



**Evaluation of Storm Water Data Reports
for Fiscal Year 2012/2013**

CTSW-RT-13-254.16.1

March 2013

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List of Abbreviations

BMP	best management practice
CGP	Construction General Permit
FY	fiscal year
HQ	Headquarters
NPDES	National Pollutant Discharge Elimination System
PE	project engineer
PPDG	Project Planning and Design Guide
PS&E	Plans, Specifications, and Estimate
QA/QC	quality assurance/quality control
RUSLE2	Revised Universal Soil Loss Equation 2
RWQCB	Regional Water Quality Control Board
SWC	Storm Water Coordinator
SWDR	Storm Water Data Report
WQV/WQF	Water Quality Volume/Water Quality Flow

1. Background

This report summarizes the independent quality assurance/quality control (QA/QC) reviews on Storm Water Data Reports (SWDRs) prepared by Caltrans District staff. The reviews were performed to evaluate whether the SWDRs have been prepared in accordance with the Project Planning and Design Guide (PPDG), 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 (CGP) (Order No. 2009-009-DWQ, NPDES No. CAS000002).

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.

The reviews included in this report have been conducted on SWDR that District staff submitted to Headquarters (HQ) for evaluation. The information provided in the SWDRs has been evaluated to determine if there are areas of the stormwater evaluation process that can be improved. Ratings were solely based on the information provided to HQ at the time of the review. If information was missing, the reports were rated accordingly.

It should be noted that a rating of “Poor”, does not necessarily mean that the project is out of compliance.

1.1 SWDR Reviews Comparison: 2009-2013

To evaluate the trend of SWDR reviews over the years, Figure 1 compares the results of SWDR reviews in 10 categories from 2009 through 2013 to come up with an Overall Review rating. The comparison chart generally shows that SWDRs have become more standardized over the years, as indicated by the increased percentage of “Outstanding/Acceptable” rankings and the decreased percentage of “Poor” rankings across the majority of review categories. This standardization is the expected result of updating the report preparation guidance documents, publishing example SWDR reports, statewide training on SWDR preparation, as well as support through the on-line PPDG training. The reports are becoming more complete, consistent, and streamlined throughout the state.

As shown in Figure 1, the category with the most improvement between 2009 and 2013 is “Temporary Construction Site Best Management Practices (BMPs).” In 2010, 48 percent of the SWDRs reviews were ranked “Outstanding/Acceptable” while in 2013, 92 percent of the SWDRs were ranked “Outstanding/Acceptable”.

Other categories that have steadily improved during the course of these reviews include: does the design incorporate BMPs and protect water quality, site data and storm water quality issues, and design pollution prevention BMPs.

Over the years, “Maintenance BMPs” and “Project Description” have had consistently high rankings. The “Required Attachments” ratings have been variable, but are improving overall.

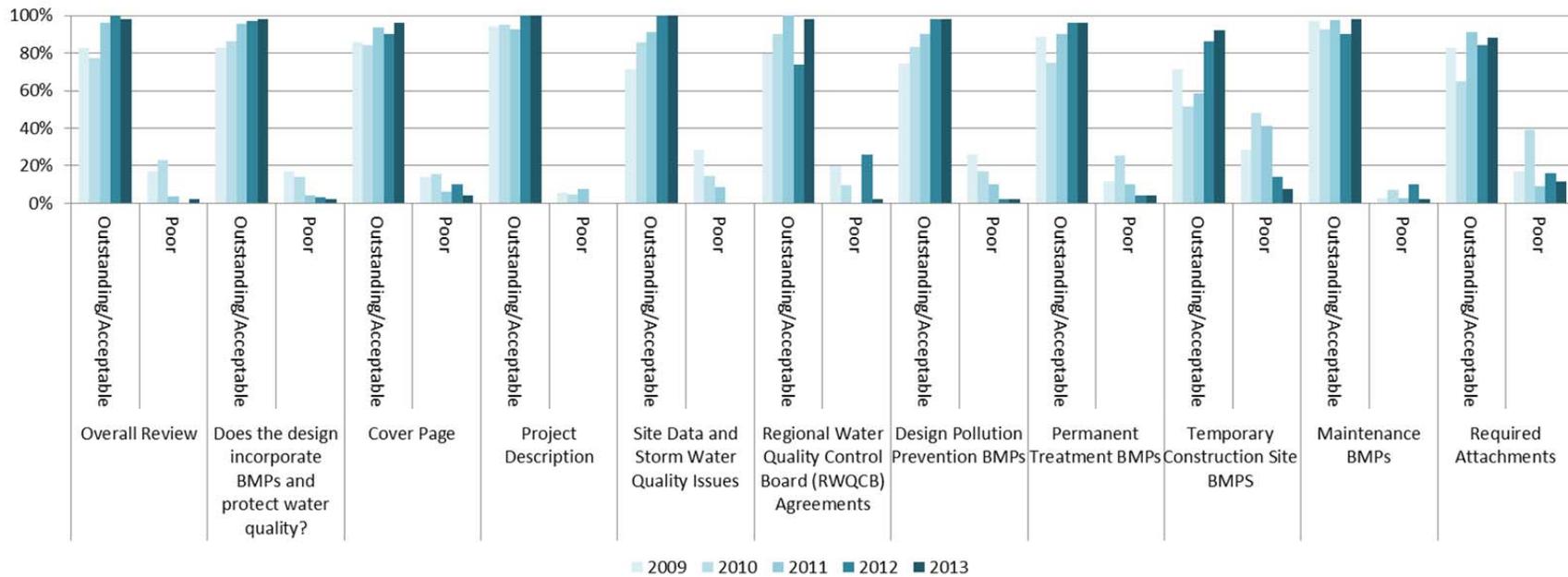


Figure 1. SWDR Review Rankings by Category (2009-2013)

2. Overview of Fiscal Year 2012/13 Findings

This section summarizes the independent QA/QC reviews conducted in fiscal year (FY) 2012/13 on a total of 51 SWDRs prepared during FY 2011/12. Review of the information provided shows that 98 percent of the SWDRs 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. Five of the 51 SWDRs reviewed used a Short Form, and the remaining 46 SWDRs were Long Forms. In addition to an overall review of SWDRs, another focus was to confirm that Districts are using the current T-1 Checklist and including requirements based on project risk level.

The SWDRs are improved over those reviewed since FY 08/09. Some of the specific improvements include the following:

- BMP strategies are fully developed and clearly documented in the narrative.
- Coordination with various 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.
- PEs are using the current PPDG and incorporating the requirements into the reports and cost estimates (e.g. Storm Water Sampling and Analysis, Additional Water Pollution Control, Rain Event Action Plan, Storm Water Annual Report, etc.).

Validating the final soil stabilization design compared to the original conditions is described in Section 8.1.10 of the PPDG and supported within the CGP. One validation method involves using 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 must be provided with the SWDR at PS&E. Ten of the SWDRs reviewed utilized RUSLE2 to document the basis of soil stabilization and attached the summary sheet. Validating final soil stabilization continues to be an important area to be documented during design and represents an area for future improvement.

When designing BMPs, the PE should aim to treat 100 percent of the net water quality volume/water quality flow (WQV/WQF). Of the 45 reports that were required to provide treatment, 18 documented that 100 percent of the net WQV/WQF will be treated by the project BMPs in the narrative. Based on information reviewed, the following BMPs were used to treat 100 percent of the net WQV/WQF:

- Biostrips (4 reports).
- Bioswales (8 reports).
- Combination of Biostrips and Bioswales (4 reports).
- Media Filters (1 report)
- Detention Basin (2 reports).
- GSRDs (1 report).
- Compost Amended Soil (1 report).

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.

Twenty-two of the reports provided were not able to treat 100 percent of the WQV/WQF, and five of the reports documented that no treatment would occur.

At this time, a draft version of the Infiltration Calculation Tool is available to PEs through their Design SWC. While it is not a requirement, this tool can be used to calculate the total amount of water infiltrated through project BMPs. In the new Caltrans Permit, documentation of infiltration will be required, and this tool can be used to meet this requirement.

Some of the reports included several statements throughout the narrative regarding requirements that “would be” met. These general statements are used to describe both design and construction project requirements. Since the project is in the PS&E phase, the project requirements are not hypothetical, and the PE should write the report to reflect that actions are to be implemented.

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. The Overall Review is based on the other 10 categories.

Table 1. Summary of All Ratings			
Category	Percentage of Reports By Rating		
	Outstanding	Acceptable	Poor
Overall Review	2%	96%	2%
Does the design incorporate BMPs and protect water quality	2%	96%	2%
Cover Page	0%	96%	4%
Project Description	0%	100%	0%
Site Data and Storm Water Quality Issues	4%	96%	0%
Regional Water Quality Control Board (RWQCB) Agreements	0%	98%	2%
Design Pollution Prevention BMPs	4%	94%	2%
Permanent Treatment BMPs	4%	92%	4%
Temporary Construction Site BMPs	4%	88%	8%
Maintenance BMPs	2%	96%	2%
Required Attachments	2%	86%	12%

3. FY 2012/13 Findings by Review Category

The results of the FY 2012/13 SWDR reviews by category are summarized in the following subsections.

3.1 Overall Review Rating

Table 2 summarizes the overall results of the 51 reviewed reports.

Table 2. Summary of Overall Review Ratings			
Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	1	49	1
Percentage of Reports Receiving Score	2%	96%	2%

The “Outstanding” rating was associated with a report that provided most of the required information in a clear and concise manner 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.

The “Poor” rating was based on incomplete documentation of Permanent Treatment BMP designs and missing information in the Construction BMP section.

General Recommendations – Some of the reports reviewed include several general statements throughout the reports regarding requirements that “would be” met. For example, a SWPPP would be prepared for the project. Since the project is in the PS&E phase and the project size is known, it is a fact that a SWPPP is required and will be provided. The PE should write the report to reflect that specific actions are to be implemented.

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 current requirements of the PPDG. The Design SWC should verify that the information contained in all SWDRs is incorporated into the corresponding project PS&E documents. The Design SWC should understand all general recommendations for each review category identified in this report.

3.2 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	1	49	1
Percentage of Reports Receiving Score	2%	96%	2%

An “Outstanding” rating was assigned to one SWDR that considered all applicable BMPs in detail and provided backup data to substantiate the statements in the narrative.

The “Poor” rating was based on incomplete documentation of Treatment BMP designs and missing information in the Construction BMP section.

General Recommendations – The Design SWC should verify that the PE is correctly and completely documenting design decisions in the SWDR narrative.

3.3 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	49	2
Percentage of Reports Receiving Score	0%	96%	4%

The “Poor” ratings were based on cover sheets that were missing significant or critical information.

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.

3.4 Project Description Information Rating

Table 5 summarizes SWDR review results related to project descriptions.

Table 5. Summary of Project Description Information Ratings			
Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	0	51	0
Percentage of Reports Receiving Score	0%	100%	0%

General Recommendations – Design SWC should continue to verify that complete narratives are included with the SWDRs prior to approval.

3.5 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	2	49	0
Percentage of Reports Receiving Score	4%	96%	0%

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

General Recommendations – Design SWC should continue to verify that complete narratives are included with the SWDRs prior to approval.

3.6 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	0	50	1
Percentage of Reports Receiving Score	0%	98%	2%

The “Poor” rating is based on missing information related to RWQCB understanding/agreements and coordination with the RWQCB that should be more clearly documented in the SWDR.

General Recommendations – Design SWC should continue to be diligent in identifying and documenting agreements with RWQCBs including documenting when the project requires a 401 certification.

3.7 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	2	48	1
Percentage of Reports Receiving Score	4%	94%	2%

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

The single “Poor” rating was based on pre- and post-construction conditions and hydraulic changes not being addressed and an overall vague narrative.

Nine of the reports reviewed documented qualitative infiltration treatment credit including the use of landscape areas and vegetated channels for conveyance.

General Recommendations – Continue to document the BMP strategy in the narrative including the documentation of qualitative infiltration treatment credits for DPP BMPs. Design SWCs need to ensure that appropriate elements of this section are addressed in SWDRs, including: validation of final soil stabilization design, downstream effects based on drainage reports, and emphasis on infiltration and its qualitative benefits.

3.8 Permanent Treatment BMPs Information Rating

Table 9 summarizes SWDR review results related to Treatment BMPs.

Table 9. Summary of Treatment BMPs Ratings			
Category	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	2	47	2
Percentage of Reports Receiving Score	4%	92%	4%

The two “Outstanding” ratings were based on reports that fully considered all applicable Treatment BMPs, confirmed compliance with BMP design criteria, and documented coordination and concurrence. The “Poor” ratings were based on incomplete consideration and/or documentation of Treatment BMPs. Neither of the SWDRs ranked “Poor” documented if the net WQV/WQF could be treated by the selected BMPs. All applicable Treatment BMPs must be considered, unless deemed infeasible by the findings of the T-1 Checklists. One report referenced documentation of Treatment BMPs in an attachment to the SWDR, but did not provide the attachment for review.

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 T-1 Checklist; as such Design SWCs need to ensure that the T-1 Checklist is being used correctly prior to signing SWDRs.

PEs must document the percentage of net WQF/WQV to be treated by the preferred BMPs and justify the BMP strategy if treatment is to be less than 100 percent. 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 use computations or other supporting information that can reliably answer the infiltration questions to complete the T-1 Checklist.

3.9 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	2	45	4
Percentage of Reports Receiving Score	4%	88%	8%

The “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 narrative identified quantities, and the supplemental attachment included associated costs for items required by the PPDG (e.g. Storm Water Sampling and Analysis,

Additional Water Pollution Control, Rain Event Action Plan, Storm Water Annual Report, monitoring locations, etc.)

The “Poor” ratings were based on the following missing information:

- Coordination and concurrence from the Construction Division.
- Identification or quantification of the items designated as separate bid items or as lump sum items, including items required for Risk Level 2 and 3 sites.
- Monitoring activities and locations for Risk Level 2 and 3 sites.

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, coordination, and concurrence with Construction. Design SWC should ensure PE is including information related to the CGP requirements in the narrative and in the quantities for construction site BMPs and monitoring (e.g., Storm Water Sampling and Analysis Day).

3.10 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	49	1
Percentage of Reports Receiving Score	2%	96%	2%

The “Outstanding” rating was based on clear and complete documentation of maintenance coordination and concurrence effort.

The “Poor” rating was assigned to a report that removed this section.

General Recommendations – The Design SWC should ensure that the SWDR format is not compromised during its preparation. Design SWC should verify that complete narratives are included with the established SWDR format prior to approval and subsequent submittal to HQ for evaluation.

3.11 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	1	44	6
Percentage of Reports Receiving Score	2%	86%	12%

The single “Outstanding” rating was based on an SWDR that provided complete and concise information on all required attachments.

In most cases, the “Poor” ratings were based on more than one of the following required attachments being incomplete or missing as follows:

- Construction Site BMP Consideration Forms (1 report).
- Missing signature on Construction Site BMP Consideration Form (10 reports).
- RUSLE2 Summary Sheet (29 reports).
- Risk Level Determination documentation (2 reports).
- Permanent Treatment BMP summary spreadsheets (12 reports).
- Quantities for Construction Site BMPs (7 reports).

Five of the reports reviewed attached the SWDR Attachment for SMARTS input. This attachment was not a requirement until May 2012 and only applicable if the project requires coverage under the CGP.

It is important that the Design SWC verify that all applicable attachments are submitted to HQ to ensure a complete review. These quality assurance reviews are based on the project information provided at the time of the review, missing or incomplete data can lead to a “Poor” rating.

General Recommendations – Design SWC should note that as of the May 2012 PPDG update, the SMARTS form is now a required attachment. Also, Design SWC should verify that complete attachments are included with the SWDRs prior to approval and subsequent submittal to HQ for evaluation.

4. Summary

4.1 Stormwater Design Compliance Improvements

The ability to comply with stormwater design requirements continues to be improved by updating existing guidance, training curriculums for staff, and special provisions. Recent updates include the following:

- 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 special provisions are revised periodically to reflect changes to regulatory requirements and to provide clarity for elements causing issues in the field.

4.2 Conclusions and Recommendations

This evaluation has determined that the SWDRs continue to improve and that the preparation of the reports is becoming standardized and streamlined. However, PEs continue to omit documentation of the basis to attain final stabilization when submitting for relief of coverage from the CGP. Design SWCs need to verify and reinforce inclusion of required attachments with the SWDR. 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 phase for implementation into projects 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 PPDG and training curriculum, including revisions to special provisions, facilitate a consistent awareness of stormwater design requirements throughout the Caltrans district offices.

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

- Address all updated requirements, including documenting planned monitoring activities and locations for Risk Level 2 and 3 sites.
- Consider using the Short Form for more projects, if agreed upon by the District Stormwater Coordinator.
- Provide information related to the method used for the validation of final soil stabilization and include documentation of validation for the project at the PS&E phase.
- The percentage of net WQF/WQV that will be treated by the preferred permanent Treatment BMPs needs to be justified and documented accordingly.
- Do not include statements regarding requirements that “would be” met when the project is in the PS&E phase. This would only be appropriate in earlier phases of the project.

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).
- Describe RWQCB Agreements and other permits (as applicable).
- Include all required attachments at each phase of the project.

4.3 Next Steps

Caltrans NPDES Permit was re-issued on September 19, 2012 (Order No. 2012-0011-DWQ) and will become effective on July 1, 2013, and all documents that relate to the NPDES Permit will be revised accordingly such as the SWMP, PPDG, special provisions, training programs, etc.

Additional clarification regarding the methods to validate final soil stabilization will be considered during the PPDG update or through other means.

The T-1 Checklist tool and infiltration tool are to be finalized and available to designers in 2013. 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 updated Caltrans NPDES Permit.