



MN Wetland Professional Certification Program Basic Class- Day 4

mn BOARD OF WATER AND SOIL RESOURCES



1

Quiz

- | | |
|---|--|
| <p>1) Which of the following is not a LGU's role in administering the WCA:</p> <ul style="list-style-type: none"> a) Make decisions on applications made under the WCA b) Completely fill out a joint application for the landowner c) Coordinate TEP meetings when needed d) Provide knowledgeable and trained staff | <p>2) The role of the Technical Evaluation Panel <u>does not</u> include:</p> <ul style="list-style-type: none"> a) Operate objectively. b) Perform LGU duties such as noticing applications. c) Generate findings as requested by the LGU. d) Make recommendations to the LGU based their findings. |
|---|--|

2

3) For a project in a shoreland area, the Technical Evaluation Panel consists of:

- a) The LGU, Army Corps and DNR.
- b) The LGU, SWCD, BWSR and Army Corps.
- c) The LGU, SWCD, BWSR and DNR.
- d) The Army Corps and DNR.

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4) Which of the following meets the technical standard for hydrology?

- a) Saturation to the surface observed during the growing season in a normal year.
- b) Observation of two primary hydrology indicators.
- c) Water table within 12 inches of the surface for at least 14 consecutive days during the growing season in normal year.
- d) Water table observed in an open bore hole.

5) Which of the following key characteristics are related to wetland hydrology?

- a) Depth and source of saturation/inundation
- b) Frequency and source of saturation/inundation
- c) Frequency and duration of saturation/inundation
- d) Vegetation adapted to live in saturated soil conditions and hydric soils

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6) Describe what the following hydrology indicators look like:

- Drift Deposits: Debris deposited or entangled to objects
- Water Stained Leaves: Dead leaves turned greyish or black due to inundation for long periods
- Saturation: Visual Observation of water glistening on soil associated with water table
- Geomorphic Position: Concave landscape positions, drainage ways, floodplains, toeslope
- Sediment Deposits: Sediment remaining after ponding or flooding

7) Describe the concept of lateral effect and the factors that influence lateral effect:

The distance on each side of a tile or ditch in its longitudinal direction where the ditch or tile has an influence on the hydrology. Measured perpendicular from midpoint of tile line or toe of ditch bank.

Depth, soil properties, grade, impermeable layer.

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8) Why is antecedent precipitation analysis important prior to a delineation?

To understand current climatic conditions

9) What are the 3 general types of adaptations that plants have made to grow in anaerobic soil conditions:

Morphologic, reproductive, physiologic

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10) In the table, place the following plant indicators from most likely to least likely to occur in a wetland.

OBL
FACW
FAC
FACU
UPL

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11) A delineator walks into a wetland edge and observes over 75% areal coverage of cattail (OBL) with 2 other species (both FAC) that are less than 5% coverage each. What hydrophytic vegetation indicator test should they use?

- a) Rapid Test of Hydrophytic Vegetation
- b) Dominance Test is >50%
- c) Prevalence Index is ≤ 3.0
- d) Morphological Adaptations

12) How many dominant species are there in the sample point data below?

Species	Strata	% Coverage
Species A	Shrub/Sapling	5
Species B	Herbaceous	20
Species C	Herbaceous	20
Species D	Herbaceous	30
Species E	Herbaceous	15
Species F	Herbaceous	30
Species G	Tree	3

- a) 1
- b) 2
- c) 3
- d) 4

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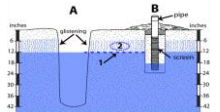
Quiz

13) What is the recommended sampling size for the sapling/shrub, herbaceous, and tree strata? Use the table below.

Strata	Plot Size (feet)
Tree	30
Shrub/Sapling	15
Herbaceous	5
Woody vine	30

14) In the monitoring device "B", at what depth will the water level eventually equilibrate?

- a) At the soil surface.
- b) 6 inches below the soil surface.
- c) 12 inches below the soil surface.
- d) 18 inches below the soil surface.



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15) How reliable are each of the 3- indicators in relation to time?

Soils: Long term may not reflect current conditions

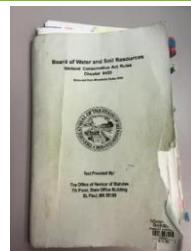
Veg: Medium Term, more reflective of current conditions, and susceptible to seasonal variation

Hydrology: Shortest Term reflective of snapshot conditions



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Wetland Conservation Act



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WCA

• [WCA Program Guidance](#)

WCA Program Guidance and Information

"Hit it bro, the lights gray"



WCA Topics of the Week

WCA Exemptions Guidance and Policy

WCA Administrative Procedures and Coordination Guidance and Policy

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Basic WCA Decision Types

mi BOARD OF WATER AND SOIL RESOURCES

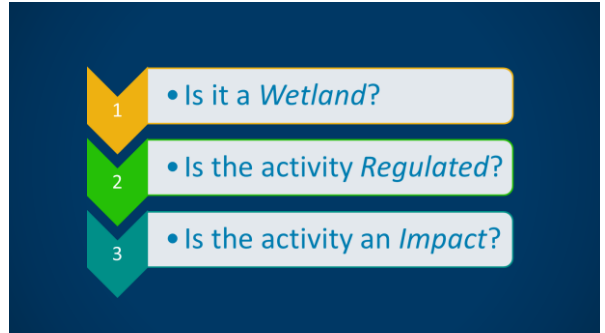
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Basic WCA Decision Types

- Boundary and Type
- No Loss
- Exemption



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What is regulated by WCA?

What is considered Impact?

A loss in quantity, quality, or biological diversity of a wetland *caused* by draining or filling in all types or by excavation in types 3, 4, or 5.



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What is Drainage?

Any method for removing or diverting waters from a wetland

- Excavation of a ditch
- Tile Installation
- Filling
- Diking
- Pumping
- Diverted water
- Etc.



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What is Fill?

Any solid material **added or redeposited** in a wetland

- Alters cross-section or hydrological characteristics,
- Obstructs flow patterns,
- Changes Boundary, or
- Converts to non-wetland.



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Wetland Fill

- Does not include posts for walkways, bridges, powerline poles, etc.



- Does not include slash or woody vegetation as long as it originated from vegetation growing in the wetland and does not impair flow or circulation of water.



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Wetland Fill

- Wetland fill *does not* include posts and pilings unless it turns wetland into a nonaquatic use or significantly alters its functions and value.



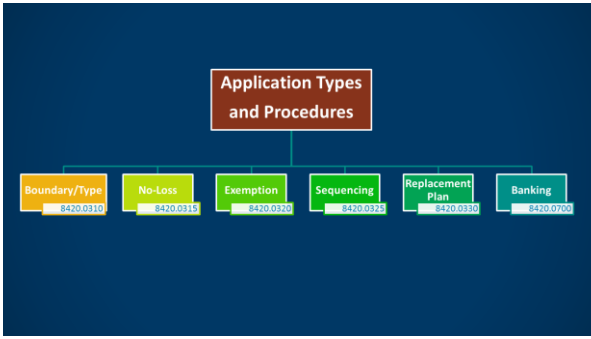
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What is Excavation?

Removal of soil by any method if it results in an impact*.



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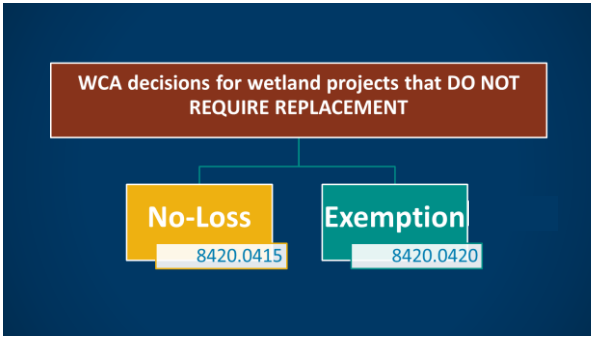
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Boundary/Type Applications: Where wetland regulation meets science

- Boundaries must be delineated using USACE 1987 Manual and Supplements (8420.0405 subp 1)
- Types must be ID'd using FWS Circular 39 and Eggers and Reed (8420.0405 subp 2)
- Requires NOA and NOD.
- Technical Decision- one member of TEP must make a site visit



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No Loss Activity Basics

Defined:
No permanent loss of, or impact to, wetlands from an activity.



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No-Loss Criteria

"No-loss" means no permanent loss of, or impact to, wetlands from an activity according to the criteria in this part.

- Will not impact a wetland (8420.0415 Subp A.)
- Excavation limited to removal of sediment or debris Trees, logs, beaver dams, trash, blockage of culverts (8420.0415 Subp B.)
- Water level management (8420.0415 Subp C.)
- Excavation limited to removal of sediment in wetlands utilized as storm water basins. (8420.0415 Subp E.)
- Operation, Maintenance or Emergency Repair. (culverts) (8420.0415 Subp F.)
- Temporary impact if: Returned to previous conditions. Activity completed within 6 months (8420.0415 Subp H.)



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No-Loss

- Temporarily crossing or entering a wetland to perform silvicultural activities, including timber harvest as part of a forest management activity, so long as the activity limits the impact on the hydrologic and biologic characteristics of the wetland; the activity does not result in the construction of dikes, drainage ditches, tile lines, or buildings; and the timber harvesting and other silvicultural practices do not result in the drainage of the wetland or public waters (8420.0415 Subp G)
- Activity conducted as part of an approved replacement or banking plan, conducted or authorized by public agencies for the purpose of wetland restoration or fish and wildlife habitat restoration (8420.0415 Subp D)



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No-loss and Exemption conditions

- Every activity in wetland, regardless of whether an application is submitted must:
 - Implement erosion control measures to prevent sedimentation of wetlands
 - Not block fish activity
 - Comply with all other applicable local, State, Federal requirements, including best management practices
- Exemptions cannot be combined on a project! (8420.0420 Subp.1 C)



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General Exemption Requirements for ALL

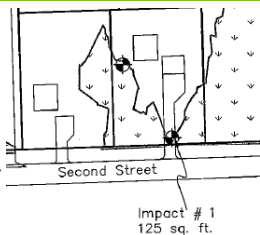
- Only has to fit one; not disqualified if not exempt by another
- If impacts exceed max allowed = nothing is exempt
- Max may not apply to all situations or wetlands-**very specific**
- May not be combined on a project
- Must stabilized to prevent sedimentation/erosion.

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Exemptions 8420.0420

- Impacts to wetlands that **DO NOT** require replacement
 - The activity is still regulated.
 - WCA does not REQUIRE an application; some LGU's may.
 - May not be combined on a project.
- Exemptions do not apply to: calcareous fens, wetland bank sites, project-specific replacement sites (8420.0420 Subp 1B)



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Exemptions

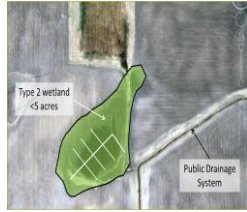
- Impacts from Agricultural Activities
- 8420.0420 Subp 2
 - (A) Type 1,2 Planted 6 of 10 prior to 1991
 - (B) Agricultural pasture land, except bottomland hardwood type 1
 - (C) SWCD conservation practices
 - (D) Wheeled booms on irrigation
 - (E) Aquaculture
 - (F) Wild rice
 - (G) Farm program MOU



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Exemptions

- Drainage Exemption
 - 8420.0420 Subp 3
- Public drainage maintenance
- Private drainage maintenance
- Planted 8 of 10 years
- Assessed benefits
- *Reminder – review the WCA language details and project specifics*



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Private Drainage/Ditch Maintenance

Replacement not required for maintenance or repair of existing private drainage systems

WHEN:

The work does not drain Wetland that have existed more than 25 years.



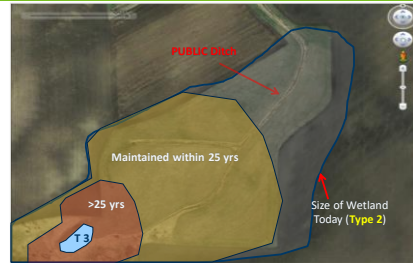
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Private Drainage/Ditch Maintenance Illustration



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Private VS. Public Drainage Ditch Maintenance Illustration



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Ditch Maintenance

CONDITIONS:

- Spoil must be placed and stabilized to minimize impacts.
 - Remove
 - place on existing spoil
 - incorporate
 - side cast
- Ditch must be stable and not degrade water quality downstream.

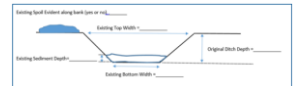


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Private Drainage/Ditch Maintenance

What items may be needed to demonstrate this exemption is met?

- Past records of maintenance (receipt to contractors)
- Aerial Photos with review
- Amount of Sediment Proposed to be removed (can be critical)
- Depth of ditch/soil types
- Culvert elevation and location
- Site visit/confirmation of wetland type (growing season)
- Lateral Effect Calculations or estimates



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Exemptions

- **Federal Approvals** 8420.0420 Subp 4
 - Impacts authorized by Corps of Engineers that meet standards agreed to by BWSR, Dept. of Ag., DNR, and MPCA.
 - Pipelines, electrical, broadband, etc.
- **Utilities** 8420.0420 Subp 6
 - Installation, maintenance, repair or replacement of utility lines if impacts are avoided and minimized and less than 1/2 acre.



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Exemptions

Table 1: Base de minimis exemption amounts for all of Minnesota

		10,000 ft ² in all > 80% counties
Non-Shoreland Areas	Types 1, 2, 4, 7 (excluding white cedar and tamarack wetland and any Type 7 wetland in a < 50% metro county)	5,000 ft ² in non-metro > 50.80% counties
		1,500 ft ² in metro > 50.80% counties
		2,000 ft ² in non-metro < 50% counties
		1,000 ft ² in metro < 50% counties
Within Shoreland, but beyond structure setback	Types 3, 4, 5, 8, and white cedar and tamarack wetland (excluding any Type 7 wetland in a < 50% metro county)	100 ft ²
	Types 1, 2, 4, 7	400 ft ² *(1,000 ft ²)
Within Shoreland and structure setback	All wetland types	20 ft ² *(100 ft ²)

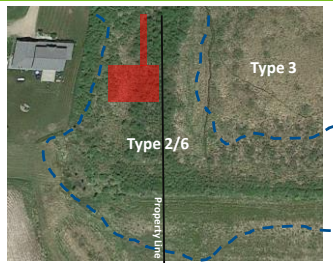
*Increased amounts (shown in parenthesis) may be allowed if wetland is isolated from the public water, or if permanent water runoff retention or infiltration measures are established in proximity to the impact and approved by the shoreland management authority.

- De minimis 8420.0420 Subp 8
 - The de minimis exemption covers small impacts to wetlands typically used for driveways, roads, small projects by landowners, etc.
 - Very specific requirements depending on location in state, local area, shoreland, etc.
 - Review all nuances of each part for every project

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De Minimis Exemption

- Can't be combined
- 5% limitation if shared
- May not divide property simply to get more



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Exemptions

- Subp. 7. **Forestry**. The exemption under this subpart is for roads and crossings solely constructed, and primarily used, for the purpose of providing access for the conduct of silvicultural activities. A replacement plan is not required for impacts resulting from construction of forest roads and crossings so long as the activity limits the impact on the hydrologic and biologic characteristics of the wetland; the construction activities do not include, or result in, the access becoming a dike, drainage ditch, or tile line; impacts are avoided wherever possible; and there is no drainage of the wetland or public waters.



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Exemptions

- **Wildlife Habitat** 8420.0420 Subp 9
 - Lesser of 5% or 1/2 acre of Type 3,4,5
 - No adverse effect on T&E
 - Certified by SWCD or TEP
 - All spoil must be stabilized with native, noninvasive vegetation.

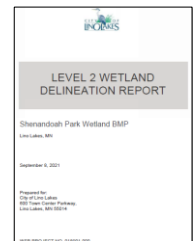


Excavation in Types 1, 2, 6, 7, 8 not regulated unless deeper than 8.2 feet depth

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Summary of Basic WCA Decisions

- **Boundary/Type:** approving wetland delineation that used Corps manual: Level 1, 2, 3 or comprehensive.
- **No-loss:** activity that does not result in wetland impacts
- **Exemptions:** wetland impacts that are exempt from replacement



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Exempt?

- Located in >80% area
- Not in shoreland
- Wetland =154,223 SF
- Proposed impact=7,490 SF



Qualifies for de minimis exemption
MN Rule 8420.0420 Subp. 8 C (2)

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Scenario 1

A project is located outside of shoreland in a 50-80% area of the State (not in 11-county metro) and proposes to fill and impact 4,975 ft² of a type 2 wetland for a driveway access. The applicant owns the entire wetland basin.



Qualifies

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Scenario 2

A project is located within the building setback zone in a >80% area of the State and proposes to fill and impact 320 ft² of a type 2 wetland.

Does not Qualify



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Scenario 3

A project is located outside of shoreland in a greater 80% area of the State and proposes to fill and impact 5,800 ft² of a type 2 wetland. The applicant owns 120,000 ft² of the wetland basin.



Qualifies

5% of 120,000 equals 6000

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Scenario 4

A project is located outside of shoreland in the less than 50% area of the State and proposes to fill and impact 175 ft² of a type 5 wetland. The applicant owns the entire wetland basin.

Does not Qualify



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Replacement Plan Applications




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Replacement Plans



8420.0330 REPLACEMENT PLAN APPLICATIONS.
 Subpart 1. **Requirement.** A landowner proposing a wetland impact that requires replacement under this chapter must apply to the local government unit and receive approval of a replacement plan before impacting the wetland.



Route A (Recommended) - Route B (Not Recommended)

Sequencing
(8420.0521)

Avoid Impact
(8420.0521.1)

Minimize Impact
(8420.0521.2)


Replace
(8420.0521.3)

BWSR Wetland Section | www.bwsr.state.mn.us/wetlands

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Preapplication Meeting

- Prior to preparation of an application;
- Meet with the LGU/TEP, provide basic information of the project
- LGU/TEP inform the applicant of sequencing requirements and criteria to evaluate the replacement plan




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Application Contents

- Information necessary to be considered a complete application (a lot of this info can be pulled from the delineation report)
- For the impacted Wetland:
 1. The amount of wetland impact (in sq ft or acres) by type
 2. Minor/Major watershed, County, and Bank Service Area (BSA)
 3. Soil survey of site, identify hydric soils
 4. Hydrologic inlets and outlets, adjacent Public Waters (shoreland), floodplain





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Application Contents Continued...

5. Information pertaining to special considerations (8420.0515) (T & E, rare communities, cultural resources, etc.)
6. List of known local, state, and federal permits required for the activity
7. Identify project purpose and need and alternatives considered

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Application Contents Continued...

- C. for the replacement wetland when the replacement consists of wetland bank credits:
 - (1) the wetland bank account number;
 - (2) the minor watershed, major watershed, county, and bank service area; (3) the amount of credits to be withdrawn in square feet; and
 - (4) a completed application for withdrawal of wetland credits from the wetland bank in a form provided by the board or a purchase agreement signed by the applicant and bank account holder; and
- D. a description of the required replacement as determined according to the proposed replacement actions and the replacement standards in part 8420.0522.

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Special Considerations (8420.0515)

These factors must be considered by the applicant before submitting a replacement and by the LGU during the review

1. Endangered and threatened species (DNR natural heritage/nongame)
2. Rare natural communities (DNR natural heritage)
3. Special fish and wildlife resources (fish spawning, water birds, waterfowl, deer-wintering/wildlife corridor)
4. Archaeological, historic, or cultural resource sites (National Register of Historic Places, State Historical Preservation Office)
5. Groundwater sensitivity (Decorah edge, Geologic Sensitivity)



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Special Considerations Continued...

- 6. Sensitive surface waters (trout stream)
- 7. Education or research use (Cedar Creek, Anoka Co)
- 8. Waste disposal site (former dump, superfund, TCAAP/AHATS)
- 9. Consistency with other plans (watershed management, land use, planning and zoning)



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Sequencing: 8420.0520

- LGU **MUST NOT** approve a wetland replacement plan unless the LGU finds the project complies with sequencing.

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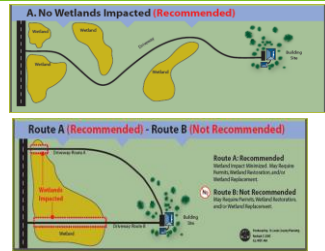
Key Concepts

- Sequencing is a MUST for all replacement plans
- TWO avoidance alternatives
- Evaluate projects...can wetlands be avoided?
- Are impacts minimized?
- Long term effects
- 8420.0520 Subp C – Page 45 of 2009 Rule book

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Sequencing

- Avoid
- Minimize
- Replace



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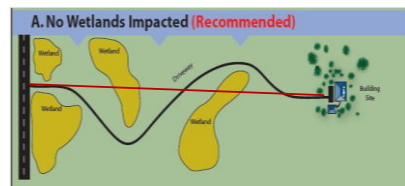
How does applicant demonstrate sequencing?

- Clearly define the **purpose** of the project.
- Identify the physical, economic, and/or demographic **requirements** of the project.
- **Justify** why this project should or must go on this site.
- Show (concept plans, discarded grading plans, etc.) and describe other *reasonable alternatives* that were considered or could be considered.

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Impact Avoidance

- If LGU finds that a Feasible and Prudent Alternative exists that avoids impacts, the application must be denied.



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Alternatives Analysis

What is *feasible* and *prudent*?

WCA rule tells us (8420.0520 subp 3C(2)):

- Can be done from an engineering perspective
- Is in accordance with accepted engineering standards and practices
- Is consistent with public health, safety, and welfare requirements
- Is environmentally preferable based on social, economic, and environmental impacts
- Would not create any truly unusual problems

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Evaluating Alternatives (continued)

- LGU must consider (8420.0520 subp 3C(3)):
 - Could the size, configuration, or density of the project be modified to avoid wetlands?
 - Has the applicant made efforts to remove constraints (zoning restrictions, ordinance requirements, etc.) that are causing wetland impacts (i.e. request for variances, PUD, conditional use permit, etc.)?

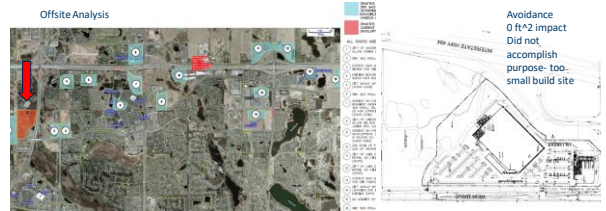
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What if an avoidance alternative DOES exist?

- If the LGU determines that a feasible and prudent alternative exist that avoids wetland impacts, it **MUST DENY** the replacement plan.

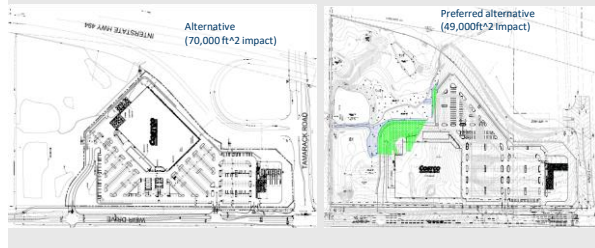
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Avoidance



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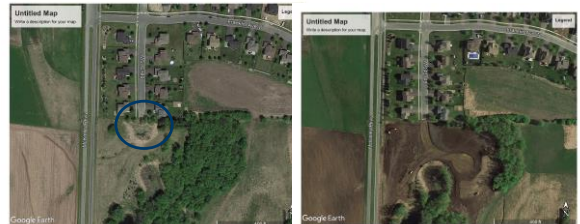
Minimization



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Alternatives Analysis Continued...

Future considerations when reviewing a site and potential off-site impacts



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Alternatives Analysis Continued...

- Direct and secondary impacts:
A wetland may not be directly impacted (filled/drained/excavated) but can be impacted through loss of hydrology (storm pond, curb/gutter, pipes, etc.)



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What if an avoidance alternative does NOT exist?

- LGU evaluates:
 - Minimization
 - Rectification
 - Reduction/Elimination of impacts over time
 - Replacement

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Impact Rectification

- Temporary impacts must be rectified by repairing, rehabilitating, or restoring the affected wetland to pre-project conditions



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Reduction or Elimination of Impacts Over Time

- Once complete, further impacts must be reduced or eliminated and preserve or maintain wetland functions
- Best Management Practices (BMP)
- Silt fence
- Storm-ponds
- Buffers
- Rip-Rap



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Sequencing Flexibility

- Allowed at the discretion of the LGU if:
 1. Impacted wetland degraded;
 2. Avoidance results in severe degradation;
 3. Upland site of the project or replacement has greater function and value;
 4. Human health and safety is a factor.

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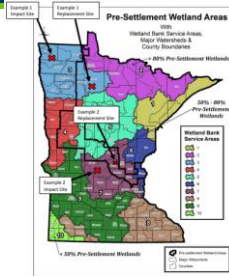
Sequencing – Replacement

- Final Review Step
LGU must evaluate if unavoidable impacts will be adequately replaced AND if correctly sited.
- Adequate Replacement
 - Must replace the functions and values at an equal or greater level than that which was lost.
 - Uses wetland area as the unit of measurement (acreage or sq. ft.)

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Replacement Siting

- Must follow a priority order:
 - Minor watershed
 - Major watershed
 - Same BSA
 - Another BSA

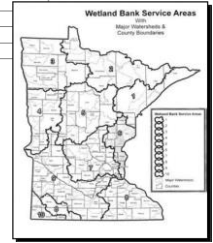


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Replacement Ratios

Location of impact	Minimum Replacement Ratios: Banking	
	Replacement	Minimum replacement ratio
>80% area or agricultural land	Outside bank service area	1.5:1
	Within bank service area	1:1
<50% area, 50-80% area, and nonagricultural land	Outside bank service area	2.5:1
	Within bank service area	2:1

- Must follow a priority order:
- Minor Watershed
 - Major Watershed
 - Same BSA
 - Another BSA



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Result?

A formal NOD document that summarizes the decision, is supported by technical findings and is valid for 5 years.

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Application to withdraw wetland credits

- Be sure to complete all sections!
- Form auto calculates fees
- Signatures

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Overview

- Purpose of Wetland Banking
- Types of Wetland Banks
- Actions Eligible for Credit
- Establishing a Wetland Bank
- Certification and deposit of credits
- Withdrawals and transfers
- Replacement for Public Road Projects

Wetland Bank Monitoring

- Monitoring
 - Timelines
 - Roles and responsibilities
 - Interpreting hydrology and vegetation monitoring data



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Banking

- [Wetland Bank Guidance and Information](#)

Wetland Bank Guidance and Information



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Purpose

What is Wetland Banking?

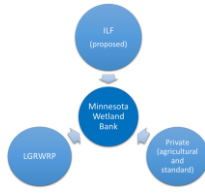
- WCA rule: "The purpose of the state **wetland banking** system is to provide a market-based structure that allows for replacement of unavoidable impacts with pre-established replacement wetlands."
- Federal Mitigation Rule definition (33 CFR 332.2): "A **mitigation bank** sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the mitigation bank sponsor."



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Bank types

- Private
 - Standard- Landowners establish bank on private land to mitigate impacts on non-ag or transportation projects
 - Agriculture- Credits can only be used for Ag projects
- In-lieu Fee (proposed)
 - Open to only government and NGOs, mitigation completed in advance, requires compensation planning framework
- Local Government Road Wetland Replacement Program
 - Replaces impacts resulting from local transportation projects



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Quick facts on ILF (as proposed)

Minnesota In-Lieu Fee Program

A program in which wetland replacement requirements are satisfied through payment of money to the board or a board-approved sponsor to develop replacement credits according to section 103G.2242, subdivision 12. (Minn Stat.)

In-lieu fee versus banking, major differences

- Mitigation is completed in advance with banking, after sale of credits with ILF
- Banking is for profit, ILF is open only to government and NGOs
- Corps is involved in finances with ILF, no involvement in banking
- ILF requires development of a compensation planning framework for program approval, banking does not

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Quick facts on Ag bank

Eligibility to USE the Ag Bank:

- ✓ The wetland must be proposed to be drained for agricultural use.
- ✓ The land must remain in agricultural use.
- ✓ The wetland must be a farmed wetland (FW) or otherwise degraded wetland on existing agricultural land.

Differences with Standard Bank:

- Credits can only be used for Ag projects
- Flexibility on Vegetation Standards
- Expired CRP sites could be eligible "as-is"

83

Local Government Road Wetland Replacement Program

- WCA exempts certain local road projects from State wetland replacement requirements
- BWSR is required to replace the associated wetland impacts so the local governments don't have to
- These wetland credits also satisfy Corps of Engineers' Section 404 permit requirements



84

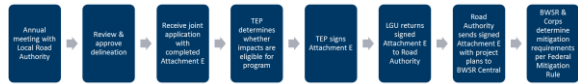
What projects Qualify?

- **Repair, rehabilitation, reconstruction or replacement of currently serviceable existing State, City, County or Town public road.**
- Provided that:
 - Project minimizes impacts
 - Plans are provided to the LGU
- What doesn't qualify?
 - New roads
 - Roads expanded solely for additional capacity lanes



85

Reviewing Local Road Projects



86

Joint Application Form



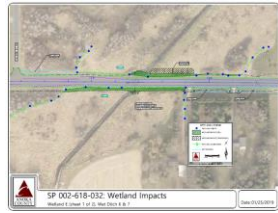
- For Local Road Projects:
- Parts 1-5; Attachments C and E
 - May need Attachment D if there will be impacts that do not meet the Local Road Program eligibility requirements



87

Application Requirements

- Local Road Unit should provide TEP the following:
- Project plans depicting wetland boundaries
 - Description of wetland impacts by type
 - Information demonstrating wetland impact minimization
 - Only one alternative is required



88

Good Example

MnDOT's Road Design Manual (2000) also recommends turn and/or bypass lanes for rural undivided roadways with traffic volumes over 1,500 ADT and speed limits above 45 mph. Current road condition compared with required and proposed are laid out in the table below.

	Existing	Required	Proposed
Lane Width (ft)	12	11-12	12
Shoulder Width (ft)	0-6	8	8
In-Slope	1:4	1:4	1:4

This project is proposed to improve CSAH 18 to meet today's State Aid Standards and improve safety along the corridor.

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Attachment E – Joint Application

Project Name (optional):

Attachment E Local Road Replacement Program Qualification

Complete this part if you are a local road authority (county, highway department, city, transportation department, etc.) looking to determine if your project (or a portion of your project) applies for the Minnesota Replacement Road Program (Replacement Program Qualification). If portions of your project are not eligible for the LRRMP, your Attachment E should be completed and submitted for your application.

Discuss how your project is a repair, rehabilitation, reconstruction, or replacement of a currently serviceable road to avoid environmental damage or other undesirable impacts. Explain your approach for avoiding, minimizing, and compensating for any impacts with feasible measures. Attach supporting documents and information as applicable.

Provide a map, plan, section or photograph accurately depicting wetland boundaries within the project area. Attach accurate delineation information reports or other maps as needed to support the feasibility study to identify and describe wetlands, the project area, and the type and extent of impacts to wetland boundaries or other aspects of the project to a reader or members of the local Technical Expertise Panel (TEP) or Council of Engineers.

In this table below, identify only the **potential** impacts from Part 4 that the road authority has determined should qualify for the LRRMP.

Is potential impact to be noted on wetland map?	Is it a Riparian (R), Wetland (W), or Other (O) impact?	Is it a Wetland (W) or Riparian (R) impact?	Is it a Riparian (R) or Wetland (W) impact?	Is it a Riparian (R) or Wetland (W) impact?	Is it a Riparian (R) or Wetland (W) impact?

Your local road authority and their consultants' type of involvement and resources ("T" for involved in both tasks both tasks only, "C" for involved in both tasks both tasks only, "S" for involved in both tasks both tasks only, "N" for not involved in both tasks both tasks only) (see page 4 of the LRRMP).

Project Name (optional):

Project Number: **SP 002-618-032**

Project Title: **Wetland Impacts**

Project Location: **SP 002-618-032**

Project Description: **Wetland Impacts**

Project Status: **Wetland Impacts**

Project Date: **Wetland Impacts**

Project Contact: **Wetland Impacts**

Project Sponsor: **Wetland Impacts**

Project Approval: **Wetland Impacts**

Project Review: **Wetland Impacts**

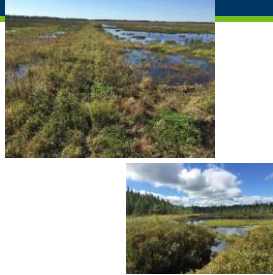
Project Sign-off: **Wetland Impacts**

Project Close: **Wetland Impacts**

90

Actions Eligible for Credit

- Restoration of completely drained wetland
- Restoration of partially drained wetland
- Vegetative restoration of farmed wetlands
- Protection of wetland previously restored via conservation easements
- Wetland Creations
- Restoration and protection of Exceptional Natural Resource Value
- Preservation of wetlands
- Upland buffer areas



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Actions Eligible for Credit 8420.0526

Subpart	Action
2	Buffer
3	Restoration, Completely Drained or Filled
4	Restoration, Partially Drained or Filled
5	Vegetative Restoration of Farmed Wetland
6	Protection of Wetlands Previously Restored
7	Wetland Creation
8	ENRV
9	Preservation

92

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Establishing a Wetland Bank

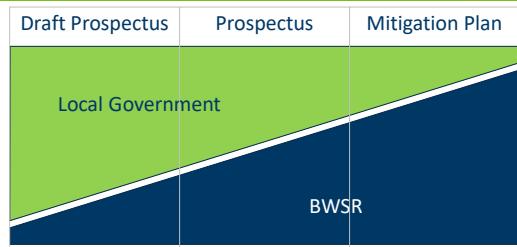
State and Federal Review Process in Minnesota

- Draft Prospectus
 - State: Optional
 - Federal: Optional
- Prospectus
 - State: Optional
 - Federal: Required
- Mitigation Plan/Draft MBI
 - State and Federal: Required
- Final Mitigation Plan and MBI
 - Federal only and required



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Roles in Establishing a Wetland Bank



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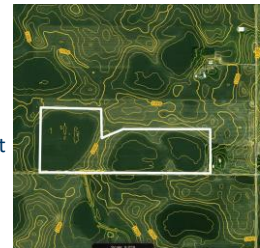
Draft Prospectus

- Optional
- No decision required
- Help sponsors
- Complex or difficult projects
- Minimal investment

95

Draft Prospectus

- Basic project information
- Easement questionnaire
- Basic Features
- Why is it a good bank project
- Constraints
- Existing wetlands



96

Draft Prospectus

- BWSR provides “Discussion Items”
- WS uses discussion items at TEP meeting
- TEP writes Findings based on discussion
- Sponsor receives TEP findings and decides what to do

97

Prospectus



- Required by Corps
- No decision required
- Baseline Information
- Justify Credit Actions
- Justify Credit Allocation
- General Concept Plans

98

Prospectus

- Crediting
- Topographic Information
- Wetland Determination
- Title Opinion
- Site Hydrology Information

Map ID #	Credit Action #	Acres	Credit Allocation			
			Minimum Credit #	% Credit	Maximum Credit #	Credit Allocation
1	Wetland + R. Submittal	21.4	75	16,050	160	21,400
2	Wetland + R. Submittal	4.9	75	3,675	36	4,900
3	Wetland + R. Submittal	3.3	75	2,475	24	3,300
4	Wetland + R. Submittal	3.2	75	2,400	24	3,200
5	Wetland + R. Submittal	1.2	75	900	9	1,200
6	Wetland + R. Submittal	1.2	75	900	9	1,200
7	Wetland + R. Submittal	1.2	75	900	9	1,200
8A	Wetland + R. Submittal	1.2	75	900	9	1,200
8B	Wetland + R. Submittal	1.2	75	900	9	1,200
9	Wetland + R. Submittal	1.2	75	900	9	1,200
10	Wetland + R. Submittal	1.2	75	900	9	1,200
11	Wetland + R. Submittal	1.2	75	900	9	1,200
12	Wetland + R. Submittal	1.2	75	900	9	1,200
13	Wetland + R. Submittal	1.2	75	900	9	1,200
14	Wetland + R. Submittal	1.2	75	900	9	1,200
15	Wetland + R. Submittal	1.2	75	900	9	1,200
16	Wetland + R. Submittal	1.2	75	900	9	1,200
17	Wetland + R. Submittal	1.2	75	900	9	1,200
18	Wetland + R. Submittal	1.2	75	900	9	1,200
19	Wetland + R. Submittal	1.2	75	900	9	1,200
20	Wetland + R. Submittal	1.2	75	900	9	1,200
21	Wetland + R. Submittal	1.2	75	900	9	1,200
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29	Wetland + R. Submittal	1.2	75	900	9	1,200
30	Wetland + R. Submittal	1.2	75	900	9	1,200
31	Wetland + R. Submittal	1.2	75	900	9	1,200
32	Wetland + R. Submittal	1.2	75	900	9	1,200
33	Wetland + R. Submittal	1.2	75	900	9	1,200
34	Wetland + R. Submittal	1.2	75	900	9	1,200
35	Wetland + R. Submittal	1.2	75	900	9	1,200
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40	Wetland + R. Submittal	1.2	75	900	9	1,200
41	Wetland + R. Submittal	1.2	75	900	9	1,200
42	Wetland + R. Submittal	1.2	75	900	9	1,200
43	Wetland + R. Submittal	1.2	75	900	9	1,200
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53	Wetland + R. Submittal	1.2	75	900	9	1,200
54	Wetland + R. Submittal	1.2	75	900	9	1,200
55	Wetland + R. Submittal	1.2	75	900	9	1,200
56	Wetland + R. Submittal	1.2	75	900	9	1,200
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63	Wetland + R. Submittal	1.2	75	900	9	1,200
64	Wetland + R. Submittal	1.2	75	900	9	1,200
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66	Wetland + R. Submittal	1.2	75	900	9	1,200
67	Wetland + R. Submittal	1.2	75	900	9	1,200
68	Wetland + R. Submittal	1.2	75	900	9	1,200
69	Wetland + R. Submittal	1.2	75	900	9	1,200
70	Wetland + R. Submittal	1.2	75	900	9	1,200
71	Wetland + R. Submittal	1.2	75	900	9	1,200
72	Wetland + R. Submittal	1.2	75	900	9	1,200
73	Wetland + R. Submittal	1.2	75	900	9	1,200
74	Wetland + R. Submittal	1.2	75	900	9	1,200
75	Wetland + R. Submittal	1.2	75	900	9	1,200
76	Wetland + R. Submittal	1.2	75	900	9	1,200
77	Wetland + R. Submittal	1.2	75	900	9	1,200
78	Wetland + R. Submittal	1.2	75	900	9	1,200
79	Wetland + R. Submittal	1.2	75	900	9	1,200
80	Wetland + R. Submittal	1.2	75	900	9	1,200
81	Wetland + R. Submittal	1.2	75	900	9	1,200
82	Wetland + R. Submittal	1.2	75	900	9	1,200
83	Wetland + R. Submittal	1.2	75	900	9	1,200
84	Wetland + R. Submittal	1.2	75	900	9	1,200
85	Wetland + R. Submittal	1.2	75	900	9	1,200
86	Wetland + R. Submittal	1.2	75	900	9	1,200
87	Wetland + R. Submittal	1.2	75	900	9	1,200
88	Wetland + R. Submittal	1.2	75	900	9	1,200
89	Wetland + R. Submittal	1.2	75	900	9	1,200
90	Wetland + R. Submittal	1.2	75	900	9	1,200
91	Wetland + R. Submittal	1.2	75	900	9	1,200
92	Wetland + R. Submittal	1.2	75	900	9	1,200
93	Wetland + R. Submittal	1.2	75	900	9	1,200
94	Wetland + R. Submittal	1.2	75	900	9	1,200
95	Wetland + R. Submittal	1.2	75	900	9	1,200
96	Wetland + R. Submittal	1.2	75	900	9	1,200
97	Wetland + R. Submittal	1.2	75	900	9	1,200
98	Wetland + R. Submittal	1.2	75	900	9	1,200
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99

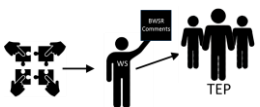
Roles for reviewing prospectus

- | | |
|--|---|
| <p>TEP/LGU Roles:</p> <ul style="list-style-type: none"> • Verify previous comments addressed • Verify sponsor adequately described the site • Review wetland delineation or determination • Review crop history (if necessary) • Provide LOCAL perspective on project and eligibility | <p>BWSR Role:</p> <ul style="list-style-type: none"> • Evaluate easement issues • Vegetation, Engineering, and Bank Coordinator comments included • Statewide consistency • Technical answers and interpretations • Coordination with Corps |
|--|---|

100

Review

- Comments become more direct
- Baseline information must justify credit actions and allocations
- Some credit actions require more information
- Project takes shape but detailed plans not required
- Balance information needs versus sponsor's cost



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Mitigation Plan



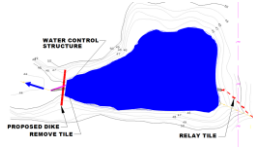
- Document of record
- Required for both programs
- LGU Decision Required
- Section 15.99 time limits!
- Attached to Corps' MBI

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Mitigation Plan

Required:

- Detailed vegetation plans
- Detailed construction plans
- Detailed monitoring plans
- Performance standards
- Credit release schedule



103

TEP Review

- Verify Corps has completed Prospectus phase
- Verify Prospectus information carried forward and comments addressed
- Verify Baseline Information is complete and adequate
- Wetland delineation approval
- Review detailed plans to your comfort level

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Mitigation Plan

"Plans are nice but performance releases credits." J. Overland

- Monitoring plan must relate to performance standards
- Performance standards must relate to credit releases
- The Mitigation Plan is the basis for implementation, credit releases, and allowable actions into the future
- DOCUMENTATION IS CRITICAL

Table 1. Credit Release Schedule Summary

Type of Credit	Total Project Release	Type of Credit	Final Credit	Final Release	Final Release	Final Release	Final Release	Final Release	Final Release
Regulatory Credit	1.0	Final	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Regulatory Credit	0.5	Final	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Regulatory Credit	0.5	Final	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Regulatory Credit	0.5	Final	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Regulatory Credit	0.5	Final	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Total	3.0		3.000	3.000	3.000	3.000	3.000	3.000	3.000

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Mitigation Plan Decision

- Track 15.99 time limits, extensions needed
- Most Mitigation Plans will require some revision
- Make final decision in accordance with section 15.99
- Clearly identify and retain approved Mitigation Plan
- When possible the WCA and Corps approved plans should be the same

106

Easement Acquisition

GENERAL PROCESS INFORMATION

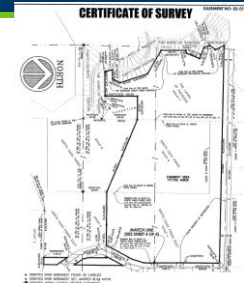
- Easement acquisition is typically initiated after mitigation plan approval
- Easement acquisition does not have to be completed prior to construction
- The process is managed at BWSR by Easement Section Staff, not Wetland Specialists
- It is the responsibility of the sponsor/landowner to initiate the easement acquisition process



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LGU role in Easement Acquisition

- Help the sponsor find the "Conservation Easement Acquisition Overview for Private Wetland Banks"
- BWSR easement staff will take it from there



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Easement Acquisition

The significant steps in the easement acquisition process include:

1. Sponsor submits initial \$1,000 Easement Acquisition Fee to BWSR along with application
2. BWSR performs a preliminary review of ownership information to identify potential issues
3. Sponsor provides DRAFT Certificate of Survey in required format for BWSR review & comment
4. BWSR provides sponsor with instructions to obtain Title Commitment
5. Sponsor (landowner) provides Title Commitment to BWSR for State Attorney General (AG) review & comment
6. BWSR prepares Conservation Easement document to be signed by landowner
7. Landowner signs Easement and returns to BWSR with \$2,400 Easement Acquisition Fee balance
8. BWSR sends instructions to record the Easement and issue a Title Insurance Policy
9. BWSR notifies sponsor that easement acquisition process is complete

109

Construction Certification

• LGU must certify the initial construction

- Documentation:
 - as-built drawing
 - surveyed map
 - Delineation
 - seed tags
 - construction photos



- Site Visit with TEP
 - Recommend TEP Findings of Fact

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Credit Deposits

- Up to 15% of the credits are eligible for deposit after the certification of construction
- Remaining credits are eligible for deposit based on the credit release schedule and performance standards in the approved bank plan
- Subject to review by the LGU & TEP
- After certifying the credit for deposit, the LGU must forward to BWSR banking administrator

111

Credit Withdrawal and Transfer

- Submitted as part of Replacement Plan to LGU with jurisdiction of impact site
- Reviewed and approved by the LGU with TEP input
- Processed and entered into official ledger by BWSR
- BWSR coordinates approved transactions with Corps
 - Need Corps approval letter



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Credit Transactions

- Help us improve transaction processing efficiency.
- Make sure all requested information is provided
- Make sure account information is provided and each column is filled out
- Don't worry about fees – BWSR will handle that

113

Credit Transactions

Transaction forms cannot be processed without required signatures

When processing transactions we need LGU name and contact. Typed or printed information makes it easier to figure out

114

Review

- Types of Wetland Banks
 - Standard
 - Private and Agriculture
 - In Lieu of Fee (proposed)
 - Local Road Program
- Replacement for Public Road Projects
 - Repair, rehabilitate, reconstruction of currently :
- Actions Eligible for Credit
 - Restoration of drained wetlands, vegetation restoration, protection, ENRV, Preservation, upland buffer
- Establishing a Wetland Bank
 - Draft Prospectus
 - Prospectus
 - Mitigation Plan
- LGU and TEP procedures for banking
 - Construction Certification, deposit of credits, withdrawal of credits

115



Questions?

BWSR Wetland Section | www.bwsr.state.mn.us/wetlands

116

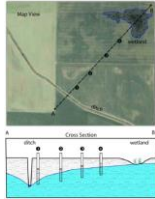


Wetland Bank Monitoring

BOARD OF WATER AND SOIL RESOURCES
 BWSR Wetland Section | www.bwsr.state.mn.us/wetlands

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Overview of Wetland Bank Monitoring

- Monitoring process
 - Construction Certification
 - Duration of monitoring
 - Deposit of Credits
 - Maintenance responsibilities
 - Monitoring reports
 - Timeline
 - Reports
 - Corrective Actions
- 
 - Hydrology Monitoring
 - Performance standards
 - Vegetation Monitoring
 - Performance standards

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General Monitoring roles once wetland bank is approved

- | | |
|--|--|
| <p>LGU/Corps roles:</p> <ul style="list-style-type: none"> • certify construction • certify credits for deposit • review monitoring reports • may require corrective actions as needed | <p>Sponsor/landowner roles:</p> <ul style="list-style-type: none"> • Sponsor responsible for maintenance • Submitting as-built documentation • Submitting wetland credit deposit transaction form(s) • Submitting monitoring reports • Paying administrative fees |
|--|--|

119

Construction Certification

- LGU must certify the initial construction
 - Documentation:
 - as-built drawing
 - surveyed map
 - Delineation
 - seed tags
 - construction photos
 - Site Visit with TEP
 - Recommend TEP Findings of Fact



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Monitoring Schedule

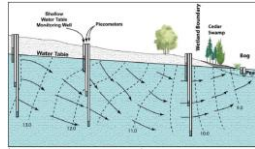
- Monitoring must begin no later than first full growing season after construction certification
- Must continue for at least 5 full growing seasons
- If unsuccessful, the LGU may extend the monitoring period (<5 additional years)
- Actual monitoring schedule may vary for different bank types (restoration vs preservation)

Table 1. Credit Return Schedule Example

Stage of Construction	Bank Material Average	Stage of Bank Erosion	Credit Ratio	Plant Project Credits	Bank Project Credits	Banking (Preservation) Credits (100% of bank area, 100% of bank height, 100% of bank width)	Banking (Restoration) Credits (100% of bank area, 100% of bank height, 100% of bank width)	Banking (Preservation) Credits (100% of bank area, 100% of bank height, 100% of bank width)	Banking (Restoration) Credits (100% of bank area, 100% of bank height, 100% of bank width)
Restoration/Preservation of Existing Bank	1.0	None	100%	1,000	1,000	1,000	1,000	1,000	1,000
Restoration/Preservation of Existing Bank	0.5	1/2	50%	500	500	500	500	500	500
Restoration/Preservation of Existing Bank	0.25	1/4	25%	250	250	250	250	250	250
Restoration/Preservation of Existing Bank	0.125	1/8	12.5%	125	125	125	125	125	125
Restoration/Preservation of Existing Bank	0.0625	1/16	6.25%	62.5	62.5	62.5	62.5	62.5	62.5
Restoration/Preservation of Existing Bank	0.03125	1/32	3.125%	31.25	31.25	31.25	31.25	31.25	31.25
Restoration/Preservation of Existing Bank	0.015625	1/64	1.5625%	15.625	15.625	15.625	15.625	15.625	15.625
Restoration/Preservation of Existing Bank	0.0078125	1/128	0.78125%	7.8125	7.8125	7.8125	7.8125	7.8125	7.8125
Restoration/Preservation of Existing Bank	0.00390625	1/256	0.390625%	3.90625	3.90625	3.90625	3.90625	3.90625	3.90625
Restoration/Preservation of Existing Bank	0.001953125	1/512	0.1953125%	1.953125	1.953125	1.953125	1.953125	1.953125	1.953125
Restoration/Preservation of Existing Bank	0.0009765625	1/1024	0.09765625%	0.9765625	0.9765625	0.9765625	0.9765625	0.9765625	0.9765625
Restoration/Preservation of Existing Bank	0.00048828125	1/2048	0.048828125%	0.48828125	0.48828125	0.48828125	0.48828125	0.48828125	0.48828125
Restoration/Preservation of Existing Bank	0.000244140625	1/4096	0.0244140625%	0.244140625	0.244140625	0.244140625	0.244140625	0.244140625	0.244140625
Restoration/Preservation of Existing Bank	0.0001220703125	1/8192	0.01220703125%	0.1220703125	0.1220703125	0.1220703125	0.1220703125	0.1220703125	0.1220703125
Restoration/Preservation of Existing Bank	0.00006103515625	1/16384	0.006103515625%	0.06103515625	0.06103515625	0.06103515625	0.06103515625	0.06103515625	0.06103515625
Restoration/Preservation of Existing Bank	0.000030517578125	1/32768	0.0030517578125%	0.030517578125	0.030517578125	0.030517578125	0.030517578125	0.030517578125	0.030517578125
Restoration/Preservation of Existing Bank	0.0000152587890625	1/65536	0.00152587890625%	0.0152587890625	0.0152587890625	0.0152587890625	0.0152587890625	0.0152587890625	0.0152587890625
Restoration/Preservation of Existing Bank	0.00000762939453125	1/131072	0.000762939453125%	0.00762939453125	0.00762939453125	0.00762939453125	0.00762939453125	0.00762939453125	0.00762939453125
Restoration/Preservation of Existing Bank	0.000003814697265625	1/262144	0.0003814697265625%	0.003814697265625	0.003814697265625	0.003814697265625	0.003814697265625	0.003814697265625	0.003814697265625
Restoration/Preservation of Existing Bank	0.0000019073486328125	1/524288	0.00019073486328125%	0.0019073486328125	0.0019073486328125	0.0019073486328125	0.0019073486328125	0.0019073486328125	0.0019073486328125
Restoration/Preservation of Existing Bank	0.00000095367431640625	1/1048576	0.000095367431640625%	0.00095367431640625	0.00095367431640625	0.00095367431640625	0.00095367431640625	0.00095367431640625	0.00095367431640625
Restoration/Preservation of Existing Bank	0.000000476837158203125	1/2097152	0.0000476837158203125%	0.000476837158203125	0.000476837158203125	0.000476837158203125	0.000476837158203125	0.000476837158203125	0.000476837158203125
Restoration/Preservation of Existing Bank	0.0000002384185791015625	1/4194304	0.00002384185791015625%	0.0002384185791015625	0.0002384185791015625	0.0002384185791015625	0.0002384185791015625	0.0002384185791015625	0.0002384185791015625
Restoration/Preservation of Existing Bank	0.00000011920928955078125	1/8388608	0.000011920928955078125%	0.00011920928955078125	0.00011920928955078125	0.00011920928955078125	0.00011920928955078125	0.00011920928955078125	0.00011920928955078125
Restoration/Preservation of Existing Bank	0.000000059604644775390625	1/16777216	0.0000059604644775390625%	0.000059604644775390625	0.000059604644775390625	0.000059604644775390625	0.000059604644775390625	0.000059604644775390625	0.000059604644775390625
Restoration/Preservation of Existing Bank	0.0000000298023223876953125	1/33554432	0.00000298023223876953125%	0.0000298023223876953125	0.0000298023223876953125	0.0000298023223876953125	0.0000298023223876953125	0.0000298023223876953125	0.0000298023223876953125
Restoration/Preservation of Existing Bank	0.00000001490116119384765625	1/67108864	0.000001490116119384765625%	0.00001490116119384765625	0.00001490116119384765625	0.00001490116119384765625	0.00001490116119384765625	0.00001490116119384765625	0.00001490116119384765625
Restoration/Preservation of Existing Bank	0.000000007450580596923828125	1/134217728	0.0000007450580596923828125%	0.000007450580596923828125	0.000007450580596923828125	0.000007450580596923828125	0.000007450580596923828125	0.000007450580596923828125	0.000007450580596923828125
Restoration/Preservation of Existing Bank	0.0000000037252902984619140625	1/268435456	0.00000037252902984619140625%	0.0000037252902984619140625	0.0000037252902984619140625	0.0000037252902984619140625	0.0000037252902984619140625	0.0000037252902984619140625	0.0000037252902984619140625
Restoration/Preservation of Existing Bank	0.00000000186264514923095703125	1/536870912	0.000000186264514923095703125%	0.00000186264514923095703125	0.00000186264514923095703125	0.00000186264514923095703125	0.00000186264514923095703125	0.00000186264514923095703125	0.00000186264514923095703125
Restoration/Preservation of Existing Bank	0.000000000931322574615478515625	1/1073741824	0.0000000931322574615478515625%	0.000000931322574615478515625	0.000000931322574615478515625	0.000000931322574615478515625	0.000000931322574615478515625	0.000000931322574615478515625	0.000000931322574615478515625
Restoration/Preservation of Existing Bank	0.00000000046566128730773928125	1/2147483648	0.000000046566128730773928125%	0.00000046566128730773928125	0.00000046566128730773928125	0.00000046566128730773928125	0.00000046566128730773928125	0.00000046566128730773928125	0.00000046566128730773928125
Restoration/Preservation of Existing Bank	0.000000000232830643653869640625	1/4294967296	0.0000000232830643653869640625%	0.000000232830643653869640625	0.000000232830643653869640625	0.000000232830643653869640625	0.000000232830643653869640625	0.000000232830643653869640625	0.000000232830643653869640625
Restoration/Preservation of Existing Bank	0.0000000001164153218269348203125	1/8589934592	0.00000001164153218269348203125%	0.0000001164153218269348203125	0.0000001164153218269348203125	0.0000001164153218269348203125	0.0000001164153218269348203125	0.0000001164153218269348203125	0.0000001164153218269348203125
Restoration/Preservation of Existing Bank	0.00000000005820766091346741015625	1/17179869184	0.000000005820766091346741015625%	0.00000005820766091346741015625	0.00000005820766091346741015625	0.00000005820766091346741015625	0.00000005820766091346741015625	0.00000005820766091346741015625	0.00000005820766091346741015625
Restoration/Preservation of Existing Bank	0.000000000029103830456733705078125	1/34359738368	0.0000000029103830456733705078125%	0.000000029103830456733705078125	0.000000029103830456733705078125	0.000000029103830456733705078125	0.000000029103830456733705078125	0.000000029103830456733705078125	0.000000029103830456733705078125
Restoration/Preservation of Existing Bank	0.0000000000145519152283668525390625	1/68719476736	0.00000000145519152283668525390625%	0.0000000145519152283668525390625	0.0000000145519152283668525390625	0.0000000145519152283668525390625	0.0000000145519152283668525390625	0.0000000145519152283668525390625	0.0000000145519152283668525390625
Restoration/Preservation of Existing Bank	0.00000000000727595761418342626953125	1/137438953472	0.000000000727595761418342626953125%	0.00000000727595761418342626953125	0.00000000727595761418342626953125	0.00000000727595761418342626953125	0.00000000727595761418342626953125	0.00000000727595761418342626953125	0.00000000727595761418342626953125
Restoration/Preservation of Existing Bank	0.000000000003637978807091713134765625	1/274877906944	0.0000000003637978807091713134765625%	0.000000003637978807091713134765625	0.000000003637978807091713134765625	0.000000003637978807091713134765625	0.000000003637978807091713134765625	0.000000003637978807091713134765625	0.000000003637978807091713134765625
Restoration/Preservation of Existing Bank	0.0000000000018189894035458565673828125	1/549755813888	0.00000000018189894035458565673828125%	0.0000000018189894035458565673828125	0.0000000018189894035458565673828125	0.0000000018189894035458565673828125	0.0000000018189894035458565673828125	0.0000000018189894035458565673828125	0.0000000018189894035458565673828125
Restoration/Preservation of Existing Bank	0.00000000000090949470177292828369140625	1/1099511627776	0.000000000090949470177292828369140625%	0.00000000090949470177292828369140625	0.00000000090949470177292828369140625	0.00000000090949470177292828369140625	0.00000000090949470177292828369140625	0.00000000090949470177292828369140625	0.00000000090949470177292828369140625
Restoration/Preservation of Existing Bank	0.0000000000004547473508864141464578125	1/2199023255552	0.00000000004547473508864141464578125%	0.0000000004547473508864141464578125	0.0000000004547473508864141464578125	0.0000000004547473508864141464578125	0.0000000004547473508864141464578125	0.0000000004547473508864141464578125	0.0000000004547473508864141464578125
Restoration/Preservation of Existing Bank	0.00000000000022737367544320707322890625	1/4398046511104	0.000000000022737367544320707322890625%	0.00000000022737367544320707322890625	0.00000000022737367544320707322890625	0.00000000022737367544320707322890625	0.00000000022737367544320707322890625	0.00000000022737367544320707322890625	0.00000000022737367544320707322890625
Restoration/Preservation of Existing Bank	0.000000000000113686837721603536614515625	1/8796093022208	0.0000000000113686837721603536614515625%	0.000000000113686837721603536614515625	0.000000000113686837721603536614515625	0.000000000113686837721603536614515625	0.000000000113686837721603536614515625	0.000000000113686837721603536614515625	0.000000000113686837721603536614515625
Restoration/Preservation of Existing Bank	0.0000000000000568434188608017683072890625	1/17592186044416	0.00000000000568434188608017683072890625%	0.0000000000568434188608017683072890625	0.0000000000568434188608017683072890625	0.0000000000568434188608017683072890625	0.0000000000568434188608017683072890625	0.0000000000568434188608017683072890625	0.0000000000568434188608017683072890625
Restoration/Preservation of Existing Bank	0.00000000000002842170943040088415364515625	1/35184372088832	0.000000000002842170943040088415364515625%	0.00000000002842170943040088415364515625	0.00000000002842170943040088415364515625	0.00000000002842170943040088415364515625	0.00000000002842170943040088415364515625	0.00000000002842170943040088415364515625	0.00000000002842170943040088415364515625
Restoration/Preservation of Existing Bank	0.00000000000001421085471520044207176822890625	1/70368744177664	0.000000000001421085471520044207176822890625%</						

Piezometers

- Used to measure depth-specific head measurements
 - Measure vertical component
 - Hydrostatic pressure or "head"
 - May provide automated measurements
- Not typically used for standard wetland investigations



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Interpreting Hydrology

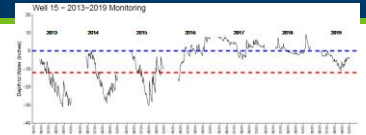


Table 1: Summary of Wetland Success Criteria for Phase I

Success Criteria	Phase I		
	Wet Meadow	Hardwood Swamp	Shallow Marsh
Duration	3	4	5
Growing Season	3	4	5
Hydrology			
Hydrology (depth to water table)	Surface to 32"	Surface to 32"	46" to 32"
Hydroperiod (duration within zone)	Moist duration	Moist duration	Moist duration
Vegetation			
Wetland Indicator (% FAC or wetter)	41/52 + 79%	39/51 + 76%	20/22 + 91%
Species Composition (Native Richness)	39/52 + 75%	39/51 + 76%	19/22 + 86%
Invasive Cover (% non-native)	2%	2%	2%
FQA/WQA	30.2/26.7	30.0/23.4	16.5/19.7
Tree Coverage (trees per acre)	N/A	26.48	N/A

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Vegetation

- Methods to monitor vegetation:
 - FQA
 - Mapping plant communities
 - Estimating invasive species
- Interpreting vegetation data
 - Indicator status (% FAC or wetter)
 - Composition (% native species richness)
 - Invasive cover (%)
 - Floristic Quality Assessment (index rating)



Vegetation

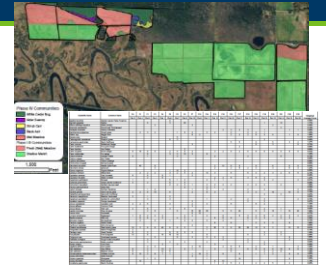
Table 1: Summary of Wetland Success Criteria for Phase I

Success Criteria	Phase I		
	Wet Meadow	Hardwood Swamp	Shallow Marsh
Duration	5	4	5
Growing Season	5	4	5
Hydrology			
Hydrology (depth to water table)	Surface to 32"	Surface to 32"	46" to 32"
Hydroperiod (duration within zone)	Moist duration	Moist duration	Moist duration
Vegetation			
Wetland Indicator (% FAC or wetter)	41/52 + 79%	39/51 + 76%	20/22 + 91%
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Tree Coverage (trees per acre)	N/A	26.48	N/A

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Interpreting Vegetation

- Vegetation measurements to consider:
 - Percent absolute cover of bare ground/open water
 - % relative cover of native, non-invasives
 - % relative cover of non-native, invasives
 - % relative cover of hydrophytes
 - Plant species richness



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Vegetation Monitoring for Wetland Bank Sites

Vegetation Monitoring for Compensatory Wetland Mitigation Sites

- Developing a vegetation monitoring plan
- Sampling methods
- Where and when to monitor
- Monitoring plan considerations
- Reporting monitoring results



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Reviewing Monitoring Reports

A. Success Criteria Summary

Summary of Success Criteria Standards and Current Metrics for 2017:

Metric	Success Criteria	Measured Criteria	Success Criteria Met?	Comments
Hydrology	Wetland between 0 and 1 foot below ground surface	Measured hydrology is between 0 and 1 foot below ground surface	Yes	Formal hydrology monitoring was completed by 2017. Success based on official site observations.
Duration	Majority of the growing season	Hydrology was within the success range for the majority of the growing season	Yes	
Diversity	Minimum of five native species	79 native species have been observed	Yes	Species diversity increased from 2016 to 2017.
Composition	Minimum two sedges and two native species	Sedges and native species have been identified	Yes	Species composition stable
Invasive species	No more than 10% total cover	Total cover of invasive species is less than 10%, and no large herbaceous coverages	Yes	Small canopy grass is less than 5% coverage. Slight increase of sedge density, but spongy sedge is not 2017 to 2018.
Invasive species composition	No single area species greater than one-quarter area in use	Invasive species remain under control with no single area greater than one-quarter area in use	Yes	

- Know performance standards
- Interpret data to determine whether the site meets those standards
- If not, document with data what is not meeting standard
- Consult with TEP & Corps
- Then corrective actions should be recommended

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Credit Deposits

- Up to 15% of the credits are eligible for deposit after the certification of construction
- Remaining credits are eligible for deposit based on the credit release schedule and performance standards in the approved bank plan
- Subject to review by the LGU & TEP
- After certifying the credit for deposit, the LGU must forward to BWSR banking administrator

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Corrective Actions

- If, during the monitoring period, the LGU/Corps or TEP determine that a bank site does not meet the approved plan's specifications, the LGU must require corrective actions
- BWSR can freeze accounts by restricting deposits, withdrawals, transfers until the LGU determines the site is in compliance
- Noncompliance of bank sites is subject to enforcement procedures



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Review

- General considerations for successful restoration
 - Restoration over creation, degraded sites, adjacent land uses, soil conditions, water quality, other drainage features, landownership
- Restoring natural hydrology
 - Understand the landscape position, hydrology, hydraulics
- Establishing vegetation
 - Strategic site preparation, landscape connections, match plant communities to site, plant diversity, work with ecological variability, species tolerance, manage invasive species
- Restoration techniques
 - Filling ditches, removing drain tile, rerouting & pump removal
- Performance Standards
 - Measurable attributes to determine if restoration goals are met
- Monitoring Reports
 - Hydrology monitoring
 - Monitoring wells
 - Interpreting data
 - Vegetation monitoring
 - Interpreting data
- Use available technical guidance!

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WCA Enforcement



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Enforcement Procedure Overview



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8420.0900 Subp. 3. Restoration and Replacement orders.

- B. Promptly upon being informed by the enforcement authority or the local government unit of the need, a soil and water conservation district staff person **must** inspect the site and prepare a plan in consultation with the local government unit and the enforcement authority for restoring the site to its prealtered condition.

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SWCD Role in a violation

- Landowner contact for CDO or RPN
- Site visit- gather information/evidence
- Prepare Restoration/Replacement Order
- Monitor restoration/ replacement site.
- Certificate of Satisfactory Completion
- Track the cases.

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LGU Role in a violation

- Help Determine if site has permit for work or prior work done.
- Assist SWCD on Restoration/Replacement Orders
- Assist with gathering evidence
- Receive application from landowner for exemption, no-loss determinations, and replacement plans
- Track the cases

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BWSR's Role in a violation

- Rule interpretation
- Bounce ideas back and forth (appropriate seed mixes)
- May contact more specialist BWSR staff to assist in difficult projects
- Assist SWCD/LGU in developing RO's
- Assist in technical findings

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DNR Enforcement Role

- Landowner contact if Cease and Desist Orders
- Write Summary of information on violation
- Gather Evidence of the violation including contractors info
- Issue Restoration and Replacement Order
- Grant Extensions
- Initiate enforcement action
- Follow and track all violation cases
- Issue RPN for after the fact cases. (not in progress)

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Resource Protection Notices

Used as a notice when activity is complete and no sign it will continue

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Cease & Desist Orders

Used when equipment is onsite and it appears the activity will continue to impact wetlands.

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Data Collection

Who – landowner and/or responsible party, contractor

- RO will go to all

What – type of disturbance or activity that occurred

- Useful for determining impact

Why – purpose of action? Were goals achieved? (i.e. some drainage is not effective...)

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Data Collection

When – estimated time of activity occurrence


- Helpful in determining responsible party if ownership change has occurred
- Aerial photos/PID information
- Did the activity work?

Where – Property location (critical), but also landscape position, slope, etc.

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Data Collection

- Maps
- Illustrations
- TEP Findings and Recommendation
- Discussions with landowner/responsible party
- Survey information
- You may only have one opportunity to be on site




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The RO

Restoration Order Gives the Landowner Options

- Restoration is priority
- Apply for replacement, exemption, no-loss
- Appeal- w/in 30 days + \$500 fee
- Court/Deed Restriction if no action is taken by landowner



After-the-fact replacement ratio must be twice the ratio otherwise required

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The RO

- Send RO to the Officer OR WREO ASAP Enforcement will serve the order (must be served in person or certified mail)
 - We recommend to officers to use only certified mail
 - Easy for everyone to track time line
- **MAKE SURE YOU SIGN YOUR COPY BEFORE SENDING IT TO CO OR WREO.**
- Extensions are issued **only** by enforcement and if:
 - The landowner has a good reason for not getting it done
 - Has made some progress
 - Maybe weather related (heavy rains, early freeze)
 - Submitted application
 - Filed an Appeal

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Is a formal Restoration Order Always Required?

- **No**, voluntary restoration is allowed but should consider
 - Willingness to cooperate
 - Past history
 - Shortened timeframe for completion to allow for formal RO process
 - Some kind of written plan or agreement with deadlines
 - Communication and agreement with DNR Enforcement
 - No formal way to make other responsible parties liable

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Wetland Restoration

m BOARD OF WATER AND SOIL RESOURCES

BWSR Wetland Section | www.bwsr.state.mn.us/wetlands

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Overview


- General considerations for successful restoration
 - MN Restoration Guide
- Restoring natural hydrology
 - Hydrogeomorphology
 - Landscape position
 - Hydrology
 - hydraulics
- Restoration techniques
 - Filling ditches
 - Removing drain tile
 - Rerouting & pump removal
- Establishing vegetation

BWSR Wetland Section | www.bwsr.state.mn.us/wetlands

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Wetland Restoration

- [Wetland Restoration](#)





Wetland Restoration Guidelines

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Why restore wetlands?

- Restore lost functions:
 - Wildlife habitat
 - Water Quality
 - Flood Attenuation
- Wetland Banking
- CRP/RIM
- Enforcement

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Setting function-based restoration goals and performance standards.

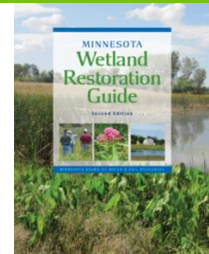
- Establishing Goals & Measurable Outcomes:
- Restore natural hydrology
 - Reestablish native plant community to site
 - Performance Standards (banking)- measurable attributes to determine if restoration goals are met



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MN Wetland Restoration Guide

- [MN Wetland Restoration Guide:](#)
- Planning
 - Site Assessment
 - Design and Construction
 - Vegetation establishment
 - Site Management & Monitoring



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Technical Guidance Sheets

- Supplements to the MN Wetland Restoration Guide
- <https://bwsr.state.mn.us/guidance-documents-tools-and-other-resources>
 - Vegetation Establishment
 - Restoration Design and Construction
 - Managing Restoration Sites



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General considerations for wetland restoration

- Identifying and selecting projects
 - Restoration over creation
- Consider potential complications from degraded sites
- Adjacent land uses (present and future?)
 - Changes to adjacent landowners?
- Location of area ditches
 - Public or private?
 - Drainage Law?
- Understand soil conditions of site (permeability, chemistry)
- Water quality

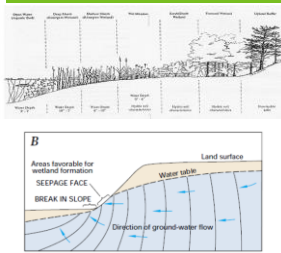


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Hydrologic design considerations

Restoring natural hydrology:

- Hydrology
 - Precipitation, evapotranspiration, surface and groundwater inflow & outflow
- Hydraulics- how water flows
 - Unidirectional, bi-directional
- Landscape position
 - Surface shape
- Outlet structures
 - Location and size



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Drainage Modifications

Drainage Manipulation Strategies:

- Ditches
- Tile
- Rerouting
- Restoration "reverses" modifications
- Don't over-engineer structures
 - Restore natural hydrology



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Ditches and Drain Tile

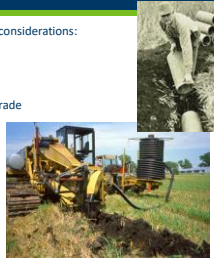
Ditch design considerations:

- Cross section area
- Depth
- Grade
- Outlet



Tile Design considerations:

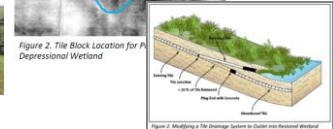
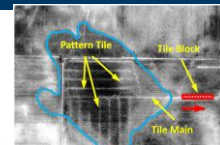
- Tile size
- Depth
- Spacing grade
- Material
- Outlet



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Drainage Restoration Methods

- Filling ditches
- Removing tile
- Re-routing



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