Possible Opportunities

Stakeholder Collaboration for Integrated Water Planning Initiative
Tim Ryan, Ph.D., Grand Valley Drainage District
Angie Fowler, PE, SGM
Prior to incorporating as the Grand Valley Irrigation Company in 1894, the company was known as the Grand River Ditch Company (established in 1882).

GVIC owns and operates 97.4 miles of canal right-of-way within the service area. The Mesa County Ditch and Ranchman’s canal are included in this right-of-way.

Photos courtesy of the Museum of Western Colorado, and Orchard Mesa Irrigation
BUILDING THE HIGH LINE CANAL

Photos courtesy of the Museum of Western Colorado, and Orchard Mesa Irrigation
BUILDING THE GRAND VALLEY CANAL

Other canals constructed
Included: Stub, Price, Orchard Mesa, Redlands

Photos courtesy of the Museum of Western Colorado, and Orchard Mesa Irrigation
RESULTS OF IRRIGATION 1894 TO 1910

Photos courtesy of the Museum of Western Colorado and Orchard Mesa Irrigation
As irrigation occurred, the tail water from the fields had nowhere to go but back into the ground, causing the high salt content soils to leach out, creating severe alkali conditions that rendered fields unusable for crop production.

**Documented as a problem as far back as 2600 B.C, Diyala River Basin, Iraq**

Ref: Salinity and Irrigation Agriculture In Antiquity, 1957-58 by Thorkild Jacobsen

Photos courtesy of the Museum of Western Colorado, and Orchard Mesa Irrigation
Irrigation Tailwater had to return to the Colorado River. This Act of 1911 provided for the Organization and Government of Drainage Districts.
Between 1917 and 1923, approximately 600 miles of irrigation return flow “Drains” and an additional 66 miles of irrigation canals were constructed throughout the Grand Valley.

“..shut out storm waters from (District Facilities) and carry all storm waters in natural drainage lines of the country…” A.P. Davis, Director & Chief Engineer, US Reclamation Service, Dept of the Interior, April 24, 1917.

Grand Valley Drainage District was to manage seep and irrigation return flow below the Grand Valley Canal “Highline”.

Grand Valley Drainage District
Formed November 11, 1915

Drain Specifications
July 25, 1917
Sugar beets on reclaimed land in Sect. 22, T2N, R3W. (O½ Road East of 13 Road) For six years starting in 1913 the land was abandoned because of seepage – too soft to walk across with occasional standing water on surface. Open drain ditches were constructed to reclaim the land (first crop is estimated at 9 tons of sugar beets per acre)
Since 1915 the district has been providing irrigation return flow and seep facilities.

The current office and shop

722 23 Road

The District returns 969,000,000 gallons of irrigation return flow daily in support of irrigation requirements, north of the Colorado River within the Grand Valley.
GRAND VALLEY DRAINAGE DISTRICT

33 Total River Outfalls and 110 Outfalls Into Natural Drains of the Country

9 Natural Drains

258 miles total. 109 miles are comingled with MS4 Regulated Urban Storm Water
Ditch width and depth were designed in 1915:
They were designed to carry irrigation return flow deep enough to be below water table to allow seep infiltration
Typical Open Ditch, Waters Carried

Irrigation tail Pipe:
Carries irrigation return flow from field tail ditch
Typical Open Ditch, Waters Carried

Undetained MS4 stormwater:
Flows at higher than historic rate and duration is storm dependent but it is a surcharge above the ditch design capacity.

Detained MS4 stormwater:
Flows at historic rate and duration is storm dependent but it is a surcharge above the ditch design capacity.

MS4 stormwater tailpipe:
Carries detained and undetained MS4 water, as well as torrential MS4 water.

Grand Junction has 286 MS4 points that enter District Facilities. Only 20 of these points are detained or 7%. Overall 5-2-1 detention is less than 10%. Fruita 133 MC 236, Palisade 36.
**Open ditch or existing tile is used by development**

**Development irrigation return flow:**
Usually development uses existing irrigation capacity to some extent.

**Capacity lost to root intrusion:**
Continual maintenance is required to clean roots out of pipes to maximize capacity.

**Hydraulic gradient is still present:**
Drives seep water out of the ground, and is greater after a storm event, (higher groundwater level), but can be great enough to drive seep flow continuously.

**MS4 water may replace irrigation return flow:**
MS4 water may also include unused development irrigation runoff and development related pollutants.
Natural Wash Basins

28 separate basins affecting urban area
Our system includes:

- 131 miles of piped
- 128 miles of open facilities

Water “Quantity” has been handled since 1917. Currently 108 miles (42%) of the District’s Irrigation Return Flow and Seep are comingled with Storm Waters (MS4). As urban development increases more unfunded quantity is added to the District’s facilities. Hydraulic capacity over and above the original design is becoming a costly problem. The District wants to continue its contribution to the community economy, but the cost are prohibitive within current budget restraints.

We need assistance!!!

Grand Valley Drainage District

8’
https://www.youtube.com/watch?v=-HfxvNd-UHc&feature=youtu.be
Grand Valley and De Beque Canyon Integrated Water Planning Initiative

• Purpose
  – Educate stakeholders watershed health, water quality issues and upcoming TMDL process
  – Support long-term collaborative water quality and stormwater drainage solutions
  – Integrate local planning with statewide efforts
    • Colorado Basin Roundtable Stream Management Planning & Basin Implementation Plan
    • Municipal Separate Storm Sewer System (MS4) Permit Compliance
Grand Valley and De Beque Canyon Integrated Water Planning Initiative

- Tasks
  - Survey the stakeholders
  - Organize and facilitate two stakeholder meetings
  - Develop a Coordination Plan
    - Obtain support/commitments
    - Describe roles and responsibilities for each cooperating organization
    - If role will include providing match dollars, describe how that will be accomplished
Grand Valley and De Beque Canyon Integrated Water Planning Initiative

• January 1, 2017 – June 1, 2017
  – Supported by CDPHE Mini-Grant for initial outreach efforts

• Other Funding
  – CWCB Watershed Restoration Grant (submitted in November 2016)
  – CDPHE 319 Funds
2012 & 2016 Impaired Streams
Potential Stakeholders
(who are we missing?)

- Palisade Irrigation District
- Mesa County Irrigation District
- Orchard Mesa Irrigation District
- Grand Valley Water Users Association
- Colorado River Water Conservation District
- Trout Unlimited
- Powderhorn Ski Resort
- NPS- Colorado National Monument
- BOR
- CDOT
- Water Center at Colorado Mesa University

- Ute Water Conservancy District
- Clifton Water
- City of Grand Junction
- Town of Palisade
- Mesa Water and Sanitation District, Mesa County
- Mesa County Valley School District 51
- 5-2-1 Drainage Authority
- USFS
- BLM
- USFWS
- Desert Rivers Collaborative
- Tamarisk Coalition