

Guidance for Obtaining Phase I Municipal Separate Storm Sewer System (MS4) Permit Compliance Costs

Purpose

The objectives of this guidance are for the Water Boards and the public to obtain adequate, consistent, and comparable information on the storm water management costs local jurisdictions incur and for the Water Boards to base decisions on that information. This guidance is for Regional Water Board storm water permitting staff to follow when requesting information on the costs of municipal separate storm sewer system (MS4) permit compliance from their MS4 permittees.

Intended audience

Regional Water Board staff who request information on the cost of permit compliance from MS4 permittees.

Secondary audience

This guidance may be valuable to MS4 permittees seeking guidance on cost reporting. Please note this guidance does not set Board policy. This guidance does not supersede permit requirements; permittees are responsible for following permit requirements and other orders of the Water Boards.

Legal requirements

Refer to the Appendix for relevant legal requirements. This general guidance is not binding and does not change or otherwise affect the legal obligations of the Water Boards related to the adoption of waste discharge requirements. Rather, this guidance provides best practices to allow Water Board staff to conduct a thorough estimation of MS4 permit compliance costs to the extent that sufficient resources exist.

This guidance was developed in part to respond to recommendations of the California State Auditor (2018).¹

Maintenance of this guidance

This document was collaboratively developed by the State Water Board's Office of Research, Planning, and Performance (ORPP) and the State Water Board's Division of Water Quality (DWQ). The current version of the document was finalized on December 19, 2019 and submitted to the California State Auditor. In 2020, the DWQ took on responsibility for

¹ Among other changes, the State Auditor recommended that, "to ensure that the regional boards obtain adequate and consistent information on the storm water management costs local jurisdictions incur, the State Water Board should develop statewide guidance... for local jurisdictions on methods for tracking the cost of storm water management."

maintenance of this guidance. Please direct questions to the Strategy to Optimize Resource Management of Stormwater (STORMS) by emailing staff at STORMS@waterboards.ca.gov.

Introduction

Storm water issues vary from system to system and from region to region, often making it difficult to compare compliance costs for individual MS4 permits. Collecting standardized data on what permittees spend to comply with their MS4 permits will allow the Water Boards and stakeholders to broadly compare across regions and systems and to identify trends over time. Reliable and robust data will allow the Water Boards to confidently draw on reported costs when developing cost estimates for future MS4 permit requirements and any new total maximum daily loads (TMDLs) that include requirements that will be incorporated into MS4 permits.

Consistent and reliable cost information may also be critical for municipalities to manage their assets, programs, funding strategies, evaluations, credit programs, and storm water utility fees.

The Water Boards are aware that the development and implementation of new standardized cost-reporting or information requests might result in short-term costs for some municipalities as local jurisdictions transition cost-accounting practices and data systems.

Limitations and warnings

- This guidance is necessarily general.
- Storm water pollution reduction measures and their costs are difficult to standardize.
 - Minimum Control Measures reflect slightly differing requirements defined historically in individual Regional permits. Standardized, statewide guidance on select Minimum Control Measures does not exist.
 - There are appropriate grounds for differences among municipal storm water permits. What is practicable and prudent in one community may not work in other communities due to differences in population, hydrology, pollution sources, water uses, and municipal infrastructure, among other things.
 - There are various implementation approaches (in-house implementation versus sub-contracted or regional programs) and methods for tracking costs (asset and information data management system functionality and scope). Consequently, analysis of cost data supplied by permittees is complex and is not covered here.
- Permittees may consider additional storm water-related costs than this guidance does. For example, some storm water control measures may be integrated into multi-benefit projects serving many objectives (e.g., a public park whose mowing maintenance schedule is designed to maximize storm water retention).
- Permittees may report costs they would have incurred regardless of their permit. For example, some storm water control measures may start out as storm water control measures only to become expected by residents for other benefits (e.g., street-sweeping for trash removal, dog waste bags at public parks). Hence, only a portion of costs that are listed may actually be related to storm water permit compliance.

Guidance on Cost Reporting Approaches

Use of the cost categories below is encouraged. Federal regulations generally require permittees to report annually on their projected costs of complying with their storm water permit. Therefore, the Regional Water Boards can require projected cost information in a permit.²

There is a tension between suggesting general categories that apply in most cases and using more specific categories. While the guidance is specific where possible, particularly for issues common to many municipalities, the categories cannot account for every community-specific situation and remain broadly usable for MS4 permits across the state. Some of the following categories will not apply to some MS4 permits (e.g., the TMDL implementation/monitoring plan development category only applies to MS4 permits that contain TMDL-based requirements). This guidance will periodically be revisited as more information becomes available and as it is applied; however, keep in mind the cost data gathered from permittees will not be perfectly comparable.

Suggested cost categories³

1. TMDL implementation/monitoring plan development not related to any of the following categories
2. Trash best management practice compliance
3. Minimum control measures
 - 3.1. Public information, education, outreach, involvement, and participation
 - 3.2. Industrial and commercial facilities programs
 - 3.3. Planning and land development programs (e.g., post-construction storm water management in new development and redevelopment)
 - 3.4. Oversight of construction site storm water runoff control⁴
 - 3.5. Public agency activities and pollution prevention, including good housekeeping for municipal operations
 - 3.6. Illicit connections and illicit discharges program (including detection and elimination)

² Refer to the following Code of Federal Regulations section: 40 C.F.R. 122.26(d)(2)(vi).

³ These categories may be of value (mainly based on the Los Angeles Regional Board's requirement for cost reporting by MS4 Permittees and the 2005 National Pollutant Discharge Elimination System (NPDES) Stormwater Cost Survey, pages 63-68). If results are not adequate, more specific categories may eventually be included.

⁴ This Includes environmental review, development project approval and verification, and permitting and licensing.

4. Additional institutional best management practices, including enhanced minimum control measures
5. Projects
 - 5.1. Distributed projects, including green streets⁵
 - 5.2. Regional projects⁶
 - 5.3. Restoration projects⁷
6. Monitoring
 - 6.1. Receiving water quality monitoring
 - 6.2. Effluent/outfall water quality monitoring
 - 6.3. Best management practice effectiveness monitoring and other special studies
 - 6.4. Regional monitoring
 - 6.5. Data analysis⁸
7. Watershed management planning, other than alternative compliance pathways such as Watershed Management Programs and Enhanced Watershed Management Programs
8. Alternative compliance plan development⁹
9. Reporting
 - 9.1. Information management systems
 - 9.2. Annual reporting
10. Other

Information suggested to be requested for each cost category

- Description of costs counted
- Total cost
- Capital expenditures (other than for land)

⁵ Permittees should provide costs for individual green street or distributed projects as separate entries in the table. Refer also to the footnotes for Regional Projects and Restoration Projects.

⁶ Costs for Regional Projects should be provided by project, i.e., if a permittee is implementing three projects include one row for each project. Details should also be provided on project design details in order to better understand unit costs (linear miles of green street, acre-feet of storm water captured). Also, costs should be those incurred within the reporting year. If a permittee is implementing a project collaboratively, the permittee should only include the portion of project cost that it is assuming. Permittees should provide overall project cost for multi-year projects if available, but separately, in their routine report submittals.

⁷ See the footnote regarding Regional Projects.

⁸ Some permits require the permittee analyze the data for key trends and basic statistics.

⁹ Costs include development or revision of plans and Reasonable Assurance Analysis costs.

- Land costs
- Personnel costs
- Number and classifications of personnel
- Cost of consultants
- Overhead costs¹⁰
- Construction costs
- Permits, operations, and maintenance costs

Other Guidance

- Permittees should put in reasonable effort to determine and report their costs.
- Consider asking permittees to include the sources of funding for permit compliance.¹¹ Grants from public agencies and other outside funding should be clearly identified.
- If the Water Boards seek additional data, focus on data the Boards will use or that the public will want.
- Consider asking that supporting documentation be available upon request for review. Examples include detailed Capital Improvement Plan budgets, Storm Drainage or Asset Management Plans. Supporting documentation may help you identify inappropriate costs. For example, inspection staff may have multiple responsibilities in addition to storm water inspections. It is not appropriate to count an entire inspector's time (i.e., full-time) as a storm water cost if the inspector is also doing building inspections.
- Required compensation for all costs should be identified if the permittee conducted any enforcement actions related to remediation activities related to elimination of a non-storm water discharge, cleanup, or maintenance on its own.
- Consider suggesting that permittees account for storm water expenditures separately from other expenditures.

¹⁰ The reported overhead costs should be limited to those associated with the cost category's activities, based on the permittee's indirect cost allocation plan or some other proration based on clear evidence.

¹¹ Refer to the following Code of Federal Regulations section: 40 C.F.R. 122.26(d)(1)(vi)(A).

References

Below is a list of references that pertain to this guidance.

1. Boardman, A. *et al.*, 1996. *Cost-benefit analysis: concepts and practice*. Prentiss Hall, Upper Saddle River, New Jersey.
2. California State Auditor, 2018. State and Regional Water Boards: They must do more to ensure that local jurisdictions' costs to reduce storm water pollution are necessary and appropriate. (Report Number 2017-118.) Click [here](#) to access this report.
3. California State University, Sacramento, Office of Water Programs, 2005. NPDES Stormwater Cost Survey. Click [here](#) to access this cost survey.
4. California State University, Sacramento, Office of Water Programs, 2018. Toolkit to Support Financial Planning for Municipal Stormwater Programs. Prepared as product of the United States Environmental Protection Agency Region 9 Environmental Finance Center at Sacramento State. *Draft*. August 2018.
5. California State University, Sacramento, Office of Water Programs, 2020. Estimating Benefits and Costs of Stormwater Management, Part II: Evaluating Municipal Spending in California. May 2020. Report and database of California-reported stormwater program cost data (Appendix B) available [here](#).
6. Department of Water Resources, 2008. Economic analysis guidebook. The Resources Agency, State of California. Click [here](#) to access this guidebook.
7. Environmental Water Resources Institute. 2018. Recommended Operation and Maintenance Activity and Cost Reporting Parameters for Stormwater Best Management Practices Database. Project No. SIWM22T17/4851. Click [here](#) to access this database.
8. United States Environmental Protection Agency, 2000. Guidelines for preparing economic analysis. (EPA 240-R-00-003.) Click [here](#) to access these guidelines.
9. United States Environmental Protection Agency, 2018. Storm Water Financing Strategy Training Course (in development).
10. Water Boards, 2020. Guidance for Future Total Maximum Daily Load (TMDL) Municipal Storm Water Cost Estimation.
11. Weimer, D. and Vining, A., 1992. *Policy analysis: concepts and practice*. Prentiss Hall, Englewood Cliffs, New Jersey.

Appendix: Legal Requirements

This general guidance is not binding and does not change or otherwise affect the legal obligations of the Water Boards related to the adoption of waste discharge requirements.

Federal regulations at 40 C.F.R. 122.26(d)(1)(vi)(A) pertaining to application requirements

This requires permittees to provide “a description of the financial resources currently available to the municipality to complete part 2 of the permit application. A description of the municipality's budget for existing storm water programs, including an overview of the municipality's financial resources and budget, including overall indebtedness and assets, and sources of funds for storm water programs.”

Federal regulations at 40 C.F.R. 122.26(d)(2)(vi) pertaining to fiscal analysis

This requires that, as part of a permittee's management program, a permittee provides a fiscal analysis: “For each fiscal year to be covered by the permit, a fiscal analysis of the necessary capital and operation and maintenance expenditures necessary to accomplish the activities of the programs under paragraphs (d)(2) (iii) and (iv) of this section. Such analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds.”

In light of these requirements, for example, the Los Angeles County MS4 Permit, Order No. R4-2012-0175 states, “each Permittee shall conduct a fiscal analysis of the annual capital and operation and maintenance expenditures necessary to implement the requirements of this Order” (Part VI.A.3.a).

Glossary of Cost Categories

Water Board MS4 permit writers should try to ensure categories and sub-categories, as described in the permit, are exclusive of one another.

If there are other terms that should be included or definitions that should be refined, please email STORMS@waterboards.ca.gov.

Alternative compliance

A permit may allow the development of an alternative compliance approach to satisfy permit requirements or other storm water obligations. They are subject to approval by the Regional Water Board. For example, alternative compliance for a water quality objective may be treatment by design volume. Approval would require demonstration of equivalency through a Reasonable Assurance Analysis or similar.

Best management practices (BMPs)

Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices, to prevent or reduce pollutants discharged to waters of the United States.¹² BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

1. **Distributed projects.** Small-scale storm water controls designed to attenuate, infiltrate, or treat storm water at its source. These include Green Streets, Green Infrastructure, and Low Impact Development (LID) projects.
2. **“Green Streets” and “Green Infrastructure” projects.** Distributed structural practices intended to treat runoff within public transportation right-of-way. Green Streets projects are storm water management projects, designed and constructed in accordance with the USEPA Green Streets guidance,¹³ that incorporate vegetation (perennials, shrubs, trees) and engineered systems (e.g., permeable pavements) to slow, filter, and cleanse storm water runoff from impervious surfaces (e.g., streets, sidewalks).¹⁴
3. **Regional projects.** Regional projects are larger in scale compared to distributed projects (such as green streets) or a property-specific project. Due to their expanded scale, regional projects have the ability to capture and treat larger volumes of runoff from extensive upstream areas. For this reason, a regional project can provide a cost-effective mechanism for infiltration, pollutant reduction, and augmentation to water supply. Regional projects are often implemented through collaborations involving multiple permittees and may represent pilot projects with more expansive, short-term

¹² Refer to the following Code of Federal Regulations section: 40 CFR 122.2

¹³ See “[Managing Wet Weather with Green Infrastructure – Municipal Handbook: Green Streets](#)” (United States Environmental Protection Agency, 2008)

¹⁴ United States Environmental Protection Agency, Learn About Green Streets [website](#).

monitoring studies used to evaluate (and test) efficacy. Regional projects are not always feasible due to site constraints such as larger land area needs, potentially requiring added land acquisition costs.

4. **Restoration projects.** Storm water management projects designed to assist the recovery of an ecosystem that has been degraded, damaged, or destroyed. Examples include projects designed to rehabilitate channelized streams, restore wetlands or riparian habitats, restore watershed functions, or restore beneficial uses of receiving waters.

BMP effectiveness monitoring

Monitoring conducted to determine the extent to which implementation of specific BMPs meet their objectives. This may involve direct monitoring of water quality improvements or monitoring of other, indirect measures. For example, a flow-through type bioswale may be evaluated through sample collection and testing of influent/effluent for target water quality constituents. Alternatively, an infiltration basin may involve characterizing flow and volume capture functionality.

Capital expenditures

Fixed, one-time expenses incurred on the purchase of land, buildings, construction, and equipment (distinct from recurring operational or ongoing maintenance costs). This guidance recommends having land and construction costs be reported separately from other capital expenditures.

Construction storm water runoff control

Activities and planning to reduce pollutants in runoff from construction sites during all construction phases. Activities may include the project approval process, site inventory and tracking, inspection, training and outreach, and enforcement of local codes and ordinances.

Construction costs

Costs, incurred by the permittee, associated with construction (i.e., clearing, grading, vegetation-removal, or excavation or any other activity that results in land disturbance) of projects or BMPs to comply with MS4 permit requirements. This does not include safety or routine maintenance activities of storm water conveyance systems or structural treatment controls or BMPs required to maintain the integrity of structures by performing minor repair and restoration work, hydraulic capacity, or original purposes of a facility.

Data analysis

Inspecting, cleaning-up, compiling and transforming data; comparisons to water quality criteria; and statistics and modeling of underlying processes to determine trends or patterns in water quality from monitoring data. This is required to meet certain MS4 permit conditions, such as requirements to assess the effectiveness of storm water control measures. This category does not include any monitoring necessary to produce the data or any required reporting of the data.

Illicit connections and illicit discharges program

Program to seek and eliminate illicit discharges and illegal connections. Activities may include detection of illicit discharges and illegal connections, investigation or inspection and follow-up procedures designed to eliminate these sources, enforcement of local codes and ordinances, and public education and training specifically related to reducing illicit connections and discharges. Includes development and implementation of spill response procedures for sanitary sewer overflows and other spills that may discharge into the permittee's MS4.

Industrial and commercial facilities programs

Programs designed to reduce pollutants in runoff from industrial and commercial sites. Activities may include high-priority facility inventory and tracking, inspection and outreach, enforcement of local codes and ordinances, and training.

Land costs

The cost of real property, exclusive of the cost of any constructed assets on the property, necessary to be acquired for projects. These do not include rent (to be included in "Operations and maintenance costs").

Operations and maintenance costs

Costs incurred for the administration, supervision, operation, maintenance, preservation, and protection of physical storm water management structures. These include, but are not limited to, costs of projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform, as needed, restoration work to preserve the original design grade, integrity, and hydraulic capacity of flood control facilities.
3. Update existing lines (i.e., replacing existing lines with new materials or pipes) and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
4. Repair leaks. Road shoulder work, including dirt or gravel roadways and shoulders, and performing ditch cleanouts.

Overhead

Costs of support services (often shared by multiple departments, programs and/or funds), such as accounting, payroll, administrative, or human resource salaries and benefits; information services; or operating and maintenance costs for buildings shared by multiple departments.

Planning and land development programs

Programs to minimize the short-term and long-term impacts on receiving water quality from new development and redevelopment. Activities may include development of planning and land development standards and program requirements, development and maintenance of a

tracking system to track the ownership and maintenance history of water quality controls, and internal training.

Pollution prevention

Practices and processes that effectively prohibit non-storm water discharges to the MS4 and reduce pollutants in storm water from all land use types to the maximum extent practicable.

Public information, education, outreach, involvement, and participation

Programs to educate the public and encourage participation in the implementation of the permittee's Storm Water Management Program. These include outreach to involve, engage, and educate the public. These do not include public education and training specifically related to reducing illicit connections and discharges.

Reporting

Costs of preparing, filing, and correcting any reporting required under the MS4 permit, including one-time and ongoing cost of associated information management systems. This category does not include monitoring or data analysis required to obtain the information to report.

Trash best management practice compliance

Implementation of full trash capture BMPs and equivalent trash management approaches that are implemented, enhanced, or refined to reduce trash pollutant discharges from an MS4. The State Water Board maintains a list of certified full trash capture devices and has developed guidance for products to obtain certification as a full trash capture device.

Water quality monitoring (storm water)

Collection of water quality data related to storm water or receiving waters (e.g., storm water sources, influent/outfall, and receiving water bodies). This does not include data analysis. Types of planning documents used to define water quality monitoring efforts include:

1. **Sampling and Analysis Plan (SAP).** A project-specific document that describes the procedural and analytical requirements for one-time or time-limited projects. A SAP will describe a project's goals, study questions, data needs, field methods and procedures, quality control measures, and safety protocols.
2. **Quality Assurance and Quality Control Project Plan (QAPP).** A project-specific document that describes a project's goals, study questions, data needs, assessment protocols, quality control measures, reporting deadlines. A QAPP also contains assigned roles and responsibilities of individuals involved in the project.

Watershed management planning (storm water)

Planning and coordination for storm water management at the watershed scale.