# BUTLER FARMS/OAK CREEK STORMWATER PROJECT UPDATE MEETING

Wednesday, February 10th

6:30 PM

# City Staff & Project Team

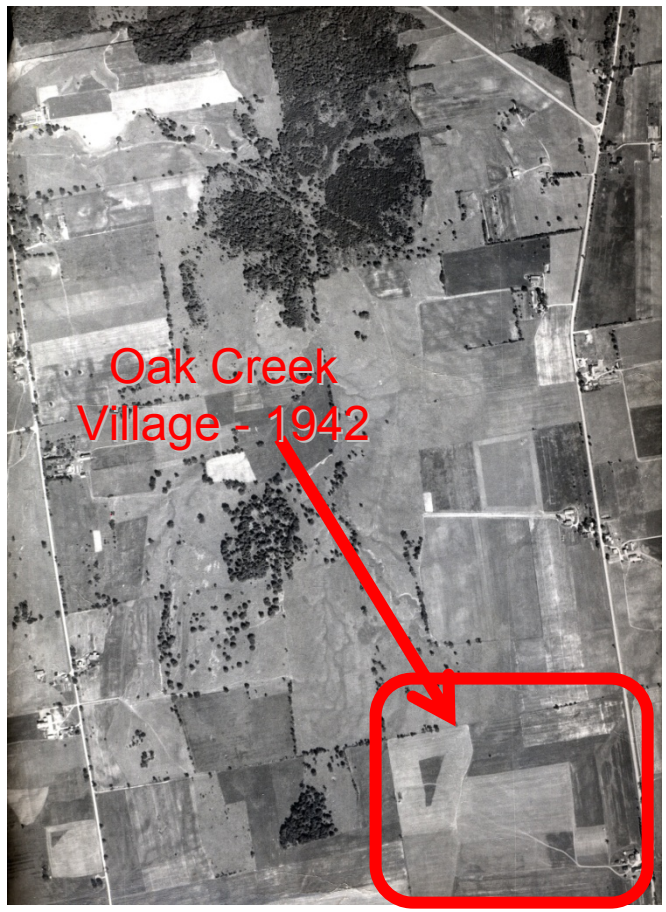
- Tom DiPietro, Stormwater Superintendent
- Justin Rabidoux, Public Works Director
- Paul Conner, Director of Planning & Zoning
- Jack Myers, PE, Stantec
- Jake Riley, VHB Pioneer
- Juli Beth Hinds, VHB Pioneer

UVM Support:

Breck Bowden

# Project History and Overview

- Project Purpose:  To work with neighborhood to develop combination of solutions that will improve water quality and meet stormwater management needs
- City has worked to ensure the stormwater project will be consistent with State permit requirements/issues, even while these are still evolving
- Initiated in 2002 through EPA grants to City and UVM; two additional grants received
- Includes water quality sampling and modeling, neighborhood outreach, use of multiple approaches



# Key Project Components:

1. New stormwater treatment ponds to treat unmanaged runoff
2. Renovation of existing ponds to improve performance
3. Installation of new bio-retention treatment (rain gardens, curb cut gardens)
4. Stream channel protection and enhancement (buffer and culvert improvements)
5. Stormwater diversion swale to mitigate VNCC impacts and improve water quality

# Upcoming Construction:

2010 Season:

- Stormwater Diversion Swale & Bioretention Area
- Curb Cut Bioretention Gardens, Butler Drive

2010-11 Season:

- Stream Channel/Buffer Enhancements
- Potential Culvert Replacements

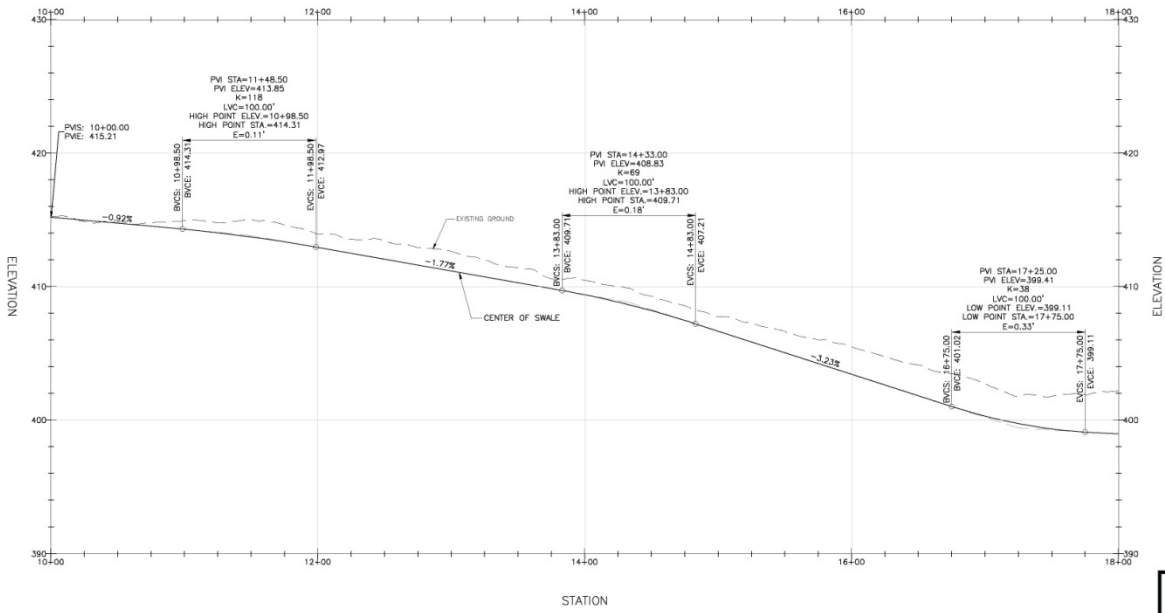
2011 Season:

- New Detention Pond at Butler Farms
- Renovation of Oak Creek Village Pond

# Oak Creek Village Pond: Completion and Performance

# Diversion Swale (planned 2010)

- Natural diversion channel to reduce flooding impacts adjacent to Golf Course, and over-loading of Oak Creek Village storm drains
- Natural systems approach to reducing flooding and providing better water quality
- Will re-direct flow out of neighborhood and into renovated stormwater pond
- Agreement with VNCC being developed
- Steve Apfelbaum to work on soil infiltration/plantings for water treatment and habitat enhancement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Stantec Consulting Services Inc.
55 Green Mountain Drive
South Burlington VT U.S.A.
05403
Tel. 802.864.0223
Fax. 802.864.0165
www.stantec.com




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Client/Project
CITY OF SOUTH BURLINGTON

OAK CREEK/BUTLER FARMS STORMWATER GOLF COURSE SWALE
South Burlington, Vermont

Title
SWALE PLAN AND PROFILE
STA. 10+00 - STA. 18+00

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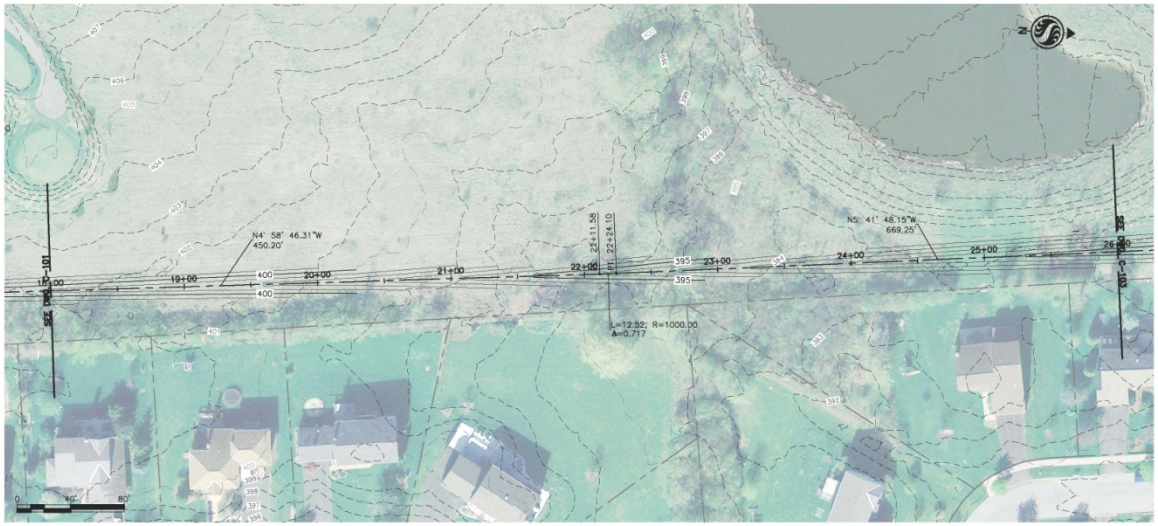


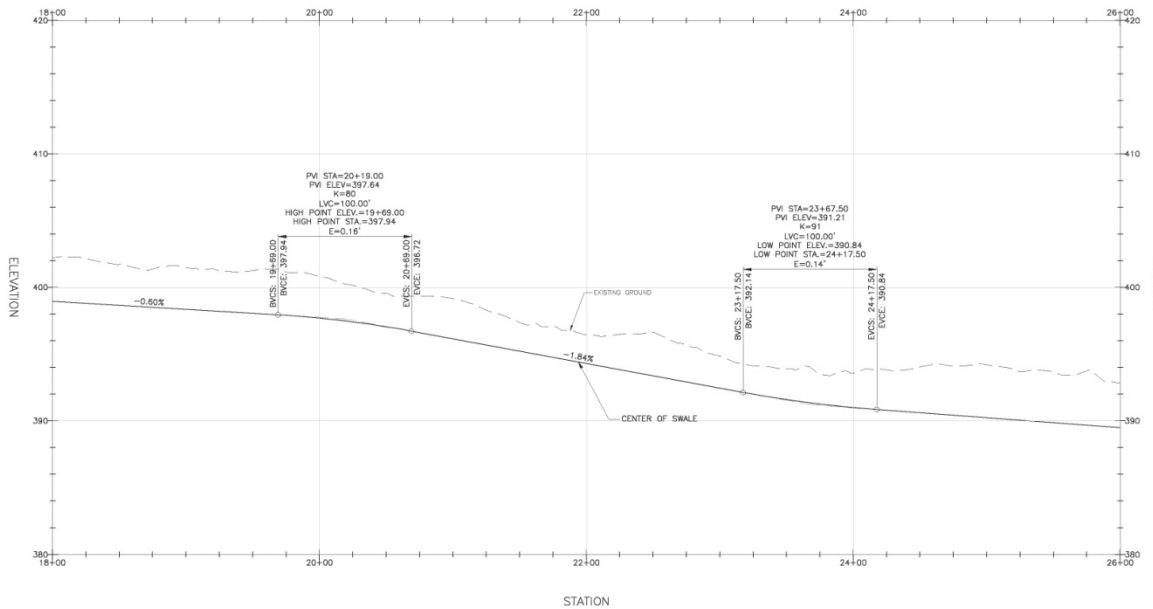


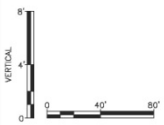


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Client/Project
**CITY OF SOUTH BURLINGTON**

**OAK CREEK/BUTLER FARMS STORMWATER GOLF COURSE SWALE**
South Burlington, Vermont

Title
SWALE PLAN AND PROFILE
STA. 18+00 - STA. 26+00

| Project No. | Scale |
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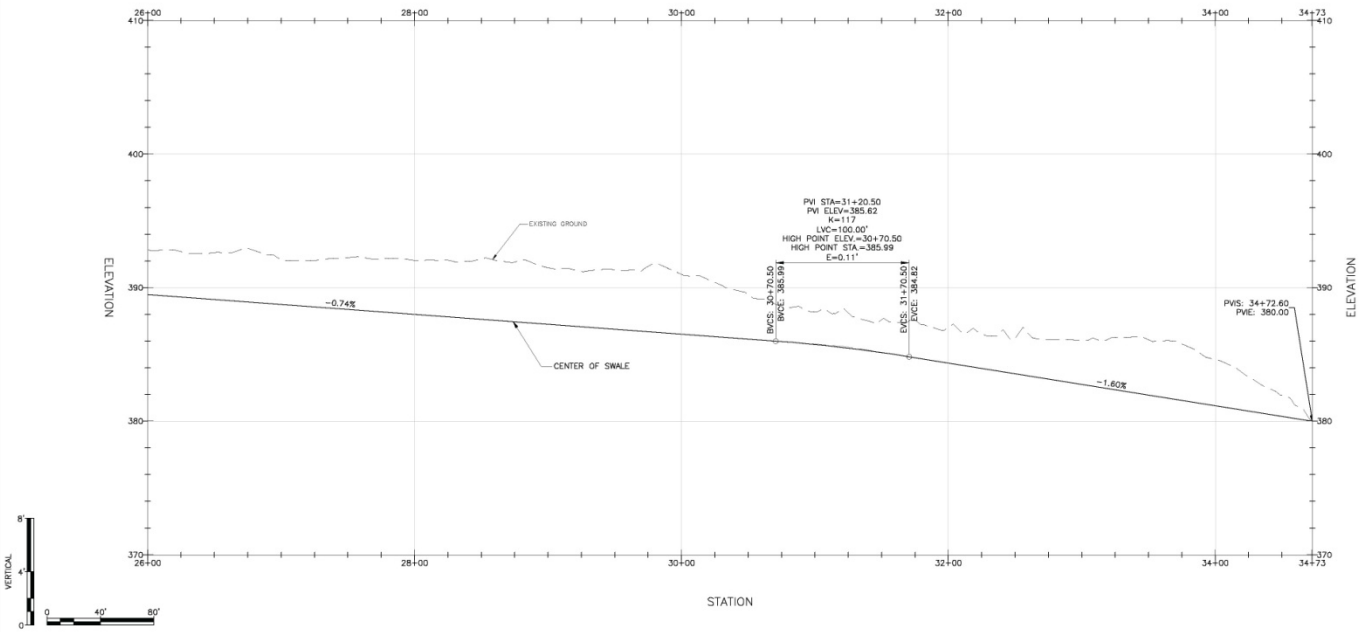


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Client/Project
CITY OF SOUTH BURLINGTON

OAK CREEK/BUTLER FARMS STORMWATER GOLF COURSE SWALE
South Burlington, Vermont

Title
SWALE PLAN AND PROFILE
STA. 26+00 - STA. 34+73

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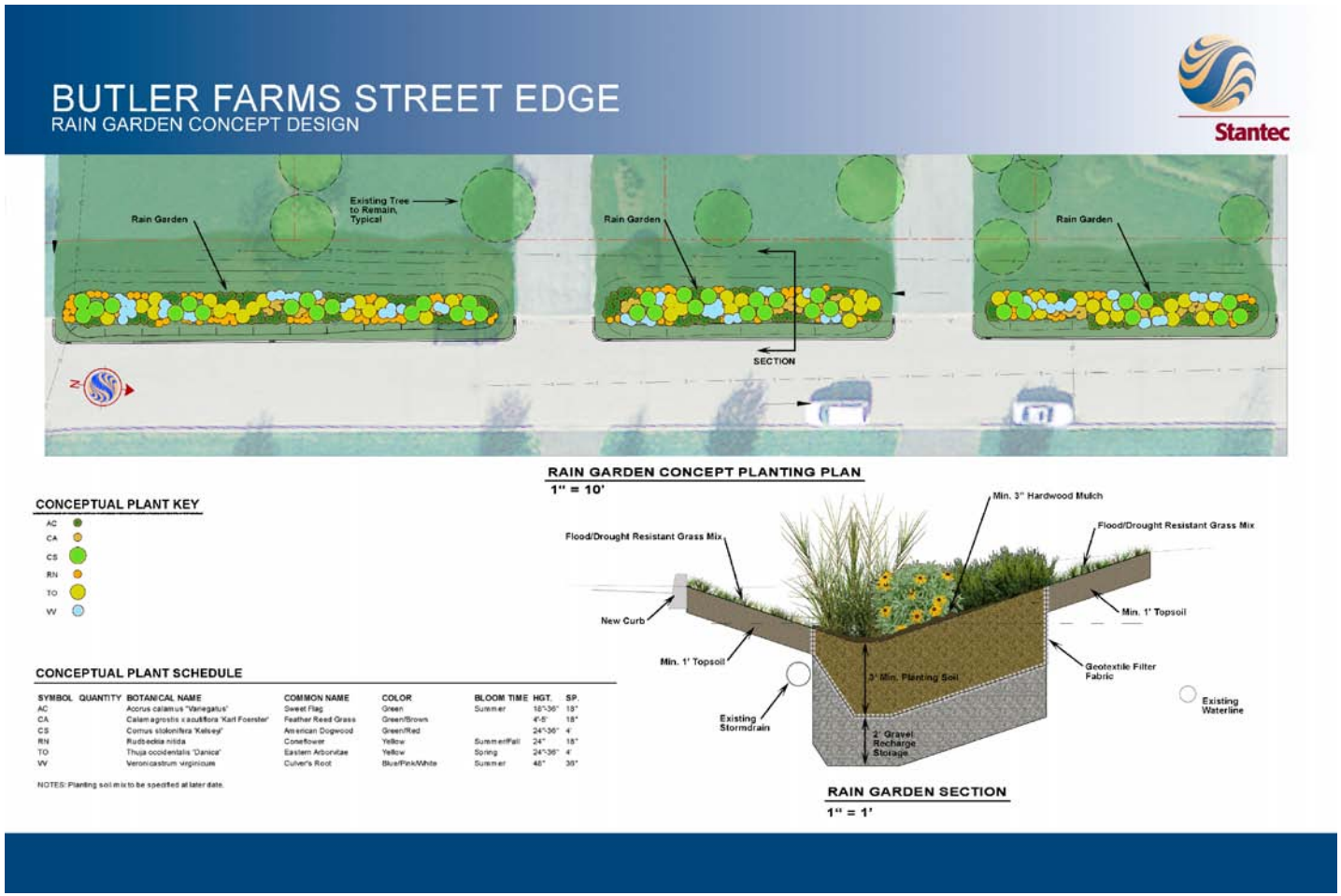
# Curb Cut Bioretention (Planned 2010)

- Principle:  provide space within the street to infiltrate and treat stormwater

# Street Edge Bioretention



# Buffers, Bank Stabilization, Floodplain Restoration & Wetland Creation (2010)

**Purposes**:

1) Reduce in-stream erosion, which deposits sediment in the stream

2) Improve in-stream habitat

3) Increase habitat diversity in buffer area

# Why Stream Buffers?

1. Improves in-stream habitat for aquatic organisms
2. Stabilizes banks
3. Reduces in-stream temperature
4. Increases in-stream roughness to slow flood events
5. Reduces and slows sheet run off flow
6. Absorbs nutrients in sheet run off

# Existing Conditions

# Existing Conditions

# Restored Stream Reach

# Restored Stream Reach

# Buffer Restoration Initiative

Can this be done in Butler Farms/Oak Creek to improve water quality…without interfering with our back yards?!

# Stream Buffer Initiative


**What is envisioned:**

- Voluntary effort to establish a 10-20 ft buffer along the stream channel
- Voluntary actions to reduce impacts & grant-funded plantings and re-grading
- Designs to happen cooperatively with homeowners in spring
- City owned parcels: Create wetland and restore floodplain

# What could be done on my property to improve stream health?

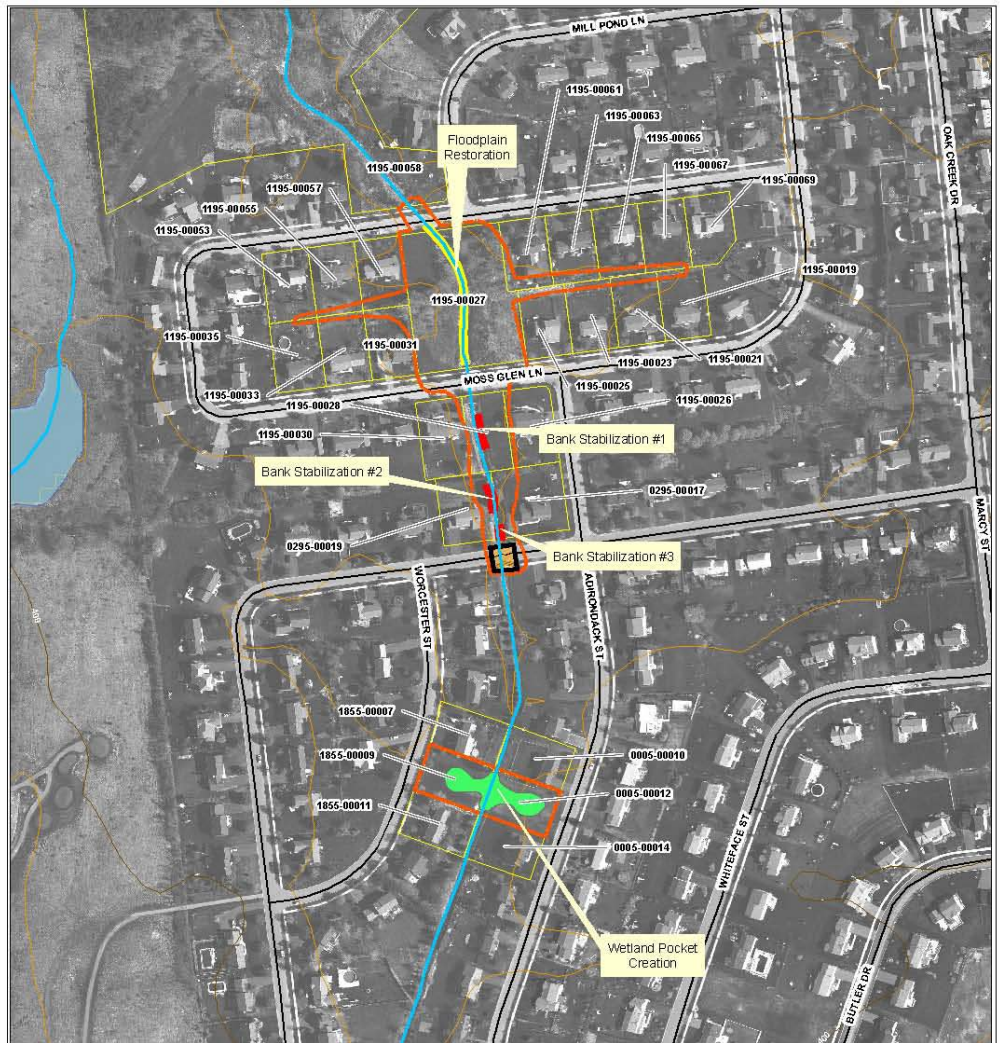
**LEAST INVOLVED**: "Giving the stream as much room as possible" through voluntary actions, with assistance and advising from City and project team.

***Examples***:

- Create a "no-mow" strip of 10'-20' along the stream
- Relocating compost and yard waste piles 10'-20' away and out of stream – yard waste piles can smother bank vegetation
- Reducing or eliminating fertilizer use in the area 10'-20' back from stream bank

# What could be done on my property to improve stream health?

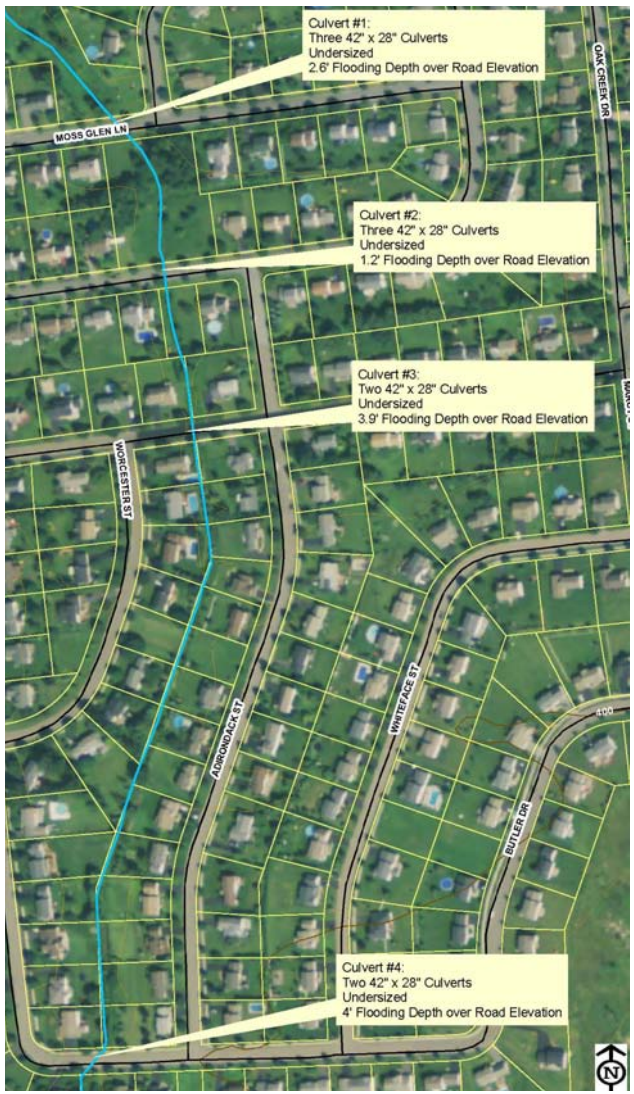
- **MORE INVOLVED**:
  - Establishing buffer plantings on land along the stream (homeowners who received a letter)
  - 3 specific areas where bank stabilization (regrading and planting) could occur to reduce erosion; these landowners will be contacted to discuss



# What happens if I'm a landowner and I'm interested in participating?

- Indicate your interest by calling or e-mailing Tom @ Stormwater Services
- You'll be contacted in the spring for a site visit to look at your property and assess potential plantings and approaches
- Simple agreements will be prepared if you decide you would like plantings installed on your property.

# Existing Culverts: Stream Health Issues




# Preliminary Culvert Designs

- Adequately sized for high flows not to cause ponding and sediment deposition upstream
- Improve natural stream processes which will improve water quality
- Reduce impediments to aquatic organism movement
- Increased roughness to slow stream flow

# Renovation of Existing Oak Creek Pond (2011)

Re-routing storm drainage into pond

Will be done to State's 'best fix' standard

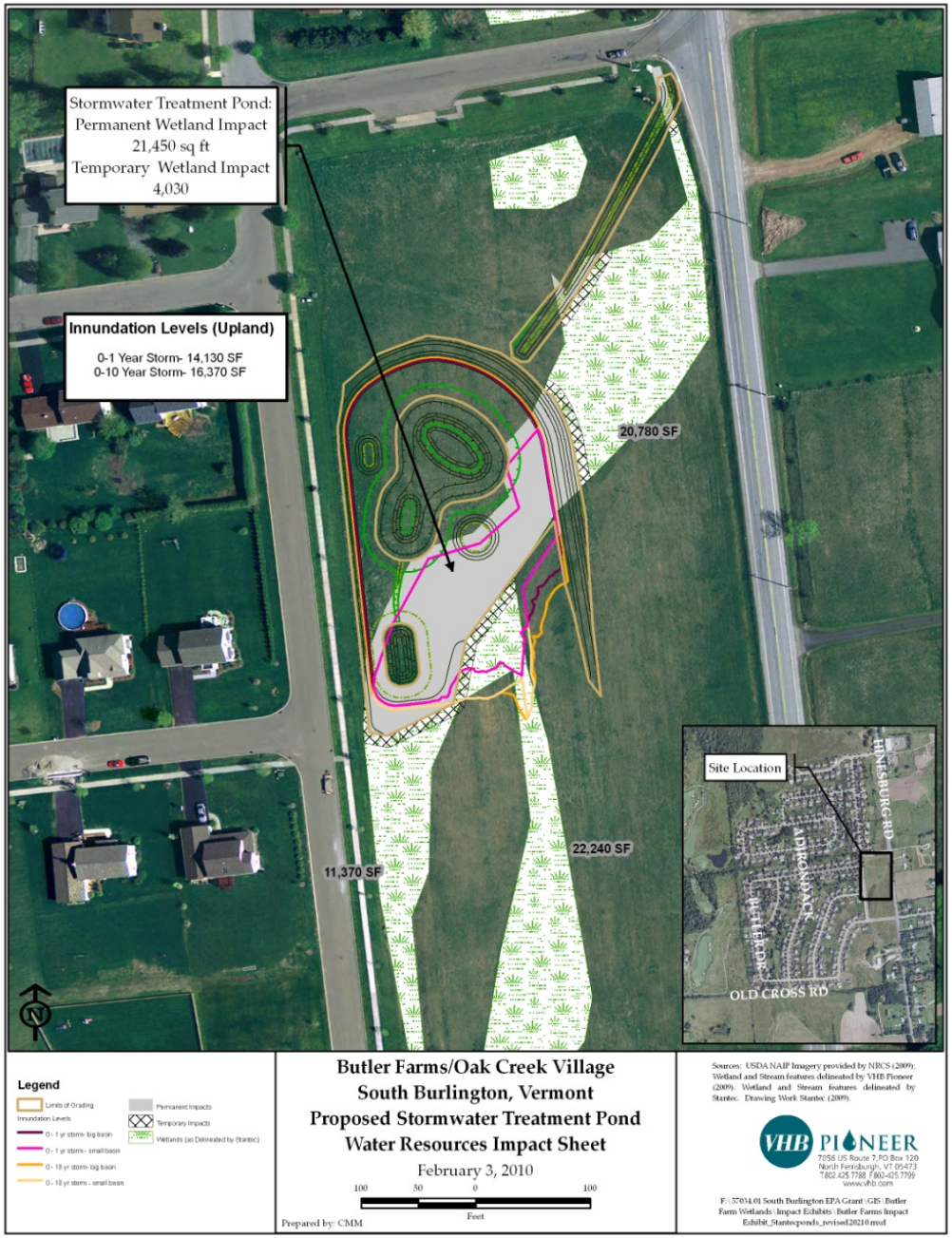
Planned for 2011

# New Butler Farms Frontage Pond (2011)

Designed to treat runoff from large sub-watershed within Butler Farms

Similar approach to the Oak Creek pond

In final design and permitting stages for 2011




**Legend**

- Limits of Grading
- Innundation Levels
  - 0 - 1 yr storm- big basin
  - 0 - 1 yr storm - small basin
  - 0 - 10 yr storm- big basin
  - 0 - 10 yr storm - small basin
- Permanent Impacts
- Temporary Impacts
- Wetlands (as Delineated by Stantec)

# Butler Farms/Oak Creek Village
## South Burlington, Vermont
## Proposed Stormwater Treatment Pond
## Water Resources Impact Sheet

February 3, 2010

100 50 0 100

Feet

Prepared by: CMM

Sources: USDA NAIP Imagery provided by NRCS (2009); Wetland and Stream features delineated by VHB Pioneer (2009). Wetland and Stream features delineated by Stantec. Drawing Work Stantec (2009).

VHB PIONEER
70 56 US Route 7, PO Box 120
North Ferrisburgh, VT 05473
T 802.425.7788 F 802-425-7799
www.vhb.com

F:\57034.01 South Burlington EPA Grant\GIS\Butler Farm Wetlands\Impact Exhibits\Butler Farms Impact Exhibit_Stantecponds_revised20210.mxd

# Project Cost Estimates & Financing

prepared on 2/9/10

## Butler Farms Project Cost Breakdown

| | | Grant Funds | | Homeowner / City Funds | |
|---|---|---|---|---|---|
| **Project Component** | **Estimated Cost*** | **SAFETEA Grant Cost** | **EPA Demo Grant Cost** | **Neighborhood Cost (based on 55% privately owned impervious area)** | **City Cost (based on 45% City owned impervious area)** |
| **Construction of Golf Course swale** | $ 55,000.00 | $ - | $ 41,250.00 | $ - | $ 13,750.00 |
| **Construction of Enhanced Infiltration and Habitat Creation** | $ 8,000.00 | $ - | $ 6,000.00 | $ - | $ 2,000.00 |
| **Construction of Curb Cut BioRetention** | $ 65,000.00 | $ - | $ 48,750.00 | $ - | $ 16,250.00 |
| **Design and Construction of OCV Pond Retrofit** | $ 200,000.00 | $ - | $ 150,000.00 | $ 27,500.00 | $ 22,500.00 |
| **Installation of Stream Restoration** | $ 75,000.00 | $ - | $ 56,250.00 | $ - | $ 18,750.00 |
| **Culvert Replacement** | $ 200,000.00 | $ - | $ 150,000.00 | $ - | $ 50,000.00 |
| **Design and Construction of Butler Farms Pond** | $ 520,000.00 | $ 200,000.00 | $ - | $ 176,000.00 | $ 144,000.00 |
| **Totals** | $ 1,123,000.00 | $ 200,000.00 | $ 452,250.00 | $ 203,500.00 | $ 267,250.00 |
| | | $ | 652,250.00 | $ 470,750.00 | |

* All estimated costs includes engineering oversight during construction

| | |
|---|---|
| **Estimated Cost / Unit (neighborhood cost / 254 units)** | **$ 801.18** |

Notes:
SAFETEA grant requires 20% matching funds.
EPA Demo grant requires 25% matching funds.

# Vote/Council Actions in 2010

- Could go to a vote to establish a Special Assessment District in November
- Do we finally get a permit?