 2000 ("Operating Agreement"). This contract, required under the Repayment contract, aligns the 1996 Fishery Pool EA decision, set forth above, with the terms of other contracts and establishes DWCD/BOR cooperation on the annual operating plan ("AOP") for McPhee. The annual volume of water actually available from McPhee for fish and wildlife purposes depends on climatic conditions. BOR and the DWCD jointly develop an AOP to optimize the use of available McPhee water supplies while assuring the structural and operational integrity of McPhee Dam and appurtenant structures. The AOP reflects climatic conditions, forecasts and managed spill releases, if any. The DWCD directs the day-to-day operations of McPhee Reservoir and accounts for the water actually released from McPhee Dam. Project irrigation water and the 29,300 AF fish and wildlife pool release are reduced by equal percentages in the event of a water shortage. Water rights acquired in the future for downstream fish and wildlife purposes and downstream senior water rights experience water shortages in accordance with Colorado Law. The Operating Agreement recognizes that the managed fishery pool may be increased by other water, either Project or non-Project, that may be leased, purchased or otherwise acquired by BOR or others and agreed upon as an addition to the managed fishery pool. The DWCD and BOR agreed to continue exploring the permanent acquisition of 3,300 AF of additional water for downstream fish and wildlife purposes.

Dolores Project, Colorado, Final Cost Allocation, Dated August 2000. This document is a summation of Project changes, overall project costs and the funding mechanism for BOR projects. Project changes included (1) elimination of flood control as a Project benefit; (2) deletion from proposed construction of Dove Creek Drains, Monument Creek Reservoir, Dawson Draw Reservoir, the Cross Canyon pumping plant, Monument Creek pumping Plant, the Cortez-Towaoc pipeline, and construction of the Dove Creek pumping plant to replace the two

deleted plants; (3) changes to the original DPR plan; (4) combining the Towaoc Canal with MVIC's Highline Canal; and (5) adding the Towaoc Power Plant forebay.

Contract Number 02-WC-40-7060, Between The U.S. Bureau of Reclamation and the Dolores Water Conservancy District, October 19, 2001, Providing for the Carriage of Water Through Project Facilities. This "Warren Act" contract provides for DWCD payment to BOR for the use of Project facilities, the Great Cut pumping plant and the Dove Creek Canal, to deliver water pursuant to the non-Project MVIC Class "B" water shares purchased by the DWCD.

Stipulated Settlement Agreement, *MVIC v. DWCD, et al.*, Case No. 09CV-1307, U.S. District Court, District of Colorado. In 2009 MVIC sued the DWCD and BOR over, among other things, its disagreement with the methodology used to determine MVIC's annual allocation of Dolores Project water under various Project contracts. In a Stipulated Settlement Agreement, the parties, which also included the Ute Mountain Ute Tribe, agreed to an accounting methodology and procedure for determining MVIC's annual allocation of Project water. The Agreement made clear that MVIC has no set Dolores Project annual water allocation and that MVIC's Project allocation may be revised during each water year depending on the direct flow of the Dolores River as determined by a reconciliation process in the Stipulation, on August 1, September 1 and October 1 of each water year. MVIC's actual annual Project water allocation, from April 1 to October 15 of each water year, is to be calculated according to a "Water Calculation Sheet" attached to the Stipulation as Exhibit A, which conforms to and represents the terms of the following contracts governing MVIC's annual Project allocation: "For the Adjustment of Water Rights and Sale of the Use of Irrigation Water," dated September 23, 1977, between DWCD and MVIC; "Contract Among the United States of America and the Dolores Water Conservancy District, the Montezuma Valley Irrigation Company, and the Ute Mountain Ute Tribe Providing for the Adjustment of Water Rights and for the Rehabilitation, Operation, Maintenance and Replacement Facilities to Reduce Salinity Inflow into the Colorado River," dated April 21, 1989; and the "Repayment Contract Between the United States of America and the Dolores Water Conservancy District," dated September 23, 1977. The Stipulation contemplates that DWCD and MVIC will confer and/or meet regarding MVIC's Project water accounting on or about April 1, June 1 and July 1 of each water year. The first calculation of MVIC's annual Project allocation will be made by DWCD by July 1 of each water year.

Miscellaneous Contracts Not Discussed in Detail

Additional contracts cover construction and operation of specific ancillary portions of the Project, including (1) purchase by the DWCD of CRSP power in contracts with Western Area Power Administration, Empire Electric, and BOR; (2) the operation of the two BOR power plants; (3) BOR agreements with the USFS covering land use, relocated roads, new facilities and recreation responsibilities; (4) BOR contracts for the construction of the Anasazi Heritage Center to be operated by the BLM; and (5) local agreements moving the Town of Dolores wastewater treatment plant, moving graves, locating and constructing power lines, improving flood protection, relocating highways and building county roads, among other items.

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