

The Cheyenne River Watershed Assessment



18 JUL 2005



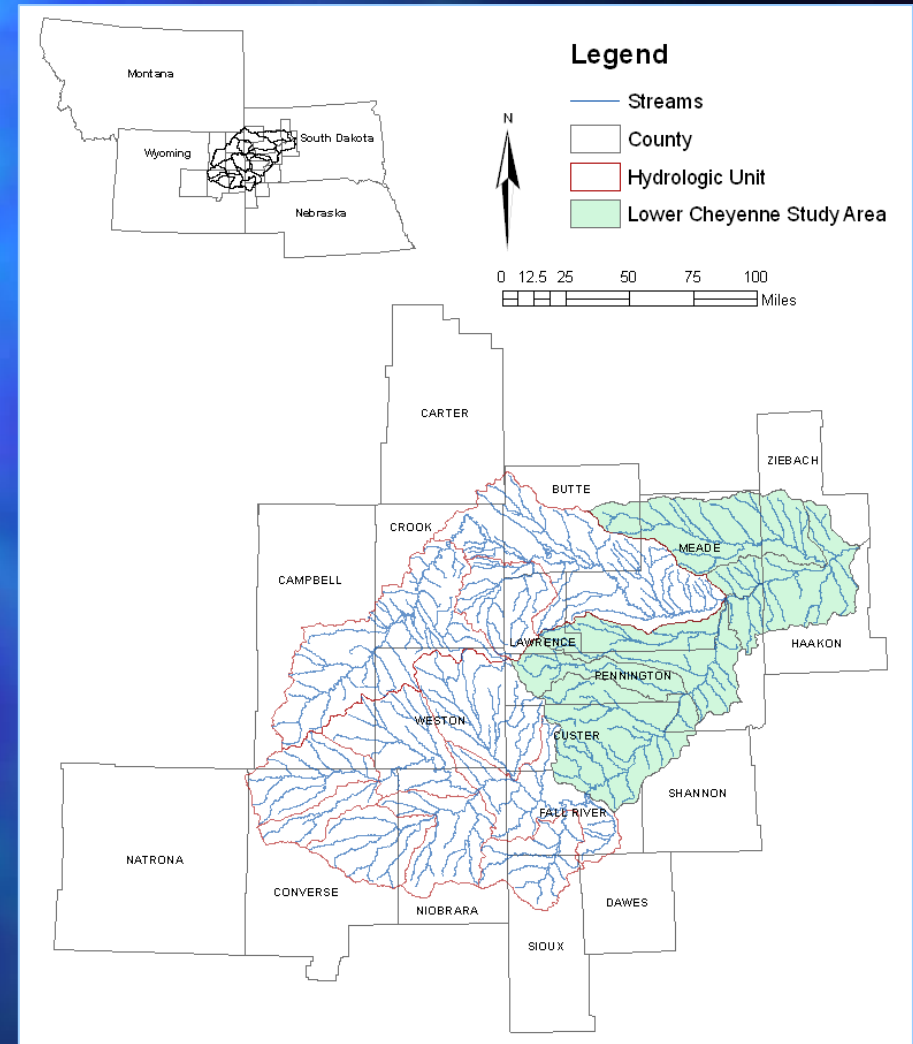
The Cheyenne River Watershed Assessment

- Watershed Background
- Project Overview
- Historic Data Analysis
- Future TMDL Work
- Sources of Project Information



Watershed Background

- Watershed Drainage Area
 - 24,240 mi²
- Impairments Listed in the 2004 Integrated Report for Surface Water-Quality Assessment
 - 19 Stream Segments
 - 10 Lakes



Listed Parameters

- Total Suspended Solids
- Fecal Coliform Bacteria
- Conductivity
- Water Temperature
- pH
- Dissolved Oxygen
- Trophic State Index (TSI)



Project Goals

- Phase I TMDL Assessment
 - Understand current conditions based on available data
 - Develop a focused watershed sampling plan
 - Form a strong Technical Working Group to guide the future work within the watershed



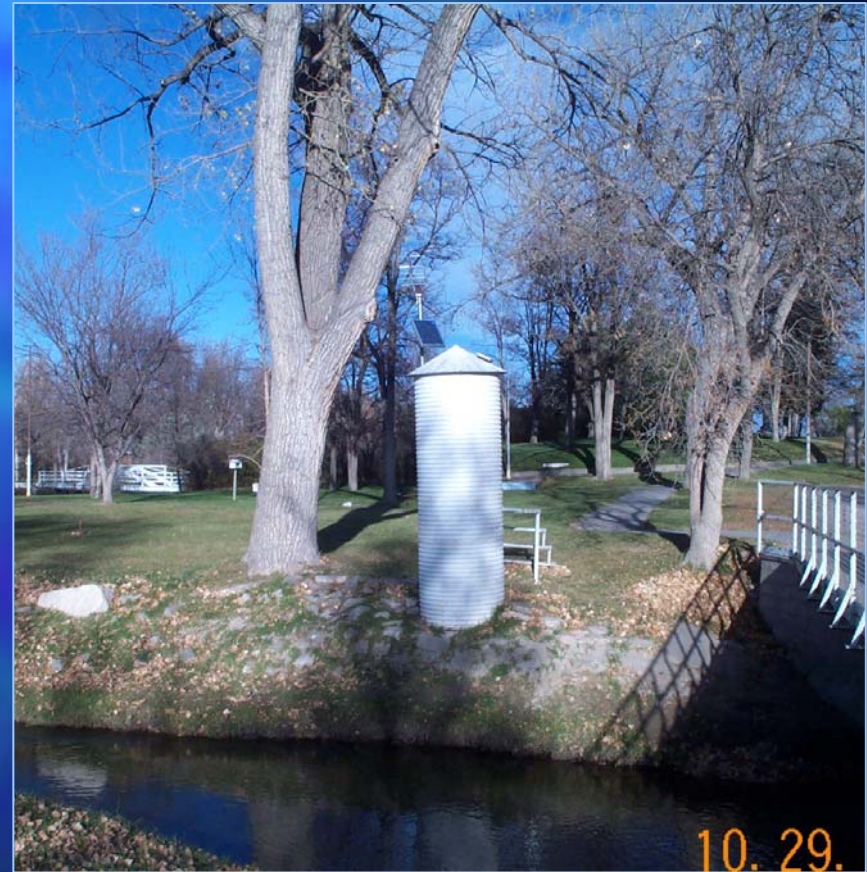
Project Tasks

- Stream Assessment
- GIS Sediment Modeling
- Historic Data Analysis
- Information and Education



Historical Data Analysis

- Two Data Sets
 - USGS discharge data
 - SD DENR & USGS water quality data
- Large Data Set Available
 - 93 Gage & Water Quality Stations
 - Discharge data dating back nearly 100 years
 - Water-quality data dating back 30 years



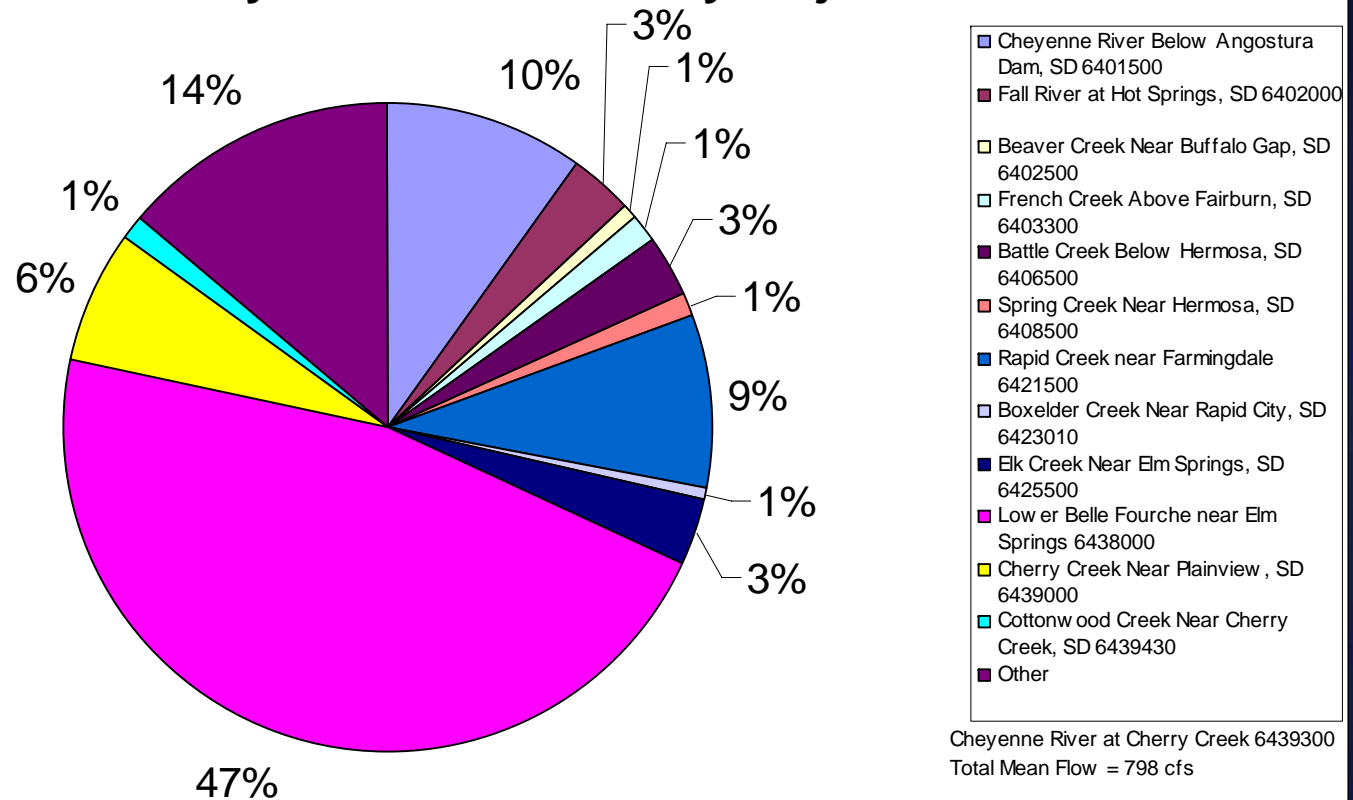
Historical Data Analysis

- Data Analysis Is Underway
- Large Appendix of Data Is Complete
- Main Focus on the Cheyenne River
 - Discharge
 - TSS
 - Fecal Coliform Bacteria

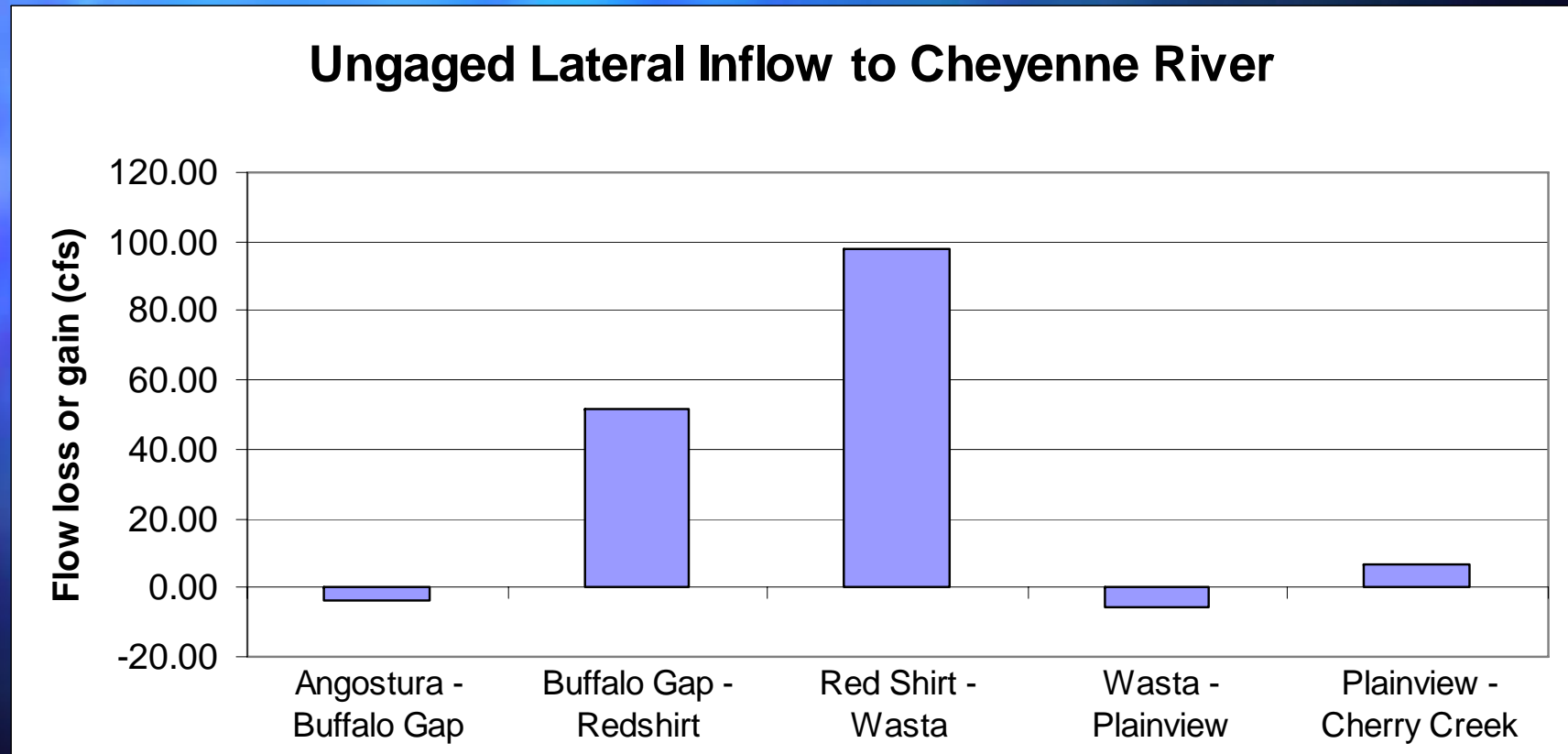


Hydrologic Budget

% of Cheyenne River Flow by Major Tributaries



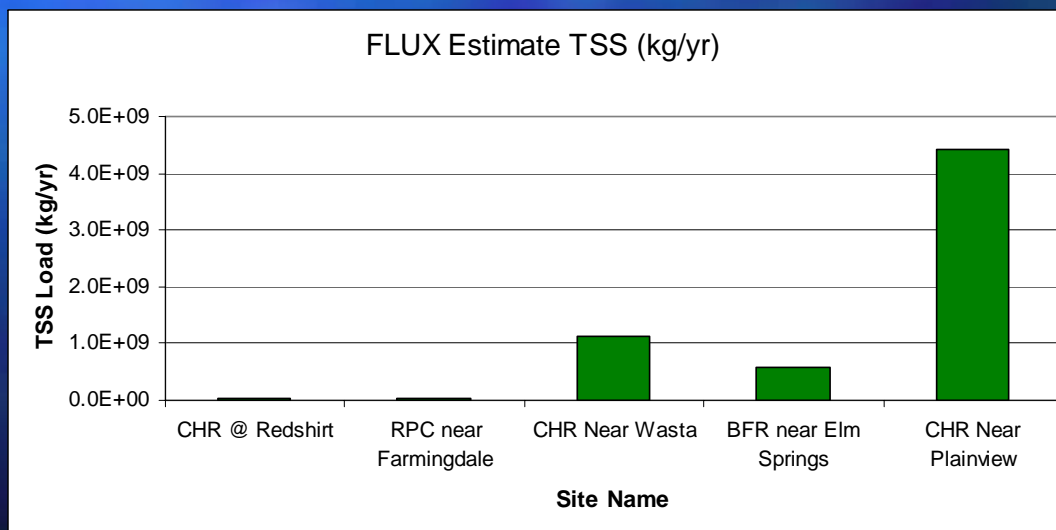
Hydrologic Budget



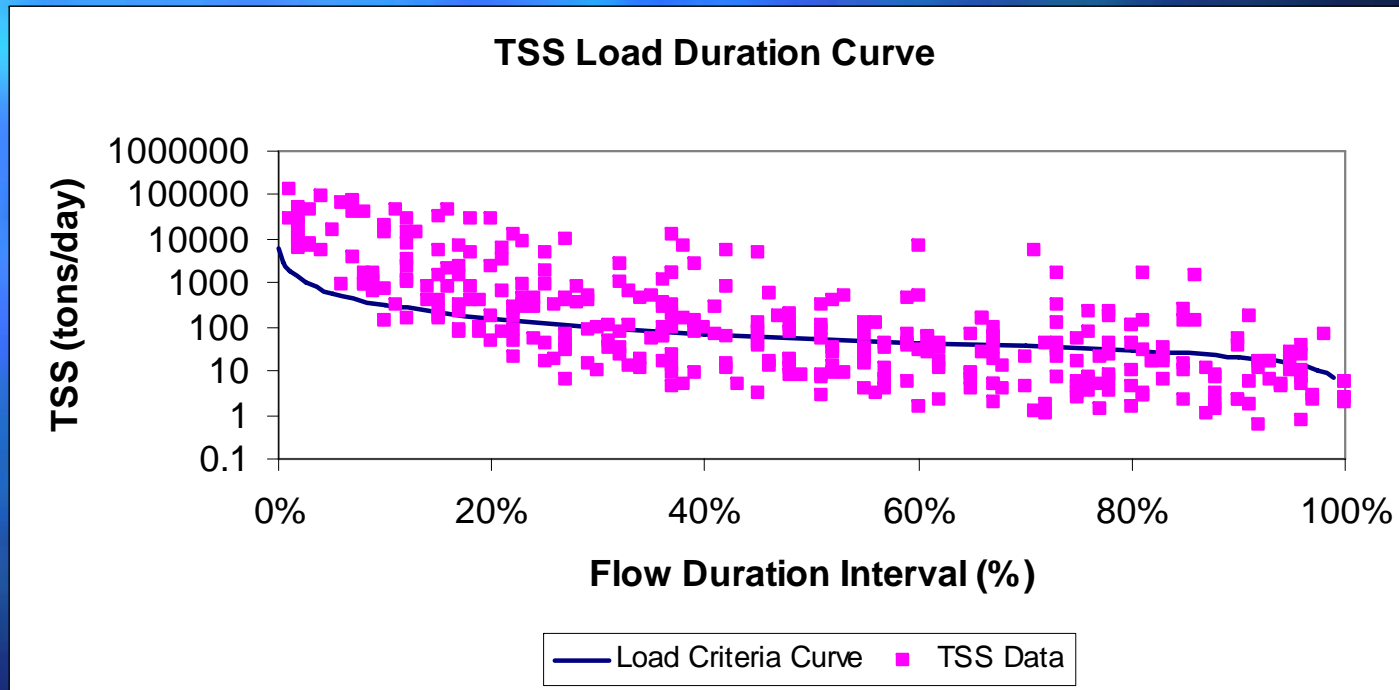
Total Suspended Solids: Concentration and Loading Analysis

Percent Exceedence of Total Suspended Solids (TSS) Standard at Sites within Cheyenne River Basin

Site Name	Site No	TSS N	Q1	Median	Q3	Percent Exceedence
CHR @ Redshirt	6403700	55	37.50	57.00	105.00	21.00%
RPC near Farmingdale	6421500	392	15.00	37.00	83.50	12.00%
CHR Near Wasta	6423500	355	45.75	163.50	728.00	51.00%
BFR near Elm Springs	6438000	131	9.00	35.50	110.00	21.00%
CHR Near Plainview	6438500	87	48.50	125.00	731.50	44.00%
TSS Standard = 158 mg/l						



TSS - Load Duration Curves



Cheyenne River @ Wasta



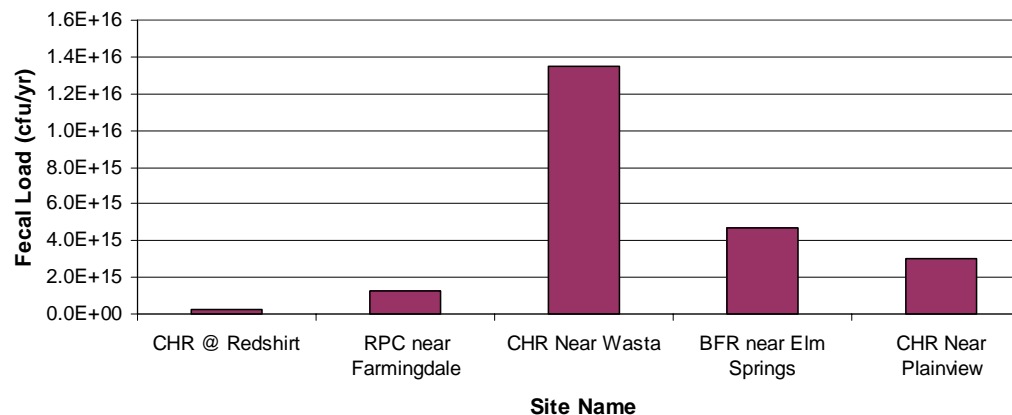
Fecal Coliform: Concentration and Loading Analysis

Percent Exceedence of Fecal Coliform (FC) Standard at Sites within Cheyenne River Basin

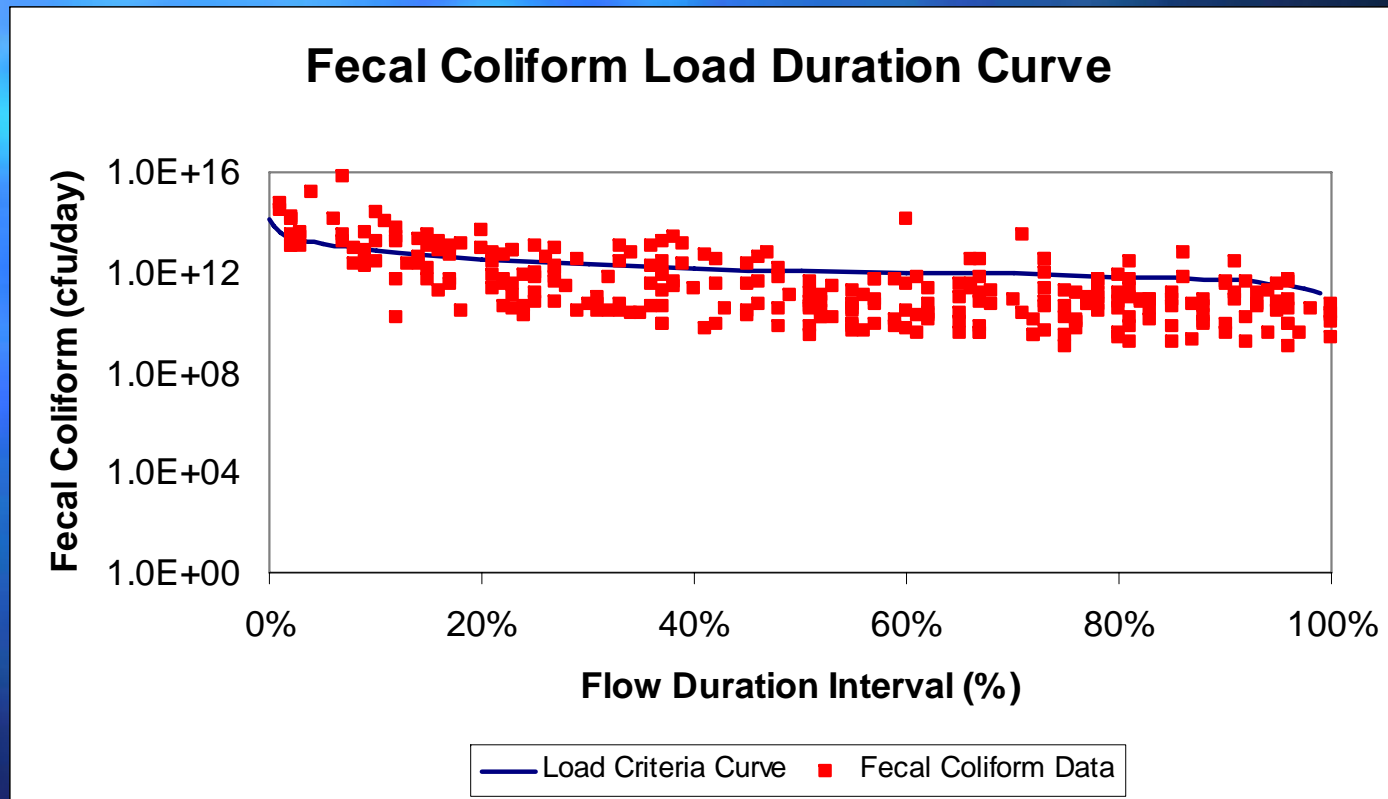
Site Name	Site No	FC N	Q1	Median	Q3	Percent Exceedence
CHR @ Redshirt	6403700	25	20.00	82.00	140.00	6.00%
RPC near Farmingdale	6421500	327	29.50	100.00	240.50	16.00%
CHR Near Wasta	6423500	289	10.00	50.00	320.00	23.00%
BFR near Elm Springs	6438000	146	10.00	50.00	290.00	20.00%
CHR Near Plainview	6438500	72	3.00	9.50	47.00	10.00%

FC Standard = 400 cfu/100 ml

FLUX Estimate for Fecal Load (cfu/yr)



Fecal Coliform - Load Duration Curves



Cheyenne River @ Wasta



Future Cheyenne TMDL Work

- Complete Current Project (September 2006)
 - Develop Focused Sampling Plan (June 2006)
 - Form Watershed Technical Working Group (August 2006)
- Implement Sampling Plan (May 2007 – Fall 2010)
- Write TMDL's Based on Available Data (2007)
- Write TMDL's From Sampling Plan (2011)
- Information and Education (Ongoing)
- Begin Implementation Projects (After Assessments)



Project Information

- Lower Cheyenne River Website
 - www.respec.com/lowercheyenne
 - Watershed Information
 - Project Summary
 - Announcements
 - Upcoming Events
 - Related Links
 - Project Photographs
 - Up-To-Date Status of Tasks



Questions?



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