Waste to Utility
Harnessing Stormwater in Waconia
Carver County
- Part of the 7 County Metro Area
- 375 square miles
- Population of 102,858
- Fastest growing County in Minnesota from 2010 to 2016 (10.5% increase)
- Mostly clay soils

Waconia
- Current population: 12,633
- 13% increase since 2010
- 79.5% increase since 2000, and 249.7% increase since 1990
Historical Background

- Watershed Districts were authorized by the State in 1955
  - 46 watershed districts in Minnesota
- Watershed Management Organizations were authorized in 1982
  - Within the 7 county Metro Area
  - Carver County Water Management Organization (CCWMO) established in 1996
CCWMO Ordinance Update in 2016
- Water Quality is 1 inch
  - Volume reduction is equivalent to 0.5 inches
- Volume reduction is equal to 1 inch
  - Unless the site is constrained, then 0.5 inches
  - Clay soils is a constraint
- Stormwater Reuse as an option to meet volume reduction.
- Simple process to establish credit
  - 4 parameters
Unique Opportunity

- Hwy 5 Reconstruction Project
  - Planning in 2015
  - Reconstruction of 1.4 miles
Unique Opportunity
Hwy 5 Reconstruction Project
- Multiple BMPs were identified to treat stormwater.
- Large pond for rate control and some Water Quality treatment.
- Also use for Volume Control with Reuse
Unique Opportunity

- **Waconia Regional Reuse System**
  - Large pond with a large volume of usable water
    - ~240,000 cubic feet of water for irrigation
    - Enough credit for 33 acres of new impervious surfaces
  - Subwatershed of 170 acres
    - 100 acres are impervious
Unique Opportunity
CCWMO Partnership

- Partnership with CCWMO and Waconia
  - Meets Volume Reduction Requirements
    - Volume Credit Bank
  - Bank was started with three sites for irrigation
    - First met Hwy 5 Requirements
    - Left over credit was banked for future use
  - CCWMO tracks credits created and withdrawn
  - Bank cannot be negative
    - For a proposal to be approved, must show that there is enough credits to meet volume reductions for site.
CCWMO Partnership

- Partnership with CCWMO and Waconia
  - Construction of Biofiltration Basin
    - Allows for most sites to meet WMO Water Quality Reduction Requirements
    - Only in areas that parcels directly drain to the pond
CCWMO Partnership

PLANTING NOTES:
1. SOIL SURFACES OUTSIDE THE BIORETENTION BENCH SHALL BE RESTORED WITH EROSION CONTROL BLANKET CATEGORY 5 WITH STATE SEED MIX 82-82. THE BOTTOM OF THE BIORETENTION BENCH SHALL BE RESTORED WITH STATE SEED MIX 33-261 AND MULCH.
2. RECOMMENDED IS USING A MIXTURE OF PLANTS, TREES AND SEED. OTHER TREE, SHRUB AND PLUG OPTIONS ARE AVAILABLE. CONTACT WITH BOLTON & MENK FOR OPTIONS, 952-686-3561.
3. USE COVER CROP WITH PLANTING (OATS OR WINTER WHEAT DEPENDING ON SEASON).
4. DO NOT SEED IF HIGH WATER IS PRESENT.
5. FOR PROPER SEED ESTABLISHMENT, PLANTS SHALL REMAIN UNEARTHED UNTIL SEEDLINGS HAVE PROPERLY ESTABLISHED (3-6 MONTHS FOR PLANTS).
6. FIRST-GROWING SEASON, MOW PLANTING TO A HEIGHT OF 6" WHEN PLANTS REACH 10"-24". SPOT SPRAY WETTER WITH AGENT AT END MOWING.
7. SECOND-GROWING SEASON FORWARD, PROBLEMS AND INVASIVE WEEPS SUCH AS THISTLE, REED CANARY GRASS AND PIGWEED SHOULD BE SPOT SPRAYED OR HOELED.
8. RESEED OR USE PLANT PLUGS IN BARE SPOTS.

LEGEND

- BIORETENTION BASIN SEED MIX 33-261
- EROSION CONTROL BLANKET SEED MIX 1
- SHORTGRASS INEXPENSIVE SEED MIX
- TURF REINFORCEMENT MAT
Established a regional zone which parcels can participate in for WQ
29 sites in this zone
City of Waconia developed Ordinances (Chapter 415), Billing (Chapter 416.05), and Agreements for these areas
Waconia Regional Irrigation Zone
Waconia Regional Reuse System

- **Connection Fee**
  - Base is established by savings of on-site Water Quality Improvement costs
  - Installation of Meter, Irrigation Controller and Staff Time

- **User Rate**
  - $2.50 per 1000 gallons
  - 50% less than the high rate for potable water use
Currently One Pump Station with 0.89 miles of 6 and 4 inch mains

Operational Gate Valves and Blow-off Sites

8 connections including Businesses and City Sites
Results

- 6 sites are online
- Almost 2.5 million gallons were used in 2018, 4.2 million gallons since 2017
- Distribution expansion by June of 2019 north of Highway 5 adding 16 acres of green space with Ridgeview Medical
Benefits

- **Benefits to City**
  - Decrease in peak demand on potable water
  - Decrease costs for storage and delivery of water

- **Benefits to Developer**
  - Reduces the amount of space needed to treat water
  - Can use the maximum allowed impervious cover as set by the city

- **Benefits to WMO**
  - Coordinated effort with city to reduce pollutant loads and volume
  - Known maintenance schedule with City Public Services handling the majority of aspects for the delivery of water.
23 sites have been approved to meet CCWMO volume reduction requirements

- Waconia Regional System
  - 6 sites currently approved, 1 pending

20 sites were monitored last year

- Over 12.8 million gallons was used in 2018
- Used roughly 1,700,000 gallons less than the permitted amounts.
- Four sites are a combined 2.4 million gallons short due to mechanical and installation issues.
Reuse in Carver County

- **Reductions**
  - 25 pounds of phosphorus removed; 8,578 pounds of sediment removed.
  - Based upon Water Rates in Chaska, Carver, and Waconia: saved $51,325.93 in water costs over 20 sites
  - Removed 10.5% of volume generated off of 197 acres of impervious surfaces.
- **Remaining 3 sites currently permitted, not operational**
  - Permitted use of 12.5 million gallons, 24 pounds of phosphorus; 8,368 pounds of sediment.
  - Savings of $44,423.
Questions