

2009 SDACD Annual Conference Tour



September 21, 2009



Belle Fourche River Watershed Partnership

A group of local people and organizations coordinating available resources to address concerns associated with the Belle Fourche River Watershed





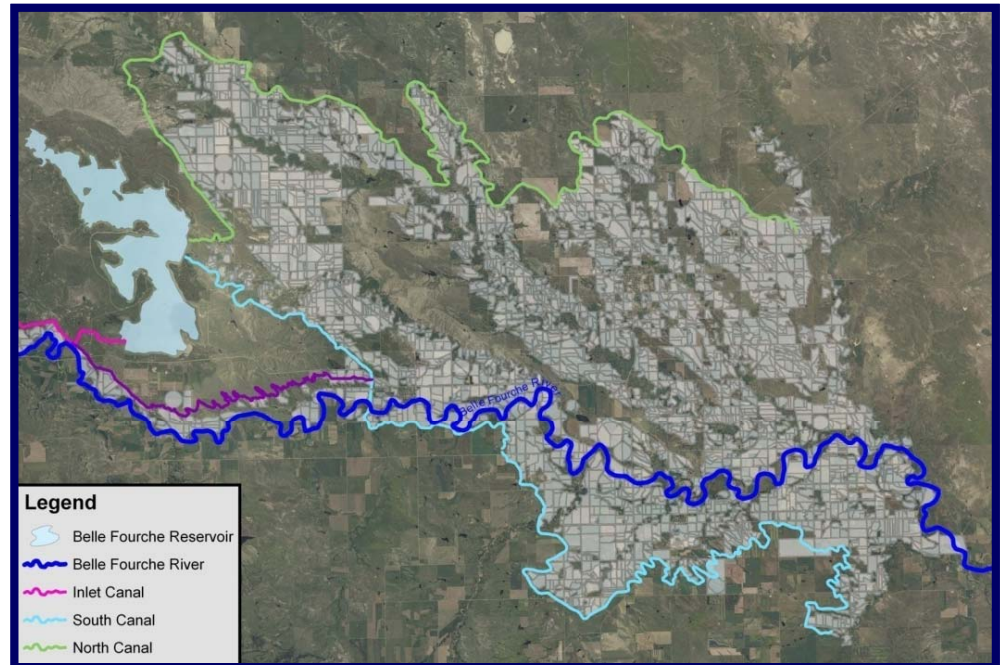
Belle Fourche River Watershed Partnership

- ❖ **Started Mid-1990, Formalized 2003**
- ❖ **Nonprofit 501(c)3**
- ❖ **Membership**
 - *Four voting members*
 - Butte, Elk Creek, and Lawrence Conservation Districts
 - Belle Fourche Irrigation District
 - *All stakeholders welcomed*
 - United States Geological Society (USGS)
 - Bureau of Reclamation (BOR)
 - Natural Resources Conservation Service (NRCS)
 - South Dakota Department of Environment and Natural Resources (SD DENR)
- ❖ ***Over \$14 Million Into the Watershed Since 2004***



Belle Fourche Irrigation District

- ❖ **57,183 Acres**
- ❖ **Over 480 Individual Farmers**
- ❖ **Crops**
 - *Alfalfa, corn, wheat, and barley*
- ❖ **Surface Irrigation Dominated**
- ❖ **Annual Water Availability**
 - *~13" Precipitation*
 - *~20" Allotted water*





Irrigation Delivery

Delivery Improvements

Upgraded Water Order/
Billing System
Complete

Date	Volume	Cost	...
1/1/2010	1000	1000	...
2/1/2010	2000	2000	...
3/1/2010	3000	3000	...
4/1/2010	4000	4000	...
5/1/2010	5000	5000	...
6/1/2010	6000	6000	...
7/1/2010	7000	7000	...
8/1/2010	8000	8000	...
9/1/2010	9000	9000	...
10/1/2010	10000	10000	...
11/1/2010	11000	11000	...
12/1/2010	12000	12000	...

Canal Automation
27 Units



Canal Lining
2 Miles



Canal Operational Model
Complete





Irrigation Application

On-Farm Improvements

Surface to
Sprinkler Irrigation
25 Pivots



Open Ditch to Pipe
70,000 feet



Irrigation Scheduling





Inlet Canal Lining

❖ Phase I

- *Completed fall 2007*
- *1/2 mile lined*

❖ Phase II

- *Completed fall 2008*
- *1/2 mile lined*

❖ Phase III

- *Scheduled fall 2010*
- *1 mile lined*





Before Lining





After Lining



5,000 Acre-Feet/Year Conserved!!!



Belle Fourche Irrigation District Automated Structures

- ❖ 13 Stand-Alone Check Gates
- ❖ 8 Real-Time Check Gates
- ❖ 17 Real-Time Flow Measurement Structures
- ❖ 5 Real-Time Lateral Head Gates





Conservation Innovation Grant (CIG) Project Overview

❖ 3-Year Project Funded by NRCS

❖ Components

→ *Extensive weather network*

- Four weather stations
- Nine rain gage sites

→ *Soil moisture stations*

→ *Web-based irrigation scheduling consultant for producers (20 total producers)*

- Easy to set up
- Accurate, reliable, and adaptable





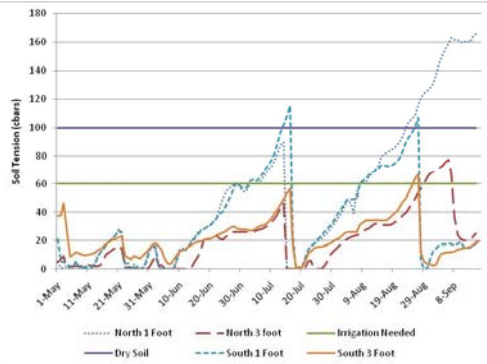
Calculating a Water Balance

- ❖ **Available Water = Previous Day Available Water + Rainfall + Irrigation – Evapotranspiration (ET)**
- ❖ **Rainfall – Collected From Installed Rain Gages**
- ❖ **Irrigation – Entered Into System**
- ❖ **ET – Calculated On Site Using Wind Speed, Solar Radiation, Temperature, and Humidity Sensors**



Results

SoilMoisture



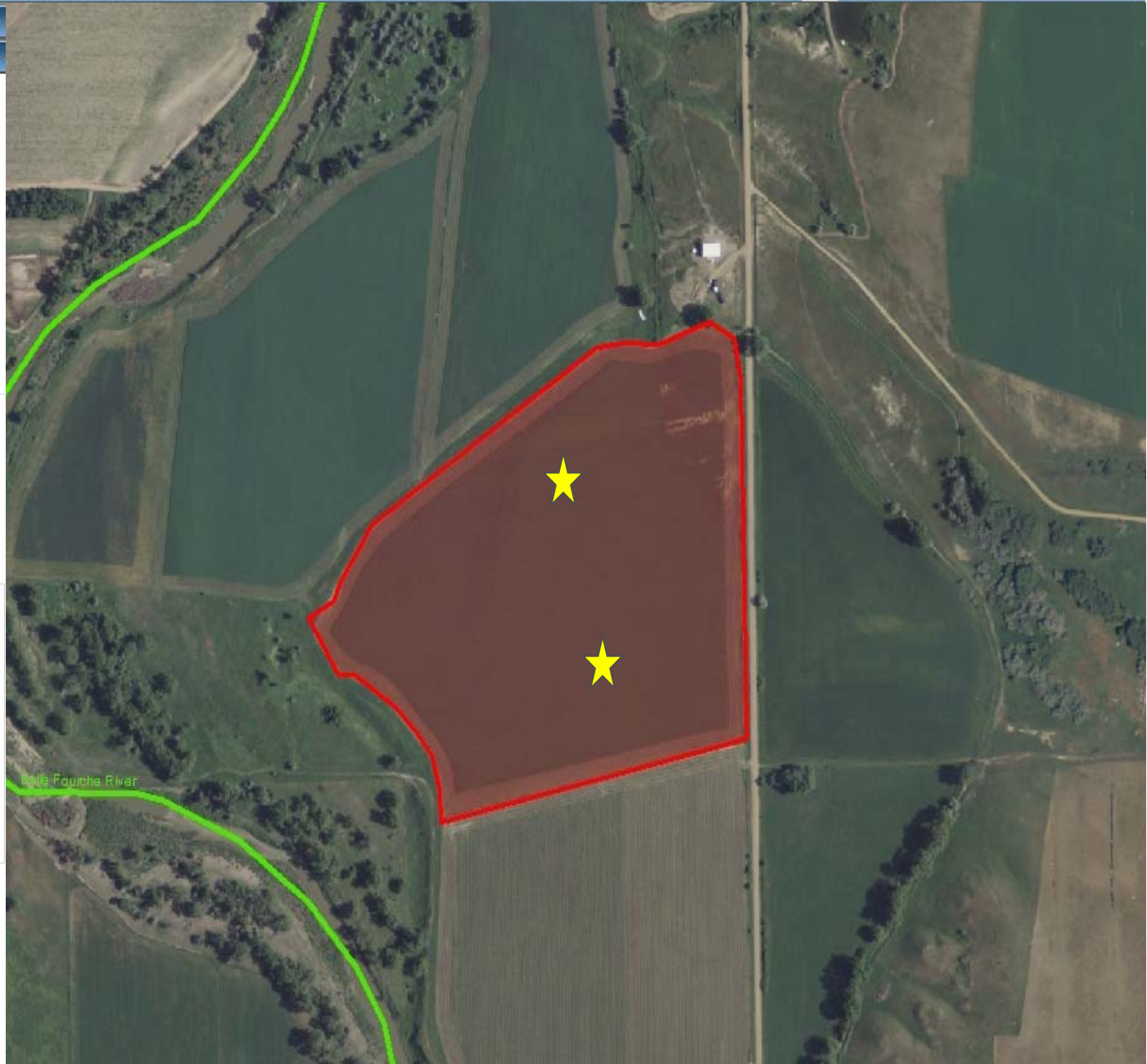
Current Readings:

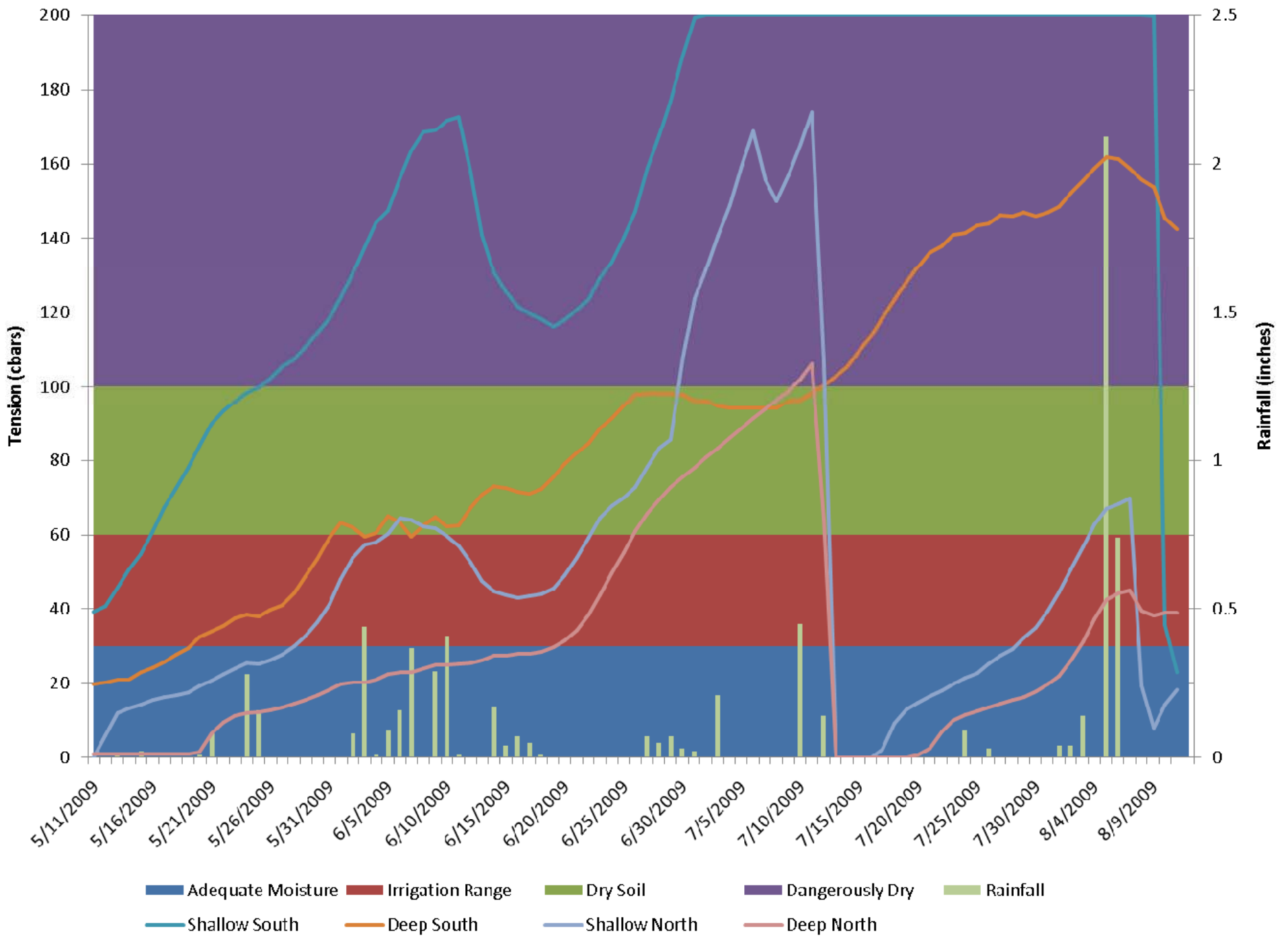
Site 1 Shallow = 20 cbar
Site 1 Deep = 22 cbar
Site 2 Shallow = 175 cbar
Site 2 Deep = 22 cbar



Current Calculated Soil Moisture = 25%

[Edit Soil Moisture](#)







Conservation Innovation Grant Cooperators

❖ 17 Total Cooperators

❖ 850 Acres

❖ Crops

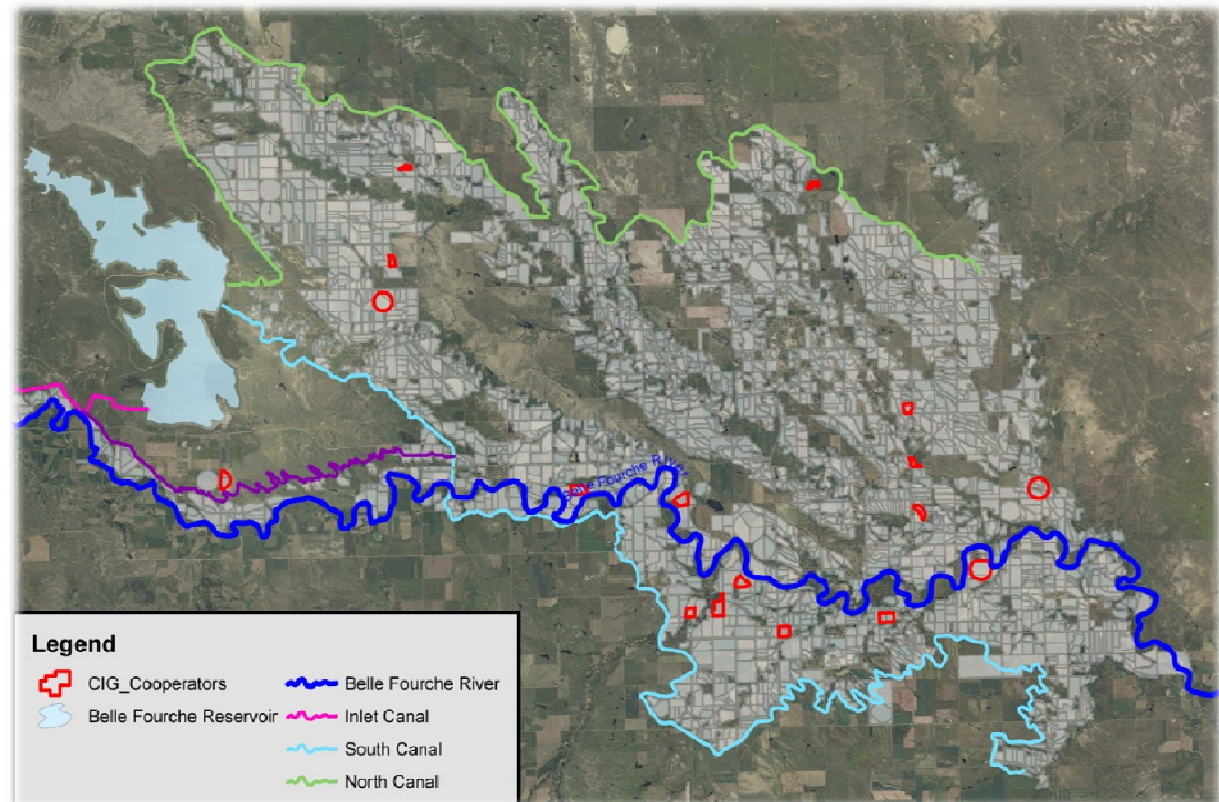
→ *Alfalfa*

→ *Corn*

→ *Barley*

→ *Soybeans*

→ *Wheat*





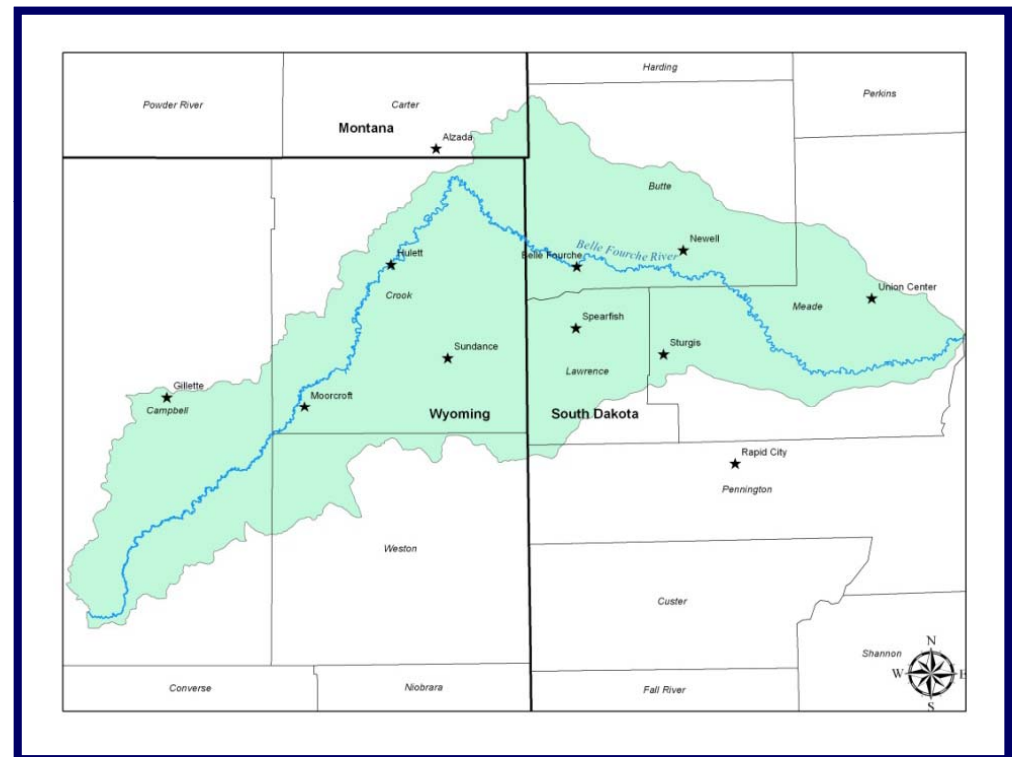
Rangelands and Water Quality





Belle Fourche River Watershed Rangelands

- ❖ 74% Native Rangelands
- ❖ 15% Public Lands
- ❖ Dense Clay Soils
- ❖ Western Wheat Grass/
Blue Grama
- ❖ Primarily Cattle
Operations With
Some Sheep





Range Planning

- ❖ **Over 200,000 Acres Planned**
- ❖ **15,000 Riparian Acres**
- ❖ **25 Ranch Operations**





Range Implementation

❖ Treated Over 200,000 Acres With 319 Funds





Cooperative Conservation Partnership Initiative (CCPI)

- ❖ **Prioritized EQIP Funding for the Watershed**
- ❖ **Targeted for Range Improvements**
- ❖ **3.5 Million Over 5 years**





Thank You!!

www.bellefourchewatershed.org

