# Appendix F: Effectiveness Assessment Resources

Effectiveness assessment-related documents of value to stormwater managers and other individuals involved in municipal stormwater programs were identified. The materials are summarized in the following tables:

* Table F-1. Summary of Stormwater Program (SP) Documents: Annual Reports
* Table F-2. Summary of Stormwater Program (SP) Documents: Monitoring Reports
* Table F-3. Summary of Stormwater Program (SP) Documents: Long-Term Effectiveness Assessment (LTEA)/ Guidance
* Table F-4. Summary of Regulatory (REG) Resources
* Table F-5. Summary of Available Research and Literature (RL)

Table F-1. Summary of Stormwater Program (SP) Documents: Annual Reports

| No. | Subtask 4.2 No.1 | Agency | Title | Description |
| --- | --- | --- | --- | --- |
| SP-01 | 12 | Bakersfield, City of | 2012-2013 Joint Annual Report (with Kern County) | (2) |
| SP-02 | 15 | Coachella, City of | 2012-2013 Annual Report | (2) |
| SP-03 | 8 | Contra Costa Clean Water Program | 2012-2013 Group Annual Report and Individual Annual Reports | (2) |
| SP-04 | 19 | Dana Point, City of | 2012-2013 Annual Report | (2) |
| SP-05 | 14 | El Dorado County | 2013 Annual Report | (2) |
| SP-06 | 13 | Fresno Metropolitan Flood Control District | 2012-2013 Annual Report | (2) |
| SP-07 | 18 | Hemet, City of | 2012-2013 Annual Report | (2) |
| SP-08 | 4 | Long Beach, City of | 2013 Annual Report | (2) |
| SP-09 | 5 | Los Angeles, County of | 2012-2013 Annual Report | (2) |
| SP-10 | 9 | Modesto, City of | 2012-2013 Annual Report | (2) |
| SP-11 | 22 | Napa Countywide Stormwater Pollution Prevention Program | 2012-2013 Annual Report | (2) |
| SP-12 | 17 | Orange, County of; and Unified Orange County | 2012-2013 Unified Annual Report | (2) |
| SP-13 | 20 | Riverside County Flood Control and Water Conservation District | 2012-2013 Annual Report | (2) |
| SP-14 | 7 | Sacramento, County of | 2012-2013 Annual Report | (2) |
| SP-15 | 3 | Salinas, City of | 2012-2013 Annual Report (Volumes 1-2) | (2) |
| SP-16 | 16 | San Bernardino, County of | 2012-2013 Annual Report  | (2) |
| SP-17 | 21 | San Diego, County of | 2012-2013 Annual Report | (2) |
| SP-18 | 2 | San Ramon, City of | 2012-2013 Annual Report | (2) |
| SP-19 | 1 | Santa Rosa, City of | 2012-2013 Annual Report | (2) |
| SP-20 | 23 | Statewide Stormwater Permit - State of California, Department of Transportation | 2012-2013 Annual Report | (2) |
| SP-21 | 10 | Stockton, City of | 2011-2012 and 2012-2013 Annual Report | (2) |
| SP-22 | 11 | Stockton, Port of | 2012-2013 Annual Report | (2) |
| SP-23 | 6 | Ventura County Watershed Protection District | 2013 Annual Report | (2) |

Note:

1. Original numbering (#) used in Subtask 4.2

2. These Annual Reports provide an evaluation of agency stormwater management programs and include a summary of the activities that occurred during the reporting period, effectiveness assessment of program components, and planned activities for the next reporting period.

Table F-2. Summary of Stormwater Program (SP) Documents: Monitoring Reports

| No. | Subtask 4.2 No.1 | Agency | Title | Description |
| --- | --- | --- | --- | --- |
| SP-24 | 8 | Contra Costa Clean Water Program | 2012-2013 Integrated Monitoring Report (Parts A-C) | (2) |
| SP-25 | 18 | Hemet, City of | 2011-2012 Regional Monitoring Report | (2) |
| SP-26 | 4 | Long Beach, City of | 2006-2007 Monitoring Report | (2) |
| SP-27 | N/A | Portland, City of | Effectiveness Evaluation of Best Management Practices for Stormwater Management in Portland, Oregon. Version 1, September 2006 | This resource is an effectiveness evaluation of the management of stormwater quality and quantity in the City of Portland, and includes effectiveness ranges and preferred or default values for all best management practices (BMPs) either currently in use or anticipated for use in the City. City of Portland monitoring data ranged from 2001 to 2006. Both structural and non-structural BMPs are covered in the evaluation. This document also includes an assessment spreadsheet for all types of BMPs and discusses key issues in assigning effectiveness values to these BMPs. |
| SP-28 | 20 | Riverside County Flood Control and Water Conservation District | 2012-2013 Regional Monitoring Report | (2) |
| SP-29 | 21 | San Diego, County of | Section 11 of the 2011-2012 Unified Annual Report | (2) |
| [SP-21] | 10 | Stockton, City of | (See Section 8 of the 2011-2012 & 2012-2013 Annual Report) | (2) |
| [SP-23] | 6 | Ventura County Watershed Protection District | (See Section 9 of the 2012-2013 Annual Report) | (2) |

Note:

1. Original numbering (#) used in Subtask 4.2

2. These monitoring reports present the results of stormwater monitoring efforts that occurred during the reporting period, in addition to analyses of the results, any interpretations or conclusions drawn from the results, and recommendations and further actions.

Table F-3. Summary of Stormwater Program (SP) Documents: Long-Term Effectiveness Assessment (LTEA)/ Guidance

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Subtask 4.2 No.1 | Agency | Title | Description |
| SP-32 | 14 | El Dorado County | 2009 Pollutant Load Reduction Model (PLRM) User’s Manual | (2) |
| SP-33 | 13 | Fresno Metropolitan Flood Control District | 2013 LTEA Strategy | (2) |
| SP-34 | 7 | Sacramento, County of | 2013 Report of Waste Discharge (ROWD) and LTEA | (2) |
| SP-35 | 21 | San Diego County Copermittees | [2011 LTEA Final Report, San Diego Copermittees, Urban Runoff Management Programs, Final Report](http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=184%3Along-term-effectiveness-assessment&catid=16&Itemid=91) | (2) |

Note:

1. Original numbering (#) used in Subtask 4.2

2. These LTEA/guidance documents provide guidance and/or strategies for conducting effectiveness assessments of stormwater management program components. These documents may also include program management questions that are intended to help provide valuable feedback for the stormwater program components.

Table F-4. Summary of Regulatory (REG) Resources

| No. | Agency | Title | Description |
| --- | --- | --- | --- |
| REG-01 | California State Water Resources Control Board | Guidance for Assessing the Effectiveness of Municipal Storm Water Programs and Permits, 2011 | This resource presents a framework for assessing the effectiveness of MS4 program implementation as a whole, rather than looking at individual programmatic elements, in order to better understand the relationships between implementation and water quality. Although assessment of a program as a whole and linking activities conducted with water quality improvement may not be immediately possible, this resource emphasizes that it is possible to begin developing assessment tools that use a system of tiers or levels that eventually lead to a full program assessment. |
| REG-02 | U.S. EPA, Region III | Evaluating the Effectiveness of Municipal Stormwater Programs (factsheet), January 2008 | This six-page resource provides an overview of stormwater program effectiveness evaluation, and recommendations and explanations that MS4s may consider in determining how to comply with Clean Water Act (CWA) requirements and NPDES permit requirements. Also included are a list of additional resources and a crib sheet detailing “useful water quality monitoring approaches for evaluations of SWMPs.” |
| REG-03 | U.S. EPA | Measurable Goals Guidance for Phase II Small MS4s | Designed to assist operators of small MS4s in complying with the measurable goals of storm water permitting requirements, this guidance document presents an approach for developing measureable goals as part of a stormwater management plan. Topics covered include background and regulatory context, a process for developing measureable goals, example BMPs and associated goals, a process for developing an SWMP, and environmental indicators. |
| REG-04 | U.S. EPA | Urban Stormwater BMP Performance Monitoring October 2009 manual and webpage | The manual provides targeted practical assistance in conducting water quality monitoring and reporting data that are useful for assessing effectiveness of stormwater BMPs. It was developed by integrating experience gleaned from field monitoring activities conducted by members of the American Society of Civil Engineers (ASCE) Urban Water Resources Research Council and through the development of the International Stormwater BMP Database.  |
| REG-05 | U.S. EPA, Office of Wastewater Management | MS4 Program Evaluation Guidance, January 2007 | This guidance document is intended to assist State and NPDES permitting authority staff in assessing the compliance and effectiveness of Phase I and Phase II MS4 programs, developing Phase II Storm Water Management Programs (SWMPs), assessing pollutants of concern, and providing technical assistance. The questions and issues addressed in this document are intended to be used as a reference during an MS4 program evaluation, not as a script or checklist during the review. |

Table F-5. Summary of Available Research and Literature (RL)

| No. | Agency/Author | Title | Description |
| --- | --- | --- | --- |
| RL-01 | Brosseau, Geoff; Van Rhyn, Jon; Ashby, Karen | A California Perspective on the Assessment of Municipal Stormwater Programs: Methods and Activities to Gauge Effectiveness and Make Improvements, September 2010 | This article provides an overview of municipal stormwater program effectiveness assessment, and includes a discussion of challenges, key issues and concepts shaping the development of effectiveness assessment approaches in California, as well as the CASQA assessment approach. |
| RL-02 | CASQA | An Introduction to Stormwater Program Effectiveness Assessment, August 2005 | This paper describes the key concepts of stormwater management program effectiveness assessment, provides a standardized terminology related to the development of a comprehensive framework for such assessment, and discusses the needs of program managers with respect to assessment. This paper was intended to act as the basis for more detailed guidance to be developed by CASQA during 2005-2006. |
| RL-03 | CASQA | Municipal Stormwater Program Effectiveness Assessment Guidance, May 2007 | This guidance document was developed to fulfill the need for a well-conceived, integrated approach for assessing stormwater program effectiveness, and is intended to assist stormwater program managers in designing and conducting program effectiveness assessments using a range of assessment methods. This document describes how to use the assessment methods that are presented, based on program-specific desired Outcomes and goals. |
| RL-04 | CASQA | Stormwater Program Effectiveness Assessment Survey, July 2005 | Conducted in preparation for the Guidance document (listed above), CASQ developed and conducted a web-based survey to compile information on how agencies were measuring effectiveness, and to identify stormwater program needs for conducting future assessments. This report describes the survey methods, results, and conclusions. |
| RL-05 | CASQA | A Strategic Approach to Planning for and Assessing the Effectiveness of Stormwater Programs, TBD | This document introduces and describes a strategic approach to planning and assessing MS4 programs; provides background on the development and use of strategic planning methods; and describes how planning results may be used to direct program resources, establish measurability, and assess program effectiveness. |
| RL-06 | Center for Watershed Protection | An Introduction to Stormwater Indicators (Article 141 in *The Practice of Watershed Protection*, 2000)  | This article describes research focused on the use of environmental indicators as tools for monitoring urban stormwater runoff. Environmental indicators are direct or indirect measures that indicate trends or responses in receiving waters. Environmental indicators can be used to characterize overall or specific conditions in receiving waters and can help provide a benchmark for assessing the success of stormwater management strategies. The article describes the use of 26 environmental indicators within 6 general categories (i.e., water quality, physical/hydrological, biological, social, programmatic and site-specific) to measure the success of stormwater programs. Additionally, the article proposes a two-phase methodology for using the indicators to identify problems within local watersheds and for assessing, reevaluating and improving stormwater management programs. |
| RL-07 | Center for Watershed Protection | Monitoring to Demonstrate Environmental Results: Guidance to Develop Local Stormwater Monitoring Studies Using Six Example Study Designs, August 2008 | The main purpose of the manual is to provide guidance to MS4 communities on developing monitoring studies, so that the study results can help inform and improve the pollutant reduction efforts of their local stormwater programs. As such, this manual presents six monitoring study designs that can be used by MS4 communities to assess their local stormwater programs. |
| RL-08 | Center for Watershed Protection | Watershed Treatment Model, 2013 | The Watershed Treatment Model (WTM) is a spreadsheet-based tool designed for municipal or watershed managers that estimates the benefits of a wide range of management practices in urban watersheds. The current version of the WTM 2013 is able to track sediment, nutrients, bacteria and runoff volume on an annual basis. The most recent updates to the WTM also updates the methodologies used to calculate BMP efficiencies and runoff from urban turf.<http://www.cwp.org/online-watershed-library/cat_view/65-tools/91-watershed-treatment-model> |
| RL-09 | Urbonas, Ben; Olson, Christopher C. | Assessment of Stormwater BMP Cost Effectiveness: A new model for decision makers, February 2011 | This technical article describes a spreadsheet-based computer model that provides life-cycle costs for stormwater treatment BMPs and may allow stormwater managers to assess the economic effectiveness of a BMP by comparing performance, capital costs, and long-term operational costs. Developed at the Colorado State University, the model is relatively open source and easy to use; permits the user to assess and adjust various program parameters as needed; and accounts for inflation, cost of money, and the regional and temporal variations of construction and maintenance costs. |
| RL-10 | U.S. EPA | Assessing the Effectiveness of Your Municipal Stormwater Program, Webcast, June 2008 | Originally broadcast in 2008, this webcast presents the original CASQA Municipal Stormwater Program Effectiveness Assessment Guidance, which describes a range of assessment methods that municipalities can use to assess all aspects of their stormwater management program. Additionally, the webcast describes U.S. EPA for expected Phase II stormwater program progress after five years of implementation. |
| RL-11 | Water Environment Research Foundation (WERF) | Controlling Pollution at Its Source: Wastewater and Stormwater Demonstration Projects, 2001 | This document identifies and develops evaluation tools applicable to a range of commercial and residential source control projects. It includes a model framework for incorporating effectiveness measurement into source control programs, as well as stormwater demonstration projects that use the effectiveness measurement tools that were developed. |
| RL-12 | Water Environment Research Foundation (WERF) | Tools to Measure Source Control Program Effectiveness, 2000 | Provides information on effectiveness measurement for stormwater and wastewater pollution prevention and public education projects. Includes cost information to implement pollution prevention programs and to measure program effectiveness. Factors and participation rates can be used to identify control strategies and plan programs. A process/ framework for developing an effective pollution prevention or source control program is described. |