

RECLAMATION
Managing Water in the West

Winter 2016-2017

Plains Talk

NEWS FROM THE GREAT PLAINS REGION

Inside this Issue:

Fossils on Reclamation
Lands

Rope Team at Guernsey

Accommodating
Endangered Species

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Cover: Excavation of a Stego Mastadon skull near Elephant Butte State Park, New Mexico.

contents

11 Fossils on Reclamation Lands

To date, Reclamation has documented close to 180 paleontological sites on its land, and maintains roughly 25,000 fossils as museum property.

14 Rock Scaling at Guernsey

The two main concerns related to potential rock fall hazards on the downstream side of the dam. One large slab of limestone was threatening the concrete chute of the North Spillway and another was perched precariously above the power plant main entrance.

18 Stretching Water Supplies

Reclamation is bringing expertise and funding to bear to help the city of Norman, Oklahoma be proactive in ensuring long-term reliability of local groundwater supplies by testing different technologies to treat hexavalent chromium (chromium-6).

110 2016 GP Photo Contest Winners

Employees submitted 68 photos highlighting the people, land, projects, and facilities in our region. More than 130 votes decided which images made the top three!



Photo Contest, p. 10



Eastern Colorado Area, p. 1



Texas Hunting, p. 12



DKAO and Partners, p. 20



Using Color, p. 21

contents

14 Reclamation's Eastern Colorado Area Office

In total, the region's projects in Colorado serve 3,611 farms with a total of about a million acres of irrigated lands. Those lands produce about \$368 million worth of crops each year and provide water to a rural and urban population of nearly one million people.

16 Accommodating Endangered Species

The Pallid Sturgeon, a fish species which is native to both the Yellowstone and Missouri Rivers, was listed as endangered under the Endangered Species Act of 1990. Several factors contribute to the species listing as endangered, one of which is the construction of dams along its native waterways.

18 Texas Public Hunting Program

"The boost in recreation opportunities for locals is well worth the effort," said Treviño. TPWD is able to help manage the recreation side along with us, so that is a great benefit to us."

20 DKAO and Partners Improve Facilities

One of the improvements included Camper Cabins constructed for public rental at the Downstream Recreation Area at Heart Butte Reservoir. Construction was made possible by using Title 28 grant funds with a 50-50 cost share between Reclamation and the facility's managing partner, Tri-Cities Joint Job Development Association.

21 Color in a Digital World - Desktop Reference

Helpful hints and resources for using color in products as a part of daily work.

27 GP Region Engineer of the Year

Michael Maroncelli named the Great Plains Region Engineer for 2016.

FOSSILS

on RECLAMATION Lands Provide a Glimpse Into the Past



A canine tooth of a saber-toothed cat (*Smilodon* sp.) found at Lovewell Reservoir, Kansas.

By GP Region Staff

When two fishermen on Harry Strunk Lake (Medicine Creek Dam) pulled ashore to stretch, in the summer of 2015, they noticed something odd protruding out along the beach at the base of a bluff. They looked at the object, and how it was eroding and realized they had happened upon a fossil. The fishermen realized the potential importance of their discovery and contacted the Nebraska State Museum at the University of Nebraska.

Shane Tucker a Paleontologist with the museum, travelled to Medicine Creek and guided by the discoverers examined their find. They had found the carapace or upper shell of a large land tortoise that lived and died

about 6 million years ago along a former river that once ran through Nebraska.

Tucker returned to recover the remains of the extinct land tortoise, August 12, 2016, under an



Kids assist with paleontological recovery near Medicine Creek Reservoir, Nebraska.

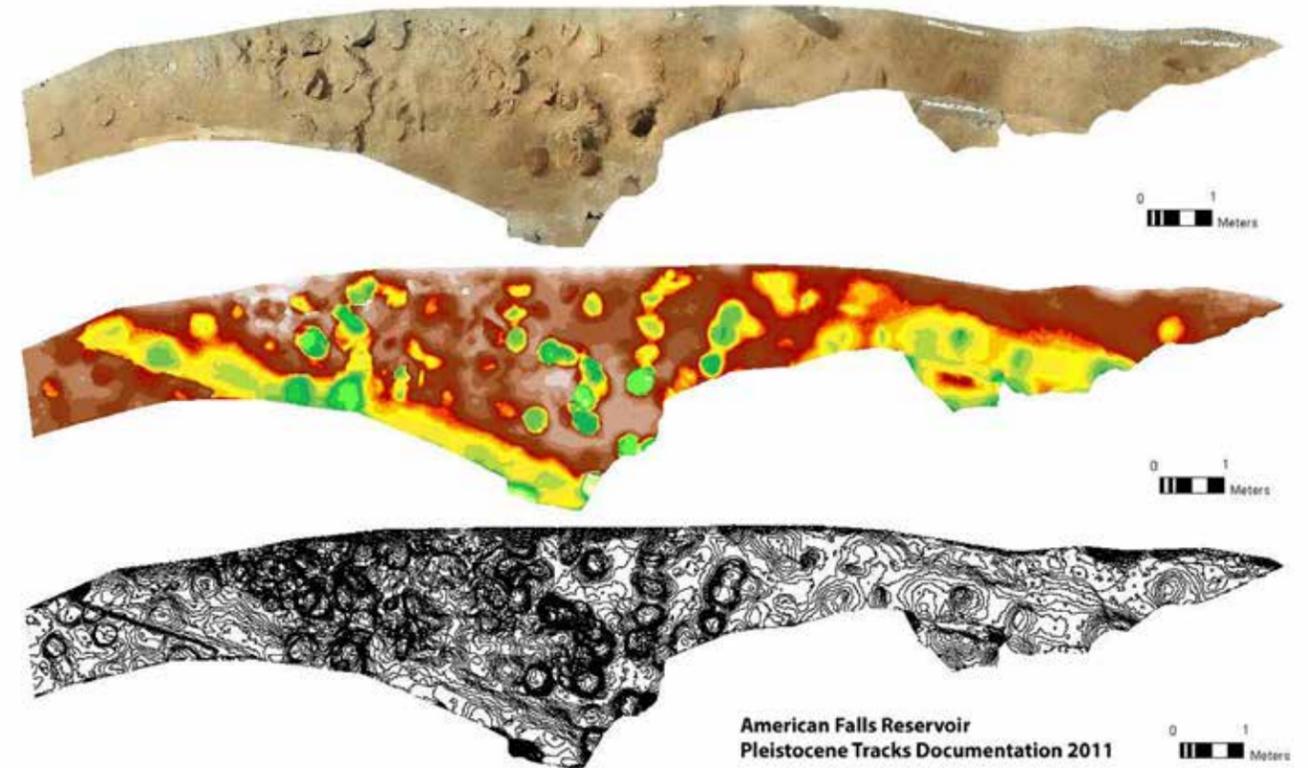
agreement between the Nebraska State Museum and the Bureau of Reclamation in compliance with the Paleontological Resources Protection Act. Tucker was assisted by a throng of more than

20 adults and children who had heard of the project, excavated surrounding sediment exposing the carapace and coating it with a plaster jacket. After drying overnight, the 750 lb. parcel was transported by boat to a dock for its trip to the State Museum for preservation and study.

Fossils like these are the remains, imprints, and traces of once-living organisms preserved in the earth's crust. Fossils are non-renewable and (except for microfossils and those that make up the energy minerals) relatively rare resources with significant scientific, educational, commercial, and recreational values.



Uncovering of a myriad of mostly Proboscidean (mammoth or mastodon) footprints (foreground) near American Falls Reservoir, Idaho. The effort was a cross-agency accomplishment, including employees from the Bureau of Reclamation, Bureau of Land Management, U.S. Forest Service, and National Park Service, as well as staff and students of Idaho State University and the Idaho Museum of Natural History in Pocatello, Idaho.



Photogrammetry data involving three different presentations: top view shows raw photos; middle view shows subtle differences in elevation in order to highlight sunken footprints (tracks) - deeper areas are shown in green, a contrasting color from the ground surface level, in order to help them stand out. Bottom photo is a representation of the contour lines, which is a different way that the 3D data can be shown in 2D - the contour lines can be read like a topographic map, wherein the darker, denser line groupings can be interpreted as steeper areas, coinciding with the side walls of the footprint impressions.

Paleontology is the science which uses fossils to study life in past geologic times. Early in its history, the Bureau of Reclamation recognized the importance of fossils. A 1905 circular produced by the agency included the following language, “In constructing irrigation works it is probable that fossiliferous beds will be uncovered, giving exceptionally good opportunities for collecting specimens of value to geologists and paleontologists. Well-preserved imprints of leaves, ferns, or other plant remains, fossil shells, and the bones and teeth of animals are always interesting, and

may add much to our knowledge of the geologic history and structure of the region.”

To date, Reclamation has documented close to 180 paleontological sites on its land, and maintains roughly 25,000 fossils as museum property. Some significant paleontological discoveries and research have occurred on Reclamation land.

“At Harry Strunk Lake in Nebraska, excavations of archaeological and paleontological remains were initiated in the 1940s when the dam forming the lake was constructed,” said Thompson.

“Impressive remains of several Pleistocene species, such as saber-toothed cat and Columbian-mammoth were recovered.”

In the late 1980s, the remains of an 18,500 year old mammoth were discovered eroding out of the reservoir bank. The site contains bone flakes, impact points, and other patterns which would seem to indicate human presence at a very early period. Part of the mammoth was excavated, but more than half was left in place for future research. This was done because research techniques such as DNA identification, methods of determining

the age of the deposits, and other forms of microscopic and chemical analysis, are rapidly improving and changing. Future excavations using advanced methods and technology might yield important information that would be lost if the excavations were done today.

At Flaming Gorge Reservoir in northeastern Utah, a number of agencies were involved in recording the footprints



Photographer, Neffra Matthews, BLM, takes overlapping photographs to enable photogrammetry of the track site.

of ancient sauropods, long-necked dinosaurs who roamed the area about 180 million years ago. Also found were the much rarer tracks of a pterosaur, a flying reptile that lived between 220 and 65 million years ago. Ongoing research continues to reveal more information about the prehistoric animals. To protect the sites, their locations are not public information at this time.

The public has an opportunity to view fossilized plants and marine animals and even fragments of dinosaur bones in their natural setting at the Cottonwood Creek Dinosaur Trail, located about 25 miles southwest of Casper, Wyoming, at Reclamation’s Alcova Reservoir.

The rock formations along the trail include many invertebrate, vertebrate, and plant fossils, indicating a rapidly changing environment of deposition 200-140

million years ago with tidal flats, sand dunes, beaches, oceans, storm deposits, and complex stream and river systems.

In 1991, fossilized skeletal remains of a medium-sized dinosaur (*Camarasaurus*) were discovered at the site. In 1993, fossil remains of a small Ornithopod, nicknamed “Sniffles”, were found. Most of the actual dinosaur bones which have been discovered to date have been removed for preparation and study and now reside at the University of Wyoming in Laramie.

The best remaining examples of dinosaur bones can be seen near the top of Cottonwood Creek Dinosaur Trail, which is approximately 2 miles long and rises nearly 300 feet in elevation. The extreme, unstable slopes and switchbacks contribute to continually changing trail conditions. The trail user should be in good physical condition and exercise caution. Due to the rugged

terrain, the trail is not accessible to the mobility impaired, although interpretive signs located at the trailhead are accessible. Estimated time to complete the self-guided tour along the trail is 2-3 hours. Collection of fossils by the public is prohibited along the trail.

Paleontological resources are protected by the Paleontological Resources Preservation Act and Federal rules and regulations. No one may collect fossils on Reclamation land other than casual collecting of a reasonable amount of common invertebrate or plant specimens for non-commercial personal use. Collection Permits are issued only for scientific research and education. Permits may be issued to institutions with qualified personnel and approved repository facilities. All collected items remain the property of the Federal Government.



(JUNE 2014) Excavation of a Stego Mastadon skull near Elephant Butte State Park, New Mexico. The fossil is currently kept at the New Mexico Natural History Museum.





WYAO Rope Access Team Addresses Rock Scaling Issues at Guernsey

By Jay Dallman, WYAO

The Wyoming Area Office (WYAO) rope team was mobilized in late October 2016 to address a number of Operation and Maintenance (O&M) recommendations at Guernsey Dam. The two main concerns related to potential rock fall hazards on the downstream side of the dam. One large slab of limestone was threatening the concrete chute of the North Spillway and another was perched precariously above the power plant main entrance. The WYAO rope team consisted of Nathan Morgan - Civil Engineer, Nathan Harp - Electrical Engineer, Mark Ronca - Mechanic, and Bryan Nyffeler - Alcova/Fremont Power Plant Supervisor. Mark Neeley - Geologist (Upper Colorado, Salt Lake



Mark Ronca drilling anchor holes in limestone slab.

City Office) joined the team to provide his expertise in geology and rope team operations.

The Guernsey Dam North

Spillway left rock face is made up of relatively flat lying rock formations, however, a loose slab of limestone rock approximately



Mark Neely roping down a slab above Guernsey North Spillway.



Nathan Morgan taking a turn at drilling.

120 feet above the center of the spillway chute floor separated from the main formation and started to move down the slope. The slab, weighing approximately 5 to 6 tons, posed a threat to the integrity of the 18-inch-thick concrete floor and walls of the spillway, as well as the drain directly below the spillway floor. Trying to remove it intact would be complicated and expensive. Attempting to blow it into smaller pieces for removal could result in damage to the spillway, if too large a piece fell into the concrete chute. In this case, it was decided to arrest the loose slab in place on the slope rather than attempt to remove it.

Since there were no available anchors on the hill above

the North Spillway, vehicle frames were used as independent anchors for each member of the two man crew working atop the rock. Four 22-inch-deep anchors were installed in the boulder, as well as two

anchors, 20 feet to the left and right sides of the limestone slab using an electric drill. The engineered anchors would allow for two wire rope lines to support the rock vertically from the hillside above, as well as one horizontally across the boulder to the in-situ limestone formation. Smaller fragmented rock material on the fractured hillside and slope proved to be a hazard to the rope team, requiring the rope team members to scale loose material above, and near the work area. Small amounts of materials did accumulate in the spillway chute, but it was not considered a threat to the integrity of the spillway.

The horizontal wire rope was tensioned across the



(L to R) Nathan Harp, Bryan Nyffeler, and Mark Ronca, prepare a Boulder Buster Charge in a slab above the power plant.





Bryan Nyffeler drills larger fragments for more blasting.

lower boulder face to help reduce outward movement. Six pieces of iron rebar were drilled into the rock in front of the toe of the limestone slab to increase sliding friction. Two separate wire ropes were installed with two anchors securing each vertical line to the slab. Each wire rope ran approximately 50 feet above to a six foot angle iron post driven perpendicularly into the top of hillside. The cables were tensioned, and a third post was placed as a backup anchor.

For the large slab (approximately 8 tons) situated directly above the power plant main entrance, it was decided to remove the boulder using controlled blasting to break it into smaller pieces. The largest concern for the

rope team was protecting the power plant and plant parking area from rock fall.

A secondary concern was the potential for large pieces of the rock breaking free and damaging the historic hand rail below. An abandoned Guernsey State Park 4-inch irrigation water pipe had to be removed from the work area since it bent at 90 degrees

directly below the rock and proved to be a hazard to the workers. Four sheets of plywood were placed along the top of the hand railing to prevent stray chips and large chunks from flying down into the power plant and parking area. The rope team removed portions of the rock periodically throughout the day using a product known as Boulder Buster. The process involved drilling holes in the rock, setting controlled charges in the holes and covering the rock with a protective blast mat to keep fragments from becoming airborne. The process worked



Limestone slab over Guernsey Dam North Spillway.



Large limestone slab above the Guernsey Power Plant entrance.

well and pieces piled-up and landed successfully in front of the hand railing where they could be further processed and removed.

Ultimately, the rope team proved to be a good example of interdisciplinary cooperation, and their efforts successfully mitigated hazards which threatened the safety of their fellow employees as well as the integrity of important Reclamation structures.



Rock slab over the spillway with epoxy grouted anchors.



Stretching Water Supplies



By Collins Balcombe and Nathan Kuhnert, OTAO

Reclamation is bringing expertise and funding to bear to help the city of Norman, Oklahoma be proactive in ensuring long-term reliability of local groundwater supplies by testing different technologies to treat hexavalent chromium (chromium-6). Norman's groundwater provides a critical supply alternative for the city and helps reduce pressure on the fully allocated surface water supplies provided by Reclamation's Lake Thunderbird, Norman Project. Results of the chromium-6 testing should help inform the design and optimization of full-scale treatment systems not only in Norman, but across the United States. The testing will also providing a model of how impaired water sources could be treated for beneficial uses to offset demands on Reclamation reservoirs and stretch existing supplies.

A team of Reclamation experts from the Technical Service Center's (TSC) Water Treatment Group was recently brought on by the Oklahoma-Texas Area Office (OTAO) to tackle this issue. The



Miguel Arias-Paic (left), and Anthony Kennedy, Reclamation Technical Service Center, commissioning an ion exchange water treatment pilot unit to remove Chromium-6 from groundwater in Norman, Okla.

team; Miguel Arias-Paic (PI), Richard Huggins, Anthony Kennedy, Julie Korak have extensive knowledge and expertise in a wide array of treatment and waste minimization applications and field testing methods. The prior experience includes testing chromium-6 removal technologies in California.

In this case, Reclamation researchers are piloting strong

base ion exchange and reduction/coagulation/filtration units that use resins and chemical reactions to either selectively remove or reduce chromium-6 to a trivalent form. The chemical reaction alternative creates a solid that is filtered out. The waste brine produced from strong base ion exchange uses membranes and other patent-pending technologies developed

by Reclamation staff to minimize the waste. The units were designed by TSC and were field commissioned in October and November 2016. In addition, a third unit that uses microbes as a biological filter is being tested by Carollo Engineers, alongside Reclamation's units using cost-share funding provided by Norman and Reclamation.

Among the considerations in developing an effective pilot protocol, like any pilot project, are logistical constraints associated with optimization and scalability. Due to the distance between groundwater water wells throughout Norman, city officials will be comparing options of either installing satellite treatment units at individual groundwater wells versus piping the impaired groundwater to a centralized treatment location where various water sources could be blended to enhance economies of scale. Ultimately, pilot results will provide important information on chemical dosage, treatment efficiency, as well as waste generation, treatment, and disposal. Results are expected in the fall of 2017.

Chromium is a naturally occurring element found in rocks, animals, plants, soil and volcanic dust and gases, according to the National Toxicology Program. It comes in several forms, including what is commonly called chromium-3, an essential nutrient for the body.

Chromium-6 can be found in nature, as in the case of Norman; but it also can be produced by industrial processes. The Environmental Protection Agency (EPA) has established a drinking water standard of 100 parts per billion (ppb) for all forms making up Total Chromium, although it lacks a specific limit for chromium-6. This total limit was established in 1991 based on scientific information indicating that large quantities of chromium were toxic.

Chromium-6 on its own is particularly toxic and considered carcinogenic at high levels. Concerns have prompted the EPA to consider setting a national limit, which is currently under review and scheduled for completion in 2017. The state of California has already enacted a chromium-6 Maximum Contaminant Level (MCL) of 10 ppb for drinking water. Other states may follow

with similar MCLs. In fact, a recent report showed that seven million Americans receive tap water with levels of chromium-6 that are higher than the legal limit established by California. Norman water users are among that group. Research shows that the annual costs for a national 10 ppb Chromium-6 standard would range from \$0.55 billion to \$5.1 billion peryear, substantially higher than those for previous drinking water regulations.



OTAO staff join Reclamation's TSC, Carollo Engineers, and the City of Norman to visit a biological treatment unit designed to remove Chromium-6.



GP PHOTO CONTEST



First Place Winner

Anellise Deters eating a rainbow near Fresno Dam. Photo by Marisela Castro, Pathways Internship Participant (RO).



Second Place Winner

(Top) Iced over at Willow Creek Reservoir, January 2016.
(Bottom) Yellowtail Dam Afterbay at sunrise. April 2016.
Photos by Shane Little (MTAO).

Third Place Winners (Tie)



Lake Creek, just above Twin Lakes Reservoir on the Fryingpan-Arkansas Project. Photo by David Hartman (ECAO).



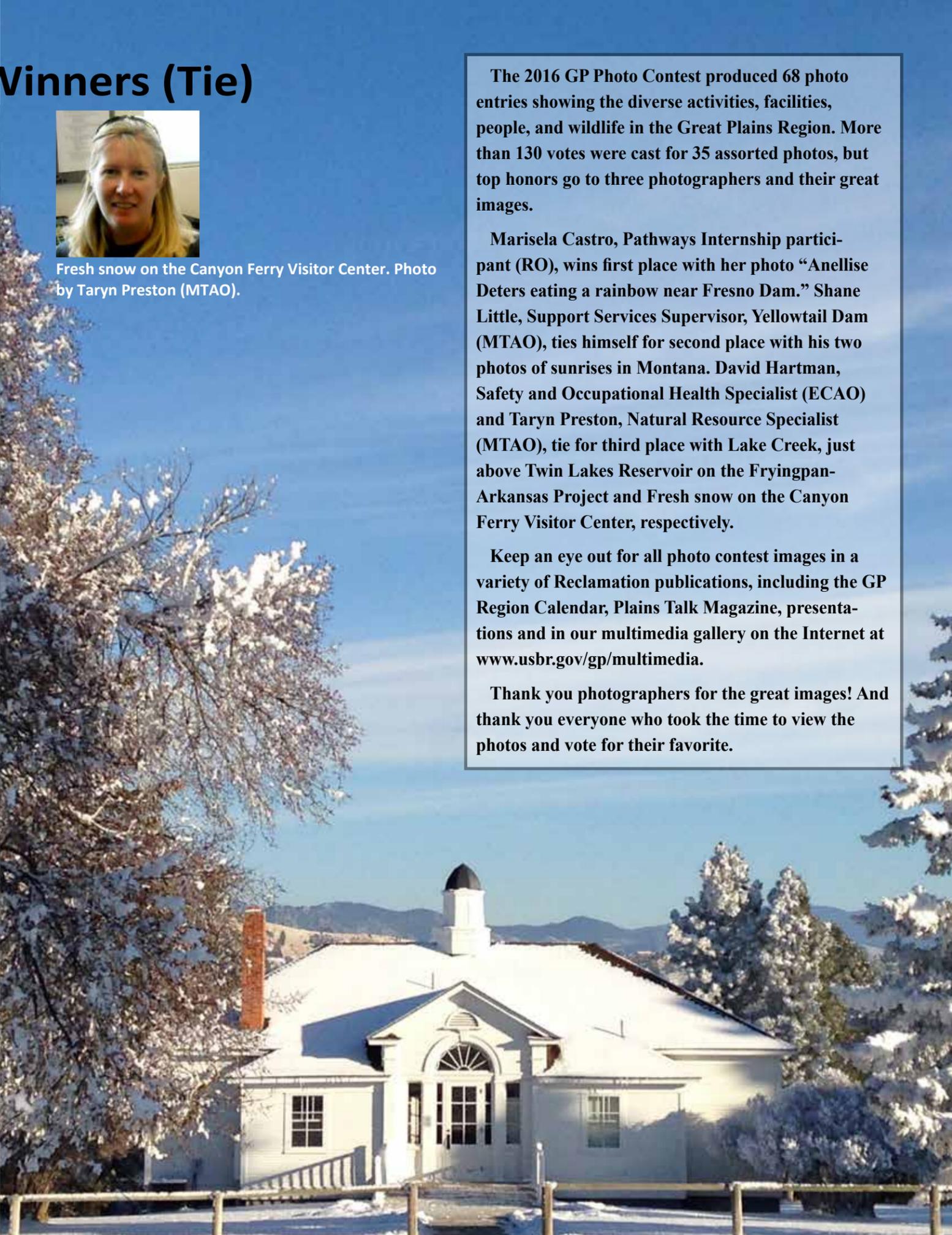
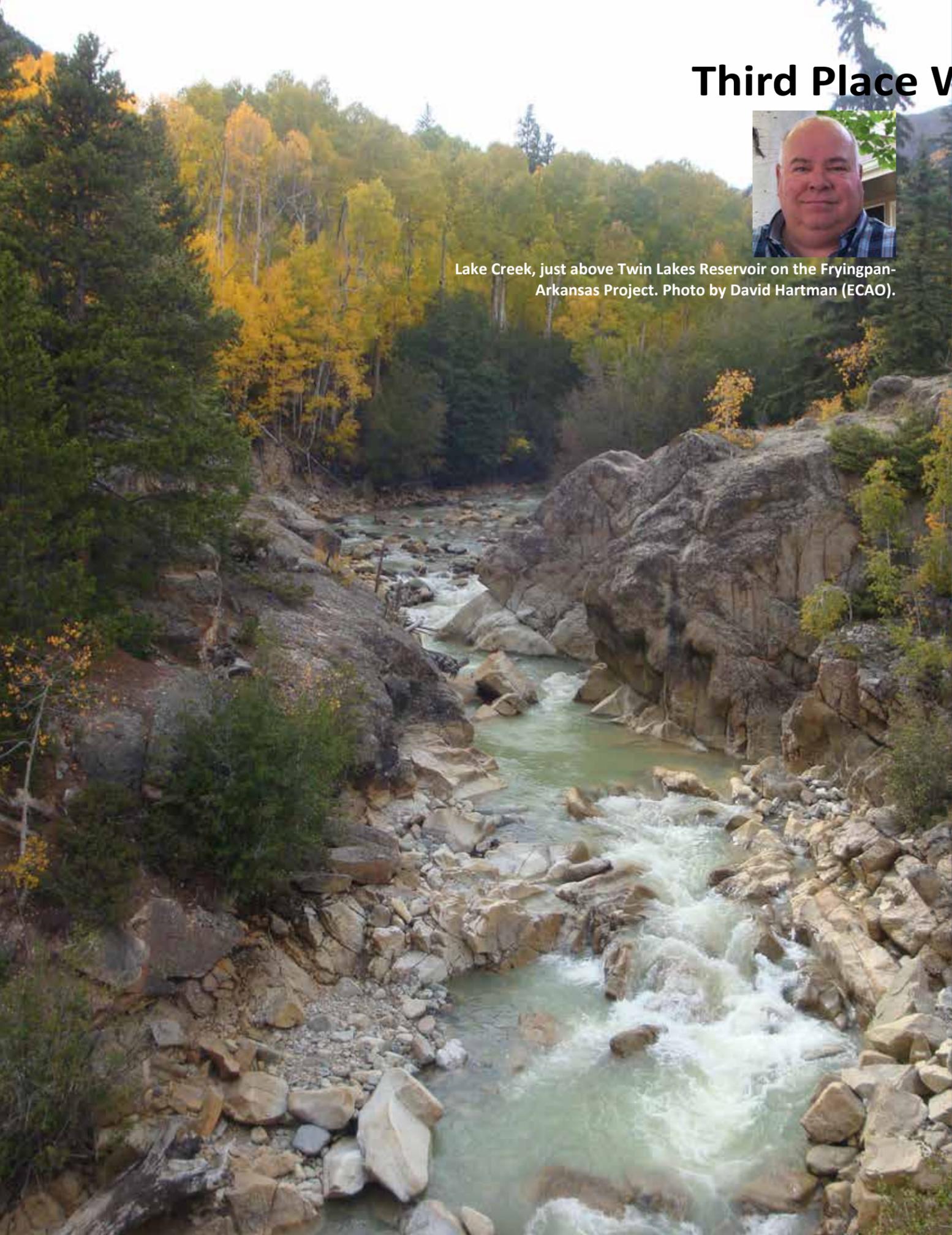
Fresh snow on the Canyon Ferry Visitor Center. Photo by Taryn Preston (MTAO).

The 2016 GP Photo Contest produced 68 photo entries showing the diverse activities, facilities, people, and wildlife in the Great Plains Region. More than 130 votes were cast for 35 assorted photos, but top honors go to three photographers and their great images.

Marisela Castro, Pathways Internship participant (RO), wins first place with her photo “Anellise Deters eating a rainbow near Fresno Dam.” Shane Little, Support Services Supervisor, Yellowtail Dam (MTAO), ties himself for second place with his two photos of sunrises in Montana. David Hartman, Safety and Occupational Health Specialist (ECAO) and Taryn Preston, Natural Resource Specialist (MTAO), tie for third place with Lake Creek, just above Twin Lakes Reservoir on the Fryingpan-Arkansas Project and Fresh snow on the Canyon Ferry Visitor Center, respectively.

Keep an eye out for all photo contest images in a variety of Reclamation publications, including the GP Region Calendar, Plains Talk Magazine, presentations and in our multimedia gallery on the Internet at www.usbr.gov/gp/multimedia.

Thank you photographers for the great images! And thank you everyone who took the time to view the photos and vote for their favorite.



Reclamation's Eastern Colorado Area Office

Transcontinental Diversions Provide Water for East Slope Cities and Farms

Approximately 80% of the state's precipitation falls on the west slope while nearly 80% of Coloradans live on the east slope which possesses land better suited to farming. It's the job of the Eastern Colorado Area Office (ECAO) to manage the projects that divert water across the Continental Divide, transporting the state's precipitation from where it mostly falls to where its citizens mostly live, work, and farm.

The ECAO main office is located near Loveland, Colorado by the Flatiron Reservoir and the Pueblo Field Office is just outside of Pueblo, Colorado. The Area Office manages its two primary responsibilities, the Colorado-Big Thompson Project and Fryingpan-Arkansas Project, both of which store water on the west slope to convey to the arid-yet-arable east slope. Staff are also stationed at Estes, Flatiron, Green Mountain, and Mt. Elbert powerplants and Leadville Mine Drainage Tunnel treatment plant.

In total, the region's projects in Colorado serve over 3,500 farms producing over \$350 million worth of crops annually by irrigating nearly one million acres. Additionally, the ECAO's projects provide water to a rural and urban population of over one million people all while generating 880 megawatt hours of electricity per

year – enough to power 60,000 homes. Vast efforts are needed to maintain and operate the complex system of dams, conduits, canals, diversion facilities and power plants that accomplish this work.

The Big Two Projects:

The Colorado-Big Thompson (C-BT) Project constitutes one of the most ambitious projects ever undertaken by Reclamation and was designed to serve northeastern Colorado. The C-BT choreographs over 100 water and power facilities to collect, regulate, store, pump, and generally move water from the west slope to the east all while generating electricity. Water transfer under the Continental Divide occurs via the Alva B. Adams tunnel, a 13.2-mile journey. On the other side more than 120 water user organizations and municipalities utilize the water while the Western Area Power Administration sells the resultant electricity. The ECAO works closely with the Northern Colorado Water Conservancy District who operate the west slope collection system and the segments of the east slope facilities that distribute C-BT water to users.

The Fryingpan-Arkansas Project accomplishes much the same work as the C-BT but for southeastern Colorado, diverting water from the

Upper Colorado River Basin (the Fryingpan River) and delivering it to the Arkansas River Valley. The project has five storage reservoirs and one pumped storage unit with power generating capacity. The terminal storage feature is Pueblo Dam near the city of Pueblo. The Southeastern Colorado Water Conservancy District is the sponsoring agency of the Fryingpan-Arkansas Project, distributing Fryingpan-Arkansas water to users.

Large-Scale Developments:

The Mt. Elbert storage powerplant is preparing for a \$60-million-dollar project to rehabilitate the facility's two turbines and related infrastructure. Currently the turbines are over 30 years old and unlike most plants, they both generate electricity and pump water. Turbines will be fixed one at a time to maintain plant operability while the rehabilitation will significantly improve powerplant reliability, availability, maintainability, predictability, and safety. Unique to both the C-BT and Fry-Ark projects, Mt Elbert generates electricity during daytime peak demand and then pumps water during low demand at nighttime for power generation availability the next day.

The Arkansas Valley Conduit is a long-term project to provide safe drinking water to the lower

Arkansas River, a public safety concern given that this portion of the river is the most saline stream in the United States and both surface and groundwater along its route are contaminated with radionuclides. The conduit is planned to run from Pueblo Reservoir and is an original feature of the Fry-Ark Project legislation in 1962 but was not built due to the cost to local communities. In 2009, Congress amended the original Fry-Ark legislation featuring a cost sharing plan with 65 percent federal and 35

percent local funding. The locally funded portion would be repaid by the District to the federal government over a period of 50 years. Improving the water supply provides capacity to grow into the foreseeable future for the citizens and businesses within the district's boundaries.

Additional Activities:

The Leadville Mine Drainage Tunnel under a National Pollutant Discharge Elimination System

discharge permit. The tunnel, constructed between 1943 and 1952 by the Bureau of Mines, historically discharged water containing heavy metals into the Arkansas River. Reclamation assumed ownership of the tunnel in 1959 for the price one dollar and began operating the treatment plant in 1992. Since that time all discharges to the river have met or exceeded environmental standards.



Pueblo Dam rises beyond Pueblo Fish Hatchery which was originally built as a part of the Fryingpan-Arkansas Project.

Summary of ECAO Facilities:

Reclamation Project / Unit	Date Authorized	Reservoir Name	Storage Dam Names	Diversion Facility Names	Power Plant Name
Colorado-Big Thompson	1937	Carter Lake	3 Dams on Carter Lake	Willow Creek Forebay Dam*	Big Thompson
		Flatiron Afterbay Reservoir	Flatiron Dam	East Portal Dam	Estes
		Green Mountain Reservoir *	Green Mountain Dam *	Little Hell Creek Dam	Flatiron
		Lake Granby *	Granby dam *	South Poudre Supply Dam	Green Mountain*
		Horsetooth	4 Grandby dikes*	Pole Hill Afterbay Dam	Marys Lake
			Dixon Canyon Dam	Big Thompson Dam	Pole Hill
		Horesetooth Dam	North Poudre Dam		
		Satanka Dike			
		Soldier Canyon Dam			
		Spring Canyon Dam			
Mary's Lake	2 Marys Lake Dikes				
Lake Estes	Olympus Dam				
Shadow Mountain Reservoir *	Shadow Mountain Dam *				
Pinewood Reservoir	Rattlesnake Dam				
Willow Creek Reservoir *	Willow Creek Dam *				
Fryingpan-Arkansas	1962	Mt. Elbert Forebay	Mt. Elbert Forebay Dam	5 dams & 12 structures *	Mount Elbert
		Pueblo Reservoir	Pueblo Dam		
		Ruedi Reservoir *	Ruedi Dam *		
		Turquoise Lake	Sugarloaf Dam		
		Twin Lakes Reservoir	Twin Lakes Dam		
SUMMARY		16 reservoirs *	19 storage dams & 7 dikes*	24 major structures*	7 powerplants

NOTE: * West slope features are marked with an asterisk.

The Lower Yellowstone Project

Accommodating Endangered Species

Located in far eastern Montana, about 70 miles upstream from the confluence of the Yellowstone and Missouri Rivers near Glendive, is the Lower Yellowstone Intake Project (LYIP), a diversion dam and 72-mile canal built to provide irrigation. The intake dam and canal system diverts enough Yellowstone River water to irrigate roughly 58,000 acres of land. The LYIP structures have been around for over 100 years, with construction starting back in 1905, and finished in 1908.

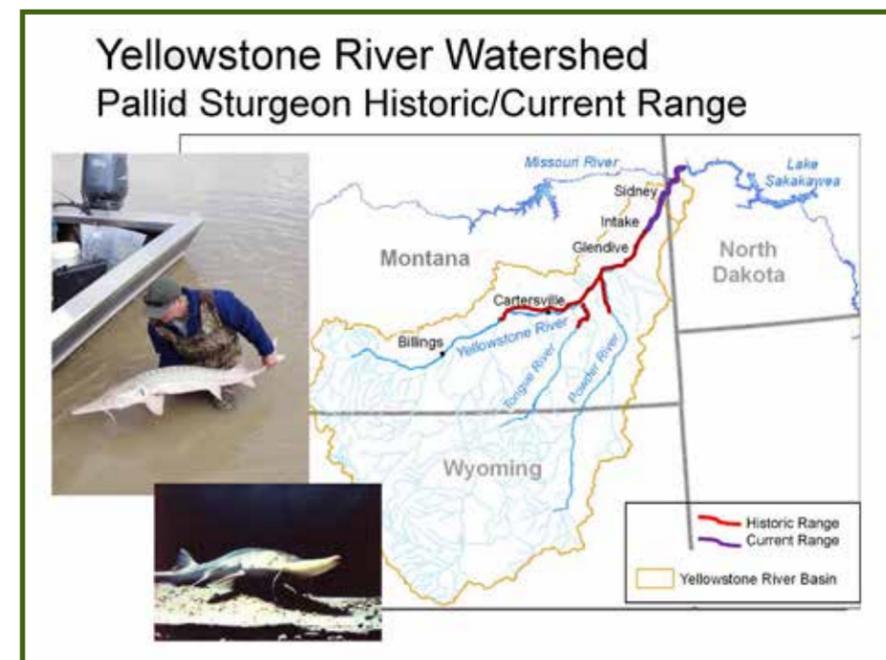


Lower Yellowstone Diversion under construction.

The pallid sturgeon, a fish species which is native to both the Yellowstone and Missouri Rivers, was listed as endangered under the Endangered Species Act in 1990. Several factors contribute to the species listing as endangered, one of which is the construction of dams along its native waterways. Dams inhibit the fish's ability to freely reach spawning areas located in the more western reaches of the Yellowstone.

In the 1990's Reclamation initiated studies to look at reducing entrainment and improving fish passage for the Pallid Sturgeon at Intake Diversion Dam. Studies began in 2005 to 2016, have culminated in a Final Environmental Impact Statement (EIS) issued by Reclamation and the U.S. Army Corps of Engineers (Corps). The EIS reviews several alternative action alternatives to address the need for fish passage past the LYIP diversion dam, including a rock ramp, bypass channel, modified side channel, and multiple pumps. All of these options are presented and reviewed, and pros and cons analyzed through the EIS process.

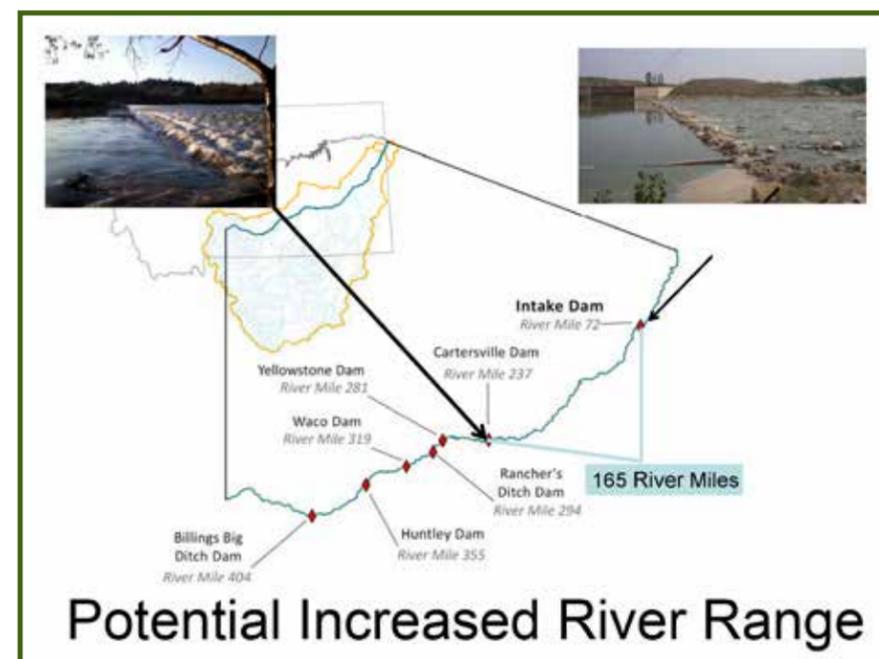
The preferred alternative to help address the needs of the Pallid Sturgeon would be cost



effective; have the lowest operations and maintenance costs; and would not result in significant long-term adverse environmental impacts to the river and surrounding area.

The Corp and Reclamation selected the Bypass Channel Alternative as the most viable

option as identified in the EIS. This preferred alternative would allow passage past the diversion dam for the Sturgeon, but also be the most cost effective to construct and also maintain and operate in future years, continuing to divert much needed water to farmers and ranchers.



The Final EIS prompts a decision, after a comprehensive review has been made of the FEIS, with a Record of Decision (ROD) issued on December 5, 2016. The ROD, if unchallenged, will signal the start of the final stage for the Corps and Reclamation to move forward with the next phase: to modify the Yellowstone River channel in a way to ensure the survival of the Pallid Sturgeon, and agriculture in eastern Montana.



TWIN BUTTES RESERVOIR LANDS JOIN



PUBLIC HUNTING PROGRAM



Dove Hunting, South Texas. Photo Credit: Chase Fountain, TPWD

By Thomas Michalewicz, OTA

The San Angelo Project was authorized and constructed to provide water for municipal and agricultural uses, flood control, fish and wildlife, and recreational benefits. The City of San Angelo is the operating entity for the Project.

Reclamation's Oklahoma-Texas Area Office entered into a Memorandum of Understanding May 5, 2016, with the City of San Angelo, and Texas Parks and Wildlife (TPWD) to incorporate approximately 13,000

acres of Federal land surrounding Twin Buttes reservoir into TPWD Annual Public Hunting Program (APH) to provide additional recreational benefits for the people of Texas.

Mark Treviño Oklahoma-Texas Area Manager, Clayton Wolf, Director, Wildlife Division and Justin Dreibelbis, Program Director, Private Lands & Public Hunting, signed the MOU after more than a year of detailed discussions and coordination between the three organizations.

"The boost in recreation opportunities for locals is well worth

the effort," said Treviño. TPWD is able to help manage the recreation side along with us, so that is a great benefit to us."

The Wildlife Division's mission is to manage and conserve the natural and cultural resources of Texas and to provide hunting, fishing, and outdoor recreation opportunities for the use and enjoyment of present and future generations.

To accomplish this mission, Division personnel annually conduct about 4,000 wildlife population surveys, provide recommendations concerning the management of about 1,200 vertebrate wildlife species, conduct about a dozen wildlife research studies, manage 50 wildlife management areas totaling 744,000 acres, hold public hunts on more than 230 tracts of land totaling more than 1.4 million acres, provide landowner incentives to manage for rare species, inform the public about wildlife, provide technical guidance to private landowners, and develop more than 8,200 active wildlife management plans for about 30 million acres of private lands.

TPWD has operated a Public Hunting Program since 1954. The APH Program, started in

1987, provides nearly 1 million acres of walk-in public hunting access. The benefits of the Annual Public Hunting Program are; TPWD Law Enforcement presence, Habitat management and harvest recommendations from TPWD biologists, and more than 60 years of experience administering hunts on public lands.

Hunters enjoy going after game that include white-tailed deer, feral hogs, dove, quail, turkey, waterfowl, rabbit, squirrel and more. The group also provides for youth only and youth & adult hunts.



Texas Parks & Wildlife Department State Park at Twin Buttes.



(L to R) Mark Treviño, Oklahoma-Texas Area Manager, Clayton Wolf, Director, Wildlife Division and Justin Dreibelbis, Program Director, Private Lands & Public Hunting.



DKAO AND PARTNERS IMPROVE FACILITIES PHOTOS IN ACTION



Pathways Student Colin Zilverberg organized twenty-one volunteers for the Belle Fourche Clean-up event in cooperation with the South Dakota Game Fish and Parks. Over 1,000 pounds of trash was collected and volunteers were thanked with a lunch provided by Reclamation and SDGFP staff.



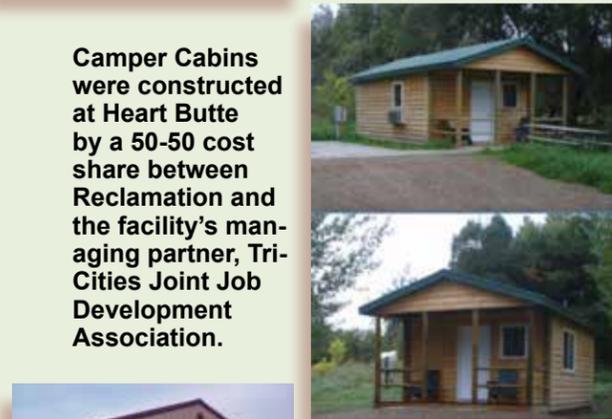
The Montana Youth Conservation Corps, Youth Crew, finishes the Ditchrider House painting project near Belle Fourche Reservoir. Below, they work on a limited mobility access trail at Keyhole Reservoir.



Staff at the Heart Butte Dam and Reservoir constructed an emergency access road on the South side of Heart Butte Dam. Emergency vehicles can still access the other side should the highway across the top of the dam be closed for any reason.



Pathways students assisted Reclamation staff during the Periodic Facility Review for Angostura Dam. Pictured left to right: Alex Adams, Lauren Allin, Adam Madigan, Randy Ehls, Tom Schulz, Jeff Nettleton, Tyler Stremcha, Ginger Wessels, and the Angostura Dam Tender RJ Wright.



Camper Cabins were constructed at Heart Butte by a 50-50 cost share between Reclamation and the facility's managing partner, Tri-Cities Joint Job Development Association.



A new fish cleaning station has been completed at Heart Butte Reservoir's Schatz's Recreation Area. This is fully enclosed to accommodate all weather conditions.

COLOR in a Digital World

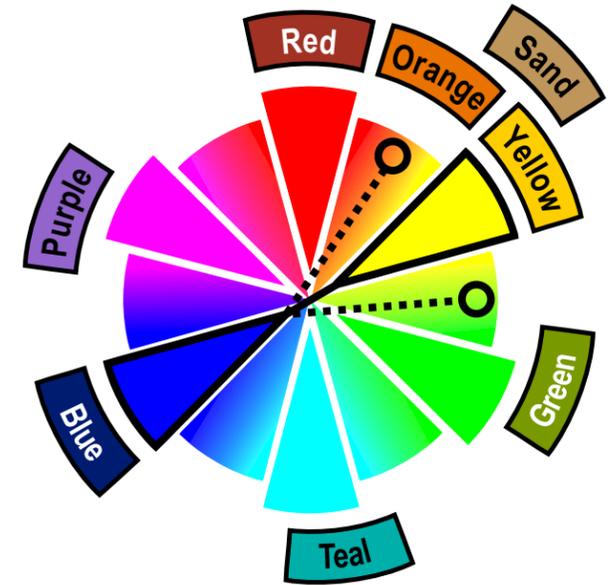
Reference Sheet

Adjusting the color of objects within Microsoft Office:

- 1) Right click on object,
- 2) Select format shape,
- 3) Select fill or line,
- 4) Change colors and/or transparency.

Reclamation deep colors are a darker luminance (black added) and pastels are a lighter luminance (transparency or white added) from the Reclamation palette.

Themes: Themes provide a quick selection for different combinations of colors. The Visual Identity palette is available in various themes for users. When selected, a given theme will display colors in the top row of selections wherever changes can be made. See below for the possible themes.



Reclamation's primaries placed within the traditional color wheel. Opposites on the wheel are complementary colors and are flanked by complementary tints. As shown above blue is complemented by yellow and the orange and sand tints.

Microsoft Office theme files using the Reclamation Visual Identity palette are available for installation on workstations. The files also include deep and pastel tints as shown. For details and instructions go to: intra.gp.usbr.gov/public_affairs/color/index.html.

Office Theme Designation

	BOR_base	BOR_blue	BOR_sand	BOR_deep_1	BOR_deep_2	BOR_pastel_1	BOR_pastel_2
Text/Background - Dark 1	d. blue	blue	sand	blue	sand	blue	sand
Text/Background - Light 1	p. sand	white	white	white	white	white	white
Text/Background - Dark 2	d. sand	d. blue	d. sand	d. blue	d. sand	d. blue	d. sand
Text/Background - Light 2	p. blue	p. blue	p. sand	p. blue	p. sand	p. blue	p. sand
Accent 1	blue	sand	blue	d. sand	d. blue	p. sand	p. blue
Accent 2	sand	yellow	yellow	d. yellow	d. yellow	p. yellow	p. yellow
Accent 3	orange	orange	orange	d. orange	d. orange	p. orange	p. orange
Accent 4	green	green	green	d. green	d. green	p. green	p. green
Accent 5	teal	teal	teal	d. teal	d. teal	p. teal	p. teal
Accent 6	purple	purple	purple	d. purple	d. purple	p. purple	p. purple
Hyperlink	d. yellow	d. sand	d. blue	sand	blue	sand	blue
Followed Hyperlink	yellow	d. yellow	d. teal	orange	teal	orange	teal

* Reds were omitted from the palettes because of Microsoft's limited selections. Black was also omitted but can easily be selected for text color by choosing "automatic." Theme colors can also be customized within Office if needed.

Clip for easy desktop reference



COLOR in a Digital World

Reference Sheet

Typically, the largest use of color in Reclamation documents is through the use of photographs. Some simple rules apply to images:

- ✓ The camera-original file is a Reclamation record in its own right.
- ✓ The camera-original should never be altered - make a copy for that purpose.
- ✓ Placing images in Microsoft Office documents does not preserve records for later use.

Adjusting photos in Microsoft Office

- 🖱 Right click to choose format picture, then choose either picture correction, color, or crop modes.
- 🖱 Avoid using presets and adjusting contrast.
- 🖱 Change **brightness**, **sharpness** and color **temperature** carefully and test results on a printer. Do not trust the appearance of images on your monitor.



Examples of contrast. Using complementary colors, especially deep tints against pastels yield the best result. Convert to grey scale or use a black and white printer to confirm a strong contrast.

Alternative 1

Lorem ipsum dolor sit amet, consectetur adipiscing elit...

Alternative 2

Lorem ipsum dolor sit amet, consectetur adipiscing elit...

Alternative 3

Lorem ipsum dolor sit amet, consectetur adipiscing elit...

Color can act like a directory prompting a reader to easily seek out information. In the example above details of scenarios are repeated on multiple pages and are easily compared - even on different pages. Note the alternatives are also identified in text to insure 508 compliance.



Headline Text

Using complementary colors not only yields a pleasing result, but it simplifies creating an accessible document by assuring the basic contrast needed by those with impaired vision.



Headline Text

Accessibility

508 compliance includes documents that are capable of being read by sight impaired individuals. A few simple considerations go a long way in meeting this requirement:

- Never use color alone to convey critical information. If text labels can be assigned in addition to using color do so.
- Using Reclamation fonts (New Times Roman and Arial) not only meets Visual Identity requirements but also assists in readability.
- Make sure all text within a document **is** text. For example, an image of a scanned page is a picture not text that can be



An alt tag of "Spill at Pathfinder Dam" meets the technical requirement, but consider the following instead: "Water flows over the canyon wall spillway below Pathfinder Dam and the spray in the canyon creates a rainbow." For the sight impaired the description sets the mood much like color for many of us.

searched or recognized by an electronic document reader. While this is a convenient shortcut in creating a printed document, remember that the electronic (official record) file is not accessible without describing the contents completely.

- Use alt tags to describe the contents of images and other graphic content. Many sight impaired people once had good vision, so take the time to make the description more valuable.

Clip for easy desktop reference

GP of the YEAR 2016 ENGINEER

Michael Maroncelli has been named the Great Plains Region Engineer of the Year for 2016. He will join engineers for Reclamation's other regions and Denver in competing for the Reclamation's Engineer of the Year.

Michael is an electrical engineer in the Regional Office. He has conducted extensive power facility investigations to ensure Reclamation required operation and maintenance practices are being accomplished. This includes performing Reclamation-wide North American Electric Reliability Corporation (NERC) / Western Electricity Coordinating Council (WECC) Internal Audits ensuring Reclamation compliance with NERC/WECC standards.



Michael Maroncelli receives the Great Plains Region Engineer of the Year award from Regional Director Mike Ryan.

NERC/WECC activities include analyzing and mitigating generation affecting compliance with the reliability of the Bulk Electric System; preparing for audits; assisting in the development

of auditing criteria and associated requirements; reviewing documentation and identifying compliance issues, critical assets and cyber security, mitigation plan development, and internal assessment of compliance.

In addition, he has taken on the oversight responsibilities of the Great Plains Region's radio program including compliance requirements,

site inspections, and design activities and associated reviews. He participates in several Reclamation-wide teams in developing technical standards, performs reviews of technical data, test procedures and results, and technical reports for content and consistency; makes suggested improvements;

maintains critical documentation and historical files including reports and technical data; research and development of several Reclamation Facility Instructions Standards and Techniques (FIST) manuals; and review and comments on several Reclamation Directive and Standards.

