Central Big Sioux River Watershed Environmental Markets

Moody County Conservation District

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Environmental Market Programs for Pollutant Reductions

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Project Background

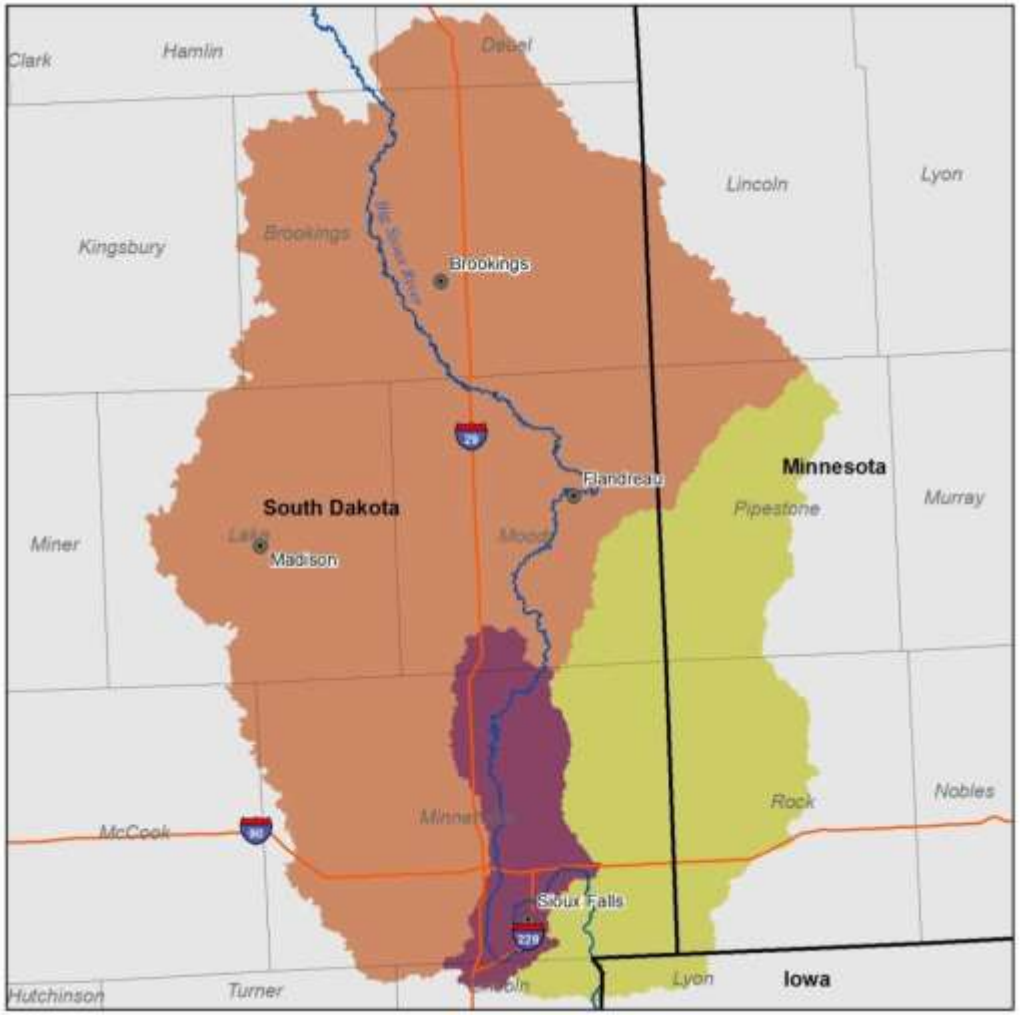
Who: Moody County Conservation District

What: Evaluated environmental market approaches

How:

- Establish a Technical Review Team
- Benchmark salient programs
- Assess pollutant suitability
- Assess financial attractiveness
- Develop market rules and infrastructure
- Test program framework
- Public outreach

Project Area



Environmental Markets Considered

- **Water Quality Trading**
- **Payment for Ecosystem Services (PES)**

  PES program -- A buyer pays another entity to provide a new environmental benefit

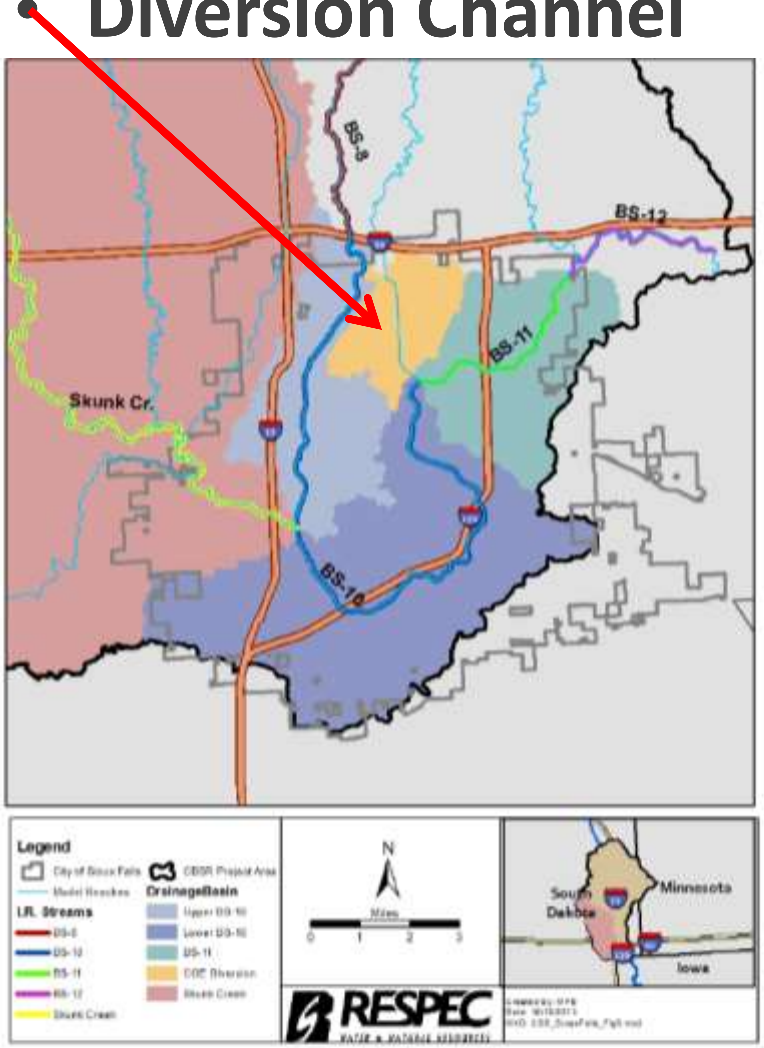
  - ***Municipality Examples:***
  - Reduce nitrates in wellhead protection areas for drinking water supply
  - Reduce stream peak flows and/or increase the base flows
  - Reduce water quality parameter loadings upstream of river reaches flowing through the city
- **Basic PES program currently in operation**

Pollutant Suitability Assessment

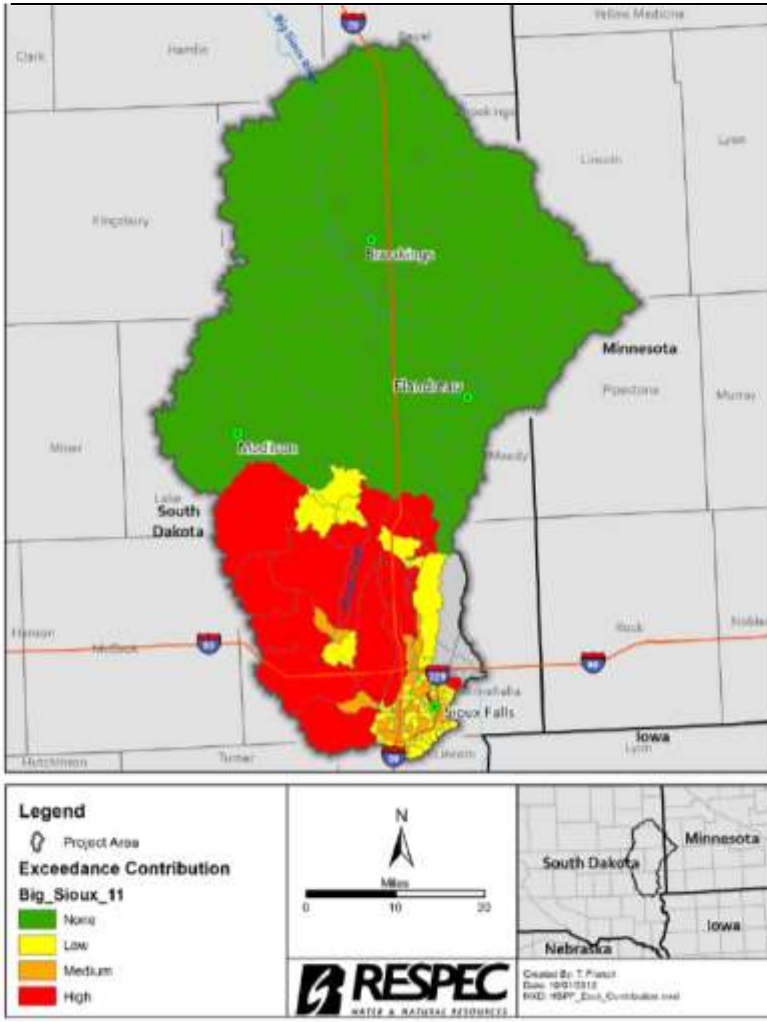
- ***Total Suspended Solids***
- ***E. coli* bacteria – A pathogen, and used as an indicator of other pathogens**
- **Are there adequate load reduction drivers?**
- **Consideration of persistence throughout different flow regimes**
- **Determination of supply to demand ratios**
- **Equivalent water quality parameter forms?**

Big Sioux River and *E. coli* Persistence

- **Diversion Channel**



Bacteria Contributions to BS 11 During Exceedances



Suitability Findings

- **Cost effective, pennies on the dollar**
- **Environmental markets alone are not sufficient**
- **Agricultural/urban sources are not fully comparable regarding forms of pathogens**
- ***E. coli* bacteria have a limited persistence**
- **The river diversion structure increases complexity**
  - Upper BS-10 and the unnamed tributary to Skunk Creek have limited potential for offsetting local stormwater loading with agricultural generated credits
  - In key reaches, bacteria is not completely flushed away
- **Inadequate load reduction driver for total suspended solids**

Conservation District

Enhanced Payment for Ecosystem Services Options

- **Public transparency**
- **Third party checks and balances**
- **Application and/or request for projects windows (e.g., open windows, reverse auctions, etc.)**
- **Cost-effective site selection**

Program transparency and third party oversight strengthens support when requesting longer permit compliance schedules and/or a variance

Pilot Testing

- **Three landowners/livestock producers in the Skunk Creek Watershed have agreed to test the protocols**
  - One livestock feeding operation
  - Two livestock grazing operations

Pilot Test Conservation Measures

Seasonal Riparian Area Management (SRAM)

(Before)

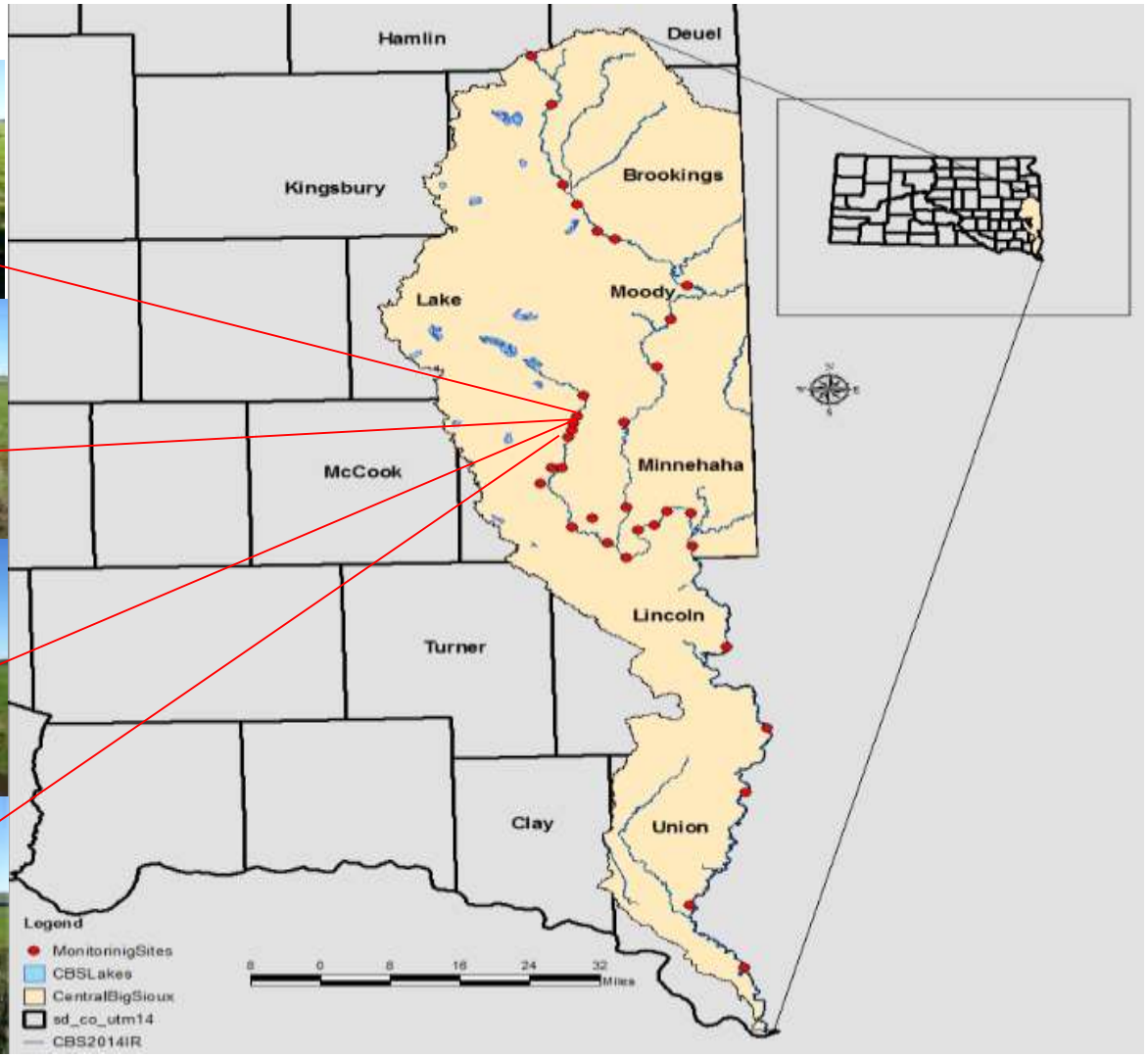
(After)

Pilot Test Conservation Measures

AFO Heavy Use Lots; Bacteria in Runoff Loads Streams During Large Events (Before)

Move Cattle to Remote, Mono-slope Barns Sites; Preventing Runoff (After)

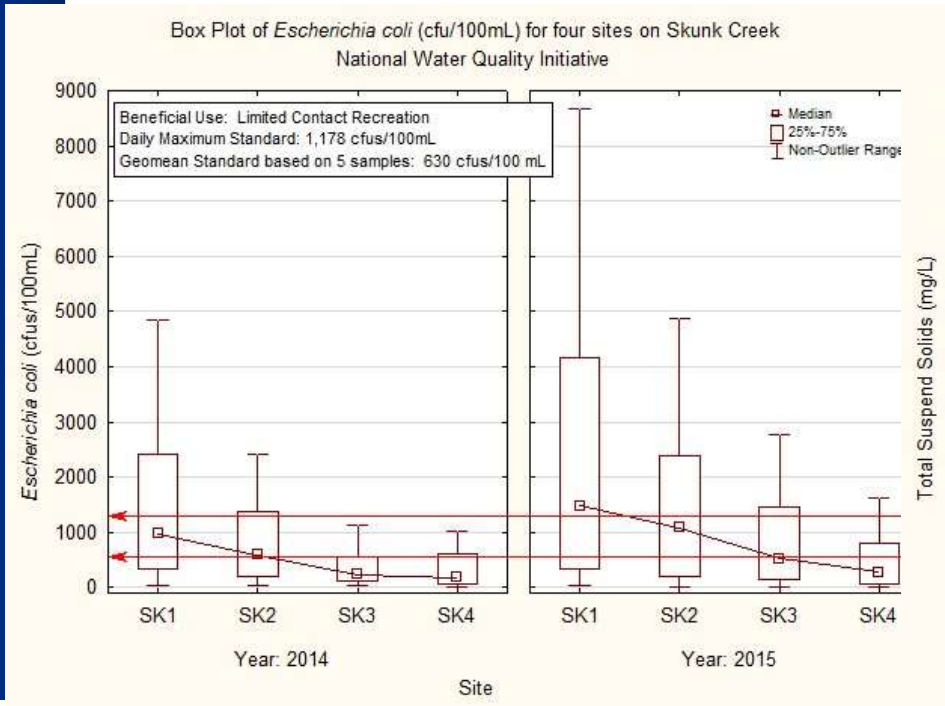
SRAM Monitoring



SRAM Monitoring

- **Water Quality monitoring results**

E. Coli



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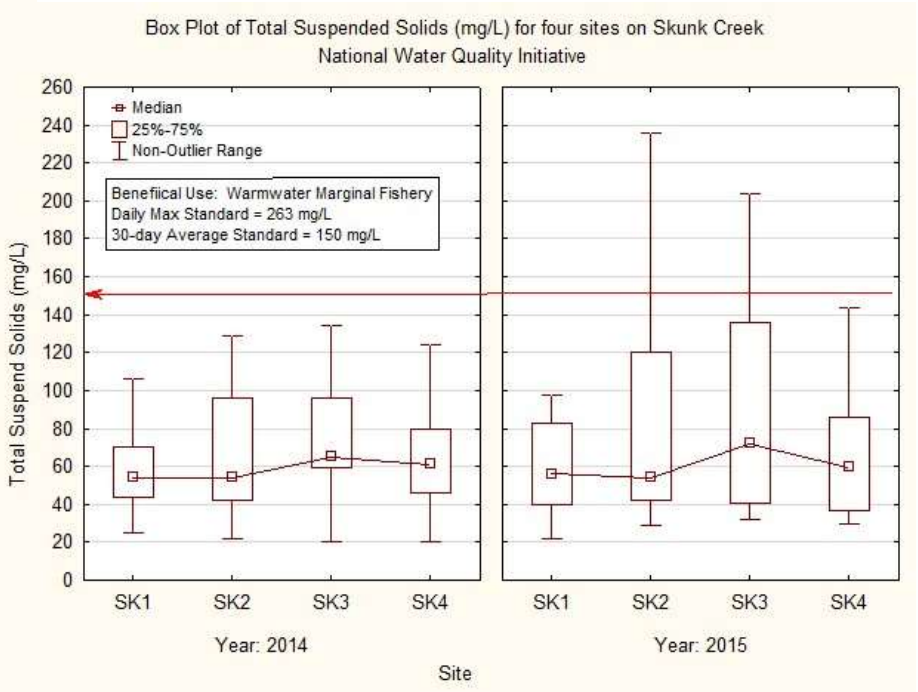

Thank you!

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