AWM – 106 – Sedimentation Management

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Curricula Build-out Guidelines and Purposes of This Document

This template should be used after the launch meeting to map outcomes and plan assessments (graded projects / assignments). Changes will occur, so this document is to be used as an initial project plan.

Mapping: [Content-provider and Course Developer to work on this together before the design process begin.]

Course Narrative: Managing sediments is a critical component of watershed management. Erosion is a natural process and the sediments it produces provide essential inputs to downstream ecosystems. They also have negative impacts on other ecosystems and on ecosystem services that become environmental, social, and economic interests downstream. The NRCS, USEPA, USGS and other federal, state, and local agencies provide education, resources, cost sharing to assist farmers and others in managing their land and water resources to minimize the negative impacts of erosion and sediment loading. This course helps develop an understanding of the sediment loading issue and how to accurate assess different sources, and the management practice changes that can reduce the negative effects of sediment for downstream interests.

Course Outcomes [approximately one per educational unit detailed on subsequent pages]:

- Discuss sediments related to agricultural watersheds and what steps can be taken to manage sediments;
- Describe problems associated with sediments in water bodies (streams, rivers, lakes, etc.);
- Identify the positive role of sediments in the watershed and ecosystems;
- Explain how soil characteristics affect erosion and sediments;
- Compare and contrast sediments derived from surface erosion with those from stream banks and riverbeds;
- Describe how agricultural best management practices can affect sediments;
- Explain the laws and regulations associated with managing sediments in agricultural watersheds.

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Unit 1 – Sediments related to agricultural watershed management

Unit 1 – Narrative: Moving water has the capacity to carry a certain amount of suspended solids (soil, etc.) and will accumulate that amount from surface erosion, scouring of stream beds, and streambanks. As the water flow is reduced downstream, part of that sediment load is released in the form of sediments. Management of agricultural practices and various other means can be used to modify the amount of sediment that is loaded into the moving water and where it is transported.

Unit 1 Lesson 1 – Narrative: Glossary is an alphabetical list of terms in a particular domain of knowledge with the definitions for those terms. Traditionally, a glossary appears at the end of a book and includes terms within that book that are either newly introduced, uncommon, or specialized. A bilingual glossary is a list of terms in one language defined in a second language or glossed by synonyms (or at least near-synonyms) in another language. Lesson 2 invites you to investigate your 'home watershed', taking into account its various stakeholders and governmental agencies.

Unit 1 - Lesson 1– Outcomes: Glossary	**Maps to Course Outcomes** (combinations of the following per each lesson):	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.]
• Recall basic watershed and advanced agricultural watershed terminology	• Prepare; • Practice; • Perform. Prepare: Prepare: Learn the terminology used in work from GOOGLE search. Some very good diagrams and photos. Images related to sediment	• Discussion Boards – 25 points • Quiz #1 (parts A & B) – 20 points

https://en.wikipedia.org/wiki/Sedimentation

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https://www.google.com/search?q=sedimentation&espv=2&tbm=isch&tbo=u&source=univ&sa=X&ved=0CGMQ7AlqFQoTCILHg__Ps8gCFUKYgAodhlMNzg&biw=999&bih=561

https://www.google.com/search?q=sedimentation&espv=2&tbm=isch&tbo=u&source#imgrc=_

http://water.epa.govhttps://www.google.com/search?q=sedimentation&espv=2&tbm=isch&tbo=u&source=
http://cfpub.epa.gov/npstbx/files/ksmo_sediment.pdf

http://www.fao.org/docrep/w2598e/w2598e05.htm

Unit 1 Lesson 2 – Narrative: Managing sediments in watersheds requires a clear understanding of potential sources of those sediments. A variety of mapping tools are available to help gain that understanding. Such knowledge is critical to development of a strategic plan for managing erosion and sediments.

Unit 1 - Lesson 2: Outcomes	**Maps to Course Outcomes** (combinations of the following per each lesson):	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.]
• Identify sources of sediment in water bodies—Rivers, lakes, etc.	Prepare: Study the maps, soil survey, and Google Earth images of your watershed. Identify the primary sources of sediments reaching the waterbodies Prepare: Study Google Earth images of your watershed. Identify visible features in place that help to reduce sediments reaching the water bodies. https://www.**google**.com/**earth/** Practice: Prepare a list of opportunities to reduce sediment losses in your watershed. Perform; Contact your local NRCS office to learn what technical support and cost-sharing would be available to help implement the potential sediment reduction strategies you have identified.	Quiz #1 (parts A & B) – 20 points

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Optional designer notes: [You can list topics for discussion boards and seminar here.]

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Discussion Board I

Discussion Board II

Discussion Board III
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Unit 2 – Positive and Negatives of Soil Sediments

Unit 2 – Narrative: There are both positive and negative effects of sediments. Understanding their sources and how physical factors and management can affect them are important to better dealing with erosion and the formation of sediments.

Unit 2 – Outcomes **(1)** Understand sediments; positive and negative aspects. **(2)** Be aware of rules and programs related to sediment	(combinations of the following per each lesson): • Prepare; • Practice; • Perform.	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.] • Reading Assignments – 15 points • Discussion Board – 10 points Quiz #1 (parts A & B) – 20 points

Unit 2 Lesson 1 – Narrative:

Unit 2 - Lesson 1 – Outcomes: Describe problems associated with sediments in agricultural watersheds -- and beyond Sediment: Good and bad for water ecosystems.	**Maps to Course Outcomes** (combinations of the following per each lesson): • Prepare; • Practice; • Perform. • Prepare: Brief overview, SOIL IN OUR STREAMS. NCSU extension http://www.bae.ncsu.edu/programs/extension/wqg/sri/sediment5.pdf Practice: Perform:	Reading assignments – 15 pts.;

	Read about the problems associated with TOO MUCH and TOO LITTLE sediment in water bodies. Identify key terminology on the subject. http://www.pollutionissues.com/Re-Sy/Sedimentation.html	

Unit 2 Lesson 2 – Narrative: Sediments from agricultural land have a significant economic impact on downstream interests, and the also impact the production on the farmer's costs of production and the maintenance of the value of the farmland to its owner. Government agencies and universities have extensive research and educational support services to assist in the economic assessment on the farm. Other agencies have done extensive economic evaluation of the impact of sediments on downstream interests.

Unit 2 - Lesson 2: Outcomes Describe the economic impact of sediments from agricultural watersheds This paper from NRCS provides in-depth discussion the effects of sediment in the aquatic environment. Has the US sediment problem been solved? While somewhat dated, this paper describes the problem and steps that have been taken to correct it, along with an assessment of progress. Guide for what still needs to be done and potential benefits.	• http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/?cid=nrcs143_014201 • http://water.usgs.gov/osw/ressed/references/Bernard-Iivari-6Fisc2-8.pdf	Quiz #1 (parts A & B) – 20 points

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Unit 3 – Soil Erosion under Differing Types of Water Erosion

Unit 3 – Narrative: Many physical factors related to the soil help determine the amount of soil erosion, and subsequently the amount of sediment loading that occurs in a given location over a given period of time. The REVISED UNVERSAL SOIL LOSS EQUATION (RUSLE) and associated tools are used to quantify these factors and document loss of soil from various sources and to guide management of sediment loads in various components of watersheds.

Unit 3 – Outcomes	**Maps to Course Outcomes** (combinations of the following per each lesson):	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.]
Be able to describe the different types of soil erosion. Relate management practices and environmental (weather) factors to soil erosion Use the Revised Universal Soil Loss Equation to quantify erosion losses and understand the effects of different factors in RUSLE in relation to managing sediments.	• Prepare; • Practice; • Perform.	• Reading Assignments – 15 points • Discussion Board – 10 points • Quiz #1 (parts A & B) – 20 points

Unit 3 Lesson 1 – Narrative: The first step in managing sediments in agricultural watershed is to understand the different erosion processes and how they contribute to soil loss, and how these losses can be reduced.

Unit 3 - Lesson 1: Describe the erosion process and the different types of water erosion	Prepare: • Detachment; transport; deposition • Sheet; rill; Gully; Surface creep; saltation; suspension	Reading assignments – 15 pts.; Reference: International CCA exam Study Guide (IPNI)

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Unit 3 Lesson 2 – Narrative: The Revised Universal Soil Loss Equation (RUSLE) is the primary tool for providing a metric analysis of erosion losses, either actual or potential. Its use has been an important component of efforts over the past 40 years or more to reduce soil erosion losses and sediment loads to watersheds. Understanding it, and its use, is an important part of watershed management, and determining best management practices to improved water quality.

Unit 3 - Lesson 2: Outcomes • Understand use of RUSLE; predicting soil loss • Be able to describe use of RUSLE	Study the RUSLE and explain how different terms in the equation affect the amount of soil loss in a given situation.	(1) http://www.ars.usda.gov/Research/docs.htm?docid=6010 (2) https://en.wikipedia.org/wiki/Universal_Soil_Loss_Equation Lab activity: Use the RUSLE to compute erosion loss for 2 fields in your watershed. http://www.ars.usda.gov/Research/docs.htm?docid=6014
• Basic erosion processes • How climate, environment, and management affect erosion • Making a simple RUSLE2 erosion calculation	Study the **RUSLE** webinar (4/7/2015) NRCS Training	https://www.youtube.com/watch?v=R0hY2T9h3qg http://fargo.nserl.purdue.edu/rusle2_dataweb/Tutorial.htm To quickly bring NRCS field office personnel (and others) up to speed with RUSLE2, a tutorial has been developed. The tutorial combines photos, audio, and short video clips
Describe the effects of the following on the rate of erosion: • Soil texture • Slope length • Slope percentage • Rainfall duration and intensity • Vegetation and residue cover		

RUSLE2 Publications

Dabney, S.M., Yoder, D.C., Ferruzzi, G.G. 2014. Forage Harvest Representation in RUSLE2. Agronomy Journal. Vol 106, Issue 1. pp. 151-167.

Dabney, S.M., Yoder, D.C., Vieira, D.A.N. 2012. The Application of the Revised Universal Soil Loss Equation, Version 2, to evaluate the impacts of alternative climate change scenarios on runoff and sediment yield. Journal of Soil and Water Conservation. Vol 67, no. 5, pp. 343-353.

Dabney, S.M. and D. C. Yoder. 2012. Improved descriptions of herbaceous perennial growth and residue creation for RUSLE2. Agronomy Journal 104(3): 771-784.

Vieira, D.A.N. and S.M. Dabney. 2011. Modeling edge effects of tillage erosion. Soil and Tillage 111: 197-207.

Dabney, S.M., D.C. Yoder, D.A.N. Vieira, and R.L. Bingner. 2011. Phenomena. Hydrologic Processes. 25: 1373-1390

Vieira, D.A.N. and S. M. Dabney. 2009. Modeling landscape evolution due to tillage. Trans. ASAE. 52 (5): 1505-1521.

Foster, G.R., D.C. Yoder, G.A. Weesies, T.J. Toy. 2001. **The Design Philosophy Behind RUSLE2: Evolution of an Empirical Model.** Pp. 95-98 in Soil Erosion Research for the 21st Century, Proc. Int. Symp. (3-5 January 2001, Honolulu, HI, USA). Eds. J.C. Ascough II and D.C. Flanagan. St. Joseph, MI: ASAE. 701P0007.

Foster, G.R., D.C. Yoder, D.K. McCool, G.A. Weesies, T.J. Toy, L.E. Wagner. 2000. **Improvements in science in RUSLE2.** Paper No. 00-2147. ASAE, 2950 Niles Rd., St. Joseph, MI 439085-9659 USA.

Lown, J.B., J.P. Lyon, D.C. Yoder. 2000. **A Scientific Modeling Architecture to Simultaneously Meet Needs of Scientists, Programmers, Data Managers, and End-Users.** Paper No. 003051. ASAE, 2950 Niles Rd., St. Joseph, MI 439085-9659 USA.

RUSLE2 References/websites/training materials: **From GOOGLE SEARCH: RUSLE2**

RUSLE2 Tutorial

fargo.nserl.purdue.edu/**rusle2**_dataweb/**Tutorial**.htm - Purdue University. To quickly bring NRCS field office personnel (and others) up to speed with **RUSLE2**, a **tutorial** has been developed. **RUSLE2 Program User's Guide**

fargo.nserl.purdue.edu/**rusle2**.../**RUSLE2**_Program_G...

An NRCS-**RUSLE2** Program user's guide is now available. This User's Guide is a draft. Some sections are incomplete, as are certain figures and appendices.**RUSLE2 Training | NRCS**

www.nrcs.usda.gov/.../**rusle2**/...

Introduction to RUSLE2 - How to Get Results with ... - YouTube This link has some excellent videos, featuring Ray Archuleta of NRCS. He is a forceful and dynamic speaker and is a very effective teacher.

www.youtube.com/watch?v=vrPv9fk8roI

Feb 18, 2015 - Uploaded by Forester University

Introduction to **RUSLE2** - How to Get Results with **RUSLE2** ... Click here to learn more about our 1 hour ...

UWEX-RUSLE2 Training
uwex-**rusle2**.blogspot.com/

Allow you to better navigate the many resources related to **RUSLE2** as you begin your training. This includes where to find installation guides, tutorials...

Revised Universal Soil Loss Equation, Version 2 (RUSLE2)
gcmd.nasa.gov/.../Metadata.do?...**RUSLE2**...

Abstract: This site contains the official NRCS version of **RUSLE2**. It is the only version of**RUSLE2** to be used for official purposes by NRCS field offices.

RUSLE2 | University of Maryland Extension
https://www.extension.umd.edu/.../**r**...

University of Maryland, College Park

To access the RUSLE2 software, Database components, a **RUSLE2 tutorial**, data collection sheets and much more, go to the following link: RUSLE2 web link.

RUSLE2 How-To Tutorial Series Survey
https://www.surveymonkey.com/r/?sm...

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Optional designer notes: [You can list topics for discussion boards and seminar here.]

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Compare alternative management options in RUSLE2

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Unit 4 – Soil Loss Is Productivity Lost

Unit 4 – Narrative: Soil loss through erosion has significant impact on the productivity of the soil from which the erosion loss occurs. Understanding the impacts of erosion on soil productivity is a major part of developing a strategy for correcting erosion problems.

Unit 4 – Outcomes Learn to evaluate the impact of erosion on soil productivity and the cost/benefit opportunities for implementing better soil management practices.	**Maps to Course Outcomes** (combinations of the following per each lesson): • Prepare; • Practice; • Perform.	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.] • Reading Assignments – 15 points • Discussion Board – 10 points • Quiz #3 – 20 points

Unit 4 Lesson 1 – Narrative: Erosion is a natural process as water moves through the watershed. But the parts of that cycle that occur within cropland can degrade important soil resources for growing crops. Assessing the costs and benefits of implementing watershed management practices must include a review of the impact on different soil resource components that are affected by soil loss.

Unit 4- Lesson 1 Outcomes: How erosion effects soil productivity?	Prepare: Perform: Describe the effects of erosion soil loss on: • Crop yield potential • Water holding capacity Infiltration • Soil nutrient content • Soil organic matter content • Water quality	Reading assignments – 15 pts

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Unit 4 Lesson 2 – Narrative: Over the past 100 years, considerable effort and funding have been targeted to soil conservation and evaluating the production practices that can be used to reduce soil loss and degradation. A management plan for a watershed must include estimation of the effects of implementing a collection of these practices on the farms within the watershed.

Unit 4 - Lesson 2: Outcomes	**Maps to Course Outcomes** (combinations of the following per each lesson):	Quiz #1 (parts A & B) – 20 points
Conservation practices that can reduce erosion loss • Contour farming • Strip cropping • Terraces • Grassed waterways • Reduced tillage; no-till • Strip-till • Cover crops • Narrower row spacing • Increased fertility •	• Prepare a list of opportunities to reduce sediment losses in your watershed. • Perform. Contact your local NRCS office to learn what technical support and cost-sharing would be available to help implement the potential sediment reduction strategies you have identified. • Practice: Envision an overall Best • Management Practices plan for a farm in your watershed outlining: **1.** Estimate the sources of sediments, their relative contribution to soil loss, individual BMPs to reduce those losses, **2.** List the potential impact of implementing each BMP, **3.** Summarize the *overall total reduction in soil loss* from implementing your plan.	

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Unit 5 – Can Soil Losses Be "Tolerable"

Unit 5 – Narrative: During the late 1900s, NRCS and others developed a strategy to reduce erosion losses from agriculture in order to reduce the negative effects of sediments in watersheds. The "T by 2000" program had the goal of reducing soil loss to below the rate at which new soil is formed (the T Factor) by the turn of the century (2000). Practices to achieve that goal were identified, promoted, and incentivized.

Unit 5 – Outcomes	**Maps to Course Outcomes** (combinations of the following per each lesson):	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.]
Be aware of the importance of the "T" in RUSLE. Know the historical significance of the ***"T" by 2000"*** initiative in promoting the adoption of reduced tillage systems and other conservation practices.	• Prepare; Read about the ***"T by 2000"*** initiative and its relative effects in the late 20th century. • Practice; • Perform.	• Reading Assignments – 15 points • Discussion Board – 10 points Quiz #1 (parts A & B) – 20 points

Unit 5 Lesson 1 – Narrative: In the latter part of the 20th century a concentrated effort of education, research, demonstrations was implemented by NRCS, Land Grant Universities, and private industry to reduce soil erosion from US cropland. The ***"T" by 2000*** effort encouraged and incentivized farmers to adopt reduced tillage systems and other production practice changes to significantly reduce soil erosion and thus sediment loading from agricultural land.

Unit 5 – Lesson 1 - Outcomes • List BMPs for reducing the T factor and their relative impact • Define "T": The tolerable rate of erosion loss; roughly the rate at which soil is regenerated.	**Maps to Course Outcomes** (combinations of the following per each lesson): • Prepare; • Practice; • Perform.	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.] • Reading Assignments – 15 points • Discussion Board – 10 points Quiz #1 (parts A & B) – 20 points
	Prepare: Perform: •	Reading assignments – 15 pts.; https://www.agr.state.il.us/t-by-2000-soil-conservation-for-the-21st-century

Unit 5 Lesson 2 – Narrative: It is helpful for individuals working in watershed management to be aware of past efforts to address the erosion and sedimentation problems. This lesson reviews the "T" by 2000 program of the NRCS and cooperators during the latter part of the 20th century. This program involved extensive education programs for farmers and landowners, and resulted greatly increased awareness and interest in managing erosion losses. It led many farmers to adopt no-till or reduced tillage systems, and stimulated major modifications in tillage equipment, planting equipment, and herbicide development and use. It was largely responsible for the disappearance of the moldboard plow in many production systems.

Unit 5 - Lesson 2: Outcomes • Recall the history of the "T-by-2000" campaign and discuss the impact it had on soil loss		Quiz #1 (parts A & B) – 20 points

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Optional designer notes: [You can list topics for discussion boards and seminar here.]

What incentives were available to encourage adoption of the program?
What roadblocks discouraged adoption?
Discuss the current situation relative to incentives, roadblocks, and adoption of these practices in your watershed.
What was the "T by 2000" program? Was the goal met?

1. **What are the incentives for farmers to adopt BMPs to reduce soil loss?**

2. **What are the roadblocks preventing farmers from adopting these BMPs?**

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Discussion Board I

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Discussion Board III

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Unit 6 – Various Regulations & Incentives to Reduce Soil Loading

Unit 6 – Narrative: *Various laws and regulations have been put in place to encourage—require-???---action to reduce sediment loading.* To further promote practices that reduce soil loss, several incentive programs offered cost sharing and other support to farmers who wanted to implement changes.

Unit 6-Outcomes:	**Maps to Course Outcomes** (combinations of the following per each lesson):	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.]
Recall (Illinois) laws and regulations related to sediment loading from agricultural lands Recognize how those legal tools can be used in a Watershed Management strategy.	• Prepare; • Practice; • Perform.	• Reading Assignments – 15 points • Discussion Board – 10 points Quiz #1 (parts A & B) – 20 points

Unit 6 Lesson 1 – Narrative: The Illinois legislature has provided encouragement---and requirement—for farmers to implement practices that will reduce sediment loading. Watershed management systems should include use of these laws and regulations as a part of management guidance for farmers in the watershed.

Unit 6 Lesson 1 – Outcomes:	Prepare:	Reading assignments – 15 pts.;
Summarize the laws and regulations that have been enacted to reduce sediment loading in Illinois agricultural watersheds. Discuss how effective these regulations have been.	• Get a general knowledge of the provisions and requirements of the Illinois Erosion and Sediment Control Law?	Review the Illinois Erosion and Sediment Control Law https://www.ideals.illinois.edu/handle/2142/29308 https://www.ideals.illinois.edu/handle/2142/29308 Illinois Drainage law, including soil erosion and sedimentation control.

Be aware of incentive programs to promote implementation of better management practices that will help reduce soil losses.	Practice: Perform:	

Unit 6 Lesson 2 – Narrative: Farmers must bear most of the responsibility for erosion control and sediment management coming from their farms, but there are other stakeholders who can and should play a role in the overall watershed management related to sediments.

Unit 6 - Lesson 2: Outcomes • State stakeholder involvement and leadership in managing sediments. • Identify the various stakeholders in your watershed. • Discuss their responsibilities and what role they can play in reducing sediment loads	•	Quiz #4 – 20 points

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Unit 7 – Soil Deposition: Where It All Goes!

Unit 7 – Narrative: Most of this course has focused on sediments from the standpoint of soil loss. On the other end of the process is transport and deposition of the sediments, and the problems and benefits that result. Too much or too little sediment deposition can be a concern.

Unit 7 – Outcomes	**Maps to Course Outcomes** (combinations of the following per each lesson): • Prepare; • Practice; • Perform.	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.]

Unit 7- Lesson 1: Outcomes • Recall the factors affecting the deposition of sediments at the end of the transport stream. • Describe the consequences of too much sediment being deposited in certain areas… Wildlife habitat; ecosystem services? ○	**Maps to Course Outcomes** (combinations of the following per each lesson): • Prepare; • Practice; • Perform.	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.] Reading assignments – 15 pts.; • http://www.fondriest.com/environmental-measurements/parameters/hydrology/sediment-transport-deposition/ an excellent discussion of the fate of sediments, as well as the whole process of erosion, transport, and deposition. Others:

		http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052488.pdf • Reading Assignments – 15 points • Discussion Board – 10 points • Quiz #1 (parts A & B) – 20 points

Unit 7 Lesson 2 – Narrative: Sediments are not always bad. Some ecosystems depend on regular deposition of sediments to maintain and support wildlife habitats. Spawning marshes near the Gulf of Mexico depend upon regular deposits of Mississippi River sediments. Without those depositions, the ecosystem does not support the proper environment for hatching and growth of fish populations. Waterfowl habitat sometimes depends on sediment deposits to provide the proper mix of vegetation. The flooding of the River Nile in Egypt has for thousands of years depended upon regular sediment deposits to maintain its productive soils. Other waterways have similar dependencies on a smaller scale. Historically, the best agricultural soils in the mid-South states were formed from sediments originating from the Great Plains and Midwest landscapes---long before any agricultural activity was involved. Without the Badlands of South Dakota, there may not have been any land for the Mississippi Delta area!!

Unit 7 - Lesson 2: Outcomes • Recall the consequences of too little/too much sediment being deposited: • Describe the effect on wildlife and their habitat.	•	Quiz #1 (parts A & B) – 20 points

Optional designer notes: [You can list topics for discussion boards and seminar here.]

- Discover an important wildlife ecosystem that depends upon sediment deposits from upstream. What impact has reduced soil erosion upstream had on this ecosystem and the biological ecosystem---and the plant and animal populations it supports?
- Discover the changes in snow geese habitat in the lower Mississippi Delta, and how it affected the snow geese migrations to western Canada and subsequent impact on moose migrations in that part of the world.

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Discussion Board I

Discussion Board II

Discussion Board III

Question: What type(s) of state (Illinois) drainage district participation is needed to improve the existing and proposed agricultural watershed management systems…? Discuss how your choice matches your choice of nutrient loss management strategy system?

AWM – 106 – Sedimentation Management

Unit 8 – Sediment Losses Other Than Agriculture

Unit 8 – Narrative: While sediments derived from erosion of agricultural lands are probably the main source of concern, significant amounts of sediment also come from construction sites, road ditches, scouring of stream beds, and stream bank erosion.

Unit 8 – Outcomes	**Maps to Course Outcomes** (combinations of the following per each lesson):	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.]
• Describe the non-agricultural sources of sediments. • Explain what management practices can be used to reduce those sources. • Identify who is responsible for managing these sources.	• Prepare; Read the USDA-NRCS publication in Urban Soil Erosion and Sediment Control. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs141p2_034363.pdf • Prepare- ○ Read about streambank erosion ○ https://en.wikipedia.org/wiki/**Bank_erosion** ○ https://en.wikipedia.org/wiki/River_bank_failure ○ http://www.motherearthnews.com/nature-and-environment/stream-erosion-zmaz86mjzgoe.aspx ○ http://www.ctre.iastate.edu/erosion/manuals/streambank/how_to_control.pdf ○ http://serc.carleton.edu/43576 **Causes of streambank erosion (drawings)** • Practice; • Perform. Earn about an example service provider who offers services to assist in controlling erosion for non-farm situations: http://erosioncontrolpros.com/ http://www.idot.illinois.gov/transportation-system/environment/erosion-and-sediment-control • *Regulation and Permitting* • *List of BMPs*	

	• *Training opportunities* Review the Illinois Department of Transportation Erosion and Sediment Control Field Guide for Construction Inspection: http://www.idot.illinois.gov/assets/uploads/files/transportation-system/manuals-guides-&-handbooks/highways/environment/erosion%20and%20sediment%20control%20field%20guide%20for%20construction%20inspection.pdf	

Unit 8 Lesson 1 – Narrative: Solving a sediment problem depends upon stakeholders clearly understanding the relative importance of different agricultural and non-agricultural sources of sediment loading. With that understanding in place, proper actions can be recommended to most effectively reduce the sediment load.

Unit 8 - Lesson 1 Outcomes:	**Maps to Course Outcomes** (combinations of the following per each lesson):	**Assessed** [Do not list discussion boards or seminars here. Only list projects, tests & papers that can be used as assessment tools.]
• Identify the relative amount of sediment load in your watershed from the various sources (agricultural & non-agricultural).	• Prepare; • Practice; • Perform.	• Reading Assignments – 15 points • Discussion Board – 10 points Quiz #1 (parts A & B) – 20 points

Unit 8 Lesson 2 – Narrative: Fully and fairly addressing the sedimentation for agricultural watersheds depend upon a complete evaluation of the various sources—agricultural and non-agricultural—of the sediments, and the practices that can be implemented to

reduce those sediments. A complete management strategy for reducing sediment load within a watershed should include ALL sources and the potential for reducing their contribution.

Unit 8 - Lesson 2: Outcomes • Identify ALL sources of sediment in your selected watershed. • Know the tools to help assess the relative contributions of each source	•	Reading assignments – 15 pts.; Quiz #1 (parts A & B) – 20 points

Optional designer notes: [You can list topics for discussion boards and seminar here.]

- Describe an Agricultural Watershed Management **ACTION PLAN** that could be implemented to help reduce sediment load from your watershed. Include both agricultural and non-agricultural components.
- What are the roadblocks to implementation of such a plan?
- What incentives could improve adoption?

Directions - This discussion question is meant to stimulate your ideas of state (Illinois) drainage district practices, and their definitions in an agricultural nutrient loss reduction management practice. Thus, please answer this question with regards to the following state (Illinois) drainage district practices concept (every district/potential district has some form of efficient nutrient conservation practice system opportunity… Some more than others).

Throughout the unit/week, please log into the discussion board, review the answers of your classmates and respond to at least one of the discussion answers with further comments or questions. If you do not respond to one of your peer's comments, you will lose 5 points.

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AWM – 106 – Sedimentation Management

Question: What type(s) of state (Illinois) drainage district participation is needed to improve the existing and proposed agricultural watershed management systems…? Discuss how your choice matches your choice of nutrient loss management strategy system??