

SECTION 7 – EFFECTIVENESS ASSESSMENT AND MONITORING FRAMEWORK

7.0 EFFECTIVENESS ASSESSMENT AND MONITORING FRAMEWORK

The purpose of the Effectiveness Monitoring Program is both to meet the requirements of the 2007 Storm Water Permit and address key management questions. Per Section I of the 2007 Permit, the City shall assess the effectiveness on an annual basis of each Watershed Water Quality Activity, Watershed Education Activity and the overall Urban Runoff Management Program implemented in the watersheds in which the City has jurisdiction. The requirements of the Permit further require the following:

1. Specifically assess the effectiveness of each of the following:
 - a) Each watershed Water Quality Activity Implemented
 - b) Each Watershed Education Activity implemented; and
 - c) Implementation of the Watershed Urban Runoff Management Program as a whole
2. Identify and utilize measurable targeted outcomes, assessment measures and assessment methods for each of the items listed in section I.2.a(1)
3. Utilize outcome Levels 1-6 to assess the effectiveness of implementation of the watershed Urban Runoff Management Program as a whole, where applicable and feasible.
4. Utilize outcome levels 5 and 6 to quantitatively assess the effectiveness of implementation of the Watershed Urban Runoff Management program as a whole, focusing on the high priority water quality problem(s) of the watershed. These assessments shall attempt to exhibit the impact of Watershed Urban Runoff Management Program implementation on the high priority water quality problems(s) within the watershed.
5. Utilize monitoring data and analysis from the Receiving Waters Monitoring Program to assess the effectiveness each of the items listed in section I.2.a.(1) above, where applicable and feasible
6. Utilize Implementation Assessment, Water Quality Assessment, and integrated Assessment, where applicable and feasible.

In addition to these Permit requirements, the City is conducting effectiveness monitoring to address key management questions. The key management questions for the initial BMPs are to determine the cost effectiveness of the BMP and whether the BMP should be expanded to additional targeted areas within the watershed, modified to improve its effectiveness or removed from the list of watershed activities. Additional management questions include the type and frequency of street sweeping and combined effectiveness of Tier I and II BMPs implemented within a targeted sub-watershed.

Section 7 presents the framework for the Watershed Activity Effectiveness Measurement and Monitoring Program. The Framework is based on the assessment of the activities using the six levels of effectiveness outcomes as shown below.

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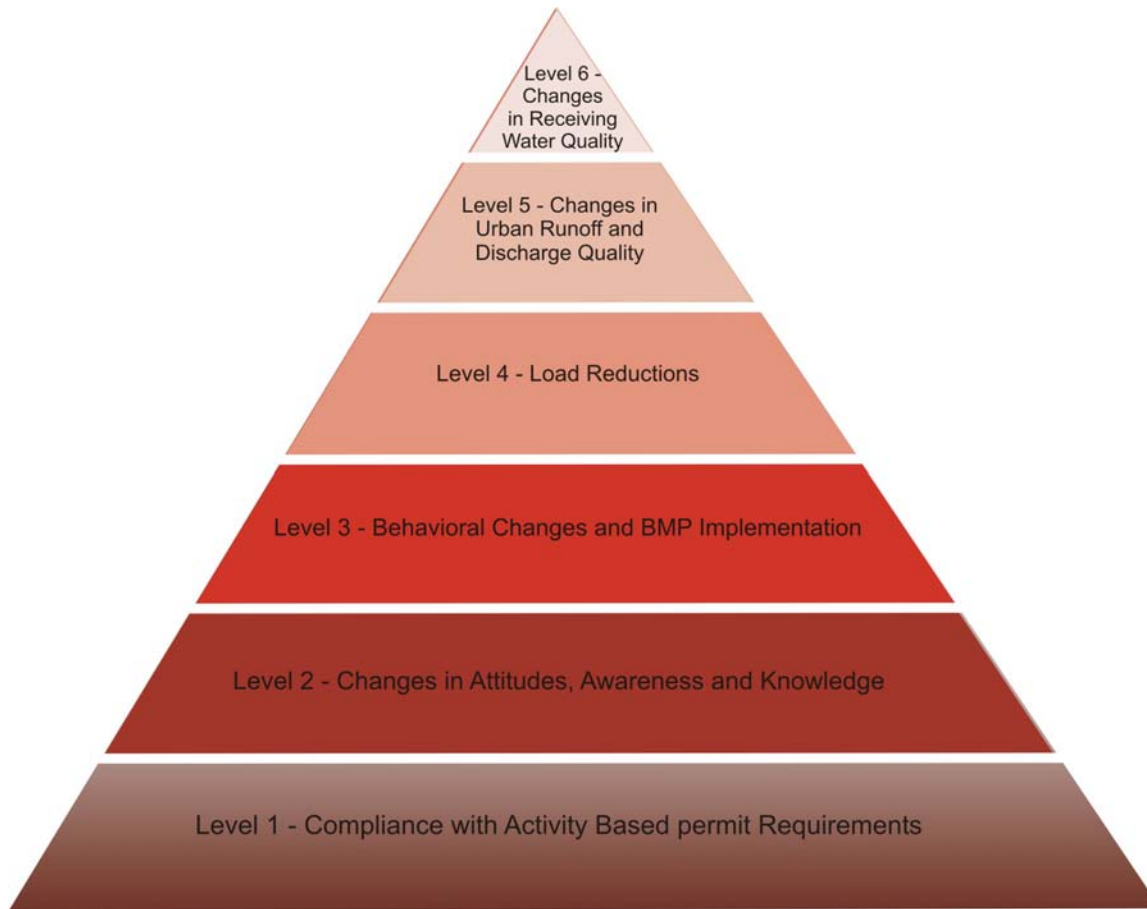


Figure 7-1. Levels of Effectiveness Outcomes

The Framework outlined in this section begins with a summary table of the general Watershed Activities that correspond to the Priority Watershed Activities Tables in Section 3. As listed in the Section 3 Priority Activities tables, each activity had a corresponding 5-year goal. In the first table of Section 7, these goals are listed with the corresponding level of effectiveness outcome, the expected outcome and method by which the outcome will be measured. This table is therefore used to develop the overall activity assessment program. This City will use this framework table to further define the measurable outcomes and to develop the specific data reporting and management needs for the outcome measurements. For example, the 5-year goal for the Enforcement Activity is to complete the targeted inspections and achieve the estimated load reductions. The levels of effectiveness outcome are Level 1 for completion of the activity and Level 4 for the estimated load reduction. The City will develop estimated load reductions as part of the overall activity program, and these specific outcome goals will be identified for each activity. The method of measuring these outcomes is to track completion of the inspections and to quantify the load reduction may be through the number of illicit discharge reduction and/or targeted sampling. This table is therefore a framework for the City to develop a more activity specific assessment program for specific activities.

Section 7 also provides a framework for the Effectiveness Assessment Monitoring Strategy. This framework is presented as a flow chart that begins with a baseline assessment. From this

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framework, the City will develop activity specific assessment monitoring programs. Additional flow charts for Source Studies and Assessment of Aggressive Street Sweeping is also provided. These frameworks are presented as a guide to developing activity specific assessment plans.

Finally, this section provides further detailed guidance on the effectiveness measurement tools and the audit process by which the expected outcomes are compared to the stated goals. The forms the overall Effectiveness Measurement and Monitoring Framework that the City will use as a guide to develop specific activity assessment programs and plans.

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Table 7-1. Priority Watershed Activities – Implementation Strategy – Tier I Best Management Practices

ACTIVITY	5-YEAR GOALS:TABLE 3	LEVEL OF EFFECTIVENESS	EXPECTED OUTCOME	METHOD OF MEASUREMENT
Outreach/Education	Achieve Awareness (Level 2) of Proposed Code Changes and Measures to Reduce Pollutants Greater than Targeted Percentage of Facilities and Residences in Targeted Area(s)	Level 2 Level 3 Level 5	Raised awareness of code changes	Paper trail outreach materials
	Achieve Awareness (Level 2) of Code Changes and Measures to Reduce Pollutants Greater than Targeted Percentage of Facilities and Residences in <i>Expanded</i> Targeted Area(s)		Behavior change above baseline.	Baseline monitoring to include surveys, updated outreach materials
	Achieve Behavioral Change (Level 3) above Benchmark Percentage of Targeted Facilities and Residences		Load reduction in target area	Conduct inspections and event monitoring
	Obtain above the benchmark estimated load reduction in MS4 (Level 5) in Targeted Area(s) for Prioritized Pollutants based on Effectiveness Monitoring		Compare baseline with post-outreach data	
	Complete (Level 1) Updates to Source Inventories and Database in Targeted Areas	Level 1	Updated inventories and database in targeted and expanded areas	
Complete (Level 1) Updates to Source Inventories and Database in <i>Expanded</i> Targeted Areas				
Enforcement	Complete and Enact (Level 1) Modified Codes	Level 1 Level 3 Level 4	A change in Codes	Comparison of Codes over time
	Achieve Targeted Load Reductions (Level 4) based on Modifications of Practices (Level 3) as Document by City Inspection Program (City-wide)		Load reductions attributable to City Inspection Program	Baseline loads compared to post-BMP implementation loads.
	Complete (Level 1) Inspections of Current Target Sources and Obtain Monitoring Data from Industrial Facilities to Estimate Loadings	Level 1 Level 4	Logs of completed inspections	Comparison of logs before and after BMP implementation
	Achieve Targeted Load Reductions (Level 4) based on Number of Increase Inspections in Targeted Areas and Modifications of Practices (Level 3) with Enforcement of Modified Codes		Estimated loadings from monitoring data from industrial facilities	Baseline versus post-BMP implementation monitoring data.
	Load reduction attributable to inspections and enforcement			
	Completion and incorporation (Level 1) of LID Standards into City Design Standards where	Level 1 Level 4	LID standards are incorporated into City Design Standards	Paper trail of City design standard changes.

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Table 7-1. Priority Watershed Activities – Implementation Strategy – Tier I Best Management Practices

ACTIVITY	5-YEAR GOALS:TABLE 3	LEVEL OF EFFECTIVENESS	EXPECTED OUTCOME	METHOD OF MEASUREMENT
	<p>Applicable</p> <p>Completion and incorporation (Level 1) of LID Standards into SUSMP where Applicable</p> <p>Achieve Estimated Load Reduction (Level 4) based on Targeted Percentage of New Construction and Roadway Improvements that Can Apply LID Techniques</p>		<p>LID standards are incorporated into SUSMP</p> <p>Measurable load reductions at construction and roadway sites</p>	Baseline versus post-BMP implementation monitoring data
Effectiveness Monitoring – WURMP Reporting	<p>Obtain Baseline Monitoring Data to Measure Effectiveness (Level 5) of Tier I Activities based on Urban Runoff Quality in Targeted Areas</p> <p>Coordinate Effectiveness Assessment Monitoring with MS4, dry weather, and TMDL monitoring program as well as between watersheds in accordance with Watershed Activities Effectiveness Monitoring Plan.</p>	Level 5	Coordinated jurisdictional programs	Data gap audit
	<p>Determine Load Reductions (Level 4) for Proposed Activities</p>	Level 4	Measurable load reductions	Compare baseline with post-implementation data
	<p>Complete (Level I) Data Management System to Track, Assess and Report Watershed Activities Effectiveness</p> <p>Develop Data Management System to Integrate Overall Storm Water Program Activities and Monitoring (Wet Weather, Dry Weather, Industrial, Coastal Outfall, MS4, Codes, AB411) in order to Determine Total Load Reductions and Water Quality Trends.</p>	Level 1	A database management system to track watershed activities	Design and create a database management system for watershed activities.
Runoff Reduction	<p>Complete Study of Potential Options to Better Manage Over-Irrigation</p> <p>Achieve Target Awareness (Level 2) and Behavioral Changes (Level 3) for Target Sources and Areas.</p>	Level 2 Level 3	<p>A report of over-irrigation management options</p> <p>Measurable awareness and behavioral changes toward over-irrigation in target areas.</p>	Baseline monitoring compared to post-BMP implementation monitoring.
	<p>Introduce Legislation for Product Substitution into State Legislature</p>	Level 4	A change in legislation which accounts for product substitution	Comparison of legislation over time.

**** All These First Steps Must be Completed Before Any of the Intermediate Steps are Initiated**

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Table 7-2. Priority Watershed Activities – 5-Year Implementation Strategy – Tier II Best Management Practices

ACTIVITY	ACTIVITY GOAL	LEVEL OF EFFECTIVENESS	EXPECTED OUTCOME	METHOD OF MEASUREMENT
Tier II –Source Studies, Design Storm and Other Special Studies	Complete (Level 1) Source Study of Targeted Group and report findings to Regional WURMP Group.	Level 1 Level 4	Report to WURMP	A final report
	Determine actual loadings (Level 4) and estimate potential load reductions from Tier I BMPs to assess need for additional management actions.		A loading calculation for Tier 1 BMPs	A set of measurement calculations
	Complete (Level 1) additional Source Study of Targeted Group and report findings to Regional WURMP Group.		A Source study identifying key sources of contamination	A finalized report on source identification
	Determine actual loadings (Level 4) and estimate potential load reductions from Tier I BMPs to assess need for additional management actions.		A calculation of actual loadings	A set of loading calculations.
Tier II – Targeted Aggressive Street Sweeping	Complete (Level 1) design storm determination.	Level 1	An understanding of design storm specifications	A study aimed at determining the characteristics of design storms
	Complete (Level 1) determination of estimated load reductions to be achieved under the design storm approach.		An understanding of achievable load reductions under design storms	A set of validated calculations which estimate the load reductions achievable under design storms.
	Complete (Level 1) <i>Phase I</i> Aggressive Street Sweeping programs in the prioritized drainage areas within the targeted watersheds.	Level 1 Level 4 Level 5	Completed Phase 1 street sweeping in priority watersheds.	Field surveys of street sweeping.
	Develop a Phase II Sweeping Program that optimizing the sweeping to achieve a high load reduction cost effectively.		Development of a Street sweeping program with high load reduction	Plan for street sweeping
Achieve minimum targeted <i>Phase I</i> load reduction (Level 4) based pounds of material removed and constituent concentrations detected in debris samples.	X pounds of material removed through street sweeping.		Measured loads removed during street sweeping	
Achieve an improvement in MS4 water quality (Level 5) based on Phase I effectiveness monitoring.	Improved MS4 water quality		Water quality measurements at the MS4 stations.	

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Table 7-2. Priority Watershed Activities – 5-Year Implementation Strategy – Tier II Best Management Practices

ACTIVITY	ACTIVITY GOAL	LEVEL OF EFFECTIVENESS	EXPECTED OUTCOME	METHOD OF MEASUREMENT
Tier II – Runoff and Treatment Volume Reduction BMPs	Complete (Level 1) Focused Geotechnical Investigation and Design Constraints	Level 1 Level 4	A report containing a geotechnical investigation with design constraints	Report audit
	Complete (Level 1) Design Standards for LID techniques for City projects.		Completed design standards for City projects	Baseline versus post-BMP implementation monitoring data comparison
Estimate potential load reductions (Level 4) from the use of LID techniques on next 5 and 10 year periods of applicable City projects	A projected load reduction for 5 and 10 year periods on City projects			
Achieve a target load reduction (Level 4) from selected City projects from the implementation of LID techniques.	X% load reduction from City projects from LID implementation			
Estimate potential load reductions (Level 4) from the use of LID techniques on next 5 and 10 year periods of applicable new development projects	A report of estimated load reductions from LID usage over 5 and 10 year projects.			
	Complete (Level 1) <i>Phase I</i> “Green Streets” programs in the prioritized drainage areas within the targeted watersheds.	Level 1 Level 4 Level 5	Successful implementation of green streets programs in City at prioritized targeted areas.	Constructed green streets at key City locations
	Develop a Phase II “Green Streets” that optimizes this BMP to achieve a high load reduction cost effectively and does not result in geotechnical issues.		Optimized green street BMPs with high load reduction and no geotechnical issues.	BMP Effectiveness monitoring
	Achieve minimum targeted <i>Phase I</i> load reduction (Level 4) based volume of run off infiltrated and estimated pounds of material removed.		Achievement of load reduction and pounds removed.	Flow volume and water quality assessments
	Achieve an improvement in MS4 water quality (Level 5) based on Phase I effectiveness monitoring.		Improved MS4 water quality.	MS4 water quality assessment.

** All These First Steps Must be Completed Before Any of the Intermediate Steps are Initiated
 Prioritized First Steps in **RED** are City-Wide Activities

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Table 7-3. Priority Watershed Activities – 5-Year Implementation Strategy – Tier III Best Management Practices

ACTIVITY	5-YEAR GOALS	LEVEL OF EFFECTIVENESS	EXPECTED OUTCOME	METHOD OF MEASUREMENT
Tier III Treatment BMP Siting, Permitting, Easement and Purchases – Selected Watersheds	Complete (Level 1) Location Assessment for Phase I Treatment BMPs if the results of the Tier I and II Effectiveness Assessment Monitoring indicate the need for additional load reductions.	Level 1 Level 4 Level 5	A report containing location assessments for Phase 1 BMPs	90% location assessments for City Phase 1 BMPs
	Complete (Level 1) Design of Treatment BMP based on the design storm determination under Tier II activities and additional site specific engineering studies as needed.		Final design specifications for Tier III BMPs and baseline conditions	Successful design concept, construction and permitting summaries
	Estimate load reductions (Level 4) that will be achieved by Tier III BMP based on design.		Load reduction calculations as per design	Tables of statistically validated load reduction achievements by Tier III BMPs
	Implement (Level 1) Treatment BMP per design if determined to be cost effective		Implemented Level 1 BMP	Cost/benefit assessment including flow reduction water quality assessments.
	Monitor influent and effluent concentrations to assess effectiveness of the BMP and verify estimated load reductions (Level 4 and 5).		BMP effectiveness assessment	Monitor influent and effluent concentrations to assess effectiveness
Tier III – Targeted Dry Weather Diversions – Selected Watersheds	Complete (Level 1) assessment and design studies for dry weather diversions for targeted drainage areas.	Level 1 Level 4 Level 6	Completed dry weather diversion design specifications	Baseline and post-BMP implementation flow and water quality monitoring
	Complete (Level 1) design of dry weather diversions for targeted drainage areas.		Constructed dry weather diversions	
	Achieve minimum targeted load reduction (Level 4) based on volume of dry weather flows diverted and pounds of material removed based on constituent concentrations detected in dry weather samples.		Load reduction of baseline dry weather flows and pollutant loads	
	Achieve targeted reduction in receiving water (Level 6) downstream of installed diversions.		Pollutant load reduction in receiving waters	

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Table 7-3. Priority Watershed Activities – 5-Year Implementation Strategy – Tier III Best Management Practices

ACTIVITY	5-YEAR GOALS	LEVEL OF EFFECTIVENESS	EXPECTED OUTCOME	METHOD OF MEASUREMENT
Tier III – Trash Segregation and Collection BMPs – Phase I – Selected Watersheds	<p>Complete (Level 1) Study on Best Technologies for Trash Segregation</p> <p>Complete (Level 1) Focused Phase I installation of Trash Segregation technologies in target areas.</p> <p>Estimate potential trash load reductions (Level 4) from the use of trash segregation technologies</p> <p>Achieve a target trash load reduction (Level 4) from selected City projects from the implementation of trash segregation techniques.</p>	<p>Level 1</p> <p>Level 4</p>	<p>Report summary of trash segregation technologies</p> <p>Installed trash segregation technologies</p> <p>Trash load reduction from segregation technologies and at selected City projects.</p>	<p>Baseline and post-BMP implementation trash volume and content monitoring</p>
Tier III - Erosion and Sediment Controls and Mitigation of Peak Flow Impacts (Hydro-modification) in Targeted Drainage Areas– Selected Watersheds	<p>Complete (Level 1) assessment and design studies for BMPs for targeted drainage areas.</p> <p>Complete (Level 1) design of BMPs for targeted drainage areas.</p> <p>Achieve minimum targeted load reduction (Level 4) based on areas stabilized and/or peak flow impact reduced.</p> <p>Achieve targeted reduction in receiving water (Level 6) downstream of installed BMPs and/or targeted reductions in stream channel modification.</p>	<p>Level 1</p> <p>Level 4</p> <p>Level 6</p>	<p>Report summary of erosion control technologies together with design specifications</p> <p>Installed erosion control technologies</p> <p>Erosion reduction in receiving waters downstream of BMPs.</p>	<p>Baseline and post-BMP implementation monitoring of erosion and sediment concentrations in flow</p>

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Table 7-4. Effectiveness Assessment Monitoring Framework

Goals	Descriptions	Measurement	Activity Outcome	Audit process
	What is required at each level?	How do you measure your BMP effectiveness?	What is the expected and actual outcome of your BMP implementation plan?	How do you verify that you have achieved your target standard?
Tier I BMPs				
Outreach and education Level 1	Identify activities behaviors and benefits	Paper trail all general activities	Achieve behavior change through outreach and public education	Peer review of investigations and conclusions by external auditor
Level 2	Monitor behavior change			
Level 3	Modify where appropriate			
Level 4	Monitor behavior change		Achieve % behavior change	
Enforcement Level 1	Complete and incorporate load impact reduction design standards into SUSMP and City design standards	Desk top assessment of design standards.	Design standards incorporated into SUSMP and City Design Standards	Peer review of investigations and conclusions by external auditor
Level 4	Achieve load reduction on targeted percentage of new construction and roadway improvements	Calculations based on storm event monitoring	Load reduction at new projects to the targeted level(s)	Statistically validated load reductions with significant standard deviation and trend analyses.
Effectiveness monitoring – WURMP reporting Level 1	Complete data management system	Data gap audit of data management system	Coordinate with MS4, dry weather and TMDL monitoring programs – jurisdictional	Peer review of investigations and conclusions by external auditor
Level 4	Determine load reductions	Measure baseline versus post-BMP loads - compare	A calculated load reduction	Statistically validated load reductions with significant standard deviation and trend analyses.
Level 5	Obtain baseline monitoring data to measure effectiveness	Measure water quality parameters for baseline and post-BMP	Measurable BMP effectiveness based on results of storm event monitoring	Statistically validated load reductions with significant standard deviation and trend analyses.
Runoff reduction Level 2:	Study over-irrigation management options	Summary document of options with cost/benefit analyses	A comprehensive overview of options to manage over irrigation	Peer review of investigations and conclusions by external auditor
Regulatory and legislative	Introduce product substitution legislation	Legislation is incorporated	Policy/legislative change	Peer review of investigations and conclusions by external auditor
Tier II				
Source studies Level 1	Complete source study of targeted group and report to WURMP	Conduct source studies at targeted facilities such as restaurants, auto repair shops etc.	Validation of contaminant sources, list of high priority sources.	Literature review?
Level 4	Determine actual loadings and estimate load reductions	Calculate loadings based on storm event monitoring. Link in with jurisdictional activities.	Coordinated approach with other jurisdictions and watersheds.	Statistically validated load reductions with significant standard deviation and trend analyses.
Design storms Level 1	Complete design storm determination	Conduct storm event monitoring with focus on pollutograph and flow information. Link in with jurisdictional activities.	Pollutograph and design storm specifications. Coordinated approach with other jurisdictions and watersheds	Statistically validated load reductions with significant standard deviation and trend analyses.
Special studies	As needed	As needed. Link in with jurisdictional activities.	As needed. Coordinated approach with other jurisdictions and watersheds.	As needed
Targeted Aggressive Street sweeping Level 1	Complete determination of estimated load reductions achievable under design storm approach	Storm event monitoring + Solids analysis (composition and weight), comparison to baseline	Measurable BMP effectiveness (as calculated % contaminant reduction) based on results of storm event monitoring and solid waste analysis.	Statistically validated load reductions with significant standard deviation and trend analyses.
Level 4	Achieve minimum targeted Phase 1 load reduction based on pounds removed and pollutant concentrations	Based on Miramar weight station results of solids analysis and storm event measurement results.	Measurable BMP effectiveness (as calculated % contaminant reduction) based on results of solid waste analysis.	Statistically validated load reductions with significant standard deviation and trend analyses.
Level 5	Achieve an improvement in MS4 water quality (based on Phase 1 effectiveness monitoring)	Monitoring at MS4 station during storm events before and after BMP implementation.	Measurable BMP effectiveness (as calculated % contaminant reduction) based on results of storm event monitoring.	Statistically validated load reductions with significant standard deviation and trend analyses.
Runoff and treatment volume reduction BMPs Level 1	Complete focused geotech investigations and design concepts complete design standards for LID techniques	Completion of geotechnical investigations and designs, and LIDs	Completed design specs for geotech investigations and LIDs.	Peer review of investigations and conclusions by external auditor
Level 4	Estimate load reductions from LID use Achieve load reductions from select projects using LID	Storm event monitoring to estimate load reductions from LIDs	Achieve load reductions through the use of LIDs	Statistically validated load reductions with significant standard deviation and trend analyses.
Level 1	Complete green streets programs	Completed green street BMP placement	Verify placement and audit using GIS/CAD?	Reported findings work-shopped with stakeholders.

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Table 7-4. Effectiveness Assessment Monitoring Framework

Goals	Descriptions	Measurement	Activity Outcome	Audit process
	Achieve minimum targeted Phase 1 load reduction based on pounds removed and pollutant concentrations.	Storm event monitoring to verify load reduction	Calculated % load reduction from street sweeping.	Statistically validated load reductions with significant standard deviation and trend analyses.
Level 5	Achieve an improvement in MS4 water quality (based on Phase 1 effectiveness monitoring)	Measured MS4 water quality improvement through storm event sampling	Calculated % contaminant load reduction during storm events	Statistical validation (standard deviations and trend analysis)
Tier III				
Treatment BMP siting , permitting, easement and purchase Level 1	Complete location assessment of BMPs if Tiers I and II indicate additional load reduction is required. Complete design treatment BMP based on design storm determined in Tier II	List of priority BMP locations and design specifications based on Tier I and II results.	Finalized copies of design specifications, purchase analyses, and permitting requirements.	Reported findings work-shopped with stakeholders.
Level 4	Report load reduction estimates achieved by Tier III BMPs	Monitoring during storm events before and after Tier III BMP implementation.	Effectiveness estimate for Tier III BMPs	Statistical validation through standard deviations, trendlines etc.
Level 1	Implement treatment BMP	Measured through construction completion assessment.	Completed BMPs at designated locations as per design specs.	Peer review of investigations and conclusions by external auditor
Level 4 and 5	Achieve minimum load reduction based on monitoring	Monitoring during storm events before and after Tier III BMP implementation.	Measurable load reduction through BMP implementation.	Statistically significant results
Targeted dry weather diversions Level 1	Complete assessment and design of dry weather diversions	Completion and assessment of Tier I and II BMP load reductions. Needs analysis of further load reduction through dry weather diversion.	Assessment of need for dry weather diversion. Completion of design specifications.	Peer review of investigations and conclusions by external auditor. Reported findings work-shopped with stakeholders.
Level 4	Achieve minimum targeted load reduction based on volumes of dry weather flows diverted and solids analyzed	Measured through dry weather flow monitoring and solids analysis.	Measurable reduction in dry weather flow loads	Statistically significant results with comparisons to baseline dry weather flows
Level 6	Achieve targeted reduction in receiving water downstream of installed diversion	Monitoring of receiving water during dry weather flows. Link in with jurisdictional activities.	A measurable outcome in the receiving waters attributable to Tier III BMP placement.	Statistically significant results with comparisons to baseline receiving water conditions
Erosion and sediment control and peak flow mitigation Level 1	Complete study on best technologies for trash segregation complete trash segregation technologies	Desk top assessment (literature review) and in field studies of trash removal and segregation technologies		Peer review of investigations and conclusions by external auditor
Level 4	Achieve trash load reduction	Field sheets used to assess trash reduction at sites of concern.	Decrease in trash presence at sites of concern.	Statistically significant conclusions regarding effectiveness of BMP in trash removal.
Level 1	Complete assessment and design studies for BMPs	Design BMPs to account for bank stabilization, hydromodification, sediment removal goals	Comprehensive overview of valid BMPs for sediment and erosion control.	Peer review of investigations and conclusions by external auditor
Level 4	Achieve load reduction based on areas stabilized or flow reduced	Measure sediment loads as part of storm event monitoring. Measure bank erosion as part of field studies	Decrease in load reduction attributable to Tier III BMPs	Statistically validated load reductions with significant standard deviation and trend analyses.
Level 6	Achieve reduction in receiving water	Receiving water monitoring – linked to jurisdictional activities.	Monitoring results indicating whether BMP implementation has a demonstrable effect on receiving waters.	Statistically validated load reductions with significant standard deviation and trend analyses.

Event monitoring (post BMP)

Outreach monitoring

Baseline monitoring (pre-BMP)

Desk top (eg lit review, policy)

Field studies

BMP placement (construction)

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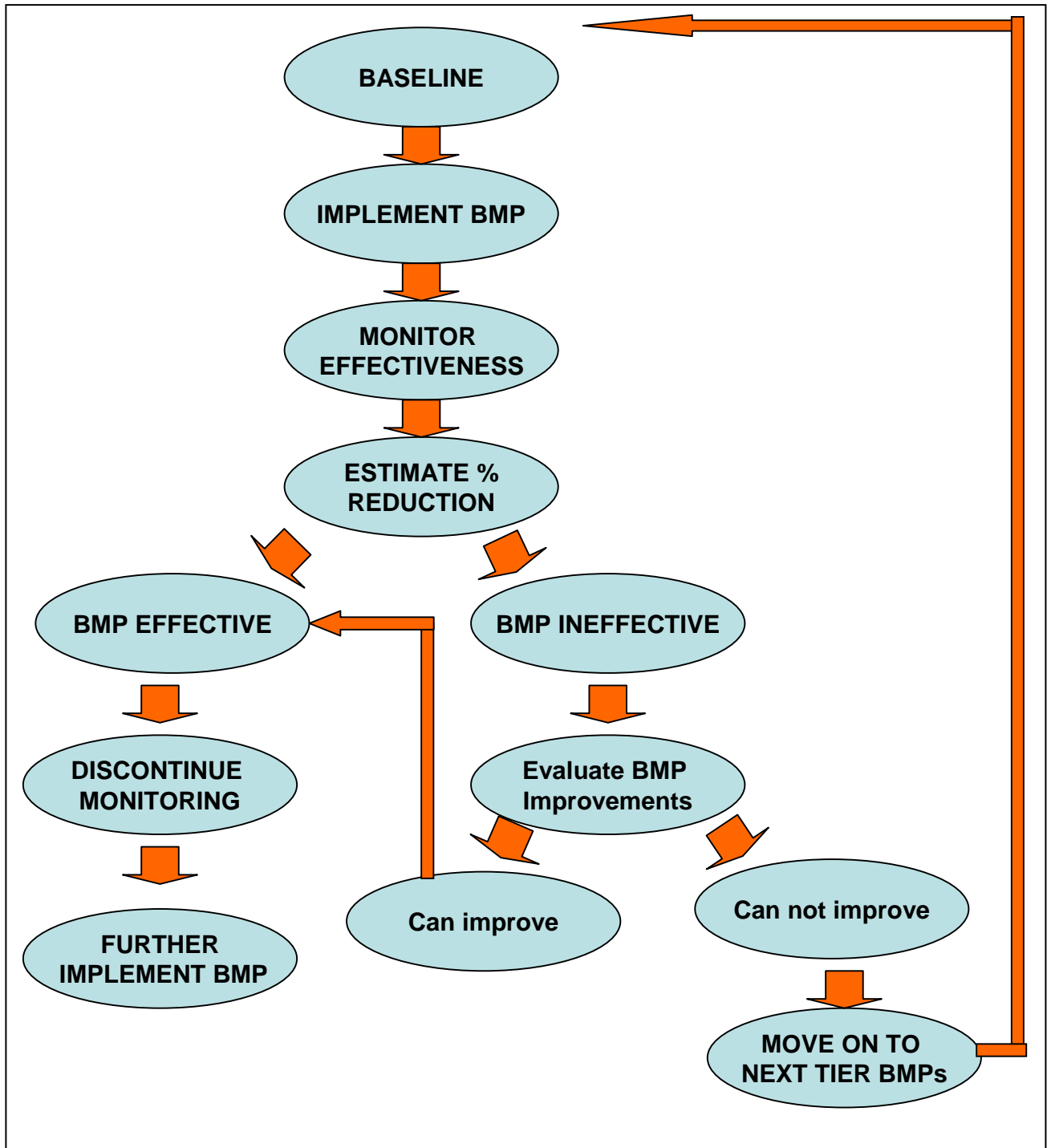


Figure 7-2. BMP Effectiveness Monitoring Strategy

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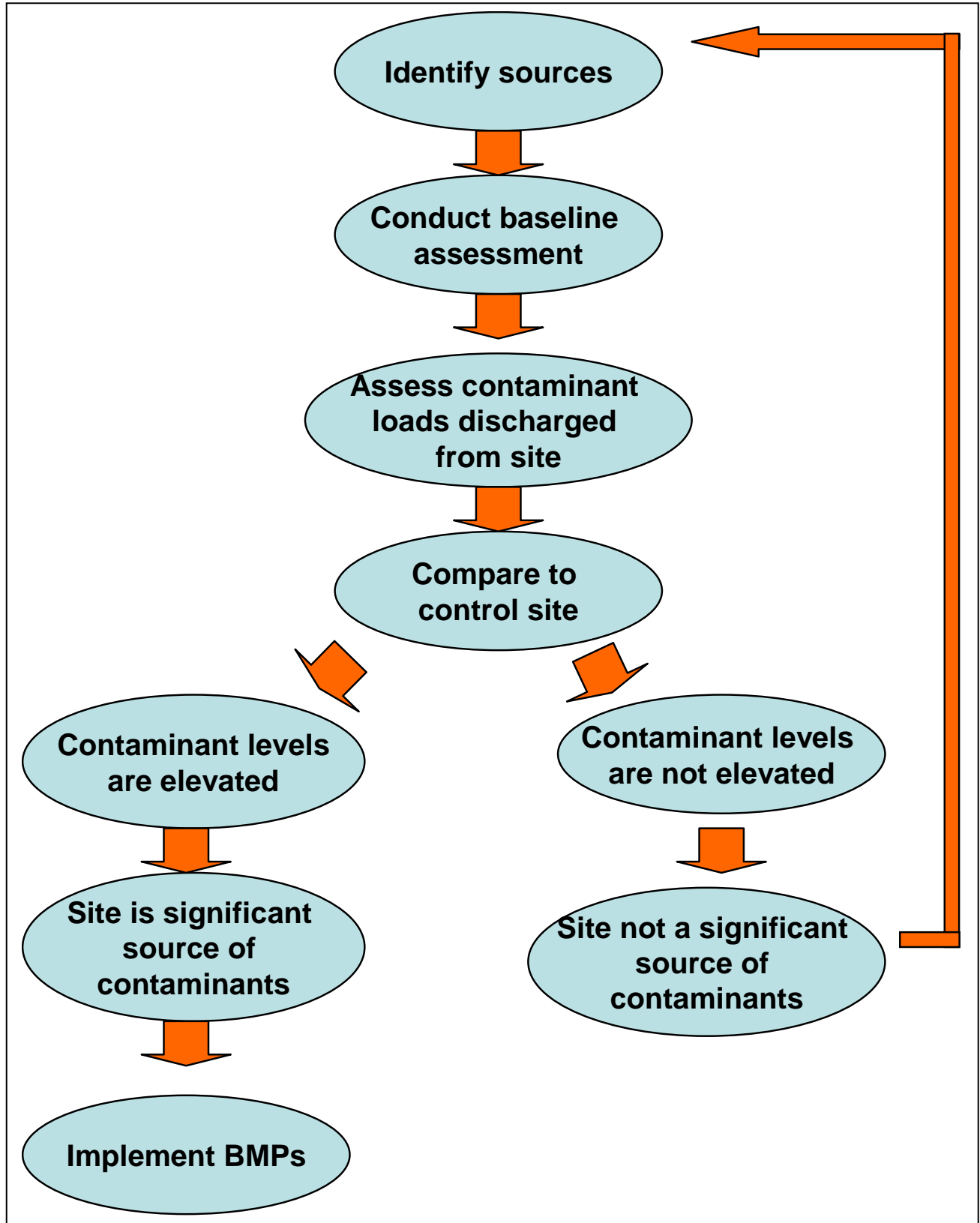


Figure 7-3. Source Study Monitoring Strategy

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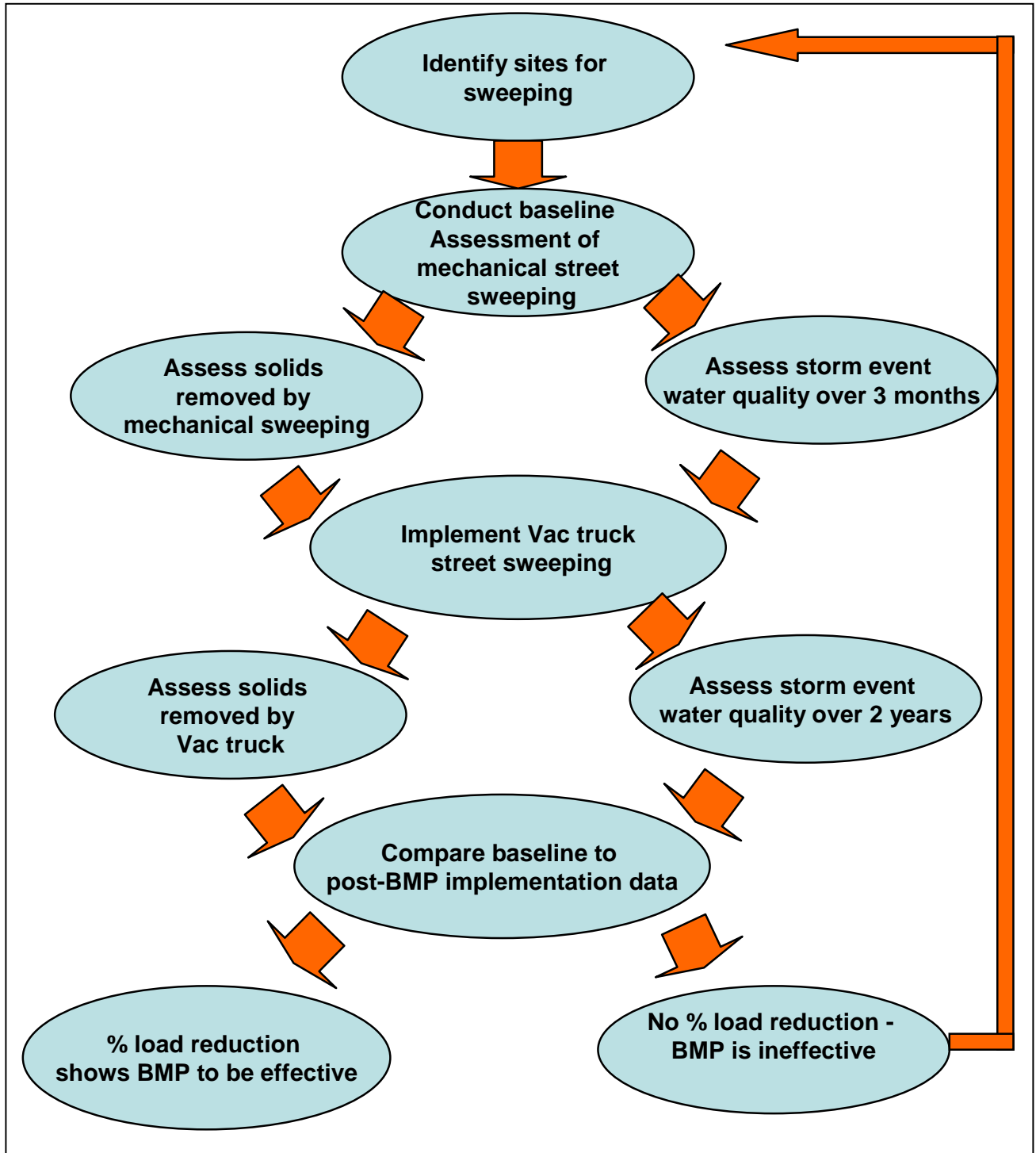


Figure 7-4. Street Sweeping Monitoring Strategy