Northeast Utilities
Transmission
Construction and Maintenance

Best Management Practices Training

2008

Course Objectives

- Transmission Group's Compliance and Obligations - NU Transmission Best Management Practices (BMPs) Manuals (CT, MA & NH)
- Point Source and Non-Point Source Stormwater Discharges
- Wetland Areas and Environmentally Sensitive Areas
- Best Management Practices
- Access Roads
- Working in Vegetated Wetlands
- Common Work Practices

Transmission Compliance Overview

1. Adhere to Permit Conditions and Requirements (Federal, State and Local)
2. Follow at a minimum - state (CT, MA or NH) regulations & industry specific erosion control guidelines
3. Utilize NU Transmission Best Management Practices (BMPs) Manuals (CT, MA & NH) to minimize impact to Wetland Areas and ESAs.
4. Upon Completion, Restore and Refurbish the area to pre-work conditions

Permit Compliance

All transmission work must comply with all applicable permits…

- Federal
  - USEPA Stormwater
  - US Army Corp of Engineers
- State
  - DEP (CT & MA); DES (NH)
  - DPUC, Siting Councils, etc.)
- Local
  - Wetland Commissions (town level)

Point & Non-Point **Source Pollution**

- *Point sources* **(discharges through pipes).** Most of these discharges to watercourses are now highly regulated.
- *Non-point* sources (**Non directed stormwater run off, i.e small construction sites)**
  - Main focus of federal programs implemented through the states
  - New EPA Phase II Stormwater Permit requirements now regulate small construction sites where there is land disturbance of ***one*** acre or more.

Example of Non-Point Source

Beseck Substation Construction

Working Definitions

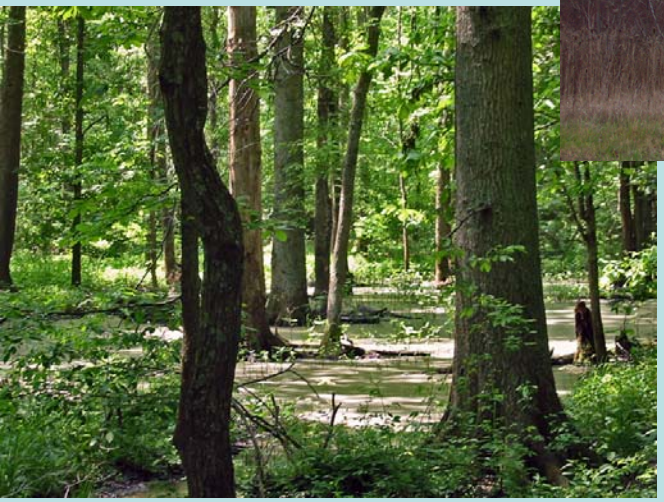
- **Wetland Areas** - includes a variety of transitional areas where land based and water based ecosystems overlap. Typical Wetland areas include:
  - Forested Wetlands,
  - Scrub-Shrub Wetlands,
  - Marshes,
  - Wet Meadows and
  - Vernal Pools
- **Environmentally Sensitive Areas (ESAs) –** are areas in/or adjacent to wetlands and can include:
  - water bodies,
  - rivers, streams and brooks,
  - scenic routes,
  - historic, endangered species,
  - watershed land, etc.

Wetland Areas

Vernal Pool

Scrub-Shrub Wetland

Fresh Water Marsh



Forested Wetland

Wet Meadow

TYPICAL WETLAND INDICATORS

- **1) Vegetation** (MA legal criteria) - 50% or more of the vegetation consists of wetland plant species (red maple, speckled alder, cattails, sensitive fern, etc.)

- **2) Topography** - typically lowland and flat. Transitional zone between terrestrial and aquatic systems.

- **3) Soil** - usually (but not always) the presence of hydric soils - or wet soils

- **4) Hydrology** - water is found at or near the ground surface, or in places where the ground is covered by varying depths of water. Wetlands are not necessarily wet all year

What is a BMP?

- Best Management Practices (BMPs) are structural and non-structural measures implemented to minimize environmental impacts
- This includes prevention of run-off and pollution from physical or chemical contamination, and erosion and sedimentation control on all construction and maintenance activities

Examples - Structural BMP's

- Sediment Controls
  - Silt Fence/hay bales
  - Inlet protection
  - Check dams
- Erosion Control
  - Mulch
  - Grass
  - Stockpile covers
- Watercourse Crossing
  - Fordes (Armored Stream Bed)
  - Culverts
  - Temporary Bridges
- Wetland Crossing
  - Wood slabs, swamp mats or corduroy roads

BMPs

BMPs

BMPs

Crossing Culvert with Rip Rap and Hay Bales for Sediment Control

BMPs

BMPs

Temporary Hay/Straw Mulching for Erosion Control

BMP Upkeep & Maintenance

Hay Bales damaged by vehicular traffic. In need of replacement. Erosion Control BMPs typically need routine upkeep and maintenance to ensure effectiveness.

Access Roads

- ***Unpaved access roadways which work crews use to access a site. During wet weather they can be a significant source of sediment if not constructed correctly using appropriate BMPs.***

Swamp Mats – Used for Wetland Crossings

Wood Chip Bags and Silt Fence – Used to Prevent Sediment Migration into the Adjacent Wetland Area.

Access Roads

Existing Access Road - An existing road is an access road created during the construction phase and maintained for the purpose of accessing electrical utility structures for maintenance and emergency events

- **Stay on the designated route!** – Existing road access has been carefully selected and designed to minimize impacts to Wetlands and ESAs
- **Changes** in location of existing roads or alternate roads must be approved by NU prior to their construction or use

Access Roads

Private Property – Access roads occasionally will traverse private property for these situations additional attention will be focused to:

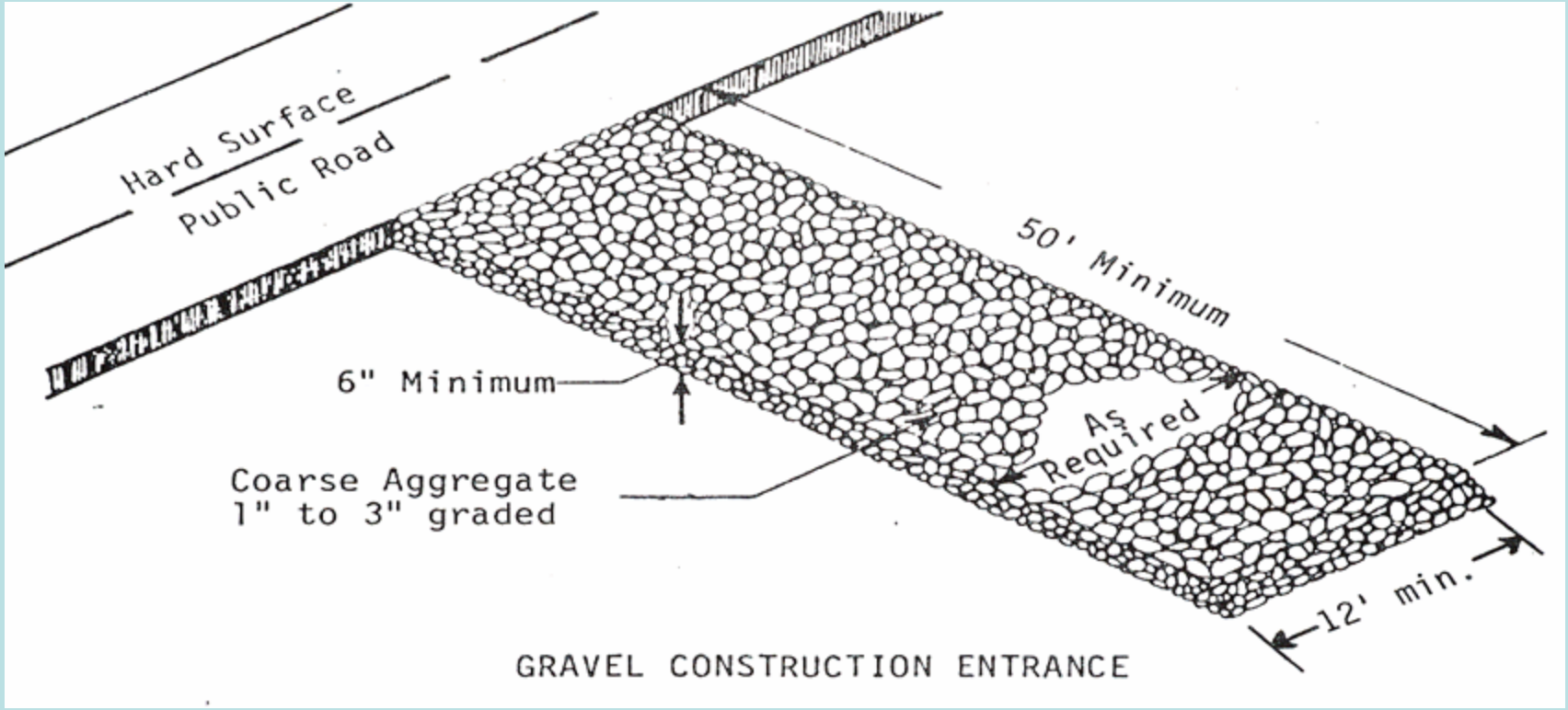
- Improve the access road to ensure suitable passage for equipment, erosion control, and maintenance of proper drainage
- After the job is complete, the area must be restored to a condition equal or better than before project use

RESIDENTIAL ACCESS & CONSTRUCTION

Examples of good residential construction restoration.

Access Roads

Construction Entrance - Entry to the access road from public paved roads must be stabilized to minimize erosion and retain a neat appearance



Access Roads

Example of a well designed and construction “Construction Entrance”

Access Roads

Stream Crossings - One of the following methods must be used for crossing streams:

- **Swamp Mats** (as temporary bridge)
- **Culvert Crossings**
- **Poled Fords**

Access Roads

Example of Swamp Mats used as a Temporary Bridge crossing

Access Roads

Example of a Culvert Crossing installed under an access road discharges to a sedimentation basin lined with hay bales.

NOTE: To prevent crushing by traffic, use 1-foot minimum cover for culverts 18 to 36 inches in diameter. Culverts > than 36 inches require are least one-third of their diameter in cover material.

Access Roads

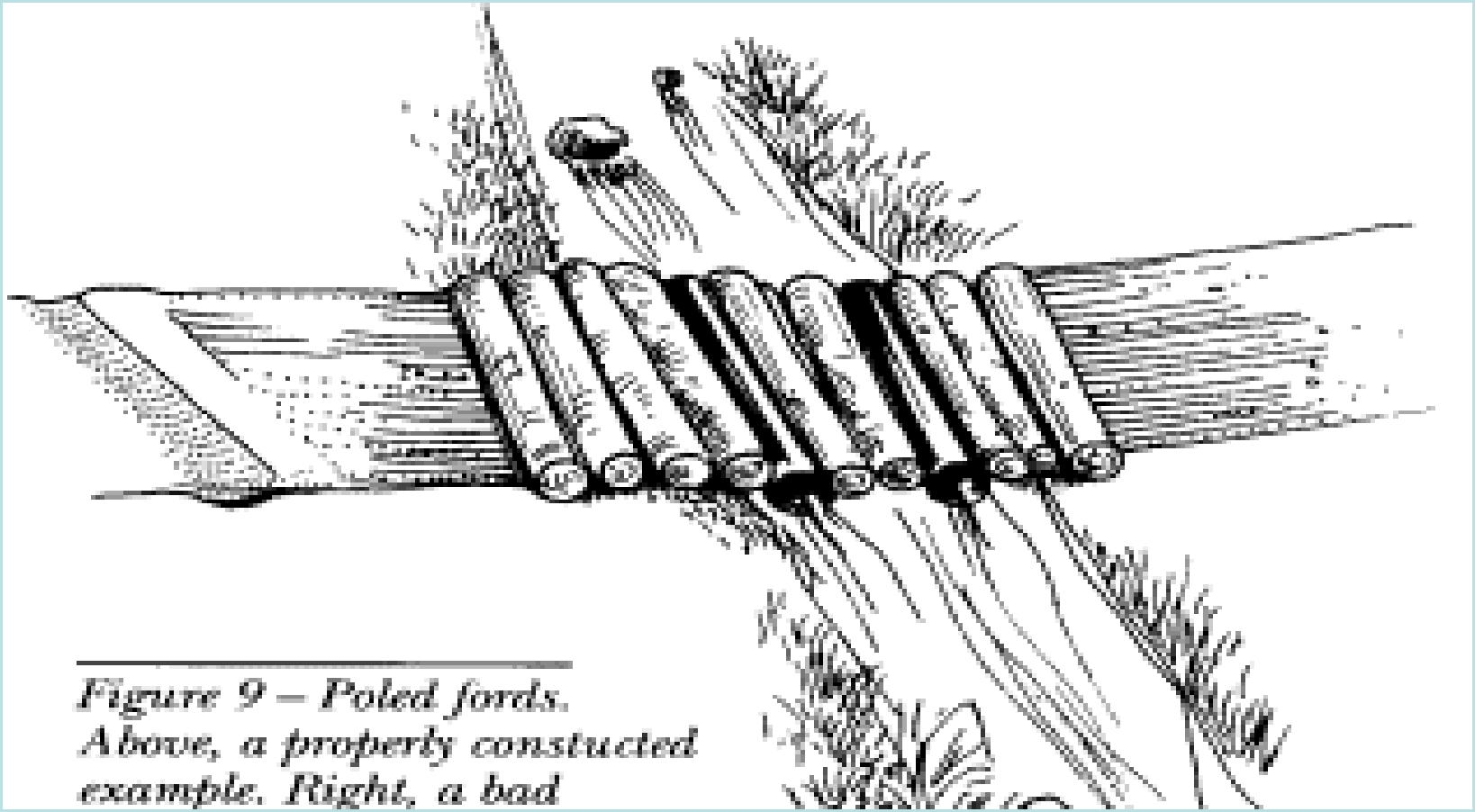


Figure 9 — Poled fords. Above, a properly constucted example. Right, a bad

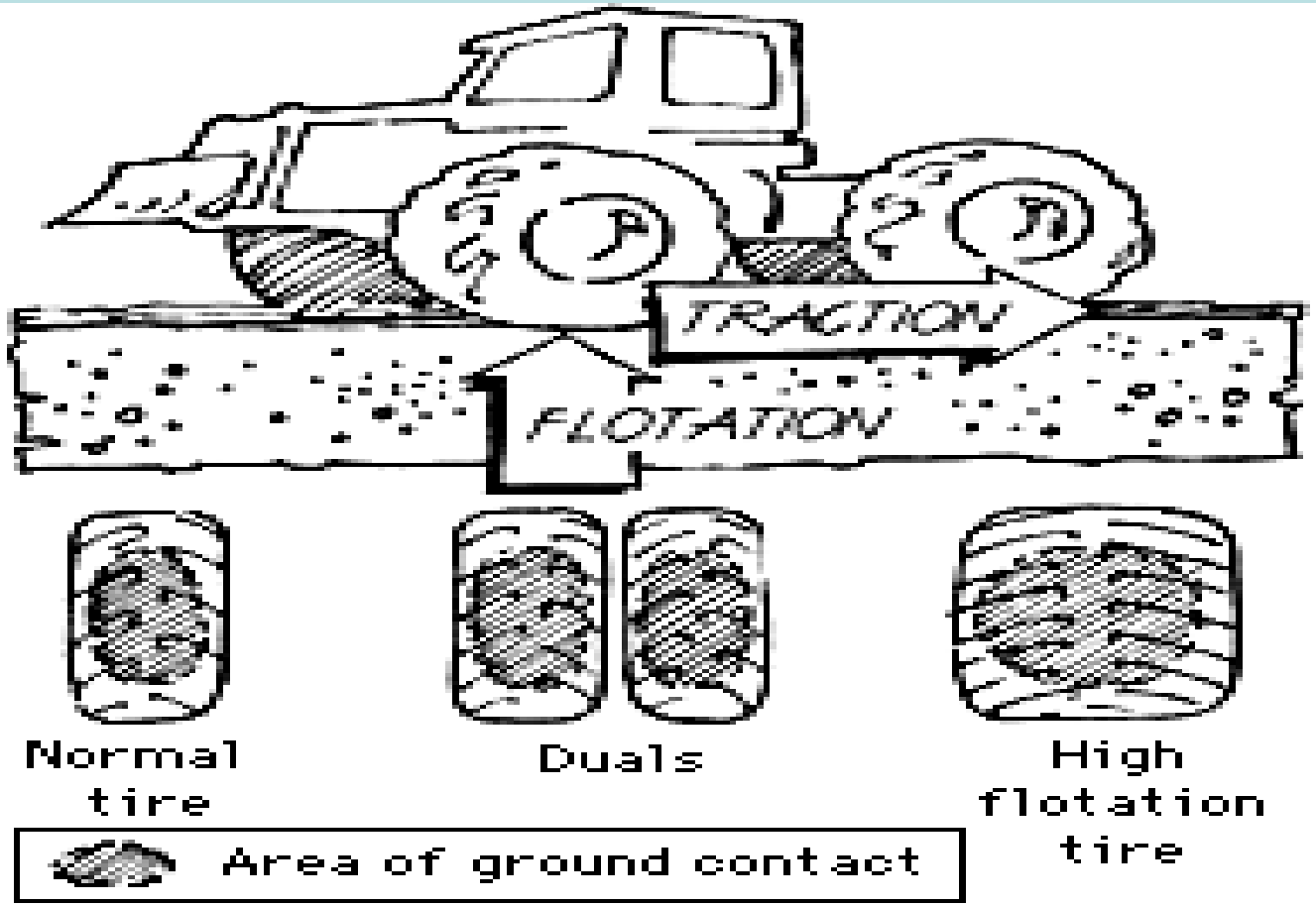
Example of a Poled Fords

Working In Vegetated Wetlands

To the extent possible Swamp/Timber Mats or AlturnaMATS® shall be installed to mitigate the potential impact. Other considerations shall also be taken and may include the use of:

- **Low Ground Pressure Equipment**
- **Wide Tires**
- **Rubberized Tracks**
- **Lightweight Equipment**
- **Vary paths - don't repeatedly cross wetlands**
- **Timing of Work:** Work during Frozen Conditions or during "Low Flow" Periods.
- **Alternate Access Methods:** Aerial or Manual Access.

Working in Vegetated Wetlands



Wide tires or a Rubberized track reduce the amount of impact to the Vegetated Wetland by reducing the amount of ground compaction.

Working in Vegetated Wetlands

Example of Preparation for Structure Access.
Swamp Mats are laid as a temporary Construction Platform to mitigate the potential effects to the surrounding vegetation.

Work Practices

Installing Poles or Placing Foundations

- Material must not be taken from the wetland area except for what must be removed for structure or foundation placement or stabilization
- Support fills must be clean gravel and stone, free of waste metal products, organic materials, similar debris and chemical impacts
- Excavated material must not be placed in a wetland. **Filling of wetlands without a permit is illegal!**

Work Practices

Overflow Channel for Flood Control
Norwalk Substation

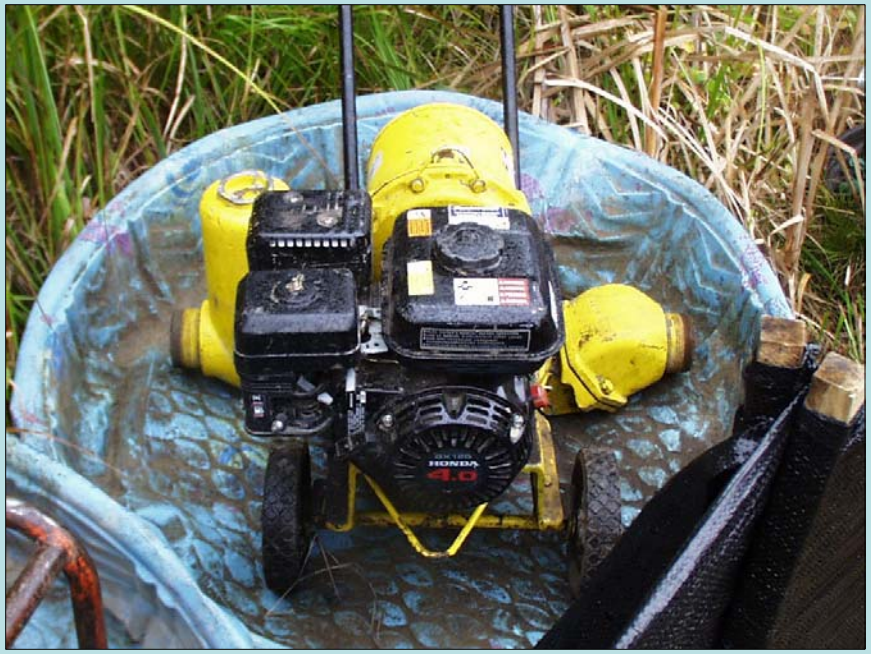
Work Practices

<u>Vehicle Management</u>: is an an important component in minimizing impacts to Wetlands and ESAs from contamination due to incidental dips or leaks.

Work Practices Include:

The removal of equipment & vehicles overnight. Locking up vehicles from vandals. Placing Absorbent Pads underneath vehicles to contain any potential spills or leaks.

Work Practices



“Do” : Plastic child sized pools are an excellent and convenient way to provide containment around the pumps and other small equipment.

“Don’t” : Pumps should be placed in some sort of secondary containment structure to avoid potential fuel spills to the wetlands.

Summary

- Conduct an assessment to determine possible environmental risk and ID actions during pre-job briefings
- Follow all permit requirements and ask questions
- Use State specific BMP’s and follow NU Transmission Best Management Practices Manuals (CT, MA or NH) to protect sensitive areas
- Find alternative paths or change equipment/work practice to access work locations
- Follow all other Transmission safety & environmental rules for the execution of work