# San Diego RWQCB
# Permit Reissuance Focused Meeting

July 25, 2012

# Adaptive Management Areas of Permit: Monitoring & Assessment Program (MAP)

**Concept**: Develop MAP as part of each Water Quality Improvement Plan to provide information needed to answer management questions & support effective adaptive management

**MAP Elements**:

- Receiving Water Conditions
- MS4 Discharges – Non-stormwater & stormwater
- Sources/Pollutant Generating Activities
- BMP Studies/Program Assessments

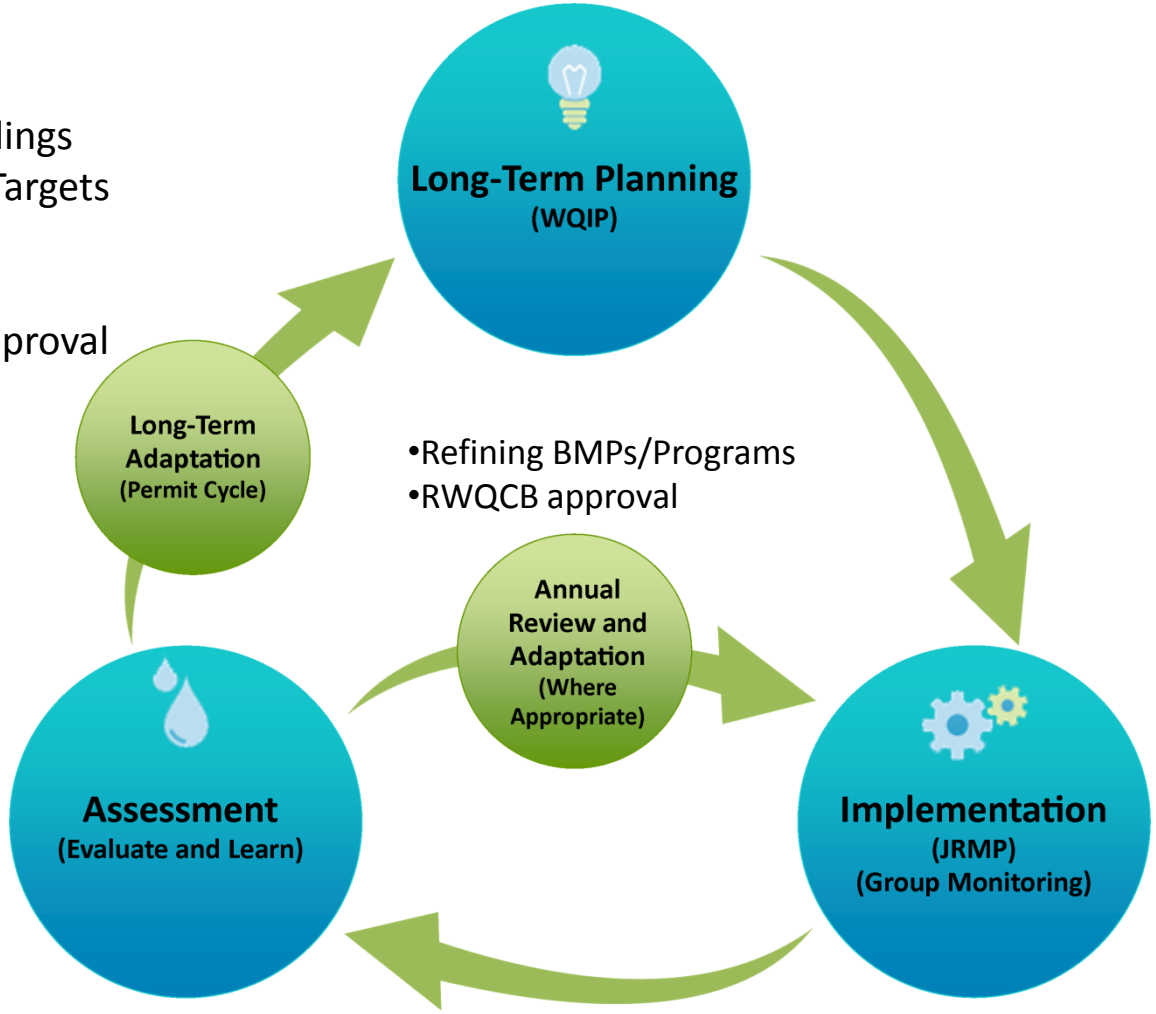
**Example**: Increase efficiencies in IDDE Programs with observational methods (or other strategies); monitoring includes activities beyond water quality sampling

**Action Items**:

- Structure initial requirements according to above in Section II.D.
- Coordinate Prov. II.D requirements with Section II.B. language requiring a strategic monitoring & assessment program as a part of the WQIPs.

# Adaptive Management Areas of Permit: Long-Term vs. Annual Processes

- Data / Findings
- Priorities/Targets
- Strategies
- Schedules
- RWQCB approval




- Refining BMPs/Programs
- RWQCB approval

# Implementation

Assess Receiving Water Conditions/ Priorities

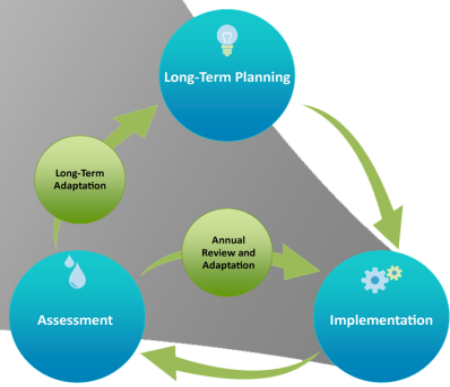
Evaluate MS4 Discharges (Cause/ Contribute?)

Identify and Prioritize Sources

Perform BMP/ Special Studies

Analyze/ Interpret Data; Inform WQIP

Implement WQIP



# Alternate Provision II.D Rationale

- More effective & efficient use of resources to maximize benefit
- Support **Adaptive Management** needs
- **Question-Driven** Monitoring Approach Design based on Assessment Questions
- Based on 15-20 years of **experience**
- **Monitoring = more than water sampling**
- Ultimately support **WQIP priorities** (strategic, prioritized monitoring approach)

# Purpose & Phasing of Alternate Provision II.D

**Purpose:**

Provide program managers with needed information to support effective adaptive management

**Phasing:**

- **Pre WQIP (transitional period)** – Proposed Alternate to Provision II.D
- **Post WQIP** – Develop Monitoring & Assessment Program (MAP) to support WQIP priorities

# Scientific Basis of Question-Driven Approach

- A Framework for Monitoring & Assessment in the San Diego Region (SDRWQCB, 2012)
- Southern California Stormwater Monitoring Coalition's Model Monitoring Program (SMC, 2004)
- SWAMP Assessment Framework (SWAMP, 2010)
- Elements of a State Water Monitoring and Assessment Program (EPA, 2003)

# Key Proposed Changes

- Jurisdictional Non-stormwater Monitoring **(D.1.a)** - Instead of extensive MS4 outfall chemical testing, reduce persistent flows that threaten receiving water quality & eliminate IC/IDs.
- Jurisdictional Stormwater Monitoring **(D.1.b)** - Instead of extensive MS4 outfall chemical monitoring, monitor homogeneous land uses as input to model.
- Jurisdictional Boundary Monitoring **(D.1.a(2))** - Insufficient technical power to differentiate small changes in upstream & downstream water quality due to the inherent variability of water quality data; Determine receiving water monitoring in MAP.
- Bacteria TMDL Monitoring **(Att. E)** – Instead of extensive prescriptive monitoring, rely on monitoring plans prepared as part of the current implementation planning process due to RWQCB October 2012.

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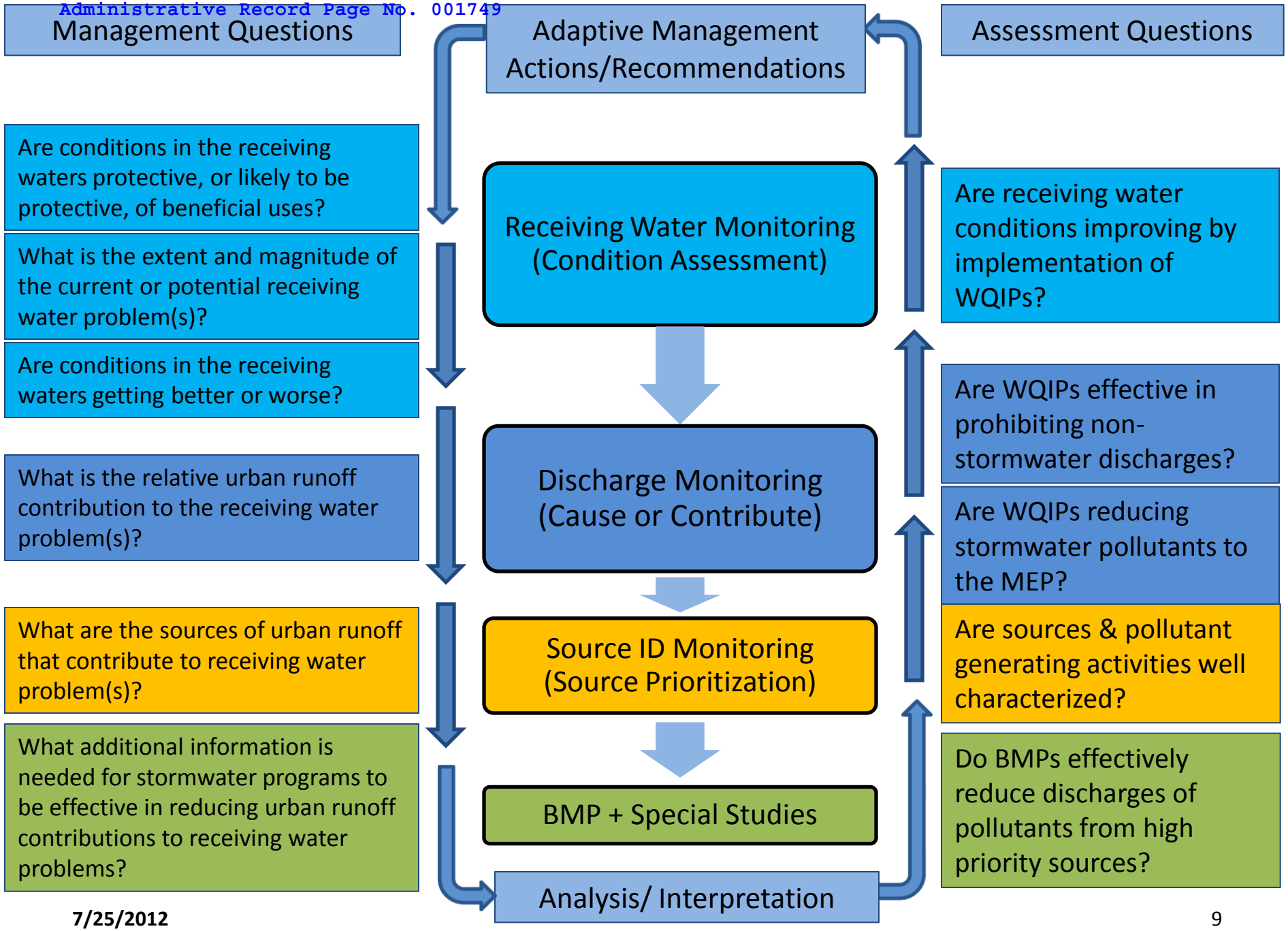

# Receiving Water

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Management Questions

Adaptive Management Actions/Recommendations

Assessment Questions

**Are conditions in the receiving waters protective, or likely to be protective, of beneficial uses?**

**What is the extent and magnitude of the current or potential receiving water problem(s)?**

**Are conditions in the receiving waters getting better or worse?**

**Receiving Water Monitoring (Condition Assessment)**

**Are receiving water conditions improving by implementation of WQIPs?**

What is the relative urban runoff contribution to the receiving water problem(s)?

Discharge Monitoring (Cause or Contribute)

Are WQIPs effective in prohibiting non-stormwater discharges?

Are WQIPs reducing stormwater pollutants to the MEP?

What are the sources of urban runoff that contribute to receiving water problem(s)?

Source ID Monitoring (Source Prioritization)

Are sources and pollutant generating activities well characterized?

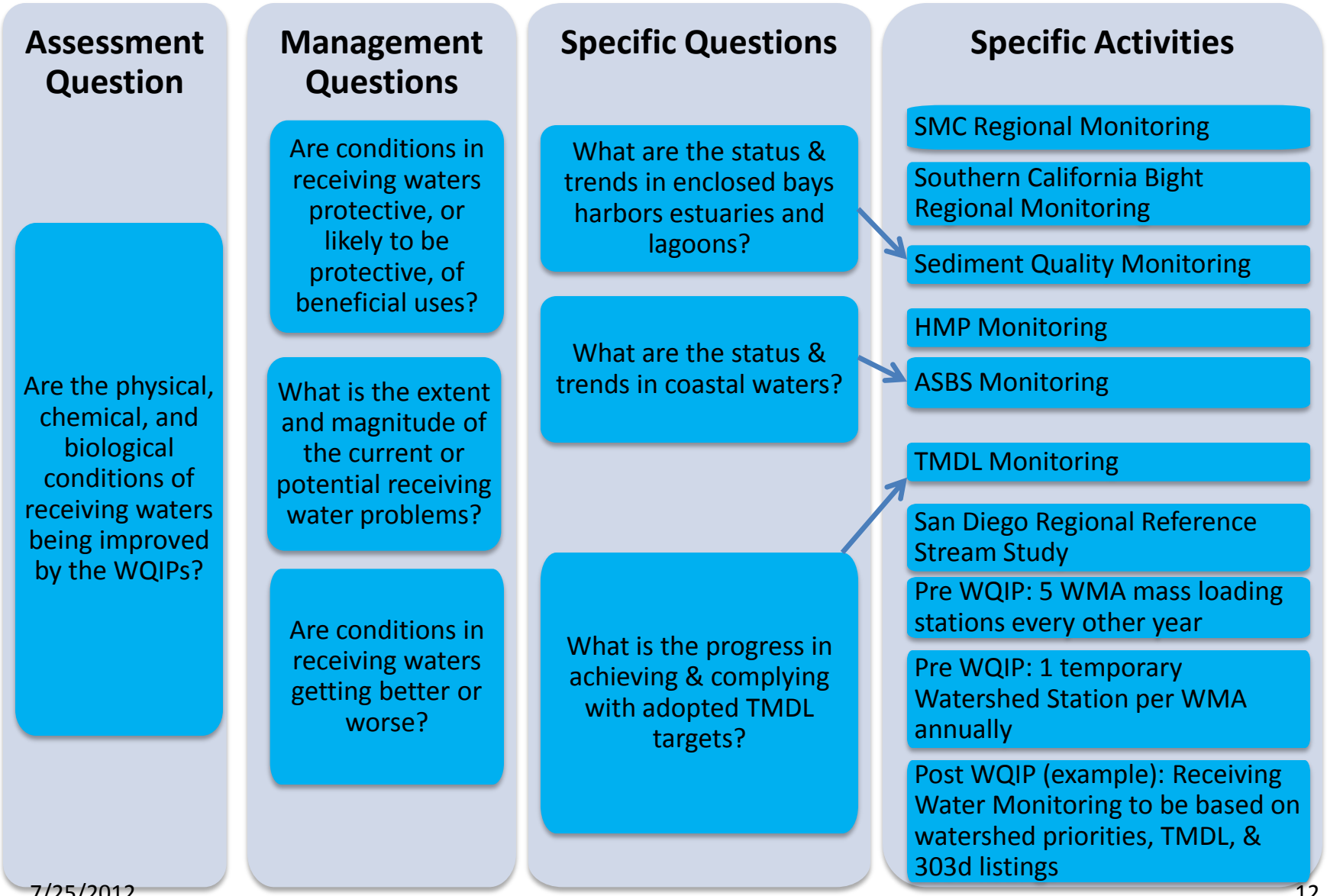
What additional information is needed for stormwater programs to be effective in reducing urban runoff contributions to receiving water problems?

BMP + Special Studies

Do BMPs effectively reduce discharges of pollutants from high priority sources?

Analysis/ Interpretation

# Receiving Water Monitoring



# Alternate Provision II.D: Receiving Waters Element

| | |
|---|---|
| **Purpose** | Assess Conditions of Receiving Waters, Extent/Magnitude, Trends |
| **Methods** | • Stormwater Monitoring Coalition (creeks)<br>• Bight (estuaries, coastal waters)<br>• Sediment Quality Monitoring (estuaries)<br>• TMDL Monitoring (creeks/beaches)<br>• Areas of Special Biological Significance<br>• Mass Loading Stations<br>• Temporary Watershed Stations<br>• Third Party Data |
| **Rationale & Benefits** | • Broad Spatial and Temporal Coverage<br>• Integrates existing programs<br>• Preserves long -term trend assessments<br>• Supports assessment-driven, adaptive management approach |

# Discharge Monitoring

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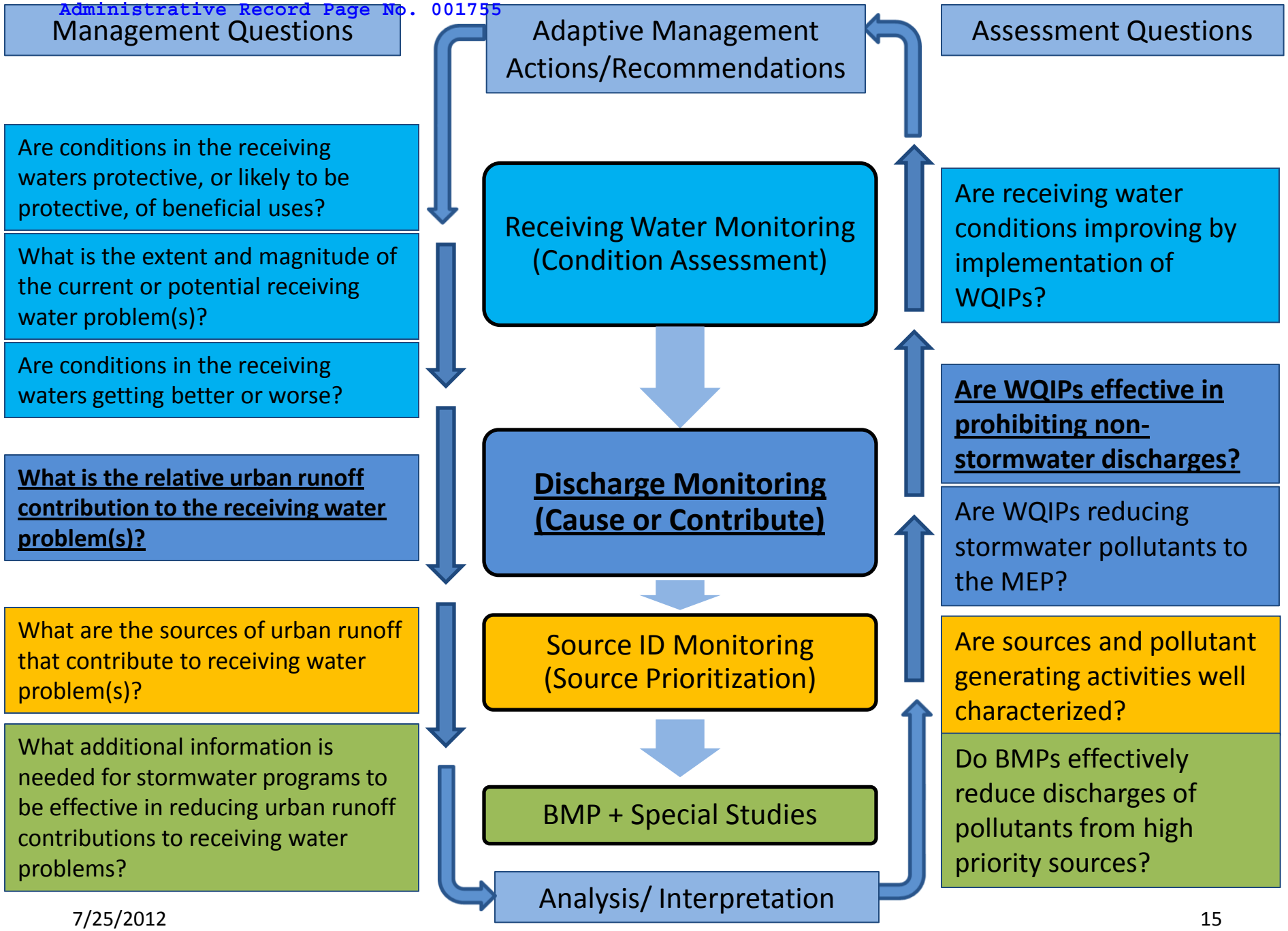
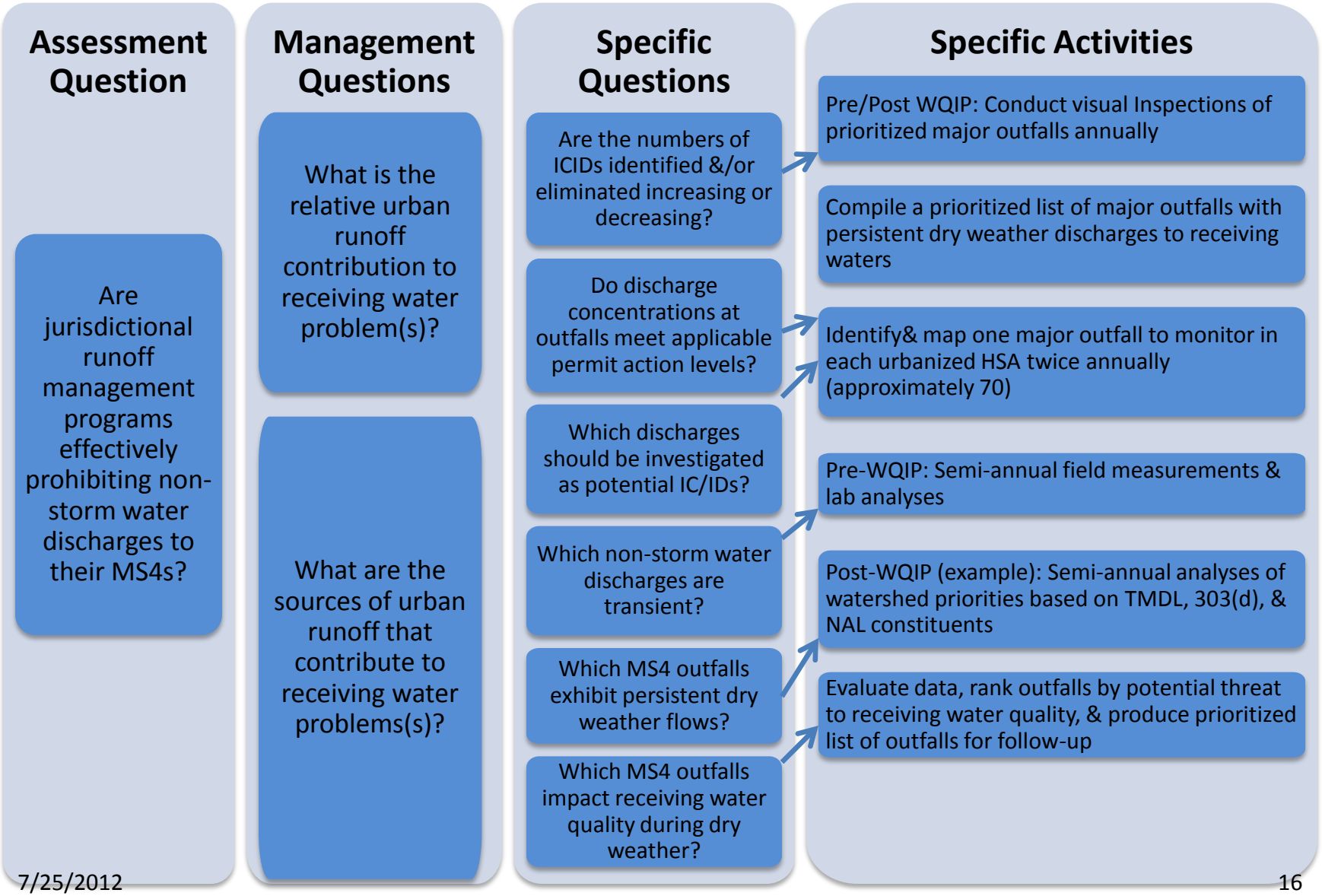


# Non-Stormwater Discharge Monitoring



# Alternate Provision II.D: Discharge Element – Non-Stormwater

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|---|---|
| **Purpose** | Address effective prohibition of non-stormwater discharges |
| **Methods** | **Transient Flow Programs (IDDE)**<br>• Source identification: existing development inspections<br>• MS4 system programs: patrols, complaint response, MS4 cleaning<br>• Outfall program: visual inspections for transient flows & prioritization, investigations<br>**Persistent Flow Programs**<br>• Current MS4 outfall program to completion<br>• Prioritized monitoring at one outfall per urbanized HSA (NALs) |
| **Rationale & Benefits** | • Broad spatial & temporal coverage<br>• Supports assessment-driven, adaptive management approach<br>• Distinction between persistent & transient flows focuses resources on eliminating &/or controlling high priority threats to receiving waters quality<br>• Utilizing other elements of the stormwater programs (inspections, complaint calls) & third party information will efficiently & effectively assist jurisdictions in eliminating non-storm water discharges |

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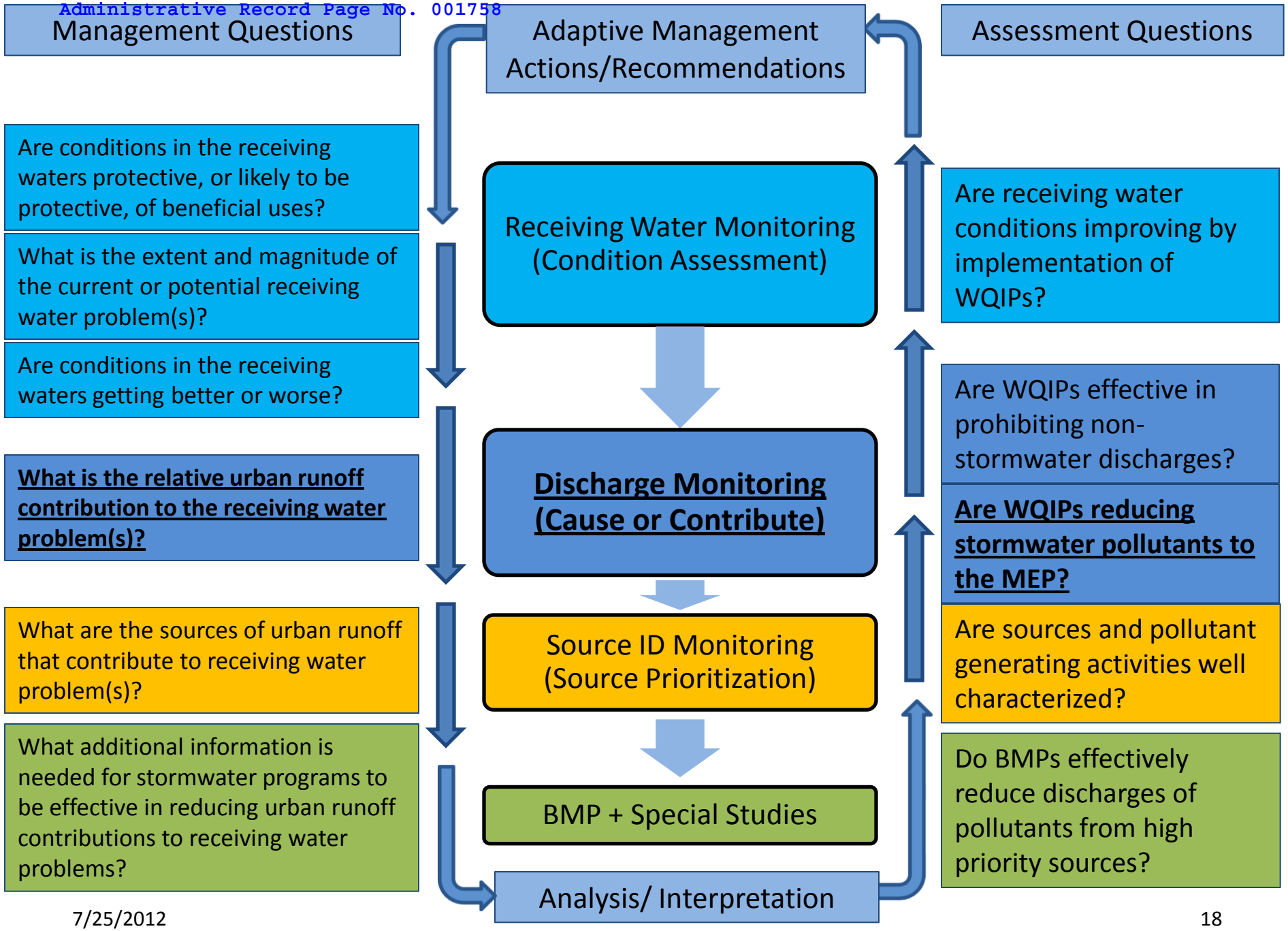

# Storm Water Discharge Monitoring

## Assessment Question

Are jurisdictional runoff management programs reducing pollutants in storm water to the MEP?

## Management Questions

What is the relative urban runoff contribution to receiving water problem(s)?

What are the sources of urban runoff that contribute to receiving water problem(s)?

## Specific Questions

Do discharge concentrations & loads from MS4 outfalls meet applicable permit action levels?

How do representative MS4 outfall discharge concentrations, loads, & flows change over time?

Which MS4 outfalls impact receiving water quality during wet weather?

## Specific Activities

**Pre-WQIP**: perform storm water discharge monitoring during two wet weather events annually:

(a) Complete the MS4 outfall monitoring program

(b) Narrative descriptions & field measurements

(c) three monitoring stations at representative major outfalls per WMA

**Post-WQIP (example)**: perform storm water discharge monitoring based on representative outfalls

(a) Develop & implement a monitoring frequency appropriate to characterize pollutant discharges from outfalls in each WMA

(b) analyze parameters identified as watershed priorities, TMDLs, SALs, 303d

# Alternate Provision II.D: Discharge Element – Stormwater

| | |
|---|---|
| **Purpose** | Address stormwater pollutant reduction to the MEP |
| **Methods** | • Complete the current MS4 outfall program<br>• Monitoring at three major outfalls per WMA per year to facilitate modeling based on land use characteristics<br>• Utilize Stormwater Action Levels for prioritization |
| **Rationale & Benefits** | • Broad spatial & temporal coverage<br>• Supports assessment-driven, adaptive management approach<br>• Flexibility in site selection will focus resources on the highest watershed priorities, whether it be for representative drainage area data or homogeneous land-use based data. |

# Source/Stressor Identification

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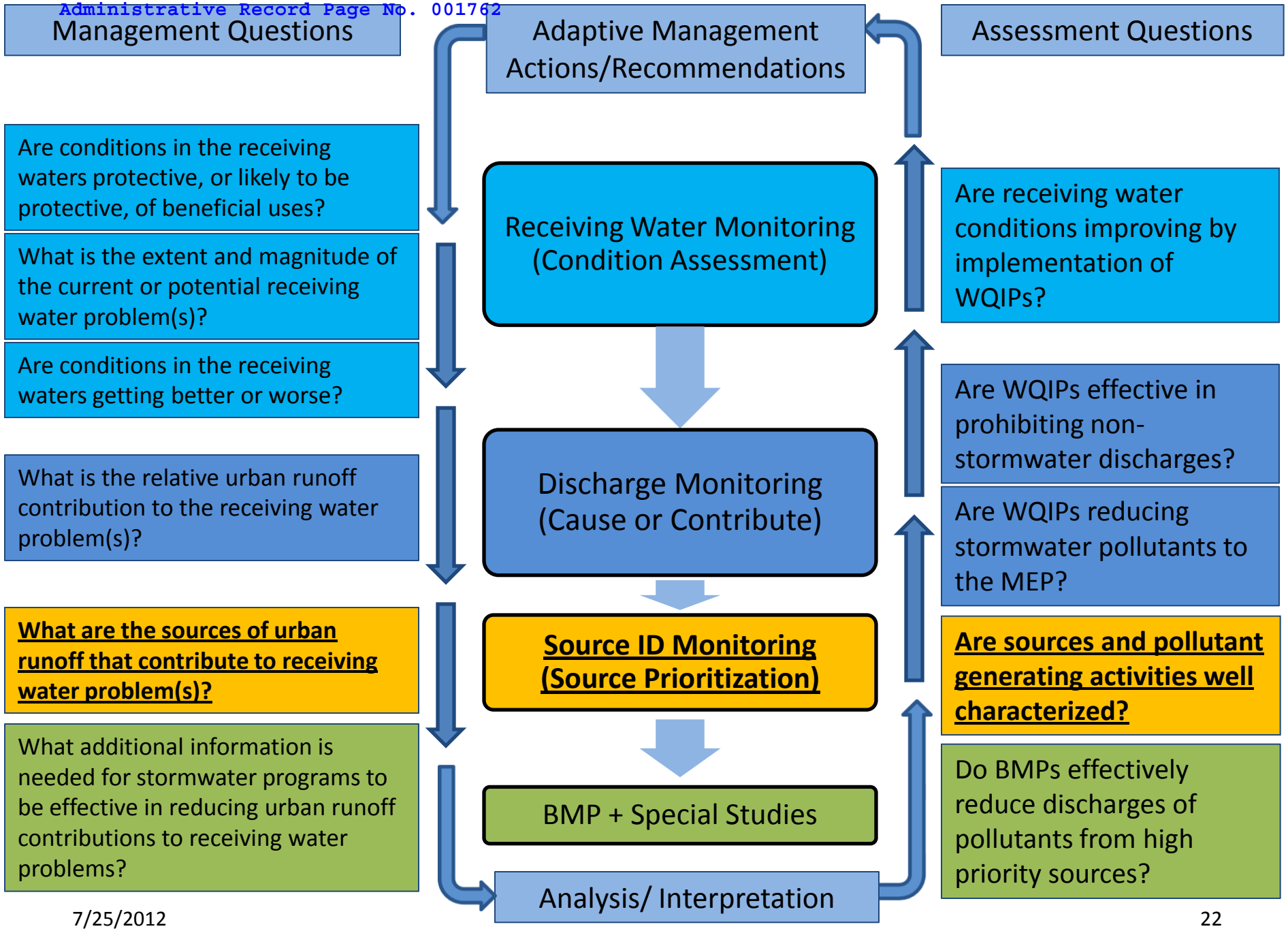

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# Source/Stressor Identification Monitoring

| Assessment Question | Management Question | Specific Questions | Specific Activities |
|---|---|---|---|
| Are sources & pollutant generating activities well characterized? | What are the sources of urban runoff that contribute to receiving water problems? | What are the land use sources contributing to the receiving water problems identified in the WQIP?<br><br>What are the relative loadings of sources contributing to the receiving water problems identified in the WQIP?<br><br>What are the specific pollutant generating activities (PGAs) contributing to the receiving water problems? | **Constituent-specific source ID**<br><br>Conduct source/stressor identification studies to address program management needs related to watershed priorities.<br><br>**Step 1**: Compile known information on priority constituent(s).<br><br>**Step 2**: Identify data gaps based on information compiled in Step 1<br><br>**Step 3**: Based on information compiled in Step 1, develop a source inventory & a prioritization scheme within the watershed for potential follow-up action<br><br>**Step 4**: Develop a prioritized list of sources for the priority constituent(s) & deliver to the staff responsible for implementing WQIPs<br><br>**Pre-WQIP**: Continue source identification studies pertaining to compliance with TMDLs & development of the CLRP as applicable<br><br>**Post-WQIP (example)**: Conduct PGA investigations for nutrients as part of the MAP for watersheds where WQIPs identified nutrients as a high priority. |

# Alternate Provision II.D Source/Stressor Identification Element

| | |
|---|---|
| **Purpose** | Identify & Prioritize Pollutant Sources & Pollutant Generating Activities (PGAs) |
| **Methods** | • Pollutant-Specific Source Inventories<br>• Source/PGA Studies<br>• Prioritization of Sources for Follow-up |
| **Rationale & Benefits** | • Responsive to Program Management needs<br>• Provides programs with information to verify, quantify, & prioritize sources<br>• Provides links between sources, activities & effects on runoff quantity & quality |

# BMPs & Special Studies

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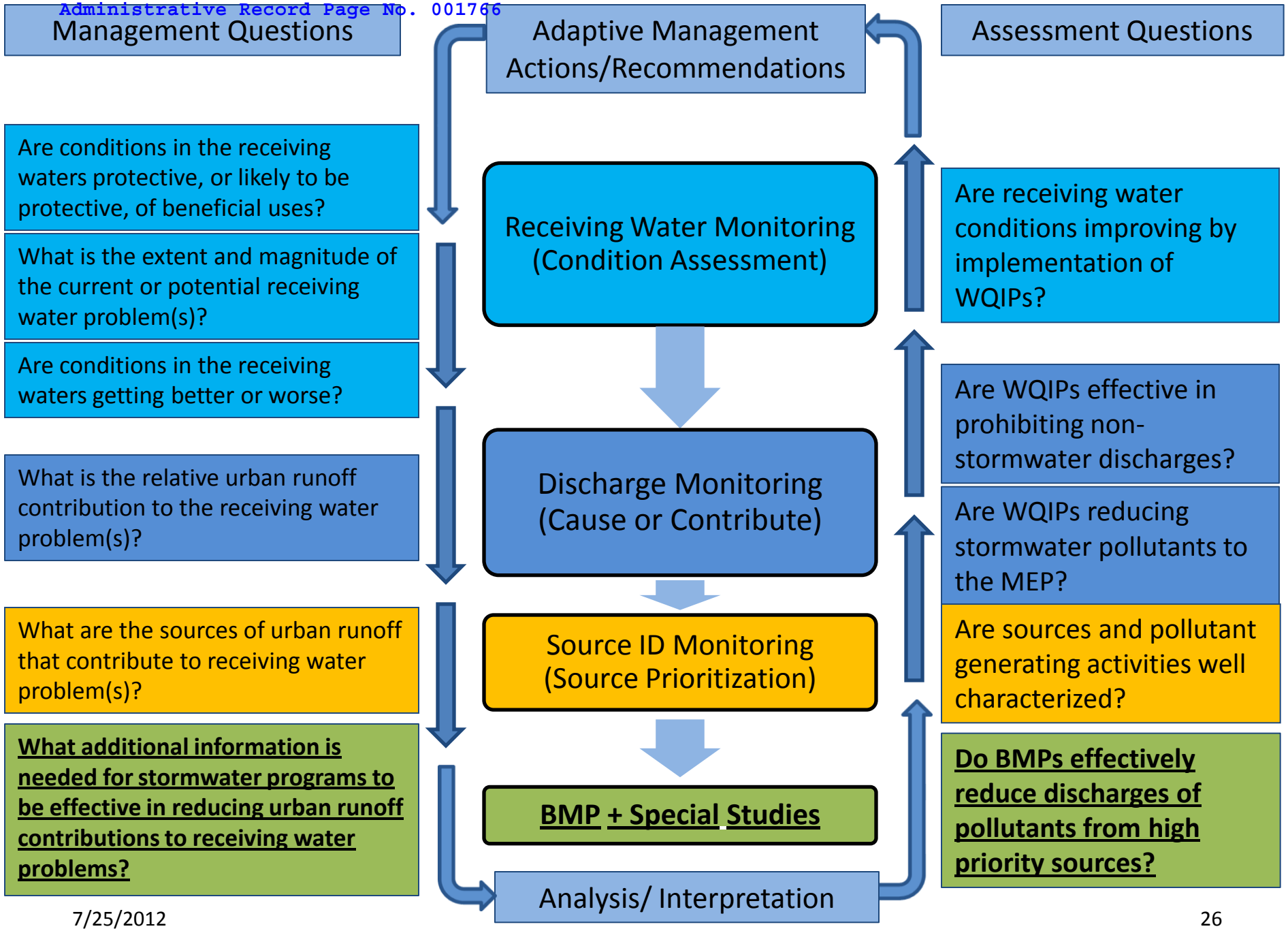


# Special Studies – BMP, Programmatic, & Water Quality

## Assessment Question

Do BMPs effectively reduce discharges of pollutants from high priority sources?

## Management Question

Are stormwater program BMPs effective in reducing urban runoff contributions to receiving water problems?

Are pollutant sources being effectively addressed to reduce urban runoff contributions to receiving water problems?

## Specific Questions

*Specific questions developed to address information needs identified in Source/Stressor Identification studies.*

Example: Are sources from outside of the MS4 (e.g., natural sources ) contributing to receiving water problems?

## Specific Activities

**Examples of Special Studies**

- Assess background concentrations of contaminants in San Diego reference streams
- Evaluate the effectiveness of enhancing outreach & education (i.e., residential BMP rebate programs, over-irrigation enforcement, rainwater harvesting, turf conversion)
- Evaluate the effectiveness of catch basin inlet cleaning
- Evaluate the effectiveness of residential & commercial area patrolling (commercial patrolling may include inspections)
- Evaluate the effectiveness of targeted aggressive street sweeping
- Evaluate the effectiveness of watershed-based inspections

# Alternate Provision II.D BMPs & Special Studies

| | |
|---|---|
| **Purpose** | • Support effective adaptive management<br>• Assess BMP effectiveness<br>• Perform scientific investigations to address data gaps |
| **Methods** | • Pilot BMP Studies<br>• Source ID Special Studies<br>• Water Quality Studies |
| **Rationale & Benefits** | • Answers questions related to program & BMP effectiveness<br>• Addresses data gaps to allow more effective program implementation<br>• Provides scientifically valid information related to regulatory principles |

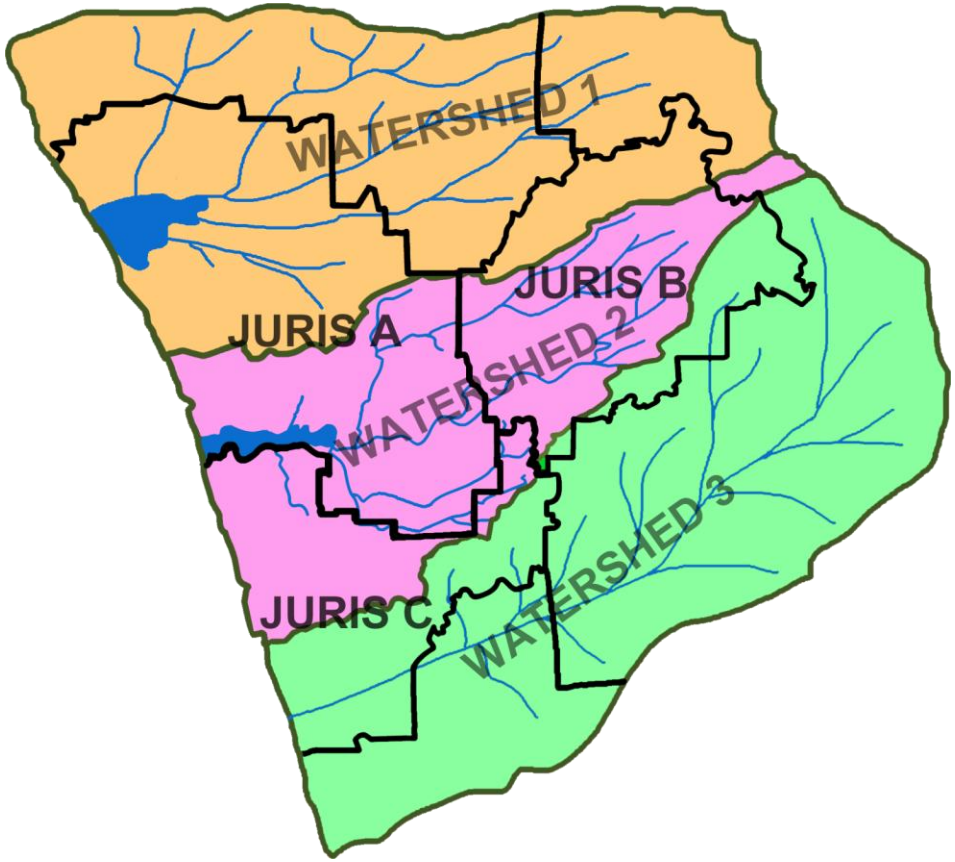
# Developing Monitoring & Assessment Programs (MAPs) for Each WQIP

**STRATEGIC MONITORING APPROACH:**

1. Establish stormwater management priorities specific for each WMA ("Watershed Priorities") as part of WQIP development.
2. Compile existing monitoring data & assess available information for receiving waters, MS4 discharges, & sources or stressors within the watershed.
3. Identify regulatory & non-regulatory drivers that apply to water quality monitoring within the watershed, & list all associated monitoring responsibilities assigned to the Copermittees.
4. Evaluate the watershed priorities in context of available monitoring data & existing monitoring responsibilities, & develop specific management questions for each priority issue.
5. Establish metrics & identify assessments that should be performed to supply information needed to address the management questions.
6. Identify elements of a watershed-based monitoring program needed to address the watershed management questions & perform the necessary assessments.
7. Develop detailed monitoring plan to address the identified monitoring needs, coordinated with other ongoing monitoring in the watershed.

# Proposed Provision II.D Development of MAP Components

- HYPOTHETICAL WATERSHED EXAMPLE



# Proposed Provision II.D
# WQIP/MAP - Stormwater Discharge Example

- Example WQIP priorities
  - TMDLs: bacteria
  - 303(d) Listings: copper & nutrients
- Likely Assessment question:
  - Are jurisdictional runoff management programs reducing pollutants in storm water to the maximum extent practical?
- Management question:
  - What are the sources of urban runoff that contribute to receiving water problem(s)?

# WQIP MAP Example: Stormwater Discharge Monitoring

- Develop Specific questions using available information:
  - MS4s are known sources of bacteria & copper
  - MS4s are less well known as sources of nutrients
  - Loadings from land uses are not well quantified to support planning of wet weather management actions or evaluate their effectiveness
- Specific question
  - *What are the representative MS4 outfall discharge concentrations, loads, & flows?*

# WQIP MAP Example: Stormwater Discharge Monitoring

- Approach to answer specific question is to support model development/ calibration/ validation
- Number of sites based on appropriate land use characterization for modeling
  - Characterize individual land uses (i.e., residential) or refine categories of land uses (i.e., SFR & HDR)
- Frequency = 2 storms/year (composite)
- Constituents = bacteria, copper, nutrients, & special study needs
- Duration = at least one adaptive management planning cycle to allow for:
  - Minimum data requirement for adequate characterization
  - Data usability to update management actions for WQIP

# Next Steps

- Alternate Provision II.D will be provided
- Technical Memo with Support/Rationale for Alternate Provision II.D

# QUESTIONS?