What is a State Water Project? An Introduction to the Rock Creek Project



Cooney and Glacier Lake Dams. Photos by DNRC

Cooney Reservoir Dam (MT-1) and Glacier Lake Dams (MT-68 & MT-1446)
Carbon County, Montana

Back to the Beginning...



Glacier Lake. Photo by DNRC


Image by Microsoft 365 Stock Images

The Problem?

- On the world stage:
  - World War I,
  - The Great Depression,
  - The Dust Bowl.
- On top of all that, in Montana:
  - Severe droughts.



Glacier Lake. Photo by DNRC

The Solution: State Water Conservation Board

1933

- Montana passed legislation to form a state water conservation program.
- Federal Public Works Administration (PWA) provided $5 million in funding.

1934

- House Bill 39 created the State Water Conservation Board (SWCB).



State Water Conservation Board. Photo by DNRC

Now What?
How do you make a State Water Project?

FIRST -

Rock Creek Project proposal was submitted to the SWCB in 1934.

THEN….



Glacier Lake Construction. Photo by DNRC

Water Rights

- Cooney Reservoir
  - Surface water
  - Priority dates between 1934 and 1937
  - Purpose: sale
- Glacier Lake
  - Surface water
  - Priority date 1934
  - Purpose: sale



Lower Drop Structure, Cooney. Photo by DNRC

Land Acquisition

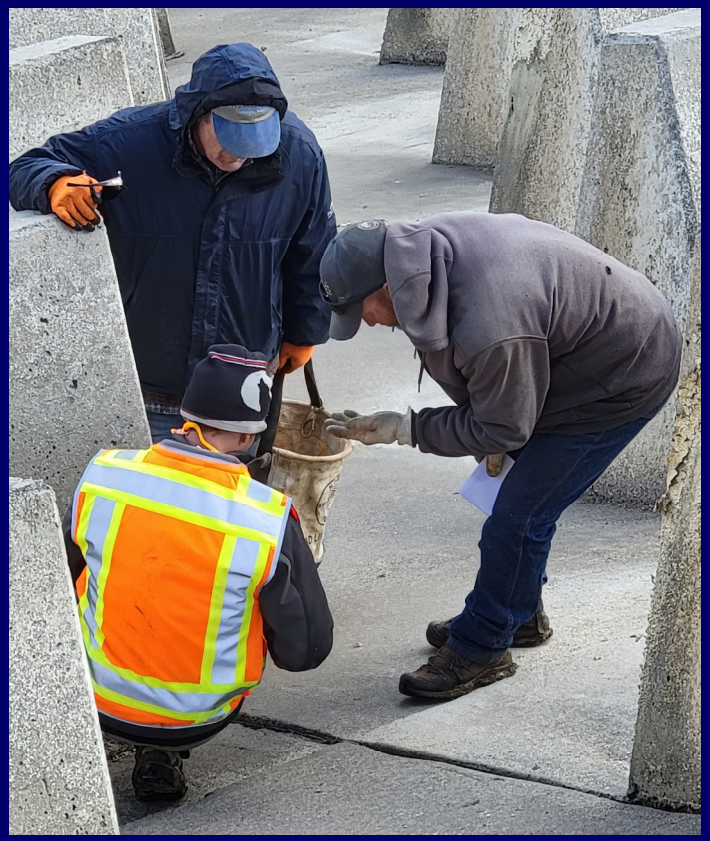
- The Montana Department of Natural Resources and Conservation (DNRC) acquired approximately:
  - 2,100 acres of land, for $60,000.
- Additional acres acquired from a U.S. Forest Service (USFS) Special Use Permit (SUP):
  - 160 acres of Custer National Forest, Montana,
  - 6 acres in the Shoshone National Forest, Wyoming,
  - SUP was superseded by permanent Ditch Bill Easement in 2025.



Glacier Lake. Photo by DNRC

Water User Association (WUA)

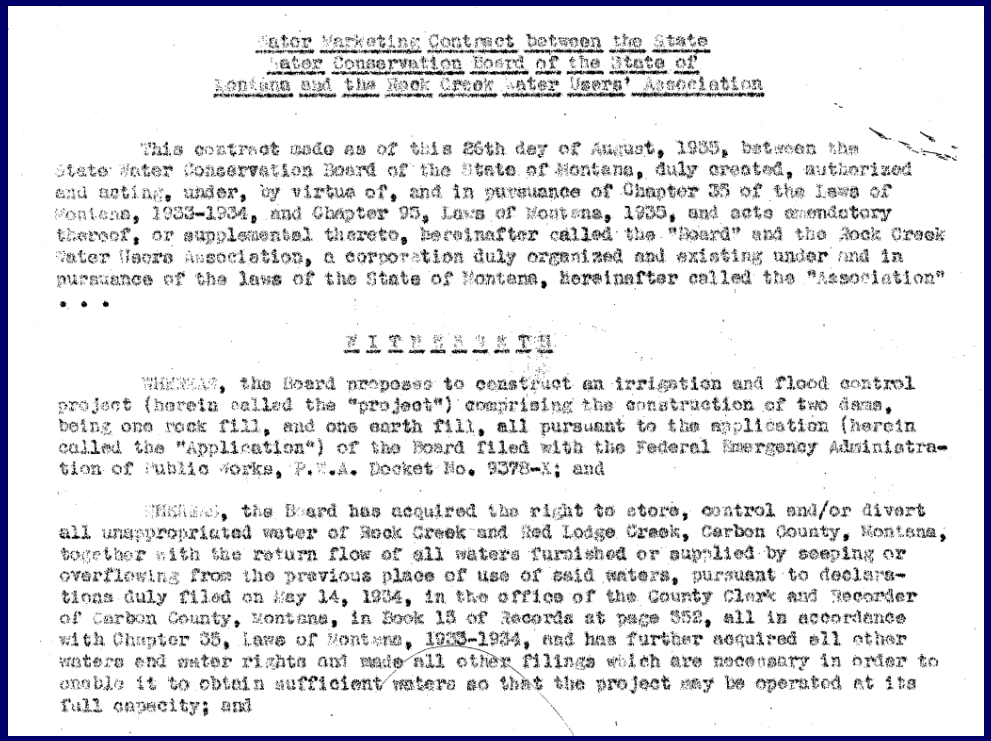
- Rock Creek Water User Association (RCWUA) formed in 1935. RCWUA:
  - is located near the projects,
  - handles day-to-day operations,
  - provides DNRC with observations of site conditions,
  - collects operation and maintenance (O&M) fees from water users.
- DNRC and the RCWUA work closely together to successfully manage projects. However, since DNRC is the owner and the responsible party for the projects, all work is approved by DNRC.



DNRC and WUA staff working on Cooney Lower Drop Structure. Photo by DNRC

Water Marketing Contract (WMC)

- Agreement between the SWCB and the RCWUA that outlines:
  - Marketable water: 31,500 acre-feet.
  - Beneficial uses include irrigation, stock watering, domestic, municipal, and other uses.
  - Periods of use May 1 through Sept. 30.
  - Funding:
    - O&M rates in 2000 were $1.60 per acre-feet/share,
    - O&M rates in 2025 were $4.00 per acre-feet/share for agricultural use.
- WMC signed Aug. 26, 1935.



Water Marketing Contract between the State Water Conservation Board of the State of Montana and the Rock Creek Water Users' Association

This contract made as of this 26th day of August, 1935, between the State Water Conservation Board of the State of Montana, duly created, authorized and acting, under, by virtue of, and in pursuance of Chapter 35 of the laws of Montana, 1933-1934, and Chapter 95, Laws of Montana, 1935, and acts amendatory thereof, or supplemental thereto, hereinafter called the "Board" and the Rock Creek Water Users Association, a corporation duly organized and existing under and in pursuance of the laws of the State of Montana, hereinafter called the "Association"

. . .

WITNESSETH

WHEREAS, the Board proposes to construct an irrigation and flood control project (herein called the "project") comprising the construction of two dams, being one rock fill, and one earth fill, all pursuant to the application (herein called the "Application") of the Board filed with the Federal Emergency Administration of Public Works, P.W.A. Docket No. 9378-X; and

WHEREAS, the Board has acquired the right to store, control and/or divert all unappropriated water of Rock Creek and Red Lodge Creek, Carbon County, Montana, together with the return flow of all waters furnished or supplied by seeping or overflowing from the previous place of use of said waters, pursuant to declarations duly filed on May 14, 1934, in the office of the County Clerk and Recorder of Carbon County, Montana, in Book 13 of Records at page 352, all in accordance with Chapter 35, Laws of Montana, 1933-1934, and has further acquired all other waters and water rights and made all other filings which are necessary in order to enable it to obtain sufficient waters so that the project may be operated at its full capacity; and

Cooney Dam

- On-stream earthen embankment dam and reservoir.
- High hazard potential dam.
- Work began in 1935.
- Completed late in 1936.



Cooney Dam Structures. Photo by DNRC

Glacier Lake

- Two on-stream rock fill dams with concrete upstream.
- High hazard potential dam.
- Glacier Lake construction was completed in late 1937.
  - “Construction of Glacier Lake was a rather spectacular undertaking because it was necessary to bring the materials into the site by a suspended cable 3,500 feet long, which transported materials to the top of the rock ledge 2,000 feet above.” (1961 Kelly Report)





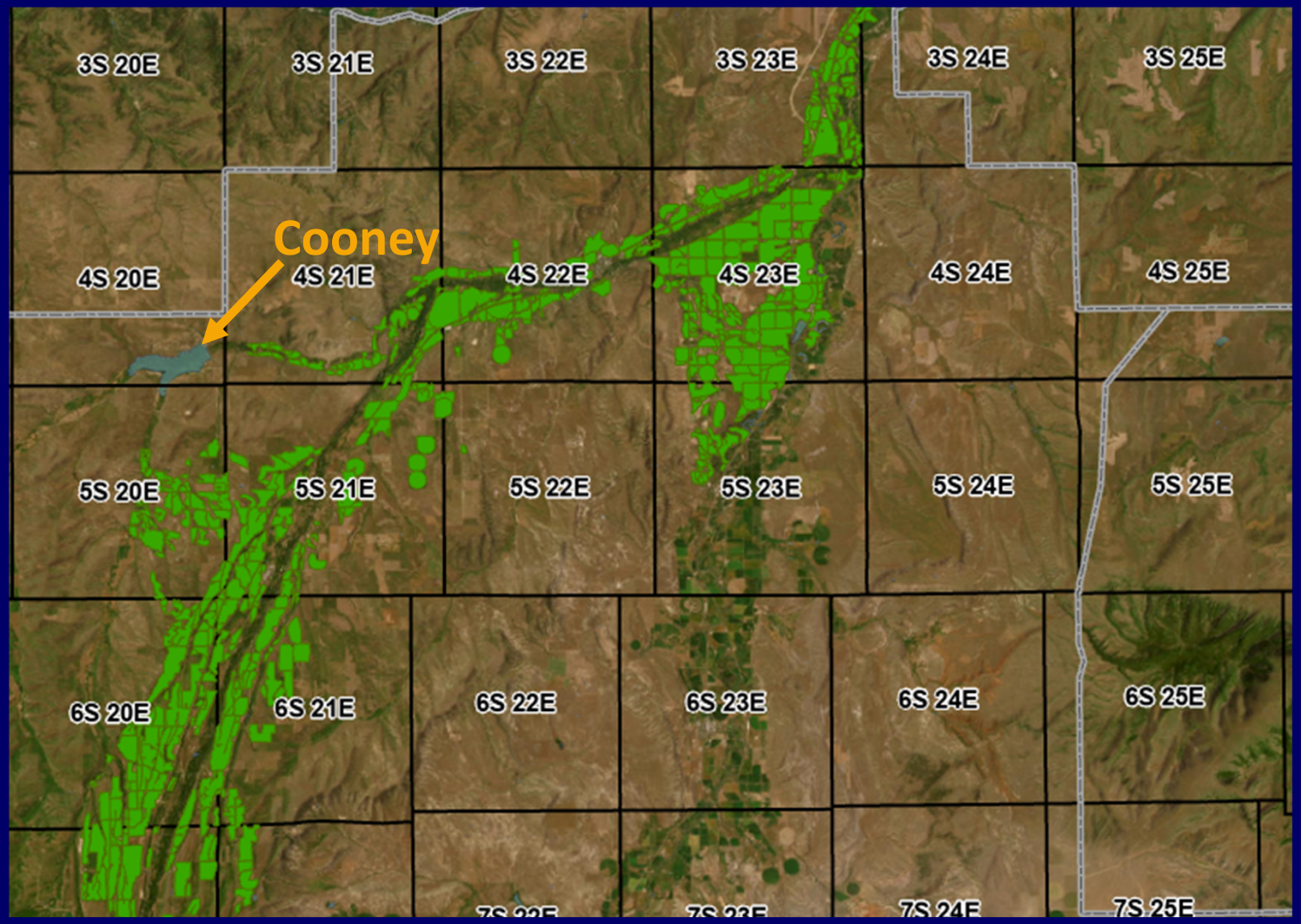


Glacier Lake Structures. Photo by DNRC

Water Purchase Contracts (WPC)

- Three party contracts between DNRC, RCWUA, and individuals (trusts, LLC, cities, etc.).
- RCWUA has 352 active contracts totaling a volume of 21,495 acre-feet.
- Components of a Water Purchase Contract:
  - Water purchase contract,
  - Subscription and pledge, and
  - Request for release and transfer.
- All contracts are drafted and signed by RCWUA, sent to DNRC for execution.

Approximate Irrigated Acres



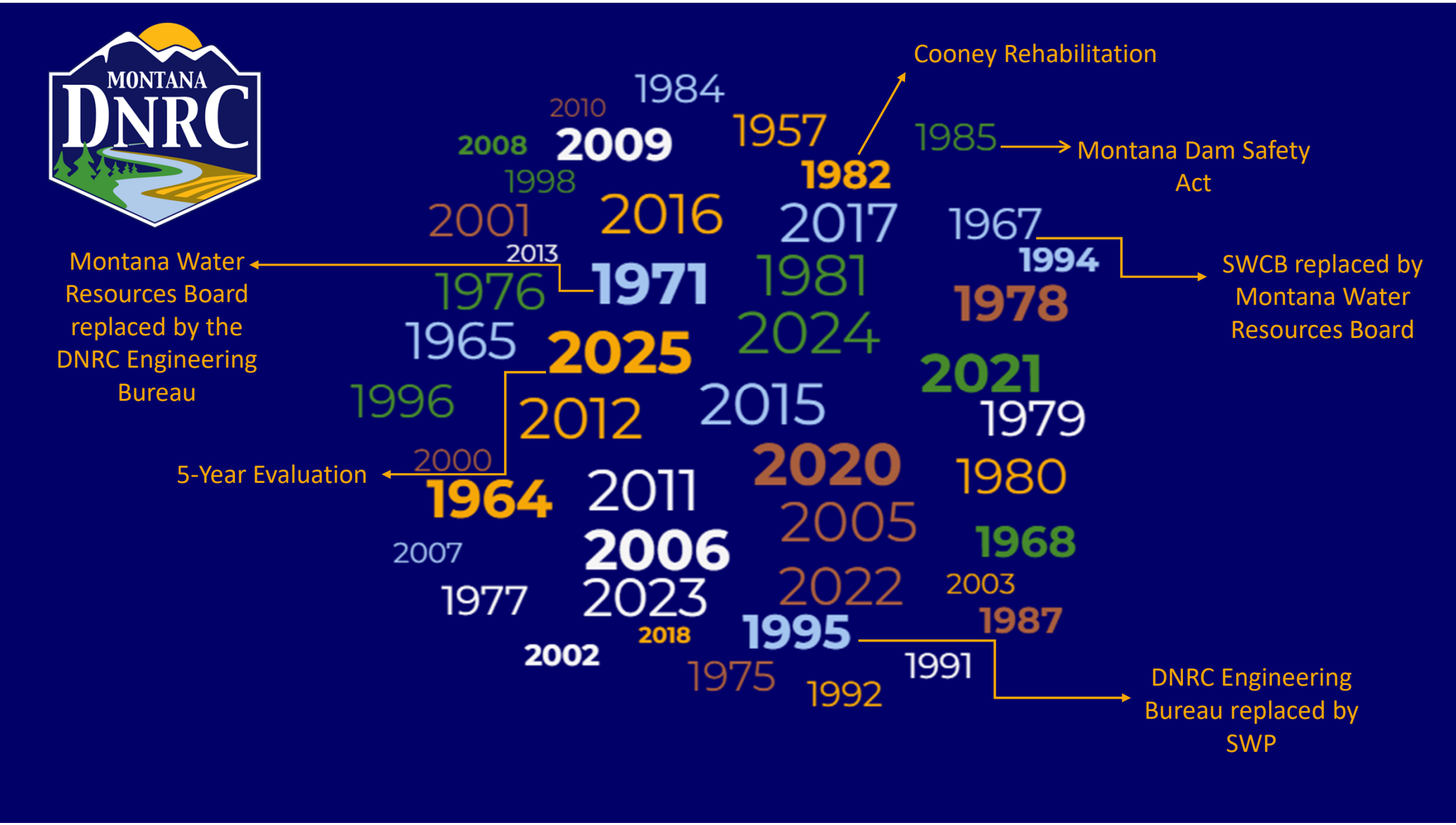
Glacier Lake

So, the project is built we're done, right?

...

Right?!?

Wrong, in 1937 within a year of construction, during the first use of Cooney's spillway there was extensive erosion to the unlined bedrock channel, SWCB added five drop structures to the spillway to prevent further erosion.


MONTANA
DNRC
1984
2010
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1968
2003
1987
Cooney Rehabilitation
Montana Dam Safety Act
SWCB replaced by Montana Water Resources Board
Montana Water Resources Board replaced by the DNRC Engineering Bureau
5-Year Evaluation
DNRC Engineering Bureau replaced by SWP



Glacier Lake Crest Leveling 2023. Photos by DNRC



Glacier Lake Driftwood Cleanup 2020



Cooney Controlled Burn 2022

Annual Projects

- Owner inspections.
- 5-year inspections/Operating Permit renewals.
- Annual meetings with WUA.
- Regional engineering monthly monitoring.
- Emergency Action Plan (EAP) updates and tabletop exercises.
- Lease billing/renewals (agricultural and state park).



Glacier Lake Outlet Channel. Photo by DNRC

Future Projects

- FWP state park lease renewal
- Glacier Lake spillway capacity re-evaluation.
- Glacier Lake Ditch bill provisions
- Cooney 5-Year Operating Permit renewal obligations
- Rehabilitation and maintenance needs go on for the life of the project.

Current Program Staff



Glacier Lake Dams and Gatehouse. Photo by DNRC

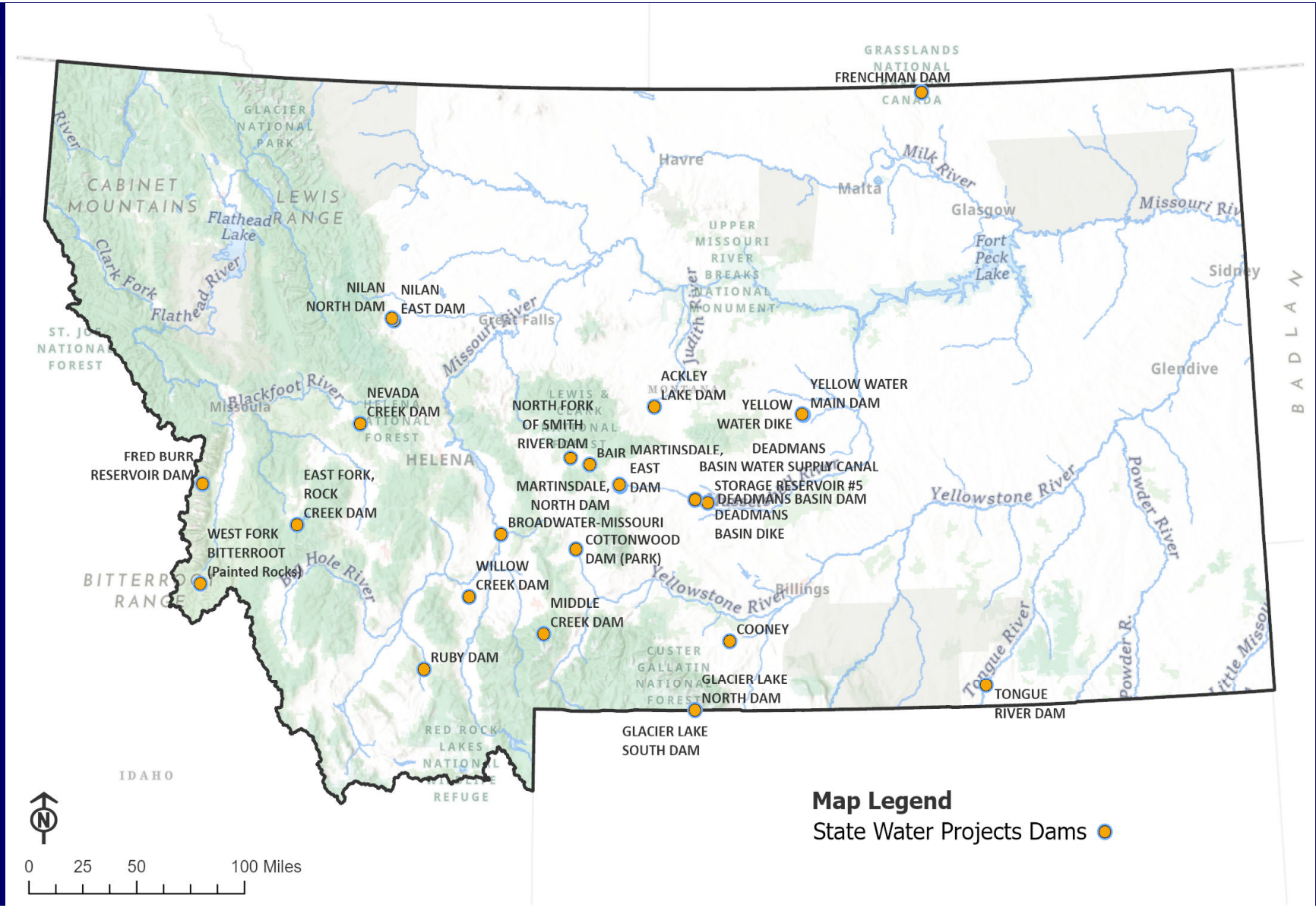
- Project Administration (4/4)
  - Bureau Chief
  - Dam Emergency Coordinator
  - Environmental Scientist
  - Administrative Support
- Project Management (4/7)
  - Instrumentation
  - Hydrography
  - Lands Management
  - Dam Safety
- Rehabilitation (5/6)
  - Rehabilitation Engineers
  - Canal Engineers
  - Fish, Wildlife, and Parks (FWP) Engineer
- Hydropower (5/6)
  - O&M Engineer
  - Federal Energy Regulation Commission (FERC) Lead
  - Hydro Plant Operators
  - Chief Dam Safety Engineer
- Total Staff 18/23

That is just one State Water Project

- DNRC owns 18 water projects
  - Total marketed water 322,847 acre-feet.
  - Total number of Water Purchase Contracts 1,872.
- Some perspective
  - Rock Creek Project…
    - 21,495 acre-feet is less than **7%** of totally marketed water in the state.
    - 352 Water Purchase Contracts.



Cooney Dam Crest. Photo by DNRC


FRENCHMAN DAM
NILAN NORTH DAM
NILAN EAST DAM
ACKLEY LAKE DAM
YELLOW WATER MAIN DAM
YELLOW WATER DIKE
NEVADA CREEK DAM
NORTH FORK OF SMITH RIVER DAM
BAIR
MARTINSDALE, EAST DAM
DEADMANS BASIN WATER SUPPLY CANAL
STORAGE RESERVOIR #5
DEADMANS BASIN DAM
DEADMANS BASIN DIKE
FRED BURR RESERVOIR DAM
EAST FORK, ROCK CREEK DAM
MARTINSDALE, NORTH DAM
WEST FORK BITTERROOT (Painted Rocks)
BROADWATER-MISSOURI
COTTONWOOD DAM (PARK)
WILLOW CREEK DAM
MIDDLE CREEK DAM
COONEY
RUBY DAM
GLACIER LAKE NORTH DAM
TONGUE RIVER DAM
GLACIER LAKE SOUTH DAM
GRASSLANDS NATIONAL
CANADA
GLACIER NATIONAL PARK
CABINET MOUNTAINS
LEWIS RANGE
Flathead Lake
Clark Fork
Flathead River
Havre
Malta
Glasgow
Milk River
Missouri River
UPPER MISSOURI RIVER BREAKS NATIONAL MONUMENT
Fort Peck Lake
Sidney
Great Falls
Missouri River
Judith River
Glendive
Blackfoot River
Missoula
HELENA
Big Hole River
BITTERROOT RANGE
Yellowstone River
Billings
Powder River
Tongue River
CUSTER GALLATIN NATIONAL FOREST
RED ROCK LAKES NATIONAL WILDLIFE REFUGE
IDAHO
BADLANDS
0 25 50 100 Miles
Map Legend
State Water Projects Dams

Hydropower





Photos by DNRC

Spillways













Photos by DNRC



Marmot on Glacier Lake Trail. Photo by DNRC