Centerville Location Map
Rice Creek Watershed District Map
Key Resource to Protect: Centerville Lake
Downtown Redevelopment
RCWD Rules

Rate Control
• No increase from existing for 2-year and 100-year events

Water Quality and Volume Control
• Infiltrate 0.8 - 2.8 inch event, depending on site conditions
• Alternative sequencing if infiltration is infeasible
Options

• Stormwater ponding
Options

• Stormwater ponding
• Infiltration features
Options

- Stormwater ponding
- Infiltration features
- In-line treatment devices

Options

- Stormwater ponding
- Infiltration features
- In-line treatment devices
- Underground storage
Options

• Stormwater ponding
• Infiltration features
• In-line treatment devices
• Underground storage
• Stormwater reuse
Selected Option: Stormwater Reuse for Irrigation of Laurie LaMotte Park Ballfields
Selected Option: Stormwater Reuse for Irrigation of Laurie LaMotte Park Ballfields
Advantages of Stormwater Reuse Option

• Saves space in downtown redevelopment area vs. stormwater ponds or infiltration features
• Provides needed irrigation system to ballfields with “free” water
• Reduces stress on aquifer from irrigation demands
• Keeps stormwater on the land – reduces runoff peaks and volumes
• Protects quality of Centerville Lake
Questions to be Answered

• Is the stormwater safe for use in a city park?
• Will the stormwater kill turf grass due to high salinity?
• Will the sprinkler system clog from sediment in the stormwater?
• What if the pond water for irrigation runs out?
• What permit requirements need to be met?
Is the stormwater safe for use in a city park?

• Water quality tests on pond water and sediment – fecal coliforms, heavy metals, PAHs, volatile organics, pH, chloride, Legionella
  – Results below MnDNR standards for swimmable waters

• Soil testing in ballfields to establish baselines – heavy metals, PAHs, volatile organics, pH, chloride
  – Results below Health Department guidelines

• Will continue to test periodically
Will the stormwater kill turf grass due to high salinity?

- Chloride levels in pond water did not indicate problem
- City will incorporate best management practices to reduce risk
  - Sprinkling protocols
  - Fertilizer formulas
Will the sprinkler system clog from sediment in the stormwater?

- Learned from practices in golf course industry
- Pond and intake designed to minimize sediment in irrigation system
- Sprinkler heads selected based on performance under these types of conditions
What if the pond water for irrigation runs out?

- Pond designed with capacity for three weeks of operation with no rain
- City’s potable water system can be used to refill pond – without direct interconnection between potable water system and irrigation system
What permit requirements need to be met?

- MnDNR Water Appropriations permit was needed
- Future permit requirements? TBD
- At the same time, the project helped meet (and exceed) RCWD requirements
System Design

- Components of system
  - Pond
  - Intake
  - Supply line
  - Pump and wet well
  - Controls
  - Irrigation system
System Design: Pond

- No immediate modifications to pond
- Future improvements to pond to increase storage capacity
- Floating dock section for use in inlet screen maintenance
System Design: Intake

- Important to keep inlet clean
- Designed for inlet velocities of less than 0.5 fps
- Well screen utilized to keep aquatic life out (frogs, etc.)
- Fabric/Rip Rap/Sump to keep sediment and vegetation out
System Design: Supply Line

- HDD used to avoid prairie plantings and deep cuts in County Regional park
- HDD used to avoid prairie plantings and deep cuts in regional park
- Flat grade used to avoid sediment build-up at low point in line
System Design: Pump and Wet Well

- City reused existing well control panel
- System utilizes city-owned well pump that was no longer being used
- Wet well was installed like a standard water supply well
System Design: Controls

- Keep it simple
- Pump is triggered by drop in pressure
- Sprinklers are opened by standard irrigation control system creating pressure drop
- System has ability to add moisture probe and wind gauge
System Design: Gun-Style Irrigation System

- Let’s see it work!
- 200’ spray radius
- 400 gpm @ 100 psi
- Just 7 irrigation heads cover 11 acres of ballfields
- 50% less capital cost vs. traditional
Project Costs

Pond, intake, supply line $125,000
Pump, wet well, controls $ 52,000\(^1\)
Irrigation system $ 52,000
Design, administration $ 40,000
Total $269,000\(^2\)

\(^1\) City reused existing pump and control panel
\(^2\) Funding sources: City of Centerville, Clean Water Legacy Fund, RCWD
System Maintenance

- A lot is yet to be determined
- Examine and clean (if necessary) inlet screen
- Treat well pump like any other well pump
- Treat irrigation system like any other irrigation system
Results and Conclusions

• System is fully operational and was successful throughout the summer

• At the very end of this year’s drought, the city did fill the pond with their water supply. However, the pond lasted longer than the estimated 3 weeks without rain.

• Volume used is to be monitored over a 3-year period for use in determining actual volume credits through RCWD

• Don’t be afraid to try something new
Questions?

Mark Statz, Stantec, mark.statz@stantec.com
Dan Edgerton, Stantec, dan.edgerton@stantec.com