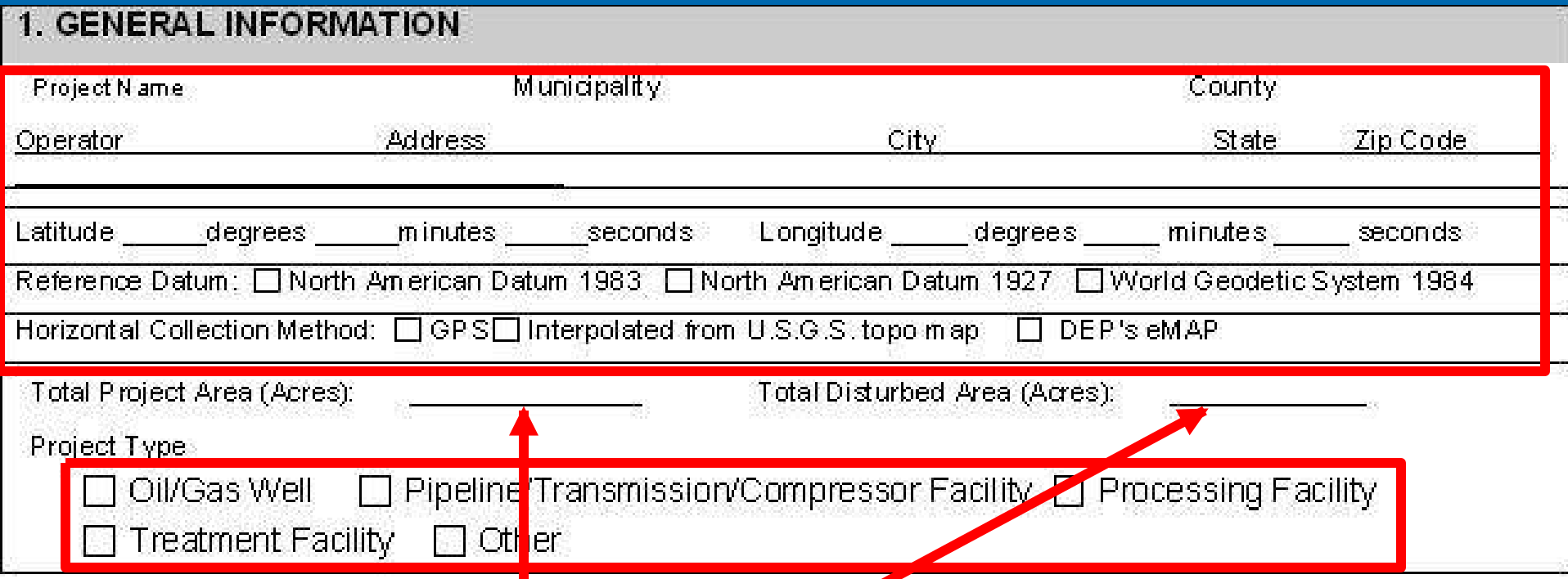
# THE EROSION & SEDIMENT CONTROL MODEL PLAN

- For Oil & Gas Operations

# SECTION 1. GENERAL INFO



1. GENERAL INFORMATION

Project Name Municipality County

Operator Address City State Zip Code

Latitude _____ degrees _____ minutes _____ seconds Longitude _____ degrees _____ minutes _____ seconds

Reference Datum: ☐ North American Datum 1983 ☐ North American Datum 1927 ☐ World Geodetic System 1984

Horizontal Collection Method: ☐ GPS ☐ Interpolated from U.S.G.S. topo map ☐ DEP's eMAP

Total Project Area (Acres): _____ Total Disturbed Area (Acres): _____

Project Type

☐ Oil/Gas Well ☐ Pipeline/Transmission/Compressor Facility ☐ Processing Facility

☐ Treatment Facility ☐ Other

- Provide the requested information
- Total project acres may not be < disturbed acres
- Check all boxes that apply

# SECTION 1.B. PROJECT DESCRIPTION

**B. PROJECT DESCRIPTION**

Will the earth disturbance activity encounter any coal seams? Yes ☐ No ☐ If yes, have you contacted the local DEP District Mining Office for further assistance? Yes ☐ No ☐

Provide a narrative description of the project. (Add additional sheets as necessary)

**C. RECEIVING WATERS**

All streams in Pennsylvania are classified based upon their designated and existing uses and water quality criteria. Designated uses for waters of this Commonwealth are found in 25 Pa. Code §93.9a-z at http://www.pacode.com/secure/data/025/chapter93/chap93toc.html. Existing uses of waters of this Commonwealth are found at the DEP Web site www.depweb.state.pa.us. Type the phrase "existing use" in the DEP Keyword box. The county conservation district office can also supply this information. List the bodies of water likely to receive direct runoff within or from the oil and gas earth disturbance activity.

| Name | Designated/Existing Use |
|---|---|
| | |
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- Check local mine maps or contact DEP for coal seams

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| Name | Designated/Existing Use |
|---|---|
| | |
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| | |

- Describe the nature of the project

# SECTION 1.C RECEIVING WATERS

**B. PROJECT DESCRIPTION**

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| Name | Designated/Existing Use |
|---|---|
| | |
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- **Identify the receiving streams & their designated/existing uses**

# SECTION 1.D RESPONSIBLE PARTIES

**D. RESPONSIBLE PARTIES**

Person(s) responsible for construction and maintenance of erosion and sediment control BMPs during earth disturbance activities. (NOTE: If duties are assigned to more than one party, list all others under Section 9 of this plan.)

Name _____ Phone _____

Address _____ City _____ State _____ Zip Code _____

Erosion and Sediment Control Plan prepared by:

Name _____ Phone _____

Address _____ City _____ State _____ Zip Code _____

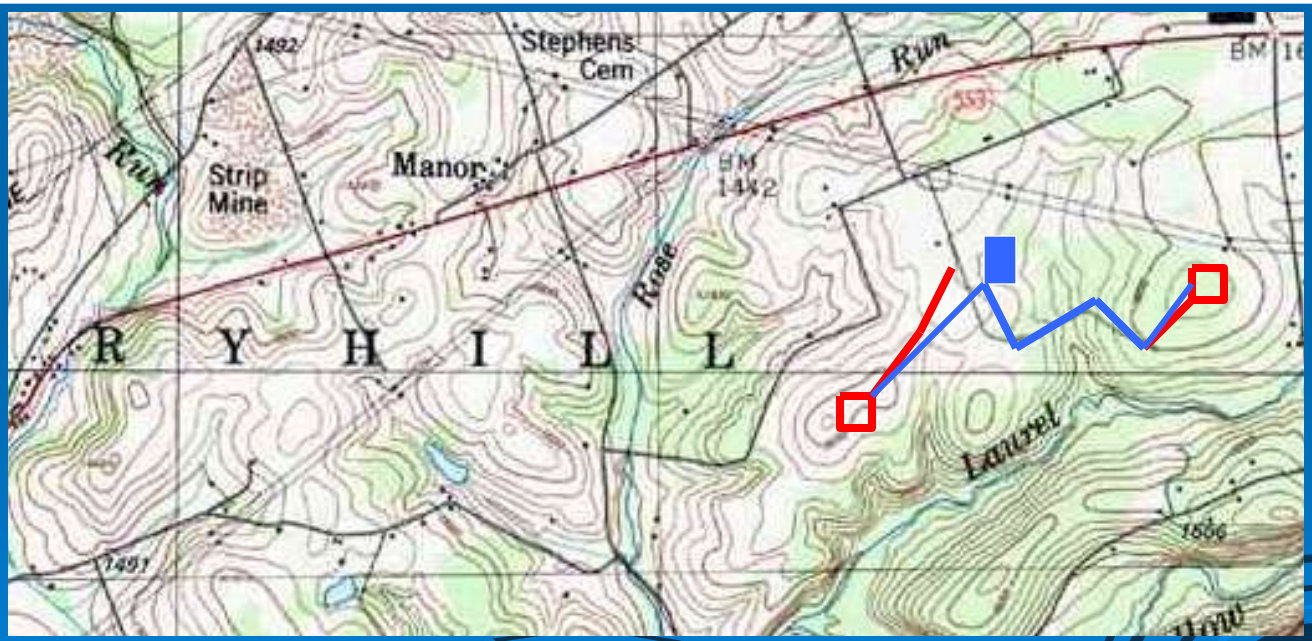
- Identify the person(s) responsible for maintenance of the E & S BMPs
- Identify the E & S plan preparer

# SECTION 2.A LOCATION MAP

**2. MAPS**

**A. LOCATION MAP**

The map must include the location of the project with respect to roadways, streams, wetlands, lakes, ponds, floodplains, type and extent of vegetation and other identifiable landmarks. A United States Geologic Service (USGS) 7.5 min. quadrangle map may be used to show the existing topographical features of the project site and the immediate surrounding area.




- A 7 ½ minute USGS Quadrangle Map is

# SECTION 2.B SOIL MAP

**B. SOIL MAP**

A soils map is attached showing the proposed site including access roads, drill pads, impoundments, and pipelines. (Soils information is available from the Natural Resource Conservation Service (NRCS) website http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx . Soils information should be addressed when determining roadway layout, pad configurations, and appropriate stabilization methods. List all soils that will be encountered and check off all limitations that apply. See Appendix B for LIMITATIONS OF PENNSYLVANIA soils pertaining to earthmoving projects and complete worksheet 1

- **A legible copy of the appropriate soil map (with site location(s) and associated roads, pits, ponds, collector & feeder lines, etc. shown) should be provided**

# SECTION 2.C PLAN MAP

**B. SOIL MAP**

A soils map is attached showing the proposed site including access roads, drill pads, impoundments, and pipelines. (Soils information is available from the Natural Resource Conservation Service (NRCS) website http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx . Soils information should be addressed when determining roadway layout, pad configurations, and appropriate stabilization methods. List all soils that will be encountered and check off all limitations that apply. See Appendix B for LIMITATIONS OF PENNSYLVANIA soils pertaining to earthmoving projects and complete worksheet 1

# SECTION 2.D STREAM & WETLAND CROSSING MAP

**D. STREAM AND WETLAND CROSSING MAP**

A legible photocopy of a USGS 7.5 min. quadrangle map showing the location of the project boundaries and all surface water crossings will be attached to the plan map. Each crossing location as well as any earth disturbance that is to occur within 50 ft of a stream channel must include the type of water obstruction and encroachment permit that is to be secured.

At all stream crossing locations, runoff must be directed to a sediment removal area, i.e., filter strip, straw bale, silt fence, sump, a trap for treatment. Waterbars and/or broad based dips should be installed and maintained as required on the approaches to the stream crossing.

Has application been made for required stream crossing permits? Yes ☐ No ☐ Not Applicable ☐


**If a USGS 7 ½ minute quad was used for the location map, these may be shown on that map**
**They may also be shown on the plan map**

# SECTION 3 – SCHEDULE & SEQUENCE OF OPERATIONS

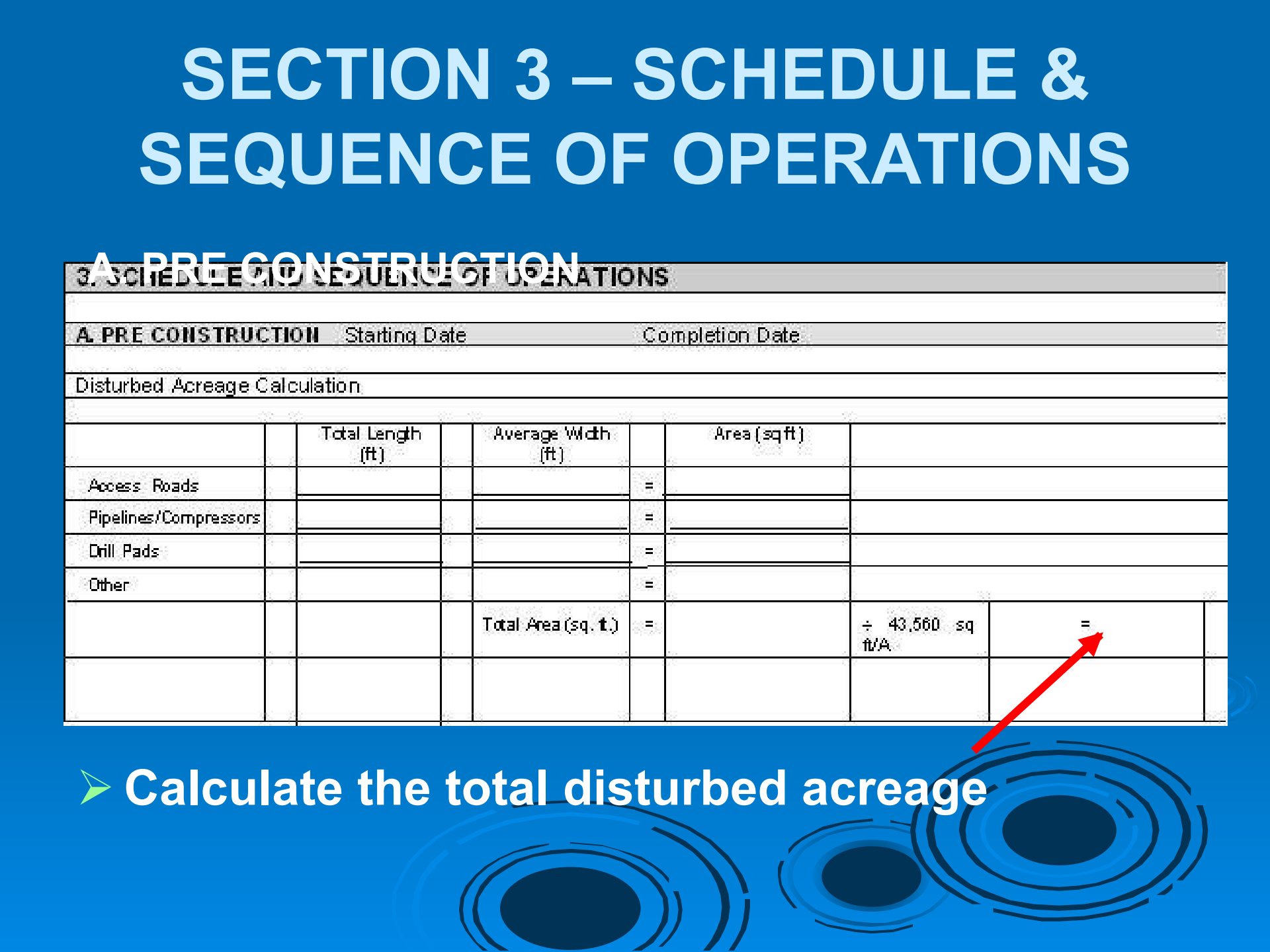
## A. PRE CONSTRUCTION

**3. SCHEDULE AND SEQUENCE OF OPERATIONS**

**A. PRE CONSTRUCTION** Starting Date Completion Date

Disturbed Acreage Calculation

| | | Total Length (ft) | | Average Width (ft) | | Area (sq ft) | | |
|---|---|---|---|---|---|---|---|---|
| Access Roads | | | | | = | | | |
| Pipelines/Compressors | | | | | = | | | |
| Drill Pads | | | | | = | | | |
| Other | | | | | = | | | |
| | | | | Total Area (sq. ft.) | = | | ÷ 43,560 sq ft/A | = |
| | | | | | | | | |



- Calculate the total disturbed acreage

# SECTION 3B – CONSTRUCTION SEQUENCE CHECKLIST

**B. SITE CONSTRUCTION/WELL DRILLING/PRODUCTION CHECKLIST**

☐ 1.) Prior to commencement of any earth disturbance activity including clearing and grubbing, the registrant shall clearly delineate sensitive areas, riparian forest buffer boundaries, areas proposed for infiltration practices, the limits of clearing, and trees that are to be conserved within the project site, and shall install appropriate barriers where equipment may not be parked, staged, operated or located for any purpose.

☐ 2) Site access – This is the first land-disturbance activity to take place at the site and should provide BMPs to minimize accelerated erosion and sedimentation from the following areas: entrance to the site, construction routes, and areas designated for equipment or other use at the site including parking, stockpiles,

☐ 3) Sediment Barriers – Install perimeter BMPs after the construction site is accessed, keeping associated clearing and grubbing limited to only that amount required for installing perimeter BMPs.

☐ 4) Upslope Diversion Channels – including outlet protection are constructed to divert upslope clean water runoff around the disturbed area (when necessary).

☐ 5) Sediment Basins and Traps – including outlet protection shall be constructed prior to the remaining clearing /grubbing and other earth disturbance activities.

☐ 6) Sediment Laden Water Channels or other Conveyance – used to divert storm water runoff water to the appropriate BMPs such as traps and ponds should be installed prior to the remaining clearing/grubbing and other earth disturbance activities.

- **Check off each block that applies**

# SECTION 3B – CONSTRUCTION SEQUENCE CHECKLIST

**B. SITE CONSTRUCTION/WELL DRILLING/PRODUCTION CHECKLIST**

☐ 7) Land Clearing and Grading – Implement clearing and grading only after all downslope E&S BMPs have been constructed and stabilized.

☐ 8) Surface Stabilization – Apply temporary or permanent stabilization measures immediately to any disturbed areas where work has reached final grade, has been delayed or otherwise temporarily suspended.

☐ 9) Construction of Buildings, Utilities, and Paving – During construction, install and maintain any additional erosion and sedimentation BMPs that may be required and implement structural post construction stormwater BMPs.

☐ 10) Final Stabilization, Topsoiling, Trees and Shrubs, After construction is completed, install stabilization BMPs including: permanent seeding, mulching and riprap, and complete implementation of stormwater BMPs in this last construction phase. Stabilize all open areas, including borrow and spoil areas, and remove all temporary BMPs and stabilize any disturbances associated with the removal of the BMP.

- **Check off each block that applies**

# SECTION 3B – CONSTRUCTION SEQUENCE CHECKLIST

- Major modifications to approved E & S Plan involving new or additional earth disturbance activity and/or addition of a discharge will require prior approval by the reviewing entity and may require submittal of a new plan
- Minor modifications to E & S Plan and Site Restoration Plan shall be noted on the plan available at the site and initialed by the appropriate Department staff
- Minor changes to the plan include:
  - Adjustments to BMPs and locations within the permitted boundary to improve environmental performance, prevent potential pollution,
  - Change in ownership or address,
  - Typographical errors
  - On-site field adjustments such as
    - **Addition or deletion of BMPs**
    - **Alteration of earth disturbance activities to address unforeseen circumstances**

# SECTION 3.C – EROSION CONTROL & STORMWATER BMPs

C. EROSION CONTROL & STORMWATER BEST MANAGEMENT PRACTICES (BMPS)

The Best Management Practices listed in this plan shall be installed and maintained in accordance with the ***Erosion and Sediment Pollution Control Manual***, No. 363-2134-008, as amended and updated and the ***Oil and Gas Operator's Manual No. 550-0300-001*** as amended and updated. The BMPs contained in this plan shall be installed as shown (or indicated) prior to earth disturbance (including clearing and grubbing) within the drainage area of the BMP in question. Appropriate BMPs shall be provided for each stage of activity (including, but not necessarily limited to, access road construction and maintenance, drilling pad, frac ponds, & pipelines). Each BMP shall be kept functional until all earth disturbances within the drainage area are completed and a minimum vegetative cover (uniform 70% coverage of perennial vegetation over the entire disturbed area) has been achieved or other suitable permanent erosion protection has been installed.

Will all erosion control and storm water BMPs be installed and maintained as specified in this plan? Yes ☐ No ☐

If no, please explain

_____

_____

_____

Will all unnecessary disturbed areas be limed, fertilized, seeded and mulched as specified in this plan? Yes ☐ No ☐

Will all unnecessary culverts and waterbars be removed as specified in this plan? Yes ☐ No ☐

Will all permanent waterbars be installed as specified in this plan? Yes ☐ No ☐

Will all unnecessary disturbed areas be regarded, smoothed, limed, fertilized, seeded and mulch as specified in this plan? Yes ☐ No ☐

- **Answer all 5 of the Yes or No questions**

# SECTION 4

**4. DESCRIPTION OF EROSION AND SEDIMENT/STORMWATER CONTROL BEST MANAGEMENT PRACTICES**

The following standard BMPs have been provided to fulfill the requirements of this plan Additional BMPS are listed in the Erosion and Sediment Pollution Control Manual as well as the Oil and Gas Operator's Manual and *the Underground Utility Line Construction BMP Manual*. BMP construction details are shown in Appendix A. If you plan to use any of these recommended BMPs, please check the appropriate boxes. If you plan to use alternative BMPs, you must provide drawings showing the details, specifications and spacing.

**A. CROSS-DRAIN CULVERT**

Culverts will be installed before the ground freezes. Culverts shall be placed with a slope of 2 to 4 percent and cross the road at a 30-degree downslope angle. Culverts will be 12" pipe or larger.

Will this BMP be used? ☐ Yes ☐ No Will recommended spacing be used? ☐ Yes ☐ No. If no, please explain

- **Cross drain culverts minimize flows in roadside ditches & convey seepages to the low side of the roadway**
- **If the recommended spacing is used, protective lining in the roadside ditches can often be avoided**

# SECTION G - ITEM 4.B WATERBARS

**B. WATERBARS**

Waterbars will be placed on pipelines and **retired** roadways according to the spacing indicated below.

Will this BMP be used? ☐ Yes ☐ No Will recommended spacing be used? ☐ Yes ☐ No

- **Waterbars are <u>not</u> recommended for active roadways**
- **They can be a very useful BMP on <u>retired</u> roadways & pipelines**
- **If the recommended size & spacing is not used, supporting calculations are required**

# SECTION G ITEM 4.C
# BROAD-BASED DIPS

**C. BROAD-BASED DIPS**

Broad-based dips will be installed and worked before the ground freezes. Broad-based dips on the road system are planned to be spaced as indicated in Appendix A.

Will this BMP be used? ☐ Yes ☐ No Will recommended spacing be used? ☐ Yes ☐ No. If no, please explain:

_____

_____

- **Broad-based dips <u>are</u> recommended for active roadways**
- **They are useful for roadway gradients ≤10%**
- **If the recommended size & spacing is not used, supporting calculations are required**

# SECTION G ITEM 4.D
# FILTER STRIPS

**D. FILTER STRIPS**

Filter strip widths vary by slope on land between roads and perennial streams.
The width of the filter strip depends on the slope between the road and the stream.

Will this BMP be used? ☐ Yes ☐ No. Will recommended spacing be used? ☐ Yes ☐ No. If no, please explain:

_____
_____
_____

- **The best filter strips are thick grassy areas**
- **Mature forests do not make good filter strips**
- **If the recommended size & spacing is not used, supporting calculations are required**

# SECTION G ITEM 4.E
# FILTER FABRIC FENCE

**E. FILTER FABRIC FENCE**

Filter fabric fence must be installed on contour at the edge of disturbed areas. Both ends of each fence section must be extended upslope at 45 degrees to the main fence alignment. They should not be installed in streams, ditches or other areas of concentrated flow. Install filter fabric fence before the ground freezes.

Will this BMP be used? ☐ Yes ☐ No

- Filter Fabric Fence = Silt Fence
- There are 3 basic types
- Installation instructions & maximum slope lengths should be followed for each type

# SECTION G ITEM 4.F TURNOUTS

**F. TURNOUTS**

Channels that drain water away from roads into well-vegetated areas are known as turnouts. Turnouts (see Appendix A) are typically located along crowned roadways where runoff cannot sheet flow off the roadway. Like ditch relief culverts, the purpose of turnouts is to minimize the volume of water in a roadside ditch. Turnouts should be located so as to take advantage of natural drainageways or buffer areas wherever possible. Where a suitable vegetative filter strip is not available, a compost filter sock, rock filter or other sediment removal BMP should be installed at the outlet of the turnout.

Will this BMP be used? ☐ Yes ☐ No

- **Turnouts minimize flows in roadside ditches along crowned roadways**
- **In some cases, they may need a rock filter at the outlet**

# SECTION G – ITEM 4.G
# ROADSIDE DITCH

**G. ROADSIDE DITCH**

In most cases, the ditches paralleling temporary access roads and haul roads need not be lined if sufficient ditch relief culverts are provided, erosion resistant soils are present, and flow velocities are less than 2 fps. However, protective liners are required for roadside ditches discharging to special protection waters, where the discharging directly to surface waters, or where necessary to prevent the erosion of the channel itself. A typical cross-section for a roadside ditch is shown in Appendix A.

Will this BMP be used? ☐ Yes ☐ No

- Roadside ditches are needed wherever insloping is used
- They are often necessary where crowned roadways are constructed as well

# SECTION G – ITEM 4.H
# CROWNED/INSLOPED ROADWAY

**H. CROWNED/INSLOPED ROADWAY**

Crowned roadways are typically installed where the topography allows for sheet flow to infiltrate into the surrounding vegetation. In situations where crowned roadways will not function properly an insloped roadway will be constructed.

Will this BMP be used? ☐ Yes ☐ No Crowned ☐ Yes ☐ No Insloped ☐ Yes ☐ N

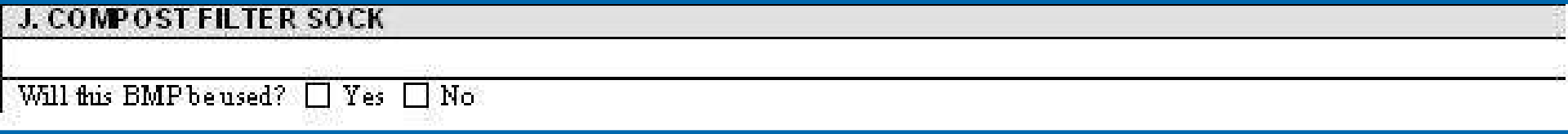
- Crowning & Insloping direct runoff from the roadway
- Crowning works best on gentler slopes
- Insloping works best on steeper slopes

# SECTION G – ITEM 4.I
# STABILIZED ROAD ENTRANCE

| I. STABILIZED ROAD ENTRANCE |
| --- |
| The purpose is to remove mud from tires and keep it off the public road. The construction entrance shall be constantly maintained. |
| Will this BMP be used? ☐ Yes ☐ No |

- Provided wherever ingress or egress to a paved or unpaved public road
- Some sweeping of the public road will likely be necessary

# SECTION G ITEM 4.J
# COMPOST FILTER SOCK


J. COMPOST FILTER SOCK

Will this BMP be used? ☐ Yes ☐ No

- Installed at same locations as silt fence
- Can be used at some locations where silt fence will not work
- Should be used in Special Protection Watersheds

# SECTION G – ITEM 4.K CHANNELS

**K. CHANNELS**

Channels are used for several purposes. Collector channels are used to collect runoff from disturbed areas and convey it to a sediment removal facility (e.g. sediment trap) prior to discharge into receiving surface waters. Diversion channels are used to divert runoff from undisturbed upslope areas and convey it around areas of earth disturbance (i.e. drill pads, impoundments, etc.). Conveyance channels are used to convey discharges from sediment traps & cross drains to receiving surface waters.

Channels should be sized to convey the calculated peak flows as calculated in the table located in Appendix A. Otherwise supporting calculations must be attached to show sufficient capacity. They should also be provided with a suitable protective liner to prevent erosion within the channel. Wherever grass is used as a protective liner, a temporary erosion control mat (e.g. rolled fiber blanket) should be firmly anchored to the bottom and sides of the channel to hold soil in place until the vegetation becomes established.

Will this BMP be used? ☐ Yes ☐ No Check all that apply:

| | | | |
|---|---|---|---|
| Temporary | ☐ Yes ☐ No | Rip-rap | ☐ Yes ☐ No |
| Permanent | ☐ Yes ☐ No | Diversion | ☐ Yes ☐ No |
| Vegetative | ☐ Yes ☐ No | Collector | ☐ Yes ☐ No |

- **Must be sized to convey peak flows from design storms**
- **Must have suitable protective liners**
- **For bed slopes > 10%, must use shear stress**

# SECTION G – ITEM 4.L
# SEDIMENT TRAPS

**L. SEDIMENT TRAPS**

Sediment traps may be used to control runoff from drainage areas up to 5.0 acres (disturbed and undisturbed). They must be sized to provide 2,000 cubic feet of total storage capacity for each acre tributary to the trap. The sediment storage zone is considered to be 700 cubic feet per acre. Outlets should be located as far from the inflow as possible. At a minimum, spillway widths should be equal to 6 feet for each acre tributary to the trap.

Will this BMP be used? ☐ Yes ☐ No

- Max tributary drainage area = 5.0 Acres
- Must be sized to provide 2,000 cu.ft. storage capacity per tributary acre
- Minimum outlet width = 6 ft./tributary acre
- Locate inflows on opposite end of trap from outlet
- Should discharge to an existing waterway

# SECTION G ITEM 4.M

**M. POST CONSTRUCTION STORMWATER/SITE RESTORATION**

Disturbed areas will be seeded and mulched as indicated below. Recommended Seed mixes may be found in Appendix A. Mulch will be applied at a rate of 3-4 tons/acre. The Department recommends that a soil test be done to determine proper soil amendment application rates for the proposed seed mixtures. Prior to seeding, soil amendments will be applied as follows:

| Soil Amendment | Type | Rate of Application* |
|---|---|---|
| Fertilizer | _____ | _____ |
| Lime | _____ | _____ |

| Area of Disturbance | Seed Mixture | Rate of Application (lb/acre) |
|---|---|---|
| Well Pads | _____ | _____ |
| Access Roads | _____ | _____ |
| Pipelines | _____ | _____ |
| Impoundments | _____ | _____ |
| Compressor Locations | _____ | _____ |
| Other | _____ | _____ |

1) *Non-Structural BMPs* which promote the treatment, infiltration, evaporation, and transpiration of stormwater runoff shall be used. ☐ **Yes** ☐ **No**

2) *Low Impact, Conservation, and Green Infrastructure Designs* shall be used to minimize the generation of runoff by preserving open space, preserving natural areas, reducing the amount of impervious surface, and other green infrastructure design principles that utilize or mimic infiltration or evapotranspiration. ☐ **Yes** ☐ **No**

3) *Infiltration practices* shall include either engineered structures or landscape features designed to capture and infiltrate runoff that mimic pre-construction conditions. ☐ **Yes** ☐ **No**

4) *Runoff practices* shall be design and constructed to convey runoff, increase evaporation, and manage rate. Such practices are to also promote infiltration, filtration, and biological uptake of pollutants. ☐ **Yes** ☐ **No**

5) *Filtration practices* shall be used to treat runoff through filter media that are designed to capture pollutants through the processes of physical filtration of solids or cation exchange of dissolved pollutants. ☐ **Yes** ☐ **No**

List the Stormwater/Site Restoration BMPs that will be used

| | | |
|---|---|---|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

# SECTION G ITEM 4.N
# EROSION CONTROL BLANKETS

**H. EROSION CONTROL BLANKETS**

Erosion control blanketing (either rolled or sprayed) shall be installed or applied for all slopes 3H:1V or steeper within 50 feet of a surface water or where soil conditions indicate blanketing is needed to achieve the required vegetative cover.

Will this BMP be used? ☐ Yes ☐ No

- All slopes 3H:1V or steeper
- Within 50 ft. of surface water
- Where soil conditions indicate blanketing is needed
  - Droughty soils
  - Poor topsoils

# SECTION G – ITEM 5
# SPECIAL PROTECTION WATERSHEDS

**5. SPECIAL PROTECTION WATERSHEDS**

Projects that are located in special protection watersheds that have a designated or existing use of high quality (HQ) or exception value (EV), or non-special protection watersheds impaired for sediment or stormwater must demonstrate that all construction and post construction discharges will not degrade the physical, chemical or biological characteristics of the surface waters. Plan preparers should utilize "non-discharge" BMPs in their E&S and PCSM Plans to the greatest extent possible. These BMPs may be found in the Post Construction Stormwater Manual and the Oil and Gas Operator's Manual. Calculations are not necessary if the approximate original contours and the preservation of the preconstruction drainage pattern and features are maintained or replicated and the disturbed areas will be revegetated or stabilized with pervious material. In addition stormwater BMPs will be employed that use natural measures, do not require extensive construction and maintenance, promote pollutant reduction and are capable of controlling the stormwater runoff from a 2-year/ 24-hour storm event and the net increase of stormwater is infiltrated or dissipated away from the waters of the Commonwealth.

a. Will there be a net increase in accelerated erosion and sedimentation from the construction runoff? ☐ **Yes** ☐ **No**

b. Does the post construction runoff volume equal pre-construction runoff volume for the 2-year/24-hour storm?
☐ **Yes** ☐ **No**

c. Does the rate of post-construction stormwater equal pre-construction runoff rate for the 2, 5, 10, 25, 50 and 100 year storm events? ☐ **Yes** ☐ **No**

d. Is the project located in a Special Protection Watershed? ☐ Yes ☐ No. If yes, provide a detailed description of how the post-construction stormwater runoff will be managed.

List the Post Construction Stormwater BMPs that will be used

# SECTION G – ITEM 6
# MAINTENANCE

| 6. MAINTENANCE |
| --- |
| BMPs will be inspected on a weekly basis and after each measurable rainfall event dring the active construction/drilling phase of the project. ☐ Yes ☐ No |
| Culverts will be cleaned out, repaired or replaced as necessary. ☐ Yes ☐ No |
| Filter strips will be maintained and respected (timber may be harvested in filter strips). ☐ Yes ☐ No |
| Earth Disturbance areas will be repaired where signs of accelerated erosion are detected. ☐ Yes ☐ No |
| Seeding and mulching will be repeated in those areas that appear to be failing or have failed. ☐ Yes ☐ No |
| Other (describe) |

- **Measurable rainfall = runoff event**
- **Other = all proposed BMPs not listed above**

# SECTION G – ITEM 7
# SITE CLEANUP

**7. SITE CLEANUP**

Describe procedures which ensure the proper handling, storage, control, disposal and recycling of well drilling and waste, including but not limited to fuels, oil, lubricants and other materials brought to the site or used in the process of drilling.

☐ Garbage, fuels or any substance harmful to human, aquatic or fish life, will be prevented from entering springs, streams, ponds, lakes, wetlands or any water course or water body.

☐ Oils, fuels, lubricants and coolants will be placed in suitable containers and disposed properly.

☐ All trash and garbage will be collected and disposed properly.

☐ Other (describe).

- **Check all boxes that apply**

# SECTION G – ITEM 8
# SITE CLEANUP

| 8. ADDITIONAL EXPLANATION/COMMENTS (if needed) |
| --- |
| |
| |
| |
| |
| |

- Use this section to provide needed info not provided elsewhere

# SECTION G – ITEM 9
# SITE CLEANUP

## 9. CERTIFICATION BY PERSON PREPARING APPLICATION

I do hereby certify to the best of my knowledge, information and belief, that the Erosion and Sediment Control Plan and Site Restoration/ Stormwater Management Plan are true and correct, represent actual field conditions and are in accordance with the 25 Pa. Code Chapters 78 and 102 of the Department's rules and regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

| Print Name | Signature |
|---|---|
| Company | |
| Address | |
| Phone | |

EXPEDITED REVIEW PROCESS

In addition to the certification required above applicants using the expedited permit review process must attach an E&S and Site Restoration Plan developed and sealed by a licensed professional engineer, surveyor or professional geologist, The plans shall both contain the following certification:

*I do hereby certify to the best of my knowledge, information and belief, that the Erosion and Sediment Control and Site Restoration Plan are true and correct, represent actual field conditions and are in accordance with the 25 Pa. Code Chapters 78 and 102 of the Department's rules and regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

- Use the block to provide a professional seal
- Additional certification is needed for an expedited review

# SECTION H
# APPLICANT CERTIFICATION

## SECTION H. APPLICANT CERTIFICATION

Applicant Certification. I certify under penalty of law that this document and all attachments were prepared by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. The responsible official's signature also verifies that the activity is eligible to participate in the permit, and that the applicant agrees to abide by the terms and conditions of the permit. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

| | |
|---|---|
| _____ | _____ |
| Print Name and Title of Applicant | Print Name and Title of Co-Applicant (if applicable) |
| _____ | _____ |
| Signature of Applicant | Signature of Co-Applicant |
| _____ | _____ |
| Date Application Signed | Date Application Signed |

Notarization

Sworn to and subscribed to before me this

_____ day of _____, 20_____

Commonwealth of Pennsylvania

County of _____

_____

Notary Public

My Commission expires _____

NAME, ADDRESS AND PHONE NUMBER OF INDIVIDUAL TO BE CONTACTED IF ADDITIONAL INFORMATION IS REQUIRED

Name

Address

Phone

# APPENDIX A
# CROSS DRAIN CULVERTS

**BMP CONSTRUCTION DETAILS**

A. Cross Drain Culverts

Sizing and Spacing* of Cross Drain Culverts for Temporary Access Roads

| Road Grade (%) | Culvert Spacing* (ft) | Length of Upslope Drainage (ft) | | | | |
|---|---|---|---|---|---|---|
| | | < 300 | 300 – 400 | 400 – 500 | 500 – 600 | >600 |
| | | Minimum Culvert Size (in) | | | | |
| 2 | 300 | 12 | 15 | 15 | 15 | 18 |
| 3 | 235 | 12 | 15 | 15 | 15 | 18 |
| 4 | 200 | 12 | 15 | 15 | 15 | 18 |
| 5 | 180 | 12 | 12 | 15 | 15 | 15 |
| 6 | 165 | 12 | 12 | 12 | 15 | 15 |
| 7 | 155 | 12 | 12 | 12 | 12 | 15 |
| 8 | 150 | 12 | 12 | 12 | 12 | 15 |
| 9 | 145 | 12 | 12 | 12 | 12 | 15 |
| 10 | 140 | 12 | 12 | 12 | 12 | 15 |
| 12 | 135 | 12 | 12 | 12 | 12 | 15 |

- No pipe diameters <12”
- Longer spacing or smaller pipes require supporting calculations

# APPENDIX A
# CROSS DRAIN CULVERTS

**Maximum Spacing* of Cross Drain Culverts (18" dia. CMP) For Permanent Access Roads**

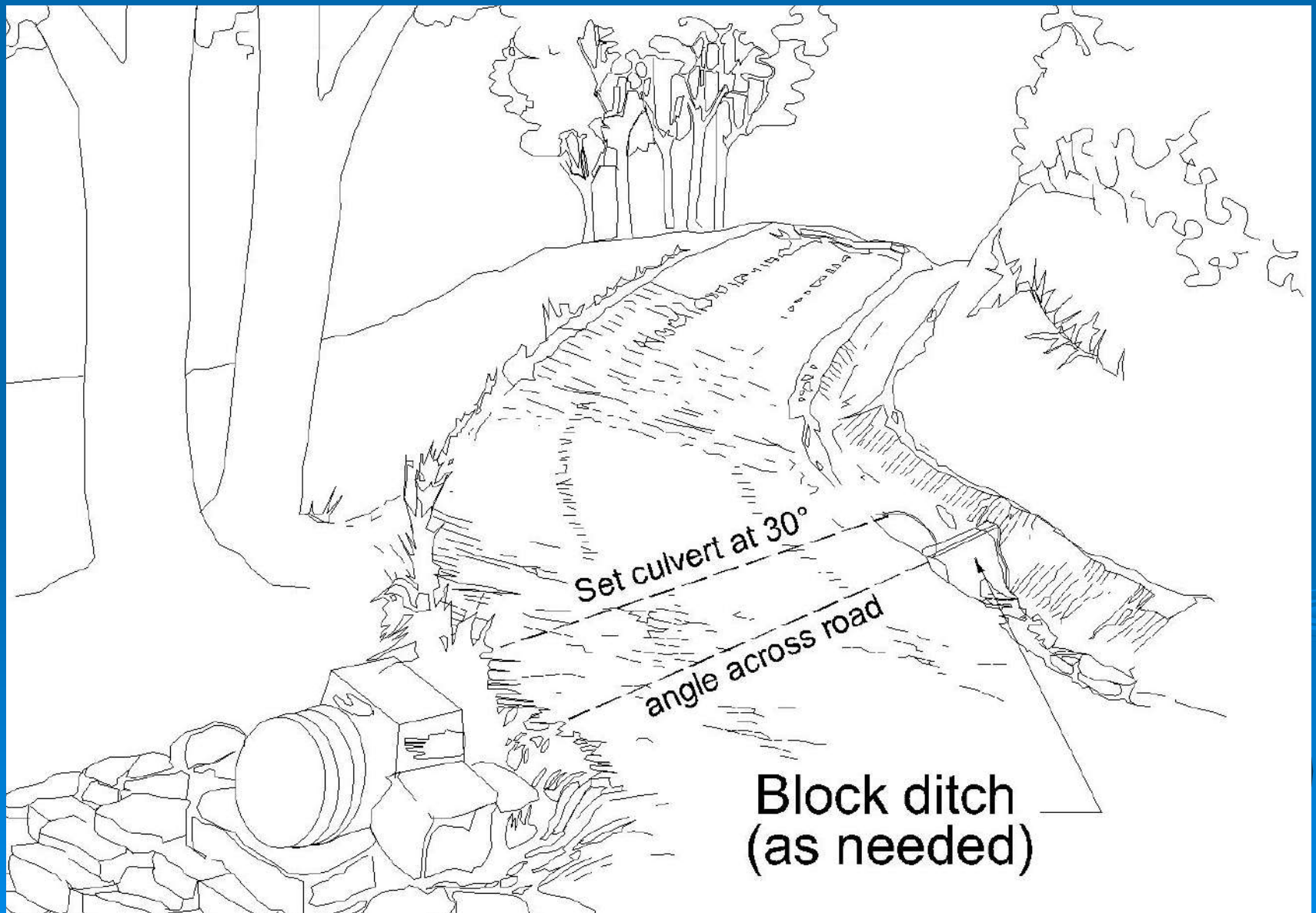
| Road Grade | Soil Type in Ditch | | | | |
|---|---|---|---|---|---|
| | Gravels, Sandy Gravels, Aggregate Surfacing | Silty Gravels, Clayey Gravels | Plastic and Nonplastic Inorganic Clays | Inorganic Silts, Silty or Clayey Sands | Sands, Silty Sands, and Gravelly Sands |
| Percent | Feet | | | | |
| 2 | 390 | 315 | 245 | 170 | 95 |
| 4 | 335 | 275 | 210 | 145 | 85 |
| 6 | 285 | 230 | 180 | 125 | 75 |
| 8 | 240 | 195 | 150 | 105 | 65 |
| 10 | 200 | 160 | 125 | 90 | 55 |
| 12 | 160 | 130 | 105 | 75 | 45 |
| 14 | 135 | 110 | 85 | 60 | 35 |

*Spacing may be adjusted slightly to take advantage of natural drainage-ways.
R-4 (Min.) Riprap protection will be provided at all outfalls.
At all stream crossing locations, runoff must be directed to a sediment removal area, i.e., filter strip, straw bale, silt fence, sump, or trap for treatment. Waterbars and/or broad based dips should be installed and maintained as required on the approaches to the stream crossing.

- **18" diameter pipes**
- **Longer spacing or smaller pipes require supporting calculations**

# APPENDIX A
# CROSS DRAIN CULVERTS
## TYPICAL CROSS DRAIN CULVERT

# APPENDIX A
# CROSS DRAIN CULVERTS



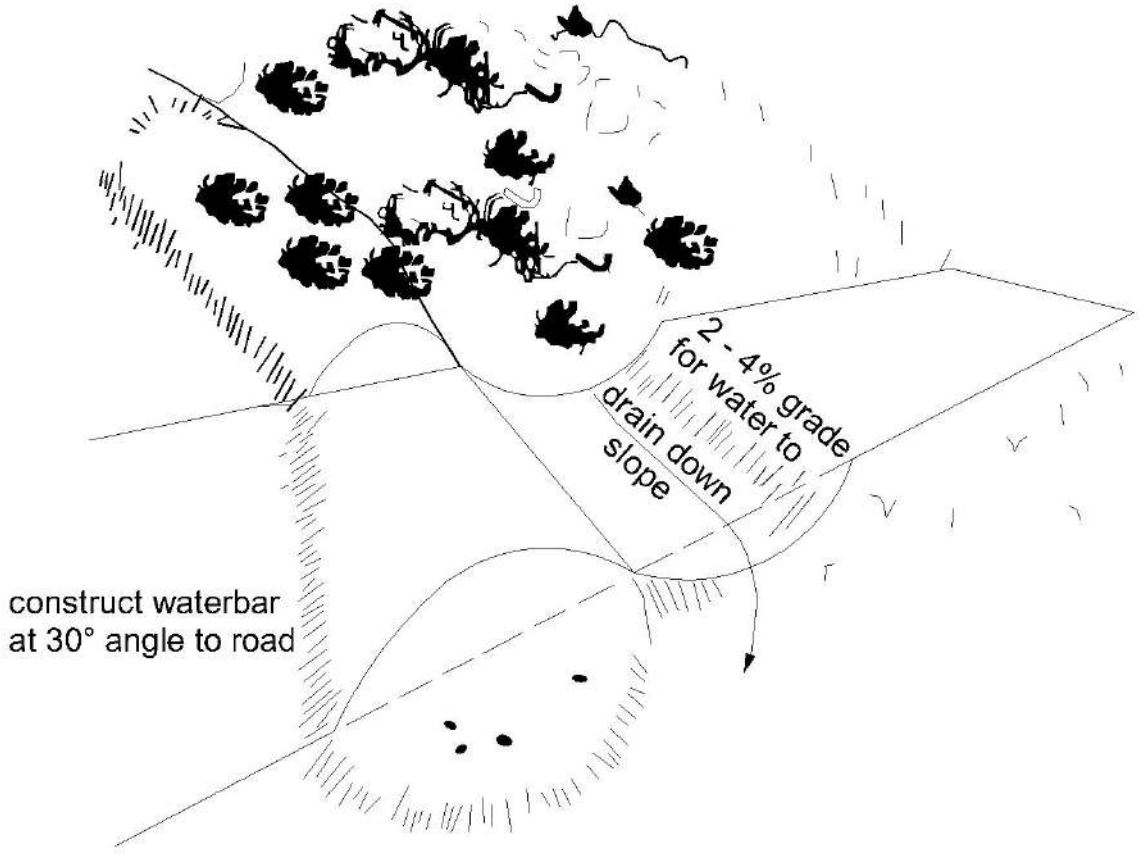
# APPENDIX A – ITEM B
# WATERBARS

- Typically used to control stormwater runoff on retired access roads & pipeline right-of-ways
- Not recommended for active access roads
  - Difficult to move equipment over them
  - Need for continual maintenance due to damage from traffic
- Waterbars will be installed before ground freezes & spaced as indicated below

| Road Grade (%) | Spacing (FT) |
|---|---|
| 2 | 250 |
| 5 | 135 |
| 10 | 80 |
| 15 | 60 |
| 20 | 45 |
| 25 | 40 |
| 30 | 35 |
| 40 | 30 |

# APPENDIX A – ITEM B
# WATERBARS

## TYPICAL WATERBAR



# APPENDIX A – ITEM B
# WATERBARS

## TYPICAL WATERBAR

ıd grade

8-12"
Min. *

* Increa
for hea

# APPENDIX A – ITEM C
# BROAD-BASED DIPS

- May be used to direct runoff from active access roads to well-vegetated areas or sediment removal BMPs (e.g. sediment traps)
- Unlike waterbars, are easily traversed by construction equipment and typically require less maintenance to ensure integrity
- Due to their nature, they should not be constructed on roads with grades exceeding 10%
  - For access roads that exceed 10% gradients, use insloping

RECOMMENDED BROAD-BASED DIP SPACING

| Road Grade (% Slope) | Recommended Spacing (feet) | Alternative Spacing* (feet) |
|---|---|---|
| 2 | 300 | |
| 3 | 250 | |
| 4 | 200 | |
| 5 | 180 | |
| 6 | 170 | |
| 7 | 160 | |
| 8 | 150 | |
| 9-10 | 140 | |

# APPENDIX A – ITEM C
# BROAD-BASED DIPS

## TYPICAL BROAD-BASED DIP

# APPENDIX A – ITEM D
# FILTER STRIPS

| Slope of Land Between Road and Stream (%) | Minimum width of Filter Strip (feet) + |
|---|---|
| 025++ | |
| 1045++ | |
| 2065 | |
| 3085 | |
| 40 | 105 |
| 50 | 125 |
| 60 | 145 |
| 70 | 165 |

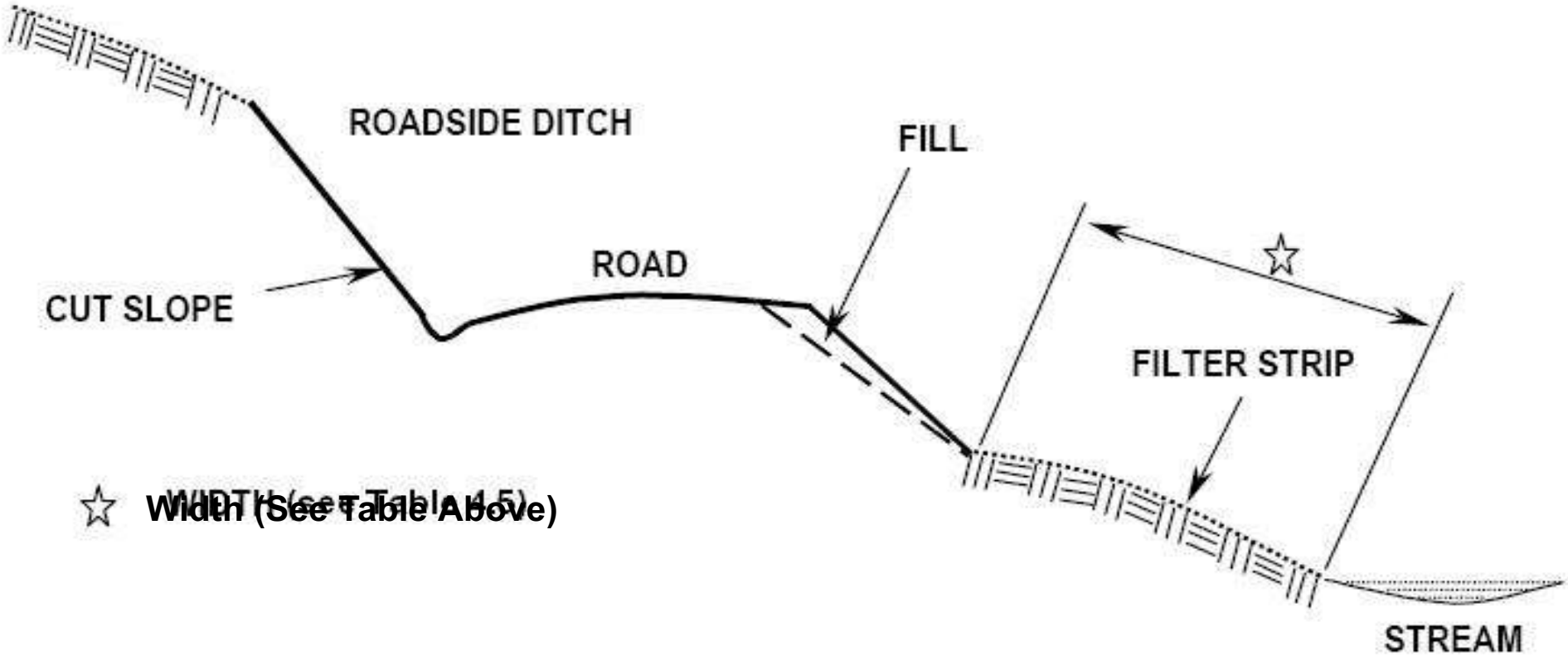
+Widths should be doubled when the earth disturbance activity is located where receiving waters have a designated use/existing use of High Quality or Exceptional Value or within a municipal water supply, source water area.

++Earth disturbance 50 feet or less from the top of the stream bank (absent evidence to the contrary) requires a water obstruction and encroachment permit from the appropriate DEP Oil and Gas Management Program or Conservation District.

# APPENDIX A – ITEM D
# FILTER STRIPS

# APPENDIX A – ITEM D
# FILTER STRIPS

## Vegetative Filter Strip




☆ **Width (See Table Above)**

# APPENDIX A – ITEM E
# SILT FENCE

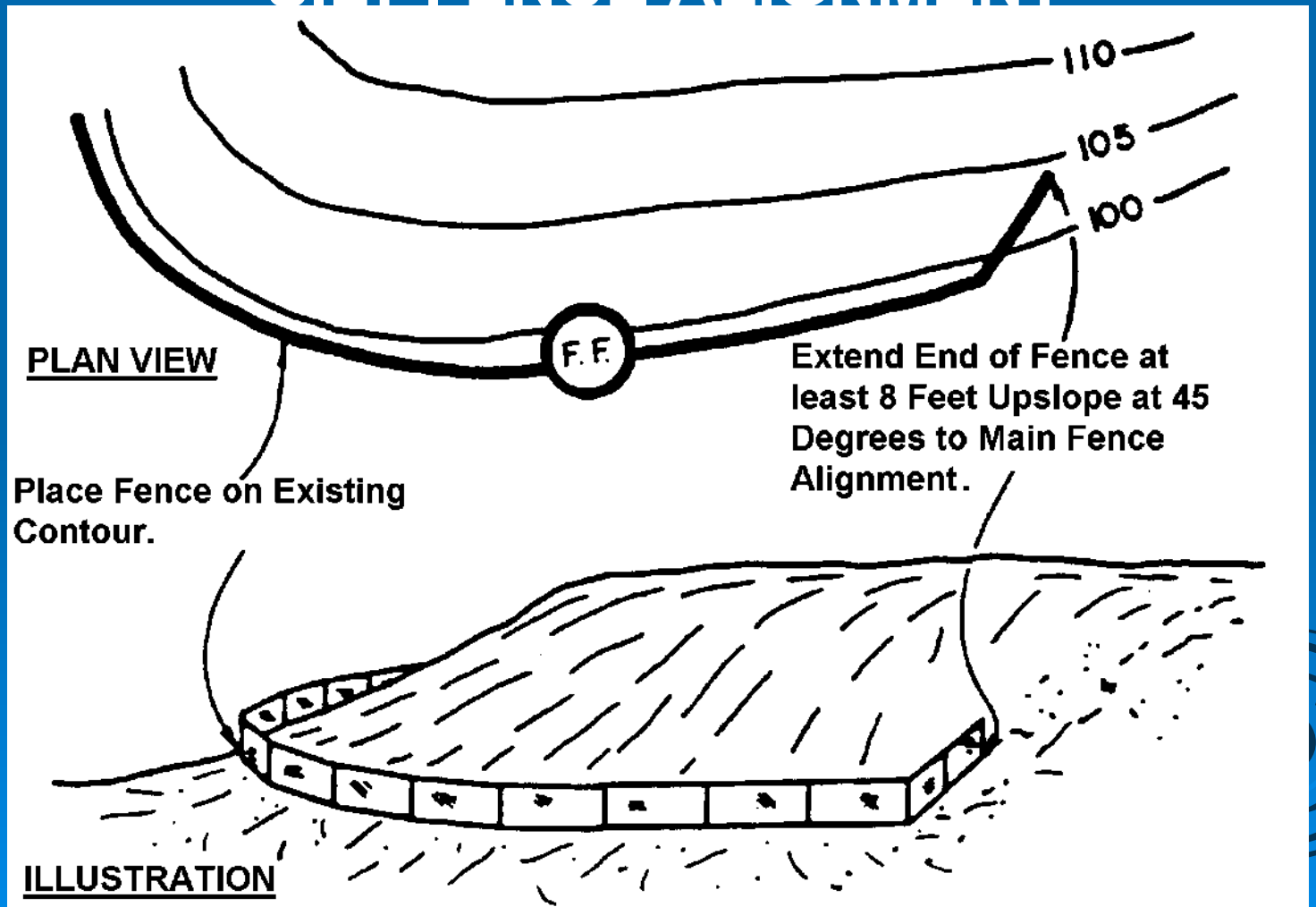
- May be used to control runoff from small disturbed areas when it is in form of sheet flow, & discharge is to stable area
- Only those fabric types specified for such use by manufacturer should be used
  - Standard Filter Fabric width shall be 30” min.
  - Reinforced and Super Filter Fabric width shall be 42” min
- Do not use in areas of concentrated flows (e.g. channels, swales, erosion gullies, across pipe outfalls, etc.

# APPENDIX A – ITEM E
# SILT FENCE

- Do not use in areas where rock or rocky soils prevent the full and uniform anchoring of fence
- Forested areas are not recommended unless tree roots can be severed during excavation of anchor trench
- Must be installed on existing level grade
- Maximum slope length above silt fence may not exceed those shown in table below

# APPENDIX A – ITEM E
# SILT FENCE

## SILT FENCE ALIGNMENT



# APPENDIX A – ITEM E
# SILT FENCE

Maximum Slope Lengths for Silt Fence

| | Maximum Slope Length (ft) Above Fence | | |
|---|---|---|---|
| Slope - Percent | Standard (18" High) Silt Fence | Reinforced (30" High) Silt Fence | Super Silt Fence |
| 2 (or less) | 150 | 500 | 1000 |
| 5 | 100 | 250 | 550 |
| 10 | 50 | 150 | 325 |
| 15 | 35 | 100 | 215 |
| 20 | 25 | 70 | 175 |
| 25 | 20 | 55 | 135 |
| 30 | 15 | 45 | 100 |
| 35 | 15 | 40 | 85 |
| 40 | 15 | 35 | 75 |
| 45 | 10 | 30 | 60 |
| 50 | 10 | 25 | 50 |

# APPENDIX A – ITEM E
# SILT FENCE

# APPENDIX A – ITEM E
# SILT FENCE
## REINFORCED SILT FENCE (30” HIGH)

# APPENDIX A – ITEM E
# SILT FENCE

## SUPER SILT FENCE

*

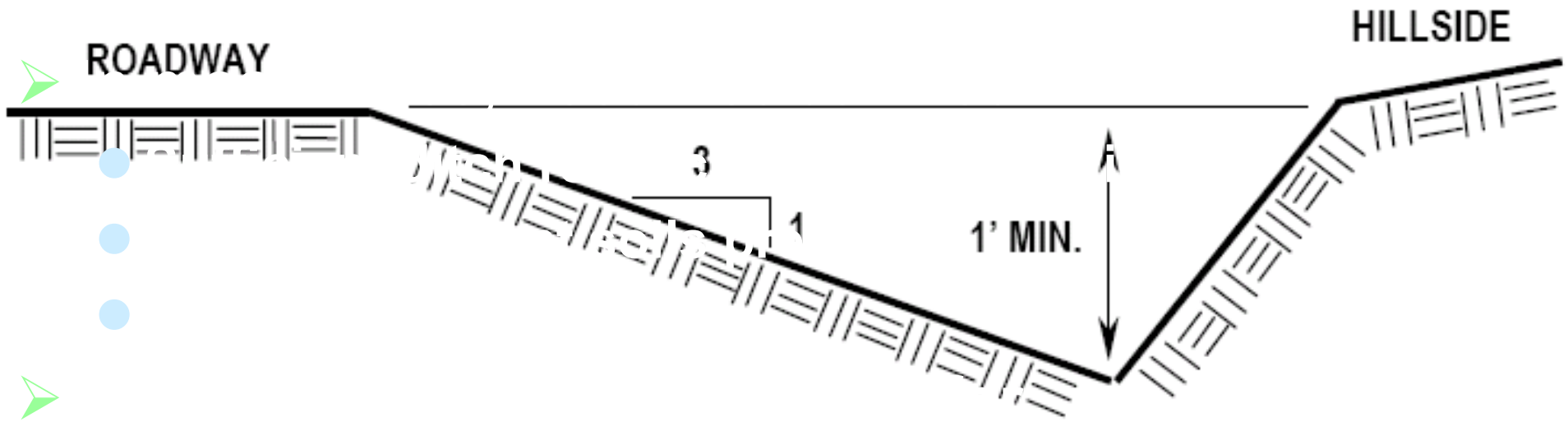
**

IZED

.5 GA.

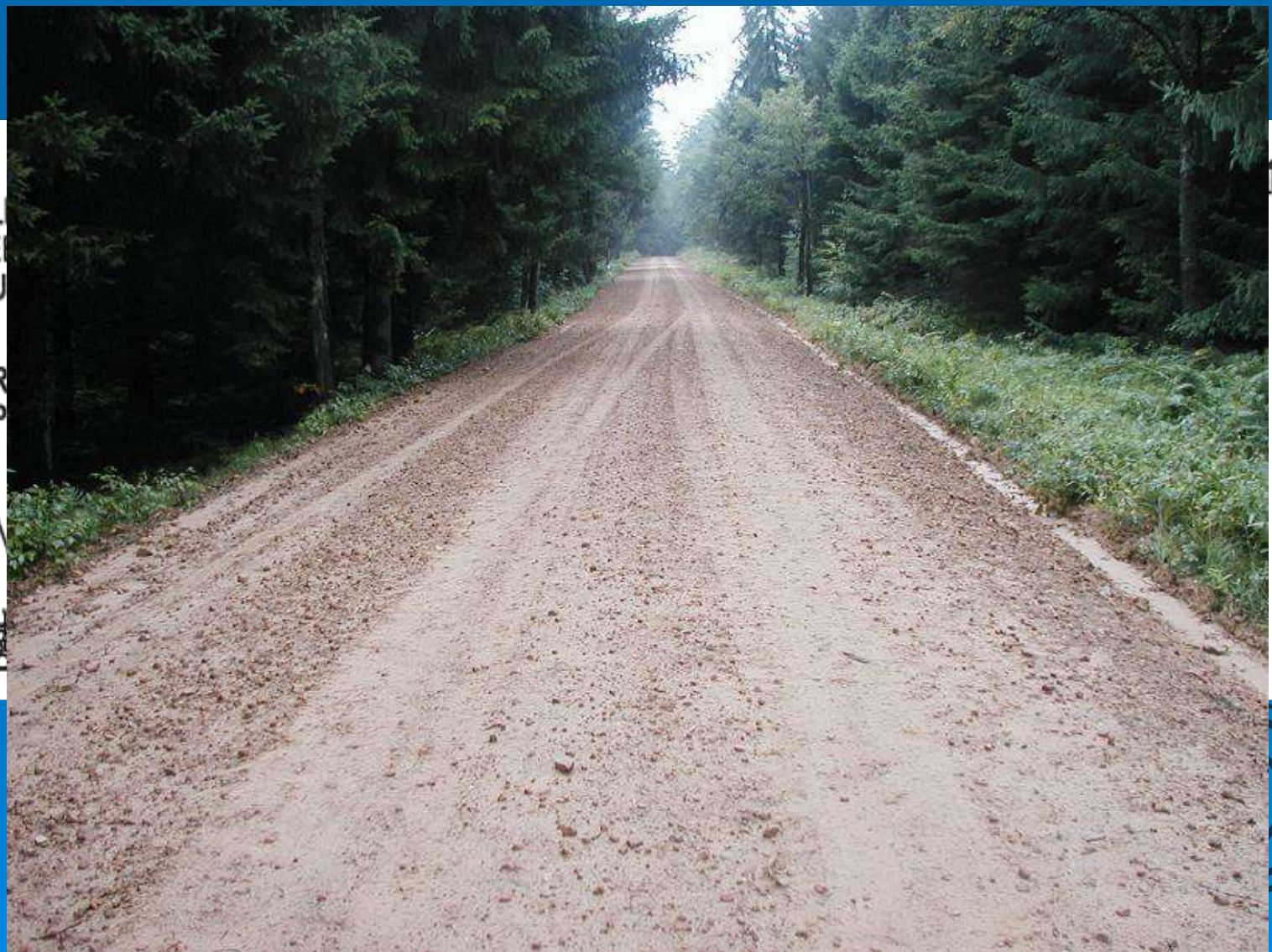
# APPENDIX A – ITEM F
# TURNOUT

# APPENDIX A – ITEM G
# ROADSIDE DITCH




- Discharges to special protection waters
- Where discharging directly to surface waters
- Where necessary to prevent erosion of the channel itself

# APPENDIX A – ITEM H
# CROWNED/ INSLOPED ROADWAYS



(12" MIN.)

# APPENDIX A – ITEM H
# CROWNED/ INSLOPED ROADWAYS

## TYPICAL INSLOPED ROADWAY

# APPENDIX A – ITEM H
# CROWNED/ INSLOPED ROADWAYS

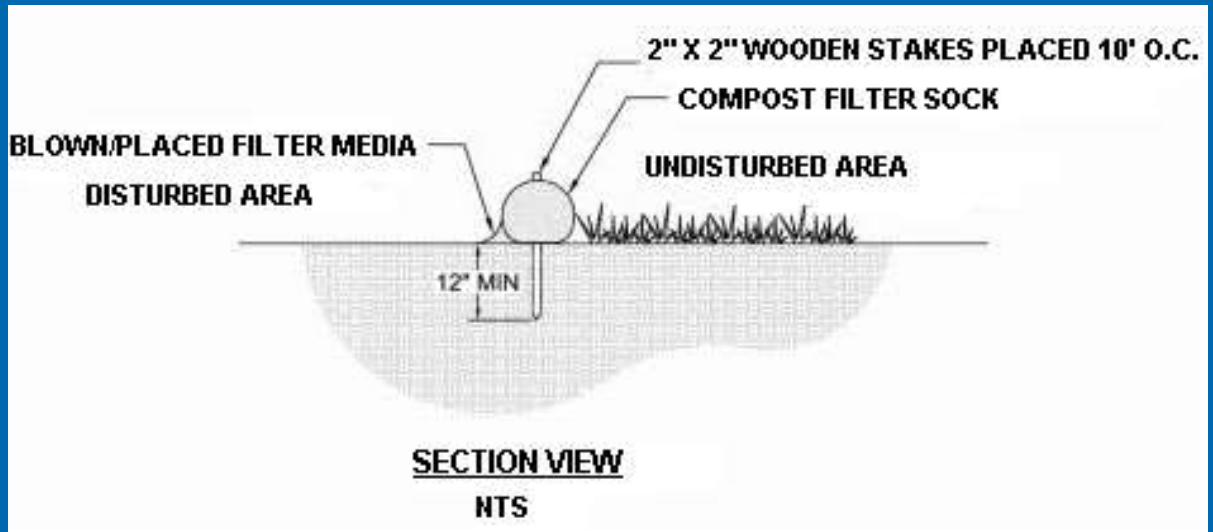
- Cut and fill slopes stabilized immediately upon completion of roadway grading
  - Blanketed wherever ≤ 50 ft. of a surface water or
  - Within 100 ft. of a surface water where no suitable vegetative filter strip
- Durable top dressing provided for soils having low strength

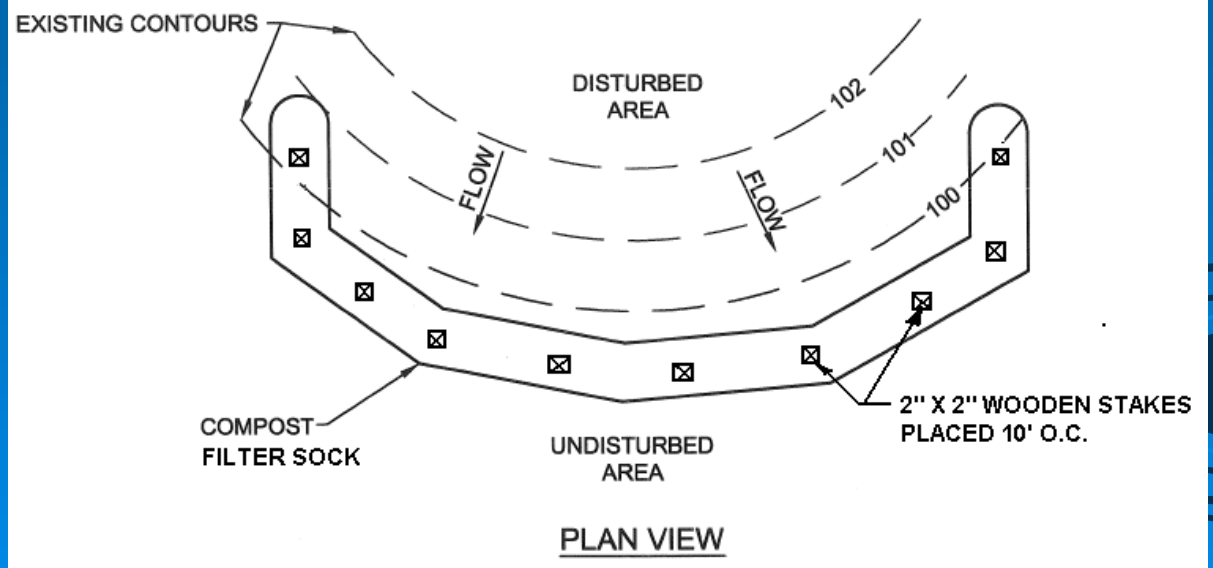
# APPENDIX A – ITEM H
# CROWNED/ INSLOPED ROADWAYS

- Roadside ditches provided with adequate protective lining
- Adequately sized culverts or other suitable cross drains provided at all seeps, springs, and drainageways
- Ditch relief culverts provided at intervals indicated on the Tables
- Roadway inspected weekly and after each runoff event
- Damaged roadways, ditches, or cross drains repaired immediately

# APPENDIX A – ITEM I
# STABILIZED ROAD ENTRANCE

# APPENDIX A – ITEM J
# COMPOST FILTER SOCK



# APPENDIX A – ITEM J
# COMPOST FILTER SOCK

# APPENDIX A – ITEM J
# COMPOST FILTER SOCK

- Accumulated Sediment removed at ½ height of the sock & disposed properly
- Inspected weekly & after each runoff event
- Damaged socks repaired according to manufacturer's specs or replaced within 24 hours of inspection
- Biodegradable sock replaced after 6 months; photodegradable socks after 1 year
- Polypropylene socks replaced according to manufacturer's recommendations

# APPENDIX A – ITEM J
# COMPOST FILTER SOCK

- Upon stabilization of area tributary to, stakes shall removed
- Sock may be left in place and vegetated or removed
  - In the latter case, mesh cut open and the mulch spread as a soil supplement

# APPENDIX A – ITEM K CHANNELS

## SIZING CHART FOR TEMPORARY VEGETATED TRAPEZOIDAL CHANNELS

| TEMPORARY VEGETATED TRAPEZOIDAL CHANNEL SIZING CHART (2H:1V SIDE SLOPES) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Tributary Acres** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| **Minimum Channel Depth (ft)** | **1.5** | **1.5** | **1.5** | **1.5** | **1.5** | **2.0** | **2.0** | **2.0** | **2.0** | **2.0** |
| **Channel Bed Slope (FT/FT)** | **Minimum Channel Bottom Width (FT)** | | | | | | | | | |
| **≤ 0.04** | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| **0.05** | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 |
| **0.06** | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 4.0 |
| **0.07** | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| **0.08** | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 4.0 | 6.0 | 6.0 |
| **0.09** | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 6.0 | 6.0 | 6.0 |

# APPENDIX A – ITEM K CHANNELS

## SIZING CHART FOR TEMPORARY VEGETATED TRAPEZOIDAL CHANNELS

## SPECIAL PROTECTION WATERSHED

| TEMPORARY VEGETATED TRAPEZOIDAL CHANNEL SIZING CHART (2H:1V SIDE SLOPES) SPECIAL PROTECTION WATERSHED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Tributary Acres | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Minimum Channel Depth (ft) | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Channel Bed Slope (FT/FT) | Minimum Channel Bottom Width (FT) | | | | | | | | | |
| ≤ 0.04 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 4.0 | 4.0 | 4.0 | 6.0 |
| 0.05 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 4.0 | 4.0 | 4.0 | 6.0 |
| 0.06 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 4.0 | 4.0 | 6.0 | 6.0 TRM |
| 0.07 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 4.0 | 6.0 | 6.0 TRM | 6.0 TRM |
| 0.08 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 6.0 | 6.0 | 6.0 TRM | 6.0 TRM |
| 0.09 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 6.0 | 6.0 | 6.0 TRM | 6.0 TRM | 6.0 TRM |

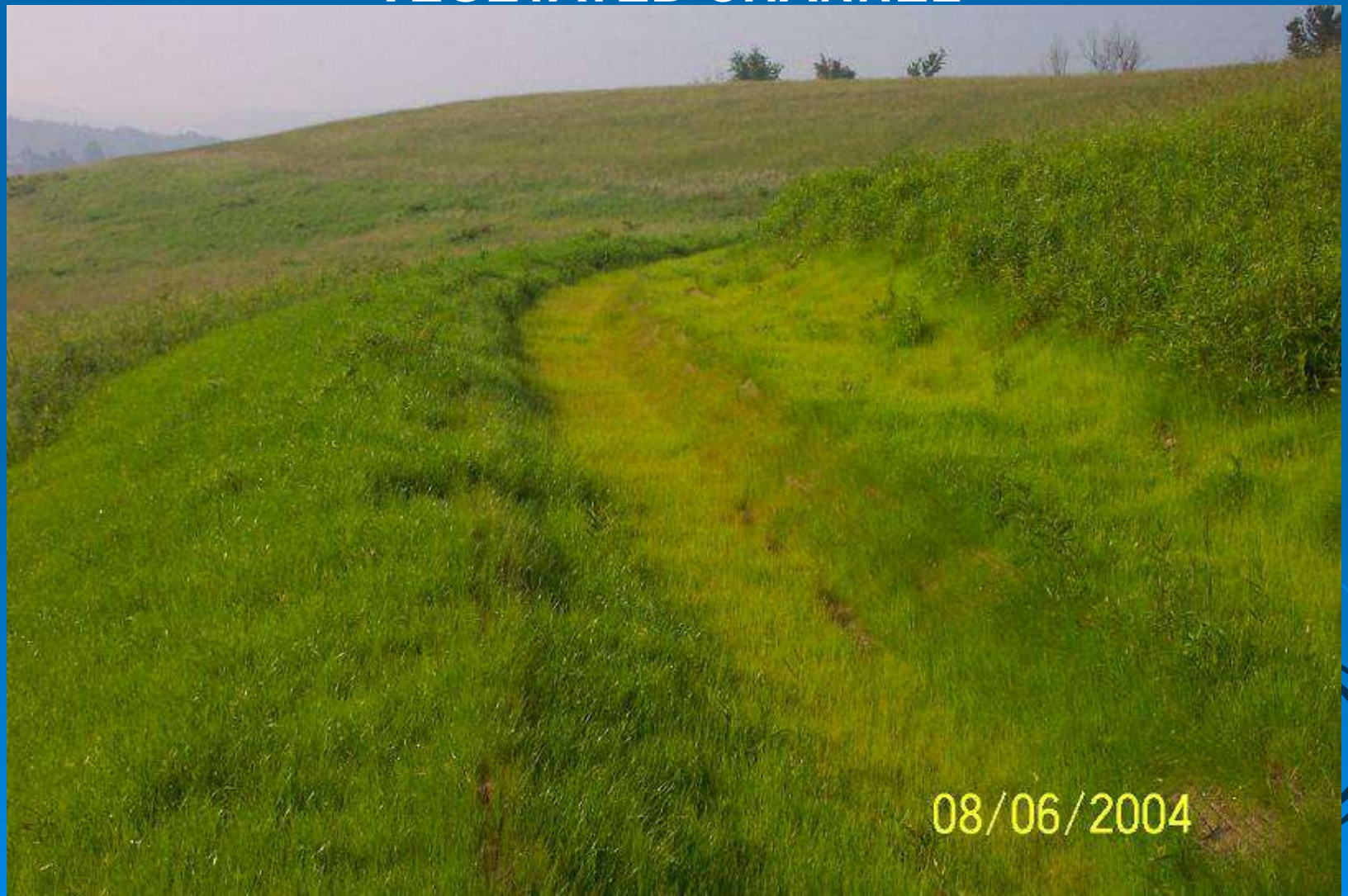
# APPENDIX A – ITEM K CHANNELS

| CHANNEL NO. | STATIONS | BOTTOM WIDTH B (FT) | DEPTH D (FT) | TOP WIDTH W (FT) | Left Side Slope Z1 (FT) | Right Side Slope Z2 (FT) | LINING* |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

- Anchor trenches for liners to be installed at beginning and end of channel in the same manner as longitudinal anchor trenches
- Channel dimensions to be constantly maintained
- Sediment deposits to be removed within 24 hrs
- Damaged lining to be repaired or replaced within 48 hrs

# APPENDIX A – ITEM K CHANNELS

## VEGETATED CHANNEL



# APPENDIX A – ITEM K CHANNELS

## RIPRAP CHANNEL

# APPENDIX A – ITEM L
# SEDIMENT TRAP

- May be used to control runoff from drainage areas ≤ 5.0 acres (disturbed and undisturbed)
- Must provide 2,000 cubic feet of total storage capacity for each tributary acre
- Sediment storage zone = 700 cf/acre
- Outlets located as far from inflow as possible
- Minimum spillway width = 6 ft / tributary acre

# APPENDIX A – ITEM L
# SEDIMENT TRAP

# APPENDIX A – ITEM M
# SITE STABILIZATION

## Recommended Permanent Seed Mixtures Cool and Warm Season Grass

| Mixture Number | Season | Species | Seeding Rate lb./ac. |
|---|---|---|---|
| 1 | Cool | Tall fescue*, or<br>Fine fescue, plus<br>Redtop, or<br>Perennial ryegrass, plus<br>Birdsfoot trefoil | 79<br>46<br>4<br>19<br>8 |
| 2 | Cool | Birdsfoot trefoil, plus<br>Tall fescue* | 8<br>40 |
| 3 | Cool | Orchardgrass, or<br>Smooth bromegrass, plus<br>Birdsfoot trefoil | 26<br>33<br>8 |
| 4 | Warm | Flatpea, plus<br>Tall fescue*, or<br>Perennial ryegrass | 27<br>26<br>25 |
| 5 | Warm | Deertongue, plus<br>Birdsfoot treefoil | 21<br>8 |
| 6 | Warm | Switchgrass, or<br>Big Bluestem, plus<br>Birdsfoot trefoil | 15<br>15<br>8 |

# APPENDIX A – ITEM M
# SITE STABILIZATION

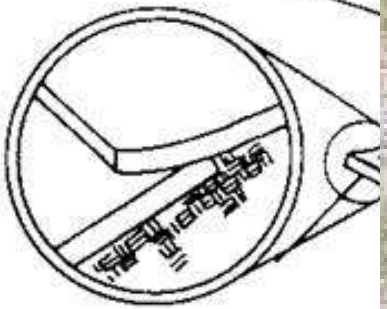
## Recommended Seed Mixtures for Stabilizing Disturbed Areas

| Site Condition | Seed Mixture (Select One Mixture) |
|---|---|
| **Cut Slopes and Fills (not mowed)** | 2, 4, or 6 |
| Well-drained | 2 |
| Variable drainage | |
| **Cut Slopes and Fills (mowed)** | 1 |
| **Cut Slopes and Fills (grazed/hay)** | 1, 2, or 3 |
| Gullies and Eroded Areas | 2 or 6 |
| Erosion Control BMPs | 1 or 2 |
| Channels, Drainage ditches, Trap embankments, etc. | 2 or 3 |
| For hay or silage | |
| Right-of-way | 4 or 6 |
| Well-drained | 2 |
| Variable drainage | 2 or 3 |
| Well-drained areas for grazing/hay | |
| Strip Mined Areas | 2, 4, or 5 |
| Spoils, waste areas, fly ash, slag, etc. (lime to soil test) | 2, 3, or 6 |
| For grazing/hay | |

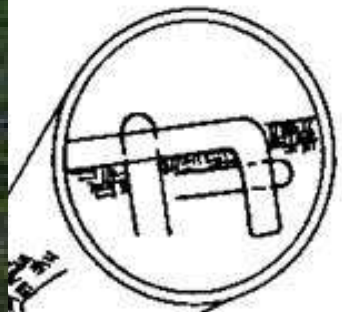
# APPENDIX A – ITEM N
# EROSION CONTROL BLANKETS

" (Min)

The blanket should not be stretche
it must maintain good soil contact.



Overlap blanket ends 6" (Min)
with the upslope blanket
overlying the downslope blanket
(shingle style). Staple securely.



Install beginning of roll in
6" X 6" anchor trench,
staple, backfill, and compact
soil.

d bed (including application of
r, & seed) prior to installation

ommended stapling pattern
slope being blanketed.

# APPENDIX A – ITEM N
# EROSION CONTROL BLANKETS

# APPENDIX B
# SOIL LIMITATIONS

**LIMITATIONS OF PENNSYLVANIA SOILS PERTAINING TO EARTHMOVING PROJECTS (Absence of an X does not mean "No Potential Limitation")**

**NOTE: THIS IS NOT NECESSARILY AN ALL-INCLUSIVE LIST**

| SOIL NAME | CUTBANKS CAVE | CORROSIVE TO CONCRETE | DROUGHTY | EASILY ERODED | FLOODING | DEPTH TO SATURATED ZONE/ SEASONAL HIGH WATER TABLE | HYDRIC/ HYDRIC INCLUSIONS | LOW STRENGTH / LANDSLIDE | SLOW PERCOLATION | PIPING | POOR SOURCE OF TOPSOIL | FROST ACTION | SHRINK - SWELL | POTENTIAL SINKHOLE | PONDING | WETNESS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Abbottstown | X | C/S | | X | | X | X | X | X | X | X | X | | | | X |
| Aeric Epiaquents | X | C/S | X | | | X | X | | | | X | X | | | | X |
| Albrights | X | C/S | X | X | | X | X | X | X | X | X | X | | | | X |
| Alden | X | C/S | | | | X | X | X | X | X | X | X | X | | X | X |
| Aldino | X | C/S | | | | X | X | X | X | X | | X | | | | |
| Allegheny | X | C | | X | | | X | X | X | X | X | X | | | | |

# WORKSHEET 1

**List the soils that will be encountered by earthmoving required to construct the drill pad(s), access road(s), pits, impoundments, collector & feeder lines, or other activities associated with the proposed well site(s)**

| Limiting Soil Characteristics | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Map Symbol | Soil Name | Erodible | Cut Banks Cave | Corrosive to Concrete or Steel | High Water Table | Low Strength | Piping | Poor Topsoil | Potentially Hydric |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

# QUESTIONS?