

Ranked Question #1: Are the temporary erosion and sediment control (TESC) best management practices (BMPs) required during development or redevelopment adequate to control erosion and sediment from construction sites?

Summary of literature review:

Effective use of TESC BMPs depends on their selection, operation and maintenance, and site conditions. Among the construction TESC BMPs discussed in the available literature, anionic polyacrylamide (PAM) showed the best results for controlling erosion and sediments at their source. Applying PAM to low-slope soils that are high in clay content or impregnating PAM into other BMPs (such as check-dams) is the most effective. Other construction TESC BMPs that ranked well for source control include ground cover blankets or filter socks with compost or wood mulch filling. Sediment ponds generally showed poor performance.

Summary of recommended effectiveness studies:

- Study PAM performance on soils in Puget Sound and throughout western Washington within the guidelines for its use in the Stormwater Management Manual.
- Study TESC BMPs under field conditions at construction sites in western Washington.
- Improve sediment pond design by adding a step for estimating sediment loading using the Universal Soil Loss Equation or another appropriate sediment model.

Ranked Question #1: Are the required TESC BMPs used at construction sites effective at reducing turbidity/TSS for compliance with water quality standards?

Summary of literature review:

Many studies in the literature reported high percentage reduction of turbidity by TESC BMPs, however the results were usually in comparison to bare soil or in a controlled bench-top setting. In practice, the use of filtration or chemical treatment BMPs are typically required to reduce turbidity in construction site runoff down to within 5 NTUs of the receiving water. Presently, the AKART approach is used, which presumes compliance with water quality standards when a construction permittee plans, samples, monitors, reports results, and uses TESC BMPs properly following permit conditions.

Summary of recommended effectiveness studies:

Study BMP performance for meeting water quality standards under field construction conditions.

Ranked Question #1: What frequency of construction erosion and sediment control inspections is most effective for achieving compliance with codes/ordinance requirements at new development and redevelopment project sites?

Summary of literature review:

Not addressed in the literature available. Based on author experience, the inspection of BMPs for erosion and sedimentation control is most effective when done on a consistent schedule that includes special inspections after significant flow events. The Stormwater Management Manual for Western Washington requires designating a Certified Erosion and Sediment Control Lead who is responsible for ensuring compliance with all applicable sediment control and water quality requirements.

Summary of recommended effectiveness studies: None.

Ranked Question #2: Do more frequent site visits and contact with private facility owners improve compliance with operation and maintenance (O&M) requirements?

Summary of literature review:

Not addressed in the literature available. Based on author experience, inspection of private stormwater facilities can improve compliance with O&M since sometimes a visit by an inspector will result in immediate corrective action to an O&M problem.

Summary of recommended effectiveness studies: See below under question eight.

Ranked Question #2: What is the optimum frequency of inspections to maintain the functionality of private stormwater facilities?

Summary of literature review:

See previous question. Annual visits are recommended at a minimum in general but the frequency should include considerations of the type of facility and the local watershed conditions that may affect the facility.

Summary of recommended effectiveness studies: See below under question eight.

Ranked Question #4: Which combination of methods work best for detection of illicit connections: smoke testing, dye testing, closed circuit TV (CCTV), flow monitoring, or outfall screening (wet and dry season)?

Summary of literature review:

Not addressed in the literature available. Based on author experience and additional literature, several methods work well. The selection of the specific method depends on the nature of the illicit discharge. A recent survey of illicit discharge detection and elimination (IDDE) methods used by Washington state NPDES permittees reported the top three methods as: 1. having an IDDE hotline; 2. inspection of manholes and catch basins; and 3. inspection of outfalls. A forthcoming IDDE Field Screening and Source Tracing Guidance Manual (an activity of the Source Identification Information Repository (SIDIR) subgroup) is currently in preparation that will provide helpful IDDE method selection guidance.

Summary of recommended effectiveness studies:

- Study how IDDE methods perform across a range of conditions in western Washington, including upland areas, tidally influenced shoreline areas, and among the range of quality of stormwater infrastructure.
- Group IDDE methods by cost and level of detail of information obtained from each method.

Ranked Question #4: How effective is wet weather screening as a tool to detect illicit connections?

Summary of literature review:

Not addressed in the literature available. Based on author experience and additional literature, wet weather screening can be an effective tool for detecting illicit connections as part of a comprehensive IDDE program. The literature recommends developing a regional chemical indicators database against which local wet weather sample results can be compared to identify the source area, activity, or organism from which an illicit discharge originates.

Summary of recommended effectiveness studies:

Develop a regional chemicals indicator database that local jurisdictions can use to help identify illicit discharge sources.

Ranked Question #4: Which parameters should be measured during dry weather screening to improve the ability to detect illicit connections?

Summary of literature review:

Not addressed in the literature available. Based on author experience and additional literature, the decision of which parameters to measure during dry weather to detect illicit connections should be based on characteristics of the discharge and some foreknowledge of potential sources. A desktop assessment of storm drainage infrastructure and current and historic activities in the drainage area can provide this foreknowledge. Top parameters to inspect include the presence of discolored or odorous discharge as well as algal growth and deposition patterns at an outfall. Several western Washington jurisdictions have already developed their own IDDE dry weather screening manuals.

Summary of recommended effectiveness studies: None.

Ranked Question #8: Are businesses that receive an in-person visit/inspection more likely to implement source control BMPs?

Summary of literature review:

Not addressed in the literature available. Based on author experience, the impact of in-person visits at businesses is usually short-lived. It's important to prioritize businesses for in-person visits/inspections where the staff changes frequently, such as restaurants, big box stores, and some automotive businesses, such as detailers and carwashes. A wide range of source control BMPs exist across many businesses and industries, thus inspections should be performed by knowledgeable staff that can identify noncompliance and specify corrective actions for the types of BMPs expected to be encountered. Refer to the Public Education and Outreach white paper for more information on this topic.

Summary of recommended effectiveness studies:

Study the connection between in-person visits and a variety of stormwater BMPs, including those used for source control.

Ranked Question #8: What frequency of business inspections is most effective for implementing and maintaining source control requirements/BMPs at businesses?

Summary of literature review:

Not addressed in the literature available. Based on author experience, the optimum frequency of inspections at businesses depends on the activities occurring at the business, the local relevant codes and regulations, and the nature of the business-government relationships in that area. The wide range of available structural source control BMPs requires setting an inspection frequency that depends on the BMP type. For non-structural source control BMPs, regular contact is key in order to establish and build relationships between local jurisdiction staff and businesses.

Summary of recommended effectiveness studies:

Study how the frequency of inspections at businesses relates to how source control BMPs are implemented and maintained.