



WESTERN DAKOTA REGIONAL WATER SYSTEM

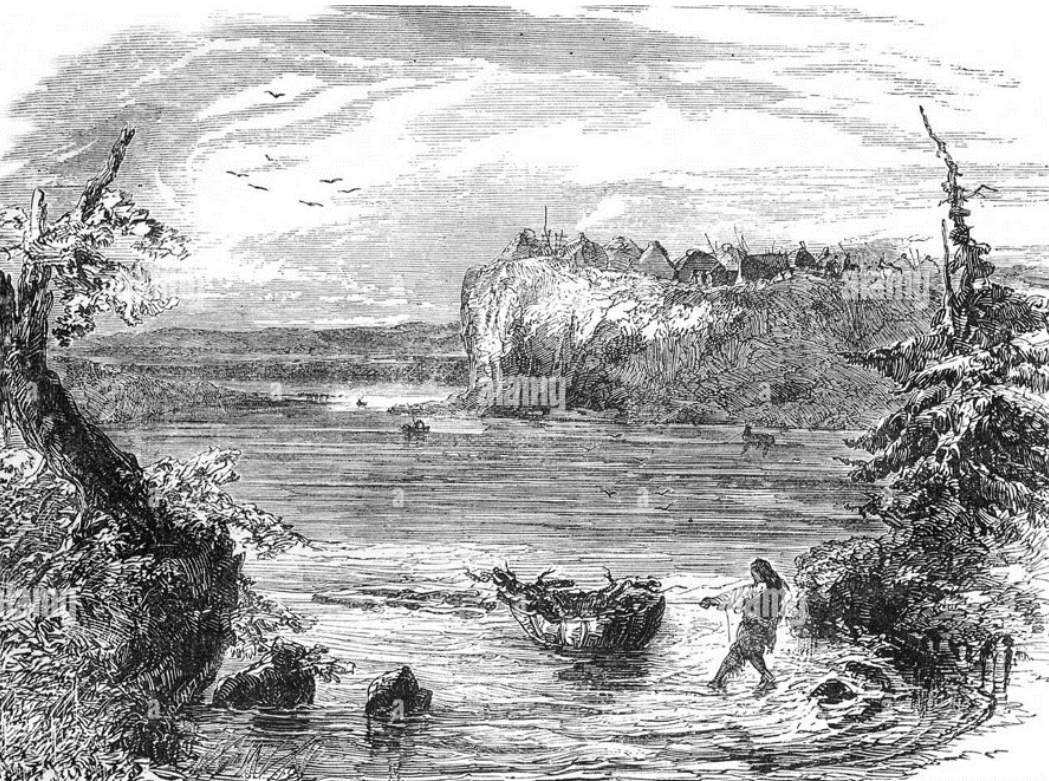
**Water...Water...Water:
Abundant, Quality
Water for Our Future**

*2023 South Dakota Planners Association Annual Conference
October 25, 2023*



MISSOURI RIVER: South Dakota's Greatest Resource

- **Physical, spiritual, economic artery for our region for thousands of years, bringing life blood to all those who call this part of the world home.**



Norbeck



MT. RUSHMORE NATIONAL MEMORIAL

Robinson

- **With European settlement, the need for water supply, flood control, and electrical power drove infrastructure development on the river.**

South Dakota Commitment to Hydropower

- **1917—Conceptual Plan for 13 Dam Sites on the Missouri River**
- **1918—Constitutional Amendment allowing the State of South Dakota to purchase, own, develop and operate plants for the development of power**
 - Upon streams of the state
 - At coal mines upon lands owned by the state
- **1919—Legislation creating the Hydro-Electric Commission**
 - Governor Peter Norbeck, Chair
 - Doane Robinson, Secretary of History
- **1921—Formation of the South Dakota Hydro Club**
 - Doane Robinson, J.W. Parmley of Ipswich, William Potts and Julius Skaug of Mobridge
- **1922—Initiated measure for on \$16 million dam**
 - Proponents—the South Dakota Hydro Club—“the Missouri can be made a great asset. Now it is a menace.”
 - Opponents—the South Dakota Tax Payer League—“funding the hydroelectric project would be like dumping South Dakotans’ money in the river.”
 - Defeated by a 2:1 margin



Norbeck

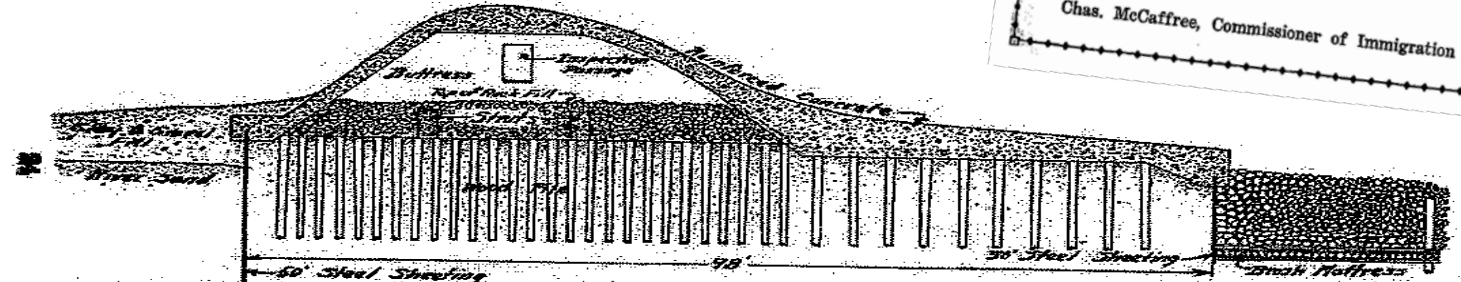
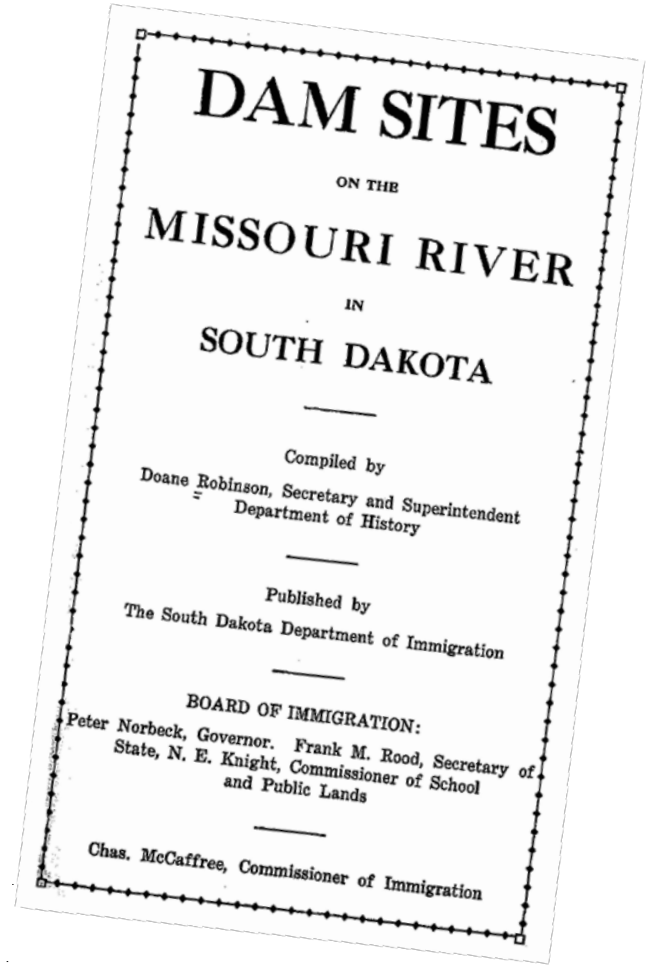
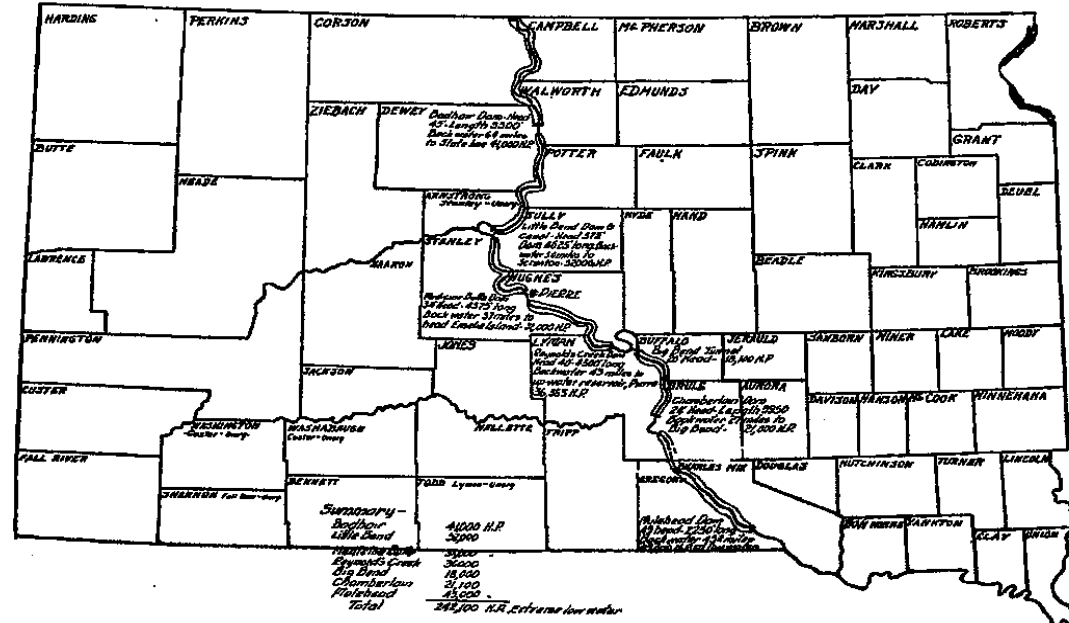


MT. RUSHMORE NATIONAL MEMORIAL

Robinson

1917

Excerpts from Dam Sites by Doane Robinson



Cross section of the reinforced concrete hollow dam upon sand foundation in the Wisconsin river at Prairie du Sac. This dam was built in 1914. The floods of three springs have passed over its crest without producing a single settlement crack. While experimental, it appears to be of a character entirely adapted to Missouri river conditions. It cost \$514 per linear foot.

MISSOURI RIVER: Pick-Sloan Plan

- **General Lewis Pick and the Corps of Engineers**
 - \$490 million
 - Focus—flood control and navigation
- **Bill Sloan and the Bureau of Reclamation**
 - \$1.3 billion
 - Focus—reclamation and irrigation
- **Compromise sought by President Roosevelt on August 7, 1944. Signed into law—December 22, 1944**
 - 5 new mainstem dams—Oahe, Big Bend, Garrison, Gavins Point and Ft. Randall
 - 83 million acre-feet of storage
 - 5 million acres irrigated
 - Multi-purpose, as amended



General Pick



Sloan

- **With European settlement, the need for water supply, flood control, and electrical power drove infrastructure development on the river.**

“Water is our
most precious
asset...”

President John F. Kennedy
delivering a speech
commemorating the Oahe Dam,
August 17, 1962.

(SD State Historical Society)



Recent Collaborative Efforts for Management of the Missouri River

2005- Present

- **Missouri River Recovery Implementation Committee (MRRIC)**
- **Missouri River Ecosystem Restoration Plan and Environmental Impact Statement (MRERP)**
- **Missouri River Authorized Purposes Study (MRAPS)**
 - Flood Control
 - Navigation
 - Irrigation
 - Power
 - Water Supply
 - Recreation
 - Fish and Wildlife
 - Water Quality

How Did the Current Efforts Start?

2017 Permit Renewal South Dakota Mines Study

- West Dakota Water Development District (WDWDD) commissioned a study with the South Dakota Mines to see if its Missouri River Future Use Water Permit should be renewed. The Report was presented in December 2019.

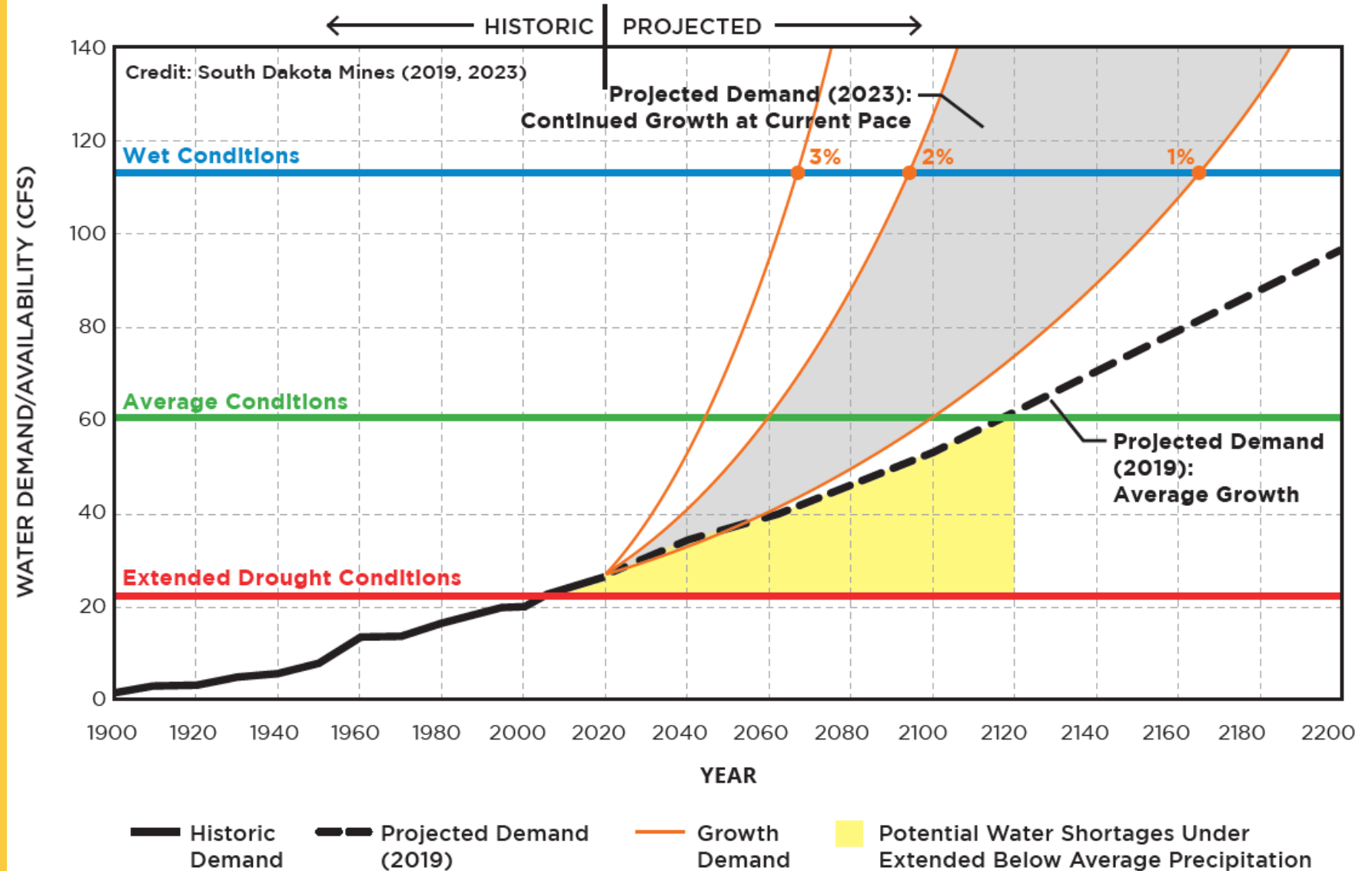


2020 Check-In with water distribution systems

- *Since no community can build the waterline alone*, WDWDD asked for a scan of potential water users and determine if there was interest from other communities to explore a possible project to bring Missouri River water to West River.

Historic and Projected Water Demand Based on Projected Population

Pennington County, SD



NEW

Current Demand Exceeds Availability During Drought



Growth of Population in Western South Dakota

“It’s a once in a generation, historic opportunity for South Dakota,” said Senator John Thune said, adding that it will ensure Ellsworth remains a vital part of the nation’s military. [The bomber] is expected to potentially double the size of the base’s personnel by bringing 3,000 more service members, out of military use.

Air Force Times
March 27, 2019

South Dakota’s Ellsworth Air Force Base will be home to B-21 bomber

By Stephen Groves, The Associated Press

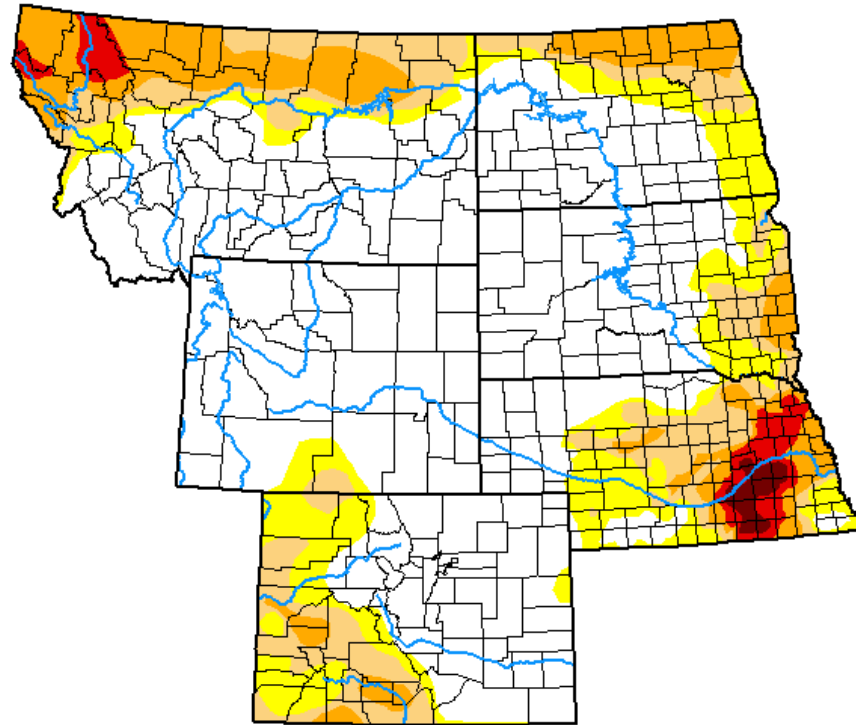
Jun 9, 2021



Drought in the Missouri River Basin

- NOAA: National Oceanic and Atmospheric Administration
- NIDIS: National Integrated Drought Information System
- DEWS: Drought Early Warning System

U.S. Drought Monitor USDA Northern Plains Climate Hub

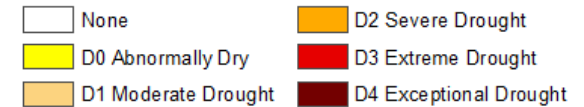


October 10, 2023
(Released Thursday, Oct. 12, 2023)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	62.69	37.31	24.19	12.60	2.72	0.63
Last Week <i>10-03-2023</i>	63.59	36.41	24.36	12.93	2.82	0.63
3 Months Ago <i>07-11-2023</i>	67.63	32.37	17.21	8.46	3.00	0.65
Start of Calendar Year <i>01-03-2023</i>	14.17	85.83	62.11	32.29	10.87	1.66
Start of Water Year <i>09-26-2023</i>	62.93	37.07	24.15	12.79	4.32	0.63
One Year Ago <i>10-11-2022</i>	10.89	89.11	66.74	32.64	10.15	1.82

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

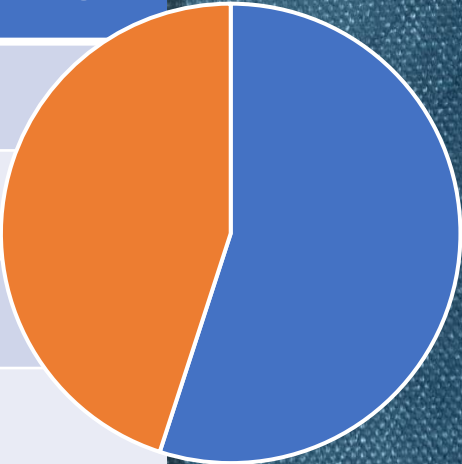
Brad Pugh
CPC/NOAA



droughtmonitor.unl.edu

Water Systems in Western South Dakota

County	Number of Water Systems
Butte	11
Custer	47
Lawrence	71
Meade	50
Pennington	146



■ Incorporated ■ Unincorporated

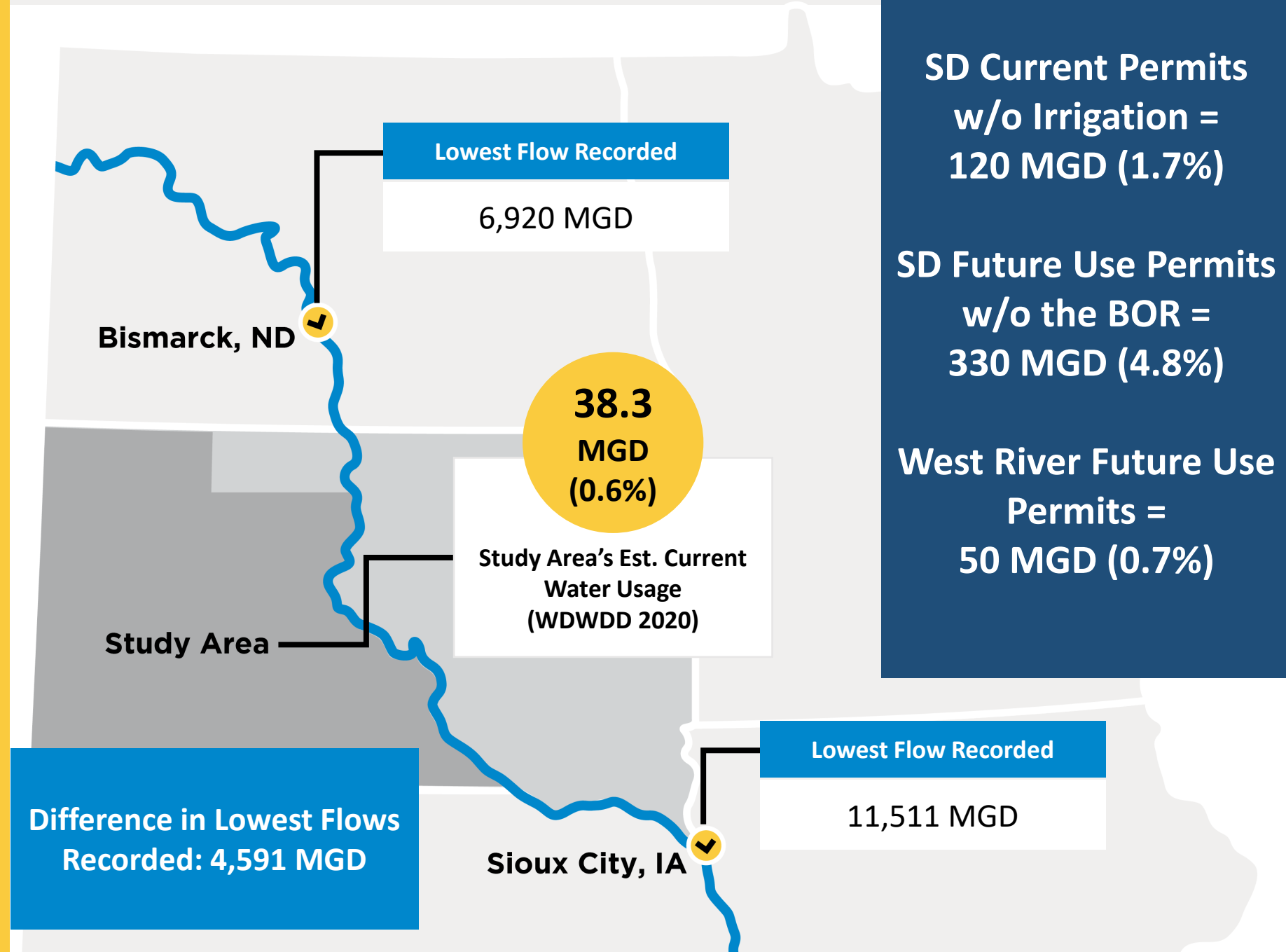
Challenges in developing projections for future water demands.

Q: Is there enough water in the Missouri River?

A: Yes!



Requested need is a drop in the bucket!
½ oz. per gallon of water



Water Use Trends in the Black Hills Region of South Dakota and Wyoming, 1990-2020 (2023)

Collaborative Agreement with Western Dakota Regional Water Systems to gain current data related to water use trends and the effects of additional water use on existing groundwater and surface water resources in western South Dakota. Specifically, the USGS will investigate and report on water use trends in the Black Hills regional from 1990 through 2020.

Task 1: Data Collection

Task 2: Data Analysis and Verification

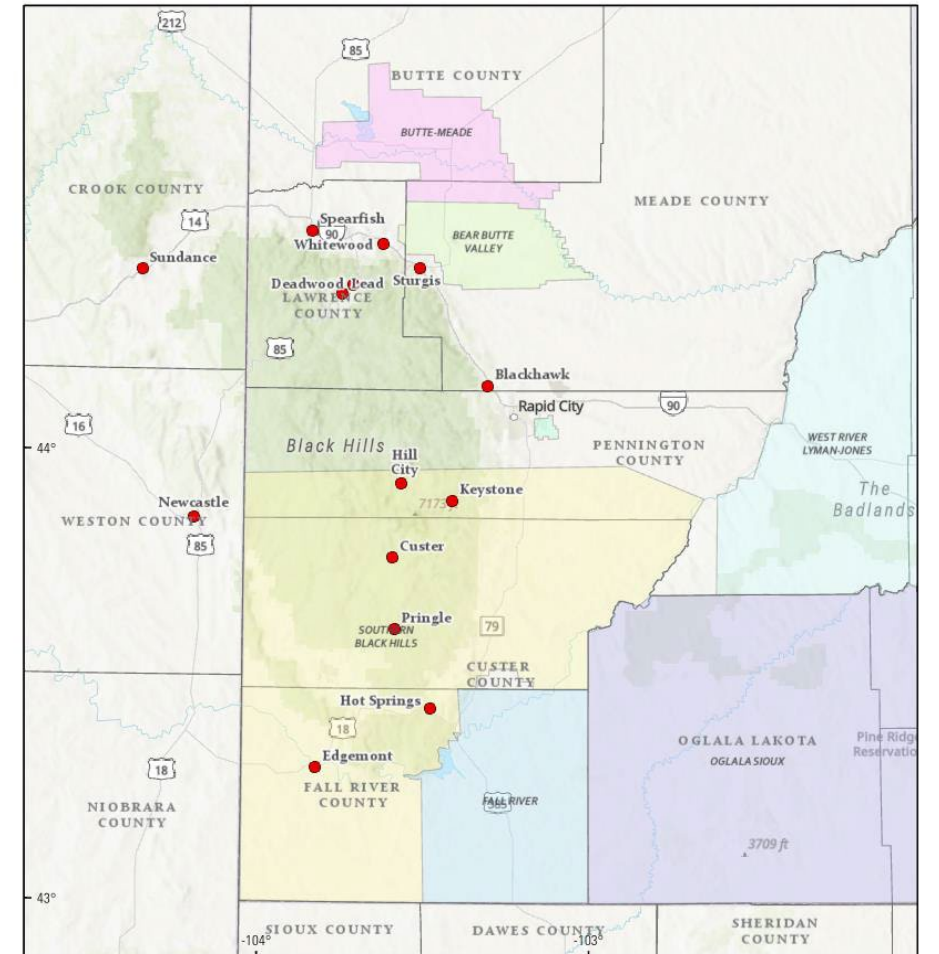
Task 3: Report Writing and Publication

South Dakota Counties:

- Butte
- Custer
- Fall River
- Lawrence
- Meade
- Pennington

Wyoming Counties:

- Crook
- Niobrara
- Weston



RESULTS

Cost Estimates for the Waterline (2019)



3-Foot Diameter Waterline

Capacity: 10,000 ac-ft/year

- Intake Pump Station \$7.5M
- Pipe (36") \$340/ft
- Booster Pumps \$5.9M
- Eng, legal, permits 25%
- Contingency 35%

TOTAL \$555M*

*does not include infrastructure for treatment

6-Foot Diameter Waterline

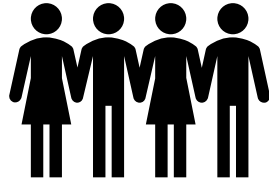
Capacity: 76,000 ac-ft/year

- Intake Pump Station \$45.5M
- Pipe (72") \$850/ft
- Booster Pumps \$39.8M
- Eng, legal, permits 25%
- Contingency 25%

TOTAL \$1,870M*

2020

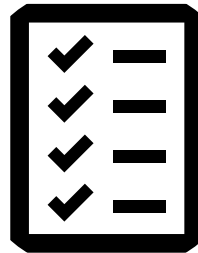
Missouri River Water
Study
to determine
Next Steps
for the
WDWDD
Future Use Permit



Scan of Stakeholders



Initial Informational
Meetings



Development of Next
Steps Plan

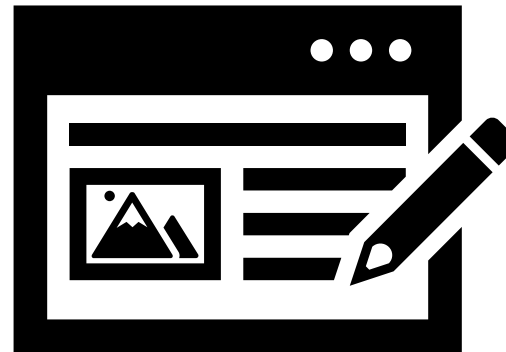
Report Recommendations



GOVERNANCE

New Non-Profit
Western Dakota Regional
Water System

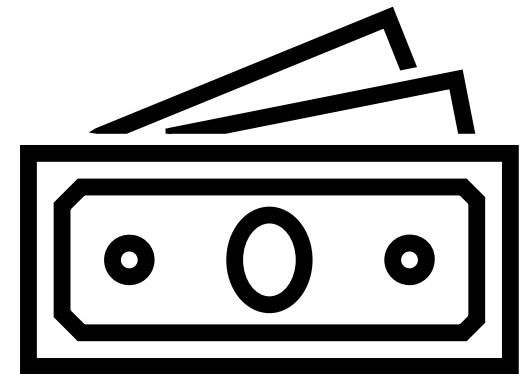
September 2021



TECHNICAL EVALUATION

Water Usage Evaluation

October 2021



FUNDING

State/Federal

April 2022



Board of Directors



Dale Tech, President
Public Works Director,
City of Rapid City



Doug Curry, Secretary/Treasurer
Public Works Director,
City of Box Elder



Mayor Teresa Hall
City of New Underwood



Jake Fitzgerald
Manager, West River/Lyman Jones



Nick Broyles
Public Works Director, City of Spearfish



Todd Williamson
Butte-Meade Sanitary Water District



Jim Martin
Colonial Pine Hills Sanitary District

Competitive Selection of Engineer



Cory Chorne, PE
Program Manager/
Governance



Dustin Dale, PE, CFM
Stakeholder Coordination



Miranda Kleven, PE
Funding/Financial



Bo Johnston, PE
Technical Evaluations



Grady Wolf
Environmental Compliance

PROCUREMENT SCHEDULE

November 2021 Statement of Interest

December 2021 Request for Proposal

January 2022 Interviews

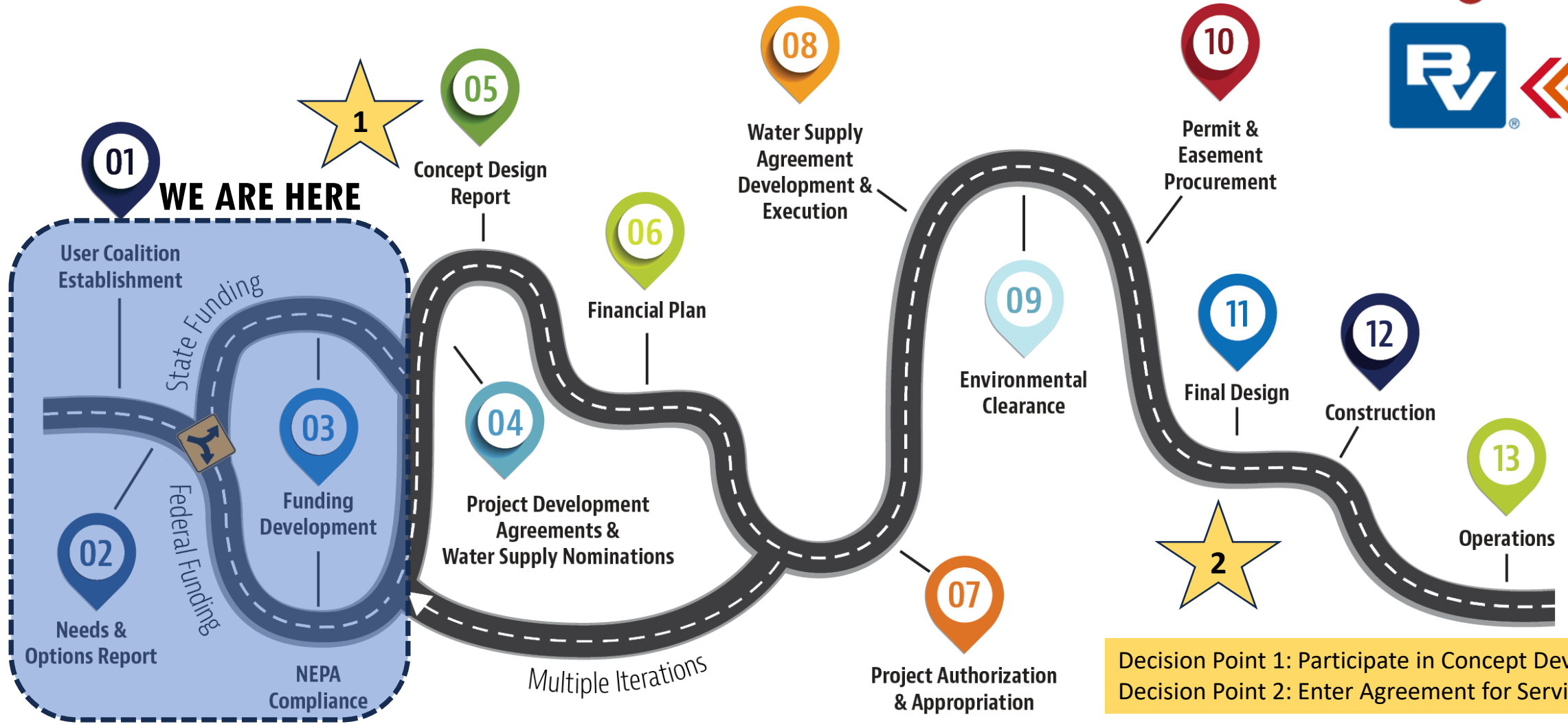
February 2022 Selection



Technical Evaluation

- **Contract with AE2S and Team and approve scope for Year 1**
- **Program planning and canvassing**
- **Preliminary alternatives for intake and routing**

More Than Just Engineering



4 Fundamental Questions



**WHO
NEEDS
WATER?**



**HOW MUCH
WATER DO
THEY NEED?**

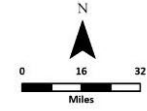
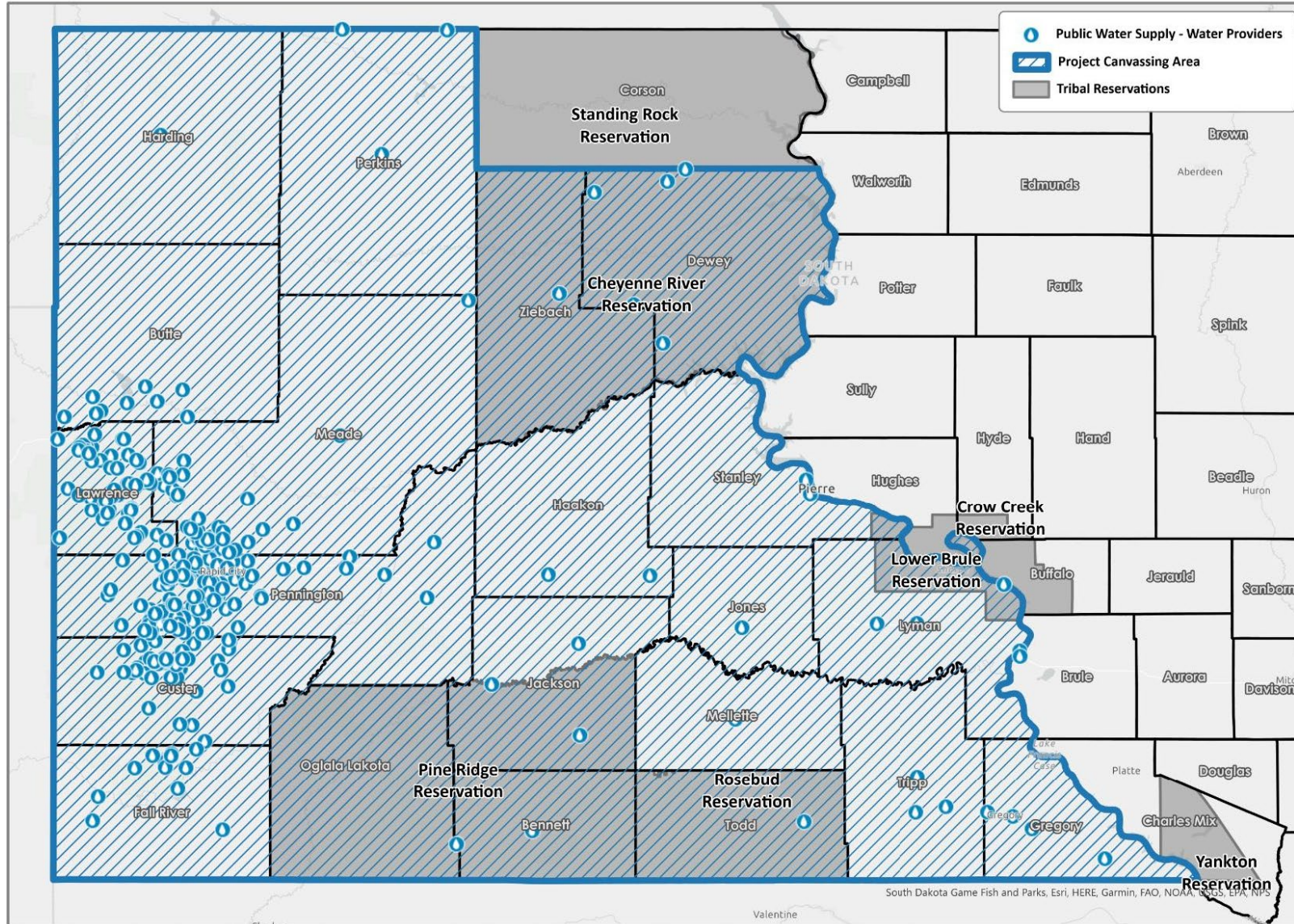


**WHEN IS THE
WATER
NEEDED?**



**HOW MUCH
WILL IT
COST?**

Who



Locator Map Not to Scale

Western South Dakota

WESTERN DAKOTA REGIONAL WATER SYSTEM

PROJECT CANVASSING AREA



Date: 3/31/2023



South Dakota Game Fish and Parks, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS

How Much

WESTERN SOUTH DAKOTA FUTURE USE PERMITS		
PERMIT HOLDER	PERMIT DATE	ACRE-FT/YR
West River WDD	09/02/76	5,515
West Dakota WDD (WDWDD)	09/03/76	10,000
City of Rapid City	12/13/76	28,880
Rapid Valley Sanitary District	01/18/22	6,050
City of Box Elder	02/25/22	2,100
Tripp Co Water	06/20/22	4,440
TOTAL		56,985

When is the Water Needed?



AVAILABLE WATER SUPPLY



POPULATION GROWTH



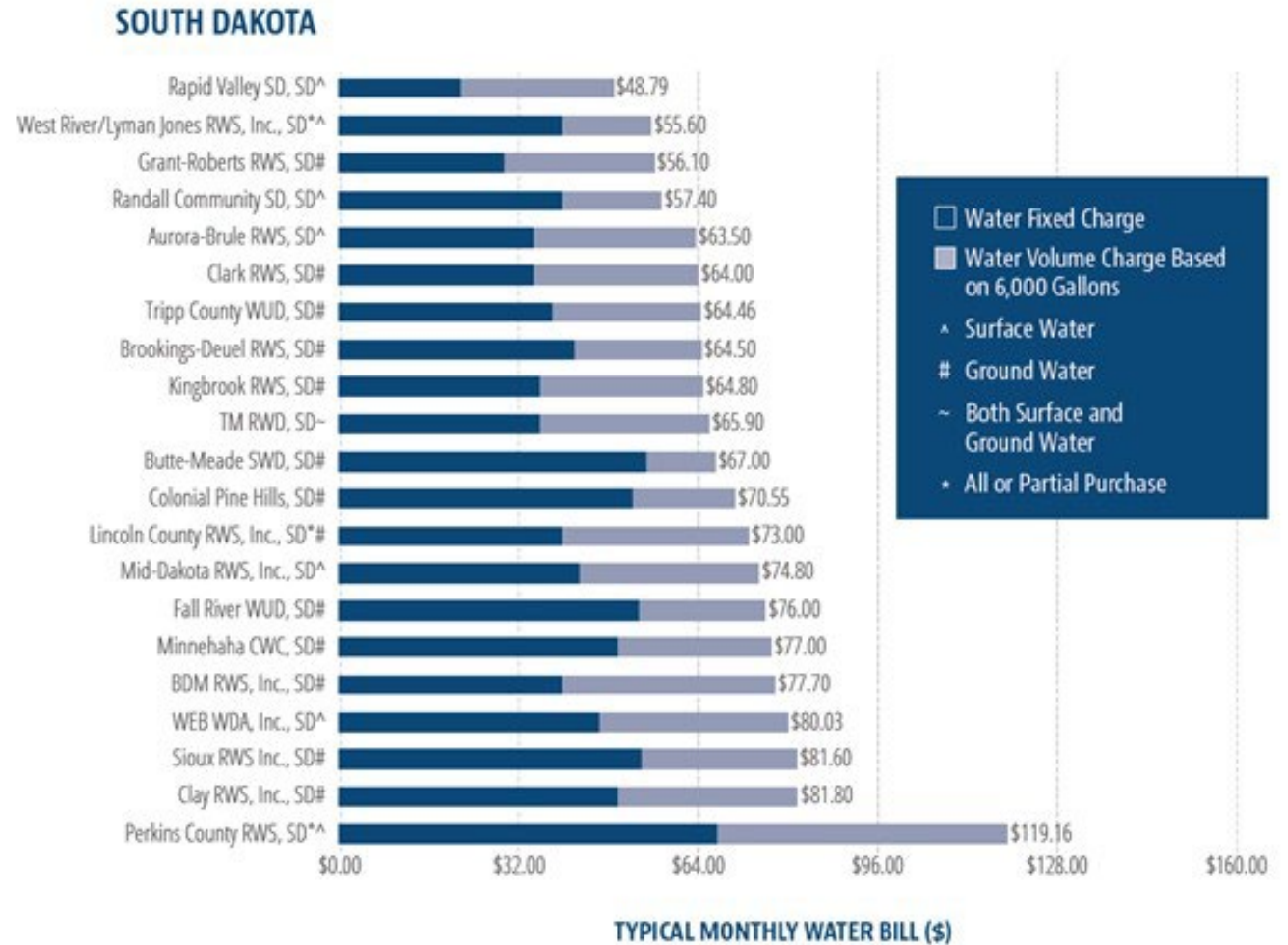
PENDING REGULATIONS



AGING INFRASTRUCTURE

What Will it Cost?

- Participants
- Conceptual alignment
- Funding
- Debt service
- Ownership and Operation
- O&M cost
- Contracts and minimum take requirements
- Affordability



Highlights from the Past Year

- **Membership**
 - 22 Members
- **Funding**
 - State: \$8M in American Rescue Plan Act and \$1M in State Water Resources Management System
 - Contributions and Membership:
- **Canvass of System Capabilities and Future Needs—350 systems**
- **Intake Options—3 possibilities near Oahe Dam**
- **Outreach and Information**
 - Newsletters, website, and social media
 - Small system workshops
 - Public meetings



Highlights from the Past Year: Membership 22 Members

- **Class 1 Member: Voting Member**
 - **\$1500 Annual Dues**
 - An organization with at least 200 separate and individual residential connections or commercial equivalent
- **Class 2 Member: Voting Member**
 - **\$750 Annual Dues**
 - An organization with less than 200 separate and individual connections or commercial equivalent or an organization with over 200 separate and individual connections that are fully built out
- **Associate Member: Non-Voting Member**
 - **\$375 Annual Dues**
 - Any firm, corporation, political entity, or subdivision not eligible to be a voting member but desiring to support the Association.
- **Supporting Individual – Non-Voting Member**
 - **\$50 Annual Dues**
 - Any individual interested party desiring to support the Association

Voting Members

Class I (>200)--\$1,500/year

- West River/Lyman Jones
- City of Rapid City
- City of Box Elder
- City of Spearfish
- Rapid Valley Sanitary District
- Bear Butte Water District
- Butte-Meade Sanitary District
- Southern Black Hills Water System
- Town of Hermosa
- City of Custer

Class II (<200)--\$750/year

- City of New Underwood
- Colonial Pine Hills

Non-Voting Members

Associate Member--\$375/year

- Pennington County
- Meade County
- Elevate Rapid City
- West Dakota Water Development District
- West River Water Development District
- West River Electric Association
- Weston Heights Homeowners Association
- City of Whitewood

Supporting Individual--\$50/year

Rocky Blare

Gary and Bobbi Drewes

BENEFITS OF MEMBERSHIP

- **All Members**
 - Attend the Annual Meeting
- **Voting Members**
 - Business Items
 - Board Members
- **Communications – All Members**
 - Newsletter
 - Notices
- **Quarterly Board Briefings for Members**
 - Review of past board meetings
 - Once a quarter, review past and upcoming board topics
- **Quarterly Technical Briefings (live and recorded)**
 - Invite technical experts to present on key issues
 - Once a quarter, present the latest scientific/engineering information



Initial Funding

West Dakota Water
Development District

South Dakota Community
Foundation

Elevate Rapid City

South Dakota Mines

2022-2023 Funding

- ***SD Legislature and SD Board of Water and Natural Resources***
 - \$8M from the American Rescue Plan Act (ARPA)
 - \$1M from the Surface Water Resources Management System (SWRMS)
- ***Local Sources***
 - \$303,500 for operations and matching funds
- ***Federal Funding for Studies***
 - 2022—2023--request made to Congress for authorization for Bureau of Reclamation (Reclamation) Feasibility Study



LOCAL MATCH

- West River Water Development District (\$25,000)
- City of New Underwood (\$1,000)
- Pennington County, (\$50,000)
- City of Rapid City, (\$100,000)
- Meade County (\$7,500)
- Rapid Valley Sanitary District - Water Service (\$10,000)
- Elevate Rapid City (\$25,000)
- City of Box Elder (\$50,000)
- West Dakota Water Development District (\$25,000)
- City of Spearfish (\$10,000)

START-UP SUPPORT

- South Dakota Community Foundation (\$20,000 Grant)
- Elevate Rapid City (in-kind)
- South Dakota Mines (in-kind)

TOTAL = \$303,500

FAQ's

- **Who receives the water?**
 - WDRWS will provide bulk water to water systems.
- **Who owns the project?**
 - The non-profit WDRWS system, comprised of water systems and supporting organizations and individuals.
- **Will the water be used for mining?**
 - No, the water will be for municipal and rural use, excluding mining and irrigation.
- **Will the water leave the Missouri River basin?**
 - No, all the water that runs off western South Dakota returns to the Missouri River through its tributaries.



Thank You!

To learn more about this important project for the future of western South Dakota, please contact:

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Executive Director
cheryl.chapman@wdrws.org
605-484-0334