NEWCASTLE

PETERS TOWNSHIP

WASHINGTON COUNTY, PENNSYLVANIA

EROSION AND SEDIMENTATION CONTROL PLAN

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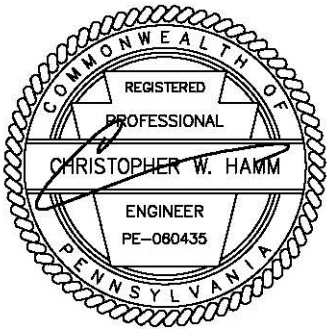

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I. INTRODUCTION

The proposed project is located along the northern side of Justabout Road approximately 1.2 miles south from the intersection of Justabout Road and Bebout Road in Peters Township, Washington County, Pennsylvania. The site is currently used for farming purposes.

The proposed project is to build residential subdivision. A USGS Location Map is located in Appendix A of this report.

The project drains to the Brush Run watershed having a Chapter 93 water designation of a Warm Water Fishes (WWF). Brush Run Watershed is an impaired watershed, all BMPs are to follow ABACT details and notes.

This E&S Plan has been developed in accordance with the Pennsylvania department of Environmental Protection's Erosion and Sedimentation Pollution Control Manual, March 2012, and is intended to comply with the required PA Code Title 25, Chapter 102 requirements for the project.

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Members of KDH, have extensive experience preparing E&S and PCSM Plans in Pennsylvania and surrounding states.

II. EXISTING SITE CONDITIONS

The site is a vacant parcel used for farming. The land cover type for pre-development conditions was determined based upon site visits, available survey information, and satellite photography.

See the attached E&S Plan for a graphic representation of the existing topographic features of the project site and surrounding areas. Pre-construction contours, existing feature lines, and proposed improvements are also shown on this plan.

USGS Location Map:

The site is located in the Bridgeville, PA 7.5-minute series, USGS Topographic Quadrangle. Please see Appendix A of this report for the USGS Location Map.

Soils:

A Custom Soil Resource Report has been generated for this site and is available within Appendix B of this report. Additionally, the soils have been delineated on the E&S Plan. The following soils are located within the project boundaries.

Map Unit Symbol	Map Unit Name
CaC	Culleoka channery silt loam, 8 to 15 percent slopes
CaD	Culleoka channery silt loam, 15 to 25 percent slopes
DoC	Dormont silt loam, 8 to 15 percent slopes
DtD	Dormont-Culleoka complex, 15 to 25 percent slopes
DtF	Dormont-Culleoka complex, 25 to 50 percent slopes
Fa	Fluvaquents, loamy
Nw	Newark silt loam, 0 to 3 percent slopes, frequently flooded

The following is a list of limitation for the on-site soils. Due to these limitations a Geotechnical Engineer shall be on site to monitor all earthwork operations. The following list of limitation were obtained from Table E.1 of the PA E&S Manual.

TABLE E.1 LIMITATIONS OF PENNSYLVANIA SOILS PERTAINING TO EARTHMOVING PROJECTS

	CUTBANKS CAVE	CORROSIVE TO CONCRETE\STEEL	DROUGHTY	EASILY ERODIBLE	FLOODING	DEPTH TO SATURATED ZONE/SEASONAL HIGH-WATER TABLE	HYDRIC/HYDRIC INCLUSIONS	LOW STRENGTH/ LANDSLIDE PRONE	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK – SWELL	POTENTENTIAL SINKHOLE	PONDING	WETNESS
Culleoka	X	C		X				X	X	X	X	X				
Dormont	X	C/S		X		X	X	X	X	X	X	X	X	X		X
Fluvaquents	X	C/S	X	X	X	X	X	X		X		X				
Nw	X	S		X	X	X	X	X	X	X	X	X		X		

Resolutions to Soil Limitations:

CUTBANKS CAVE:

Remedial actions:

- Prevent saturation of slopes
- Provide anchoring or retaining systems
- Provide benching to catch falling debris
- Provide trench boxes for utility installations

CORROSIVE TO CONCRETE\STEEL

Remedial actions:

- Minimize the amount of soil disturbance
- Provide protective coating to concrete and steel
- Provide extra concrete and steel thickness

DROUGHTY OR EASILY ERODIBLE

Remedial actions:

- Limit time of exposure
- Use erosion control blankets
- Selection of seed mixtures with rapidly germinating species

SEASONAL HIGH WATER TABLES, PIPING, SEEPING, SLOW PERCOLATION

Remedial actions:

- Provide pumped water sediment removal facilities
- Use clay embankment cores
- Utilize anti-seep collars or gravel packs

LOW STRENGTH, LANDSLIDE PRONE

Remedial actions:

- Prevent saturation of slopes
- Provide anchoring or retaining systems
- Provide benching to catch falling debris
- Perform soil testing and follow geotechnical recommendations

FROST ACTION

Remedial actions:

- Minimize the amount of soil disturbance
- Provide effective drainage
- Control depth of frost penetration
- Replace and/or modify frost-susceptible soils

POOR SOURCE OF TOPSOIL

Remedial actions:

- Perform soil testing to determine proper application of soil amendments and proper moisture content for proper vegetation cover
- Import topsoil as needed

WETNESS, HYDRIC INCLUSIONS

Remedial actions:

- Ensure that the soils are well drained and prevent saturation of soils
- Conditions may require soils to be extensively air dried, mixed with drier materials, and/or disked to modify moisture content for proper compaction.
- In severe situations, substitute appropriate fill material.
- Provide pumped water sediment removal facilities

III. LAND USES

Past Use land uses for past 50-years: Farm Field

Present Use for past 5-years: Farm Field

Proposed Use: Residential Subdivision

IV. WATERSHED AND RUNOFF

The project is located in Peters Township. The project will have an infiltration pond to reduce the amount of runoff to below the Pre-developed Conditions.

The project drains to the Brush Run Watershed having a Chapter 93 water designation of a Warm Water Fishes (WWF). Brush Run Watershed is an impaired watershed, all BMPs are to follow ABACT details and notes.

The proposed project is located in Zone X – Area of Minimal Flood Hazard per FIRM Map Number 42125C0214E with an effective date of 9/30/2015.

V. TEMPORARY CONTROL MEASURES

The E&S control facilities proposed for the project are shown on the E&S Control Plans. Control measures shown on this plan are minimum controls to protect offsite areas from sediment-laden runoff. Additional controls may be required depending on the progress of construction and varying conditions encountered.

A. **Rock Construction Entrance:** A rock construction entrance will be installed to provide a buffer area where vehicles can drop their mud and sediment to avoid transporting it onto public roads, to control erosion from surface runoff, and to help control dust at the locations shown on the plans and in accordance with the standard detail.

Installation: To construct the pad, place a layer of 6 inches of stone across the full width of the vehicle ingress and egress area. The stone pad should be at least 100 feet in length, 25 feet in width, and 6 inches thick.

Maintenance: Additional stone may have to be added periodically to maintain the proper functioning of the pad.

B. **Compost Filter Sock:** Compost filter socks are a type of contained compost filter berm. They consist of a biodegradable or photodegradable mesh tube filled (typically using a

pneumatic blower) with a coarse compost filter media that meets certain performance criteria as specified on the detail drawings.

Installation: Compost Socks shall be placed on a level contour with both ends of the sock extending at least 8 feet up slope at 45 degrees to the main sock alignment. Filter socks are flexible and can be filled in place or filled and moved into position. Traffic shall not be permitted to cross filter socks.

Maintenance: Accumulated sediments will be removed as required to keep the sock functional. In all cases, remove deposits where the sediment accumulation has reached ½ the above ground height of the sock. Adhere to any manufacturer's recommendations for replacing sock due to weathering.

Damaged socks shall be repaired according to manufacturer's specifications or replaced within 24 hours of inspection. Biodegradable filter sock shall be replaced after 6 months; photodegradable socks after 1 year. Polypropylene socks shall be replaced according to manufacturer's recommendations. Upon stabilization of the area tributary to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed. In the latter case, the mesh shall be cut open and the mulch spread as a soil supplement.

C. **Temporary Vegetative Stabilization:** Temporary vegetative stabilization shall be placed in the locations shown on the plans and in accordance with the seeding specifications provided to temporarily cover disturbed areas that will be exposed for a period of more than four working days. The temporary vegetation will reduce problems of mud and dust production from bare soil surfaces during construction.

Installation: Fertilizing, seeding, and mulching will be used as a temporary E&S control measure on all non-paved disturbed areas. Exposed soils, not subject to construction traffic, shall not remain unseeded or covered by mulch for more than four days, including stockpiled soil materials. With regard to the temporary seed mix, refer to the seeding mixture table provided on the E&S Control Plan Detail Sheet.

Soil preparation and seeding procedures, to be applied in the order presented, are as follows: Unless approved soil test results indicate otherwise, evenly apply the following soil amendments:

- 560 pounds per acre 18-46-0 diammonium phosphate;
- 335 pounds per acre 0-0-60 muriate of potash;
- 6 tons per acre pulverized agricultural limestone; and
- 4 pounds per acre "Bio-pak" microbial inoculant*.

Where slopes permit, promptly disk all amendments under to a 3 to 6-inch depth. Where slopes do not permit tillage, track slope with a dozer as described under seedbed preparation. On extremely steep slopes, amendments may be applied with the seed and mulch using a hydro seeder as long as seed and inoculant is not in a slurry with fertilizers for more than one hour.

Prepare seedbed by cultipacking or tracking with a dozer using equipment (such as a light tractor) and technique that minimizes rutting of the surface. If tracking is done, run dozer so track marks are parallel to site contours. If a Brillion seeder is used, this step may be skipped.

Just before seeding, inoculate birdsfoot trefoil seed (where applicable) with legume inoculant appropriate for birdsfoot trefoil using at least five times the manufacturer's minimum inoculant application rates, then evenly apply the appropriate seed mixture (Refer to Tables 1-3 on Details Sheets).

Lightly cultipack to press seed into seedbed using equipment (such as a light tractor) and technique that minimizes rutting of the surface. If a Brillion seeder is used, this step may be considered complete. If slopes are too steep to permit seed preparation and placement, use hydroseeding techniques.

Promptly and evenly apply straw (not hay) mulch at a rate of 3 tons per acre using a bale-buster or using wood cellulose fiber (not paper pulp) hydromulch at a rate of 2,500 pounds per acre. Promptly tack straw into place using one of the following methods: 1) apply 800 to 1,000 pounds per acre application of wood cellulose fiber mulch with a hydroseeder over the

straw; or, 2) use a crimper disk (a specially designed heavy disk with no offset to the direction of travel). Make multiple passes with the crimper as necessary to secure the straw.

*NOTE: Biopak inoculant is not needed for temporary seeding. Biopak water soluble powder is a mixture of beneficial nitrogen-fixing and phosphorus-solubilizing bacteria (180 billion cfu per pound) combined with biocatalyst ingredients, as manufactured by Plant Health Care, Inc., 440 William Pitt Way, Pittsburgh, Pennsylvania 15238; 1-800-421-9051.

D. Construction Waste Recycling/Disposal: Construction wastes and refuse materials generated during the course of construction and include, but are not limited to, paper, plastic, wood, food, textile, and metal products.

Installation: The Contractor shall be responsible for identifying waste recycling/disposal areas on the Erosion and Sediment Control Plans. The Contractor shall be responsible for obtaining all waste recycling/disposal permits prior to the commencement of construction activities.

Maintenance: All construction waste shall be removed by the Contractor and disposed of at a state approved waste site and in accordance with all local and state codes and permit requirements. The burning of waste materials shall not be permitted.

E. Erosion Control Blanket: Erosion control blankets should be used on all slopes that are 3H:1V or steeper and where potential exists for sediment pollution to receiving surface waters. Since rock slopes pose little, if any, potential for erosion, cut slopes in competent bedrock and rock fill slopes need not be blanketed. Erosion control blankets should be used for all seeded areas within 50 feet of a surface water — 100 feet of a special protection water — regardless of slope.

Installation: Blanket shall have good continuous contact with underlying soil throughout entire length. Lay blanket loosely and stake or staple to maintain direct contact with soil. Do not stretch blanket. The blanket shall be stapled in accordance with the manufacturer's recommendations.

Maintenance: Blanketed areas shall be inspected weekly and after each runoff event until perennial vegetation is established to a minimum uniform 70% coverage throughout the

blanketed area. Damaged or displaced blankets shall be restored or replaced within 4 calendar days.

F. **Trench Plugs:** Trench plugs should be installed on both sides of all crossings to prevent draining streams or wetlands, and to prevent changes to their hydrology. Trench Plugs should also be installed per the spacing table shown in the details.

Installation: Trench Plugs shall be installed per the detail shown within the plans.

Maintenance: Trench plugs shall be inspected regularly to ensure they are functioning properly. If a malfunction is notice, the plug shall be excavated and replaced.

G. **Concrete Washout:** For any project on which concrete will be poured or otherwise formed on site, a suitable washout facility must be provided for the cleaning of chutes, mixers, and hoppers of the delivery vehicles unless such a facility will be used at the source of the concrete. Under no circumstances may wash water from these vehicles be allowed to enter any surface waters. Make sure that proper signage is provided to drivers so that they are aware of the presence of washout facilities.

Installation: Washout facilities should not be placed within 50 feet of storm drains, open ditches, or surface waters. They should be in a convenient location for the trucks, preferably near the place where the concrete is being poured, but far enough from other vehicular traffic to minimize the potential for accidental damage or spills. Wherever possible, they should be located on slopes not exceeding a 2% grade.

If compost filter socks are used, compost socks should be staked in the manner recommended by the manufacturer around perimeter of the geomembrane so as to form a ring with the ends of the sock located at the upslope corner. Care should be taken to ensure continuous contact of the sock with the geomembrane at all locations. Where necessary, socks may be stacked and staked so as to form a triangular cross-section.

Maintenance: Once material reaches 50% of the height of the washout it shall be removed and disposed of in accordance with the Construction Waste Recycling/Disposal methods spelled out in the report.

H. Pumped Water Filter Bag: Filter bags may be used to filter water pumped from disturbed areas prior to discharging to surface waters. They may also be used to filter water pumped from the sediment storage areas of sediment basins and sediment traps.

Installation: Bags shall be located in well-vegetated (grassy) area, and discharge onto stable, erosion resistant areas. Where this is not possible, a geotextile underlayment and flow path shall be provided. Bags may be placed on filter stone to increase discharge capacity. Bags shall not be placed on slopes greater than 5%. For slopes exceeding 5%, clean rock or other non-erodible and non-polluting material may be placed under the bag to reduce slope steepness.

Maintenance: Filter bags shall be inspected daily. If any problem is detected, pumping shall cease immediately and not resume until the problem is corrected. This may include replacement of the bag or repositioning of the bag.

VI. PERMANENT CONTROL MEASURES

The accompanying "Post Construction Stormwater Management Plan" (PCSM) includes pre-development and post-development supporting calculations to show the anticipated increase in runoff for the 2-year storm event. This increase in runoff volume will be treated by detention pond and the rain garden after the site has been stabilized.

Permanent Vegetative Stabilization: Permanent vegetative stabilization will be placed to control runoff and erosion by permanently stabilizing disturbed areas with perennial vegetative cover.

VII. STAGING OF EARTHMOVING ACTIVITIES

A generalized construction sequence is provided on the Plan Drawings. The construction sequence is intended to provide a general course of action in order to conform to the applicable regulatory agency requirements for temporary and permanent soil erosion and sediment pollution control. All necessary parts for proper and complete execution of work pertaining to this plan, whether specifically mentioned or not, are to be performed by the contractor. It is not intended that the drawings and this report show every detailed piece of material or equipment. The contractor shall comply with all requirements listed in this section. The contractor may be required to alter controls based on effectiveness of controls or differing conditions encountered.

VIII. CONSTRUCTION SEQUENCE

Construction Sequence

Project Schedule

The project is expected to begin within 2 weeks of receipt of all necessary approvals and the construction schedule is weather dependent.

Phase 1 – E&S BMP Installation and GP-7 Stream Crossings

All earth disturbance activities shall proceed in accordance with the following sequence. Each stage shall be completed and immediately stabilized before any following stage is initiated. Clearing, grubbing and topsoil stripping shall be limited only to those areas described in each stage.

Immediately upon discovering unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the operator shall implement appropriate best management practices to eliminate the potential for accelerated erosion and/or sediment pollution and contact the engineer.

A written report must be kept by the contractor documenting inspections and repairs to all BMPs. The contractor shall inspect and log all activities onto DEP Form 3800-FM-BCW0271d (dated 12/2024) and kept on site at all times.

The site is located within the Brush Run Watershed, having a Chapter 93 watershed classification of Warm Water Fishery. Brush Run Watershed is an impaired watershed, all BMPs are to follow ABACT details and notes.

Sediment removed from BMP's shall be spread in an area protected by existing BMP's (prior to final stabilization) or removed to an approved waste site.

1. At least 7 days prior to starting any earth disturbance activities, including clearing, and grubbing, the owner and/or operator shall invite all contractors, the landowner, appropriate municipal officials, the E&S plan preparer, the PCSM plan preparer, the licensed professional responsible for oversight of critical stages of implementation of the PCSM plan, and a representative from the Washington County Conservation District to an on-site preconstruction meeting.
2. At least 3 days prior to starting any earth work disturbance activities, or expanding into an area previously unmarked, the Pennsylvania One Call System, Inc. shall be notified at 1-800-242-1776 or 811 for the location of existing underground utilities.
3. Layout the limits of the construction site and establish benchmarks and reference points.
4. Stake out the limit of disturbance (LOD) as indicated on the construction plans.
5. Install the rock construction entrances in the locations shown on the plan and in accordance with standard detail. Install any culverts and/or storm drain conveyance system under the entrance as shown on the plans.
6. Clear only those areas necessary to reach and install perimeter E&S controls within the northern side of the project earth moving limits. Install compost filter socks as shown on the E&S control plan drawings and in accordance with the standard details. All compost filter socks shall be installed parallel to the contours with the ends of the socks turned upslope at a 45-degree angle. Trees shall not be removed in order to install compost filter socks. Slight deviation from installation parallel to contours is acceptable to avoid trees.
7. Begin the installation of the stream culvert crossing for GP-7.1 at Stream R001. The crossings will be installed one at a time. The contractor shall install the culvert pipes using the pump bypass method. The stream will be dammed on the upstream and downstream side of the crossing using sandbags. Once the stream is dammed, a pump will be used to bypass the stream around the work area and discharge it below the downstream dam. Any water accumulating in the work area shall be pumped to a pumped water filter bag prior to discharging back into the stream. Once the work area is dry, excavation for the culvert installation may take place. Any excavated material from the stream shall be stockpile at least 10 feet back from the top of the

stream bank with compost filter sock placed around the stockpile on the low side. The culvert is to be embedded into the stream channel 6" to allow stream channel flow. The culvert will then be back filled with clean stone and compacted. After the culvert pipe is installed and capable of allowing flow, the sandbag dam downstream of the crossing shall be removed and then the sandbag dam upstream of the culvert installation shall be removed.

8. After the culvert is installed and working properly, the access over the pipe shall be stoned at least 10' back from the top of the bank in each direction.
9. Once GP-7.1 is installed, the contractor may start the installation of the perimeter controls in this section of the project. This would be the installation of the compost filter socks located on the eastern side or down slope side of the project.
10. Next the contractor shall start to clear and grub the area necessary to install the stream crossing for GP-7.2 at Stream R003.
11. After the area is cleared and grubbed, the contractor may start the installation of the stream crossing. The contractor shall install the culvert pipes using the pump bypass method. The stream will be dammed on the upstream and downstream side of the crossing using sandbags. Once the stream is dammed, a pump will be used to bypass the stream around the work area and discharge it below the downstream dam. Any water accumulating in the work area shall be pumped to a pumped water filter bag prior to discharging back into the stream. Once the work area is dry, excavation for the culvert installation may take place. Any excavated material from the stream shall be stockpile at least 10 feet back from the top of the stream bank with compost filter sock placed around the stockpile on the low side. The culvert is to be embedded into the stream channel 6" to allow stream channel flow. The culvert will then be back filled with clean stone and compacted. After the culvert pipe is installed and capable of allowing flow, the sandbag dam downstream of the crossing shall be removed and then the sandbag dam upstream of the culvert installation shall be removed.
12. After the culvert is installed and working properly, the access over the pipe shall be stoned at least 10' back from the top of the bank in each direction.

13. Once GP-7.2 is installed, the contractor may start the installation of the perimeter controls in this section of the project. This would be the installation of the compost filter socks located on the northern side or down slope side of the project.
14. Next the contractor shall start to clear and grub the area necessary to install the stream crossing for GP-7.3 at Stream R007.
15. After the area is cleared and grubbed, the contractor may start the installation of the stream crossing. The contractor shall install the culvert pipes using the pump bypass method. The stream will be dammed on the upstream and downstream side of the crossing using sandbags. Once the stream is dammed, a pump will be used to bypass the stream around the work area and discharge it below the downstream dam. Any water accumulating in the work area shall be pumped to a pumped water filter bag prior to discharging back into the stream. Once the work area is dry, excavation for the culvert installation may take place. Any excavated material from the stream shall be stockpile at least 10 feet back from the top of the stream bank with compost filter sock placed around the stockpile on the low side. The culvert is to be embedded into the stream channel 6" to allow stream channel flow. The culvert will then be back filled with clean stone and compacted. After the culvert pipe is installed and capable of allowing flow, the sandbag dam downstream of the crossing shall be removed and then the sandbag dam upstream of the culvert installation shall be removed.
16. After the culvert is installed and working properly, the access over the pipe shall be stoned at least 10' back from the top of the bank in each direction.
17. Now that the contractor has installed all three-stream crossing and the perimeter controls are installed and working properly. The contractor may start to clear and grub the remaining trees along the eastern side of the project near Sienna Trail.
18. The contractor may also install the second rock construction entrance off of Sienna Trail.

<u>Phase 2 – Sitework and Construction</u>

19. Begin cut/fill grading operations as follows: Begin the cut on the western side of the project (Lots 10, 11, 12, 13, 14, 15, 16, 17, 18, and 19). Continue moving east with the earthwork operations and using the generated cut on the eastern side of the

development as fill material. The infiltration basins can be constructed as part of the earthwork. These are considered critical stages since they will be used as PCSM BMPs and should be inspected as they are installed. However, they are not to be used as sediment traps during construction.

20. As the earthwork is progressing and the cut and fill slopes are taking shape and have reached final grade, they shall have topsoil placed and be seeded.

21. Once the slopes have been seeded, they shall have erosion control blankets placed on the slopes. Erosion control blankets shall be placed in accordance with the plans and details.

Note:

Contractor shall grade such that all cut, and fill earthwork continue to promote sheet flow as in the existing conditions. Contractor shall not grade in any way that causes channelization of runoff flow except for at the top-of-slope berms. Any channelization shall be corrected to ensure sheet flow during site grading.

22. Site utilities including water and sewer, storm sewer, gas, and electric/communications within the limit of disturbance can be installed per the approved GP Plans at the contractor's discretion to avoid re-disturbing areas later as the site reaches grade, provide downstream BMPs are in place as per plans. Utilize trench plugs and compost filter sock as necessary and refer to the standard details provided on the detail sheet. The total length of excavated trench open at any one time should not be greater than the total length of utility line that can be placed in the trench and backfilled in one working day. Utilize a pumped water filter bag, as necessary. Water filter bags must be surrounded by compost filter sock to treat for additional sediment removal prior to being discharged to surface waters or stormwater inlets.

Note:

The construction of any utilities (specifically storm and sanitary sewers) shall be done during expected periods of dry weather and only the amount of trench that can be completed in one day shall be opened at any time. The basin shall be inspected to

ensure that it is functioning properly. As the utility is installed, the disturbance shall be seeded and mulched immediately to ensure vegetation growth and limit the possibility of erosion. As the work is completed, the basin should be inspected for any damage caused by the utility installation and any necessary repairs are to be made immediately.

Once installed, all stormwater inlets shall be protected from entering sediment by the use of inlet protection as shown on the plans to prevent sediment from entering the previously constructed sediment basin that will be converted to an infiltration pond. Please note sediment shall be prevented from entering the infiltration basin by the installation of compost silt sock on the uphill side of the bmp. Inlet protection must be inspected on a weekly basis and after each runoff event throughout the duration of construction. Bags can be emptied, and rinsed or replaced when filter bags are half full and flow capacity has been reduced so as to cause flooding.

23. As disturbed areas within the project approach the final grade, preparations should be made for the seeding and mulching to begin. In no case should an area exceeding 15,000 square feet which is to be stabilized by vegetation reach the final grade without being seeded or mulched. Fill slopes should be seeded and mulched at regular vertical increments -15 to 25 feet maximum – as fill is being constructed. This will allow the bottom of the fill to progress toward stabilization while work continues on the upper portion, making stabilization easier to achieve and providing some vegetation buffering at the bottom of the slope.
24. Install the concrete washout facilities in accordance with the standard detail.
25. Fine grade and stabilize all areas of the site. Stabilize roads with stone base immediately after subgrade is reached. Utilize proper slope and trench shoring methods to alleviate cutbank caving. All unpaved disturbed areas shall be stabilized immediately with seed and mulch once grading is complete within four days once the construction has been completed.
26. Install all proposed paving and concrete site work.

27. All areas not paved shall receive a minimum of 6" of topsoil. Install plantings in accordance with the landscape plan.

Phase 3 –PCSM Installation and Site Stabilization

28. As the site work is taking place, the two infiltration basins, SCM-001 and SCM-005, will also be constructed at this time. Both infiltration basins are critical stage activities and advanced notification should be given to the engineer to allow for inspection of the installation.
29. SCM-1 is located along Justabout Road behind Lot 1 and Lot 2. This area should be protected from compaction prior to the installation starts. SCM-001 will have the northwestern portion of the basin in cut, while the southeastern side will be constructed by fill placement.
30. As the cut slopes start to be cut in, the area above the slopes shall have compost filter socks placed on the top of slope to protect the basin from receiving any sediment from upslope areas.
31. After the earthwork for SCM-001 has been completed, Storm HW-2 shall have the riprap apron installed to help eliminate and possible erosion issues. Once the riprap has been installed, the contractor shall start the installation of Outlet-SCM-001.
32. As the outlet barrel is installed through the berm, an antiseep collar shall be installed in accordance to the plans.
33. After Storm HW 1 is installed, the riprap apron shall be installed to ensure that no erosion shall take place from the outlet to the receiving surface waters.
34. After the outlet barrel is installed, CSM-001 shall be stabilized. It should be seeded and mulched in accordance to the seeding specifications provided in the plan set. Also, the emergency spillway shall receive the turf reinforced matting.
35. SCM-5 is located along Drawbridge Land between Lot 9 and Lot 10. This area shall be protected from compaction prior to the installation starts. SCM-5 will be located in an area of cut. Once the hillside is cut down to the top of berm elevation, the contractor shall install the compost filter sock at the toe of cut slope and along the remainder of the CSM in order to prevent silt from entering the proposed infiltration basin.

36. After the compost filter socks are installed, the contractor may start the excavation of the infiltration basin.
37. Once the basin has reached design elevation, the contractor may start the installation of the outlet Structure – Outler CSM-005 along with installing the riprap aprons on Storm HW 4, Storm HW 5, and Storm HW 6.
38. As the outlet barrel is installed through the berm, an antiseep collar shall be installed in accordance to the plans.
39. After the outlet barrel is installed, CSM-005 shall be stabilized. It should be seeded and mulched in accordance to the seeding specifications provided in the plan set. Also, the emergency spillway shall receive the turf reinforced matting.
40. SCM-2, SCM-3, and SCM-4 are located on Lot 24, Lot 23, and Lot 22. These lots are located along Justabout Road. These SCMs shall be installed at the same time the house on these lots are constructed. The SCMs are a critical stage in the stormwater management system and the engineer needs to be notified beforehand of its installation so the installation can be inspected.

    Note: The SCM's are intended to control the increase runoff created by the house roof. These SCMs shall be specifically designed for each lot.

41. The area of the SCMs shall be protected from compaction during construction. And the SCMs shall be installed after the house is completed.
42. The rock sump shall have a bottom that is uniform, level uncompacted subgrade that is free from rocks and debris.
43. Once the CSM is excavated, the sump shall have nonwoven geotextile placed such to wrap the excavation to prevent sediment from accumulating.
44. After the geotextile has been installed, the perforated pipe and observation well and all other dry well structures shall be installed according to plans.
45. Once the piping is in place, the contractor can start to place uniformly graded, clean-washed aggregate in 6" lifts, lightly compacting between lifts.
46. Once the stone has reached the design elevation, fold and secure the nonwoven geotextile over the trench.

47. Once the rock sump has been completely wrapped, place 12 " of approved topsoil over the sump as indicated on the plans. Seed and stabilize the topsoil.
48. Once a uniform 70% perennial vegetative cover is achieved on all disturbed areas. Upon completion of all earth disturbance activities involved with the subdivision infrastructure, removal of all temporary BMPs, and permanent stabilization of all disturbed areas, the owner and/operator shall contract the Washington County Conservation District for a final inspection and a Notice of Termination (NOT) shall be filed for the project.

Phase 4 –BMP Removal

Disposal Directions for Sediment

1. Sediment removed form BMPs shall be spread in an area protected by existing BMPs (Prior to final stabilization) or removed to an approved waste site.

IX. THERMAL IMPACTS

There are no anticipated thermal impacts to any surface waters with in the project area. The stormwater runoff from the site will be stored in the infiltration pond and released slowly. The system will then discharge directly to an Unnamed Tributary to Brush Run.

X. GEOLOGIC CONDITIONS THAT MAY HAVE THE POTENTIAL TO CAUSE POLLUTION

Based upon a review of the site and depth of the planned excavation it is not anticipated that there will be any potential pollution from geological formations such as coal or pyrite.

The moderate site slopes cause a geological condition that may have the potential to cause pollution, through the discharge of sediment. Therefore, the most effective perimeter controls, compost filter socks, will be used.

XI. MAINTENANCE PROGRAM

All E&S controls shall be maintained in good working order (cleaned, repaired, etc.) until all disturbed tributary areas are stabilized. All temporary E&S controls will remain in place until a uniform 70% perennial vegetative cover is established.

1. The construction supervisor shall be responsible for conducting the regular inspections and for performing required maintenance.
2. During construction, sediment removed from the erosion control devices shall be disposed of by spreading it onsite.
3. All site entrance and exit points shall be inspected for evidence of off-site tracking of mud. It is the responsibility of the contractor to clean streets of mud and keep the streets in a clean and dust-free condition.
4. Seeded and vegetated areas shall be checked regularly to ensure that a good stand is maintained. Areas shall be fertilized and reseeded, as necessary.
5. The contractor shall maintain records of all inspections.
6. All temporary runoff E&S controls shall be inspected weekly and after each runoff event to maintain their effectiveness. Any damaged controls shall be repaired or replaced by the end of the working day.

Maintenance of temporary control measures

A. Rock construction entrance:

Additional stone may have to be added periodically to maintain the proper functioning of the pad.

B. Compost Filter Sock:

Adhere to any manufacturer's recommendations for replacing compost sock due to weathering. Silt should be removed when it reaches ½ height of the barrier.

C. Temporary Vegetative Stabilization:

1. As disturbed areas within a project approach final grade, preparations should be made for seeding and mulching to begin (i.e., anticipate the completion date and schedule the seeder). In no case should an area exceeding 15,000 square feet, which is to be stabilized by vegetation, reach final grade without being seeded and mulched.

2. The area will not be considered to be stabilized until at least 70% of the area is uniformly covered in vegetation. Erosion controls must remain in place until the site is stabilized.

3. If standard seeding methods are not enough protection because of slopes or erodible soils, erosion control blanketing should be used to promote vegetative coverage.

D. Construction waste recycling/disposal:

All construction waste shall be removed by the contractor and disposed of at a state approved waste site and in accordance with all local and state codes and permit requirements. The burning of waste materials shall not be permitted.

E. Trench Plugs

Trench plugs shall be inspected regularly to ensure they are functioning properly. If a malfunction is notice, the plug shall be excavated and replaced.

F. Concrete Washout:

Once material reaches 50% of the height of the washout it shall be removed and disposed of in accordance with the Construction Waste Recycling/Disposal methods spelled out in the report.

G. Pumped Water Filter Bag

Filter bags shall be inspected daily. If any problem is detected, pumping shall cease immediately and not resume until the problem is corrected. This may include replacement of the bag or repositioning of the bag.

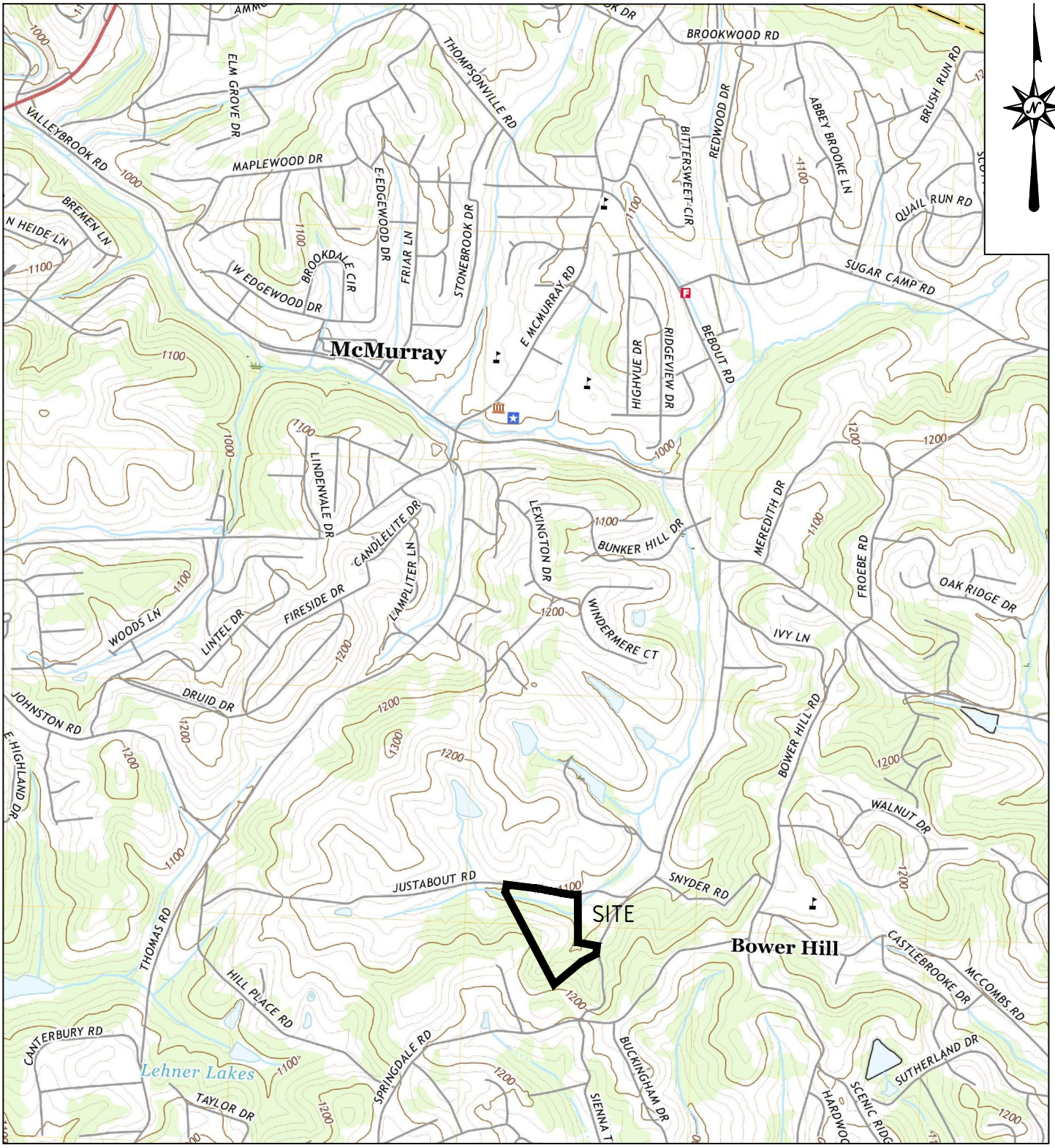
XII. REFERENCES

1. Commonwealth of Pennsylvania, Department of Environmental Protection, Office of Water Management, Erosion and Sediment Pollution Control Program Manual, Harrisburg, PA, March 2012.

2. U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Greene and Washington County, Pennsylvania, Washington D.C., December 1993

APPENDIX A

USGS Map



BRIDGEVILLE QUAD

KDH
CONSULTING ENGINEERS, INC
593 RUGH STREET
GREENSBURG, PA 15601
P: 878-295-8914 F:724-514-7047
www.kdhengineers.com

NEWCASTLE

SHEET TITLE:

USGS
LOCATION MAP

PROJ NO:	291-002-21
DATE:	1/10/2025
DRAWN BY:	RAM
CHECKED BY:	CWH

PETERS TOWNSHIP,
WASHINGTON COUNTY,
PENNSYLVANIA

SHEET NO.

1 OF 1

1" = 2000'
SCALE IN FEET

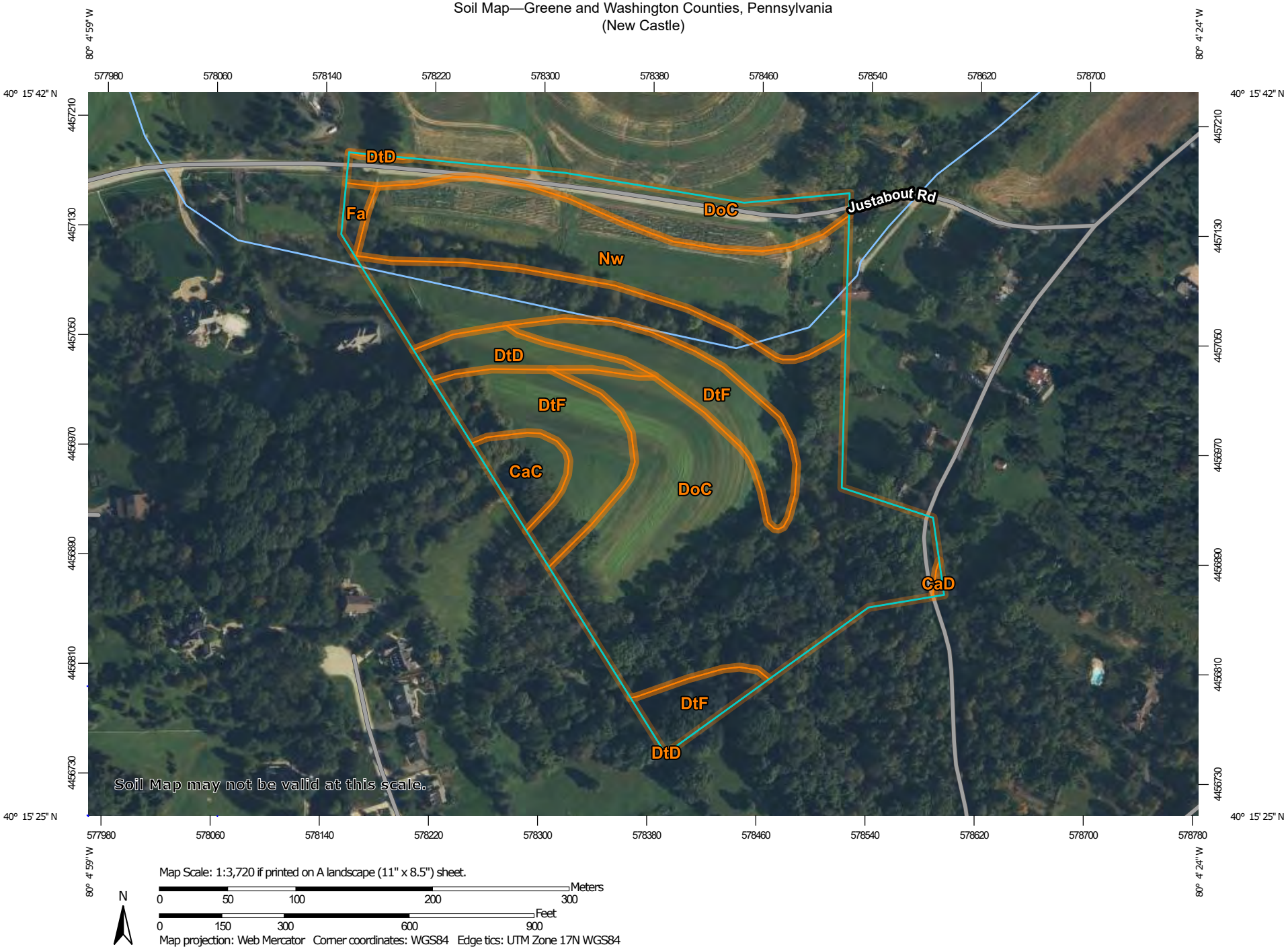
0 2000' 4000'

S:\PROJECTS\291-002-21-HABEN PROPERTY -NEW CASTLE\DRAWINGS\291-002-21-BASE-250407.DWG

APPENDIX B

Custom Soils Report

Soil Map—Greene and Washington Counties, Pennsylvania
(New Castle)



Map Scale: 1:3,720 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 19, 2021—Sep 19, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CaC	Culleoka channery silt loam, 8 to 15 percent slopes	0.7	2.8%
CaD	Culleoka channery silt loam, 15 to 25 percent slopes	0.0	0.1%
DoC	Dormont silt loam, 8 to 15 percent slopes	15.0	55.6%
DtD	Dormont-Culleoka complex, 15 to 25 percent slopes	0.9	3.2%
DtF	Dormont-Culleoka complex, 25 to 50 percent slopes	4.8	18.0%
Fa	Fluvaquents, loamy	0.2	0.7%
Nw	Newark silt loam, 0 to 3 percent slopes, frequently flooded	5.3	19.6%
Totals for Area of Interest		**27.0**	**100.0%**

Greene and Washington Counties, Pennsylvania

CaC—Culleoka channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2s5gn
Elevation: 720 to 1,610 feet
Mean annual precipitation: 37 to 48 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 173 to 206 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Culleoka and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Culleoka

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt - 10 to 19 inches: channery silt loam
BC - 19 to 26 inches: very channery silt loam
C - 26 to 31 inches: very channery silt loam
R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F126XY001OH - Dry Ridge

Hydric soil rating: No

Minor Components

Dormont

Percent of map unit: 15 percent
Landform: Hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Lowell

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

CaD—Culleoka channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2s5gp
Elevation: 720 to 1,610 feet
Mean annual precipitation: 37 to 48 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 173 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition

Culleoka and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Culleoka

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt - 10 to 19 inches: channery silt loam
BC - 19 to 26 inches: very channery silt loam
C - 26 to 31 inches: very channery silt loam
R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Minor Components

Dormont

Percent of map unit: 15 percent
Landform: Hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Lowell

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

DoC—Dormont silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2s5gh
Elevation: 800 to 1,540 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 173 to 197 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dormont and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam
Bt1 - 11 to 21 inches: silt loam
Bt2 - 21 to 31 inches: silty clay loam
Bt3 - 31 to 46 inches: channery silty clay loam
Bt4 - 46 to 62 inches: channery silty clay loam
BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)
Depth to water table: About 24 to 44 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D
Ecological site: F126XY003OH - Moist Ridge
Hydric soil rating: No

Minor Components

Culleoka
Percent of map unit: 15 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Lowell
Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Guernsey
Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

DtD—Dormont-Culleoka complex, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2s5gy
Elevation: 200 to 1,300 feet
Mean annual precipitation: 32 to 48 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Dormont and similar soils: 45 percent
Culleoka and similar soils: 37 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, head slope
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam
Bt1 - 11 to 21 inches: silt loam
Bt2 - 21 to 31 inches: silty clay loam
Bt3 - 31 to 46 inches: channery silty clay loam
Bt4 - 46 to 62 inches: channery silty clay loam
BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)
Depth to water table: About 24 to 44 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F126XY004OH - Side Slope
Hydric soil rating: No

Description of Culleoka

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, nose slope, head slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt - 10 to 19 inches: channery silt loam
BC - 19 to 26 inches: very channery silt loam
C - 26 to 31 inches: very channery silt loam
R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F126XY004OH - Side Slope
Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope, head slope, nose slope
Down-slope shape: Convex

Across-slope shape: Linear, convex
Hydric soil rating: No

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

Thorndale

Percent of map unit: 3 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

DtF—Dormont-Culleoka complex, 25 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2s5gz
Elevation: 800 to 1,300 feet
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Dormont and similar soils: 50 percent
Culleoka and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam
Bt1 - 11 to 21 inches: silt loam
Bt2 - 21 to 31 inches: silty clay loam
Bt3 - 31 to 46 inches: channery silty clay loam
Bt4 - 46 to 62 inches: channery silty clay loam
BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 25 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)
Depth to water table: About 24 to 44 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F126XY004OH - Side Slope
Hydric soil rating: No

Description of Culleoka

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, nose slope, head slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt - 10 to 19 inches: channery silt loam
BC - 19 to 26 inches: very channery silt loam
C - 26 to 31 inches: very channery silt loam
R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 25 to 50 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F126XY004OH - Side Slope
Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope, nose slope
Down-slope shape: Convex, linear

Across-slope shape: Linear, convex
Hydric soil rating: No

Fluvaquents

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

Fa—Fluvaquents, loamy

Map Unit Setting

National map unit symbol: l64w
Elevation: 700 to 1,340 feet
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Fluvaquents and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluvaquents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 42 inches: silt loam
H3 - 42 to 60 inches: loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F126XY005OH - Poorly Drained Floodplain
Hydric soil rating: Yes

Minor Components

Newark

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Huntington

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melvin

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

Nw—Newark silt loam, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2w1w1
Elevation: 500 to 1,440 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 49 to 55 degrees F
Frost-free period: 130 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Newark, frequently flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newark, Frequently Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Fine-silty alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 9 inches: silt loam
Bw - 9 to 19 inches: silt loam
Bg - 19 to 35 inches: silt loam
Cg - 35 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 10 to 18 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F126XY005OH - Poorly Drained Floodplain
Forage suitability group: Unnamed (G124XYC-3OH)

Other vegetative classification: Unnamed (G124XYC-3OH)
Hydric soil rating: No

Minor Components

Lobdell, frequently flooded
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melvin, frequently flooded
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Nolin, frequently flooded
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

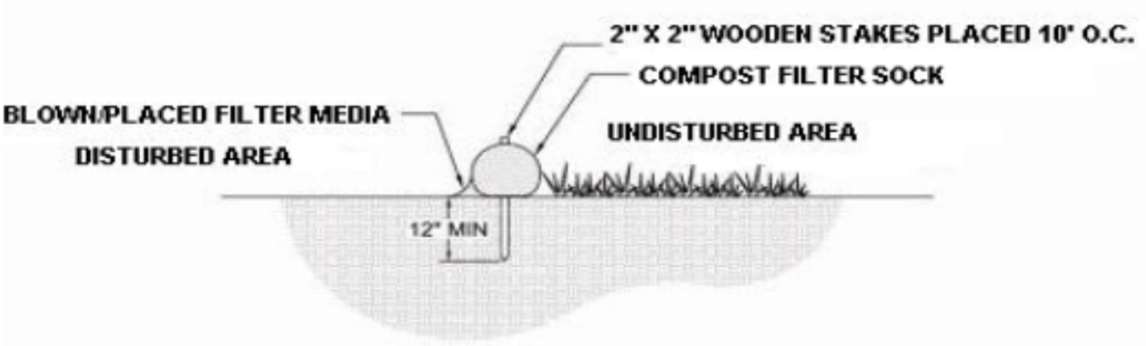
Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

APPENDIX C

E&S Standard Worksheets

STANDARD E&S WORKSHEET #1
Compost Filter Socks

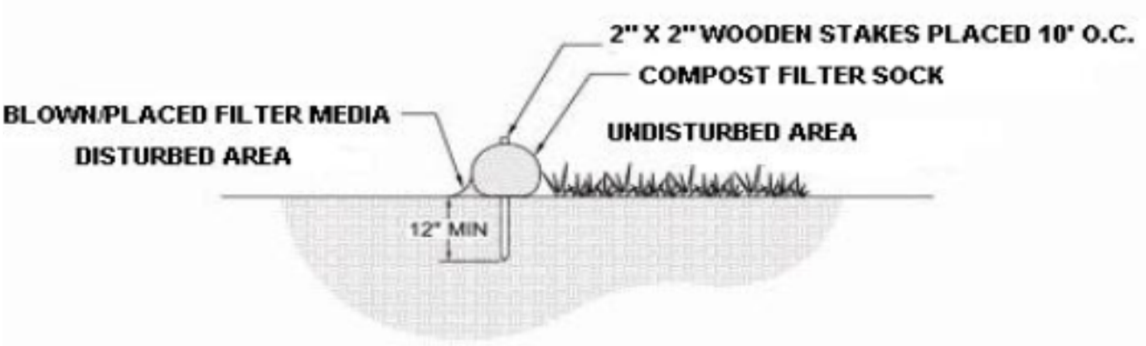
PROJECT NAME: Tuscany II
LOCATION: Peters Township, Washington County, PA
PREPARED BY: RAM DATE: 10/25/2024
CHECKED BY: DATE:



Sock Number	Sock Length (ft)	Diameter (in)	Approximate Location	Slope (%)	Slope Length Above Sock (ft)
SS-1	78	18 IN. CFS	Above R001	5	168
SS-2	127	18 IN. CFS	Above R001	6	184
SS-3	135	18 IN. CFS	Above R001	7	184
SS-4	124	18 IN. CFS	Above R001	4	113
SS-5	145	18 IN. CFS	Above R001	5	227
SS-6	168	18 IN. CFS	Above R001	4	249
SS-7	89	18 IN. CFS	Above R001	4	285
SS-8	89	18 IN. CFS	Above UNT Brush Run	5	233
SS-9	23	18 IN. CFS	Above UNT Brush Run	7	158
SS-10	52	18 IN. CFS	Above UNT Brush Run	9	122
SS-11	128	32 IN. CFS	Above R001	19	269
SS-12	43	32 IN. CFS	Above R001	15	350
SS-13	35	32 IN. CFS	Above R001	13	362
SS-14	75	32 IN. CFS	Above R001	19	400
SS-15	91	32 IN. CFS	Above R001	17	429
SS-16	26	32 IN. CFS		15	350
SS-17	133	32 IN. CFS		15	312
SS-18	76	32 IN. CFS		14	441
SS-19	46	32 IN. CFS		18	216
SS-20	58	32 IN. CFS		17	303
SS-21	114	32 IN. CFS		16	322
SS-22	58	32 IN. CFS	Above R003	15	376
SS-23	107	32 IN. CFS	Above R003	15	364
SS-24	16	32 IN. CFS	Above R003	15	244
SS-25	90	32 IN. CFS	Above R003	13	275
SS-26	54	32 IN. CFS	Above R003	12	308

STANDARD E&S WORKSHEET #1
Compost Filter Socks

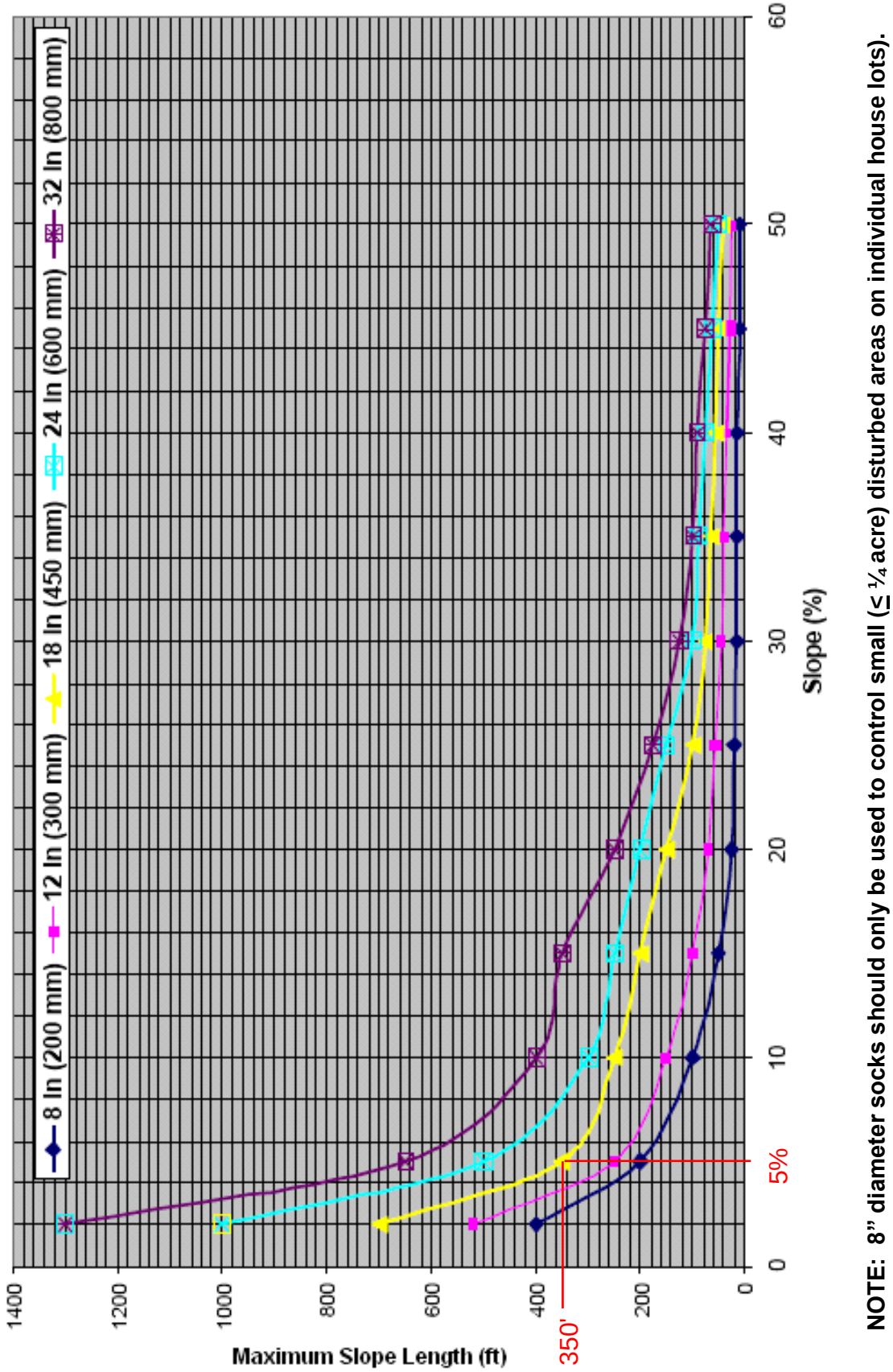
PROJECT NAME: Tuscany II
LOCATION: Peters Township, Washington County, PA
PREPARED BY: RAM DATE: 10/25/2024
CHECKED BY: DATE:



Sock Number	Sock Length (ft)	Diameter (in)	Approximate Location	Slope (%)	Slope Length Above Sock (ft)
SS-27	46	32 IN. CFS		14	306
SS-28	39	32 IN. CFS		16	271
SS-29	11	18 IN. CFS		23	103
SS-30	10	18 IN. CFS		18	136
SS-31	19	18 IN. CFS		16	126
SS-32	28	18 IN. CFS		13	110
SS-33	29	18 IN. CFS		12	144
SS-34	28	18 IN. CFS		15	96
SS-35	15	18 IN. CFS		18	44
SS-36	98	32 IN. CFS	Above R003	21	218
SS-37	29	18 IN. CFS	Above R003	23	62
SS-38	19	18 IN. CFS	Above R003	23	80
SS-39	15	18 IN. CFS	Above R003	21	121
SS-40	12	18 IN. CFS	Above R007	6	52
SS-41	20	18 IN. CFS	Above R007	15	166
SS-42	25	18 IN. CFS	Above R007	15	200
SS-43	20	18 IN. CFS	Above R007	14	208
SS-44	30	18 IN. CFS	Above R007	0	0
SS-45	56	18 IN. CFS	Above R007	16	159
SS-46	25	18 IN. CFS	Above R007	17	166

SS-1

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

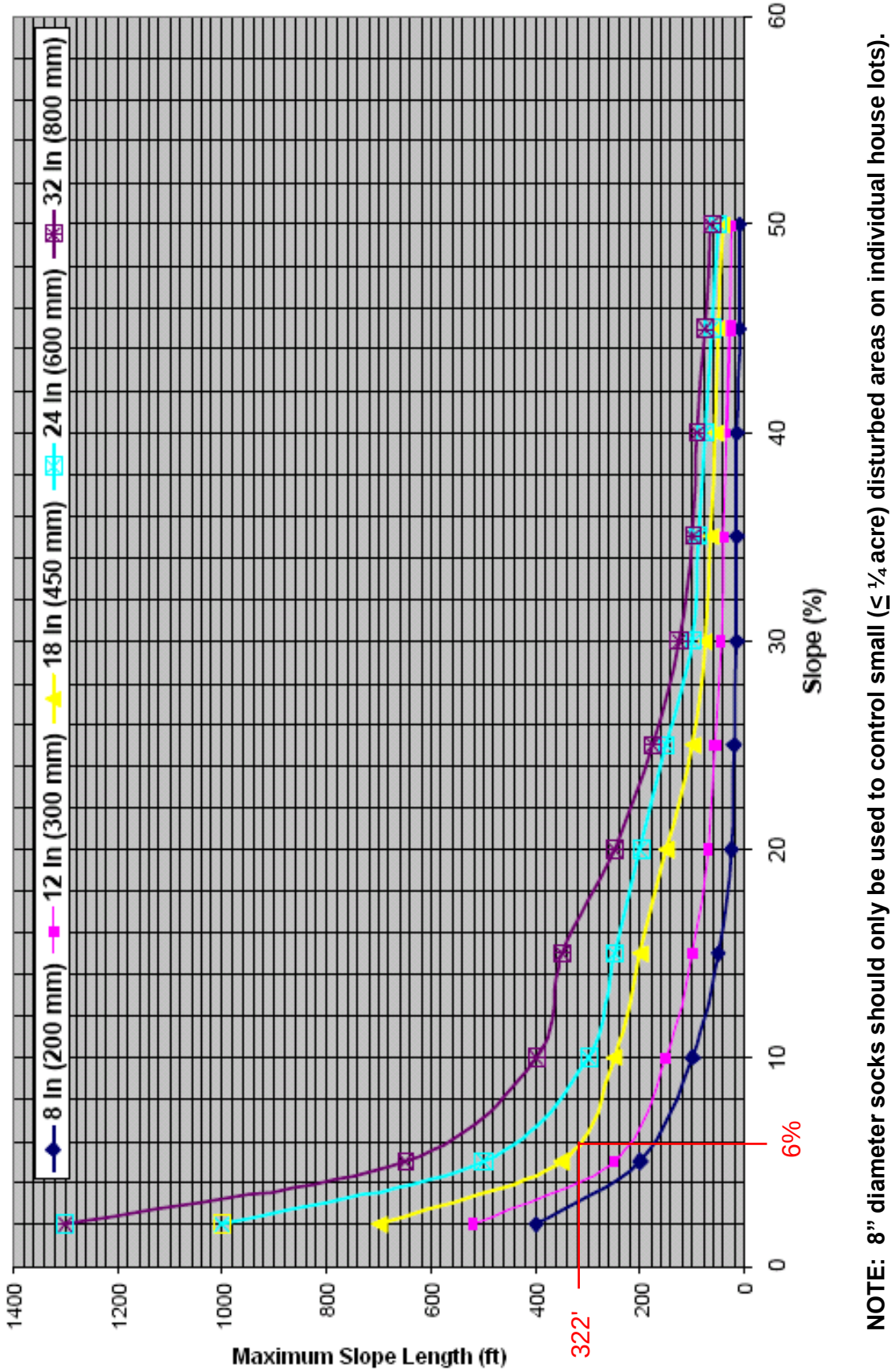


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-2

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

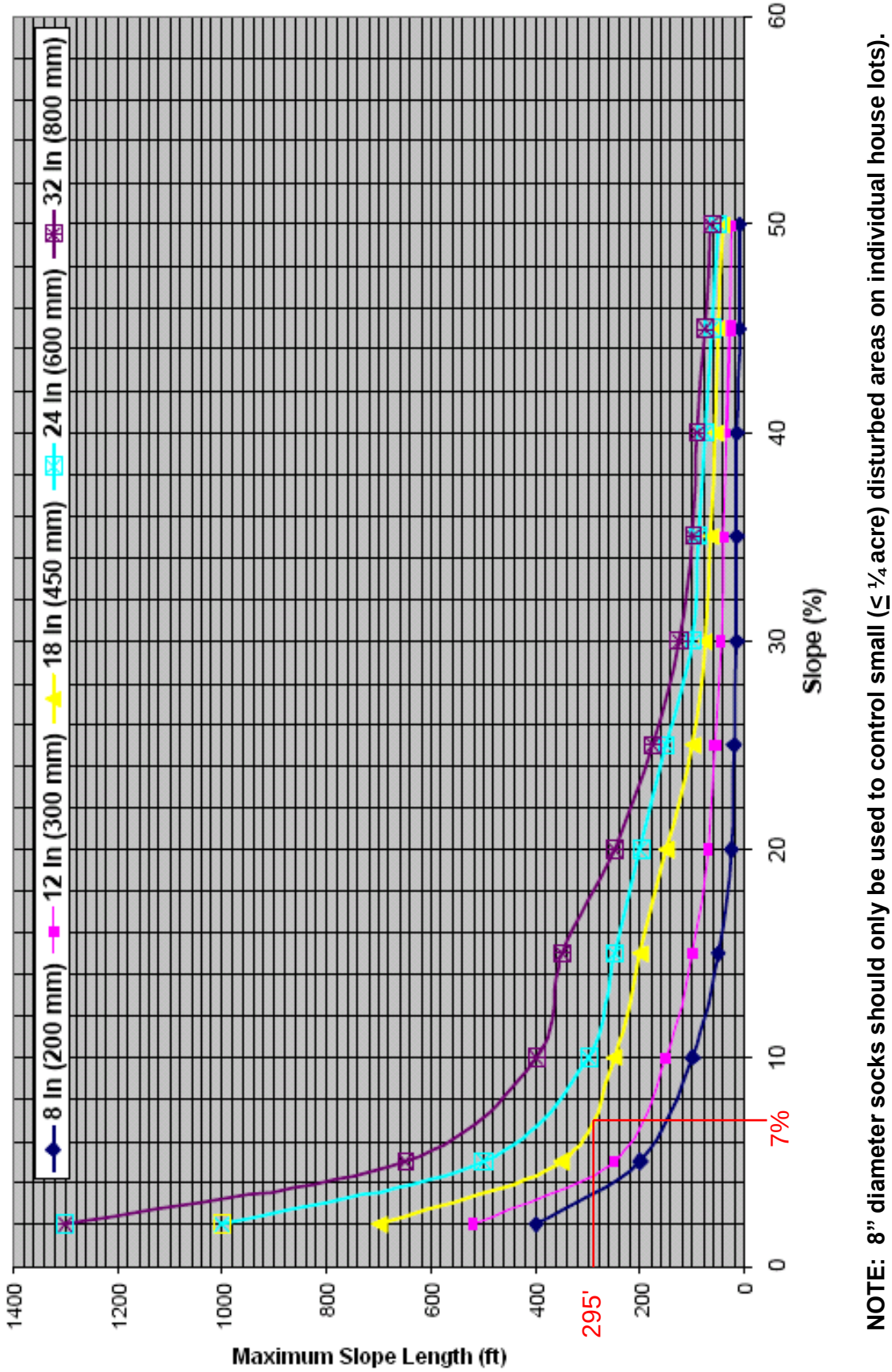


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-3

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

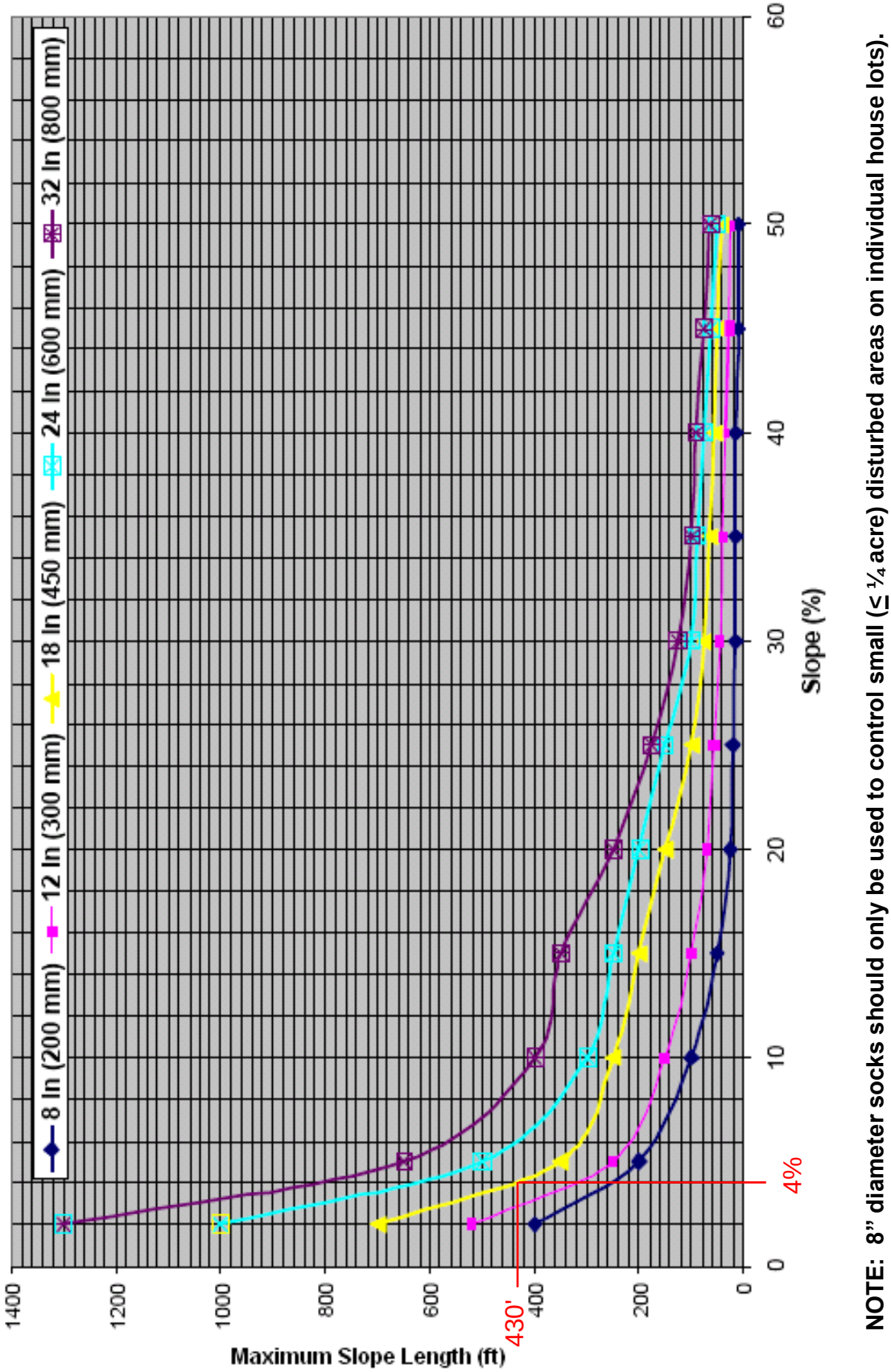


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-4

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

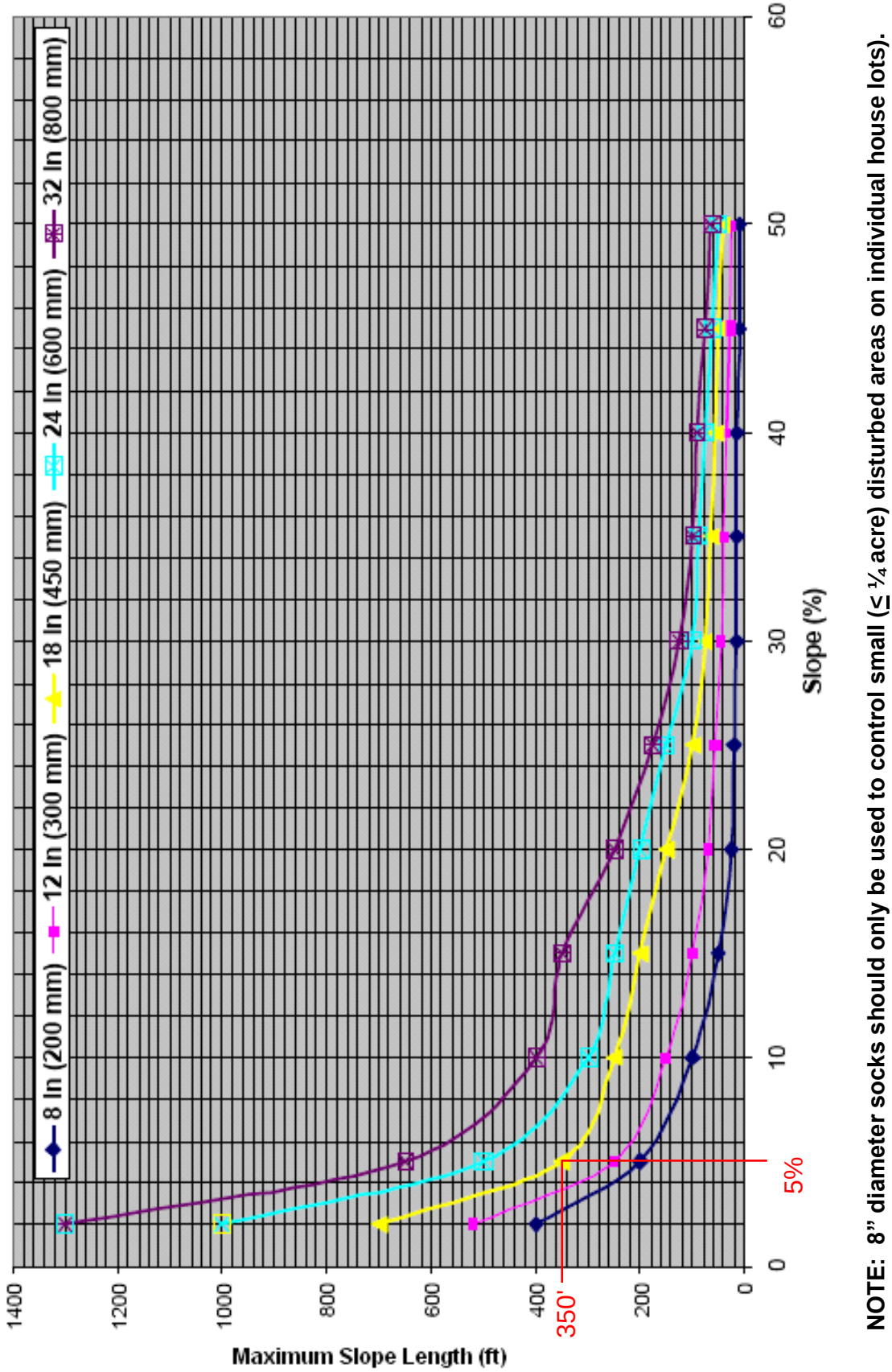


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-5

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

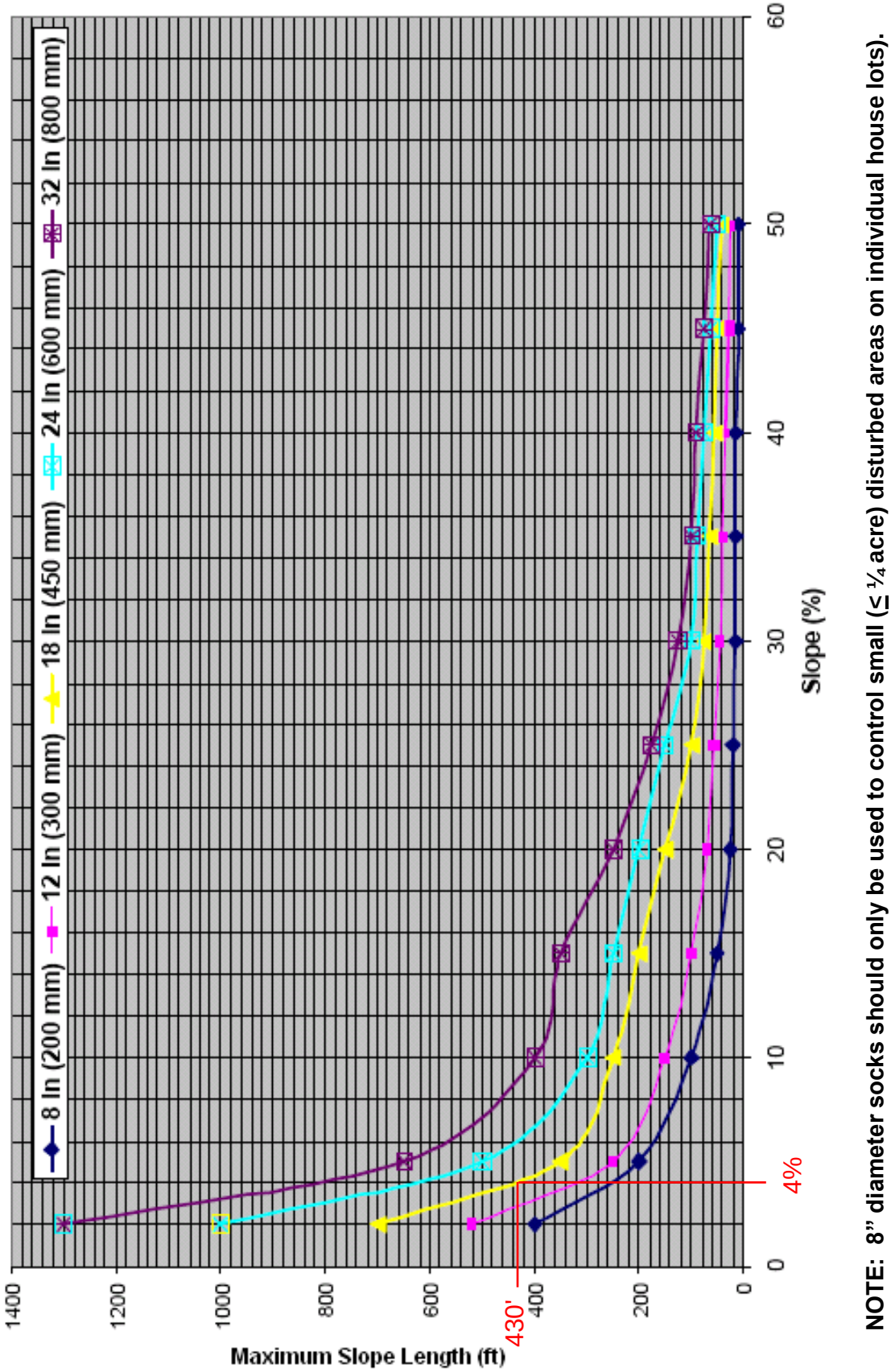


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-6

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

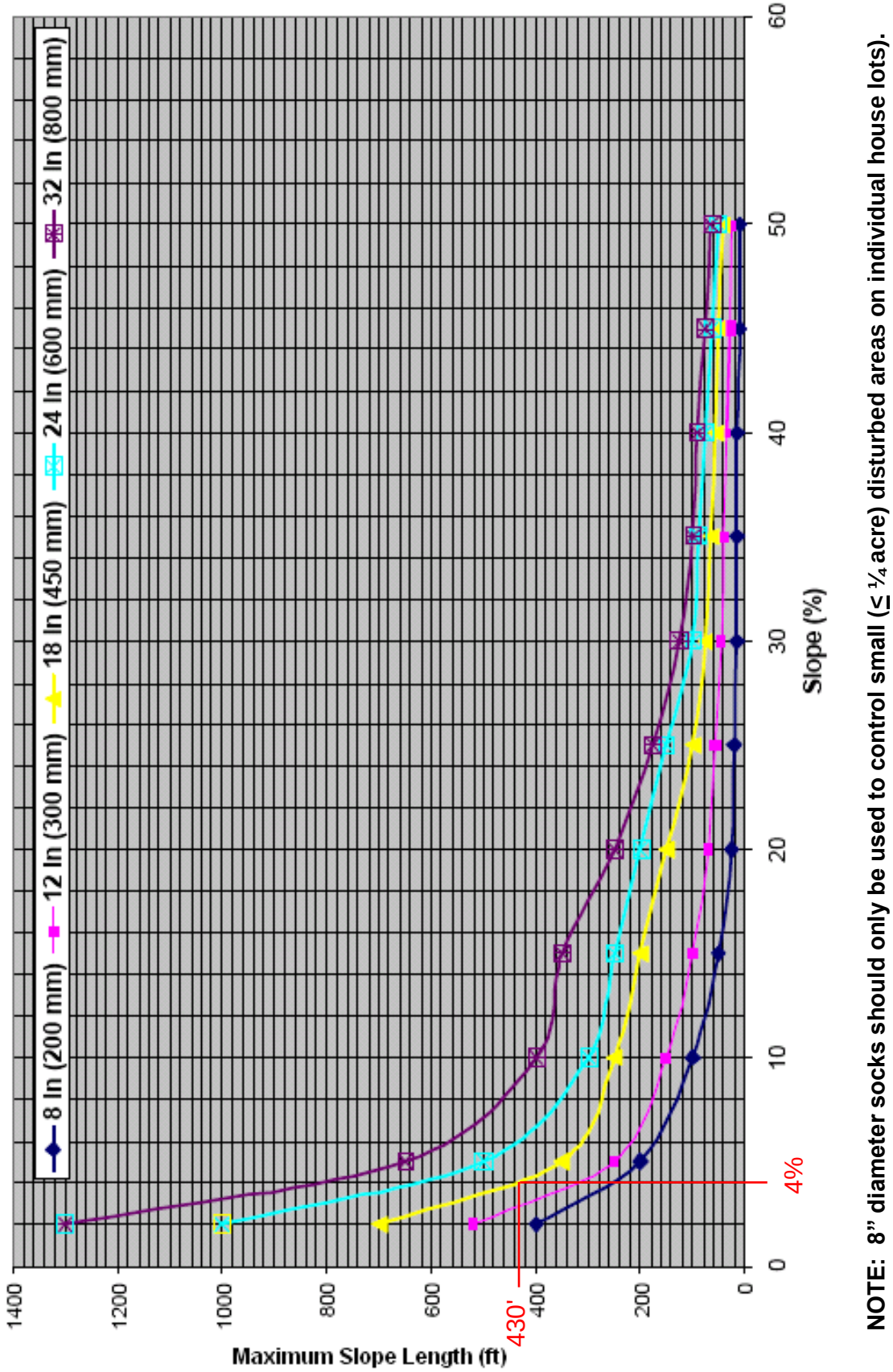


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-7

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

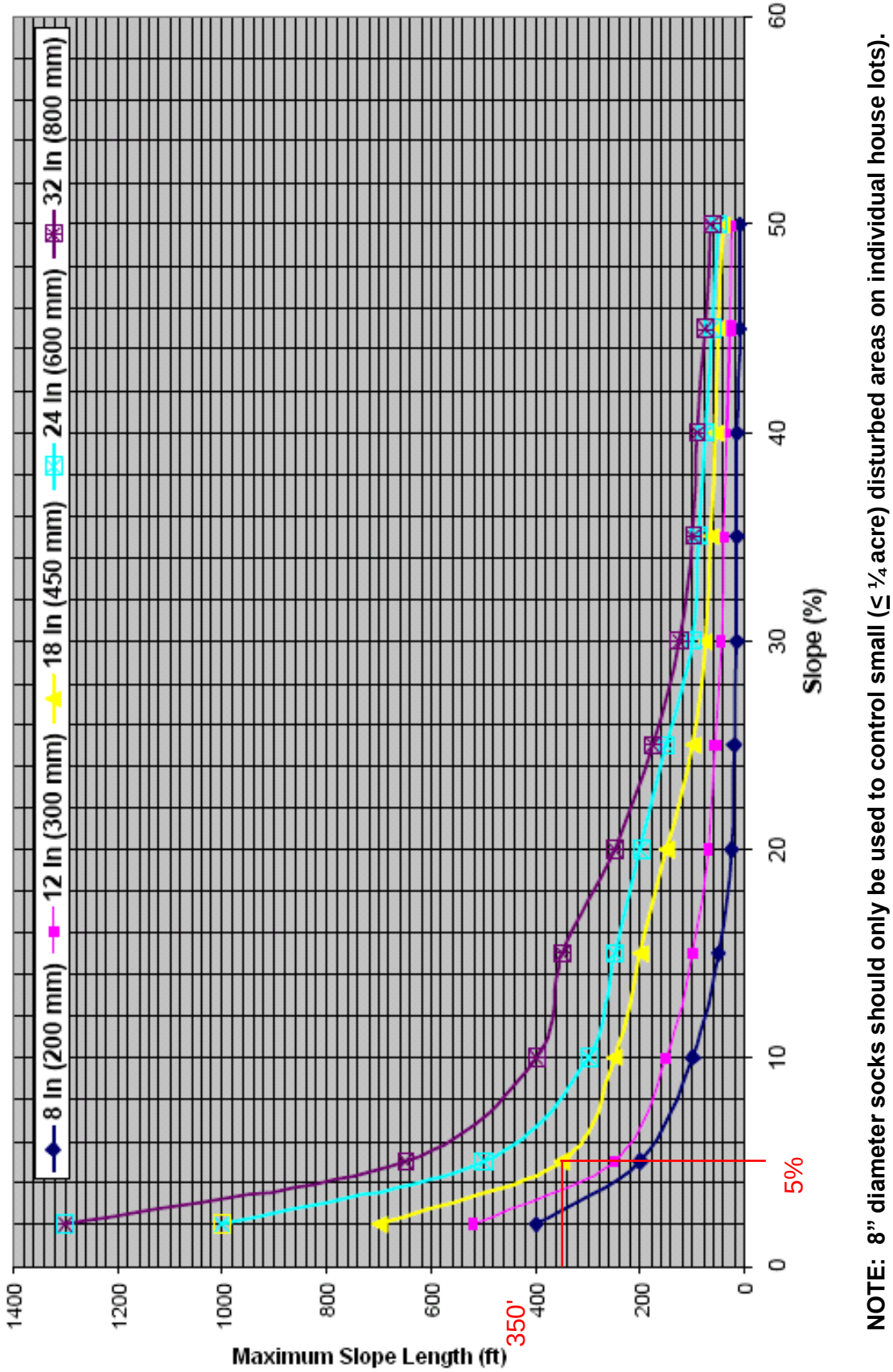


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-8

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

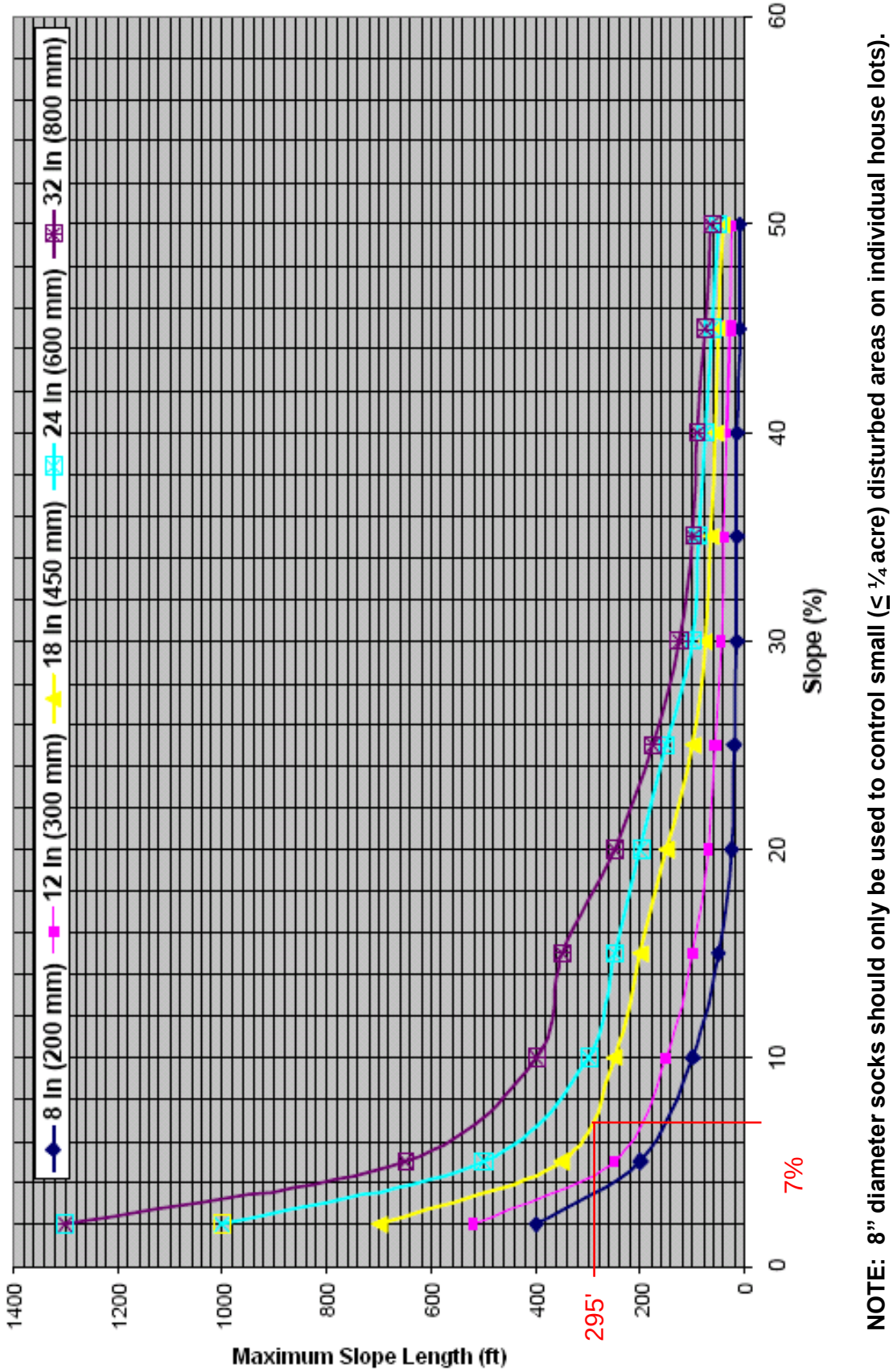


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-9

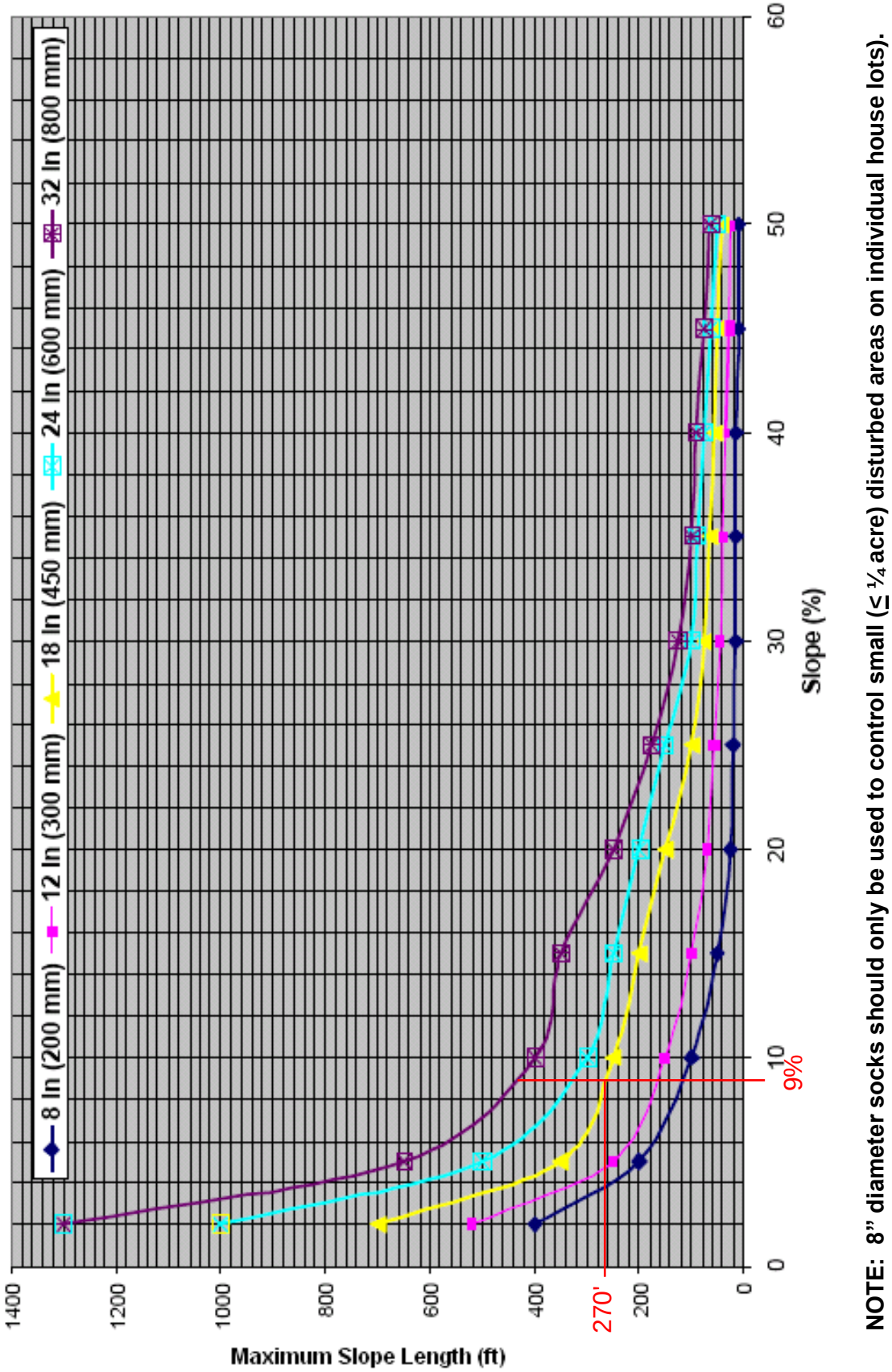
FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

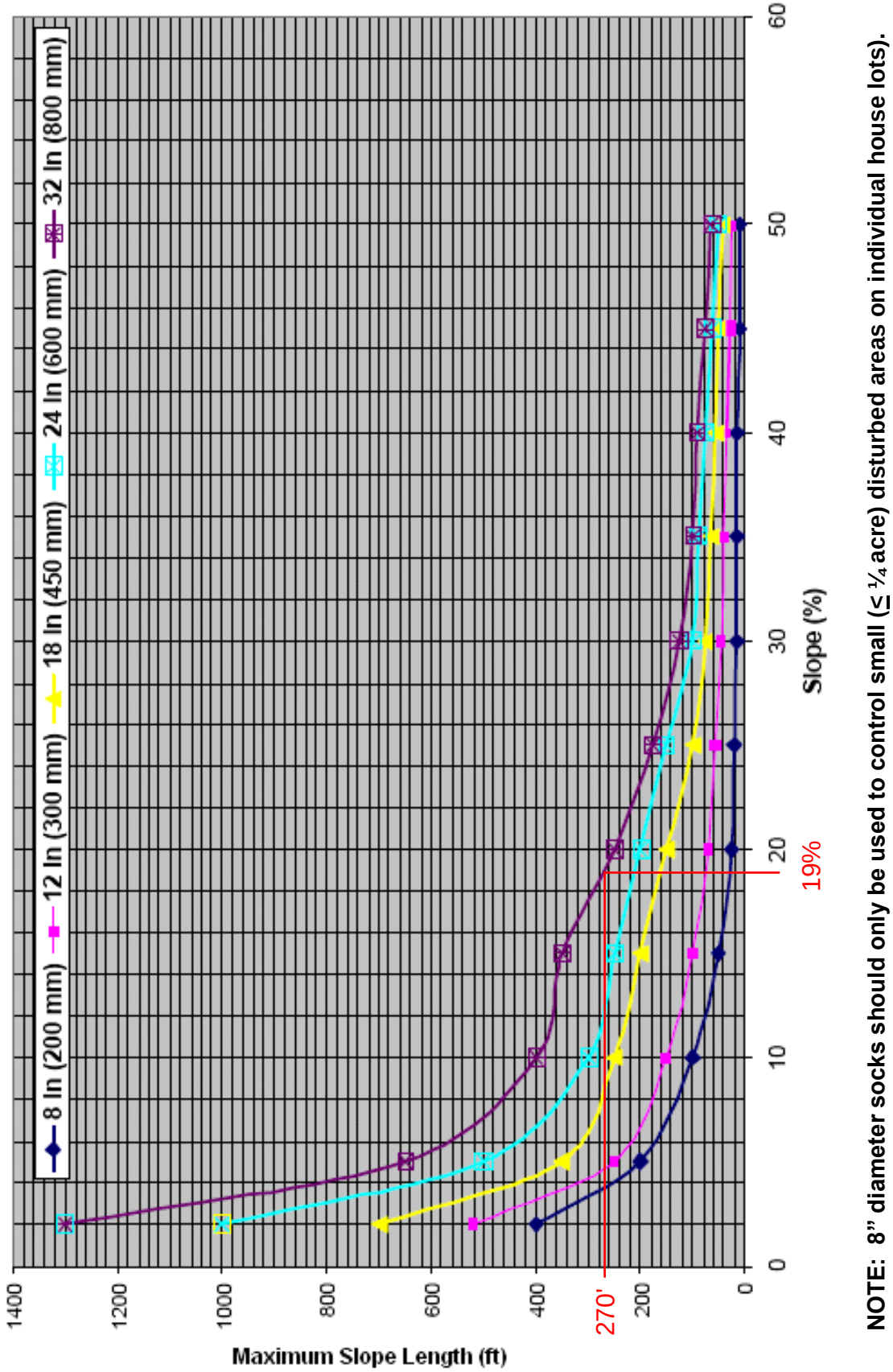
FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

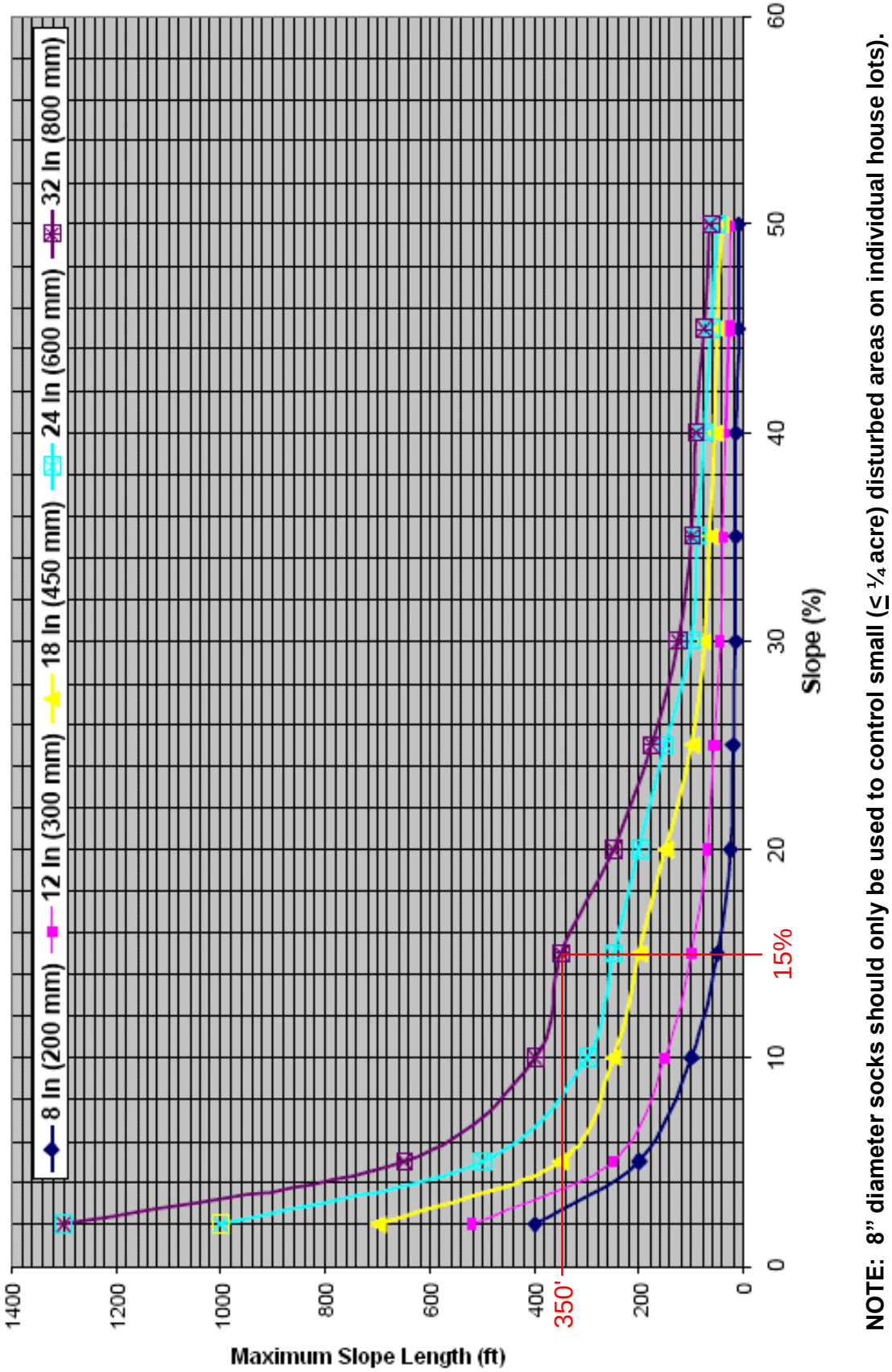
FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

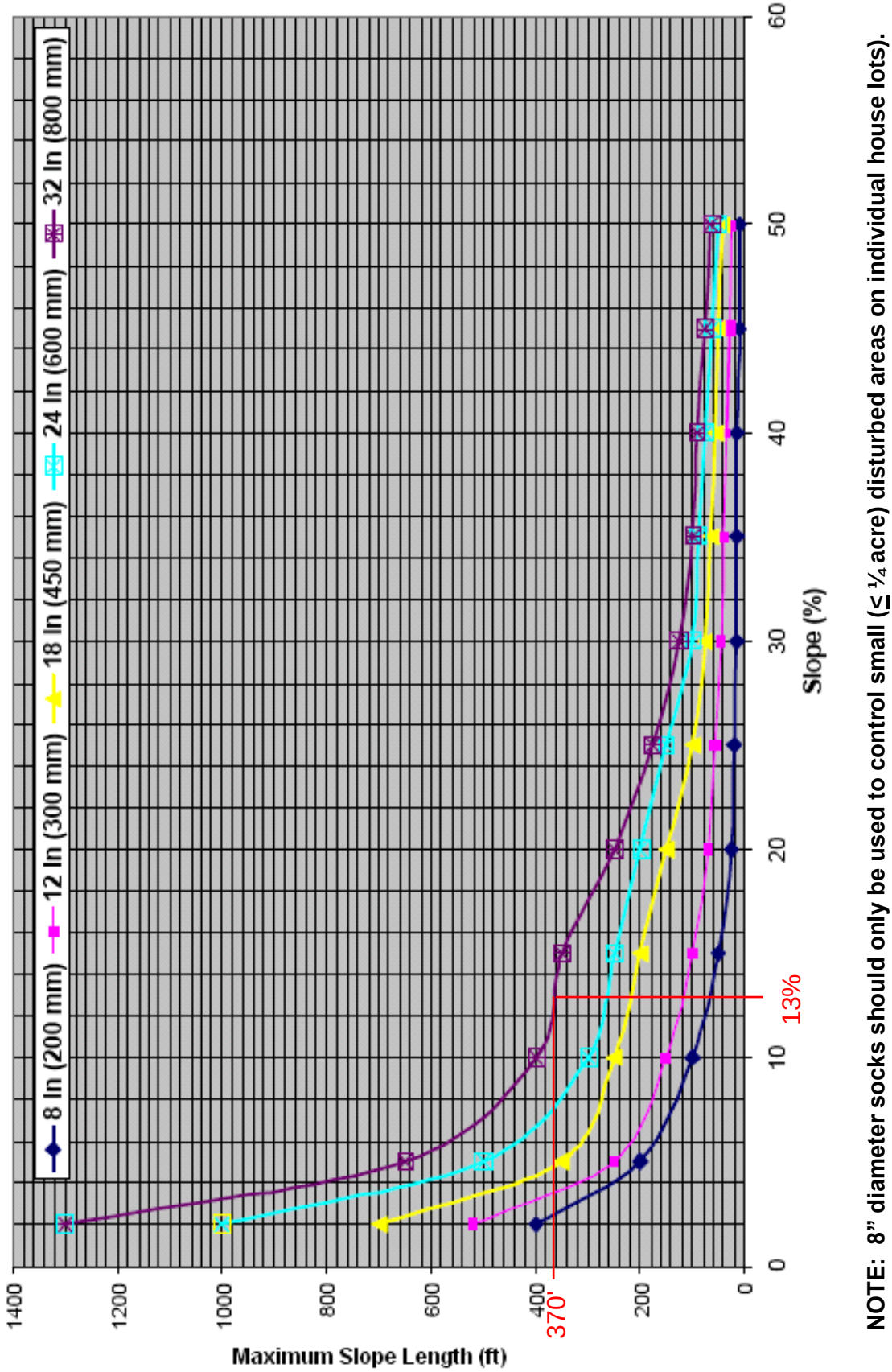


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-13

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

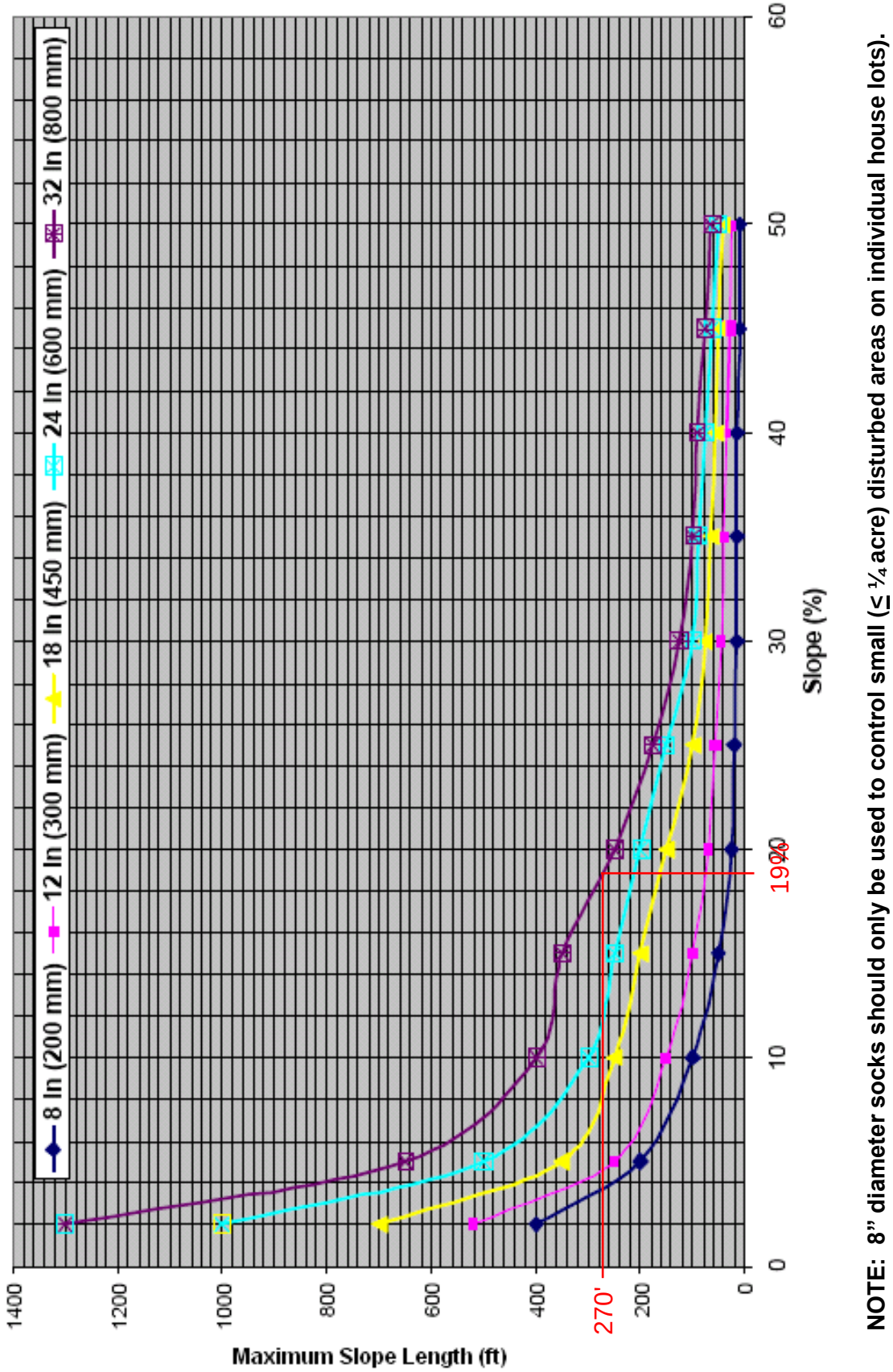


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-14

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

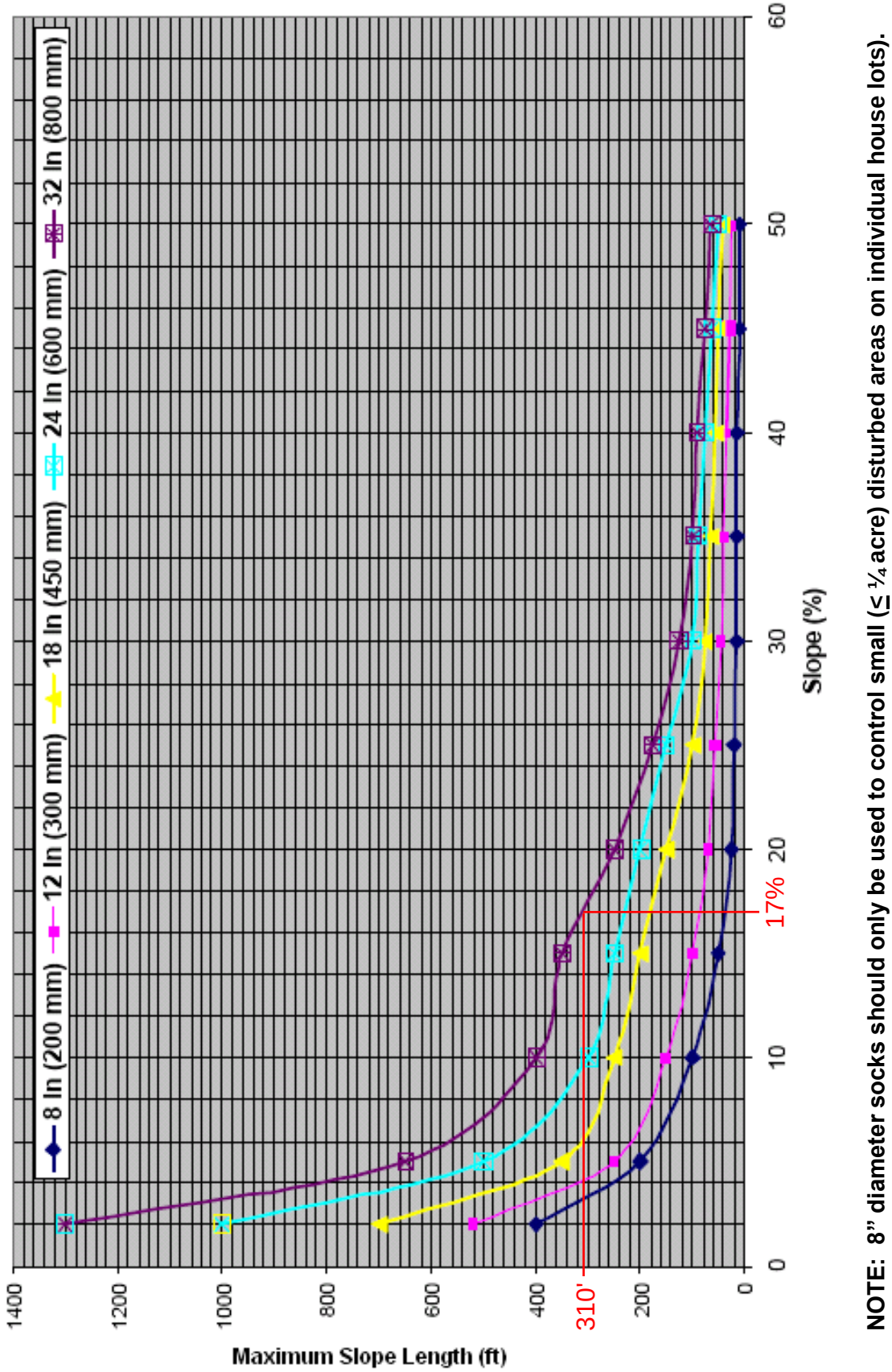


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-15

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

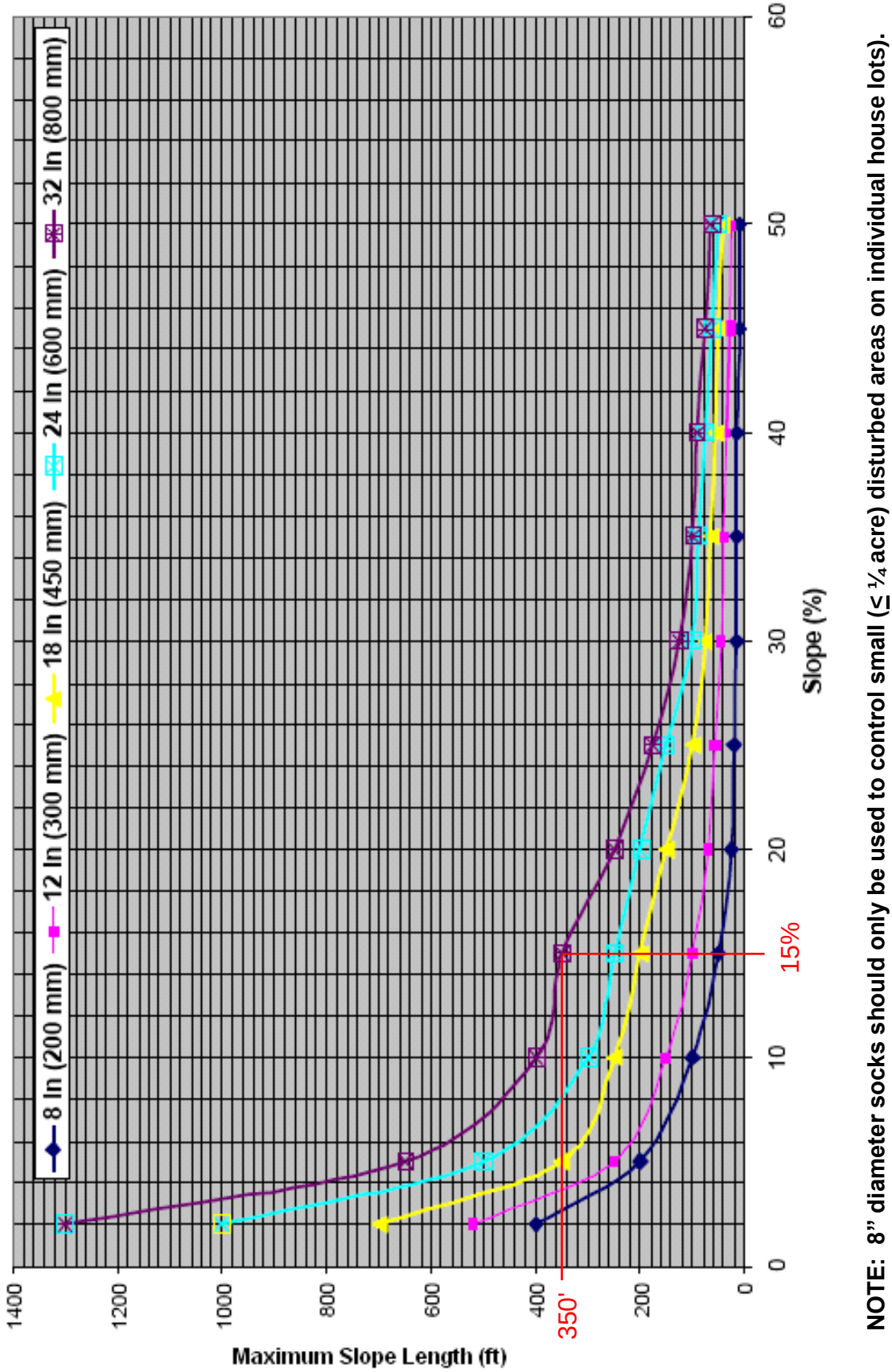


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-16

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

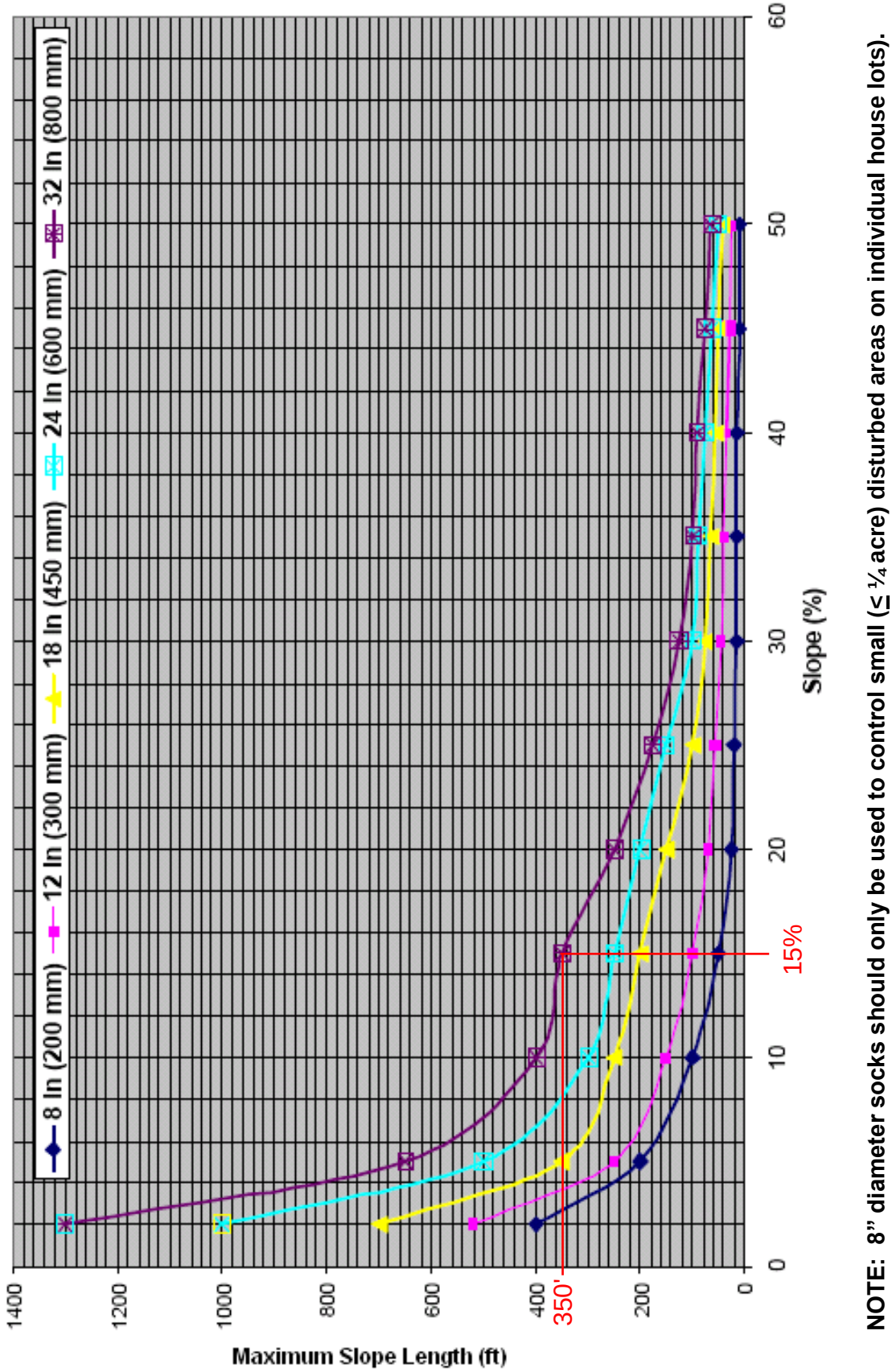


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-17

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

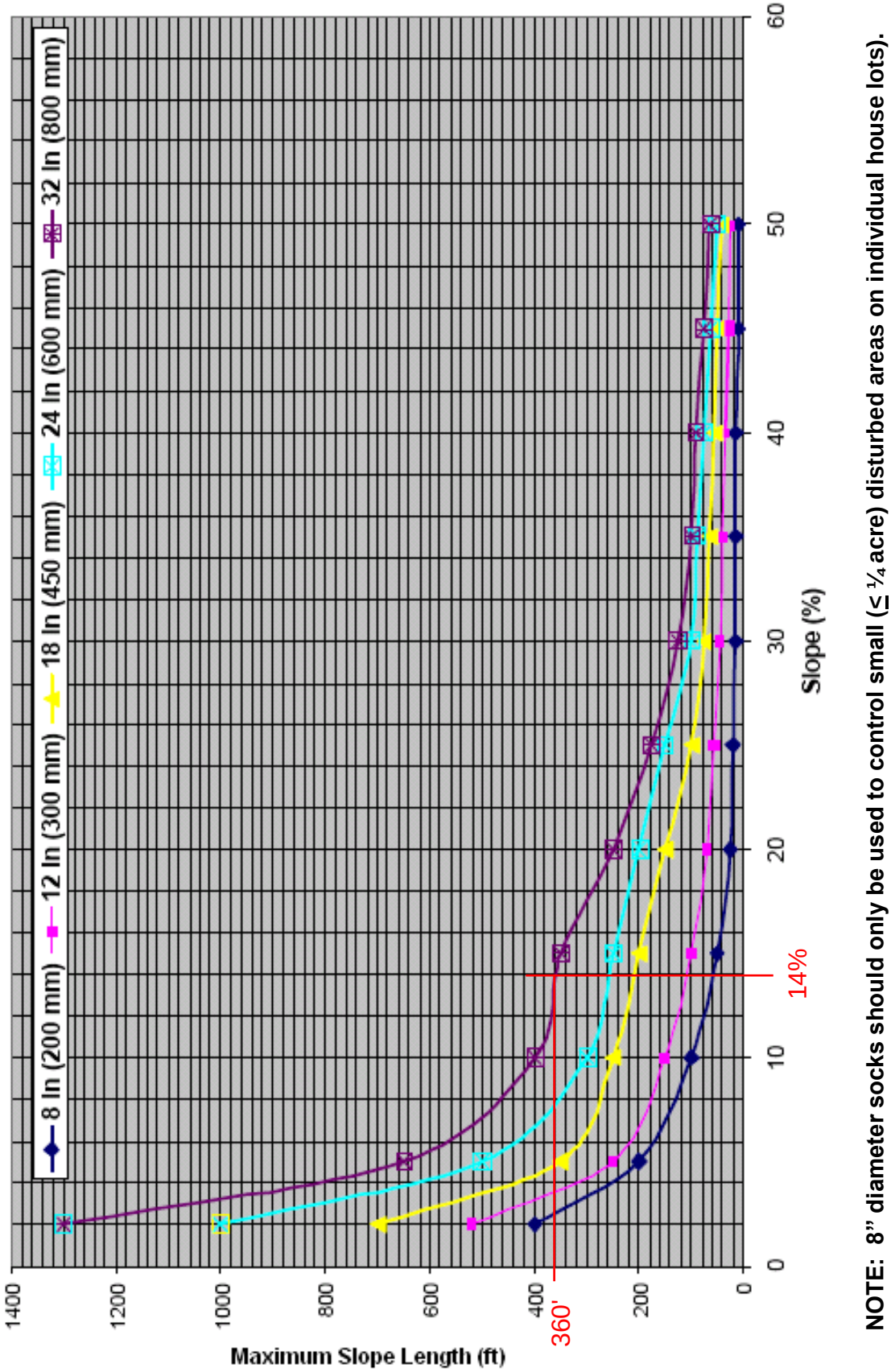


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-18

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

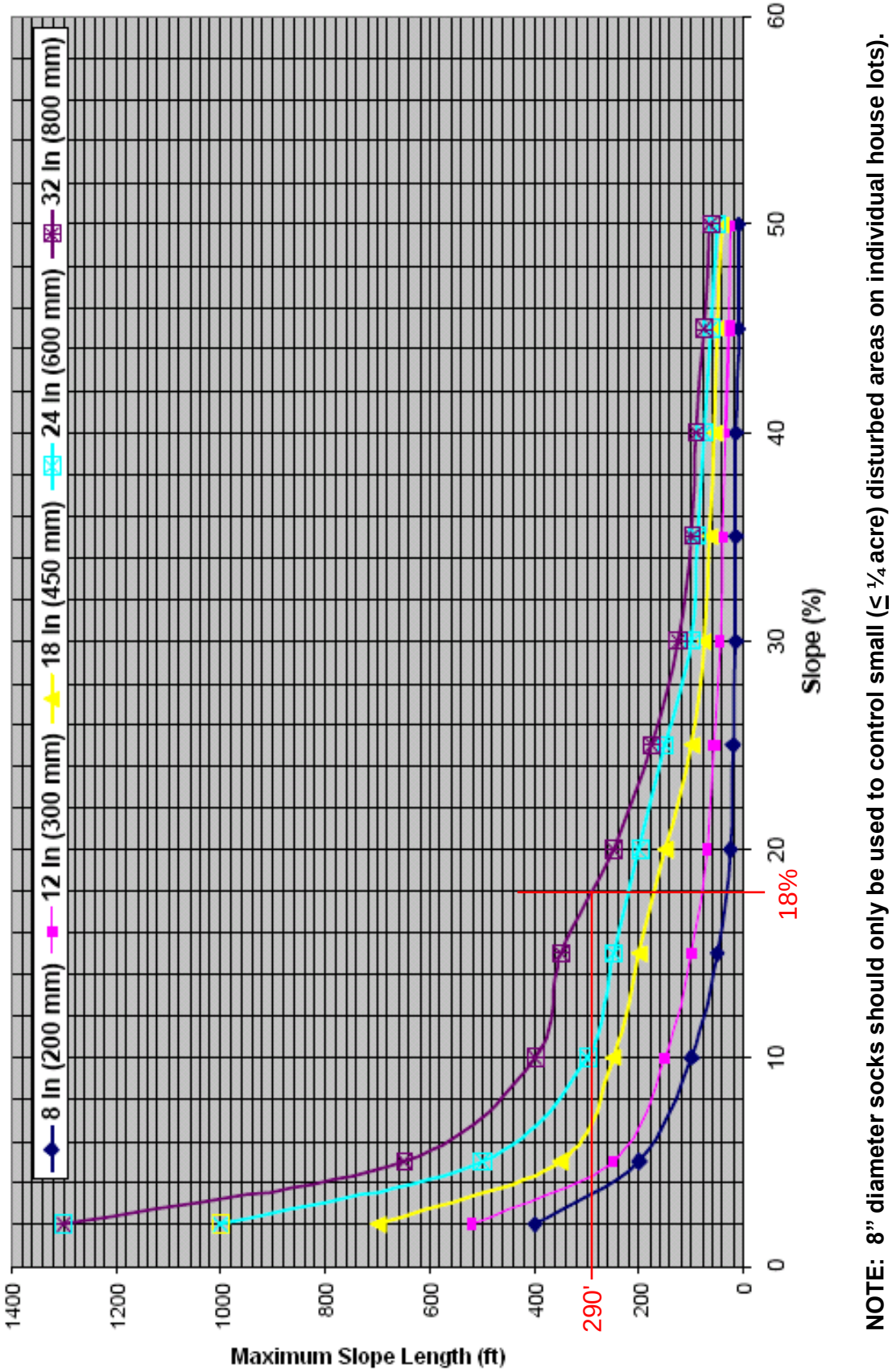


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-19

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

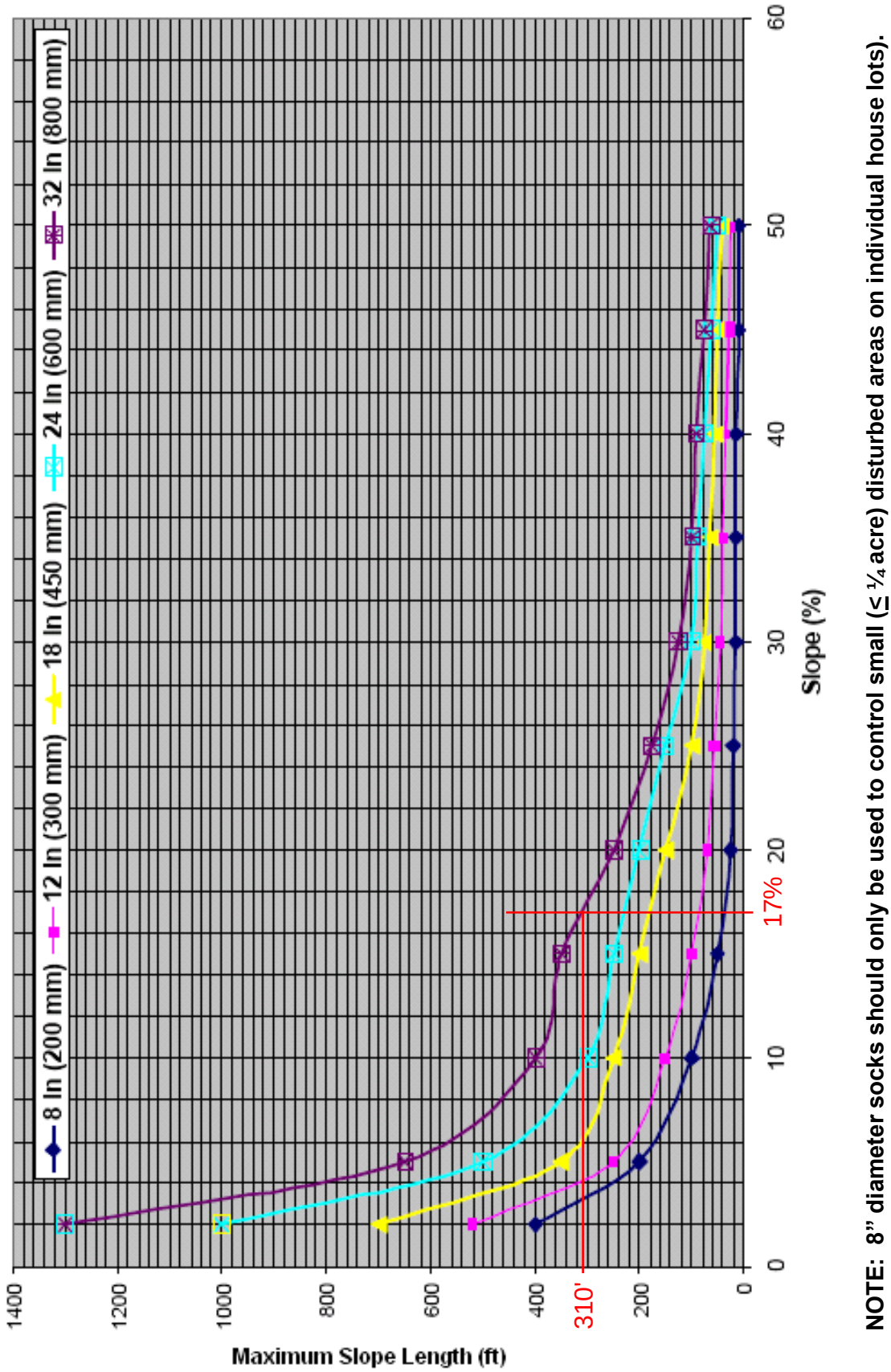


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-20

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

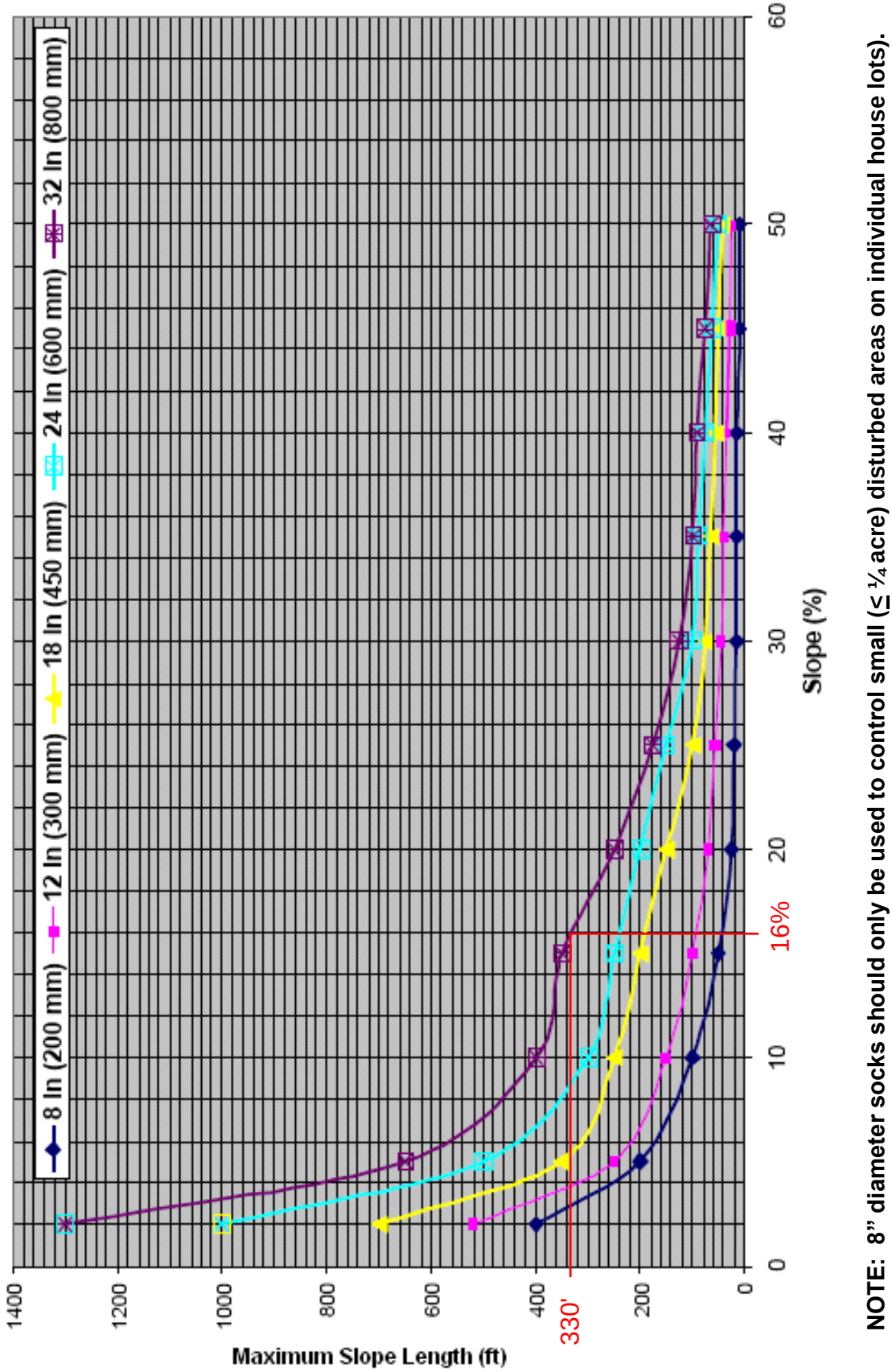


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-21

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

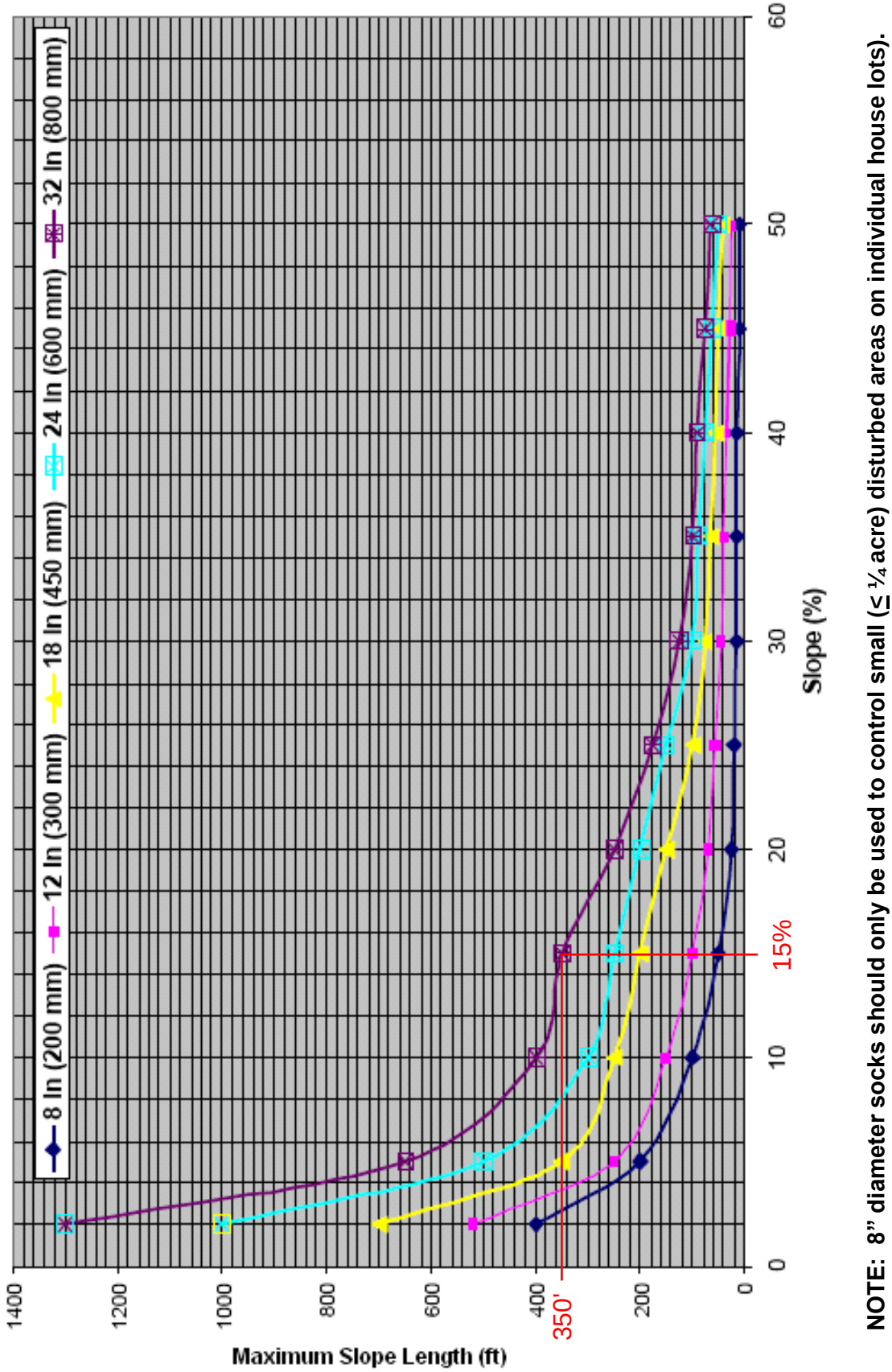


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-22

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

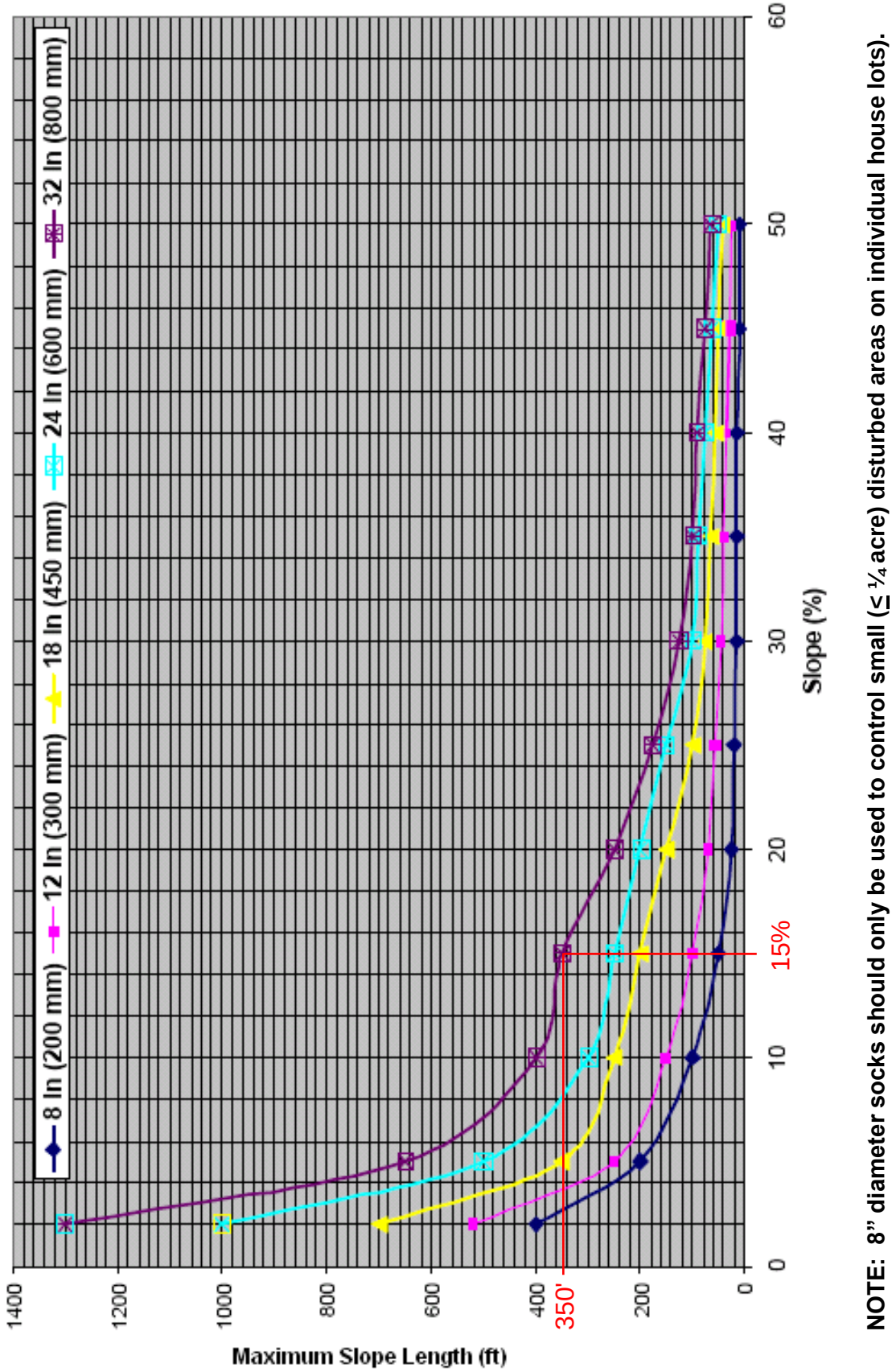


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-23

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

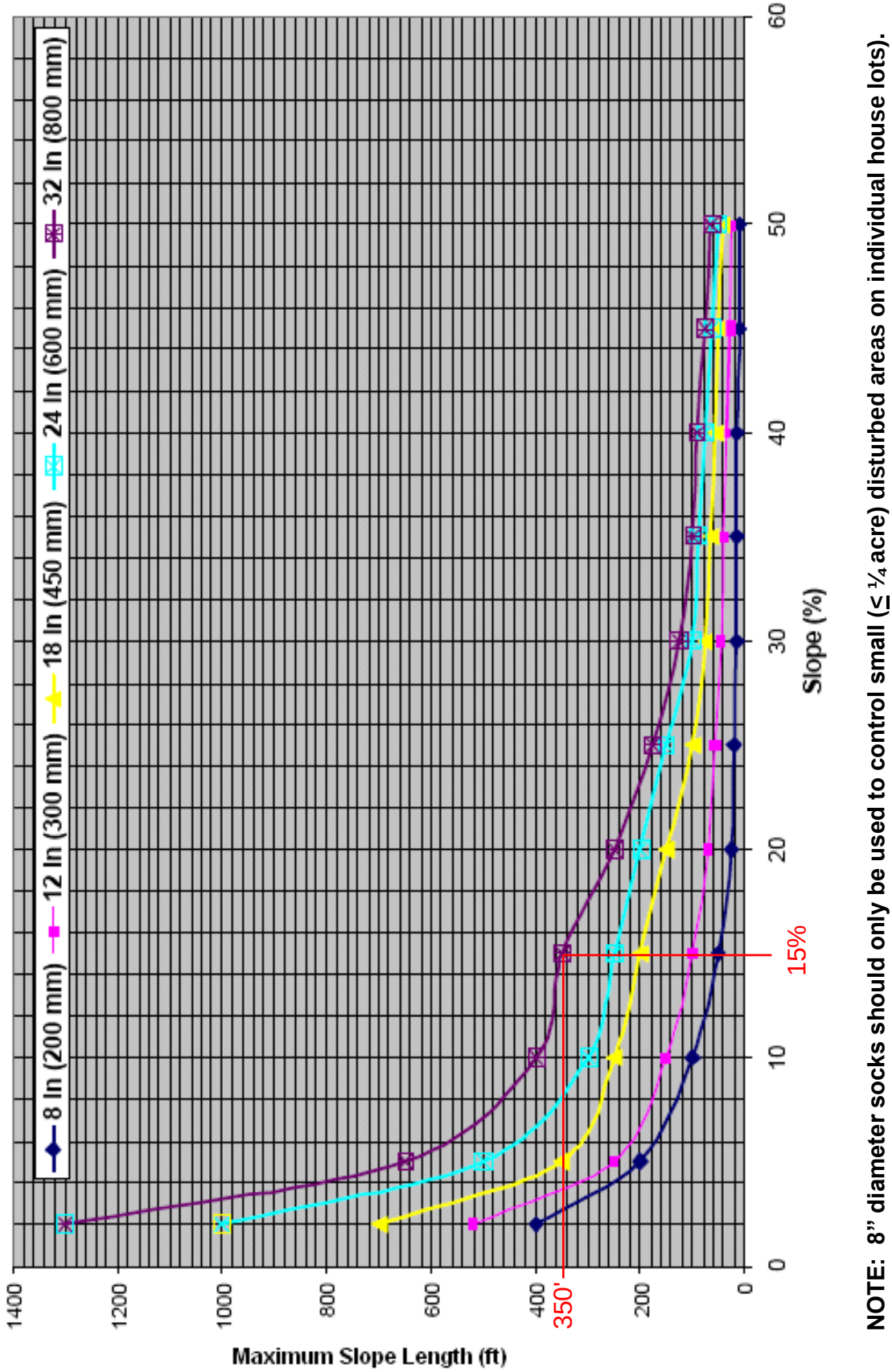


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-24

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

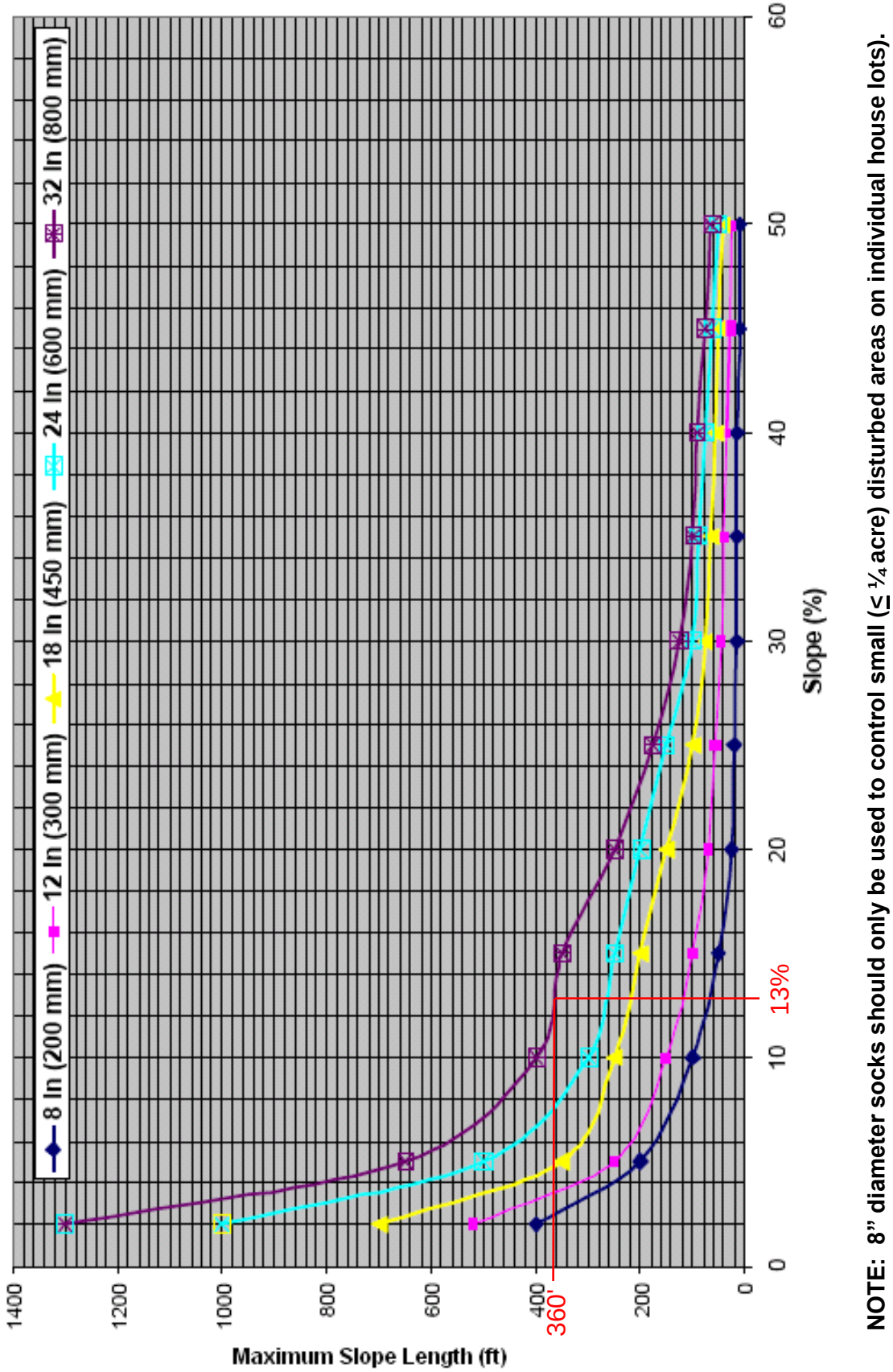


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-25

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

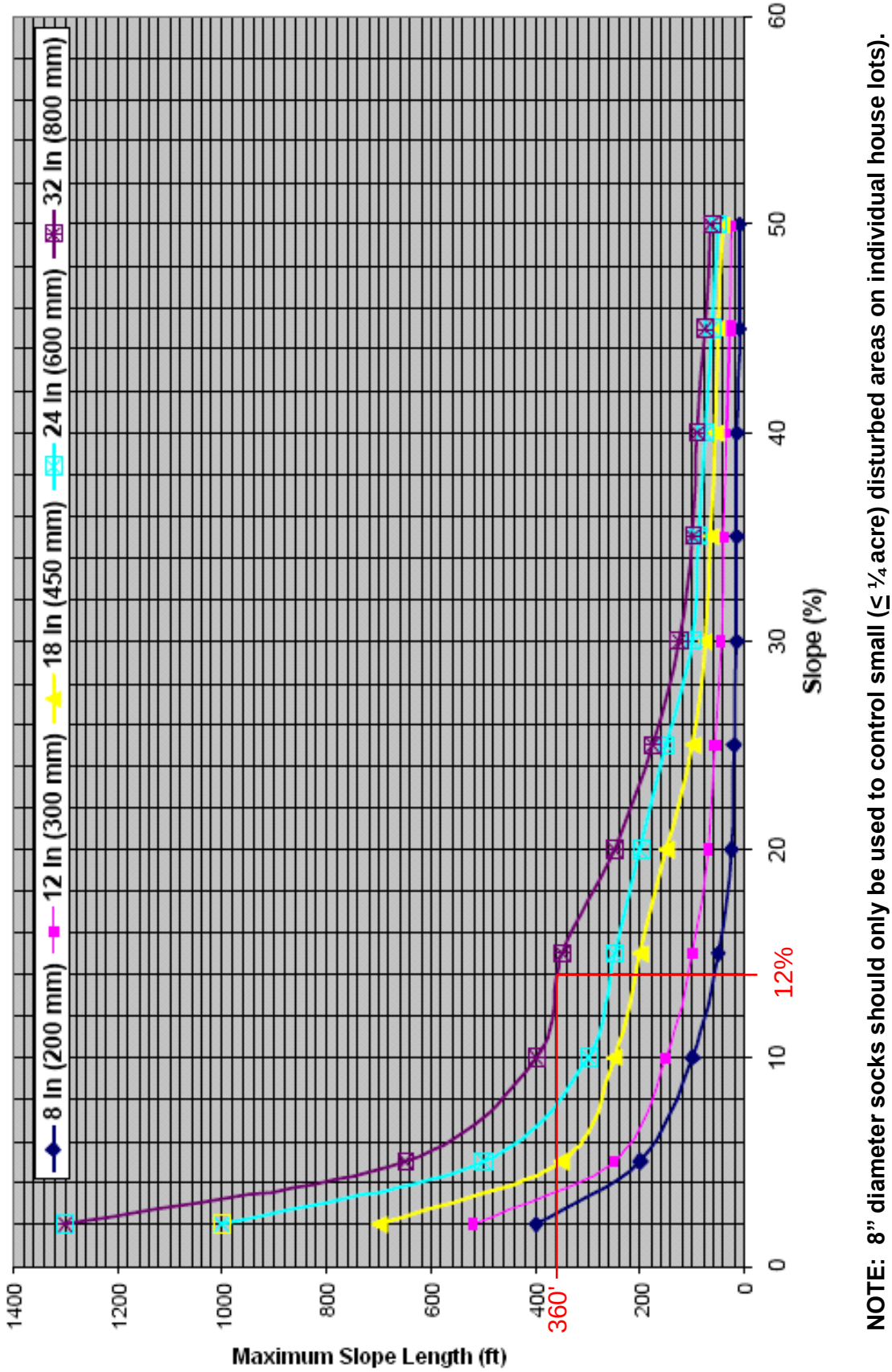


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-26

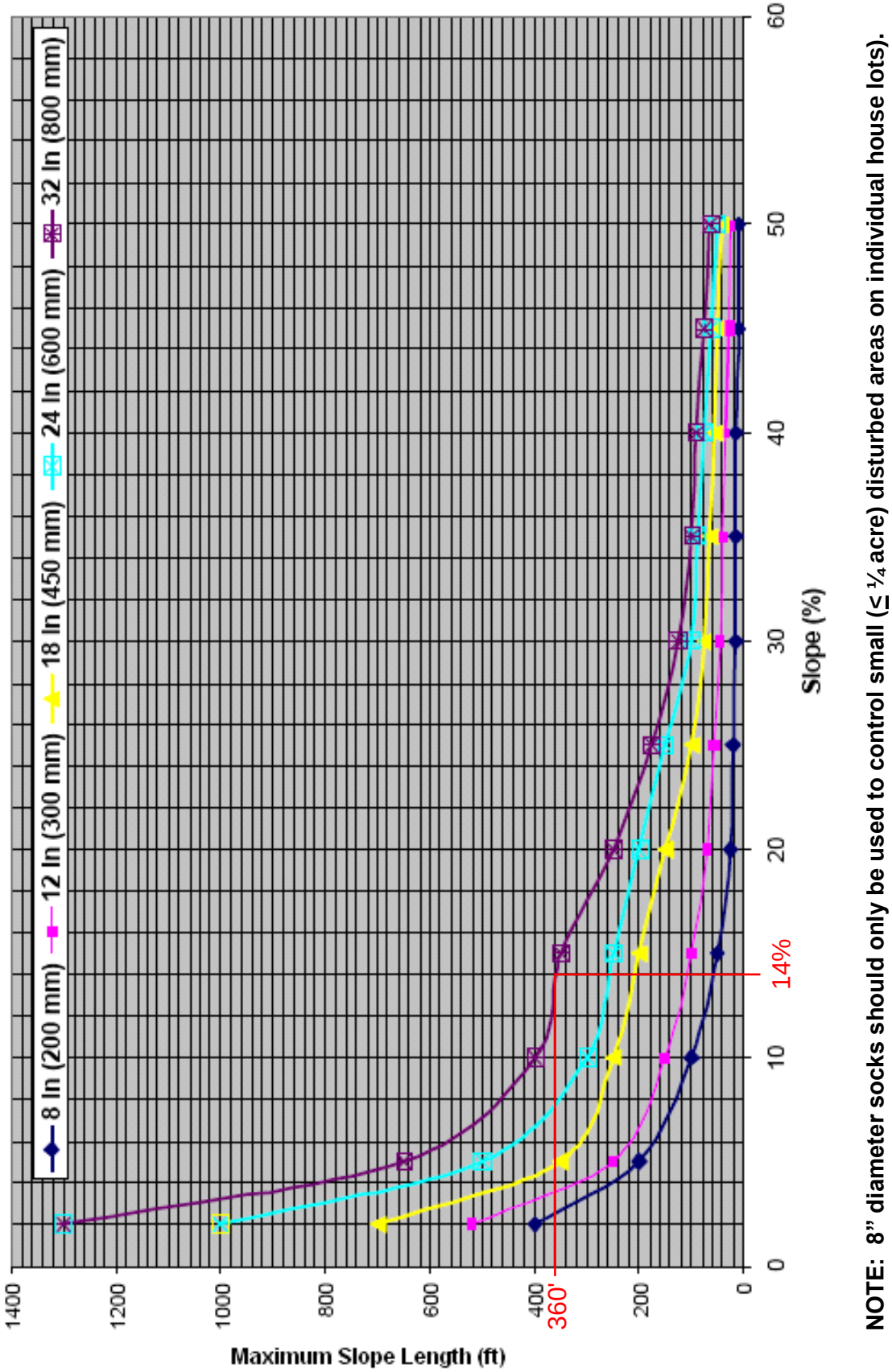
FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

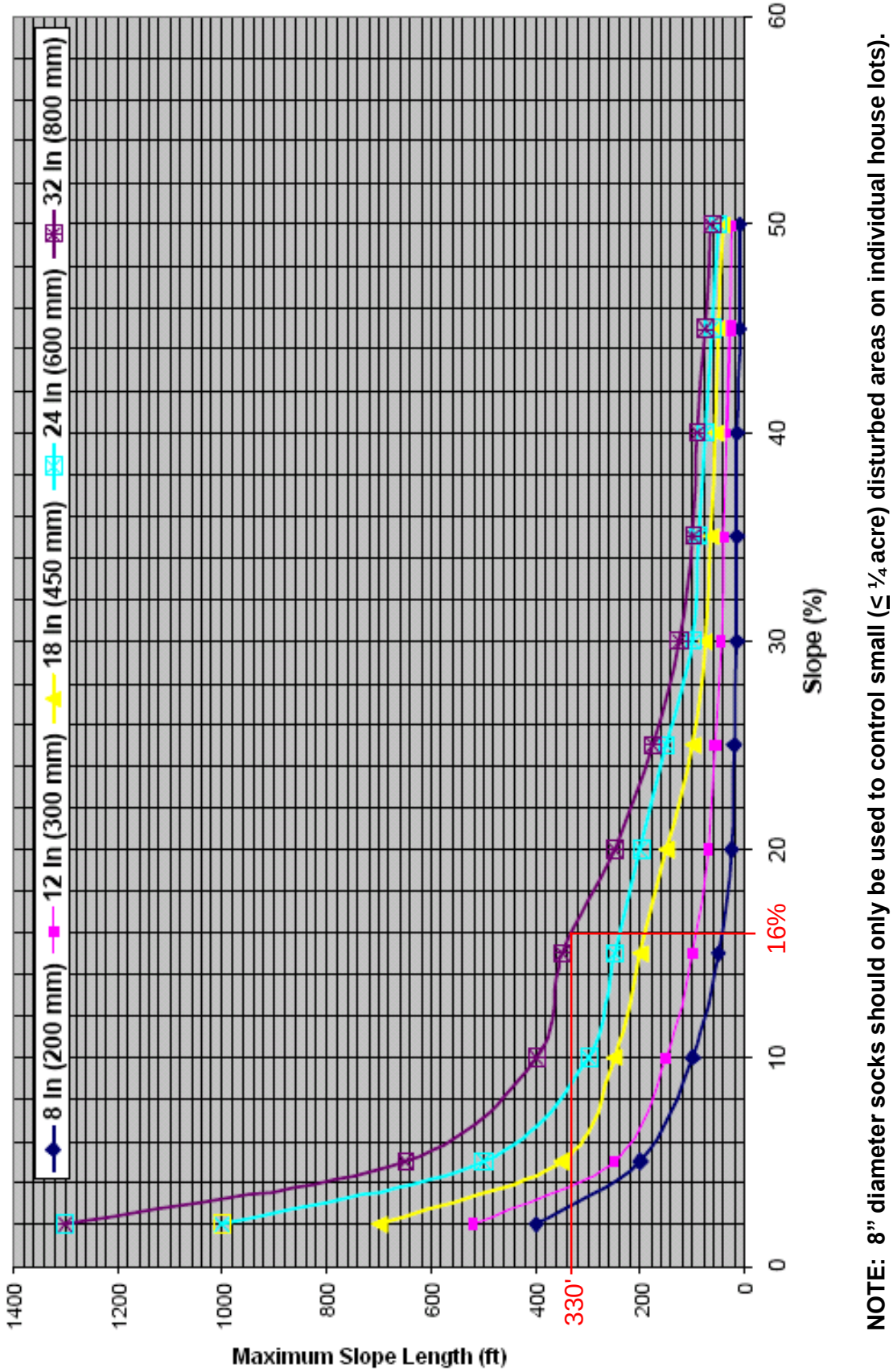


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-28

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

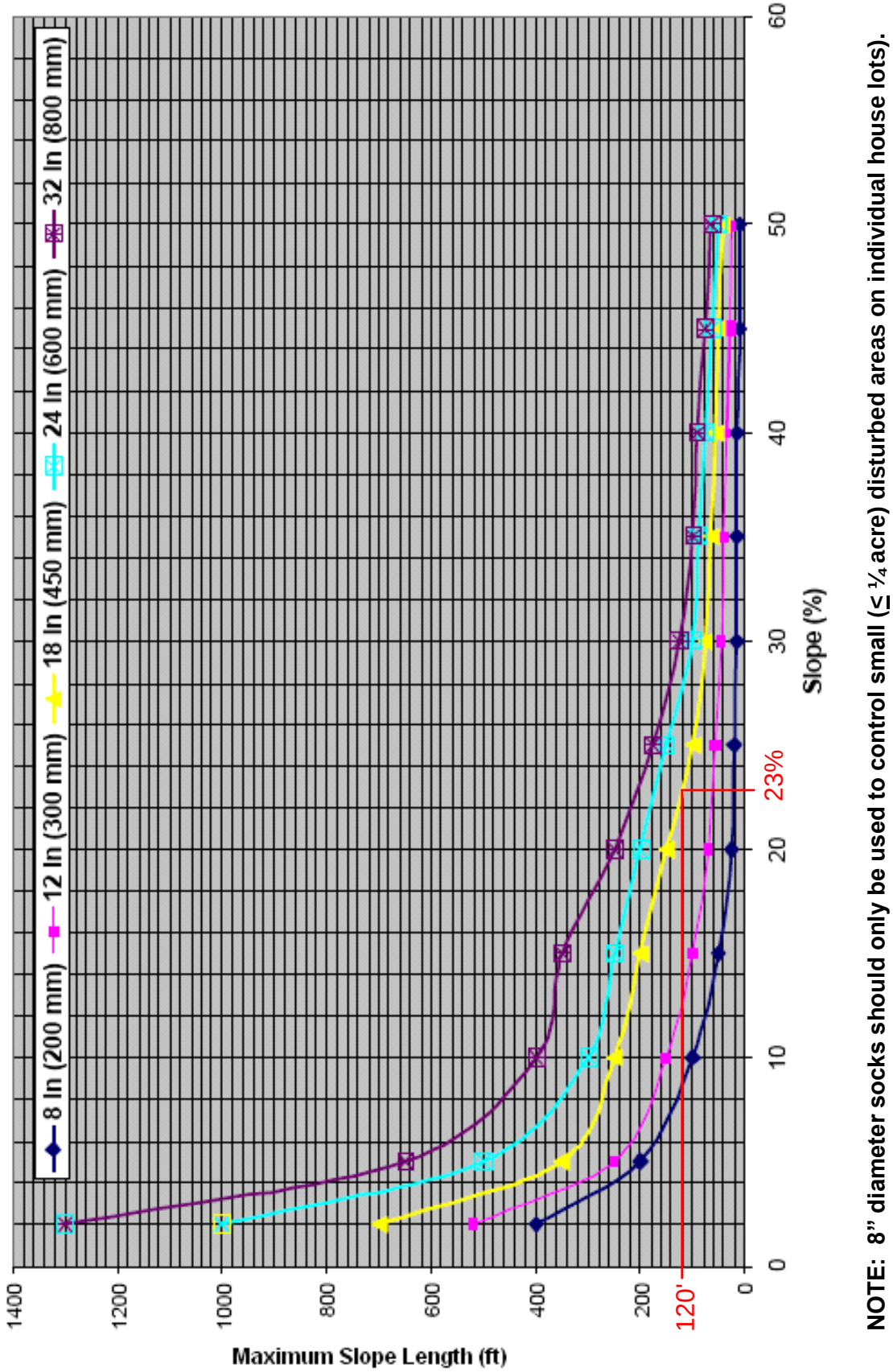


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-29

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

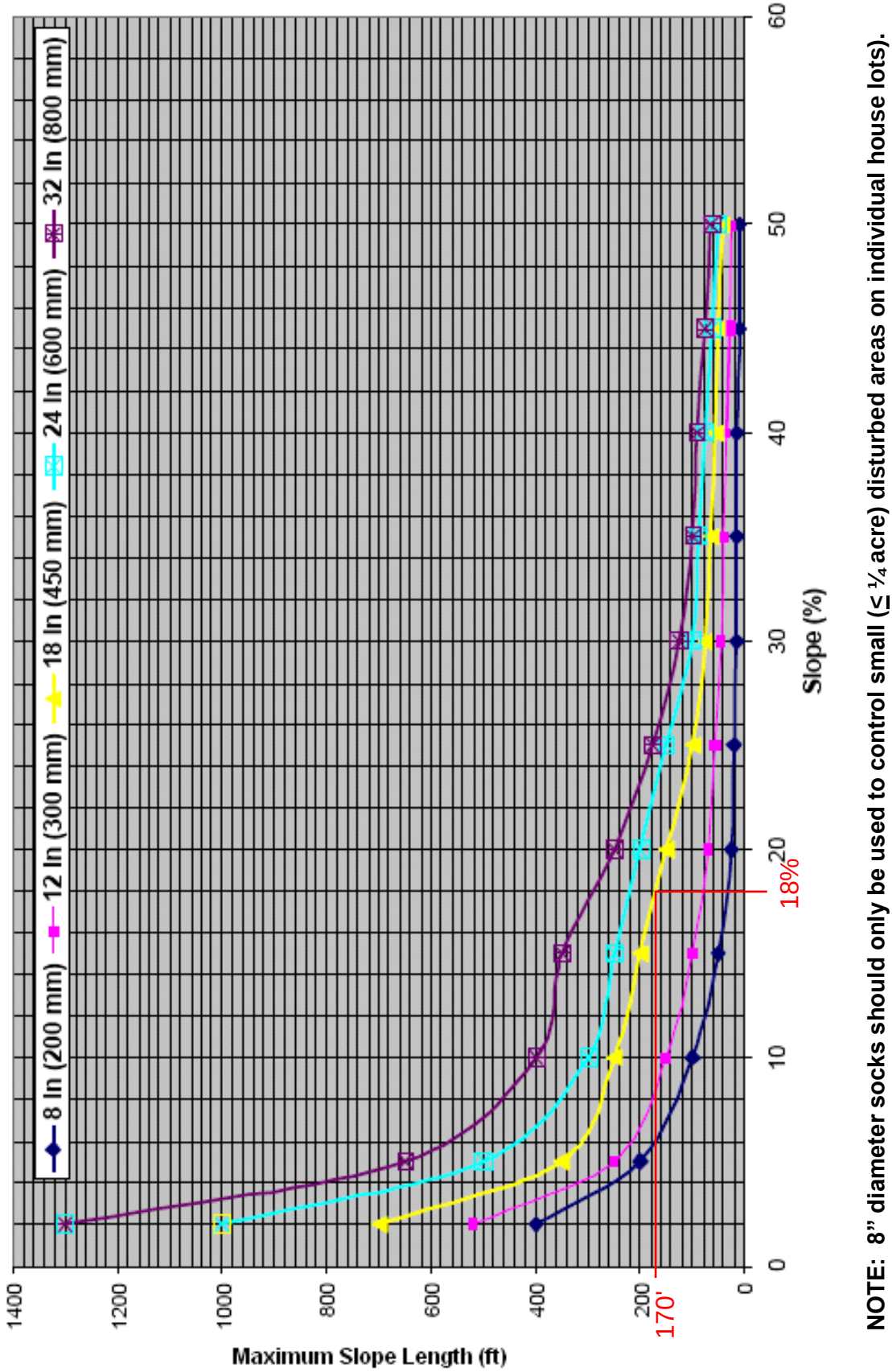


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-30

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

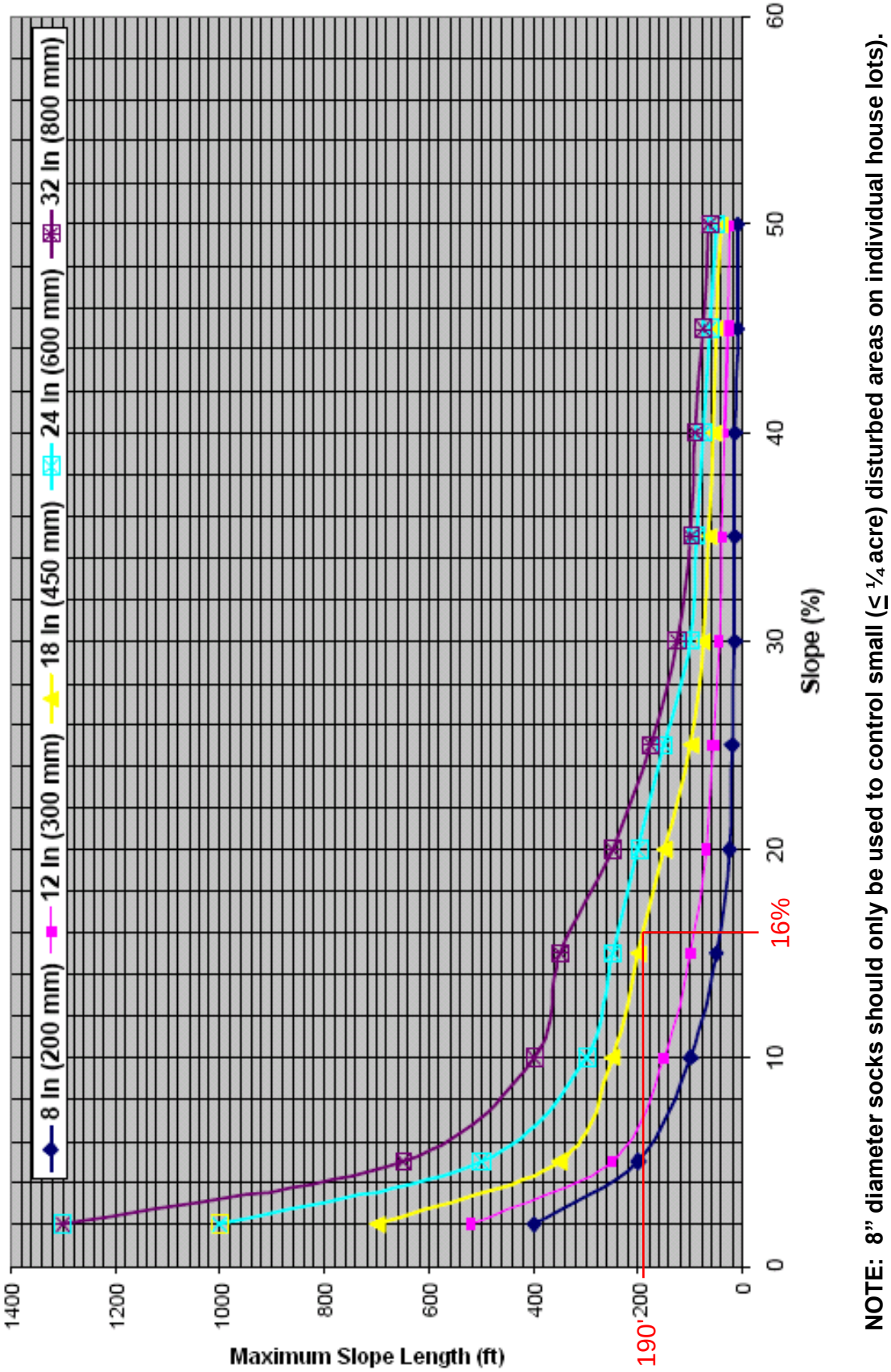


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-31

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

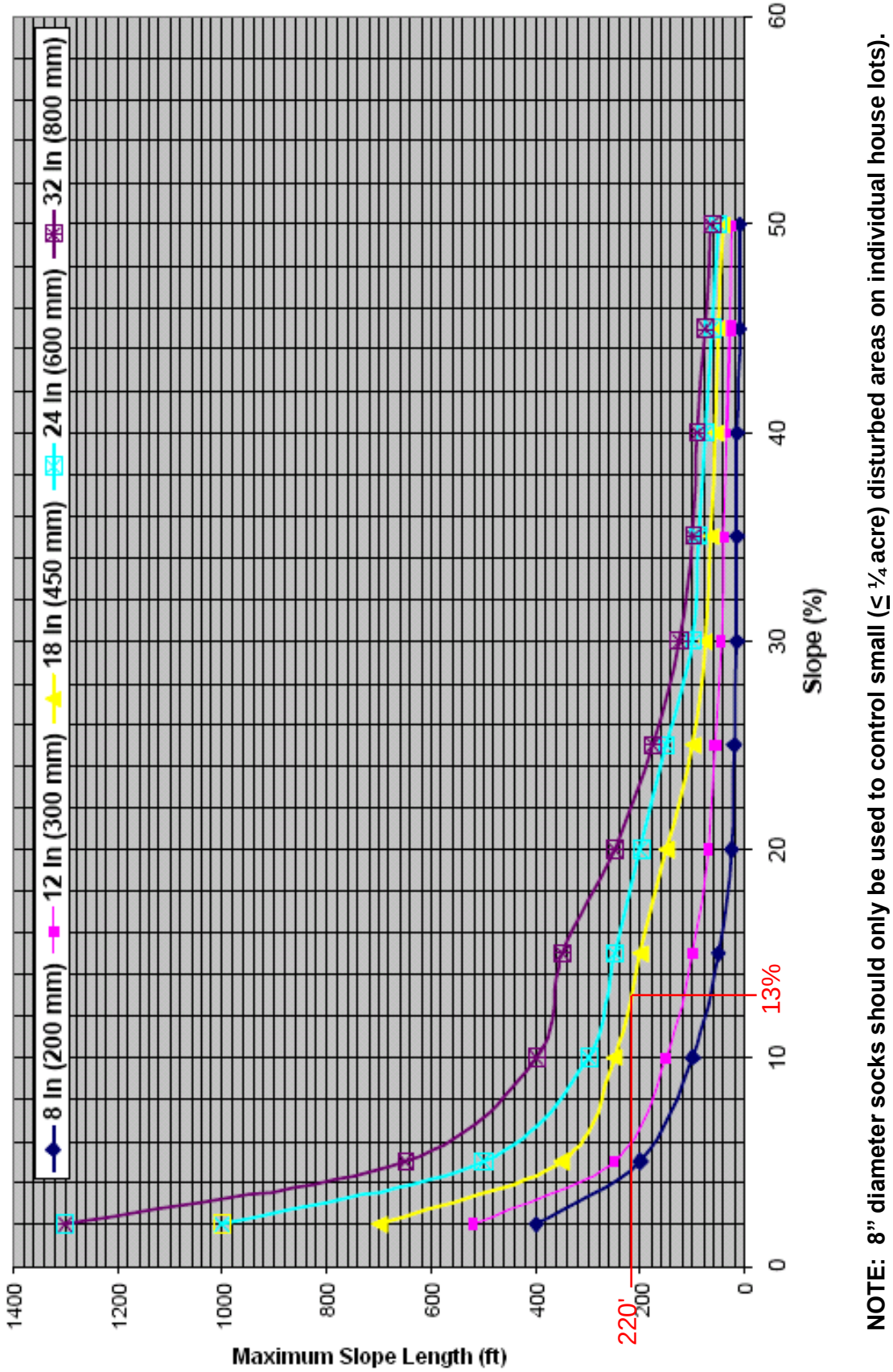


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-32

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

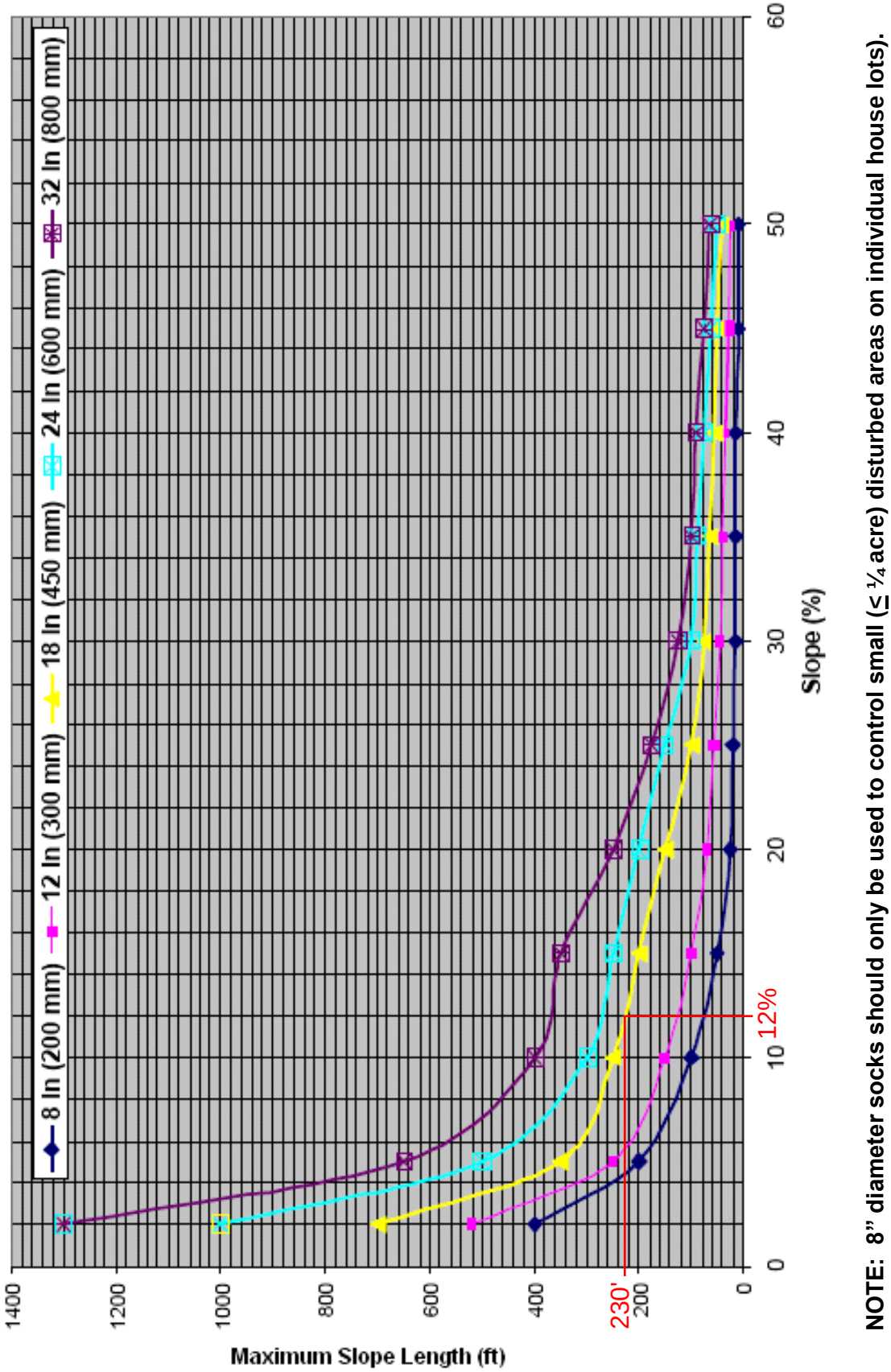


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-33

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

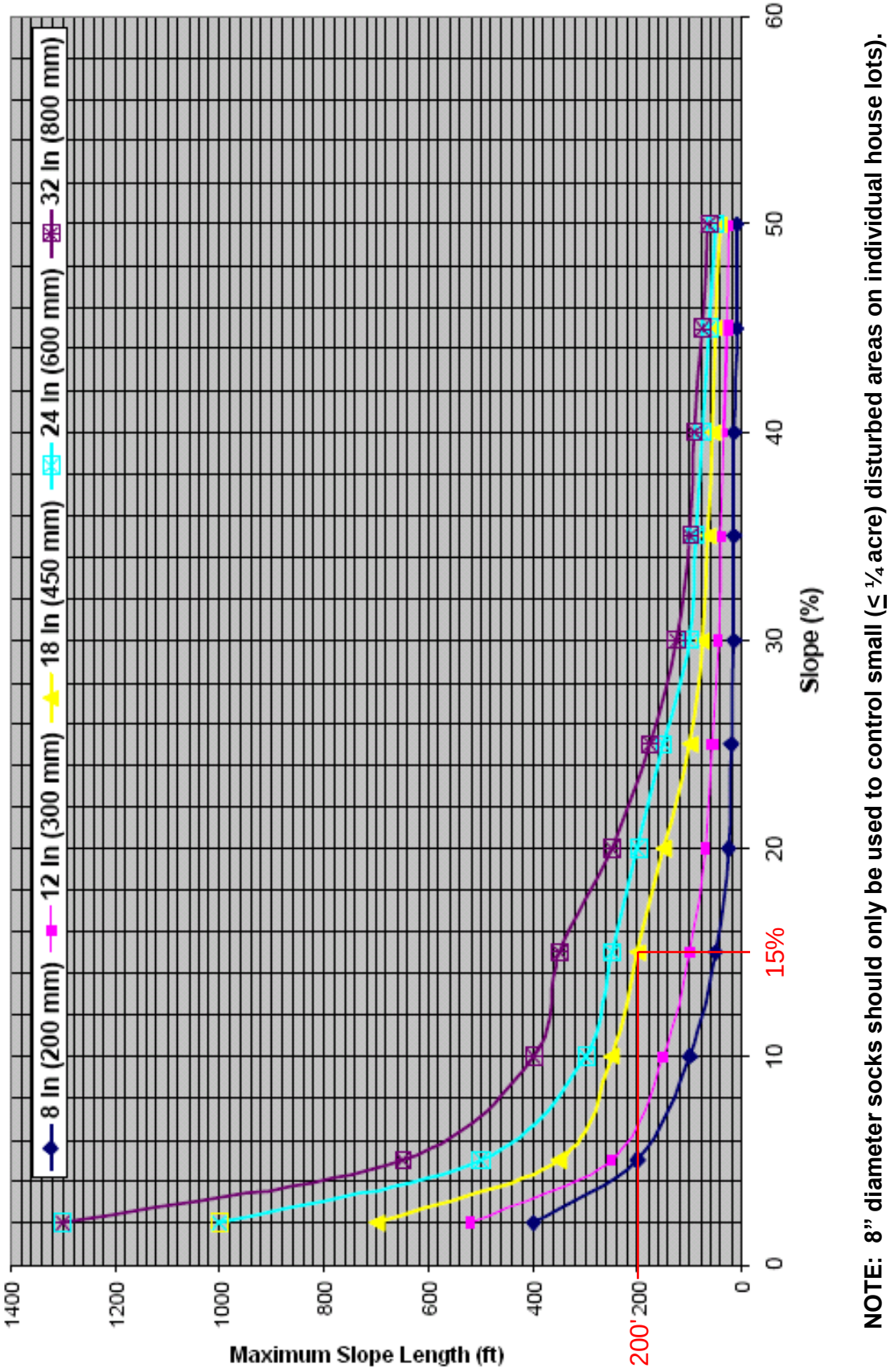


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-34

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

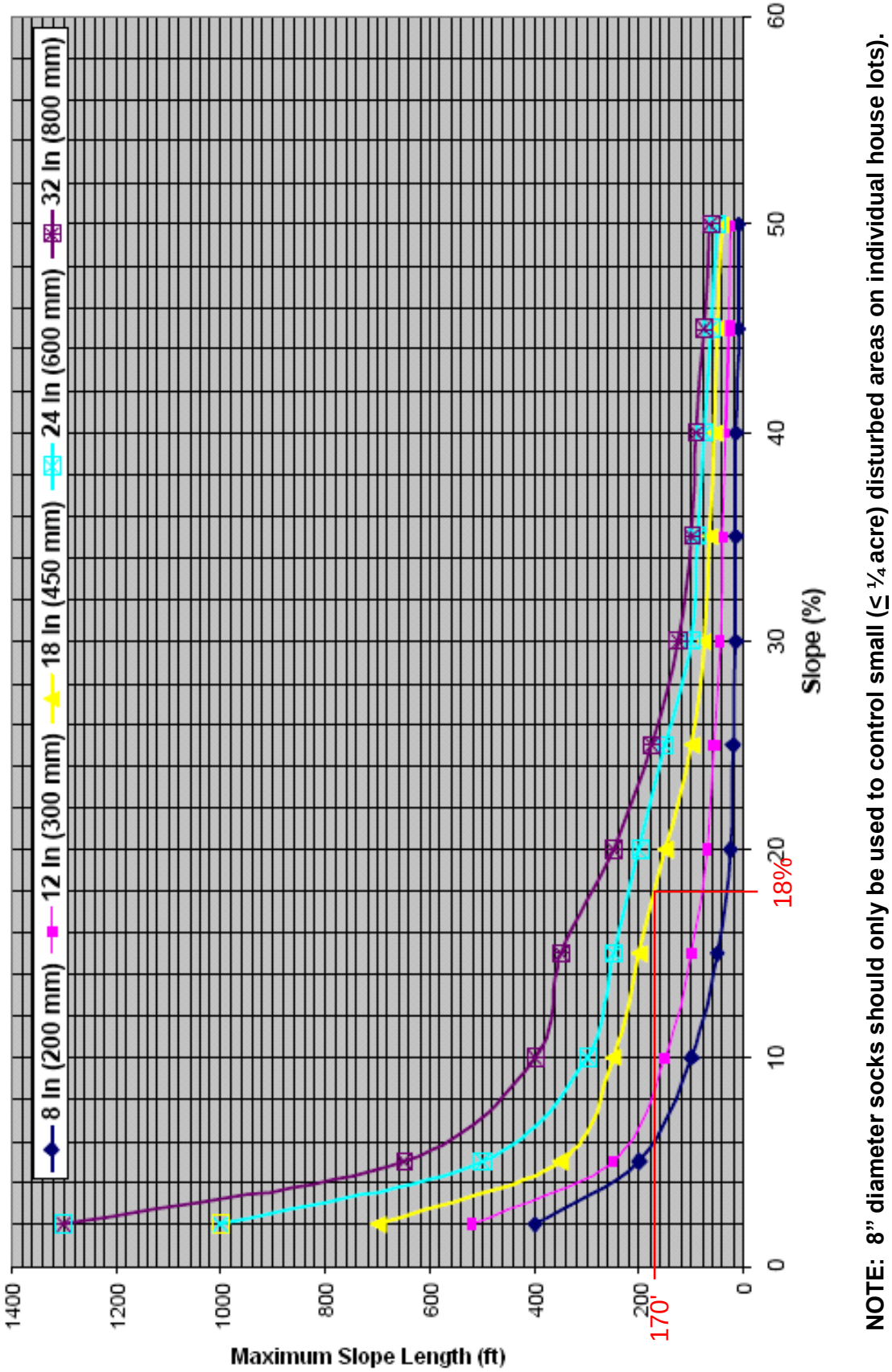


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-35

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

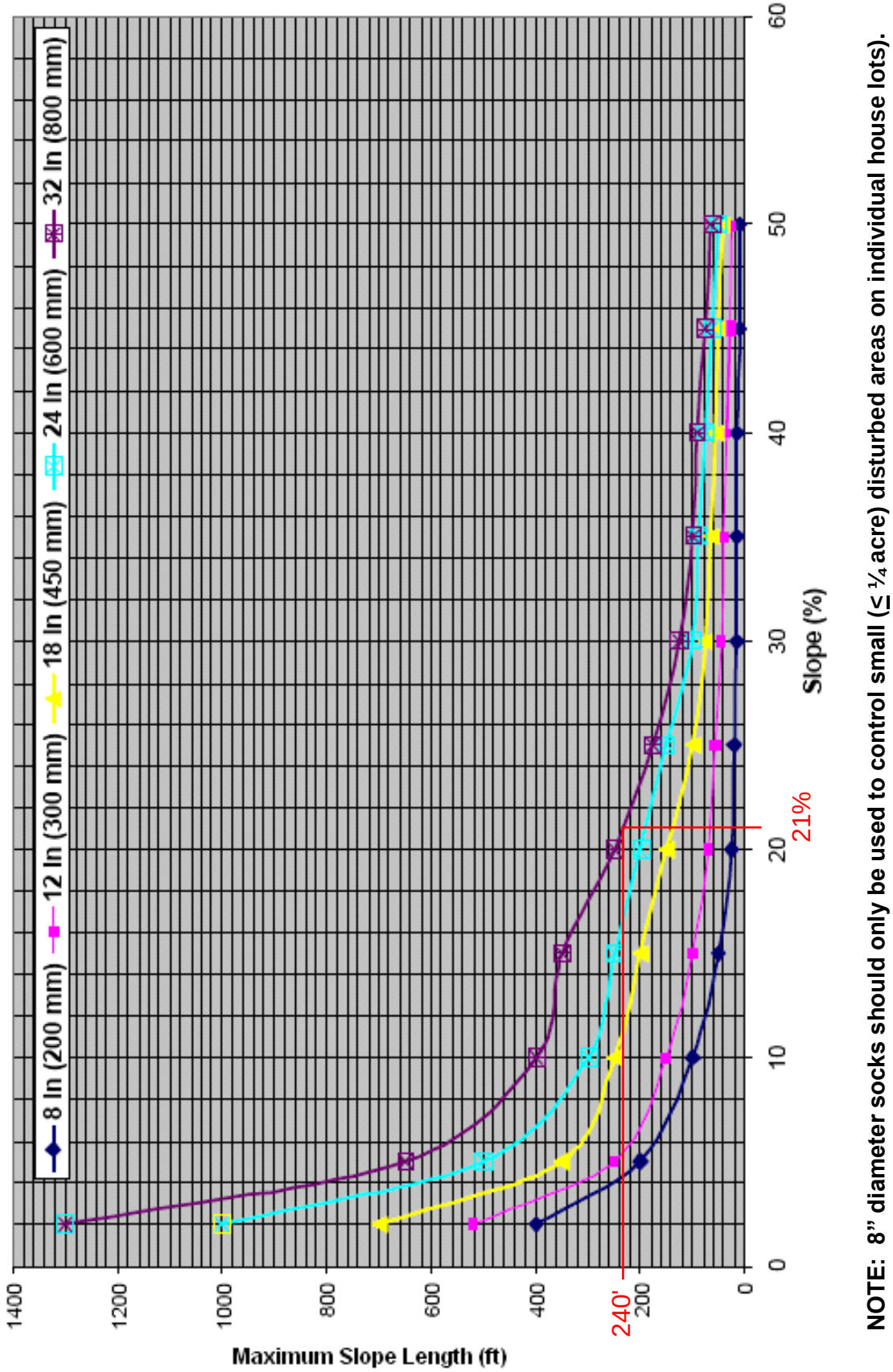


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-36

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

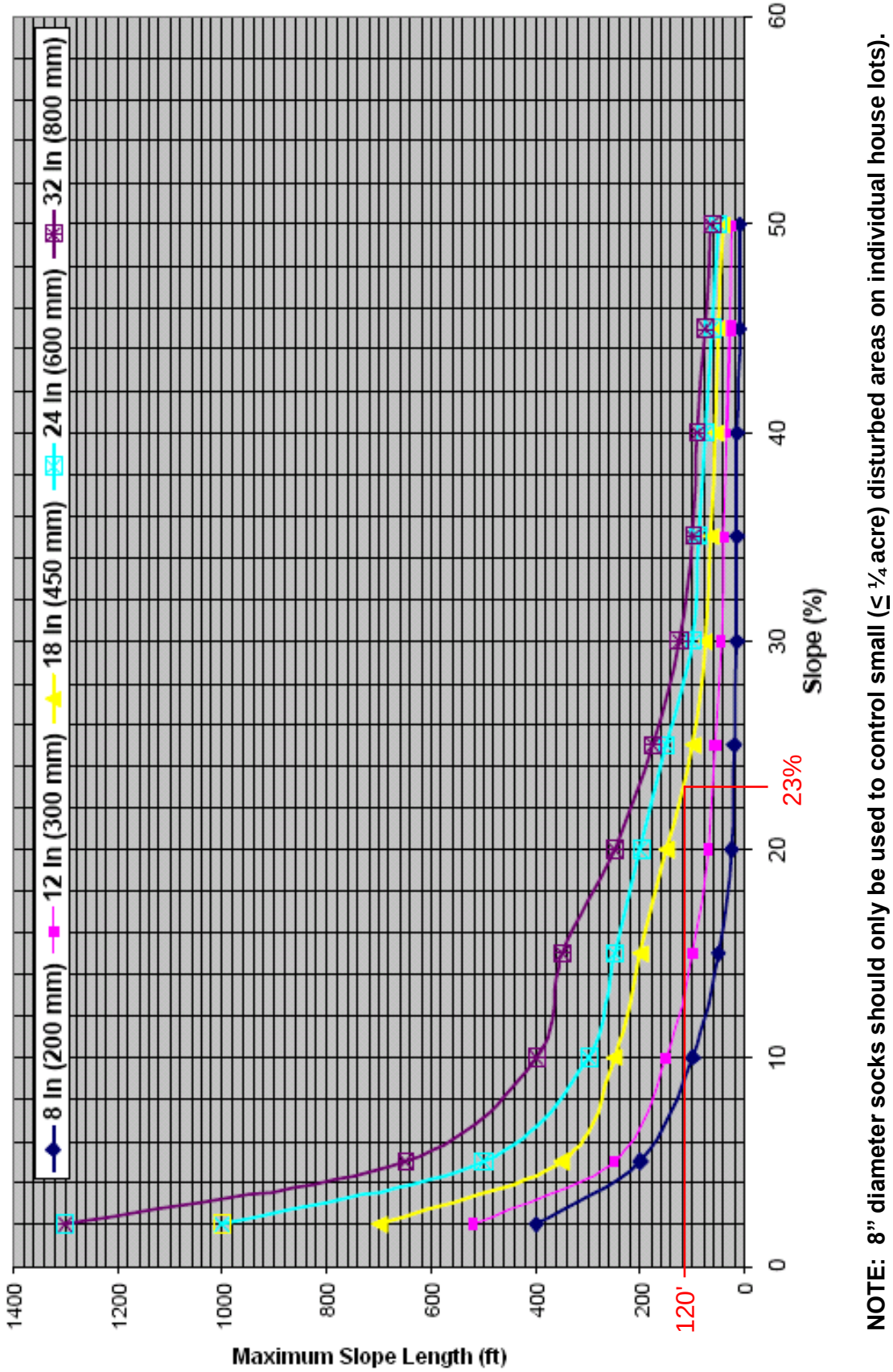


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-37

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

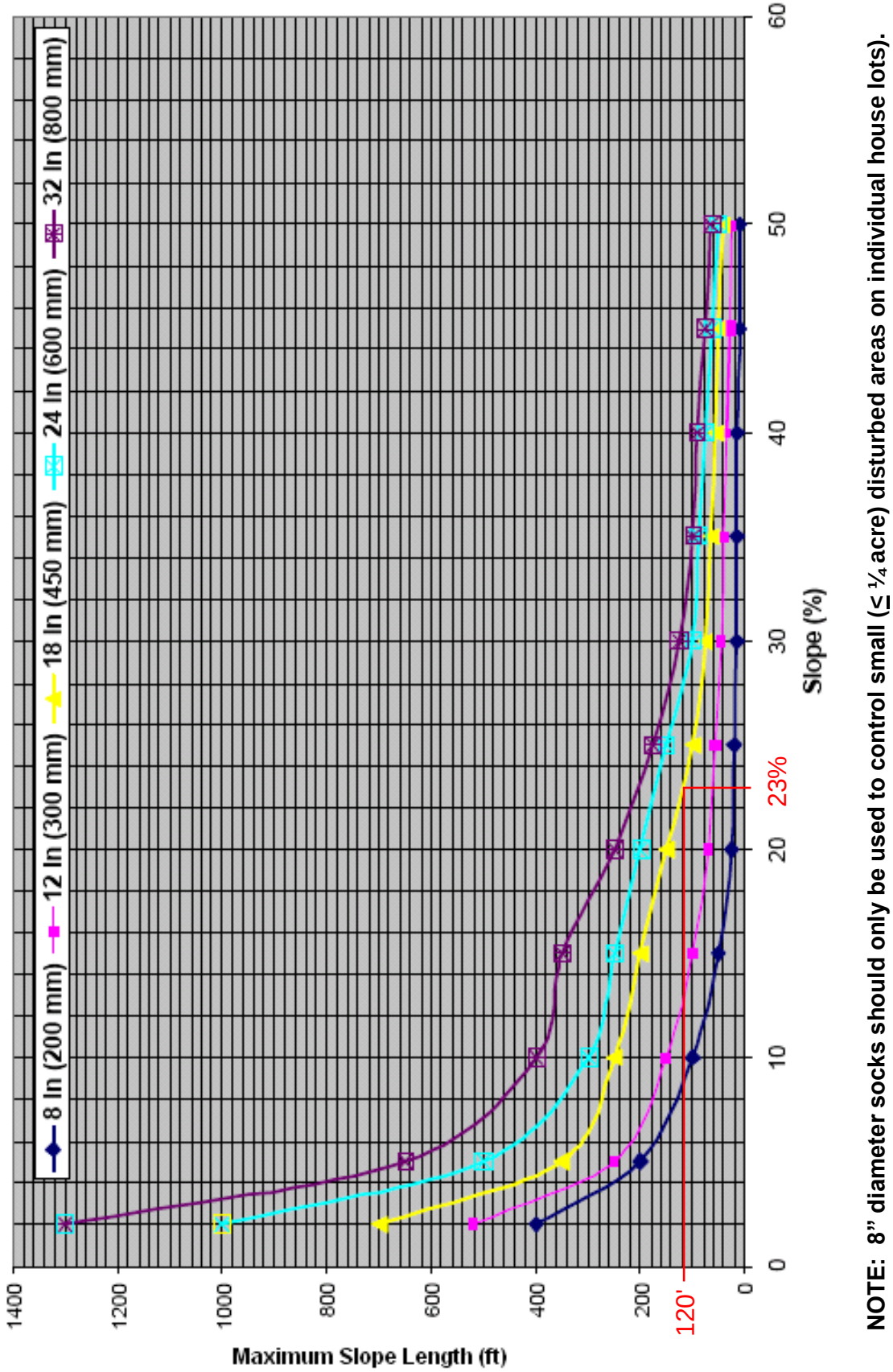


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-38

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

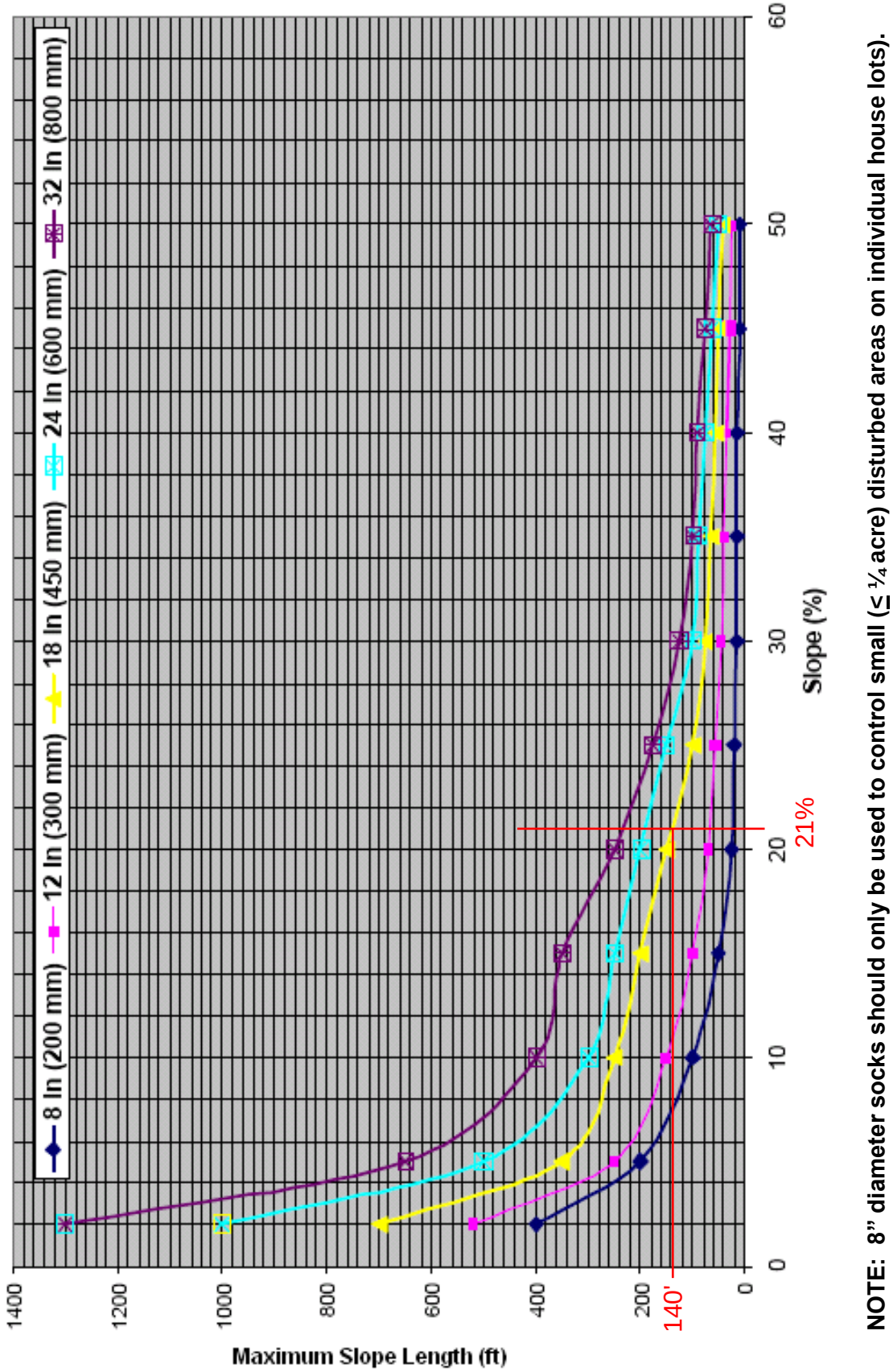


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-39

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

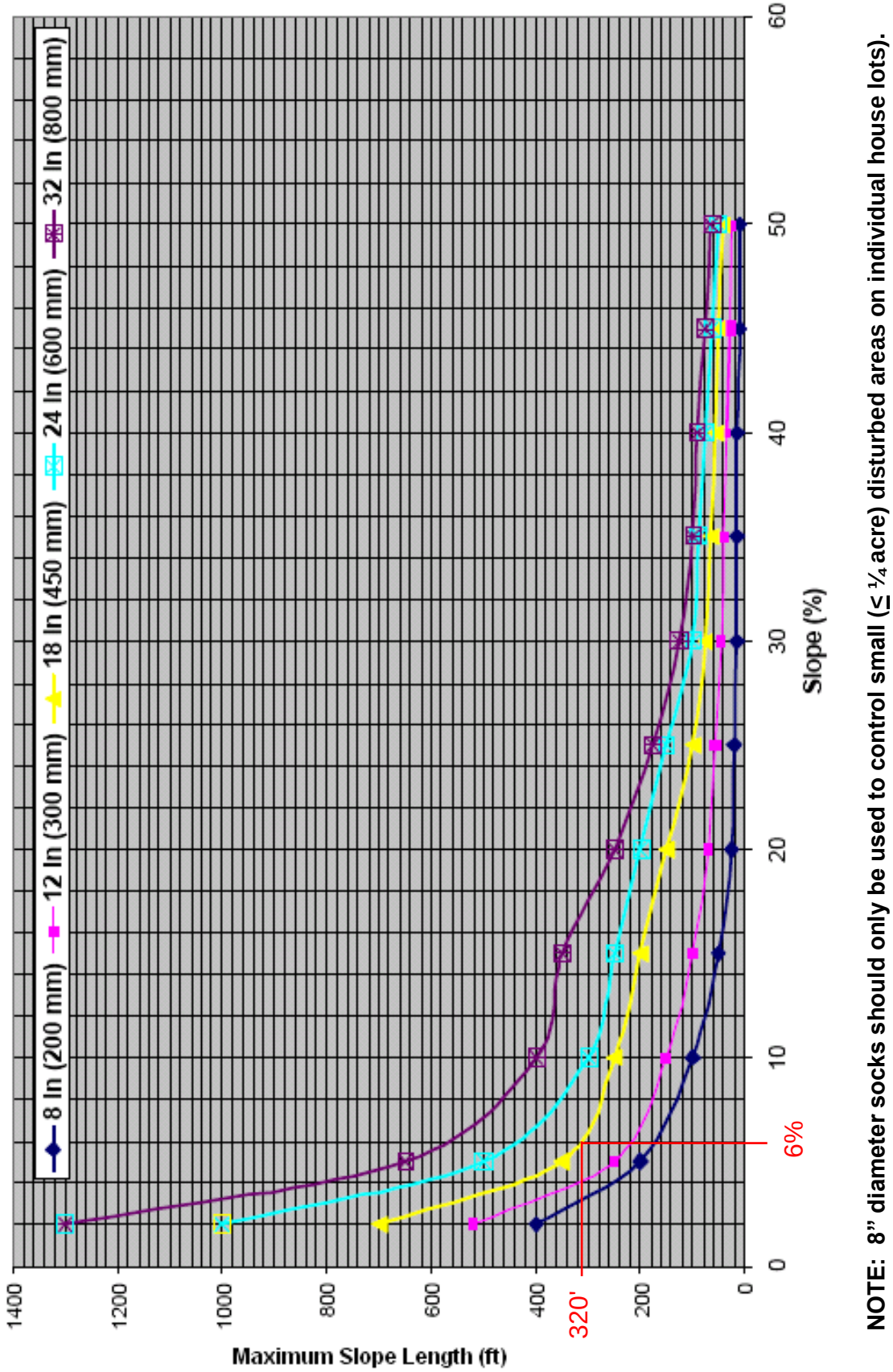


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-40

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

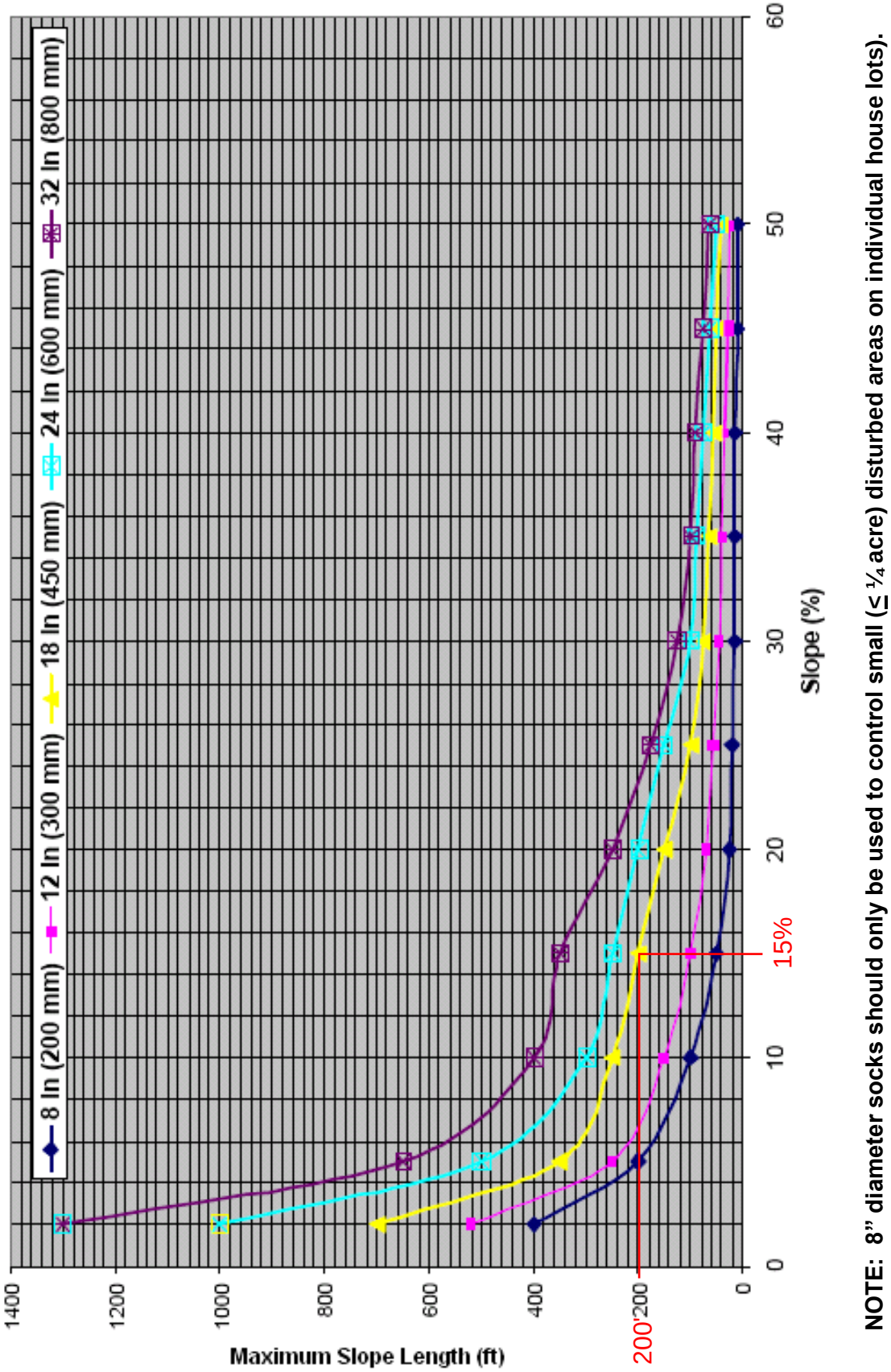


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-41

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

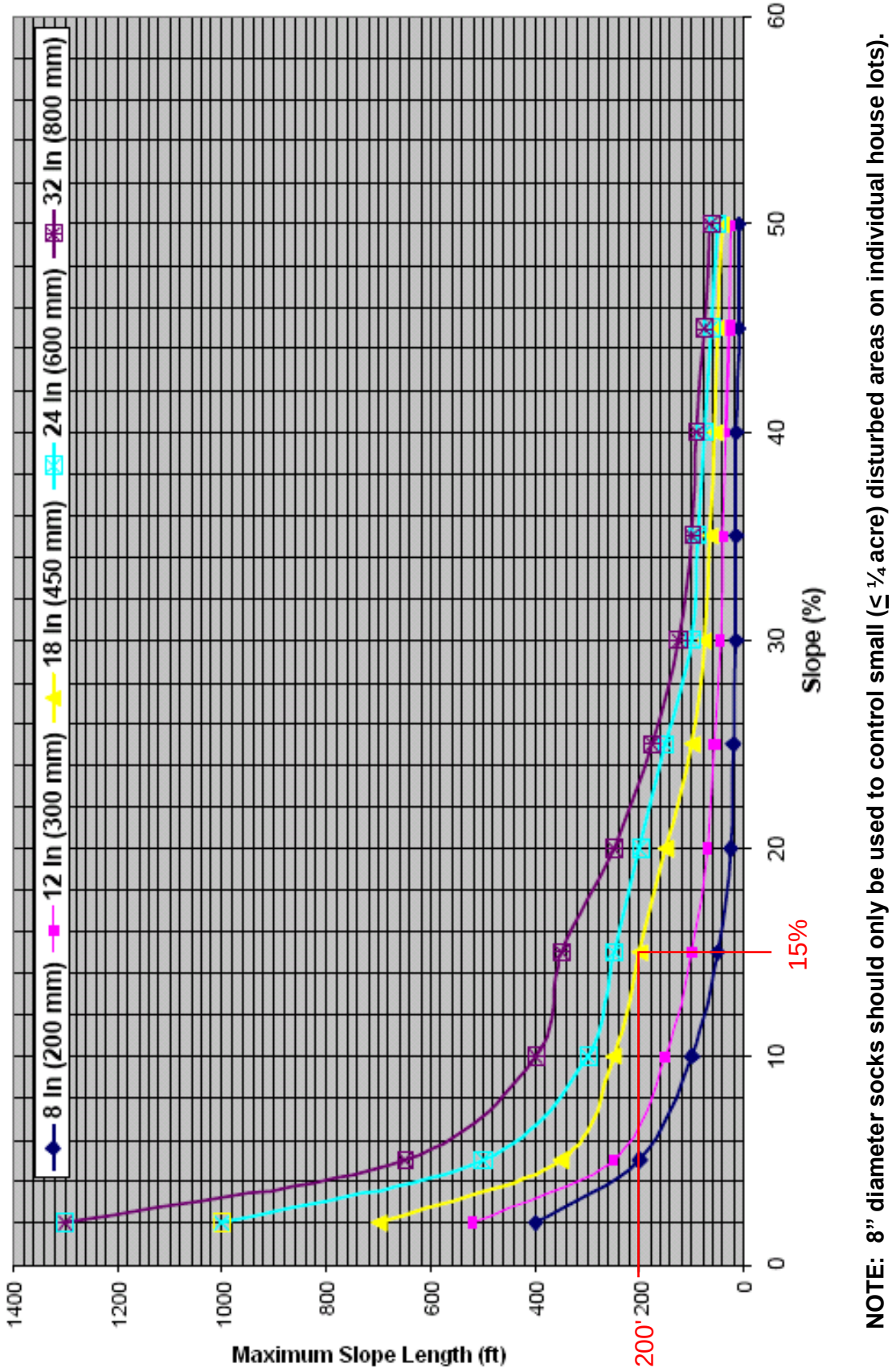


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-42

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

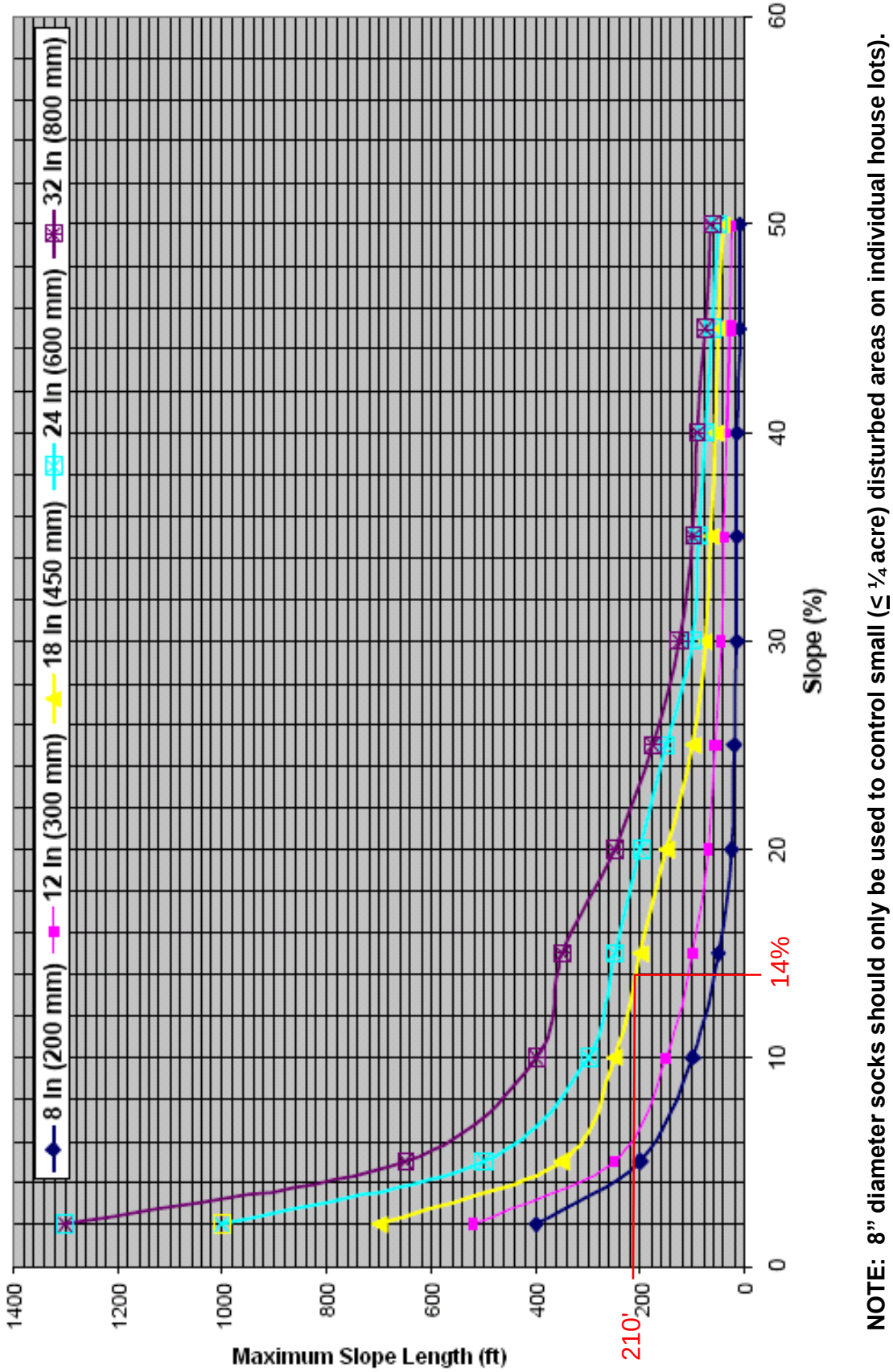


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-43

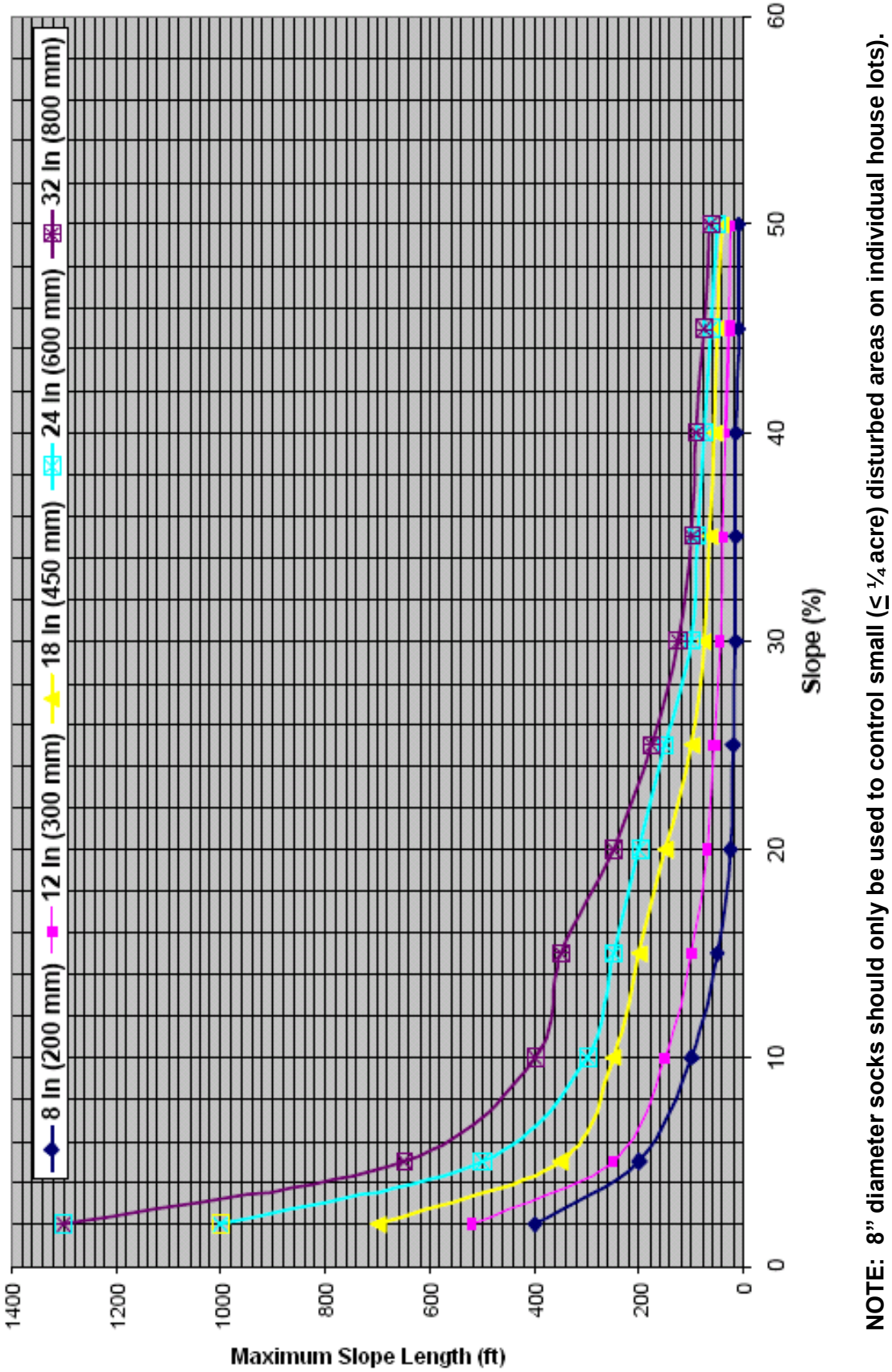
FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

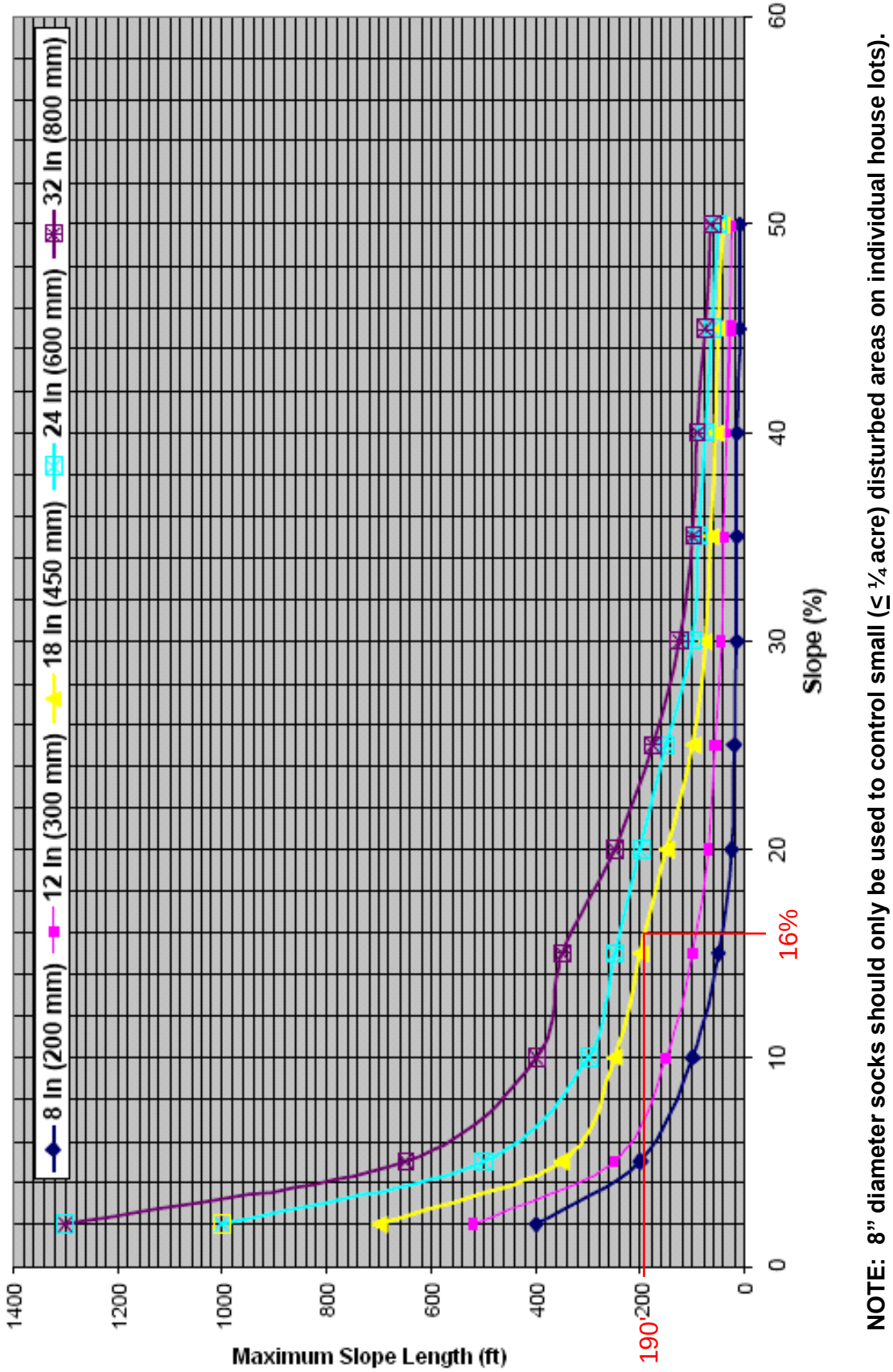


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-45

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

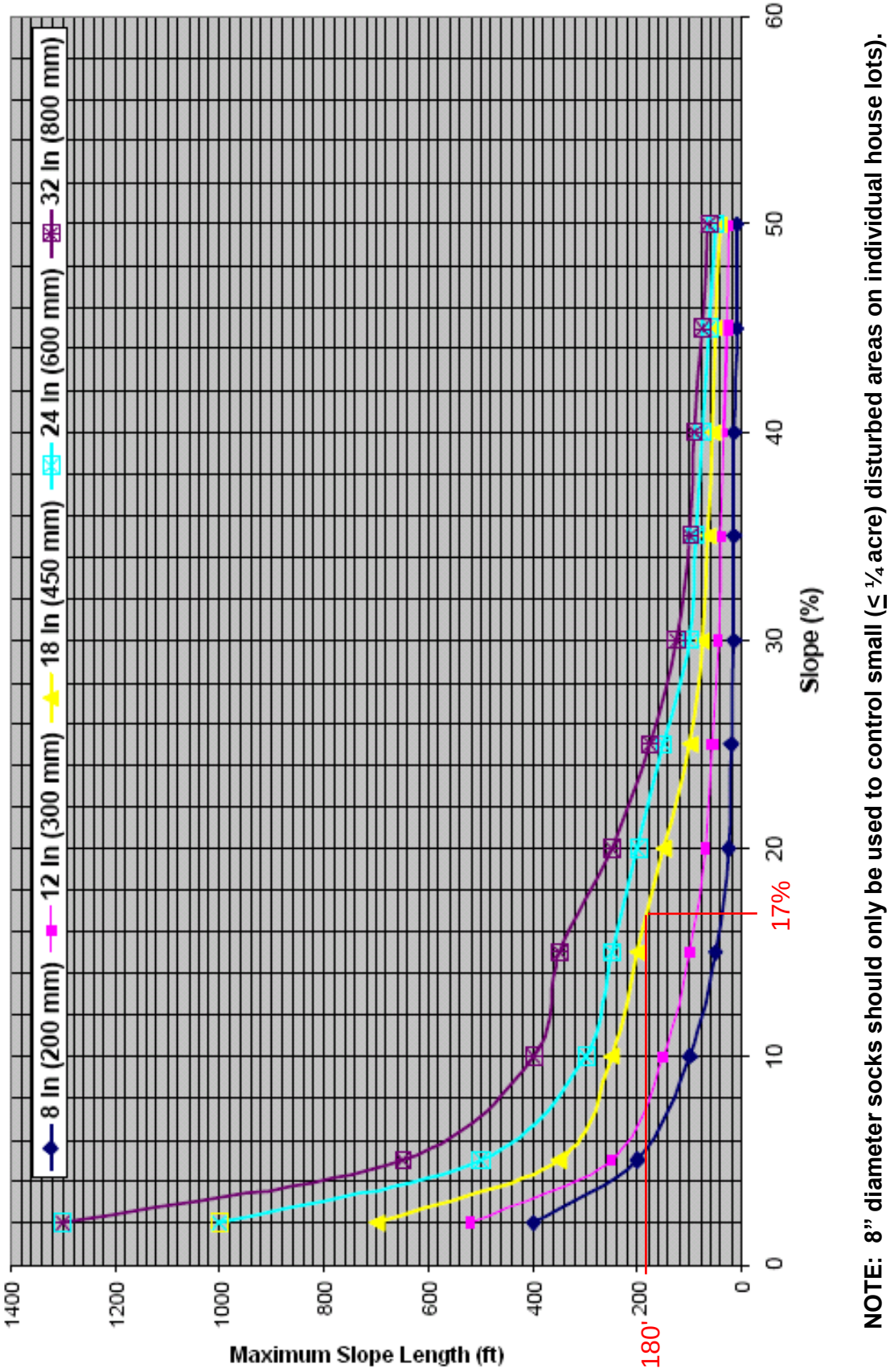


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

SS-46

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS

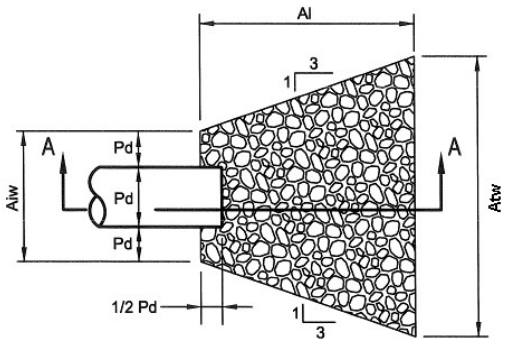


NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

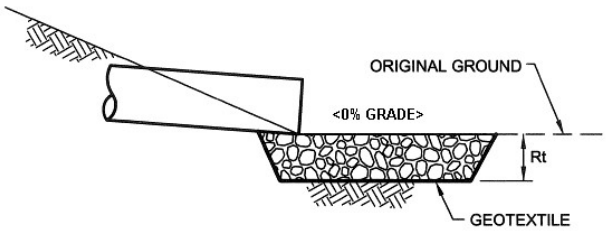
Adapted from Filtrexx

STANDARD E&S WORKSHEET # 20
Riprap Apron Outlet Protection

PROJECT NAME: Newcastle
PROJECT LOCATION: Peters Township, Washington County
PREPARED BY: R. Mongell DATE: 4/2/2025
CHECKED BY: DATE:



PLAN VIEW



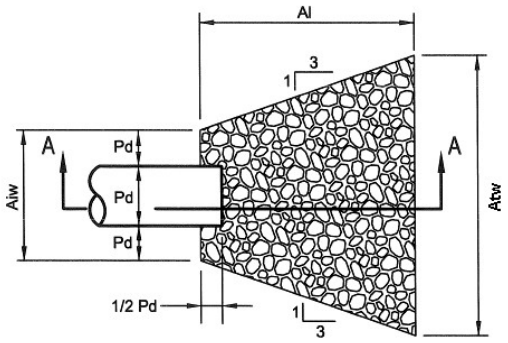
SECTION A - A

NO.	PIPE DIA. Do (in.)	TAIL WATER COND. (Max or Min)	MAN. "n" FOR PIPE	PIPE SLOPE (FT/FT)	Q (CFS)	V* (FPS)	RIPRAP SIZE	Rt (in)	Al (ft)	Aiw (ft)	Atw (ft)
Storm HW 1	18	Min.	0.011	0.0168	0.71	0.40	R-4	18	8	4.5	12.5
Storm HW 2	24	Min.	0.011	0.01	4.24	4.17	R-4	18	12	6	18
Storm HW 3	18	Min.	0.011	0.0056	3.17	1.79	R-4	18	8	4.5	12.5
Storm HW 4	18	Min.	0.011	0.01	1.26	3.11	R-4	18	8	4.5	12.5
Storm HW 5	24	Min.	0.011	0.0052	3.67	3.98	R-4	18	12	6	18
Storm HW 6	15	Min.	0.011	0.0101	3.01	4.28	R-4	18	8	3.75	11.75

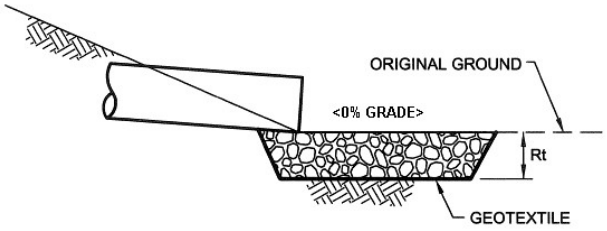
***:The anticipated velocity (V) should not exceed the maximum permissible shown in Table 6.6 for the proposed riprap protection. Adjust for less than full pipe flow. Use Manning's equation to calculate velocity for pipe slopes ≥ 0.05 ft/ft.**

STANDARD E&S WORKSHEET # 20
Riprap Apron Outlet Protection

PROJECT NAME: Newcastle
PROJECT LOCATION: Peters Township, Washington County
PREPARED BY: R. Mongell DATE: 4/2/2025
CHECKED BY: _____ DATE: _____



PLAN VIEW



SECTION A - A

NO.	PIPE DIA. Do (in.)	TAIL WATER COND. (Max or Min)	MAN. "n" FOR PIPE	PIPE SLOPE (FT/FT)	Q (CFS)	V* (FPS)	RIPRAP SIZE	Rt (in)	Al (ft)	Aiw (ft)	Atw (ft)
DA #1 (SCM-002)	4	Min.	0.011	0.28	0.011	0.13	R-3	9	6	1	7
DA #1 (SCM-003)	4	Min.	0.011	0.28	0.011	0.13	R-3	9	6	1	7
DA #1 (SCM-004)	4	Min.	0.011	0.27	0.011	0.13	R-3	9	6	1	7

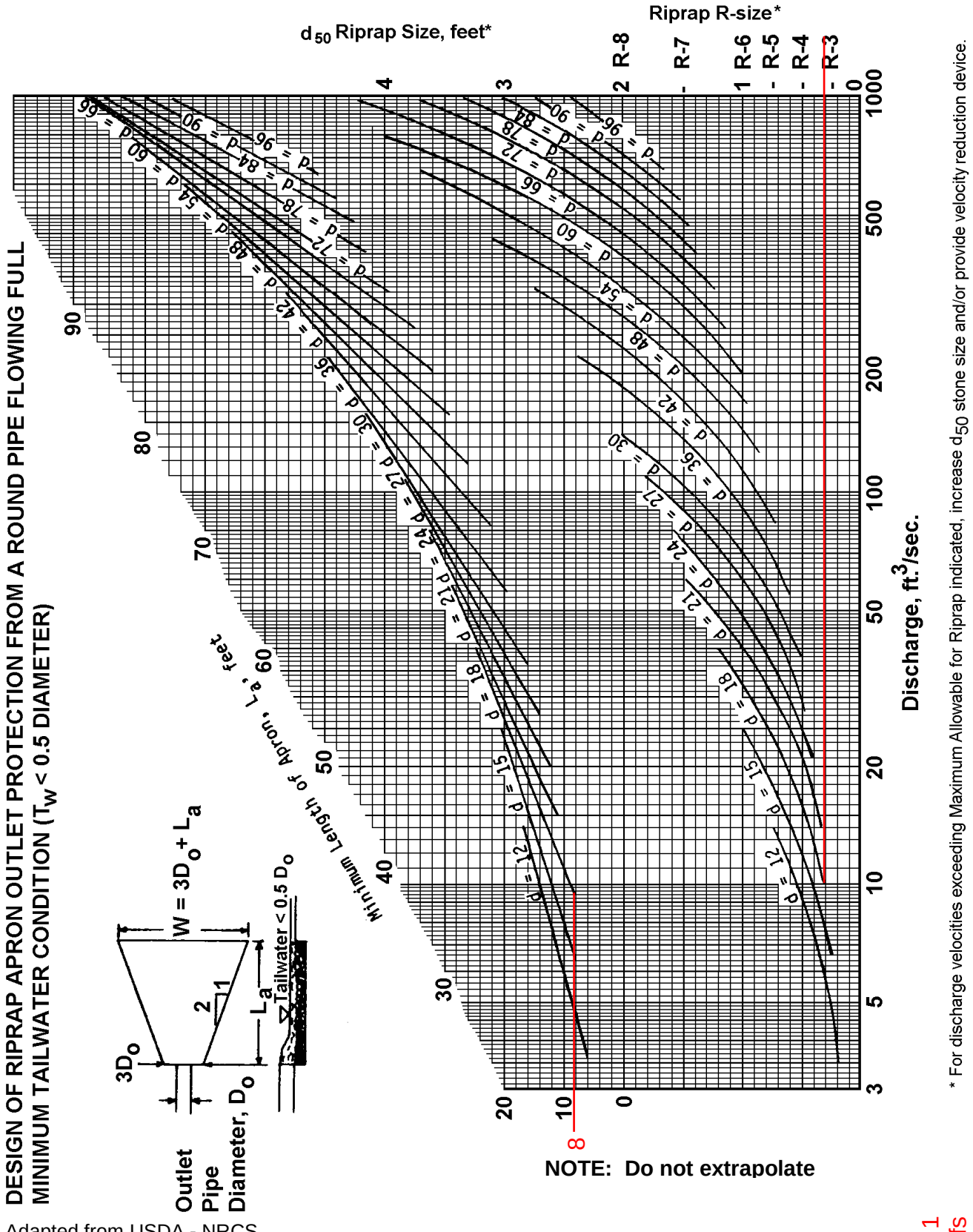
***:The anticipated velocity (V) should not exceed the maximum permissible shown in Table 6.6 for the proposed riprap protection. Adjust for less than full pipe flow. Use Manning's equation to calculate velocity for pipe slopes ≥ 0.05 ft/ft.**

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	24.65	1	719	55,758	------	------	------	Pre DA #1
2	SCS Runoff	35.35	1	718	72,230	------	------	------	Post DA #1
4	SCS Runoff	25.54	1	717	52,679	------	------	------	Post DA #1 (SCM-1)
5	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-2)
6	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-3)
7	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-4)
8	SCS Runoff	9.282	1	718	18,723	------	------	------	Post DA #1 (Undetained)
9	Combine	35.81	1	718	73,828	4, 5, 6, 7, 8	------	------	Combine Post DA #1 (No Controls)
11	Reservoir	1.013	1	789	22,618	4	1083.68	31,341	Route DA #1 (SCM-1)
12	Reservoir	0.011	1	815	731	5	1101.21	526	Route DA#1 (SCM-2)
13	Reservoir	0.011	1	815	731	6	1099.21	526	Route DA#1 (SCM-3)
14	Reservoir	0.011	1	815	731	7	1097.21	526	Route DA#1 (SCM-4)
15	Combine	0.034	1	815	2,192	12, 13, 14	------	------	Combine (SCM-2, 3, & 4)
16	Reach	0.033	1	831	2,085	15	------	------	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	9.307	1	718	43,425	8, 11, 16	------	------	Combine DA #1
19	Reservoir	0.000	1	691	0	4	1084.32	44,445	DA #1 (SCM-1) Blocked

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Adapted from USDA - NRCS

Not to be used for Box Culverts

Storm HW 1

Storm HW 1
Q=1.013 cfs
D=18"

Storm Sewer Summary Report Storm HW 2

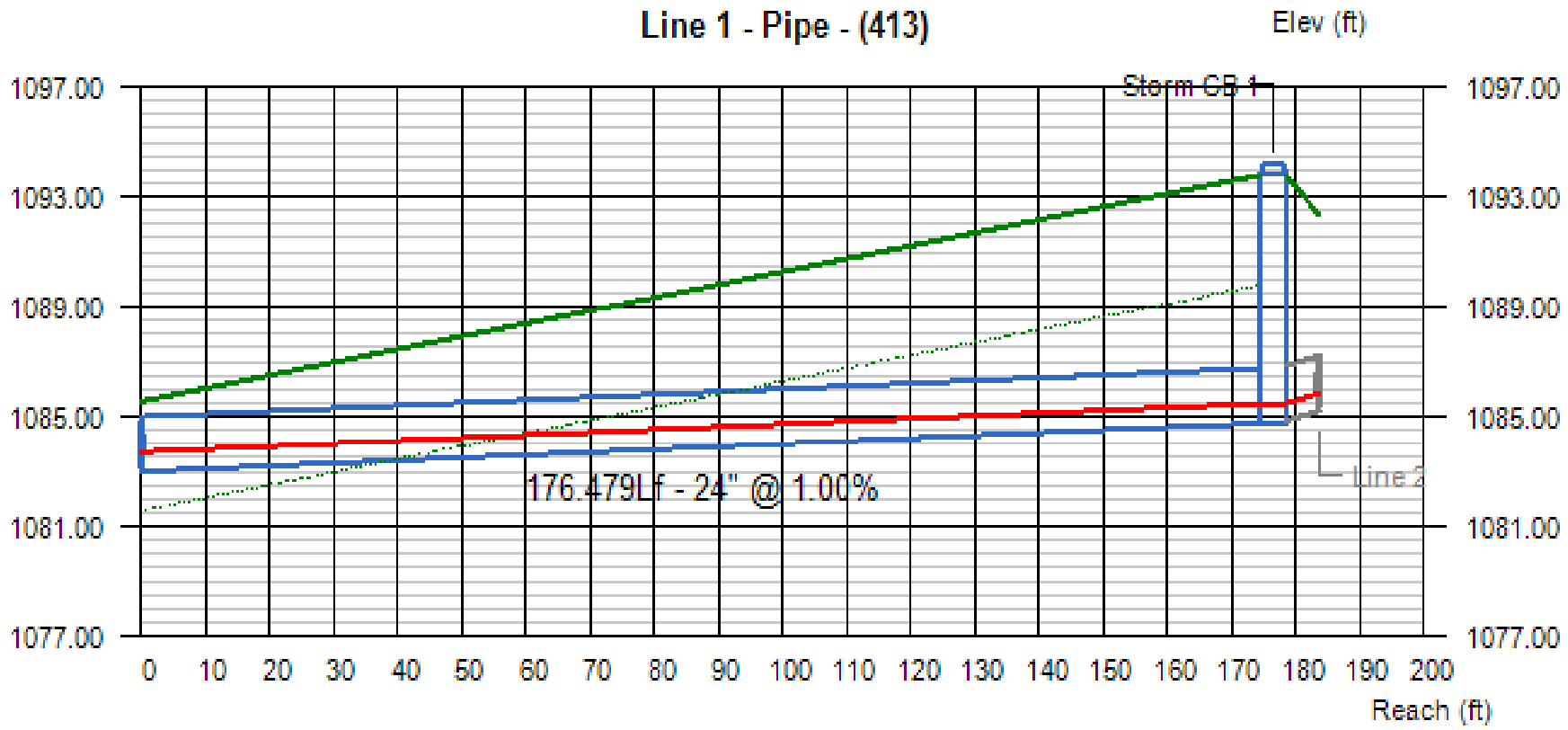
Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (413) Storm HW 2	4.24	24	Cir	176.479	1083.00	1084.76	0.997	1083.72	1085.48	0.40	1085.48	End	Generic
2	Pipe - (412)	3.86	24	Cir	19.019	1084.86	1086.15	6.783	1085.48	1086.84	n/a	1086.84	1	None
3	Pipe - (411)	3.46	24	Cir	160.057	1086.15	1096.96	6.754	0.00	0.00	n/a	0.00	2	None
4	Pipe - (410)	3.01	24	Cir	37.223	1096.96	1099.49	6.797	0.00	0.00	n/a	0.00	3	Generic
5	Pipe - (409)	1.67	24	Cir	28.088	1099.59	1099.90	1.104	0.00	0.00	n/a	0.00	4	Generic
6	Pipe - (430)	1.25	15	Cir	28.873	1100.65	1102.46	6.269	0.00	0.00	n/a	0.00	5	Generic
7	Pipe - (429)	0.71	15	Cir	91.958	1102.56	1103.80	1.348	0.00	0.00	n/a	0.00	6	Generic
8	Pipe - (428)	0.32	15	Cir	106.285	1103.90	1111.24	6.906	0.00	0.00	n/a	0.00	7	Generic
9	Pipe - (427)	0.12	15	Cir	76.015	1111.34	1119.33	10.511	0.00	0.00	n/a	0.00	8	Generic
10	Pipe - (426)	0.05	15	Cir	72.592	1119.43	1123.74	5.937	0.00	0.00	n/a	0.00	9	Generic
11	Pipe - (463)	0.62	15	Cir	50.724	1102.56	1106.84	8.438	0.00	0.00	n/a	0.00	6	None
12	Pipe - (439)	0.44	15	Cir	24.458	1106.84	1108.90	8.423	0.00	0.00	n/a	0.00	11	Generic
13	Pipe - (433)	0.27	15	Cir	78.327	1109.00	1116.00	8.937	0.00	0.00	n/a	0.00	12	Generic
14	Pipe - (432)	0.14	15	Cir	87.653	1116.10	1120.00	4.449	0.00	0.00	n/a	0.00	13	Generic
15	Pipe - (449)	1.45	15	Cir	55.107	1100.24	1103.52	5.952	0.00	0.00	n/a	0.00	4	Generic
16	Pipe - (450)	1.44	15	Cir	107.267	1103.42	1110.43	6.535	0.00	0.00	n/a	0.00	15	Generic
17	Pipe - (453)	1.23	15	Cir	65.665	1110.53	1111.19	1.005	0.00	0.00	n/a	0.00	16	Generic
18	Pipe - (457)	0.98	15	Cir	92.536	1111.29	1112.22	1.005	0.00	0.00	n/a	0.00	17	Generic
19	Pipe - (458)	0.74	15	Cir	107.249	1112.32	1113.40	1.007	0.00	0.00	n/a	0.00	18	Generic
20	Pipe - (459)	0.52	15	Cir	103.369	1113.50	1114.54	1.006	0.00	0.00	n/a	0.00	19	Generic
21	Pipe - (460)	0.36	15	Cir	75.337	1114.64	1115.39	0.996	0.00	0.00	n/a	0.00	20	Generic
22	Pipe - (462)	3.67	24	Cir	57.800	1102.50	1102.80	0.519	0.00	0.00	n/a	0.00	End	Generic
23	Pipe - (464)	3.56	15	Cir	124.059	1103.55	1108.50	3.990	0.00	0.00	n/a	0.00	22	Generic
24	Pipe - (470)	2.85	15	Cir	23.056	1108.70	1108.82	0.520	0.00	0.00	n/a	0.00	23	Generic

Project File: 241025-Newcastle Storm Sewer.stm | Number of lines: 38 | Run Date: 10/22/2024

NOTES: Return period = 25 Yrs.

Line Profile (Line 1) - Pipe - (413)

Storm HW 2

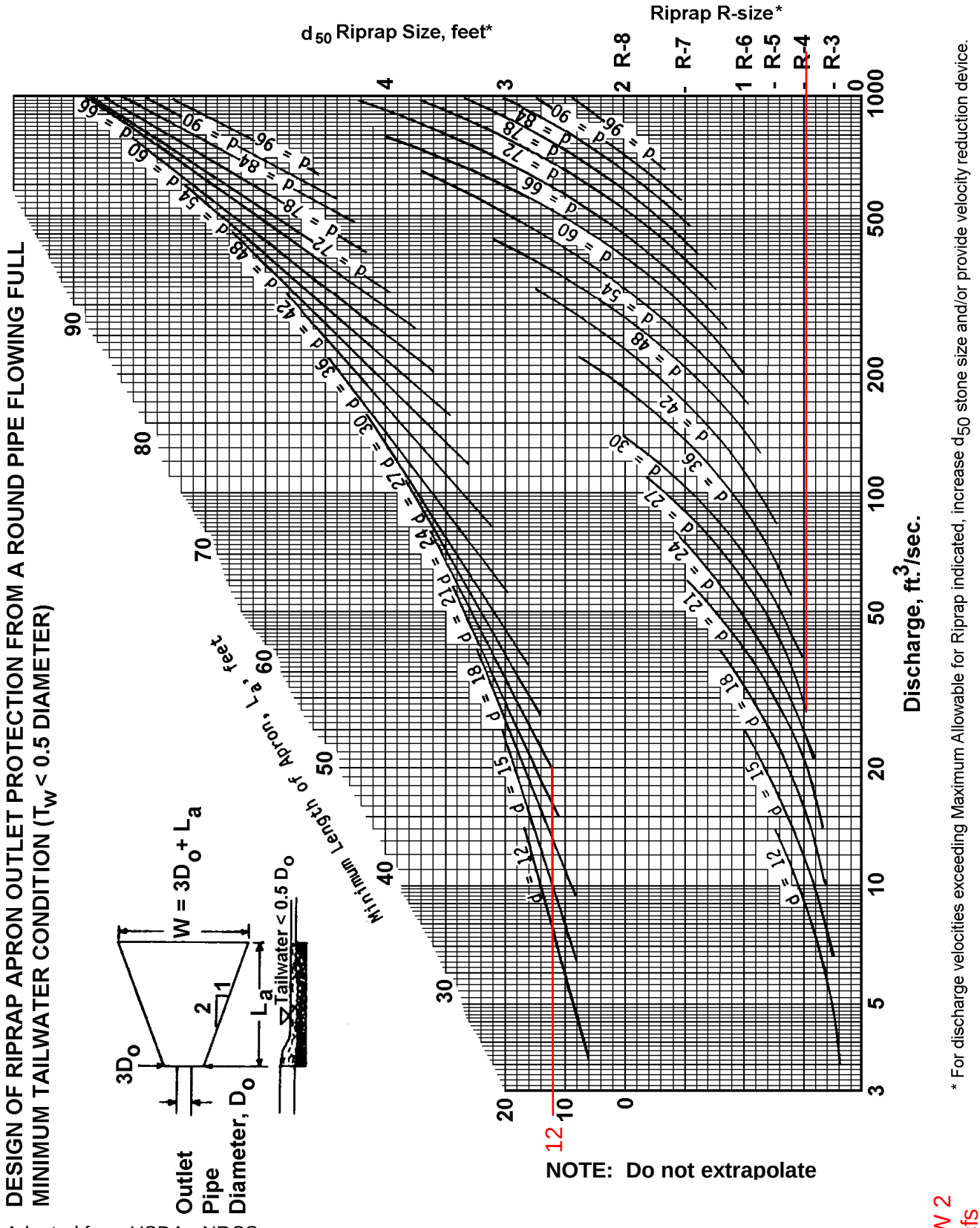


Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
1	4.24	1083.00	1084.76	0.72	0.72	0.72	1083.72	1085.48	1085.48	4.17	4.15	0.56	7.03

Project File: | No. Lines: 38 | Run Date: 10/22/2024

Storm HW 2

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



Adapted from USDA - NRCS

Not to be used for Box Culverts

Storm HW 2
Q=4.24 cfs
D=24"

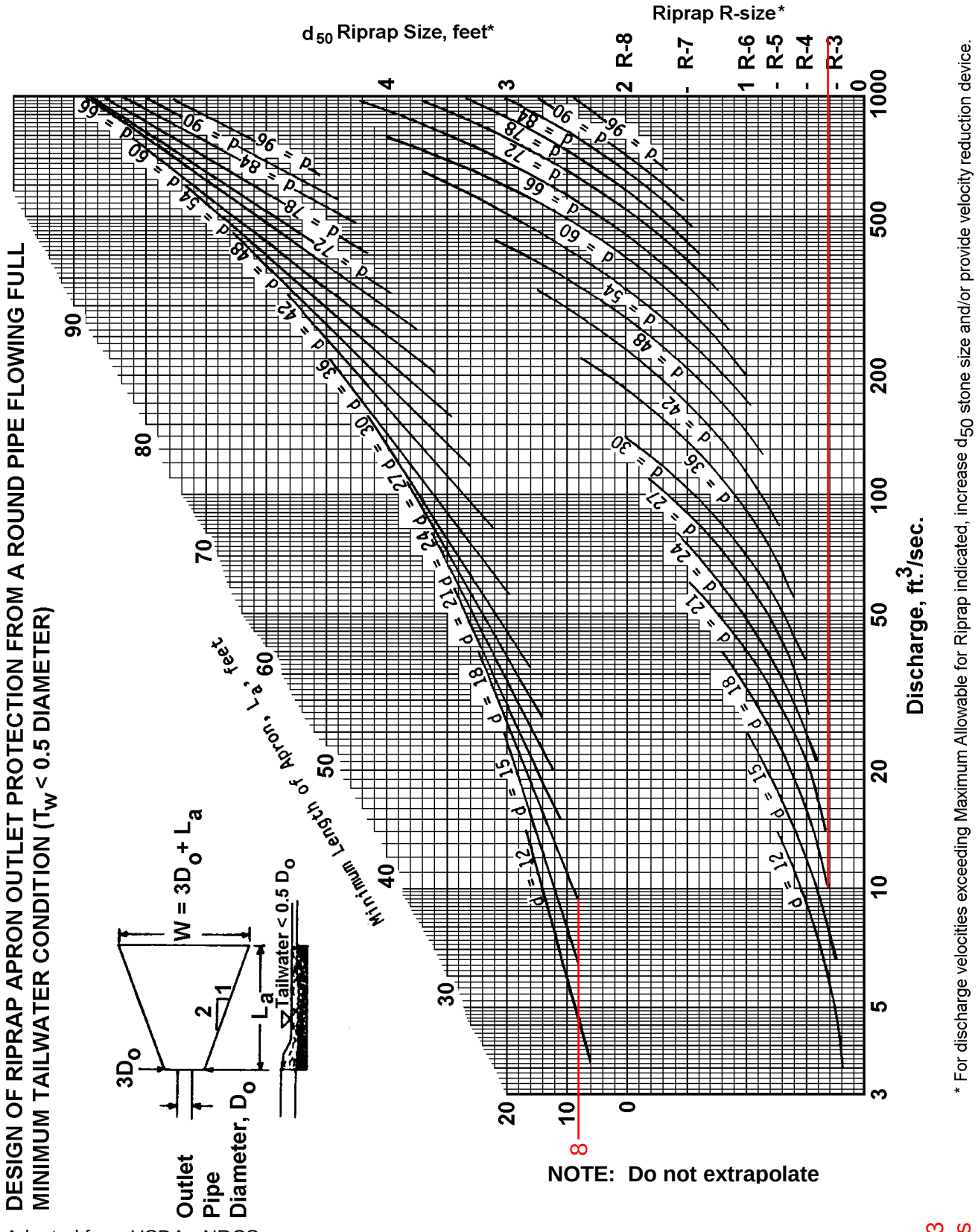
Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	17.17	1	719	36,240	------	------	------	Pre DA #2
2	SCS Runoff	23.17	1	717	44,461	------	------	------	Post DA #2
4	SCS Runoff	19.21	1	718	39,437	------	------	------	Post DA #2 (SCM-5)
5	SCS Runoff	3.208	1	718	6,458	------	------	------	Post DA #2 (Undetained)
6	Combine	22.42	1	718	45,895	4, 5	------	------	Combine Post DA#2 (No Controls)
8	Reservoir	1.904	1	743	22,356	4	1104.79	20,505	Route DA#2 (SCM-5)
9	Reach	1.903	1	744	22,349	8	------	------	Reach DA #2 (SCM-5)
10	Combine	3.243	1	718	28,808	5, 9	------	------	Combine DA #2
12	Reservoir	0.000	1	706	0	4	1106.33	35,386	DA #2 SCM-5 Blocked

Storm HW 3

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



Adapted from USDA - NRCS

Not to be used for Box Culverts

Storm HW 3
Q=1.904 cfs
D=18"

Storm Sewer Summary Report Storm HW 4

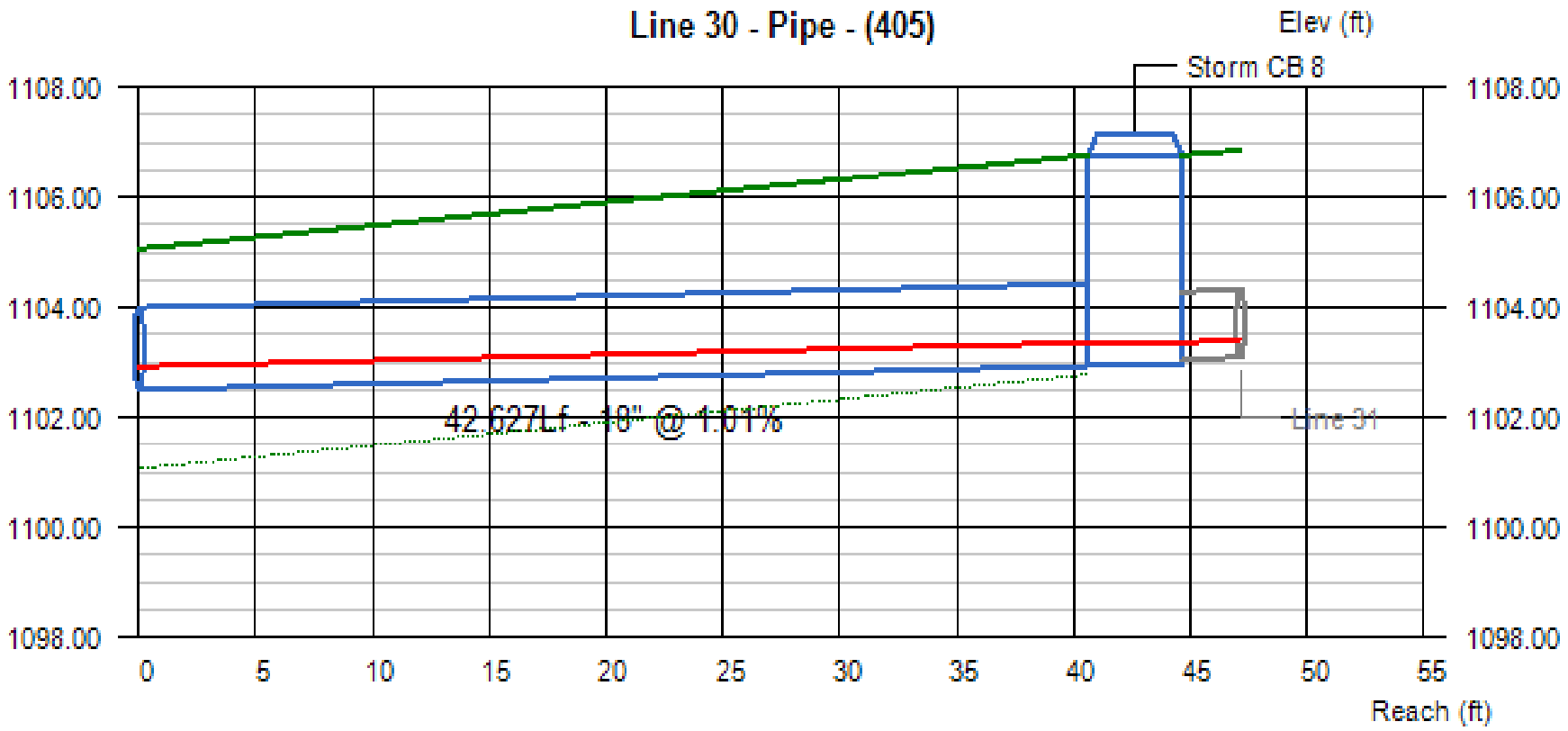
Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	Pipe - (443)	1.78	15	Cir	50.257	1109.02	1109.52	0.995	0.00	0.00	n/a	0.00	24	Generic
26	Pipe - (465)	1.65	15	Cir	71.255	1109.72	1110.71	1.389	0.00	0.00	n/a	0.00	25	Generic
27	Pipe - (466)	0.78	15	Cir	70.790	1110.91	1114.73	5.396	0.00	0.00	n/a	0.00	26	Generic
28	Pipe - (442)	0.52	15	Cir	93.882	1114.93	1118.56	3.867	0.00	0.00	n/a	0.00	27	Generic
29	Pipe - (447)	0.86	15	Cir	94.217	1110.91	1114.80	4.129	0.00	0.00	n/a	0.00	26	Generic
30	Pipe - (405) Storm HW 4	1.26	18	Cir	42.627	1102.50	1102.93	1.009	0.00	0.00	n/a	0.00	End	Generic
31	Pipe - (451)	0.78	15	Cir	95.994	1103.03	1105.40	2.469	0.00	0.00	n/a	0.00	30	Generic
32	Pipe - (471)	0.77	15	Cir	55.832	1105.60	1108.22	4.693	0.00	0.00	n/a	0.00	31	Generic
33	Pipe - (467)	3.01	15	Cir	40.400	1102.50	1102.91	1.015	0.00	0.00	n/a	0.00	End	Generic
34	Pipe - (468)	1.68	15	Cir	26.138	1103.00	1103.44	1.683	0.00	0.00	n/a	0.00	33	None
35	Pipe - (469)	0.90	15	Cir	92.184	1103.44	1105.00	1.692	0.00	0.00	n/a	0.00	34	Generic
36	Pipe - (404)	0.48	15	Cir	28.000	1103.03	1103.31	1.000	0.00	0.00	n/a	0.00	30	Generic
37	Pipe - (452)	0.21	15	Cir	50.433	1100.65	1101.16	1.011	0.00	0.00	n/a	0.00	5	Generic
38	Pipe - (414)	0.64	24	Cir	23.001	1084.86	1085.09	1.000	0.00	0.00	n/a	0.00	1	Generic

Project File: 241025-Newcastle Storm Sewer.stm | Number of lines: 38 | Run Date: 10/22/2024

NOTES: Return period = 25 Yrs.

Line Profile (Line 30) - Pipe - (405)

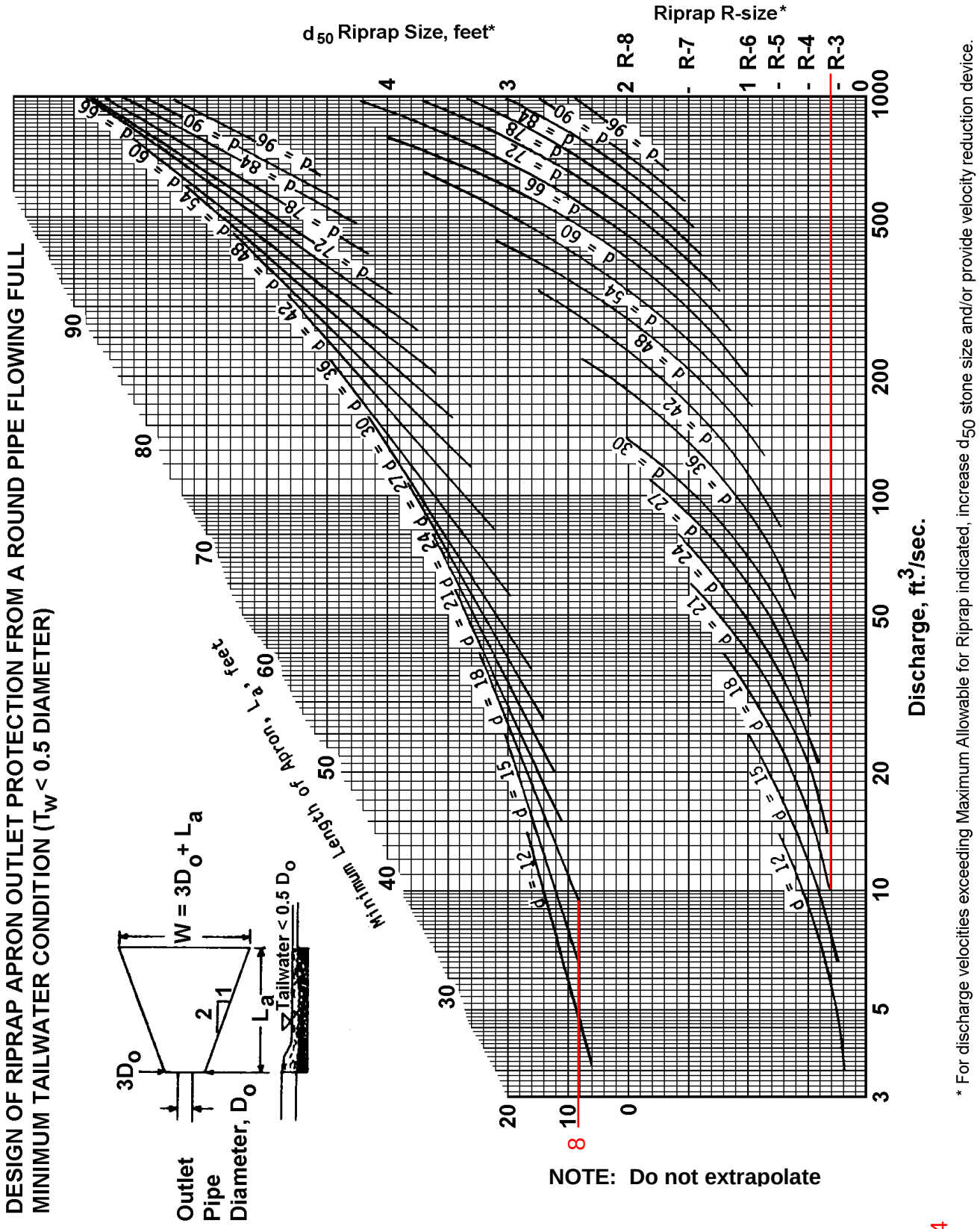
Storm HW 4



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
30	1.26	1102.50	1102.93	0.42	0.42	0.42	1102.92	1103.35	1103.35	3.11	3.11	1.06	2.34

Project File: | No. Lines: 38 | Run Date: 10/22/2024

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Adapted from USDA - NRCS

Not to be used for Box Culverts

Storm HW 4

Storm HW 4
Q=1.26 cfs
D=18"

Storm Sewer Summary Report Storm HW 5

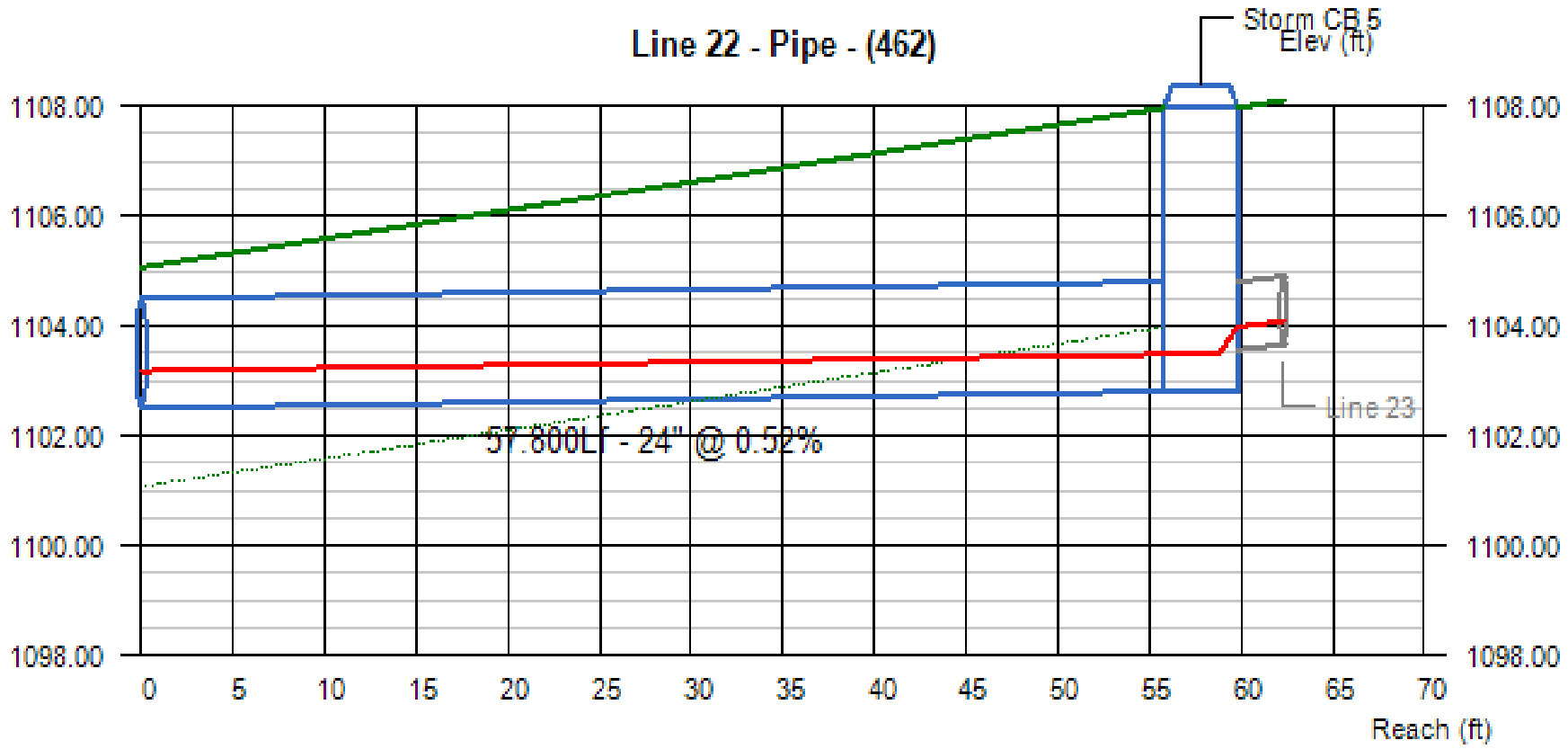
Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (413)	4.24	24	Cir	176.479	1083.00	1084.76	0.997	1083.72	1085.48	0.40	1085.48	End	Generic
2	Pipe - (412)	3.86	24	Cir	19.019	1084.86	1086.15	6.783	1085.48	1086.84	n/a	1086.84	1	None
3	Pipe - (411)	3.46	24	Cir	160.057	1086.15	1096.96	6.754	0.00	0.00	n/a	0.00	2	None
4	Pipe - (410)	3.01	24	Cir	37.223	1096.96	1099.49	6.797	0.00	0.00	n/a	0.00	3	Generic
5	Pipe - (409)	1.67	24	Cir	28.088	1099.59	1099.90	1.104	0.00	0.00	n/a	0.00	4	Generic
6	Pipe - (430)	1.25	15	Cir	28.873	1100.65	1102.46	6.269	0.00	0.00	n/a	0.00	5	Generic
7	Pipe - (429)	0.71	15	Cir	91.958	1102.56	1103.80	1.348	0.00	0.00	n/a	0.00	6	Generic
8	Pipe - (428)	0.32	15	Cir	106.285	1103.90	1111.24	6.906	0.00	0.00	n/a	0.00	7	Generic
9	Pipe - (427)	0.12	15	Cir	76.015	1111.34	1119.33	10.511	0.00	0.00	n/a	0.00	8	Generic
10	Pipe - (426)	0.05	15	Cir	72.592	1119.43	1123.74	5.937	0.00	0.00	n/a	0.00	9	Generic
11	Pipe - (463)	0.62	15	Cir	50.724	1102.56	1106.84	8.438	0.00	0.00	n/a	0.00	6	None
12	Pipe - (439)	0.44	15	Cir	24.458	1106.84	1108.90	8.423	0.00	0.00	n/a	0.00	11	Generic
13	Pipe - (433)	0.27	15	Cir	78.327	1109.00	1116.00	8.937	0.00	0.00	n/a	0.00	12	Generic
14	Pipe - (432)	0.14	15	Cir	87.653	1116.10	1120.00	4.449	0.00	0.00	n/a	0.00	13	Generic
15	Pipe - (449)	1.45	15	Cir	55.107	1100.24	1103.52	5.952	0.00	0.00	n/a	0.00	4	Generic
16	Pipe - (450)	1.44	15	Cir	107.267	1103.42	1110.43	6.535	0.00	0.00	n/a	0.00	15	Generic
17	Pipe - (453)	1.23	15	Cir	65.665	1110.53	1111.19	1.005	0.00	0.00	n/a	0.00	16	Generic
18	Pipe - (457)	0.98	15	Cir	92.536	1111.29	1112.22	1.005	0.00	0.00	n/a	0.00	17	Generic
19	Pipe - (458)	0.74	15	Cir	107.249	1112.32	1113.40	1.007	0.00	0.00	n/a	0.00	18	Generic
20	Pipe - (459)	0.52	15	Cir	103.369	1113.50	1114.54	1.006	0.00	0.00	n/a	0.00	19	Generic
21	Pipe - (460)	0.36	15	Cir	75.337	1114.64	1115.39	0.996	0.00	0.00	n/a	0.00	20	Generic
22	Pipe - (462) Storm HW 5	3.67	24	Cir	57.800	1102.50	1102.80	0.519	0.00	0.00	n/a	0.00	End	Generic
23	Pipe - (464)	3.56	15	Cir	124.059	1103.55	1108.50	3.990	0.00	0.00	n/a	0.00	22	Generic
24	Pipe - (470)	2.85	15	Cir	23.056	1108.70	1108.82	0.520	0.00	0.00	n/a	0.00	23	Generic

Project File: 241025-Newcastle Storm Sewer.stm | Number of lines: 38 | Run Date: 10/22/2024

NOTES: Return period = 25 Yrs.

Line Profile (Line 22) - Pipe - (462)

Storm HW 5

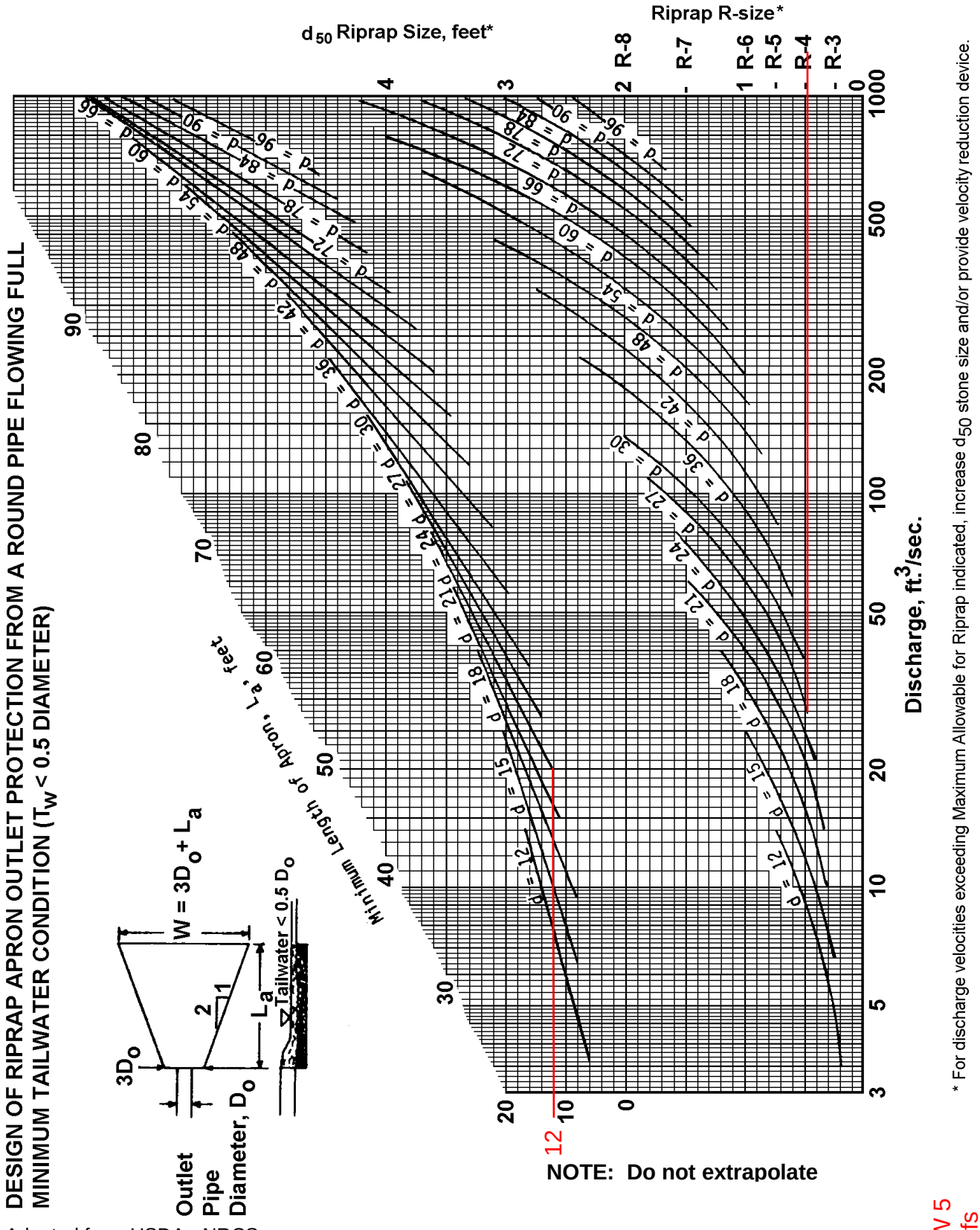


Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
22	3.67	1102.50	1102.80	0.67	0.67	0.67	1103.17	1103.47	1103.47	3.98	3.98	0.56	3.16

Project File: | No. Lines: 38 | Run Date: 10/22/2024

Storm HW 5

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Adapted from USDA - NRCS

Not to be used for Box Culverts

Storm HW 5
Q=3.67 cfs
D=24"

Storm Sewer Summary Report Storm HW 6

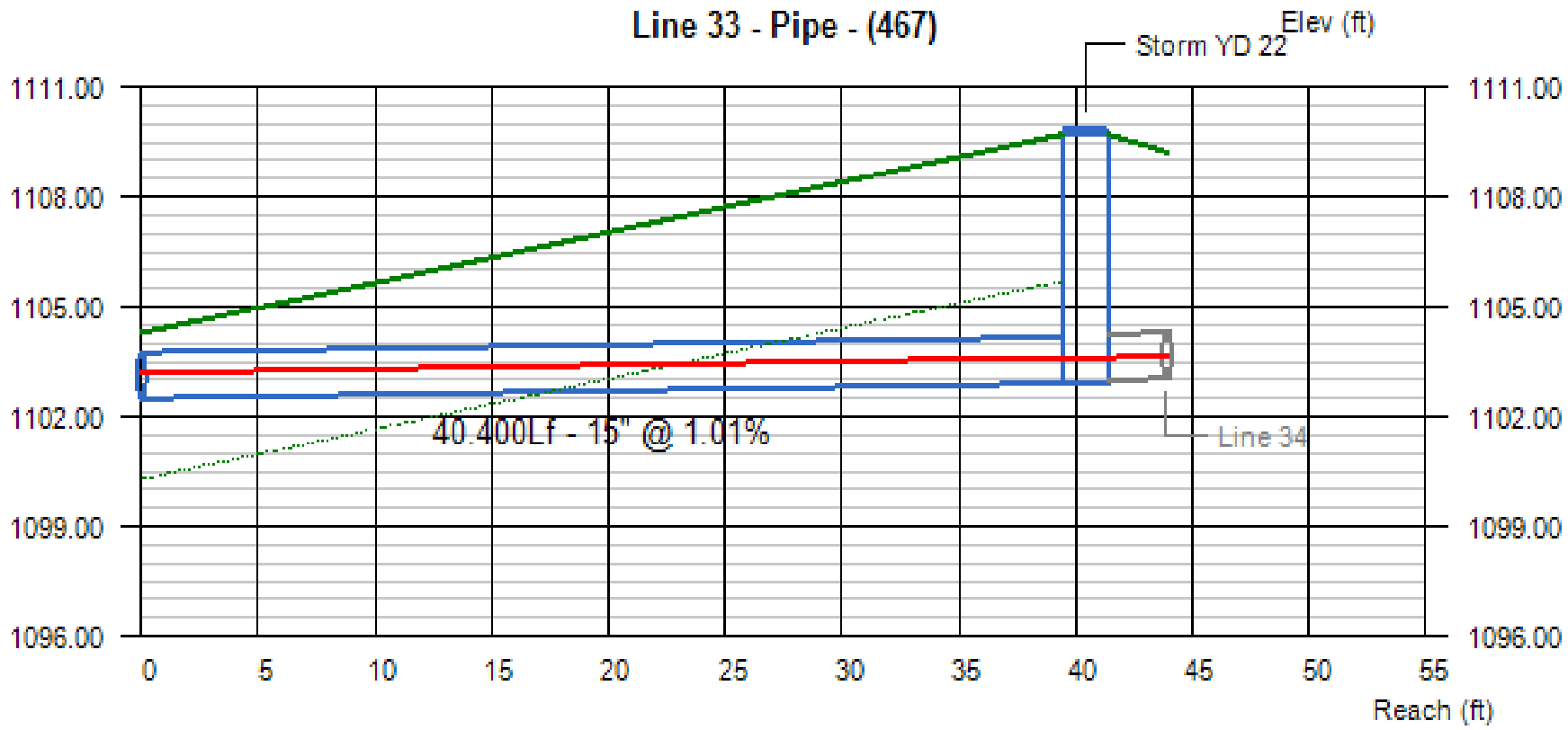
Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	Pipe - (443)	1.78	15	Cir	50.257	1109.02	1109.52	0.995	0.00	0.00	n/a	0.00	24	Generic
26	Pipe - (465)	1.65	15	Cir	71.255	1109.72	1110.71	1.389	0.00	0.00	n/a	0.00	25	Generic
27	Pipe - (466)	0.78	15	Cir	70.790	1110.91	1114.73	5.396	0.00	0.00	n/a	0.00	26	Generic
28	Pipe - (442)	0.52	15	Cir	93.882	1114.93	1118.56	3.867	0.00	0.00	n/a	0.00	27	Generic
29	Pipe - (447)	0.86	15	Cir	94.217	1110.91	1114.80	4.129	0.00	0.00	n/a	0.00	26	Generic
30	Pipe - (405)	1.26	18	Cir	42.627	1102.50	1102.93	1.009	0.00	0.00	n/a	0.00	End	Generic
31	Pipe - (451)	0.78	15	Cir	95.994	1103.03	1105.40	2.469	0.00	0.00	n/a	0.00	30	Generic
32	Pipe - (471)	0.77	15	Cir	55.832	1105.60	1108.22	4.693	0.00	0.00	n/a	0.00	31	Generic
33	Pipe - (467) Storm HW 6	3.01	15	Cir	40.400	1102.50	1102.91	1.015	0.00	0.00	n/a	0.00	End	Generic
34	Pipe - (468)	1.68	15	Cir	26.138	1103.00	1103.44	1.683	0.00	0.00	n/a	0.00	33	None
35	Pipe - (469)	0.90	15	Cir	92.184	1103.44	1105.00	1.692	0.00	0.00	n/a	0.00	34	Generic
36	Pipe - (404)	0.48	15	Cir	28.000	1103.03	1103.31	1.000	0.00	0.00	n/a	0.00	30	Generic
37	Pipe - (452)	0.21	15	Cir	50.433	1100.65	1101.16	1.011	0.00	0.00	n/a	0.00	5	Generic
38	Pipe - (414)	0.64	24	Cir	23.001	1084.86	1085.09	1.000	0.00	0.00	n/a	0.00	1	Generic

Project File: 241025-Newcastle Storm Sewer.stm | Number of lines: 38 | Run Date: 10/22/2024

NOTES: Return period = 25 Yrs.

Line Profile (Line 33) - Pipe - (467)

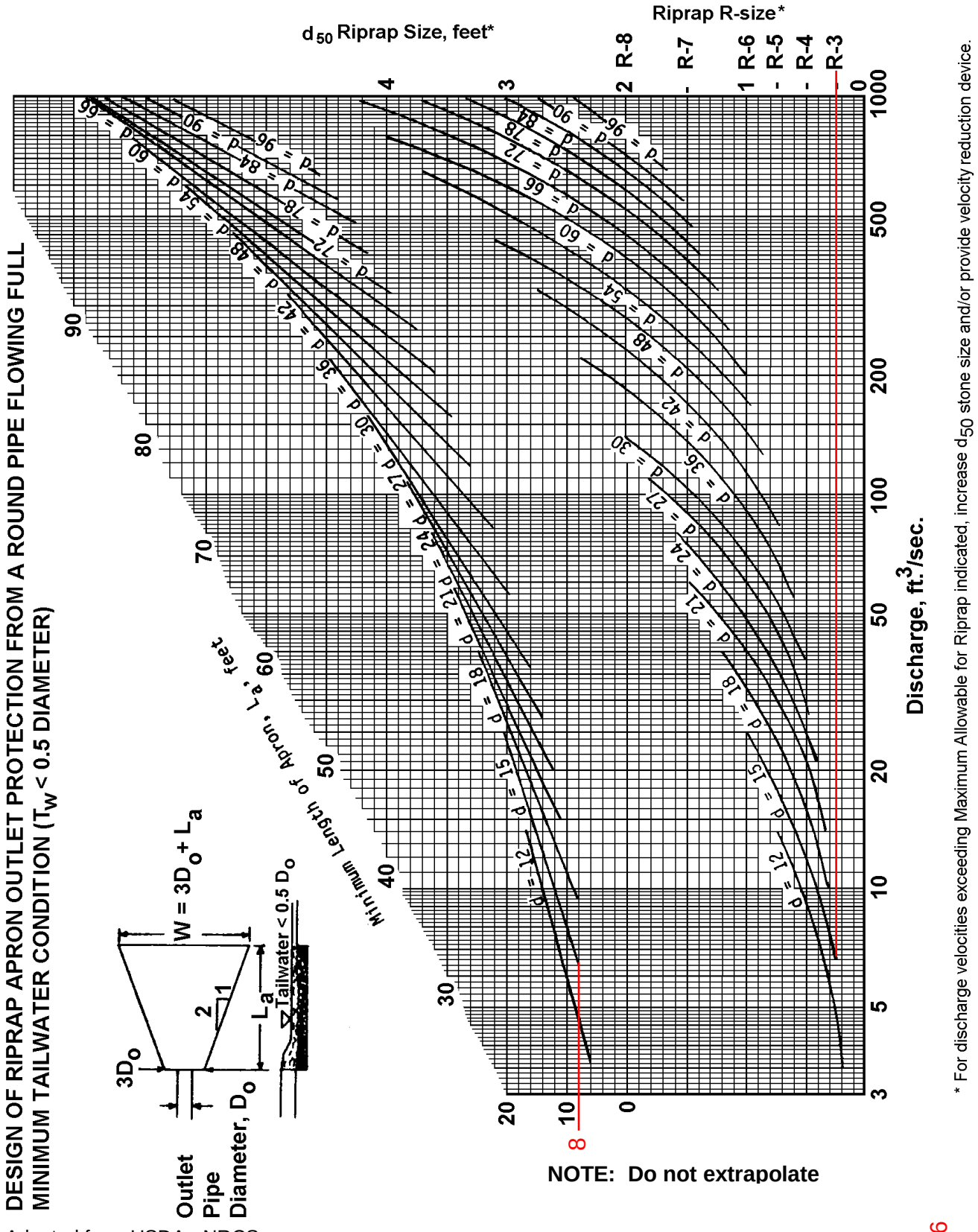
Storm HW 6



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
33	3.01	1102.50	1102.91	0.70	0.70	0.70	1103.20	1103.61	1103.61	4.28	4.28	0.53	5.54

Project File:	No. Lines: 38	Run Date: 10/22/2024

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



Adapted from USDA - NRCS

Not to be used for Box Culverts

Storm HW 6

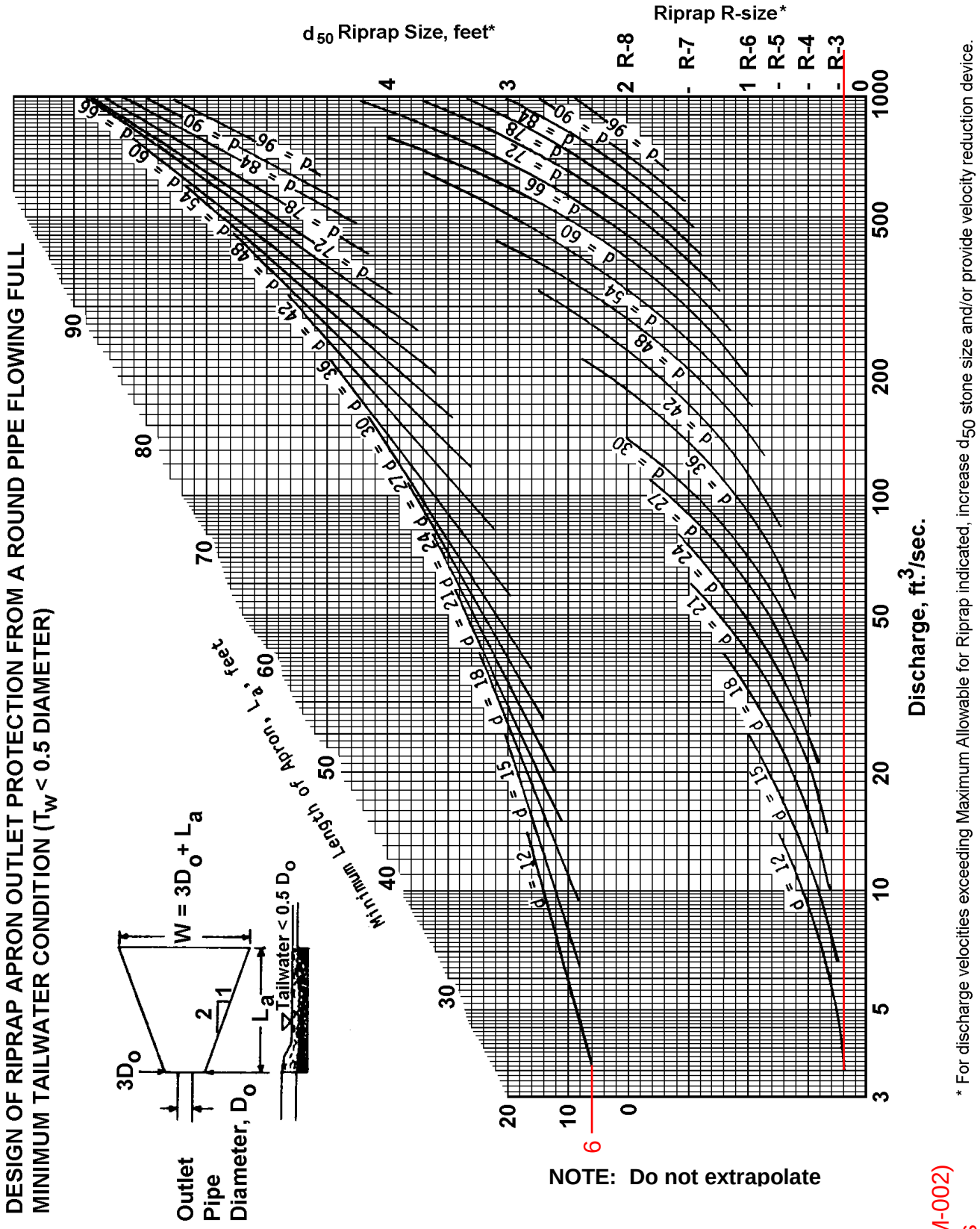
Storm HW 6
Q=3.01 cfs
D=15"

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	24.65	1	719	55,758	------	------	------	Pre DA #1
2	SCS Runoff	35.35	1	718	72,230	------	------	------	Post DA #1
4	SCS Runoff	25.54	1	717	52,679	------	------	------	Post DA #1 (SCM-1)
5	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-2)
6	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-3)
7	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-4)
8	SCS Runoff	9.282	1	718	18,723	------	------	------	Post DA #1 (Undetained)
9	Combine	35.81	1	718	73,828	4, 5, 6, 7, 8	------	------	Combine Post DA #1 (No Controls)
11	Reservoir	1.013	1	789	22,618	4	1083.68	31,341	Route DA #1 (SCM-1)
12	Reservoir	0.011	1	815	731	5	1101.21	526	Route DA#1 (SCM-2)
13	Reservoir	0.011	1	815	731	6	1099.21	526	Route DA#1 (SCM-3)
14	Reservoir	0.011	1	815	731	7	1097.21	526	Route DA#1 (SCM-4)
15	Combine	0.034	1	815	2,192	12, 13, 14	------	------	Combine (SCM-2, 3, & 4)
16	Reach	0.033	1	831	2,085	15	------	------	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	9.307	1	718	43,425	8, 11, 16	------	------	Combine DA #1
19	Reservoir	0.000	1	691	0	4	1084.32	44,445	DA #1 (SCM-1) Blocked

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



Adapted from USDA - NRCS

Not to be used for Box Culverts

DA #1 (SCM-002)

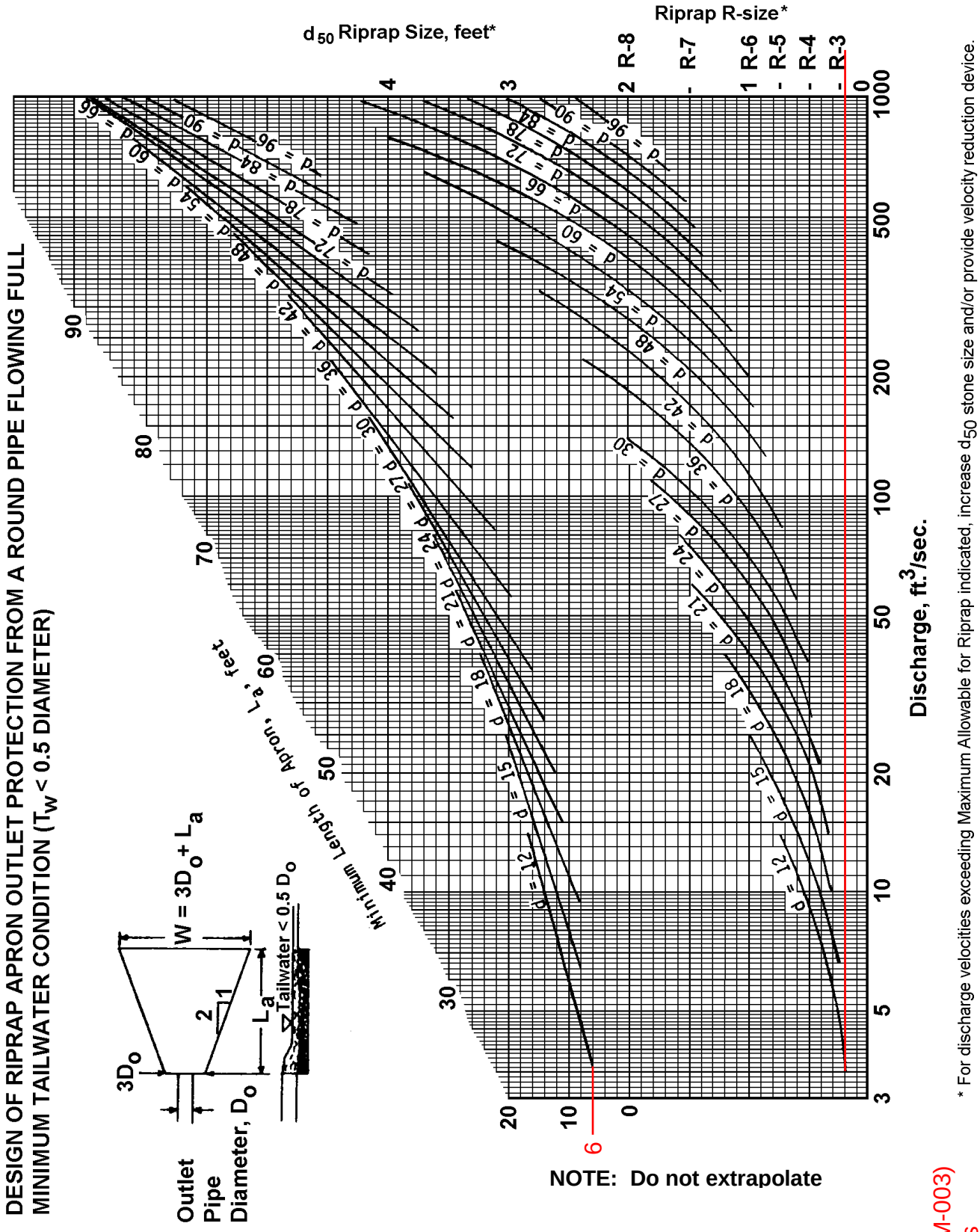
DA #1 (SCM-002)
Q=0.011 cfs
D=4"

DA #1 (SCM-003)
Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	24.65	1	719	55,758	------	------	------	Pre DA #1
2	SCS Runoff	35.35	1	718	72,230	------	------	------	Post DA #1
4	SCS Runoff	25.54	1	717	52,679	------	------	------	Post DA #1 (SCM-1)
5	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-2)
6	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-3)
7	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-4)
8	SCS Runoff	9.282	1	718	18,723	------	------	------	Post DA #1 (Undetained)
9	Combine	35.81	1	718	73,828	4, 5, 6, 7, 8	------	------	Combine Post DA #1 (No Controls)
11	Reservoir	1.013	1	789	22,618	4	1083.68	31,341	Route DA #1 (SCM-1)
12	Reservoir	0.011	1	815	731	5	1101.21	526	Route DA#1 (SCM-2)
13	Reservoir	0.011	1	815	731	6	1099.21	526	Route DA#1 (SCM-3)
14	Reservoir	0.011	1	815	731	7	1097.21	526	Route DA#1 (SCM-4)
15	Combine	0.034	1	815	2,192	12, 13, 14	------	------	Combine (SCM-2, 3, & 4)
16	Reach	0.033	1	831	2,085	15	------	------	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	9.307	1	718	43,425	8, 11, 16	------	------	Combine DA #1
19	Reservoir	0.000	1	691	0	4	1084.32	44,445	DA #1 (SCM-1) Blocked

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Adapted from USDA - NRCS

Not to be used for Box Culverts

DA #1 (SCM-003)

DA #1 (SCM-003)
Q=0.011 cfs
D=4"

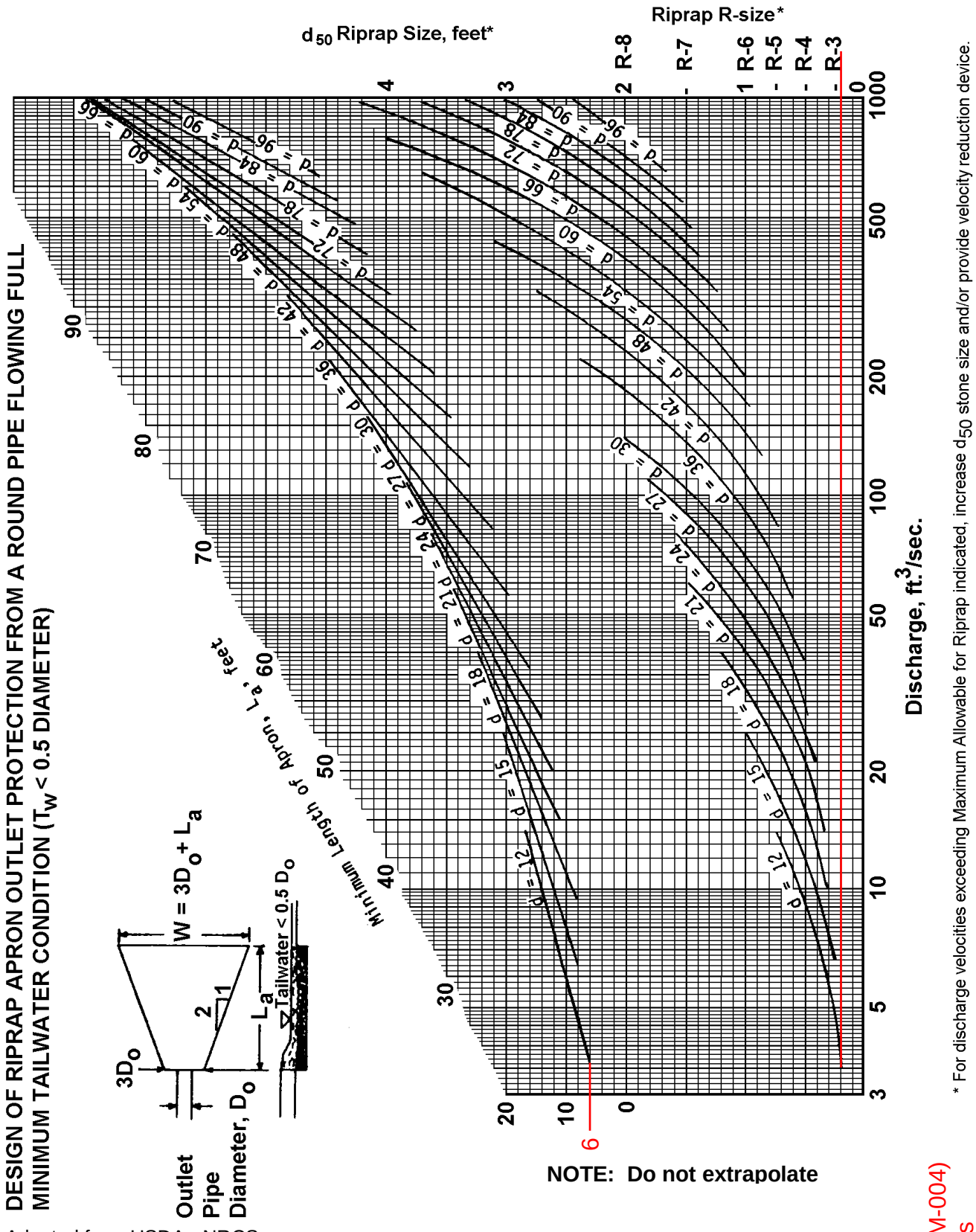
Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	24.65	1	719	55,758	------	------	------	Pre DA #1
2	SCS Runoff	35.35	1	718	72,230	------	------	------	Post DA #1
4	SCS Runoff	25.54	1	717	52,679	------	------	------	Post DA #1 (SCM-1)
5	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-2)
6	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-3)
7	SCS Runoff	0.339	1	717	809	------	------	------	Post DA #1 (SCM-4)
8	SCS Runoff	9.282	1	718	18,723	------	------	------	Post DA #1 (Undetained)
9	Combine	35.81	1	718	73,828	4, 5, 6, 7, 8	------	------	Combine Post DA #1 (No Controls)
11	Reservoir	1.013	1	789	22,618	4	1083.68	31,341	Route DA #1 (SCM-1)
12	Reservoir	0.011	1	815	731	5	1101.21	526	Route DA#1 (SCM-2)
13	Reservoir	0.011	1	815	731	6	1099.21	526	Route DA#1 (SCM-3)
14	Reservoir	0.011	1	815	731	7	1097.21	526	Route DA#1 (SCM-4)
15	Combine	0.034	1	815	2,192	12, 13, 14	------	------	Combine (SCM-2, 3, & 4)
16	Reach	0.033	1	831	2,085	15	------	------	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	9.307	1	718	43,425	8, 11, 16	------	------	Combine DA #1
19	Reservoir	0.000	1	691	0	4	1084.32	44,445	DA #1 (SCM-1) Blocked

DA #1 (SCM-004)

FIGURE 9.3
Riprap Apron Design, Minimum Tailwater Condition



Adapted from USDA - NRCS

* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Not to be used for Box Culverts

DA #1 (SCM-004)
Q=0.011 cfs
D=4"