

A Water Review Quarterly

RECLAMATION

Autumn 1976



AFTER TETON



RECLAMATION



Autumn 1976

Vol. 62 No. 3

United States
Department of the Interior
Thomas S. Kleppe, Secretary

Bureau of Reclamation
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For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price: \$1.05 for single copy, \$4 for annual subscription (\$1 additional for foreign mailing).

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Cover

The Teton Dam, one of Reclamation's over 300 dams, was first in the agency's 74-year history to fail.

Issued quarterly by the Bureau of Reclamation, United States Department of the Interior, Washington, D.C. 20240. Use of funds for printing this publication approved by the Director, Office of Management and Budget, February 3, 1975.

The first and only failure of a Reclamation dam with loss of life, destruction of property, and disruption to the thousands of victims weighs heavily upon the Reclamation program and all those associated with it.

But if the character of organizations, like people, can best be judged by their actions in a time of crisis, the Bureau of Reclamation and its employees deserve the highest praise for their response to the Teton Dam disaster.

This edition of the *Reclamation Era* is dedicated to telling the story of how the Bureau of Reclamation reacted to this tragic event.

In the wake of the dam failure, one of the immediate problems facing the Bureau was the restoration of irrigation service to some 427,000 acres of good

cropland. Although most of the endangered cropland was undamaged or untouched by the flood itself, the crops were in danger of burning up due to widespread destruction of canals, diversion from the river, pumping plants, and the like. Thanks to a remarkable effort by engineers and a support staff recruited from throughout Reclamation—and outstanding cooperation and prompt action by numerous organizations and individuals—we were able to restore service to practically the entire acreage within a few weeks.

In July, following authorization by the Congress to pay for direct damages from the flood, people from throughout the Bureau again responded as a team to set up the unusual and difficult



AFTER TETON

by Gilbert G. Stamm
Commissioner of Reclamation



claims program, which is continuing.

Special credit and appreciation is due also to the other Federal, State, and local agencies mentioned in the stories that follow which assisted in the disaster relief operation, and especially to the Mormon Church, which conducted a well-organized humanitarian effort to aid flood victims.

We do not yet know why the dam failed. The cause of the failure is the object of two major investigations—one by an independent panel of distinguished engineers and a geologist from outside the Government, and the

other by a group of professionals representing various Government agencies. Final reports from these two investigations are not expected before the end of the year 1976.

The Bureau is eager to find the reason for this tragedy, and to that end we are cooperating fully with all investigative groups in a thorough analysis of the facts. We hope that a cause can be pinpointed so the engineering community, and the people it serves all over the world, can



benefit from this unhappy experience and take steps to prevent it from ever happening again.

In the introspection following Teton, we must not lose sight of all that the Reclamation program has done for the people of the West and of the Nation throughout its 74-year history.

During those years Reclamation has earned a worldwide reputation for engineering skill in the planning, design, and construction of dams and a multitude of associated water structures. Much of the West's economic vitality and its quality

of life can be traced directly to the development, conservation, regulation, and management of its limited water supplies for the benefit of people.

The failure of Teton Dam was a tragedy unprecedented in the history of Reclamation. Yet it would be an even greater tragedy, in my opinion, if those who have traditionally opposed water resource development programs should succeed in using the Teton disaster as a political weapon to stop all further development. Such an exploitation of the Teton disaster would, if successful, deny the proven benefits of water resource development to millions of people for generations to come.

eri



It was a beautiful, sunny Saturday morning—the 5th of June 1976. The agenda for the Wade household, near Boise, was a full day of yard work. But it was to be shattered by events taking shape some 300 miles to the east, along the Teton River near the Idaho-Wyoming border.

The first call came at approximately 9:30 a.m. from Glenn Barker of the Bureau's regional office, Power Division, who wears a second hat as regional facilities security officer. He called to say, "We have a problem at the Teton Dam. Thought you ought to know in case you begin to get some media inquiries."

About 30 minutes later the telephone rang again. Assistant Regional Director Harry Stivers was calling. The Teton situation had deteriorated. I told Harry I would meet him at the office as soon as I could get cleaned up.

After taking a quick shower and changing my clothes, I drove the 9 miles to the Federal Building and U.S. Courthouse in downtown Boise. My 15-year-old son, Steve, had talked his way into accompanying me to the office. His "pitch" was that he would be able to make a pot of coffee and otherwise help us. My snap judgment was that we might be at the office for several hours answering media inquiries, and Steve could be of help to us.

We arrived at about 10:45 a.m. On board were Stivers, decked out in his golfing shorts; Barker; and Brent Carter, our regional geologist. I was quickly filled in on the situation. Teton Dam had a leak in the rock canyon wall

near the toe of the right abutment, something not too unusual during the first fill of a reservoir.

Steve went to get the water to make a pot of coffee.

Within a few minutes we received another call from Teton Project Engineer Robert Robison. The situation had worsened. It was a few minutes after 11 o'clock and Robbie reported, "We have a small hole opening about two-thirds up on the fill near the right abutment and a whirlpool has developed on the reservoir side."

My first question to Robbie was, "Have the news media and the local authorities been notified of the problem?" He assured us they had.

It was obvious we weren't going to be much help to him 300 miles away, so we asked if he needed us there. He said, "Yes, I think I can use some help answering media inquiries."

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Stephen G. Wade is Regional Public Affairs Officer for the Bureau's Pacific Northwest Region, Boise, Idaho.

The First Days



The Wilford Canal inlet dike in Teton River

by Stephen G. Wade

Saturday

The conversation with Robbie was short and to the point. We had no sooner hung up the phone when Stivers was calling Bill Ryder, one of two pilots for the region's Aero Commander. Take-off time to Idaho Falls was set for 1 p.m.

That allowed us time to get home and throw a few clothes in a suitcase before meeting at the airport.

Steve unplugged the coffeepot, still cold, and we were off for home. There I received the first media inquiry—from the Associated Press. Bureau Chief Bob Leewright was calling about “a problem at Teton.” I told him what we knew about it and our assessment of the current situation. I told Leewright we were on our way to Teton and would report back to him later that afternoon.

I kissed my wife and boys goodbye at the airport and climbed into the right pilot's seat of Commander N618.

As we approached the Idaho Falls area, we decided to swing up around Teton Dam to see what we could from the air. We

were only a few minutes beyond Idaho Falls when I sensed there was something wrong. As I looked toward Rexburg and Sugar City, there appeared to be an area of sand dunes with trees growing out of them. I said to Bill, “Is that water?”

Bill replied, “It sure is.” We realized the worst had happened.

I turned to alert the others. Stivers was taking a catnap. Barker and Carter were enjoying the otherwise uneventful ride. I

Within minutes we could see it—a gaping hole in the 307-foot-high Teton Dam with water pouring from the partially emptied reservoir as from a giant pitcher. It was approximately 2 p.m. There was stunned silence aboard Commander N618.

By this time, flying in the area had become treacherous. Light aircraft were flying in all directions, and Ryder and I were spending our full time spotting



Below Teton Dam

tapped Stiver's knee and he received what was probably the most startling arousing of his whole life. As he opened his eyes he could see the small town of Sugar City and its surrounding farmlands—flooded.



Teton Dam nearing completion, September 26, 1975



6

and avoiding them. We stayed above most of the traffic, about 8,000 feet above ground.

"We have a problem at the Teton Dam."

The current of the water dumped out of the reservoir, boiled down the canyon, and fanned out into the valley. My overriding thought during the rest of the trip and for many hours to come was—did the people get out? At that time Rexburg, about 15 miles to the southwest, was just beginning to take the first wave of water.

In a few minutes we were on the ground at Fanning Field in Idaho Falls arranging for a rental car. We made contact by telephone and radio relay with Robbie Robison through our Palisades Project—on the South Fork of the Snake about 50 miles south and slightly east of Teton—and made arrangements to meet him in Rexburg. Robbie's home, like so many others in the area, was inundated.

It was an eerie feeling traveling north on U.S. Highway 20/191. What traffic there was was headed south. Checkpoints, stationed every few miles, were manned by State and local authorities. Our picture ID's, identifying us as employees of the Bureau of Reclamation, convinced the officers that we had business in the area. They admonished, "You travel at your own risk." Just after we crossed the South Fork of the Snake River we cut east on a secondary road toward the Rexburg Bench, an area that overlooks that part of the Upper Snake River Valley. By the time we approached Rexburg, the traffic jam was unbelievable. People from Rexburg, Sugar City, and the surrounding areas were seeking refuge on the higher ground. They were bringing with them anything they could drive or carry out.

aymond



Teton Dam following rupture, June 6, 1975

Luckily, as the water fanned out for some 8 miles across the valley, its progress slowed down to 8-10 miles per hour. This gave people time to rescue some of their material goods. Trucks, tractors, combines, and campers were scattered all over the Rexburg Bench area. Cars, pickups,

There was stunned silence aboard Commander N618.

and campers were filled with the few items of clothing, pictures, souvenirs, and other items the residents could quickly pick up and carry. Along the dusty roads were families standing or sitting next to their cars. Children, hungry and crying, looked with disbelief as the water traversed its way toward Henrys Fork of the Snake River.

The community of Wilford was the first area hit after the water left the canyon. It was obliterated with nothing left but house foundations and remnants of buildings. Len Isaacson of the Teton Project staff, along with his wife and family, lived in a mobile home in the Wilford area. They have never found a trace of their home.

The small towns of Teton and Newdale were on high enough ground to be spared from the rampaging water, as was St. Anthony to the north.

The Teton River, after it leaves the canyon, divides into a north and south fork for its remaining course to Henrys Fork of the Snake River. Sugar City is located almost directly between the two forks of the Teton and thus sustained a brutal head-on attack by the water and debris.

Rexburg, the largest town at the immediate flood area, lies almost directly on the south fork. Virtually every business in the town of some 10,000 was badly damaged, as were homes and everything else in the part of Rexburg which lies on the floor of the valley. Luckily, one of the newer parts of town, along with Ricks College, was located on high ground which escaped the ravages of the water. The water, already heavily laden with debris, swept past a sawmill on the outskirts of Rexburg, picking up huge logs which became gigantic battering-rams, smashing foundations of homes and anything else in their path. The one thing that stands out in my memory of this flood is the tremendous destruction doled out by the combination of a fast current and every conceivable kind of debris.



Rexburg, Idaho, 6:45 p.m. on June 5



We met Robison in Rexburg and spent approximately 2 hours at the Army Reserve Center on the Rexburg Hill near Ricks College, where emergency headquarters had been set up since the National Guard Armory near the river was inundated.

We helped relay a call, via Robison's radio-equipped car, for assistance from the Boise

"Is that water?"

Interagency Fire Center for a fire-retardant drop. There was a raging fire in a building in the center of Rexburg and officials wanted to get it put out before it spread. Floodwaters prevented firefighters from reaching it with ground equipment.

We were able to reserve four rooms in an Idaho Falls motel—chosen largely because it sat on higher ground not threatened by



A Sugar City home



Rexburg

the flood that was eventually to hit that city. The motel became my home for the next 2 months. We checked in and began to contact our people at the project, regional, and Washington levels. We also notified the news media and other agencies of our location. Stivers and I had connecting rooms. Barker and Carter were just down the hall.

There began that evening the most intensive week of calling and being called, of assisting the news media people in getting their story, and otherwise trying to be of help that I have ever experienced. We had modest facilities. Two phones and a portable radio were our links to the project and the outside world. By Tuesday, I noticed my left wrist was becoming very sore. The only explanation I have was that I had been using my left hand to pick up the phone.

Understandably, the Teton Dam failure and its aftermath was immediately a national news story. Our first objective was, and continues to be, to make sure all of the circumstances surrounding the Teton Dam failure be made fully available to the public through the news media. Our big problem at that point was that we just didn't have any information to even suggest what might have happened. Prior to June 5, Teton Dam was a little-known project to people outside of Idaho. Of course, by now the news media wanted to know everything there was to know about the project.

News media representatives from all over the country were visiting Idaho Falls and were calling for information. There were many aspects to the story, including the failure itself, emergency search and rescue activities, gearing up for the long road to recovery, and the many facets of human experience associated with the flood.

Robbie Robison, alone, granted several dozen personal interviews to newspapers, wire services, magazines, radio and TV stations, and others. For a period he was tied up virtually full time with news media interviews and inquiries. He was being called at all hours of the day and night. Our philosophy was to go the "extra mile or extra 10 miles" to help the media get their story. Our files on the Teton Project, from its inception to the present, have

been and are now open. Most media representatives were courteous and understanding. A few were not.

The first of a long procession of Federal and State officials arrived the day following the break, on June 6. Assistant Secretary Jack O. Horton, and Commissioner of Reclamation Gilbert G. Stamm were a welcome sight to those of us who were trying to satisfy an unending demand for information. They brought with them some of the Bureau's top technical experts. After an onsite inspection and a thorough briefing from project personnel, Assistant Secretary Horton and Commissioner Stamm held the first of many official news conferences.

The flood area of the Upper Snake River Valley—Bingham, Bonneville, Fremont, Madison, and Jefferson Counties—was declared a disaster area by the President. Within a few days the Federal Disaster Assistance Administration (FDAA), in cooperation with the State of Idaho, had set up an office in Idaho Falls to coordinate recovery efforts.

Assistant Secretary Horton, Regional Director Rod Vissia, and others spent several hours with Idaho Governor Cecil D. Andrus and his staff in laying the groundwork for the combined Federal-State emergency recovery efforts. General James S. Brooks, Idaho Adjutant General, was designated the Governor's representative in the flood area and William Mayer, Regional Director for FDAA, and the FDAA Assistant Director, Hugh Fowler, headed coordination of Federal agencies.

Throughout the recovery period there was continual praise for the high degree of Federal-State cooperation during the Teton disaster. Local organizations and volunteer groups both from within the area and from the outside played major roles in the recovery.

During the first 2 or 3 weeks of the postflood period, daily meetings chaired by FDAA and the State of Idaho were conducted to assure a coordinated approach to the recovery. Concurrently, public information officers of the various agencies represented held a coordinating session each morning.

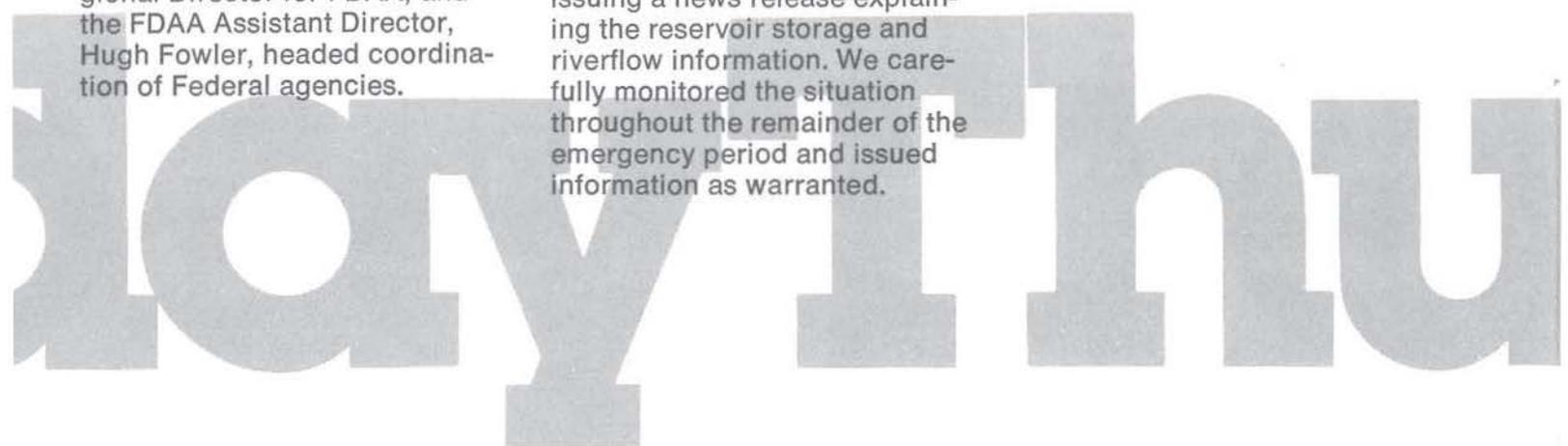
Prior to June 5, Teton Dam was a little-known project to people outside of Idaho.

One of the biggest problems of information dissemination was rumor suppression. For example, at one point the "rumor mill" reported that we were about to open up the spillway gates of Palisades Dam to their full capacity because the reservoir was full. The facts were that the Bureau of Reclamation river operators were on or slightly below their flood control parameters and the prospects were very good that no additional increase in outflows would be needed (which is what ultimately happened). We suppressed this rumor by quickly issuing a news release explaining the reservoir storage and riverflow information. We carefully monitored the situation throughout the remainder of the emergency period and issued information as warranted.

For the next several weeks many activities filled our 12- to 14-hour days. It was, perhaps, one of the greatest concentrations of answering media inquiries, arranging for interviews and material, setting up news conferences, making advance arrangements, and accompanying investigative committees and governmental officials from many branches of government that a one-man public affairs operation has ever attempted.

The Teton Dam failure will undoubtedly be the most thoroughly investigated happening of its type in recent history. In one of the many Federal-State cooperative undertakings, the Secretary of the Interior and the Governor of Idaho jointly appointed an independent investigating panel made up of some of the world's most renowned dam experts.

The U.S. Department of the Interior Teton Dam Failure Review Group, with some of the Federal Government's top dam building experts from the Corps of Engineers, Tennessee Valley Authority, Soil Conservation Service, U.S. Geological Survey, and the Bureau of Reclamation is investigating the failure. These groups, plus several Senators and Congressmen, visited the area during the first few weeks following the break. While each group handled its own media arrangements, we worked closely with them on logistics and overall press arrangements.





Our first concern in the hours right after the flood was for protection of lives and property.



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rsclayt



Ricks College in Rexburg became a temporary home for flood victims.

12 We used helicopters, which were the only viable means of continuous transportation during the first few weeks. Of great assistance were the many pilots, including our own Bureau of Reclamation helicopter crews recruited from other regions, and Bureau of Land Management helicopter pilots from the Boise Interagency Fire Center. There were no serious aircraft incidents. That in itself is almost

The outstanding effort of Idaho Falls officials and volunteers minimized the damage to their city.

miraculous considering the mix of helicopters and fixed-wing aircraft and the emergency situation under which they were flying.

Once the floodwaters reached Henrys Fork, and then came within a mile or so of the main stem of the Snake River, it became a more conventional flood, although still extremely destructive. The crest at Idaho Falls arrived about 8:30 on Sunday morning. The outstanding effort of the Idaho Falls officials and volunteers minimized the damage to their city. As the water continued down the Snake River, the towns of Robert, Shelly, and Blackfoot were especially hard-hit.

Bureau of Reclamation Minidoka Project employees, under the direction of Project Manager Carlos Randolph, cut back the outflow of Palisades Reservoir and Island Park Reservoir on the Henrys Fork almost immediately after Teton Dam had failed. That quick action alleviated an even higher crest in the stretch of the river from Rexburg to American Falls. As it was, Snake River flows at Idaho Falls on Sunday were the second highest on record. American Falls Reservoir water level, which had been lowered in anticipation of the increased inflow, raised to about the level that the Bureau of Reclamation's river forecaster predicted. The flood was contained there and there was no floodwater damage below American Falls Dam.

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The remains of Teton Dam

Our first concern in the hours right after the flood was for protection of lives and property. As the immediate crisis ebbed, our efforts were concentrated on recovery. One of the first mission assignments by the FDAA was to the Bureau of Reclamation for restoration of irrigation facilities to the more than 400,000 acres affected by loss of irrigation water. (See article "The First Weeks—Saving Crops" on page 14.)

About 10 days after the flood, President Ford proposed that the Congress make available \$200 million to begin restitution for flood damages. That proposal became a part of the 1976 Public Works Appropriation Act which was signed into law by the President on July 12. (See article, "The First Months—Rebuilding Lives," on page 20.)

By the first week in July, the Bureau's emphasis was shifting from canal restoration to administration of a massive claims program to indemnify those who had suffered damage as a direct result of the Teton Dam failure. Throughout this period, and continuing into the present, we have received a continuing media and public inquiry into every aspect

of the Teton Project, extending into almost every aspect of how the Bureau of Reclamation goes

President Ford proposed that Congress make available \$200 million to begin restitution.

about its job as assigned by the Congress.

Since the failure of Teton Dam we have attempted to do everything possible to keep the American people informed about what happened, while at the same time have helped local residents start their long road to recovery.



The First Weeks-

Saving Crops

by Don D. Fillis

When Teton Dam failed, the rampaging waters released caused severe damage to irrigation facilities along the Teton and Snake Rivers from the dam-site to American Falls Reservoir—a distance of 70 miles.

In its wake 65 different canal systems were damaged leaving 427,000 acres of rich cropland without irrigation water. On June 6, President Gerald R. Ford declared the five counties affected by the flood a "disaster area." Immediately the Federal

Don D. Fillis is the project construction engineer on the Chief Joseph Dam Project in Washington. He was detailed to Idaho Falls, Idaho, to coordinate the irrigation rehabilitation program.

Disaster Assistance Administration assigned the task of restoring irrigation facilities to the Bureau of Reclamation.

Within 2 days after the disaster, Teton Dam Project officials had assigned onsite contractors to areas within the flood zone to begin restoring the damaged canals. One day later, Bureau of Reclamation personnel were detailed into the area to take over the task of restoration and an office was established in nearby Idaho Falls. Immediately, emergency provisions were developed to expedite contracting procedures and special authorizations granted to provide rapid payment to contractors.

Sixty-five different canal systems were damaged.

Teams consisting of Bureau of Reclamation and Idaho State Department of Water Resources personnel surveyed the canal systems to estimate the amount of damage and to provide the information necessary to plan and coordinate reconstruction. Bureau of Reclamation helicopters from Casper, Wyo., Montrose, Colo., and Phoenix, Ariz., provided important reconnaissance to expedite the surveys

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and coordination. More than 250 hours were logged by the pilots during this period.

The damage was extensive. Huge sections of canals were washed away; headworks structures and diversion dams were completely or partially destroyed; siphons crossing the Teton River were completely obliterated; canals were filled with silt, sand, and gravel; river channels previously deep and unobstructed were now relocated or blocked with sandbars, but the most overwhelming condition that existed was the tremendous amount of debris that had been deposited in the canals. Everything—trees, dead livestock, cars, even house trailers—would require removal before service could be restored.



From the data gathered by the damage survey teams, a priority list was established and contractors were scheduled to begin restoring each system. Again the helicopter proved to be an invaluable mode of travel. It helped us maintain daily surveying of the entire area to head off trouble spots and to provide a base for directing all operations.

Contractors from as far away as Pennsylvania offered their services. Lists were made tabulating available contractors and



equipment to assist in the work. Contractors assigned to the reconstruction were working in excess of 12 hours per day to speed up completion of the work. All types of construction equipment were used and suppliers of equipment for three temporary pumping plants expedited deliveries to meet deadlines.

Within 10 days after the disaster, 75 percent of the 427,000 acres had water supply restored. By June 23, this figure had risen to 90 percent and by July 5, 98 percent of the cropland had its water service returned. During this period more than 90 contracts were awarded to 22 different contrac-

Trees, dead livestock, cars, even housetrailers would require removal before service could be restored.

tors and approximately 2.5 million dollars were expended. Of the work accomplished, 40 percent is considered temporary and will require permanent construction after the irrigation season. In addition, six small canal systems that were destroyed immediately down stream of the dam will be reconstructed this fall.

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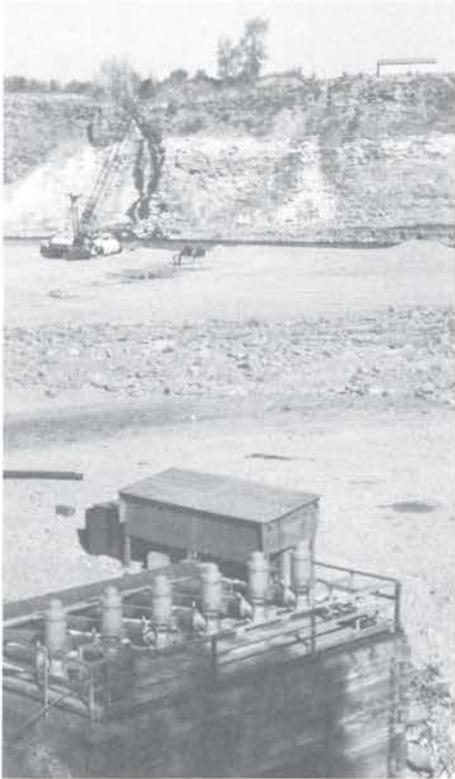
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Debris creates a tragic pattern along and in canals .





**Temporary pumping plant
for the Enterprise Canal**



Clean up of the South Wilford Canal



**Newly constructed reach
of the South Branch of the
Fall River Canal**

A contractor works east of Sugar City to clean and restore irrigation canals.





Construction nears completion.

The office that had been established in Idaho Falls to coordinate restoration of the irrigation facilities closed on August 6 when all activities were transferred to the project office. During its existence, 46 Bureau employees were assigned for varying lengths of time. They came from all regions of the Bureau, Washington, D.C., and the Engineering and Research Center in Denver.

The entire emergency operation took a tremendous effort. The cooperation and assistance received from the Idaho State Department of Water Resources,

Within 10 days after the disaster, 75 percent of the 427,000 acres had water supply restored.

contractors and unions under "Operation Bulldozer," officials of canal companies, and the landowners contributed greatly to its success. However, the overall achievement of the Bureau in its effort to restore the damage must be attributed to the 46 individuals who performed so admirably during very difficult times. The employees who worked 12 to 16 hours daily for weeks while living away from homes and families, dedicated themselves to the work at hand. To these individuals we owe our thanks.

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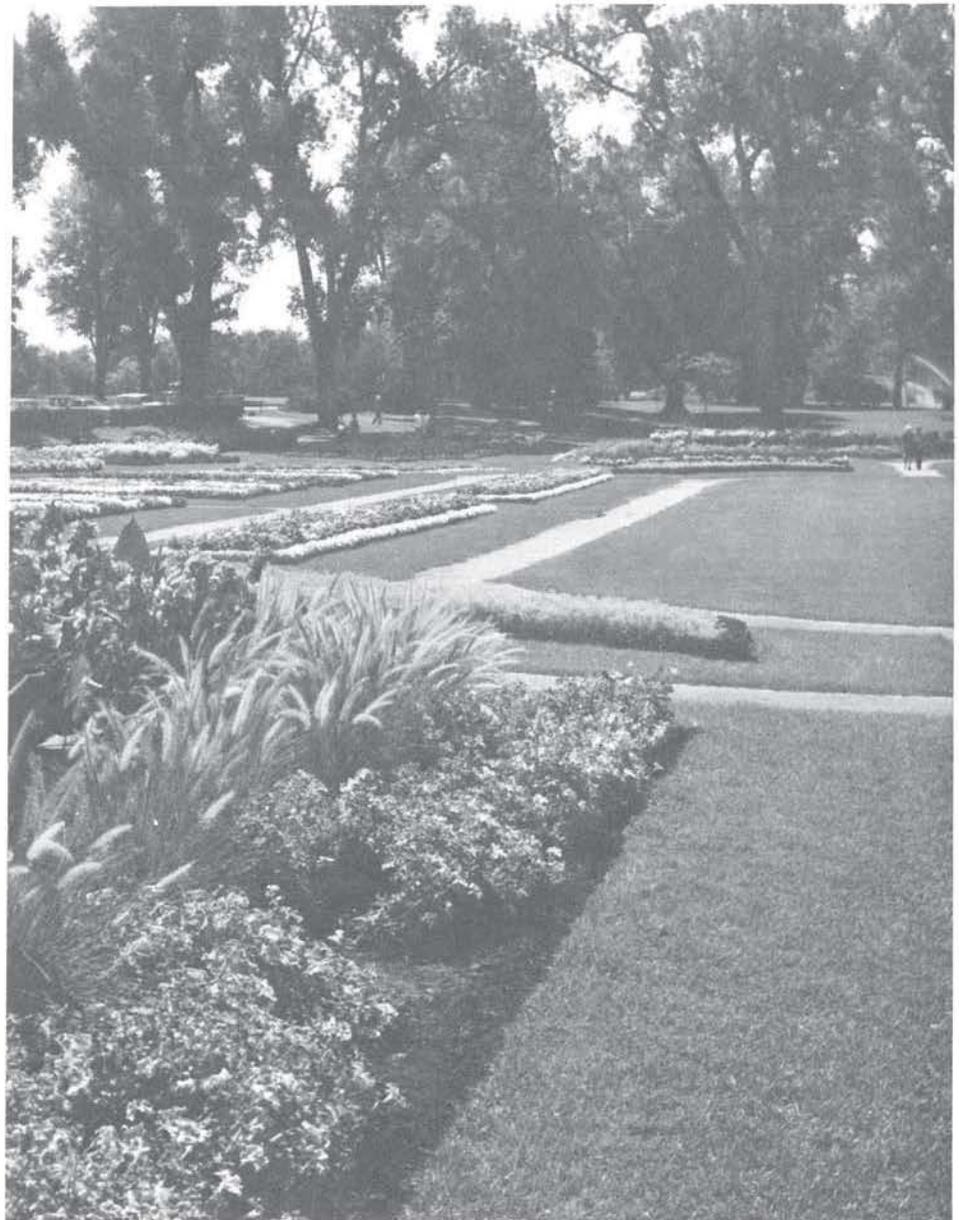
Water Quiz



Water Quiz

1. About 95,000 cubic miles * of water goes into the air annually. How much of this water rises from the ocean? How much is drawn from the land, evaporated off lakes, streams and moist soil, and transpired from the leaf surfaces of living plants?
2. What term is used to identify underground zones or layers that are relatively good sources of water?
3. The average man has approximately 50 quarts (about 100 lbs.) of water in his body and everyday he must replace about 2½ quarts of it, true or false?
4. What is the method by which surface water is soaked into the ground through tiny openings in the soil?
5. Many lakes die of an excess of sediment. Sand and gravel settle on the bottom, slowly turning the lake into a mud flat or swamp, and finally filling the lake entirely, true or false?

* 3,379,000 acre feet equal 1 cubic mile.



Answers to Water Quiz on
page 32.

The First Months- Rebuilding Lives

by Paul Winegar

"It is the intent of the President and the Congress to provide payment to the victims of the tragic flood as soon as possible, so they may rebuild their lives and communities."

These introductory words to the rules and regulations published in the *Federal Register* of July 14, 1976, marked the formal beginning of one of the most extraordinary operations in the 74-year history of the Bureau of Reclamation. The operation is the Teton Dam Flood Claims Program, set up to make restitution to victims of the Teton Dam failure in southeastern Idaho.

Paul Winegar is a public information specialist for the Bureau of Reclamation, Washington, D.C. He was detailed to Idaho to assist with the claims operation.

It is expected that by the time the program ends in July 1978, the Bureau will have paid an estimated 7,000 separate claims, totaling about \$400 million, for damages to property, personal injury, and loss of life resulting from the dam's collapse on June 5.

The Teton Dam Flood Claims Program was set up to make restitution to victims of the Teton Dam failure.

But beyond the statistics lies the broader story of a remarkable self-help spirit within the flood-stricken communities, of unprecedented cooperation among Federal, State, and local government agencies, and of a "can do" attitude by the team of Reclamation employees assembled to set up and operate the claims program.

The claims program was born in the first few hectic days following the dam break, which sent an estimated 80 billion gallons of water roaring down on the cities and farms of Idaho's Upper Snake River Valley.

While victims and disaster workers were concerning themselves with emergency measures, a number of broad questions were being addressed by Federal officials in Washington. Was the Government liable for the

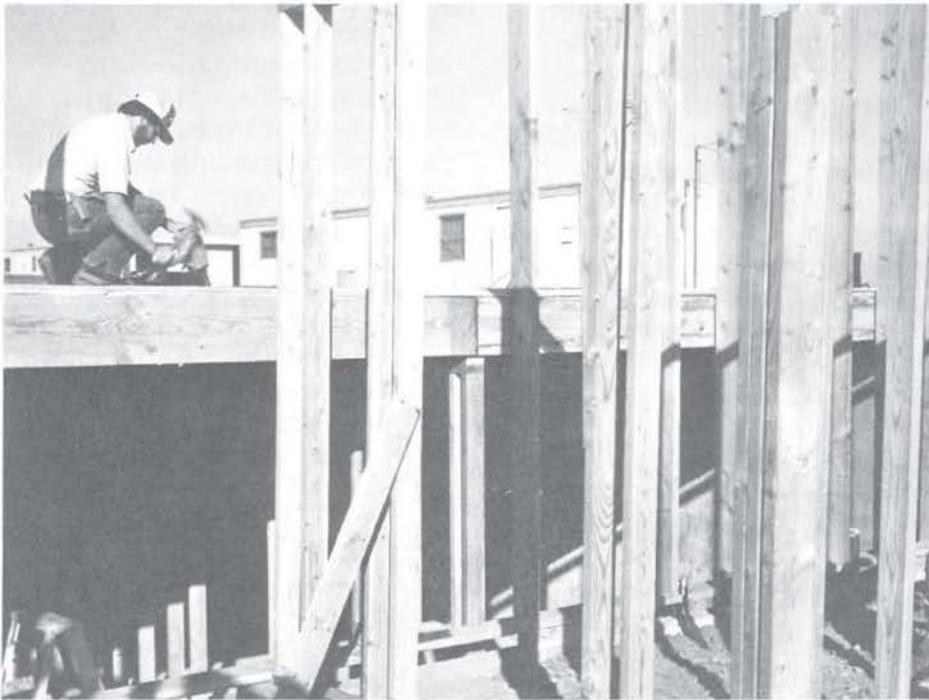
tragedy? If not, what could be done to help the victims beyond the regular Federal disaster relief efforts?

Gail Achterman, an attorney with the Department of the Interior's Solicitor's office in Washington, said legal experts, including Justice Department attorneys, researched the liability issue and ruled that the Federal Government was not liable for the flood.

"However, it was clear from the Administration's standpoint

It was clear from the Administration's standpoint that we had a moral responsibility.

that we had a moral responsibility we wanted to pay off," Achterman said.





Ray Chatham, a loss verifier for Reclamation, is discussing the damage suffered by LaVell Hirschi. He lost 19 of his 36 cows, and his home and farm buildings were destroyed.

22 Secretary of the Interior Thomas S. Kleppe was called to the White House, where President Ford urged him to explore ways of assisting the flood victims.

Within a week of the dam failure, a decision was made to request a special \$200 million appropriation as an initial payment for damages arising from the Teton flood, without assigning responsibility for the disaster.

The special appropriation was attached to the annual Public Works Appropriations bill then moving through the Congress. Using authorizing language, with a substantive amendment, the bill would allow payment of claims arising from Reclamation activities. (In September, the President signed a separate authorization bill sponsored by

the Idaho congressional delegation allowing full restitution to Teton victims).

While waiting for the passage of the appropriations bill and the President's signature, a team of experts from several Federal agencies, including the Office of Management and Budget, Interior Solicitor's Office, Justice Department, Bureau of Reclamation, and Federal Disaster Assistance Administration, met to draft rules and regulations implementing the claims program.

"The regulations were extremely difficult to write," recalls Achterman. One of the few precedents for such a large scale claims program was a 1947 disaster in Texas City, Tex., when two ships loaded with chemical fertilizer blew up in the harbor, killing hundreds of persons and causing millions of dollars in damages. The fertilizer was destined for France as part of the Federal Government's foreign aid program, and although the Supreme Court ruled that the Government could not be sued, special legislation was passed to provide compensation to the victims.



Dorothy Gimlin, a Reclamation employee, gives Lewis F. Smith a claims payment check.

Unfortunately, no regulations were written in the Texas City case, and the only basic model available to those wrestling with the Teton tragedy was regulations under the Federal Tort Claims Act. Mostly, the Teton claims regulations were drafted from scratch, drawing on the expertise of various individuals with experience in Government claims or disaster situations.

"The attitude was one of 'let's pay the victims a fair and equitable amount as rapidly as possible so they can rebuild their communities,'" Achterman said. "We looked at it in terms of a grant program. We didn't want to take a hard line or an adversary position, but at the same time we wanted to protect the Government against fraud."



Claimants George R. and Ida W. Emery return a signed voucher to a claims clerk.

After several meetings, one of which lasted into the early morning hours, a draft of the regulations was prepared and circulated among interested Federal agencies, the Idaho congressional delegation, and the State's governor.

"Let's pay the victims a fair and equitable amount as rapidly as possible so they can rebuild their communities."

Roy Boyd, a tort claims officer and Chief of the Bureau's Water Operations Branch in Washington, D.C., had a role in writing the regulations, and also was responsible for preparing guidelines for Bureau personnel who would be working in the claims program.

"The biggest problem at that time was the uncertainty of when the law would be passed," Boyd said. "We were under desperate time pressures to get the regulations written, but then the bill was delayed because of other issues, giving the Solicitor's office time to polish the regulations."

The regulations were refined as the appropriations bill moved through Congress and made its way to the White House. Meanwhile, in anticipation of final approval of the bill, the Bureau



HUD established this mobile home park in Sugar City to house flood victims.



After her claim was paid, Roberta Boice refurnished her damaged home.



Gail Achterman, an Interior attorney, and Roy Boyd, a tort claims officer, review regulations regarding Reclamation's legal responsibilities.

of Reclamation went into action to set up claims offices in three Idaho cities: Rexburg, Idaho Falls, and Blackfoot. Office space had to be located, a staff had to be assembled and trained, administrative details had to be worked out.

Administration of the claims program was assigned to the Bureau's Pacific Northwest Regional Office in Boise under the direction of Regional Director Rod J. Vissia.

Assistant Commissioner for Resource Development, Donald A. Giampaoli was appointed by Commissioner Gilbert G. Stamm as the Washington office coordinator for Teton disaster activities. Giampaoli said that a decision was made to use Federal personnel to run the claims program rather than turning it over to private adjustment firms who sought to contract for the job.

"There was a great deal of Federal experience available in disaster relief and verification of claims, and we elected to tap that experience," Giampaoli said.

Agreements were signed by the Bureau and two other Federal agencies, the Small Business Administration (SBA) and the Farmers Home Administration (FmHA). Under those agreements, SBA would provide investigators to verify claims in urban areas, and FmHA would supply experts to assess damages to farm property.

But the bulk of the claims personnel were to be Reclamation employees detailed to the flood area to assist claimants in filling out and filing claim forms, to review the reports of loss verifiers, and to disburse money to the victims.

Lloyd Ericson, an able administrator who is Chief of the Lands Branch in the Boise regional office, was named to direct claims activities in the disaster area as chief claims officer.

Claims officers were appointed to head each of the three offices: Mark H. Lowe, chief administrative officer for the Columbia Basin Project, was assigned to Blackfoot; Neil Stessman, director of the Columbia Basin Job Corps Center at Moses Lake, Wash., was appointed head of the Idaho Falls office; and Franklin E. Dimick, a civil engineer at Grand Coulee Dam, was named to direct the office at Rexburg.



Wilbur and Irene Park clean up after the flood washed their house 150 yards away.

Three experienced Federal attorneys were appointed by Secretary of the Interior Thomas S. Kleppe to serve as authorized officers to make determinations on what claims would be allowed and how much would be paid. The three were Thomas O. Parker, veteran regional solicitor for the Interior Department in Salt Lake City; Curtis H. Meneff, from the regional solicitor's office in Denver, and Ernest Skroch, a retired Interior lawyer from Sacramento, Calif.

Information officers, review team members, and disbursing officers were assigned to the flood area from Reclamation offices throughout the West on details ranging from 2 weeks to 30 days or more. Some temporary employees were hired in the local area to assist with clerical work.

The number of people working in the claims program fluctuates, but as of early September it included 49 Reclamation employees, 40 from the Small Business Administration, 13 representing the FmHA, three from the Solicitor's office, and 16 temporaries.

The claim offices were staffed and ready to go by the time the

The claims offices were staffed and ready to go by the time the President had signed the appropriations bill.

President had signed the appropriations bill on July 12. Two

days later, on July 14, the regulations were published in the *Federal Register* and the claims offices opened their doors.

Nine claims were received by the three offices that first day, and a week later, the first claim check was issued to a farm couple who live near Blackfoot. At the time this article was written, 3,349 claims totaling over \$116.5 million had been filed. This is almost one-half of the number of claims expected. The Bureau has already paid 1,962 claims totaling over \$42 million.

Observers of the Teton claims program generally agree that it is operating smoothly at this point. Ericson credits much of this early success to the attitude of Bureau personnel.

"The Bureau people have responded as a team, and we have had tremendous cooperation," Ericson said.

The performance of Reclamation employees was also lauded by Assistant Commissioner Giampaoli. "The spirit of our Reclamation people in getting things done out there, working day and night, is a real plus," he said.

Another plus in the program has been the response of the victims themselves according to Ericson. "They have demonstrated a willingness and ability to pick themselves up and put themselves back together," he said.

In particular he cited the volunteer effort of the Church of Jesus Christ of Latter Day Saints (the Mormon Church), which is predominant in the area. The Church organized an extremely efficient humanitarian effort in the early days of the crisis, providing clothing, shelter, and thousands of meals to flood victims in the hard-hit Rexburg area.

"But in addition," Ericson said, "the Church donated over one million hours of volunteer labor to help in the cleanup

operation, busing in hundreds of church members from Utah, Wyoming, and eastern Idaho. Without this volunteer help, the labor market would have been devastated."

The Church organized an extremely efficient humanitarian effort in the early days of the crisis.

"These volunteers prevented the labor market from being saturated and prevented the economy of the entire eastern Idaho area from being knocked out of kilter," Ericson said.

His praise for the Mormons was echoed by William Eikenberry on the staff of Interior's Assistant Secretary Jack O. Horton.

"If it weren't for the well-organized Mormon effort, we really would have had a problem," Eikenberry said.

In its first months of operation, the Teton claims program has faced some difficulties to be

sure. One of the problems has been the continuity of staff. Long stretches away from their homes and families present a personal hardship to many of the Reclamation employees working in the claims offices, and replacements have to be recruited and trained.

Many of the problems surfacing after initial experience with the claims procedures are being corrected with amendments to the regulations and administrative decisions. Other problems are resolved informally through the open line of communication.

It's no easy task making sure the flood victims are treated fairly, while at the same time guarding against the temptation of a very small minority to get some quick, easy money from the Government. But the claims program is working, and working well. In the face of the Bureau's darkest moment, Reclamation employees may be writing one of the Bureau's most notable success stories. 

Don Kulawik, Clarence Anderson, and Lyle Robertson check the loss verifiers' analysis of claims.





Dear Commissioner Stamm:

I am writing this letter to you because I would like to express my feelings on the good side of the story following the Teton Dam failure. I work for the Bureau of Reclamation and have been detailed with the Flood Rehabilitation Teams working under the Teton Emergency Coordinator. I am now, and have always been proud of the Bureau and the people who make it go.

Too often, we have been the target of one-sided reporting and abuse. I am sure the "I told you so's" will be out in force using the dam failure as an excuse to downgrade us. So, what I would like to tell about is what it is like out on the ground here in Idaho.

The people on the farms of Idaho are a tough, wonderful breed. I know because I have been working with them for almost 3 weeks. They can stand on their own and don't need or want people far-removed and living in the comfort of city apartments talking for them. They make their living from the land and want and need the water that projects like the Teton Dam give them.

The area I have been working is in and near the town of Wil-

ford, right at the mouth of the Teton River Canyon. This area was almost completely devastated, but the people are all back. I have walked through their fields while they told me where their homes were and what they looked like. I've dug in the soil with them to see if the land was still productive and always it was, "We will start over." The love of the land and the pioneer spirit are still alive and with people like this, maybe this country will make it another 200 years.

I would also like to comment on our own personnel. Don Fillis and Roland Ridgeway are doing a fine job running the Emergency Coordination Center. Robert Robison (Robbie), the project construction engineer is working so hard and feels such a tre-

mendous responsibility and loss that any organization would be proud to have a man of such compassion working for it. He sent most of his people into the area to get the irrigation system going again. These people (Pete Aberle, Dick McClung, Al Heintz and others) are literally working their tail ends off to help the farmers again get water to their crops.

I have not had to hold my head in shame because I work for the Bureau of Reclamation. The farm people of the Wilford area have accepted us with open hearts and have thanked us for helping them. Most would like to see the dam rebuilt because their lives, although threatened by it once, need it badly to store irrigation water so they can continue with their way of life.

Sincerely yours,

Frederick Angell
Mid-Pacific Regional Office



P.S. I have enclosed a picture of one of the few houses left standing in the Wilford area. On our 200th anniversary I think this photo says it all about the people of Idaho in the Teton flood area.

Reclamation Library



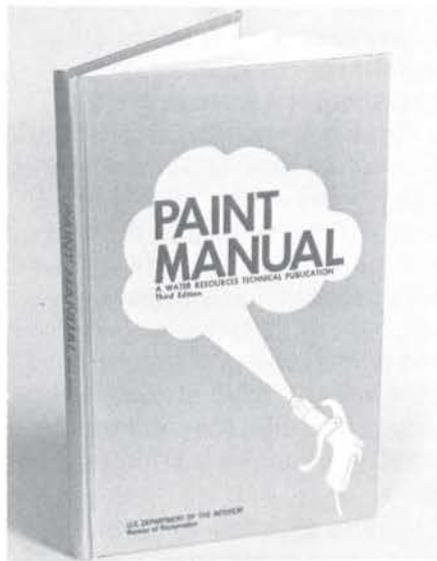
Reclamation Library Reclamation Paint Manual Updated

The newly published third edition of the Bureau of Reclamation's *Paint Manual*, a technical book describing protective coatings and their applications, is available for purchase.

This edition updates uses of older materials and describes new protective coatings coming into increasingly wide use. The manual stresses common specifications paints, conventional cleaning and painting practices, and the equipment and techniques of inspection.

Since protective coatings are a principal means employed by Reclamation to control metal work corrosion, the manual provides basic information on the types of paint most frequently used on Bureau of Reclamation water resource development projects. The manual also identifies other methods for controlling corrosion.

The third edition of the *Paint Manual* is available for \$5.40 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.



20402 and from the Bureau of Reclamation, Engineering and Research Center, Attention: Code 922, P.O. Box 25007, Denver Federal Center, Denver, Colorado 80225

Reclamation Efforts Featured in New Public Works History

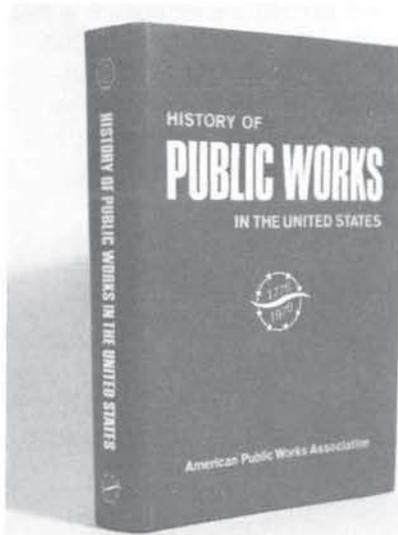
Early Reclamation efforts are among the hundreds of public works advances described in the

American Public Works Association's new *History of Public Works in the United States, 1776-1976*. Produced in observance of the Bicentennial, the comprehensive, illustrated volume discusses engineering and technological accomplishments within the context of broad social, economic, and political themes to illustrate how public works have enhanced the American way of life. This book has been written by a team of professional engineers and historians with the cooperation of many officials and organizations in the public works field.

This 20-chapter volume covers all aspects of public works in America, including chapters on irrigation, flood control and drainage, and parks and recreation. The history contains chapters on developing urban public services, such as water supply; sewer and wastewater treatment; solid waste disposal; drainage and flood control.

The APWA Bicentennial history deals not only with facilities which are primarily Government-owned, it also discusses services such as railroads, airways, and light and power which are essential to the common welfare of American society.

The History of Public Works in the United States, 1776-1976 is available for \$15. Members of the Public Works Historical Society (annual membership fee is \$10) may obtain copies for \$10. Send book orders and requests for information about the society to: American Public Works Association, 1313 East 60th Street, Chicago, Ill. 60637.



Teton Dam Flood Shown on Maps

A series of maps delineating areas inundated by the flood resulting from the failure of Teton Dam has been compiled by the U.S. Geological Survey and is available for purchase.

The maps are part of a continuing USGS program designed to document actual flood events to aid in water and land-use planning and management. The maps show, in simple form, the area flooded by the sudden release of about 250,000 acre-feet (80 billion gallons) of water in the reservoir when the dam was breached.

The series of 17 maps, prepared at a scale of 1:24,000 (1 inch equals 2,000 feet), covers a total of about 900 square miles in southeastern Idaho. Each map measures 17 x 23 inches and covers 54 square miles.

The maps show inundated areas in a blue tint, and show that the widest area of flooding—about 7 miles—occurred at Rexburg.

The maps were prepared as standard USGS Hydrologic-Investigations Atlases (HA's). The title of each atlas is "Teton Dam Flood of June 1976, (quadrangle name), Idaho." Each atlas costs \$1.75 and bears a distinct HA number, and should be ordered by that number. The atlases may be purchased by mail (prepaid checks or money orders payable to the U.S. Geological Survey) from the USGS, Branch of Distribution, Federal Center Bldg. 41, Box 25286, Denver, Colo., 80225.

See accompanying list for Atlas (HA's) numbers.

Quadrangle name

HA-565	Newdale
HA-566	St. Anthony
HA-567	Parker
HA-568	Moody
HA-569	Rexburg
HA-570	Menan Buttes
HA-571	Deer Parks
HA-572	Rigby
HA-573	Lewisville
HA-574	Idaho Falls North
HA-575	Idaho Falls South
HA-576	Woodville
HA-577	Firth
HA-578	Rose
HA-579	Blackfoot
HA-580	Moreland
HA-581	Pingree

Reclamation Film Available

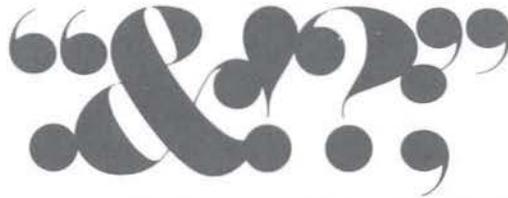
The story of 74 years of Reclamation is told in a new 20-minute, sound and color film, "The Miracle of Water," just released by the Bureau of Reclamation.

Federally constructed storage reservoirs were conceived by Major John Wesley Powell, explorer-scientist of 100 years



ago, as the only way to ensure an adequate water supply for hard-pressed pioneers and settlers in the arid West. The film tells this story and illustrates the green and bountiful harvests of today by farmers using Reclamation water.

"The Miracle of Water" is available from Bureau of Reclamation project or regional offices, or directly from the Bureau of Reclamation, U.S. Department of the Interior, Code 910, Washington, D.C. 20240. A broader distribution of the film for the general public is planned through Modern Talking Pictures.



Employees in the News

Cliff Barrett Named Assistant Commissioner

Cliff Barrett, former Chief of the Division of Water and Land, has been appointed Assistant Commissioner for Resource Planning, the position vacated by James J. O'Brien who is working for the World Bank.

Barrett began his career with the Bureau in 1956 as an engineer in the Denver office of Design and Construction, after receiving a B.S. degree in civil engineering from the University of Denver. He later transferred to Sacramento as a hydraulic engineer where he was promoted to general engineer in the office of Program Coordination. Four years later he came to Washington, D.C., as a program specialist in the Economics and Statistics Branch in the Division of Water and Land. In 1973 he became chief of that division.

This year, Barrett was elected to serve on the Executive Committee of the United States Committee on Irrigation Drainage and Flood Control. He was a Department of the Interior Fellow in 1975-76 and has attended the Federal Executive Institute.

Barrett has identified several goals toward which he will work as Assistant Commissioner for Resource Planning.

Among them are:

- To maintain and assert Reclamation's position as the principal water planning agency in the West.
- To improve relationships between Reclamation and the numerous other agencies with which Reclamation is involved.
- To work toward finding equitable solutions to the Indian water rights problem.
- To maintain and increase the public's understanding and confidence in the Bureau's program.

Cliff Barrett



- To find more effective ways to bridge the gap between the preservationists and the conservationists regarding water resource development.

A member of the American Public Works Association, Barrett was born in Salt Lake City, and is married to the former Lee Chesley of Westcliffe, Colo. They have three children, Vicki, Myron, and Jaqueline.

Lucy Pettapiece — First Woman Manager of a Project Office

Lucy Pettapiece has been named Project Manager of the Bureau's Upper Missouri Projects Office in Great Falls, Mont. She is the first woman in the Bureau of Reclamation's history to be named manager of a project office.

A 1947 graduate of the University of Texas with a B.S. degree in civil engineering, she began working as a civil engineer for the Upper Missouri Projects Office in Great Falls in

1948. During her career with Reclamation, she has worked in the Planning, Design, and Construction Branches.

As Project Manager, she is in charge of the Canyon Ferry Dust Abatement Project at the upper end of Canyon Ferry Lake. A contract for \$5.5 million is in progress to dredge silt from the reservoir and deposit it in ponds to prevent sand from blowing.

Pettapiece was recently elected president of the Montana Section of the American Society of Civil Engineers in which she has been active for 28 years.

She is married to Vance G. Pettapiece, a cattle and sheep rancher. They have three daughters,

Lucy Pettapiece



ters, Susan, the oldest, holds a degree in space science and mechanical engineering; Pat, the second, is a surveying aide with the Montana Department of Highways, and Ruth, the youngest, is studying agriculture production at Montana State University.

Harman is Chief, Power Division

Raymond E. Harman has been named Chief, Division of Power in the Washington office, succeeding William F. Graham, who retired.

Harman, an electrical engineer, has been with the Bureau for 26 years. He began his career with Reclamation in 1950 in Cody, Wyo., and later held many offices in the Upper Missouri Region. In 1972 Harman transferred to the Division of Power in the Washington office.

A native of Nebraska, Harman served in the Air Force during World War II and taught school

for a brief period in Pavillion, Wyo. He holds B.S. and M.S. degrees in electrical engineering.

As Division Chief, Harman has established three goals to work toward: first, "I would like to develop the team concept in this office," he said. Secondly, he would like to improve cooperation between the Washington office and the regional offices. And third, he wishes to make Reclamation customers feel more a part of the decisionmaking process. "We must be concerned about the public," Harman said.

Harman is married to the former Maxine Day of Arnold, Neb. They have four children, Daniel, Regena, Lynda, and Paul.

Raymond E. Harman



Bureau Eases Flood Impact at Big Thompson Canyon

Torrential rains, resulting in a flash flood that crashed through Colorado's Big Thompson Canyon, caused the death of about 140 people on July 31. But quick action by Bureau of Reclamation personnel helped reduce the impact of the disaster.

Bob Berling, project manager of the Bureau's South Platte River Projects Office, said, "Even during the period that the project was being extensively damaged, we were providing a maximum of flood control benefits with the project facilities."

Bureau personnel stopped all flows of water from Bureau facilities into the flooding canyon and they increased the flow of water from Lake Estes and Olympus Dam above the Canyon into another system unaffected by the flood.

The Bureau also provided radio communication for emergency rescue operations until the sheriff's office could establish a system between Loveland and Estes Park. A Bureau helicopter was used to evacuate stranded flood victims and to survey damage to Bureau facilities.

Damage to Reclamation facilities alone totaled an estimated \$1 million. The siphon crossing the Big Thompson Canyon was destroyed. It was part of the canal which transports water from the Flatiron Reservoir to the Horsetooth Reservoir. A new siphon started operation 88 days later. Also destroyed was a small diversion dam, and the Big Thompson Powerplant was forced to cease operation because of the large quantity of debris in the tailrace.

The remains of Highway 34 through Big Thompson Canyon.



Part of the Big Thompson Siphon lies atop "Big Dam" near mouth of the canyon.



Draft Environmental Statement

A draft environmental statement on the use of water from main-stem Missouri River Reservoirs for energy development has been prepared by the Bureau of Reclamation. The statement discusses the environmental impacts resulting from the diversion of a maximum of 1 million acre-feet of water for possible industrial use in Montana, North Dakota, South Dakota, and Wyoming.

This statement is the first to result from the memorandum of understanding between the Departments of the Interior and of the Army in which Reclamation will market water from six reservoirs impounded by Army Corps of Engineers' dams on the Missouri River.

Copies of the statement are available from Code 150, Bureau of Reclamation, 18th & C Sts., NW., Washington, D.C. 20240, and from Code 150, Bureau of Reclamation P.O. Box 2553 Federal Office Building, 316 North 26th St., Billings, Mont. 59103.

Answers to Water Quiz

1. 80,000 cubic miles from the ocean; 15,000 cubic miles from land, lakes, streams, moist soils and leaf surfaces of living plants.
2. Aquifer.
3. True.
4. Percolation.
5. True.



Reclamation Construction in the News

Mt. Elbert Contracts

Two contracts have been let for the Mt. Elbert pumped-storage hydroelectric powerplant in Colorado. The first is an award of \$2,582,070 for the second generator which went to Hitachi America Ltd. of San Francisco, Calif. The second contract was awarded to Red River Construction Co., Addison, Tex., with a bid of \$1,061,503. This contract is for the 230-kilovolt transmission line from Mt. Elbert to the Public Service Co. of Colorado's Malta Substation.

The Mt. Elbert powerplant is a pumped-storage facility including an upper and lower reservoir with the powerplant between. During peak demand periods, water is piped through the powerplant to generate clean hydroelectricity. At low demand periods, usually at night, the water is pumped back to the upper reservoir using lower cost surplus electricity supplied by the powerplant's customers. The cycle is then reversed to generate additional power in the early afternoon and evening hours.

\$8.5 Million for Carter and Mormon Tunnels

A contract to construct Carter and Mormon Tunnels of the North Side Collection System of the Fryngpan-Arkansas Project, Colo., has been awarded to the joint venture of Martin K. Eby Construction, Co. Inc., and Equipment Rental and Sales Co., Inc. (doing business as Eby and Co.) of Wichita, Kans.

In addition to the two tunnels, the work includes construction of six diversion structures, three conduits, access roads, and an operations building. The work is located near Basalt, Colo., in Eagle and Pitkin Counties.

Four New Pump-Turbines at Grand Coulee

Four vertical-shaft pump-turbines will be installed at the Grand Coulee Pumping-Generating Plant in Washington under provisions of the contract awarded to Mitsui and Company (USA) Inc., of San Francisco.

At a cost of \$6,776,133, the four pump-turbines each are rated at 67,500 horsepower. The contract also calls for building and testing a pump-turbine model.

Construction at Spring Hill, Tualatin Project

Electric Technology Corporation of Tacoma, Wash., has been awarded a \$1,028,642 contract to complete Spring Hill Pumping Plant and Switchyard near Forest Grove, Oreg., and a contract for \$4,085,469 has been awarded to Underground Construction Co., Inc. of San Leandro, Calif., to construct Block 4B of the distribution system in Washington County, Oreg.

The distribution system and pumping plant are part of the Tualatin Project, which will provide water for irrigation, municipal and industrial use, water quality control, recreation, and fish and wildlife for Washington, Yamhill, and Clackamas Counties adjacent to the metropolitan area of Portland.

When completed, the pumping plant and its distribution system will provide water for the city of Hillsboro and will furnish a supplemental supply of irrigation water for about 10,350 acres of farmland. The 57 kilovolt switchyard will be used to supply power to the pumping plant.



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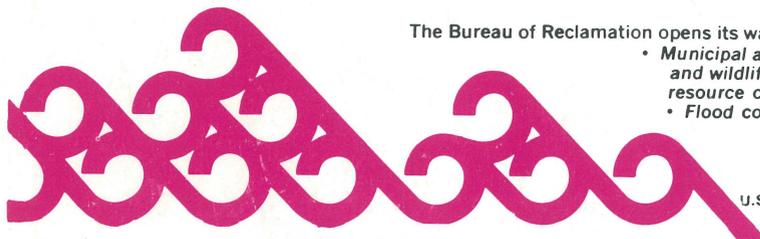
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