Project Sequencing: Planning, Decisions, and Expected Results

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"If we have failed, we are experienced. If we have not failed, we will be experienced in due time."

– Jay Settersten

SetterTech
Natural Environment Technologies

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Timeline Changes and Contingency Plans

- Murphy's Law of Construction Delays
  - Bid/spec/plan development/permit delays
  - Weather and climate change
  - Site conditions
  - Product availability
  - Equipment breakdowns
  - Contractor qualifications/capacities
  - Design/approach changes
  - Unknown variables

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Plan Development Related to Sequencing

- Multi-disciplinary
- Communicate with contractors during plan development
- Add cushion to timelines. Understand the effects of timeline changes.
- Once grading begins, proceed systematically. Leap-frogging or start/stop
- Priority actions
- CONTINGENCY PLAN

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Communications

- Engineers, landowners, consultants, contractors – daily or weekly meetings.
- Sub-contractors are often out of the loop.
- Develop streamlined communication systems.
- Project changes must not be just noted, but filtered through all aspects of the project and all contractors.

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Understanding the SWPP

- Site inspections to verify conditions after each phase of project work.
- Aspects of the SWPP should be developed by people with field experience in erosion control and vegetation management.
- SWPP should be flexible and address contingencies.
- Communicate with your SWPP

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Plan Review

- Everyone on the same page?
- Good communication to keep EC/Veg contractors "on deck" – immediate seeding/EC products following final grading.
- Consider equipment ingress/egress.

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Erosion Control Requirements Outside of the Design Plan

- Sediment control
- Erosion control
- Stormwater management
- Not all sediment control and stormwater management requirements can be depicted in the original design plan.
- Field communication is essential.

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Leap Frogging

- Product availability
- Contractor availability
- Expected results of decisions

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Reacting to unknown variables

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Site Access

- Removing access before task completion
- Proper equipment
  - Low ground pressure vehicles

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Priority Actions

- Site Planning
- Site Inspection
- Identify areas of concern
- Perimeter control
- Vegetate slopes first

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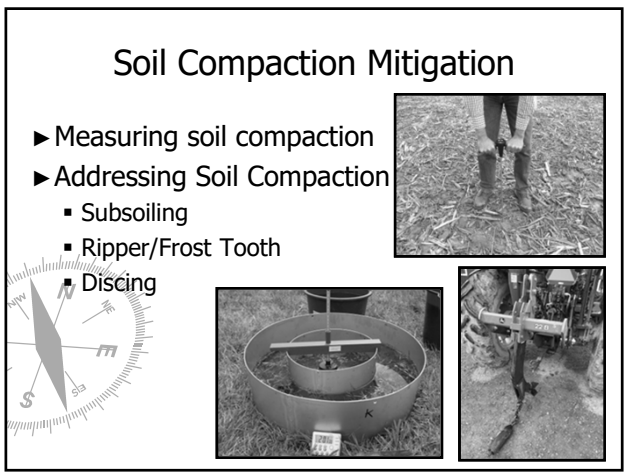

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Effects of not addressing soil compaction

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Stormwater Runoff/Diversion

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Cost Savings Through Proper Project Sequencing

- Requires understanding of construction processes
- Get it right the first time
- Inspect the site before contractors leave

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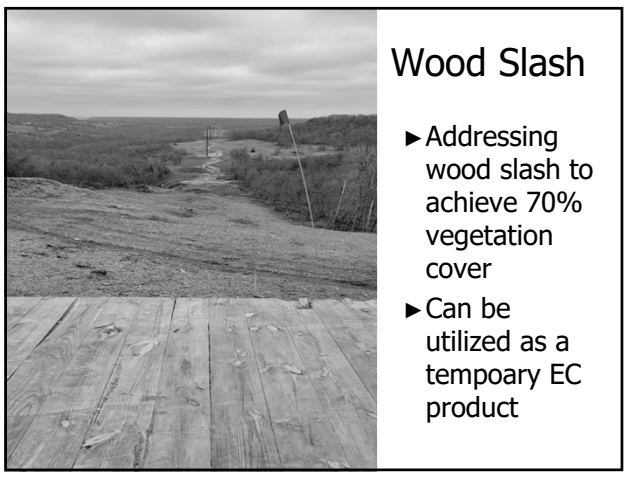

Wood Slash

- Addressing wood slash to achieve 70% vegetation cover
- Can be utilized as a tempoary EC product

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Soil Impacts

- Compaction
  - Erosion
  - Poor Infiltration
  - Loss of porosity
  - Invasive Species (soil disturbance)
  - Poor vegetation establishment
- Biological soil health
- Soil Quality (stockpiled topsoil)

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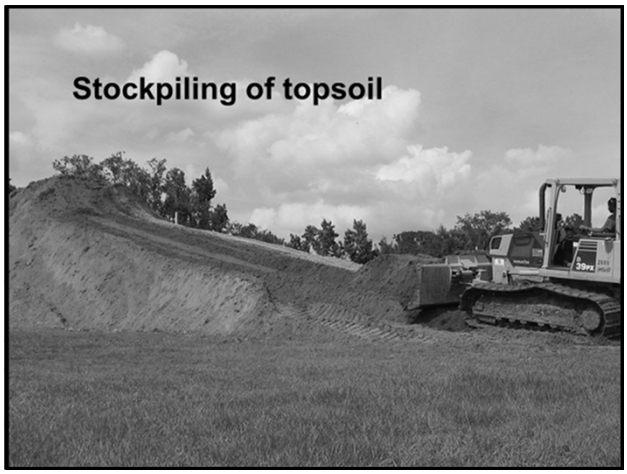

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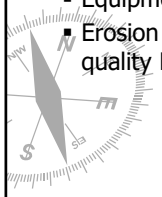
Invasive Species

- Site history – what was growing on the site prior to the start of the project?
- Vectoring of invasive species
  - Equipment (time to clean equipment?)
  - Erosion Control Product (time to acquire higher quality EC products?)



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Tread Lightly during vegetation establishment phase.

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Vegetation Impacts

- The Vegetation and Erosion Control Plan must be flexible
- Understanding phenology of target plant species
- Climate change (windows are changing)
- Inspections and maintenance considerations
- Misconceptions about using native vegetation to alleviate soil compaction
- Contingency Plans

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Seed Selections

- Communicate the importance of strict adherence to seed specifications to all contractors and subs.
- Time to acquire high-quality seed?
- QA/QC - Time to verify seed specs are being followed?

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- Stabilize the site but think about what comes next….

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Lean in…
and Think
Outside the Box.

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Polymer…the great equalizer

- Buys time
- Inexpensive
- Alleviates need for ECM installation and then removal later
- Binds seed to the soil
- Retains soil moisture (increases seed germination rates)
- Reduces soil erosion

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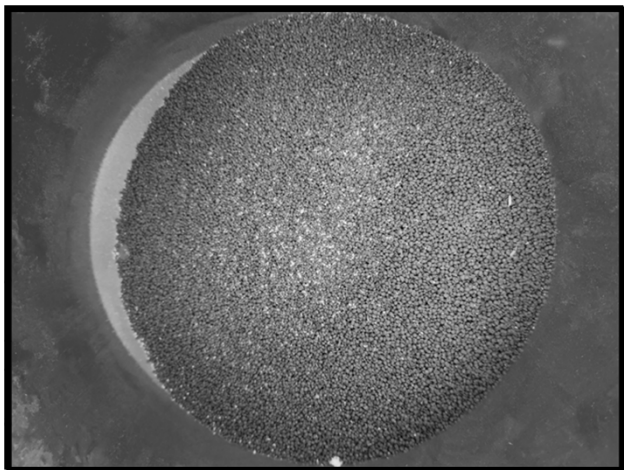

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Temporary Cover Crops

- Rapid vegetation establishment is the best erosion control practice.
- Seed cover crops immediately (seed early and often on smaller sites).
- Add polymer on slopes, channelized flow/sheet flow
- Fast-establishing annual cool season species
  - Oats for growing season – best in spring. Will not overwinter
  - Annual rye for end-of-season or dormant season
  - Avoid wheat/triticale if natives are to be seeded

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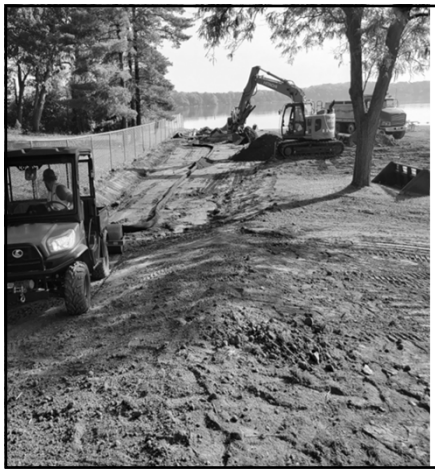

Don't wait until construction is complete to seed temporary cover crop

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Nurse (companion) Crops

- Planted with target seed mix
- Rapid root development of annual cover crop species paves the way for permanent cover species.
- Nurse crop species can fill niches otherwise filled by shallow-rooted non-native invasive species (NNIS).

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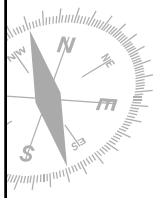
Questions?

Thank you for your attention.



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