Evaluation of Storm Water Data Reports for Fiscal Year 2011/2012

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List of Abbreviations

BMP	best management practice
EPP	Erosion Prediction Procedure
FY	fiscal year
HQ	Headquarters
NPDES	National Pollutant Discharge Elimination System
PEs	project engineers
PID	Project Initiation Document
PPDG	Project Planning and Design Guide
PS&E	Plans, Specifications, and Estimates
QA/QC	quality assurance/quality control
RUSLE2	Revised Universal Soil Loss Equation 2
RWQCB	Regional Water Quality Control Board
SWCs	Storm Water Coordinators
SWDRs	Storm Water Data Reports
WQV/WQF	Water Quality Volume/Water Quality Flow

1. Overview

This report summarizes the independent quality assurance/quality control (QA/QC) reviews conducted in fiscal year (FY) 2011/12 on a total of 50 Storm Water Data Reports (SWDRs) prepared during FY 2010/11. The reviews were performed to evaluate whether the SWDRs have been prepared in accordance with the current version of the Project Planning and Design Guide (PPDG) (July 2010), which facilitates compliance with the Caltrans National Pollutant Discharge Elimination System (NPDES) Permit (Order No.1999-06-DWQ, NPDES No. CAS00003), the Storm Water Management Plan (May 2003), and the Construction General Permit (Order No. 2009-009-DWQ).

Based on the review of the information provided, all the SWDRs (100 percent) prepared by or for Caltrans, based on this sampling, conform to the requirements.

The SWDRs reviewed were based on projects at the Plans, Specifications, and Estimates (PS&E) phase and were primarily Long Forms (49 of the 50 SWDRs reviewed) with net new impervious area. In addition to an overall review of SWDRs, another focus was to confirm that Districts are using the new T-1 checklist and to determine if existing infiltration features or design pollution prevention best management practices (BMPs) could benefit stormwater treatment.

In general the SWDRs are much improved over those reviewed last year. Some of the specific improvements include the following:

- BMP strategies are fully developed and clearly documented in the narrative.
- Coordination with Storm Water Coordinators (SWCs) is documented in the narrative.
- The reports are more concise.
- In most Districts, project engineers (PEs)[1] have included quantities in the SWDR narrative sections and costs in the supplemental attachments.
- It seems that the PEs are using the example SWDRs posted to the Caltrans website as guides for preparing reports.
- PEs are using the new guidance and incorporating new requirements into the reports and cost estimates (e.g. Storm Water Sampling and Analysis, Additional Water Pollution Control, Rain Even Action Plan, Storm Water Annual Report, etc.).

The July 2010 PPDG includes updated requirements and forms that SWCs and PEs were expected to use for developing SWDRs in FY 2010/11. Because there was a transition period between the release of the updated PPDG and the time that FY 2010/11 SWDRs were submitted, evaluations of SWDRs submitted in early FY 2010/11 are given some leniency in addressing the new requirements and relying on the updated forms.

In general, a SWDR is required for every project. Depending on the extent of soil disturbance and degree of storm water impacts, a “Long Form” or a “Short Form” SWDR is required. Projects that do not have the potential to create storm water impacts, and have little or no soil disturbance may utilize the “Short Form” SWDR. Only one of the 50 SWDRs reviewed was a Short Form, and the remaining 49 SWDRs were Long Forms.

As part of this year’s review, the potential to capitalize on treatment from existing features within the project area was considered. Of the 50 SWDRs, 17 (or 34 percent) of the projects had the potential to take treatment credit for unlined ditches and/or vegetated sheet flow. These features may not meet the

[1] Use of PE in this report is based on a registered engineer or landscape architect, as identified on the cover page of the SWDR.

design standards of treatment BMPs, but PEs are encouraged to evaluate the qualitative benefits of these features.

Validating the final soil stabilization design compared to the original conditions is a challenge of the Construction General Permit. One possible method involves using the Erosion Prediction Procedure (EPP). The EPP relies on the Revised Universal Soil Loss Equation 2 (RUSLE2) computer program to estimate soil erosion loss and sediment transport in natural and disturbed construction sites. If this method is used, the RUSLE2 summary sheet is provided as a required attachment to the SWDR. Though all of the SWDRs reviewed were PS&E Phase, only three had the RUSLE2 summary sheet attached. Validating final soil stabilization represents an area for future improvement.

It should be noted that the District/Regional Design SWC is to be the last person signing the report. It is the responsibility of the Design SWC to verify that the appropriate disciplines have reviewed and concurred upon the strategies proposed by the PE. A lesson learned during this evaluation is that when entering the SWDR date into the SWDR Tracking Tool "Report_Date" field, the date that the Design SWC signs the SWDR is to be entered.

An issue observed is that some SWDRs included costs in the narrative. Costs should only be included in the supplemental attachments, as all costs are for Caltrans internal use only. Only quantities should be listed in the narrative.

The reports have been evaluated against information expected in 10 categories that comprise a fully developed SWDR. Rating summaries and general recommendations are included in the following sections for each category of evaluation.

Table 1 summarizes ratings for each of the review categories further presented in Tables 2 through 12 of this report.

Table 1. Summary of All Ratings

Category	Percentage of Reports By Rating		
	Outstanding	Acceptable	Poor
Overall Review	8%	92%	0%
Does the design incorporate BMPs and protect water quality	12%	86%	2%
Cover Page	0%	90%	10%
Project Description	12%	88%	0%
Site Data and Storm Water Quality Issues	8%	92%	0%
Regional Water Quality Control Board (RWQCB) Agreements	4%	70%	26%
Design Pollution Prevention BMPs	10%	88%	2%
Permanent Treatment BMPs	10%	86%	4%
Temporary Construction Site BMPs	24%	62%	14%
Maintenance BMPs	2%	88%	10%
Required Attachments	8%	76%	16%

2. Overall Review Rating

Table 2 summarizes the overall results of the 50 reviewed reports.

Table 2. Summary of Overall Review Ratings

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	4	46	0
Percentage of Reports Receiving Score	8%	92%	0%

"Outstanding" ratings are associated with reports that provided most of the required information in a clear and concise way with backup data to substantiate the statements in the narrative. In general, most of the SWDRs reviewed were consistent among the various Caltrans districts, particularly in regard to narratives for the project description, completion of checklists, and consideration of all types of BMPs.

General Recommendations – Overall the SWDR process works well. In order to increase the level of consistency throughout various Caltrans districts, Caltrans has provided training to PEs related to the proper methods for preparing SWDRs and new requirements of the PPDG. The Design SWC should verify that the requirements of the new guidance are being incorporated into all SWDRs, and that general recommendations for each category of review identified in this report are understood.

3. Does the Design Incorporate BMPs and Protect Water Quality

Table 3 summarizes SWDR review results in terms of the number of reports with designs that incorporate BMPs and protect water quality.

Table 3. Summary Ranking of Designs that Incorporate BMPs and Protect Water Quality

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	6	43	1
Percentage of Reports Receiving Score	12%	86%	2%

"Outstanding" ratings were assigned to six SWDRs that considered all applicable BMPs in detail and provided backup data to substantiate the statements in the narrative.

The one "Poor" rating was based on inadequate incorporation or consideration of Permanent Treatment and Design Pollution Prevention BMPs into the design to protect water quality. In general, the rationale provided for not including BMPs was unacceptable (e.g., inadequate schedule/budget).

General Recommendations – The Design SWC should verify that the PE is using the new guidance, specifically the T-1 Checklist, correctly and documenting design decisions in the SWDR narrative.

4. Cover Page Information Rating

Table 4 summarizes SWDR review results related to cover pages.

Table 4. Summary of Cover Page Ratings

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	0	45	5
Percentage of Reports Receiving Score	0%	90%	10%

"Poor" ratings were based on cover sheets that were either filled out incorrectly or conflicted with information provided in the narrative. Some SWDRs used the outdated cover sheet (i.e., the 2007 PPDG). However, this practice is acceptable in some cases, because there was a transition period between the time the updated PPDG was released and the time that FY 2010/11 SWDRs were submitted. SWDRs submitted in early FY 2010/11 are given some leniency in addressing the new requirements and relying on the updated forms.

General Recommendations – The Design SWC should be the last person signing the cover page. It is the responsibility of the Design SWC to ensure other disciplines have reviewed and approved the content of the SWDR specific to their area of expertise and concern, including the design approach, prior to signing the SWDR. The Design SWC should ensure the PE is using the correct cover sheet before it is signed.

5. Project Description Information Rating

Table 5 summarizes SWDR review results related to project descriptions.

Table 5. Summary of Ratings

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	6	44	0
Percentage of Reports Receiving Score	12%	88%	0%

"Outstanding" ratings were based on all required information being thorough and clearly presented.

General Recommendations –Design SWC should verify that complete narratives are included with the SWDRs prior to approval and subsequent submittal to HQ for evaluation.

6. Site Data and Storm Water Quality Issues Information Rating

Table 6 summarizes SWDR review results related to site data and storm water quality issues.

Table 6. Summary of Site Data and Storm Water Quality Issues Ratings

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	4	46	0
Percentage of Reports Receiving Score	8%	92%	0%

"Outstanding" ratings were based on all pertinent information being provided in the narrative, along with substantiation or a source for each statement.

General Recommendations – This section should be used to summarize project specific conditions and concerns. The information should be complete and concise.

7. RWQCB Agreements Information Rating

Table 7 summarizes SWDR review results related to RWQCB agreements.

Table 7. Summary of RWQCB Agreements Ratings

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	2	35	13
Percentage of Reports Receiving Score	4%	70%	26%

"Outstanding" ratings were based on detailed and clear descriptions of project specific meetings held with the RWQCB and requirements dictated in specific RWQCB permits or orders for the project.

There are 13 "Poor" ratings, mostly based on missing information related to RWQCB understanding/agreements and coordination with the RWQCB that should be more clearly documented in SWDRs.

General Recommendations – PEs should provide a clear description of coordination conducted with the RWQCB (or at least with the District/Regional Storm Water Coordinator at the Project Initiation Document (PID) phase), dates/times/names of such coordination, and a description of any project specific permit requirements imposed as a result of the coordination.

Both NPDES and Design SWCs should take more responsibility in assuring documentation related to discussions with the RWQCB on agreements is memorialized. This includes making a declarative statement in the SWDR that no additional requirements are being imposed by the RWQCB; see the example SWDRs available at the Caltrans Office of Storm Water Management - Design website.

SWDRs should address the new requirements, including potential use of Rainfall Erosivity Waivers, BMPs identified due to 401 requirements, and costs attributed to water quality requirements that are outside of the Caltrans NPDES permit.

8. Design Pollution Prevention BMPs Information Rating

Table 8 summarizes SWDR review results related to Design Pollution Prevention BMPs.

Table 8. Summary of Design Pollution Prevention BMPs Ratings

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	5	44	1
Percentage of Reports Receiving Score	10%	88%	2%

"Outstanding" ratings were based on detailed quantities, locations, types, and sizes of design BMPs provided in the SWDR narrative.

The one "Poor" rating was based primarily on pre- and post-construction conditions and hydraulic changes not being addressed or incomplete consideration of Design Pollution Prevention BMPs in the narrative.

General Recommendations – Continue to document BMP strategy in narrative. Design SWCs to ensure new requirements for this section are addressed in subsequent SWDRs, including documentation of: validation of final soil stabilization design, downstream effects based on drainage reports, and emphasis on infiltration and its qualitative benefits.

9. Permanent Treatment BMPs Information Rating

Table 9 summarizes SWDR review results related to Permanent Treatment BMPs.

Table 9. Summary of Permanent Treatment BMPs Ratings

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	5	43	2
Percentage of Reports Receiving Score	10%	86%	4%

"Outstanding" ratings were based on reports that fully considered all applicable Permanent Treatment BMPs and confirmed compliance with BMP design criteria.

"Poor" ratings were based on incomplete consideration and/or documentation of Permanent Treatment BMPs. All applicable Permanent Treatment BMPs must be considered unless found infeasible by results on the new (updated) T-1 checklists. Some SWDRs did not document consideration of all Permanent Treatment BMPs identified by the T-1 Checklist matrix, and some SWDRs did not document if the

required Water Quality Volume/Water Quality Flow (WQV/WQF) could be treated by the selected BMP. In some cases, WQV/WQF was incorrectly calculated based on the total impervious area rather than the net new impervious area.

In general, PEs have done a good job of clearly documenting the Treatment BMP strategy in the narrative.

General Recommendations – PEs should continue to document Treatment BMP strategies in the narrative. All reports requiring treatment BMPs must use the new T-1 checklist; as such Design SWCs need to ensure that the new T-1 checklist is being used correctly prior to signing SWDRs. A tool has been developed to assist PEs with completing calculations to answer infiltration questions within the T-1 checklist; however, this tool is not required to be used. If the tool is not used, then the PE will need to provide computations or other supporting information that can reliably answer the infiltration questions to complete the T-1 checklist.

10. Temporary Construction Site BMPs Information Rating

Table 10 summarizes SWDR review results related to Temporary Construction Site BMPs.

Table 10. Summary of Temporary Construction Site BMPs Ratings

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	12	31	7
Percentage of Reports Receiving Score	24%	62%	14%

"Outstanding" ratings were based on all required information being thorough and clearly presented. These reports included complete documentation of the Construction Site BMP strategy and coordination with the Construction SWC. The cost estimates were complete and included costs for items required by the new guidance (e.g. Storm Water Sampling and Analysis, Additional Water Pollution Control, Rain Even Action Plan, Storm Water Annual Report, etc.)

"Poor" ratings were based on the following missing information:

- A Temporary Construction Site BMP strategy.
- Coordination and concurrence from the Construction Division.
- Identification or quantification of the items designated as separate bid items or as lump sum items.
- Dewatering requirements - one report mentioned in the narrative that dewatering is required, but did not indicate in either the narrative or on the cover sheet that there is an associated dewatering permit secured or in process.
- Discussion on project risk level and associated monitoring costs.

In general, PEs have done a good job clearly documenting the Construction Site BMP strategy and coordination/concurrence from Construction personnel in the narrative.

General Recommendations – Continue to document Construction Site BMP strategy and coordination and concurrence with Construction. Design SWC should ensure PE is including new monitoring and

reporting requirements of the current guidance in the narrative and in the quantities for construction site BMPs.

11. Maintenance BMPs Information Rating

Table 11 summarizes SWDR review results related to Maintenance BMPs.

Table 11. Summary of Maintenance BMPs Ratings

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	1	44	5
Percentage of Reports Receiving Score	2%	88%	10%

"Outstanding" rating is based on information presented in a clear and concise manner including maintenance coordination and concurrence effort.

"Poor" ratings were assigned to SWDRs that removed a section for addressing this item or did not provide adequate information to describe why maintenance BMPs (i.e., stenciling) were not needed.

General Recommendations – Design SWC should verify that complete narratives are included with the SWDRs prior to approval and subsequent submittal to Headquarters (HQ) for evaluation.

12. Required Attachments Information Rating

Table 12 summarizes SWDR review results related to required attachments.

Table 12. Summary of Required Attachments Ratings

Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	4	38	8
Percentage of Reports Receiving Score	8%	76%	16%

"Outstanding" ratings were based on SWDRs that provided all required attachments and comprehensive design backup data for each proposed Permanent Treatment BMP.

"Poor" ratings were based on one or more incomplete or missing required attachments as follows:

- Vicinity maps.
- EDFs (or EDFs without required initials/dates).
- Construction Site BMP Consideration Forms (or forms without required initials/dates).
- RUSLE2 Summary Sheet (if applicable).
- Risk Level Determination documentation.
- Treatment BMP summary spreadsheets.
- Quantities for Construction Site BMPs.
- Rainfall Erosivity Waiver (if applicable).

General Recommendations –Since the District/Regional Design SWCs are to be the last signature on the SWDR, they should not sign it until all of the required attachments have been included. The District SWC should be knowledgeable of any new requirements that may influence revisions to the SWDR.

13. Guidance, Training, Specifications, and Special Provisions Improvements

The Caltrans design stormwater program continues to be improved by updating existing guidance, training curriculums for staff, and special provisions.

- SWDR Workshops have been provided, emphasizing use of the revised T-1 checklist, incorporation of descriptive narratives, and ensuring all BMP categories are adequately evaluated.
- Example SWDRs have been developed to show sample language and the level of detail expected at each phase of a project. The examples were developed based on the July 2010 PPDG.
- PPDG Training, which is planned to be a self-paced internet (online) training that allows staff to obtain consistent and timely clarification on PPDG direction without having to rely upon other staff or the District/Regional SWC.
- Stormwater standard specifications and special provisions are revised periodically to reflect changes to regulatory requirements and to provide clarity for elements causing issues in the field.

14. Conclusions and Recommendations

While this annual evaluation has determined that improvements can still be made when documenting stormwater decisions in the SWDR process, Caltrans fulfills stormwater requirements by incorporating stormwater management strategies throughout project planning and design. Caltrans incorporates BMPs into the design process, implements BMPs to protect water quality, and documents these steps through the preparation of their SWDRs. The reports reviewed adequately document the stormwater design processes and decisions made by the Caltrans designers at the final PS&E phase.

Based on the SWDR reviews conducted in this evaluation, the revisions to the guidance and training curriculum including revisions to specifications and special revisions appear to facilitate a consistent awareness of stormwater design requirements throughout the Caltrans district offices.

The following specific areas of documentation that can be improved in preparing SWDRs:

- Use the new forms (2010 PPDG) and address all updated requirements.
- Consider using the Short Form for more projects, if agreed upon by the District Stormwater Coordinator:
  - For example, if project improvements are more than one-quarter mile apart, they are described as being as non-contiguous and could allow for the use of a short form SWDR. For specific information, contact your District Stormwater Coordinator.
- Consider adding a discussion related to the potential to take treatment credit for vegetated areas that may have not met the design standards of a treatment BMP.
- Provide additional information related to the method to be used for the validation of final soil stabilization. Notice of Construction Completion (NOCC) or Notice of Termination (NOT).
- Include more detail related to permanent erosion control strategies.
- Reference the posted SWDR examples and utilize similar language where appropriate.

Continual reminders:

- Ensure that the Design SWC is last to sign the SWDR.
- Initialize and date the Construction Site BMP Form and EDF.
- Do not include costs in the narrative (i.e., include costs in the attachments only).
- Include adequate information related to site data and stormwater design issues.
- Describe RWQCB Agreements and other permits (as applicable).
- Provide more clarity in the narratives of Temporary Construction Site BMPs strategies (including documentation of concurrence).
- Include all required attachments at each phase of the project.

15. Next Steps

Caltrans new NPDES Permit is expected to be approved in late 2012. After it is approved, all documents that relate to the NPDES Permit will be revised accordingly such as the SWMP, PPDG, design guidance, specifications, special provisions, etc.

The T-1 checklist tool and infiltration tool are expected finalized and available to designers in August or September 2012. These tools will help to minimize process related errors, provide automated accounting for treatment of the WQV/WQF, and will provide an easy method to document specific compliance elements from the new Caltrans NPDES Permit.