

# DNR Soil Loss & Sediment Discharge Calculation Update

Pete Wood, P.E.  
DNR Sturtevant  
262-884-2360  
[Peter.Wood@Wisconsin.gov](mailto:Peter.Wood@Wisconsin.gov)

# Soil Loss & Sediment Discharge

- Applicable to construction sites that disturb one acre or more (NR 216)
- NR 151.11 - Sediment Performance Standard
  - No more than 5 tons/acre/year sediment discharge (2013)
- Compliance policy as of January 1, 2016
  - Compliance verification procedure (guidance document)
  - Calculation tool (Excel spreadsheet)
- New policy does not replace other construction site performance standards and erosion control plan requirements
  - May influence erosion and sediment control practice selection
  - Will influence construction schedules



## Storm Water publications/guidance

These publications and guidance documents provide technical assistance for developing soil erosion control and storm water management plans; designing storm water management practices; practicing pollution prevention; and planning public education programs.

## DNR publications and guidance for construction sites & municipalities

- [Construction site soil loss and sediment discharge guidance \[PDF\]](#)
  - [USLE Model \[XLS\]](#)
- [Modeling Post-Construction Storm Water Management Treatment \[PDF\]](#)
- [Water Quality Review Procedures for Additives \[PDF\]](#)
- [Erosion Control Notes \[PDF\]](#)
- [Model Ordinances for Construction Site Storm Water Management \[PDF\]](#)
- [Common Plan of Development Guidance \[PDF\]](#)
- [Uniform Statewide Standards Guidance \[PDF\]](#)
- [Non-Agricultural Revisions to Chapter NR 151, Runoff Management Rule \[PDF\]](#)
- [Delayed Implementation Guidance \[PDF\]](#)
- [Storm Water Construction Technical Standards](#)
- [Storm Water Post-construction Technical Standards](#)
- [Turf Nutrient Management Standards](#)
- [Snow treatment and disposal guidance for municipalities PUBL-WR-154-06REV \[PDF\]](#)
- [Protective Areas for Wetlands \[PDF\]](#)
- [West Nile Virus and Storm Water Management](#)
- [Wisconsin Storm Water Manual](#)

## Publications for industrial sites

These documents explain what industries must do to comply with industrial storm water permits.

- [Industrial Storm Water Pollution Prevention Planning Manual](#)
- [Wisconsin's Guidance for Industrial Storm Water Sampling](#)
- [Managing Storm Water Runoff: A Self-Assessment for Wisconsin Businesses \[PDF exit DNR\]](#)

### Storm water runoff

#### Learn more

about storm water runoff

#### Plan

with technical standards

### Guidance & resources

- [Publications](#)
- [Industrial sites](#)
- [Contacts](#)
- [Links](#)
- [Disclaimer](#)

### Related links

- [Learn more](#)
- [Construction permits](#)
- [Industrial permits](#)
- [Municipal permits](#)
- [Technical standards](#)

### Contact information

For information on this page, contact:

[Jim Bertolacini](#)  
Storm Water Program  
Coordinator

## Construction site storm water permits

### Important notice:

#### Construction site soil loss and sediment discharge calculation

Note: Required January 1, 2016

The [Soil Loss and Sediment Discharge Calculation Tool](#) was developed to provide direction and assistance to Department staff, developers, municipalities and consultants. The guidance document establishes a procedure to document compliance with the 5 tons per acre per year sediment performance standard for construction sites pursuant to s. NR 151.11, Wis. Adm. Code.

Effective January 1, 2016, the results of soil loss and sediment discharge calculations must be documented in a summary report and included with the construction site storm water permit application (Notice of Intent).

On October 22, 2015, the DNR held an informational webinar to provide an overview of the guidance, explain the calculation tool, and provide documentation requirements in the application for permit coverage. The webinar recording is split into 5 parts:

- [List of recordings and presentation slides \[DNR FTP\]](#)

# Six Step Compliance Verification Procedure

- Step 1: Determine location where calculations will be done
- Step 2: Determine compliance period
- Step 3: Conduct soil loss calculations (use spreadsheet)
- Step 4: Conduct sediment discharge calculations (use spreadsheet)
- Step 5 – If necessary, modify plan and re-calculate (back to Step 1)
- Step 6 – Document results

# Documentation

The results of soil loss and sediment discharge calculations must be documented in a summary report and included with permit applications submitted to the administering authorities. The summary report should identify the input variables used in the calculations (e.g., a screenshot of the spreadsheet tool) and the locations where the input variables were measured or determined (e.g., a map that clearly identifies the slope and soil conditions and sediment control practices). All areas that were evaluated to establish the representative worst case condition should be included in the summary report.

# Construction Schedules

The duration of soil disturbance and timing of soil stabilization have a significant impact on soil loss and sediment discharge from construction sites. As a result, the soil loss and sediment discharge calculations will have a direct influence on construction schedules. Construction schedules identified in erosion and sediment control plans must be consistent with the dates or durations used in the soil loss and sediment discharge calculations.

PC (small area)

PC (20% slope)

PC (concentrated flow)

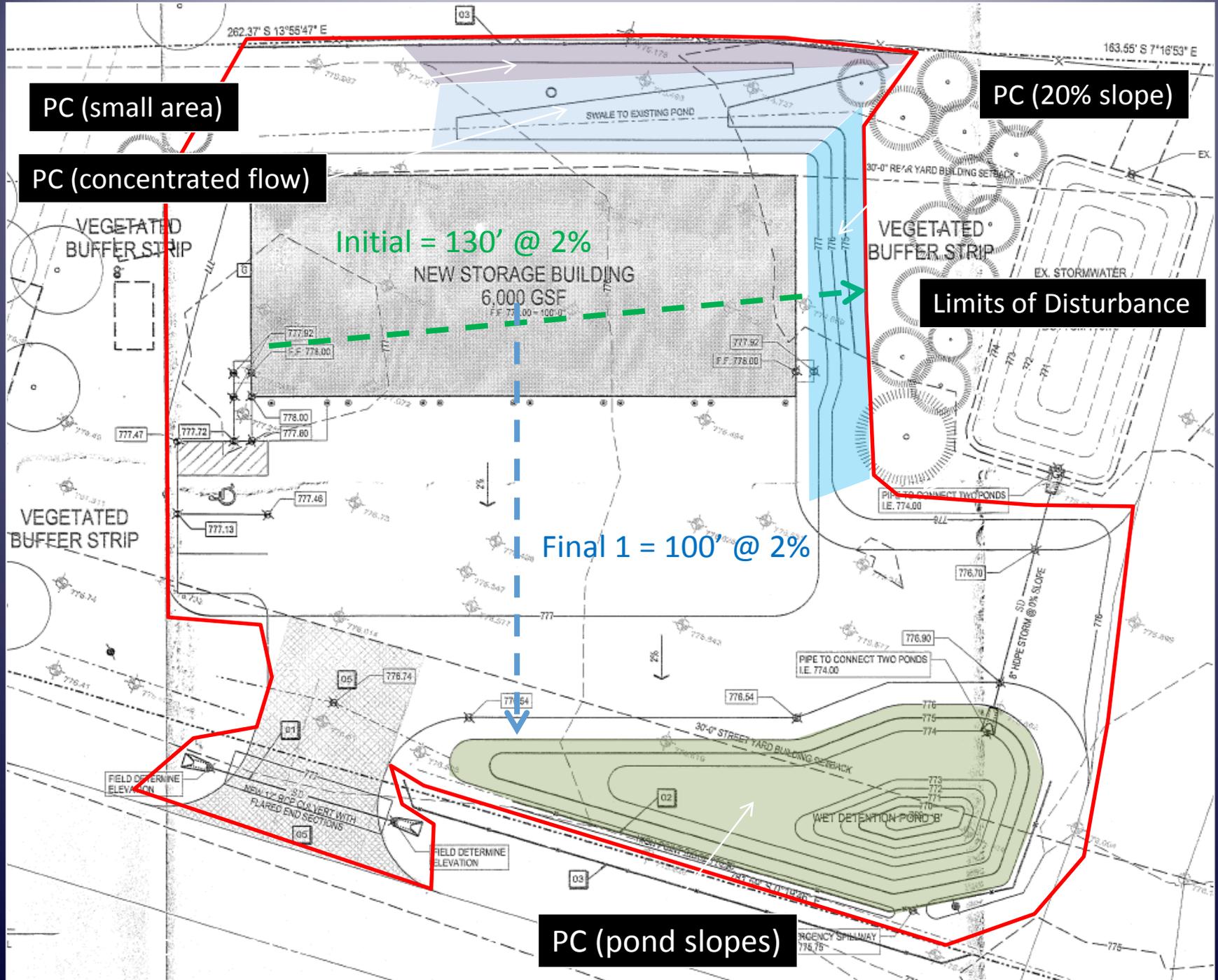
Limits of Disturbance

Initial = 130' @ 2%

NEW STORAGE BUILDING  
6,000 GSF  
F.F. 778.00 - 100.0'

Final 1 = 100' @ 2%

PC (pond slopes)





# Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Official Version 1.0 (05-15-2015)



**YEAR 1**

Developer: Town of Winchester  
 Project: Hansen Road Storage Facility  
 Date: 10/19/2015  
 County: Winnebago

Version 1.0

Activity	Begin Date	End Date	Period % R	Annual R Factor	Sub Soil Texture	Soil Erodibility K Factor	Slope (%)	Slope Length (feet)	LS Factor	Land Cover C Factor	Soil loss A (tons/acre)	Sediment Control Practice	Sediment Discharge (tons/acre)
Bare Ground	05/01/2015	06/01/2015	11.0%	110	Silt Loam	0.43	2.0%	130	0.22	1.00	1.1	Vegetative Buffer	0.6
Bare Ground	06/01/2015	09/01/2015	60.0%	110	Silt Loam	0.43	2.0%	100	0.20	1.00	5.7	Sediment Basin	1.0
Seed with Mulch or Er	09/01/2015	11/01/2015	17.0%	110	Silt Loam	0.43	2.0%	100	0.20	0.10	0.2	Sediment Basin	0.0
End	11/01/2015	----	----	----	-----	----	2.0%	100	0.20	-----	----		0.0
		----	----	----	-----	----	2.0%	0	----	----	----		0.0
		----	----	----	-----	----	0.0%	0	----	----	----		0.0
<b>TOTAL</b>											<b>7.0</b>	<b>TOTAL</b>	<b>1.6</b>
												<b>% Reduction Required</b>	<b>NONE</b>

**Notes:**  
 See Help Page for further descriptions of variables and items in drop-down boxes.  
 The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.  
 For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

**Recommended Permanent Seeding Dates:**

4/15-6/1 and 8/1-8/21 Turf, introduced grasses and legumes  
 Thaw-6/30 Native Grasses, forbs, and legumes

Designed By:	
Date	

# SOIL LOSS & SEDIMENT DISCHARGE SUMMARY REPORT

---

This report is intended to document compliance of the 2016 Street Improvements project in the City of Port Washington with the 5 tons per acre per year sediment performance standard for construction sites pursuant to s. NR 151.11, Wis. Adm. Code.

Due to the linear but non-contiguous nature of the project, the soil loss and sediment discharge for the project was evaluated for each of the 14 street/alley segments that are shown in the 2016 Street Improvements project plans as attached to the storm water NOI. Specific information for each segment is as follows:

## Lincoln Avenue

**Location:** Southwest area of the project (see Project Location Map). Station 109+00 to 129+47 of the segment roadway. During excavation/grading operations this area will be bare soil at the project subgrade elevations and soil loss could occur from 2-ft behind the curb on the LT side of the roadway to 2-ft behind the curb on the RT side of the roadway. Any exposed soil outside of those lateral locations (ie. terraces) will be at a higher elevation and will drain into the roadway “bathtub” excavated area and cannot leave the project site by another direction.

**Soils:** The soils map included in the storm water notice of intent submittal package indicates the soil type for the segment area is “Silt Loam”.

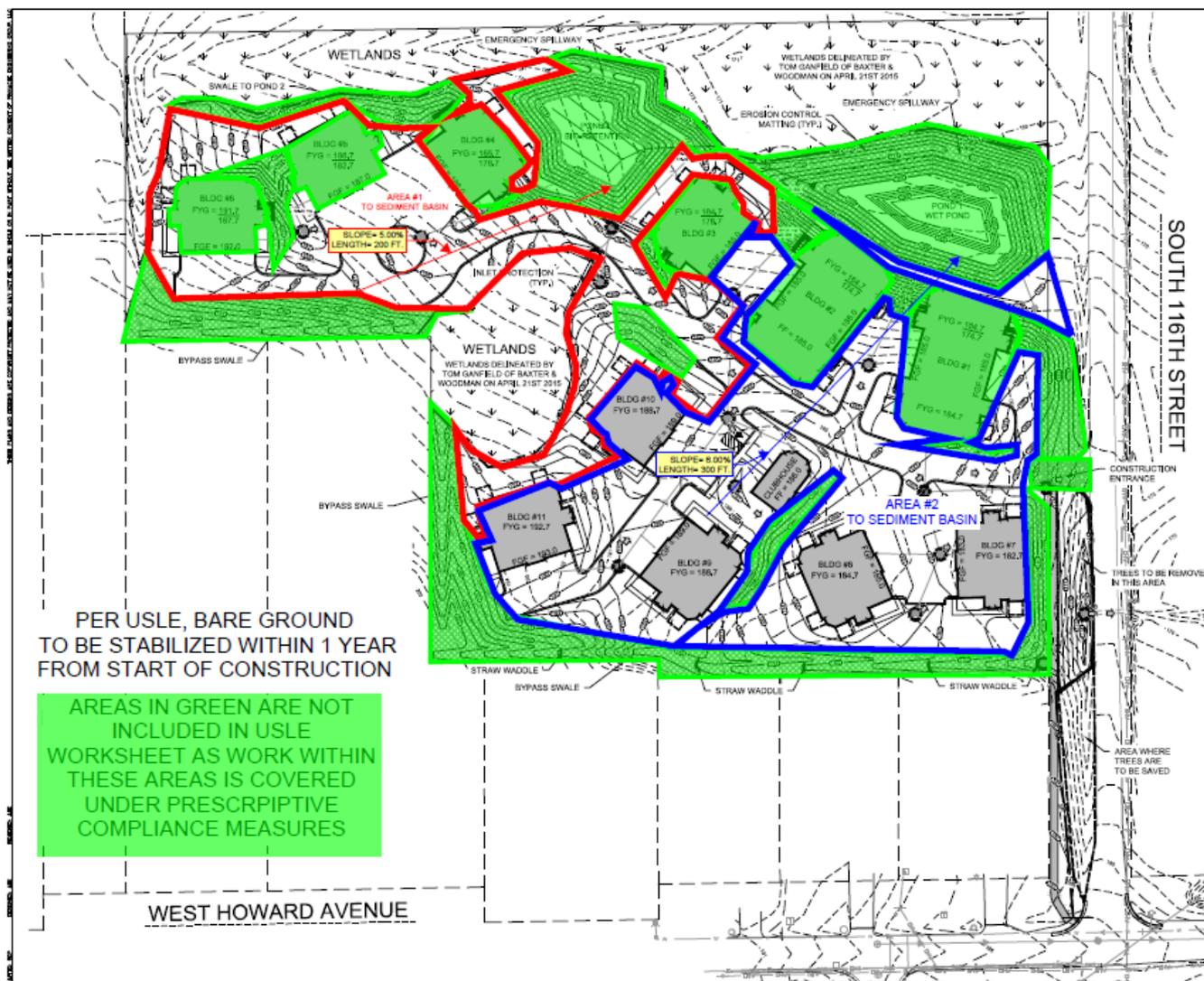
**Slope:** Due to the length of this segment and significant variability in both profile slopes and lengths, a weighted average was used to determine an appropriate slope for evaluation. The controlling slope of this segment calculates to a value of 2.72%.

**Length:** Due to the significant variability in both profile slopes and lengths for this segment, a maximum slope length of 300-ft was used for soil loss evaluation. The 300-ft length corresponds to the maximum storm sewer inlet spacing of 300-ft for the project. This is the most conservative value for slope length applicable to the segment.

**Timeframe:** All of the various roadway segments of the 2016 Street Improvements project will be constructed in a progressive manner during the 2016 construction season. Project specifications stipulate that once work begins on any roadway segment, the contractor will have a maximum of 12 weeks to complete all work on that segment. Early stages of the work will consist of utility (water main & storm sewer) trench work, which is backfilled each work day and leaves no exposed soil. Based upon the estimated work schedules for the project, each segment could feature exposed soil for approximately up to two weeks before restoration will need to be completed in order to meet the required 12-week interim deadlines. For this segment, the soil loss calculations were completed based on the approximate 2 week period from August 10, 2016 to August 24, 2016 to ensure the worst case scenario was evaluated.







FYG = FINISHED YARD GRADE (0.3' LOWER THAN FGF)  
 FGF = FINISHED GARAGE FLOOR

ORANGE CONSTRUCTION FENCING SHALL BE PLACED ALONG THE WETLANDS IN ADDITION TO SILT PER THE CITY'S EROSION CONTROL PERMIT

**CONSTRUCTION SITE SEQUENCING**

1. PREPARE CONSTRUCTION SCHEDULE ON SITE AND MAINTAIN CONSTRUCTION ACTIVITIES AND CONTROL THE SITE TO MINIMIZE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
2. OBTAIN COPY OF THE CURRENT AERIAL PHOTOGRAPH OF THE PROJECT AND CONDUCT VISUAL ANALYSIS OF THE WORK AT THE PROJECT LOCATION TO IDENTIFY SENSITIVE AREAS.
3. CONDUCT VISUAL ANALYSIS OF THE PROJECT LOCATION TO IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
4. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
5. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
6. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
7. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
8. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
9. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
10. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
11. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
12. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
13. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
14. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
15. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
16. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
17. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
18. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
19. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.
20. IDENTIFY SENSITIVE AREAS AND DETERMINE THE IMPACT OF CONSTRUCTION TO THE NEIGHBORHOOD.

PER USLE, BARE GROUND TO BE STABILIZED WITHIN 1 YEAR FROM START OF CONSTRUCTION

AREAS IN GREEN ARE NOT INCLUDED IN USLE WORKSHEET AS WORK WITHIN THESE AREAS IS COVERED UNDER PRESCRIPTIVE COMPLIANCE MEASURES

WEST HOWARD AVENUE

SOUTH 16TH STREET



PLAN | DESIGN | DELIVER

**PINNACLE ENGINEERING GROUP**

1300 W. BROADWAY SUITE 200 GREENFIELD, WI 53039

TEL: 762-1000 FAX: 762-1001

WWW.PINNACLE-ENGR.COM

**THE GLEN AT GREENFIELD**

GREENFIELD, WI

**GRADING & EROSION CONTROL PLAN**

REVISIONS

NO.	DATE	DESCRIPTION

SHEET 3 OF 11





# Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Official Version 1.0 (05-15-2015)



**YEAR 1**

Developer:

Project: Wilde Toyota - Wollmer Rd Parking - AREA 3

Date: 3/10/2016

County: Milwaukee

Version 1.0

Activity	Begin Date	End Date	Period % R	Annual R Factor	Sub Soil Texture	Soil Erodibility K Factor	Slope (%)	Slope Length (feet)	LS Factor	Land Cover C Factor	Soil loss A (tons/acre)	Sediment Control Practice	Sediment Discharge (tons/acre)
Bare Ground	3/23/2016	5/1/2016	5.8%	120	Silt Loam	0.43	2.1%	150	0.24	1.00	0.7	Inlet Protection	0.5
Bare Ground	5/1/2016	5/31/2016	10.6%	120	Silt Loam	0.43	2.2%	195	0.26	1.00	1.5	Inlet Protection	0.9
End	5/31/2016	----	----	----	----	----	2.2%	195	0.26	----	----		0.0
		----	----	----	----	----	2.2%	195	0.26	----	----		0.0
		----	----	----	----	----	2.2%	0	----	----	----		0.0
		----	----	----	----	----	0.0%	0	----	----	----		0.0
<b>TOTAL</b>											<b>2.2</b>	<b>TOTAL</b>	<b>1.4</b>
												<b>% Reduction Required</b>	<b>NONE</b>

**Notes:**

See Help Page for further descriptions of variables and items in drop-down boxes.  
 The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.  
 For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

**Recommended Permanent Seeding Dates:**

4/1-5/15 and 8/7-8/29 Turf, introduced grasses and legumes  
 Thaw-6/30 Native Grasses, forbs, and legumes

Designed By:	Gregory E. Mitchell, PE
Date	3/10/2016



# Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin



WDNR Official Version 1.0 (05-15-2015)

**YEAR 1**

Developer: Irgens  
 Project: Calhoun Health Center  
 Date: 3/8/2016  
 County: Waukesha

Version 1.0

Activity	Begin Date	End Date	Period % R	Annual R Factor	Sub Soil Texture	Soil Erodibility K Factor	Slope (%)	Slope Length (feet)	LS Factor	Land Cover C Factor	Soil loss A (tons/acre)	Sediment Control Practice	Sediment Discharge (tons/acre)
Bare Ground	5/10/2016	8/30/2016	67.0%	130	Silty Clay	0.28	2.5%	125	0.26	1.00	6.3	Inlet Protection	3.7
Seeding	8/30/2016	10/30/2016	17.3%	130	Silty Clay	0.28	2.5%	125	0.26	0.40	0.7	Inlet Protection	0.3
End	10/30/2016	----	----	----	----	----	2.5%	125	0.26	----	----		0.0
		----	----	----	----	----	2.5%	125	0.26	----	----		0.0
		----	----	----	----	----	2.5%	0	----	----	----		0.0
		----	----	----	----	----	0.0%	0	----	----	----		0.0
<b>TOTAL</b>											<b>7.0</b>	<b>TOTAL</b>	<b>3.9</b>
												<b>% Reduction Required</b>	<b>NONE</b>

**Notes:**  
 See Help Page for further descriptions of variables and items in drop-down boxes.  
 The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.  
 For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

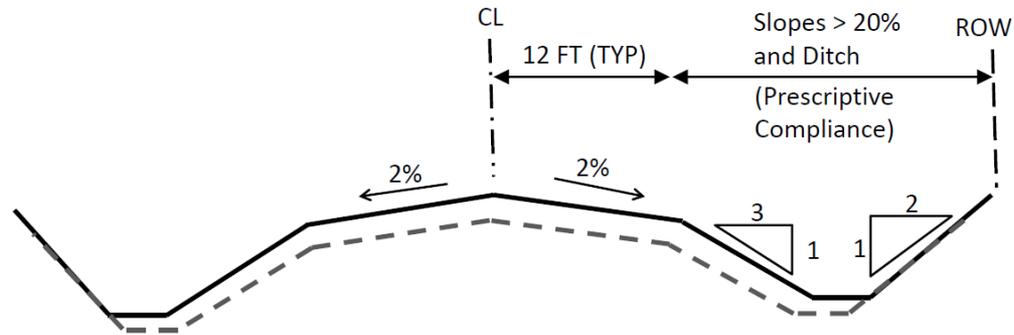
NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

**Recommended Permanent Seeding Dates:**

4/1-5/15 and Thaw-6/30	8/7-8/29 Turf, introduced grasses and legumes Native Grasses, forbs, and legumes
---------------------------	---

Designed By:	Carr
Date	3/10/2016

# TYPICAL SECTION



# PROFILE

