Appendix B: Steam Protection Zone Requirements

The purpose of this appendix is to assist you in complying with the requirements in Part III.A.2.a of the permit regarding the establishment of Stream Protection Zones and/or additional sediment controls. This appendix is organized as follows:

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1. Construction Sites that are Required to Provide and Maintain Stream Protection Zones

Vegetated buffers are important filters that protect water quality. When construction occurs and results in runoff that isn't filtered by a substantial buffer, it has a much greater potential to impact perennial and intermittent streams. The requirement in Part III.A.2.a is to provide and maintain a Stream Protection Zone, made up of either a natural vegetated buffer and/or additional erosion and sediment controls. This Stream Protection Zone is measured from the edge of stream to at least 50 feet for Tier I watersheds, or an average of 100 feet for Tier II watersheds. Tier II Waters merit additional scrutiny to maintain their high-quality status. The additional erosion and sediment controls in this Appendix do not apply if the construction activity doesn't occur within the Stream Protection Zone. If the project can avoid earth disturbance in the required protection zone, then the minimum controls found in Maryland's Erosion and Sediment Control Handbook shall suffice for the project. See Figure B-1.

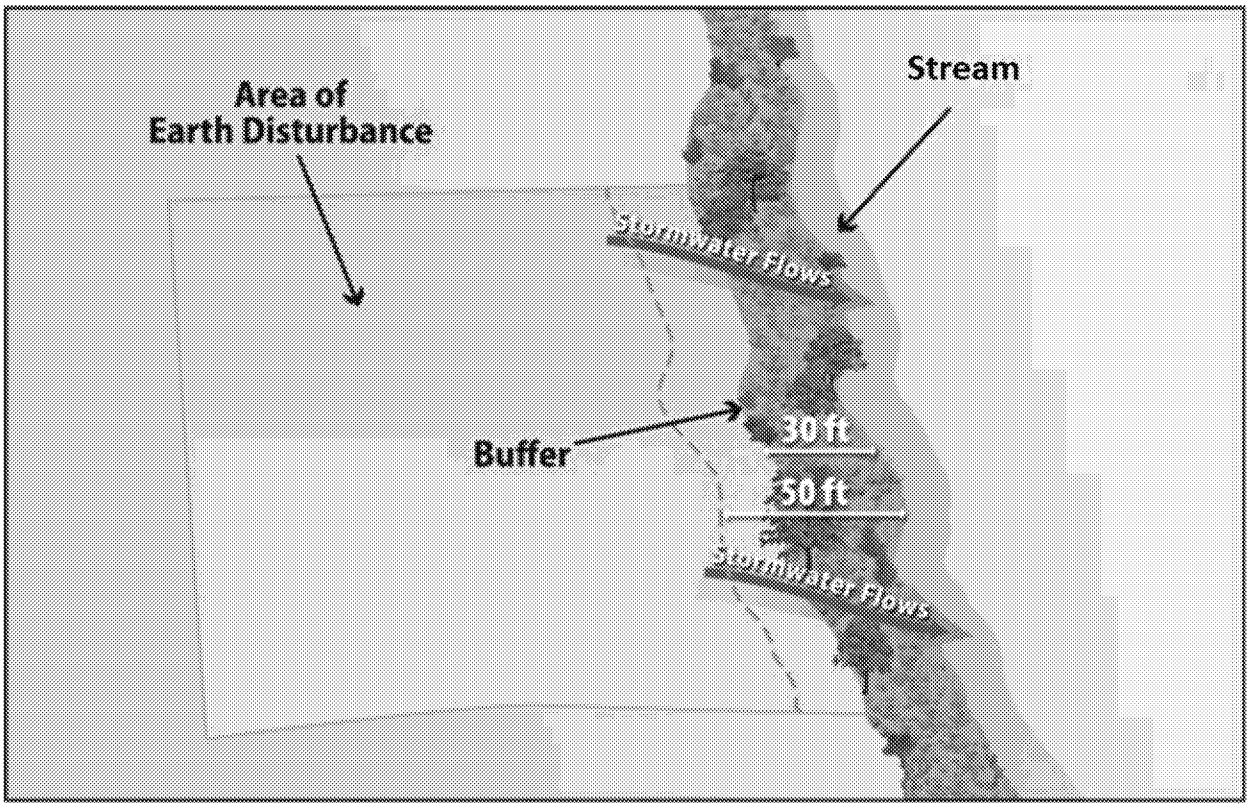

Figure B-1 Example of earth-disturbing activities within 50 feet of a Tier I Stream.

2. Compliance Alternatives[1]

If any portion of a project is in a Stream Protection Zone you have two compliance alternatives from which you can choose, unless you qualify for any of the exceptions (see below and Part 3 of this Appendix). The compliance alternative selected must be maintained throughout the duration of permit coverage:

Compliance Alternative 1: Provide and maintain an undisturbed natural buffer within the Stream Protection Zone; or

Compliance Alternative 2: Provide and maintain an undisturbed natural buffer that is less than the specific Stream Protection Zone and is supplemented by additional erosion and sediment controls. The acceptable additional erosion and sediment controls include, but is not limited to those listed in the 2011 ESC Handbook. Those controls are accelerated stabilization, redundant controls, upgraded controls, passive or active chemical treatment, or a reduction in the size of the grading unit. These options are provided below, which are the controls that must be considered and once selected,

[1] For projects in Tier II Watersheds, when you complete the Checklist (Appendix C) as part of your antidegradation review (Part III.B.2), these compliance alternatives are the elements you will include on the Checklist to verify your evaluation of planned protections in Stream Protection Zones.

implemented when construction activity occurs within these Stream Protection Zones. The local approval authorities may provide additional options that provide similar protection.

a. Accelerated Stabilization Requirements

Earth disturbance must be stabilized as soon as possible and as dictated by the approved plan (e.g., seed and mulch, soil stabilization matting, rip rap, sod, pavement):

- At a minimum, all perimeter controls (e.g., earth dikes, sediment traps) and slopes steeper than 3:1 require stabilization within three calendar days and all other disturbed areas within seven calendar days
- Accelerated stabilization (e.g., same day stabilization) may be required based on site characteristics or as specified by the approval authority

b. Redundant Controls

Runoff must pass through two sediment control devices in series. The following are examples of possible combinations:

- When dewatering sump areas, sediment traps or basins, discharge sediment laden water first to a portable sediment tank and then a filter bag
- Install parallel rows of a perimeter filtering control or a combination thereof of silt fence, super silt fence, and filter logs (e.g., two rows of parallel silt fence or a row of filter log parallel to a row of super silt fence)

c. Upgrade Controls

The following are examples of possible upgrades:

- Upgrade from silt fence to super silt fence
- Upgrade from temporary stone outlet structure to temporary gabion outlet structure
- Upgrade all sediment traps and basins to control additional storage volume; increase the required storage volume from 3,600 cubic feet/acre to 5,400 cubic feet/acre
- Upgrade standard inlet protection type A to type B and at grade inlet protection to gabion inlet protection

d. Passive or Active Chemical Treatment

See Part III.A.2.m of this permit for more information on chemical treatment.

e. Reduction in the Size of the Grading Unit

- Require grading unit limitations to 10 acres of earth disturbance inside the Stream Protection Zone
- Require grading unit limitations to 20 acres for any earth disturbance that is adjacent to and contiguous with earth disturbances inside the Stream Protection Zone

f. Prerogative of Approval Authorities

The additional controls described above for projects in Stream Protection Zones are examples of accelerated stabilization, redundant controls, upgraded controls, passive or active chemical treatment, or a reduction in the size of the grading unit. Approval authorities may use these examples as a guide when approving projects, but may also apply further erosion and sediment control measures based on local site conditions and best professional judgement.

3. Exceptions to the Compliance Alternatives

The following exceptions apply to the requirement to implement one of the compliance alternatives (see Part 2 of this Appendix):

- The following disturbances within the Stream Protection Zone are exempt from the requirements Part III.A.2.a and this Appendix:

  - Construction approved under a CWA Section 404 permit; or

  - Construction of a water-dependent structure or water access areas (e.g., pier, boat ramp, trail).

- If there is no discharge of stormwater to Waters of this State through the area between the disturbed portions of the site and any waters of the U.S. located within 50 feet of your site, you are not required to comply with the requirements in Part III.A.2.a and this Appendix. This includes situations where you have implemented controls measures, such as a berm or other barrier, which will prevent such discharges.
- Where no natural buffer exists due to preexisting development disturbances (e.g., structures, impervious surfaces) that occurred prior to the initiation of planning for the current development of the site, you are not required to comply with the requirements in Part III.A.2.a and this Appendix.

  Where some natural buffer exists but portions of the area within the Stream Protection Zone are occupied by preexisting development disturbances, you <u>are</u> required to comply with the requirements in Part III.A.2.a and this Appendix. Clarity about how to implement the compliance alternatives for these situations is provided in Part 4 and Part 5 below.

- For "linear construction sites" (see Appendix A), you are not required to comply with this requirement if site constraints (e.g., limited right-of-way) make it infeasible to implement one of the above compliance alternatives, provided that, to the extent feasible, you limit disturbances

within 50 feet of any Waters of this State and/or you provide supplemental erosion and sediment controls to treat stormwater discharges from earth disturbances within 50 feet of the Waters of this State. For Tier II waters, you must also document in the Checklist your rationale for why it is infeasible for you to implement one of the above compliance alternatives, and describe any buffer width retained and supplemental erosion and sediment controls installed.

Note that you must document in your SWPPP (if required under the conditions of Part III.F.1) if any disturbances related to any of the above exceptions occurs within the buffer area on your site.

4. Requirements for Providing and Maintaining Natural Buffers

This part of the appendix applies to you if you choose compliance alternative 1 (avoid Stream Protection Zone), or compliance alternative 2 (work within the Stream Protection Zone supplemented by additional erosion and sediment controls described above).

Stream Protection Zone Measurement

Where you are retaining a buffer of any size, the buffer should be measured perpendicularly from any of the following points, whichever is further landward from the water:

- The ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or
- The edge of the stream or river bank, bluff, or cliff, whichever is applicable.

Refer to Figure B-2 and Figure B-3. You may find that specifically measuring these points is challenging if the flow path of the Water of this State changes frequently, thereby causing the measurement line for the buffer to fluctuate continuously along the path of the waterbody. Where this is the case, the Department suggests that rather than measuring each change or deviation along the water's edge, it may be easier to select regular intervals from which to conduct your measurement. For instance, you may elect to conduct your buffer measurement every 5 to 10 feet along the length of the water.

Additionally, note that if earth-disturbing activities will take place on both sides of a Water of this State. that flows through your site, to the extent that you are establishing a buffer around this water, it must be established on both sides. For example, if you choose compliance alternative 1, and your project calls for disturbances on both sides of a small stream, you would need to retain the full 50 feet of buffer on both sides of the water. However, if your construction activities will only occur on one side of the stream, you would only need to retain the 50-foot buffer on the side of the stream where the earth disturbance will occur.

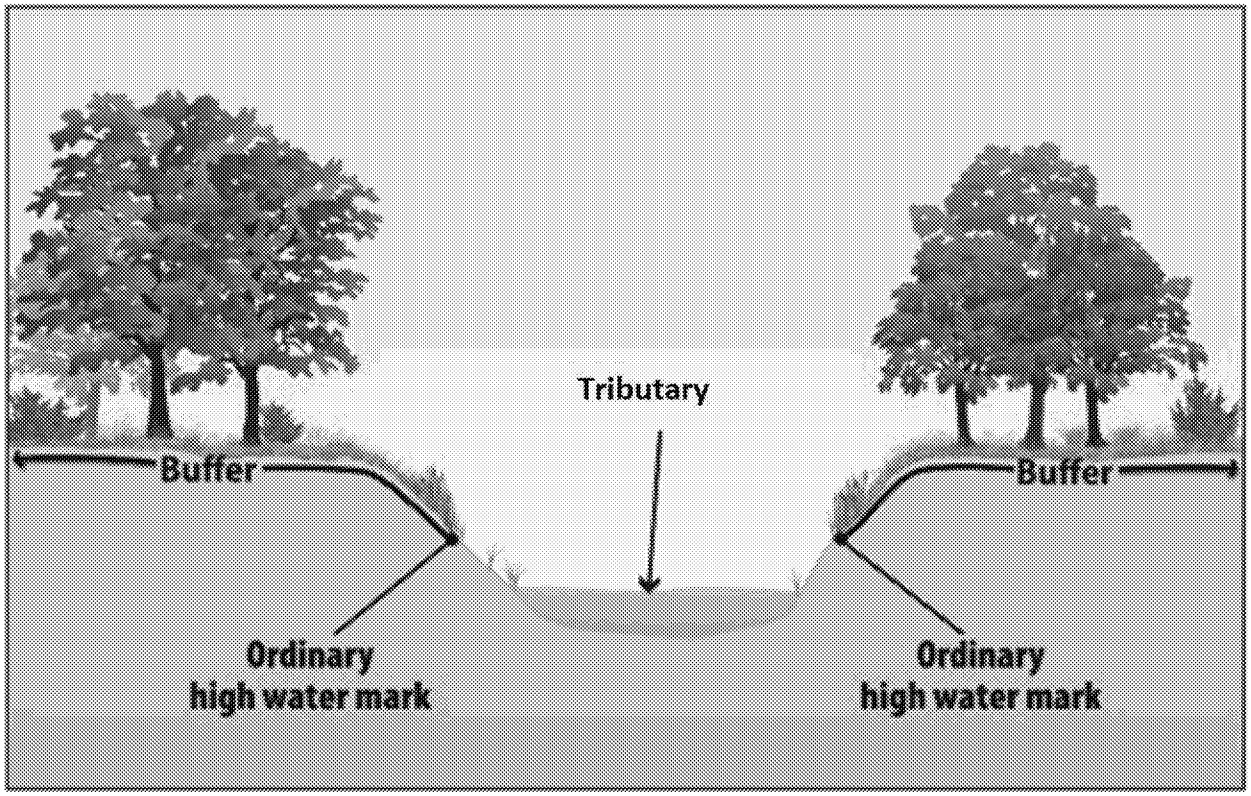

Figure B- 2 – Stream Protection Zones and natural buffers are measured from the ordinary high water mark of the water body, as indicated by a clear natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, and/or the presence of litter/debris.[2]

[2] Alternatively, if the appropriate approval authority has an equivalent method for calculating a 50 foot Stream Protection Zone in a Tier I watershed, that is not less restrictive, for sake of consistency you can use that delineation.

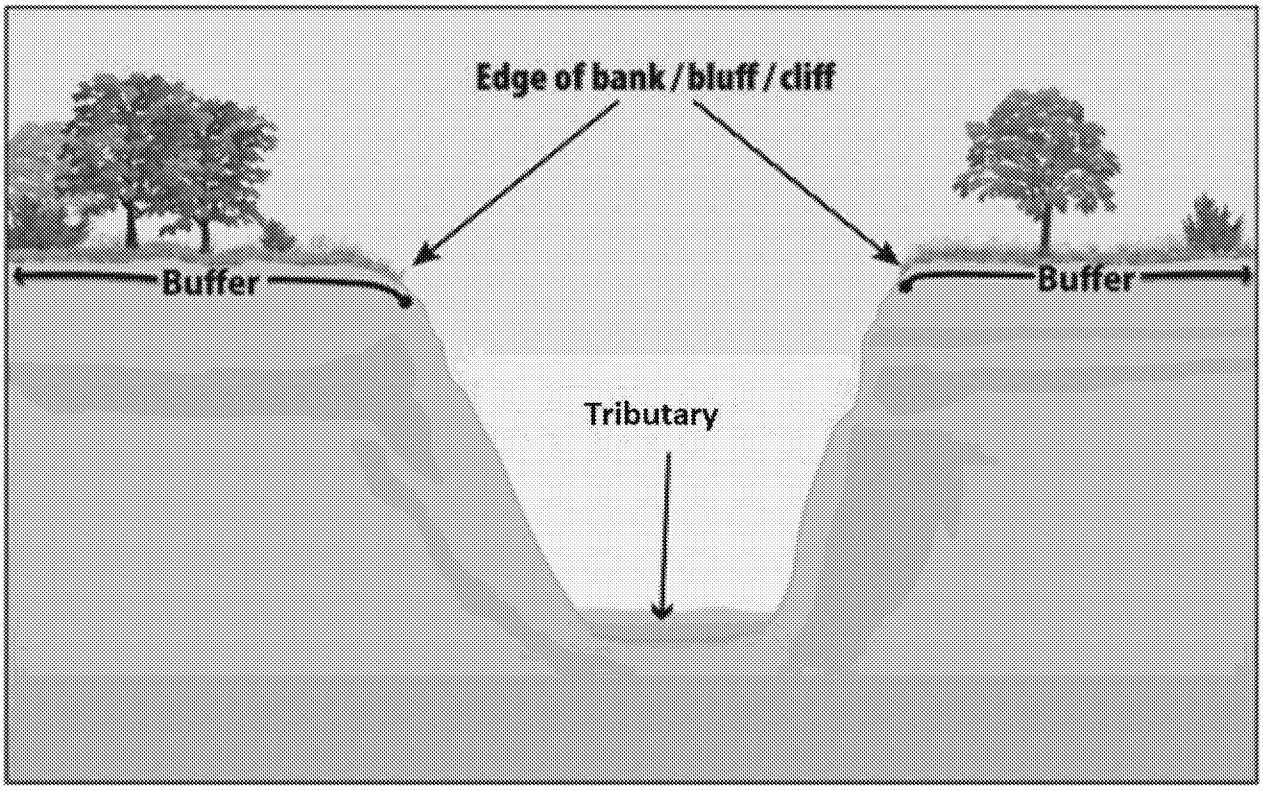

Figure B- 3 -– Stream Protection Zones and natural buffers are measured from the edge of the bank, bluff, or cliff, whichever is applicable.[3]

Limits to Disturbance Within the Stream Protection Zone

If avoidance of earth disturbances in a Stream Protection Zone is not possible, then minimization of the project's footprint shall be implemented to the maximum extent practicable. You are considered to be in compliance with the requirement to provide and maintain a natural buffer if you retain and protect from construction activities the natural buffer that existed prior to the commencement of construction. If the Stream Protection Zone contains no vegetation prior to the commencement of construction (e.g., sand or rocky surface), you are not required to plant vegetation. As noted above, any preexisting structures or impervious surfaces may occur in the natural buffer provided you retain and protect from disturbance the buffer areas outside of the preexisting disturbance.

To ensure that the water quality protection benefits of the buffer are retained during construction, you are prohibited from conducting any earth-disturbing activities within the buffer during permit coverage. In furtherance of this requirement, prior to commencing earth-disturbing activities on your site, you must delineate, and clearly mark off, with flags, tape, or a similar marking device, the buffer area on

[3] Alternatively, if the appropriate approval authority has an equivalent method for calculating a 50 foot Stream Protection Zone in a Tier I watershed, that is not less restrictive, for sake of consistency you can use that delineation.

your site. The purpose of this requirement is to make the buffer area clearly visible to the people working on your site so that unintended disturbances are avoided.

While you are not required to enhance the quality of the vegetation that already exists within the buffer, you are encouraged to do so where such improvements will enhance the water quality protection benefits of the buffer. (Note that any disturbances within the Stream Protection Zone related to buffer enhancement are permitted and do not constitute construction disturbances.) For instance, you may want to target plantings where limited vegetation exists, or replace existing vegetation where invasive or noxious plant species (see http://plants.usda.gov/java/noxiousDriver) have taken over. In the case of invasive or noxious species, you may want to remove and replace them with a diversity of native trees, shrubs, and herbaceous plants that are well-adapted to the climatic, soil, and hydrologic conditions on the site. You are also encouraged to limit the removal of naturally deposited leaf litter, woody debris, and other biomass, as this material contributes to the ability of the buffer to retain water and filter pollutants.

If a portion of the buffer area adjacent to the Waters of this State is owned by another party and is not under your control, you are only required to retain and protect from construction activities the portion of the buffer area that is under your control. For example, if you comply with compliance alternative 1 (avoid Stream Protection Zone), but 10 feet of land immediately adjacent to the Water of this State is owned by a different party than the land on which your construction activities are taking place and you do not have control over that land, you must only retain and protect from construction activities the 40-foot buffer area that occurs adjacent to the property on which your construction activities are taking place. The Department would consider you to be in compliance with this requirement regardless of the activities that are taking place in the 10-foot area that is owned by a different party than the land on which your construction activities are taking place that you have no control over.

Discharges to the Buffer

You must ensure that all discharges from the area of earth disturbance to the natural buffer are first treated by the site's erosion and sediment controls (for example, you must comply with the Part III.A.2.e requirement to install sediment controls along any perimeter areas of the site that will receive pollutant discharges), and if necessary to prevent erosion caused by stormwater flows within the buffer, you must use velocity dissipation devices.

Discharges from a project into existing riparian buffers shall be non-erosive. Non-erosive discharges shall be attained through true sheet flow conditions, where the width of the flow path is at least as wide as the flow length, or a stable channel or pipe. Adequately designed outlet protection, including but not limited to rock outlets or plunge pools, shall be provided for all concentrated discharges into the stream, unless supporting evidence is provided that the flows are non-erosive, or the stream is already protected from erosion.

The purpose of this requirement is to decrease the rate of stormwater flow and encourage infiltration so that the pollutant filtering functions of the buffer will be achieved. To comply with this requirement, construction operators typically will use devices that physically dissipate stormwater flows so that the discharge entering the buffer is spread out and slowed down.

E&SC Documentation

All additional controls needed to meet these requirements in Tier II watersheds shall be clearly marked on the erosion and sediment control plan and approved by the appropriate approval authority pursuant to COMAR 26.17.01. You are required to document in your E&SC the natural buffer width that is retained. For example, if you are complying with alternative 1, you must specify in your SWPPP that you are providing a 50-foot buffer. Or, if you will be complying with alternative 2, you must document the reduced width of the buffer you will be retaining (and you must also describe the additional erosion and sediment controls you will use. Note that you must also show any Stream Protection Zones on your site map in your SWPPP (if required under the conditions of Part III.F.1). Additionally, if any disturbances related to the exceptions in Part 3 of this Appendix occur within the buffer area, you must document this in the SWPPP.

5. Guidance for Providing Additional Erosion and Sediment Controls

This part of the appendix applies to you if you choose compliance alternative 2 (Provide and maintain an undisturbed natural buffer that is less than the specific Stream Protection Zone and is supplemented by additional erosion and sediment controls).

Determine Whether it is Feasible to Provide a Reduced Buffer

The Department recognizes that there will be a number of situations in which it will be infeasible to provide and maintain a buffer of any width. While some of these situations may exempt you from the buffer requirement entirely (see Part 3 of this Appendix), if you do not qualify for one of these exemptions, there still may be conditions or circumstances at your site that make it infeasible to provide a natural buffer. For example, there may be sites where a significant portion of the property on which the earth-disturbing activities will occur is located within the buffer area, thereby precluding the retention of natural buffer areas. Therefore, you should choose compliance alternative 2. if it is feasible for you to retain some natural buffer on your site. (Note: For any buffer width retained, you are required to comply with the requirements in Part 4, above, concerning the retention of vegetation and restricting earth disturbances.)

Design Controls That Provide Additional Sediment Reduction

You must next determine what additional controls are possible on your site that, alone or in combination with any retained natural buffer, from those listed in this compliance alternative 2.

Note that if only a portion of the natural buffer is less than the Stream Protection Zone, you are only required to implement erosion and sediment controls that achieve the sediment reduction through that area. You would not be required to provide additional treatment of stormwater discharges that flow through areas where the natural buffer exceeds the Stream Protection Zone width. See Figure G-4.

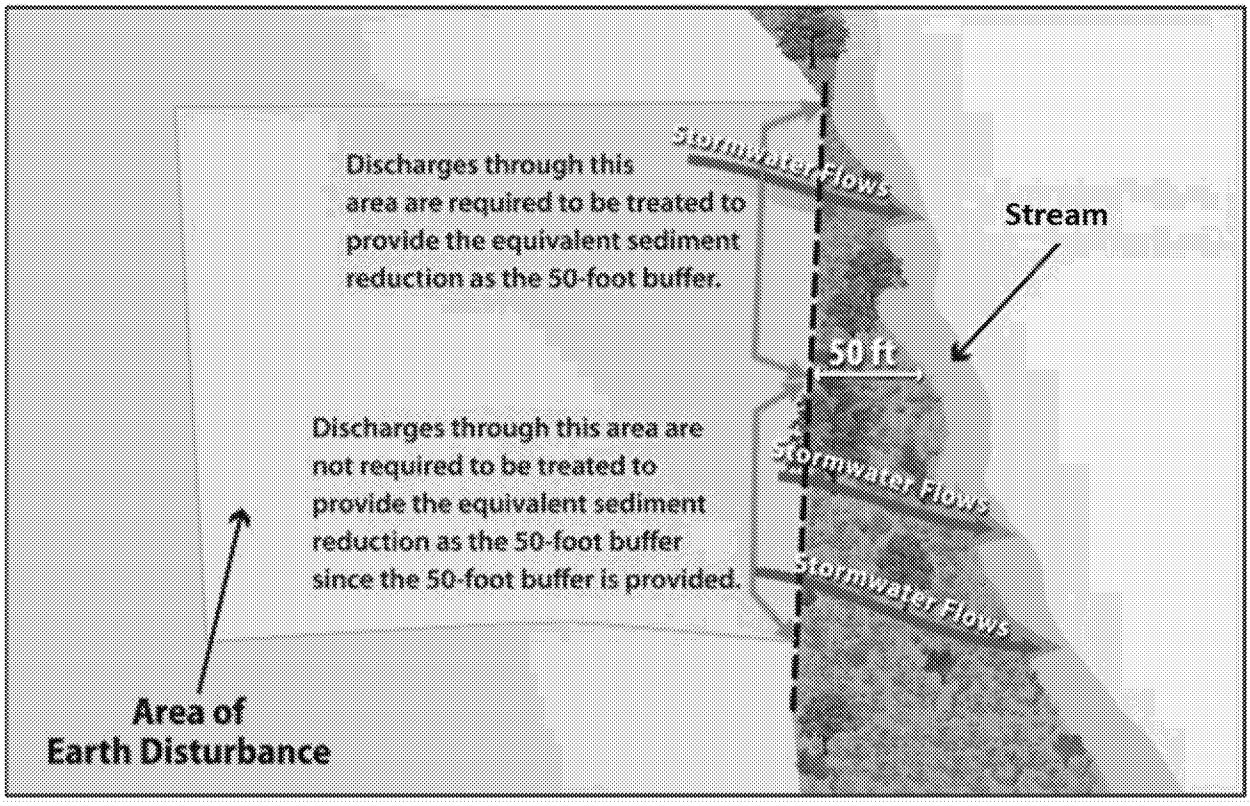

Figure B-4 - Example of how to comply with the requirement to provide the equivalent sediment reduction when only a portion of your earth-disturbances discharge to a buffer of less than 50- feet.