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FRESNO-CLOVIS STORM WATER
QUALITY MANAGEMENT PROGRAM

Long Term Effectiveness Assessment Strategy

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Introduction

This Long Term Effectiveness Assessment Strategy (*LTEA Strategy*) was developed pursuant to the municipal National Pollutant Discharge Elimination System (NPDES) stormwater permit (MS4 Permit) (Order No. R5-2013-0080) issued to the Fresno Metropolitan Flood Control District (District), the cities of Fresno and Clovis, the County of Fresno (County), and the California State University at Fresno (CSUF) (hereinafter referred to as ‘Permittees’) by the Central Valley Regional Water Quality Control Board (Regional Board) on May 31, 2013. The *LTEA Strategy* supplements the Fresno-Clovis Storm Water Quality Management Program (SWQMP) and outlines the approach for assessing the effectiveness of the stormwater program during the third Permit term (2013-2018).

LTEA PERMIT REQUIREMENTS

The MS4 Permit has specific requirements identifying what should be included in the LTEA. Provision D.21. states:

Program Effectiveness Assessment and Reporting Program – By (6 months of the adoption of the Permit) the Permittees shall submit a proposed Long Term Effectiveness (LTEA) strategy, which shall build on the results of the Permittees’ Annual Reports and the initial program effectiveness assessments. The LTEA shall identify how the Permittees will conduct a more comprehensive effectiveness assessment of the storm water program as part of the SWQMP. The strategy shall identify key goals for the program and address the storm water program in terms of achieving both programmatic goals (raising awareness, changing behavior) and environmental goals (reducing pollutant discharges, improving environmental conditions).

- a. *The Permittees shall report program assessment results in the Annual Reports. The program assessments shall identify the direct and indirect measurements that the Permittees use to track the effectiveness of their programs as well as the outcome levels at which the assessment is occurring consistent with this Order. Direct and indirect measurements shall include, but not be limited to, conformance with established performance standards, quantitative monitoring to assess the effectiveness of control measures, measurements or estimates of pollutant load reductions or increases from identified sources, raising awareness of the public, and/or detailed accounting/documentation of SWQMP accomplishments.*
- b. *The Permittees shall track the long-term progress of their SWQMP towards achieving improvements in receiving water quality.*
- c. *The Permittees shall use the information gained from the program effectiveness assessment to improve their SWQMPs and identify new BMPs, or modification of existing BMPs. This information shall be reported within the Annual Reports consistent with this Order.*

The Monitoring and Reporting Requirements (MRP) (Provision B.7.) includes the following requirements:

An effectiveness assessment for each program element, as defined in the SWQMP, shall be conducted annually, shall be built upon each consecutive year, and shall identify any

necessary modifications. The SWQMP shall describe, in detail, the performance standards or goals to use to gauge the effectiveness of the storm water management program. The primary questions that must be assessed for each program element include the following:

- a. Level 1 Outcome: Was the Program Element implemented in accordance with the Permit Provisions, SWQMP Control Measures and Performance Standards? (L1)*
- b. Level 2 Outcome: Did the Program Element raise the target audience's awareness of an issue? (L2)*
- c. Level 3 Outcome: Did the Program Element change a target audience's behavior, resulting in the implementation of recommended BMPs?(L3)*
- d. Level 4 Outcome: Did the Program Element reduce the load of pollutants from the sources to the storm drain system? (L4)*
- e. Level 5 Outcome: Did the Program Element enhance or change the urban runoff and discharge quality? (L5)*
- f. Level 6 Outcome: Did the Program Element enhance or change receiving water quality?(L6)*

The *LTEA Strategy* incorporates the above MS4 Permit requirements and fulfills the requirements of Provisions D.21 and B.7 of the Monitoring and Reporting Program.

Long Term Effectiveness Assessment Strategy

The Permittees' *LTEA Strategy* addresses the stormwater program in terms of achieving both programmatic goals (i.e., raising awareness, changing behavior) and environmental goals (i.e., reducing pollutant discharges, improving environmental conditions). The *LTEA Strategy* was developed to build on the results of the Permittees' Annual Reports and initial program effectiveness assessment (PEA) efforts.

LTEA STRATEGY GOALS

Table 1 presents the *LTEA Strategy* goals, the associated program component (i.e., monitoring or programmatic) that will be assessed, and the expected assessment frequency (i.e., annual or long-term).

Table 1. LTEA Goals, Associated Components, and Assessment Frequency

Goal	Component		Assessment Frequency	
	Monitoring	Programmatic	Annual	Long-Term
1. Ensure that construction, industrial/commercial, and municipal sites are in compliance with local codes and ordinances to minimize their impacts on water quality.		X	X	
2. Maintain all stormwater basins to ensure that the basins continue to function as designed.		X	X	X
3. Train municipal staff regularly to promote the identification and reporting of illicit discharges and connections observed during their routine activities.		X	X	X
4. Evaluate illicit discharge data to determine the predominant pollutants detected and utilize this information to guide elements of the PIE program.		X	X	X
5. Engage and educate the general public regarding urban runoff and stormwater issues.		X	X	X
6. Ensure that the impacts of new development and redevelopment on water quality are minimized through the implementation of LID practices where sites are not served by regional stormwater basins.		X	X	
7. Assessment of watershed health and identification of water quality issues and concerns.	X			X
8. Assessment of changes in receiving water quality.	X			X

PROGRAM MANAGEMENT QUESTIONS

In developing the PEA approach for the third term permit, the Permittees continued to refer to the approach promoted by the California Stormwater Quality Association™ (CASQA) to identify methods for assessing the effectiveness of the stormwater program. Outcome levels help to categorize and describe the desired results of the Program Elements and related Control Measures. Pursuant to the 2007 CASQA guidance¹, outcomes for stormwater programs have been generally categorized into six levels, as described in MRP Provision B.7.(a-f).

The outcome levels represent ways in which the effectiveness of the program can be determined, even if it is intermediate.² Working highest to lowest from Outcome Level 6 to Outcome Level 1, the Permittees can identify key typical urban runoff Pollutants of Concern (POCs), address the contribution from the MS4 outfalls, identify the potential sources and loads of those POCs, outreach to the target audiences who are involved at those sources, and implement the program accordingly. Some important points to remember regarding effectiveness assessments include the following:

- The ability of a stormwater program to assess an outcome level tends to become progressively more difficult as higher outcome levels (Outcome Levels 4-6) are assessed. This is because the higher outcome levels assess the impact that the SWQMP has on water quality, which requires a much more robust dataset over an extended period of time.
- Outcome Levels 1-3 (and sometimes 4) are typically assessed using program management data, whereas Outcome Levels 4-6 are assessed using physical and/or water quality monitoring data.
- The Permittees regularly evaluate Outcome Level 6 through a receiving water monitoring program that has demonstrated support of beneficial uses. There are currently no receiving waters with known impairments caused by urban runoff. If impairments or potential impairments are identified, Outcome Levels 5 and 4 would be further evaluated. The Permittees have previously evaluated discharge quality from the extensive regional basin system that treats the vast majority of urban runoff from the permitted area. The basins are known to remove significant fractions of constituent loading (Outcome Level 4) and improve urban runoff quality through sediment and pollutant removal (Outcome Level 5).^{3,4}
- Each program element may be assessed at one or more outcome levels, depending on the data and information available.

Generally, program evaluations have been conducted by comparing how well the Permittees implemented Program Elements, the completion of which is likely to lead to stormwater quality

¹ When the CASQA Program Effectiveness Assessment Guidance document is updated, the *LTEA Strategy* may be modified for consistency with the latest guidance.

² CASQA, *Municipal Program Effectiveness Assessment Guidance*, May 2007.

³ A. Krich-Brinton, "Evaluation of Basin EK Effectiveness," Larry Walker Associates, Davis, CA, October 5, 2006.

⁴ A. Krich-Brinton, "In-System Monitoring Plan Report: Evaluation of Basin "V" Effectiveness," Larry Walker Associates, Davis, CA, August 28, 2001.

improvement. The Permittees rely on the success of the regional system of stormwater basins, but continue to implement all other program elements as additional measures to protect water quality. If relationships can be established between the program efforts (e.g., regional stormwater basin performance, conducting a survey, assessing BMP implementation) and water quality, it may allow for predictions of improvements to water quality resulting from implementation of certain types of programs.

Over time, developing an understanding of how programmatic actions can improve water quality will allow prioritization of activities based on cost and benefit assessments to reduce pollutant loadings to the maximum extent practicable. As a part of the PEA, the Permittees will track the long-term progress of achieving improvements in receiving water quality.

A comprehensive PEA strategy will provide the Permittees with the ability to determine if the stormwater programs are appropriately targeted, determine whether intended results are being achieved efficiently and cost-effectively, and, ultimately, relate these results to conditions in urban runoff and receiving waters. The SWQMP and *LTEA Strategy* incorporate the use of management questions to help determine the purpose of the data collection as well as to guide the implementation of the program.

By utilizing an iterative process and conducting effectiveness assessments, the Permittees can use the information gained to modify their programs and ensure that the resources expended are providing a commensurate benefit and are protective of water quality. Based on the program evaluation and experience in the implementation of the various Control Measures, the SWQMP may need to be modified periodically in order to respond to changing conditions or to incorporate more effective approaches. Proposed revisions to the SWQMP will be provided to the Regional Water Board as a part of the Annual Report submittal.

Preliminary management questions have been identified to guide program implementation and assessment. As part of the Annual Report process, the Permittees will evaluate the management questions and revise them as needed.

Programmatic Assessment Questions

These questions provide valuable feedback for core components of the stormwater program. The Control Measure(s) and Outcome Level(s) associated with each are identified within the brackets.

1. What are the annual expenditures for the stormwater program for each fiscal year? **[PM3][L1]**
2. Are the construction sites being managed so that they are in compliance with the local codes and ordinances and preventing sediment and other pollutants from leaving the site? **[CON4, CON5][L1,L2,L3]**
3. Are the industrial and commercial sites being managed so that they are in compliance with the local codes and ordinances and preventing pollutants from leaving the site? **[IC4, IC5][L1,L2,L3]**
4. How many stormwater basins are inspected and cleaned each year? How much total material is removed? **[MUN2][L1,L4]**
5. How many pump stations are inspected and cleaned each year? **[MUN2][L1]**

6. How much Household Hazardous Waste (HHW) is collected each fiscal year? [MUN4][L1,L4]
7. How many curb miles and parking lots are swept annually? [MUN5][L1]
8. Have the field crews been trained to accurately identify and report illicit discharges (IDs) while conducting routine maintenance activities in the field? [ICD1, ICD4, MUN8][L1,L2,L3]
9. Of the water pollution investigations that occur, what are the primary pollutants of concern that are the focus of the investigations? [ICD2][L4]
10. For the public participation opportunities (e.g., storm drain stenciling, cleanup events), how many volunteers assist at how many sites? What are the results of the activities (e.g., how many storm drain inlets are stenciled, how much trash is collected)? [PIE3][L1,L2,L4]
11. Is the general public aware that stormwater runoff drains to stormwater basins untreated and the majority of the runoff infiltrates into the ground water aquifer? [PIE4][L1,L2,L3]
12. Is the general public aware of the water pollution hotlines that have been established by the Permittees? [PIE6][L1,L2]
13. What is the total land area for each Permittee that has undergone new or redevelopment and how many/what types of BMPs have been implemented? What percentage of the new or redevelopment is served by regional stormwater basins? [PLD2][L1,L2,L3]

Monitoring Supported Assessment Questions

These questions provide valuable feedback related to receiving water assessments and follow-up actions. The CASQA Outcome Level is identified within the brackets. Questions No. 2 and 3 are only necessary if receiving water quality impairments are identified.

1. Are receiving waters (e.g., the San Joaquin River) meeting water quality objectives and supporting beneficial uses? [L6]
2. Do the regional stormwater basins effectively remove the constituent(s) causing or contributing to the impairment? [L5]
3. Are urban stormwater discharges a significant source of constituent loads causing impairments to the San Joaquin River and other direct receiving waters? Are there other sources that are major contributors to the receiving water load? [L4]

ASSESSMENT DATA

Assessment data have been identified for each Program Element. The assessment data will be collected to document the Permittees' activities and to aid in assessing the effectiveness of the Control Measures. These data will be compiled and reviewed each year to assess trends, improvements, and/or data gaps. Further description of the assessment data is provided within this document.

ASSESSMENT OF PROGRAM ELEMENTS

The outcome levels anticipated to be evaluated by each program element are summarized in Table 2.

Table 2. Program Effectiveness Assessment Summary for the Stormwater Program

Program Element	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	Implement Program	Increase Awareness	Behavior Change	Pollutant Loads	Runoff Quality	Receiving Water Quality
Overall Stormwater Program (Monitoring Program)*	N/A	N/A	N/A	N**	N**	A
Program Management	A	N/A	N/A	N/A	N/A	N/A
Construction	A	A	A	N	N/A	N/A
Industrial and Commercial	A	A	A	N	N/A	N/A
Municipal Operations	A	A	N	A	N/A	N/A
Illicit Connection and Discharge	A	A	A	N	N/A	N/A
Public Involvement and Education	A	A	A	A	N/A	N/A
Planning and Land Development	A	A	A	N	N/A	N/A

* Assessment of the program as a whole is performed using monitoring data to answer the Monitoring Supported Assessment Questions, beginning with Question 1 and progressing to Questions 2 and 3 only where impairments are identified in the receiving waters.

** Further evaluation of receiving water quality may indicate need for follow-up and assessment at Levels 4 and 5.

A – It is anticipated that an effectiveness assessment may be conducted during the 2013-2018 Permit term

N – An effectiveness assessment is not currently anticipated

N/A – This outcome level is not applicable

Programmatic Assessment

This section provides the strategy for assessing the progress in implementing the various stormwater program elements. The assessment strategy is structured around the identified management questions for applicable program elements and control measures. Assessment data needed to evaluate implementation of the control measure(s) associated with each management question are identified, along with the party or parties responsible for identifying, compiling, and reporting the data.

PROGRAM MANAGEMENT

The Program Management element is outlined in Section 1 of the SWQMP.

As a part of the Annual Report, the Permittees assess the current NPDES expenditures, as well as the projected expenditures for the next fiscal year, and prepare an annual fiscal analysis. The analysis will include the expenditures incurred to implement the SWQMP and written explanations where necessary. The summary will also include a description of the source(s) of the funds including any legal restrictions on the use of the funds.

Management Questions

The management question identified to guide the effectiveness assessment of the Program Management is:

1. What are the annual expenditures for the stormwater program for each fiscal year?
[PM3][L1]

Assessment Frequency and Data

The assessment data needed to assess the implementation of this program element are identified in **Table 3**.

Table 3. Program Management Assessment Frequency and Data

Control Measure and Performance Standards	Assessment Frequency					Outcome Level	Assessment Data	Data Tracking Responsibilities ¹				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018			FMFCD	City of Fresno	City of Clovis	County of Fresno	Cal State University - Fresno
PM3 – Reporting and Fiscal Analysis												
Report the fiscal analysis in the Annual Report	X	X	X	X	X	L1	<ul style="list-style-type: none"> Track SWQMP expenditures by fiscal year Report projected SWQMP expenditures for next fiscal year Describe source of funds 	I	I	I	I	I

X – An effectiveness assessment will be completed during this reporting period

1. P = Primary role and responsibility. S = Secondary role and responsibility. I = Individual role and responsibility

CONSTRUCTION PROGRAM

The Construction Program element is outlined in Section 2 of the SWQMP.

The effectiveness of the Construction Program is dependent on compliance of construction sites with local codes and ordinances, as well as appropriate and effective stormwater pollution prevention BMP implementation. The Permittees conduct inspections of construction sites to ensure proper BMP implementation and compliance with local requirements and applicable Provisions of the MS4 Permit. Follow-up inspections must be performed as necessary to bring deficient sites into compliance.

Management Questions

The management question identified to guide the effectiveness assessment of the Construction Program is:

2. Are the construction sites being managed so that they are in compliance with the local codes and ordinances and preventing sediment and other pollutants from leaving the site?
[CON4, CON5][L1,L2,L3]

Assessment Frequency and Data

The assessment data needed to assess the implementation of this program element are identified in **Table 4**.

Table 4. Construction Program Assessment Frequency and Data

Control Measure and Performance Standards	Assessment Frequency					Outcome Level	Assessment Data	Data Tracking Responsibilities ¹				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018			FMFCD	City of Fresno	City of Clovis	County of Fresno	Cal State University - Fresno
CON4 – Inspection and Follow-up												
Inspect sites at designated frequencies and require BMPs	X	X	X	X	X	L1	<ul style="list-style-type: none"> • Number of active construction sites and threat to water quality prioritization • Number and frequency of inspections for each active construction site • Number and % of active construction sites adequately implementing BMPs at first inspection • % of sites adequately implementing BMPs during original inspection 	P	P	P	P	P
CON5 – Enforcement												
Implement progressive enforcement procedures as needed	X	X	X	X	X	L2, L3	<ul style="list-style-type: none"> • Number and types of progressive enforcement actions taken at each active construction site • Number and % of active construction sites requiring follow-up inspections • % sites adequately implementing BMPs after follow-up inspection • Number and types of violations 	P	P	P	P	P
Advise Regional Board of potential violations of the Construction General Permit	X	X	X	X	X	L1, L3	<ul style="list-style-type: none"> • Number and % of active construction sites in compliance with Construction General Permit • Number of referrals to the Regional Board 	P	P	P	P	P

X – An effectiveness assessment will be completed during this reporting period

1. P = Primary role and responsibility. S = Secondary role and responsibility. I = Individual role and responsibility

INDUSTRIAL AND COMMERCIAL PROGRAM

The Industrial and Commercial Program element is outlined in Section 3 of the SWQMP.

The effectiveness of the Industrial and Commercial Program is dependent on coordination by the District, Co-Permittees and business owners and their employees to reduce and prevent pollutants originating from improper discharges and/or spills and leaks from commercial and industrial facilities. Industrial facilities covered under the Industrial General Permit will continue to be inspected by incorporating stormwater inspections within existing agency inspection programs. Permitted industries not covered by existing Co-Permittee agency inspection programs will be inspected by the District.

Management Questions

The management question identified to guide the effectiveness assessment of the Industrial Commercial Program is:

1. Are the industrial and commercial sites being managed so that they are in compliance with the local codes and ordinances and preventing pollutants from leaving the site?
[IC4, IC5][L1,L2,L3]

Assessment Frequency and Data

The assessment data needed to assess the implementation of this program element are identified in **Table 5**.

Table 5. Industrial Commercial Program Assessment Frequency and Data

Control Measure and Performance Standards	Assessment Frequency					Outcome Level	Assessment Data	Data Tracking Responsibilities ¹				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018			FMFCD	City of Fresno	City of Clovis	County of Fresno	Cal State University - Fresno
IC4 – Inspection and Follow-up												
Inspect sites as needed	X	X	X	X	X	L1	<ul style="list-style-type: none"> Number and types of industrial and commercial facilities requiring inspection Number of inspections conducted Number and % of industrial facilities with SWPPP available onsite Number, %, and types of industrial and commercial facilities in compliance with local codes and ordinances 	P	S	S	S	S
Conduct follow-up inspections as needed	X	X	X	X	X	L1	<ul style="list-style-type: none"> 	P	S	S	S	S
IC5 – Enforcement												
Implement progressive enforcement procedures as needed	X	X	X	X	X	L2, L3	<ul style="list-style-type: none"> Number and types of progressive enforcement actions taken at each facility Number and % of industrial and commercial facilities requiring follow-up inspections Number and types of activities causing non-compliance and what pollutants were involved 	P	S	S	S	S
Coordinate with Regional Board regarding potential violations of the Industrial General Permit	X	X	X	X	X	L1, L3	<ul style="list-style-type: none"> Number and % of industrial facilities in compliance with state Industrial General Permit Number and types of facilities requiring coordination with the Regional Board 	P	S	S	S	S

X – An effectiveness assessment will be completed during this reporting period

1. P = Primary role and responsibility. S = Secondary role and responsibility. I = Individual role and responsibility

MUNICIPAL OPERATIONS PROGRAM

The Municipal Operations Program element is outlined in Section 4 of the SWQMP.

The effectiveness of the Municipal Operations program is dependent on adequate training, effective maintenance of the storm drain system and stormwater basins, and the implementation of stormwater pollution prevention practices for municipal facilities and activities.

Management Questions

The management questions identified to guide the effectiveness assessment of the Municipal Operations Program are:

1. How many stormwater basins are inspected and cleaned each year? How much total material is removed? [MUN2][L1,L4]
2. How many pump stations are inspected and cleaned each year? [MUN2][L1]
3. How much Household Hazardous Waste (HHW) is collected each fiscal year? [MUN4][L1,L4]
4. How many curb miles and parking lots are swept annually? [MUN5][L1]
5. Have the field crews been trained to accurately identify and report illicit discharges (IDs) while conducting routine maintenance activities in the field? [ICD1, ICD4, MUN8][L1,L2,L3]

Assessment Frequency and Data

The assessment data needed to assess the implementation of this program element are identified in **Table 6**.

Table 6. Municipal Operations Program Assessment Frequency and Data

Control Measure and Performance Standards	Assessment Frequency					Outcome Level	Assessment Data	Data Tracking Responsibilities ¹				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018			FMFCD	City of Fresno	City of Clovis	County of Fresno	Cal State University - Fresno
MUN2 – Stormwater Basin Construction and Maintenance												
Inspect and maintain stormwater basins to maximize infiltration rates (see also PLD2)	X	X	X	X	X	L1, L4	<ul style="list-style-type: none"> Number of inspections and maintenance frequency for each basin Amount of material removed See also PLD2	P				
Inspect and maintain stormwater pump stations	X	X	X	X	X	L1	<ul style="list-style-type: none"> Number of inspections and maintenance frequency for each pump station 	P				
MUN4 – Municipal Activities Pollution Prevention												
Coordinate with household hazardous waste programs	X	X	X	X	X	L1, L4	<ul style="list-style-type: none"> Amount and types of materials collected² 	P	S	S	S	S
MUN5 – Street and Parking Area Maintenance												
Conduct street sweeping activities	X	X	X	X	X	L1	<ul style="list-style-type: none"> Frequency of sweeping Number of curb miles swept 	P	I	I	I	I
Inventory municipal parking facilities	X	X	X	X	X	L1	<ul style="list-style-type: none"> Number of municipal parking facilities 	P	I	I	I	I
Clean and maintain parking facilities	X	X	X	X	X	L1	<ul style="list-style-type: none"> Number and frequency of inspections and maintenance/cleaning 	P	I	I	I	I
MUN8 – Training												
Conduct training for staff	X	X	X	X	X	L1, L2	<ul style="list-style-type: none"> Training dates, number of staff trained Number of IDs correctly identified in field (see also ICD1, ICD4) 	P	S	S	S	S

X – An effectiveness assessment will be completed during this reporting period

1. P = Primary role and responsibility. S = Secondary role and responsibility. I = Individual role and responsibility

2. Data is based on quantities reported to State of California by HHW programs

ILLICIT CONNECTION AND DISCHARGE CONTROL PROGRAM

The Illicit Connection and Discharge Control Program element is outlined in Section 5 of the SWQMP.

The effectiveness of the Illicit Connection and Discharge Control Program is dependent on accurate identification, investigation, and elimination of illicit connections and discharges, whether identified and reported by field staff, citizens (via hotline), or another agency. In addition, identifying and tracking the primary materials and/or pollutants associated with each illicit discharge incident will allow the Permittees to identify spatial trends, temporal trends, priority areas and/or identify the types of illicit discharges or illegal connections that may be preventable.

Management Questions

The management questions identified to guide the effectiveness assessment of the Illicit Connection and Discharge Control Program are:

1. Have the field crews been trained to accurately identify and report illicit discharges (IDs) while conducting routine maintenance activities in the field? **[ICD1, ICD4, MUN8][L1,L2,L3]**
2. Of the water pollution investigations that occur, what are the primary pollutants of concern that are the focus of the investigations? **[ICD2][L4]**

Assessment Frequency and Data

The assessment data needed to assess the implementation of this program element are identified in **Table 7**.

Table 7. Illicit Connection and Discharge Control Program Assessment Frequency and Data

Control Measure and Performance Standards	Assessment Frequency					Outcome Level	Assessment Data	Data Tracking Responsibilities ¹				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018			FMFCD	City of Fresno	City of Clovis	County of Fresno	Cal State University - Fresno
ICD1 – Detection and Identification of Illicit Discharges and Illicit Connections												
Implement field activities to detect illicit discharges and illicit connections	X	X	X	X	X	L1	<ul style="list-style-type: none"> Number, associated pollutant type(s), and locations of illicit discharges identified by field staff Number, associated pollutant type(s), and locations of illicit connections identified by field staff 	P	S	S	S	S
Maintain and advertise stormwater hotline (see also PIE6)	X	X	X	X	X	L1	<ul style="list-style-type: none"> Number, associated pollutant type(s), and locations of illicit discharges reported via hotline Number, associated pollutant type(s), and locations of illicit connections reported via hotline 	P				
ICD2 – Investigation, Inspection, Follow-up, and Elimination												
Implement procedures for the investigation of illicit connections and discharges, including follow-up protocols	X	X	X	X	X	L1, L2, L3	<ul style="list-style-type: none"> Procedures and follow-up protocols implemented Number of illicit discharges investigated and % verified Numbers and % of associated pollutant type(s) for all illicit discharges Number of illicit connections investigated and % verified Numbers and % of associated pollutant type(s) for all illicit connections Number of illegal connections eliminated and mechanism (e.g., permitted, plugged) 	P	S	S	S	S
ICD3 – Enforcement												
Implement progressive enforcement response procedures as needed	X	X	X	X	X	L1, L2, L3	<ul style="list-style-type: none"> Number and types of progressive enforcement actions taken for each incident 	P	S	S	S	S

Control Measure and Performance Standards	Assessment Frequency					Outcome Level	Assessment Data	Data Tracking Responsibilities ¹				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018			FMFCD	City of Fresno	City of Clovis	County of Fresno	Cal State University - Fresno
ICD4 – Training												
Conduct training of first responders, inspectors and relevant field staff	X		X		X	L1, L2	<ul style="list-style-type: none"> • Training dates, number of staff trained • Number of IDs correctly identified in field (see also MUN8) 	P	S	S	S	S

X – An effectiveness assessment will be completed during this reporting period

1. P = Primary role and responsibility. S = Secondary role and responsibility. I = Individual role and responsibility

PUBLIC INVOLVEMENT AND EDUCATION PROGRAM

The Public Involvement and Education Program element is outlined in Section 6 of the SWQMP.

The effectiveness of the Public Involvement and Education Program is dependent on effective and targeted outreach to and education of the public about the impacts of stormwater runoff and ways to reduce stormwater pollutants, as well as encouraging public participation in the implementation of the SWQMP.

Management Questions

The management questions identified to guide the effectiveness assessment of the Public Involvement and Education Program are:

1. For the public participation opportunities (e.g., storm drain stenciling, cleanup events), how many volunteers assist at how many sites? What are the results of the activities (e.g., how many storm drain inlets are stenciled, how much trash is collected)?
[PIE3][L1,L2,L4]
2. Is the general public aware that stormwater runoff drains to stormwater basins untreated and the majority of the runoff infiltrates into the ground water aquifer?
[PIE4][L1,L2,L3]
3. Is the general public aware of the water pollution hotlines that have been established by the Permittees? [PIE6][L1,L2]

Assessment Frequency and Data

The assessment data needed to assess the implementation of this program element are identified in **Table 8**.

Table 8. Public Involvement and Education Program Assessment Frequency and Data

Control Measure and Performance Standards	Assessment Frequency					Outcome Level	Assessment Data	Data Tracking Responsibilities ¹				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018			FMFCD	City of Fresno	City of Clovis	County of Fresno	Cal State University - Fresno
PIE3 – Public Participation												
Publicize and recruit volunteers to conduct storm drain stenciling and participate in other events	X	X	X	X	X	L1, L2, L4	<ul style="list-style-type: none"> Number of events and volunteers participating, by event Number storm drains stenciled by volunteers Amount of trash collected at clean-up events, by event 	P	S	S	S	S
PIE4 – Public Outreach												
Update and implement public awareness survey				X		L1, L2, L3	<ul style="list-style-type: none"> % change in survey target audience response to questions related to water quality issues % change in survey target audience response to questions related to behavior 	P	S	S	S	S
PIE6 – Hotline												
Promote/publicize the 24-hour hotline number in outreach materials	X	X	X	X	X	L1, L2	<ul style="list-style-type: none"> Number of calls and types of problems/requests Number of calls verified (i.e., water quality issues) 	P	S	S	S	S

X – An effectiveness assessment will be completed during this reporting period

1. P = Primary role and responsibility. S = Secondary role and responsibility. I = Individual role and responsibility

PLANNING AND LAND DEVELOPMENT PROGRAM

The Planning and Land Development Program element is outlined in Section 7 of the SWQMP.

The effectiveness of the Planning and Land Development Program is dependent on ensuring that the Planning and Land Development requirements of the MS4 Permit are met, including comprehensive plan review, application of appropriate land development standards to development projects, implementation of required post-construction BMPs and associated maintenance and maintenance agreements for post-construction BMPs, periodic inspections of post-construction BMPs, and appropriate tracking of projects, BMPs, and program implementation.

Management Questions

The management question identified to guide the effectiveness assessment of the Planning and Land Development Program is:

1. What is the total land area for each Permittee that has undergone new or redevelopment and how many/what types of BMPs have been implemented? What percentage of the new or redevelopment is served by regional stormwater basins? [PLD2][L1,L2,L3]

Assessment Frequency and Data

The assessment data needed to assess the implementation of this program element are identified in **Table 9**.

Table 9. Planning and Land Development Program Assessment Frequency and Data

Control Measure and Performance Standards	Assessment Frequency					Outcome Level	Assessment Data	Data Tracking Responsibilities ¹				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018			FMFCD	City of Fresno	City of Clovis	County of Fresno	Cal State University - Fresno
PLD2 – Implementation of the FMFCD Storm Drainage and Flood Control Master Plan												
Ensure that all priority development projects comply with development standards in FMFCD Master Plan	X	X	X	X	X	L1, L2	<ul style="list-style-type: none"> Number of priority development projects approved Number of acres covered by approved priority development projects Number and acreage of priority development projects draining to a regional stormwater basin Number and type of post-construction BMPs approved for priority development projects Number and type of proprietary control measures approved for priority development projects 	P	P	P	P	P
Perform post construction inspections for all priority development projects	X	X	X	X	X	L1, L3	<ul style="list-style-type: none"> Number of priority development projects Number of inspections conducted Number and type of post-construction BMPs implemented and maintained by priority development projects Number and type of proprietary control measures implemented and maintained by priority development projects 	P	S	S	S	S

X – An effectiveness assessment will be completed during this reporting period

1. P = Primary role and responsibility. S = Secondary role and responsibility. I = Individual role and responsibility

Monitoring Supported Assessment

BACKGROUND

The Permittees have evaluated previous studies, literature, and the water quality monitoring data to determine if their stormwater discharges were likely to cause or contribute to exceedances of applicable water quality objectives (WQOs). Historically, receiving water investigations were performed on the reach of the San Joaquin River that directly receives urban runoff discharges. These characterization studies support the finding that this reach is of high quality with infrequent exceedances of water quality objectives, well below the threshold for finding impairments based on the 303(d) listing policy.⁵

Based on the lack of 303(d) impairment listings caused by urban runoff and the water quality analyses performed to date, it appears that stormwater and urban runoff are not impairing beneficial uses in the Fresno-Clovis urban runoff receiving waters. This is likely due to infiltration of 70-80% of the average annual stormwater runoff, the relatively low rainfall totals in the urban area, and the high quality of the San Joaquin River downstream of Millerton Lake and Friant Dam. Based on previous assessments, the Permittees intend to focus programs on the following urban runoff POCs for the third term permit, where feasible and practicable:

- Metals: Cu, Pb, Zn
- Polycyclic aromatic hydrocarbons

While pesticides and pathogen indicators are also commonly included in other California MS4 POC programs, the regional basin system captures the sediment bound pollutants as well as eliminating dry weather flows such that no impairments of the receiving water have been observed. Future monitoring and evaluations may identify receiving water issues of concern or provide further justification to remove or add urban runoff POCs.

MANAGEMENT QUESTIONS

The Monitoring Program Element (Section 8 of the SWQMP) effectiveness assessment is based on completion of requirements and planned or requested monitoring assessments. Section 8 of the SWQMP describes the assessment activities and the associated sampling and analysis plans describe the goals and methods of the field investigations. Data collected through the Monitoring Program Element are used as an overall Program Effectiveness Assessment for the stormwater program as a whole. The Monitoring Program Element also tracks year-to-year trends in monitoring data. The monitoring-supported management questions⁶ identified to guide the effectiveness assessment of the Program as a whole are as follows:

⁵ State Water Resources Control Board, Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List. September 2004.

http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/ffed_303d_listingpolicy093004.pdf.

⁶ These questions provide valuable feedback related to receiving water assessments, follow-up actions, and identified pollutants of concern for the Stormwater Program. The CASQA Outcome Level is identified within the brackets. Questions No. 2 and 3 are only necessary if receiving water quality impairments are identified.

1. Are receiving waters (i.e., the San Joaquin River) meeting water quality objectives and supporting beneficial uses? **[L6]**
2. Do the regional stormwater basins effectively remove the constituent(s) causing or contributing to the impairment? **[L5]**
3. Are urban stormwater discharges a significant source of constituent loads causing impairments to the San Joaquin River and other direct receiving waters? Are there other sources that are major contributors to the receiving water load? **[L4]**

Until water quality impairments caused by urban runoff are identified, Questions No. 2 and 3 will not be directly assessed on a year-to-year basis. As described in Section 1 of the Stormwater Quality Management Plan, previous studies have evaluated the regional basin performance in removing constituent loading and improving water quality. System maintenance activities maintain this level of performance.

Reporting, Assessment, and Program Modifications

As part of the Annual Reporting process, the Permittees will evaluate and report on the assessment data with respect to the management questions for each program element. Some of the assessments will occur over a longer term, e.g., as part of the ROWD process or over multiple permit terms. The assessments may include, but will not be limited to, presentations of data in tabular or graphical format and discussion of the results.

By utilizing an iterative process and conducting effectiveness assessments, the Permittees can use the information gained to modify their programs and ensure that the resources expended are providing a commensurate benefit and are protective of water quality. Based on the program evaluation (both annual and long-term) and experience in the implementation of the various Control Measures, the SWQMP may need to be modified periodically in order to respond to changing conditions or to incorporate more effective approaches. In addition, the Permittees may also need to revise the SWQMP in order to comply with regional- or watershed-specific requirements or WLAs that have been developed and approved pursuant to the 303(d)-listing and TMDL process. Proposed revisions to the SWQMP will be provided to the Regional Water Board as a part of the Annual Report submittal.

In addition, receiving water quality can be used to guide level of effort for each Program Element. For example, if receiving water continues to be of good quality (i.e., no impairments or water quality criteria exceedances), the frequency of inspections under certain program elements may be able to be reduced. If exceedances are observed in either the receiving water or detention basins, additional inspections or outreaches to the likely sources can be revised.