When all of us come together and work towards a common goal, we can and will accomplish something amazing and beneficial for our community.
Today’s Presenters

Joe Kenney, P.E., CFM, Director of Community Development, Village of Glenview


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Glenview, Illinois

- Near north suburb of Chicago
- Incorporated 1899
- Population: 45,529
Drainage in Glenview

- Three primary watersheds
- 48 sub-watersheds
- 60% of Village built to old standards
  - No stormwater detention
  - No overland flow paths
  - Limited conveyance
2007-08 Flooding Events

- August 2007: *Microburst*
  - 10-year flood event (monthly total > 11 inches)
  - Downed trees and leaves blocking inlets
  - Mass power outages (up to four days)

- September 2008: *Flood of record*
  - Six inches of rain in four hours (13% > 100-year)
  - 9.5 inches total
  - All local systems beyond capacity
  - Results include all types of private property flooding
  - *Residents: demand for quick, local action*
2008 Flooding Event
Stormwater Task Force (SWTF)

- 16 area residents
  - Village-wide representation

- Hosted 14 public meetings
  - Including two ½ day open houses
  - Over 500 attendees

- 355 responses to SWTF survey

- Very public and active engagement

Outreach tools used:
- Public meetings
- Brochures
- Email blasts
- E-glenview
- Village newsletter
- Glenview TV
- Survey monkey
- Staff roadshow
Layer #1: Sanitary sewer backup into homes with direct impacts on public health and structures.

Layer #2: Over-foundation flooding that can result from overbank flooding from rivers or surface flooding.

Layer #3: Surface flooding of streets to depths that impair vehicle access.

Layer #4: Other areas impacted by street or property flooding.
Flood Tier Mapping

Glenview Park Golf Club
Stormwater Master Plan

- Flood Risk Reduction Program
  - Approved August 3, 2010

$125M of local projects identified
Expand Blue tee forward to distribute wear on larger surface – reduce White tee accordingly

Reconstruct greenside bunkers for improved proximity to putting surface and add a new “framing” bunker back / left of green

Select clear & limb trees to enhance playability of recovery shots out of renovated fairway bunker

Construct dry detention area to improve drainage and storm water management

Expand fairway approach near renovated bunker which is being reduced in size

Re-grade fairway for improved surface drainage, turfgrass condition and playability (no “washboard” movement)

Shift Red tee to accommodate space for new prairie detention area – transplant smaller trees impacted by excavation

Hole #3
Convert the existing manicured turf into a naturalized area to the left of the pond adjacent to the tee complex on Hole #5

Expand the existing lake for enhanced golf hole strategy and storm water detention

Reconstruct the greenside bunkers – increase size of left bunker to relate to the existing lake while also expanding the fairway approach to the lake

Re-grade the fairway to improve playability and drainage

Create a “risk/reward” tee shot by constructing a new lake that transitions into a naturalized area along the right side of the golf

Construct two (2) new fairway bunkers to visually frame the tee shot landing area and challenge the longer hitters

Expand Blue tee to gain more teeing area

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Hole #7
Engineering Project Goals

1. Improve golf course playability

2. Bring site into compliance with Metropolitan Water Reclamation District (MWRD) storm water ordinance

3. Support Village storm water management program

*An Intergovernmental Agreement (IGA) was executed by both the Park District and Village Boards in March 2013 approving the parameters for this partnership.
Neighborhood Existing

NOTE: FLOODING EXTENTS WITHIN GOLF COURSE LIMITS NOT SHOWN
Golf Course Pre-Construction Drainage Divide

Overflow to Elmgate
Golf Course Post-Construction
Drainage Divide

Legend
- Blue: Elevation 1 Day After Peak Storm
- Green: Peak Water Elevation

Flow modeled with Pondpack
Drainage Profile - South Watershed

CRITICAL ELEVATION

- Central: 654.2
- Elmgate: 650.5
- Shermer: 649.4
- Robincrest: 648.3

South Watershed

Pre-Construction
- 1.6 Ac-Ft Storage
- 73.0 cfs outflow

Post-Construction
- 9.5 Ac-Ft Detention
- 19.4 cfs outflow

Approximate Drainage Route

Post - Con Detention
Pre - Con Grade
Post - Con Detention

Post - Con Storage
Pre - Con Grade
### Stormwater Detention (acre-feet):

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<th></th>
<th>North</th>
<th>South</th>
<th>Total</th>
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<tbody>
<tr>
<td>Pre-Construction</td>
<td>5.0</td>
<td>1.6</td>
<td>6.6</td>
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<tr>
<td>Post-Construction</td>
<td>12.4</td>
<td>9.5</td>
<td>21.9</td>
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<td><strong>Net Increase</strong></td>
<td><strong>7.4</strong></td>
<td><strong>7.9</strong></td>
<td><strong>15.3</strong></td>
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- 1 acre-foot = 325,000 gallons of water
- 4,970,000 gallons of new detention storage proposed
- Storage will be used to better manage golf course runoff and runoff from tributary areas while reducing downstream discharges.
- By utilizing the detention proposed and restricting the flow, the release rate (overland and by pipe) from the golf course during a 100-year storm event will be reduced by over 70%.
Stormwater Management and Golf Course Renovation

Do they really go together?
What I see
Perception

> Take on more storm water? Are you kidding?

> “We have a hard enough time keeping turf as it is”

Remember -

> “Collaborative efforts align units of local government to work towards a common goal.” (Warn 2011)
Reality

- The untrained eye would never know
- Performing as engineered
- Substantial improvements as a result
- Revenue/Round up $$
- Riding Cars every day
Outcomes

- To date – SWM performing as designed
  - VIP Opening July 18th
- Performing regular maintenance duties much sooner than in the past
  - Cart path provides for maintenance staff too, not just golfers (reduced compaction wear patterns)
- No standing water in fairways and Bunkers
- Provide for overall system to accommodate more frequent large scale rain events
- Renewed interest in overall facility
- Win/Win IGA
Take Aways

- Glenview Park District and the Village of Glenview had to compromise and work together, both giving up control and trusting one another with the work needed to be done.
- JGCD & GHA established boundaries for design roles
- Set the stage for future partnering, about a dozen since the inception of this development
- Effective Engagement of the public; golfers, surrounding residents, Village and Park District Staff & Boards
- Correct the Perception for SWM – Not “New water” but better managed stormwater
Take Aways

- Village of Glenview valued detention by the acre foot, anticipating:
  - 100,000 per acre foot above ground
  - 400,000 per acre foot below ground
- Stormwater Committee made its case to the Village Board about 16 acre feet
  - 22 acre feet created by project
  - 6 acre feet of existing depressional storage
  - Village share was $1,842,000
  - equates to $115,000 per acre foot
- The actual contribution was calculated by a sum of hard and soft costs for the project.