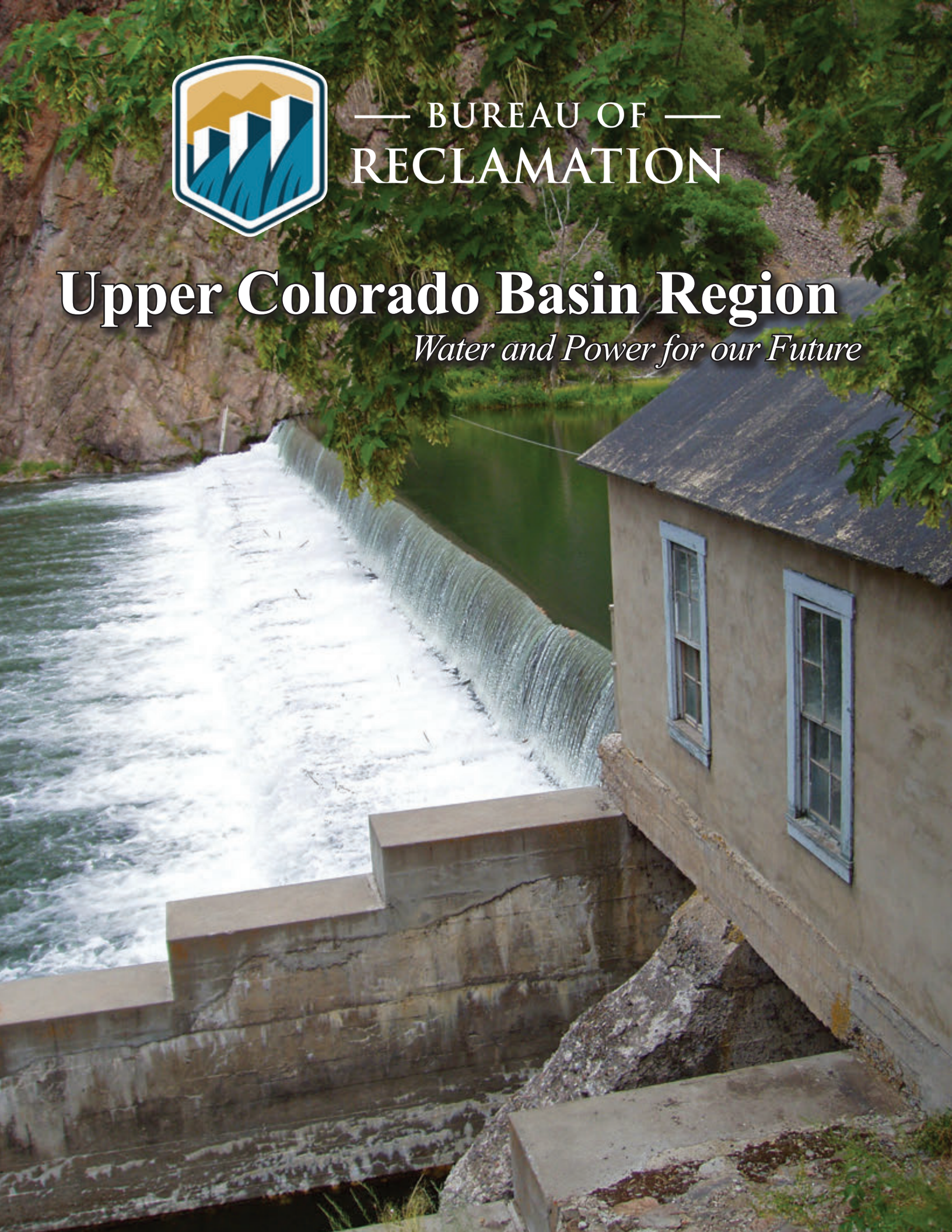
BUREAU OF
RECLAMATION
Upper Colorado Basin Region
Water and Power for our Future

Reclamation in the Upper Colorado Basin

One of five Reclamation regions, Reclamation's Interior Region 7: Upper Colorado Basin Region, is headquartered in Salt Lake City and encompasses Utah, New Mexico, western Colorado, northeastern Arizona, southwestern Wyoming, west Texas, and portions of Nevada and Idaho. The region includes five area offices: Albuquerque Area Office in Albuquerque, New Mexico; Western Colorado Area Office in Grand Junction, Colorado; Provo Area Office in Provo, Utah; and the Power Office located in Salt Lake City. In addition, the Four Corners Construction Office is located in Farmington, New Mexico.

The region oversees the Upper Colorado River, Rio Grande, and Pecos River basins, and the eastern part of the Great Basin. Reclamation works in close partnership with other federal and state agencies, Native American Tribes, water users and organizations, power customers, environmental groups, and other stakeholders, to identify and implement collaborative solutions to western water issues.

The challenge Reclamation faces every day is to bring competing interests together to find consensus-based approaches to the contemporary water challenges facing the west. This challenge includes how to best manage the quantity of finite water resources while also maintaining water quality in a region experiencing dramatic population growth, climate change, a 20-year drought, and all the related impacts of these issues to aquatic ecosystems.

Mission of Upper Colorado Basin Region

The Upper Colorado Basin Region is a collaborative leader in water management and hydropower generation dedicated to improving the quality of life of citizens in this region and preparing for the future to ensure reliable delivery of water and power.

Vision of Upper Colorado Basin Region

As stewards of the public trust, we will balance the needs of our stakeholders and the environment to achieve our mission. The Upper Colorado Basin Region will be a model of water resource management through our expertise, forward-looking and result-oriented culture.

Mission of Bureau of Reclamation

The Bureau of Reclamation manages, develops, and protects water and related resources in an environmentally and economically sound manner in the interest of the American public.

Mission of Department of the Interior

The Department of the Interior conserves and manages the Nation's natural resources and cultural heritage for the benefit and enjoyment of the American people, provides scientific and other information about natural resources and natural hazards to address societal challenges and create opportunities for the American people, and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities to help them prosper.

Hydroelectric power generators inside Glen Canyon Dam, Arizona.
(Reclamation photo Chris Watt)

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Upper Colorado Basin Region

Water and Power for our Future

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Upper Colorado Basin Region Director's Welcome

Wayne Pullan
Regional Director

As regional director for the Upper Colorado Region, I am passionate about our mission and committed to building on the successes of this great organization. During an unprecedented global pandemic, our team has shown exceptional professionalism. We have come together in many innovative ways to meet our mission of providing reliable water and power to our millions of customers. I want to take this opportunity to thank each of you—members of the regional Reclamation team as well as our partners and stakeholders—for your diligence and flexibility during this trying time. Please know that we will continue to be diligent at supporting the health and safety of our partner organizations, the public, and our employees. This is my number one priority, as we begin a new year.

As the region's new leader, I've identified some key principles to define the Upper Colorado Basin Region's approach to meeting water, power, and environmental challenges here in the west. These principles represent a vision of what the region can be and how we work together with our community and government partners. These are ideals against which we can evaluate our work and describe what those we serve can expect from our Reclamation team.

I think it is important for leaders to set clear expectations from the beginning. Here they are:

• **Public Service and Mission.** Public service is an honor. We take pride in Reclamation's mission to serve the citizens and future generations of the United States with a sense of duty.

• **Vision.** Vision is Reclamation's legacy and our mission. We strive to look to the future, anticipate opportunities and challenges, and develop personal visions for our areas of responsibility. We do our best to position ourselves to assist the region in honoring and fulfilling our mission.

• **Professionalism.** Success demands professionalism. We make every effort to exhibit the highest standards of professionalism in our writing, our speech, our relationships, and our work. We endeavor to coordinate and communicate often and well. Our aim is to Be competent. Be grateful. Be kind—to everyone.

Water flowing through the Morrow Point Dam, Colorado, bypass. *(Reclamation photo)*

• **Accomplishment.** Reclamation's culture is a culture of accomplishment. We know that we earn respect by getting things done. To do this we use a project management approach to all tasks and that facilitates decision-making and increases our focus on results.

• **Ownership.** Accomplishment requires a devoted owner. We encourage our Reclamation professionals to own their work and the projects and tasks to which they are assigned. We take full responsibility. When we succeed, we own that success. If we fail, we take responsibility. Our management will own that failure up the line, learn from it, and together we will avoid future trouble. Reclamation professionals throughout our region are enabled to identify and report issues of concern to management early.

• **Trust and Loyalty.** Those we serve in the Upper Colorado Basin should know that our people have their management's full trust. Because of that trust, they have great latitude in pursuing their work. We strive to be worthy of that trust and latitude. We are loyal to colleagues, supervisors, and those we serve.

• **Teambuilding.** All Reclamation's work is collaborative. To build our team, we rely on the knowledge and experience of others, we keep our promises, we are dependable, and we share successes, we share information, we have and share opinions, and we engage in vigorous discussion. Sometimes our views will carry the day. When they do not, we will still implement the selected path with enthusiasm.

• **Culture of Safety.** Reclamation's culture is a safety culture upon which we adopt and build. We endeavor to be absolutely safe in our work. Safety is vital to efficiency. It is important to speak up about risks and do our part to protect the public, our contractors, and our employees and we expect and require management to do the same.

• **Social Contract.** A social contract governs the relationship between employees and Reclamation. Our employees provide diligence, creativity, intelligence, vision, professionalism, and a full day's work. They comply with law, policy, and agency requirements. In exchange, Reclamation management provides meaningful work, a safe and nourishing environment, opportunities for personal development, assistance with career goals, a full day's pay, and support for life outside of work. We encourage all of our Upper Colorado Basin team to live by the contract.

As we meet the challenges in this new year, what is most important is that we commend each other on our collaborative successes, build each other up, and learn from our successes (and our failures). By doing this, we will continue to become stronger and better equipped to continue to meet the water and power and environmental needs of the west.

Reclamation past and present

President John F. Kennedy (left) at Flaming Gorge Dam, Utah. *(Reclamation photo)*

In the mid-nineteenth century, there were few reliable water supplies in the harsh country known as the Intermountain West. An early attempt to solve this problem was made in 1891 by a group of hard-driven westerners that convened the first National Irrigation Congress in Salt Lake City. The group, whose early water projects led to homesteading and promoted economic development in the west, found support from President Theodore Roosevelt.

At the turn of the century, national leaders realized that adequate and reliable water supplies were needed before the parched west could be brought into agricultural production or "reclaimed". To meet this need, the U.S. Congress and President Roosevelt created the U.S. Reclamation Service as an agency within the U.S. Geological Survey in 1902.

In 1907, the Reclamation Service obtained bureau status, and officially changed its name to the Bureau of Reclamation in 1923.

Reclamation began multi-purpose projects that kept a strong focus on water storage and irrigation, but also provided additional public benefits such as flood control, municipal water supply, and hydroelectric power generation. During its first century, Reclamation built more than 600 dams and reservoirs that irrigate some of the most productive farmland in America and sustain families and communities across the western United States. The Upper Colorado Basin Region continues to oversee some of Reclamation's earliest projects, including the Strawberry Valley Project, Utah; the Uncompahgre Project, Colorado; and the Carlsbad Project, New Mexico.

As of 2020, Reclamation is the largest water wholesaler of water in the country, operating 491 dams and reservoirs and 8,000 miles of canals with a total storage capacity of 140 million acre-feet of water. Reclamation delivers more than 10 trillion gallons of water to tens of millions of water users in the western United States and Mexico, including irrigation water to 10 million acres on 140,000 farms — one out of five western farms. In fact, water from Reclamation projects irrigate the lands that produce 60% of the nation's vegetables and 25% of its fresh fruit and nut crops with an economic contribution of $43.94 billion and 354,240 jobs.

Reclamation is also the second largest hydropower producer in the United States, harnessing the power of water through 78 hydroelectric powerplants to create a combined generating capability of more than 40 billion kilowatt-hours of renewable energy per year — 15% of the total hydropower produced across the nation.

Reclamation hydroelectric power provides more than 11,750 jobs to the U.S. economy and earns more than $3.15 billion in power revenues for the federal government while producing enough electricity to power 3.7 million American households each year.

The bureau's municipal and industrial water output supports more than 53,750 jobs and contributes $11.4 billion to the economy.

In addition, more than 245 Reclamation recreation areas received 90 million visitors, accounting for $5.4 billion in economic contribution and 36,472 jobs.

Overall, Reclamation activities now contribute a total of more than $63.9 billion to the nation's economic output and supports more than 456,200 jobs. Reclamation professionals strategically plan and provide numerous programs, initiatives, and activities that help western states, Native American Tribes, and others meet water needs, protect the environment, and balance competing uses of water in the west.

Upper Colorado Basin Region
At-a-Glance

$189,303,000 five-year average water-related projects budget *(FY2017 to FY2021)*

782 Reclamation professionals

Upper Colorado Basin Region operates and maintains **82** projects and dams

11,500,000 people visited ...

58 Upper Colorado Basin Region facilities in 2019

2,100,000 visitors to other Upper Colorado Basin Region facilities

1,010,000 visitors to Elephant Butte, New Mexico

2,600,000 visitors to state-run recreation areas at Colorado River Storage Project reservoirs

836,034 visitors to Aspinall Unit, Colorado (Crystal Dam, Morrow Point Dam, and Blue Mesa Dam)

598,154 visitors to Jordanelle Reservoir, Utah

4,300,000 million visitors to Lake Powell, Utah/Arizona

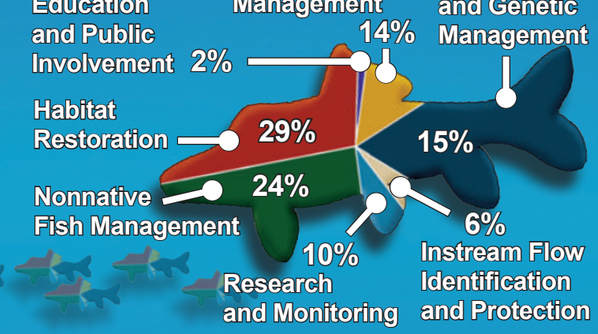
Upper Colorado River Endangered Fish Recovery Program

Program Partners

- Bureau of Reclamation
- Power customers
- Water users
- Power Revenues (WAPA)
- State of Wyoming
- State of Utah
- State of Colorado
- Ruedi Reservoir (BOR)
- U.S. Fish and Wildlife Service
- Power replacement costs recognized by Congress
- Other Federal appropriations

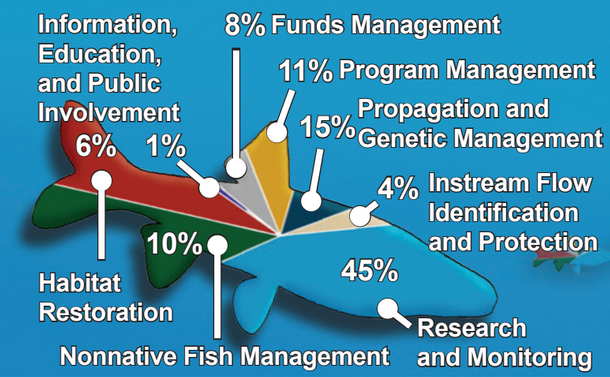
Total Partner Contributions: **$394,325,800**
(FY1989 to 2018)

Projected Program Expenditures



San Juan River Basin Recovery Implementation Program

Program Projected Expenditures



Program Partners

- Bureau of Reclamation
- Bureau of Land Management
- Bureau Indian Affairs
- Jicarilla Apache Tribe
- Southern Ute Indian Tribe
- The Nature Conservancy
- State Colorado
- State of New Mexico
- Power Revenues (WAPA)
- Energy Consultation Revenues

Total Partner Contributions: **$82,460,061**
(FY1992 to 2018)

Upper Colorado Basin Region
Water and Power

UCB reservoirs can store up to a combined
32.4 million
acre-feet of water

UCB owns
61
high hazard or significant dams

5.7 million
people living in the UCB use Reclamation water

12.6 million
acre-feet provided by UCB to irrigate

3.5 million
acres of farmland

49 dams operated by water user groups through Reclamaton agreements

FYI: 1 acre-foot is equal to 325,851 gallons or the average amount of water * used in one year by 3 American households.

* Source: epa.gov

UCB hydroelectric powerplants generate an average of
5.1 billion kilowatt-hours
of clean renewable energy per year

Using only the force of water, this region generates as much energy in one year as can be generated by burning 3 million barrels of oil or 922,000 tons of coal

UCB'S
34
hydroelectric powerplants have a combined compacity of
1,949 megawatts

22
hydroelectric powerplants operated by water user organizations and governments
115 megawatts
1,834 megawatts

12
hydroelectric powerplants operated directly by Reclamation

UCB-generated power is provided to more than
5.8 million
power users

Working with Stakeholders

Providing value in all stakeholder interactions

High-flow release at Glen Canyon Dam, Arizona. *(Reclamation photo)*

Glen Canyon Dam Long-term Experimental and Management Plan

The Long-Term Experimental and Management Plan applies scientific knowledge gained from the past 20 years and provides a framework to adaptively manage Glen Canyon Dam operations for the next 20 years.

Some LTEMP research and environmental recovery tools include monthly standardized volume releases from Lake Powell to aid in food cycle support (for example, macroinvertebrate production flows or "bug flows") in the Colorado River throughout the summer. LTEMP tools also include high-flow release events (HFEs) to push accumulated sediment down river, forming or adding to beaches along the river, and procedures to enable research and improve fish conditions and river management.

In water year 2019, representatives of Reclamation; U.S. Fish and Wildlife Service; National Park Service; Bureau of Indian Affairs; U.S. Geological Survey; Western Area Power Administration; Arizona Game and Fish Department; Upper Colorado River Commission; and the seven Colorado River Basin states (Arizona, California, Colorado, Nevada, New Mexico, Utah, Wyoming); worked together to recommend to Department of the Interior's Assistant Secretary for Water and Science, the implementation of two LTEMP HFEs in 2018 and 2019.

The November 2018 HFE was conducted to move sediment downriver and included a peak flow rate of approximately 38,100 cubic feet-per-second for 60 hours. The resulting sandbars was generally consistent with the sediment build-up results from previous HFEs with substantial deposits at all sandbar types.

Sediment deposits from HFEs often begin eroding immediately after each HFE. The bulk of newly-deposited sand only remains for approximately 6 to 12 months. However, compiled, multi-year data indicates a net increase in the size of remaining sandbars since HFE protocol began in 2012, suggesting that, while most of the sediment deposits erode away, some of the HFE deposits do remain longer.

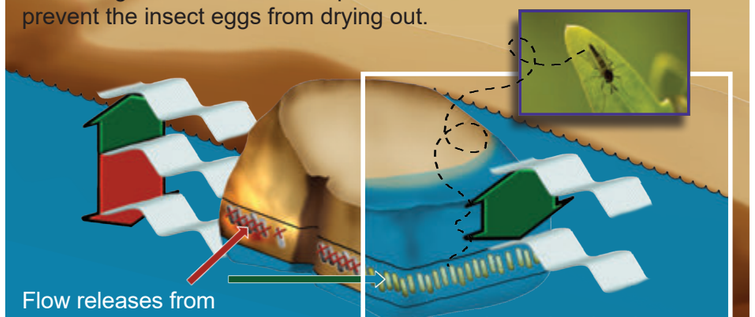
Interestingly, the temporary increases in beach campsite areas created by HFEs also benefits local plant life. Unfortunately, for campers, new native vegetation encroachment on the refreshed sandbars has reduced the overall area for new campsites. These kinds of conflicting demands on the river are exactly why LTEMP was created. Working closely with our LTEMP partners, Reclamation professionals are continuously studying these kinds of issues to find balanced solutions to meet stakeholders' concerns.

The LTEMP was approved in 2016 by the Secretary of the Interior and complies with the Grand Canyon Protection Act of 1992 and the Law of the River. For more information on, please visit www.usbr.gov.

High-flow release at Glen Canyon Dam, Arizona.
(Reclamation photo by Amee Andreason.)

Bug Flows explained

Often called "Bug Flows", Macroinvertebrate Production Flows consist of 2 days of low-flow, steady releases from Glen Canyon Dam to provide favorable conditions for insects to lay eggs along the river banks. This 2-day steady flow is followed by 5 days of fluctuating releases that are kept above those low-flow levels to prevent the insect eggs from drying out.



Flow releases from hydroelectric dams vary over the course of a day. Eggs laid near the water line during higher flows often dry out within hours as flows decline to lower levels. "

Bug flows keep river levels above where insect eggs are laid so they don't dry out. This allows the eggs to grow into their larval and adult stages.

Upper Colorado Basin support for endangered fish recovery programs

The Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program were established under cooperative agreements in 1988 and 1992, respectively. The shared goals of the two programs are to recover populations of four endangered fish species — humpback chub, bonytail, Colorado pikeminnow, and razorback sucker — while also enabling water projects to continue operations.

The programs provide Endangered Species Act compliance for more than 2,500 federal, Tribal, and non-federal water projects that include hydropower production; irrigation; and municipal, industrial, recreational, and Tribal uses.

Participants and stakeholders in the programs include Reclamation and the states of Colorado, New Mexico, Utah, and Wyoming; Western Area Power Administration; U.S. Fish and Wildlife Service; Bureau of Land Management; National Park Service; Bureau of Indian Affairs; and Native American Tribes including the Jicarilla Apache, Navajo, Southern Ute Indian, and Ute Mountain Ute Indian Tribes and Nations; as well as environmental organizations, water users, and power customers.

Fish and Wildlife Service recommended downlisting the humpback chub from an endangered to a threatened species based on rigorous species status assessments completed in 2018. The public review process required to downlist the humpback chub began in January 2020. Humpback chub are found in multiple fish population centers in the Upper and Lower Colorado River Basins.

School of razorback suckers *(National Park Service photo)*
INSET PHOTO: School of humpback chub.
(Reclamation photo).

Colorado River Basin drought contingency planning

In May 2019, the Secretary of the Interior, Reclamation, and the seven Colorado River Basin States developed and adopted drought contingency plans to meet the challenges created by more than 20 years of drought in the Colorado River Basin. Colorado River Upper Basin Drought Contingency Planning consists of three elements:

1. Weather modification (cloud seeding)

2. Demand management, a long-term effort to reduce consumptive use currently being analyzed by the basin states with support from Reclamation.

3. Drought operations: Upper Colorado River Storage Project reservoir water delivered to Lake Powell when lake water levels are projected to decline to critical elevations.

One component of the region's drought contingency planning is storage in CRSP and includes water saved through each upper basin states' demand management programs. Reclamation also provides active support to Colorado River Basin states in the implementation of their Upper and Lower Basin Drought Contingency Plans.

Finally, in response to new scientific findings, the Upper Colorado Basin Region is also considering providing support to the Upper Basin states in the implementation of measurable pilot weather modification projects.

Review, Renegotiation of Interim Guidelines 2007

Reclamation and the seven Colorado River Basin States have successfully managed water deliveries and avoided conflict in the Colorado River Basin by following 2007 interim guidelines for Lower Basin Shortage and the coordinated operations for Lake Powell and Lake Mead guidelines.

The guidelines expire in 2025 and the Secretary of the Interior is required to initiate a formal review for the purposes of evaluating the effectiveness of the guidelines no later than the end of 2020. Reclamation has initiated the review of the current guidelines and will be conducting extensive analysis and negotiation of new guidelines between 2020 and 2025 to replace the current expiring guidelines. The analyses include documenting operational experience under the current guidelines while also acknowledging and considering drought contingency planning and other operational developments since 2007.

Vallecito Dam and Reservoir, Colorado *(Reclamation photo)*

Working with Native American Communities

Building and strengthening partnerships

Part of the Animas-La Plata Project located near Durango, Colorado, the Ridges Basin Dam and Lake Nighthorse reservoir provide important water storage for the region — including for the Southern Ute Indian Tribe and the Ute Mountain Ute Indian Tribe. *(Reclamation photo by Stacey Smith)*

***A Navajo resident pumps water to transport to his home** (left)**. The Navajo-Gallup Water Supply Project is building facilities such as the Cutter Lateral water treatment plant** (right)* ***to bring water to many areas of the Navajo Nation.** (Reclamation photos)*
***MAIN PHOTO: San Juan River, Utah** (Reclamation photo by Stacey Smith)*

Navajo-Gallup Water Supply Project progress

The Navajo-Gallup Water Supply Project is designed to provide water to a population of nearly 250,000 people by diverting an estimated 37,750 acre-feet of water per year from the San Juan River, through approximately 300 miles of pipeline, 19 pumping plants, and two water treatment plants. The project began in 2012 and is planned to be completed in 2024.

The affected areas currently rely on a rapidly depleting groundwater supply that can no longer meet current or future demands.

The project is expected use diversions from the San Juan River Basin in northern New Mexico to convey an additional reliable municipal and industrial water supply to the eastern section of the Navajo Nation; the southwestern part of the Jicarilla Apache Nation; and the City of Gallup, New Mexico.

In the past, Reclamation provided water to a municipality or a water provider, who then treated and delivered it to their customers. When the Navajo-Gallup Water Supply Project is completed, Reclamation will treat the water first and then pass it down the system to the municipalities and utilities to deliver to their customers.

One of the main purposes of this project is to spur economic development opportunities on the Navajo Reservation. Therefore, large commercial and industrial users are expected to eventually benefit as well.

A major part of the project, the Cutter Water Treatment Plant was completed in August 2020 with the first water deliveries expected to be made in March 2021 after the startup and testing phase to ensure the water meets federal standards.

San Juan River Dineh Water Users salinity control project

Reclamation and San Juan River Dineh Water Users provide irrigation water to Navajo Nation farmers along the San Juan River from Farmington past Ship Rock, New Mexico.

Reclamation's Upper Colorado Basin Region's Salinity Control Program is working with water users on a salinity control project converting 15 laterals (open canals) into 182,917 feet of underground pressurized pipelines to irrigate up to 2,463 acres. Using pressurized pipelines, instead of open canals, greatly reduces the levels of salinity absorbed by the water.

The region's Salinity Control Program has a cooperative agreement with water users to provide $4.8 million in financial assistance to help with the $6.7 million projected cost of the project.

In addition, a habitat replacement project was completed to restore flow from the San Juan River to a historic secondary channel.

The entire project as completed in 2020 and is expected to reduce the salt load in the San Juan and Colorado Rivers by 4,381 tons annually.

Pojoaque Regional Water System to be built

Under the Aamodt Litigation Settlement Act, Reclamation officials planned, designed, and started to construction on a system capable of providing potable water to the Pueblos of de San Ildefonso, Pojoaque, Nambé, and Tesuque; and Santa Fe County residents.

Limited construction began in 2020 at the project intake on the Rio Grande, while design work continues for the second phase of the project which includes the Pueblos of Nambé, Tesuque, and lower Pojoaque.

Designed to provide an economic boost to the region, locally-owned small businesses, including Native American business owners, are expected to be awarded 30% of the overall construction work on the project.

Construction plans include an intake structure, a water treatment plant, pump stations, storage tanks, and an estimated 150 miles of pipeline.

US Geological Survey study to benefit Utah Navajo settlement

Working with the Navajo Nation, Reclamation identified a need to study the ground water recharge potential in the Monument Valley area. The Provo Area Office partnered with the U.S. Geological Survey and Bureau of Indian Affairs for the study.

Reclamation, the Navajo Nation and USGS attended a project site visit in Monument Valley in August 2019. Using information from the site visit, USGS is working with the Navajo Nation to finalize the study site and identify the source of water for the aquifer recharge test. Provo Area Office drill crews will install the pilot recharge facilities and monitoring wells. The USGS will then conduct the study and develop the associated, geographically-weighted models and reports.

Red Fleet Dam, Utah. *(Reclamation photo by Stacey Smith)*

Infrastructure Excellence

Ensuring America's investments in water management and hydropower generation infrastructure continues to provide and improve authorized benefits in an economically and environmentally sound manner.

Elephant Butte Dam and Reservoir, New Mexico. *(Reclamation photo by Stacey Smith)*

Reclamation Safety of Dams Program

The Safety of Dams Program is a continuous program that ensures Reclamation dams do not present unacceptable risk to people, property, and the environment.

The program focuses on evaluating and implementing actions to resolve safety concerns by completing studies to identify and accomplish needed corrrective action on Reclamation dams on a regular basis. Selected courses of action relies on assessments of risks and liabilities with environmental and public involvement input to the decision-making process.

Safety of Dams work at Steinaker Dam, Utah

Steinaker Dam located near Vernal, Utah, began modification work in July 2018 to repair a slope failure on the upstream face of the right side of the dam by flattening the embankment.

A new hydraulic system for gate operation was also installed. Reclamation, the Uintah Basin Water Conservancy District, and the basin's water users can all look forward to the continued safe and successful operation of this facility.

Safety of Dams work at Hyrum Dam, Utah

The Hyrum Dam spillway was approved for new design criteria focusing on retrofitting the crest of the dam to prevent a potential spillway failure. Recent advances in data capture and three-dimensional computer assisted design models have created options for models far beyond traditional engineering drawing practices. The project at the dam included completing a new 3-D model to better predict the amount of flow over the spillway.

The Hyrum Project, authorized in 1935, was developed to supply supplemental irrigation water to approximately 6,800 acres near the City of Hyrum, Utah. Hyrum Dam is located just south of the City of Hyrum on the Little Bear River.

Repairs and construction underway at Steinaker Dam, Utah. *(Reclamation photo)*

Upper Colorado Basin's Force Account construction team

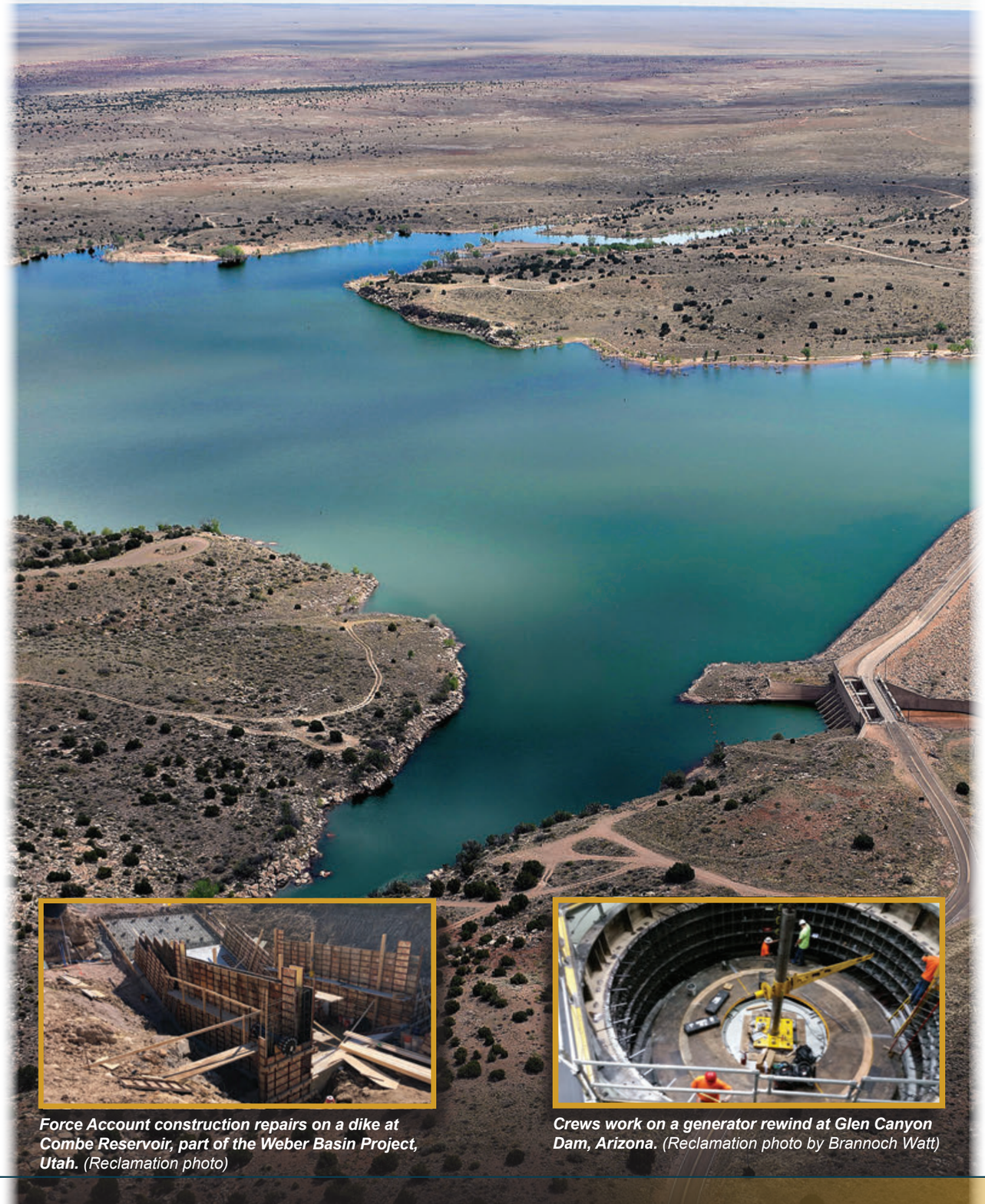
Force Account is the Reclamation nickname given to Upper Colorado Basin's Construction Services Team, based out of the Provo Area Office, Utah. The team is a mobile construction crew that builds anything from foundation excavation for dams and other dam-related structures, to earthwork for contouring streams, rivers, and wetlands.

In addition to providing construction services for Reclamation projects, the Force Account team also provides services to federal and state agencies located in the 17 western states.

For example, in 2019, the Force Account team constructed a new concrete spillway at Cook Lake, Wyoming, to increase the outflow capacity of a small U.S. Forest Service dam and reservoir in the Black Hills National Forest. The project required draining the reservoir and complete construction during the wettest year on record in the area. The new spillway can now withstand maximum flooding.

The team doesn't normally perform operations or maintence work, concentrating mainly on building new structures. However, in 2019 and 2020, the team worked on construction of a fish screen addition; contouring a new Provo River delta wetland that enters Utah Lake, Utah; demolition of older dam-related buildings; reconstruction of a dam toe drain; as well as many tons of concrete work at various government water facilities throughout the West.

Current work by the Force Account team includes geotechnical investigations, filter installation, seismic berm construction, seepage remediation, outlet works installation and any other construction projects that successfully reduce safety risks and brings Reclamation dams and water-related facilities into compliance with federal dam safety guidelines for continued safe operation.



Force Account construction repairs on a dike at Combe Reservoir, part of the Weber Basin Project, Utah. *(Reclamation photo)*

Crews work on a generator rewind at Glen Canyon Dam, Arizona. *(Reclamation photo by Brannoch Watt)*

MAIN PHOTO: Sumner Dam and Reservoir, New Mexico. *(Reclamation photo by Stacey Smith)*

Operations upgrades

Upper Colorado Basin Region operates 12 hydroelectric powerplants, located at dams throughout the western United States. These dams provide clean and reliable power to rural areas that would otherwise be forced to import power over long distances, often at high-priced rates. These 12 dams generated a combined total of more than 5.1 billion kilowatt-hours of electricity in fiscal year 2019.

Many of Reclamation's hydropower facilities are more than 50 years old which is why Upper Colorado Basin's Power Office, located in Salt Lake City, is charged with maintaining the capability of these aging facilities, including replacement of critical equipment, when required.

FY 2020 projects completed include:

Glen Canyon Powerplant, Arizona:
- Completed remodel of the information technology, electronics technician, and supervisory control and data acquisition spaces
- Stand-alone cooling system added for SCADA Room.

Blue Mesa Powerplant, Colorado: Rewind of Unit 1 (in-service, Sep 2020).

Flaming Gorge Dam, Utah:
- Cavitation repair on Unit 2 runner; this completed cavitation repair on all three units.
- Overhauled the tour route at the bottom of the dam.

Projects in progress in 2021 include:

Flaming Gorge, Utah:
- Relining of penstock filling lines and installation of penstock filling valves, on Units 1, 2, and 3.
- Installation of new station service including automating the emergency diesel generator for station service and blackstart capability with autofill and automation of river bypass system.

Glen Canyon Powerplant, Arizona:
- Replacement of step up transformers underway.
- Work on the Glen Canyon Field Division warehouse.

Blue Mesa Powerplant, Colorado: Work on rewind of Unit 2 planned for completion in May 2021.

Elephant Butte Powerplant, New Mexico: Contract awarded for relining penstocks. Work is projected for completion by the end of 2021.

Adapting to sediment at Paonia Reservoir, Colorado

Paonia Reservoir, located near Paonia, Colorado, provides recreation opportunities, flood control benefits, and irrigation water to approximately 5,300 acres of farmland. Sediment from Muddy Creek flows into the reservoir and has, in recent years, filled a significant portion of the dead storage capacity, the part of the reservoir below the outlet works. This inflow of sediment caused significant damage to the Paonia Dam outlet works.

In 2017, Reclamation, working with Fire Mountain Canal and Reservoir Company and the North Fork Water Conservancy District, removed the damaged concrete bulkhead, the sediment, and the debris from the intake structure. Work is currently underway to install a temporary steel bulkhead and new high-pressure outlet works gates. These repairs will mitigate incoming sediment until a more permanent sediment management solution can be installed.

Vegetation removal saves High Line Canal, Utah

During inspections at Strawberry High Line Canal located in Utah County, Utah, it was determined the canal was under considerable risk of failure due to excessive vegetation growth near the embankment of the canal. Trees and other woody vegetation can shorten seepage paths, obscure the embankment, make inspections and monitoring difficult. Excessive vegetation can also promote increased rodent burrowing activity which can also weaken canal embankments.

Reclamation found that some residential property boundaries along the canal were inconsistent between their Reclamation records and those of the landowners. To resolve property owners' concerns, Reclamation met with the owners and then surveyed the fee title land and easements before removing the vegetation.

More than 1.5 miles of canal embankment was cleared of heavy vegetation and regraded by Reclamation's Provo Area Office in partnership with the Highline Canal Company in 2019. These efforts will continue until the entire canal has been cleared of all detrimental vegetation.

Water flows through the bypass at Paonia Dam, Colorado. *(Reclamation photo)*

MAIN AND INSET PHOTOS: Utah State University scientists catch, study, tag, and release silvery minnows on the Middle Rio Grande. *(Reclamation photos)*

Invasive quagga and zebra mussel settlements coat the entire surface area of a massive penstock gate at Glen Canyon Dam, Arizona. *(Reclamation photo by Chris Watt)*

Rio Grande silvery minnow movement study

Reclamation and Utah State University are conducting a fish movement study to improve the process of increasing the population of the endangered silvery minnow in the Rio Grande. The study is aimed at researching silvery minnow behaviors and abilities to navigate varying conditions in the Middle Rio Grande. Reclamation hopes to use the data to improve fish passages in the future.

Utah State University released 1,700 passive integrated transponder-tagged (PIT-tagged) fish in the San Acacia reach of the Rio Grande below San Acacia diversion dam in New Mexico. Reclamation will study silvery minnow movement below, above, and through the dam and apply the data toward construction of a fish passage. An additional 11,000 PIT-tagged fish were released in both the Isleta and San Acacia reaches in November 2019, with 12,000 more released in Spring 2020.

The fish used in the study are provided by the U.S. Fish and Wildlife Service Southwestern Native Aquatic Resources and Recovery Center.

Protecting infrastructure from invasive species

Upper Colorado Basin Region professionals are taking active roles in researching solutions to prevent the damaging effects of quagga and zebra mussel settlements on submerged hydropower and water delivery infrastructure. Part of their efforts included the Reclamation Research and Development Office, Denver, Colorado, recently funding a research project titled “Ultrasonic Transducer Field Test for Quagga Mussel Settlement Control”.

Quagga and zebra mussels are prolific invasive species that create large settlements that completely block pipes and reduce water flow, often leading to overheated infrastructure and unplanned outages within the facility.

The goal of the research project is to determine the effectiveness of ultrasound waves as a way to prevent these mussel settlements. An ultrasound transducer, originally created for algae control, will be tested at Lake Powell, Arizona. Ultrasound waves are not expected to directly kill juvenile mussels but may reduce food availability preventing growth and survival.

If ultrasound waves are found to be effective, the costs of removing mussels and the risks associated would be significantly reduced. Ultrasound treatment equipment is low cost, does not require a power source or significant maintenance, and a single ultrasound transducer can protect a large surface area. Ultrasound control could be used to protect any submerged equipment at risk for mussel infestation. The results of this research may also benefit other government and public water agencies.

Reclamation is also implementing methods to ensure the mussels are unable to impact systems within the dam facility. Glen Canyon Dam has two internal systems that are highly vulnerable to mussel infestations, both of which supply turbine, generator bearings, and transformer cooling and fire protection water.

To mitigate for these vulnerabilities a two-pronged approach is being taken. First, generator and unit cooling water systems strainers are being replaced or upgraded. Second, water entering both systems is irradiated with medium frequency, ultraviolet light. Ultraviolet light damages juvenile mussels so they cannot attach, mature, or reproduce.

Organizational Excellence

Creating a high-performing organization with integrated processes to increase efficiencies, manage risk, promote safety, and strengthen effectiveness.

Jordanelle Dam and Reservoir. *(Reclamation photo Stacey Smith)*

Geographic information system work at Upper Colorado Basin's Provo Area Office, Utah

Provo Area Office leads the Upper Colorado Basin effort to capture assets in a geographic information system to improve land, water, recreation, and infrastructure management. The system is also proving to be beneficial to office efficiency and customer service.

For example, geographers can demonstrate the benefits of Colorado River desalination by mapping changes in vegetation health, using the normalized difference vegetation index that identifies vegitation growth through infrared technology.

The GIS maps have proven vital when initializing title transfers to a beneficiary for all or part of responsibility for operation, maintenance, and replacement of a project. By incorporating project data into the system, conflicts and errors in land ownership boundaries can be identified and addressed prior to the transfer. This mapping tool is also beneficial to Reclamation cultural resource and environmental specialists for analysis of potential impacts of a title transfer.

Title transfer basics and the Dingell Act

Since 1902, Reclamation has constructed many of the dams, canals, and hydropower plants that provide water and power in the 17 western states.

For most of these project facilities, Reclamation has transferred all or part of the responsibility for operation, maintenance and replacement to a project beneficiary, while the ownership, or title, remains with the United States Government, unless Congress passes legislation directing otherwise.

In 1995, Reclamation began transferred the title of some project facilities, including dams, reservoirs, canals, laterals, buildings, project lands, and easements, to project beneficiaries. The title transfer process followed a framework, developed by Reclamation and its partners, that involved project stakeholders and included meeting national environmental legal requirements such as the National Environmental Policy Act. Title to these facilities was only transferred after the passage of individual acts of Congress.

In 2019, President Donald Trump signed the John D. Dingell, Jr. Conservation, Management and Recreation Act into law. This Act* provides Reclamation with new authority to transfer the title for certain eligible facilities to qualifying entities without individual acts of Congress.

The act streamlines the bureaucratic process of title transfers and empowers local ownership and facilitates infrastructure investment from non-federal sources. Title transfers save American taxpayer dollars by decreasing federal operating costs and reducing liability.

Under the Dingell Act, once the construction costs of a Reclamation facility are fully paid back to the U.S. Government, the federal government can transfer the title to local entities that know the area and the interests of those communities effected by that facility. This is just one of the ways the benefits of a project can be maximized.

**John D. Dingell, Jr. Conservation, Management and Recreation Act (P.L. 116-9), Title VIII*

Corey Albright takes survey readings at Pineview Reservoir.
(Reclamation photo)

Reclamation recreation database in development

The Albuquerque Area Office is serving as a test office for a recreational database developed in Columbia-Pacific Northwest Region that will be a one-stop-shop for all information about recreation at Reclamation facilities. A team of recreation and lands staff visited recreation property throughout New Mexico to gather information by walking through the area, gathering GPS information, and taking inventory information and imagery. Inventory information includes a description of a site and its current condition, including locations of picnic tables, campfire rings, cabins, visitor centers, trails, parking lots, and restrooms.

Database entry is complete for Reclamation land around Elephant Butte, Caballo, Leasburg, Brantley and Nambe dams. The team will next focus on inputting data for land around Percha, Sumner, El Vado and Heron dams.

The database will allow staff to easily track Reclamation recreation assets and prioritize needs for funding based on asset conditions and safety concerns. The ultimate goal is to assist the public in finding recreational opportunities on Reclamation lands.

Financial stewardship is serious business

The Acquisition Management and Financial Management Divisions are committed to focusing on customer service. This focus drives development of processes and formats that streamline the acquisition process for users and increases efficiency. The divisions' initiative is primarily centered on foundational tools, developed within the region, and are now deployed Reclamation-wide:

• Acquisition Customer's One-Stop-Shop is a web-based portal that provides a single location for all customers and staff to clearly communicate acquisitions requirements, policies, and procedures, and enables customers to efficiently and effectively develop and submit quality acquisition packages.

• Looking Ahead Never Stops (LENS) and Acquisition Control and Tracking System (ACTS) are two user-friendly tools to enable real-time tracking of customer requirements including status and updates on acquisition actions; workload monitoring; acquisition planning; and loading of pending and potential acquisitions. The second generation of LENS deployed in fiscal year 2020 and provides additional tracking and reporting functions as well as a direct communication link between LENS and ACTS.

• The Budget and Finance Reporting website uses PowerPivot to combine data from the Financial Management Division's Financial Business Management System with the Reclamation's LENS and ACTS tools to provide user-friendly executive dashboards and detailed reports.

The Upper Colorado Basin has achieved and maintained obligation rates of 96% using these tools, while also assuring regional priorities are considered.

PHOTO INSETS: Visitors enjoy kayaking, boating, fishing, and taking in the beauty of nature at Reclamation waterways and reservoirs. *(Reclamation photos.)*
MAIN PHOTO: Heron Dam and Reservoir, New Mexico. *(Reclamation photo by T. Ross Reeve)*

Reclamation leads Lake Powell Pipeline Project environmental review

The Department of the Interior named Reclamation as the lead agency for federal project review for the Lake Powell Pipeline Project, with responsibility for coordinating National Environmental Policy Act compliance efforts for all Department agencies working on this project. Reclamation established a team with members from Reclamation, the Bureau of Land Management, and two consulting firms completed the final environmental impact statement at the end of 2020.

The region's Provo Area Office is leading the NEPA-compliance effort and is leveraging a collaborative approach with partner agencies to ensure the completed environmental impact statement fully considers the needs and likely impacts of the project.

The project, proposed by the Utah Board of Water Resources, aims to establish a second source of water for Washington County in southwest Utah, by installing an approximately 140-mile-long water delivery pipeline from the Page, Arizona, end of Lake Powell to Sand Hollow Reservoir near St. George, Utah. The State of Utah is pursuing the project to help meet future water demands and diversify and enhance the reliability of the state's water supply portfolio.

Security Response Force now at Glen Canyon Dam, Arizona

Upper Colorado Basin Region transitioned Reclamation's security at Glen Canyon Dam, Arizona, from contracted staff to a federally-trained and certified security response force in June 2019. The security response force works with Reclamation's Glen Canyon Field Division leaders to ensure the safety and security of employees, visitors, and property at and around the facility.

Glen Canyon Dam plays a crucial role in water and power security in the West. Ensuring the safety and security of the facility is a top priority for the nation.

The new team is part of the region's facility security strategy to deter, detect, delay, deny, respond, or recover from threats to Reclamation people and facilities. The change at Glen Canyon Dam follows similar transitions made at Hoover Dam, Arizona/Nevada, and Grand Coulee Dam, Washington.

Lake Powell, Utah. *(Photo by Gary Ladd.)*

Workforce Excellence

Developing and supporting a diverse, highly-qualified workforce with the right skills, in the right job, to carry out the mission.

Overflow spillway at Crystal Dam, Colorado. The dam and reservoir are part of the Colorado River Storage Project. *(Reclamation photo)*

Reclamation Core Values:

Professional excellence, safety, respect

Professional excellence: We are results-oriented. We embrace a "can-do attitude" finding solutions to complex problems by providing valued results.

We strive for excellence in every aspect of our work through professional acumen and technical competence; empowering our workforce to foster creativity and innovation.

Safety: We share a personal commitment to protecting the safety of each other, contractors, customers, as well as the people and communities served by our projects.

Respect: We embrace a culture of respect for people through our own ethical behavior and with clear, effective communication.

We treat people with dignity and respect, fostering an environment that supports diversity, collaboration, inclusion and excellence.

We conduct ourselves with integrity, striving to be trusted public servants with the highest ethical standards.

We actively listen and share information in a transparent manner.

Safety in Upper Colorado Basin

Upper Colorado Basin Region is committed to continued safety improvements. Safety is improved when we understand the challenges workers face in achieving success.

In 2019, Upper Colorado Basin field divisions made a commitment to "Reset Safety", to improve safety by learning from on-the-job experiences and increasing ownership where potential problems are most likely to occur. Through employee engagement and structured work observations, safety officials were able to identity improvement opportunities.

For example, in response to employee input, the region increased the ease of purchasing safety equipment, including upgrading to more protective hard hats.

Brantley Dam and Reservoir, New Mexico.
(Reclamation photo by Stacey Smith)

WOMEN IN WATER AND ENERGY

BUREAU OF RECLAMATION

Western Area Power Administration

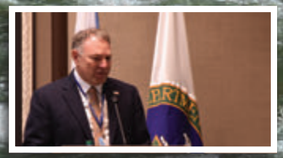
Women in Water and Energy

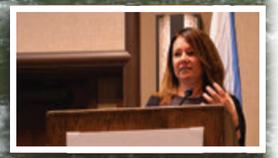
A professional development event

For the first time, the Bureau of Reclamation and Western Area Power Administration hosted Women in Water and Energy, a professional development event that brought together a diverse audience to engage in meaningful conversations about the issues women and men face in the workplace.

Event speakers and teachers provided participants with tools and strategies for creating inclusive organizations. By recognizing and highlighting the many different ways men and women collaborate, communicate, and compete in the workplace, the event helped identify ways to work better together.

More than 250 attendees participated in the day and a half event. The event proved to be a success as participant feedback was 90% positive and showed the knowledge and skills presented was beneficial. Many participants stated it was an inspirational and eye-opening event.





Participants from Reclamation and Western Area Power Administration attend the first Women in Water and Energy professional development training event in Park City, Utah.
(Reclamation photos by Amee Andreason, Richard Burgula, and Clint Stone.)

Leadership programs, training

Upper Colorado Basin Region provides skill-based development opportunities to 100% of the workforce by offering face-to-face and virtual classes as well as other development activities including, professional reading recommendations, video training, details, job shadowing, on-the-job development and others. The region's skill-based employee development program to improve safety, quality, productivity, and collaboration, focuses on accountability, interpersonal skills, oral and written communication, continual learning, leadership skills, and leveraging diversity.

Upper Colorado Basin offers five leadership development programs:

- The Learning Journey
- Aspiring Leaders Program
- Exploring Supervision and Reclamation
- Reclamation Strategies for Successful Supervision
- Reclamation Leadership Development Program

In addition to these development programs, the Human Resources Division's Regional Learning Office offers standalone seminars and development opportunities to support the culture of inclusivity by encouraging professional and open communication and 360-degree accountability.

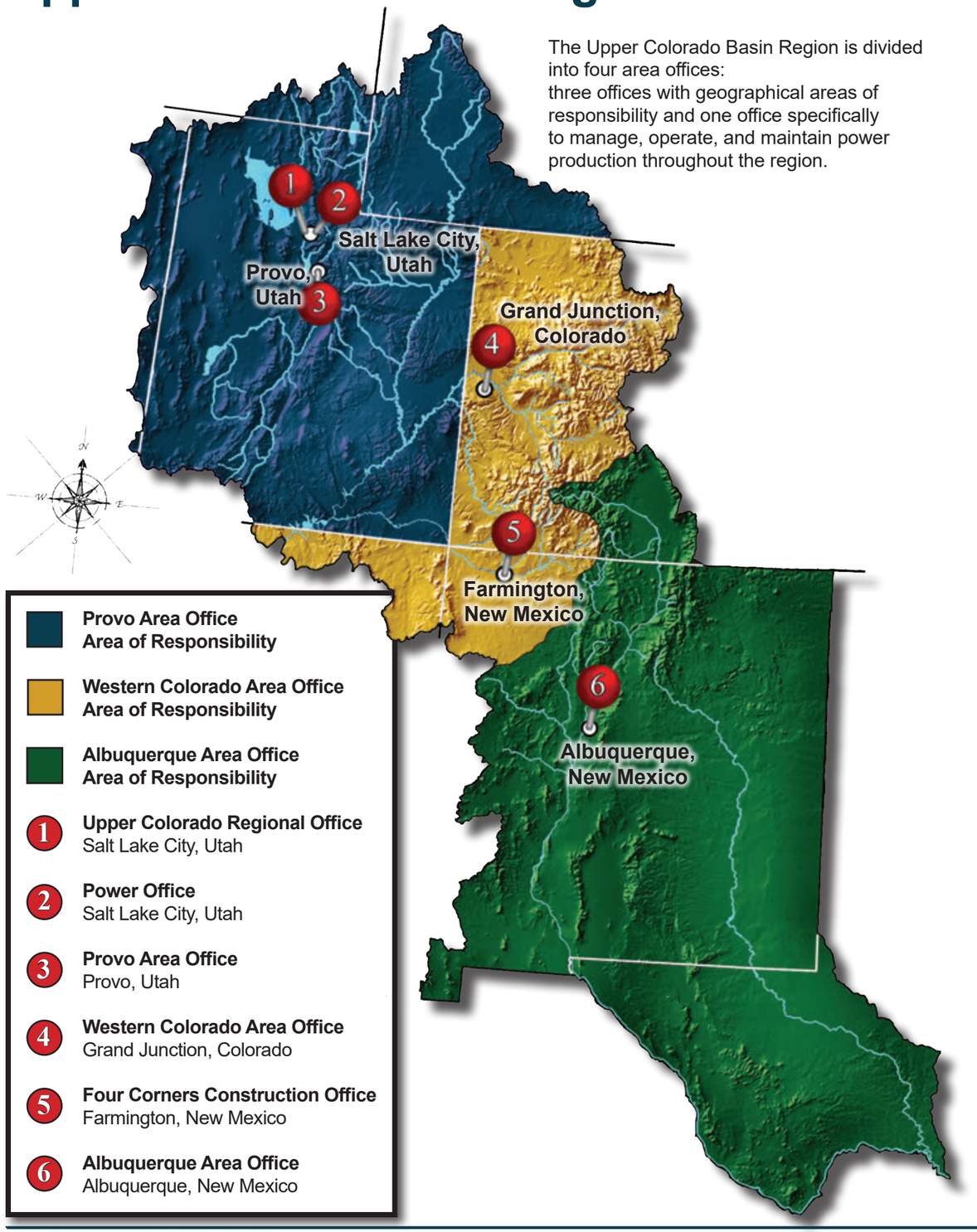
Power Apprentice Program

An educated and well-trained workforce is essential to the successful operation and maintenance of the Upper Colorado Basin's power facilities. In 2019, the Power Office hired nine apprentices to the positions of power system electrician, electronics technician, plant mechanic, and powerplant operator. These apprentices will complete a 4-year training program consisting of on-the-job-learning and related academic instruction specific to the position. At the completion of the apprenticeship, they will earn journeyman status.

In support of the apprenticeship program, the Power Office also completed a revision of the Principles of Hydropower course. This course covers a broad range of hydropower topics and is used as the primary academic text through the first year of the apprenticeship program.

Upper Colorado Basin Region Area Offices

The Upper Colorado Basin Region is divided into four area offices:
three offices with geographical areas of responsibility and one office specifically to manage, operate, and maintain power production throughout the region.



- **Provo Area Office**
  Area of Responsibility
- **Western Colorado Area Office**
  Area of Responsibility
- **Albuquerque Area Office**
  Area of Responsibility
- **1 Upper Colorado Regional Office**
  Salt Lake City, Utah
- **2 Power Office**
  Salt Lake City, Utah
- **3 Provo Area Office**
  Provo, Utah
- **4 Western Colorado Area Office**
  Grand Junction, Colorado
- **5 Four Corners Construction Office**
  Farmington, New Mexico
- **6 Albuquerque Area Office**
  Albuquerque, New Mexico

Upper Colorado Basin Region Leadership

Regional Director
Wayne Pullan

Deputy Regional Director
Daniel C. Picard

Deputy Regional Director
(Interim Deputy Manager)

Executive Assistant
(Vacant)

Equal Employment Office
Tim Coplin

UCB Regional Liaison in Washington D.C.
Dave Isleman

Secretary to the Deputy Regional Directors
Marisol Solis

Public Affairs Office
Public Affairs Officer
(Interim Public Affairs Officer)

Power Office
Manager
Nick Williams

Albuquerque Area Office
Manager
Jennifer Faler

Provo Area Office
Manager
Kent Kofford

Western Colorado Area Office
Manager
Ed Warner

Human Resources Division
Manager
Theresa Michal

Four Corners Construction Office
Manager
Pat Page

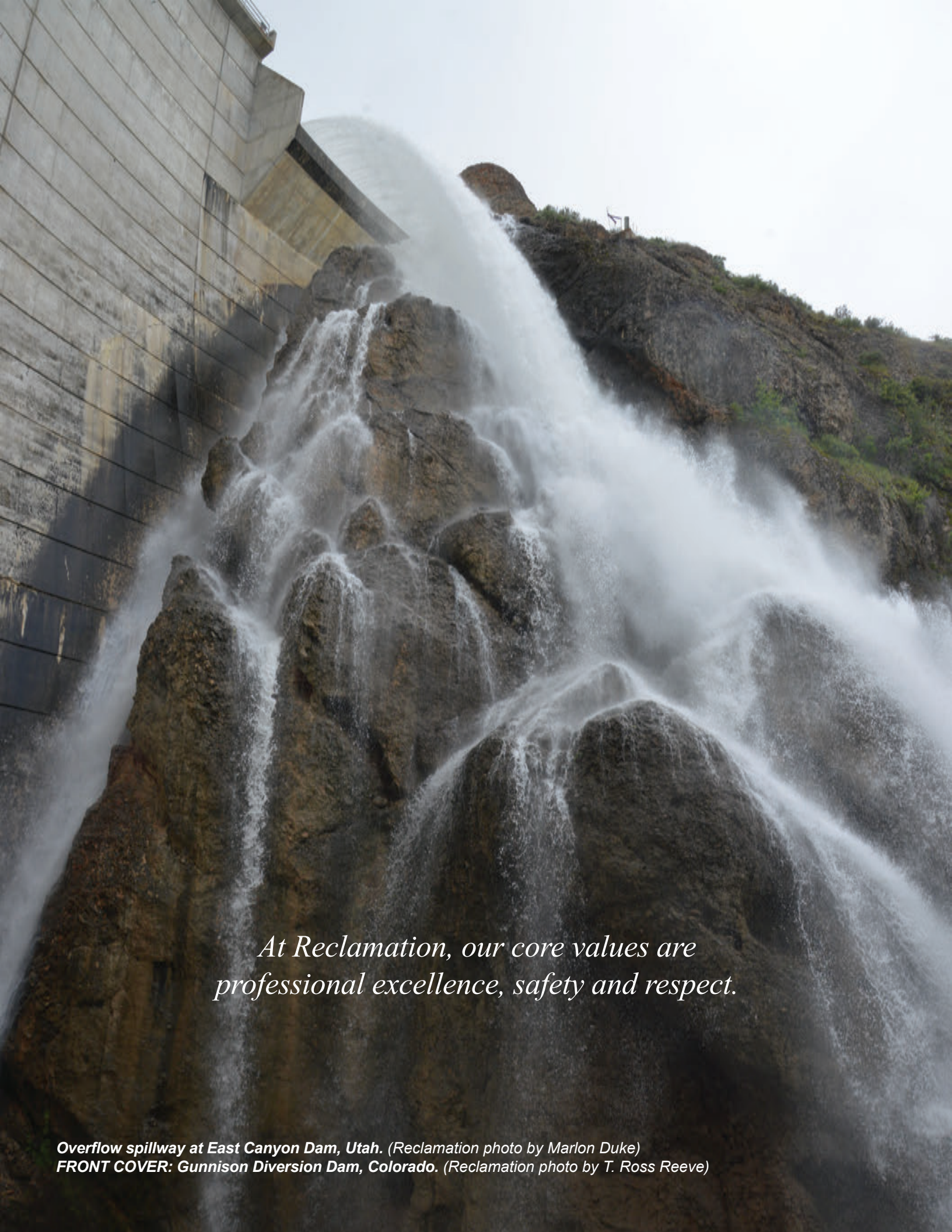
Resources Management Division
Manager
Kathy Callister

Financial Management Division
Manager
Shara Hillier

Information Management and Technology Division Manager
Lisa Iams

Acquisition Management Division
Manager
James Durrant

Safety and Technical Resource Division Manager
Katrina Grantz



At Reclamation, our core values are professional excellence, safety and respect.

Overflow spillway at East Canyon Dam, Utah. *(Reclamation photo by Marlon Duke)*
FRONT COVER: Gunnison Diversion Dam, Colorado. *(Reclamation photo by T. Ross Reeve)*