



# 7 | Challenges and Opportunities Related to Development of Tribal Water

## 7.0 Introduction

The Partnership Tribes hold a significant amount of federal Indian reserved water rights, including unresolved claims, from the Colorado River and its tributaries.<sup>1</sup> Also, some tribes hold rights that are not federal reserved water rights. Although each Partnership Tribe has a unique water use history and specific water use barriers, through the Tribal Water Study process, the Partnership Tribes identified nine categories of challenges to currently using reserved water rights as well as challenges to future water development. Describing the challenges fostered the collective exploration of opportunities to overcome the challenges and potential future actions that could advance the opportunities.

This chapter presents and describes the nine categories of challenges, discusses the associated opportunities and identifies future potential actions. The challenges categories are as follows:

- Administrative and Legal Constraints
- Responding to Colorado River Basin Water Supply Challenges
- Data Collection and Tools for Water Management
- Agricultural Water Use Challenges
- Domestic, Commercial, Municipal, and Industrial Water Use
- Establishment of Continuous, Sustainable Funding
- Diverse Geography of Tribal Reservations
- Cultural and Environmental Challenges to the Use of Tribal Water
- Socioeconomic Considerations

## 7.1 Administrative and Legal Constraints

### 7.1.1 Challenges

Over the past 150 years, the Partnership Tribes have experienced challenges gaining recognition of and, in some instances, understanding their reserved water rights by federal regulators, federal and state water managers, and the public at large. This has present implications, both for the Partnership Tribes and for all other Basin stakeholders. For instance, Partnership Tribes in the Basin have a significant claim to a substantial amount of water, which they fully intend to develop and use, but which junior users are currently using; once Partnership Tribes fully use and develop their reserved water rights, those junior water users will be affected.

The doctrine of Indian reserved water rights, also known as the *Winters* doctrine, holds that when Congress reserves land for an Indian reservation, Congress also impliedly reserves water to fulfill the purpose of the reservation. *Winters v. United States*, 207 U.S. 564, 577 (1908). This 1908 United States Supreme Court decision affects the water rights of nearly everyone in the Basin due to the fact that Indian reserved water rights have a priority date of either the date the

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<sup>1</sup> See Section 3.0 of *Chapter 3 – The Tribes of the Ten Tribes Partnership*.

reservation was created or time immemorial which makes them senior to almost every other water right in the Basin.

Although *Winters* recognized federal Indian reserved water rights and set the stage for resolving Indian water rights claims, these claims are being resolved at a slow pace. Indeed, fewer than half of the tribes in the Basin have fully settled or adjudicated their reserved water rights. One challenge preventing tribes from fully settling or adjudicating their reserved water rights in the Basin is the slow resolution of water claims in general – whether that is through an adjudicatory or settlement process. Another challenge is obtaining sufficient funding necessary to facilitate a comprehensive negotiated resolution of a tribe’s reserved water rights. The fact that many tribes have yet to resolve their water rights claims creates many challenges for both tribal and other water users in the Basin, the most significant of which is the uncertainty it creates in regard to water availability to water users.

Moreover, while some Partnership Tribes have successfully navigated the process for obtaining quantified water rights either through adjudication or settlement, significant issues remain in fully using those water rights. Partnership Tribes may not have the expertise, funding or resources for comprehensive water management planning and implementation. Local entities may be hesitant to partner with tribes on water development opportunities because of differing regulations, taxation options, and sovereign immunity considerations. Even within a reservation, the various forms of land status such as trust allotments, restricted fee, and individual assignments may complicate an otherwise straightforward water development opportunity and further slow progress towards water development.

When a Partnership Tribe’s reservation is located in more than one state, complicated issues of how and where the tribe can use its water arise. The state line is an arbitrary boundary to tribes. Indeed tribal member’s homes may be located on the reservation but within two states. Partnership Tribes contend they have the right to use their water anywhere within their reservation regardless of state lines. However, if the reservation crosses state lines, the tribe is often restricted in its ability to use its full reserved water rights. Water management among states is not coordinated, which complicates permitting, water accounting and other administrative processes. In addition, the tribe may be subject to multiple state adjudications or settlement processes, which may result in a portion of the tribe’s reserved water rights being fully adjudicated in one state, but not in another.

Other challenges arise when a tribe’s reservation consists of areas within both the Upper Basin and the Lower Basin. The tribe may be restricted from using its water across Basin boundaries within the reservation. Because the Navajo Reservation covers areas of Utah, Arizona and New Mexico, the Navajo Nation has reserved water rights in the Upper Basin and unresolved claims to water in both the Upper Basin and the Lower Basin but may not use water allocated to the Upper Basin in the Lower Basin and vice versa.

Another challenge involves the ability to voluntarily transfer (such as through transfers, leases, water banking, exchanges, and deferral and forbearance agreements) a portion of a tribe’s reserved water rights for off-reservation uses. This could provide a potential source of revenue for a tribe in water short areas, but there are obstacles to such transfers.

### 7.1.2 Opportunities

To address these challenges, Congress, federal and state agencies, and the general public will need to consider more fully the nature and importance of Indian reserved water rights not just in general but also with regard to (1) the intricacies of each tribe's settled or adjudicated water rights and (2) unresolved claims. The Partnership Tribes intend to take advantage of more opportunities to educate other partners in the Basin and elsewhere about the importance of Indian reserved water rights and how timely and full recognition and understanding of these rights can assist with addressing water challenges in the Basin as a whole. An increased understanding of reserved water rights could help reduce conflict, highlight opportunities for collaboration and lead to innovative partnerships between tribes and state or federal agencies.

There are currently successful water transfer arrangements in place in the Basin involving Indian reserved water rights and other communities. For example, the United States Supreme Court's Consolidated Decree in *Arizona v. California*, 547 U.S. 150 (2006), included a recognition of the Quechan Indian Tribe's right to choose to forebear the development of some of its then- unused federal Indian reserved water rights in California in favor of allowing that water to flow to the Metropolitan Water District of Southern California (MWD). In exchange for obtaining this additional water supply for its customers, MWD agreed to pay the Quechan Tribe on a per acre-foot (AF) basis for the amount of water forborne by the Tribe each year, up to 13,000 AF per year.

The Colorado River Indian Tribes (CRIT) fallow farm land to leave water in Lake Mead as part of the Pilot System Conservation Program. The CRIT entered a forbearance agreement with Reclamation that includes the methodology for measuring reduced consumptive use and corresponding reductions in diversions to the reservation, field verification of fallowed lands, and payment schedules. Funding is provided by Reclamation, Central Arizona Water Conservation District, Metropolitan Water District of Southern California, Southern Nevada Water Authority and Denver Water under the terms of the 2014 Funding Agreement.<sup>2</sup>

The Jicarilla Apache Nation (Jicarilla), too, has reserved water rights that it subleases to a number of different entities for off reservation use subject to the approval authority of the Secretary of the Interior. Jicarilla subleases water to a variety of entities and for a variety of purposes including energy production, private industry, recreation, and conservation.<sup>3</sup> Jicarilla also takes delivery of 6,500 AF of Colorado River water via the San Juan-Chama Project for use in the Rio Grande Basin. Marketing its water provides a source of revenue for Jicarilla; at the same time, downstream users in water short areas benefit as well.

These examples demonstrate that voluntary modifications of tribal water use patterns can be used to help meet the demands of other water users. The Partnership Tribes are hopeful that the information obtained through the Tribal Water Study will provide an opportunity to evaluate and pursue establishing a variety of voluntary use options such as transfers, leases, water banking, exchanges, and deferral and forbearance agreements, which offer opportunities for Partnership Tribes as well as other communities to develop mutually beneficial use of tribal water. Certainly, treating recognition of Indian reserved water rights as a high priority can lead to

<sup>2</sup> Retrieved from: <https://www.usbr.gov/lc/region/programs/PilotSysConsProg/pilotsystem.html>

<sup>3</sup> Jicarilla Apache Tribe Water Rights Settlement, Public Law No. 102-441, 106 Stat. 2237 (1992) and Contract between the Jicarilla Apache Tribe and the United States (Dec. 8, 1992).

solutions in the Basin in a time when water is scarce and the Basin as a whole is faced with serious imbalances in supply and demand.

The Partnership Tribes are also hopeful that the Tribal Water Study will provide an opportunity for them to be included in regional water planning in order to facilitate tribal water development, minimize conflict, and improve overall reliability of the Colorado River System.

The Partnership Tribes plan to work on structuring grant funding opportunities to support the development of internal technical and legal expertise to assist with tribal water planning and management.

### **7.1.3 Potential Actions**

- Pursue the full resolution of all Indian water rights claims
- Explore the development of a permanent funding mechanism for implementation of tribal water settlements
- Explore revising DOI Criteria and Procedures for Indian Water Rights Settlements to place greater emphasis on the federal trust responsibility and less emphasis on potential federal liability
- Work with federal and state agencies to prioritize the identification of legal and regulatory constraints to full use of tribal water, and to design ways to overcome constraints and to broaden opportunities that enable Partnership Tribes to put their water to full beneficial and economic use
- Address statutory and regulatory prohibitions to interstate water management and use
- Inform other communities that a substantial amount of tribal water is going to be re-directed for tribal use and coordinate efforts to work with Partnership Tribes to develop regional solutions, thereby reducing the likelihood of conflict
- Develop and draft proposed policy changes addressing legal and regulatory constraints, as well as proposed legislation that allows for water management flexibility for Partnership Tribes
- Explore opportunities for federal agencies and Partnership Tribes to work together to develop the expertise, funding and/or resources for comprehensive water management planning and implementation
- Explore ways for Partnership Tribes to use their water that otherwise may be constrained by the Law of the River

## **7.2 Responding to Colorado River Basin Water Supply Challenges**

### **7.2.1 Challenges**

For decades, Reclamation and others have recognized and documented the challenges and complexities of ensuring a sustainable water supply and meeting future demands in an over-allocated and highly variable system such as the Colorado River. This challenge is magnified for the Partnership Tribes who seek to fully use their reserved water rights. Future challenges arise from the likelihood of continued population growth and the significant uncertainty regarding an adequate future water supply. As water demand for municipal and agricultural uses increases to serve the demands of growing populations, ensuring the availability of water for non-

consumptive uses such as the environment, recreation, and hydropower becomes increasingly challenging, especially because water supply uncertainty is further compounded by the potential effects of climate variability. Evidence indicates increased future climate variability in the Southwest, which may include longer, more extreme dry (and wet) periods than previously observed.

In addition to the long-term challenges identified in the Basin Study (Reclamation, 2012), current extended drought conditions in the Basin have further highlighted the urgency for ensuring Colorado River sustainability for the Partnership Tribes. The past 19 years of drought in the Basin has resulted in increased water management challenges with total Basin storage declining from nearly full to about 50 percent of capacity. The risk of reaching critically low elevations at Lake Powell and Lake Mead over the next decade nearly doubled over the past 10 years.

In the Upper Basin, most tribes depend on water supplies that are more reliant on the natural stream flows fed directly by snowpack than rainfall. These supplies are more likely to be impacted by localized drought patterns. Therefore, Partnership Tribes in this area experience seasonal and yearly flow variations that can result in reduced water deliveries. Upper Basin tribal lands frequently experience an insufficient water supply. In addition, Partnership Tribes with land in multiple sub-basins do not have the infrastructure to move or use water on all parts of their reservations. Indeed, for Partnership Tribes whose reservations are located in multiple states, the current Law of the River and the terms of Indian water rights settlements may result in limitations on their ability to move water where needed on their own reservation lands.

These challenges demonstrate the critical need for on-reservation water storage facilities throughout the Upper Basin. The construction of reservoirs or water projects in the Upper Basin helps provide a more reliable annual water supply. Still, the lack of adequate precipitation to fill the reservoirs coupled with high temperatures can lead to water shortages, especially in late summer. In watersheds without storage facilities, seasonal flow variations frequently do not correspond with crop water demands. Risks related to the imbalance between water supply and the timing of the supply could increase with continuing climate variability.

Partnership Tribes in the Lower Basin have some of the most senior water rights on the Colorado River. In the event of insufficient mainstream water to satisfy all deliveries, the United States Supreme Court held:

[T]he Secretary of the Interior shall, before providing for the satisfaction of any of the other present perfected rights except for those listed herein . . . first provide for the satisfaction in full or all rights of the Chemehuevi Indian Reservation, Cocopah Indian Reservation, Fort Yuma Indian Reservation [Quechan Indian Tribe], Colorado River Indian Reservation and Fort Mojave Indian Reservation . . . .<sup>4</sup>

Often supply shortages are experienced locally on various parts of the reservations. The Partnership Tribes frequently do not have the internal financial or technical resources to construct needed, large-scale watershed storage facilities. Federal Indian irrigation projects have failed to construct the proper infrastructure, including storage facilities, on many reservations to ensure an adequate and reliable water supply. Further, little infrastructure exists on reservations

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<sup>4</sup> *Arizona v. California*, 547 U.S. 150, 167 (2006).

to move water between basins within the reservation or, where authorized, to move water off reservation.

### **7.2.2 Opportunities**

Addressing current and future water supply challenges will require diligent planning and will not be resolved through any single approach. Because Partnership Tribes hold senior water rights, opportunities exist at local, reservation, regional, and Basin-wide levels for tribes to help other Basin water users balance the many competing interests to ensure adequate, reliable water supplies throughout the Colorado River System, while creating economic benefits for their respective communities. Local efforts could include encouraging water reuse, increased agricultural and domestic, commercial, municipal, and industrial conservation, and relatively simple actions such as rainwater harvesting. Reservation-wide efforts such as new or improved storage, stormwater capture, or groundwater recharge facilities would help reduce supply risks. Developing innovative funding and partnership structures could help address the resource and funding needs for these types of projects. Broader efforts such as the Navajo-Gallup Water Supply Project provide long-term sustainable water supplies for multiple communities and support regional economies, and serve as an example of how the needs of tribal and other water users may be addressed in the years ahead.

Future opportunities could include flexibility in the management and operation of reservoirs to help maintain reliable water deliveries and power generation, support environmental needs, and manage flood control. Partnership Tribes, in conjunction with federal, state and independent water authorities, researchers and economists can study the societal and environmental benefits attributable to non-consumptive uses to identify an economic value for those uses which will lend itself to more apt comparison with other use types. This in turn will aid more informed policy development. Policy and management flexibility may also aid significantly in the ability of Partnership Tribes to leverage early priority water rights, creating cooperative opportunities for greater Colorado River System efficiency, reliability and economic benefits for users throughout the Basin.

### **7.2.3 Potential Actions**

- Repair, rehabilitate or improve aging infrastructure
- Develop and fund on-reservation conservation measures
- Construct/improve storage facilities to permit or enhance tribal access to storage
- Pursue tribal representation on the Upper Colorado River Commission and greater tribal input on Reclamation's long-term planning in the Lower Basin
- Pursue tribal representation in state-wide agencies (such as the Interstate Stream Commission in New Mexico)
- Draft and propose appropriate legislation to authorize the interstate use of a tribe's reserved water rights
- Initiate efforts to value benefits accruing from non-consumptive uses in monetary terms Basin wide



## **7.3 Data Collection and Tools for Water Management**

### **7.3.1 Challenges**

Tribal governments and communities face significant challenges in improving tools and methods for effective management of their water resources. The Partnership Tribes divert their water allocations directly from the Colorado River and its tributaries, from hydrologically-connected groundwater, from federal water projects, or from a combination of these sources. Regardless of the water delivery source, the Partnership Tribes cannot effectively manage what they do not monitor.

Data collection and other tools available to measure water flows and monitor water quality for water management should be enhanced in both the Upper and Lower Basins. Water use accounting in the Upper Basin is currently inconsistent and measuring capabilities are limited or nonexistent in some tributaries. While water accounting on the Colorado River in the Lower Basin is more robust and is updated with new modeling approaches and systems for integrated gaging pursuant to the Secretary of the Interior’s mandated Watermaster responsibilities in that Basin, there is always room for improvement and refinement in any hydrologic accounting system. Data collections, quality control, review, and publication of associated data have significantly improved over past record keeping. However, use of similar measurement technologies and the availability of quality data on some tribal lands are limited at this time.

Water monitoring for the Partnership Tribes is especially challenging given the cost constraints and the general remoteness of reservation lands. These challenges make it difficult to automate water meters, monitor water quality and flow conditions, detect leaks, and ensure pipeline integrity, all of which can generally improve delivery efficiency. Tribal infrastructure systems in rural areas also require remote monitoring and automation. Partnership Tribes see a critical need for additional stream gaging stations in the Basin, especially on tributaries in the Upper Basin, to monitor proper delivery and use. Likewise, the measurement of on-farm water deliveries at federal and state authorized irrigation projects needs improvement.

### **7.3.2 Opportunities**

Partnership Tribes can address some of these challenges by applying technological improvements that can make water monitoring in remote locations more feasible and cost-effective. Such improvements would make data available that could contribute to enhanced decision-making for rural tribal communities in efficiently using their finite water resources. Appropriately located stream gaging stations are crucial for managing and protecting tribal water resources. These sites provide the data necessary to model natural flows, develop river management plans and properly administer water diversions and storage water deliveries based on their seniority. Because the data often benefits other users, as well as tribes, it can be possible to enter into cooperative funding agreements between several entities to help offset the financial burden of installing gage stations. Better measurement and data collection, such as that currently employed in the Lower Basin, can allow for greater transparency and foster cooperative opportunities while reducing potential conflicts among users with different, but necessarily interrelated, interests.

To better reflect the needs of the Partnership Tribes, more tribal information and data could be incorporated into existing water-management systems and models. With significant allocations

in the Basin, the Partnership Tribes continue their efforts to foster cooperation with adjacent communities, but a lack of tribal information in data systems is problematic for the tribes and other water users. Information on how tribes are affected by long-term trends and extreme events, such as droughts or floods, would be useful in evaluating water availability when it is most needed and in ensuring that water is not lost or wasted. Integrating accurate and up-to-date information from the Partnership Tribes would certainly allow for better management of the water.

### **7.3.3 Potential Actions**

- Develop coordinated accounting among state entities in the Upper Basin
- Explore the installation of more gages using cost-sharing agreements among Partnership Tribes, U.S. Geological Survey, Reclamation, and state entities
- Install instream gages and water meters where appropriate
- Implement water quality data collection on tribal lands generally and in response to events such as the Gold King Mine spill (while exploring the need for similar monitoring at sites throughout the Basin)
- Support rigorous accounting of water use throughout the Basin
- Encourage the use of measurement-based automation to help with the priority-based administration of diversions

## **7.4 Agricultural Water Use Challenges**

### **7.4.1 Challenges**

Agriculture is the dominant use of Colorado River water, with approximately 70 percent of total Colorado River water used to support agriculture (Reclamation, 2015). Irrigated lands are an essential component for Partnership Tribes in pursuing economic development and self-determination using their water resources. These benefits are manifested in the form of individual tribal member farms, tribally-owned farm enterprise operations, or revenue generated through leasing tribal water and croplands to other producers. In order for agricultural operations to be economically viable and reach full potential yield, they must have access to reliable irrigation water deliveries in the amounts needed to satisfy crop demand.

Many federally operated Indian irrigation projects throughout the Basin struggle with outdated or poorly maintained infrastructure, inadequate staffing levels, and a lack of knowledgeable operators. Several of these projects started out in the late 19th century as primitive ditches serving only small tracts of land. These ditch systems evolved into larger irrigation projects, but often without the benefit of coordinated planning and use of modern engineering design. The result is that water delivery to project irrigators is often inefficient, inadequate, and unreliable. This, in turn, reduces crop yields, puts the overall economic viability of the operation at risk, and ultimately decreases the revenue of Partnership Tribes.

Also, significant competition for limited BIA and/or Reclamation funding available for irrigation rehabilitation work means that many systems must significantly raise operations and maintenance rates in order to address the maintenance issues. But tribal producers with agricultural operations already economically handicapped by backlogged deferred maintenance



on these aging systems often cannot bear the higher operations and maintenance rates, leading to an economic stalemate.

Partnership Tribes often lack the monetary resources and/or technical expertise to independently maintain or rehabilitate major agricultural infrastructure, whether the projects are federally or tribally managed. Even if they have the capability, regulations governing federally owned projects make it difficult for tribes to perform their own improvements or install water efficiency measures on such projects. Partnership Tribes are hesitant to assume full operational responsibility for these projects without funding to address the large maintenance backlogs. Additionally, even if tribal irrigation infrastructure is not owned by the government, it can be difficult for tribes to finance the rehabilitation of existing or development of new agricultural facilities due to challenges in accessing capital markets. With most of their lands and natural resources held in trust by the federal government, tribes often lack the collateral or revenue streams necessary to establish credit ratings, issue bonds or secure loans.

One final challenge is that posed by water quality issues, both real and perceived. Salinity and selenium are both real concerns in the Basin. Often, significant amounts of water are required to “flush” fields to prevent salinity buildup. Plus, concerns regarding heavy metals from mine discharge and contamination from radioactive mine tailings are also a problem in the Basin and can hurt the market value of area crops due to perceived risk on the part of consumers.

#### **7.4.2 Opportunities**

Given the senior priority of most federal Indian reserved water rights and the economic importance of agriculture in the Basin, there is significant opportunity for Partnership Tribes to leverage their irrigation resources for purposes of economic development. The senior nature of these water rights sustains or increases the value of tribal agriculture operations in times of water scarcity. Tribal farmlands equipped with modern, efficient irrigation infrastructure and data gathering equipment can allow Partnership Tribes to take advantage of market forces and obtain premium lease rates from tenant farmers or maximize their own production of high-value crops.

Partnerships with tenant-farming enterprises under development or improvement leases may require installation of irrigation efficiency measures. These measures will help upgrade Indian irrigation projects, increase yields for both tribal and other producers, and help bolster the economies of area communities. The Colorado River Indian Tribes’ Irrigation Committee has been able to install on-farm irrigation improvements by accessing tribal-specific funds through the cost-share U.S. Department of Agriculture Natural Resources Conservation Service Environmental Quality Incentives Program (EQIP), and by partnering with tenant farmers to cover the user portion of the cost-share. Opportunities may also exist to partner with other water sectors to pay for irrigation improvements to boost production and lower water consumption in exchange for transfer of the conserved water.

Investing in irrigation system modernization and efficiency improvements could help increase yields, expand agricultural operations, or augment other uses – both on- or off-reservation. Allowing Partnership Tribes the ability to transfer or lease their water to producers with less reliable supplies could provide economic benefits to both parties by allowing non-tribal producers to use the water directly on their own lands, using existing irrigation infrastructure, while also generating revenue that Partnership Tribes could use to fund irrigation improvements

on their lands. Developing tribal loan programs or capitalization mechanisms might allow revenue streams to be leveraged to finance larger irrigation investments.

Independent evaluation of each irrigation system's economic and operational potential might be advisable to help prioritize infrastructure needs, ensure that the proposed upgrades use appropriate, cost-effective, and resilient technologies, and that the project can reasonably support the ongoing maintenance of the upgrades. Indian irrigation projects were built for the benefit of the tribes and their members, yet they are often operated in a manner that does not reflect the tribes' best interests. Greater coordination among the Partnership Tribes, individual water users, and irrigation project staff can help ensure that project operations align with tribal goals, while also helping irrigators understand the physical and regulatory limitations of the Colorado River System. Contracts authorized under the Indian Self-Determination and Education Assistance Act of 1975 (Public Law 93-638), as amended, can help provide tribes with a direct role in the operation of tribal/federal irrigation projects as well as limited funding for project improvement.

Protecting water quality is crucial to sustaining the economic contributions of agriculture throughout the Basin. Continued support of the salinity control program, ongoing clean-up of old mine sites, and regular monitoring of water quality by independent entities are all important to ensure both the protection of Basin water and the transparency of those efforts.

### **7.4.3 Potential Actions**

- Ensure operations and maintenance fees and project funding for tribal and BIA-managed facilities are adequate to maintain irrigation facilities
- Increase tribal management and oversight of BIA Indian irrigation projects
- Explore the potential for removing barriers to or expanding contracts authorized under the Indian Self-Determination and Education Assistance Act (Public Law 93-638) to allow Partnership Tribes to assume operational control of federally owned irrigation projects
- Engage outside/independent expertise to conduct economic analysis of Indian irrigation projects where needed to prioritize or evaluate the feasibility of further investment
- Examine and, if deemed helpful, propose changes to 25 CFR Part 171 to improve tribal participation in BIA irrigation operations
- Increase efficiency by implementing new technology and farming methods where practicable
- Seek ways to collaborate with other water users to increase irrigation system efficiencies
- Explore ways to work with the financial sector to create specific avenues for Partnership Tribes to better access capital markets
- Consider developing a tribal loan program specifically for agricultural infrastructure development, rehabilitation, and storage development

## **7.5 Domestic, Commercial, Municipal, and Industrial Water Use**

### **7.5.1 Challenges**

Access to a clean, reliable supply of water is basic to human health and limited on some Partnership Reservations. The lack of water infrastructure, limited economic development, and sustained poverty can be correlated with the availability and use of tribal water supplies. Low

per capita water use on some Partnership Reservations is often part of a larger pattern reflecting a lower economic standard of living compared to non-tribal communities. Reasons for inadequate supplies include the rural nature of some reservations, water infrastructure deficiencies, and contaminated or poor quality water supplies.

Low housing density on many reservations makes development of municipal systems economically and financially challenging. For example, on the Navajo Reservation, approximately 30 percent of the homes do not have access to drinking water systems and rely on water hauling to provide for everyday needs. During droughts, the population that hauls domestic water is at the greatest risk. They must travel longer distances to find public water systems that can provide water, or use non-potable water sources. These water haulers also create additional demands on the public water systems that maintain public water taps (Navajo Department of Water Resources, 2012).

Some Partnership Reservations have limited financial resources, making capital investments problematic and repayment capacities low. Widely dispersed reservation populations result in long distances between water sources and water users, and extremely high unit operation and maintenance costs. Typically, tribal water delivery systems have been severely underdeveloped and underfunded. Tribal municipal water projects have often been underfunded and go into disrepair due both to limited financial resources and a lack of technically trained individuals to operate and maintain these systems. Some federal funding programs, such as those offered by Reclamation, require the recipient to contribute matching funds that may exceed the financial resources available to Partnership Tribes. In addition, some reservations have not established funding mechanisms, such as a depreciation fund, to adequately repair and replace the existing water systems, many of which are at or near the end of their design life. These conditions result in expensive water and challenges generating adequate revenue to build and maintain water systems. Not only are Partnership Tribes unable to meet growing demands, they also struggle to operate and maintain existing systems. The inability to access or make full use of traditional forms of funding such as property taxes, rate increases, local or municipal assessments and municipal bonds also affects infrastructure development in tribal communities.

Water and infrastructure development within the Partnership Reservations for domestic, commercial, municipal or industrial use is often complicated by the different categories of land ownership. Checkerboard ownership patterns of fee and trust lands, fractionated ownership of allotted lands, varying tribal policies toward residential or individual land assignments, and other unique land designations within Partnership Reservations complicates the processes for obtaining infrastructure rights-of-way and satisfying other necessary clearances.

### **7.5.2 Opportunities**

Improving access to safe and reliable water is important to the Partnership Tribes. Exploring new management opportunities and adopting emerging technologies may help build tribal capacity in operating, maintaining and managing sustainable drinking water systems.

New federal initiatives have been developed to improve access to safe drinking water in Indian Country, including an innovative strategy to boost water sustainability through the greater use of water-efficient and water reuse technologies, and to promote and invest in breakthrough research and development that reduces the price and energy costs of new water supply technology. At the federal level, many agencies have worked to improve access to safe drinking water and basic

sanitation in Indian Country. In the past, a task force model has been used to coordinate federal efforts in developing water infrastructure, wastewater infrastructure, and solid waste management services in tribal communities. These efforts focused on streamlining agency policies, regulations and directives related to water services in order to reduce the administrative burden for tribal communities and facilitate access to funding. Other economic and training resources such as Tribal Economic Development Bonds, the Native American Water Association, and WaterOperator.org also assist Partnership Tribes in water management and infrastructure planning and funding.

Partnership Tribes can also take advantage of opportunities for innovation and wider adoption of technologies for more efficient water use. Providing assistance in rural, tribal areas with distributed water quality treatment systems, optimizing groundwater pumping times to lower energy costs, exploiting natural flows for small-scale hydro-generation energy projects, and using alternative energy sources such as solar power or other energy sources can help assure the availability of sufficient, high quality water supplies. For areas where distribution systems are not currently feasible, community wells and watering points can be upgraded or constructed to improve access for water haulers.

### **7.5.3 Potential Actions**

- Work with BIA to develop programmatic right-of-way agreements to simplify obtaining rights-of-way for domestic, commercial, municipal, and industrial projects
- Work with existing professional associations related to the development of tribal utility authorities to facilitate communication and idea sharing among various Partnership Tribes
- Improve access to federal expertise for financing water infrastructure
- Advocate for tribal waivers of the requirement for matching funds in federal water-related funding programs
- Create and improve relations with the adjacent communities and establish a forum for bringing tribal and other communities together to discuss issues of mutual concern
- Use a water-hauling truck service to provide more distribution points in rural areas

## **7.6 Establishment of Continuous, Sustainable Funding**

### **7.6.1 Challenges**

Tribal governments and communities face unique challenges in their efforts to establish continuous and sustainable funding for water supply infrastructure and treatment. Partnership Tribes often face more difficulty than off-reservation state and local governments because they have limited access to traditional forms of funding such as property taxes, rate increases, assessments and municipal bonds.

The ownership status of tribal lands often makes it difficult to obtain funding. The land within a tribal reservation is titled to the United States and held in trust for the benefit of the tribe and its members; therefore, tribes do not assess property taxes against their own members or the United States as a state municipality might. Although tribal members and others living or engaging in business on the reservation may pay some fees to the tribal government, revenues from property taxes, fees for services, and assessments typically are not significant sources of revenue to support tribal infrastructure construction or maintenance. Additionally, there may be private

holdings within a reservation, creating a checkerboard ownership pattern, but tribal jurisdiction to tax private land or impose assessments for services against those private land owners often is not clear and is therefore unlikely to generate significant reliable revenue.

Funding challenges faced by Partnership Tribes for water infrastructure are exacerbated by poverty in and around tribal lands. In turn, the lack of water infrastructure does little to ease, and often even prolongs already-existing levels of poverty.

Statistics about levels of poverty and employment for Native Americans on and off tribal lands are not compiled on a systematic basis. In addition, the information that is available may not accurately reflect how poverty and unemployment rates truly affect Native American populations.<sup>5</sup>

Since 2009 tribes have been authorized to issue tax-exempt economic development bonds that may be used for water infrastructure.<sup>6</sup> Tribes may also issue tax-exempt bonds for essential governmental functions. However, Partnership Tribes have difficulty accessing bond markets and obtaining favorable ratings because of the lack of property to pledge as collateral and the lack of traditional streams of revenue for repayment. Plus, there are national limits under federal law on the total amount of tribal bonds that may be issued each year.

Historically, tribal water-related infrastructure was funded by the Indian Health Service and the BIA with some funding from the U.S. Department of Housing and Urban Development. Over time, the budgets for these agencies for assistance to tribes have seen significant reductions even as the need for these services has grown in proportion to expanding on and off-reservation populations.

Federal water programs with funding available to tribal or non-tribal governments are often difficult for tribes to access. The particular tribe in need of funding may not have available matching funds or may not meet one or more of the criteria for eligibility, such as documented utility easements or the ability to impose user fees for repayment. Competition for these funds is intense and Partnership Tribes often lack the trained personnel to prepare competitive applications.

### **7.6.2 Opportunities**

The Tribal Water Study provides the opportunity to broaden the understanding of the public about tribal water issues and to provide information to water managers throughout the Basin about tribal funding needs for water infrastructure. Little or inadequate attention is focused on the pressing needs for Native American populations in the United States.

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<sup>5</sup> For instance, the 2013 American Indian Population and Labor Force Report, U.S. Department of the Interior, Office of the Secretary, Office of the Assistant Secretary – Indian Affairs, January 16, 2014, available at: <http://www.bia.gov/cs/groups/public/documents/text/idc1-024782.pdf>, accessed September 21, 2016 (2013 Report) provides some of this information; however, it must be noted that the assumptions and the accuracy of the census and other data have been disputed by tribes and tribal organizations. According to this Report, on a national scale, only 49 to 50 percent of Native Americans living on or near reservations ages 16 and older are employed. The majority of these jobs are with the tribal or the federal government or through federally funded programs. The 2013 Report estimated the rate of poverty for Native American families in Arizona is approximately 31 to 33 percent. Unemployment statistics are not compiled for tribal populations, but the 2013 Report indicates the average percentage of tribal population of workforce age working in civilian jobs in Arizona to be 39.6 percent and in Colorado to be 51.1 percent. A high percentage of the tribal population indicates they are willing and available to work, but are not working.

<sup>6</sup> American Recovery and Reinvestment Act of 2009, Public Law 111-5.

Partnership Tribes may explore opportunities to develop or expand infrastructure that serves both tribal and other populations, which in turn may also expand options to obtain funding. For example, the Colorado River Indian Tribes operate a joint venture wastewater treatment plant with the City of Parker. The Navajo-Gallup pipeline obtained funding from multiple sources to supply water to the Navajo Nation, Jicarilla Apache Nation, and the City of Gallup, New Mexico. In addition, the Animas-La Plata Project in southern Colorado serves both tribal and other communities.

Many Partnership Tribes have their own tribal utility authorities that function independently. Wider use of tribal utility authorities may expand the professional staff working for tribes and create more opportunities to access alternative funding.

Additionally, modern technology for water treatment at the tap or at a personal level may make poor quality groundwater useable in the remote and dispersed households on tribal lands. However, the current cost of the technology may limit its usefulness.

### **7.6.3 Potential Actions**

- Conduct more detailed and comprehensive assessments of tribal water infrastructure demands to better inform funding agencies and promote increased funding through the federal budget process
- Formulate a strategy to build capacity within Partnership Tribes to write grants and to access assistance for grant writing
- Broaden the access to federal expertise to finance water infrastructure through specialized programs within the DOI and within the Environmental Protection Agency such as the Natural Resource Investment Center and Tribal Infrastructure Task Force
- Develop a tribal utility authority professional association to facilitate communication, training and the sharing of ideas among Partnership Tribes
- Solidify base funding and training opportunities for tribal program staff to develop and implement domestic and municipal water and waste water programs
- Identify business entities and neighboring non-tribal communities that may be able to facilitate tribal economic development that provides mutual benefits
- Explore options for generating on-reservation revenue that may be dedicated to infrastructure development, operation and maintenance costs, or as repayment for financing mechanisms

## **7.7 Diverse Geography of Tribal Reservations**

### **7.7.1 Challenges**

Moving water to where it is needed is both geographically challenging and expensive. Doing so on tribal lands is no exception. The United States Supreme Court has acknowledged that: “It can be said without overstatement that when the Indians were put on these reservations they were not considered to be located in the most desirable area of the Nation.” *Arizona v. California*, 373 U.S. 546, 598 (1963). Consequently, the variable topography and geographic conditions of reservations can make conveyance and application of water uniquely difficult and expensive.



In addition, the sometimes uneven history of the creation of reservations, including the ‘islanding’ of some reservation lands and ‘checker-boarding’ of privately owned lands amid lands reserved for tribes, complicates infrastructure development.

Further, many tribal nations have lands within multiple states, counties or even, as is true for the Navajo Nation, lands in both the Upper and Lower Basins. Moving water from one part of a reservation to serve another can therefore encounter not only physical barriers such as long distances, mountains, and land-ownership/rights-of-way hurdles, but regulatory barriers as well.

### **7.7.2 Opportunities**

Meeting these challenges while putting water resources to full beneficial use will involve seeking new water management efficiencies that can minimize the economic burden of trans-reservation development.

Going forward, Partnership Tribes can seek more joint venture opportunities with neighboring communities. For example, on the Colorado River Indian Reservation, a joint venture water treatment facility serves both the tribal community and the Town of Parker, Arizona. Water supply projects such as the Animas-La Plata Project, serving three tribes and numerous communities and water districts in two states, is another example of what the future will likely hold, as Partnership Tribes put their remaining water resources to work.

### **7.7.3 Potential Actions**

- Explore the economics of on-reservation versus off-reservation water use where geography is a significant physical or jurisdictional impediment to tribal water development which increases funding requirements
- Explore joint venture opportunities with neighboring tribal and other communities and agencies

## **7.8 Cultural and Environmental Challenges to the Use of Tribal Water**

### **7.8.1 Challenges**

Partnership Tribes in the Basin, as elsewhere around the globe, face a number of competing concerns – both cultural and economic – when dealing with the use and stewardship of their water resources. The cultural significance of water in the worldview of native communities is captured by the shorthand phrase ‘water is life,’ some version of which can be heard in many languages, and in nearly every tribal nation. The reason for this is at once simple and profound; tribes everywhere recognize that water supports all life, and they genuinely respect this fact.

Water is also life to a number of different economic enterprises – from growing food, to raising livestock, to engaging modern commerce in the broader, and much more populous, marketplace of today. Modern tribal leaders balance these competing interests in concert with a resource management approach that respects tribal history, retains cultural values, supports the community’s existing and growing economies, and sustains these natural resources for future generations. This delicate balance is complex, and presents ongoing challenges for tribal leaders and resource managers alike.

Even in cases where cultural values are preserved while undertaking some form of water development, tribes must also address many environmental challenges. For example, where

Partnership Tribes wish to develop water resources for the benefit of their communities, compliance with the Endangered Species Act and other environmental regulations may restrict their flexibility in water use and development.

Partnership Tribes presently engaged in development of their water resources, or contemplating future water development, face a disproportionate burden for Endangered Species Act compliance. Past development has left the Colorado River and its tributaries in precarious environmental condition, as growing demands have left little of the River's resources available for environmental mitigation purposes. The Colorado River's ability to support remaining riparian habitat and native species is now extremely limited with no surplus water to serve as a buffer for species on the brink. Moreover, since all tribal projects may have a federal nexus, complying with the Endangered Species Act and the National Environmental Policy Act, including the associated compliance costs, complicates the development process and weighs heavily on tribal projects. Finally, for Partnership Tribes who share Colorado River water sources with water users operating within a state-based water rights system, improvements in the quality of the water, including in-stream flow commitments, are difficult to ensure where state water right schemes may not recognize in-stream flows as a valid water right use.

Protecting tribal cultural values and using reservation streams in ways that ensure their health and environmental viability will continue to challenge Partnership Tribes as they seek to make full use of their valuable water resources.

### **7.8.2 Opportunities**

Partnership Tribes seek opportunities to maximize the use of their water resources for the benefit of their communities. The challenge posed by maintaining healthy flows can be alleviated somewhat by establishing environmental flow requirements with more certainty, identifying – through proven scientific data – both the quantity and quality of water required for environmental health. This reduces the 'trial and error' risk in developing practices to sustain endangered and threatened species and their habitats, and offers valuable information that can support sound decision-making in the design, development, and management of potential water projects.

Partnership Tribes may also improve the likelihood for success of their projects by supporting partnerships in inter-agency species programs, such as the Lower Colorado River Multi-Species Conservation Program, and minimize Endangered Species Act compliance costs by establishing tribal, state, and local river management plans to support minimum instream flow agreements. Similarly, partnering with non-government environmental organizations presents another area of opportunity for Partnership Tribes to address the needs of the environment along with the interests of their communities and other Basin water users.

Water development and management strategies on the Colorado River must engage all Basin users in recognizing the needs of the environment. The stakes are now too high for Partnership Tribes and all other water users to ignore these challenges.

### **7.8.3 Potential Actions**

- Ensure water resources within reservations are managed to protect ecosystems, including wildlife, riparian areas, recreation areas, designated instream flow requirements and wetlands

- Expand the use of categorical exclusions to reduce the burden of National Environmental Policy Act compliance on Partnership Tribes
- Preserve and ensure that environmental flows are part of water management plans to help protect natural and cultural values
- Negotiate river management plans with minimum instream flow requirements
- Partner with environmental organizations to restore waterways, wetlands and other habitats, where possible
- Consider including all decreed tribal water rights in the environmental baselines developed as part of consultations with the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act
- Engage in public outreach/education to demonstrate the economic value of healthy waterways – including commercial, environmental, cultural, and recreational values to foster support for in-stream flows

## **7.9 Socioeconomic Considerations**

### **7.9.1 Challenges**

Partnership Tribes seek to provide their community members with all necessary services and opportunities, and recognize that adequate water infrastructure is fundamental to virtually every aspect of community success. However, many tribal communities still struggle with poverty, and infrastructure development that has been historically delayed by the slow recognition, adjudication or settlement of Indian reserved water rights. Still, where water infrastructure has been completed, it usually serves as the economic heart of the community, supporting domestic, commercial, municipal and industrial activity, as well as significant agricultural enterprises. The tribal water infrastructure development that has occurred was usually built subject to the modest limits of each tribe's ability to pay for construction directly, and/or its ability to access federal funding when it was available for such projects.

Overall, there remains a lack of adequate water infrastructure across tribal lands. The limited availability of financial resources continues to delay construction of new water projects, and causes setbacks in addressing needed repairs or rehabilitation of existing infrastructure, further contributing to lingering poverty within tribal communities.

Inadequate, aging and poorly maintained water systems impede cost-effective delivery, increasing the unreliability of irrigation projects which are often the largest economic driver in tribal communities. Under these conditions, tribal farms may suffer from uncertain water availability, lower crop yields, or poorer quality agricultural end-products, forcing producers to seek ways to offset the additional costs these unfavorable conditions represent – either by paying less for cropland leases or simply taking their business elsewhere.

Likewise, where a tribe's economy relies on oil, gas, minerals, timber or gaming operations, the cyclical or irregular income stream from these enterprises complicates long-term water infrastructure planning, funding and construction.

Another complication is the lack of a steady, reliable pool of qualified personnel to operate the tribal water infrastructure and irrigation systems – even those built and operated by the federal government for the benefit of tribes. Reservations are often remote and, as in most rural areas,

the available labor force is usually small. Federal funding, even when available to support additional personnel at prevailing wage and benefits rates, is not always a sufficient inducement to attract and retain a steady labor force. In many cases, education and training of tribal personnel have not provided sufficient numbers of qualified personnel to keep pace with the operational and maintenance needs of commercial-scale domestic and irrigation water systems.

### **7.9.2 Opportunities**

Partnership Tribes may take greater advantage of federal grants for education and training in water infrastructure design, engineering, construction, management, operations and other related programs which target low income and tribal communities; this could be a significant factor in addressing these limitations in Indian Country.

Partnership Tribes can also benefit by focused efforts to develop a skilled labor force from within their communities. Such efforts may include mentoring and training youth interested in careers in hydrologic engineering, management or operational areas.

### **7.9.3 Potential Actions**

- Develop educational programs to enhance farming/ranching techniques/opportunities
- Develop programs to encourage and train tribal participants in operating/monitoring irrigation systems
- Improve compliance with Tribal Employment Rights Office ordinances for tribal employment and job training
- Create and develop individual and collaborative tribal socioeconomic plans

## **7.10 Summary**

The Partnership Tribes identified nine categories of challenges, opportunities, and potential future actions related to the current use of tribal water and potential future water development. It is recognized that the applicability of the opportunities and potential future actions are dependent upon the administrative management of each Partnership Tribe's water resources, the Tribe's physical location, and state and federal water law, and will need to be vetted in consideration of local economies and related factors<sup>7</sup>. However, the identified opportunities and potential actions are considered to have the potential to assist Partnership Tribes in overcoming water use challenges and benefiting water management throughout the Basin.

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<sup>7</sup> Consistent with the purposes of this Study, the lists of potential future actions in this section are neither exhaustive nor constitute a statement of endorsement of any potential future action by Reclamation or the Department of Interior. Additionally, Reclamation recognizes that some potential future actions identified here could require substantial and meaningful discussions with all Basin stakeholders.