



Storage reservoir site at 25% constructed.

(Source: WSB & Associates, Inc.)

# Saint Anthony Village Water Reuse Facility

City of Saint Anthony Village, Minnesota

## Project Description

The Saint Anthony Village Water Reuse Facility collects stormwater runoff from 15.4 acres of land, including Silver Lake Road (Hennepin County Road 136), the City Hall, and local streets, plus filter backwash water from the City's water treatment plant. The collected runoff and filter backwash water is stored in a half million-gallon reservoir located underground and adjacent to Silver Lake Road. Water stored in the reservoir is recycled to irrigate a 20-acre site that includes a municipal park and St. Anthony's City Hall campus.

## Project Objectives

- ▶ Capture and reuse filter backwash water to eliminate discharge to sanitary sewer.
- ▶ Capture and reuse stormwater runoff to reduce pollutant discharge to surface waters.
- ▶ Conserve groundwater by replacing potable water used for field irrigation with reuse water.
- ▶ Reduce irrigation costs for City and comply with stormwater management requirements for Hennepin County roadway improvements and for public school parking lot upgrades.
- ▶ Create educational opportunities for stormwater management professionals and the public to view and learn about water reuse in Minnesota.

## Site Characteristics

- ▶ Runoff from 15.4 acres of surface area, including Silver Lake Road, 33rd Avenue NE, City Hall campus and the school parking lot
- ▶ 0.5-million gallon storage reservoir located underground between tennis courts and Silver Lake Road right-of-way

## Source Water

- ▶ Stormwater runoff including snowmelt
- ▶ Filter backwash water from the City's water treatment plant

## Regulatory Requirements

- ▶ Water Treatment Facility General Permit (MPCA)
- ▶ NPDES/SDS Permit (MPCA) for water treatment plant discharge
- ▶ NPDES general stormwater permit for construction activity (MPCA) for site construction
- ▶ Sanitary Sewer Extension Permit (MPCA/Metropolitan Council) for discharge to sanitary sewer from storage reservoir

## QUICK FACTS:

Over 15 acres of ground runoff from athletic fields and streets collected and reused

### Project Owner

- ▶ City of Saint Anthony Village

### Project Designer

- ▶ WSB & Associates, Inc.

### Project Costs

- ▶ Capital Cost: \$1.5 million
- ▶ O&M Cost: \$3,000 per year (estimated)

### Water Fact

- ▶ 77.5% reduction in phosphorus discharges to nearby surface waters



The storage tank is below an aesthetically designed stormwater pond with fountains.

(Source: HKGI)



## Project Components:

### Collection

- ▶ Stormwater runoff and backwash water conveyed via gravity flow into the storage reservoir

### Storage

- ▶ 0.5-million gallon underground storage reservoir
- ▶ Additional storage capacity provided by pumping water into a pond located above the storage reservoir

### Treatment Process

- ▶ Backwash water chlorinated prior to entering the storage reservoir
- ▶ Settling of suspended pollutants in the storage reservoir
- ▶ Filtration through a self-cleaning disc filter prior to reaching the irrigation distribution system

### Distribution

- ▶ Treated water pumped to two irrigation systems
- ▶ Potable water supply is directed to the reservoir and used for irrigation if reuse water is not available.

- ▶ Rice Creek Watershed District Permit for construction activity
- ▶ Rice Creek Watershed District Rules and the City's Ordinances
- ▶ Minnesota Department of Health (MDH) did not require a permit for the project.

## Public Involvement

Several presentations and an educational sign on the site have helped to educate residents about stormwater management issues in the community.

Some concerns regarding water quality of reused water were initially raised by the public. These concerns diminished once the public was informed of the water quality of reused water.

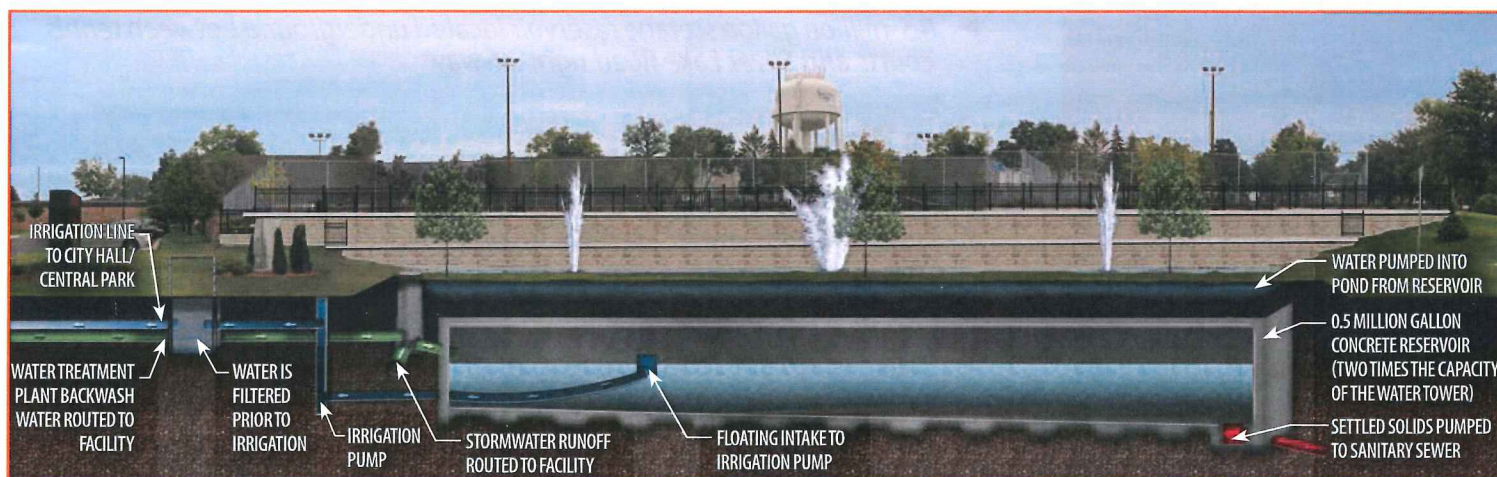
## Project Outcomes

- ▶ Surface water discharge reduced by 4.6 MGY, from 8.3 MGY to 3.7 MGY (55% reduction)
- ▶ Potable water used for irrigation on the site reduced from 6.0 MGY to 1.4 MGY, saving \$16,000/yr
- ▶ Estimated annual pollution loads to nearby surface waters reduced by 77.5% for phosphorus and 95% for total suspended solids (TSS)

## Monitoring Results

Testing has been performed to detect chloride and fecal coliform present in the reservoir. Results indicate there are no public health concerns and that water is suitable for turf irrigation.

The volume of reused water has been monitored from 2009 through 2011. Results indicate more than 6.0 million gallons per year are being reused for irrigation. This monitored volume exceeds original expectations by 30%.



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