



Village of Menomonee Falls  
W156 N8480 Pilgrim Road  
Menomonee Falls, WI 53051-3140  
Telephone: (262) 532-4200

## STORMWATER MANAGEMENT FACILITIES OPERATION AND INSPECTION REPORT

|                        |         |                              |                           |
|------------------------|---------|------------------------------|---------------------------|
| Quarter Section        | 03 N    | Name of Business/Subdivision | GRAND AVENUE              |
| Property Tax ID Number | 0010993 | Address of Property          | BIO-RETENTION POND        |
|                        |         |                              | W168N9308 GRAND AVE       |
|                        |         |                              | MENOMONEE FALLS, WI 53051 |

|          |   |
|----------|---|
| Dry Pond | X |
| Wet Pond |   |
| Other    |   |

Description: SWP03N009  
P-0176

Location Of  
Pond NORTHEAST OF  
GRAND AVENUE &  
FOREST DRIVE

Year Pond Constructed 2017 Year of Last Certification 2018

| Compliance Verification                  | Design (Non-AsBuilt) | Actual (GPS) | Compliant<br>Yes No |   | Comments<br>( Condition of Structure)          |
|------------------------------------------|----------------------|--------------|---------------------|---|------------------------------------------------|
| <b>Primary Outlet Pipe</b><br>(ST015864) |                      |              |                     |   | Outlet Pipe Material                           |
| Opening Diameter<br>(inches)             | 6" PVC               | 6" PVC       | Y                   | - | 6" PVC IN GOOD CONDITION                       |
| Upstream Invert                          | 834.40               | 834.39       | Y                   | - |                                                |
| Downstream Invert                        | 834.40               | 834.45       | Y                   | - |                                                |
| Length<br>(feet)                         | 36.0 FT              | 35.5 FT      | Y                   | - |                                                |
| Slope<br>(%)                             | 0.0000%              | - 0.169%     | Y                   | - |                                                |
| <b>Secondary Outlet Pipe</b>             | N/A                  |              |                     |   | Outlet Pipe Material                           |
| Opening Diameter<br>(inches)             |                      |              | -                   | - |                                                |
| Upstream Invert                          |                      |              | -                   | - |                                                |
| Downstream Invert                        |                      |              | -                   | - |                                                |
| Length<br>(feet)                         |                      |              | -                   | - |                                                |
| Slope<br>(%)                             |                      |              | -                   | - |                                                |
| <b>Riser</b>                             |                      |              |                     |   | Riser Material                                 |
| Opening Diameter<br>(inches) (ST015864)  | 24"                  | 24"          | Y                   | - | REINFORCED CONCRETE RISER IN GOOD<br>CONDITION |
| Elevation                                | 837.60               | 837.45       | Y                   | - |                                                |
| <b>Upper Discharge Control</b>           | N/A                  |              |                     |   |                                                |
| Opening Diameter<br>(inches)             |                      |              | -                   | - |                                                |
| Elevation                                |                      |              | -                   | - |                                                |

| Compliance Verification                                | Design                  | Actual          | Compliant<br>Yes    No                                                  |   | Comments                                     |                                                                                |
|--------------------------------------------------------|-------------------------|-----------------|-------------------------------------------------------------------------|---|----------------------------------------------|--------------------------------------------------------------------------------|
| Lower Discharge Control                                | N/A                     |                 |                                                                         |   |                                              |                                                                                |
| Opening Diameter (inches)                              |                         |                 | -                                                                       | - |                                              |                                                                                |
| Elevation                                              |                         |                 | -                                                                       | - |                                              |                                                                                |
| Other (Description)                                    | N/A                     |                 |                                                                         |   |                                              |                                                                                |
| Opening Type and Size (inches)                         |                         |                 | -                                                                       | - |                                              |                                                                                |
| Elevation                                              |                         |                 | -                                                                       | - |                                              |                                                                                |
| Emergency Spillway                                     |                         |                 |                                                                         |   |                                              |                                                                                |
| Elevation                                              | 838.19                  | 838.19          | Y                                                                       | - | SPILLWAY CLEAR OF VEGETATION                 |                                                                                |
| Length of spillway (feet)                              | 10.0 LF                 | 10.0 LF         | Y                                                                       | - |                                              |                                                                                |
| Embankment                                             | Present<br>Yes    No    |                 | Comments/Maintenance Requirements                                       |   |                                              |                                                                                |
| Unauthorized Plantings, trees, or woody vegetation     | Y                       | -               | INVASIVE GRASS EXCEEDS 7 FEET IN HEIGHT.<br>REMOVE INVASIVE VEGETATION. |   |                                              |                                                                                |
| Animal burrows or slope erosion or hole                | -                       | N               |                                                                         |   |                                              |                                                                                |
| Storm Sewer Outfalls                                   | Type & Size             |                 | Location                                                                |   | Comments                                     |                                                                                |
| Outfall 1 (ST015863)                                   | RCP - 18"               |                 | SOUTH EMBANKMENT                                                        |   | RCP IN GOOD CONDITION, RIPRAP IN END SECTION |                                                                                |
| Outfall 2 (ST015861)                                   | RCP – 15"               |                 | NORTHWEST EMBANKMENT                                                    |   | RCP IN GOOD CONDITION                        |                                                                                |
| Outfall 3                                              |                         |                 |                                                                         |   |                                              |                                                                                |
| Storage Properties                                     | Design<br>(NON-ASBUILT) | Actual<br>(GPS) | Compliant<br>Yes    No                                                  |   | Not Applicable                               | Equipment Used                                                                 |
| Normal Water Elevation<br>(Wet Ponds)                  | -                       | -               | -                                                                       | - | N/A                                          | GPS EQUIPMENT:<br>GOEMAX ZENITH35 &<br>CARLSON SURVEYOR2<br>WITH SURV CE v5.04 |
| Design High Water Elevation                            | 838.00                  | 838.19          | Y                                                                       | - |                                              |                                                                                |
| Area at Normal Water Elevation (Ac)<br>(Wet Ponds)     | -                       | -               | -                                                                       | - | N/A                                          |                                                                                |
| Area at Design High Water Elevation (Ac)               | 0.169 AC                | 0.152 AC        | Y                                                                       | - |                                              |                                                                                |
| Active Storage Available (Ac-Ft)*                      | 0.269 ACFT              | 0.436 ACFT      | Y                                                                       | - |                                              |                                                                                |
| Lowest Elevation at Top of Embankment (If Applicable)  | 838.00                  | 838.52          | Y                                                                       | - |                                              |                                                                                |
| Average Elevation at Top of Embankment (If Applicable) | 839.00                  | 838.50          | Y                                                                       | - |                                              |                                                                                |
| Maximum Bottom Elevation                               | 837.00                  | 838.60          | Y                                                                       | - |                                              |                                                                                |
| Average Pond Bottom Elevation                          | 837.00                  | 836.63          | Y                                                                       | - |                                              |                                                                                |
| Pond Bottom Area (Ac)                                  | 0.110 AC                | 0.122 AC        | Y                                                                       | - |                                              |                                                                                |
| Maximum Pond Depth                                     | 1.00 FT                 | 1.90 FT         | Y                                                                       | - |                                              |                                                                                |
| Average Pond Depth                                     | 1.00 FT                 | 1.87 FT         | Y                                                                       | - |                                              |                                                                                |
| Average Permanent Pool Depth (Wet Ponds)               | -                       | -               | -                                                                       | - | N/A                                          |                                                                                |

\*To Determine Active Storage  $V = \left( \left( \frac{H}{3} \right) \left( A1 + A2 + \left( \left( A1 + A2 \right)^{\left( \frac{1}{2} \right)} \right) \right) \right)$

Wet Ponds Use  $H$  = Height of Section ,  $A1$  = area at normal water elevation,  $A2$  = area at top section

Dry Ponds Use  $H$  = Height of Section,  $A1$  = pond bottom area,  $A2$  = area at top section

# Grand Avenue Bio-Retention Basin – SWP03N009

## Overview



Outlet ST015861 &  
Clean-out ST015866



Outlet ST015863





## Grand Avenue Bio-Retention Basin – SWP03N009

Inlet/Overflow Structure ST015864 to River Outlet



Outlet to River ST015865



## Grand Avenue Bio-Retention Basin – SWP03N009

### Spillway (NE Corner)



## Grand Avenue Bio-Retention Basin – SWP03N009

### Repairs Needed (11/2023)

- 1) Remove invasive grasses.
- 2) Remove sediment from outlet ST015863.



*Sketch Outlet*

*Place Photograph of Pond*

*Place Photograph of Pond*

Inspection Firm: VILLAGE OF  
MENOMONEE FALLS  
Phone Number: 262-532-4411  
Address: W156N8480 PILGRIM RD  
MENOMONEE FALLS, WI  
53051

Inspector Name : CHRISTOPHER M GARIEPY

Inspection Date: 11/14/2023

Certifying THOMAS M. HOFFMAN, P.E.

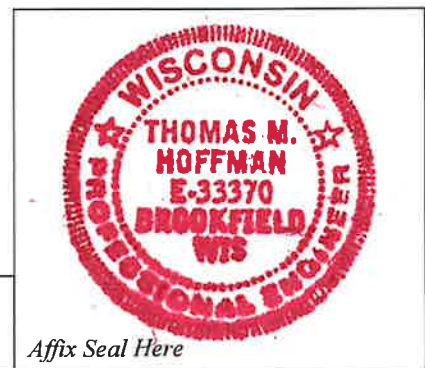
Professional Name:

Phone Number: (262) 532-4415

Date:

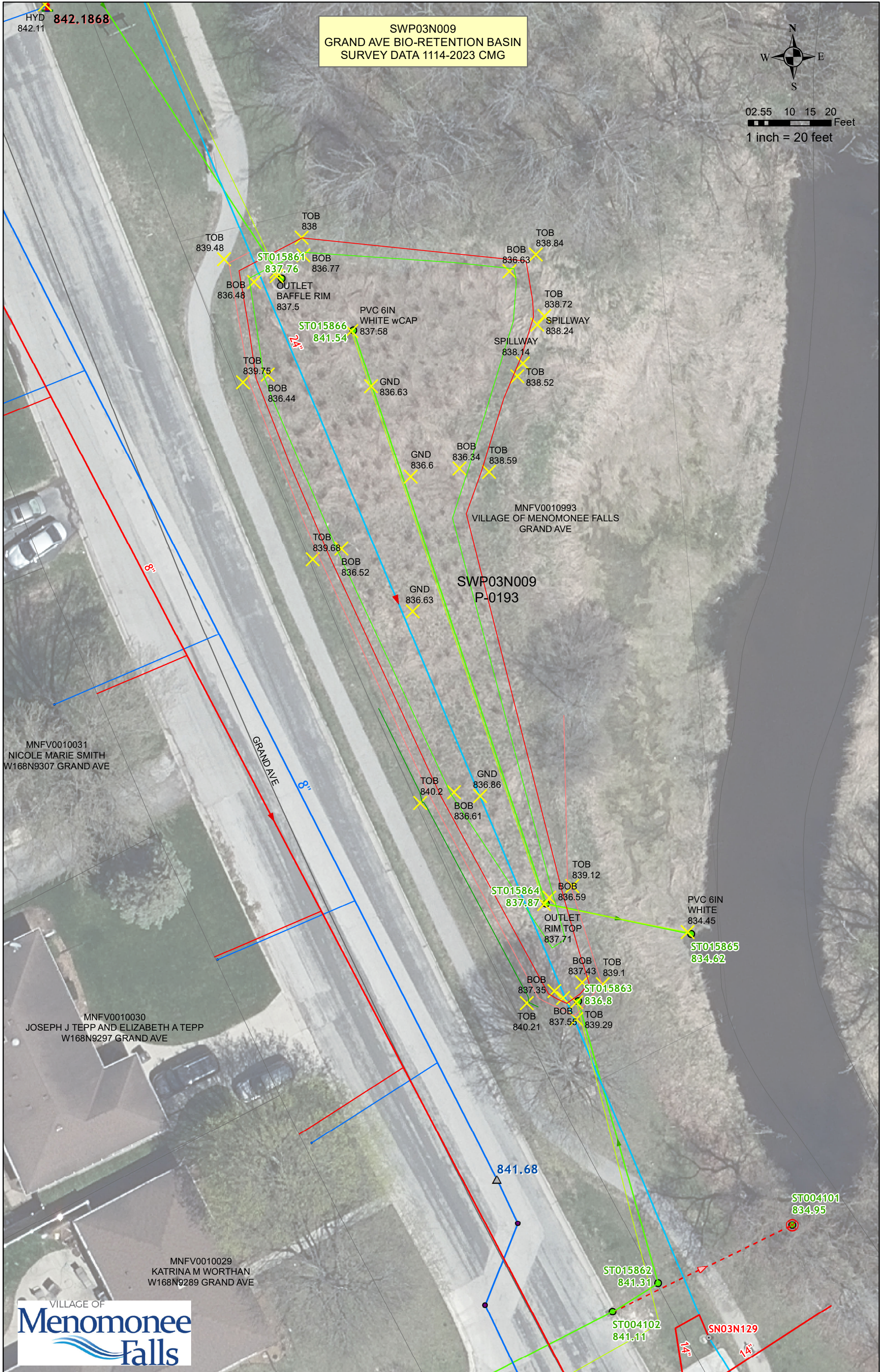
2/26/2024

Signature:



*Affix Seal Here*







Acre Feet pond storage volume calculations for:

**Grand Ave Bio-Retention Basin**  
**SWP03N009**

**836.55** = Entered Value  
**838.19** = Calculated Value  
**838.50** = Description of Elevations Calculated

Year of Inspection: **2023**

Example:  $H = H2 - H1$ , where  $H2 > H1$

|                 |                 |                                                                                                 |
|-----------------|-----------------|-------------------------------------------------------------------------------------------------|
| <b>H1 =</b>     | <b>836.55</b>   | Lower Height Elevation in Feet (Pond Bottom for Dry Pond <b>OR</b> Top of Observed Water Level) |
| <b>H2 =</b>     | <b>838.19</b>   | Height at Bottom of Spillway (Wet or Dry)                                                       |
| <b>H3 =</b>     | <b>838.50</b>   | Higher Height Elevation in Feet (Top of Bank Around Pond - Wet or Dry)                          |
| <b>H4 =</b>     | <b>0.00</b>     | Bottom of Wet Pond Elevation in Feet (Wet Ponds Only)                                           |
|                 | Sq.Ft.          | Acres                                                                                           |
| <b>Area 1 =</b> | <b>5,295.40</b> | <b>0.1216</b> Area of H1                                                                        |
|                 |                 | Area 1 = Area at Pond Bottom for Dry Pond <b>OR</b> Top of Observed Water Level                 |
| <b>Area 2 =</b> | <b>6,636.00</b> | <b>0.1523</b> Area of H2                                                                        |
|                 |                 | Area 2 = Area at Bottom of Spillway                                                             |
| <b>Area 3 =</b> | <b>6,636.00</b> | <b>0.1523</b> Area of H2                                                                        |
|                 |                 | Area 3 = Area at Top of Bank                                                                    |
| <b>Area 4 =</b> | <b>-</b>        | <b>0.0000</b> Area of H3                                                                        |
|                 |                 | Area 4 = Area at Bottom of Pond (Wet Ponds Only)                                                |

Equation to determine Volume (AcFt) of pond storage capacity from  
**Bottom of Dry Pond to Bottom of Spillway:**

$$V = ( ((H2-H1)/3)(A1+A2 + (v(A1+A2))) )$$

|           |               |             |           |   |            |
|-----------|---------------|-------------|-----------|---|------------|
|           | Feet          |             | Acres     |   | Acres      |
| V=        | $((H2-H1)/3)$ | x           | $(A1+A2)$ | + | $v(A1+A2)$ |
| V=        | 0.5467        | x           | 0.2739    | + | 0.5234     |
| V=        | 0.5467        | x           | 0.7973    |   |            |
| <b>V=</b> | <b>0.4358</b> | <b>AcFt</b> |           |   |            |

Equation to determine Volume (AcFt) of pond storage capacity from  
**Bottom of Dry Pond to Top of Bank at Spillway:**

$$V = ( ((H3-H1)/3)(A1+A3 + (v(A1+A3))) )$$

|           |               |             |           |   |            |
|-----------|---------------|-------------|-----------|---|------------|
|           | Feet          |             | Acres     |   | Acres      |
| V=        | $((H3-H1)/3)$ | x           | $(A1+A3)$ | + | $v(A1+A3)$ |
| V=        | 0.6500        | x           | 0.2739    | + | 0.5234     |
| V=        | 0.6500        | x           | 0.7973    |   |            |
| <b>V=</b> | <b>0.5182</b> | <b>AcFt</b> |           |   |            |

Equation to determine Volume (AcFt) of pond storage capacity from  
**Bottom of Pond to Top of Water:**

$$V = ( ((H1-H4)/3)(A1+A4 + (v(A1+A4))) )$$

|           |                 |             |           |   |            |
|-----------|-----------------|-------------|-----------|---|------------|
|           | Feet            |             | Acres     |   | Acres      |
| V=        | $((H1-H4)/3)$   | x           | $(A1+A4)$ | + | $v(A1+A4)$ |
| V=        | 278.8500        | x           | 0.1216    | + | 0.3487     |
| V=        | 278.8500        | x           | 0.4702    |   |            |
| <b>V=</b> | <b>131.1232</b> | <b>AcFt</b> |           |   |            |

Equation to determine Volume (AcFt) of pond storage capacity from  
**Bottom of Pond to Top of Bank at Spillway:**

$$V = ( ((H3-H4)/3)(A3+A4 + (v(A3+A4))) )$$

|           |                 |             |           |   |            |
|-----------|-----------------|-------------|-----------|---|------------|
|           | Feet            |             | Acres     |   | Acres      |
| V=        | $((H3-H4)/3)$   | x           | $(A3+A4)$ | + | $v(A3+A4)$ |
| V=        | 279.5000        | x           | 0.1523    | + | 0.3903     |
| V=        | 279.5000        | x           | 0.5427    |   |            |
| <b>V=</b> | <b>151.6710</b> | <b>AcFt</b> |           |   |            |

