

COVERING BMPs

- REDUCE EROSION BY STABILIZING EXPOSED SOILS IN DISTURBED AREAS
- PROVIDES IMMEDIATE TEMPORARY OR PERMANENT PROTECTION FROM EROSION.



1

CATEGORIES OF COVERING BMPs



Hydraulically Applied



Hand Dispersed, Equipment Applied and Blown

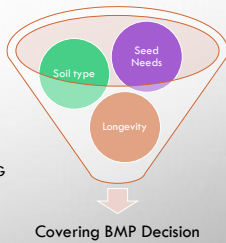


Rolled Erosion Control products (RECPs)

2

CONSIDERATIONS FOR WHAT COVERING BMP TO APPLY

- PROJECT SIZE – ½ ACRE THRESHOLD
- WILDLIFE INFLUENCE
- SLOPE AND SURFACE PREP
- TIME OF YEAR
- SHORT TERM OR LONG TERM COVERING
- SHEER STRESS



3



ANIMAL AND WILDLIFE IMPACTS ON BMP SELECTION AND USE

4



SITE PREP SURFACE ROUGHENING

5



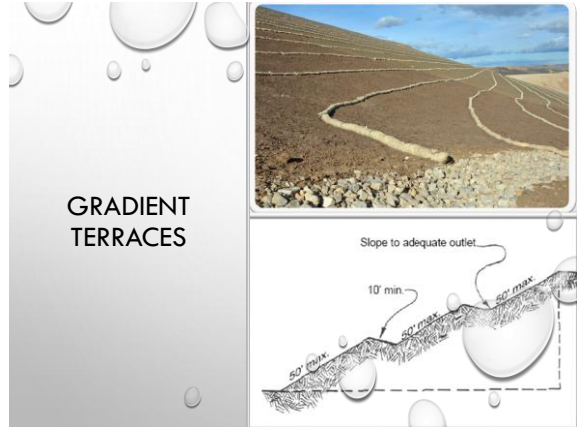
IMPORTANCE OF SLOPE PREP

6



SHEEPS-FOOT ROLLER

7

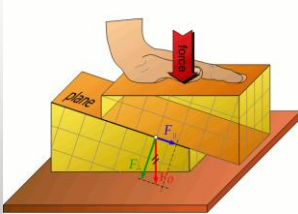


GRADIENT TERRACES

8

SHEER STRESS

Shear stress, force tending to cause deformation of a material by slippage along a plane or planes parallel to the imposed **stress**.



9

COVER AND STABILIZE

DEPENDING ON THE GEOGRAPHIC LOCATION OF THE PROJECT, THE PERMITTEE MUST NOT ALLOW SOILS TO REMAIN EXPOSED AND UNWORKED FOR MORE THAN THE TIME PERIODS SET FORTH BELOW TO PREVENT EROSION:

WEST OF THE CASCADE MOUNTAINS CREST

- DURING THE DRY SEASON (MAY 1 - SEPT. 30): 7 DAYS
- DURING THE WET SEASON (OCTOBER 1 - APRIL 30): 2 DAYS

EAST OF THE CASCADE MOUNTAINS CREST, EXCEPT FOR CENTRAL BASIN*

- DURING THE DRY SEASON (JULY 1 - SEPTEMBER 30): 10 DAYS
- DURING THE WET SEASON (OCTOBER 1 - JUNE 30): 5 DAYS

10



STOCKPILE MANAGEMENT

11



HYDRAULICALLY APPLIED EROSION CONTROL

12

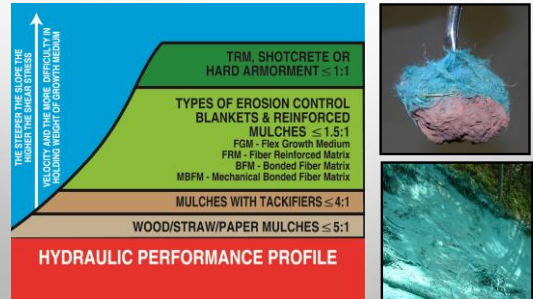
DUST SUPPRESSION TACKIFIERS

- POLYACRYLAMIDE (PAM)
- GUAR
- LIGNOSULFONATE



13

NOT ALL "HYDROSEED" PRODUCTS ARE EQUAL



14

WHAT IS YOUR FUNCTIONAL OBJECTIVE?

EROSION CONTROL

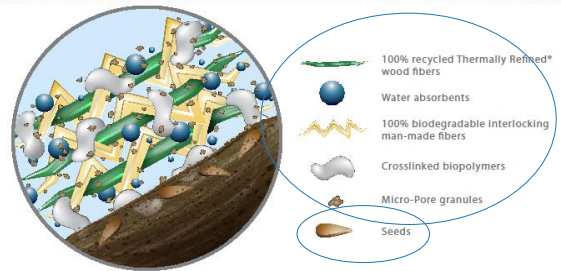


RE-VEGETATION



15

HYDRAULIC EROSION CONTROL



longterra flex systems

16

Approximate Installation Costs

| Category | Appl. Rate (lbs/Acre) | Installation Cost (\$/sq.ft.) | Functional Longevity | % Effectiveness |
|----------------------|-----------------------|-------------------------------|--------------------------|-----------------|
| Dry Applied Straw | 2,000 - 3,000 | \$0.02- 0.04 | 3-6 months (if in place) | 15 - 40% |
| Pelletized | 1,500- 2,500 | \$0.03- 0.05 | 3 - 6 months | 40 - 50% |
| Base Hydraulic Mulch | 1,500 - 2,000 | \$0.03- 0.06 | < 3 months | 50 - 65% |
| Terra-Matrix SMM | 2,000 - 3,500 | \$0.07 - 0.10 | 3 - 6 months | 85 - 90% |
| Hydro-Blanket BFM | 3,000 - 4,000 | \$0.09 - 0.11 | 6 - 12 months | 90 - 95% |
| Flexterra FGM | 3,000 - 4,000 | \$0.11 - 0.16 | 12 - 18 months | 99.9% |
| CocoFlex ET-FGM | 3,000 - 4,000 | \$0.15 - 0.20 | 18 - 24 months | 99.99 % |

17



LONGEVITY

18

APPLICATION

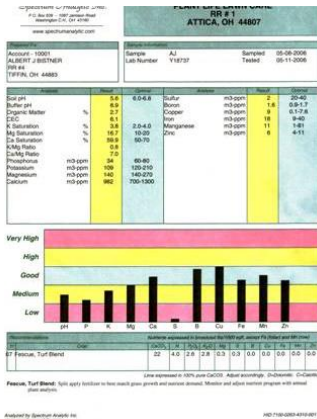


19



HOW TO REVEGETATE DIFFICULT SOILS

20



THE VALUE OF SOIL TESTING

- INCREASES SUCCESS RATE OF RE-VEGETATION BY 80%.
- ALLOWS THE CORRECT SEED MIXES BASED ON ISSUES OR STRENGTH OF SOIL CHEMISTRY
- CAN RESULT IN SUBSTANTIAL SAVINGS
- VERY INEXPENSIVE OR FREE TO PERFORM



21

TOP SOILING



22



COMPOST BLANKET

23

CATEGORIES OF COMPOST

- SIZES
 - FINE
 - COARSE/MEDIUM
 - "OVERS"
- TYPES
 - GREEN
 - Green:** Nitrogen-Rich Material, microbes' protein building block.
 - Home Examples:** Kitchen Scraps, freshly fallen leaves/grass clippings, leafy weeds, hair (human and pets), coffee grounds, green garden trimmings.
 - Commercial Examples:** Landscaping wastes and yard waste carts
 - BROWN
 - Brown:** Carbon-Rich Material feeds the microbes. Think of mature/processed/dried plant material.
 - Home Examples:** Old leaves (not fresh), cardboard, shredded newspaper, dried grass clippings, straw, paper towels, brown paper bags.
 - Commercial Examples:** Yard waste cart and restaurant wastes
 - BLACK
 - Black:** Injecting a layer of microbes to speed the compost process.
 - Home Examples:** A shovel of garden soil, finished compost, composted animal manure.
 - Commercial Examples:** Biosolid Incorporation

24



COMPOST
"TEA"

25



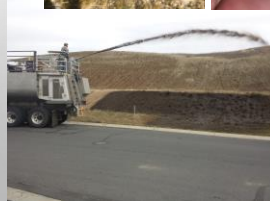
26

PROGANICS™ BIOTIC SOIL MEDIA™
(BSM)

TWO TANK LOADS OF PROGANICS PROVIDES THE SAME AMOUNT OF ORGANIC AND SOIL-BUILDING COMPONENTS AS 36 TRUCKLOADS OF QUALITY TOPSOIL

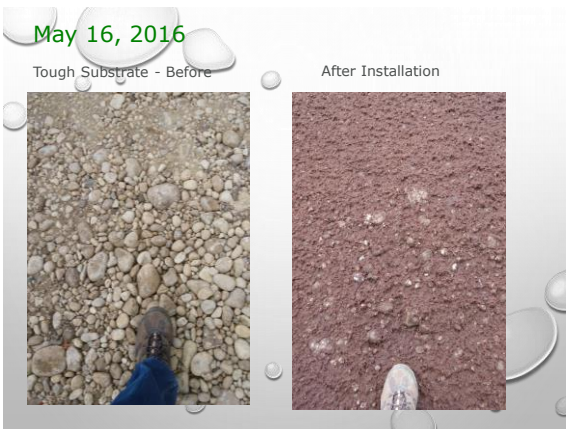


27



SPRAY
APPLIED SOIL
AMENDMENT

28



29



30



Post Installation July 13, 2016

31



December 12, 2016

32

WHAT TO KNOW

- SOIL TEST
- ACREAGE
- ACCESS TO WATER
- NO SEED OR SEED (\$20/LB - \$200/LB)
- LONGEVITY
- GERMINATION WINDOWS

33

HAND APPLIED OR BLOWN MULCH

| | Hand/ Equipment Applied | Blown |
|---------------------------|-------------------------|-------|
| Sodding | ✓ | |
| Straw | ✓ | ✓ |
| Wood Straw | ✓ | |
| Compost Blanket | | ✓ |
| Hog Fuel/Chipped Material | ✓ | ✓ |

34



SODDING BMP

35



STRAW MULCH

36



37



HOG FUEL OR CHIPPED MATERIAL

38

IMPORTANT NOTES FOR MULCHING

- ✓ Seeding windows
- 🧪 Seed type, mix ratio, mulch base, fertilizer, bonding agent, etc.
- ✗ Thickness – 2 inch min, increase thickness until 95% covered

39



RECP
NETS, MATS AND BLANKETS

40

TEMPORARY VS PERMANENT

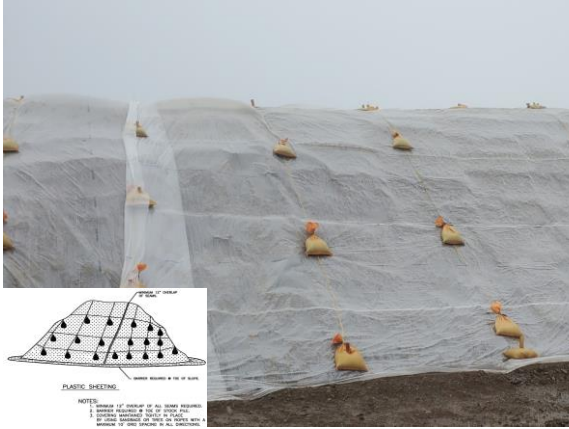
| | |
|---|---|
| <p>TEMPORARY</p> <ul style="list-style-type: none"> • BIODEGRADES • EROSION PROTECTION ON SLOPES AND CHANNELS <div style="background-color: #007bff; color: white; padding: 5px; margin-top: 10px;"> <p>How long does it need to last? How much thermal protection for the seed? Will there be sheer velocities over the face of the slope or in channel?</p> </div> | <p>PERMANENT</p> <ul style="list-style-type: none"> • MEDIA MAY BIODEGRADE BUT MESH REMAINS • PERMANENT SLOPE OR CHANNEL INTEGRITY • "GREENSCAPING" OR "SOFT INFRASTRUCTURE" • ALTERNATIVE TO CONCRETE REINFORCEMENT |
|---|---|

41



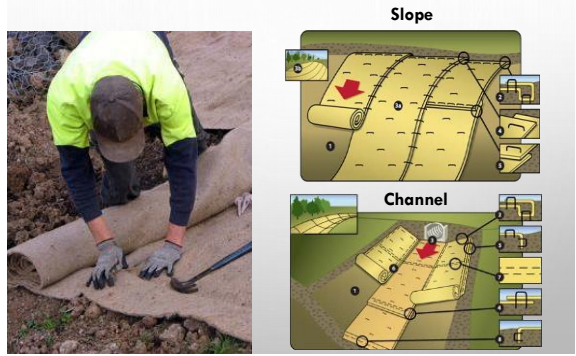
PLASTIC COVERING

42



43

RECP INSTALLATION



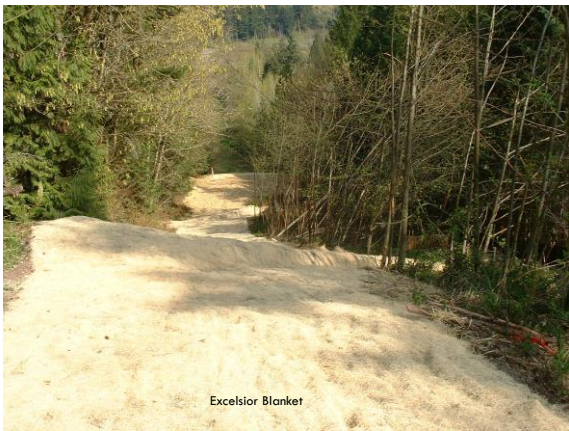
44



45



46



47



48



49



TURF
REINFORCEMENT
MATS (TRM)

50



IMPORTANT
NOTES FOR
PLASTIC,
MATS, NETS
AND
BLANKETS

- KEEP MAT IN DIRECT CONTACT WITH SOIL SURFACE (STAPLES WORK WELL)
- KEY IN AT THE TOP OF THE SLOPE
- OVERLAP SIDE EDGES IF USING MULTIPLE SECTIONS
- OVERLAP UP-SLOPE BLANKETS OVER DOWN-SLOPE (LIKE SHINGLES ON A ROOF)
- ALWAYS PLACE MATS PARALLEL TO FLOW DIRECTION

51



COMPLETION OF SECTION 4
More BMPs to Come

52