

CONVERTING DEGRADED PONDS INTO SUSTAINABLE COMMUNITY ASSETS



By:

**Ted Gray, PE, CFM, CPESC
Living Waters Consultants, Inc.
www.LWC-Inc.com
(O) 630-321-1133**

For:

**Illinois Lake Management Assn.
32nd Annual Conference
Crystal Lake, IL
March 30, 2017**

Outline: Converting Degraded Ponds Into Community Assets

- Pond Impacts
- Dredging Alternatives
- Environmentally Sound Solutions
- Legal Considerations
- Potential Benefits Long-Term

Impoundments, Detention Basins, & Pond Impacts



Sedimentation Impacts



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Shallow Water & Silt Impacts



Mud Flats During Drought



Mid-Channel Dam



Flood Control Structure



Dredging Costs???



Sustainable Solutions: Streams Naturally Convey Sediment & Water



Living Waters Consultants, Inc.

- Design Engineering
- Construction Services (Design-Build Projects)
- Environmentally Sound Solutions
- Ecologists, Hydrologists, Fluvial Geomorphologists



Professional Services:

- Stream, Lake & Wetland Restoration
- Water Resources Engineering
- Steep Slope Repair
- Coastal Beach Stabilization
- Stormwater BMP Design
- Grant Funding Acquisition
- Native Landscaping Design
- Wastewater Reuse



Example Awards

- APWA - Technical Innovation Award
- APWA - Project of the Year Award
- ACEC - Engineering Excellence Merit Award
- City of Chicago - Greenworks Award
- IAFSM - Stormwater Management Project of the Year
- IAPD / IPRA – Outstanding Conservation & Sustainability Award
- IECA - Environmental Achievement Award
- Lake County - Stormwater Community of the Year
- National Visionary Award - Top 5 Finalist
- U.S. EPA / Chicago Wilderness – Native Landscaping Awards (5)



Valley View Pond - Impacts



-Water Depth
2 to 4 feet

-Silt Impacts

-Algae Blooms

-Odors

-Water Quality
Impairment

Algae Blooms



Goose Population

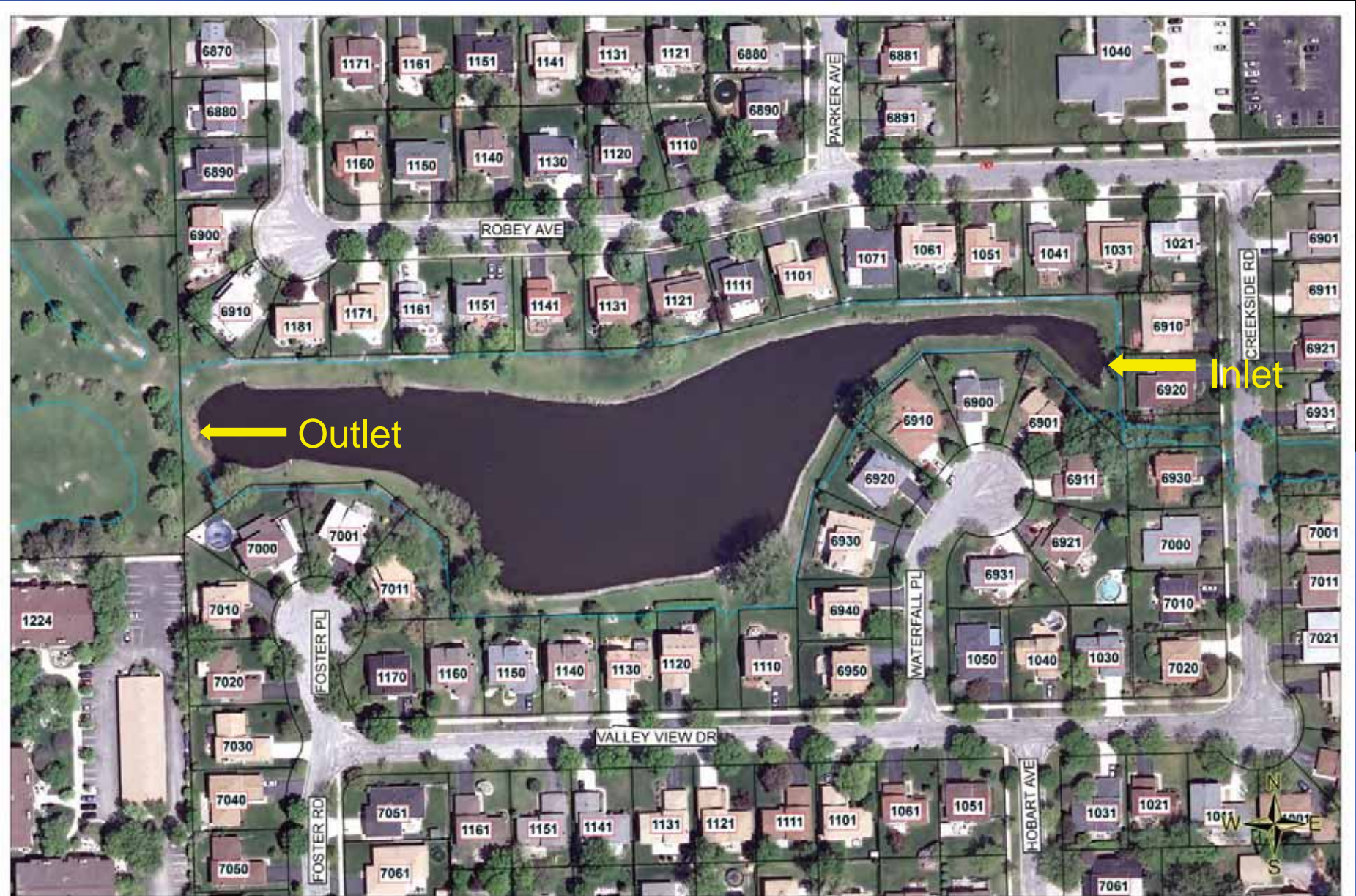


Existing Impacts



- Aesthetic Impacts
- Sediment Toxicity Concerns (Potential Illinois EPA TACO Remediation)
- Fishkills

Project Area Overview



Valley View Pond Existing Site Analysis



Future Options:

- Option # 1: Dredging & Sediment Removal
- Option # 2: In-Lake Sediment Management, Naturalization, Creek Restoration

Valley View Pond: Dredging Benefits & Drawbacks

Advantages:

- Increased Open water (at least temporarily)

Disadvantages:

- Dredging is a temporary solution.
- High long-term costs (continued sedimentation / future dredging).
- Does not address impacts to water quality or aquatic life.
- If sediment toxicity is present, it will increase costs beyond existing cost projections.

Concept Cost Estimate

- Dredge to Average 5-foot Water Depths = \$950,000+ (6,000 cubic yards silt removal) – Potential Soil Disposal Issues and Additional Costs

Option 2: Naturalization Concept Plan



Pond Naturalization Concepts



Access & Nearshore Pools



Offshore Wetlands

Option 2: Benefits & Drawbacks

Advantages:

- Environmentally sound stabilization of sediment deposits
- No removal of sediment necessary
- Reduced algae blooms
- Water quality improvement / reduced odors
- Reduced long-term costs
- Increased flood storage
- Stream & wetland habitat restoration
- Fish passage restoration
- Increased wildlife diversity (birds, stream fishes, etc.)

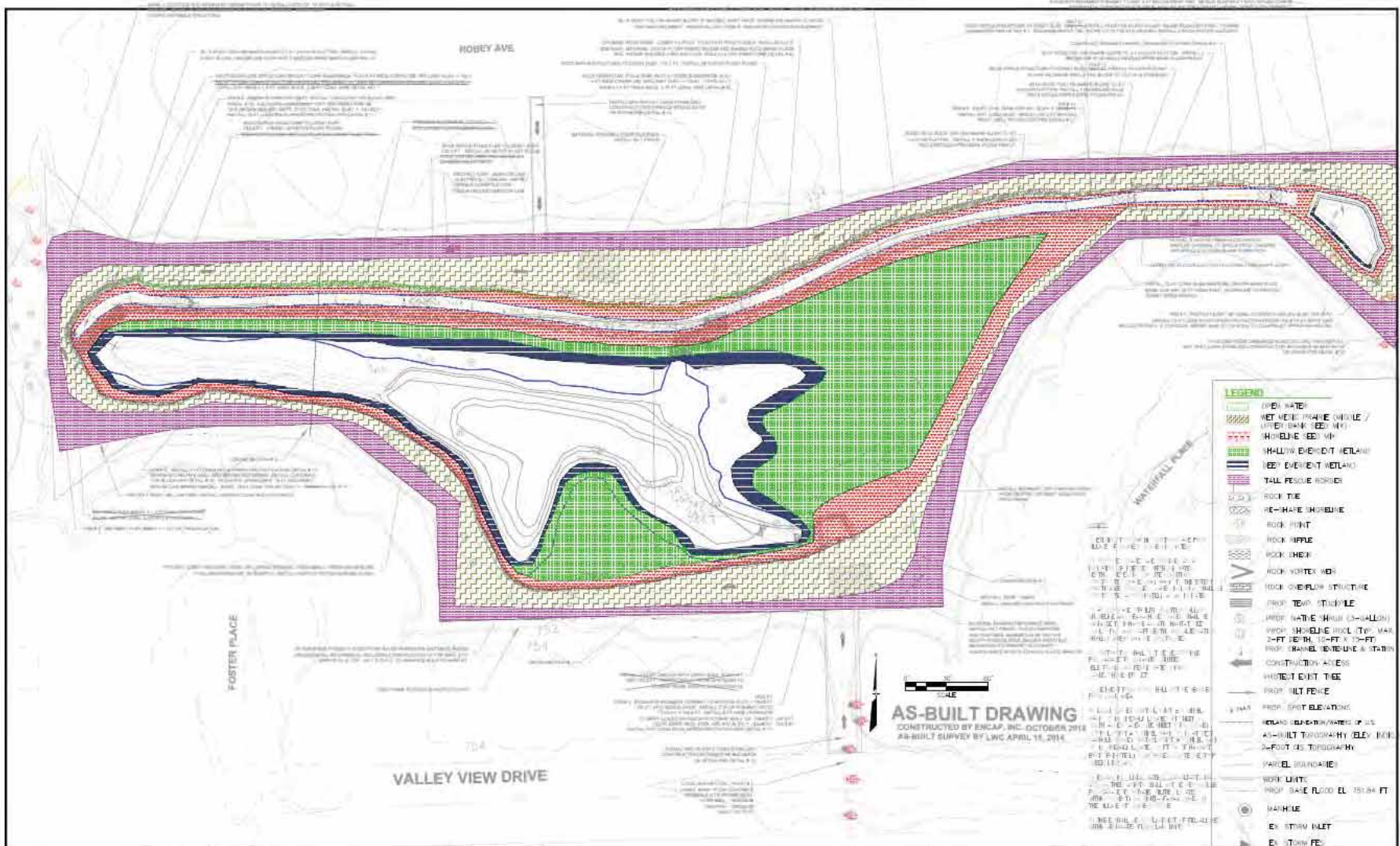
Disadvantages:

- Reduced area of open water (stream vs. impoundment)
- Some downstream discharge of sediment may temporarily occur.

Concept Cost Estimate

Ranging from \$450,000 to \$525,000

Option 2: Planting Plan



NO.	DESCRIPTION	DATE	BY	CHK	DATE
1	AS-BUILT SURVEY	APRIL 18, 2014			
2	REVISIONS FOR AGENCY REVIEW				
3	REVISIONS FOR REVIEW				



LIVING WATERS CONSULTANTS, INC.
 16 W. 455 S. FRONTAGE ROAD
 SUITE 119
 BURR RIDGE, IL 60527
 TEL: 630-921-1199 FAX: 630-921-1144

SHEET 3: POND NATURALIZATION PLAN
VALLEY VIEW POND NATURALIZATION PROJECT
VILLAGE OF DOWNERS GROVE
SHEET 3 OF 12

Construction



Construction



Construction



Construction



East Side of Creek (Year 1)



West Side of Creek (Year 1)



Creek and Berm (Facing East)



Dredged Pond (Year 1)



Pond Shoreline



Sediment Catchment / Forebay



Pond (Year 2)



East Wetland (Year 2)



Creek (Year 2)



Legal Considerations of “Detention”

- “Detention” Basins by Law Must (by County Ordinance, Deed Restriction, etc.) Provide the Detention Storage Function Originally Approved and Intended
 - Flood Storage Volume Preservation
 - Flood Conveyance Capacity
 - Pond Outlet Hydraulic Functions
- Property Protection From Flooding Usually Improves (More Flood Storage Provided)
- Outlet Structure Design or Spillway Design Modifications Evaluated by a Licensed Engineer
- Environmental Issues Caused by Ponds Usually Improve with a Solid Naturalization Plan

Challenges

- Aesthetic Adjustment (Turf Conversion)
- Would Have Provided More Designated Shoreline Access Areas (Flagstone Outcrops, etc.)



Benefits

- Sustainable Open Water Features
- Restored Stream Channels
- Sediment Bypass / Protects Lake
- Possible Funding Assistance
- Aesthetic Enhancement
- Flood Reduction Potential
- Environmentally Sound
- Property Value Protection
- Habitat Enhancement
- Fish Community Restoration
- Wildlife Benefits
- Resolves Future Sediment Deposits

Converting Water Features Into Natural Stream Corridors



- Aesthetic Impacts
- Algae Blooms
- Sedimentation
- Loss of Open Water
- Shoreline Erosion
- Shallow Bedrock Deposits

Existing Conditions



Proposed Plan



Inlet Structure

Shoreline

Outlet Structure

Outlet Modifications



Planting Plan



Open Water / Deep
Emergent Wetland Margin

Emergent Wetland

Construction Sequence



Before



De-Watering

Construction Sequence



Stream Meander & Shore Stabilization

Erosion Blanket, Seeding, Planting



Construction Sequence



Early Restoration

Year 1 Growth



Sustainable Options For Degraded Water Features



Creek Restoration



Wetland Pockets

Questions?



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