

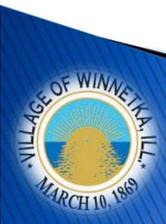
Village of Winnetka Stormwater Management Program Town Hall Meeting

September 19 & 25, 2013
Winnetka Community House



Agenda

- ❖ Introductions
- ❖ The Community–Wide Problem: Flooding
- ❖ Winnetka’s Stormwater Management Program
- ❖ Financial Strategy for Stormwater Improvements
- ❖ Frequently Asked Questions
- ❖ Audience Questions and Comments



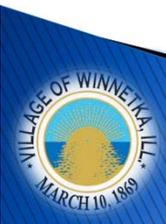
The Community-Wide Problem: Flooding

It has become clear that pervasive flooding in Winnetka requires bold, aggressive action. A community-wide problem requires a community-wide solution.



Frequent Major Rain Storms

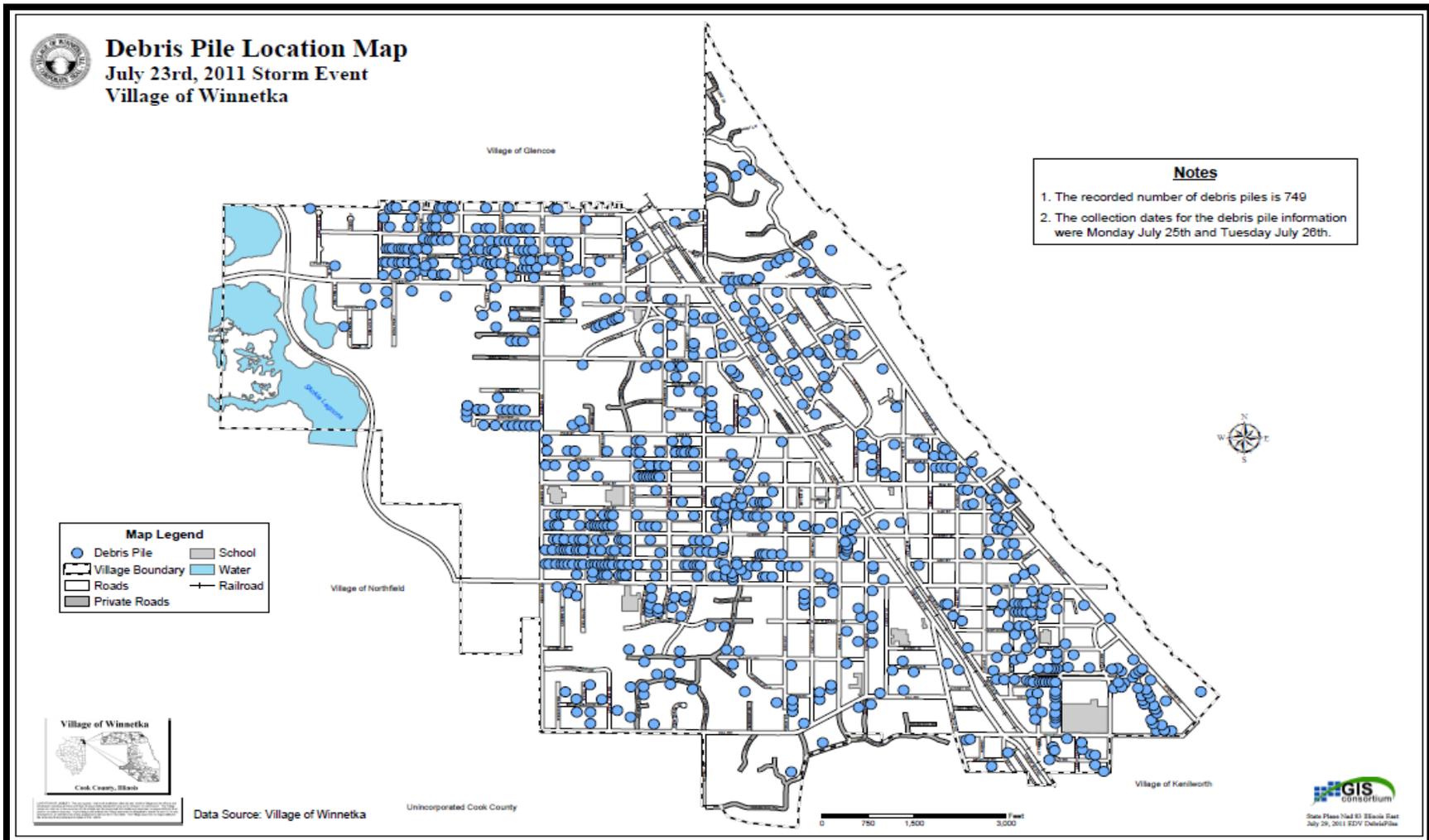
- ▶ April 18, 2013
 - 3.5” in 12-hour period
 - Saturated ground before event
- ▶ July 22–23, 2011
 - 7.8” total
 - 6.49” in 3.5 hour period
- ▶ September 13–15, 2008
 - 8.19” total, 36+/- hour duration
- ▶ August 21–22, 2002
 - 5.44” total, 6 hour duration



When It Rains, It Floods

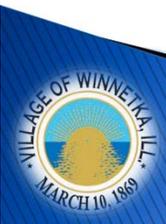


July 2011 Flood Damage Locations



Winnetka Stormwater Planning

- ▶ December 2008 CBEL Contract
 - North & South Willow Road Areas
 - 2-, 5-, and 10-year events
 - Study presented September 2009
- ▶ October 2010 Study of Additional Areas
 - 2-, 5-, and 10-year events
 - Study presented July 2011
- ▶ July 23 2011 Storm
 - Proposed improvements would not have provided significant benefits
- ▶ Additional Improvement Study for Large Storms
 - October 2011 presentation
 - Results in current program

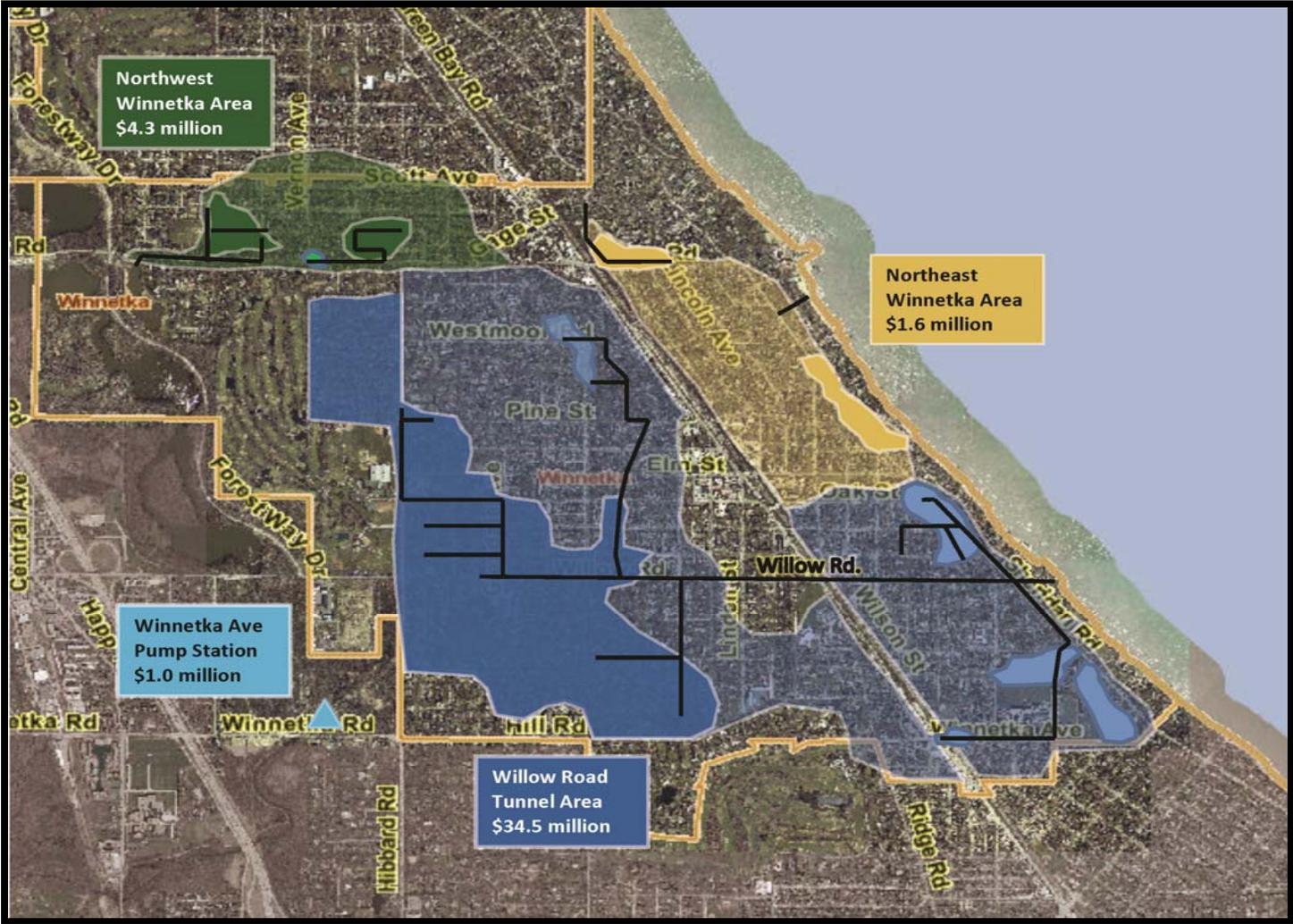


Winnetka's Stormwater Management Program

Providing the maximum level of flood protection so Winnetkans can weather 100-year rain events.

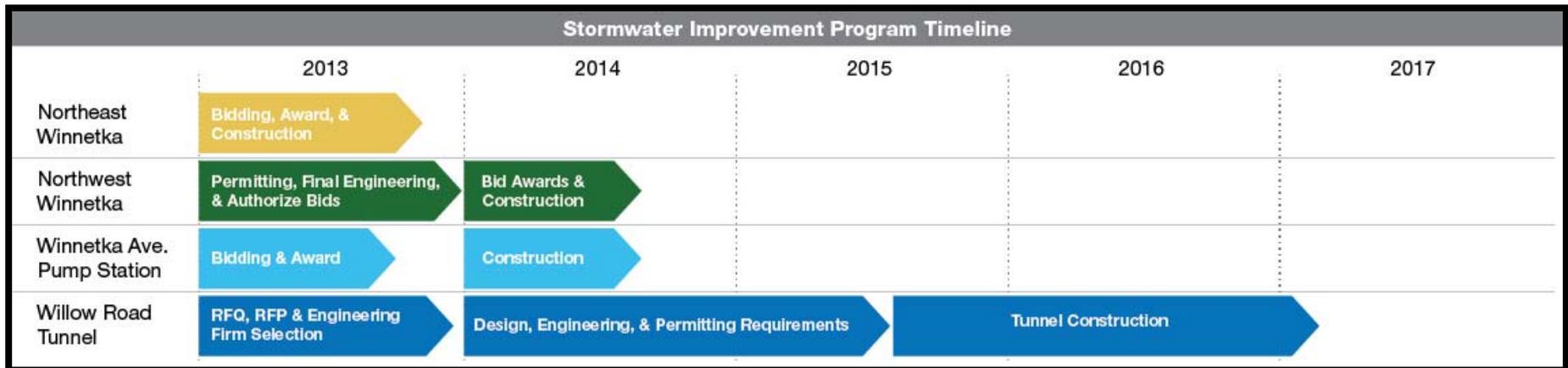


Stormwater Management Program

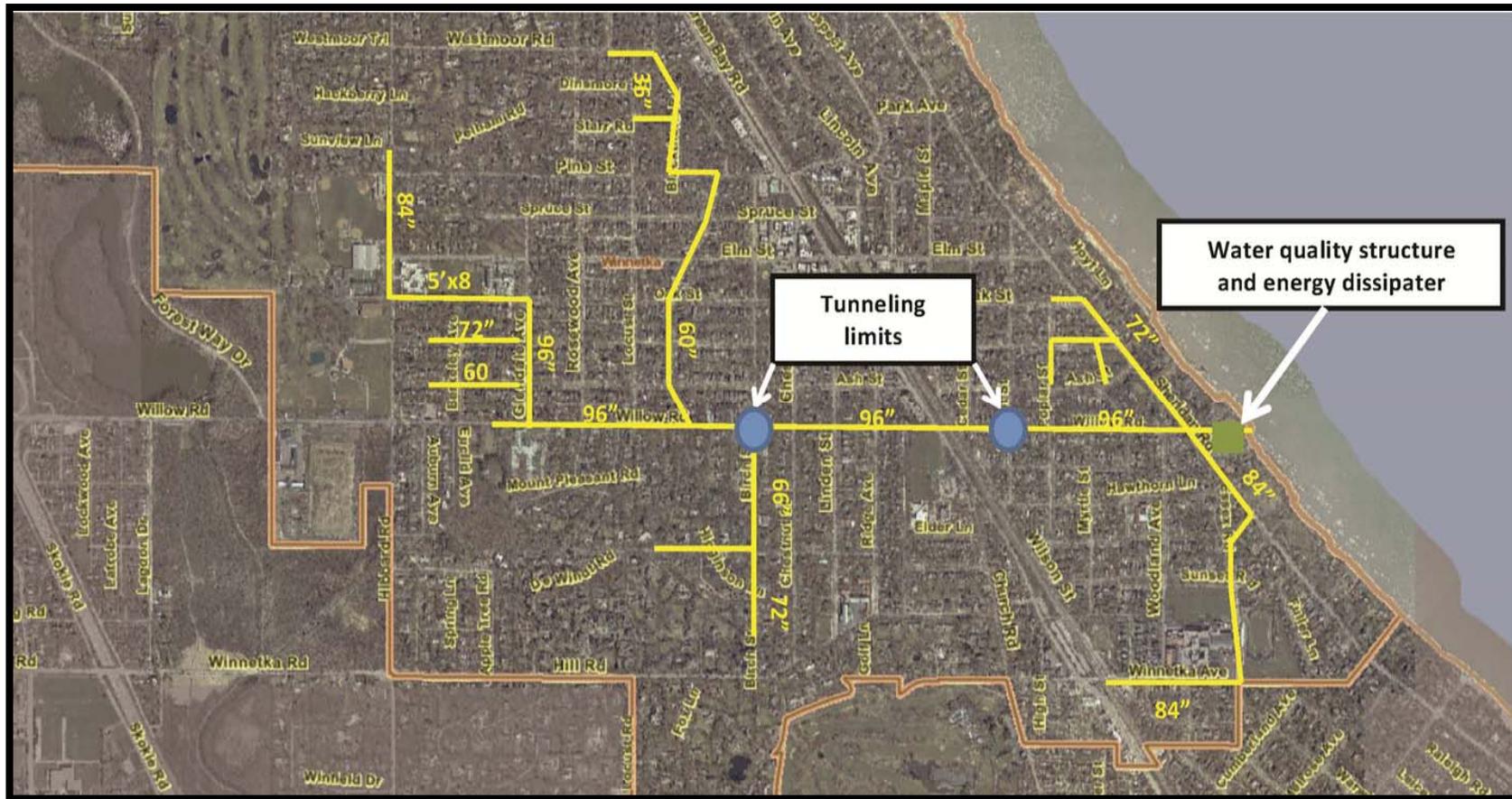


Program Timeline

- ▶ High level schedule includes improvements already in the pipeline as well as Willow Road Tunnel



Willow Road Tunnel



Combined Sewer vs. Separate Sewer Systems

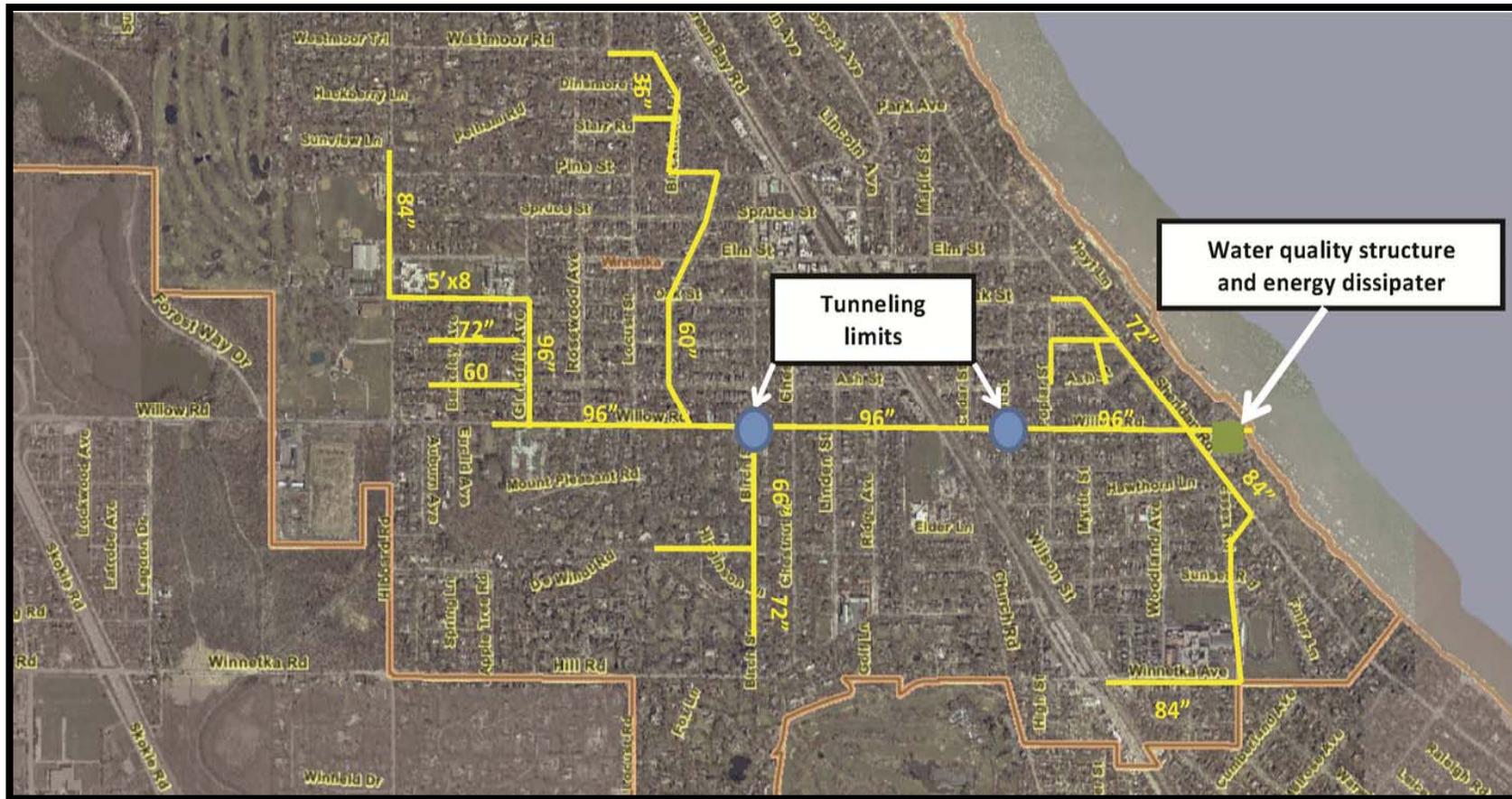
Combined Sewer

- ▶ One sewer network
- ▶ Receives both domestic sewage and stormwater runoff
- ▶ Discharges to treatment plant under normal conditions
- ▶ Overflows discharge mixed stormwater and sewage to waterways
- ▶ Chicago, Evanston, east Wilmette, east Kenilworth

Separate Sewer (Winnetka)

- ▶ Two sewer networks
- ▶ One receives sewage, one receives stormwater
- ▶ Conveys sewage to treatment plant, stormwater to waterways
- ▶ No mixed overflows
- ▶ Winnetka, Glencoe, Highland Park, and north

Willow Road Tunnel



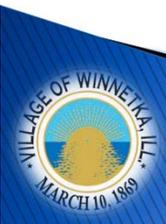
Tunnel Benefits

- ▶ Reduces flooding in 5 drainage areas served by approximately 2,500 parcels
- ▶ Less costly than providing 100-year protection in five separate drainage projects
- ▶ Does not require land lease or acquisition for detention
- ▶ Gravity system – no pumping required



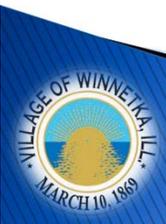
Tunnel Permitting Requirements

- ▶ Illinois Environmental Protection Agency (IEPA)
 - New stormwater discharge must meet Clean Water Act standards
- ▶ United States Army Corps of Engineers (USACE)
 - Work within the “ordinary high water mark” of Lake Michigan
- ▶ Illinois Department of Natural Resources (IDNR)
 - Diversion of water from western watershed to Lake Michigan
- ▶ Metropolitan Water Reclamation District of Greater Chicago (MWRDGC)
 - Permit required for new outfall structure
- ▶ North Cook County Soil & Water Conservation District (NCCSWCD)
 - Erosion control plans during construction
 - Permit required as condition of USACE permit approval



Environmental Permitting

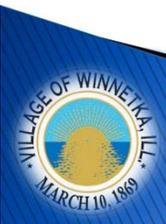
- ▶ The Tunnel project preliminary design anticipates a threefold strategy to protect water quality:
 - For western drainage area, higher frequency, lower volume events conveyed through the existing drainage system to the Skokie River.
 - Protect water quality through incorporating distributed green infrastructure at locations throughout the proposed project watershed.
 - Construct physical structures to prevent erosion and to control sedimentation and floatables, at the discharge outfall to Lake Michigan.



Environmental Stewardship

- ▶ Protect and enhance the quality of water in Lake Michigan and the Skokie River.
 - Higher frequency, lower volume storms continue to drain to Skokie River
 - No “new” water from east Winnetka to Lake Michigan
- ▶ Encourage the use of stormwater Best Management Practices (BMPs) throughout the Village to reduce runoff volumes and improve the quality of stormwater runoff.
 - Tunnel outlet structure to reduce velocity and trap floatables/sediment
 - Distributed green infrastructure installations to filter water before it enters the Tunnel

IEPA clean water standards must be met to construct the tunnel, and the Village believes this can be achieved.



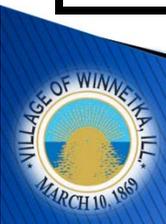
Financial Strategy for Stormwater Improvements

Developing an equitable way
to pay for the costs of
stormwater management.



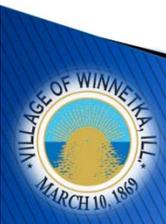
Program Costs

Project Description	Estimate of Probable Cost	Progress To-Date
<i>Spruce Street Outlet Area Improvements</i>		
Tower Road/Foxdale Area	\$1,162,853	Construction tentatively scheduled - fall, 2013
Lloyd Park Outlet	\$398,786	Construction tentatively scheduled - fall, 2013
<i>Northwest Winnetka Improvements</i>		
Tower Road/Greenwood Area	\$3,581,924	Proceeding with final engineering. Council authorization anticipated fall, 2013 and construction in spring, 2014
Forest Glen Extension	\$685,000	
Winnetka Avenue Pump Station	\$1,002,300	Council authorized project bidding - July, 2013
Stormwater Master Plan	\$101,220	Draft Master Plan expected by end of 2013
Utility Feasibility Study	\$72,100	Final report to Council: May 14, 2013
Utility Implementation	\$89,766	MFSG Implementation, Approved June, 2013
<i>Willow Road Stormwater Tunnel</i>		
North/South Willow & Provident	\$27,969,048	Staff has issued an RFQ for engineering services and anticipates that an engineering firm for tunnel design will be hired by the end of 2013
Cherry Street Outlet Area	\$2,000,000	
Winnetka Underpass Area	\$4,400,000	
Area F (west of Hibbard Road)	***	
TOTAL	\$41,462,997	



Program Financing

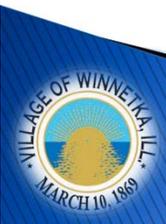
- ▶ Approaches to capital improvement funding
 - Pay-as-you-go
 - Cash reserves
 - Bond financing
- ▶ Program financing combines bond financing and reserves, due to:
 - Magnitude of project
 - Long-lived asset
 - Generational equity
- ▶ Planned bond issuances
 - \$18.5 million October 2013
 - \$16.0 million 2016



Program Financing (cont.)

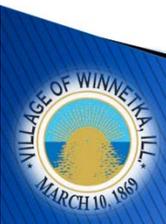
▶ Bond Repayments

- To-date, \$8.2 million of reserve funds allocated
 - Establish stormwater utility fund
 - Pay for projected stormwater improvements
- \$34.5 million costs financed by 30-year bonds
- Net bond proceeds, including principal and interest, currently projected to cost \$61.3 million



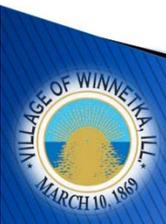
Stormwater Utility

- ▶ What?
 - A utility fee, paid by residents, business owners, and other institutional property owners, to repay bond issuance for improvements.
- ▶ Why?
 - A fair and equitable approach, as every property, regardless of location, contributes to runoff.
- ▶ How?
 - Properties are billed based on square footage of impermeable surface (proportional to runoff)



What is an ERU?

- ▶ Equivalent Runoff Unit – the basic billing unit for the utility
- ▶ 1 ERU = 3,400 square feet of impermeable surface
- ▶ Calculated based on average for all parcels in the Village
- ▶ Number of ERU's, multiplied by fee, results in the amount of the bill
- ▶ A fee calculator will be on the Village's website this fall



Stormwater Utility (cont.)

▶ Sample Change Rate and Fee Calculation

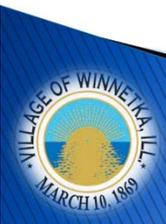
- Building: 1,804 s.f.
- Driveway: 621 s.f.
- Patio: 565 s.f.



- Total Impermeable: 2,990 s.f.

▶ $2,990 \text{ s.f.} / 3,400 = 0.88 \text{ E.R.U. (round to 0.9)}$

	2014	2015	2016	2017	2018
E.R.U.	0.9	0.9	0.9	0.9	0.9
Rate	\$262	\$356	\$358	\$360	\$362
Bill	\$236	\$320	\$322	\$324	\$326



Frequently Asked Questions

Q&A, reviewing answers to the most frequently asked questions the Village has received.



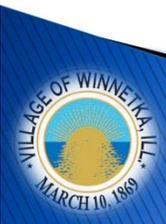
FAQ: East vs. West Runoff

- ▶ Why is the Village proposing to drain western Winnetka east to Lake Michigan, rather than to the west?
- ▶ What are the alternatives to the Tunnel and how were they analyzed/eliminated?



Answer: East vs. West Runoff

- ▶ Due to limits on river discharge, significant detention is required for 100-year protection:
 - 5.6 acre-feet @ Washburne School
 - 16.5 acre feet on playfield
 - 8.5 acre-feet on golf course
 - 13.4 acre-feet on Duke Childs Field
 - 123.5 acre-feet in Forest Preserve
 - 167.5 acre-feet total
- ▶ Going west is more complicated
 - Detention located on parcels owned by 4 other agencies with other missions
 - Detention relies on pumping for discharge
 - Deep detention below groundwater table
- ▶ For 100-year protection, going west is more costly
 - “Tree streets” and Provident area \$17.5 million
 - Southwest area \$17.8 million
 - Add \$11.7 million for Northeast, Northwest, Cherry Outlet, Underpass, and Skokie R. Pump Station, and total project cost rises to \$47.0 million, without land acquisition costs



FAQ: Environmental

- ▶ How have the impacts on Lake Michigan thus far been taken into account in Tunnel design?
- ▶ What water quality standard does the discharge need to achieve?
- ▶ What is Winnetka doing to ensure water quality?



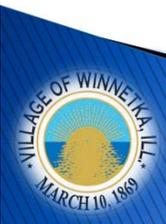
Answer: Environmental

- ▶ As part of the joint permitting process, the Illinois EPA will be reviewing the proposed project for impacts on water quality.
- ▶ The project will require an Individual Section 401 Water Quality Certification and anti-degradation assessment:
 - Applicable water quality standards may not be exceeded
 - All existing uses shall be fully protected
 - Incorporate all technically and economically reasonable measures to avoid or minimize increase in pollutant loading
 - If an activity results in an increased pollutant loading, it must benefit the community at large



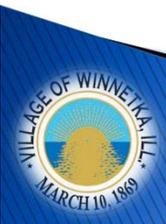
FAQ: Other Options

- ▶ Why is the Village undertaking such an extensive set of improvements? Why isn't it possible for the Village to deal with stormwater through residential mitigation efforts like green infrastructure?



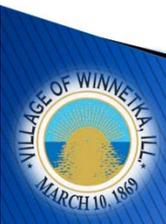
Answer: Other Options

- ▶ Green infrastructure refers to stormwater controls that mimic natural processes by infiltrating stormwater rather than shedding it
- ▶ Green infrastructure can reduce flooding by reducing runoff in watersheds
- ▶ Primary benefit of green infrastructure is water quality, achieved by filtration.
- ▶ Examples:
 - Permeable pavements
 - Green roofs
 - Rain gardens and bioswales with native water-loving plants



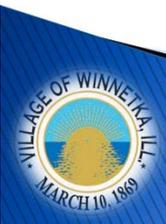
Answer: Other Options

- ▶ Sample Calculation: How much green infrastructure would be needed to absorb 1 inch of rainfall over the 900 acre western portion of the tunnel drainage area?
- ▶ 1 inch rainfall on 900 acres = 75 acre-feet (24,437,160 gallons)
- ▶ Pervious Pavement:
 - 1 mile of pervious pavement (24 ft. wide with 2 ft. stone base) will store 2 acre-feet
 - Reconstructing every street between Willow and Pine west of Locust to Hibbard yields 4.8 miles of pervious pavement, storing 9.6 acre-feet of water.
 - 9.6 acre-feet is equivalent to 0.13 inches of rainfall over the watershed



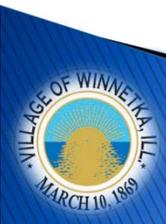
Answer: Other Options

- ▶ Rain gardens and bio-swales absorb more water than lawns. What if every property owner in the 900 acre drainage area installed a rain garden amounting to 5% of their lot area?
 - For an 8,000 sq. ft. lot, this would amount to replacing 400 sq. ft. of lawn with rain garden
 - Christopher Burke modeled the increased permeability and found that over 900 acres, runoff would be reduced by 3.7 acre feet
 - 3.7 acre feet over 900 acres translates to capturing 0.05 inches of precipitation



Answer: Other Options

- ▶ Total 100-year runoff storage volume required from 900 acres: 167 acre-feet
 - Less 4.8 miles of pervious pavement (-9.6 acre feet)
 - Less 5% of every lot replaced with rain garden (-3.7 acre feet)
 - Less 3, 55-gallon rain barrels per property @ 1200 properties (-0.6 acre-feet)
- ▶ Remaining runoff to be managed = 153.1 acre-feet, or 92% of volume
- ▶ For very large storms, green infrastructure is not a replacement for traditional stormwater management.
- ▶ Green infrastructure does handle smaller storms well, and can play an important role in protecting water quality.



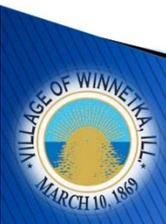
FAQ: Sanitary Sewer Backups

- ▶ I experience backups through my basement floor drains from the sanitary sewer. What is the Village doing about this?



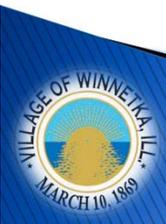
Answer: Sanitary Sewer Backups

- ▶ Sanitary Sewer Backups Caused by Stormwater Entering Sanitary Sewer
 - Inflow: Direct stormwater connections
 - Infiltration: Groundwater via open joints/cracked pipes
- ▶ Detailed Investigation Program
 - Flow Monitoring (Complete)
 - Manhole Inspections (Complete)
 - Smoke Testing (Complete)
 - Dyed-water testing/Television Inspection (October)
- ▶ Develop Corrective Actions
- ▶ Private Property Inspection Program



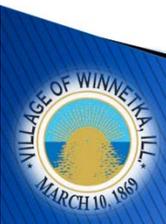
Answer: Sanitary Sewer Backups (cont.)

- ▶ Corrective Actions Anticipated
- ▶ Public Sector
 - Manhole rehabilitation
 - Spot sewer repairs
 - Sewer lining
- ▶ Private Sector
 - Broken sewer services
 - Downspouts and drains
 - Sump pumps



FAQ: Utility

- ▶ How will governmental and other tax-exempt entities fit into the utility structure?

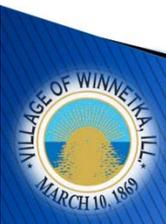


Answer: Utility

- ▶ Currently, entities like governmental bodies, religious and cultural institutions, and other non-profit entities do not pay property taxes.
- ▶ If stormwater improvements are funded through property taxes, these entities will not pay their share, even though they contribute significant runoff amounts.
- ▶ With a utility, everybody who contributes runoff to the system, and to the flooding problem, pays for the solution.

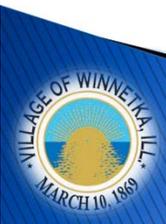
FAQ: Private Stormwater Improvements

- ▶ My new home was designed with a stormwater control system. Why should I pay the utility fee?



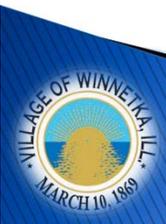
Answer: Private Stormwater Improvements

- ▶ The Village's stormwater drainage regulations only require property owners to detain the runoff generated by the additional incremental impermeable surface added during a construction project.
- ▶ Runoff generated by the previously existing improvements (buildings, driveways, patios, etc.) is not accounted for in these calculations.
- ▶ Detention improvements hold the stormwater for a period of time, but the stormwater is still ultimately discharged to the Village's system.
- ▶ As a result, detention improvements do not capture all runoff, and stormwater runoff volume still discharges to the Village's storm sewer system.
- ▶ Stormwater is still discharged to the Village stormwater system, in proportion to the amount of impermeable surface on the property, the stormwater fee calculation is still applicable.



Summary

- ▶ A community-wide problem requires a community-wide solution
- ▶ The Village Council has made stormwater management a top priority since the 2008 flooding
- ▶ The proposed program reduces flood risk in susceptible areas throughout the Village, for \$41.4 million
- ▶ The proposed tunnel project is a viable, cost effective project that will be designed to reduce flooding while protecting water quality
- ▶ The program will be funded equitably and fairly, via utility, because everyone contributes to the flooding problem, and everyone should contribute to the solution.



Questions and Comments

Participate tonight by:

- Asking a question of the panel
- Filling out a comment card
- Sending an email to stormwatercomments@winnetka.org



Information Resources

www.villageofwinnetka.org

www.winnetkastormwaterplan.com

stormwatercomments@winnetka.org

