

# Presentation

**Wyoming Water  
Development  
Commission**

**Kirby Creek  
Watershed Plan  
Level I Study**

**June 24, 2003**



# PROJECT TEAM

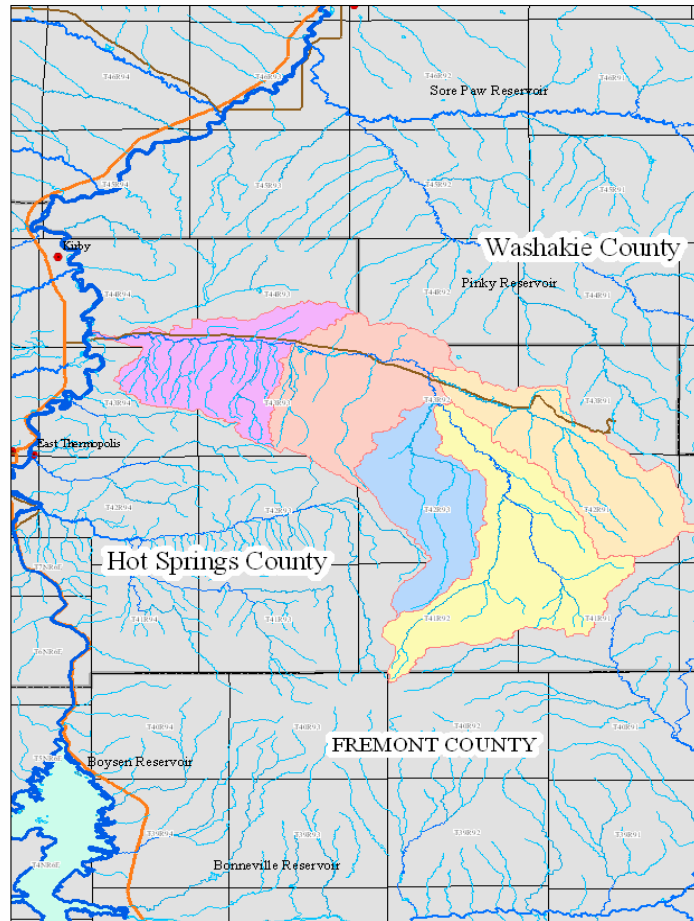
- Wyoming Water Development Commission
- Sunrise Engineering, Inc.
  - North Wind, Inc.
  - ECI, an AECOM Company
  - Donnell & Allred

# Introduction to Sunrise Engineering

- ❑ Over 25 years of Experience
- ❑ Large Rocky Mtn. Based Civil Engineering Firm
- ❑ 6 Offices in 4 States
- ❑ Local Afton, WY Office
- ❑ Wide Range of Services  
Specializing in Water Resource Projects



# Area Overview



# Important Issues

1. Thorough Technical Analysis
2. Environmentally Sound
3. Financially Feasible



# **Major Tasks of the Study**

1. Review Previous Studies
2. Basin Description & Inventory
3. Survey
4. Watershed Management Plan
5. Permitting
6. Cost Estimates & Financing Plan

# Review Previous Studies

- WWDC
- WY Basin Plan
- NRCS
- Hot Springs County Conservation Service
- WY DEQ
- University of Wyo
- Water Resources Data System
- U.S.F.S.
- State Engineers Office
- U.S. Corps of Eng.
- U.S. Fish & Wildlife
- WY Game & Fish

# **Basin Description and Inventory**

## **1. Land Uses**

- Management Activities
- Grazing
- Mining
- Irrigation Diversions
- Easements & NPDES Permits
- Pipelines & Roads



# **Basin Description and Inventory**

## **2. Geology & Geotechnical**

- Soils
- Climatological Zones
- Major Plant Communities

# Basin Description and Inventory

## 3. Basin Hydrology

- Stream Discharges
- Wet, Normal, & Dry Year



# Basin Description and Inventory

## 4. Stream Channels

- Morphology
  - Level I Characterization
  - Level II for specific reaches
- Structure
- Stability

# **Basin Description and Inventory**

## **5. Irrigation Systems**

- Identify
- Define Challenges
  - Supply Sufficiency
  - Erosion
  - Conveyance Losses
- Rehabilitation Needs

# Basin Description and Inventory

## 6. Water Quality

- Gather Available Data
- Sample as Needed



# **Basin Description and Inventory**

## **7. Water Storage**

- Basin Plan
- Upland & Tributary

# **Basin Description and Inventory**

**8. All Inventories Will be GIS Mapped.**

# Range Management

- Determine causes of degradation – reduces the diversity, values, commodities that rangelands provide.
- Define goals and objectives.
- Prevent irreversibility.
- Monitor and employ adaptive management strategies.



# **Riparian, Upland Range, and Soils Assessment**

- Land uses and management activities will be assessed to determine their effects on surface erosion, sedimentation, and water flow.
- Major plant communities and soil types will be quantified using scientifically defensible, state-of-the-art inventory techniques.

# Biological Assessment

- Upland Range

## Rangeland Health –

*“The degree to which the integrity of the soil and the ecological processes of rangeland ecosystems are balanced and sustained.”*

Soil/Site  
Stability

Hydrologic  
Function

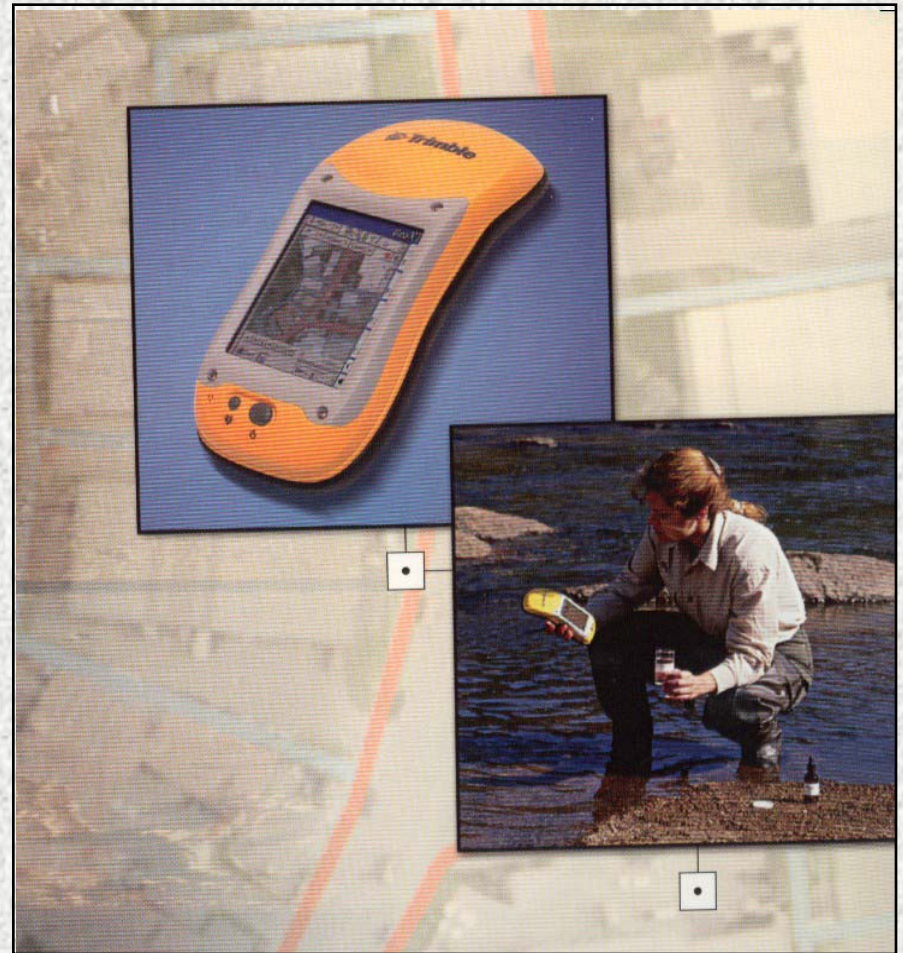
Biotic  
Integrity

# Biological Assessment

- Riparian – 3 Inventory Techniques
  - 1) Vegetation Cross-Section Composition
  - 2) Greenline Composition
  - 3) Woody Species Regeneration

# Survey

- Use Digital USGS Quads
- Field work as necessary by Trimble GPS units for GIS



# Watershed Management Plan

## ☐ Land Management Methods

- Channel Stabilization
- Erosion Control Structures

## ☐ Water Management Methods

- Irrigation Supply Needs
- Irrigation Structures

## ☐ Recommendations & Concept Designs

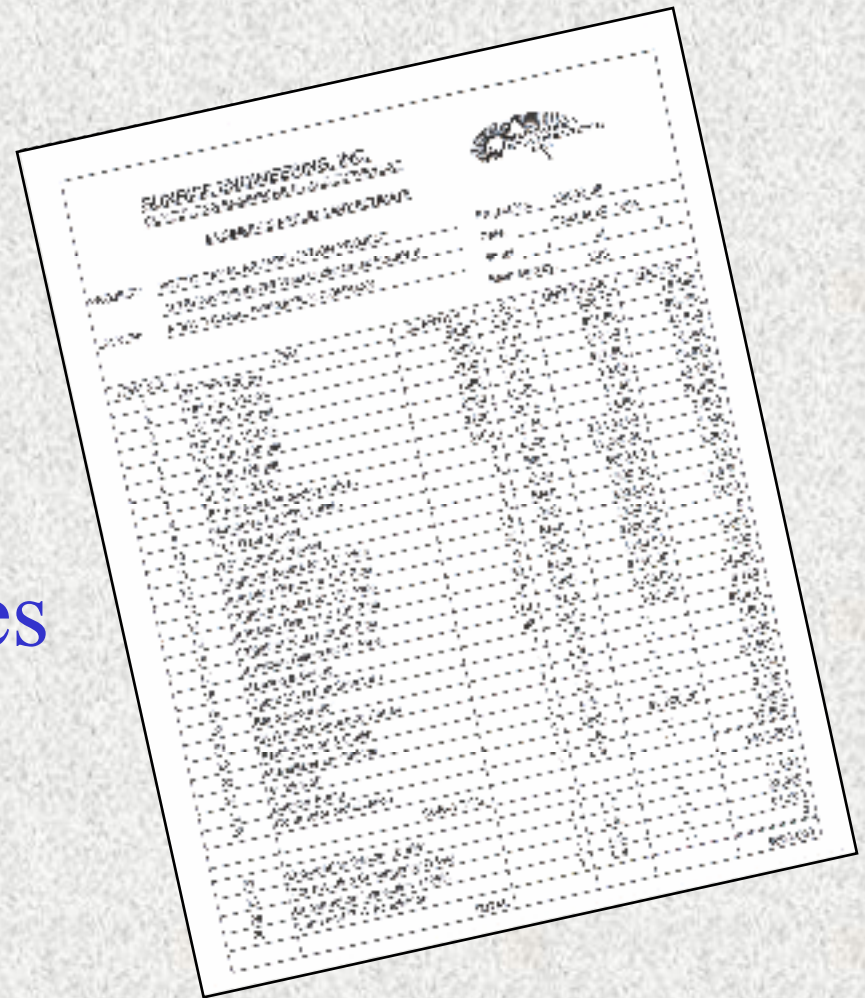


# Permitting

- Identification Of:
  - Easements
  - Clearances
  - Permits
  - Environmental Issues
- Government Agency Coordination

# Cost Estimates and Financing

- Assist in Prioritizing All Recommended Improvements and Projects
- Provide Cost Estimates
- Identify Potential Funding Sources

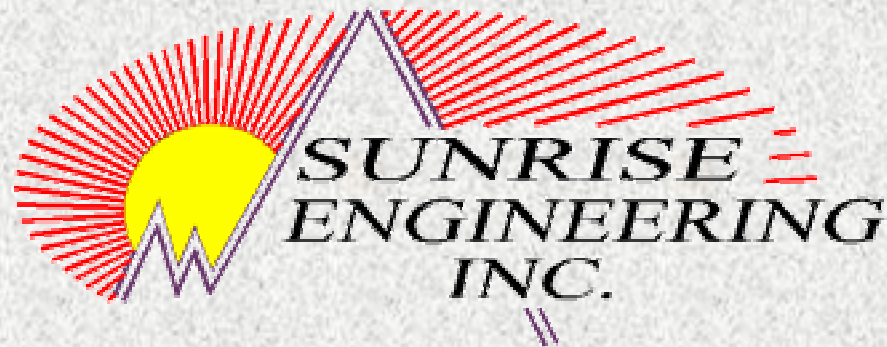


# Questions & Input

- Available Resources?
- Important Issues?
- Additional Input?



# SUNRISE ENGINEERING



47 East 4<sup>th</sup> Avenue

Afton, Wyoming 83110

[www.sunrise-eng.com](http://www.sunrise-eng.com)

(307) 885-8500