Wisconsin
Department of Natural Resources

Construction Site Soil Loss & Sediment Discharge Calculation

Guidance Document & Calculation Tool

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GOAL: Establish a procedure that can be used to verify compliance with 5 tons/acre/year sediment discharge performance standard for construction sites (NR 151.11).

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Amy Minser, DNR
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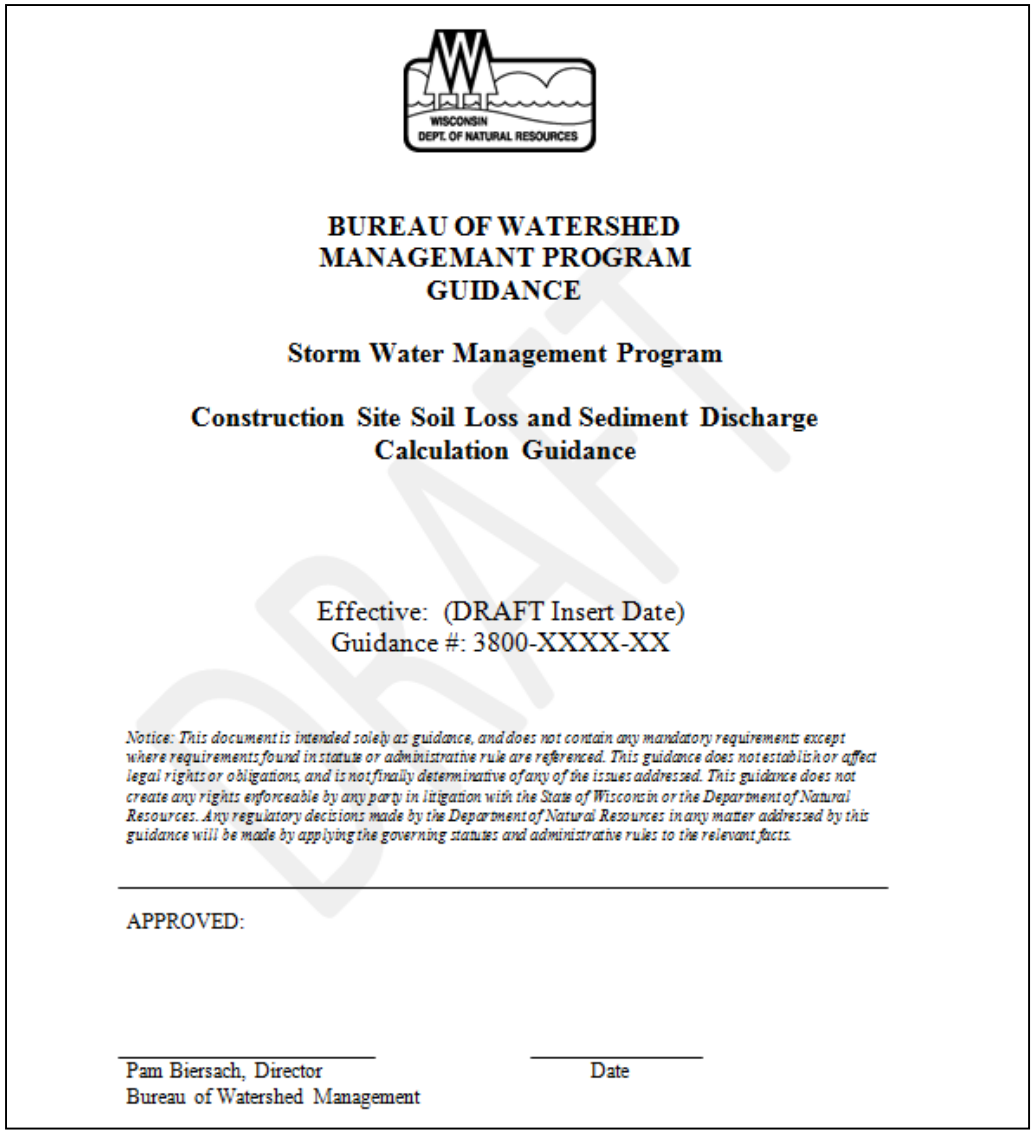


WISCONSIN DEPT. OF NATURAL RESOURCES

BUREAU OF WATERSHED MANAGEMANT PROGRAM GUIDANCE

Storm Water Management Program

Construction Site Soil Loss and Sediment Discharge Calculation Guidance

Effective: (DRAFT Insert Date)
Guidance #: 3800-XXXX-XX

Notice: This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

APPROVED:

Pam Biersach, Director
Bureau of Watershed Management

Date

DRAFT

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

DRAFT VERSION 02-13-2015

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: _____

Project: _____

Date: 04/01/2015

County: -----

PRINT HELP PAGE

Version 1.0

Land Disturbing 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)
		-----	-----	-----		-----			-----	#N/A	-----		
		-----	-----	-----		-----			-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
										TOTAL	-----	TOTAL	-----
												% Reduction Required	NONE

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.

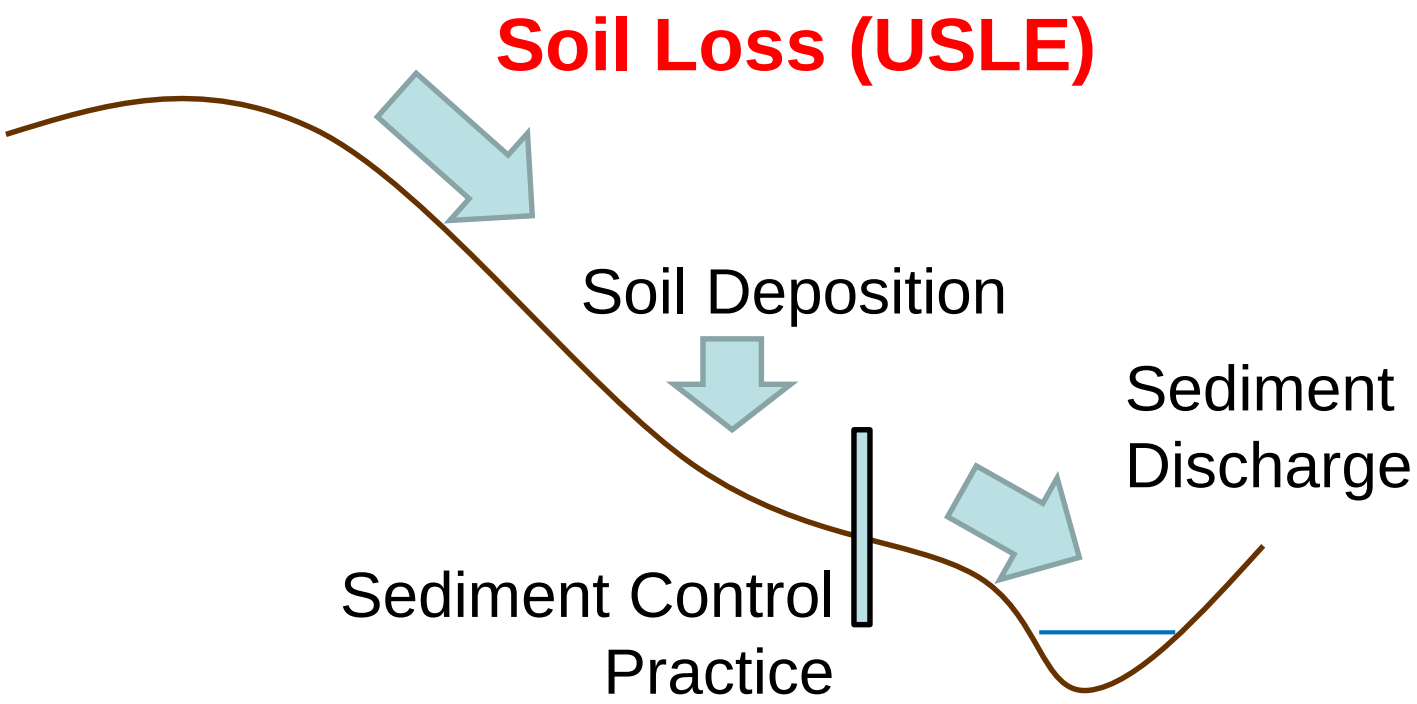
NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

Recommended Permanent Seeding Dates:

#N/A and #N/A — #N/A Turf, introduced grasses and legumes
#N/A — Native Grasses, forbs, and legumes

Designed By:	
Date	

Key Concepts



Step 1

- Determine the location(s) where soil loss and sediment discharge calculations will be conducted
  - Determine representative worst case condition (calculation areas): Location where combination of soil loss and sediment control practice removal efficiency produces highest sediment discharge rate
  - Determine prescriptive compliance areas (non-calculation areas)

Prescriptive Compliance Areas

- Slopes > 20%
- Soil Stockpiles
- Utility Trench Excavations
- Channelized Flow (below design storm event flow)
- Small Areas (< 10% of site and < 1 acre)
- Interior Pond Slopes

Step 2

- Determine the compliance period(s)
  - Duration of land disturbance + time needed to establish vegetation during growing season (60 days after seeding)

Step 3

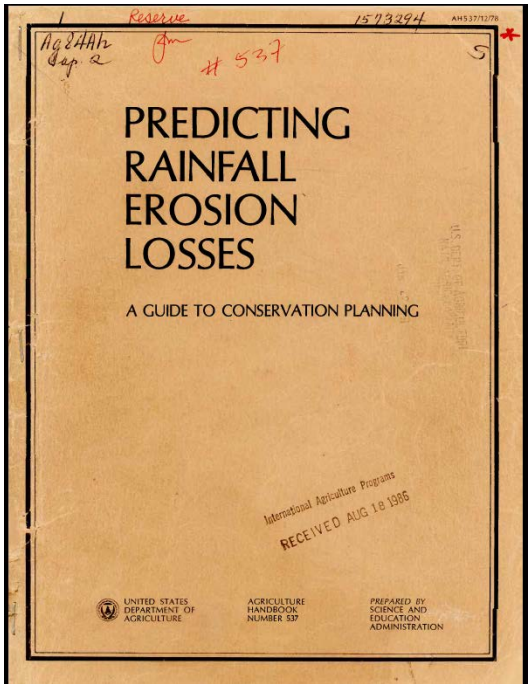
- Conduct soil loss calculations based on the location(s) selected in Step 1 and compliance period(s) determined in Step 2
  - Use spreadsheet tool

Universal Soil Loss Equation

$$A = R \times K \times (LS) \times C \times P$$

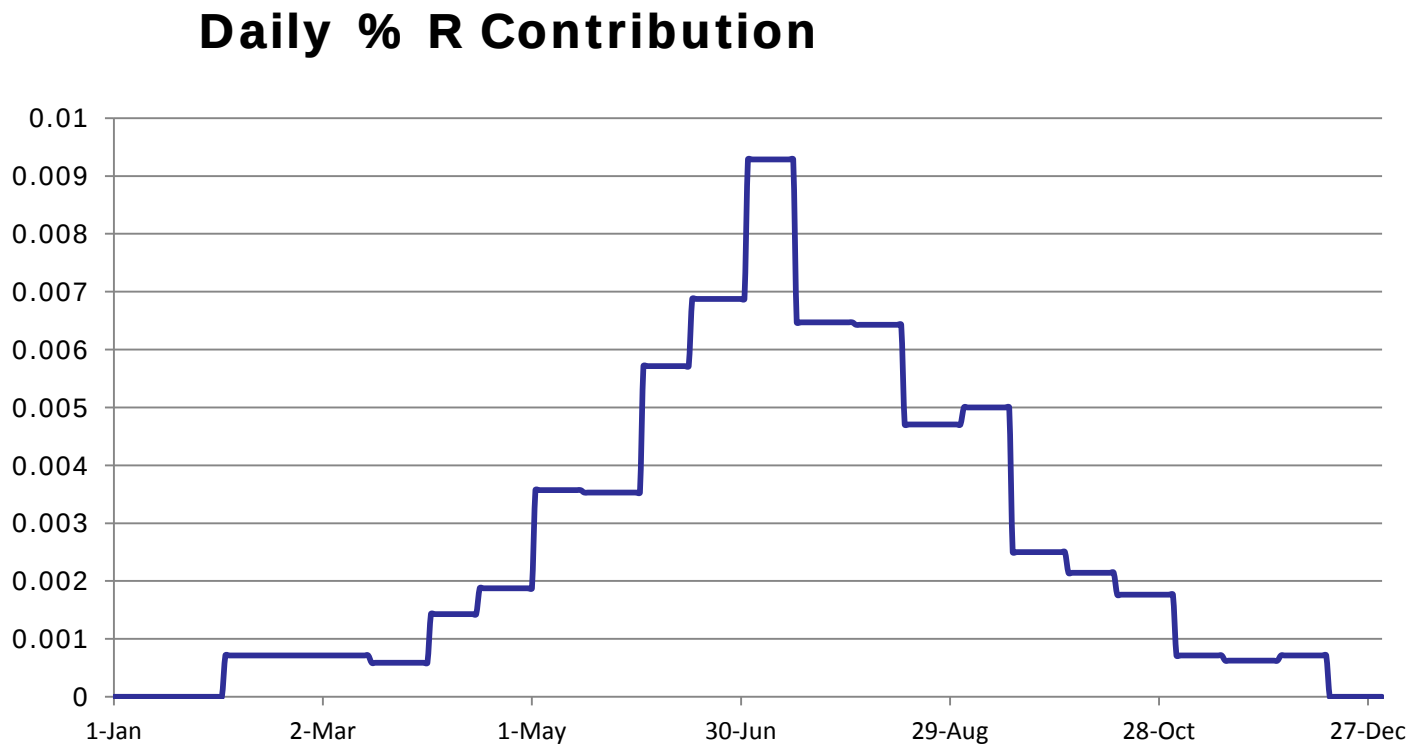
Where:

- A = Average Annual Soil Loss
- R = Rainfall & Runoff Factor
- K = Soil Erodibility Factor
- L = Slope Length
- S = Steepness Factor
- C = Cover & Management Factor
- P = Support Practice Factor (1.0 for Construction)

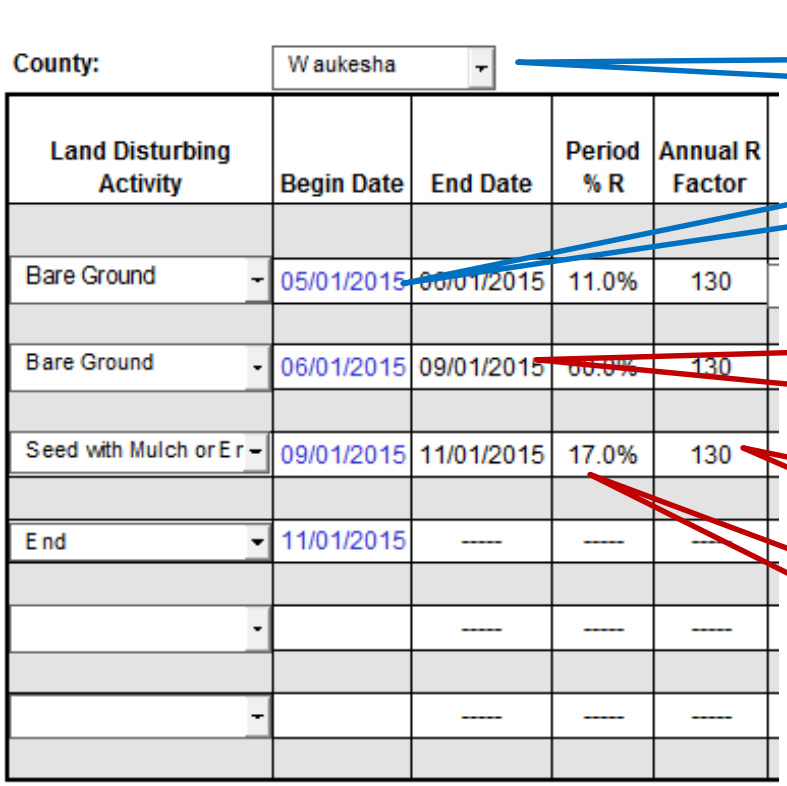


Rainfall & Runoff Factor (R)

R = (% of R to date) x (annual R factor)



Rainfall & Runoff Factor (R)



County: Waukesha

Land Disturbing Activity	Begin Date	End Date	Period % R	Annual R Factor
Bare Ground	05/01/2015	06/01/2015	11.0%	130
Bare Ground	06/01/2015	09/01/2015	66.0%	130
Seed with Mulch or Er	09/01/2015	11/01/2015	17.0%	130
End	11/01/2015	-----	-----	-----
		-----	-----	-----
		-----	-----	-----

Recommended Permanent Seeding Dates:

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

Help Page | Year 1 | Year 2

Select County

Enter Begin Dates

End Dates Based on Next Begin Date

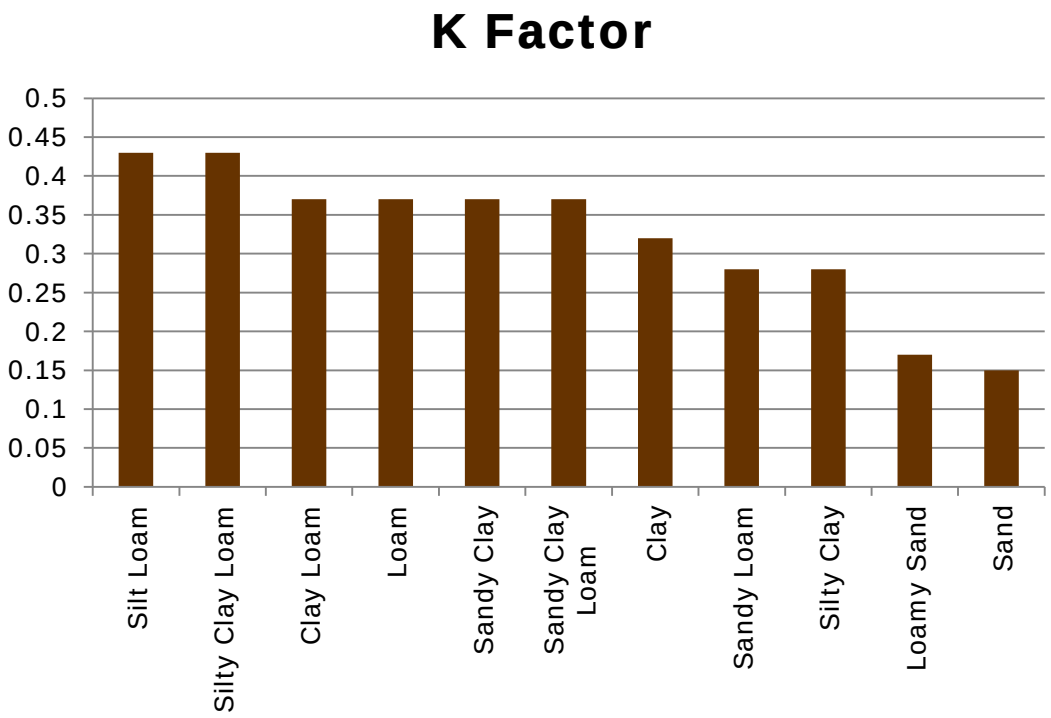
Annual R Factor Based on County

Period % R Based on Dates

Recommended Seeding Dates Per NRCS and County Entered

Guidance:
Assume May 1st if start date unknown

Soil Erodibility Factor (K)



Subsoil texture is the texture of soil exposed to erosion

Soil Erodibility Factor (K)

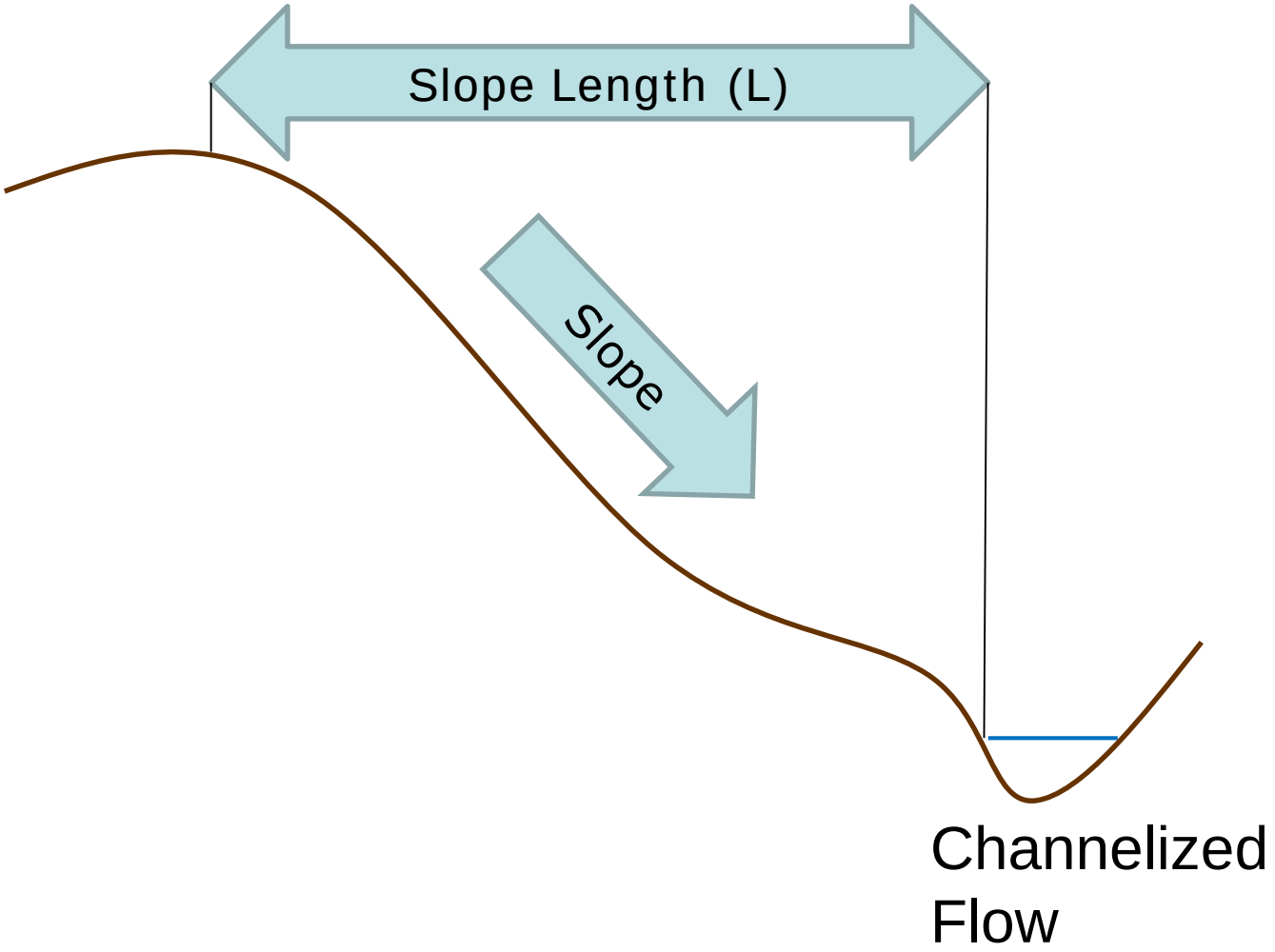
Select Subsoil Texture

Soil Erodibility Factor Based on Subsoil Texture

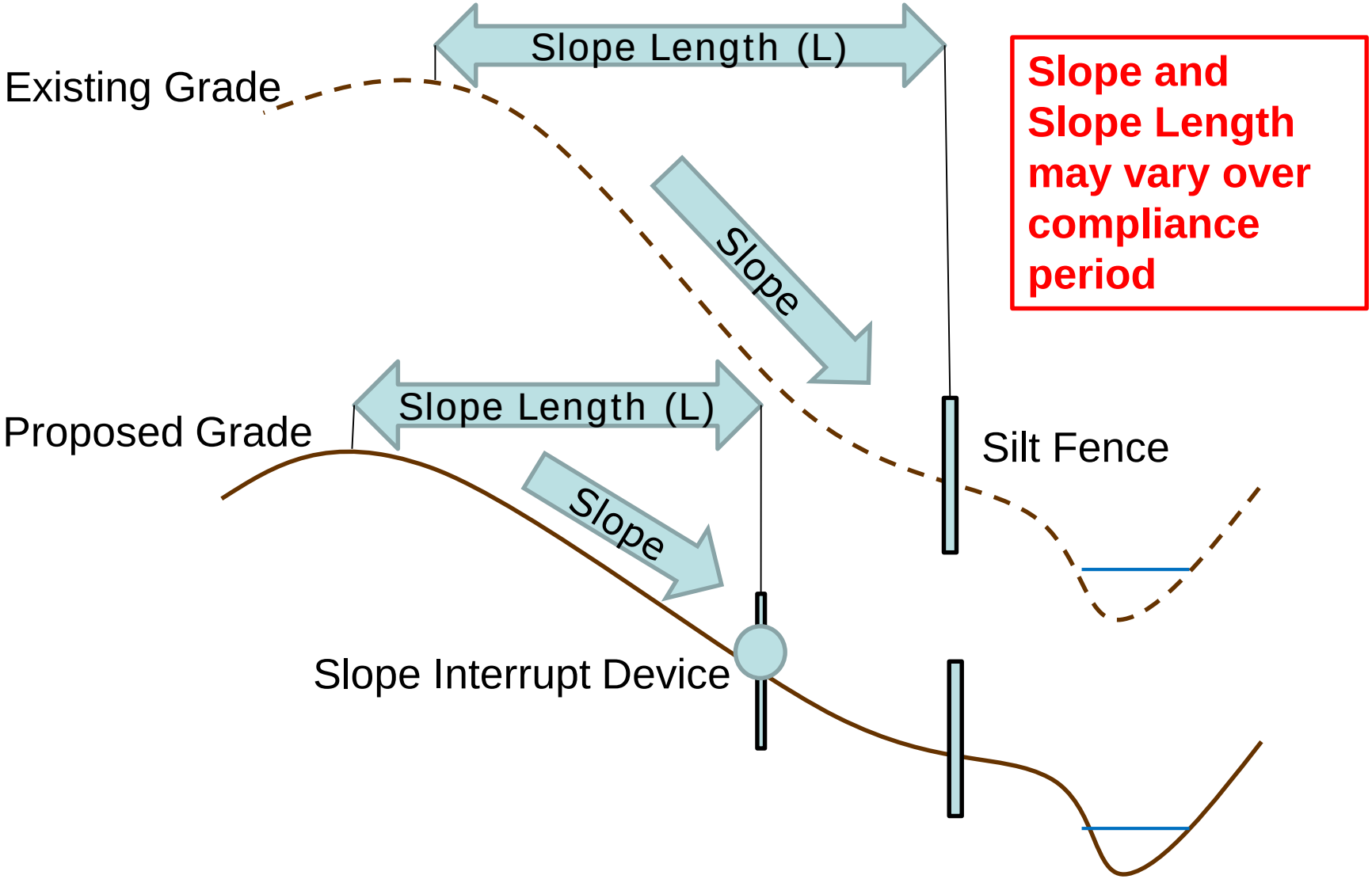
End Date	Period % R	Annual R Factor	Sub Soil Texture	Soil Erodibility K Factor	Slope (%)	Slope Length (feet)	LS Factor	Land Cover C Factor	Soil loss A (tons/acre)	S
06/01/2015	11.0%	130	Silt Loam	0.43	6.0%	300	1.17	1.00	7.2	S
09/01/2015	60.0%	130	Silt Loam	0.43	3.0%	250	0.43	1.00	14.3	S
11/01/2015	17.0%	130	Silt Loam	0.43	3.0%	250	0.43	0.10	0.4	S
-----	-----	----	-------	-----	3.0%	250	0.43	------	-----	

Select Subsoil Texture

Slope Length & Steepness Factor (LS)



Slope Length & Steepness Factor (LS)



Cover and Management Factor (C)

Land Disturbing Activity	C Factor
Bare Ground	1
Directional Tracking or Tillage	0.9
Land Applied Polymer	0.5
Seeding	0.4
Mulch or Erosion Matting	0.2
Seeding with Mulch or Erosion Matting	0.1
Sod	0.01

Bare Ground

Erosion Control Mat

Seeding

Final Stabilization or the end of a 12 month period is entered as ‘End’.

Cover and Management Factor (C)

Enter Land Disturbing Activities

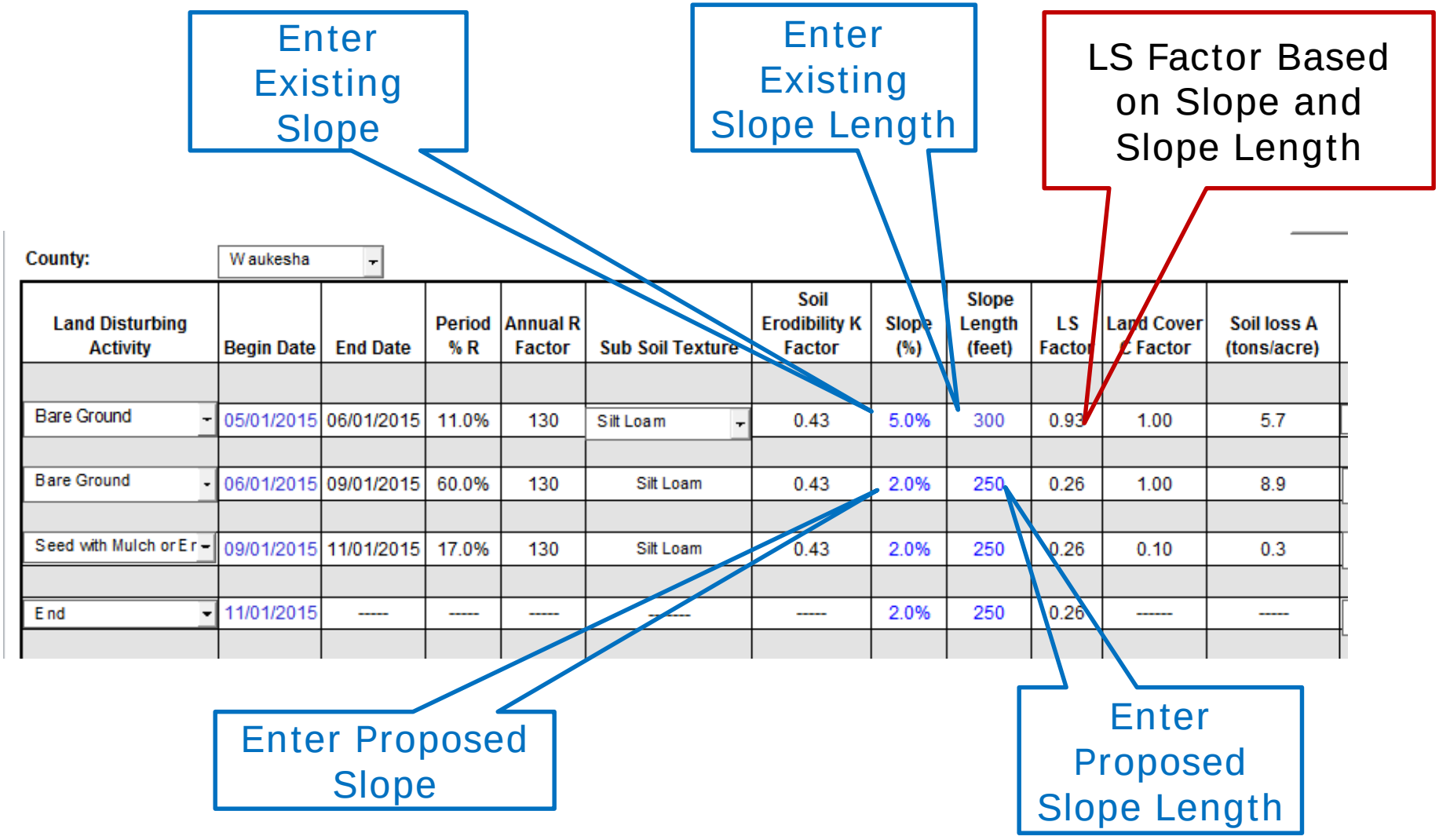
C Factor Based on Land Disturbing Activity

Land Disturbing 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
Bare Ground	05/01/2015	06/01/2015	11.0%	130	Silt Loam	0.43	5.0%	300	0.93	1.00
Bare Ground	06/01/2015	09/01/2015	60.0%	130	Silt Loam	0.43	2.0%	250	0.26	1.00
Seed with Mulch or Er	09/01/2015	11/01/2015	17.0%	130	Silt Loam	0.43	2.0%	250	0.26	0.10
End	11/01/2015	-----	-----	-----	-------	-----	2.0%	250	0.26	------

Last Activity on Each Sheet MUST be End

Final Stabilization assumed 60 days after Seeding, or May 15th of following spring if outside NRCS recommended dates.

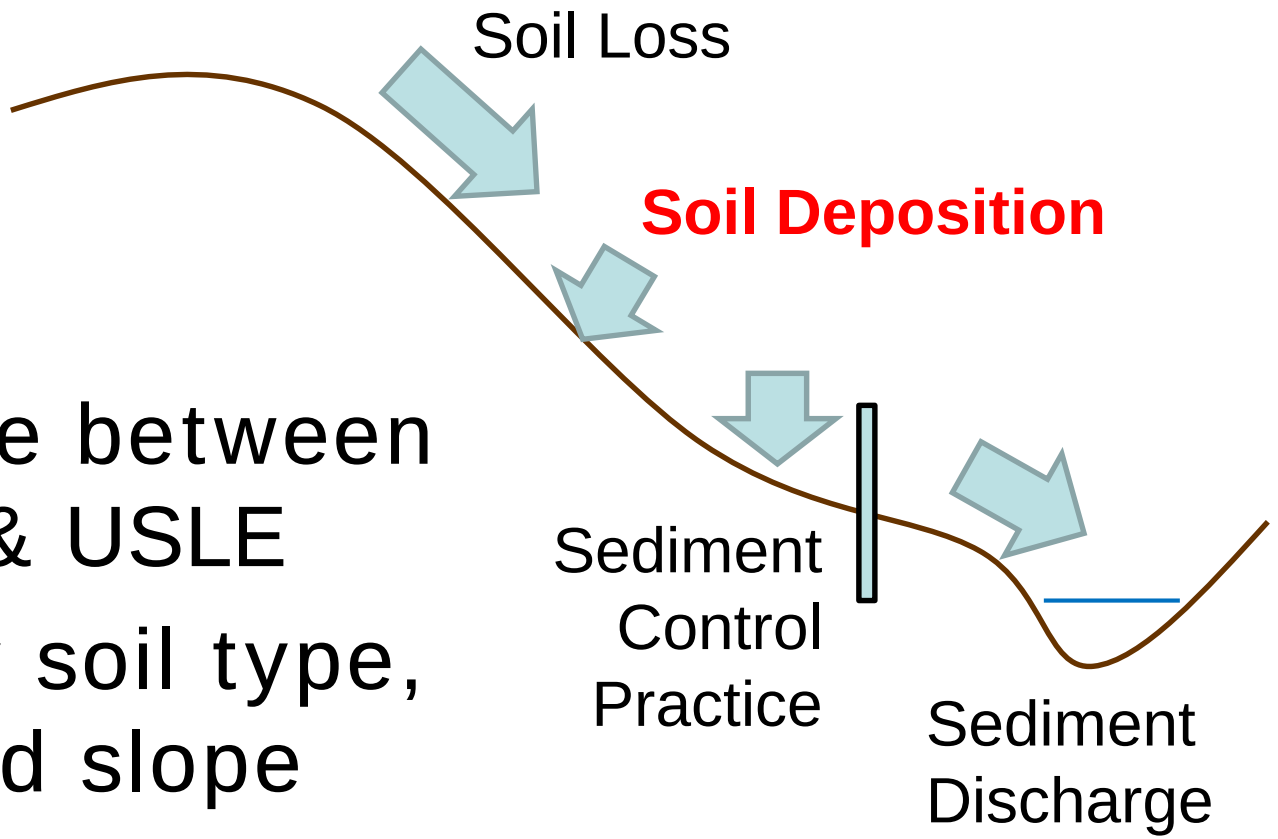
Slope Length & Steepness Factor (LS)



Step 4

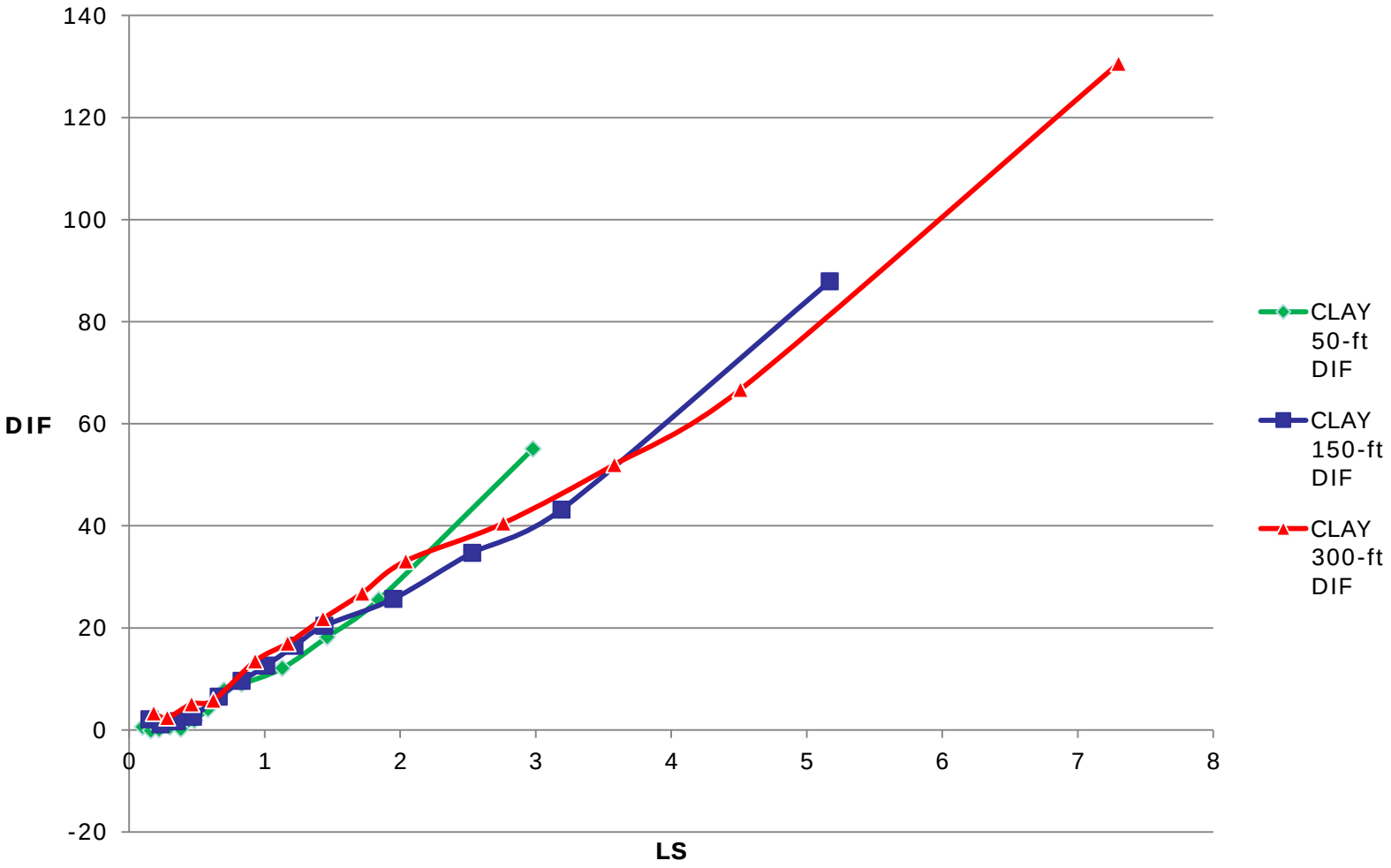
- Conduct sediment discharge calculations
  - Use spreadsheet tool

Soil Deposition



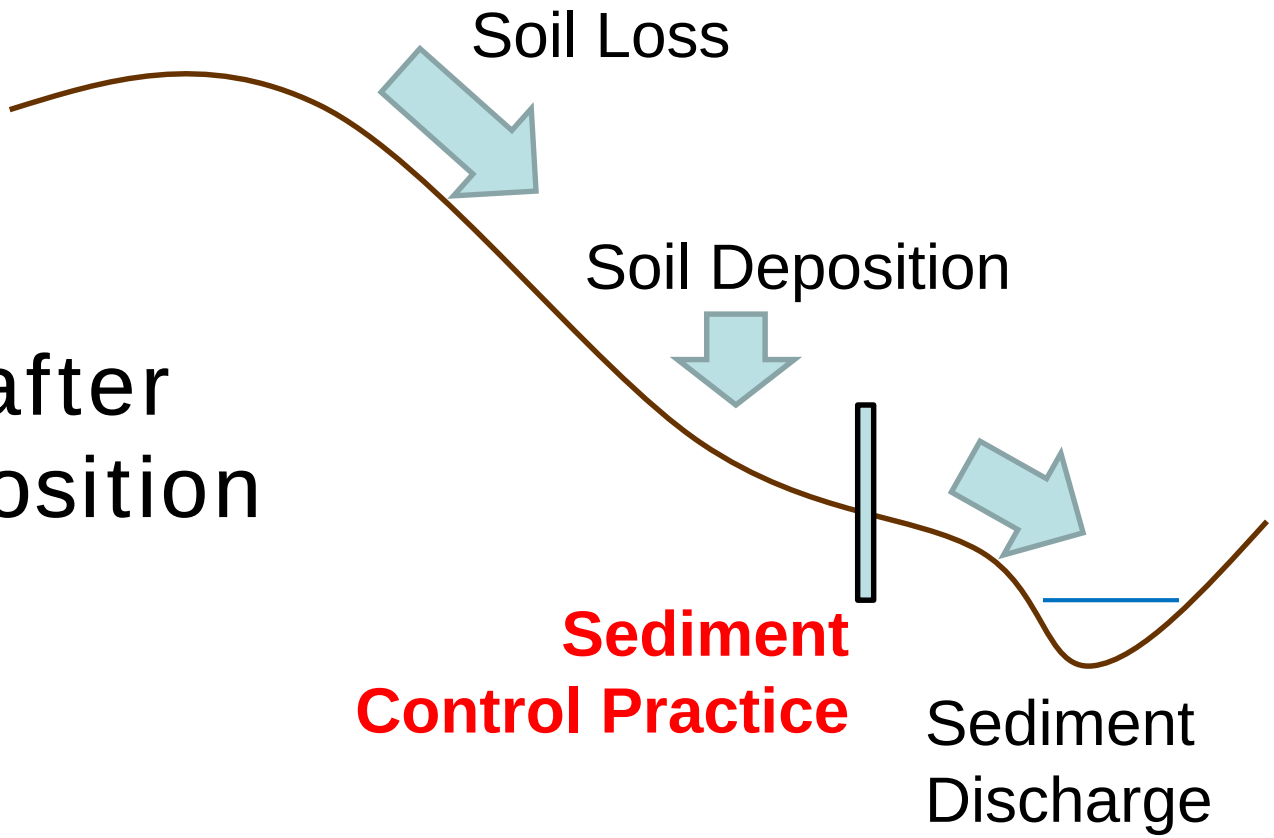
- Difference between RUSLE2 & USLE
- Varies by soil type, slope, and slope length

Soil Deposition-Clay



Sediment Control Practice

- Applied after Soil Deposition



Sediment Control Practice

Sedimentation Practices	Removal Efficiency*
Sediment Basin	80%
Sediment Trap	80%
Manufactured Perimeter Control	40%
Silt Fence	40%
Straw Bale Barrier	40%
Vegetative Buffer	40%
Ditch Check Sediment Trap	30%
Inlet Protection	30%

Sediment Basin

Silt Fence

Ditch Check

*** Removal efficiency assumes proper installation and maintenance**

Sediment Control Practice

Version 1.0

Soil loss A (tons/acre)	Sediment Control Practice	Sediment Discharge (tons/acre)
5.7	Sediment Basin	1.1
8.9	Sediment Basin	1.6
0.3	Sediment Basin	

14.8	TOTAL	2.7
	% Reduction Required	NONE

Enter Most Effective Sediment Control Practice

Sediment Discharge Listed for Each Activity

May be blank if Soil Loss is very small

If this is >5.0, then modify erosion and sediment control and/or schedule

Step 5

- If necessary, modify the erosion and sediment control plan and recalculate

Step 6

- Document the results of soil loss and sediment discharge calculations
  - Identify input variables (spreadsheet tool)
  - Show locations on map (including prescriptive compliance areas)
- Develop construction schedule consistent with calculations and prescriptive compliance criteria

Example 1 – One Soil Type

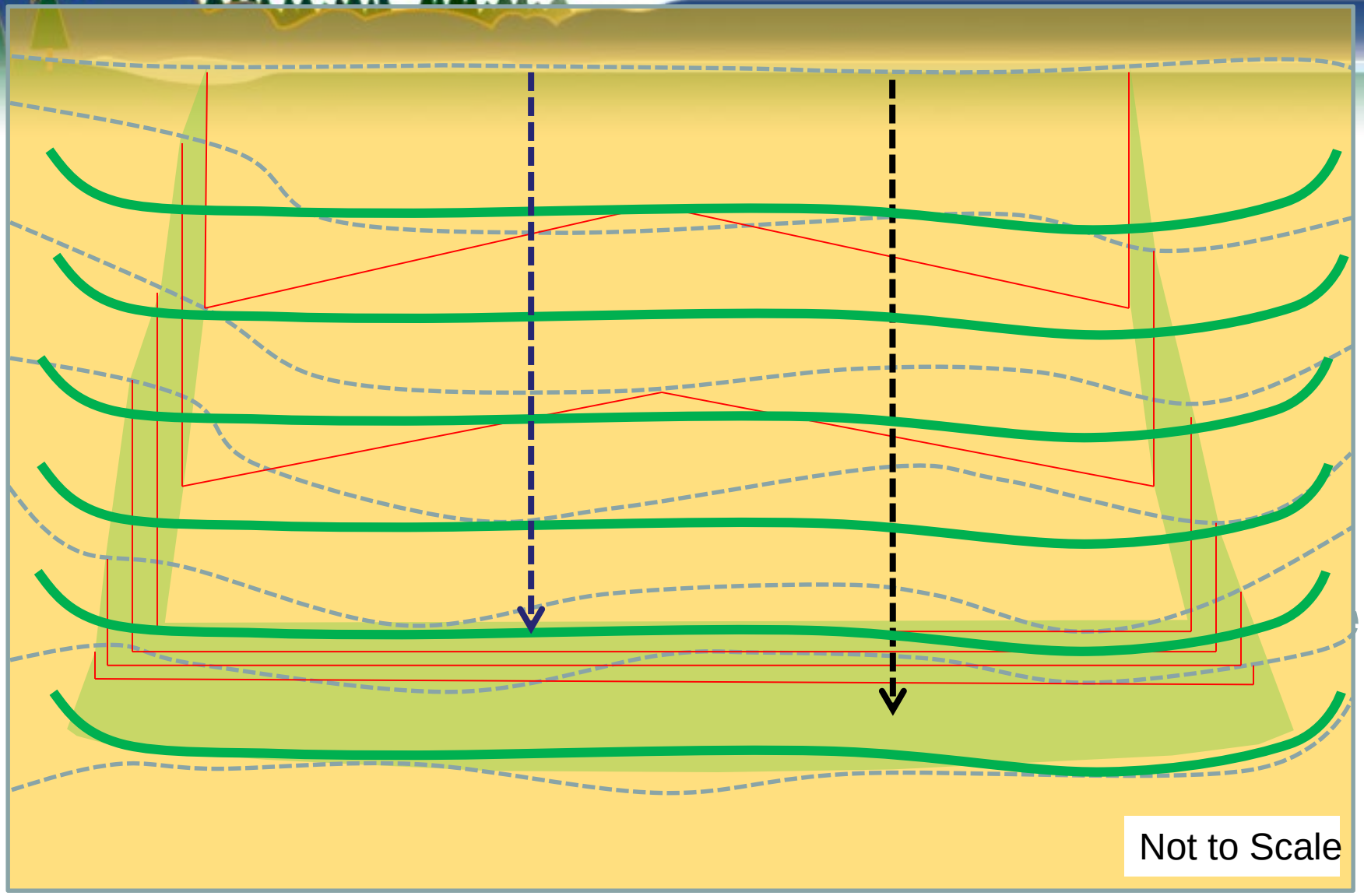
Given

- Site Location: Waukesha County
- Initial Grading: 05/01/2015 to 06/01/2015, 300-ft slope @6%
- After Fill Slope Construction: 06/01/2105 to 9/01/2015, 250-ft slope @ 3%
- Seed & Mulch or Erosion Matting: 09/01/2015
- 60 Day Vegetation Establishment: 11/01/2015
- Soil Type: Silt loam
- Sediment Control Practice: Trial 1 – Silt Fence, Trial 2 – Sediment Basin

Compliance Verification Procedure

- Step 1 – Locations: Identify the county where construction will occur (Waukesha), representative worst case slope locations & conditions (300-ft @ 6%, 250-ft @ 3%) and dominant soil texture (silt loam). Identify prescriptive compliance measures on the erosion and sediment control plan for fill slopes exceeding 20% and the sediment basin.
- Step 2 – Compliance Period: Identify the anticipated construction schedules and durations.
- Step 3 – Soil Loss Calculations: Enter the locations and compliance periods in the spreadsheet tool to conduct the soil loss calculations.
- Step 4 - Sediment Discharge Calculations: For Trial 1, enter silt fence in the spreadsheet tool as the sediment control practice to conduct the sediment discharge calculations.
- Step 5 – Plan Modification and Re-calculation: Trial 1 (silt fence) exceeds 5 tons/acre/year. Modify the erosion and sediment control plan to replace rows of silt fence with a sediment basin. For Trial 2, enter a sediment basin in the spreadsheet tool as the sediment control practice and conduct the sediment discharge calculations. Compliance is verified by Trial 2. Develop the construction schedule for the erosion and sediment control plan based on Trial 2.
- Step 6 – Documentation: Provide screenshots of the Trial 1 and Trial 2 spreadsheets and a map identifying the locations of the input variables.

Example 1 – Silt Fence



Silt Fence

Existing Contour

Final Contour

Silt Loam Soils

Prescriptive Compliance Area

Representative Worst Case Slope – Initial Grading

Representative Worst Case Slope – After Fill Slope Established

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

DRAFT VERSION 02-18-2015

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: Example 1

Project: Trial 1 - Silt Fence - 50-ft spacing

Date: 02/19/2015

County: Waukesha

PRINT HELP PAGE

Version 1.0

Land Disturbing 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%	130	Silt Loam	0.43	6.0%	50	0.48	1.00	2.9	Silt Fence	1.4
Bare Ground	06/01/2015	09/01/2015	60.0%	130	Silt Loam	0.43	3.0%	50	0.22	1.00	7.5	Silt Fence	4.2
Seed with Mulch or Er	09/01/2015	11/01/2015	17.0%	130	Silt Loam	0.43	3.0%	50	0.22	0.10	0.2	Silt Fence	0.0
End	11/01/2015	-----	-----	-----	-------	-----	3.0%	50	0.22	------	-----		
		-----	-----	-----	-------	-----	3.0%		-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
										TOTAL	10.7	TOTAL	5.6
												% Reduction Required	10%

Notes:

See Help Page for further descriptions of variables and items in drop-down boxes.
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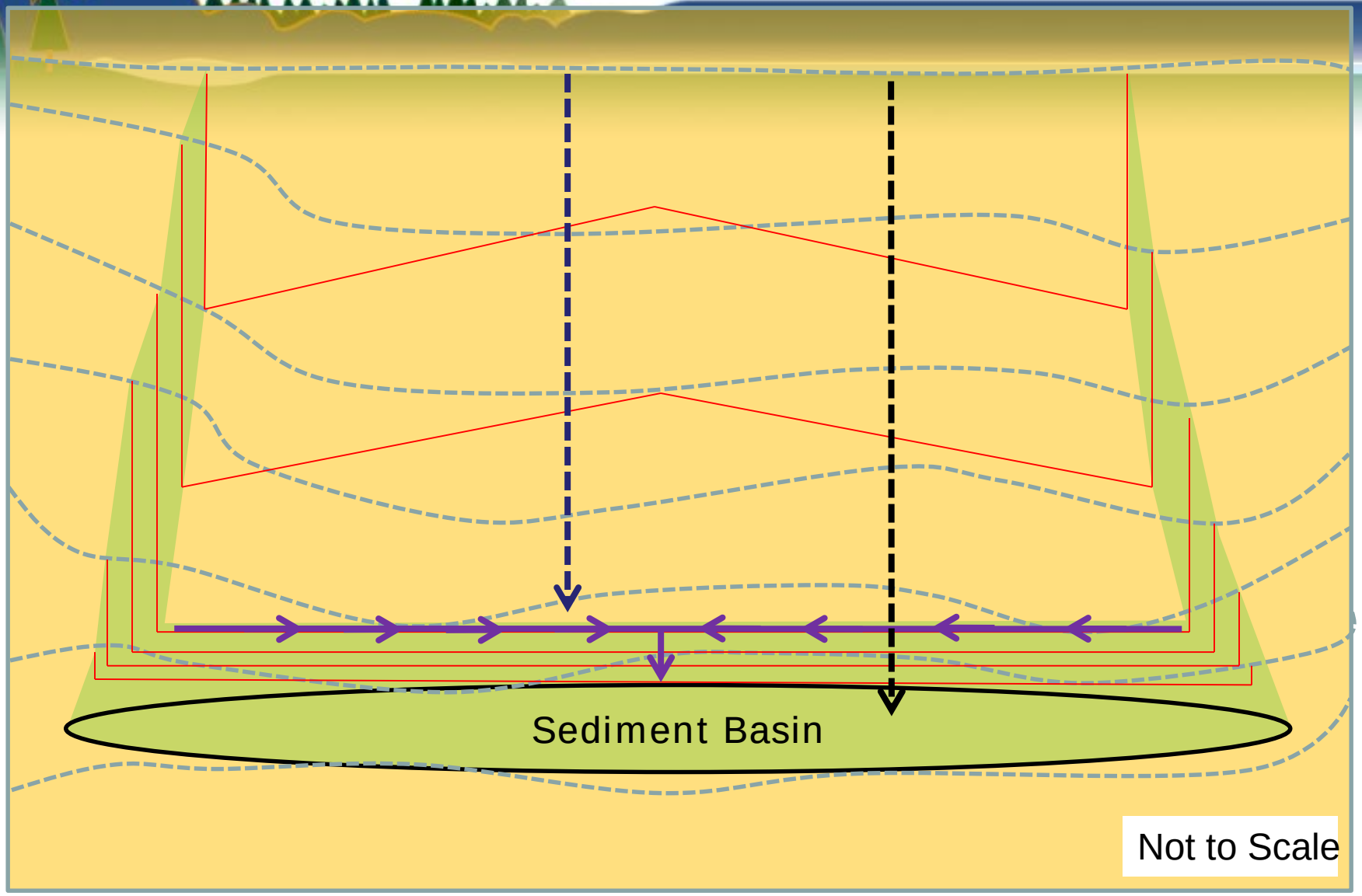
NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

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:	
Date	

Example 1 – Sediment Basin



Runoff Diversions (Channel Flow)

Existing Contour

Final Contour

Silt Loam Soils

Prescriptive Compliance Area

Representative Worst Case Slope – Initial Grading

Representative Worst Case Slope – After Fill Slope Established

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

DRAFT VERSION 02-18-2015

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: Example 1

Project: Trial 2 - Sediment Basin

Date: 02/19/2015

County: Waukesha

PRINT HELP PAGE

Version 1.0

Land Disturbing 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%	130	Silt Loam	0.43	6.0%	300	1.17	1.00	7.2	Sediment Basin	1.3
Bare Ground	06/01/2015	09/01/2015	60.0%	130	Silt Loam	0.43	3.0%	250	0.43	1.00	14.3	Sediment Basin	2.7
Seed with Mulch or Er	09/01/2015	11/01/2015	17.0%	130	Silt Loam	0.43	3.0%	250	0.43	0.10	0.4	Sediment Basin	0.0
End	11/01/2015	-----	-----	-----	-------	-----	3.0%	250	0.43	------	-----		
		-----	-----	-----	-------	-----	3.0%		-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
										TOTAL	21.9	TOTAL	4.1
												% Reduction Required	NONE

Notes:

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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:	
Date	

Example 2 – Two Soil Types

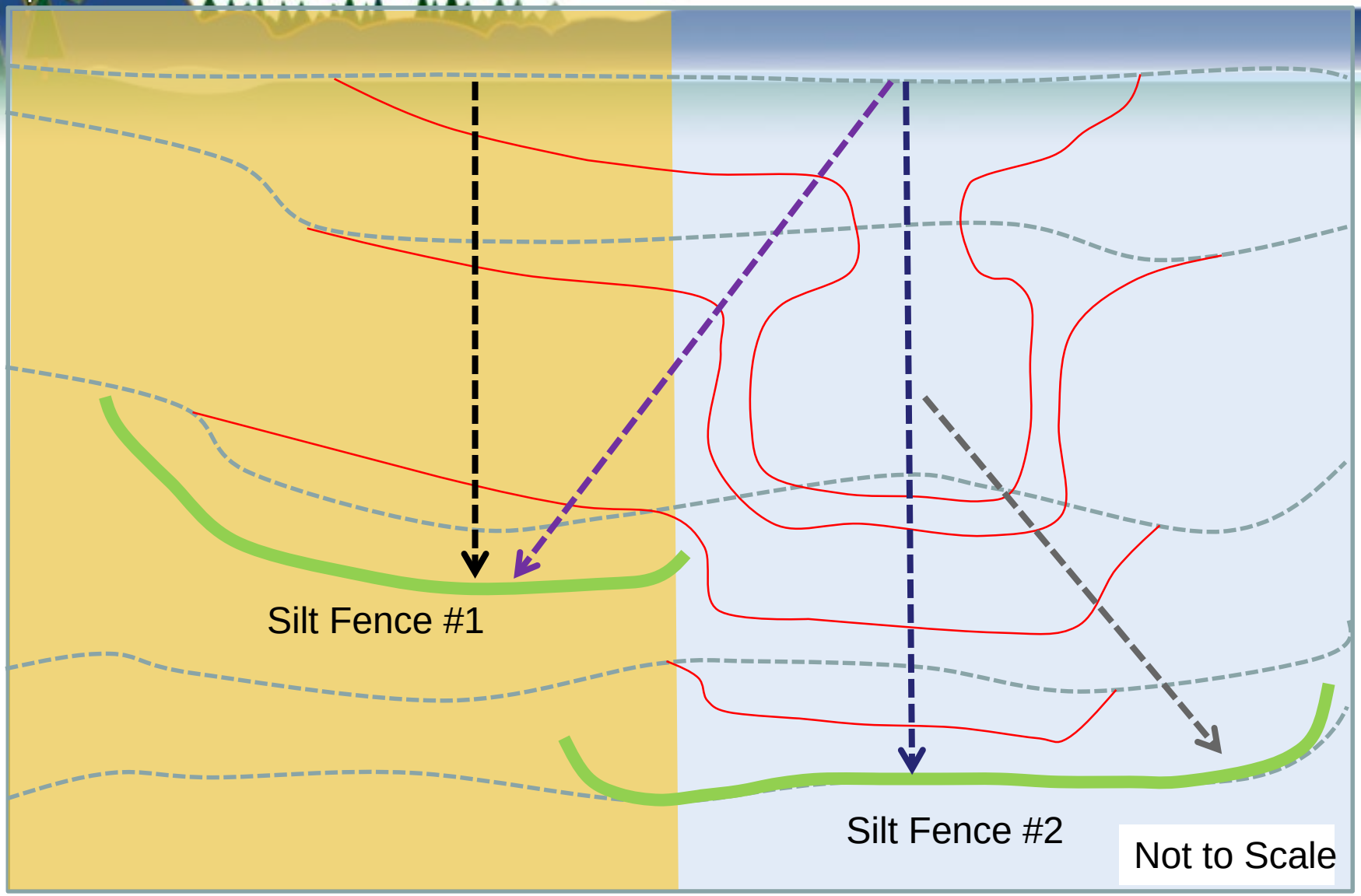
Given

- Site Location: Waukesha County
- Initial Grading: 05/01/2015 to 06/01/2015, 40-ft slope @3% (Silt Fence Drainage Area #1), 60-ft @3% (Silt Fence Drainage Area #2)
- After Fill Slope Construction: Silt Fence Drainage Area #1 - 06/01/2015 to 8/10/2015, 60-ft slope @3%, Silt Fence Drainage Area #2 – 06/01/2015 to 07/10/2015, 50-ft @7%
- Seed & Mulch or Erosion Matting: Silt Fence Drainage Area #1 - 08/10/2015, Silt Fence Drainage Area #2 – 07/10/2015
- 60 Day Vegetation Establishment: Silt Fence Drainage Area #1 - 10/10/2015, Silt Fence Drainage Area #2 – 09/10/2015
- Soil Type: Silt Fence Drainage Area #1 - Silt loam, Silt Fence Drainage Area #2 - Clay
- Sediment Control Practice: Silt Fence

Compliance Verification Procedure

- Step 1 – Locations: Identify the county where construction will occur (Waukesha), representative worst case slope locations & conditions and dominant soil texture (silt loam and clay).
- Step 2 – Compliance Period: Identify the anticipated construction schedules and durations.
- Step 3 – Soil Loss Calculations: Enter the locations and compliance periods in the spreadsheet tool to conduct the soil loss calculations.
- Step 4 - Sediment Discharge Calculations: Enter silt fence in the spreadsheet tool as the sediment control practice to conduct the sediment discharge calculations.
- Step 5 – Plan Modification and Re-calculation: Compliance is verified by initial evaluation (no plan modification and re-calculation required). Develop the construction schedule for the erosion and sediment control plan based on the Silt Fence Drainage Area #2 compliance period (worst case) or develop separate construction schedules for Silt Fence Drainage Area #1 and Silt Fence Drainage Area #2.
- Step 6 – Documentation: Provide screenshots of the Silt Fence Drainage Area #1 and Silt Fence Drainage Area #2 spreadsheets and a map identifying the locations of the input variables.

Example 2



Silt Fence

Existing Contour

Final Contour

Silt Loam Soils

Clay Soils

Representative Worst Case Slope - Silt Fence #1 Initial

Representative Worst Case Slope - Silt Fence #1 Final

Representative Worst Case Slope - Silt Fence #2 Initial

Representative Worst Case Slope - Silt Fence #2 Final

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

DRAFT VERSION 02-18-2015

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: Example 2

Project: Silt Fence #1

Date: 02/26/2015

County: Waukesha

PRINT HELP PAGE

Version 1.0

Land Disturbing 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%	130	Silt Loam	0.43	3.0%	40	0.21	1.00	1.3	Silt Fence	0.7
Bare Ground	06/01/2015	08/10/2015	48.8%	130	Silt Loam	0.43	3.0%	60	0.24	1.00	6.6	Silt Fence	3.7
Seed with Mulch or Er	08/10/2015	10/10/2015	24.1%	130	Silt Loam	0.43	3.0%	60	0.24	0.10	0.3	Silt Fence	0.1
End	10/10/2015	-----	-----	-----	-------	-----	3.0%	60	0.24	------	-----		
		-----	-----	-----	-------	-----	3.0%		-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
										TOTAL	8.2	TOTAL	4.4
												% Reduction Required	NONE

Notes:

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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:	
Date	

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

DRAFT VERSION 02-18-2015

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: Example 2

Project: Silt Fence #2

Date: 02/26/2015

County: Waukesha

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Version 1.0

Land Disturbing 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%	130	Clay	0.32	3.0%	60	0.24	1.00	1.1	Silt Fence	0.6
Bare Ground	06/01/2015	07/10/2015	27.4%	130	Clay	0.32	7.0%	50	0.58	1.00	6.7	Silt Fence	3.3
Seed with Mulch or Er	07/10/2015	09/10/2015	37.1%	130	Clay	0.32	7.0%	50	0.58	0.10	0.9	Silt Fence	
End	09/10/2015	-----	-----	-----	-------	-----	7.0%	50	0.58	------	-----		
		-----	-----	-----	-------	-----	7.0%		-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
										TOTAL	8.7	TOTAL	3.9
												% Reduction Required	NONE

Notes:

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

Designed By:	
Date	

Example 3 – Two Sediment Control Practices & Seeding After Growing Season

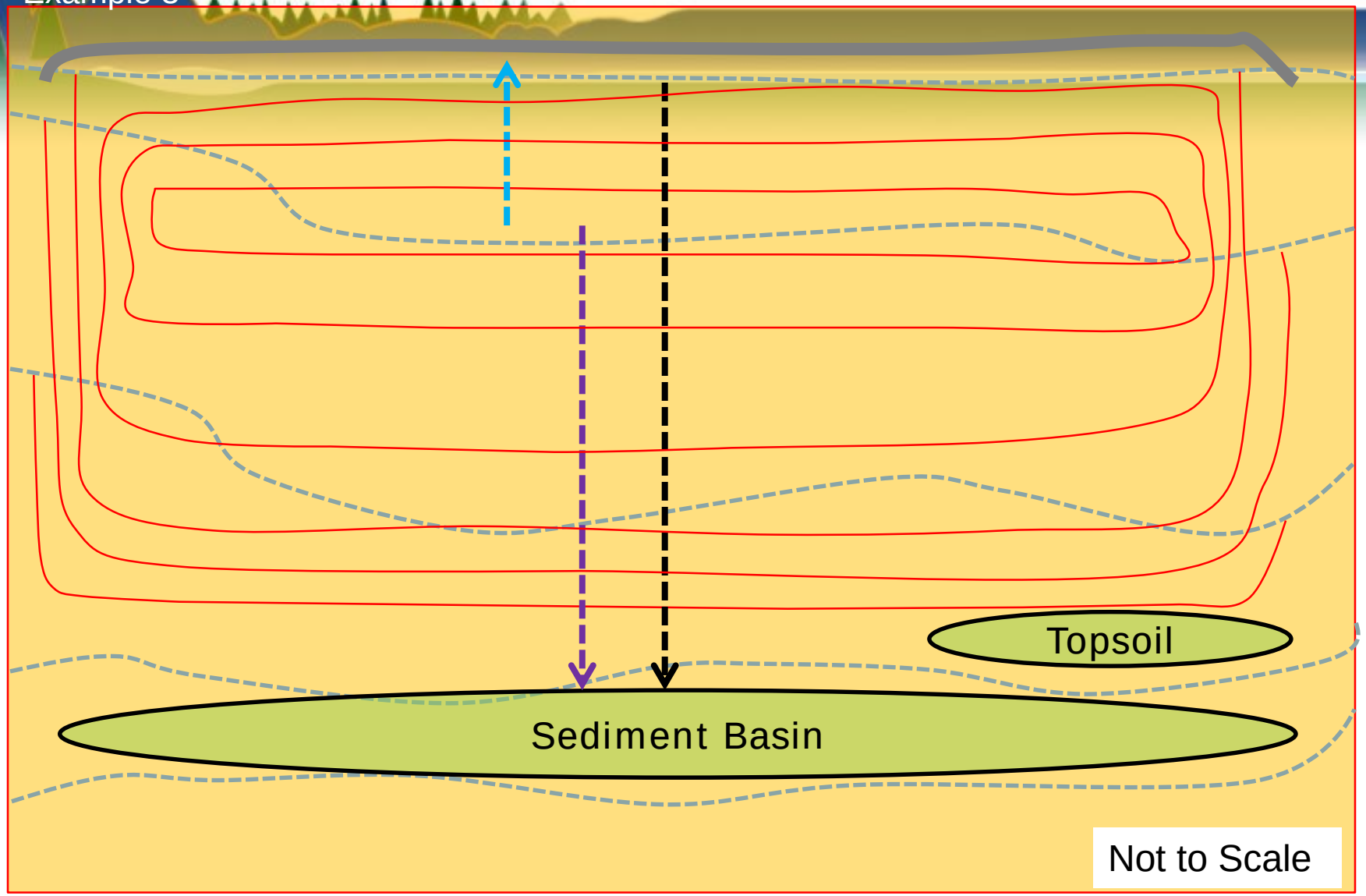
Given

- Site Location: Waukesha County
- Initial Grading: Silt Fence Drainage Area - 05/16/2015 to 06/15/2015, 50-ft slope @2%, Sediment Basin Drainage Area – 05/16/2015 to 06/15/2015, 200-ft @2%
- Fill Slope Construction: Silt Fence Drainage Area - 06/15/2015 to 07/15/2015, 50-ft slope @3%, 07/15/2015 to 10/15/2015, 50-ft @5%, Sediment Basin Drainage Area – 06/15/2015 to 10/15/2015, 150-ft @7%
- Seed & Mulch or Erosion Matting: 10/15/2015
- 60 Day Vegetation Establishment: Seeding After Growing Season - Extend to 05/15/2016 per Appendix B
- Soil Type: Silty clay
- Sediment Control Practices: Silt Fence and sediment basin

Compliance Verification Procedure

- Step 1 – Locations: Identify the county where construction will occur (Waukesha), representative worst case slope locations & conditions and dominant soil texture (silty clay). Identify prescriptive compliance measures on the erosion and sediment control plan for the topsoil stockpile and the sediment basin.
- Step 2 – Compliance Period: Identify the anticipated construction schedules and durations.
- Step 3 – Soil Loss Calculations: Enter the locations and compliance periods in the spreadsheet tool to conduct the soil loss calculations.
- Step 4 - Sediment Discharge Calculations: Enter silt fence and sediment basin as the sediment control practices to conduct the sediment discharge calculations.
- Step 5 – Plan Modification and Re-calculation: Compliance is verified by initial evaluation (no plan modification and re-calculation required). Develop the construction schedule for the erosion and sediment control plan based on the silt fence and sediment basin compliance periods.
- Step 6 – Documentation: Provide screenshots of the Silt Fence and Sediment Basin spreadsheets and a map identifying the locations of the input variables.

Example 3



Silt Fence
Existing Contour
Final Contour
Silty Clay Soils

Prescriptive Compliance Area
Representative Worst Case Slope – Initial Grading
Representative Worst Case Slope – Sediment Basin Final
Representative Worst Case Slope – Silt Fence

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

DRAFT VERSION 02-18-2015

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: Example 3

Project: Silt Fence

Date: 02/19/2015

County: Waukesha

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Version 1.0

Land Disturbing 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	05/16/2015	06/15/2015	13.6%	130	Silty Clay	0.28	2.0%	50	0.16	1.00	0.8	Silt Fence	0.3
Bare Ground	06/15/2015	07/15/2015	24.0%	130	Silty Clay	0.28	3.0%	50	0.22	1.00	2.0	Silt Fence	0.9
Bare Ground	07/15/2015	10/15/2015	42.0%	130	Silty Clay	0.28	5.0%	50	0.38	1.00	5.8	Silt Fence	3.4
Seed with Mulch or Er	10/15/2015	05/15/2016	20.4%	130	Silty Clay	0.28	5.0%	50	0.38	0.10	0.3	Silt Fence	0.1
End	05/15/2016	-----	-----	-----	-------	-----	5.0%		-----	------	-----		
		-----	-----	-----	-------	-----			-----	------	-----		
										TOTAL	8.8	TOTAL	4.8
												% Reduction Required	NONE

Notes:

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

Designed By:	
Date	

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

DRAFT VERSION 02-18-2015

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: Example 3

Project: Sediment Basin

Date: 02/19/2015

County: Waukesha

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Version 1.0

Land Disturbing 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	05/16/2015	06/15/2015	13.6%	130	Silty Clay	0.28	2.0%	200	0.25	1.00	1.2	Sediment Basin	0.2
Bare Ground	06/15/2015	10/15/2015	66.0%	130	Silty Clay	0.28	7.0%	150	1.01	1.00	24.3	Sediment Basin	3.3
Seed with Mulch or E	10/15/2015	05/15/2016	20.4%	130	Silty Clay	0.28	7.0%	150	1.01	0.10	0.8	Sediment Basin	
End	05/15/2016	-----	-----	-----	-------	-----	7.0%	150	1.01	------	-----		
		-----	-----	-----	-------	-----	7.0%		-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
										TOTAL	26.3	TOTAL	3.5
												% Reduction Required	NONE

Notes:

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For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

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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:	
Date	

Example 4 – Construction > 12 Months

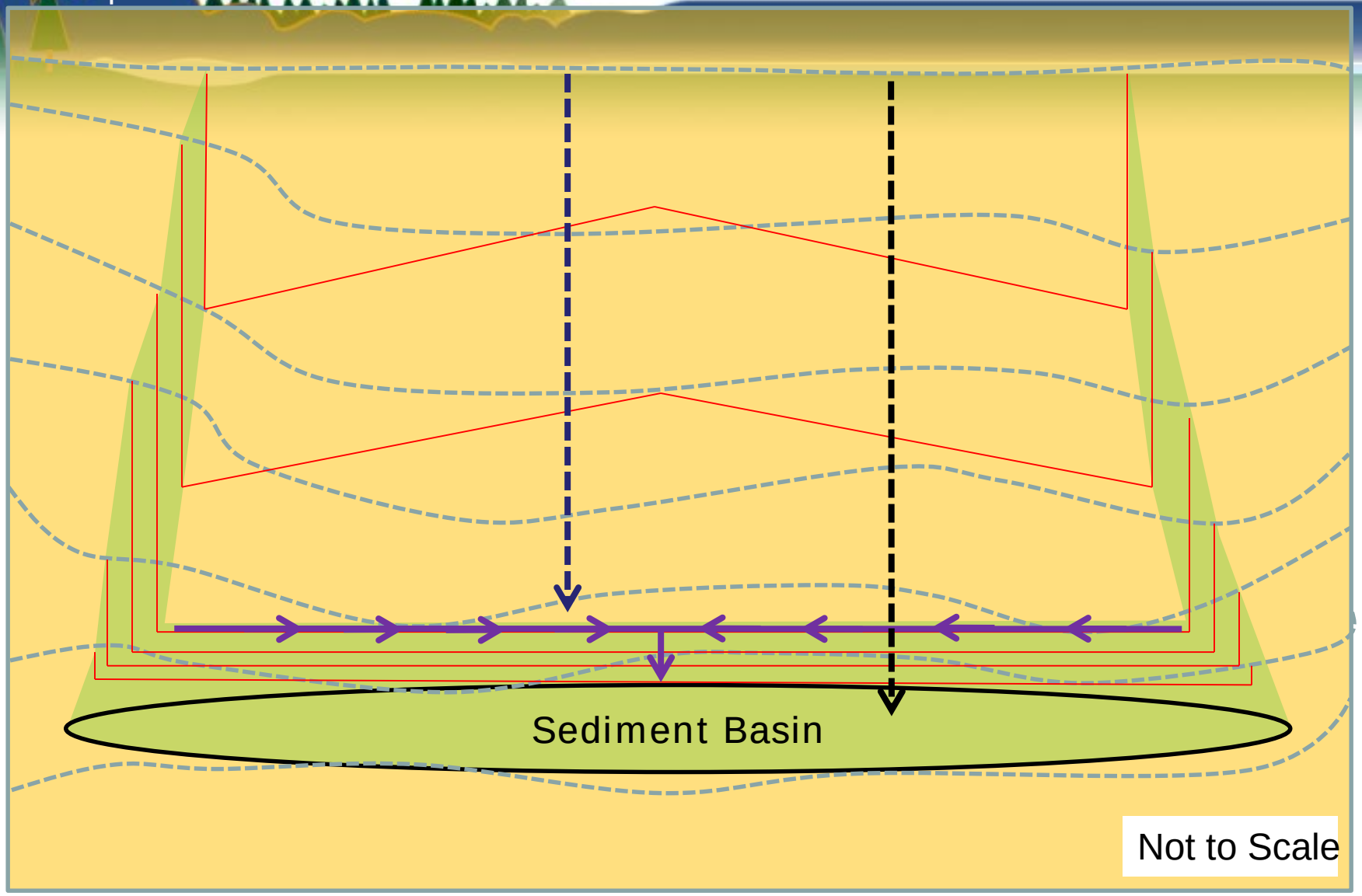
Given

- Site Location: Waukesha County
- Initial Grading: 05/01/2015 to 07/01/2015, 300-ft slope @5%
- After Fill Slope Construction: 07/01/2105 to 8/30/2016, 250-ft slope @ 2%
- Seed & Mulch or Erosion Matting: 08/30/2016
- 60 Day Vegetation Establishment: 10/30/2016
- Soil Type: Silt loam
- Sediment Control Practice: Sediment Basin

Compliance Verification Procedure

- Step 1 – Locations: Identify the county where construction will occur (Waukesha), representative worst case slope locations & conditions (300-ft @ 5%, 250-ft @ 2%) and dominant soil texture (silt loam). Identify prescriptive compliance measures on the erosion and sediment control plan for fill slopes exceeding 20% and the sediment basin.
- Step 2 – Compliance Period: Identify the anticipated construction schedules and durations. For Year 1 spreadsheet, use the first 12 months of construction (05/01/2015 to 04/30/2015). For Year 2 spreadsheet, use the 12 months prior to the 60 day vegetation establishment date (11/01/2015 to 10/30/2016).
- Step 3 – Soil Loss Calculations: Enter the locations and compliance periods in the spreadsheet tool to conduct the soil loss calculations.
- Step 4 - Sediment Discharge Calculations: Enter a sediment basin in the spreadsheet tool as the sediment control practice to conduct the sediment discharge calculations.
- Step 5 – Plan Modification and Re-calculation: Compliance is verified by initial evaluation (no plan modification and re-calculation required). Develop the construction schedule for the erosion and sediment control plan based on the specified compliance periods.
- Step 6 – Documentation: Provide screenshots of the Year 1 and Year 2 spreadsheets and a map identifying the locations of the input variables.

Example 4



Runoff Diversions (Channel Flow)

Existing Contour

Final Contour

Silt Loam Soils

Prescriptive Compliance Area

Representative Worst Case Slope – Initial Grading

Representative Worst Case Slope – After Fill Slope Established

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

DRAFT VERSION 02-18-2015

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer: Example 4

Project: Sediment Basin

Date: 02/19/2015

County: Waukesha

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Version 1.0

Land Disturbing 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	07/01/2015	30.0%	130	Silt Loam	0.43	5.0%	300	0.93	1.00	15.6	Sediment Basin	2.9
Bare Ground	07/01/2015	04/30/2016	70.0%	130	Silt Loam	0.43	2.0%	250	0.26	1.00	10.3	Sediment Basin	1.9
End	04/30/2016	-----	-----	-----	-------	-----	2.0%	250	0.26	------	-----	Sediment Basin	
		-----	-----	-----	-------	-----	2.0%	250	0.26	-----	-----		
		-----	-----	-----	-------	-----	2.0%		-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
										TOTAL	25.9	TOTAL	4.8
												% Reduction Required	NONE

Notes:

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

Designed By:	
Date	

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

DRAFT VERSION 02-18-2015

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 2

Developer: Example 4

Project: Sediment Basin

Date: 02/19/2015

County: Waukesha

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Version 1.0

Land Disturbing 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	11/01/2015	08/30/2016	82.5%	130	Silt Loam	0.43	2.0%	250	0.26	1.00	12.2	Sediment Basin	2.3
Seed with Mulch or Er	08/30/2016	10/30/2016	17.3%	130	Silt Loam	0.43	2.0%	250	0.26	0.10	0.3	Sediment Basin	0.0
End	10/30/2016	-----	-----	-----	-------	-----	2.0%	250	0.26	------	-----		
		-----	-----	-----	-------	-----	2.0%	250	0.26	-----	-----		
		-----	-----	-----	-------	-----	2.0%		-----	-----	-----		
		-----	-----	-----	-------	-----			-----	-----	-----		
										TOTAL	12.4	TOTAL	2.3
												% Reduction Required	NONE

Notes:

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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:	
Date	