

September 10, 2009

SUBJECT: LAKE CLARITY CREDITING PROGRAM DRAFT HANDBOOK

Dear Tahoe Basin Stormwater Managers and Interested Stakeholders,

The Lake Tahoe Total Maximum Daily Load (TMDL) will establish pollutant load reduction milestones to restore Lake Tahoe clarity. The Lake Clarity Crediting Program (Crediting Program) defines the system to evaluate and track pollutant load reductions and related Lake Clarity Credits (credits) in the context of the Lake Tahoe TMDL. We expect that future stormwater NPDES permits, Memoranda of Agreement, and codes will include pollutant load reduction requirements.

The Lake Clarity Crediting Program Draft Handbook (enclosed) defines the protocols for implementing the Crediting Program. The Crediting Program sets forth a process to evaluate load reductions and determine the associated credit potential that could result from the implementation of various pollutant controls in urban catchments. It further describes how credits will be awarded annually based on the actual conditions of pollutant controls resulting from operation and maintenance activities. The Crediting Program relies on interactions between regulators, urban jurisdictions and stakeholders to award credits for effective implementation of pollutant controls and ensure the Crediting Program operates efficiently and is informed by the best available science. The draft Handbook also includes forms, technical guidance and examples to facilitate consistent analyses and efficient communication.

We have no plans to formally implement this Crediting Program until at the earliest fall of 2010. Over the next year we look forward to working with you to implement the protocols and perform the analyses described in the Handbook on a non-regulatory basis. Through beta-testing we expect to learn how to make the Crediting Program and the Handbook more efficient and useful to help support targeted efforts to reduce pollutant loading.

The Handbook is expected to be updated in the summer and fall of 2010. The update will include adjustments to address lessons learned and comments received during the beta-testing period. There will be an opportunity to submit formal comments on the Crediting Program and Handbook prior to it being used in any regulatory actions. During this beta-test period, please submit any comments or questions to Bob Larsen (rlarsen@waterboards.ca.gov) at the Lahontan Water Board (for California entities) and Jason Kuchnicki (jkuchnic@ndep.nv.gov) at the Nevada Division of Environmental Protection (for Nevada entities). Beginning in the fall of 2010 we expect to incorporate the Crediting Program into policies, permits and code.

Thank you for your participation in the review of the Handbook and the beta-testing of the Crediting Program, and for your efforts to restore Lake Tahoe clarity.

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Harold J. Singer  
Interim Executive Officer  
California Regional Water Quality  
Control Board, Lahontan Regional

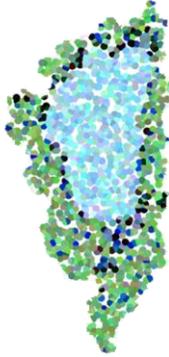
Handwritten signature of Joanne Marchetta in blue ink.

Joanne Marchetta  
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Tom Porta, P.E.  
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# LAKE CLARITY CREDITING PROGRAM HANDBOOK

FOR LAKE TAHOE TMDL IMPLEMENTATION

September **2009**

Motivating Effective Action To Improve Lake Tahoe Clarity

A program of the Lahontan Regional Water Quality Control Board and Nevada Division of Environmental Protection, in cooperation with the Tahoe Regional Planning Agency and U.S. Environmental Protection Agency.

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<http://ndep.nv.gov/BWQP/tahoe.htm>

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# **LAKE CLARITY CREDITING PROGRAM v0.99**

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## FOR LAKE TAHOE TMDL IMPLEMENTATION

This report was developed for the Lahontan Regional Water Quality Control Board and the Nevada Division of Environmental Protection. The project was funded by a U.S. Environmental Protection Agency Targeted Watershed Initiative Grant.

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## **BETA HANDBOOK CONTEXT**

This version of the Lake Clarity Crediting Program Handbook is meant to be used in the context of a beta-testing period. During this period urban jurisdictions, regulators and other program participants will use the processes defined in the Handbook on test catchments. The information gained will be used to refine the processes and related technical guidance before the Crediting Program is implemented within a regulatory context.

## **REFERENCES TO POLICIES AND TOOLS IN DEVELOPMENT**

This document is written in present tense; however, it references policies and tools that are still under development. Please understand that some statements are projections based on informed expectations of policy decisions and technical developments that will occur in 2009 and 2010.

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## THE LAKE CLARITY CREDITING PROGRAM

The Lake Clarity Crediting Program (Crediting Program) establishes the framework that connects on-the-ground actions to the goal of restoring Lake Tahoe clarity. It defines a comprehensive and consistent accounting system administered by the Lahontan Regional Water Quality Control Board (Water Board) and the Nevada Division of Environmental Protection (NDEP) to track pollutant load reductions from urban stormwater using Lake Clarity Credits. The Crediting Program aligns policies with ongoing implementation in order to drive accountability and motivate effective action to improve Lake Tahoe clarity.

The Lake Tahoe clarity standard is 29.7 meters.<sup>1</sup> In 2004 lake clarity was 22.4 meters.<sup>2</sup> The primary culprit in clarity loss is fine sediment particles less than 16 micrometers ( $\mu\text{m}$ ) in diameter. Urban stormwater contributes more than 70 percent of fine sediment particles and a significant portion of the nitrogen and phosphorus loads to the lake.<sup>3</sup> The Clarity Challenge defines an interim clarity milestone of 24 meters. Meeting this milestone requires a 34 percent basin-wide reduction of fine sediment particles from urban stormwater.

### ■ A COMPREHENSIVE AND CONSISTENT ACCOUNTING SYSTEM

Tracking Lake Clarity Credits (credits) creates a consistent means to quantitatively assess progress toward the Clarity Challenge milestone.

#### CREDIT DEFINITION

The Lake Clarity Credit is defined on the basis of a relationship among pollutant load reductions (load reductions) of fine sediment particles, total nitrogen and total phosphorus<sup>4</sup>. The current credit definition focuses on load reductions of the primary pollutant of concern: fine sediment particles.

**1 Lake Clarity Credit =  $1.0 \times 10^{16}$  fine sediment particles with a diameter smaller than 16  $\mu\text{m}$**

Pollutant load reduction is defined as the difference between the estimated average annual amount of pollutants entering Lake Tahoe under standard baseline conditions<sup>5</sup> and the estimated average annual amount of pollutants entering the lake under expected conditions. All pollutant loading reaching a surface waterbody that flows to Lake Tahoe is assumed to enter the lake.

#### CREDIT POTENTIAL AND CREDIT AWARDS

The Crediting Program emphasized effective ongoing implementation of pollutant controls that result in pollutant load reductions to Lake Tahoe. It recognizes that initiating actions through designing and constructing a water quality improvement project, purchasing an effective sweeper, or adopting a municipal

<sup>1</sup> The Lake Tahoe clarity standard is measured by Secchi Disk and defined in the Water Quality Control Plan for the Lahontan Region (Basin Plan), the Nevada Administrative Code Chapter 445A – Water Controls, and the Tahoe Regional Planning Agency Regional Plan – Threshold Standards defined in Amendment 82-11.

<sup>2</sup> Lake Tahoe clarity is defined as the depth below the lake surface at which a Secchi disk can no longer be seen as it is lowered.

<sup>3</sup> The Crediting Program tracks load reductions of all three pollutants of concern identified in the Lake Tahoe TMDL from urban stormwater: fine sediment particles, total phosphorus and total nitrogen. In the future the Crediting Program could be expanded to define load reduction estimation and condition assessment methods, and credits related to load reductions from atmospheric deposition to the lake surface, forest uplands, and stream bank erosion. Currently, Lake Clarity Credits pertain only to urban sources; however, the TMDL Tracking and Accounting Tool enables tracking and reporting of load reductions from nonurban sources.

<sup>4</sup> See Section 0.2 for a complete Lake Clarity Credit definition.

<sup>5</sup> The baseline conditions correspond to typical 2004 conditions. See Chapter 0 and the Catchment Credit Schedule Technical Guidance and Instructions for details.

ordinance creates the potential to reduce pollutant loading to the lake. However, to realize that load reduction potential, treatment best management practices (BMPs) must be effectively maintained, equipment must be operated at appropriate times, and municipal programs must engage citizens to change their practices.

Credits are awarded annually for effective, ongoing implementation of pollutant controls in urban catchments.<sup>6</sup> Effective implementation of pollutant controls results in actual conditions of urban lands and treatment BMPs that are near-to or better-than the expected conditions used as the basis for load reduction estimates. Actual conditions in a given year are compared to the expected conditions to determine the appropriate amount of credit to award in that year.

Condition assessment methods are used to determine actual conditions. When actual conditions in a given year are near-to or better-than expected conditions the actual loading from the catchment is likely the same or less than the expected loading. This is grounds for awarding the full credit potential amount for that year. If the actual conditions are worse than expected conditions the actual loading is likely to be higher than the expected loading. This is cause to award less than the full credit potential amount.

## ■ ALIGNING POLICIES WITH ACTIONS

The Crediting Program drives accountability and motivates effective action by aligning policies with on-the-ground actions. The Crediting Program tracks load reductions and credits. Figure A shows that load reductions and credits align (1) policies, (2) regulatory requirements and program goals, (3) implementation plans, (4) design and implementation of pollutant controls in specific catchments, and (5) maintenance activities and inspection results reported in annual stormwater reports. In particular, credits are used to determine compliance in National Pollutant Discharge Elimination System (NPDES) permits and Memoranda of Agreement (MOA).

### Policies – TMDL Milestones, TRPA Thresholds & EIP Performance Measures

Load reductions are used by the Water Board, NDEP, the Tahoe Regional Planning Agency (TRPA) and the Environmental Improvement Program (EIP) partners to report progress toward meeting total maximum daily load (TMDL) load reduction milestones, TRPA threshold standards, and EIP goals.

### Regulatory Requirements – NPDES Permits, MOA & TRPA Code

Credit requirements are the amount of credit an urban jurisdiction is required to achieve in a year, as defined in its urban stormwater NPDES permit or MOA. TRPA also uses load reductions as performance metrics during performance reviews to determine the release of development commodities, such as residential building allocation and commercial floor area.

### Implementation Plans – Stormwater Management Plans & EIP Project Selection

Individual urban jurisdiction stormwater management plans (SWMP) define actions to meet load reduction requirements and achieve credit requirements. EIP project selection considers load reduction potential as one factor in determining funding priorities.

### Pollutant Controls – Water Quality Improvement Projects, Maintenance Plans, Programs and Ordinances

Pollutant controls include water quality improvement projects, maintenance plans, and municipal programs and ordinances. Pollutant controls implemented in specific catchments establish the load reduction and credit potential.



**Figure A: Credits align policies and on-the-ground actions** –Credits and load reductions are used to align policies with actions and ongoing implementation.

<sup>6</sup> An urban catchment is a contiguous area containing urban land uses with runoff draining to a surface waterbody. This definition allows urban jurisdictions some flexibility to define urban catchments that work for their modeling and planning purposes. Any single square foot of land is included in only one urban catchment.

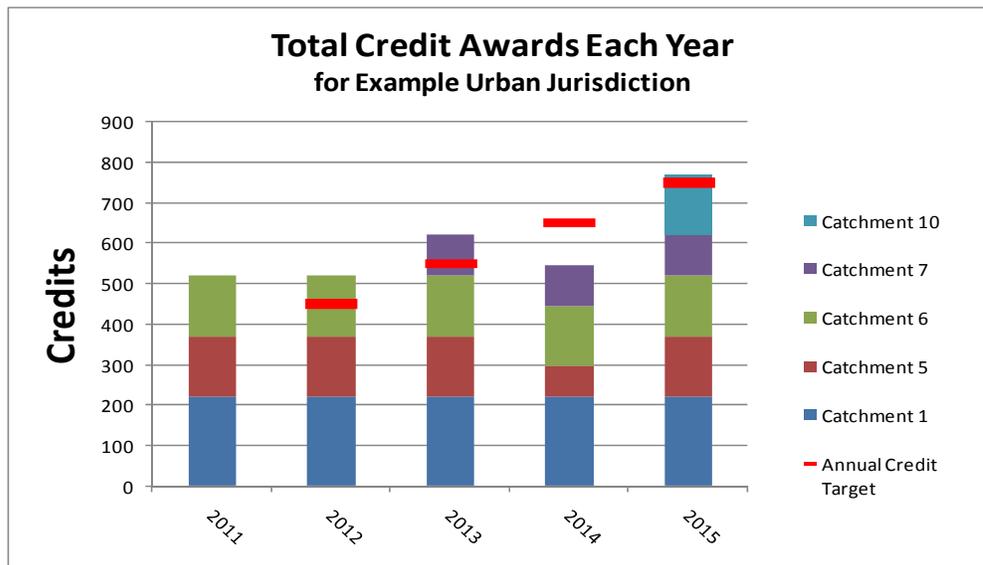
### Operations & Maintenance Activities – Sweeping Roadways, Maintaining BMPs & Implementing Programs

Pollutant load reduction potential is realized when pollutant controls are effectively operated, maintained and implemented. Inspection results inform the prioritization of operations and maintenance activities.

### Stormwater Reports – Annual NPDES, MOA & Maintenance Efficiency Plan Reporting

Inspection results and credit declarations are included in annual stormwater reports. Credit awards are determined by comparing actual conditions to expected conditions of pollutant controls. The sum of credit awards for an urban jurisdiction determines whether the jurisdiction is meeting the credit requirements defined in its NPDES permit or MOA.

Figure B illustrates how the sum of credits awarded for specific catchments is related to credit requirements included in NPDES permits and MOA. The example urban jurisdiction has several catchments that generate load reductions and credits. The credits awarded for each catchment are based on the actual conditions in the catchment each year. The urban jurisdiction is in compliance with credit requirements each year that it meets or exceeds the annual credit requirement.



**Figure B: Credit awards related to credit targets** – A sample illustration of urban jurisdiction credit targets and credit awards. The red lines indicate the credit targets for an urban jurisdiction. The stacked bars show the total credits awarded each year. Each colored segment in the bars represents the credits awarded for a specific catchment.

## ■ PRIMARY PROCESSES AND SUPPORTING TOOLS

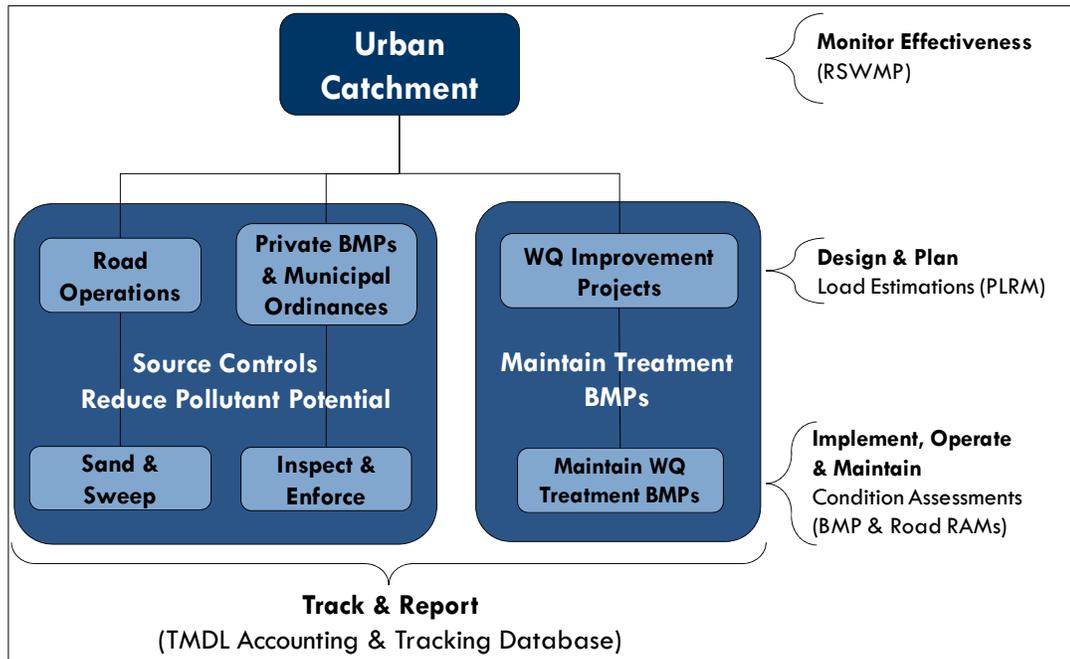
### PROCESSES

The Crediting Program defines methods for, and roles in, the three Crediting Program primary processes: (1) establishing consistent load reduction estimates and catchment credit schedules for pollutant controls implemented in specific catchments, (2) awarding credits for ongoing implementation, and (3) managing and adjusting the Crediting Program to ensure that it continues to motivate effective action to improve Lake Tahoe clarity over time.

### TOOLS

The Crediting Program encourages the use of a standard set of tools and methods. The Pollutant Load Reduction Model (PLRM) is the standard load reduction estimation tool that integrates load reductions achieved through combinations of pollutant controls, including source control practices and treatment BMPs in catchments. The BMP Maintenance Rapid Assessment Methodology (BMP RAM) and Road RAM are the standard condition assessment methodologies used to inspect and report actual conditions. The TMDL Accounting and Tracking Tool stores all credit information, and generates reports showing the number of credits awarded each year for specific catchments and urban jurisdictions. The TMDL Accounting and Tracking Tool also tracks and reports load reductions achieved, at all scales, from specific catchments to the entire Tahoe Basin.

Figure C shows the relationship between typical pollutant controls and these standard tools. It also indicates that effectiveness data generated through the Regional Stormwater Monitoring Program (RSWMP) are used to test load reduction estimations and condition assessment methods. RSWMP provides the scientific information necessary to improve standard tools and methods over time.



**Figure C: Typical pollutant controls relationship to standard methods & monitoring** – Pollutant controls are implemented in urban catchments. Condition assessment methods (BMP RAM & Road RAM) are used to inspect treatment BMPs and roads to determine how actual conditions compare to expected conditions used in load reduction estimates, using PLRM. Effectiveness monitoring conducted by RSWMP determines the observed load reductions from a catchment and compares them to the estimated load reductions. The TMDL Accounting and Tracking Tool calculates credit awards for ongoing implementation of pollutant controls and generates credit and load reduction reports.

## ■ MOTIVATING EFFECTIVE ACTION

The Crediting Program motivates effective action to improve Lake Tahoe clarity by rewarding prioritization, encouraging cooperation, and enabling innovation and adaptive management. By quantifying load reductions based on local land use and meteorological conditions, the Crediting Program rewards actions that target areas with the greatest potential to achieve load reductions. Further, by focusing on the actual conditions present during each year, instead of rote adherence to static maintenance plans, the Crediting Program enables stormwater managers and maintenance personnel to determine when and how to maintain the condition of treatment BMPs and roads in the most cost-effective manner possible. This respects the professional judgment of stormwater managers while ensuring that the most important pollutant controls are effectively maintained.

The Crediting Program encourages cooperation among urban jurisdictions by enabling credits to be distributed. Credits generated in a catchment in one urban jurisdiction can be distributed to any urban jurisdiction in the Lake Tahoe Basin as determined appropriate by the urban jurisdictions. This enables urban jurisdictions to share equipment and expertise to reach the common goals of regulatory compliance and improved lake clarity.

The Crediting Program provides a structure to ensure that improvements to load reduction estimation methods and the credit definition minimize near-term compliance issues and thus are less politically charged and more likely to occur. Catchment credit schedules, developed for specific catchments, enable regulators and urban jurisdictions to commit to the credit potential for implementing actions for a defined number of years. This predictability enables urban jurisdictions to innovate and invest resources confidently—knowing that changes to load reduction estimation methods will not lead to near-term regulatory compliance issues. Further, by limiting the duration of catchment credit schedules, and requiring the use of the best-available science with

new and updated load reduction estimates, the Crediting Program ensures that over time the number of credits awarded will match the best estimate of actual load reductions.

The regulatory, funding and implementation agencies within the Lake Tahoe Basin are committed to using scientific findings to inform policy and to direct action. The Crediting Program enhances the agencies' ability to meet this commitment by defining a transparent and practical approach that improves policies and targets cost-effective, on-the-ground actions to improve Lake Tahoe clarity.

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# HANDBOOK ORGANIZATION & USER SHORTCUT TABLES

## LAKE CLARITY CREDITING PROGRAM HANDBOOK

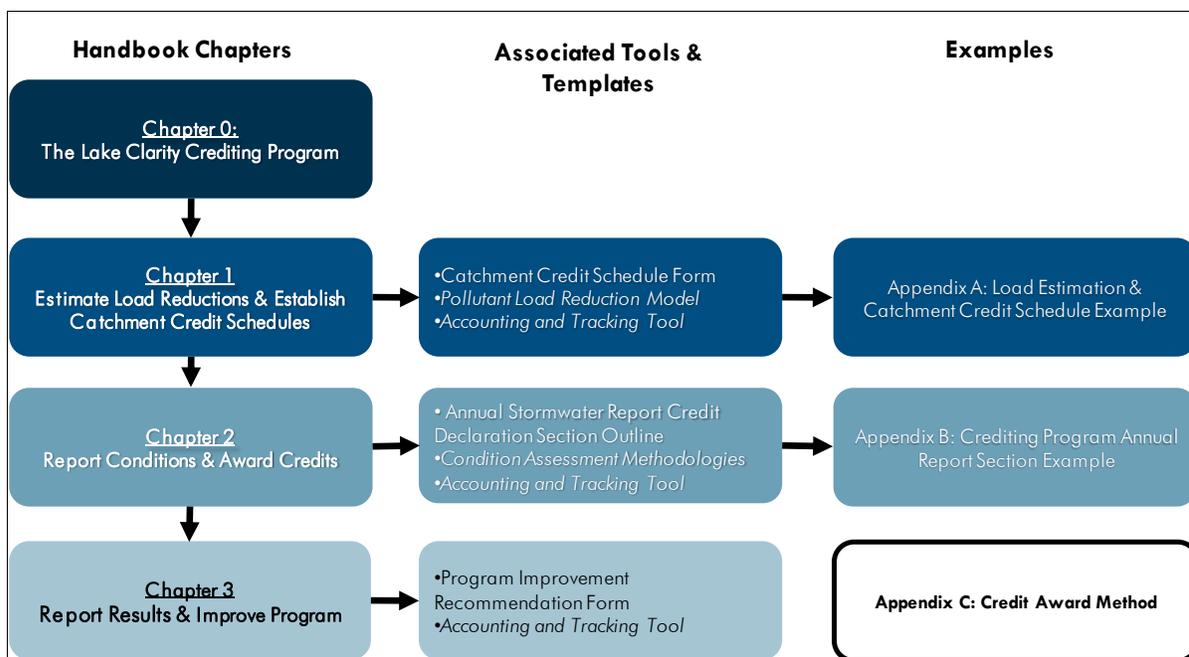
The Lake Clarity Crediting Program Handbook (Handbook) describes processes, identifies tools for completing related analyses, and provides examples to illustrate how to guide Crediting Program participants to efficiently implement the Crediting Program.

### ■ HANDBOOK ORGANIZATION

Urban jurisdiction stormwater managers are the primary audience of the Handbook. The Handbook defines the roles and responsibilities of the regulators, urban jurisdiction stormwater managers, scientists, and EIP partners and interested stakeholders. The Handbook includes hyperlinks and shortcuts to assist experienced users in quickly navigating to the point in the document necessary to complete specific steps. New users seeking an initial understanding of the Crediting Program should consider first reading through the relevant chapters of the document, then scanning the forms and associated technical guidance documents, and finally reading the appendices.

### PROGRAM DESCRIPTIONS & PROCESS OVERVIEW CHAPTERS

Figure D shows the Handbook overall organization. Chapter 0 describes the Crediting Program in the context of related policies, establishes the official credit definition, defines the how credits may be used, and outlines roles in Crediting Program implementation. Chapters 1 through 3 define the specific steps to complete each of the primary Crediting Program processes: (1) estimating load reductions and establishing catchment credit schedules, (2) reporting conditions and awarding credits, and (3) reporting results and improving the Crediting Program.



**Figure D: Lake Clarity Crediting Program Handbook organization** – Chapter 0 provides context and defines Lake Clarity Credits, Chapters 1 through 3 describe the primary processes: (1) estimating load reductions and establishing catchment credit schedules, (2) reporting conditions and awarding credits, and (3) reporting results and improving the Crediting Program. Tools and templates facilitate consistent and efficient completion of the processes. Italicized tools and templates are external to the Handbook. The appendices provide examples that illustrate how a typical stormwater manager and regulator implement the processes.

### TOOLS & TEMPLATES

Following chapters 1 through 3 are a set of tools and templates that are to be used and completed at specified steps. These tools and templates include specific instructions to ensure consistent and efficient information transfer between urban jurisdictions, regulators and other involved parties. The tool and template instructions include detailed technical guidance defining how to complete related analyses.

## APPENDICES EXEMPLIFYING PROCESSES & DETAILING TECHNICAL FRAMEWORK

Appendix A complements chapter 1. It contains a step-by-step example for developing a load reduction estimate and catchment credit schedules. Appendix B complements chapter 2, providing a step-by-step example for developing the Credit Declaration Section of an annual stormwater report and awarding credits. Appendix C presents the technical framework for relating load reduction estimates to condition assessment inspections results and defines the Crediting Program credit award method. Appendix C is useful for those developing load reduction estimates and implementation plans, but it is not required for understanding the mechanics of how to complete the primary processes to receive credit for implementing pollutant controls.

## REFERENCES AND SHORTCUTS

References and a glossary of terms follow the appendices.

Certain text in the Handbook is bolded, italicized, underlined or otherwise formatted to facilitate the user's understanding of the Handbook. The text formatting tags are as follows:

- An underline indicates either a hyperlink to another section or step in the document, a tool or template included in the Tools and Templates section of the document, or a reference to additional information.
- The first instance of words defined in the glossary is italicized.
- The first instance of the primary role(s) in each step is bolded to indicate primary responsibility and required involvement for completing that step.
- Additional explanations, important definitions and equations are presented in text boxes.

## COMPANION PROJECT REPORT

The Lake Clarity Crediting Program Project Report is a companion document that presents the rationale for many of the decisions related to Crediting Program design. It also describes options considered during the development of the Crediting Program and additional functions that could add to the scope and usability of the Crediting Program in the future.

## ■ USER SHORTCUT TABLES

The following set of tables enables urban jurisdiction stormwater program managers and regulators familiar with Lake Clarity Crediting Program operations to go directly to the specific steps, tools and templates necessary to complete specific steps defined in the Handbook. These tables include hyperlinks to items within the Lake Clarity Crediting Program Handbook.

## URBAN JURISDICTIONS

Urban jurisdictions are involved in (1) developing load reduction estimates and draft catchment credit schedules, (2) reporting inspection results and declaring credits in annual reports, and (3) contributing suggestions to improve the Crediting Program through the annual program improvement process. Urban jurisdictions are directly involved in the steps of, and will use the tools and forms shown in, the Urban Jurisdiction shortcut table (Table A).

Process	Step #	Tools & Templates	Crediting Program Products
Estimate Load Reductions & Draft Catchment Credit Schedule	<a href="#">1.1</a>	<a href="#">Catchment Credit Schedule</a>	Draft Catchment Credit Schedule
Verify Load Reduction Estimate & Catchment Credit Schedule	<a href="#">1.2</a>	<a href="#">Issue Resolution Punchlist</a>	Final Catchment Credit Schedule
Register Catchment	<a href="#">1.3</a>	<a href="#">Accounting &amp; Tracking Tool</a>	Registered Catchment
Inspect	<a href="#">2.1</a>	<a href="#">BMP RAM</a>	Inspection Results
Maintain, Operate & Administer Pollutant Controls	<a href="#">2.2</a>		Inspection Results
Report & Declare Credits	<a href="#">2.4</a>	<a href="#">Annual Stormwater Report – Credit Declaration Section Outline; Accounting &amp; Tracking Tool</a>	Annual Stormwater Report – Credit Declaration Section
Synthesize Findings	<a href="#">3.6</a>	<a href="#">Program Improvement Recommendation Form</a>	Synthesis of Findings Report; Program Improvement Recommendation

**Table A: Urban jurisdiction shortcut table** - Showing the steps with urban jurisdictions playing a necessary and active role, as well as the methods, tools and templates used and the resulting products.

## REGULATORS

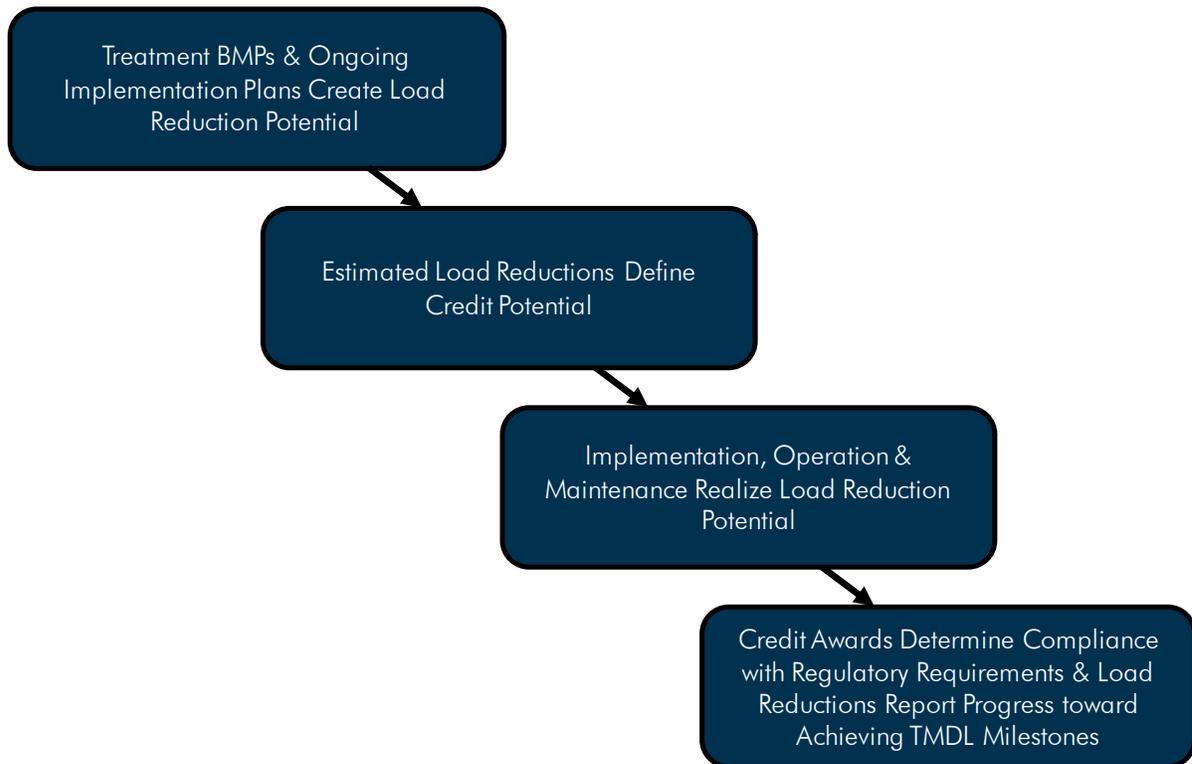
Regulators, and specifically Water Board and NDEP staff, are involved in (1) reviewing load reduction estimates and approving catchment credit schedules, (2) conducting independent validation inspections, reviewing information submitted in annual reports, and awarding credits, and (3) leading the development of the Crediting Program Progress Report, the Synthesis of Findings Report, and program improvement recommendations. The Water Board and NDEP staffs are directly involved in the steps and will use the tools and forms shown in the Regulator shortcut table (Table B).

Process Step	Step #	Tools & Templates	Crediting Program Products
Verify Load Reduction Estimate & Catchment Credit Schedule	<a href="#">1.2</a>	<a href="#">Issue Resolution Punchlist</a>	Final Catchment Credit Schedule
Approve Final Credit Schedule	<a href="#">1.4</a>	<a href="#">Accounting &amp; Tracking Tool</a>	Accepted Catchment Credit Schedule & Approved Catchment Registration
Validate Conditions	<a href="#">2.3</a>	<a href="#">Accounting &amp; Tracking Tool</a>	Inspection Results
Award Credits	<a href="#">2.5</a>	<a href="#">Issue Resolution Punchlist; Accounting &amp; Tracking Tool</a>	Credit Awards
Translate TMDL Allocations to Credit Requirements	<a href="#">3.1</a>	<a href="#">Accounting &amp; Tracking Tool</a>	
Refine Protocols & Accepted Methods	<a href="#">3.2</a>	Lake Clarity Crediting Program Handbook	Updated Handbook; Updated Identified Operational Improvements List
Prioritize Research & Monitoring Needs	<a href="#">3.3</a>		Updated & Prioritized List of Areas for Investigation
Guide Monitoring & Research	<a href="#">3.4</a>		
Report Program Performance	<a href="#">3.5</a>		Lake Clarity Crediting Program Performance Report
Synthesize Findings	<a href="#">3.6</a>	<a href="#">Program Improvement Recommendation Form</a>	Synthesis of Findings Report; Program Improvement Recommendation
Engage Stakeholders	<a href="#">3.7</a>		
Develop Program Improvement Recommendations	<a href="#">3.8</a>	<a href="#">Program Improvement Recommendation Form</a>	Program Improvement Recommendations
Decide Upon Program Improvement	<a href="#">3.9</a>		Record of Decisions

**Table B: Regulator shortcut table** – Showing the steps with regulators playing a necessary and active role, as well as the methods, tools and templates used and the resulting products.

# THE LAKE CLARITY CREDITING PROGRAM

LAKE CLARITY CREDITING PROGRAM HANDBOOK



## QUESTIONS ANSWERED

- What is the scope and approach of the Crediting Program?
- How is the Crediting Program related to the Lake Tahoe TMDL, TRPA thresholds standards, and the Environmental Improvement Program?
- How are credits used in regulatory requirements and program reporting guidelines?
- What is a Lake Clarity Credit and how is it calculated?
- How do credits provide regulatory stability and enable adaptive management?
- What are the processes for an urban jurisdiction to get credit for implementing pollutant controls?
- Which standard tools and methods are used to support load reduction estimations, condition assessment inspections, and reporting?
- Who is involved in the processes to determine credit potential, award credits, and improve the Crediting Program?

**Chapter 0**  
The Lake Clarity  
Crediting Program

**Chapter 1**  
Estimate Load Reductions & Establish  
Catchment Credit Schedules

**Chapter 2**  
Report Conditions &  
Award Credits

**Chapter 3**  
Report Results &  
Improve Program

# ZERO | THE LAKE CLARITY CREDITING PROGRAM

## LAKE CLARITY CREDITING PROGRAM HANDBOOK

The Lake Clarity Crediting Program (Crediting Program) is the framework that connects on-the-ground actions to the goal of restoring Lake Tahoe clarity. *Lake Clarity Credits* (credits) relate *pollutant load reductions* from implementation of *pollutant controls* to the load allocations in the *Lake Tahoe Total Maximum Daily Load* (Lake Tahoe TMDL). Credits are used to determine regulatory compliance and to inform the investment of public funds. Effective implementation of any pollutant control can generate credits, provided that it is (1) expected to result in real load reductions to Lake Tahoe, (2) supported by a reasonable load reduction estimate, and (3) effectively implemented and maintained over time. The Crediting Program facilitates cooperation among urban jurisdictions by allowing credits to be distributed among urban jurisdictions. The Crediting Program incentivizes innovation by providing regulatory stability in the face of scientific uncertainty. It incorporates new scientific information and operational improvements through a transparent program improvement process without causing near-term regulatory compliance issues. The Crediting Program provides quantitative feedback regarding progress toward meeting load reduction milestones both basin-wide and for specific jurisdictions and land managers. In so doing, the Crediting Program drives accountability and motivates effective actions to improve Lake Tahoe clarity.

The Crediting Program defines a comprehensive and consistent accounting system administered by the Lahontan Regional Water Quality Control Board (Water Board) and the Nevada Division of Environmental Protection (NDEP) to track pollutant load reductions from urban stormwater.<sup>7</sup> It defines a consistent approach for estimating load reductions from catchments and for assessing ongoing performance of actions. It also guides interactions between urban jurisdictions and regulators.

The Crediting Program focuses on effective ongoing implementation of pollutant controls that result in pollutant load reductions to Lake Tahoe. It recognizes that initiating actions through designing and constructing a water quality improvement project, purchasing an effective sweeper, or adopting a municipal ordinance creates the potential to reduce pollutant loading to the lake. However, to realize that load reduction potential, treatment best management practices (BMPs) must be effectively maintained, equipment must be operated at appropriate times, and municipal programs must engage citizens to change their practices. Thus, credits are awarded annually given evidence that pollutant controls are being effectively implemented during that year.

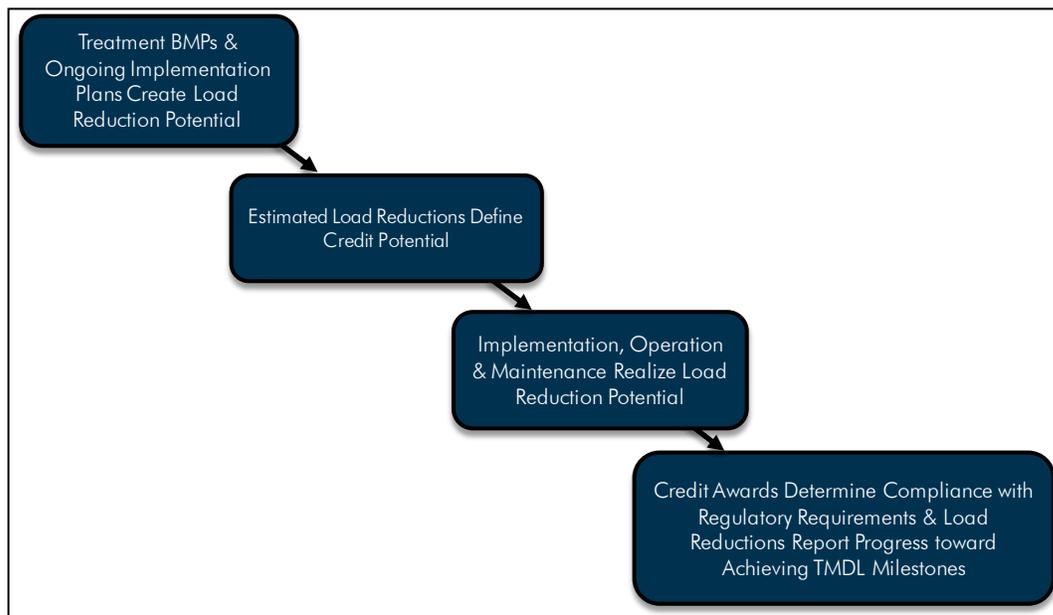


Figure 0.1: Conceptual relationship between implementing actions and credits determining compliance

<sup>7</sup> In the future the Crediting Program could be expanded to define load reduction estimation and condition assessment methods, and credits related to load reductions from atmospheric deposition to the lake surface, forest uplands, and stream bank erosion. Currently, Lake Clarity Credits pertain only to urban sources; however, the TMDL Tracking and Accounting Tool enables tracking and reporting of load reductions from nonurban sources.

**URBAN CATCHMENT**

The Crediting Program defines and tracks load reductions on the basis of urban catchments. An urban catchment is a contiguous area containing urban land uses with rain and snowmelt draining to a surface waterbody. This definition allows urban jurisdictions some flexibility to define urban catchments that work for their modeling and planning purposes. However, to avoid double counting, any single square foot of land can be included in only one urban catchment.

## 0.1 PROGRAM CONTEXT & RELATIONSHIP TO PRACTICES

The Crediting Program is built on the Lake Tahoe TMDL science and planning efforts.<sup>8</sup> Credits are used to set targets in regulatory policies, and load reductions are used to establish program goals and report overall progress toward meeting TMDL load reduction milestones.

### 0.1.1 ■ RELATIONSHIP TO LAKE TAHOE TMDL

Scientific research indicates that Lake Tahoe's famed clarity can be restored by reducing the loading of three pollutants of concern: fine sediment particles, phosphorus, and nitrogen. The Lake Tahoe TMDL finds that fine sediment particles, those smaller than 16 micrometers ( $\mu\text{m}$ ) in diameter, cause approximately two-thirds of clarity loss, and that urban stormwater runoff accounts for more than 70 percent of fine sediment particle loading to the lake. Therefore, the Crediting Program currently focuses on actions that reduce the number of fine sediment particles coming from urban stormwater.

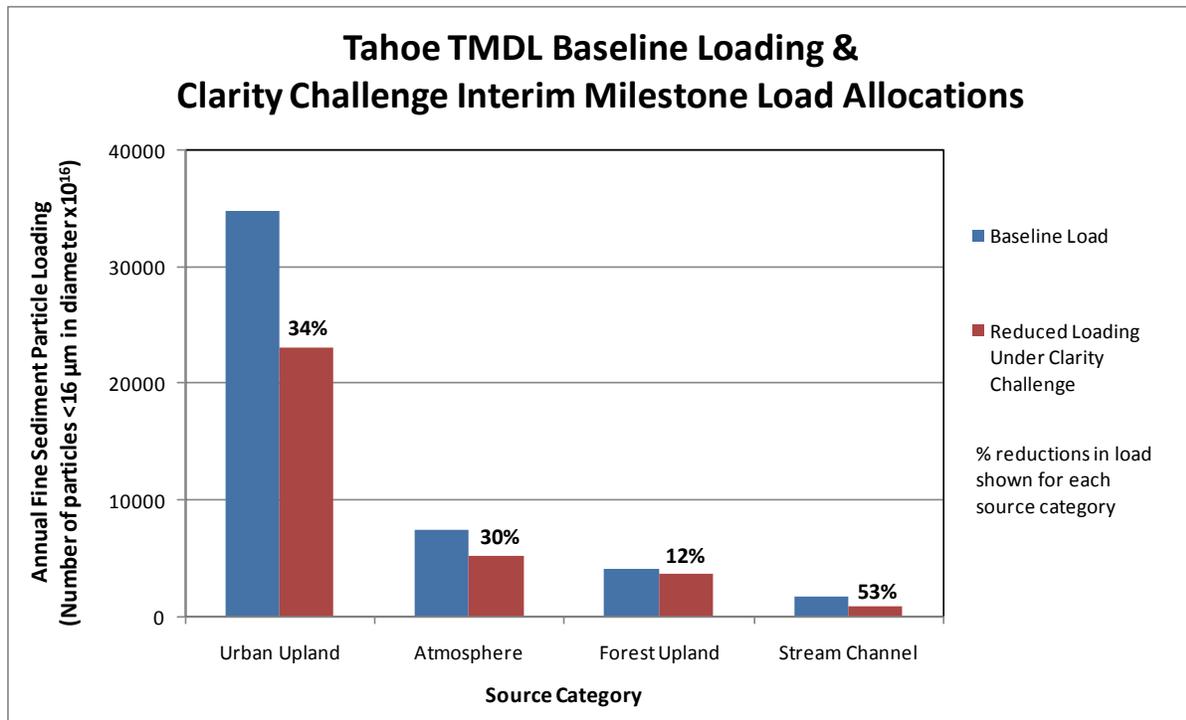
The Lake Tahoe TMDL establishes a broad implementation plan to restore lake clarity based on years of scientific research. In 2004 lake clarity was 22.4 meters.<sup>9</sup> The Lake Tahoe TMDL defines the Clarity Challenge as an interim milestone to reverse the decline in clarity and restore it to approximately 24 meters. The lake clarity standard is 29.7 meters. The Clarity Challenge calls for a 32 percent basin-wide pollutant load reduction of fine sediment particles from the TMDL baseline. Figure 0.2 presents the baseline pollutant loads and pollutant load reductions associated with the Clarity Challenge for runoff from urban uplands, forest uplands, direct atmospheric deposition to the lake surface, and stream channel erosion.

Fine sediment pollutant load from urban stormwater must be reduced by 34 percent from the urban stormwater baseline to meet the Clarity Challenge. In order to achieve this, the Lake Tahoe TMDL establishes load reduction milestones for each of the seven urban jurisdictions within the Tahoe Basin: El Dorado, Placer, Washoe and Douglas counties; the city of South Lake Tahoe; California Department of Transportation (Caltrans); and Nevada Department of Transportation (NDOT). Such load reduction milestones are the basis for setting credit requirements in *National Pollutant Discharge Elimination System* (NPDES) permits and *Memoranda of Agreement* (MOA).

<sup>8</sup> For more information about the science and planning efforts related to the Lake Tahoe TMDL and the Crediting Program, see the following reports:

- TMDL Technical Report
- Pollutant Load Reduction Opportunity Report
- Integrated Water Quality Management Strategy Project Report
- Lake Clarity Crediting Program Project Report

<sup>9</sup> Lake Tahoe clarity is defined as the depth below the lake surface at which a Secchi disk can no longer be seen as it is lowered.

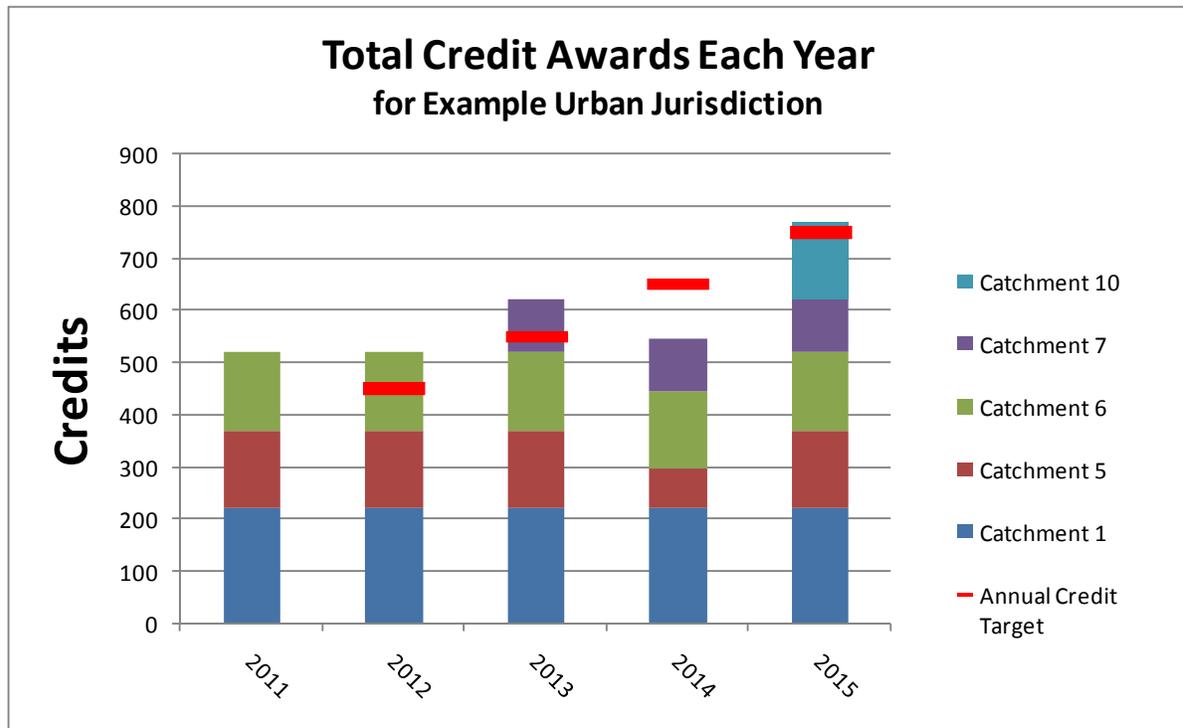


**Figure 0.2: Baseline & Clarity Challenge fine sediment particle loading** – Comparison between fine sediment particle baseline loads (blue bars) and load allocations for meeting the Clarity Challenge (red bars) for runoff from four source categories: urban uplands, forest uplands, direct atmospheric deposition to the lake surface, and stream channel erosion. Also shown are the percent load reductions from baseline required for each source category to achieve the Clarity Challenge.

### 0.1.2 ■ LOAD REDUCTION & CREDIT USES IN POLICIES AND PROGRAMS

The Crediting Program tracks credits and their associated load reductions. Load reductions are used by the Water Board, NDEP, the Tahoe Regional Planning Agency (TRPA), and the Environmental Improvement Program (EIP) partners to report progress toward meeting overall TMDL load reduction milestones and threshold standards. The Lake Tahoe Restoration Act, which is the legislation that establishes the federal funding for the EIP, requires setting goals on the basis of performance measures. Load reductions are performance measures used by the EIP partners.

Credits are used to determine regulatory compliance related to urban stormwater NPDES permits and MOA. NPDES permits and MOA include credit requirements that establish the number of credits that must be achieved each year in order to remain in regulatory compliance. TRPA also uses progress toward meeting credit requirements as a performance metric during annual performance reviews to determine release of residential building allocations and commercial floor area. Figure 0.3 illustrates how the sum of credits awarded for specific catchments are related to credit requirements included in NPDES permits and MOA.



**Figure 0.3: Credit targets & credit awards example** – The red lines are the annual credit targets for the urban jurisdiction, as defined in its NPDES permit or MOA. Each colored bar segment represents the credits awarded from a specific catchment. The total number of credits awarded in a year is compared to the credit target to determine compliance with the NPDES permit or MOA.

Individual urban jurisdiction stormwater management plans (SWMP) define actions to achieve load reductions and credit requirements. Load reduction estimates and catchment credit schedules are related to pollutant controls implemented in specific catchments. Urban jurisdictions submit annual stormwater reports, including inspection results, that demonstrate whether pollutant controls are being effectively implemented. Inspection results are compared to load reduction estimate assumptions to determine the appropriate number of credits to award in each catchment. The sum of credit awards for an urban jurisdiction determines if it is meeting credit requirements defined in its NPDES permit or MOA.

The Crediting Program drives accountability and motivates effective action by aligning policies with on-the-ground actions. The Crediting Program tracks load reductions and credits. Figure 0.4 shows that load reductions and credits align (1) policies, (2) regulatory requirements and program goals, (3) implementation plans, (4) design and implementation of pollutant controls in specific catchments, and (5) maintenance activities and inspection results reported in annual stormwater reports.

#### Policies – TMDL Milestones, TRPA Thresholds & EIP Performance Measures

Load reductions are used by the Water Board, NDEP, the TRPA and the EIP partners to report progress toward meeting TMDL load reduction milestones, TRPA threshold standards, and EIP goals.

#### Regulatory Requirements – NPDES Permits, MOA & TRPA Code

Credit requirements are the amount of credit an urban jurisdiction is required to achieve in a year, as defined in its urban stormwater NPDES permit or MOA. TRPA also uses load reductions as performance metrics during performance reviews to determine the release of development commodities, such as residential building allocation and commercial floor area.

**Implementation Plans – Stormwater Management Plans & Project Selection**

Individual urban jurisdiction SWMPs define actions to meet load reduction requirements and achieve credit requirements. Project selection considers load reduction potential as one factor in determining funding priorities.

**Pollutant Controls – Water Quality Improvement Projects, Maintenance Plans, Programs and Ordinances**

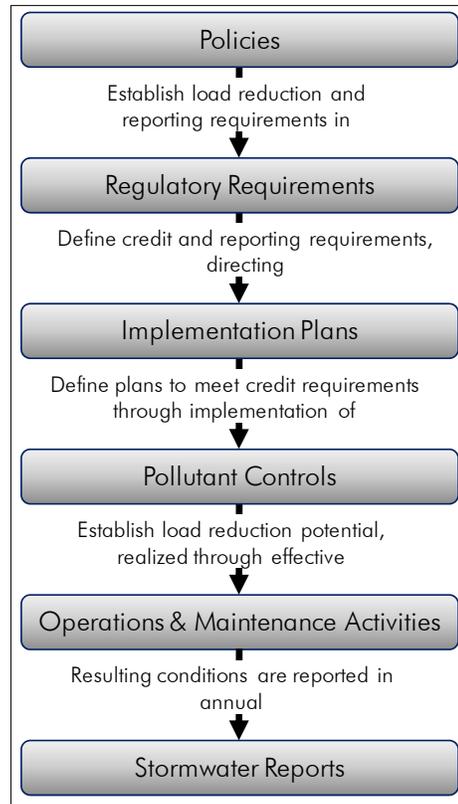
Pollutant controls include water quality improvement projects, maintenance plans, and municipal programs and ordinances. Pollutant controls implemented in specific catchments establish the load reduction and credit potential.

**Operations & Maintenance Activities – Sweeping Roadways, Maintaining BMPs & Implementing Programs**

Pollutant load reduction potential is realized when pollutant controls are effectively operated, maintained and implemented. Inspection results inform the prioritization of operations and maintenance activities.

**Stormwater Reports – Annual NPDES, MOA & Maintenance Efficiency Plan Reporting**

Inspection results and credit declarations are included in annual stormwater reports. Credit awards are determined by comparing actual conditions to expected conditions of pollutant controls. The sum of credit awards for an urban jurisdiction determines whether the jurisdiction is meeting the credit requirements defined in its NPDES permit or MOA.



**Figure 0.4: Credits align policies and on-the-ground actions** – Credits and load reductions are used to align policies with actions and ongoing implementation.

**CREDIT CONSIDERATIONS IN PROJECT SELECTION**

Each urban jurisdiction selects projects and actions on the basis of its own prioritization method. This is likely to include an analysis of load reduction potential, other environmental and community benefits, funding availability, project readiness, and other opportunities and constraints. The Crediting Program does not impose requirements on project planning and prioritization. NPDES permits and MOA do require urban jurisdictions to include a schedule outlining the expected timing of project implementation in SWMP. Annual stormwater reports include a comparison between planned actions and implemented actions (for additional detail, see Chapter 2 and the Annual Stormwater Report Template Technical Guidance).

**0.2 THE LAKE CLARITY CREDIT**

The Lake Clarity Credit translates TMDL load reduction milestones into a metric that can be directly related to ongoing implementation of actions. Credits are awarded each year. They are designed to enable cooperation between urban jurisdictions and to incentivize action and innovation.

**0.2.1 LAKE CLARITY CREDIT DEFINED**

The Crediting Program defines the Lake Clarity Credit on the basis of a relationship among load reductions of fine sediment particles, total nitrogen, and total phosphorus. The general definition of the credit includes terms for fine sediment particles, phosphorus, and nitrogen per Equation 0.1.

**EQUATION 0.1: GENERAL LAKE CLARITY CREDIT DEFINITION**

$$\text{Lake Clarity Credit} = FSP_{LR} \times FSP_{multiplier} + TN_{LR} \times N_{multiplier} + TP_{LR} \times P_{multiplier}$$

WHERE

$FSP_{LR}$	Fine sediment particle load reduction is expressed in $1.0 \times 10^{16}$ fine sediment particles with diameter smaller than $16 \mu\text{m}$
$TN_{LR}$	Total nitrogen load reduction is expressed in kg
$TP_{LR}$	Total phosphorus load reduction is expressed in kg
$FSP_{multiplier}$	Fine sediment particle multiplier is a number between 0 and 1 credit / $1.0 \times 10^{16}$ fine sediment particles with a diameter smaller than $16 \mu\text{m}$
$N_{multiplier}$	Nitrogen multiplier is a number between 0 and 1 credit / 1 kg of TN
$P_{multiplier}$	Phosphorus multiplier is a number between 0 and 1 credit / 1 kg of TP

The multipliers for each pollutant are set by the Crediting Program on the basis of the understanding of their unique impact on lake clarity. The current definition of the credit focuses solely on fine sediment particles. This focus is based on (1) the TMDL findings that fine sediment particles are the primary driver of lake clarity decline under current conditions, and (2) the understanding that nutrient reductions, particularly phosphorus reductions, are inherently related to reductions in fine sediment particles. Thus, the fine sediment particle multiplier in Equation 0.1 is set to 1, and the nitrogen and phosphorus multipliers are set to 0. The resulting current definition of a credit is expressed in Equation 0.2.

**EQUATION 0.2: CURRENT LAKE CLARITY CREDIT DEFINITION**

$$1 \text{ Credit} = 1.0 \times 10^{16} \text{ fine sediment particles with diameter smaller than } 16 \mu\text{m}$$

**TRACKING & REPORTING NUTRIENT LOAD REDUCTIONS**

While not reflected in the initial credit definition, the importance of nitrogen and phosphorus is still recognized and addressed. Nitrogen and phosphorus load reductions are estimated, reported, and tracked along with reductions of fine sediment particles. Further, the general definition of the credit explicitly includes nitrogen and phosphorus with the anticipation that new science or changes to lake characteristics might increase the importance of nutrients to lake clarity. In the future, the multipliers in the credit definition equation can be changed through a program adjustment, enabling credits to be generated on the basis of nitrogen and phosphorus load reductions, in addition to fine sediment particle reductions.

**CALCULATING LOAD REDUCTIONS & CREDITS**

*Load reduction* is defined as the difference between the estimated average annual amount of pollutants entering Lake Tahoe under standard baseline conditions and the estimated average annual amount of pollutants entering the lake under current conditions. All pollutant loading reaching a surface waterbody that flows to Lake Tahoe is assumed to enter the lake. Figure 0.5 illustrates the difference between baseline loading using standard baseline conditions and current loading in a catchment where source controls and treatment BMPs have been implemented.<sup>10</sup>

<sup>10</sup> Section 0.3 describes load reduction estimation tools, and the [Catchment Credit Schedule Technical Guidance](#) defines details regarding standard baseline conditions and urban catchment connectivity to surface waters.

Load reduction estimation tools provide the load reductions as the mass (in kg) of fine sediment particles with diameter smaller than  $16\ \mu\text{m}$ . This mass is translated to a number of fine sediment particles using Equation 0.3.

**Baseline** is defined as the conditions present during the 2002 to 2004 period. This is the period used to inform the TMDL baseline loading. Infrastructure present within a catchment as of October 2004 is part of the baseline. Typical basin-wide conditions and practices as of this period are used in calculating load reductions.

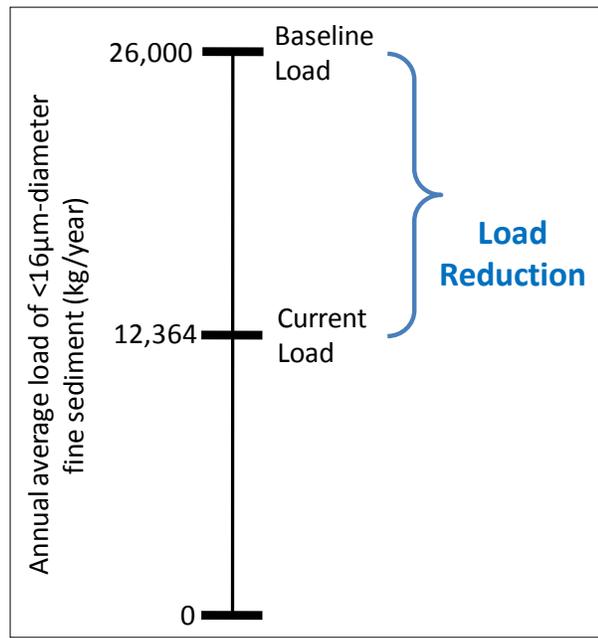


Figure 0.5: Load reduction example: Load reduction is the difference between the baseline load and the current load.

#### EQUATION 0.3: CONVERTING FINE SEDIMENT MASS TO FINE SEDIMENT PARTICLE NUMBER<sup>11</sup>

1 kg of fine sediment particles with diameter smaller than  $16\ \mu\text{m}$  =  $1.1 \times 10^{14}$  fine sediment particles

Building on the illustration presented in Figure 0.5, the fine sediment particle load reduction for the current conditions is  $26,000\ \text{kg} - 12,364\ \text{kg} = 13,636\ \text{kg}$  of fine sediment. Multiplying  $13,636\ \text{kg}$  by  $1.1 \times 10^{14}$  fine sediment particles per 1 kg of fine sediment, yields  $150 \times 10^{16}$  fine sediment particles.

The number of credits is then calculated using Equation 0.2. Thus, a load reduction of  $150 \times 10^{16}$  fine sediment particles results in 150 credits.

### 0.2.2 ■ CREDIT CHARACTERISTICS

Credits are awarded and accounted for annually, and they may be distributed among urban jurisdictions. The credits available from a specific catchment are stable for a defined duration to incentivize action and innovation.

#### ANNUAL CREDIT AWARDS AND ACCOUNTING PERIOD

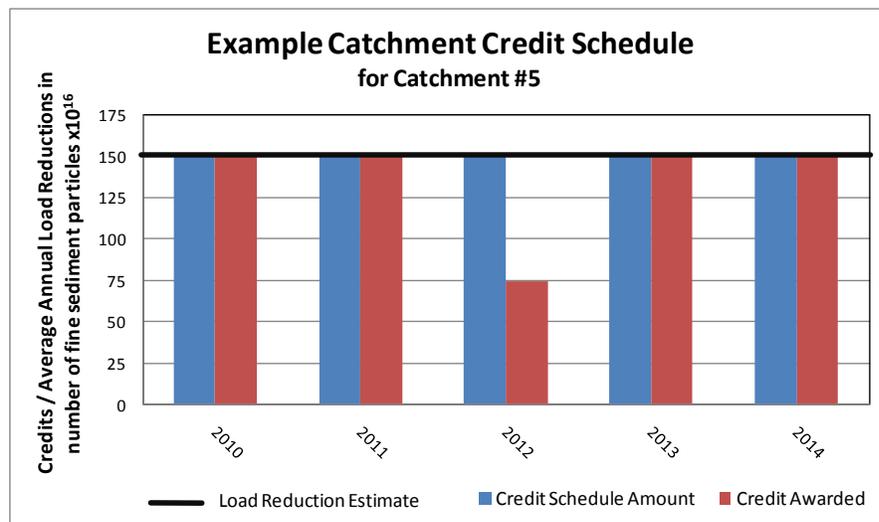
Credits are awarded and tracked annually. The accounting period for a credit is a water year, October 1 through September 30. Each year is a unique accounting period, thus credits awarded in one year cannot be used to meet credit requirements in a subsequent year.

Credits are awarded for effective, ongoing implementation of pollutant controls in catchments. Effective implementation of pollutant controls results in actual conditions of urban lands and treatment BMPs that are near-to or better-than the expected conditions used as the basis for load reduction estimates. Actual conditions in a given year are compared to the expected conditions to determine the appropriate amount of credit to award in that year.

<sup>11</sup>Equation 0.3 is derived by summing the number of fine particles less than  $16\ \mu\text{m}$  in a ton of urban runoff and dividing by the number of kg of less than  $16\ \mu\text{m}$  fine sediment in a ton of urban runoff. For additional discussion related to fine sediment mass to particle number relationships and particle size distribution information used in the TMDL analyses, see Chapter 5 of the Tahoe TMDL Technical Report.

Condition assessment methods are used to determine actual conditions. When actual conditions in a given year are near-to or better-than expected conditions the actual loading from the catchment is likely the same or less than the expected loading. This is grounds for awarding the full credit potential amount for that year. If the actual conditions are worse than expected conditions the actual loading is likely to be higher than the expected loading. This is cause to award less than the full credit potential amount.

Figure 0.6 illustrates a catchment credit schedule for the current conditions described above and shown in Figure 0.5. The blue bars illustrate the credit schedule amount, showing the potential for 150 credits each year for 5 years, as long as the actual conditions are near or better than the expected conditions used in the load reduction estimation. The red bars illustrate the number of credits actually awarded each year, showing full credit awards for 2011, 2012, 2014 and 2015, and only 50 percent of the full potential amount of credit for 2013. The reduced credit amount results from the actual conditions of the pollutant controls being worse than expected conditions.



**Figure 0.6: Example catchment credit schedule** – The black line shows the estimated average annual fine sediment particle load reduction for Catchment #5 over the 5-year catchment credit schedule duration. The blue bars illustrate the potential number of credits available each year. The red bars indicate the actual credits awarded each year on the basis of the actual treatment BMP and land use conditions in that year.

## CREDIT DISTRIBUTIONS FACILITATE COOPERATION

The Crediting Program encourages cooperation among urban jurisdictions by enabling credits to be distributed. Credits generated in any one catchment in a year can be distributed to any urban jurisdiction in the Lake Tahoe Basin as determined appropriate by the urban jurisdictions. This flexibility enables urban jurisdictions to prioritize the most practical and effective pollutant controls.

Building on the illustration presented in Figure 0.5 and Figure 0.6 above, consider that Catchment #5 includes stormwater from both a Caltrans highway and a commercial area within the City of South Lake Tahoe. The urban jurisdictions may report that 50 credits are awarded to Caltrans, 80 to the City of South Lake Tahoe, and the remaining 20 to another urban jurisdiction not directly involved.

## CREDITS CREATE REGULATORY STABILITY TO INCENTIVIZING INNOVATION & ENABLING ADAPTIVE MANAGEMENT

Credits provide urban jurisdictions with near-term regulatory stability to encourage action and incentivize innovation. The Crediting Program provides a structure to ensure that improvements to load reduction estimation methods and the credit definition minimize near-term compliance issues and thus are less politically charged and more likely to occur.

The Regional Stormwater Monitoring Program (RSWMP) performs effectiveness monitoring to test the estimated load reductions generated using accepted load reduction estimation methods. New monitoring

information enables new versions of load reduction estimation methods to more-accurately estimate load reductions. Improved load reduction estimates can be applied to existing catchment credit schedules so that the accounting for load reductions can reflect the current best understanding of actual load reductions to Lake Tahoe.

Keeping the number of potential credits for existing catchment credit schedules constant for a defined number of years provides urban jurisdictions near-term regulatory stability. If this regulatory stability were not built into the Crediting Program, urban jurisdictions could have a strong incentive to resist program improvements because of concerns of near-term regulatory compliance issues. Urban jurisdictions would also be less likely to implement innovative practices and new treatment BMPs that have the potential to significantly improve current best practices, but might also have variability in actual load reduction effectiveness because they have not been previously implemented in the Lake Tahoe Basin. Locking in the amount of credit potential for a defined duration enables urban jurisdictions to innovate and invest resources confidently, knowing that changes to load reduction estimates will not lead to near-term regulatory compliance issues.

New and renewed catchment credit schedules are based on the best available science as reflected in the most recently accepted load reduction estimation methods. Catchment credit schedules range in duration from 5 to 15 years, depending on the expected lifespan of the pollutant controls implemented in the catchment.<sup>12</sup> The limited duration of catchment credit schedules ensures that over time the number of credits awarded will ultimately match the estimated load reduction based on the best available science, while providing urban jurisdictions with the necessary time to adjust their implementation pollutant controls to achieve regulatory compliance. In the event that deviations between catchment credit schedules and improved load reduction estimation methods are expected to persist for several years, regulators may consider adjusting credit requirements in future permits to compensate for persistent disparities.

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<sup>12</sup> [Chapter 1](#) and the [Catchment Credit Schedule Technical Guidance](#) provide detailed consideration for establishing the appropriate duration for catchment credit schedules.

### POTENTIAL ADAPTIVE MANAGEMENT IMPROVEMENTS

The Lake Tahoe TMDL and the standard tools and methods employed by the Crediting Program are based on years of scientific investigation. The commitment by regulators and stakeholders in the Lake Tahoe Basin to use the best available science in policies will result in improvements to the current understanding of lake dynamics and load reductions from pollutant controls. The Crediting Program is specifically designed to enable these scientific improvements to be incorporated into policy and planning. Some of the areas of investigation that could lead to program improvements include the following:

- The relationship between mass of fine sediment to fine sediment particle number is an active area of research, because the Lake Tahoe Basin is the first area to focus on this relationship in the context of urban stormwater effects on clarity. This mass-to-particle-number relationship is set programmatically in Equation 0.3 so that it is consistently applied and can be adjusted at the programmatic level to reflect research findings.
- RSWMP monitoring and other efforts are investigating the actual load reductions achieved from different treatment BMPs and source control practices implemented in catchments within the Lake Tahoe Basin. These investigations include testing new practices and innovative technologies, resulting in true active adaptive management. The information generated from these investigations is intended to improve the accuracy of load reduction estimation methods.
- The effect of fine sediment, nitrogen, and phosphorus loading on Lake Tahoe clarity is also an active area of research. Lake dynamics can change because of climate change or as a result of successfully reducing pollutant loads. The Lake Clarity Credit definition in Equation 0.1 is established to enable credits to be generated from nutrient reductions in addition to fine sediment reductions with a single program adjustment decision.

## 0.3 PROCESSES, SUPPORTING TOOLS & INDIVIDUAL ROLES

The Crediting Program defines methods and roles to execute the primary processes of (1) establishing credit schedules for actions implemented in specific catchments, (2) awarding credits for ongoing implementation of actions, and (3) managing and adjusting the Crediting Program to ensure that it continues to motivate effective action to improve Lake Tahoe clarity over time. Table 0.1 shows the frequency and scale at which each process is performed as well as the locations in the Handbook where the steps in the processes are defined.

Process	Frequency	Scale	Handbook Location
Establish Load Reductions & Establish Catchment Credit Schedules	Only when initiating new or changed actions	Specific Actions in a Catchment	Chapter 1
Report Conditions & Award Credits	Annually	Catchments in a Jurisdiction	Chapter 2
Report Results & Improve Program	Annually & Five-year Review	Jurisdictions in the Tahoe Basin	Chapter 3

**Table 0.1: Process overview & handbook organization** – This table outlines the frequency and scale at which each process is performed as well as the locations in the Handbook where the steps in the processes are defined.

**EFFICIENT COMMUNICATION & TIMELY REVIEW**

The Crediting Program defines the interactions and information transfers between urban jurisdictions and regulators. The tools, forms, and templates defined in the Crediting Program enable interactions to be clear and efficient. Efficiency and effectiveness can be increased by providing timely review and revisions to catchment credit schedules and annual reports. Urban jurisdictions and regulators should strive for a two-week turnaround time for each review and revision step in the development of catchment credit schedules and annual reports. Driving products to completion as soon as possible minimizes the need for reorientation, and using the Crediting Programs Issue Resolution Punchlist (IRP) eliminates the need to revisit previously resolved issues.

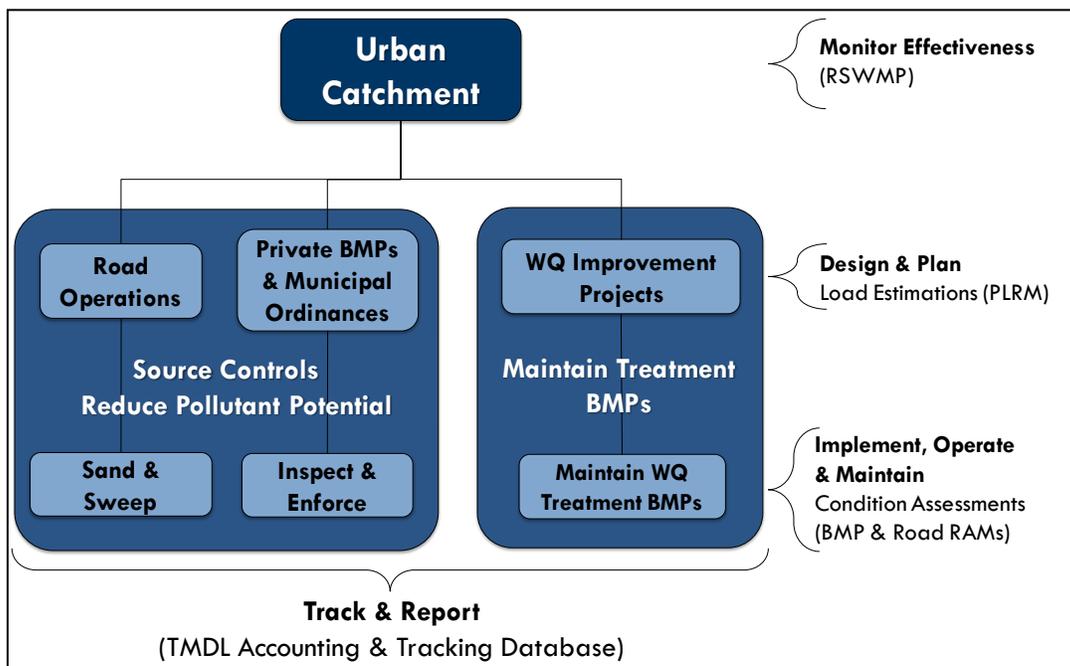
### 0.3.1 ■ TOOLS & METHODS SUPPORTING CREDITING PROGRAM PROCESSES

The Crediting Program encourages the use of a standard set of tools and methods including the following:

- The [Pollutant Load Reduction Model](#) (PLRM) is the standard load reduction estimation tool, which integrates load reductions achieved through combinations of source control practices and treatment BMPs in a catchment.
- The [BMP Maintenance Rapid Assessment Methodology](#) (BMP RAM) and Road RAM are the standard condition assessment methods used to inspect and report actual conditions in comparison to the expected conditions used in load reduction estimations.
- The [TMDL Accounting and Tracking Tool](#) is the central credit accounting system. It stores information related to catchment credit schedules and inspection results and generates reports showing the credits awarded each year for specific catchments and urban jurisdictions. The TMDL

Accounting and Tracking Tool also tracks and reports load reductions at all scales from specific catchments to the overall basin.<sup>13</sup>

Figure 0.7 shows the relationship between typical pollutant controls and these standard tools, and it indicates that RSWMP effectiveness data is used to test load reduction estimations. Pollutant controls are implemented in catchments. Load reduction estimation methods integrate the overall load reduction for implementing pollutant controls within a catchment on the basis of expected conditions. Condition assessment methods are used to inspect treatment BMPs and roads to determine if actual conditions are near or better than the expected conditions used in load reduction estimates. Effectiveness monitoring determines the observed load reductions from a catchment and compares them to the estimated load reductions, feeding improvements to load reduction estimation tools and condition assessment methods. The Accounting and Tracking Tool stores the information necessary to award credits for ongoing implementation of pollutant controls and generates credit and load reduction reports.



**Figure 0.7: Typical pollutant controls relationship to standard tools, methods and monitoring** – Pollutant controls are implemented in urban catchments. Condition assessment methods (BMP RAM & Road RAM) are used to inspect treatment BMPs and roads to determine how actual conditions compare to expected conditions used in load reduction estimates, using PLRM. Effectiveness monitoring conducted by RSWMP determines the observed load reductions from a catchment and compares them to the estimated load reductions. The TMDL Accounting and Tracking Tool calculates credit awards for ongoing implementation of pollutant controls and generates credit and load reduction reports.

Using standard methods increases the efficiency of reviews and the consistency and comparability of results. However, certain innovative practices and new treatment BMP technologies might not be accurately reflected by standard methods. Any pollutant control can be awarded credits if it is (1) expected to result in real load reductions to Lake Tahoe, (2) supported by a reasonable load reduction estimate, and (3) effectively implemented over time. [Chapter 1](#) and the [Catchment Credit Schedule Technical Guidance and Instructions](#) define guidelines for using other load reduction estimation methods when deemed necessary. [Chapter 2](#) and [Appendix C](#) describe how alternative condition assessment methods might be developed and employed.

<sup>13</sup> The TMDL Accounting and Tracking Tool tracks and reports load reductions from all source categories including urban uplands and forest uplands, direct atmospheric deposition to the lake surface, and stream channel erosion. Credits are defined, tracked and reported for urban uplands only.

### 0.3.2 ■ ROLES

The Crediting Program defines which steps in each process involve different organizations, scientists, and interested stakeholders. Table 0.2 summarizes the involvement of each participating group, indicating which groups have a necessary, active role or a potential review role for each step. The steps are described in operational detail in Chapters 1 through 3 of this Handbook.

Process	Step	Lahontan	NDEP	TRPA	EPA	Urban Jurisdictions	Stakeholders	Scientists	Grantors (NDSL, CTC)	Consultants & Third Parties
Estimate Load Reductions & Establish Catchment Credit Schedules	1.1 Estimate Load Reductions & Draft Catchment Credit Schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		■	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	1.2 Verify Load Reduction Estimate & Catchment Credit Schedule	■	■	■		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
	1.3 Register Catchment					■				
	1.4 Accept Catchment Registration	■	■							
Report Conditions & Award Credits	2.1 Inspect					■				
	2.2 Maintain, Operate & Administer Pollutant Controls					■				
	2.3 Validate Conditions	■	■	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.4 Report & Declare Credits					■				
	2.5 Award Credits	■	■	<input type="checkbox"/>	<input type="checkbox"/>					
Report Results & Improve Program	3.1 Translate TMDL Allocations to Credit Requirements	■	■	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
	3.2 Refine Protocols & Accepted Methods	■	■	<input type="checkbox"/>						
	3.3 Prioritize Research & Monitoring Needs	■	■	<input type="checkbox"/>						
	3.4 Guide Monitoring & Research	<input type="checkbox"/>		■						
	3.5 Report Program Performance	■	■	<input type="checkbox"/>		<input type="checkbox"/>				
	3.6 Synthesize Findings	■	■	<input type="checkbox"/>						
	3.7 Engage Stakeholders	■	■	■	■	■	■	<input type="checkbox"/>	<input type="checkbox"/>	
	3.8 Develop Program Improvement Recommendations	■	■	<input type="checkbox"/>						
	3.9 Decide Upon Program Improvement	■	■							
Legend ■ Indicates a necessary or active role <input type="checkbox"/> Indicates potential participation or a support role										

Table 0.2: Roles & process summary – This table summarizes involvement of each participating group in each Crediting Program step, indicating which groups have necessary, active roles and which a potential, supporting role.

**Urban Jurisdictions** (Washoe, Douglas, El Dorado, and Placer counties; City of South Lake Tahoe; Caltrans; NDOT) implement pollutant controls. They prepare and submit load reduction estimates when initiating actions. They submit annual reports with inspection and maintenance information, and they provide recommendations for Crediting Program adjustments.

**The Water Board and NDEP** review load reduction estimates and approve catchment credit schedules. They conduct independent validation-inspections of actual conditions resulting from actions and compare those findings to self-inspection results submitted by urban jurisdictions in annual reports. They award credits each year on the basis of inspection results. They also lead the development of the basin-wide TMDL Progress Report and the Synthesis of Findings Report, and compile Crediting Program adjustment recommendations. Water Board and NDEP executives make final program adjustment decisions.

**The TRPA** provides input to the design of pollutant controls in its roles as (1) EIP manager, (2) permitting authority, and (3) Technical Advisory Committee (TAC) member. TRPA uses the credit awards determined by the Water Board and NDEP to inform allocation of development commodities, report EIP accomplishments, and determine progress toward meeting the lake clarity desired condition and related Water Quality Thresholds.

**The U.S. Environmental Protection Agency (EPA)** may review catchment credit schedules and annual reports. It actively participates in program adjustment recommendation discussions, driving the use of the Crediting Program to address regulatory needs and reflect best available science.

**The California Tahoe Conservancy, Nevada Division of State Lands, and U.S. Forest Service**, in the roles as grantors and TAC members, review load reduction estimates. These agencies may conduct validation-inspections of treatment BMP and road conditions as a means to judge whether funded projects are meeting contractual maintenance requirements. This information may also be used as validation-inspections results.

**Scientists** design and implement effectiveness monitoring studies and compare monitoring results to load reduction estimates. They develop findings to inform improvements to load reduction calculation methods. They also conduct applied research into pollutant fate and transport as well as in-lake dynamics and present findings to inform recommendations for Crediting Program adjustments.

**Engaged Stakeholders**, including other agencies, interested citizens and interest groups, review individual actions and overall program reports to ensure the robust and fair administration of the Crediting Program. They also provide recommendations for Crediting Program adjustments.

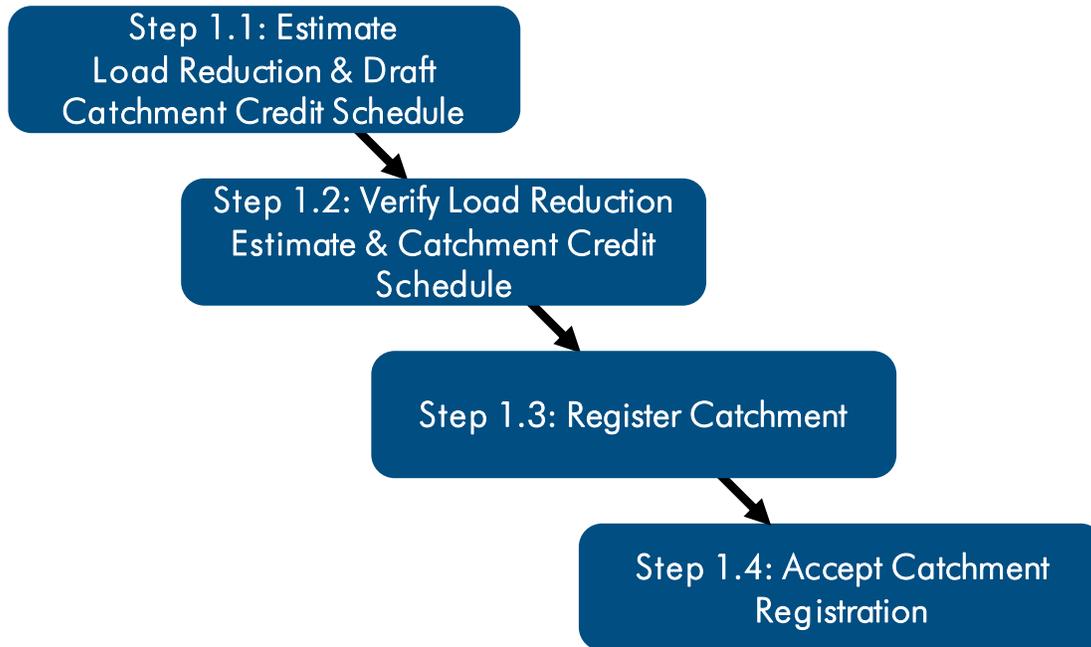
**Consultants and third-party service providers** may be contracted to perform specific tasks. Most tasks can be contracted to third parties; however, the responsibility for accuracy remains with the urban jurisdiction or regulator.

The next three chapters describe the steps necessary to complete each of the three primary Crediting Program processes. The Tools and Templates section of the Handbook includes specific instructions and technical guidance for completing the products required at each step. Appendices A through C walk through examples following the steps defined in Chapters 1 and 2.

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# ESTIMATE LOAD REDUCTIONS & ESTABLISH CATCHMENT CREDIT SCHEDULES

LAKE CLARITY CREDITING PROGRAM HANDBOOK



## QUESTIONS ANSWERED

- How does an urban jurisdiction estimate expected and baseline loading?
- How can an urban jurisdiction gain an understanding of the amount of credit potential to expect for planned pollutant controls?
- How do urban jurisdictions and regulators resolve issues and questions, and agree to a final Catchment Credit Schedule?
- How is the Accounting and Tracking Tool used by urban jurisdictions to register and regulators to accept Catchment Credit Schedules?

## Parties Involved

- Urban jurisdictions develop loading estimates and draft Catchment Credit Schedules.
- Regulators provide input and verify Catchment Credit Schedules.

**Chapter 0**  
The Lake Clarity  
Crediting Program

**Chapter 1**  
Estimate Load Reductions & Establish  
Catchment Credit Schedules

**Chapter 2**  
Report Conditions &  
Award Credits

**Chapter 3**  
Report Results &  
Improve Program

Effective implementation of pollutant controls result in load reductions to Lake Tahoe. The credit potential for an *urban catchment* is based on the estimation of load reduction from baseline to expected conditions. The Crediting Program defines a document called a catchment credit schedule that (1) documents the inventory of treatment best management practices (BMPs), roads, private property BMPs and other pollutant controls used as the basis for a load reduction estimate, and (2) defines the credit potential for a specific catchment. In order to receive credit for load reductions in a catchment, the urban jurisdiction must develop a unique catchment credit schedule.

This chapter describes the steps for developing and approving a catchment credit schedule (CCS) based on a load reduction estimate for a specific catchment (see Figure 1.1). The urban jurisdiction develops a draft catchment credit schedule. The regulator verifies that the catchment credit schedule accurately represents the pollutant controls as implemented, ensuring that load reduction estimates reflect the final specifications of implemented pollutant controls. Depending on the expected life of the pollutant controls, a catchment credit schedule can be five to fifteen years in duration. A credit schedule remains effective until either the end of the defined credit schedule period, or until the catchment credit schedule is updated by the urban jurisdiction to reflect changed conditions and implementation plans.

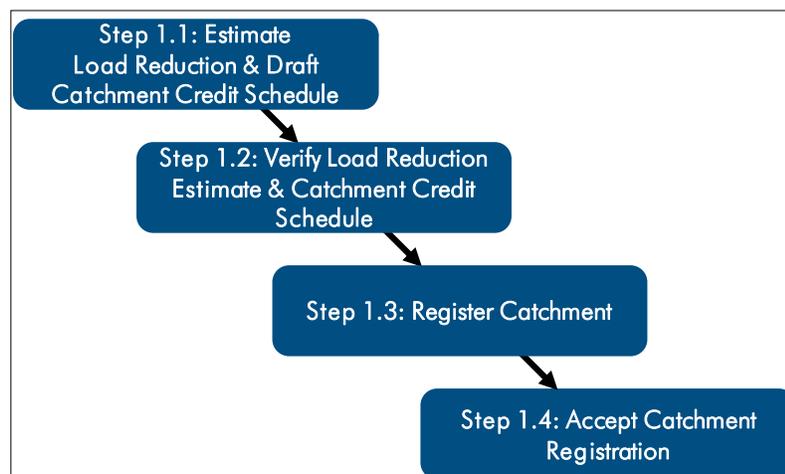


Figure 1.1: Overview of steps to establish a catchment credit schedule

The urban jurisdiction may wish to reach an initial understanding from the regulator regarding the likely credit potential before investing in the purchase and construction of pollutant controls. Urban jurisdictions are encouraged to estimate load reductions based on planned pollutant controls and engage regulators in a review of load estimations. Gaining regulator endorsement is a natural next step to EIP project Technical Advisory Committee (TAC) discussions. For implementation of non-constructed pollutant controls this may require the urban jurisdiction to request a specific review. While initial regulator endorsement is not binding, it can provide a strong expectation for the likely credit potential for implementing pollutant controls.

Table 1.1 summarizes the roles, tools and products involved in each step of the process to establish a catchment credit schedule. The urban jurisdiction completes the Catchment Credit Schedule Form in Step 1.1 and refines it with input from the regulator through Step 1.2. The Catchment Credit Schedule Technical Guidance and Instructions document provides specific information necessary to complete loading estimates using the Pollutant Load Reduction Model (PLRM) or any alternative approach. Steps 1.3 and 1.4 consist of entering and approving final information in the Accounting and Tracking Tool.

Process Step	Step #	Urban Jurisdiction	Regulator	Stakeholders & Other Entities	Methods, Tools & Templates	Crediting Program Products
Estimate Load Reductions & Draft Catchment Credit Schedule	<a href="#">1.1</a>	■			<a href="#">Catchment Credit Schedule</a>	Draft Catchment Credit Schedule
Verify Load Reduction Estimate & Catchment Credit Schedule	<a href="#">1.2</a>	■	■	□	<a href="#">Issue Resolution Punchlist</a>	Final Catchment Credit Schedule
Register Catchment	<a href="#">1.3</a>	■			<a href="#">Accounting &amp; Tracking Tool</a>	Registered Catchment
Accept Catchment Registration	<a href="#">1.4</a>	□	■		<a href="#">Accounting &amp; Tracking Tool</a>	Accepted Catchment Registration
<p>Legend</p> <p>■ Indicates a necessary or active role</p> <p>□ Indicates potential participations or a support role</p> <p>Underlined items are hyperlinked and part of the Crediting Program Handbook</p>						

Table 1.1: Overview of roles, tools & products to establish a catchment credit schedule

[Appendix A](#) walks through a complete example of each step for establishing a catchment credit schedule for a typical catchment involving treatment BMPs, advanced road abrasive application and sweeping practices, private property BMPs, and implementation of a municipal ordinance.

## 1.1 ESTIMATE LOAD REDUCTIONS & DRAFT CATCHMENT CREDIT SCHEDULE

Credits are based on estimated load reductions. This step defines the process for the **urban jurisdiction** to develop a load reduction estimate consistent with the TMDL baseline, to document the underlying expected conditions related to the load reduction estimate, and to propose the credit potential amount for a catchment. The [Catchment Credit Schedule Technical Guidance and Instructions](#) document provides specific direction for completing the necessary analyses using PLRM or another load estimation method. Figure 1.2 outlines the operations in this step and the structure of the catchment credit schedule.

**BEFORE YOU BEGIN**

The urban jurisdiction needs the following materials before initiating this step:

- Project design specifications for the preferred alternative (EIP water quality improvement projects only)
- Equipment and product specifications
- Operation and maintenance plans

**Load reduction** is defined as the difference between the estimated average annual amount of pollutants entering Lake Tahoe under standard baseline conditions and the estimated average annual amount of pollutants entering the lake under expected conditions. All pollutant loading reaching a surface waterbody that flows to Lake Tahoe is assumed to enter the lake.

For projects following the Storm Water Quality Improvement Committee (SWQIC) Project Delivery Process (PDP), the catchment credit schedule should be developed after the final construction operations are completed in conjunction with the final walkthrough and project closeout. For catchments with existing water quality improvements or those where non-constructed pollutant controls are being implemented, the catchment credit schedule should be developed once final specifications of implementation plans are known, such as following procurement of equipment or adoption of municipal ordinances.

The urban jurisdiction should open the [Catchment Credit Schedule Form](#) in the Tools section of this Handbook, and save a new catchment credit schedule file for the specific catchment under consideration. The General Information portion of Section A of the catchment credit schedule should be completed before proceeding to Step 1.1.1.

### 1.1.1 ■ DELINEATE CATCHMENT

The **urban jurisdiction** starts by delineating the boundary for the *urban catchment* under consideration, and completing the catchment credit schedule *Section B: Catchment Delineation*. The catchment must be clearly identified on an overall urban jurisdiction Urban Catchments Map. The definition of urban catchment allows urban jurisdictions some flexibility to define catchments that work for their modeling and planning purposes. However, to avoid double counting, any single square foot of land can be included in only one catchment.

Section B of the Catchment Credit Schedule Technical Guidance and Instructions contains specific direction on catchment delineation.

An **urban catchment** is a contiguous area containing urban land uses with runoff draining to a surface waterbody.

#### CATCHMENT CONNECTIVITY TO A SURFACE WATERBODY

All pollutant loading reaching a surface waterbody that flows to Lake Tahoe is assumed to enter the lake. Depending on how a catchment is defined, its outlet may not be directly connected to a surface waterbody. In certain instances, catchment outlets flow to meadows that effectively treat loading coming from the catchment. This treatment must be accounted for in both baseline and current loading calculations. The Catchment Credit Schedule Technical Guidance and Instructions document provides general direction for defining catchment connectivity and the percentage of load from the catchment that is expected to reach a surface waterbody. Discussions of catchment connectivity can be avoided altogether by defining catchments such that they have outlets to surface waterbodies, and including treatment provided by natural features in both the baseline and current loading estimates.

#### PRODUCT ■ CATCHMENT CREDIT SCHEDULE SECTION B: CATCHMENT DELINEATION

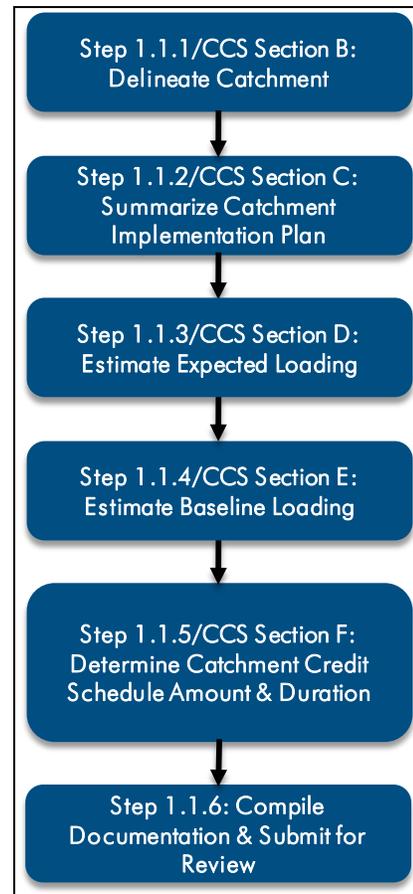


Figure 1.2: Load reduction estimate and catchment credit schedule development overview

### 1.1.2 ■ SUMMARIZE CATCHMENT IMPLEMENTATION PLAN

The **urban jurisdiction** summarizes the operation, maintenance and program implementation activities specific to the catchment under consideration in the catchment credit schedule *Section C: Catchment Implementation Plan Summary*. The Catchment Implementation Plan Summary is an integral part of the expected loading estimate, the definition of potential credit for a catchment, and the associated future credit awards for the catchment.

The Implementation Plan Summary identifies the overall catchment load reduction strategy and includes a more detailed inventory of treatment BMPs, source controls and roads, in addition to definitions of expected average conditions and water quality importance of specific pollutant controls. The Implementation Plan Summary also outlines an inspection plan and a brief description of planned operations and maintenance activities. Expected average conditions are used to determine the appropriate modeling parameters in expected loading estimates. Expected conditions are also used as the basis for comparison to actual conditions each year, which determines the amount of credit awarded during each year.<sup>14</sup> See Step 1.1.3 and Catchment Credit Schedule Technical Guidance and Instructions Section C for direction on determining expected conditions and water quality importance.

PRODUCT ■ CATCHMENT CREDIT SCHEDULE SECTION C: CATCHMENT IMPLEMENTATION PLAN SUMMARY

### 1.1.3 ■ ESTIMATE EXPECTED LOADING

The **urban jurisdiction** develops the expected load estimate and completes the catchment credit schedule *Section D: Expected Loading Estimate* using catchment-specific information including the Treatment BMP and Roads Inventory Tables from the Catchment Implementation Plan Summary. Section D of the Catchment Credit Schedule Technical Guidance and Instructions document provides specific direction to complete the expected loading estimate. The urban jurisdiction keeps clear notes on modeling assumptions and understands that the expected loading estimate is likely to be the most thoroughly reviewed and discussed portion of the overall catchment credit schedule.

PRODUCT ■ CATCHMENT CREDIT SCHEDULE SECTION D: EXPECTED LOADING ESTIMATE

### 1.1.4 ■ ESTIMATE BASELINE LOADING

The **urban jurisdiction** develops a baseline loading estimate for the catchment and completes the catchment credit schedule *Section E: Baseline Loading Estimate*. The baseline loading estimate uses the land use and

**Baseline** is defined as the conditions present during the 2002 to 2004 period. This is the period used to inform the TMDL baseline loads. Infrastructure present within a catchment as of October 2004 is part of the baseline. Typical basin-wide conditions and practices as of this period are used in baseline loading estimates.

infrastructure in place in 2004 and standard conditions consistent with the TMDL baseline loading assumptions. Section E of the Catchment Credit Schedule Technical Guidance and Instructions document provides specific direction for developing baseline loading calculations.

Baseline loading for a specific catchment should not change over time. The only situations which may require re-evaluation of baseline loading are those in which the

catchment delineation changes, or where load estimation methods change in such a way that the baseline loading is expected to significantly change.

PRODUCT ■ CATCHMENT CREDIT SCHEDULE SECTION E: BASELINE LOADING ESTIMATE

### 1.1.5 ■ DETERMINE CATCHMENT CREDIT SCHEDULE AMOUNT & DURATION

The **urban jurisdiction** proposes an appropriate credit potential amount based on the load reduction estimate. The credit amount is a direct translation of the load reduction estimate based on [Equations 0.2](#) and [0.3](#).

The catchment credit schedule duration is based on the expected lifetime of the primary and secondary pollutant control strategies identified in the Load Reduction Strategy portion of Section C of the catchment

<sup>14</sup> See [Appendix C](#) for a complete description on how the comparison between expected and actual conditions is combined with water quality importance to determine annual credit awards.

credit schedule. In general, a five-year credit schedule is appropriate for catchments with primary implementation strategies based on operational practices – such as abrasive application and sweeping practices – and a 15-year schedule is appropriate for catchments primarily relying upon treatment BMPs. Section F of the Catchment Credit Schedule Technical Guidance and Instructions document contains specific directions.

#### PRODUCT ■ CATCHMENT CREDIT SCHEDULE SECTION F: CATCHMENT CREDIT SCHEDULE AMOUNT & DURATION

### 1.1.6 ■ COMPILE DOCUMENTATION & SUBMIT FOR REVIEW

The **urban jurisdiction** checks the catchment credit schedule, ensures that all appropriate portions of Section A are complete, and confirms that model runs, maps and specifications are aligned and contain consistent information. Once all materials are complete, the urban jurisdiction develops a digital file folder structure as defined in the [File Structure Template](#) in the Tools section of this Handbook. The urban jurisdiction submits the catchment credit schedule and supporting materials to the regulator, and other reviewers as appropriate, by posting the folder to the appropriate file-sharing site and sending a printed copy of all materials itemized in Section A of the catchment credit schedule. The urban jurisdiction may wish to schedule the verification meeting (Step 1.2.2) at this time.

In many instances it is necessary to go over the planned actions and materials with the regulator. It is appropriate to schedule a meeting at this time.

#### PRODUCT ■ COMPLETE DRAFT CATCHMENT CREDIT SCHEDULE

## 1.2

## VERIFY LOAD REDUCTION ESTIMATE & CATCHMENT CREDIT SCHEDULE

The **urban jurisdiction** and **regulator** verify that the actions implemented in the catchment are appropriately represented by the expected load reduction estimate, that the catchment credit schedule and supporting materials sufficiently document expected conditions, and that the credit potential amount and catchment credit schedule duration are acceptable. At the conclusion of this step, the urban jurisdiction and regulator agree to a final catchment credit schedule.

### BEFORE YOU BEGIN

The regulator and urban jurisdiction need the following materials before initiating this step:

- Draft final catchment credit schedule and supporting documentation
- Final treatment BMP and equipment specifications and as-built drawings
- Final ordinance language or program implementation plans

### 1.2.1 ■ REVIEW DRAFT FINAL DOCUMENTS

The **regulator** reviews the submitted catchment credit schedule and supporting materials provided by the urban jurisdiction from Step 1.1 and develops an [Issue Resolution Punchlist](#) to discuss at the verification meeting (Step 1.2.2). The regulator reviews the entire catchment credit schedule and supporting materials, identifying any questions or issues of concern. The regulator should specifically check the following items and should ensure that:

- The catchment is clearly delineated on the urban jurisdiction's current Urban Catchments Map, and the catchment does not overlap with any other catchments.
- The baseline and expected loading results from the load reduction estimates match the loading numbers in the catchment credit schedule, and the conversions from fine sediment mass to fine sediment particle number to credits are correct.

- The Catchment Implementation Plan Summary includes complete Treatment BMP and Roads Inventory tables and maps, including identification of expected conditions that are reasonable given the description of planned maintenance activities.
- Any alternative assumptions or calculation approaches are acceptable and documented in a memo that 1) provides the rationale for using the alternative approach, and 2) describes the methods used in sufficient detail to support independent analysis and testing.
- The inventory tables and maps in the Catchment Implementation Plan Summary are complete and clearly indicate the expected conditions and water quality importance of key and essential treatment BMPs, road groups, private parcel BMPs and other pollutant control strategies.
- The parameters used in the expected loading estimate calculations appropriately reflect the expected conditions defined in the inventory tables and maps.
- The description of inspection schedules and summary of maintenance plans are reasonable and are expected to provide sufficient information to inform annual credit awards.

#### PRODUCT ■ ISSUE RESOLUTION PUNCHLIST (IF NEEDED)

### 1.2.2 ■ VERIFY ACTIONS, IMPLEMENTATION PLANS & LOADING ESTIMATES

The **urban jurisdiction and regulator** meet and review the catchment credit schedule and supporting materials. This meeting is likely a combination of a site visit to the catchment and an office discussion to resolve items identified on the Issue Resolution Punchlist. The site visit may include verification of treatment BMP specifications, visual inspection of priority roads and/or discussions of expected observable changes from successful implementation of programs. The urban jurisdiction guides discussion, showing the relationship between the Implementation Plan Summary, expected loading estimate and supporting documentation.

The regulator and urban jurisdiction identify questions and issues, and resolve the items identified in the Issue Resolution Punchlist. By the end of the meeting, the urban jurisdiction and regulator should be comfortable that once the items on the Issue Resolution Punchlist have been resolved (1) the load reduction estimate appropriately reflects the load reduction potential from the combination of pollutant controls implemented in the catchment, (2) the catchment credit schedule and supporting documentation is complete, and (3) the catchment credit schedule amount and duration are acceptable.

If significant issues remain that require load reduction estimate revisions, it may be necessary to repeat this step before the urban jurisdiction and regulator can agree to a final catchment credit schedule.

#### PRODUCT ■ ISSUE RESOLUTION PUNCHLIST LISTING ITEMS TO ADDRESS BEFORE THE CATCHMENT CREDIT SCHEDULE CAN BE FINALIZED AND REGISTERED IN THE ACCOUNTING AND TRACKING TOOL

### 1.2.3 ■ SUBMIT CATCHMENT CREDIT SCHEDULE & SUPPORTING MATERIALS

Once all identified issues are resolved and documents updated, the **urban jurisdiction** develops a digital file folder structure as defined in the [File Structure Template](#) in the Tools section of this Handbook. The urban jurisdiction submits the catchment credit schedule and supporting materials to the regulator by posting the folder to an appropriate file-sharing site, and by sending a printed copy of all materials itemized in Section A of the catchment credit schedule. The only official version of the catchment credit schedule is the accepted catchment credit schedule on file with the regulator.

The submittal date is also the catchment credit schedule establishment date as described in Section F of the [Catchment Credit Schedule Technical Guidance and Instructions](#).

#### PRODUCT ■ FINAL CATCHMENT CREDIT SCHEDULE AND SUPPORTING MATERIALS

#### PRODUCT ■ CHECKED-OFF ISSUE RESOLUTION PUNCHLIST ITEMS WITH RESPONSES AND DESCRIPTIONS OF CHANGES

#### PRODUCT ■ RECORD OF SUBMITTAL—KEEP A COPY OF THE TRANSMITTAL EMAIL ON FILE

### 1.2.4 ■ VERIFY CATCHMENT CREDIT SCHEDULE

Once the **regulator** verifies that the final catchment credit schedule is complete and that all items identified in the Issue Resolution Punchlist are addressed, the regulator:

- Signs the regulator acceptance line of Section A of the catchment credit schedule.
- Confirms that all electronic files are stored in the catchment file structure (see [File Structure](#) in the Tools portion of this Handbook).
- Files all paper files in the appropriate locations.
- Sends a confirmation email to the urban jurisdiction stating that all materials are verified and the catchment credit schedule is finalized and ready to be registered in the Accounting and Tracking Tool.

#### PRODUCT ■ VERIFIED CATCHMENT CREDIT SCHEDULE

### 1.3 REGISTER CATCHMENT

The **urban jurisdiction** registers the catchment in the Accounting and Tracking Tool. This is the final step for the urban jurisdiction in the process of establishing a catchment credit schedule. The urban jurisdiction should strive to complete this step within ten days of receiving the catchment credit schedule verification notice.

#### BEFORE YOU BEGIN

The urban jurisdiction needs the following materials before initiating this step:

- Final catchment credit schedule and supporting documentation
- Accounting and Tracking Tool urban jurisdiction login

#### 1.3.1 ■ REGISTER CATCHMENT IN ACCOUNTING & TRACKING TOOL

The urban jurisdiction completes the Urban Catchment Credit Schedule Registration Form in the [Accounting and Tracking Tool](#), checking that all fields are accurately completed and consistent with the information in the final catchment credit schedule. After completing the Urban Catchment Credit Schedule Registration Form, the urban jurisdiction generates the catchment credit schedule report and confirms that all information is accurate, and sends the report as an attachment to the regulator as notice that the catchment is registered.

If the urban jurisdiction does not have a login for the Accounting and Tracking Tool, it should contact the regulator.

#### PRODUCT ■ URBAN CATCHMENT CREDIT SCHEDULE REPORT FROM THE ACCOUNTING AND TRACKING TOOL

### 1.4 ACCEPT CATCHMENT REGISTRATION

The **regulator** accepts the registered catchment in the [Accounting and Tracking Tool](#), completing the catchment credit schedule development process.

#### BEFORE YOU BEGIN

The regulator needs the following materials before initiating this step:

- Final catchment credit schedule and supporting documentation
- Accounting and Tracking Tool regulator login

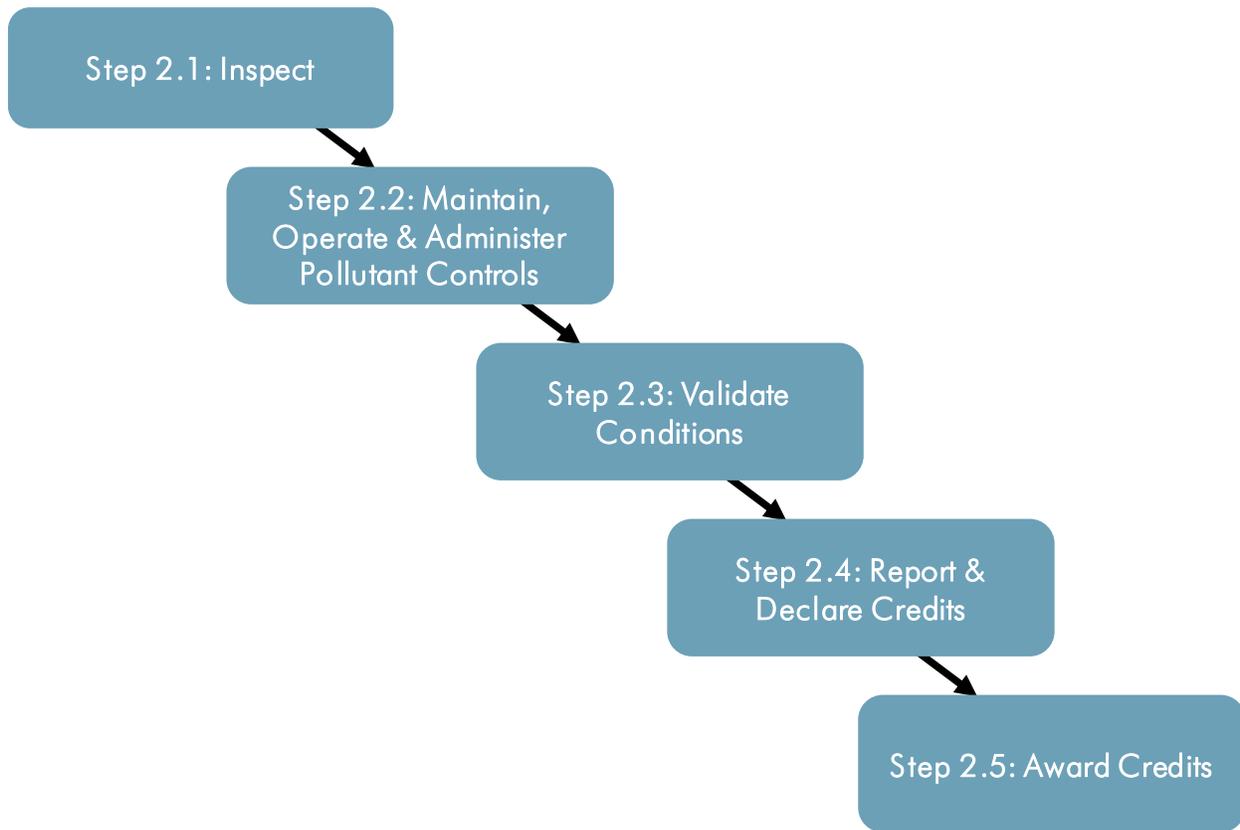
#### 1.4.1 ■ ACCEPT CATCHMENT CREDIT SCHEDULE

With ten days of receiving the catchment registration notice from the urban jurisdiction, the **regulator** logs in to the Accounting and Tracking Tool and accepts the catchment registration.

#### PRODUCT ■ ACCEPTED CATCHMENT CREDIT SCHEDULE REGISTRATION IN THE ACCOUNTING AND TRACKING TOOL

# REPORT CONDITIONS & AWARD CREDIT

## LAKE CLARITY CREDITING PROGRAM HANDBOOK



### QUESTIONS ANSWERED

- How are inspection results used to determine the amount of credit awarded?
- How are self-inspection results compared to validation-inspection results?
- How are credits declared in annual stormwater reports?

### Parties Involved

- Urban jurisdictions perform inspections, maintain treatment BMPs, implement programs and report results.
- Regulators review reports and award credits.
- Regulators, scientists and grantors perform validation-inspections.

**Chapter 0**  
The Lake Clarity  
Crediting Program

**Chapter 1**  
Estimate Load Reductions & Establish  
Catchment Credit Schedules

**Chapter 2**  
Report Conditions &  
Award Credits

**Chapter 3**  
Report Results &  
Improve Program

## TWO | REPORT CONDITIONS & AWARD CREDITS

### LAKE CLARITY CREDITING PROGRAM HANDBOOK

Credits are awarded for effective, ongoing implementation of pollutant controls in catchments. Effective implementation of pollutant controls results in actual conditions of urban lands and treatment best management practices (BMPs) that are near-to or better-than the expected conditions, and which are used as the basis for load reduction estimates. Actual conditions in a given year are compared to the expected conditions to determine the appropriate amount of credit to award in that year.

Condition assessment methods are used to determine actual conditions. When actual conditions within a catchment are near-to or better-than expected conditions, the actual loading is likely close to or less than the expected loading. This is grounds for awarding the full credit potential amount. If the actual conditions are worse than expected conditions, the actual loading is likely to be higher than the expected loading. This is cause to award less than the full credit potential amount.

The focus on conditions rather than rote adherence to static maintenance plans enables stormwater managers and maintenance personnel to determine when and how to maintain the condition of treatment BMPs and roads in the most cost-effective manner possible. This respects the professional judgment of stormwater managers while ensuring that the most important pollutant controls are effectively maintained.

[Chapter 1](#) and the [Catchment Credit Schedule Technical Guidance and Instructions](#) describe the process for developing load reduction estimates and determining the credit potential amount for a catchment. Appendix C describes the credit award method and the relationship between load reduction estimates, condition assessment results and credits. This chapter describes the process to (1) determine actual conditions during a year, (2) use this information as the basis for credit declarations in annual stormwater reports, and (3) award credits to determine progress towards meeting credit requirements and regulatory compliance. [Appendix B](#) walks through a complete example of the process for a typical urban stormwater manager and regulator.

Figure 2.1 outlines the annual steps to assess conditions, implement pollutant controls, report results and award credits. Table 2.1 summarizes the roles, tools and products involved in each step.

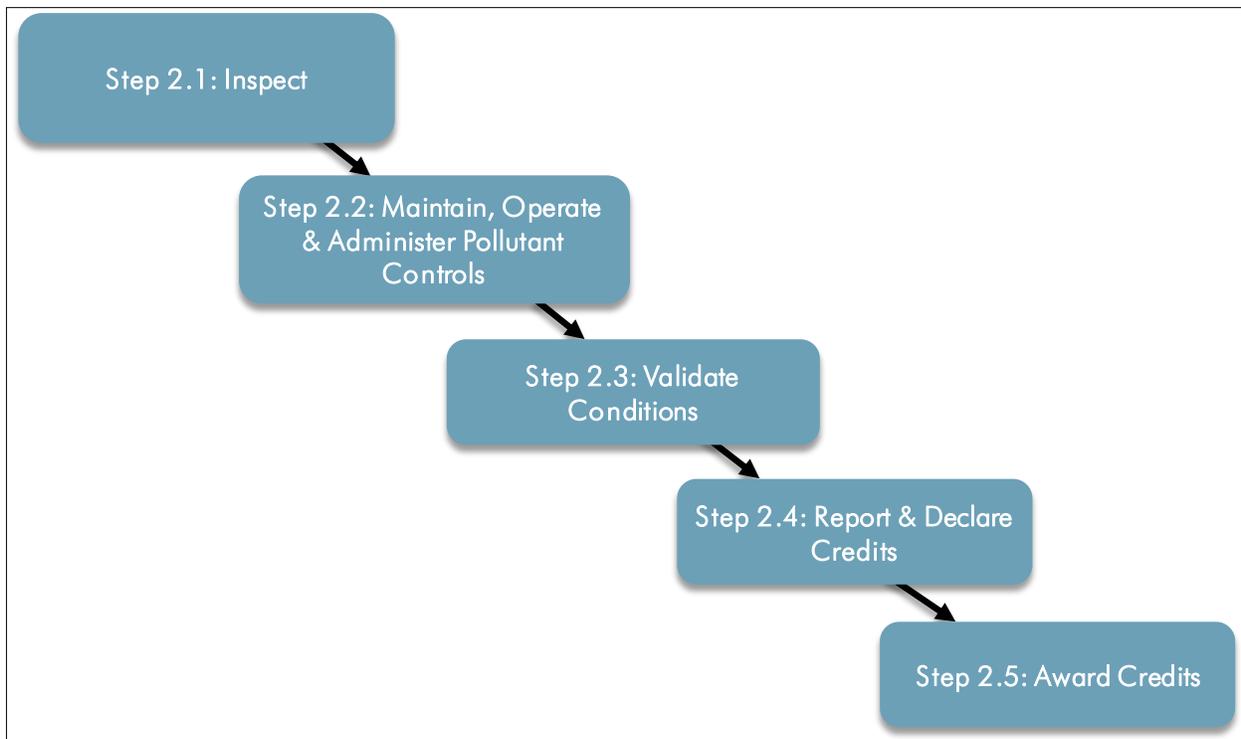


Figure 2.1: Overview of steps to award credits annually

Process Step	Step #	Urban Jurisdiction	Regulator	Stakeholders & Other Entities	Tools & Templates	Crediting Program Products
Inspect	<a href="#">2.1</a>	■			<a href="#">BMP RAM</a> ; <a href="#">Road RAM</a>	Inspection Results
Maintain, Operate & Administer Pollutant Controls	<a href="#">2.2</a>	■				Inspection Results
Validate Conditions	<a href="#">2.3</a>		■	□	<a href="#">Accounting &amp; Tracking Tool</a>	Inspection Results
Report & Declare Credits	<a href="#">2.4</a>	■			<a href="#">Annual Stormwater Report – Credit Declaration Section Outline</a> ; <a href="#">Accounting &amp; Tracking Tool</a>	Annual Stormwater Report – Credit Declaration Section
Award Credits	<a href="#">2.5</a>	□	■		<a href="#">Issue Resolution Punchlist</a> ; <a href="#">Accounting &amp; Tracking Tool</a>	Credit Awards
<p><u>Legend</u></p> <p>■ Indicates a necessary or active role</p> <p>□ Indicates potential participation or a support role</p> <p>Underlined items are hyperlinked and part of the Crediting Program Handbook</p>						

Table 2.1: Overview of roles, tools &amp; products to report conditions and award credits

## 2.1 INSPECT

The **urban jurisdiction** inspects treatment BMPs, roads, private property BMP implementation and other pollutant control strategies to assess actual conditions, which are used by urban jurisdictions to determine maintenance priorities. Actual conditions are also used to determine the appropriate amount of credit to award each year.

### BEFORE YOU BEGIN

The urban jurisdiction needs the following materials before initiating this step:

- All applicable Implementation Plans
- Treatment BMP inventory tables and maps
- Updated BMP database
- Roads inventory tables and maps
- Assessment methodology manual(s)
- Inspection forms

### 2.1.1 ■ DEFINE INSPECTION NEEDS

The urban jurisdiction identifies inspection needs from Treatment BMP and Roads Inventory Tables or related BMP, road and/or asset management databases. These inspection lists, accompanied by maps that identify the location of treatment BMPs and road groups, direct inspection efforts by personnel trained to use standard assessment methods (see Table TT.1 in the [Tools and Templates](#) section of this Handbook for a list of accepted standard assessment method(s)).

Roads may be inspected more frequently depending on the maintenance practices employed. See Appendix C for a discussion of road inspection practices.

## PRODUCT ■ INSPECTION LIST(S)

### 2.1.2 ■ PERFORM INSPECTIONS

The urban jurisdiction performs condition assessment inspections of treatment BMPs, roads, private property BMPs and other pollutant control strategies. The urban jurisdiction should use standard condition assessment methods whenever appropriate (see Table TT.1 in the [Tools and Templates](#) section of this Handbook for a list of accepted standard assessment method(s)).

#### TREATMENT BMP INSPECTIONS

The [BMP Maintenance Rapid Assessment Methodology](#) (BMP RAM) is the standard assessment method for treatment BMPs. Treatment BMPs and conveyance infrastructure are typically inspected in the late spring to determine their condition following spring runoff. Spring conditions are assumed to represent the actual condition of a treatment BMP for the year unless maintenance is performed, or site-specific conditions or runoff events warrant multiple inspections in a year. The [Accounting and Tracking Tool](#) averages multiple treatment BMP inspections during a year to determine the average actual condition for the year.

The Crediting Program requires inspection of all key and essential treatment BMPs. While the Crediting Program does not require inspection results to be reported for conveyance infrastructure, the BMP RAM and any acceptable condition assessment method must include evidence that flow is reaching treatment BMPs. Further, inspection and maintenance of conveyance infrastructure is necessary to prevent flooding and may be required through other regulatory requirements.

#### ROAD CONDITION INSPECTIONS

The [Road Rapid Assessment Methodology](#) (Road RAM) is the standard assessment methodology for determining roadway conditions.<sup>15</sup> Road condition inspections are completed on a representative sample of each road type in each catchment. The frequency of road condition inspections may vary depending on the expected conditions used in load reduction estimates. If advanced abrasive application practices and frequent sweeping are part of the urban jurisdiction implementation plans, resulting in high road condition scores, road condition inspections may be required multiple times per year. Alternatively, the urban jurisdiction may develop an operations-to-conditions relationship as described in the [Catchment Credit Schedule](#) Section C. See [Appendix C](#) for additional discussion.

#### PRIVATE PROPERTY BMP INSPECTIONS

The percentage of properties in a catchment with BMPs is expected to remain constant from year to year unless the urban jurisdiction determines that additional properties receive BMP and Source Control Certificates. Private property BMP implementation rates can be determined through an annual records inventory.

#### OTHER POLLUTANT CONTROL STRATEGY INSPECTIONS

Other pollutant control strategies should be inspected as described in applicable implementation documents and summarized in catchment credit schedules. Condition assessment observations should be established for the inspection of other pollutant control strategies based on observable changes related to water quality improvement. Implementation plans should define benchmarks and thresholds for each observation. See [Appendix A](#) for an example description of an inspection plan for a municipal ordinance, and [Appendix C](#) for additional discussion of establishing condition assessments and how they are used in awarding credits.

<sup>15</sup> As of September 2009, the Road RAM is under development which will define the methods for inspecting road conditions and an appropriate inspection schedule. This Handbook will be adjusted once the Road RAM is published to align with the methodology.

**INSPECTING AND CREDITING ORDINANCES AND PROGRAMS**

Municipal ordinances may be an effective means to compel residents to change their behavior in ways that reduce their impact on water quality. While it may be difficult to know if a specific ordinance or program is the cause of improved conditions of roads and urban lands, it is the observation and measurement of improved conditions that is the basis for credit awards. Appendix A provides an example of an implementation plan and load reduction estimate for a municipal ordinance. It is important to understand that if improvements are documented, whether a result of an effective ordinance or program or not, the urban jurisdiction can declare and be awarded credit. Likewise, even if an urban jurisdiction is aggressively administering programs and enforcing ordinances, no credit can be declared or awarded without evidence that expected conditions are being maintained.

**PRODUCT ■ INSPECTION RESULTS****2.1.3 ■ RECORD INSPECTION RESULTS & DEFINE MAINTENANCE PRIORITIES**

The urban jurisdiction records inspection results in its BMP database and may upload results to the Accounting and Tracking Tool throughout the year or all at once at the end of the reporting year (Step 2.4). The urban jurisdiction uses inspection results to define maintenance priorities.

**PRODUCT ■ UPDATED BMP DATABASE WITH INSPECTION RESULTS****2.2 MAINTAIN, OPERATE & ADMINISTER POLLUTANT CONTROLS****BEFORE YOU BEGIN**

The urban jurisdiction needs the following materials before initiating this step:

- Maintenance priorities informed by inspection results
- Treatment BMP specifications for items being maintained
- BMP inventory maps
- Road expected condition maps
- Assessment methodology manual(s)
- Inspection forms

The **urban jurisdiction** maintains treatment BMPs, performs abrasive applications, operates sweeping equipment and administers programs to achieve the expected conditions defined in catchment credit schedules and used as the basis for load reduction estimates and credit awards.

**2.2.1 ■ PERFORM MAINTENANCE, IMPLEMENT PROGRAMS & RE-INSPECT**

The Crediting Program focus on achieving conditions, rather than following the specifications of static implementation plans, allows stormwater managers and maintenance crews the flexibility to make daily decisions to best allocate resources.

The urban jurisdiction inspects treatment BMPs following maintenance to ensure the treatment BMPs are returned to better-than-expected conditions. Some urban jurisdictions may perform initial inspections (Step 2.1.2), maintenance, and re-inspections in one site visit. For treatment BMPs requiring heavy equipment, it may be desirable to re-inspect immediately following maintenance to determine if additional maintenance may be necessary to restore conditions before equipment leaves the site.

Even if the urban jurisdiction has developed an operations-to-conditions relationship for road maintenance activities (see Section C of the [Catchment Credit Schedule Technical Guidance and Instructions](#)), periodic inspection of roadways following road abrasive application and sweeping activities may be necessary to ensure equipment is operating and being operated effectively.

## PRODUCT ■ INSPECTION RESULTS

**2.2.2 ■ LOG ACTIVITIES & RECORD RESULTS**

Inspector updates the BMP, roads and/or asset management databases with inspection results and logs maintenance activities. Maintenance logs are helpful to inform discussion with regulators when self-inspection results differ from validation inspection results.

PRODUCT ■ UPDATED BMP, ROADS AND/OR ASSET MANAGEMENT DATABASES WITH INSPECTION RESULTS

PRODUCT ■ LOG OF TREATMENT BMP MAINTENANCE ACTIVITIES

PRODUCT ■ LOG OF SWEEPING, ABRASIVE APPLICATION AND OTHER POLLUTANT CONTROL IMPLEMENTATION ACTIVITIES

**2.3 VALIDATE CONDITIONS****BEFORE YOU BEGIN**

The regulator or other validation inspector needs the following materials before initiating this step:

- Access to treatment BMP inventories for catchments
- Treatment BMP Inventory Tables and Maps
- Roads Inventory Tables and Maps
- Assessment methodology manual(s)
- Inspection forms

The **regulator** and potentially **grantors, scientists** and **other stakeholders** trained to use standard assessment methods (validation inspectors) perform condition assessment inspections and submit results. These inspection results are used to validate self-inspection results reported by the urban jurisdiction. Funders may also use validation inspection results to determine compliance with contractual maintenance requirements. Scientists may use validation inspections to inform data interpretation related to intensive stormwater monitoring efforts.

**2.3.1 ■ SELECT VALIDATION INSPECTION POINTS & GATHER MATERIALS**

The regulator should coordinate with other validation inspectors to select the catchment(s), treatment BMPs, roadways and urban land areas to inspect and determine the appropriate timing for inspections. Once inspection assignments are made, validation inspectors can use approved catchment credit schedules to find inventory tables and maps that identify the location and expected conditions for treatment BMPs, roads and other pollutant control strategies within catchments that have active catchment credit schedules.

Validation inspectors gather the necessary materials and inspection forms before going into the field to perform inspections.

PRODUCT ■ INSPECTION LISTS, SCHEDULES AND ASSIGNMENTS

PRODUCT ■ SPECIFICATIONS FOR TREATMENT BMPs, ROADS AND OTHER POLLUTANT CONTROL STRATEGIES TO BE INSPECTED

PRODUCT ■ MATERIALS NECESSARY TO PERFORM INSPECTIONS

**2.3.2 ■ PERFORM VALIDATION INSPECTIONS**

Inspection timing is critical to ensure validation inspection results are comparable to self-inspection results.

**TREATMENT BMP VALIDATION-INSPECTION TIMING**

For treatment BMPs, validation inspections can be compared to self-inspections as long as they are not separated by maintenance activities or significant runoff events that would change the condition of the treatment BMP. Because most maintenance of treatment BMPs is likely to occur during favorable summer conditions, validation inspections should generally be performed in the spring or fall. Spring validation

inspections can be compared to self-inspection results to confirm maintenance priorities. Fall validation inspections can still be compared to spring self-inspections, but greater variability should be expected. Early fall validation inspections are valuable to check conditions before the runoff events of the fall, winter and spring. Individual agencies determine appropriate validation inspection schedules and priorities.

### ROADS VALIDATION-INSPECTION TIMING<sup>16</sup>

Road conditions are expected to change rapidly in the winter and may also change following significant runoff events. Validation inspectors should consult road implementation plans in catchment credit schedules to determine the level of maintenance committed to in the catchment credit schedule and the resulting expected conditions.

When expected conditions are relatively high for a particular road group, the roadway should be maintained within a week or two of a precipitation event, as defined in the Catchment Credit Schedule Roads Maintenance Plan Summary and Roads Inventory Table. In these situations, validation inspections should be conducted one-to-two weeks following a precipitation event, to provide the urban jurisdiction sufficient time to perform planned maintenance.

When expected road conditions are relatively low for a particular road group, planned maintenance is infrequent and thus actual conditions may not be returned to expected conditions until some time after precipitation and runoff events. In these situations, validation inspections should be conducted at least two weeks following a precipitation event, and the results should be interpreted carefully to confirm they are comparable to self-inspection results.

#### RELATIVE HIGH AND LOW CONDITIONS FOR DIFFERENT ROAD GROUPS

The PLRM Model Development Guidance defines the road condition scoring process. High and low conditions are determined relative to the road type and risk, with a high score, of 5, relating to a low pollutant loading potential, and a low score, of 1, relating to a high pollutant loading potential. For instance, a secondary low-risk road will score no lower than 3 even if no special abrasive applications are planned and the road is only swept annually. This reflects that secondary low-risk roads, by definition, receive low-traffic and are low-slope. Thus, they are not expected to require frequent abrasive applications and are likely to pose a relatively low risk to downslope water quality even if they are rarely maintained.

Conversely, the road score for a primary high-risk road for which advance abrasive applications and frequent highly-effective sweeping is planned can be no greater than 1.9. This reflects that primary high-risk roads, by definition, receive a high level of traffic and are sloped. Thus, primary high-risk roads are expected to receive significant abrasive applications and, even if these abrasives are diligently recovered, they are likely to generate a relatively high risk to downslope water quality.

### OTHER POLLUTANT CONTROL STRATEGY INSPECTION TIMING

The regulator or other validation inspector should consult the Other Pollutant Control Strategies description in the catchment credit schedule memo to determine the appropriate validation inspection timing to assess conditions related to implementing other pollutant control strategies.

### PERFORM INSPECTIONS

The validation inspector assesses conditions according to the appropriate standard condition assessment methodology (see Table TT.1 for a current list of the standard assessment methods accepted by the Crediting Program).

<sup>16</sup> As of September 2009 a Road RAM is under development. This method is expected to be the standard road assessment method and will inform the appropriate timing for performing both self-inspections and validation inspections. The Handbook will be updated to reflect these methods once they are complete.

## PRODUCT ■ INSPECTION RESULTS

**2.3.3 ■ RECORD & SUBMIT INSPECTION RESULTS**

The regulator records validation-inspection results and enters the resulting condition scores in the [Accounting and Tracking Tool](#). These results will be compared to urban jurisdiction self-inspection results in Step 2.5. The regulator keeps inspection forms on file.

## PRODUCT ■ UPDATED ACCOUNTING AND TRACKING TOOL

**2.4 REPORT AND DECLARE CREDITS****BEFORE YOU BEGIN**

The urban jurisdiction needs the following materials before initiating this step:

- Updated BMP, roads and asset management databases
- Maintenance logs
- Accounting and Tracking Tool login

The **urban jurisdiction** develops a Credit Declaration Section for its Annual Stormwater Report and submits all materials by December 10 of each year for the reporting year ending September 30.

**2.4.1 ■ COMPILE DATA & UPDATE ACCOUNTING AND TRACKING TOOL**

The urban jurisdiction compiles all self-inspection results and ensures maintenance logs are in order. The urban jurisdiction uploads or enters self-inspection results from its databases into the [Accounting and Tracking Tool](#). The Accounting and Tracking Tool User Guidance defines the data input format for importing an Excel file of self-inspection results into the Accounting and Tracking Tool. Alternatively, the urban jurisdiction can hand-enter the self-inspection information.

The urban jurisdiction also gathers information from records and county staff regarding the urban jurisdiction's overall stormwater program, planned actions for the coming year, suggestions for Crediting Program improvement, and areas for scientific investigation.

## PRODUCT ■ MATERIALS NECESSARY TO COMPLETE CREDIT DECLARATION SECTION OF ANNUAL STORMWATER REPORT

**2.4.2 ■ RUN REPORTS & REVIEW RESULTS**

The urban jurisdiction uses the Accounting and Tracking Tool to generate urban catchment credit schedule reports for each catchment. The urban jurisdiction reviews each Report to determine that all information is accurate then completes the credit declaration for each catchment. For each catchment credit schedule, this includes review and completion of the following:

- Inspection information – ensuring it is accurate and related to the correct features in each catchment.
- Credit declarations – confirming they are appropriate for the catchment given the credit schedule and inspection results. The Accounting and Tracking Tool automatically calculates the amount of credit based on inspection results using the credit award method described in Appendix C. If the urban jurisdiction declares a credit different than that calculated amount, a justification must be provided in the Catchment Credit Declaration Results portion of the Credit Declaration Section of annual stormwater report.
- Credit distributions – confirming the distribution of declared credits to other urban jurisdictions from each catchment.

## PRODUCT ■ ACCURATE AND COMPLETE INFORMATION TO SUPPORT ANNUAL REPORT AND CREDIT DECLARATION FOR EACH CATCHMENT

### 2.4.3 ■ DEVELOP CREDIT DECLARATION SECTION NARRATIVE & COMPILE ANNUAL STORMWATER REPORT

The urban jurisdiction develops the Credit Declaration Section of the annual stormwater report using the recommended Annual Stormwater Report Credit Declaration Section Outline from the [Tools and Templates](#) section of this Handbook. The Credit Declaration Section Outline identifies several Accounting and Tracking Tool reports to run and include as attachments to the annual stormwater report.

The overall annual stormwater report includes sections related to several other regulatory requirements that must be addressed in the overall stormwater report, but that do not directly affect the credit declaration or credit awards.

PRODUCT ■ CREDIT DECLARATION SECTION OF THE ANNUAL STORMWATER REPORT

### 2.4.4 ■ REVIEW AND SUBMIT ANNUAL STORMWATER REPORT

The urban jurisdiction follows the requirements for submitting its annual stormwater report. It also develops a digital [File Folder Structure](#) according to the File Structure Template found in the Tools and Templates portion of this Handbook. The file folder should be posted to an appropriate file-sharing site for access by the regulator.

PRODUCT ■ SUBMITTED ANNUAL STORMWATER REPORT INCLUDING A CREDIT DECLARATION SECTION AND SUPPORTING MATERIALS

## 2.5 AWARD CREDITS

The **regulator** awards credits based on a review of the urban jurisdiction's annual report and evaluation of self-inspection and validation-inspection results.

#### BEFORE YOU BEGIN

The regulator needs the following materials before initiating this step:

- Urban Jurisdiction Annual Report

### 2.5.1 ■ REVIEW INSPECTION RESULTS

The regulator compares the self-inspection results to validation-inspection results to check the accuracy of self-inspections reported. The regulator first confirms which validation-inspections are comparable to self-inspections by checking the comparable inspections in the Inspection Comparison Form of the [Accounting and Tracking Tool](#). The regulator then generates an Inspection Comparison Summary for the urban jurisdiction and analyzes the overall percent of discrepancies as well as the discrepancies related to essential pollutant controls.

A high frequency of discrepancies between self-inspection and validation-inspection results should be noted in an [Issue Resolution Punchlist](#) and be a topic of conversation between the regulator and urban jurisdiction during the Annual Review meeting. As a rule of thumb, the regulator and urban jurisdiction discuss results when self-inspection results are higher than validation-inspection results for more than ten percent of comparable results, or when self-inspection results are more than one condition score higher than validation-inspection results for essential pollutant controls. See the Potential Corrective Actions for Inspection Discrepancies box (below) for potential corrective action to consider.

PRODUCT ■ URBAN JURISDICTION INSPECTION COMPARISON SUMMARY

PRODUCT ■ ISSUE RESOLUTION PUNCHLIST (IF NECESSARY)

**POTENTIAL CORRECTIVE ACTIONS FOR INSPECTION DISCREPANCIES**

Unless the regulator has evidence to the contrary, the first instances of significant discrepancies between self-inspection and validation-inspection results should be assumed to be the result of variability in the assessment methods and training. While multiple types of corrective actions are possible, Table 2.2 outlines a potential sequence of corrective actions. The corrective actions in Table 2.2 should be seen as suggestions only, and are not intended to define a corrective actions policy for the Crediting Program. The regulator determines the appropriate corrective action in consultation with the urban jurisdiction.

Magnitude & Frequency of Discrepancy	Adjust Credit Award	Change Inspection Practices
First year with more than 10%, but less than 25%, of self-inspection results more than 1 condition score greater than validation inspection results	No adjustment necessary	Conduct a day-long inspection and operations training involving urban jurisdiction inspectors, maintenance staff as well as regulators and other validation inspectors
First year with more than 25% of self-inspection results more than 1 condition score greater than validation inspection results; or Multiple years with more than 10%, but less than 25% of self-inspection results more than 1 condition score greater than validation inspection results	Consider adjusting credit awards assuming that the validation inspections are correct and that the discrepancy is uniform across all self-inspection results	1) The urban jurisdiction performs an analysis and develops a report of inspection and operational issues, focusing on staff practices and accuracy of inspection results;  2) Conduct a multi-day training with inspection and maintenance staff, involving the regulator and validation inspector in at least one day of training
Multiple years with more than 25% of self-inspection results more than 1 condition score greater than validation inspection results	Consider adjusting credit awards, assuming all self-inspection results are high by a consistent amount and using the calculated credit as the credit award;  and Regulator considers if enforcement action for misreporting is required	1) Overhaul inspection plans and training. Develop a strategy to address issues and submit plans, including how all catchment credit schedules should be adjusted for the coming year(s)  2) The urban jurisdiction and regulator define implementation plan adjustments and training requirements necessary to resolve problems

Table 2.2: Potential corrective actions in response to inspection discrepancies

### 2.5.2 ■ REVIEW SUBMITTED ANNUAL REPORTS & CREDIT DECLARATIONS

The regulator strives to review annual stormwater reports within twenty working days of receiving each report. The regulator develops an Issue Resolution Punchlist identifying questions or issues identified in the annual stormwater report, or other items to address with the urban jurisdiction to facilitate coordination in the coming year. The regulator schedules the annual review meeting (see Step 2.5.3) and sends the Issue Resolution Punchlist to the urban jurisdiction.

The regulator compares the Credit Distribution Summary Tables across different urban jurisdictions to the Accounting and Tracking Tool urban catchment credit schedule reports to confirm that the credit distributions among urban jurisdictions are consistent. Any discrepancies should be noted in an email to both jurisdictions. If the urban jurisdictions do not reply with a consistent correction, the information provided by the primary urban jurisdiction for the catchment credit schedule is used.

**PRODUCT ■ ISSUE RESOLUTION PUNCHLIST (IF NECESSARY)**

### 2.5.3 ■ DISCUSS RESULTS

The regulator and urban jurisdiction hold an annual review meeting to:

- Address any issues identified regarding the annual stormwater report content.
- Review differences identified in the Urban Jurisdiction Inspection Comparison Summary and identify potential causes of notable deviations.
- Define corrective actions, if necessary.
- Discuss Crediting Program change suggestions provided by the urban jurisdiction.
- Discuss plans for the current and following years.

Ideally, the annual review meeting should occur within thirty working days of the urban jurisdiction submittal of the annual stormwater report. The meeting can be initiated by either the regulator or urban jurisdiction, and should not be skipped. This is a critical point of contact. The annual review meeting provides the opportunity for communication to increase the effectiveness of the Crediting Program and save both regulator and urban jurisdiction time and resources in the future.

If any changes are required before the regulator can finalize credit awards, the regulator and urban jurisdiction define those changes and the timeframe for making them, using an Issue Resolution Punchlist.

**PRODUCT ■ RESOLUTION TO ISSUES AND COMPLETED ISSUE RESOLUTION PUNCHLIST**

**PRODUCT ■ IMPROVED UNDERSTANDING BETWEEN REGULATOR AND URBAN JURISDICTION**

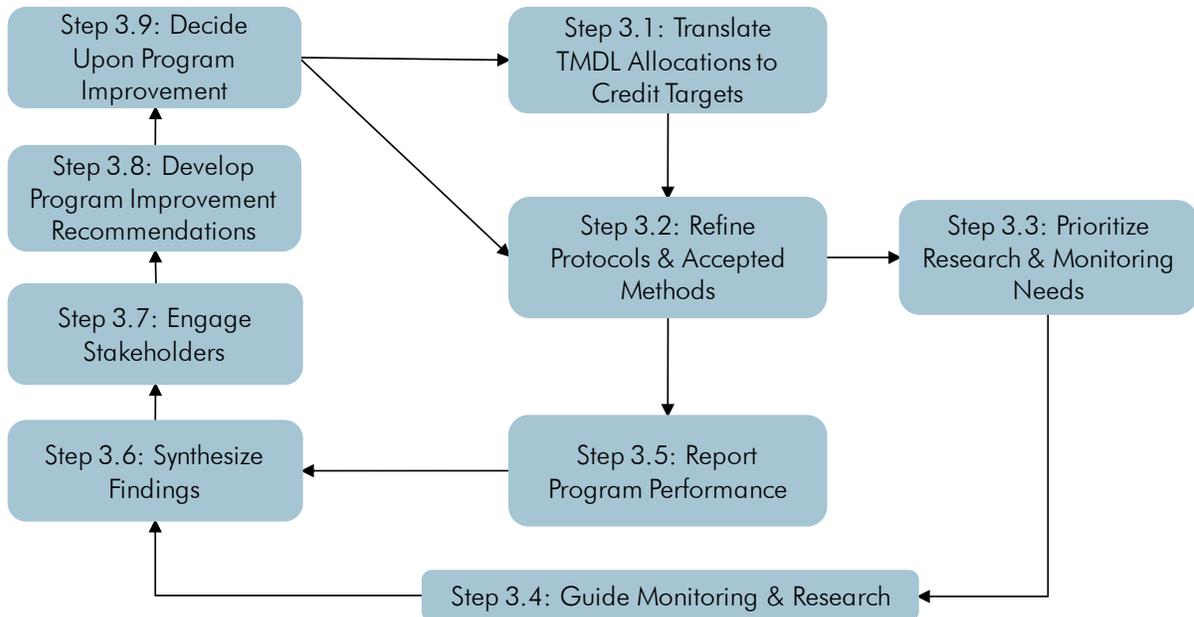
### 2.5.4 ■ AWARD CREDITS

Once all necessary issues are resolved, the regulator determines the final credit awards and makes adjustments in the Credit Award Form in the Accounting and Tracking Tool. Once complete, the regulator generates a final Urban Jurisdiction Annual Credit Summary, files the final report along with the annual stormwater report, and notifies the urban jurisdiction that the Accounting and Tracking Tool reflects the final credit awards.

**PRODUCT ■ CREDIT AWARDS IN ACCOUNTING AND TRACKING TOOL**

**PRODUCT ■ FINAL URBAN JURISDICTION ANNUAL CREDIT SUMMARY**

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## QUESTIONS ANSWERED

- How is the Crediting Program managed to ensure transparency and to drive accountability?
- What information is reported related to achieving load reductions and meeting credit targets?
- How are findings from operational experience and scientific investigations synthesized into useful information to make the Crediting Program more efficient and improve the accuracy of related standard methods?
- How are program improvement recommendations developed and used to inform annual program improvement decisions?

## Parties Involved

- Regulators compile reports, convene a Science-Agency Working Group and engage stakeholders.
- Scientists provide input and contribute to the Synthesis of Findings report.
- Agency partners and stakeholders contribute program improvement recommendations.
- Regulators review reports and award credits.

<p><b>Chapter 0</b> The Lake Clarity Crediting Program</p>	<p><b>Chapter 1</b> Estimate Load Reductions &amp; Establish Catchment Credit Schedules</p>	<p><b>Chapter 2</b> Report Conditions &amp; Award Credits</p>	<p><b>Chapter 3</b> Report Results &amp; Improve Program</p>
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## THREE | REPORT RESULTS & IMPROVE PROGRAM

### LAKE CLARITY CREDITING PROGRAM HANDBOOK

The Crediting Program is managed through a transparent and inclusive program improvement process. Regulators, urban jurisdictions, funders, scientists and stakeholders develop program adjustment recommendations, informed by operational considerations and scientific findings. Regulatory agency executives use these recommendations to make well-informed decisions to officially adjust the Crediting Program. Annual program adjustments ensure the Crediting Program continues to motivate effective action to improve lake clarity over time. Every fifth year, a complete Crediting Program review informs significant changes to the Crediting Program and potential changes to regulatory requirements. Figure 3.1 outlines the annual steps to evaluate new information, report results, and improve the Crediting Program.<sup>17</sup>

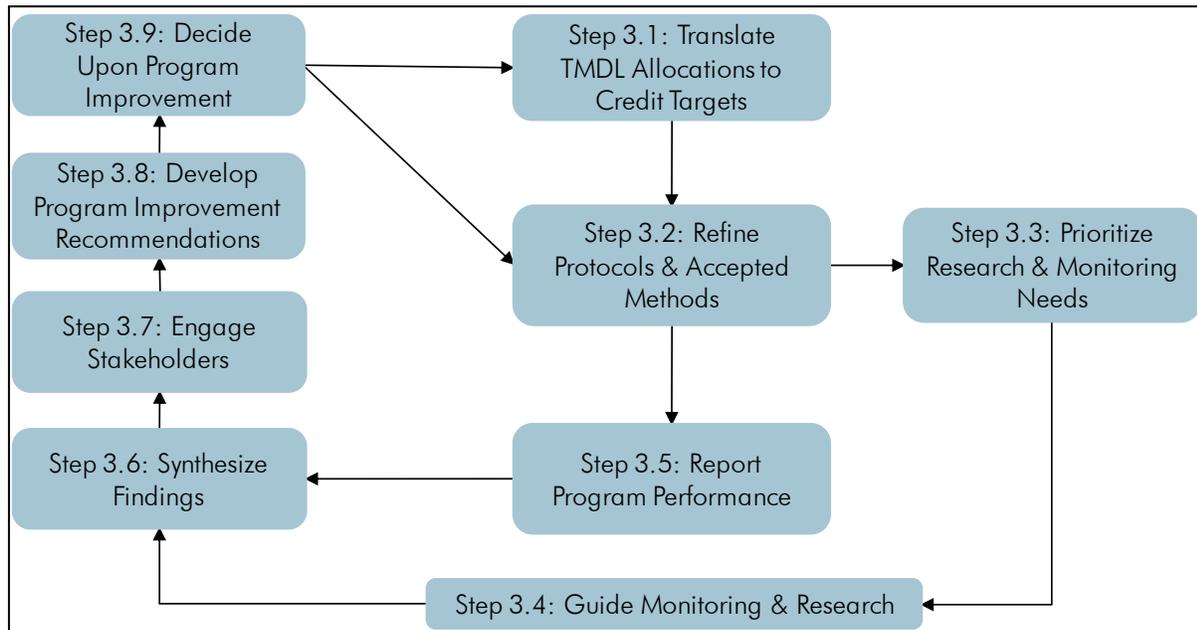


Figure 3.1: Overview of annual steps to evaluate new information, report results, and improve the Crediting Program.

Two reports are developed each year to provide information to all interested parties and inform program improvement decisions. The TMDL Performance Report describes progress toward meeting overall load reduction milestones and urban jurisdiction credit requirements. The TMDL Synthesis of Findings Report presents relevant research, monitoring and operational insights in the context of TMDL and Crediting Program needs.

The Crediting Program management process is cyclical. This chapter describes the process starting with the policy, planning and operational documents that define (1) regulatory requirements related to the Crediting Program (Step 3.1), (2) operational protocols and accepted standard methods (Step 3.2), and (3) prioritized research and monitoring needs (Step 3.3). The process to adjust these documents begins with developing and synthesizing information (Steps 3.4 to 3.6). Steps 3.7 through 3.9 use this information to inform program improvement decisions. When reviewing Steps 3.1 through 3.3 recognize that the description of how to propose, and to decide upon, changes to the subject documents is described in Steps 3.4 through 3.9. Table 3.1 summarizes the roles, tools and products involved in each step.

<sup>17</sup> As of September 2009, the US EPA and NDEP, in partnership with the Water Board and TRPA, are expected to use SNPLMA funds to develop an overall TMDL Management System. Management of the Crediting Program is expected to become part of the overall TMDL Management System.

Process Step	Step #	Urban Jurisdictions	Regulators	Scientists	Stakeholders & Other Entities	Tools & Templates	Crediting Program Products
Translate TMDL Allocations to Credit Requirements	<a href="#">3.1</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<a href="#">Accounting &amp; Tracking Tool</a>	
Refine Protocols & Accepted Methods	<a href="#">3.2</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lake Clarity Crediting Program Handbook	Updated Handbook; Updated Identified Operational Improvements List
Prioritize Research & Monitoring Needs	<a href="#">3.3</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Updated & Prioritized List of Areas for Investigation
Guide Monitoring & Research	<a href="#">3.4</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Report Program Performance	<a href="#">3.5</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				Lake Clarity Crediting Program Performance Report
Synthesize Findings	<a href="#">3.6</a>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<a href="#">Program Improvement Recommendation Form</a>	Synthesis of Findings Report; Program Improvement Recommendation
Engage Stakeholders	<a href="#">3.7</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Develop Program Improvement Recommendations	<a href="#">3.8</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<a href="#">Program Improvement Recommendation Form</a>	Program Improvement Recommendations
Improve Program	<a href="#">3.9</a>		<input checked="" type="checkbox"/>				Record of Decisions

Legend  
 ■ Indicates a necessary or active role  
 □ Indicates potential participation or a support role  
 Underlined items are hyperlinked and part of the Crediting Program Handbook

Table 3.1: Overview of roles, tools & products to improve the Crediting Program and report Basin-wide results

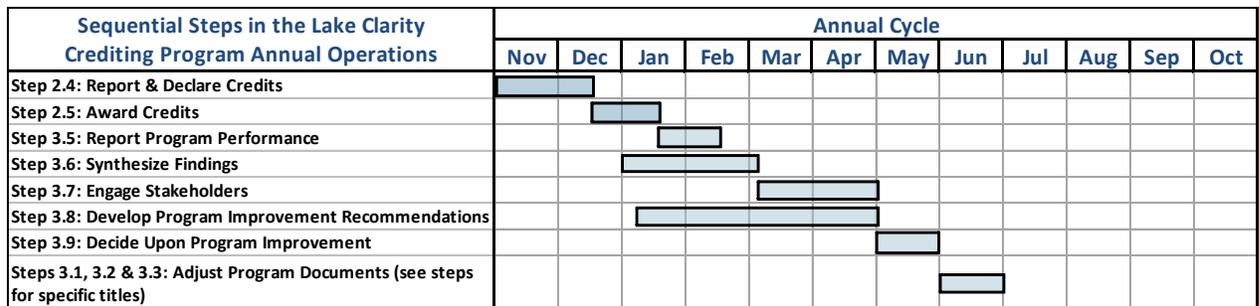


Figure 3.2: Annual crediting program report and decision timeframe – Information provided in urban jurisdiction annual stormwater reports is used to inform the Crediting Program Performance Report and Crediting Program Synthesis of Findings Report. These in-turn inform development of Program Improvement Recommendations and program improvement decisions.

### 3.1 TRANSLATE TMDL ALLOCATIONS TO CREDIT REQUIREMENTS

**Regulators** periodically review credit requirements and, in consultation with urban jurisdictions, determine the credit requirements to include in renewed NPDES permits and MOA. The TMDL load reduction milestones provide the context for setting load reduction milestones and credit requirements in NPDES permits and MOA.

#### FUTURE CREDIT REQUIREMENTS & IMPROVEMENTS TO LOAD REDUCTION ESTIMATES

Improvements to load reduction estimates may cause temporary deviations between the number of credits awarded through existing catchment credit schedules and the best estimate of average annual load reduction using improved load estimation methods. Whenever a catchment credit schedule is extended or revised, the related load reduction estimates must be consistent with the currently approved load estimation methods. This provides a self-correcting mechanism, whereby credits and load reduction estimates may temporarily deviate but converge over time.

Urban jurisdictions should be aware of the future ramifications of changes to load reduction estimates. They should consider whether improved load estimation methods may cause extended and revised catchment credit schedules to result in more or fewer credits. By anticipating these changes the urban jurisdiction can plan future implementation efforts accordingly.

In the event that deviations between credit awards and improved load reduction estimations are expected to persist for more than five years, regulators may consider adjusting credit requirements in future permits to compensate for this disparity. With catchment credit schedule durations of five-to-fifteen years, however, the self-correcting mechanism of using improved load reduction estimates for extended and revised catchment credit schedules is most likely sufficient to ensure credit awards and load reduction estimates remain consistent.

#### BEFORE YOU BEGIN

Regulators need the following materials before initiating this step:

- Record of Decisions with program adjustments related to credit requirements

#### 3.1.1 ■ ADJUST CREDIT REQUIREMENTS IN REGULATORY DOCUMENTS & THE ACCOUNTING AND TRACKING TOOL

**Regulators** determine if changes to credit requirements are required and make adjustments to the load reduction and credit requirements in the [Accounting and Tracking Tool](#) for each jurisdiction. This adjusts the load reduction and credit requirement comparisons in the urban jurisdiction summaries and reports.

Regulators also follow the processes to update NPDES permits, MOAs and other regulatory requirements.

**PRODUCT ■ UPDATED LOAD REDUCTION AND CREDIT REQUIREMENTS IN ACCOUNTING AND TRACKING TOOL**

**PRODUCT ■ UPDATED LOAD REDUCTION AND CREDIT REQUIREMENTS IN REGULATORY AND IMPLEMENTATION DOCUMENTS**

## 3.2 REFINE PROTOCOLS & ACCEPTED METHODS

**Regulators** define protocols and accepted methods in two ways:

- The Lake Clarity Crediting Program Handbook defines the operational protocols related to the Crediting Program including roles, timeframes, reporting requirements, consultation procedures and accepted standard methods.
- Accepted standard methods define the specific technical requirements necessary to produce consistent load reduction estimation calculations and condition assessments that are used to develop catchment credit schedules and inform credit award decisions. While other load reduction and condition assessment methods may be used in certain cases, accepted methods set the standard for alternative methods to match or improve upon. Standard methods require less review, as they are generally understood by regulatory reviewers, and provide consistent and comparable results. Once a new method is used for more than one approved catchment credit schedule it may be considered for adoption as a new standard method. Table TT.1 in the Tools and Templates section of the Handbook defines the currently accepted standard methods.

### BEFORE YOU BEGIN

Regulators need the following materials before initiating this step:

- Record of Decisions with program adjustments related to accepted methods
- Identified Operational Improvements List

### 3.2.1 ■ ADJUST CREDITING PROGRAM HANDBOOK & IDENTIFIED OPERATIONAL IMPROVEMENTS LIST

Regulators compile and maintain an Identified Operational Improvements List which is used as a reference for developing program improvement recommendations and ensures that items identified in one year are not overlooked in subsequent years (see Step 3.8 for a more complete description). Regulators review program adjustment decisions and the issues identified in annual stormwater reports, the TMDL Performance Report, and the TMDL Synthesis of Findings Report to determine if additional items should be added to or moved within the Identified Operational Improvements List.

Once operational protocols or new and updated methods are accepted through a program improvement decision, regulators change the appropriate steps and descriptions in this Handbook to improve operational protocols, or adjust Table TT.1 in the Tools and Templates section of this Handbook, which defines the current list of accepted standard methods. Regulators update the Identified Operational Improvements List to reflect the changes made in order to address previously identified issues.

PRODUCT ■ UPDATED LAKE CLARITY CREDITING PROGRAM HANDBOOK

PRODUCT ■ UPDATED IDENTIFIED OPERATIONAL IMPROVEMENTS LIST

## 3.3 PRIORITIZE RESEARCH & MONITORING NEEDS

**Regulators** maintain the List of Areas for Investigation. The List of Areas for Investigation catalogs and prioritizes research and monitoring needs that have been identified by Crediting Program participants as being important to improve their ability to effectively and efficiently achieving load reductions.

While the Crediting Program does not directly fund or manage research and monitoring efforts, the Crediting Program participants manage monitoring contracts and programs. They are also influential in the selection of research and monitoring projects administered by individual agencies and larger science programs, and are active participants in the Regional Stormwater Monitoring Program (RSWMP). The List of Areas for Investigation is a tool to help communicate and track research and monitoring needs and coordinate the Crediting Program participants' efforts to secure funding to address priority needs.

**BEFORE YOU BEGIN**

Regulators need the following materials before initiating this step:

- Record of Decisions with program adjustments related to accepted methods
- List of Areas for Investigation

**3.3.1 ■ DEVELOP & ADJUST LIST OF AREAS FOR INVESTIGATION**

Regulators convene stakeholders to develop a prioritized List of Areas for Investigation and periodically adjust the list based on agreed upon needs in the TMDL Synthesis of Findings Report. Ideally, scientists, urban jurisdictions, regulators, funding agencies and stakeholders coordinate input to develop a single Program Improvement Recommendation in Step 3.8 proposing revisions to the List of Areas for Investigation. Regulators review program adjustment decisions in the Record of Decisions from, and update the List of Areas for Investigation.

**PRODUCT ■ UPDATED LIST OF AREAS FOR INVESTIGATION**

**3.4 GUIDE MONITORING & RESEARCH**

**Scientists**, through the RSWMP and other efforts, conduct monitoring and research to address items on the List of Areas for Investigation to improve effectiveness of pollutant controls and the Crediting Program. Scientists use expected loading estimates as hypotheses and design study plans to test these hypotheses and improve load estimation and condition assessment methods. In addition, scientists study the state of Lake Tahoe and the factors that affect lake clarity.

The Crediting Program does not directly fund or manage research and monitoring efforts. However, Crediting Program participants identify research and monitoring needs in the List of Areas for Investigation (Step 3.3) and advocate for funds to priority projects. They may also request that contracts reflect a need for clear, timely and standard-formatted findings so that findings may be used to address identified needs.

**BEFORE YOU BEGIN**

Scientists, regulators, urban jurisdictions and stakeholders need the following materials before initiating this step:

- List of Areas for Investigation

**3.4.1 ■ PROVIDE INPUT TO RESEARCH & MONITORING FUNDING PROCESSES**

Regulators, urban jurisdictions, grantors and stakeholders use the prioritized items on the List of Areas for Investigation and coordinate efforts to identify and secure funding for identified research and monitoring needs.

**PRODUCT ■ COORDINATED FUNDING EFFORTS FOR RESEARCH AND MONITORING**

**3.4.2 ■ REQUEST CONTRACT REQUIREMENTS FOR CLEAR & APPLICABLE FINDINGS**

Regulators, urban jurisdictions, grantors and stakeholders may recommend specific requirements for funded research and monitoring project contracts. Specific requirements can increase the likelihood that funded research and monitoring projects produce directly useful findings by:

- Identifying specific questions for investigators to address through specific projects
- Requesting a one-to-two page summary of findings that directly relates findings to identified questions and related items on the List of Areas for Investigation
- Requiring that reports be submitted in a timely manner so findings may be considered in the development of the Synthesis of Findings Report (Step 3.6)
- Requesting interim updates for long-duration projects, in order for these project to provide insights with potential to influence current decisions and future expectations

- Holding final payments until a draft report has been reviewed by an appropriate group of Crediting Program participants and review comments have been satisfactorily addressed.

PRODUCT ■ STANDARD CONTRACT REQUIREMENTS

### 3.5 REPORT PROGRAM PERFORMANCE

**Regulators** develop the Lake Clarity Crediting Program Performance Report (Performance Report) summarizing credit awards and load reduction estimates across all urban jurisdictions. The Performance Report highlights successes and challenges from the past year both basin-wide and for each urban jurisdiction. Stakeholders and the interested public are the primary audiences for the Performance Report.

#### LAKE CLARITY CREDITING PROGRAM PERFORMANCE REPORT OUTLINE

The following is a recommended outline for the Performance Report:

##### Basin-wide Performance

- Urban Source Category Annual Summary, chart and tables – from Accounting and Tracking Tool
- Narrative Summary and Discussion of Performance (2 to 4 pages)

##### Each Urban Jurisdiction

- Urban Jurisdiction Annual Credit Summary, chart and tables – from Accounting and Tracking Tool
- Narrative Summary and Discussion of Performance – from Annual Stormwater Report (1 to 2 pages)

#### BEFORE YOU BEGIN

Regulators need the following materials before initiating this step:

- Updated Accounting and Tracking Tool with all credit awards finalized
- All Urban Jurisdiction Annual Stormwater Reports

#### 3.5.1 ■ DEVELOP & COMPILE CONTENT

Regulators use the [Accounting and Tracking Tool](#) to generate the quantitative information for the Performance Report. The Urban Source Category Summary sums load reductions across urban jurisdictions and compares them to TMDL load reduction milestones. Urban Jurisdiction Annual Credit Summaries sum credits and load reductions for each individual urban jurisdiction and compare credit awards to credit requirements.

Regulators develop a narrative summary of overall accomplishments and challenges using information from the Credit Declaration Section of each urban jurisdiction's annual stormwater report (see [Step 2.4](#)). Regulators also use annual stormwater reports to identify the most important information regarding the performance of each urban jurisdiction and include this information in the individual urban jurisdiction sections of the report.

PRODUCT ■ LAKE CLARITY CREDITING PROGRAM PERFORMANCE REPORT CONTENT

#### 3.5.2 ■ PRODUCE & DISTRIBUTE PERFORMANCE REPORT

Regulators produce the Performance Report and distribute it digitally, through email and posting, to the Crediting Program and/or the appropriate agency web pages.

PRODUCT ■ LAKE CLARITY CREDITING PROGRAM PERFORMANCE REPORT

## 3.6 SYNTHESIZE FINDINGS

Regulators convene a **Science-Agency Working Group**<sup>18</sup> to identify relevant research, monitoring and operational findings that may inform program improvements. Findings may address needs related to improving (1) the accuracy of load estimation and condition assessment methods, (2) the effectiveness of treatment BMP design and maintenance efforts, and (3) the efficiency of Crediting Program operations. This information is brought together in a Synthesis of Findings report, targeted to regulatory and urban jurisdiction agency management and available to all interested parties.

### SCIENCE-AGENCY WORKING GROUP

The Science-Agency Working Group is a formal body with representatives from key agencies, at least one urban jurisdiction, and respected scientists actively engaged in stormwater research. The Science-Agency Working Group Charter specifies the membership and decision structure for the group. The Science-Agency Working Group must efficiently produce the Synthesis of Findings Report, necessitating a relatively small group size. Ideally, the Science-Agency Working Group is supported by a research fellow or intern who is responsible for developing Findings Summaries, the Findings Summary Table, and the Synthesis of Findings Report with the guidance of the Science-Agency Working Group.

Generally, the Science-Agency Working Group decision structure is consensus-seeking with non-consensus outcomes resulting in majority and minority opinions, each of which are reflected in the Synthesis of Findings Report.

The function of the Synthesis of Findings Report is to inform Crediting Program improvements. It is not intended to be a comprehensive review of all literature and available information. It should present clear findings that are directly related to the Crediting Program. Findings should be presented in clear statements. Supporting information should be targeted, providing the most relevant information necessary for agency managers to understand the issue in context of the Crediting Program.

The Synthesis of Findings is meant to bridge the gaps between agency management, stormwater practitioners, and researchers. Providing highly-nuanced recommendations with extensive discussion does not meet the primary audience's needs. Clear statements related to the identified needs can help drive action.

<sup>18</sup> As of September 2009, an overall TMDL Management System is planned for development and implementation in 2010 and 2011. The Science-Agency Working Group described in this step is envisioned to be a stormwater focused, sub-group of the overall TMDL Science-Agency Working Group.

**BEFORE YOU BEGIN**

Regulators and Science-Agency Working Group Members need the following materials before initiating this step:

- Research reports relevant to Crediting Program
- Monitoring reports relevant to Crediting Program
- Past Synthesis of Findings Reports
- List of Areas for Investigation
- Annual Stormwater Reports
- Lake Clarity Crediting Program Performance Report

**3.6.1 ■ COMPILE POTENTIAL FINDINGS**

Regulators ask Science-Agency Working Group members and other potential information providers, including researchers, agency staff, and technically-oriented stakeholders, to identify relevant research and monitoring information. Summaries of research reports should be submitted in a two-page Findings Summary that clearly identifies the relevance of the information to the Crediting Program. All relevant information may be considered, however, articles and information not in the Finding Summary format must be considered on a prioritized basis, to the degree that resources are available.

Operational improvement considerations are identified in annual stormwater reports ([Step 2.4](#)) and brought to the Science-Agency Working Group in the Finding Summary format. By synthesizing both operational and technical issues, the Synthesis of Findings is intended to use new information to solve identified needs.

Regulators lead the development of a Potential Findings Summary Table, which lists the title of each Finding Summary and identifies its relevance to the items on the List of Areas for Investigation (see Step 3.3) or Identified Operational Improvements List (see Step 3.2). The Potential Findings Summary Table is sent to the Science-Agency Working Group along with a compilation of Finding Summaries.

**PRODUCT ■ FINDINGS SUMMARY TABLE**

**PRODUCT ■ FINDINGS SUMMARIES**

**3.6.2 ■ REVIEW BY SCIENCE-AGENCY WORKING GROUP**

The Science-Agency Working Group convenes an initial meeting to discuss the identified research and to decide upon the most relevant and conclusive findings to highlight in the Synthesis of Findings Report. The Working Group synthesizes findings that emerge from considering the body of research, monitoring and operational information from the past year, and from the overall history of experience of the Working Group members.

At the initial meeting, the Working Group delineates roles, defining who is responsible for drafting each finding and who is responsible for providing initial review.

**PRODUCT ■ ROLES FOR DEVELOPING THE SYNTHESIS OF FINDINGS REPORT**

**3.6.3 ■ DEVELOP SYNTHESIS OF FINDINGS REPORT**

Once each finding is drafted and reviewed, it is sent to the person designated to assemble the draft Synthesis of Findings Report. The draft report is compiled and sent to the Working Group members, who then reconvene to discuss the findings and provide final input on the report.

The final Synthesis of Findings Report is posted to the Crediting Program web page and distributed to all interested parties.

**PRODUCT ■ SYNTHESIS OF FINDINGS REPORT**

**3.6.4 ■ RECOMMEND ADJUSTMENTS TO AREAS FOR INVESTIGATION**

The Science-Agency Working Group recommends changes to the List of Areas for Investigation based on information gained from (a) developing the Synthesis of Findings and (b) the research and monitoring needs

identified in urban jurisdiction annual stormwater reports. The Science-Agency Working Group reviews the complete proposed List of Areas for Investigation, and recommends adjustments to priorities to clearly identify high, medium and low priority needs. Regulators develop a draft Program Improvement Recommendation for review and executive adoption (see Steps 3.8 & 3.9).

**PRODUCT ■ DRAFT PROGRAM IMPROVEMENT RECOMMENDATION OF UPDATES TO LIST OF AREAS FOR INVESTIGATION**

## 3.7 ENGAGE STAKEHOLDERS

**Regulators engage stakeholders** to inform them of program progress and findings, and to solicit their input for Program Improvement Recommendations (Step 3.8). This engagement should target a broad audience including urban jurisdictions, regulators, scientists, funding agencies, environmental groups, business interests, and any other interested parties. Stakeholder engagement is critical to increase understanding, engender support, and drive accountability. Stakeholder input that is relevant to identified areas for operational improvement is considered on par with the findings in the Synthesis of Findings Report.

### BEFORE YOU BEGIN

Regulators need the following materials before initiating this step:

- List of interested stakeholders
- Lake Clarity Crediting Program Performance Report
- Synthesis of Findings Report

### 3.7.1 ■ INFORM STAKEHOLDERS OF AVAILABLE INFORMATION

Regulators keep an ongoing list of engaged stakeholders with contact information. Regulators inform stakeholders when reports are available for review.

Regulators notify stakeholders of the Crediting Program Review meeting, which should be held within approximately one month of the posting of the final Performance Report and Synthesis of Findings Report.

**PRODUCT ■ INFORMED AND ENGAGED STAKEHOLDERS**

### 3.7.2 ■ DISCUSS FINDINGS & SOLICIT STAKEHOLDER INPUT

Regulators convene an open meeting where findings are presented and stakeholders have the opportunity to provide input. At this Crediting Program Review meeting, stakeholder input should be structured such that input directly related to identified areas of operational improvement and areas for investigation are recorded in context of the specific need. Stakeholders also have the opportunity to identify new needs and concerns for consideration. These may be included in the Identified Operational Improvements List or List of Areas for Investigation. Stakeholder input that does not directly relate to these ongoing lists of needs should be summarized and the notes posted to the Crediting Program web site.

**PRODUCT ■ STAKEHOLDER MEETING WITH MEETING NOTES INCLUDING INPUT TO CONSIDER IN RECOMMENDATIONS DEVELOPMENT**

## 3.8 DEVELOP PROGRAM IMPROVEMENT RECOMMENDATIONS

**Regulators** lead the development of operational and technical improvement recommendations to ensure that the Crediting Program continues to motivate effective action to improve lake clarity over time. The [Program Improvement Recommendation Form](#) in the Tools and Templates section of this Handbook provides a structure to ensure recommendations are clear and contain the necessary information for regulatory executives to make informed decisions.

Regulators compile and maintain an Identified Operational Improvements List which is used as a reference for developing change recommendations and ensures that items identified in one year are not overlooked in subsequent years (see Step 3.8 for a more complete description). Regulators review program adjustment decisions and the issues identified in annual stormwater reports, the TMDL Performance Report, and the

TMDL Synthesis of Findings Report to determine if additional items should be added to, or moved within, the Identified Operational Improvements List.

#### BEFORE YOU BEGIN

Regulators need the following materials before initiating this step:

- Synthesis of Findings Reports
- Urban Jurisdiction Annual Stormwater Reports
- Current List of Areas for Investigation
- Identified Operational Improvements List
- Stakeholder input

### 3.8.1 ■ DEVELOP DRAFT PROGRAM IMPROVEMENT RECOMMENDATIONS

Regulators coordinate and/or lead the drafting of Program Improvement Recommendations. Each recommendation should clearly state the proposed change to the Lake Clarity Crediting Program Handbook, load reduction estimation methods, assessment methodologies or other protocols. This includes strikethrough language when appropriate. A recommendation should define how it addresses identified needs. Each recommendation should also address any potential complications or impacts the change may have to an individual entity or to the Crediting Program overall.

### 3.8.2 ■ GAIN STAKEHOLDER REVIEW

Draft Program Improvement Recommendations are posted to the Crediting Program web site and stakeholders are notified that the recommendations are available for review and comment. For minor changes, it may be sufficient to gain input through electronic communication or comment tables. However, for major changes it may be necessary to hold a stakeholder review meeting to discuss and gain input on the proposed changes.

PRODUCT ■ DRAFT PROGRAM IMPROVEMENT RECOMMENDATIONS

PRODUCT ■ STAKEHOLDER COMMENTS

#### PEER REVIEW

Formal peer review may be necessary for important technical changes that are likely to result in significant redirection of effort and funds. Regulators and members of the Science-Agency Working Group identify when a recommendation is appropriate for peer review. Regulators work with the Tahoe Science Consortium to facilitate an appropriate review.

### 3.8.3 ■ DEVELOP FINAL RECOMMENDATIONS

Regulators review all input related to recommendations and make adjustments as appropriate. Significant comments should be noted in the Program Improvement Recommendations. The final Program Improvement Recommendations are posted to the Crediting Program web site and sent to the regulator agency executives for consideration.

PRODUCT ■ PROGRAM IMPROVEMENT RECOMMENDATIONS

## 3.9 DECIDE UPON PROGRAM IMPROVEMENT

The **Water Board and NDEP agency executives** decide which Program Improvement Recommendations to officially act upon each year. These decisions are documented and direct the adjustments made in Steps 3.1 through 3.3.

### BEFORE YOU BEGIN

Regulators need the following materials before initiating this step:

- Program Improvement Recommendations
- Synthesis of Findings Report
- Current List of Areas for Investigation
- Current Identified Operational Improvement List

### 3.9.1 ■ REVIEW CHANGE RECOMMENDATIONS

Agency executives review Program Improvement Recommendations with staff and consult stakeholders as appropriate to address any questions.

**PRODUCT ■ UNDERSTANDING OF PROGRAM IMPROVEMENT RECOMMENDATIONS**

### 3.9.2 ■ MEET & DECIDE

The agency executives meet and decide which Program Improvement Recommendations to act upon. For policy decisions and those directly affecting certain permit requirements, the decision by the executive may be to bring a proposal before the Board or other decision making authority. Only upon approval from the Board or other decision making authority can action be taken.

A Record of Decisions defines the agreed-to changes, the rationale, and the party responsible for implementing the changes. Any recommendations not acted upon should be addressed by providing a brief rationale and an indication of whether the recommendation may be considered at a later date or if the recommendation has been rejected and should not be brought back in the future.

**PRODUCT ■ PROGRAM ADJUSTMENT DECISIONS**

### 3.9.3 ■ DOCUMENT & COMMUNICATE DECISIONS

The Record of Decisions, including rationale for decisions and significant notes, are posted to the Crediting Program or appropriate agency web sites and stakeholders are notified.

**PRODUCT ■ COMPLETE AND POSTED RECORD OF DECISIONS**

# TOOLS & TEMPLATES

## LAKE CLARITY CREDITING PROGRAM HANDBOOK

The Crediting Program encourages the use of standard methods and requires certain information to be submitted using the forms and templates provided in this section. Table TT.1 defines the current list of officially accepted standard methods. Table TT.2 identifies the tools and templates referenced in the Handbook that should be used to document information related to certain steps.

Crediting Program Tools & Templates	Description	Related Crediting Program Steps
Catchment Credit Schedule Form (CSS)	Fillable form documenting all information related to a load reduction estimation and catchment credit schedule for an urban catchment	1.1 through 1.3
Catchment Credit Schedule Technical Guidance & Instructions	Technical guidance providing direction to complete load estimations and catchment inventories necessary to develop a catchment credit schedule	1.1 through 1.3
Catchment Credit Schedule Inventory Table Templates	Excel table templates to complete treatment BMP, roads, and baseline infrastructure inventories related to catchment credit schedule	1.1 through 1.3
Issue Resolution Punchlist (IRP)	Fillable form to define questions and issues to be addressed related to the review and acceptance of a catchment credit schedule or annual report	1.2, 1.4 & 2.5
Issue Resolution Punchlist Guidance & Instructions	Guidance for completing the Issue Resolution Punchlist in a consistent and clear manner	1.2, 1.4 & 2.5
Annual Stormwater Report - Credit Declaration Section Outline	Outline and description of the desired content for the Credit Declaration Section of an urban jurisdiction annual stormwater report	2.4
Program Improvement Recommendation Form (PIR)	Fillable form to recommend program improvements for consideration, including supporting information	3.6 through 3.9
File Structure Template	Digital file structure for storing and submitting files related to catchment credit schedules and annual reports	1.1, 1.3, 2.4

Table TT.1: Accepted standard methods & tools

Tool or Method Title	Approved Version	Used For
Pollutant Load Reduction Model	v1.0	Estimating loading
Best Management Practice Maintenance Rapid Assessment Methodology	v1.0	Assessing conditions of treatment BMPs
Road Rapid Assessment Methodology	v1.0	Assessing conditions of roads
TMDL Accounting & Tracking Tool	v1.0	Storing catchment credit schedule, load reduction requirement and credit information, and calculating credit awards

Table TT.2: Tools and templates supporting the Crediting Program

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## SECTION A: CORRESPONDENCE & CATCHMENT CREDIT SCHEDULE SUMMARY

The Correspondence & Catchment Credit Schedule Summary section is completed incrementally throughout the process of establishing a Catchment Credit Schedule (CCS), as defined in Chapter 1 of the Lake Clarity Crediting Handbook (Handbook). Subsequent sections of this template prompt users to complete the corresponding summary items here in Section A.

### I. GENERAL CATCHMENT INFORMATION SUMMARY

<b>1. CATCHMENT STATUS</b>		Check the appropriate status and add date of previous approval if applicable	
<input type="checkbox"/> NEW CATCHMENT <input type="checkbox"/> REVISION <input type="checkbox"/> EXTENSION		Date of previous approval	
<b>2. CATCHMENT ID</b>		Provide the unique catchment ID & common name	
Catchment ID		Common Catchment Name	
<b>3. PRIMARY JURISDICTION</b>		Identify the primary urban jurisdiction and primary point of contact within the urban jurisdiction	
<input type="checkbox"/> CALTRANS <input type="checkbox"/> CSLT <input type="checkbox"/> DOUGLAS <input type="checkbox"/> EL DORADO		<input type="checkbox"/> NDOT <input type="checkbox"/> PLACER <input type="checkbox"/> WASHOE	
		Primary Contact	
		Phone Number	E-mail Address
<b>4. REGULATORY AGENCY</b>		Identify the responsible regulatory agency and primary point of contact within the agency	
<input type="checkbox"/> LRWQCB <input type="checkbox"/> NDEP		Primary Contact	
		Phone Number	E-mail Address

### II. CATCHMENT CREDIT SCHEDULE SUMMARY

<b>5. BASIC CATCHMENT POLLUTANT CONTROL STRATEGY NARRATIVE</b>	In the space provided, describe the basic strategies employed to reduce pollutant loading within the catchment
--	--

Basic Narrative

<b>6. EFFECTIVE LOAD REDUCTION ESTIMATE</b>				Note the load reduction estimate amounts from Section F			
Fine sediment particles (#)		Fine sediment mass (kg)		Total nitrogen (kg)		Total phosphorous (kg)	
<b>7. CREDIT POTENTIAL AMOUNT</b>				Note the credit amount			

**CREDITS**

<b>8. ESTABLISHMENT DATE</b>	Note the catchment establishment date from Section F for final CCS only	<b>9. FINAL YEAR</b>	Note the final year of the CCS from Section F for final CCS only
Establishment Date		Final Year	

**III. COORDINATION CHECKLIST**

**10. SUBMITTED FOR VERIFICATION REVIEW**

Note the date submitted and urban jurisdiction staff person (Step 1.3)

Date Submitted	Name of Staff Person
----------------	----------------------

**11. STATEMENT OF COMPLETENESS & APPROPRIATENESS**

Representative from urban jurisdiction must certify the completeness of the CCS (Step 1.3)

I certify that the information contained in this Catchment Credit Schedule and the analyses related to this Catchment Credit Schedule are complete and appropriate.

Printed Name	Date
--------------	------

Signature	
-----------	--

**12. VERIFIED BY REGULATOR**

Regulator must certify the verification step is complete (Step 1.4)

I certify that the Verification Step is complete.

Printed Name	Date
--------------	------

Signature	
-----------	--

**13. REGISTERED AND SUBMITTED FOR APPROVAL**

Note the date that the catchment was registered in the Accounting and Tracking Database (Step 1.5)

Date	
------	--

**14. SUPPORTING MATERIALS CHECKLIST AND FILENAMES**

Confirm each file is included in the digital submission and provide the filename and save date

Checklist	Filename	Save Date
<input type="checkbox"/> CCS FORM		
<input type="checkbox"/> CCS MEMO (IF NECESSARY)		
<input type="checkbox"/> CATCHMENT DELINEATION MAP FOR CATCHMENT 1		
<input type="checkbox"/> OVERALL CATCHMENT DELINEATION MAP		
<input type="checkbox"/> TREATMENT BMP INVENTORY MAP		
<input type="checkbox"/> TREATMENT BMP INVENTORY TABLE		
<input type="checkbox"/> ROADS INVENTORY MAP		
<input type="checkbox"/> ROADS INVENTORY TABLE		
<input type="checkbox"/> ROADS MAINTENANCE MAP(S) (NOT REQUIRED)		
<input type="checkbox"/> BASELINE TREATMENT BMP INVENTORY TABLE		
<input type="checkbox"/> CATCHMENT REGISTRATION REPORT (FINAL ONLY)		
<input type="checkbox"/> PLRM PROJECT FILE (DIGITAL FILE ONLY)		
<input type="checkbox"/> AS-BUILT DRAWINGS AND EQUIPMENT SPECIFICATIONS (DIGITAL FILES ONLY)		

**SECTION B: CATCHMENT DELINEATION**

Credits and load reductions are tracked for specific urban catchments. The same urban catchment area must be used in both baseline and expected loading estimates. In order to prevent double counting, no land area may be included in two urban catchments.

I. CATCHMENT CONNECTIVITY			
<b>1. CATCHMENT ID</b>	Confirm the catchment ID and name	<b>2. CATCHMENT DELINEATION MAP</b>	Confirm the catchment delineation map is complete
<input type="checkbox"/> CATCHMENT ID IS PROPERLY LISTED IN A.1		<input type="checkbox"/> MAP FOLLOWS TECHNICAL GUIDANCE AND IS LISTED IN A.17	
<b>3. OVERALL URBAN JURISDICTION CATCHMENT MAP</b>	Confirm the overall catchment delineation map is complete	<b>4. CATCHMENT HISTORY</b>	Note any previous catchments that included a portion of this catchment
<input type="checkbox"/> MAP FOLLOWS TECHNICAL GUIDANCE AND IS LISTED IN A.17		Previous Catchment Name	Establishment Date
<b>5. CATCHMENT AREA</b>	Provide the total catchment area	<b>6. CATCHMENT CONNECTIVITY</b>	Provide the percent connectivity that will be used to modify the load reduction estimate
Total Area (acres)		Percent Connectivity	
		<input type="checkbox"/> 100% <input type="checkbox"/> OTHER _____%	
		<input type="checkbox"/> ADDITIONAL INFORMATION IS PROVIDED IN THE CCS MEMO CATCHMENT CONNECTIVITY SECTION	

**SECTION C: IMPLEMENTATION PLAN SUMMARY**

The Implementation Plan Summary defines the expected conditions for treatment BMPs, roads, private property BMPs, and other pollutant control strategies based on the urban jurisdiction’s planned operations, maintenance and program implementation activities in the urban catchment. The Implementation Plan Summary may pull information from multiple sources and ideally relies upon one or more of the broader implementation plans used by the urban jurisdictions.

<b>I. DEFINE LOAD REDUCTION STRATEGY</b>			
<b>1. TREATMENT BMPS</b>	Check the most appropriate description	<b>2. ROAD OPERATIONS</b>	Check the most appropriate description
<input type="checkbox"/> PRIMARY <input type="checkbox"/> SECONDARY <input type="checkbox"/> TERTIARY <input type="checkbox"/> NONE		<input type="checkbox"/> PRIMARY <input type="checkbox"/> SECONDARY <input type="checkbox"/> TERTIARY <input type="checkbox"/> NONE	
<b>3. PRIVATE PARCEL BMPS</b>	Check the most appropriate description	<b>4. OTHER POLLUTANT CONTROL STRATEGY</b>	Check the most appropriate description
<input type="checkbox"/> PRIMARY <input type="checkbox"/> SECONDARY <input type="checkbox"/> TERTIARY <input type="checkbox"/> NONE		<input type="checkbox"/> PRIMARY <input type="checkbox"/> SECONDARY <input type="checkbox"/> TERTIARY <input type="checkbox"/> NONE	
<b>II. TREATMENT BMP IMPLEMENTATION SUMMARY</b>			
<b>5. TREATMENT BMP INVENTORY TABLE</b>	Confirm the table is complete	<b>6. TREATMENT BMP INVENTORY MAP</b>	Confirm the map is complete
<input type="checkbox"/> TABLE FOLLOWS TECHNICAL GUIDANCE AND IS LISTED IN A.17		<input type="checkbox"/> MAP FOLLOWS TECHNICAL GUIDANCE AND IS LISTED IN A.17	
<b>7. TREATMENT BMP MAINTENANCE PLAN SUMMARY</b>	In the space provided, summarize planned treatment BMP maintenance actions for the overall catchment (reference implementation planning documents if applicable)		

<b>8. TREATMENT BMP INSPECTION PLAN SUMMARY</b>	In the space provided, summarize planned treatment BMP inspection actions for the overall catchment (reference implementation planning documents if applicable)
---	---

<b>9. ADDITIONAL TREATMENT BMP IMPLEMENTATION INFORMATION</b>	Indicate whether additional information is provided in the CCS memo to adequately describe the treatment BMPs within the catchment
<input type="checkbox"/> ADDITIONAL INFORMATION IS PROVIDED IN THE CCS MEMO TREATMENT BMP IMPLEMENTATION SUMMARY SECTION	

**III. ROADS OPERATION IMPLEMENTATION SUMMARY**

<b>10. ROAD INVENTORY TABLE</b>	Confirm the table is complete	<b>11. ROADS INVENTORY MAP</b>	Confirm the map is complete
<input type="checkbox"/> TABLE FOLLOWS TECHNICAL GUIDANCE AND IS LISTED IN A.17		<input type="checkbox"/> MAP FOLLOWS TECHNICAL GUIDANCE AND IS LISTED IN A.17	
<b>12. ROADS MAINTENANCE PLAN SUMMARY</b>	In the space provided, summarize planned road maintenance actions for the overall catchment (reference implementation planning documents if applicable)		

<b>13. ROADS MAINTENANCE MAP(S)</b>	Confirm road maintenance maps
<input type="checkbox"/> ROAD MAINTENANCE MAPS ARE PROPERLY IN A.17 (NOT REQUIRED)	
<b>14. ROADS INSPECTION PLAN SUMMARY</b>	In the space provided, summarize planned road inspection actions for the overall catchment (reference implementation planning documents if applicable)

<b>15. ADDITIONAL ROAD IMPLEMENTATION INFORMATION</b>	Indicate whether additional information is provided in the CCS memo to adequately describe the roads within the catchment
<input type="checkbox"/> ADDITIONAL INFORMATION IS PROVIDED IN THE CCS MEMO ROADS IMPLEMENTATION SUMMARY SECTION	

**IV. PRIVATE PROPERTY BMP IMPLEMENTAION SUMMARY**

<b>16. PRIVATE PROPERTY BMP INVENTORY</b>		In the space provided, note the total number of developed single-family residential (SFR) parcels and the number of SFR parcels with BMP and source control certificates. Also, note the total area of multi-family residential (MFR) and commercial properties (CICU) and the area with BMP and source control certificates. Provide the percentage area with BMP and source control certificates that should be used as the expected value.			
Total Area of SFR (acres)	Total # of SFR	Total # of SFR w/ BMP Cert.	Total % of SFR w/BMP Cert.	Total # of SFR w/ SC Cert.	Total % of SFR w/ SC Cert.
			%		%
Total area of MFR (acres)	Area of MFR with BMP Certificates (acres)	Total Area of CICU (acres)		Area of CICU with BMP Certificates (acres)	
Expected percentage of area with BMP certificates		Expected percentage of area with source control certificates			
%		%			
<b>17. URBAN JURISDICTION PRIVATE PROPERTY BMP PROGRAM SUMMARY</b>		In the space provided, describe any planned variations from the general private property BMP program for this urban catchment (reference implementation planning documents if applicable)			

<b>18. PRIVATE PROPTERY BMP INSPECTION PLAN SUMMARY</b>	In the space provided, identify the data sources supporting these private property BMP calculations (reference implementation planning documents if applicable)
---	---

<b>19. ADDITIONAL PRIVATE PROPERTY BMP INFORMATION</b>	Indicate whether additional information is provided in the CCS memo to adequately describe the private property BMP implementation efforts in the catchment
<input type="checkbox"/> ADDITIONAL INFORMATION IS PROVIDED IN THE CCS MEMO PRIVATE PROPERTY BMP IMPLEMENTATION SUMMARY SECTION	

**V. OTHER POLLUTANT CONTROL STRATEGIES IMPLEMENTATION SUMMARY**

<b>20. OTHER POLLUTANT CONTROL PROGRAM SUMMARY</b>	If other pollutant control strategies are implemented in the urban catchment, indicate that they are described in the CCS memo
<input type="checkbox"/> ADDITIONAL INFORMATION IS PROVIDED IN THE CCS MEMO OTHER POLLUTANT CONTROL STRATEGIES SECTION	

**SECTION D: EXPECTED LOADING ESTIMATE**

The expected loading estimate reflects annual average loading assuming treatment BMPs, roads, private property BMPs and other pollutant controls are maintained and operated to achieve the expected conditions defined in the Implementation Plan Summary.

**I. EXPECTED LOADING ESTIMATE**

<b>1. LOAD ESTIMATION METHOD</b>		Select the method used to estimate the expected and baseline loading for the catchment	
<input type="checkbox"/> POLLUTANT LOAD REDUCTION MODEL (PLRM) V1.0 <input type="checkbox"/> OTHER (DESCRIPTION IS INCLUDED IN CCS MEMO)		Name and version (if you selected Other)	
<b>2. EXPECTED LOADING PARAMETERS, ASSUMPTIONS &amp; DATASETS</b>		Check yes if any parameter values, assumptions or datasets used deviate from default values or recommendations	
<input type="checkbox"/> YES <input type="checkbox"/> NO (only defaults used)		<input type="checkbox"/> ADDITIONAL INFORMATION IS PROVIDED IN THE CCS MEMO LOAD ESTIMATION APPROACH AND ASSUMPTIONS SECTION	

If Yes, please explain

<b>3. EXPECTED LOADING PROJECT FILE</b>	Confirm that the expected loading estimate scenario is included	<b>4. EXPECTED LOAD</b>	Provide the expected loads for fine sediment, nitrogen and phosphorus
<input type="checkbox"/> THE EXPECTED LOADING ESTIMATE SCENARIO IS INCLUDED IN THE LOAD ESTIMATION PROJECT FILE AND IS LISTED IN A.17		Fine sediment mass (kg)	Fine sediment particles (#)
		Total nitrogen (kg)	Total phosphorus (kg)

**SECTION E: BASELINE LOADING ESTIMATE**

The urban catchment baseline loading estimate sets the reference point for determining load reductions.

**I. BASELINE LOADING ESTIMATE**

<b>1. BASELINE INVENTORY TABLE</b>	Confirm baseline inventory table	<b>2. BASELINE INFRASTRUCTURE MAP</b>	Confirm baseline infrastructure map
<input type="checkbox"/> TABLE FOLLOWS TECHNICAL GUIDANCE AND IS LISTED IN A.17		<input type="checkbox"/> MAP FOLLOWS TECHNICAL GUIDANCE AND IS LISTED IN A.17	
<b>3. CHANGES SINCE 2004</b>		Summarize any changes to treatment BMPs since 2004	

ADDITIONAL INFORMATION IS PROVIDED IN THE CCS MEMO BASELINE CONDITIONS SECTION

<b>4. BASELINE LOADING PARAMETERS, ASSUMPTIONS &amp; DATASETS</b>	Indicate if any parameter values, assumptions or datasets used deviate from default values or recommendations
<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> ADDITIONAL INFORMATION IS PROVIDED IN THE CCS MEMO BASELINE CONDITIONS SECTION

If Yes, please explain

<b>5. BASELINE LOAD ESTIMATE</b>		Provide the baseline loads for fine sediment, nitrogen and phosphorus	
Fine sediment mass (kg)	Fine sediment particles (#)	Total nitrogen (kg)	Total phosphorus (kg)

**SECTION F: CATCHMENT CREDIT SCHEDULE AMOUNT & DURATION**

The final determination of the appropriate CCS credit potential amount and duration is made by the regulator in consultation with the urban jurisdiction. The urban jurisdiction proposes the CCS credit potential amount based on the load reduction estimate, and the duration based on the primary and secondary pollutant control strategies.

**I. LOAD REDUCTION ESTIMATE & CATCHMENT CREDIT SCHEDULE AMOUNT**

<b>1. LOAD REDUCTION ESTIMATE</b>		Note the load reduction estimate amounts	
Fine sediment mass (kg)	Total phosphorus (kg)	Total nitrogen (kg)	
<b>2. FINE SEDIMENT PARTICLE NUMBER CONVERSION</b>	Using Equation 0.3, convert the fine sediment mass to number of fine sediment particles	<b>3. CATCHMENT CONNECTIVITY</b>	From item B.5
Fine sediment particles (#)		Percent Connectivity	
		%	
<b>4. EFFECTIVE LOAD REDUCTION ESTIMATE</b>		Multiply the values in items F.1 and F.2 by F.3	
Fine sediment mass (kg)	Fine sediment particles (#)	Total phosphorus (kg)	Total nitrogen (kg)
<b>5. CREDIT AMOUNT CALCULATION</b>		Using equation 0.2 calculate the credit amount	

**CREDITS**

**II. CREDIT SCHEDULE DURATION**

<b>6. CREDIT SCHEDULE DURATION</b>	Indicate the catchment credit schedule duration	<b>7. DURATION RATIONALE</b>	Briefly explain the rationale for the selected duration
<input type="checkbox"/> 5 YEARS <input type="checkbox"/> 10 YEARS <input type="checkbox"/> 15 YEARS <input type="checkbox"/> OTHER (SPECIFY) _____ YEARS		Explanation	

**III. ESTABLISHMENT SUMMARY**

<b>8. ESTABLISHMENT DATE</b>	Note the date that the CCS is submitted to the regulator	<b>9. ESTABLISHMENT YEAR CREDIT POTENTIAL</b>	Note the appropriate establishment year percentage and amount
Date		Percentage	Credit Amount
		%	
<b>10. FINAL YEAR OF CREDIT SCHEDULE</b>	Note the appropriate final year of the credit schedule		
Final Year			

<b>11. ADDITIONAL EXPECTED CCS AMOUNT AND DURATION INFORMATION</b>	Indicate whether additional information is provided in the CCS memo to adequately describe the private property BMP implementation efforts in the catchment
<input type="checkbox"/> ADDITIONAL INFORMATION IS PROVIDED IN THE CCS MEMO CCS AMOUNT AND DURATION SECTION	

## PURPOSE OF THE CATCHMENT CREDIT SCHEDULE

The Catchment Credit Schedule (CCS) Form documents the assumptions, calculations and agreed-upon results related to defining the credit potential for a specific urban catchment. The urban jurisdiction initially develops the CCS in Step 1.1 of the Lake Clarity Crediting Program (Crediting Program), as shown in Table CCS.1. The CCS facilitates efficient communication between the urban jurisdiction and regulator during Steps 1.2, including review of actions, expected conditions and loading estimates, and determination of credit potential amount and CCS duration for an urban catchment. The CCS and supporting documentation provide the information necessary to complete the Urban Catchment Registration Form in the TMDL Accounting and Tracking Database (Accounting and Tracking Database) in Step 1.3.

Figure CCS 1.2 outlines the structure of the CCS and how each section is related to operations in Step 1.1 of the Lake Clarity Crediting Program Handbook (Handbook). The urban jurisdiction completes each section of the CCS Form following the direction provided in this Technical Guidance and Instructions document. Technical guidance is provided for each section, explaining how to complete analyses and consider information related to the content requested. Detailed instructions follow the technical guidance in each section. The instructions define the specific information required to complete each item in the CCS Form. The Technical Guidance relies upon the currently accepted versions of standard load estimation tools and condition assessment methodologies. Please see *Table TT.1* for currently accepted standard methods and tools at the beginning of the Tools and Templates section of this Handbook to determine which version of methods is currently accepted.

A complete CCS includes 1) a CCS Form with all applicable fields completed, 2) supporting maps, 3) inventory tables, and, in many cases, 4) a memo with specific sections providing additional information for each item that requires additional explanation as requested in the CCS instructions or as deemed appropriate by the urban jurisdiction. As described in *Chapter 1 of this Handbook*, the CCS and supporting materials are submitted by developing a digital file folder structure, as defined in the File Structure Template in the Tools section of this Handbook, and posting the folder to an appropriate file-sharing site. The urban jurisdiction also sends a printed copy of all materials itemized in Section A of the Catchment Credit Schedule. The only official version of a CCS is the current verified version on file with the appropriate regulator. The urban jurisdiction keeps a copy of the submitted CCS.

Appendix A provides a complete example of a CCS for a typical urban catchment. It includes a description of considerations for the development of a CCS and shows each section of the CCS completed for the example urban catchment.

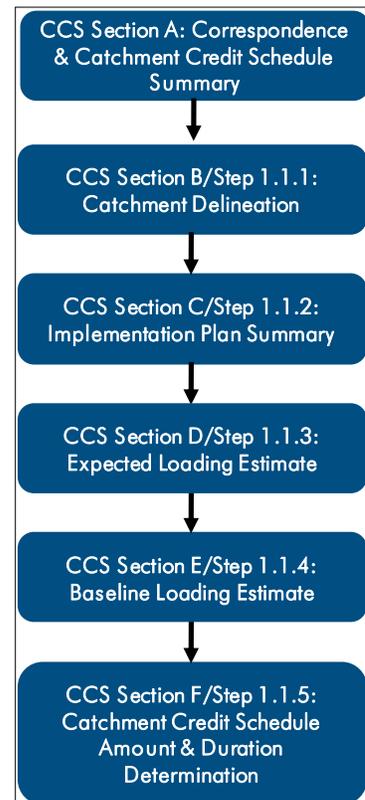


Figure CCS 1.1: Catchment credit schedule overview

Step #	Step title	Regulator	Urban jurisdiction
<b>1. Estimate Load Reductions &amp; Establish Catchment Credit Schedules</b>			
1.1	Estimate Load Reductions & Draft Catchment Credit Schedule	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.2	Verify Load Reduction Estimate & Catchment Credit Schedule	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
1.3	Register Catchment	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.4	Accept Catchment Registration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
■ = primary responsibility and required involvement; □ = secondary responsibility or potential involvement			

Table CCS.1: Associated steps of the LCCP

## SECTION A: CORRESPONDENCE & CATCHMENT CREDIT SCHEDULE SUMMARY

The Correspondence & Catchment Credit Schedule Summary section is completed incrementally throughout the CCS development process, as defined in Chapter 1 of the Handbook. Subsequent sections of this template will prompt users to complete the corresponding summary items in Section A.

### TECHNICAL GUIDANCE

Items A.7 through A.17 require completion of Sections B through F of the CCS. Technical guidance related to these items is provided in the appropriate section of this document. There is no specific additional technical guidance necessary to complete this section.

### INSTRUCTIONS

#### I. GENERAL CATCHMENT INFORMATION SUMMARY

The information provided on the front page of the CCS is intended to provide a quick overview of the basic information related to the catchment. Some of the information cannot be provided until the rest of the CCS sections and related analyses are complete.

##### 1. Catchment Status

The catchment status identifies whether this is the first time the urban catchment under consideration is being reviewed or if there is a previously verified CCS related to the same urban catchment. This information may assist the regulator in determining the necessary depth of review required. Select the most appropriate catchment status from the following options:

**New Catchment** - Select this option if there is no previously verified CCS related to this urban catchment. If some or all of the area within this urban catchment was previously delineated as part of a different urban catchment, 1) indicate that this is a new catchment, and 2) provide the catchment identification(s) and approval date(s) for all relevant CCSs. Please note that no area may be included in more than one active CCS. Therefore, all previous CCSs including land area that is part of the urban catchment under consideration must be made inactive or re-defined before this CCS may be verified.

**Revision** - Select this option if there is a previously verified version of a CCS related to this urban catchment, and this CCS is reflecting modifications to the actions implemented in the catchment, and/or the load reduction estimates. Note the date the previous CCS was verified.

**Extension** - Select this option if this CCS is an identical submission of a previously verified CCS for this catchment, and is simply requesting an extension of the credit schedule based on the same actions and load estimation calculations. Note the date the previous CCS was verified.

##### 2. Catchment ID

Provide the unique catchment identification and common name for the urban catchment. The unique catchment identification should begin with the initials of the primary reporting jurisdiction.

##### 3. Primary Urban Jurisdiction

Identify the primary urban jurisdiction and the name and contact information for the primary point of contact within the urban jurisdiction. The primary urban jurisdiction is the entity that identifies itself as the chief administrator of the CCS and is responsible for reporting the actual conditions and declaring credits for the catchment in its annual stormwater report. Some urban catchments include land from several different jurisdictions. Further, load reduction strategies may involve several urban jurisdictions. Jurisdictions conduct

discussions among themselves and decide which jurisdiction is best identified as the **primary urban jurisdiction** for each urban catchment.

#### 4. Regulatory Agency

Identify the regulatory agency responsible for the administration of permits pertaining to the primary urban jurisdiction. Also identify the name and contact information for the primary point of contact within the regulatory agency.

## II. CCS SUMMARY

#### 5. Basic Catchment Pollutant Control Strategy Narrative

In the space provided, describe the basic pollutant control strategies employed to reduce pollutant loading within the catchment. This description is used to orient all interested parties to the primary pollutant control strategies, including identification of any essential treatment BMPs, road groups or other pollutant controls in the catchment, as described in Section D of this Technical Guidance.

#### 6. Effective Load Reduction Estimate

Provide the effective load reduction estimate as defined in CCS Section F.

#### 7. Credit Potential Amount

Provide the credit potential amount as defined in CCS Section F.

#### 8. Establishment Date

Provide the establishment date of the CCS as defined in CCS Section F.

#### 9. Final Year

Provide the final year of the credit schedule from CCS Section F.

## III. COORDINATION CHECKLIST

The coordination checklist tracks progress of the CCS from initial review through final verification. Depending on the type and complexity of actions implemented in the urban catchment, this process may span multiple years. Handbook Steps 1.2 through 1.4 define the specific interactions associated with each coordination item.

#### 10. Submitted for Verification Review

The most recent date the CCS and supporting materials were submitted to the regulator for review and verification. Also note the name of the urban jurisdiction staff person submitting the information.

#### 11. Statement of Completeness & Appropriateness

Signature, printed name and date of a qualified individual representing the urban jurisdiction, stating his or her belief in the completeness and appropriateness of the information contained in the CCS and the analyses related to the CCS. A qualified individual is a certified professional engineer or reputable scientist who is authorized to sign on behalf of the urban jurisdiction. This should be completed before submitting the CCS and supporting materials for verification review (Step 1.2.2). The signature is updated each time the CCS or supporting material are changed during the verification and approval processes.

#### 12. Verified by Regulator

Signature, printed name and date of the regulator indicating the verification step is complete. An electronic signature may be provided in instances when the urban jurisdiction must address issues identified in an Issue Resolution Punchlist following the verification meeting (Step 1.2.2).

#### 13. Registered & Submitted for Approval

Provide the date that the catchment was registered in the Accounting and Tracking Database and submitted for acceptance by the regulator.

#### 14. Supporting Material Checklist & File Names

Provide the file name of each of the items developed in Sections B through F of the CCS, and check the box indicating that they have been included both in the digital file structure and in the printed materials submitted. The printed materials should be bound in the order listed below.

1. CCS Form
2. CCS Memo (if necessary)
3. Catchment Delineation Map
4. Overall Catchment Delineation Map (digital file only)
5. Treatment BMP Inventory Map
6. Treatment BMP Inventory Table
7. Roads Inventory Map

8. Roads Inventory Table
9. Baseline Treatment BMP Inventory Table
10. Issue Resolution Punchlist(s) (any applicable)
11. PLRM Project file including both expected loading and baseline loading scenarios (digital file only)
12. As-built drawings and equipment specifications (digital files only; may refer to general implementation plan and project design report documents, if appropriate)

## SECTION B: CATCHMENT DELINEATION

Credits and load reductions are tracked for specific urban catchments. The same urban catchment area must be used in both baseline and expected loading estimates. In order to prevent double counting no land area may be included in two urban catchments.

### TECHNICAL GUIDANCE

The definition of an urban catchment allows urban jurisdictions some flexibility to define urban catchments that work for their modeling and planning purposes. A catchment may range in size from a few acres to hundreds of acres and can include one or multiple outfalls to a surface waterbody. The flexibility in defining

An urban catchment is a contiguous area containing urban land uses with runoff draining to a surface waterbody.

A modeling drainage catchment is a unique area, defined in a load estimation model, that is fully contained within only one urban catchment. Any area of land can be included in only one modeling drainage catchment for a specific loading estimate.

a catchment is supported by the Pollutant Load Reduction Model (PLRM) use of distinct modeling drainage catchments within a single urban catchment. Figure CCS 1.2 shows the difference between a typical subwatershed, urban catchment and modeling drainage catchment.

# Urban Catchment Location

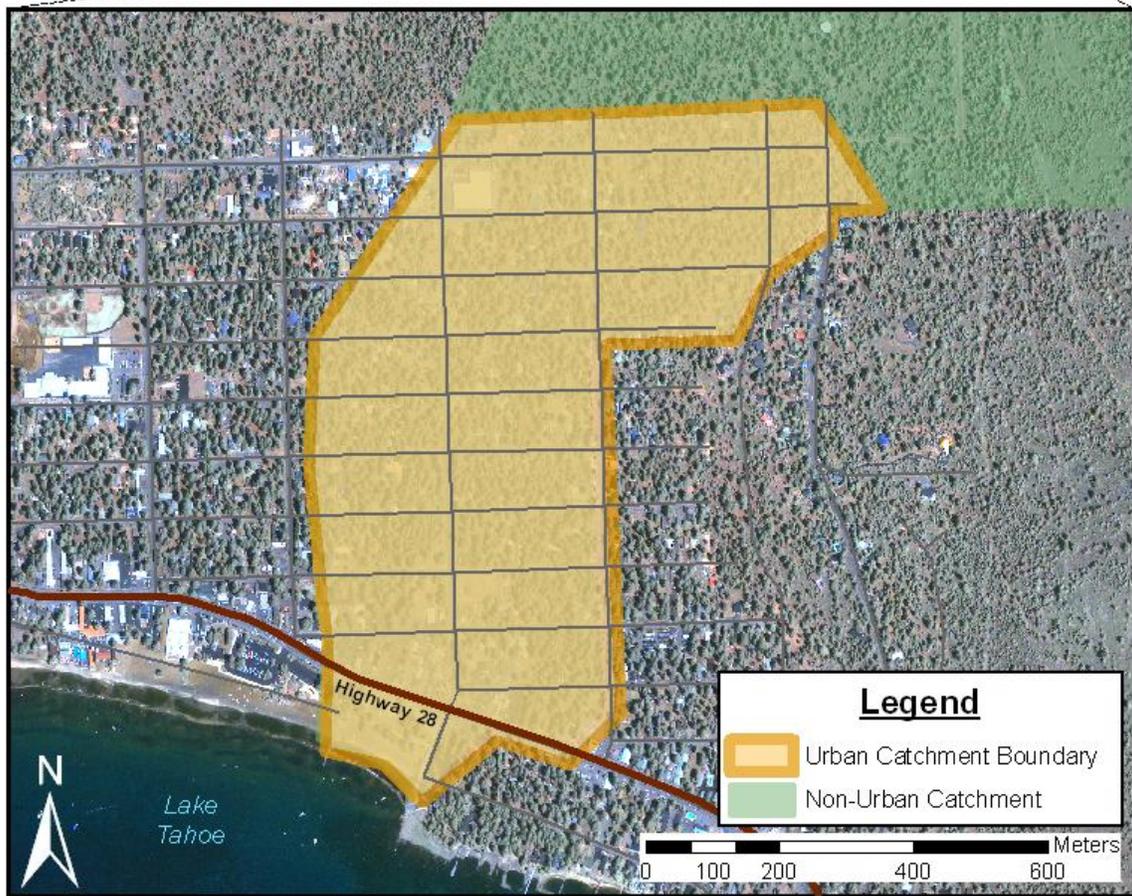
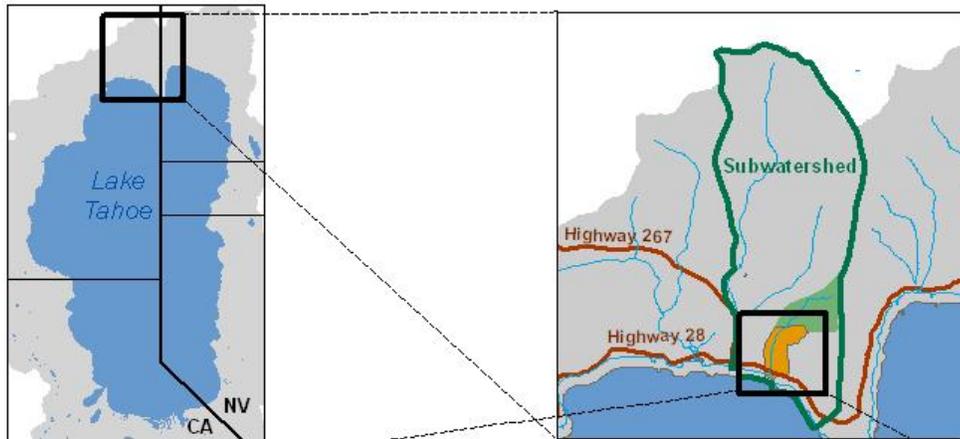


Figure CCS 1.2: Distinction between subwatershed, urban catchment and modeling drainage catchment

## I. CATCHMENT CONNECTIVITY

By default, all loading coming from an urban catchment is assumed to enter a surface waterbody leading to Lake Tahoe. If this is accurate for the urban catchment under consideration, no catchment connectivity analysis is required.

In situations where an outfall delivers stormwater to a meadow or other natural filtration system, only a fraction of the load may reach a surface waterbody and the lake. The fraction of load delivered to the surface waterbody is applied to the final load reduction calculation as it applies to both baseline and expected conditions. This reduces the actual pollutant load reduction and the credit potential amount from the urban catchment.

Connectivity is expressed as a percentage and is used as a multiplier in Section F to determine the estimated load reduction from the urban catchment. Each outfall with less than 100 percent connectivity must be modeled as a unique urban catchment and have a unique CCS. The specific methods for defining catchment connectivity are an active area of adaptive management for the Crediting Program and no standard method is proposed. The following are recognized as potentially acceptable approaches:

- **Extend the urban catchment boundary** – Extend the catchment boundary to reach a surface waterbody in both the catchment delineation and loading estimates. This results in 100 percent connectivity at the end of the urban catchment, it avoids the need to develop a specific connectivity analysis with supporting information, and uses the model assumptions for pollutant removal by the natural area between the originally considered outfall and the surface waterbody.
- **Percent of flow** – Estimate the percentage of the total flow from the outfall that reaches the surface waterbody. This may provide a rough estimate for fine sediment particles, but is likely to underestimate dissolved nutrient loading, which can occur through subsurface flow to the waterbody. If using this technique, consider developing a delivery ratio for nutrients.
- **Percent removal** – Use literature, monitoring or extrapolation from modeling assumptions to develop a general percent load removal relationship that will be applied to both baseline and expected loading.

The urban jurisdiction is encouraged to discuss its proposed approach with the regulator early in the evaluation.

## INSTRUCTIONS

### I. CATCHMENT CONNECTIVITY

#### 1. Catchment Identification

Confirm that the catchment ID and name are properly listed in item A.1. The unique catchment identification should begin with the initials of the primary reporting jurisdiction.

#### 2. Catchment Delineation Map

Confirm the catchment delineation map clearly identifies the boundary of the urban catchment, that no area within the catchment is included in another registered catchment, and that the map file name is recorded in item A.18.

#### 3. Overall Urban Jurisdiction Catchment Map

Confirm that the file name for the most recent urban jurisdiction catchment delineation map is recorded in item A.18. Ensure that all catchments registered by the urban jurisdiction are included, that each catchment is clearly labeled, and that no catchments overlap.

#### 4. Catchment History

If any portion of this urban catchment has been previously included in a CCS that does not have the exact same boundaries as the current catchment delineation, list the names of all previous catchments and the establishment date(s) of the related CCS(s). Note that all CCSs including any portion of the catchment under consideration must be inactive before this CCS may be verified.

#### 5. Catchment Area

Provide the total area, in acres, within the delineated urban catchment.

## 6. Catchment Connectivity

If percent connectivity is less than 100%, provide the percent connectivity that will be used to modify the load reduction estimate to account for treatment between the urban catchment outfall and the surface waterbody. See the technical guidance in this section (above) for direction. Document the calculation approach, rationale and actual calculations in a section titled Catchment Connectivity of the CCS memo for this catchment.

## SECTION C: IMPLEMENTATION PLAN SUMMARY

The Implementation Plan Summary defines the expected conditions for treatment BMPs, roads, private property BMPs, and other pollutant control strategies based on the urban jurisdiction's planned operations, maintenance and program implementation activities in the urban catchment. The Implementation Plan Summary may pull information from multiple sources and ideally will rely upon one or multiple broader implementation plans used by the urban jurisdictions. Because the Crediting Program focuses on actual conditions and not specific maintenance actions, the CCS Implementation Plan Summary focuses on defining expected conditions. The summary of implementation actions is relatively brief and general. See the Implementation Plan and Crediting Program Focus on Condition box below for further discussion.

### IMPLEMENTATION PLANS & CREDITING PROGRAM FOCUS ON CONDITION

Implementation plans describe what an urban jurisdiction intends to do to maintain treatment BMPs and implement source control activities. An urban jurisdiction may develop broad implementation plans for different types of operations, maintenance, and program implementation activities undertaken. The geographic scale of an implementation plan may range from a specific urban catchment to the overall urban jurisdiction. For instance, it may be desirable for an urban jurisdiction to develop an infrastructure maintenance plan for a neighborhood, and a road abrasive and sweeping implementation plan for the entire jurisdiction. The decisions regarding the scope and scale of an implementation plan should be informed by how the people involved in implementing the plan, namely maintenance personnel and inspectors, can most effectively use the plan to direct actions. In practice, an implementation plan may be applicable to many catchments, and one catchment may be associated with more than one implementation plan.

Stormwater Management Plans provide a general description of plans to address the areas identified in NPDES permits and MOA. More detailed and flexible plans more effectively direct on-the-ground actions. If the urban jurisdiction has not developed explicit implementation plans, the Implementation Plan Summary may be the sole location where implementation plan information is defined. While this may suffice for developing the expected loading estimates, it may be difficult for maintenance personnel to access and implement.

The Crediting Program focuses on the actual conditions present during each year, not on rote adherence to schedules of maintenance actions in static maintenance plans. This enables stormwater managers and maintenance personnel to determine when and how to maintain the condition of treatment BMPs and roads to be as cost-effective as possible. The Crediting Program also encourages practical innovation and respects the professional judgment of stormwater managers while ensuring that the most important pollutant controls achieve the goal of reducing pollutant loading to Lake Tahoe.

## TECHNICAL GUIDANCE

Each urban catchment may combine several different types of pollutant control strategies including (1) treatment BMPs, (2) source controls on roads, (3) private property BMPs, and (4) other pollutant control actions, such as municipal ordinances and programs. The Implementation Plan Summary identifies the overall load reduction strategy for the urban catchment and provides specific information about each pollutant control strategy. The Implementation Plan Summary documents an inventory of features, a brief maintenance plan summary, and a brief inspection plan summary for each pollutant control strategy.

**Pollutant Control** – Any treatment BMP or source control practice that reduces pollutant loads in stormwater transported downslope. The Crediting Program evaluates water quality importance and determines credit awards by grouping certain pollutant controls. Each Treatment BMP and road group is treated independently. Private property BMPs and other pollutant control strategies are treated as two overall groups.

**Observation Value** – The specific numeric value observed during a condition assessment inspection. Observation values are the basis for condition scores.

**Condition Score** – A numeric value between 0 and 5, inclusive, determined by comparing observation values to pre-determined benchmark (best achievable) and threshold (no longer acceptable) values set by the user. A condition score may be determined by one or more observation values according to a defined assessment method. See Appendix C and the BMP RAM for a more detailed discussion.

**Expected Condition** – The lowest expected average condition score for a treatment BMP, roadway or other pollutant control during a year. The expected condition and related observation values are used as the basis for selecting modeling parameters in the expected loading estimates.

**Actual Condition** – The average of condition scores from inspection results for a pollutant control during a reporting year.

The Implementation Plan Summary relies upon standard condition assessment methods, the BMP Maintenance Rapid Assessment Methodology (BMP RAM) and the Road RAM, to set the framework for determining expected conditions. In certain instances, these condition assessment methods may not define appropriate methods for determining the conditions of certain innovative practices and new treatment BMP technologies. See [Appendix C](#) for a description of how to create and document acceptable condition assessment observations for unique situations.

### CHOOSING & USING EXPECTED CONDITIONS

Expected conditions are determined by urban jurisdictions when developing the expected loading estimate and CCS. Expected conditions are documented in the Implementation Plan Summary Inventory. Expected conditions are expressed as a condition score between 0 and 5, inclusive. Condition scores are based on one or more observation values appropriate for the particular pollutant control as defined by an accepted condition assessment method. Actual conditions for a year are calculated for each pollutant control within the urban catchment. Multiple observations for any one treatment BMP or road type are averaged to determine the actual condition for the year.

Expected conditions, not design or optimal conditions, are used as the basis for determining the expected loading estimate. To determine credit awards, actual conditions are compared to the expected conditions to determine if the treatment BMPs and source controls in an urban catchment are being maintained at near or better condition than assumed in the expected loading estimate. When the actual condition of a treatment BMP or source control is more than 0.5 less than its expected condition, a credit penalty is incurred during the annual credit declaration and award process. This provides an incentive to avoid penalties by setting expected conditions based on realistic assumptions considering site and resource constraints. See Chapter 2 and Appendix C of this Handbook for further discussion of the credit award method.

## I. DEFINE LOAD REDUCTION STRATEGY

The overall load reduction strategy for the urban catchment provides an understanding of the relative importance of each type of pollutant control implemented within the catchment. This understanding informs CCS duration discussions and communicates the overall catchment approach to interested parties.

Load reduction strategy information does not require a documented quantitative analysis. Use best professional judgment and the basic understanding gained from design and modeling efforts to provide an informed description of the relative importance of each pollutant control strategy in comparison with others implemented in the catchment. The load reduction strategy is defined by the category of pollutant control, combining the benefit of all of the individual elements of each type of control. For instance, the combined load reduction resulting from all treatment BMPs is compared to the combined load reduction from all private property BMPs.

Use the following general definitions to indicate the relative importance of each type of pollutant control to the overall load reduction strategy:

**Primary** – responsible for more load reduction than the other types of pollutant controls

**Secondary** – responsible for a significant amount of load reduction, but distinctly less than the primary strategy

**Tertiary** – responsible for some load reduction, but not significant with respect to other types of pollutant controls

**None** – not employed in the catchment, or not expected to result in load reductions

If a pollutant control strategy is not employed in the catchment, select “none.” If two types of controls are similar in their overall importance, use the same rating for both. Conversely, if a particular load reduction strategy relies principally on one type of strategy, it may be appropriate to have one primary, no secondary and multiple tertiary strategies. It is not necessary to differentiate the relative minor importance of multiple insignificant strategies.

## II. TREATMENT BMP IMPLEMENTATION SUMMARY

The Implementation Plan Summary for treatment BMPs anchors on a tabular inventory and map of the essential and key treatment BMPs providing stormwater treatment in the urban catchment. See the BMP Maintenance RAM User Manual for instructions on how to create a complete treatment BMP inventory, BMP inventory map, and for guidance on determining benchmark values and thresholds for each treatment BMP. Only the BMPs identified as providing treatment in the BMP RAM and that meet the definition of key or essential water quality importance in Section D of this Technical Guidance are necessary to include in the Treatment BMP Inventory Table.

### TREATMENT BMP INVENTORY TABLE

Populate the Treatment BMP Inventory Table (Table CCS.2) using information from the BMP RAM database, implementation plans, and the additional information related to developing the expected loading estimate as described.

Column	Field Name	Field Description	Data Type
A	BMP_ID	The Treatment BMP ID used on the Treatment BMP Inventory Map	Text
B	BMP_Type	Treatment BMP Type as defined by the BMP RAM	Text
C	Planned Maintenance	Briefly describe the planned maintenance for the treatment BMP.	Text
D	Inspection Frequency & Timing	Identify the number of inspections planned each year and the time of year when inspections are planned.	Text
E	Water Quality Importance	Complete this item during Step 1.3 as describe in CCS Section D. Identify if the treatment BMP is key or essential.	Key or Essential
F	Notes	Provide any brief notes related to the specific treatment BMP useful for reviewers or for future reference.	Text
G	BMP RAM Observation #1	As defined by BMP RAM	Text
H	Observation #1 Benchmark Value	As defined by BMP RAM	Numeric
I	Observation #1 Threshold Value	As defined by BMP RAM, select considering desired maintenance frequency and influence on load reduction potential.	Numeric
J	Observation #1 Expected Condition Value	Using the BMP RAM equations defined for each observation type, determine the value associated with the RAM score of 3. This is the expected average annual condition for the treatment BMP, which will be the basis for comparing against measured conditions and awarding credit.	Numeric
K	Observation #1 Related PLRM Parameter	Complete this item during Step 1.3 as described in CCS Section D. Identify the parameter(s) used in PLRM that is related to Observation #1.	Text
L	Observation #1 Related PLRM Value	Complete this item during Step 1.3 as described in CCS Section D. Indicate the value used in the load reduction estimate related to the parameter identified in Column K.	Numeric
M – R & S – X As Needed	Repeat Fields G through L for BMP RAM Observation #2 and Addition Observations as Applicable	When the BMP RAM defines multiple observations for a treatment BMP, complete the information described for Observation #1 for each additional observation.	

Table CCS.2: Treatment BMP Inventory Table Structure & Descriptions

### TREATMENT BMP MAINTENANCE PLAN SUMMARY

Briefly summarize the planned actions for maintaining treatment BMPs at near or better-than-expected conditions in the overall urban catchment. Identify who is expected to perform maintenance activities and the type of equipment that will be used. Clearly refer to urban jurisdiction implementation planning documents for additional information.

Complete the Planned Maintenance column in the Treatment BMP Inventory Table with a brief description of the planned maintenance activities for each treatment BMP. Generally, each type of treatment BMP in an urban catchment will have the same planned maintenance. For instance, “Sediment Removal by Front-end Loader as Needed,” would be an appropriate statement for the Planned Maintenance field for a settling basin.

### TREATMENT BMP INSPECTION PLAN SUMMARY

The inspection plan summary briefly identifies the staff or service provider who will conduct condition assessment inspections, and it describes how results will be used to prioritize maintenance actions. Clearly refer to urban jurisdiction implementation planning documents for additional information.

Complete the Inspection Frequency & Timing column in the Treatment BMP Inventory Table by identifying the expected frequency and timeframe of condition assessment inspections. See the BMP RAM documents for additional guidance.

### III. ROADS IMPLEMENTATION SUMMARY

Similar to treatment BMPs, the Roads Implementation Plan Summary anchors on a map and a tabular inventory of the roads within the urban catchment. The Road Inventory Map defines the specific road groups in the urban catchment showing the expected condition for each road group, which is provided as an output from PLRM. Road condition is determined according to the method described in the PLRM Model Development Documentation, which combines road type, road risk, planned abrasive application practices, and planned sweeping practices.

**Road Risk** – Road risk designates the theoretical pollutant loading from a road segment based on key physiographic and anthropogenic characteristics that are assumed to influence the relative stormwater quality downslope in the absence of pollutant source controls. A Road Risk map is provided with the PLRM User Manual. The PRLM designation of road risk is based on three physiographic characteristics that are assumed to influence those potential sources: slope, traffic density, and adjacent land use.

**Modeling Drainage Catchment** – a unique area defined within a load estimation model that is fully contained within only one urban catchment. Any one area can be included in only one modeling drainage catchment for a specific loading estimate. See Appendix A Figure A.Z for an example map showing modeling drainage catchments within an urban planning catchment.

**Road Condition** – The relative risk to downslope water quality as result of both pollutant generation and transport from a road.

**Road Group** – Uniquely identified group of roads within a modeling drainage catchment of the same type (primary or secondary) and risk (determined by slope, traffic density and surrounding land use).

By defining the expected condition for each road group, the urban jurisdiction has the flexibility to vary abrasive application and sweeping practices within an urban catchment. For instance, an urban jurisdiction may sweep the roads in a modeling drainage catchment that drains directly to an untreated outfall more frequently than it sweeps roads in a modeling drainage catchment that drains to a dry basin.

### ROADS INVENTORY

First develop the Road Inventory Map by overlaying the modeling drainage catchments within the urban catchment with the road risk map available with the PLRM. Then populate the Road Inventory Summary Table (Table CCS.3) for each road group according to the descriptions below.

Column	Field Name	Field Description	Data Type
A	Road_Group_ID	The recommended Road Group ID naming convention is UrbanCatchmentID_ModelingDrainageCatchmentID_RoadType_RoadRisk. See Appendix A - Attachment A.7 for an example Road Inventory Table including Road Group IDs.	Text
B	Abrasive Application Plan	Complete this item during Step 1.3 as describe in CCS Section D. This should align with the inputs used in developing the expected loading estimate.	Text
C	Sweeping Plan	Complete this item during Step 1.3 as describe in CCS Section D. This should align with the inputs used in developing the expected loading estimate.	Text
D	Other Source Control Plans	Identify any additional source control practices that will reduce loading from this road group.	Text
E	Inspection Frequency & Timing	Identify the planned timing and frequency when inspections are planned. See Road Inspection Plans box and Appendix C for discussion.	Text
F	Expected Condition Score	Complete this item during Step 1.3 as described in CCS Section D. Expected condition is provided from the PLRM expected loading estimate based on road type, risk, planned abrasive application and sweeping practices, and other pollutant controls.	Numeric
G	Water Quality Importance	Complete this item during Step 1.3 as described in CCS Section D. Identify if abrasive application, sweeping, and other pollutant controls combined for this road group are key or essential.	Key or Essential
H	Notes	Make any brief notes related to the specific road group that may be useful for reviewers or for future reference.	Text

Table CCS.3: Treatment BMP Inventory Table structure & description

## ROADS MAINTENANCE PLAN SUMMARY

Briefly summarize the planned abrasive application, sweeping and other source control practices for maintaining the road conditions at near or better-than-expected conditions in the overall urban catchment. Identify who is expected to perform the activities and the type of equipment that will be used. Clearly refer to urban jurisdiction implementation planning documents for additional information.

Road maintenance plans can be made more concrete and usable by including abrasive application and sweeping maps that define where maintenance personnel plan to apply heavy, moderate, light and no road abrasives, and where different types of sweepers will be operated at different frequencies. Abrasive application and sweeping maps are recommended, but not required, elements of the Road Maintenance Plan Summary. They will not be used as rigid regulatory documents with specific checks to determine if they are being followed as represented. They provide useful information to describe the general road maintenance plan and provide context for CCS reviewers. Stormwater managers and maintenance personnel are expected to perform the necessary source control activities to achieve the expected conditions determined in the load reduction estimate.

Complete the Abrasive Application Plan, Sweeping Plan and Other Pollutant Control Plans columns in the Road Inventory Table with a brief description of the planned activities for each road group. See [Appendix A – Attachments A.1, A.6 and A.7](#) for a complete example.

## ROADS INSPECTION PLAN SUMMARY

The inspection plan summary briefly identifies the staff or service providers who will conduct condition assessment inspections, and describes how results will be used to prioritize source control activities. Clearly refer to urban jurisdiction implementation planning documents for additional information.

Complete the Inspection Frequency & Timing field in the Treatment BMP Inventory Table by identifying the expected frequency and timeframe when condition assessment inspections will be conducted. See the Road Inspection Plans box for additional guidance.

**ROAD INSPECTION PLANS<sup>1</sup>**

Road conditions will change rapidly depending on the need for abrasive applications, the frequency of sweeping, the type of sweeper used, and other pollutant control practices implemented. It is not practical to inspect all roads, nor is it practical to inspect any one road on a weekly basis. Road conditions within a week following a storm event that requires abrasive applications will be below the expected conditions. However, roads should be maintained and returned to expected conditions within one or two weeks as defined in the Road Maintenance Plan Summary, which should align with the assumptions used in the expected loading estimate.

In order to keep the road inspection level of effort more reasonable, the urban jurisdiction may develop an operations-to-conditions relationship by performing calibration inspections to develop a relationship between operations and resulting conditions. Calibration inspections should be completed during different conditions, at least once in the winter before and after application of abrasives and subsequent sweeping, and again in the summer before and after sweeping. A minimum of 10 roads should be inspected on the same day, covering each road group type and multiple inspections should be conducted for all primary road groups and the secondary high risk road group.

With operations-to-condition relationships defined and a log documenting abrasive application and sweeping activities, the urban jurisdiction can rely upon assumed condition scores, rather than actual observed conditions, for most of the year. The results should be included in the urban jurisdiction's annual stormwater report. Note, however, that actual observations are assumed to be more accurate than assumed relationships. As a result, validation inspections results that differ from assumed conditions will be the source of discussion between the urban jurisdiction and regulator. See Appendix B for an example of how to develop an operations-to-conditions relationship, Appendix C for a discussion of condition assessments, and Chapter 2 for a description of validation inspection practices.

**IV. PRIVATE PROPERTY BMP IMPLEMENTATION SUMMARY**

Private property BMPs are an important type of source control with a unique policy context. Each county and the City of South Lake Tahoe implement a private property BMP program. It is appropriate to rely upon existing documentation related to municipal private property BMP programs in the responses to the items C.16 through C.18.

**PRIVATE PROPERTY BMP INVENTORY**

Define the expected percentage of private property BMP implementation used in the expected loading estimate as defined in PLRM guidance documentation. All properties within the catchment with BMP and source control certificates should be included. For the Crediting Program, it is acceptable to estimate the fraction of area of single family residential property with BMPs by dividing the number of developed single family residential parcels by the total number of single family residential parcels.

Be aware that the percent implementation declared in this section sets the assessment condition 3 value. For any year when the actual percent implementation is less than 95 percent of the expected, the overall private property BMP implementation source control will be deemed under-performing and will reduce the amount of credit awarded for the urban catchment. See Appendix C for a complete explanation.

<sup>1</sup> As of July 2009, a Road RAM is under development which will define the methods for inspecting road conditions and an appropriate inspection schedule. This Technical Guidance will be adjusted once the Road RAM is published to refer to the Road RAM and align with its methodology.

## PRIVATE PROPERTY BMP PROGRAM SUMMARY

Describe any plans specific to this urban catchment that may differ from the overall private property BMP implementation plans. Refer to the urban jurisdiction's private property BMP program documents. Only provide additional description if special efforts will be made in this urban catchment.

## PRIVATE PROPERTY INSPECTION PLAN SUMMARY

The expected inspection plan for private property BMPs includes calculating a new percentage BMP implementation based on the total developed parcels and the parcels with BMP and source control certificates. Identify the specific data source supporting these calculations. It is only necessary to outline a unique inspection summary if a specific inspection approach that applies to this urban catchment may differ from the basic calculation described above.

## V.

## OTHER POLLUTANT CONTROL STRATEGIES IMPLEMENTATION SUMMARY

If the urban jurisdiction is implementing other pollutant controls that cannot be described as a treatment BMPs or as part of the roads or private property BMP implementation strategies, then it may be described here. Implementation of municipal ordinances and programs fall under this category..

## OTHER POLLUTANT CONTROL STRATEGIES INVENTORY

Define the specific on-the-ground changes expected from baseline conditions as a result of the other pollutant control strategies. Develop a section of the CCS memo for this catchment entitled Other Pollutant Control Strategies and include a subsection that clearly describes the assessment observations for the alternative strategies. Define benchmark, threshold and expected conditions for the overall control strategy using the BMP RAM definitions and the discussion in Appendix C as guidance.

## OTHER POLLUTANT CONTROL STRATEGIES IMPLEMENTATION PLAN SUMMARY

Build upon the section of the CCS memo for this catchment entitled Other Pollutant Control Strategies and include a subsection that clearly describes the implementation actions that are planned related to the other pollutant control strategies. Refer to other implementation plan documentation as appropriate.

## OTHER POLLUTANT CONTROL STRATEGIES INSPECTION PLAN SUMMARY

Build on the section of the CCS memo for this catchment entitled Other Pollutant Control Strategies and include a subsection that clearly identifies the staff or service providers who will conduct condition assessment inspections, defines the frequency and timing of inspections, and describes how results will be used to prioritize activities. Clearly refer to urban jurisdiction implementation planning documents for additional information.

## INSTRUCTIONS

### I. DEFINE LOAD REDUCTION STRATEGY

#### 1. Treatment BMPs

Check the most appropriate description based on the definitions above.

#### 2. Road Operations

Check the most appropriate description based on the definitions above.

#### 3. Private Parcel BMPs

Check the most appropriate description based on the definitions above.

#### 4. Other Pollutant Control Strategy

Check the most appropriate description based on the definitions above.

### II. TREATMENT BMP IMPLEMENTATION SUMMARY

#### 5. Treatment BMP Inventory Table

Using the [Treatment BMP Inventory Summary Table template](#), populate columns A – C for all essential and key treatment BMPs within the urban catchment. Check the box confirming the table is complete according to the above technical guidance and include the file name (and if appropriate tab title) in item A.18.

**6. Treatment BMP Inventory Map**

Check the box confirming the map is complete according to the technical guidance above and include the file name in item A.18.

**7. Treatment BMP Maintenance Plan Summary**

In the space provided, summarize planned treatment BMP maintenance actions for the overall catchment as described in the technical guidance above. Reference the appropriate section(s) of urban jurisdiction implementation planning documents for additional information.

**8. Treatment BMP Inspection Plan Summary**

In the space provided, summarize planned treatment BMP inspection plans for the overall catchment as described in the technical guidance above. Reference the appropriate section(s) of urban jurisdiction implementation planning documents for additional information.

**9. Additional Treatment BMP Implementation Information**

If additional information is required to adequately describe the treatment BMPs within the urban catchment, indicate that additional information is provided in a Treatment BMP Implementation Summary section of the CCS memo.

**III. ROAD OPERATIONS IMPLEMENTATION SUMMARY****10. Road Inventory Table**

Using the [Roads Inventory Summary Table template](#), populate the Roads Inventory Table for all road groups within the urban catchment. Check the box confirming the table is complete according to the technical guidance above and include the file name (and if appropriate tab title) in item A.18.

**11. Roads Inventory Map**

Check the box confirming the map is complete according to the technical guidance above and include the file name in item A.18.

**12. Road Maintenance Plan Summary**

In the space provided, summarize planned roads actions for the overall catchment as described in this Technical Guidance. Reference the appropriate section(s) of urban jurisdiction implementation planning documents for additional information.

**13. Road Maintenance Map(s)**

Road maintenance maps are not required portions of the overall implementation summary, however, they are recommended. Check the box indicating such maps exist and include the file name in item A.18.

**14. Road Inspection Plan Summary**

In the space provided, summarize roads inspection plans for the overall catchment as described in the technical guidance above. Reference the appropriate section(s) of urban jurisdiction implementation planning documents for additional information.

**15. Additional Roads Implementation Information**

If additional information is required to adequately describe the roads within the urban catchment, indicate that additional information is provided in a Roads Implementation Summary section of the CCS memo.

**IV. PRIVATE PROPERTY BMP IMPLEMENTATION SUMMARY**

The Private Property BMP Implementation Summary provides an overview of the strategy that the urban jurisdiction employs for Private Property BMP implementation and should reference appropriate sections of private property BMP program documents whenever possible.

**16. Private Property BMP Inventory**

In the space provided, note the total number of developed single-family residential parcels and the number of single-family residential parcels with BMP and source control certificates. Also, note the total area of multi-family residential and commercial properties and the area with BMP and source control certificates. Provide the percentage area BMP and source control certificates that should be used as the expected value.

**17. Urban Jurisdiction Private Property BMP Program Summary**

In the space provided, describe any planned variations from the general private property BMP program for this urban catchment. If necessary, indicate that additional information is provided in a Private Property BMP Implementation Summary section in the CCS memo.

**18. Private Property BMP Inspection Plan Summary**

Identify the data sources supporting these private property BMP calculations. If the urban catchment has a unique inspection plan that deviates from standard inspections, indicate that it is described in a section of the CCS memo entitled Private Property BMP Implementation Summary.

**19. Additional Private Property BMP Information**

If additional information is required to adequately describe private property BMP implementation, indicate that additional information is provided in a Private Property BMP Summary section of the CCS memo.

**V. OTHER POLLUTANT CONTROL IMPLEMENTATION SUMMARY****20. Other Pollutant Control Program Summary**

If other pollutant control strategies are implemented in the urban catchment, indicate that they are described in the CCS memo in a section entitled Other Pollutant Control Strategies. Include the information described in the technical guidance above.

**SECTION D: EXPECTED LOADING ESTIMATE**

The expected loading estimate reflects annual average loading assuming treatment BMPs, roads, private property BMPs and other pollutant controls are maintained and operated to achieve the expected conditions defined in the Implementation Plan Summary. During Step 1.3 and the completion of Section D, the urban jurisdiction develops the expected loading estimate and completes the expected condition and water quality importance columns in the Treatment BMP and Roads Inventory Tables.

**TECHNICAL GUIDANCE**

The text box on acceptable load estimation methods provides general direction for selecting a load estimation method for both baseline and expected loading estimates. A consistent load estimation approach must be used for both baseline and expected loading estimates. Perform the expected loading estimate as directed by the guidance documents related to the load estimation method and use the expected conditions defined in the Implementation Plan Summary.

**LOAD ESTIMATION METHODS****STANDARD LOAD ESTIMATION METHODS**

Load estimation methods refer to 1) the load calculation approach, and the associated 2) data inputs, and 3) assumptions. The Crediting Program has officially accepted the use of the load estimation method(s) listed in Table TT.1 at the beginning of the Tools and Templates section of this Handbook.

While alternative methods may be used, they require significant additional effort by regulators and other reviewers to understand a unique load reduction estimation approach, and they may produce results that are difficult to compare with the load reduction estimates made using the standard load estimation method(s). Therefore, urban jurisdictions are encouraged to use standard load estimation methods in a manner consistent with their recommended use.

While using standard methods enables consistency and comparability, certain innovative practices and new treatment BMP technologies might not be accurately reflected by the standard load estimation method(s). In these cases, the urban jurisdiction should first consider making modifications to the standard load estimation method(s) to adjust the standard method to appropriately reflect expected load reductions. Alternative load estimation methods may be used when it is agreed that an alternative method is superior to the standard method(s) for the specific urban catchment conditions.

**MODIFYING STANDARD LOAD ESTIMATION METHODS**

When standard load estimation methods are modified, the urban jurisdiction must clearly document modifications and use of parameters other than the defaults or outside of recommended ranges defined in the standard method's user guidance. Document the modifications, non-standard parameters and any other appropriate notes related to the modifications to standard load reduction estimation methods in a section of the CCS memo for this catchment entitled Load Estimation Approach and Assumptions.

**ALTERNATIVE LOAD ESTIMATION METHODS**

If a clearly superior load estimation method is available, the urban jurisdiction should discuss using the alternative method with the appropriate regulator. Alternative methods must:

1. Produce estimated average annual pollutant loads and load reductions for pollutants of concern.

2. Incorporate long-term hydrologic characteristics and a range of hydrologic conditions (rather than a single storm) using a long-term continuous model simulation that represents a sequence of hydrologic events and intervening dry periods, or an accepted alternate approach.
3. Produce results based on the integration of stormwater actions in the drainage catchment and their relationships to each other, and not a simple sum of load reductions from each action. The types of actions and processes that should be represented include: hydrology and hydrologic source controls; pollutant generation and pollutant source controls; and stormwater treatment.
4. Be supported by documentation clearly stating the calculation methods, assumptions, and limitations.
5. Represent actions and drainage catchments at a scale and level of complexity that is deemed appropriate by regulatory reviewers and, when applicable, the project-specific Technical Advisory Committee.
6. Be endorsed by a professional civil engineer or other qualified professional stating that load reduction calculations have been performed using professionally accepted methods, are specifically applicable to the Lake Tahoe stormwater setting, and appropriately represent expected average annual load reductions.

Documentation related to the alternative load estimation method must be submitted as part of the CCS supporting materials. Within a section of the CCS memo for this catchment entitled Load Reduction Estimation Approach, include 1) a description of the rationale for using the alternative method, 2) clear notes on the specific datasets, assumptions and parameters used in load estimates, and 3) a description of how the alternative method is consistent with the criteria for an acceptable load estimation method listed above.

Once an alternative load estimation method is used and deemed acceptable for more than one urban catchment, it may be appropriate to officially adopt it as a standard load estimation method through a Crediting Program adjustment decision (See Steps 3.2, 3.8 and 3.9 in the Handbook).

## DETERMINING WATER QUALITY IMPORTANCE

Water quality importance is used to determine the amount of credit to award when actual conditions during a year are significantly worse than expected conditions.<sup>2</sup> Each treatment BMP, type of source control, and road category is defined as essential, key or supporting based on the relative amount of expected load reduction it is expected to achieve, according to the following definitions:

- **Essential Treatment BMPs and Pollutant Controls** are those individual pollutant controls that are responsible for a major portion of the overall load reduction from the catchment baseline loading. If an essential treatment BMP or source control is not functioning properly, significantly higher loading can be expected from the catchment. Not all catchments contain essential pollutant controls. As a rule of thumb, the complete absence or failure of an essential pollutant control could result in more than a 25% increase of the overall load from the catchment, assuming all other treatment BMPs and source controls are functioning as expected.
- **Key Treatment BMPs and Pollutant Controls** are those individual pollutant controls that are intended to achieve a significant amount of load reduction from the catchment baseline loading. If a key treatment BMP or source control is not functioning properly, higher loading can be expected from the catchment. As a rule of thumb, the complete absence or failure of a key treatment BMP or source control could result in more than a 2% but less than a 30% increase of the overall load from the catchment, assuming all other treatment BMPs and source controls are functioning as expected.
- **Supporting Treatment BMPs, Conveyance Infrastructure and Source Controls** are features and practices that are critical to safely convey water to treatment BMPs, prevent soil erosion or perform pre-treatment. If a supporting treatment BMP or source control is not operating properly, key or essential treatment BMPs may be compromised, maintenance costs may increase, or new soil erosion may result. New soil erosion is erosion that would not be expected as part of the baseline conditions.

It is not necessary to include supporting treatment BMPs and conveyance infrastructure in the Treatment BMP Inventory in CCS Section C. The BMP RAM and any acceptable condition assessment method includes an assessment of whether flow is reaching treatment BMPs. If flow is not reaching a treatment BMP, the assessment score is 2. This is underperforming according to the Crediting Program credit award method (see Appendix C) and a penalty will apply if the conveyance infrastructure is not maintained or improved to restore flow.

<sup>2</sup> See Appendix C for a complete discussion of the method to determine credit awards.

As a default, all pollutant controls are considered key unless specified as essential. The determination of importance is based on a combination of analysis of loading estimates and best professional judgment. Figure CCS.X provides a conceptual framework to help guide best professional judgment and discussions regarding the assignment of water quality importance for specific treatment BMPs. Use Figure CCS 1.3 and the definitions above to determine if any infrastructure or road conditions should be identified as essential, and indicate these in the Implementation Plan Summary inventory tables accordingly.

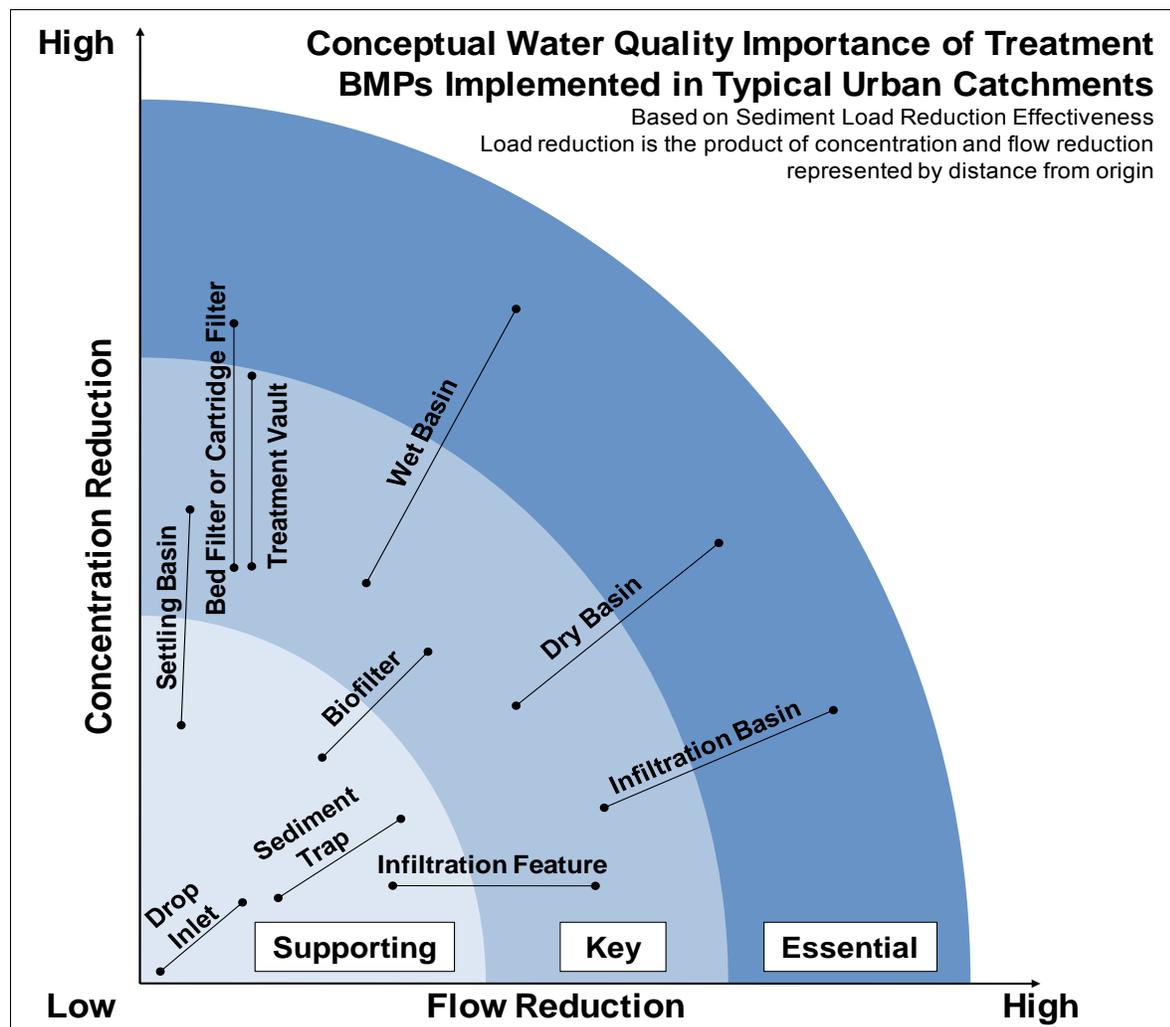


Figure CCS 1.3: Conceptual water quality importance of treatment BMPs implemented in typical urban catchments – Load reduction is the product of concentration and flow reductions and is represented as the distance from the origin. This figure is intended as a conceptual framework for reference during discussions of treatment BMP importance. It is not intended to provide quantitative guidance for developing load estimations, nor are the ranges necessarily appropriate for all situations.

## INSTRUCTIONS

### I. EXPECTED LOADING ESTIMATE

The expected loading estimate reflects the loading, assuming the implementation activities result in the expected conditions defined in the Implementation Plan Summary.

#### 1. Load Estimation Method

Select the method used to estimate the expected and baseline loading for the catchment. If using a non-standard load estimate method, note the name and version and develop a section of the CCS memo entitled Load Estimation Approach and Assumptions including the information described above.

#### 2. Expected Loading Parameters, Assumptions & Datasets

Indicate whether any parameter values, assumptions or datasets used deviate from default values or recommendations provided in the load estimation method guidance documents. Describe any deviations and the rationale for their use in a Load Estimation Approach and Assumptions section of the CCS memo.

### 3. Expected Loading Project File

Confirm that the expected loading estimate scenario is included in the Load Estimation project file, and indicate that the file name is accurately listed in item A.18.

### 4. Expected Load

Provide the expected loads in the space provided for fine sediment mass, number of fine sediment particles, total phosphorus and total nitrogen. Use Equation 0.3 to convert from fine sediment mass to number of fine sediment particles.

## SECTION E: BASELINE LOADING ESTIMATE

The urban catchment baseline loading estimate sets the reference point for determining load reductions. The technical guidance for developing baseline loading estimates attempts to preserve consistency with

**Baseline** is defined as the conditions present during the 2002 to 2004 period. This is the period used to inform the TMDL baseline loads. Infrastructure present within a catchment as of October 2004 is part of the baseline. Typical basin-wide conditions and practices as of this period are used in baseline loading estimates.

assumptions used in developing the baseline loading estimates in the TMDL, while using the capabilities of project scale load estimation methods to take into consideration site-specific considerations.

While the expected loading estimate for a catchment may change as practices change, the baseline loading estimate for an urban catchment should remain the same over time. The baseline loading estimate will only change when load reduction estimation methods change in a way that requires re-evaluation of baseline loading, which will only be required when extending or revising a CCS.

### TECHNICAL GUIDANCE

The TMDL baseline loading was developed using a set of basin-wide assumptions and consistent event mean concentrations for different land uses for a large majority of the urban upland loading. The TMDL event mean concentrations were developed using data from stormwater sampling conducted over the period from 2002 to 2004. In contrast, the standard urban catchment load estimation method(s) allow(s) variation of runoff concentrations depending on the specific conditions and source control practices present in the urban catchment. When calculating baseline loading, use the standard baseline values defined in Table CCS.4. These values represent typical practices used in the Lake Tahoe Basin in the 2000 to 2004 period. Use the land use and infrastructure in place in the urban catchment as of 2004.

### BASELINE CONDITIONS

Table CCS.4 defines the standard baseline values to use for specific parameters in PLRM. For parameters not listed in Table CCS.4, use the best estimate of actual 2004 conditions. The values in Table CCS.4 represent an informed best professional judgment of standard practices during the 2000 to 2004 period.<sup>3</sup> The standard baseline conditions may not reflect the actual practices in place in the specific urban catchment or the specific urban jurisdiction during this period. This is appropriate for the following reasons:

The TMDL baseline loading estimate did not reflect catchment-specific conditions, and thus urban jurisdiction baseline loading and load reduction requirements are based on basin-wide average conditions.

Normalizing across urban jurisdictions creates a level playing field for all urban jurisdictions that does not penalize urban jurisdictions with better-than-average practices in place during the baseline loading period.

<sup>3</sup> See the Lake Clarity Crediting Program Project Report for discussion of standard baseline conditions.

PLRM User Inputs	Standard Baseline Values
Road Abrasive Application Strategy	None where applicable Minimal for secondary road groups Moderate for primary road groups
Type of Sweeper	Mechanical broom
Sweeping Strategy	Level 1(Rare): 2 times a year for secondary Level 2(Occasional): 4 times per year for primary
BMP Implementation (create an area-weighted average using these values)	Single-Family Residential = 7% Multi-Family Residential = 19% Commercial/Institutional/Communications/Utilities= 5%, Vegetated Turf = 0% except Vegetated Turf for golf courses = 100%, 0% Source Control Certification for all land uses

Table CCS.4: Standard Baseline Modeling Parameters

## BASELINE INFRASTRUCTURE AND TREATMENT BMPs

Determining land use and infrastructure conditions in place as of 2004 need not require a detailed investigation. Use land use maps and parcel maps from the early 2000s, if available. If specific infrastructure maps for this period are not available, start with expected conditions maps, then (1) scan records, (2) check with urban jurisdiction, regulatory and funding agency staff, and (3) drive around the catchment, looking for the following changes that have been completed since the end of 2004:

- Evidence of water quality improvement projects and roadway improvements
- Increases or decreases in impervious cover with an attempt to identify changes of greater than 1,000 square feet, including both new development and significant changes to parcels developed as of 2004.

The urban jurisdiction will develop a baseline infrastructure map. The baseline infrastructure map may be relatively crude, starting with the existing conditions map and simply eliminating treatment BMPs and highlighting changes in roads and land use that have occurred since 2004. The urban jurisdiction will use this map to define the catchment area and provide the necessary land use and road areas information used in the baseline loading estimate. Use the road risk layer supplied with PLRM and assume risk is constant unless there is a reason to believe that a significant change has occurred. Any significant changes in the catchment since 2004 should be summarized in a section of the CCS memo entitled Baseline Conditions.

All treatment BMPs in place as of the end of 2004 and recognized in the baseline load estimation should be indicated on the Baseline Conditions Map and included in the Baseline Treatment BMP Inventory Table. The baseline load reduction estimate assumes treatment BMPs installed before 2005 were maintained at a relatively poor condition reflective of a BMP RAM score of 2 for the treatment BMP. The expected loading estimate can assume improved conditions (equivalent to a BMP RAM score of 3) for all treatment BMPs constructed before the end of 2004 that are still functioning, inspected and maintained.

Further, the urban jurisdiction may have significant opportunities to improve the load reduction potential of existing treatment BMPs through re-engineering. The opportunity to improve the effectiveness of existing treatment BMPs may provide low-cost load reductions and credits by minimizing the need to acquire land and may not require construction permits for changes with minimal soil disturbance. Indicate significant design changes in the Baseline Treatment BMP Inventory Table. Table CCS.5 provides the structure for the Baseline Treatment BMP Inventory Table and describes the information required in each field.

Column	Field Name	Field Description	Data Type
A	BMP_ID	The Treatment BMP ID used on the Baseline Infrastructure Map. If the treatment BMP is also included in the Treatment BMP Inventory Table from Section C, use the same BMP ID.	Text
B	BMP_Type	Use the type defined in the load estimation	Text
C	Baseline & Expected	Yes/No – Indicate if the treatment BMPs that were in place during the baseline period are included in the expected conditions. Confirm that the BMP_ID is the same as that listed in the Treatment BMP Inventory Table in the Implementation Plan Summary.	Yes/No
D	PLRM Baseline Parameter Names	Identify the relevant parameters used for this treatment BMP in the baseline loading estimate.	Text
E	PLRM Baseline Parameter Values	Baseline conditions for treatment BMPs assume infrequent maintenance and worse function than for the same treatment BMP for expected conditions. Use the parameters equivalent to an average condition score of 2 for all treatment BMPs. Refer to the condition scores discussion in Section C of this Technical Guidance for further discussion.	Text
F	Notes	Describe the rationale for changes between expected and baseline parameter values that are not obviously the result of improved maintenance. This may include a reference to changes subsequent to 2005 to increase the size, configuration or effectiveness of treatment BMPs.	Text

Table CCS.5: Baseline Treatment BMP Inventory Table structure & descriptions

## INSTRUCTIONS

### I. BASELINE LOADING ESTIMATE

#### 1. Baseline Inventory Table

Using Table CCS.6 and the Baseline Treatment BMP Inventory Table template, populate the Baseline Treatment BMP Inventory Table. Confirm the file name is included in item A.18.

#### 2. Baseline Infrastructure Map

Check the box confirming the map is complete according to the technical guidance above and include the file name in item A.18.

#### 3. Changes Since 2004

In the space provided, describe if there have been significant changes to treatment BMPs in place as of 2004 and included in the expected loading estimate. If additional space is required, develop a section of the CCS memo entitled Baseline Conditions.

#### 4. Baseline Loading Parameters, Assumptions & Datasets

Indicate if any parameter values, assumptions or datasets used deviate from default values or recommendations provided in the load estimation method guidance documents or the technical guidance above. Describe any deviations and the rationale for their use in a Baseline Load Estimation section of the CCS memo.

#### 5. Baseline Load Estimate

Provide the expected loads in the space provided for fine sediment mass, number of fine sediment particles, total phosphorus and total nitrogen. Use Equation 0.3 to convert from fine sediment mass to number of fine sediment particles.

## SECTION F: CATCHMENT CREDIT SCHEDULE AMOUNT & DURATION

The final determination of the appropriate CCS credit potential amount and duration is made by the regulator in consultation with the urban jurisdiction. The urban jurisdiction proposes the CCS credit potential amount based on the load reduction estimate, and the duration based on the primary and secondary pollutant control strategies.

### TECHNICAL GUIDANCE

#### LOAD REDUCTION ESTIMATE & CREDIT SCHEDULE AMOUNT

The credit potential amount is determined by the load reduction, which is the difference between the expected and baseline loading estimates. The credit potential amount defines the maximum amount of credit that may be awarded for the urban catchment in a year (see Appendix C and Chapter 2 of the Handbook for discussion of the credit award method).

The following describes the steps used to calculate the load reduction estimate as described in Section 0.2 of the Handbook.

**Step 1: Calculate the catchment load reduction estimate** by subtracting the expected loading estimate from the baseline loading estimate for fine sediment, total phosphorus and total nitrogen. This provides a mass load reduction.

**Step 2: Convert the fine sediment mass to number of fine sediment particles** using Equation 0.3.

**Step 3: Calculate the effective load reduction estimate** factoring in the effective of catchment connectivity by multiplying each load reduction estimate from Steps 1 and 2 above by the catchment connectivity percent from item B.5.

**Step 4: Calculate credit amount** using Equation 0.2 with the calculated effective load reduction estimates.

#### CREDIT SCHEDULE DURATION

The CCS duration defines the number of years that the CCS will be valid before it must be extended. Generally a CCS duration is between five and 15 years. The duration is based on the expected lifetime of the primary and secondary pollutant controls identified in the Load Reduction Strategy developed in Section C, and should balance the following considerations:

- Longer credit schedules reduce the level of effort invested in developing and reviewing CCSs and supporting documentation related to load reduction estimates and implementation plans.
- Longer credit schedules provide regulatory stability for urban jurisdictions, and provides an incentive to act and attempt innovative practices that may result in improved ability to achieve load reductions.
- When a CCS is extended, it is possible to request updated load estimation calculations that use the most recently approved load estimation methods. Because updated methods will generally provide more accurate load estimations than previous methods, shorter CCS durations may result in credit awards that more accurately reflect the actual average annual load to the lake.

The urban jurisdiction can update a credit schedule when pollutant control implementation strategies change. Thus, if road maintenance practices significantly change, the urban jurisdiction can update the CCS before the end of the CCS duration. However, it is not appropriate to frequently update CCSs. Because the underlying average annual load reduction estimate is based on a multi-year simulation, the urban jurisdiction should have a strong rationale for making more than one change to a CCS in a five-year period.

#### ESTABLISHMENT DATE & ESTABLISHMENT YEAR CREDIT AMOUNT

The CCS establishment date is the date the Final CCS and supporting materials are submitted to the regulator for approval and the catchment is registered in the Accounting and Tracking Database, as described in Step 1.3.3 in the Handbook. This may not be the initial submittal if the regulator requires

significant changes to load reduction estimates and supporting documentation provided with the initial submission.

The credit potential amount for the first fraction of a year is determined according to Table CCS.X. The percent of the full credit potential amount in the year the CCS is established is based on the basin-wide load duration curve from the TMDL baseline analysis (Integrated Water Quality Management Strategy Report, 2008).

Month	% of Credit Award
Oct	100%
Nov	96%
Dec	92%
Jan	84%
Feb	79%
Mar	64%
Apr	46%
May	20%
Jun	4%
Jul	1%
Aug	0%
Sep	0%

Table CCS.1: Establishment year credit amount

If the urban jurisdiction receives more than 50 percent of the credit award amount in the year the CCS is established, the establishment year is considered the first year of the credit schedule. If less than 50 percent of credit is received in the year the CCS is established, the following year is considered the first year of the credit schedule. Credit is given for the entire month when the catchment is registered even if the submittal is the final day of the month. This is based on the presumption that the treatment BMPs and implementation plans are effective before the date of registration.

The following two examples illustrate the credit award and credit schedule start date:

Catchment A is registered on June 28, 2011, with a credit schedule amount of 50 credits and duration of 15 years. The urban jurisdiction receives 4 percent of the credit, or 2 credits in 2011. This is less than 50 percent of the credit schedule amount, so the first year of the credit schedule is defined as 2012, and the credit schedule is effective through September 31, 2026.

Catchment B is registered on January 5, 2014, with a credit schedule amount of 100 credits and duration of 5 years. The urban jurisdiction receives 84 percent of the credit, or 84 credits in 2014. This is greater than 50 percent of the credit schedule amount, so the first year of the credit schedule is 2014, and the credit schedule is effective through September 31, 2018.

## INSTRUCTIONS

The CCS amount is determined by the load reduction between expected and baseline conditions. The CCS amount is the maximum amount of credit potential for the urban catchment, and is the amount of credit awarded during years when all conditions are near or better than expected.

### I. LOAD REDUCTION ESTIMATE & CATCHMENT CREDIT SCHEDULE AMOUNT

**1. Load Reduction Estimate**

Enter the load reduction as calculated following the technical guidance above. Also include this information in item A.10.

**2. Fine Sediment Particle Number Conversion**

Using Equation 0.3, convert the fine sediment mass to fine particle number. Also include this information in item A.10.

**3. Catchment Connectivity**

Enter the percent connectivity defined in item B.6.

**4. Effective Load Reduction Estimate**

Multiply the load reductions from items F.1 and F.2 above by the Catchment Connectivity percent to determine the effective load reduction estimate. Also include this information in item A.7.

**5. Credit Amount Calculation**

Using Equation 0.2, calculate the credit amount. Also include this information in item A.8.

**II. CREDIT SCHEDULE DURATION****6. Credit Schedule Duration**

Based on the information given in the technical guidance above, indicate the catchment credit schedule duration. Also include this information in item A.8.

**7. Duration Rationale**

Briefly explain the rationale for the selected duration.

III. Establishment Summary

**8. Establishment Date**

Note the date that the complete set of CCS materials are submitted to the regulator as described in Step 1.3.3. Also include this information in item A.9.

**9. Establishment Year Credit Potential Percentage**

Note the appropriate establishment year percent and amount as described in the technical guidance above.

**10. Final Year of Credit Schedule**

Note the final year of the credit schedule according to the CCS duration and the technical guidance above regarding establishment date. Also include this information in item A.10.

**11. Additional CCS Amount and Duration Information**

If additional information is required, indicate that additional information is provided in a CCS Amount and Duration section of the CCS memo.











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**SECTION A: GENERAL INFORMATION**

**INSTRUCTIONS:** Provide the information requested below. If more room is needed, include a memo as an attachment to this form and indicate the memo name below. For additional information, see the Issue Resolution Punchlist – Descriptions & Instructions.

<b>1. RELEVANT CATCHMENT ID OR ANNUAL REPORT</b>	Identify the specific item being reviewed
<small>Catchment ID or Document Title</small>	

<b>2. BRIEF DESCRIPTION OF SITUATION</b>	Provide relevant information
<small>Identify Topic Context</small>	<small>For Credit Schedules, define the stage of review</small>
<input type="checkbox"/> New Catchment Credit Schedule <input type="checkbox"/> Revision of Existing Catchment Credit Schedule <input type="checkbox"/> Annual Report <input type="checkbox"/> Other	<input type="checkbox"/> Step 1.2: Verify Catchment Credit Schedule <input type="checkbox"/> Step 1.4: Accept Catchment Registration
<small>Briefly describe the situation</small>	

Attachment name (if necessary)

<b>3. URBAN JURISDICTION CONTACT INFORMATION</b>	Identify primary contact and appropriate contact information					
<input type="checkbox"/> Caltrans <input type="checkbox"/> CSLT <input type="checkbox"/> Douglas <input type="checkbox"/> El Dorado	<input type="checkbox"/> NDOT <input type="checkbox"/> Placer <input type="checkbox"/> Washoe	<table border="1"> <tr> <td><small>Name</small></td> <td><small>Phone</small></td> </tr> <tr> <td colspan="2"><small>E-Mail</small></td> </tr> </table>	<small>Name</small>	<small>Phone</small>	<small>E-Mail</small>	
<small>Name</small>	<small>Phone</small>					
<small>E-Mail</small>						

<b>4. REGULATORY AGENCY CONTACT INFORMATION</b>	Identify primary contact and appropriate contact information					
<input type="checkbox"/> LRWQCB <input type="checkbox"/> NDEP	<table border="1"> <tr> <td><small>Name</small></td> <td><small>Phone</small></td> </tr> <tr> <td colspan="2"><small>E-Mail</small></td> </tr> </table>		<small>Name</small>	<small>Phone</small>	<small>E-Mail</small>	
<small>Name</small>	<small>Phone</small>					
<small>E-Mail</small>						

<b>5. INITIATION DATE</b>	Report the date of the initial transmittal
<small>Date</small>	

<b>6. STATEMENT OF RESOLUTION</b>	Review the following statement and sign your acknowledgment
<input type="checkbox"/> <b>All issues have been resolved to the degree necessary to proceed.</b>	
<small>Signature of urban jurisdiction representative</small>	<small>Signature of regulator representative</small>
<small>Date</small>	<small>Date</small>

**SECTION B: ISSUE IDENTIFICATION & RESOLUTION**

**INSTRUCTIONS:** Provide the information requested below. If more room is needed, **include a memo as an attachment to this form and indicate the memo name below.** For additional information, see the Issue Resolution Punchlist – Descriptions & Instructions.

**1. ISSUE NUMBER, TITLE AND TYPE**

Issue #: _____	Issue Title: _____
<input type="checkbox"/> Question	<input type="checkbox"/> Issue
<input type="checkbox"/> Change request	<input type="checkbox"/> Other

**2. ISSUE INITIALLY IDENTIFIED BY**

Name

**3. ISSUE QUESTION OR ISSUE DESCRIPTION**

Clearly describe the question or issue

**4. ISSUE QUESTION OR ISSUE RESOLUTION**

Briefly describe the answer or resolution

**5. RESOLUTION SIGN-OFF**

Review the following statement & INITIAL your acknowledgment

*This issue has been resolved to the degree necessary to proceed.*

Urban Jurisdiction representative Initials	Date	Regulator representative initials	Date
--	------	-----------------------------------	------

**1. ISSUE NUMBER, TITLE AND TYPE**

Issue #: _____	Issue Title: _____
<input type="checkbox"/> Question	<input type="checkbox"/> Issue
<input type="checkbox"/> Change request	<input type="checkbox"/> Other

**2. ISSUE INITIALLY IDENTIFIED BY**

Name

**3. ISSUE QUESTION OR ISSUE DESCRIPTION**

Clearly describe the question or issue

**4. ISSUE QUESTION OR ISSUE RESOLUTION**

Briefly describe the answer or resolution

**5. RESOLUTION SIGN-OFF**

Review the following statement & initial your acknowledgment

*This issue has been resolved to the degree necessary to proceed.*

Urban Jurisdiction representative Initials	Date	Regulator representative initials	Date
--	------	-----------------------------------	------

# ISSUE RESOLUTION PUNCHLIST DESCRIPTION & INSTRUCTIONS



This guidance provides guidance for using the [Issue Resolution Punchlist](#) (IRP) for the Lake Clarity Crediting Program (Crediting Program). The punchlist is used in the steps of the [Lake Clarity Crediting Program Handbook](#) (Handbook) shown in Table 1.

Step #	Step title	Regulator	Urban jurisdiction
<b>1. Establish Credit Schedules</b>			
1.2	Verify Load Reduction Estimate & Catchment Credit Schedule	■	■
1.4	Accept Catchment Registration	■	□
<b>2. Award Credits</b>			
2.5	Award Credits	■	□
Note: ■ = primary responsibility or necessary participation; □ = secondary responsibility or potential participation			

Table 1: Issue Resolution Punchlist Steps

## PURPOSE OF THE PUNCHLIST

The Issue Resolution Punchlist clarifies communication between regulators and urban jurisdictions during the processes to (1) develop Catchment Credit Schedules, and (2) award credits based on Annual Reports. The punchlist identifies questions and issues, and documents how they are addressed and resolved. Once all questions and issues have been addressed and resolved, the review of the Catchment Credit Schedule or other documents is complete.

## TECHNICAL GUIDANCE

The IRP clarifies communication and increases efficiency. Use of the IRP is not an indication of conflict. However, in the event that the regulator and urban jurisdiction are having difficulty resolving a specific catchment credit schedule or annual report issue, they should use the document-specific conflict resolution process described below. The Crediting Program defines a separate governance and adjustment process for resolving broad programmatic issues in [Chapter 3: Report Results and Improve Program](#) of the Handbook.

## DOCUMENT-SPECIFIC CONFLICT RESOLUTION PROCESS

The document-specific conflict resolution process is a slight modification to the process defined in, "Collaborative Storm Water Quality Project Delivery for the Lake Tahoe Basin," developed by the Storm Water Quality Improvement Committee (SWQIC). Use the SWQIC conflict resolution process with the following modifications:

- Use the IRP, and an associated memo if needed, to define issues
- Only involve the regulator and urban jurisdiction in discussions, as they are the only parties who must agree to resolve the issue related to specific Crediting Program documents.

## SPECIFIC INSTRUCTIONS & DEFINITIONS

Either the regulator or the urban jurisdiction can initiate use of the Issue Resolution Punchlist; however, once initiated, either party can add questions and issues to be answered and resolved. Section A includes information identifying the unique Catchment Credit Schedule or Annual Report being reviewed. In general, a new Issue Resolution Punchlist is developed for each Catchment Credit Schedule.

Section B defines each unique question or issue to be addressed and resolved. Issues may be identified by either the regulator or urban jurisdiction, and all issues should be satisfactorily resolved before the review is complete. Issues should be added to the IRP electronically; however, issues identified during meetings and discussions may be hand-written.

Once all items are resolved and both the regulator and urban jurisdiction have signed the Issue Resolution Punchlist, it is scanned and kept on file with both parties. If the regulator and urban jurisdiction cannot come to resolution on certain issues, they follow the conflict resolution process described in the following section.

## SECTION A: GENERAL INFORMATION

1. **Relevant Catchment ID or Annual Report**  
Identify the specific item being reviewed.
2. **Brief Description of Situation**  
Concisely identify the context for the situation. Identify whether the issue relates to a (1) new credit schedule, (2) a revision to an existing credit schedule, or (3) an annual report. For credit schedules, define the stage of review: Step 1.2: Verify Catchment Credit Schedule, Step 1.4: Accept Catchment Registration. Provide a brief statement describing the general situation surrounding the issues and questions identified.
3. **Urban Jurisdiction Contact Information**  
Identify the responsible urban jurisdiction, primary contact, and contact information.
4. **Regulatory Agency Contact Information**  
Identify the responsible regulatory agency, primary contact, and contact information.
5. **Initiation Date**  
Record the date of the initial transmittal of the document in question.
6. **Statement of Resolution**  
Once all issues have been resolved, provide signatures under the statement indicating that there are no remaining issues that must be addressed before proceeding.

## SECTION B: ISSUE IDENTIFICATION & RESOLUTION

1. **Issue #\_\_ : Title**  
Provide a sequential issue number for each issue and a representative title for ease of reference. Indicate whether the issue is a(n) (1) question, (2) item to discuss, or (3) change request related to a specific field or statement
2. **Issue Initially Identified By**  
Indicate who initially identified the question.
3. **Question or Issue Description**  
Clearly describe the question or issue. When referring to a document, identify the page number and paragraph. When referring to a calculation, identify the specific parameters or methods. Use the space provided or develop a memo to more completely describe the issue. If using a memo, reference the memo in the description and attach as a separate file or page.
4. **Question or Issue Resolution**  
Give a brief description of the answer or resolution. Use the space provided or develop a memo to more completely describe the issue. If using a memo, reference the memo in the description and attach as a separate file or page.
5. **Resolution Sign-off**  
Once the question has been addressed or the issue resolved to the degree necessary to proceed, the regulator and urban jurisdiction each initial and date the IRP. This indicates that the item does not need any further attention.
6. **Additional Issues**  
Same descriptions as items B1 through B5.

# ANNUAL STORMWATER REPORT - CREDIT DECLARATION SECTION OUTLINE



Each urban jurisdiction develops an Annual Stormwater Report (ASR) to comply with reporting requirements set forth by the TRPA, and in NPDES permits or Memoranda of Agreement. The overall ASR may cover a wide range of stormwater-related topics. Chapter 2 of the Lake Clarity Crediting Program Handbook (Handbook) calls for the development of a Credit Declaration Section of the ASR. The Credit Declaration Section is developed in Step 2.4, presenting the inspections results and implementation efforts from Steps 2.1 and 2.2. The information presented in the Credit Declaration Section is the basis for awarding credits related to individual Catchment Credit Schedules (CCSs), and is used to inform (1) the overall TMDL Performance Report, (2) the Synthesis of Findings Report, and (3) development of change recommendations to improve the efficiency and effectiveness of the Lake Clarity Crediting Program (Crediting Program).

Figure ASR.1 is the recommended outline for the Credit Declaration Section. Reports generated by the TMDL Accounting and Tracking Tool (Accounting and Tracking Tool) provide most of the numeric information required for the Credit Declaration Section. This document presents technical guidance to define the intent and recommended content of each part of this Credit Declaration Section outline. Appendix B provides an example of the annual process for developing an ASR and declaring credits.

The following is a recommended outline for the *Catchment Declaration Section* of an *Annual Stormwater Report*:

1. **Credit Declaration Overview** – Reference Attachment A.1: Urban Jurisdiction Credit Summary
  - 1.1. **Catchment Credit Declaration Discussion** – Reference Attachment A.2: Annual Catchment Credit Reports for each active CCS
  - 1.2. **Credit Distribution Summary** – Reference Attachment A.3: Credit Distribution Summary Report
  - 1.3. **Implementation Summary**
    - 1.3.1. Summary of Treatment BMP Implementation
      - Inspection Findings
      - Maintenance Actions Overview
    - 1.3.2. Summary of Road Maintenance Practices
      - Inspection Findings
      - Maintenance Actions
    - 1.3.3. Summary of Private Property BMP Implementation
      - Inspection Findings
      - Implementation Actions
    - 1.3.4. Summary of Other Pollutant Control Strategies Implementation
      - Inspection Findings
      - Implementation Actions
  - 1.4. **New Catchments & Implementation Plan Progress**
    - 1.4.1. New Catchment Credit Schedules
    - 1.4.2. Progress Towards Implementing Stormwater Management Plans
      - Table of Planned and Actual Implementation Schedule
      - Expected Progress for Upcoming Year
  - 1.5. **Program Recommendations**
    - 1.5.1. Program Improvement Discussion & Potential Change Recommendations

Figure ASR.1: Credit declaration report outline

## TECHNICAL GUIDANCE

The following provides brief instructions for developing the recommended content for each enumerated portion of the Credit Declaration Section outline.

### CREDIT DECLARATION OVERVIEW

Provide a brief description of the information presented in the Urban Jurisdiction Annual Credit Summary generated by the Accounting and Tracking Tool. This text should highlight the most important factors influencing the overall results of the urban jurisdiction's efforts to implement pollutant controls and meet credit targets for the year. This may include both successes and challenges. Include the Urban Jurisdiction Annual Credit Summary as an attachment to the ASR.

## CATCHMENT CREDIT DECLARATION DISCUSSION

Describe any notable factors related to specific urban catchments and CCSs. It is only necessary to include specific descriptions for CCSs for which the urban jurisdiction’s declared credit amount is different from the calculated credit provided by the Accounting and Tracking Tool. See the Crediting Program credit award method described in Appendix C. The urban jurisdiction may also provide descriptions highlighting notable successes and challenges related to any CCS. The text refers to Annual Catchment Credit Reports generated by the Accounting and Tracking Tool for each CCS, and a full set of Annual Catchment Credit Reports for all registered catchments are attached to the ASR.

## CREDIT DISTRIBUTION SUMMARY

Develop a table summarizing the number of credits distributed to and received from other jurisdictions. Table ASR.1 shows the recommended table structure and column definitions. Complete the table only for catchments with credits distributed between multiple jurisdictions. Provide description of cooperation between urban jurisdictions as needed.

Catchment ID	Total Credits Declared	Credits Declared by Reporting Urban Jurisdiction	Credits Declared by [Partner Urban Jurisdiction Name]	Credits Declared by [Partner Urban Jurisdiction Name]	Credits Declared by [Partner Urban Jurisdiction Name]
Unique Catchment ID – name begins with urban jurisdiction abbreviation	Total # of Credits Declared for the Catchment in This Year (the sum of the remaining columns should equal this number)	# of Credits Declared by Urban Jurisdiction Developing this Report	# of Credits Declared by Partner Urban Jurisdiction #1	# of Credits Declared by Partner Urban Jurisdiction #2	# of Credits Declared by Partner Urban Jurisdiction #3

Table ASR.1: Recommended credit distribution summary table

## IMPLEMENTATION SUMMARY

Provide a brief overview of implementation efforts related to maintaining the conditions within registered (and, if desired, unregistered) urban catchments. This may include a description of overall resources and a discussion of successes and challenges.

## SUMMARY OF TREATMENT BMP IMPLEMENTATION

Describe activities related to maintaining treatment BMP conditions. Relate descriptions to the Implementation Plan Summary information included in individual CCSs, and other implementation planning documents used by the urban jurisdiction.

- **Inspection Findings**

Provide an overview of inspection efforts, notable results, and how inspection results were used to direct treatment BMP maintenance actions. Reference inspection results stored in the Accounting and Tracking Tool and individual urban jurisdiction BMP database reports that may be included as attachments to the ASR.

- **Maintenance Actions**

Provide a summary of maintenance actions, including any notes related to specific catchments and treatment BMPs.

## SUMMARY OF ROAD MAINTENANCE PRACTICES

Describe activities related to maintaining road conditions. Relate descriptions to the Implementation Plan Summary information included in individual CCSs and other implementation planning documents used by the urban jurisdiction.

- **Inspection Findings**

Provide an overview of inspection efforts, notable results, and how inspection results were used to direct roadway maintenance actions. Reference inspection results stored in the Accounting and Tracking Tool and individual implementer database reports that may be included as attachments to the ASR.

If an operations-to-conditions relationship exists for road abrasive application and sweeping practices, clearly present the data and describe the findings drawn from the data that support the operations-to-conditions relationships.

- **Maintenance Actions**

Provide a summary of maintenance actions including any notes related to specific catchments and roads.

## **SUMMARY OF PRIVATE PROPERTY BMP IMPLEMENTATION**

Describe activities related to implementing the urban jurisdiction’s private property BMP program. Relate descriptions to the Implementation Plan Summary information included in individual CCSs and other implementation planning documents used by the urban jurisdiction.

- **Inspection Findings**

Provide the results for private property BMP implementation from the past year and over time. For individual catchments, reference results stored in the Accounting and Tracking Tool.

- **Implementation Actions**

Provide a summary of private property BMP program implementation activities, including and notes related to specific catchments.

## **SUMMARY OF OTHER POLLUTANT CONTROL STRATEGIES IMPLEMENTATION**

Describe activities related to implementing other pollutant control strategies described in individual CCSs. Relate descriptions to the Implementation Plan Summary information included in individual CCSs and other implementation planning documents used by the urban jurisdiction.

- **Inspection Findings**

Provide an overview of inspection efforts, notable results, and how inspection results were used to direct program implementation and maintenance actions. Reference inspection results stored in the Accounting and Tracking Tool and individual urban jurisdiction BMP database reports that may be included as attachments to the ASR.

- **Maintenance Actions**

Provide a summary of activities to implement other pollutant control strategies, including any notes related to specific catchments.

## **NEW CATCHMENTS & IMPLEMENTATION PLAN PROGRESS**

Briefly describe efforts to implement new pollutant controls through capital improvements, procurement of new equipment, implementation of programs and ordinances, and any other efforts that are intended to reduce pollutant loading to Lake Tahoe.

## **NEW, EXTENDED, REVISED & EXPIRING CATCHMENT CREDIT SCHEDULES**

Identify any CCSs established, extended or revised during this reporting year. Highlight any notable changes in overall implementation activities that are expected as a result of new actions. Also, identify any CCSs that expired during this year and what is being done to compensate for the resulting reduction in credit.

## **PROGRESS TOWARDS IMPLEMENTING STORMWATER MANAGEMENT PLANS**

Refer to the urban jurisdiction’s Stormwater Management Plan and describe progress toward implementing the approved plan. Also describe efforts to implement projects on the urban jurisdiction’s Environmental Improvement Program project lists.

- **Table of Planned and Actual Implementation Schedule**

The Stormwater Management Plan includes a table summarizing planned implementation of pollutant controls by catchment, providing a rough estimate or range of predicted credit, and the expected year of implementation and CCS registration. This table is reproduced in the ASR and columns added showing the actual year of implementation and credit amount, as well as providing any notes related to the specific catchment.

- **Expected Progress for Upcoming Year**

Add comments to the Table of Planned and Actual Implementation Schedule describing activities making progress toward implementing pollutant controls in specific catchments. Also, provide a brief narrative of near-term plans to progress toward achieving pollutant load reductions and meeting credit requirements in the next year or two.

## **PROGRAM RECOMMENDATIONS**

Identify logistical and technical issues that, if changed or addressed, would improve the efficiency and effectiveness of the Crediting Program and efforts to reduce pollutant loading to Lake Tahoe.

### **PROGRAM IMPROVEMENT DISCUSSION & POTENTIAL CHANGE RECOMMENDATIONS**

Describe challenges related to performing the Crediting Program steps and using the standard tools and methods. Also identify any aspects of the Crediting Program that improve the urban jurisdiction's ability to target implementation efforts and to communicate with regulators.

For specific operational issues, suggest changes to be considered for the annual program adjustment process described in Chapter 3 of the Handbook.

### **SCIENCE QUESTIONS FOR INVESTIGATION**

Identify scientific investigations and monitoring efforts that would help inform the urban jurisdiction's future decision-making and improve the ability of the Crediting Program and related standard tools and methods to more effectively incentivize implementation of actions to improve Lake Tahoe clarity.



**SECTION A: GENERAL INFORMATION**

Recommendations submitted with this form will be considered for inclusion in the **Program Adjustment Recommendations**. For each program change recommendation, fill in a separate Change Recommendation section.

**I. CHANGE IDENTIFICATION**

<b>1. TITLE USED TO IDENTIFY CHANGE</b>		<b>2. YEAR OF PROPOSED CHANGE DECISION</b>	
Date		Year	
<b>3. POINT OF CONTACT</b>		Provide the contact information for the appropriate representative	
Name	E-mail	Phone	

**4. CHANGE PROPOSED AND ACTIVELY SUPPORTED BY**

<b>Urban Jurisdictions</b> <input type="checkbox"/> CALTRANS <input type="checkbox"/> CSLT <input type="checkbox"/> DOUGLAS <input type="checkbox"/> EL DORADO <input type="checkbox"/> NDOT <input type="checkbox"/> PLACER <input type="checkbox"/> WASHOE		<b>Funding Partners &amp; Scientists</b> <input type="checkbox"/> CTC <input type="checkbox"/> NDSL <input type="checkbox"/> RSWMP INVESTIGATORS <input type="checkbox"/> OTHER: _____	
<b>Regulatory Agencies</b> <input type="checkbox"/> LRWQCB <input type="checkbox"/> NDEP <input type="checkbox"/> TRPA <input type="checkbox"/> U.S. EPA		<b>Stakeholders (name of group or individual)</b> <input type="checkbox"/> OTHER: _____ <input type="checkbox"/> OTHER: _____ <input type="checkbox"/> OTHER: _____ <input type="checkbox"/> OTHER: _____	

**II. RECOMMENDATION**

<b>5. PROPOSED CHANGE</b>	Indicate all of the following related to the proposed change.
<input type="checkbox"/> LOAD REDUCTION ESTIMATION METHODS <input type="checkbox"/> PROGRAM OPERATIONS & CREDITING PROGRAM HANDBOOK <input type="checkbox"/> CONDITION ASSESSMENT METHODS <input type="checkbox"/> OTHER: _____	

<b>6. NEEDS ADDRESSED BY RECOMMENDATION</b>	Briefly describe the need for change and the issues that the change would address. Refer to items on the Identified Operational Improvements list as appropriate.
---	---

<b>7. RECOMMENDED ACTION</b>	Describe the specific changes that are required to implement the change. Include section references to documents and specific language, if appropriate.
------------------------------	---

<b>8. POTENTIAL COMPLICATIONS/IMPACTS OF ACTION</b>	Describe any ramifications or related changes that would be required to completely implement the change.
---	--

<b>9. ADDITIONAL MATERIALS</b>	If additional space is needed, specify in a separate memo or attachment, and complete the fields below.
Filename	Date

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## PURPOSE OF THE FILE STRUCTURE

The Files Structure Template provides a consistent structure to organize the files of different formats related to (1) specific catchments and catchment credit schedules, (2) urban jurisdiction implementation plans, inventories and annual stormwater reports, and (3) the Lake Clarity Crediting Program overall, including Handbook files, forms, Performance Reports, Synthesis of Findings Reports, Lists and Program Improvement Recommendations.

## TECHNICAL GUIDANCE

Figure FST.1 illustrates the file structure template that should be used on file sharing sites related to the Crediting Program.

The operational tools and templates of the Crediting Program (fill-able forms, inventory templates, etc.) are found in the Templates sub-folder of the Handbook folder. The Handbook also houses program management reports and the handbook source files (available only to Crediting Program Managers) for future revision and adaptation.

The Urban Jurisdictions folder details a digital hierarchy that urban jurisdictions use to submit and store digital files related to their jurisdiction. Sub-folders of the Urban Jurisdictions folder include locations to store all information related to active catchments within the jurisdiction, historical documentation of archived (inactive) catchments. Information related to the urban jurisdiction’s programmatic operations and strategies such as implementation plans, annual reports and general jurisdiction maps are stored in the General sub-folder.

The Crediting Program File Structure can be copied and pasted to a user’s computer from the Crediting Program file sharing site or supplied Crediting Program compact discs.

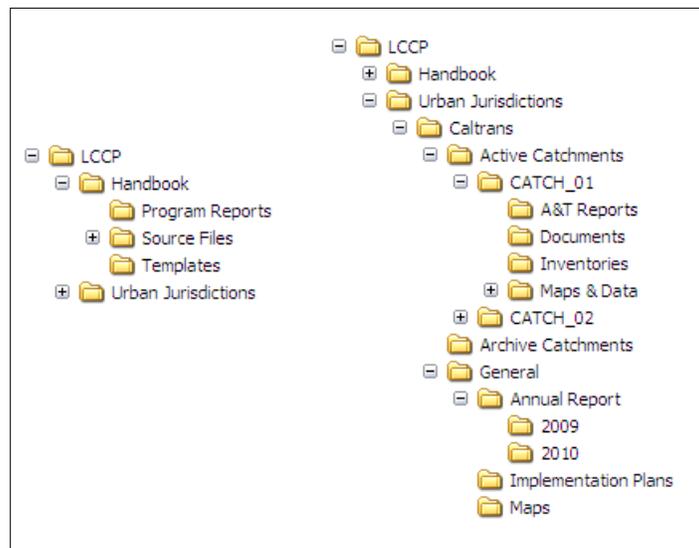


Figure FST.1: Digital file folder structure template

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