Region 6 Permanent Water Quality Documentation

1.1 PURPOSE

This memorandum presents the minimum documentation that is required per CDOT's MS4 Permit. The main purpose is to formally document decisions regarding permanent water quality in regards to the New Development Redevelopment (NDRD) program. The individual preparing the Permanent Water Quality Report should be familiar with all the hydrologic and hydraulic design procedures associated with the CDOT Drainage Design Manual. This memo identifies the procedures for organizing the documentation of Permanent Water Quality design.

1.1.1 Scheduling

During the preconstruction phase of plan development, there are four key milestones leading to the advertisement date. These are the:

- Design Scoping Review (DSR) meeting;
- Field Inspection Review (FIR) meeting;
- Final Office Review (FOR) meeting; and
- Sign off of the 128 Categorical Exclusion form (CatEx).

DSR Meeting: The individual responsible for the design of Permanent Water Quality will receive information from an Environmental Specialist or Hydraulic Engineer should a qualified Environmental Specialist not exist. The information will include an overview of the extent of permanent water quality needed based on the current CDOT NDRD program.

Between DSR and FIR: Consultant will schedule a meeting with the Project Manager to identify any additional survey or right of way needed for permanent water quality BMP's. All right of way needs must be established before FIR plans are submitted. Consultant will be asked to attend the ROWPR (right of way plan review) meeting if included in the project scope.

FIR Meeting: Consultants shall provide a preliminary water quality report when the FIR plans are submitted to CDOT. Reports shall follow the outline detailed in the appendix of this memo. FIR reports should at a minimum include a discussion of how each item in the outline will be addressed in the FOR submittal. Consultants should also provide the preliminary NDRD Map, or separate maps and/or exhibits to outline options, as outlined in Item 5 of the CDOT Project Certification of Permanent Water Quality BMP's (Form). This map shall also follow the outline detailed in the appendix of this memo.

Between FIR and FOR: Consultant will schedule a meeting with the Project Manager to finalize right of way needs for permanent water quality BMP's (if needed).

FOR Meeting: Consultants shall submit the final water quality report with the FOR plans or sooner if there are potential changes from the review. All changes in the analyses or drainage patterns shown in the FIR report shall be clearly presented in the FOR submittal. The consultant should provide the final NDRD Map as outlined in Item 5 of the CDOT Project Certification of Permanent Water Quality BMP's (Form). This map shall also follow the outline detailed in the appendix of this memo.

Sign off of the 128 CatEx form: The final water quality map and report must be finalized and the Form required by CDPHE shall be signed prior to sign off of the 128 CatEx form.

1.2 DOCUMENTATION PROCEDURE

1.2.1 Practices

The following are practices for documenting Permanent Water Quality designs and analysis:

- Calculations, analysis, and all related information used in developing conclusions and recommendations related to the CDOT NDRD requirements, including alternatives, omissions, and location shall be compiled in the water quality report.
- All assumptions and criteria related decisions shall be documented.
- Design decisions shall be documented and based on sound engineering principles and not personal opinions.
- All related references shall be provided in the documentation file.
- Data and information shall be documented through all stages of the project as to provide successors with all information.
- Documentation shall be organized to logically lead the reader from the past through the problem background, into the findings, and through the performance.

1.3 DOCUMENTATION PROCEDURES

1.3.1 Introduction

The intent of documentation is not to limit the data to only the items listed, but rather to establish a minimum requirement consistent with the water quality design procedures as outlined in this memorandum. If circumstances are such that a water quality feature is sized by other than normal procedures or if the size of the feature is governed by factors other than hydrologic or hydraulic factors, a narrative summary detailing the design basis shall appear in the water quality report.

APPENDIX A – Water Quality Report Outline

NOTE: WQ report shall be written as a stand-alone document that references the drainage report for technical aspects of design.

1. Table of Contents

2. Introduction

• Project location shown on an area map.

• Site location: stationing, state highway number, name of receiving waters, location of existing and proposed outfalls, geographic reference (county, nearest town), and jurisdictional MS4 boundary areas.

3. Discussion of CDOT MS4 / NDRD Requirements

- Discuss each of the following
  - Design Objectives
  - Treatment Options
  - Expected Pollutant Removal Rates
  - Existing Water Quality features that will be abandoned, reconfigured, or incorporated into a new design.
  - Right of Way needs and/or concerns
  - Recommended Design
  - Maintenance and Operation

- The following topics shall be addressed in detail:

a) Description of project and land disturbance in acres.
b) What area (in acres) is required to be treated, what area (in acres) of treatment is provided, what area (in acres) is not treated, and what area (in acres) is treated in addition to what is required. Include this information in the report and as a note on the NDRD Exhibit Map.
c) Detailed description, design criteria, justifications (why an area is not treated), decision making process (why a permanent BMP was chosen over another), location of permanent BMPs to be implemented, and analysis as to how permanent BMPs (combination or individual) satisfy the current CDOT NDRD requirements.
d) Exhibit showing project in relation to MS4 boundary area.
e) NDRD Exhibit Map.
    1. Delineate each water quality basin with colored, solid-filled, hatch pattern. Each water quality basin will be tributary to a specific permanent best management practice (BMP). Provide different colors for each water quality basin. These water quality basins should be general basins for the project and will likely encompass several sub-basins found in the Drainage Report.
    2. Label each water quality basin. Include the typical basin designation circle label. Include within the circle the water quality basin ID, the basin area, and the impervious area with that basin. Provide a legend to describe the basin designation label.
    3. Label the proposed permanent water quality BMP serving each water quality basin. Ensure that the location of the BMP matches the proposed locations found in the construction drawings.
    4. Show flow direction arrows.
    5. Delineate disturbed area for the project.
    6. Develop a table with six column headings. The column headings will be; Basin Color, Basin ID, Type of Permanent BMP used to Treat Area, Required Impervious Area to be Treated, Actual Impervious Area Treated, and comments. At the bottom of the table sum the columns for Required Impervious Area to be Treated and the Actual Impervious Area Treated. **Note that the required impervious area to be treated under CDOT's current permit consists of all impervious areas within each water quality basin. The required impervious area to be treated will only extend up to the limits of disturbance.**
    7. If the required impervious area to be treated is less than the actual impervious area treated, provide a note on the NDRD exhibit describing why we could not capture and treat the required impervious area for the project. Per CDOT's current permit, we will not be able to reference the applicable exclusions.
    8. Provide the certification number for CDPS Construction Stormwater permit for the project (Obtain from CDOT).

4. Maintenance and Operation

- Narrative description of the facility

    - Example: Extended detention pond with a single cell outlet structure with an orifice plate which is designed for a 40 hour drain time. Three RCP inlets drain into the basin which has a concrete lined forebay with grouted riprap berm. The forebay is designed to drain within 5 minutes and keep out large floatable/debris.
- Narrative description of how to access the facility
    - Example: maintenance access off of I-25 south bound before guardrail or take ramp from Southbound I-25 to Westbound Speer. Parking is from the shoulder.
- Narrative description of what maintenance work will need to be done to ensure continued effectiveness of the facility. Example:
        - Mowing basin to keep vegetation controlled so water can continue to flow unhindered. Remove vegetation off site to keep from re-clogging up grates and orifice plate.
        - Clean trash rack/grates of debris and dispose of off site
        - Clear orifice plate holes so water can continue to flow
        - Remove sediment from basin when reaches lowest orifice hole or blocking forebay outlet pipe. Can use hand shovels, bob cats/skid steers. Remove sediment off site to keep from re-polluting the pond.
        - Re-seed as necessary to keep area stable of erosion
        - Add additional erosion control items to keep area stable.
        - Tighten/replace trash rack bolts and screens as necessary to keep structure in working order.
- Documentation of commitments from responsible agency (such as IGA's, MOU, etc) or Owner to maintain the permanent water quality features will NOT be required to be included with the final report, but shall be included if this information is available.

5. Appendix (if needed)

Document computer runs with input files and tabulated trial runs to fulfill the reporting requirements for the design outlined in the text.