



DWR – NPDES-SOP – G – 16 –Erosion Prevention and Sediment Control Handbook – 01092026
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4.4.12.4 Floating Turbidity Curtain



Source: TNWRRC

Definition and Purpose

A floating turbidity curtain is an in-stream sediment control measure designed to minimize the spread of suspended sediments from construction activities occurring adjacent to or within a water body. It consists of a geotextile filter fabric or a plastic sheet with holes suspended from floats and held vertically in place by a weighted ballast chain or other anchorage system. Rather than stopping water movement, the curtain isolates the construction zone, allowing sediment to settle before reaching the surrounding watercourse. The primary purpose of a turbidity curtain is to protect water quality by preventing sediment migration into the larger water body.

Appropriate Applications

Floating turbidity curtains are applicable in both watercourses where construction activities result in unavoidable sediment disturbance, such as dredging, filling, or bridge pier installation. They are most effective in shallow waters, typically less than 30 feet deep, where conventional onshore sediment controls are not feasible. Common deployment locations include coastal zones, river channels, and environmentally sensitive areas. Suitability depends on site specific conditions such as hydrodynamics, wave action, and operational constraints like navigation access (Oglivie et al., 2012). Further, they may be used as baffles in sediment basins.

Limitations and Maintenance

Floating turbidity curtains become less effective when used in areas with flow velocities exceeding five feet per second and should never be installed across active stream channels, as strong currents, wave action, and rapid water level changes can submerge or damage the



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curtain (TDOT; VDEQ, 2024). Installation errors, such as poor anchoring, gaps between screen sections, or incorrect placement relative to flow, can compromise performance (Oglivie et al., 2012). Repairs should follow manufacturer guidelines, and removal must be done carefully once sediments have settled to avoid resuspension. Curtains should not be left in place once construction activities conclude and soil stabilization is complete. Curtains must also be properly cleaned, repaired, and stored after use to preserve their integrity for future deployments.

Installing turbidity curtains in jurisdictional waters requires additional permits, such as an ARAP, and therefore, both the conditions of the CGP and ARAP must be followed. A Section 404 permit from USACE may also be required, and if the proposed bank protection is to be completed in a TVA reservoir, a TVA 26a permit may also be necessary. Local permitting may be required in addition to state and federal permitting requirements. Consider the criteria and conditions of the necessary permits during the planning stages of the project and EPSC plans.

Planning and Design Considerations

A floating turbidity curtain usually consists of a geotextile filter cloth that is permeable enough to allow water to pass through while retaining sediment and promoting settling; however, other designs that allow water passage and promote settling are also acceptable. The curtain is suspended from buoyant floats and anchored both at the shoreline and within the water to maintain its shape and position. A ballast chain embedded at the lower edge of the curtain helps keep it vertical and provides tensile strength under stress. When used, floating turbidity curtains are typically the last line of defense for preventing sediment transport. As such, potential failure of a turbidity curtain can result in clear violation of the CGP, and therefore, it is imperative that other EPSC measures are installed and functioning properly to limit the amount of sediment received by the curtain.

When selecting a turbidity curtain, it is crucial to assess site specific conditions such as water depth, flow velocity, wave action, and sediment loads (Oglivie et al., 2012). Curtains should never be installed across the main flow of a water body; instead, they should be aligned parallel to the current to prevent structural failure (ALSWCC, 2018; VDEQ, 2024). For river systems, lower velocities are generally found near the shore on straight reaches, whereas higher velocities occur on the outside of bends. Similarly, in tidal or wave-impacted waters, curtains must be carefully designed to account for fluctuating water levels and stresses induced by wave action and/or boat traffic.

Turbidity curtains are generally classified into three types based on environmental conditions. Type I is used in calm, protected waters without current or wave action. Type II is



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suited for currents up to 3.5 feet per second and some wind or wave influence. Type III is appropriate for more challenging environments with stronger currents up to 5 feet per second, tidal fluctuations, and significant wave action (ALSWCCC, 2018; VDEQ, 2024). The selection of curtain type should be matched to the hydraulic conditions of the site to avoid structural stress or failure. In areas with strong hydrodynamics, the curtain depth should not exceed 10 to 12 feet to prevent excessive loading and "billowing" of the fabric.

Design considerations also include ensuring an adequate gap, typically 12 inches, between the curtain bottom and the waterbed to prevent burial and resuspension of sediment during removal. In shallow environments less than two feet deep, curtains may be secured with stakes driven into the substrate instead of using floating anchors. Where high sediment containment is critical and full-depth coverage is necessary under tidal conditions, either woven pervious filter fabric or impermeable material (with holes) can be used, but whichever reduces the hydraulic pressure on the barrier while maintaining filtration effectiveness is preferred.

Curtain segments are generally fabricated in 50 to 100-foot sections, joined with secure connections that maintain full material strength. The number of joints should be minimized, and a minimum of one anchor is recommended at each joint, with additional anchoring based on wave and flow conditions. For safety and visibility, curtains should be a bright color, typically yellow or international orange, and may require lighted buoys in navigable waterways, subject to agency requirements like those of the USACE or TVA.

Finally, to enhance effectiveness in highly active water bodies, dual parallel curtains separated by rigid barriers (e.g., wooden boards or pipes) can be deployed. This configuration helps reduce sediment escape and improves overall containment. Throughout the design and installation process, adherence to manufacturer specifications and regulatory guidelines is essential to ensure both environmental protection and operational compliance.

The installation and removal of turbidity curtains must be carefully planned and executed based on the waterbody conditions. In calm waters such as lakes or ponds (Type I installations), installation typically involves placing end stakes or anchor points, using anchor buoys if bottom anchors are required, then towing the furled curtain into place and securing it. Once aligned, additional anchors may be added to maintain the curtain position, and the furling lines are cut to release the skirt into the water. External anchors such as fluke, plow, or mushroom types must be placed to ensure the curtain remains in a stable vertical position, with sufficient slack in anchor lines to accommodate tidal or wave-induced



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movement. In moving water environments (Type II and III installations), all anchor points should be securely installed prior to curtain deployment. Anchor buoys are essential in these conditions to prevent flotation submersion. The curtain should be secured starting from the upstream end and proceeding downstream, with its lay assessed before unfurling. Importantly, all anchor lines must be attached to the flotation line, not the curtain bottom, to avoid structural failure. In cases where silt buildup in mid-channel poses a risk, curtains may be installed in a sharp, long-sided “V” configuration to deflect cleaner water and contain sediment-laden flows near the worksite. Removal of the curtain must be done with care to avoid disturbing settled sediment, ensuring protection of water quality during final demobilization.



Source: City of Franklin

Example Application

No formal design or quantities are required for this measure and therefore are not presented here.

References

ALSWCC. (2018). *Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas*.

Oglivie, J., Middlemiss, D., Lee, M., Crossouard, N., & Feates, N. (2012). Silt curtains-a review of their role in dredging projects.

TDOT. *Drainage Manual Ch10*.

VDEQ. (2024). *Virginia Stormwater Management Handbook*.