Appendix C

Example Monitoring Plan for Dry Weather Screening

Appendix C
Dry Weather Monitoring Plan for Segment 14 South Platte River
(Source: Nathan Moore, CWQCD, 2007)

1. **Monitoring Objectives**
    a. Primary Objective:
    To identify municipal storm sewer outfalls to Segment 14 of the South Platte River with dry-weather discharges that might have a reasonable potential to contribute to exceedance of the E-Coli stream standard of 126 cfu/100ml.
    b. Secondary Objectives:
        i. To identify potential cross connections and unpermitted non-municipal outfalls discharging to Segment 14 of the South Platte River.
        ii. To develop a further understanding of the overall E-Coli loading to Segment 14 of the South Platte River
2. **Monitoring Plan**
The following reference, referred to as the "Illicit Discharge Detection and Elimination Guidance Manual" in this document, is the recommended reference for this plan and supplements the Basic Outfall Sampling Procedures in Appendix A: Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments, Center for Watershed Protection, October 2004. The manual is available from the Center for Watershed Protection (http://cwp.org.master.com/texis/master/search/+/form/New_IDDE.html).
    a. Dry Weather Flow Inventory:
        i. Outfalls Requiring Inventory: The Dry Weather Flow Inventory shall be conducted for all Major and Minor Outfalls.
        ii. Inventory Observations Protocol: Outfall observations shall be conducted to identify the following:
            1. Major Outfalls with a discharge during dry-weather periods
            2. Major Outfalls that are submerged
            3. Minor Outfalls of Concern, as identified using the following protocol:
                a. Minor Outfalls must be visually observed for the existence of significantly abnormal conditions, based on the screener's best professional judgment. Significantly abnormal conditions include flow rates that are substantially elevated relative to the outfall size and the flow rate of any nearby outfalls and discharges likely to be resulting from a cross connection based on qualitative observations. It is not necessary to make in-pipe observations for submerged Minor Outfalls. When significantly abnormal conditions are observed, the outfall is defined as a Minor Outfall of Concern.

        Previously completed observations conducted after March 10, 2003, may be used to meet these requirements.
        iii. Inventory Documentation: For each outfall identified as meeting the definitions in 2.a.ii.1, 2, and 3, above, one of the following two options shall be carried out:
            1. Monitoring must be performed, as required by Section 2.b, and the information required in Section 2.b.iii must be documented; or
            2. If Monitoring did not occur (e.g., if the screening had occurred prior to the adoption of this plan), the following information must be recorded:
                a. The geographic and descriptive location, size, and type (e.g., storm sewer pipe, open channel, etc.) of the outfall
                b. The date and time of the screening
                c. Estimation of the flow rate at the outfall (unless submerged)
                d. If the outfall was submerged

e. For Minor Outfalls of Concern, the information as required in Part 2.b.iii.2, below.

iv. Inventory Observation Frequency:
1. The Dry Weather Flow Inventory shall include at least two observations for each required non-submerged outfall, and one for each submerged Major Outfall.
2. Observations shall occur at least one week from the previous observation at a specific outfall.

v. Inventory Period:
1. Dry Weather Flow Inventory observations must be conducted during periods when rain or snowmelt runoff events are not expected to contribute to flows at outfalls.
2. The Dry Weather Flow Inventory must be completed by **April 30, 2007**.

vi. Submittal Requirements: A short summary of the inventory and results shall be submitted to the Water Quality Control Division by **May 15, 2007.** The submittal shall include, at a minimum, the following information
1. Dates screening occurred and either specific outfalls observed during each screening, or areas screened.
2. The documentation as required by Section 2.a.iii, above.
a. If monitoring, as required by Section 2.b, is conducted at the time of a Dry Weather Screening occurrence, the submittal for Dry Weather Flow Screening may reference the monitoring results required by Section 2.b.vi, instead of repeating the information as required here.

b. Outfall Monitoring:

i. Outfalls Requiring Monitoring: All submerged Major Outfalls, and Major Outfalls with dry weather flows, and Minor Outfalls of Concern, as identified in the Dry Weather Screening, Section 2.a.ii.1, 2, and 3, above, must be monitored, with the following exceptions:
1. The source of all dry weather flow(s) and/or conditions resulting in the outfall being defined as a Minor Outfall of Concern are removed so that the outfall no longer meets the criteria of 2.a.ii.1 or 3. This condition must be documented and submitted with the reports required in Part 2.b.vi.
2. A specific variance is requested in writing from the Water Quality Control Division and granted. (See Section 2.c.)

ii. Monitoring Protocol:
1. Refer to Appendix A for example sampling procedures. Alternative procedures may be used if they follow professionally accepted protocol.
2. At a minimum, the parameters listed in Table 1, below, must be sampled

Table 1

Analyte	Method	Container	Preservative	Hold Time	Reference
Field Readings					
Flow Rate, gpm	Field	N/A	N/A	N/A	N/A
Discharge Temperature, Centigrade	Field	N/A	N/A	N/A	Manufacturer's Specs.
Aqueous					
E.Coli, cfu/100 mL	Idexx Colilert*	(1) 4 oz. Whirl-pak bag or plastic bottle	Cool to 4° C	6 hrs	Idexx Laboratories, Inc.

*unless otherwise authorized by the Water Quality Control Division

iii. Monitoring Documentation: For each outfall monitored, the following information must be recorded:
    1. The results of the sampling conducted for the parameters in Table 1, above.
    2. Indicators Documentation: The occurrence of any significant physical indictors shall be observed and documented for all Major Outfalls, including odor, color, significant turbidity, or excessive bacterial, algal, or vegetation growth. Refer to Sections 11.7 and 11.8 of the Illicit Discharge Detection and Elimination Guidance Manual. Additional monitoring for ammonia, ammonia/potassium ratios, fluoride, phosphorus, and/or the use of optical brightener may further assist in identifying cross connections, but is not required as part of this plan.
    3. The date and time the monitoring occurred.
    4. Sampling location if other than at the outfall (i.e., for submerged outfalls)

iv. Monitoring Frequency:
    1. Non-Submerged Outfalls
        a. A total of nine samples or more shall be collected from each identified non-submerged outfall.
        b. Four samples shall be obtained on or before **April 30, 2007.**
        c. Four samples shall be obtained between **April 30, 2007** and **August 31, 2007.**
        d. The remaining one sample may be conducted at any time during the monitoring period.
    2. Submerged Outfalls
        a. A total of four samples shall be collected from each required submerged outfall.
        b. One sample shall be obtained on or before **April 30, 2007**.
        c. One sample must be obtained between **April 30, 2007** and **August 31, 2007.**
        d. The remaining two samples may be conducted at any time during the monitoring period.
    3. All samples shall be collected at least one week from the previous occurrence at a specific outfall .
    4. Monitoring may be conducted at the same time as the Dry Weather Inventory required in Section 2.a.
    5. Monitoring on or before April 30, 2007 is intended to occur during periods when landscape irrigation flows are not expected to be a significant contributor to dry weather flows. Therefore, the sampler should avoid obtaining samples at times when, although on or before April 30, it is believed irrigation is contributing significantly to outfall flows.

v. Monitoring Period:
    1. Monitoring shall be completed by **August 31, 2007**.

vi. Submittal Requirements:
    1. All information documented as required by Parts 2.b.iii, above, shall be submitted to the Water Quality Control Division in accordance with the following schedule:
        a. All monitoring conducted prior to April 30, 2007 shall be reported by May 15, 2007.
        b. All observations made between May 1, 2007 and August 31, 2007 shall be reported to the Water Quality Control Division by September 15, 2007.

c. Variances:
If the schedules and/or tasks required by the Monitoring Plan cannot be met due to weather conditions or other circumstance, a variance from the plan may be requested. Requests must be

made in writing to the Water Quality Control Division prior to any deadlines applicable to the request. All request must include the proposed alternative schedule and/or tasks and the reason for the variance request.

3. <u>Definitions</u>

a. Illicit Discharge: any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges specifically authorized by a CDPS permit, and discharges resulting from fire fighting activities. Certain non-stormwater or illicit discharges do not need to be addressed by MS4 permittees (see Part I.B.3.a.4 of the CDPS MS4 General Permit or Part I.B.1.b.1 of the Denver MS4 Permit).

b. Major Outfall: a municipal separate storm sewer outfall that discharges from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than circular pipe which is associated with a drainage area of more than 50 acres).

c. Minor Outfall: a municipal separate storm sewer outfall not defined as a “Major Outfall”.

d. Outfall: the point where a municipal separate storm sewer discharges to state waters.