

Colorado Cattlemen's Ag Water NetWORK

Goal: Keeping Ag Water Connected with Ag Land

Phil Brink, Consulting Coordinator



2019 Project: Outreach and Training on Watershed & Stream Management Planning for the Ag Community

2019 Project elements:

1. **Survey** of ag producers (www.agwaternetnetwork.org)
2. **Outreach** to the agricultural community
3. **Training** ag-oriented individuals interested in engaging / leading local efforts on watershed and stream management planning.



What we'll cover:

- Watershed and Stream Management Planning Basics
- Water Law 101 (Priority system, consumptive use, etc.)
- Ag & Water (irrigation methods, consumptive use, efficiency vs. conservation, return flow)
- Water Stakeholders - What's important to each group?
- Examples of Plans & Projects
- Funding Sources



Question?

Why are we suddenly talking about

WATER

so much?!

THE DENVER POST

December 24, 2018

With 80,000 new residents, Colorado is the seventh-fastest growing state in the U.S.

- **Population growth: +80,000 people in 2018.**
- +700,000 people since 2010
 - *Source: Denver Post / U.S. Census Bureau
- Current: ~ 5.7 M
- Projected: ~ 8.6 M by 2050

White River Basin:

County	2019	2050
Garfield	61,079	101,200
Moffat	13,130	13,600
Rio Blanco	6,360	7,070

Rising Demand versus Finite Supply

Consumptive: Municipal, Agricultural, Industrial

Non-consumptive: Recreation, Environmental – aquatic, wildlife

Little known fact:

“More than 99.9% of the water used by an irrigated crop or turf is drawn through the roots and transpires through the leaves. Only a small amount (0.1%) of the water taken up by plants is actually used to produce plant tissue.”

Source: CSU Extension https://coagmet.colostate.edu/extended_etr_about.php

Planning is key to minimizing crisis and conflict

Drought Contingency Plan (DCP) The Colorado River Watershed supplies:



- 40 million people*
- ~ 5.5 million irrigated acres*
- Aquatic life & wildlife*

* some in other basins

Drought Contingency Plan (DCP): 3 components:

1. Increase supply (tamarisk removal & cloud seeding)
2. Storage (U. Basin Reservoirs; Lake Powell savings account)
3. Demand Management (conserved consumptive use ie. rotational fallowing, deficit irrigation, M&I conservation, interruptible supply agreements, etc.)



CO Water Plan goal for watershed / stream plans:

“Develop Watershed Master Plans that address the needs of a diverse set of local stakeholders.”

Water Plan Measurable Objectives by 2030:

- 80% of the locally prioritized rivers have **Stream Management plans.**
- 80% of critical watersheds have **Watershed Management Plans.**



Does Agriculture Need to be Involved in watershed and stream management planning?

**Farms comprise approximately
48% of the land area in Colorado***

*Colorado Ag statistics 2017 Farm Operations; 31.8 M
ac. www.nass.usda.gov/

**Agriculture controls most of the
water in Colorado**

Watershed and Stream Management Planning Basics

At their essence, watershed and stream management plans are created to identify and evaluate local water-related problems, secure funding, and design and implement improvements.

Plans are:

- Locally driven
- Non-regulatory
- Consensus-based
- Developed by water stakeholders

Watershed Mgmt. Plan

Typical Focus: Watershed or sub-watershed scale



Yampa River Health Assessment & Streamflow Management Plan



City of Steamboat Springs 

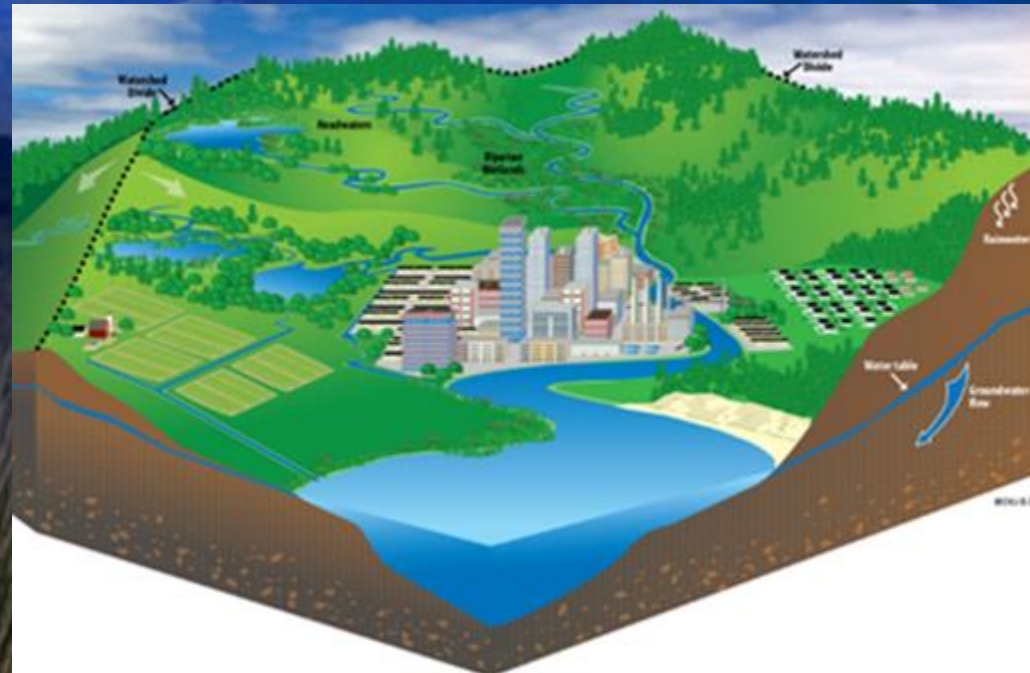
June 2018

Stream Mgmt. Plan

Typical Focus: Individual Stream Segment(s) and reach(es) within a watershed.

Watershed Services:

- Water - rivers, streams, tributaries, wetlands, groundwater recharge
- Food and fiber (ag, timber)
- Wildlife Habitat (aquatic and terrestrial)
- Economic activity (Ag, Industry, recreation, tourism, hunting/fishing, etc.)
- Open space
- Place to live



Questions so far?

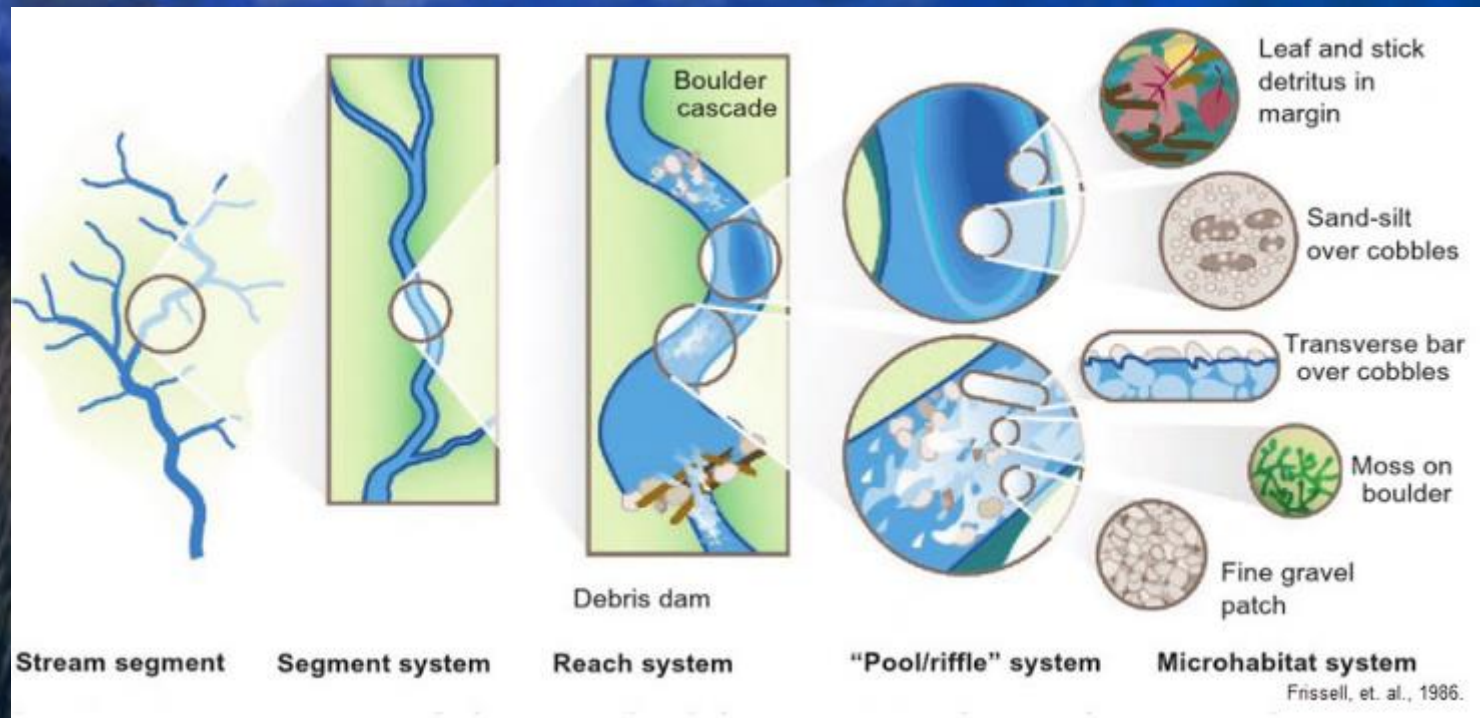
Interesting Fact:

**According to a 2010 study
conducted by the Trust for Public Land :**

Coloradoans reap roughly \$6 in benefits for every \$1 invested in efforts to keep agricultural land and other open spaces from being developed.

What is a Stream Management Plan (SMP)? A plan that promotes a healthy stream and protects existing rights & uses.

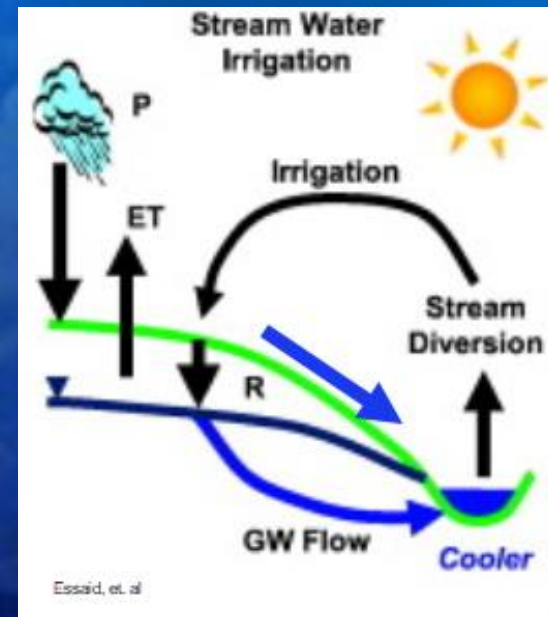
- Area: Stream segment(s) and/or reaches
- Looks at physical, chemical & biological characteristics. Includes Economic, Social, & Cultural interests
- Identifies what is needed to support environmental and rec. uses (flows, physical aspects, quality), other uses in some cases.



Stream Management Plan (SMP) may include:

Stream hydrology analysis:

- Reveals the timing, volume and source of flows during year.
- Characterizes irrigation return flow & stream flows in late summer & fall.
- Effect of irrigation upgrade on return flows / downgradient water right holders?
- Better enables planning around multi-benefit improvements.
- Viability of ATMs (alternative transfer mechanism) to supplement other uses.



Currently Available Resources for White River Watershed:

- Basin Implementation Plan (BIP)
- NRCS Rapid Watershed Assessment Reports (White R., Piceance Ck)
- CSU 2008 Survey of Critical Biological Resources in Rio Blanco County
- Rio Blanco County Land and Resource Use Plan
- 2017 Upper White River Watershed Assessment (Elk Ck Ranch)
- CPW 2016 Algae Report
- State and USGS data
- IWMP (starting)

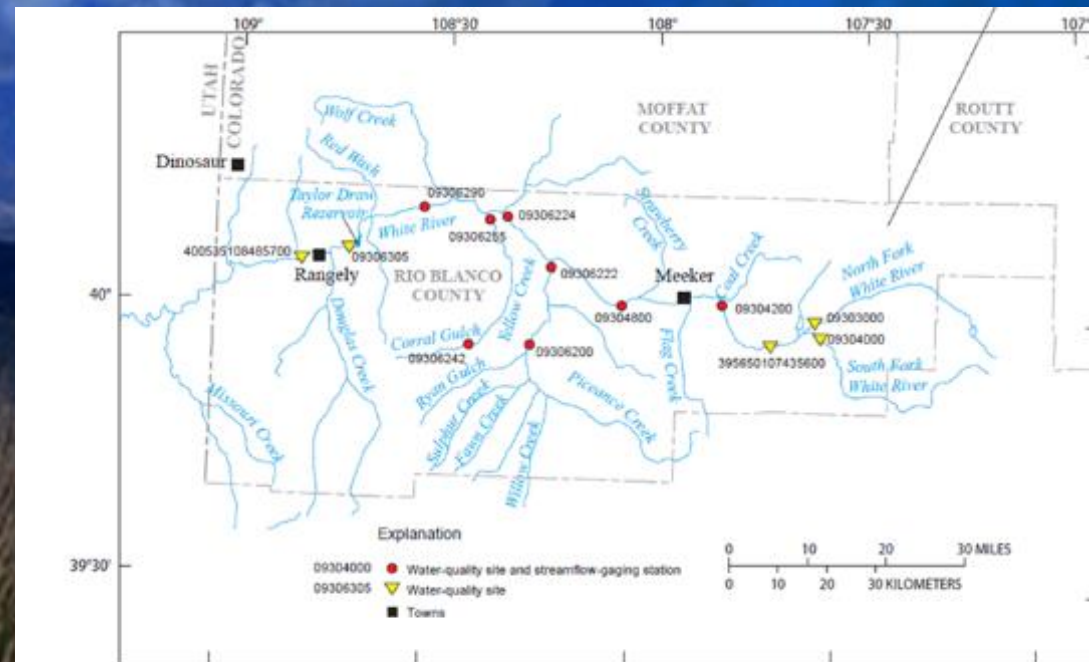


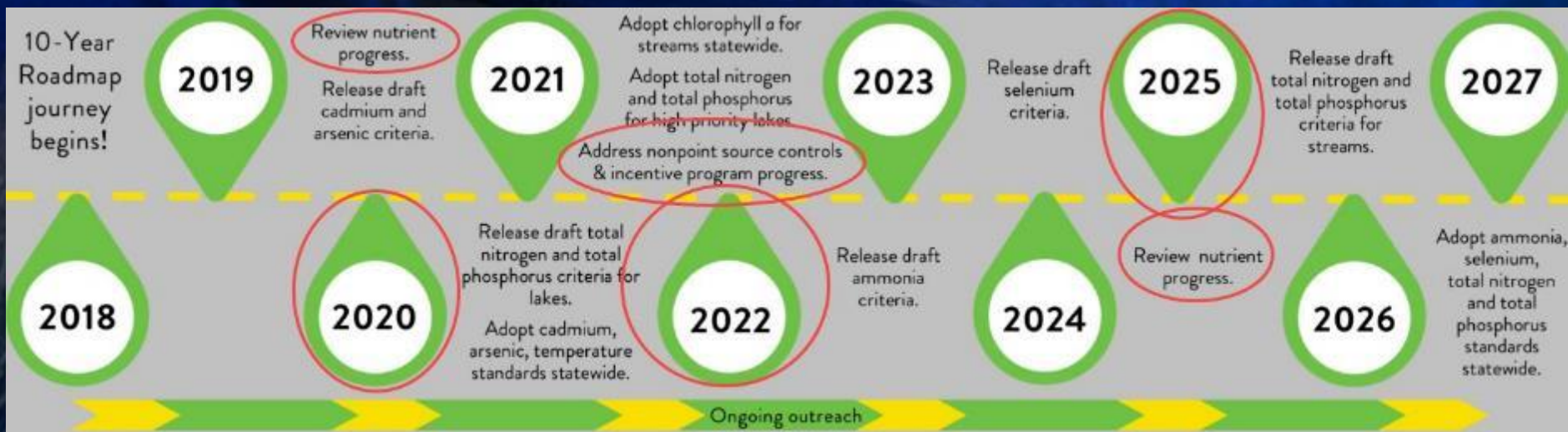
Figure 1. Location of streamflow-gaging stations and water-quality sites (modified from Thomas and others, 2013).

and now for something completely different...



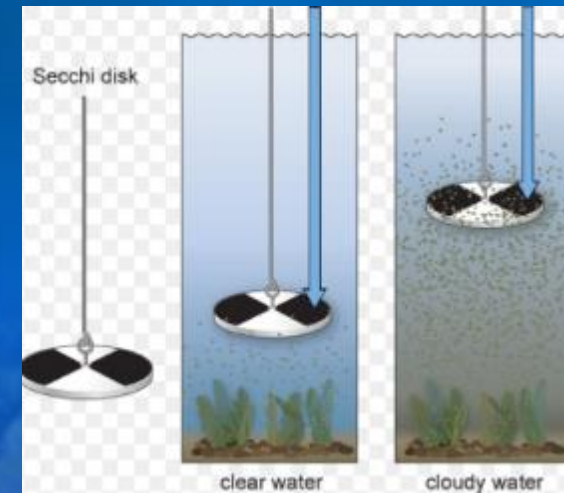
Water Quality Impairments

- **Regulation 85:** Nutrient control regulation (N & P) governing point and NPS pollution in surface waters.
- Provides for voluntary management of nonpoint sources of pollution by encouraging the use of BMPs.
- Adopted by WQCC in 2012.
- After 10 years (2022), the WQCC may adopt “prohibitions or precautionary measures if voluntary controls are not effective in reducing nutrient loads and protecting classified uses.



Types of Water Quality Impairments:

1. Physical (temperature, low DO, turbidity)
2. Chemical – pH, metals, nutrients (N, P, etc.)
3. Biological (bacteria, algae, other)



Agriculture Water Quality: Issues of importance

- Biological (bacteria, algae, other)
- Dissolved solids (Salinity) - crops, livestock
- Sediment
- Alkalinity
- Selenium
- Chemical compounds



Table 2. Potential yield reduction from saline water for selected irrigated crops.¹

Crop	% yield reduction			
	0%	10%	25%	50%
	EC_w²			
Barley	5.3	6.7	8.7	12
Wheat	4.0	4.9	6.4	8.7
Sugarbeet ³	4.7	5.8	7.5	10
Alfalfa	1.3	2.2	3.6	5.9
Potato	1.1	1.7	2.5	3.9
Corn (grain)	1.1	1.7	2.5	3.9
Corn (silage)	1.2	2.1	3.5	5.7

Watershed / Stream Management Planning

Potential Benefits for Ag - Funding for:

- Assessment of irrigation infrastructure
- Funding for multi-benefit upgrades
- Flow and quality analyses; what is needed to better support uses (irrigation, muni, fish, rec)
- Channel improvement / bank stabilization
- Groundwater recharge area protection planning
- Phreatophyte removal



Watershed / Stream Management Planning

Potential Benefits for Ag - Funding for:

- Forest Health and Fire Risk Assessment / Fire mitigation / Post-fire recovery
- Water quality / aquatic habitat improvement
- Flood recovery
- Create dialog with other water stakeholders which creates allies outside the ag community.



US Hwy 34 East of Greeley, 2013, CDOT

**Watershed / Stream Management Planning:
Need All water stakeholders at the Table!
(Ag, M&I, rec, env.)**



Producer involvement is crucial to balanced plan and protecting agriculture's interests (water rights, land, etc.)

Discussion Questions:

- 1) Should ag be proactive on IWMP / WMP / SMP planning?
 - what are the risks?
 - what are the benefits?
- 2) Irrigation inventory / assessment data - is privacy an issue?

