

PLANNING FOR MEASURABLE RESULTS IN COLORADO

Curtis Hartenstine

Colorado Department of Health and
Environment

319 Nonpoint Source Pollution Program

Measurable Results Program (MRP)



Colorado Department
of Public Health
and Environment



- 12 Projects in 2010
- Multiple Project Types/Stages of Development
- Collaborative
- Toolbox
- SAPP Development

JUST WHAT IS A “MEASURABLE RESULT”

- Different outputs for different people
- Means to evaluate and learn
- Credence



WHY ARE MEASURABLE RESULTS SO HARD TO ACHIEVE?

- Clear project Goals and Objectives
- Correct Identification of your Audience
- Lack of Pre Project or Expected Condition



Clear Goals and Objectives

Executive Order

Measurable Outcomes

Draft
3/19/10



Additional outcomes may be included in the final strategy.

Additional information on these outcomes is available in the appendix on slides 20-22.

Restoring Habitat

Goal: Restore a network of land and water habitats to support priority species and to afford other public benefits, including water quality, recreational uses, and scenic value across the watershed.

Measurable Outcome for Wetland Restoration: Restore 30,000 additional acres of tidal & non-tidal wetlands and enhance the function of 150,000 additional acres of degraded wetlands by 2025. (Current condition: 1 million acres of tidal and non-tidal wetland estimated to be available in Chesapeake watershed for restoration or enhancement. Between 1998 and 2008, 18,217 acres of wetlands were restored and 97,738 acres were enhanced in the Bay watershed portions of MD, PA, VA, DC, NY and DE.)

Measurable Outcome for Riparian Buffers: Restore riparian forest buffers to 64%, or 148,000 miles, of the total riparian miles (streambank and shoreline miles) in the Bay watershed by 2025. (Current condition: 58% of the 230,000 total riparian miles in the Bay watershed has forest buffers in place.)

Measurable Outcome for Fish Passage: Restore historical fish migratory routes by opening an additional 1,000 stream miles by 2025, with restoration success indicated by the presence of river herring, American shad and American eel. (Current condition: Approximately 1,924 miles in the Chesapeake Bay watershed have been opened and are accessible for fish migration. Projects are currently being ranked and prioritized through a collaborative federal and state process designed to strategically target priority projects. Number of miles opened per project is a key criterion in the prioritization process.)

Know Your Audience

- Regulatory
- Funders
- General Public
- Students

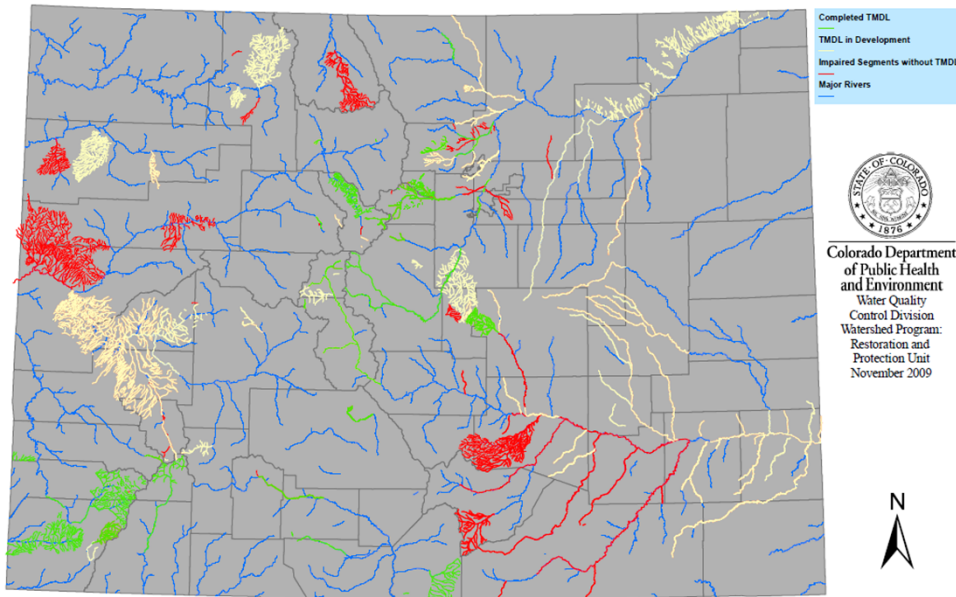


SCOPE

- BMP- Structure Specific
- Segment- Miles
- Watershed-8, 10 Digit?



Total Maximum Daily Load (TMDL) and Impaired Stream Segment Status in Colorado



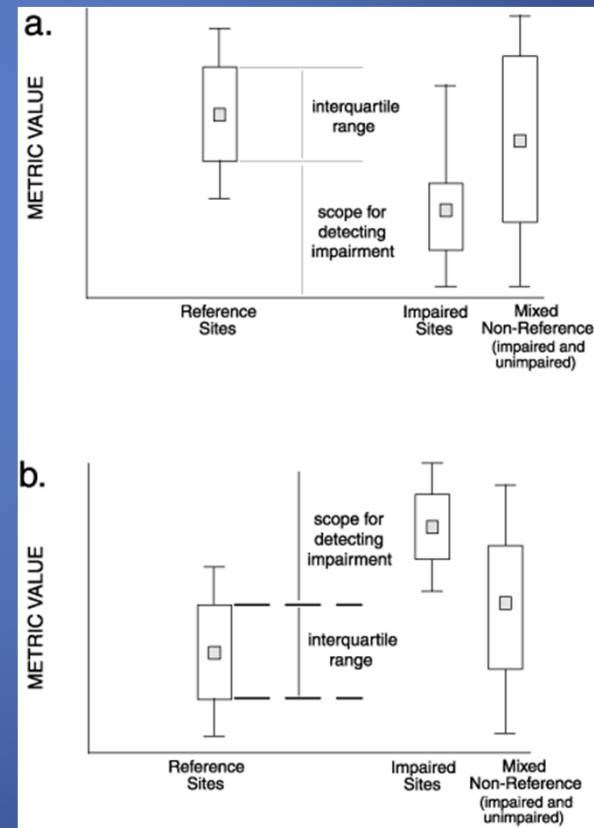
Colorado Department
of Public Health
and Environment
Water Quality
Control Division
Watershed Program:
Restoration and
Protection Unit
November 2009

BENCHMARKS FOR SUCCESS

What are we restoring the system to?

How do we know when we are done?

- Expected Condition
- Reference Condition
- Above/below Studies
- Modeling





Imagery Dates: May 25, 2003 - Jun 24, 2003

37°35'23.45" N 106°06'02.04" W elev 7629 ft

© 2010 Google
Image © 2010 DigitalGlobe

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Eye alt 22424 ft



CHOOSING THE RIGHT TOOLS

- Methods that resonate with funding partners/regulatory agencies
- Replicable
- Cost Effective
 - RBP
 - Targeted
 - In-depth Synoptic
- Correct Precision
- IMAP

Stream Bank Stability

- Bank Erosion Hazard Index
- Lateral Erosion Rates
- Bank Surveys
- Bank Pins

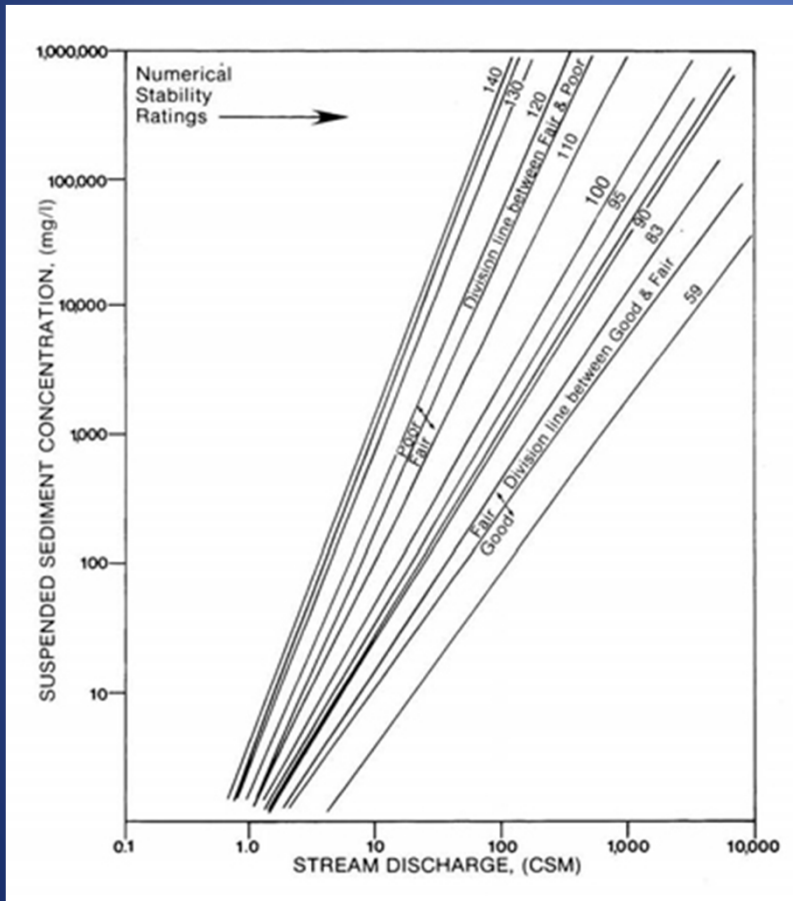


Channel Morphology

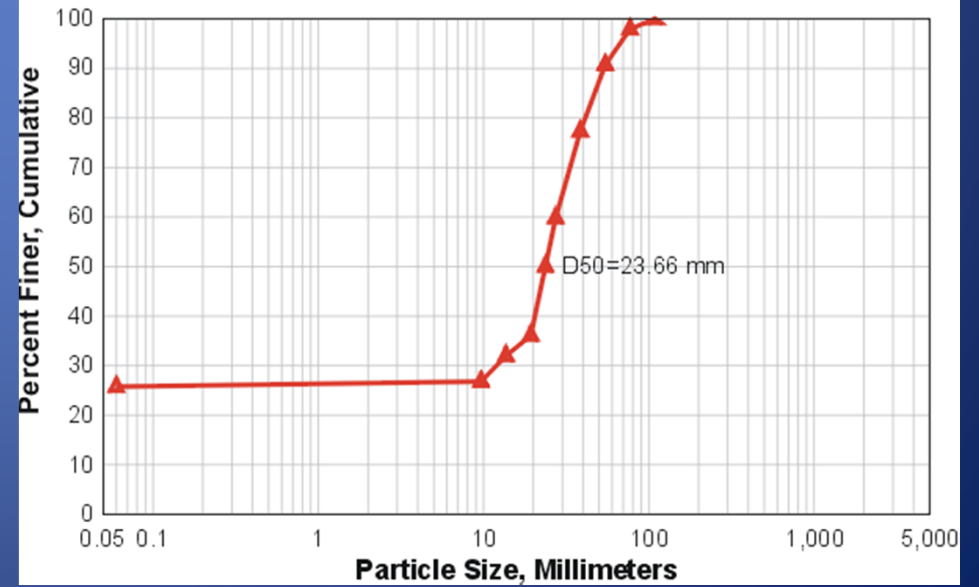
- Cross Sections
 - Monumented, GPS'd permanent pins
- Longitudinal Profile
 - Bed Features
- Width: Depth
- Riffle: Pool, Step: Pool
- Radius of Curvature
- Sinuosity
 - Stream Length/Valley Length



Sediment



Pebble Count
 Baron Fork at Eldon, OK
 07197000 307 sq mi



Load Quantification of Eroding Banks

- Nutrients (N&P), Sediment
- (L) (H) (lateral erosion rate or concentration) =mg/L or tons per year

Bank Stabilization

If estimating for just one bank, put "0" in areas for Bank #2.

Please select a soil textural class:

<input type="checkbox"/> Sands, loamy sands	<input type="checkbox"/> Silty clay loam, silty clay
<input type="checkbox"/> Sandy loam	<input type="checkbox"/> Clay loam
<input type="checkbox"/> Fine sandy loam	<input type="checkbox"/> Clay
<input type="checkbox"/> Loams, sandy clay loams, sandy clay	<input type="checkbox"/> Organic
<input checked="" type="checkbox"/> Silt loam	

Please fill in the gray areas below:

Parameter	Bank #1	Bank #2	Example
Length (ft)	500	500	500
Height (ft)	10	10	15
Lateral Recession Rate (ft/yr)*	0.2	0.2	0.5
Soil Weight (tons/ft3)	0.0425	0.0425	0.04
Soil P Conc (lb/lb soil)**	USER	0.0005	0.0005
Soil N Conc (lb/lb soil)**	USER	0.001	0.001

** If not using the default values, users must provide input (in red) for Total P and Total N soil concentrations

*Lateral Recession Rate (LRR) is the rate at which bank deterioration has taken place and is measured in feet per year. This rate may not be easily determined by direct measurement. Therefore best professional judgement may be required to estimate the LRR. Please refer to the narrative descriptions in Table 1.

Estimated Load Reductions

	BMP Efficiency* Bank #1	BMP Efficiency* Bank #2	Bank #1	Bank #2	Example
Sediment Load Reduction (ton/year)	1.0	1.0	42.5	42.5	150
Phosphorus Load Reduction (lb/year)			42.5	42.5	150
Nitrogen Load Reduction (lb/yr)			85.0	85.0	300

* BMP efficiency values should be between 0 and 1, and 1 means 100% pollutant removal efficiency.

Table 1

LRR (ft/yr)	Category	Description
0.01 - 0.04	Slight	Some bare bank but active erosion not readily apparent. Some rills but no vegetative
0.06 - 0.2	Moderate	Bank is predominantly bare with some rills and vegetative overhang.
0.3 - 0.5	Severe	Bank is bare with rills and severe vegetative overhang. Many exposed tree roots and some fallen trees and slumps or slips. Some changes in cultural features such as fence corners missing and realignment of roads or trails. Channel cross-section becomes more U-shaped as opposed to V-shaped.
0.5+	Very Severe	Bank is bare with gullies and severe vegetative overhang. Many fallen trees, drains

Ready

Aquatic Biology



Vegetation

- Survivability/Mortality
- Stem Counts
- Invasive Species
- % Cover

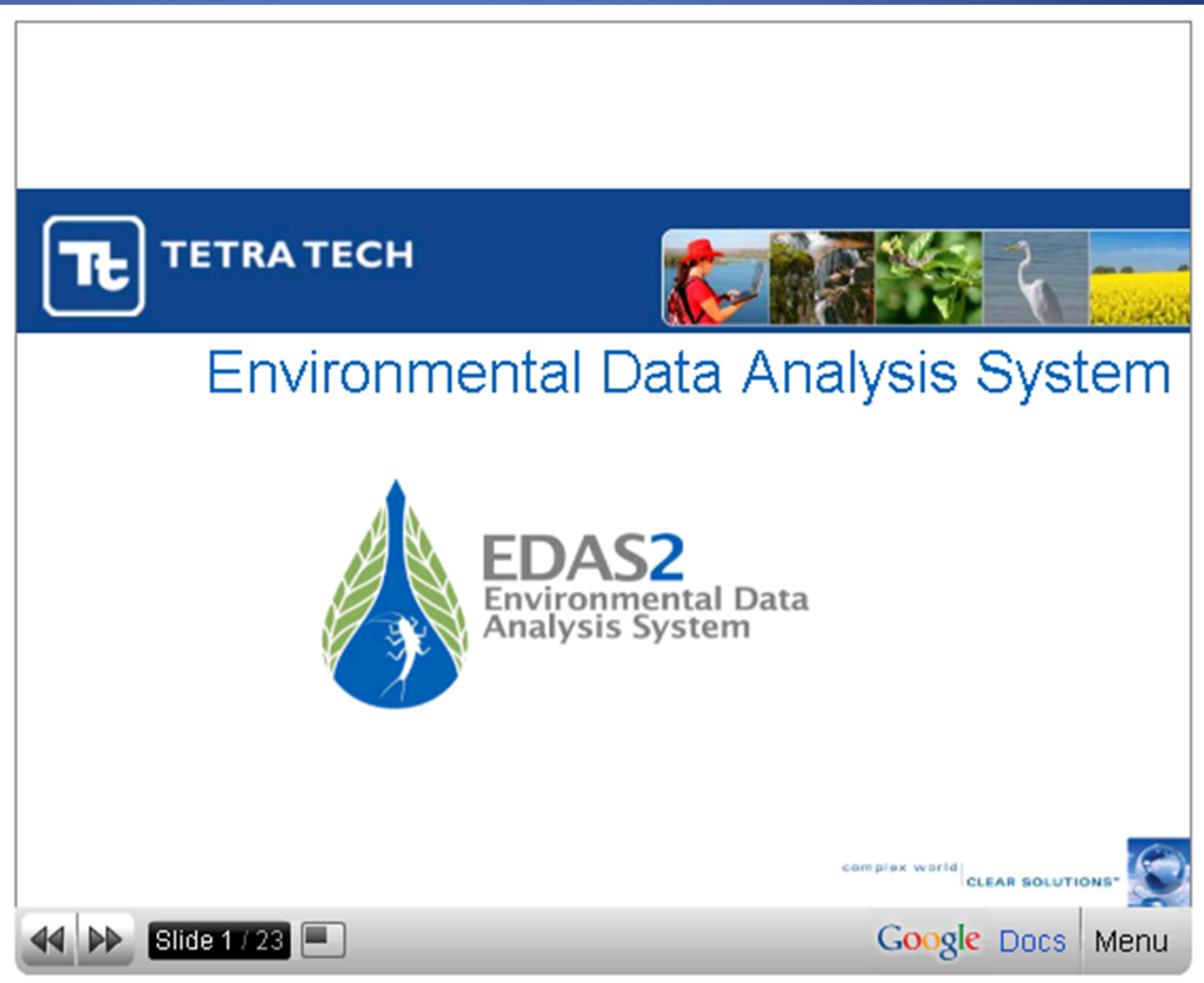


Figure 18: Transect 18, August, 2001

Same location, Drought August, 2002

Analysis

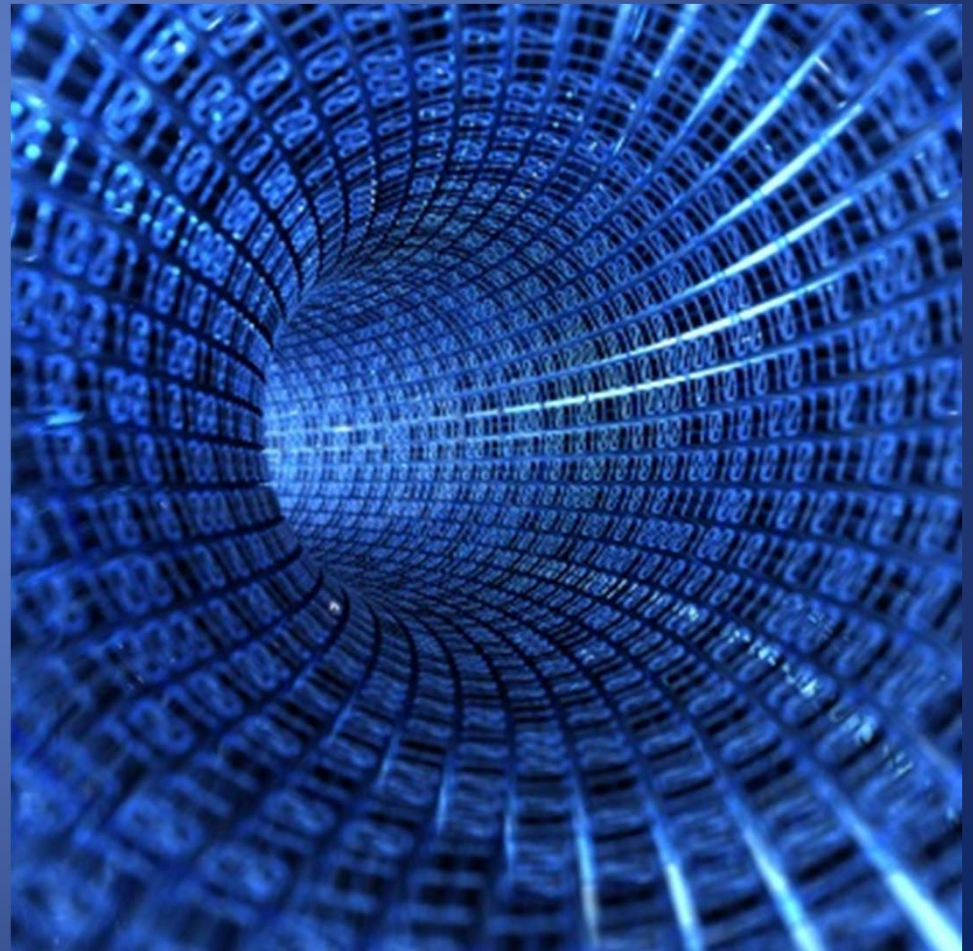
- Free tools are out there
 - EDAS
 - Excel



The screenshot displays the user interface for the EDAS2 Environmental Data Analysis System. At the top, there is a dark blue header bar containing the Tetra Tech logo (a white 'Tt' in a square) and the text 'TETRA TECH'. To the right of the logo is a horizontal strip of five small images: a person in a red cap using a laptop, a person in a field, green leaves, a white egret, and a yellow field. Below the header, the text 'Environmental Data Analysis System' is centered in a blue font. In the center of the page is the EDAS2 logo, which consists of a blue water drop shape with green leaves on either side and a white insect-like figure inside the drop. To the right of the logo, the text 'EDAS2' is in a large blue font, with 'Environmental Data Analysis System' in a smaller grey font below it. In the bottom right corner, there is a small logo for 'complex world | CLEAR SOLUTIONS' and a globe icon. At the very bottom, there is a navigation bar with a back and forward arrow, the text 'Slide 1 / 23', a small square icon, and the text 'Google Docs | Menu'.

Data to Information

- Deliver your Message Appropriately
 - Numbers and Charts
 - Photos
 - Anecdotal





Prevent ANS



- Use hot (< 40° C or 104° F) or salt water to clean your equipment.
- 100% vinegar for 20 minutes
- A 1 % table salt solution for 24 hours can replace the vinegar dip.
- Spray and brush
- DRY Equipment 5 Days

Questions?



Curtis Hartenstine
Project Coordinator
Nonpoint Source Pollution Program
Colorado Department of Public Health and
Environment
Phone: (303) 692-3573
curtis.hartenstine@state.co.us