TWIN ORCHARD COUNTRY CLUB
DRAINAGE IMPROVEMENTS
IASFM 2010 CONFERENCE

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Presented by:
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South Branch Indian Creek Tributary

Outlet #1
- Total DA = 136 acres
- 47% Offsite
- No Defined Channel
- Storm Sewers Connected To Ponds
- Interconnected Ponds (Storm Sewers Channels)
- Outlet: Channel & 18" Field Tile

Outlet #2
- Total DA = 305 acres
- 31% Offsite
DRAINAGE PROBLEMS

• Existing Drainage System Capacity is Exceeded on a Yearly Basis
• Various Portions of the Two 18-Hole Courses are Inundated
• Damages to the Courses Include Dead Bend Grass Fairways (Depth & Duration), Loss of Revenue Due to Course Closure (Duration), Erosion and Debris

DRAINAGE PROBLEM CAUSES

• Not Enough Storage Volume Available
• Deteriorating and Undersized Infrastructure
• Downstream Outlet Restrictions (Failed 18” Field Tile)
PROJECT OBJECTIVE:
REDUCE FREQUENCY AND MAGNITUDE OF FLOODING

SOLUTION:

• Additional Stormwater Storage at Effective Locations
• Floodplain Fill to Raise Fairways (Reduce Frequency, Depth & Duration of Inundation)
• New Storm Sewers
• Replace Failed 18” Field Tile

ISSUES:

• Location of Stormwater Storage Basins?
• Look and Feel of Stormwater Storage Basins?
First Step

- Work with CC Members, Staff and Golf Course Architect
- Identify Locations for SW Storage
- Determine Look and Feel of Basins

Second Step

- Develop Elevation-Storage-Discharge for each Basin
- Use Hydrologic Model to Determine Effectiveness

Third Step

- Refine Conceptual Drainage Improvement Plan
- Developed Concept Level Opinion of Probable Cost

Fourth Step

- Obtain Membership Approval of Plan
Final Engineering & Permitting Phase

1. Finalize Modeling
   - TR-20 Hydrologic Model (West & East)
   - HEC-RAS Hydraulic Model (East)

2. Final Engineering Plans
   - Work closely with the Golf Course Architect
   - Hole Grading, Drainage and Earthwork Balance

3. Stormwater Pollution Prevention Plan

4. Permitting (May 23, 2008)
   - LCSMC – Concurrence with Existing & Proposed BFE’s
   - LPCB & HEC – Letter of No Objection
   - LCPB & Z – Site Development Permit
   - IEPA – NOI General Permit to Discharge Stormwater – Construction Site Activities

FINALLY!!

CONSTRUCTION BEGINS – AUGUST 2008
DRAINAGE IMPROVEMENT PLAN

• 12 Dry Basins (Native Plants & Blue Grass)
• 2 New Wet Bottom Pond
• Expansion of 5 Existing Wet Bottom Ponds
• Provided Stormwater Storage = 33 acre-feet
• Provided 2.3 acre-feet of new Floodplain Storage
• New Storm Sewers draining SW basins
QUESTIONS