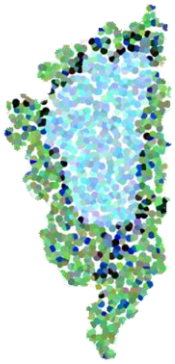

LAKE CLARITY CREDITING PROGRAM HANDBOOK

FOR LAKE TAHOE TMDL IMPLEMENTATION

September **2011**

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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LAKE CLARITY CREDITING PROGRAM v1.0

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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TABLES

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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 total maximum daily load (TMDL) numeric target is 29.7 meters. In 2004, lake clarity was 22.4 meters.[1] The primary culprit in clarity loss is fine sediment particles less than 16 micrometers (μm) 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.[2] The Clarity Challenge defines an interim clarity milestone of 24 meters. Meeting this milestone necessitates 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[3]. The current credit definition focuses on load reductions of the primary pollutant of concern: fine sediment particles.

1 Lake Clarity Credit = 1.0×10^{16} fine sediment particles with a diameter smaller than 16 μm

Pollutant load reduction is defined as the difference between the estimated average annual amount of pollutants entering Lake Tahoe under standard baseline conditions[4] 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 emphasizes effective ongoing implementation of pollutant controls that results 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

[1] For the purposes of this handbook, Lake Tahoe clarity is defined as the annual average depth below the lake surface at which a Secchi disk can no longer be seen as it is lowered.

[2] 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.

[3] See Section 0.2 for a complete Lake Clarity Credit definition.

[4] 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.[5] 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).

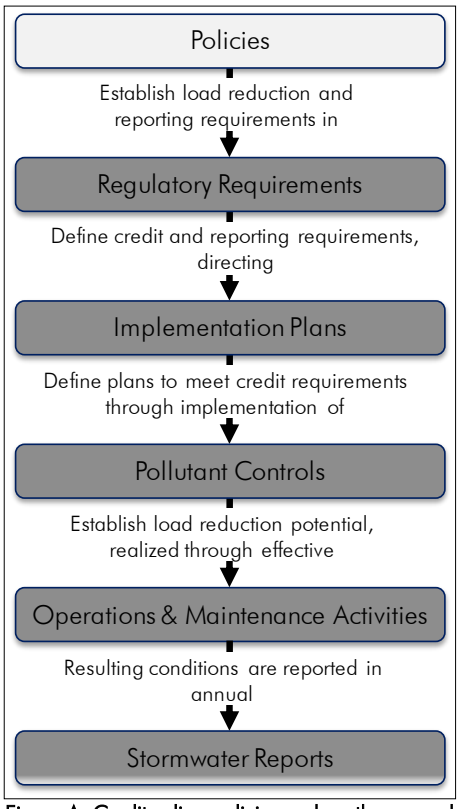

Figure A: Credits align policies and on-the-ground actions –Credits and load reductions are used to align policies with actions and ongoing implementation.

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 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 expected 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 obligations 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.

[5] 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.

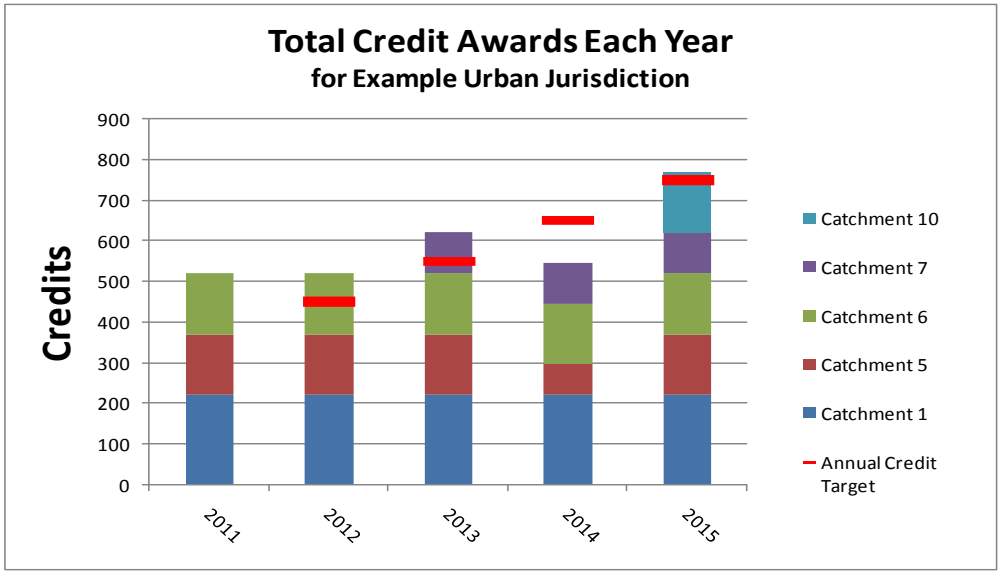

Figure B: Credit awards related to credit targets – A sample illustration of urban jurisdiction credit targets and credit awards. The red lines indicate the credit targets for an urban jurisdiction. The stacked bars show the total credits awarded each year. Each colored segment in the bars represents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

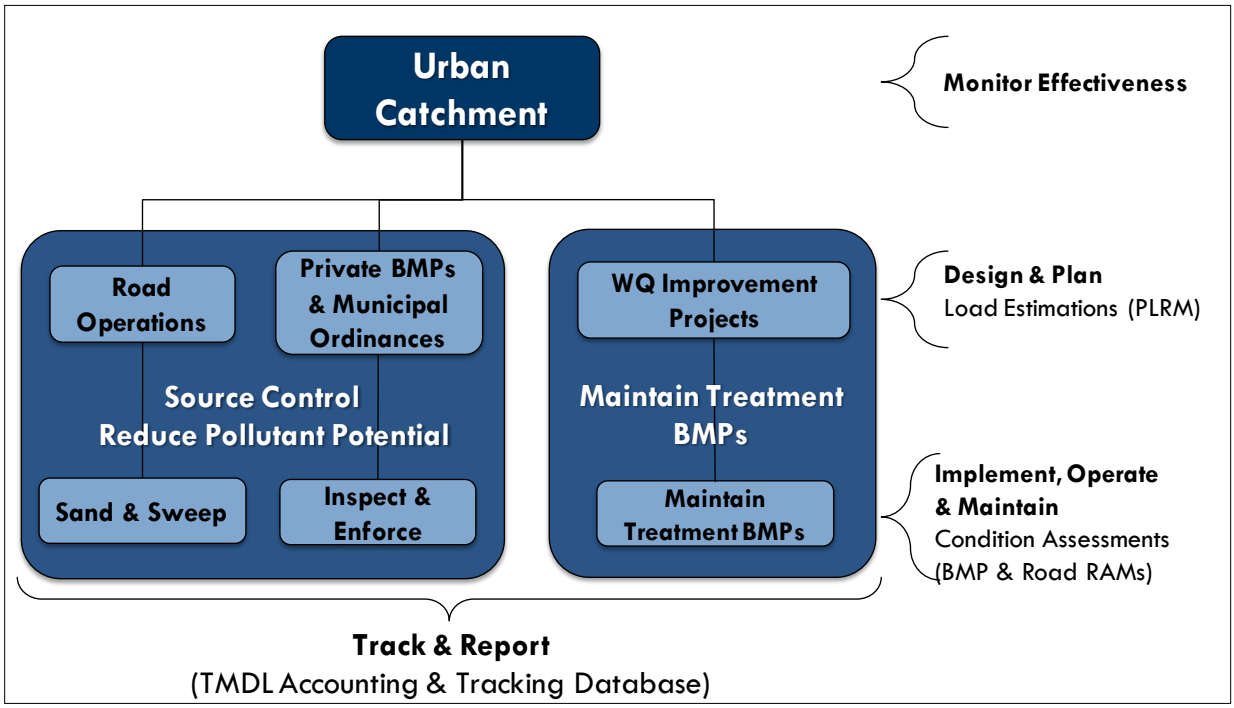

Figure C: Typical pollutant controls relationship to standard methods & monitoring – Pollutant controls are implemented in urban catchments. Condition assessment methods (BMP RAM & Road RAM) are used to inspect treatment BMPs and roads to determine how actual conditions compare to expected conditions used in load reduction estimates, using PLRM. Effectiveness monitoring 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.

Figure C shows the relationship between typical pollutant controls and these standard tools. It also indicates that effectiveness data generated through research and monitoring programs are used to test load reduction estimations and condition assessment methods. Research and monitoring programs will provide the scientific information necessary to improve standard tools and methods over time.

■ 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 supporting 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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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.

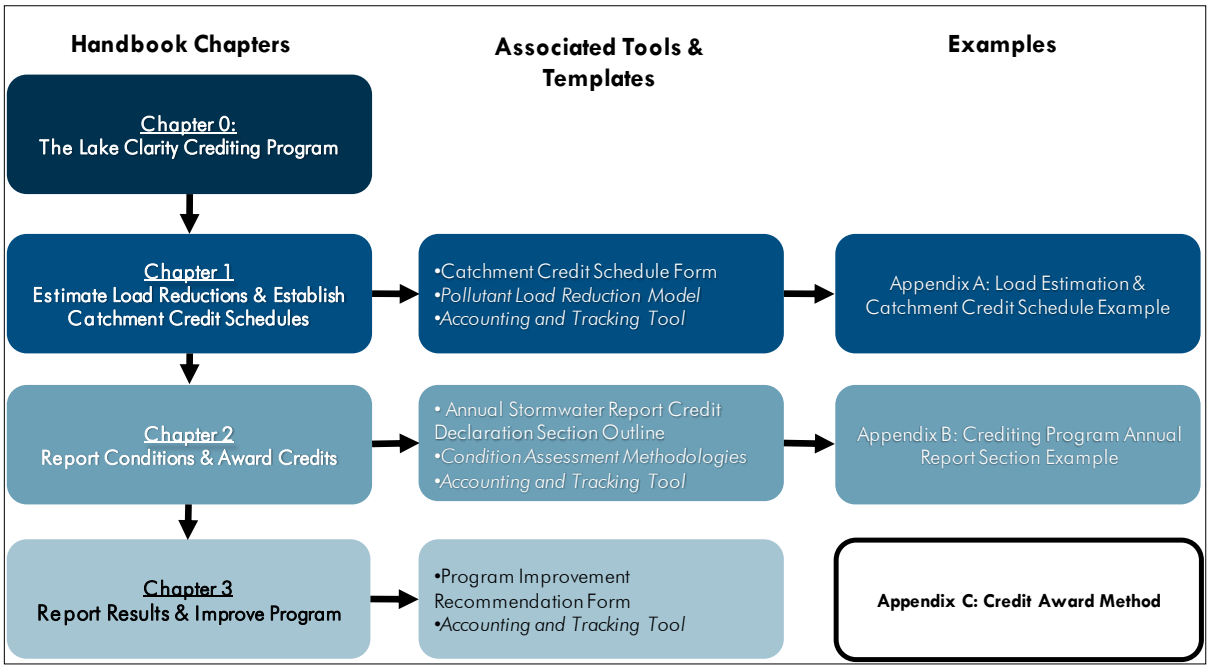


Figure D: Lake Clarity Crediting Program Handbook organization – Chapter 0 provides context and defines Lake Clarity Credits, Chapters 1 through 3 describe the primary processes: (1) estimating load reductions and establishing catchment credit schedules, (2) reporting conditions and awarding credits, 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 can 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.

■ 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	1.1	Catchment Credit Schedule	Draft Catchment Credit Schedule
Verify Load Reduction Estimate & Catchment Credit Schedule	1.2	Issue Resolution Punchlist	Final Catchment Credit Schedule
Register Catchment	1.3	Accounting & Tracking Tool	Registered Catchment
Inspect	2.1	BMP RAM; Road RAM; RCAT	Inspection Results
Maintain, Operate & Administer Pollutant Controls	2.2		Inspection Results
Report & Declare Credits	2.4	Annual Stormwater Report – Credit Declaration Section Outline; Accounting & Tracking Tool	Annual Stormwater Report – Credit Declaration Section
Synthesize Findings	3.6	Program Improvement Recommendation Form	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.

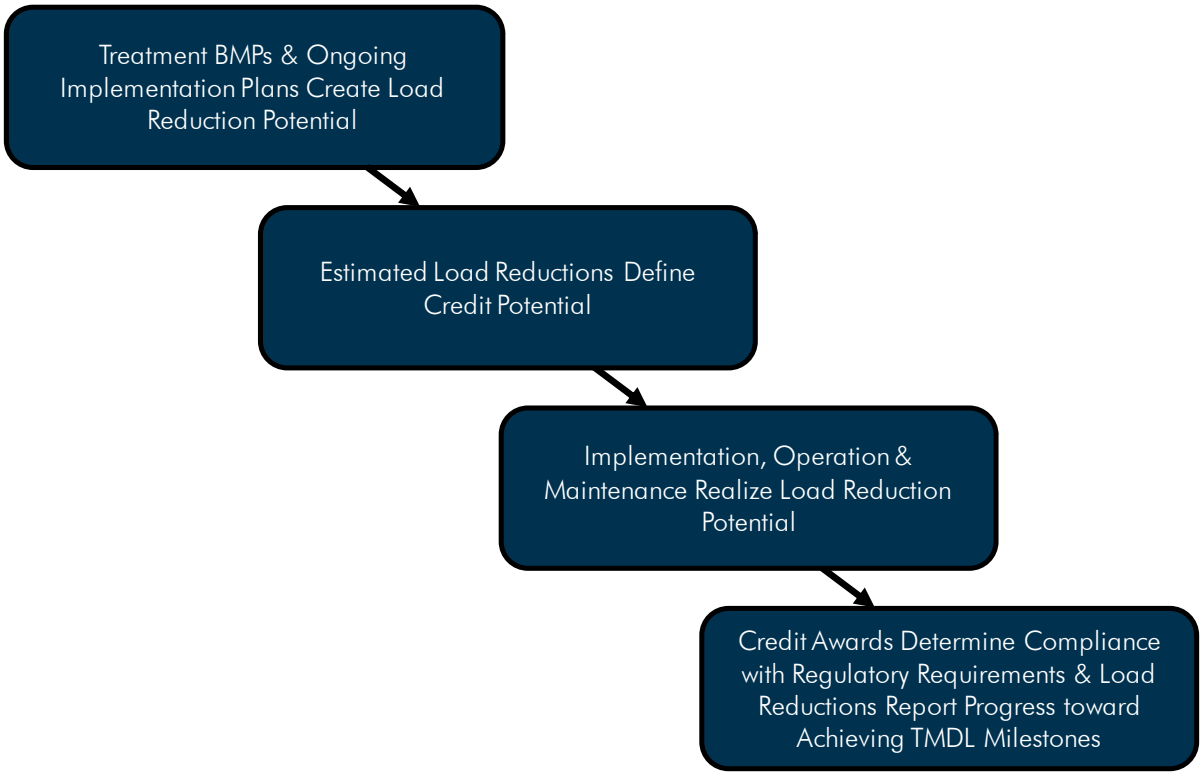
REGULATORS

Regulators, 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	1.2	Issue Resolution Punchlist	Final Catchment Credit Schedule
Approve Final Credit Schedule	1.4	Accounting & Tracking Tool	Accepted Catchment Credit Schedule & Approved Catchment Registration
Validate Conditions	2.3	Accounting & Tracking Tool	Inspection Results
Award Credits	2.5	Issue Resolution Punchlist; Accounting & Tracking Tool	Credit Awards
Translate TMDL Allocations to Credit Requirements	3.1	Accounting & Tracking Tool	
Refine Protocols & Accepted Methods	3.2	Lake Clarity Crediting Program Handbook	Updated Handbook; Updated Identified Operational Improvements List
Prioritize Research & Monitoring Needs	3.3		Updated & Prioritized List of Areas for Investigation
Guide Monitoring & Research	3.4		
Report Program Performance	3.5		Lake Clarity Crediting Program Performance Report
Synthesize Findings	3.6	Program Improvement Recommendation Form	Synthesis of Findings Report; Program Improvement Recommendation
Engage Stakeholders	3.7		
Develop Program Improvement Recommendations	3.8	Program Improvement Recommendation Form	Program Improvement Recommendations
Decide Upon Program Improvement	3.9		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



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?

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 doing so, 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.[6] 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.

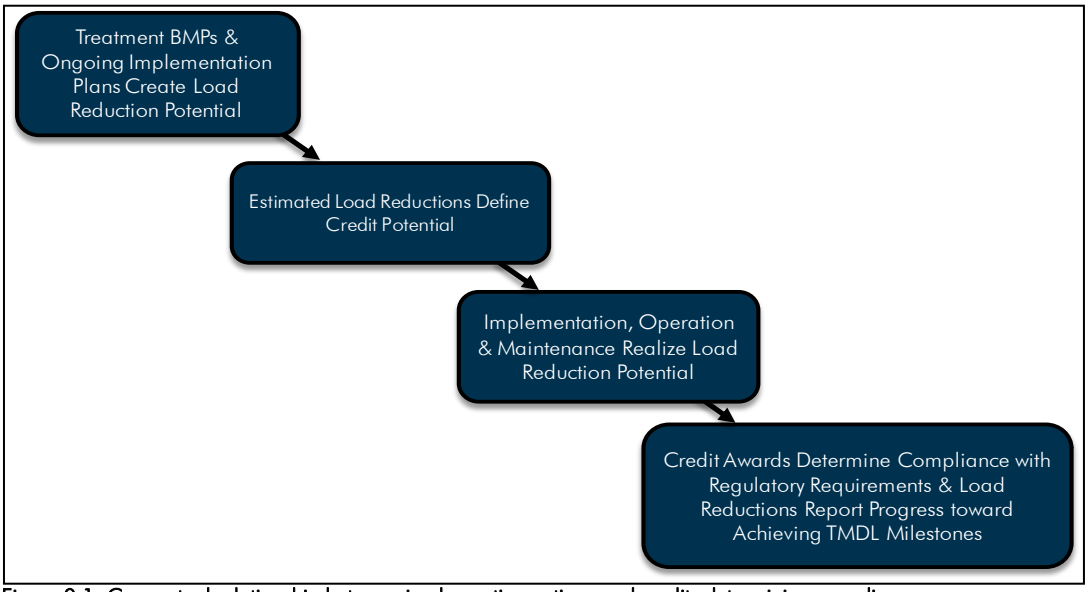


Figure 0.1: Conceptual relationship between implementing actions and credits determining compliance

[6] 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 typically 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.[7] 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 (μm) 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[8] based on years of scientific research. The TMDL numeric target is 29.7 meters. In 2004, lake clarity was 22.4 meters.[9] 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 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 needs to 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).

All pollutant load reductions from urban areas are eligible to be considered for meeting Lake Clarity Credit targets in stormwater permits and MOA. This includes any urban stormwater load reductions resulting from improving stream environment zones that result in increased filtration and pollutant capture of stormwater runoff.

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[7] For more information about the science and planning efforts related to the Lake Tahoe TMDL and the Crediting Program, see the following reports:

1. TMDL Technical Report
2. Pollutant Load Reduction Opportunity Report
3. Integrated Water Quality Management Strategy Project Report

All reports can be found on the Lahontan Regional Water Quality Control Board website (www.swrcb.ca.gov) and Nevada Division o f Environmental Protection website (http://ndep.nv/gov/bwgp/tahoe.htm).

[8] For the purposes of this handbook, Lake Tahoe clarity is defined as the annual average depth below the lake surface at which a Secchi disk can no longer be seen as it is lowered.

[9] 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.

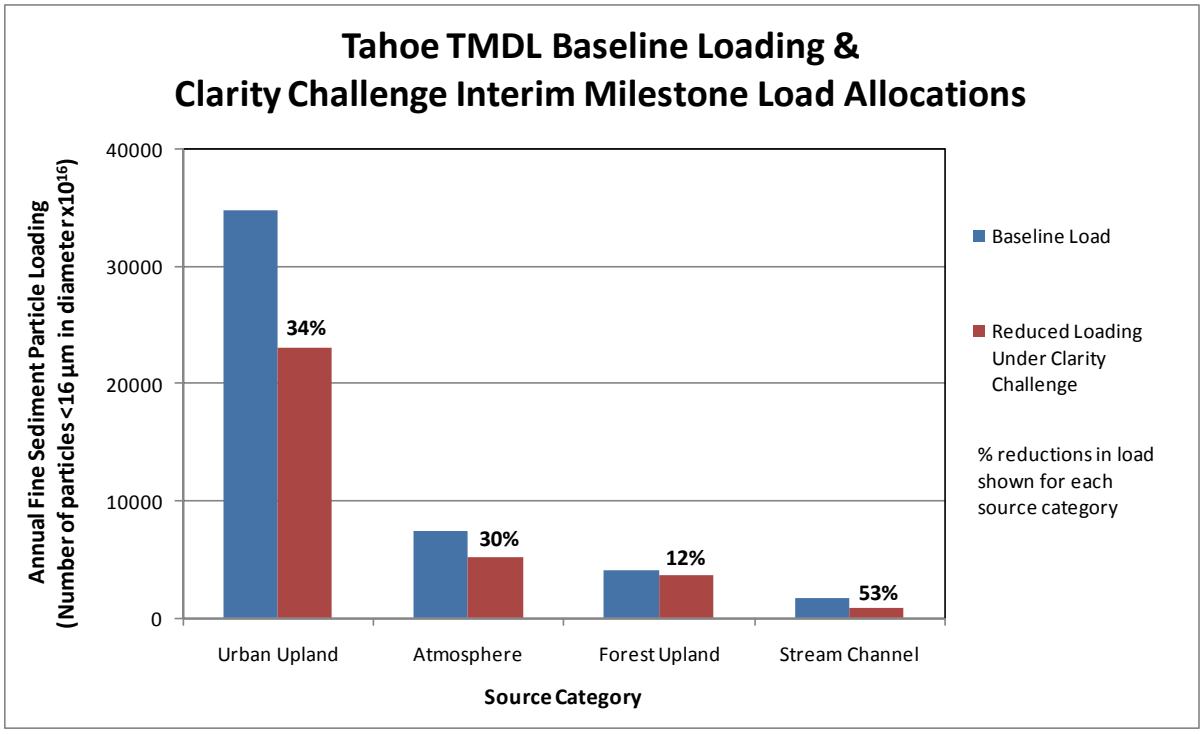

Figure 0.2: Baseline & Clarity Challenge fine sediment particle loading – Comparison between fine sediment particle baseline loads (blue bars) and load allocations for meeting the Clarity Challenge (red bars) for runoff from four source categories: urban uplands, forest uplands, direct atmospheric deposition 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 to achieve 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 is related to credit requirements included in NPDES permits and MOA.

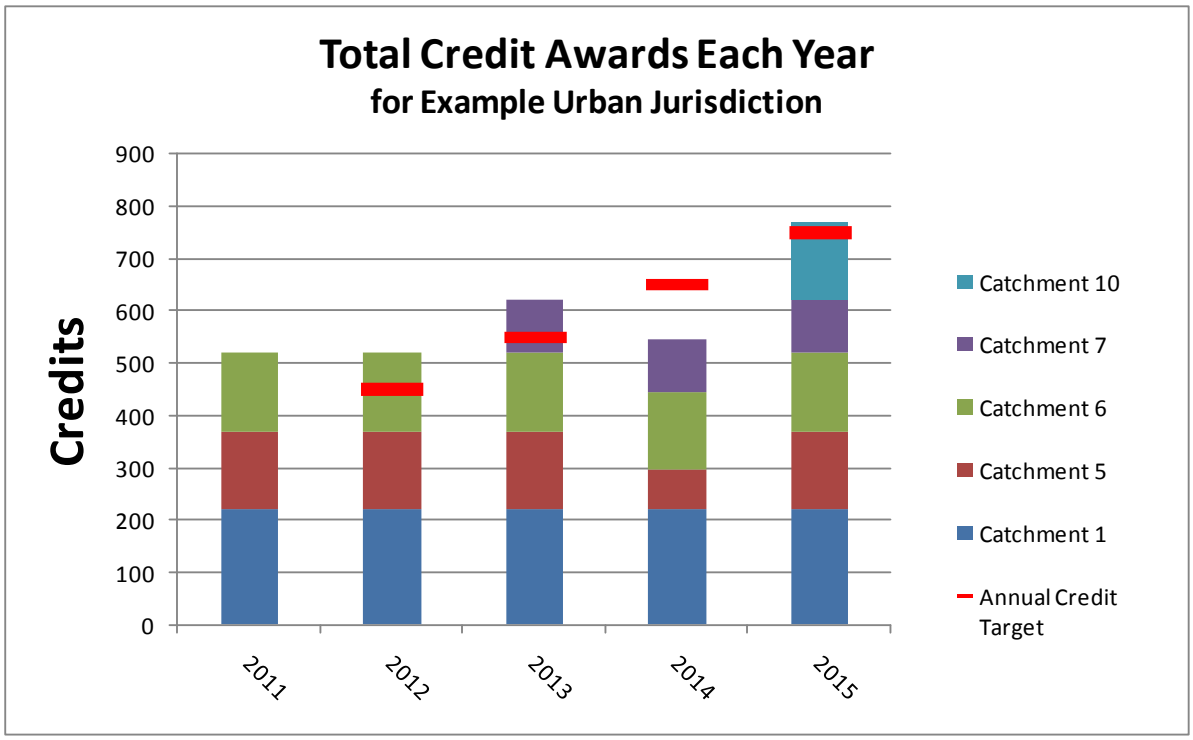

Figure 0.3: Credit targets & credit awards example – The red lines are the annual credit targets for the urban jurisdiction, as defined in its NPDES permit or MOA. Each colored bar segment represents the credits awarded from a specific catchment. The total number of credits awarded in a year is compared 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 results of inspection and maintenance activity, which 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.

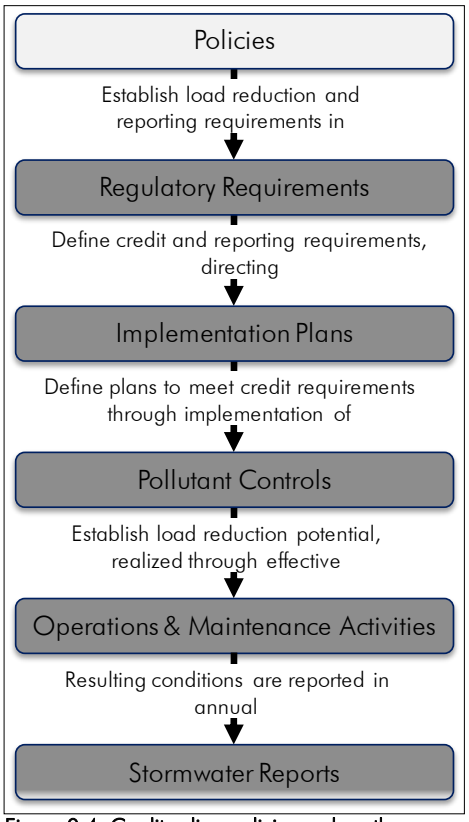

Figure 0.4: Credits align policies and on-the-ground actions – Credits and load reductions are used to align policies with actions and ongoing implementation.

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

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 1.0×10^{16} fine sediment particles with diameter smaller than 16 μm
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 / 1.0×10^{16} fine sediment particles with a diameter smaller than 16 μm
$N_{multiplier}$	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 Credit = 1.0×10^{16} fine sediment particles with diameter smaller than 16 μm

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.[10]

[10] 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 μm. 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.

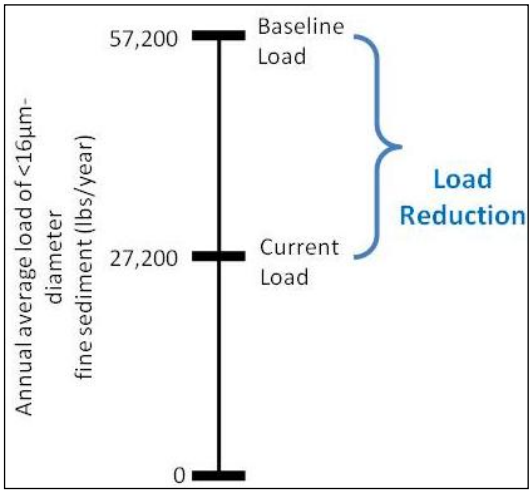

Figure 0.5: Load reduction example: Load reduction is the difference between the baseline load and the current load.

EQUATION 0.3: CONVERTING FINE SEDIMENT MASS TO FINE SEDIMENT PARTICLE NUMBER[11]

1 kg of fine sediment particles with diameter smaller than 16 μm = 1.1×10^{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 kg – 12,364 kg = 13,636 kg of fine sediment. Multiplying 13,636 kg by 1.1×10^{14} fine sediment particles per 1 kg of fine sediment, yields 150×10^{16} fine sediment particles.

The number of credits is then calculated using Equation 0.2. Thus, a load reduction of 150×10^{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.

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.

[11] Equation 0.3 is derived by summing the number of fine particles less than 16 μm in a ton of urban runoff and dividing by the number of kg of less than 16 μm 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.

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.

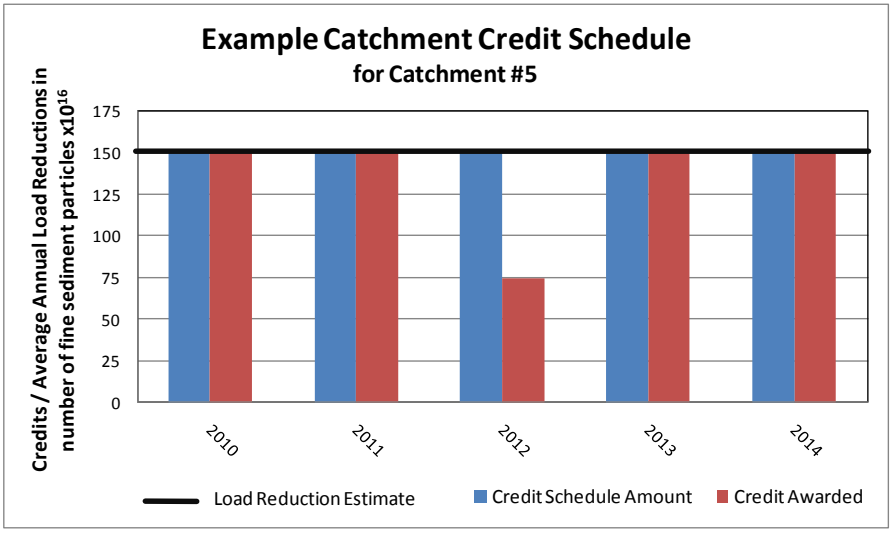

Figure 0.6: Example catchment credit schedule – The black line shows the estimated average annual fine sediment particle load reduction for Catchment #5 over the 5-year catchment credit schedule duration. The blue bars illustrate the potential number of credits available each year. The red bars indicate 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 in consultation with the appropriate regulatory authority. 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 Incentivize Innovation & Enable 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 TMDL Management System will manage research and monitoring efforts to check 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.[12] 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.

[12] 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.
- Research and monitoring 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 Program's 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.[13]

Figure 0.7 shows the relationship between typical pollutant controls and these standard tools, and it indicates that effectiveness monitoring 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.

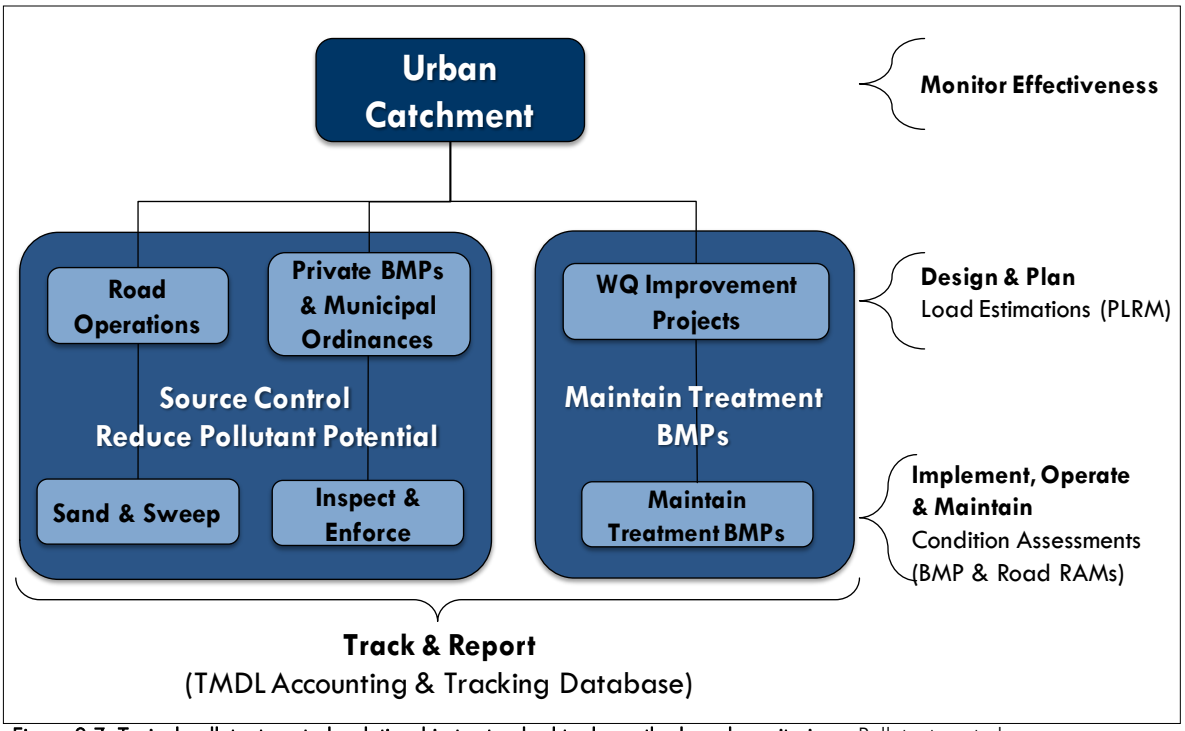

Figure 0.7: Typical pollutant controls relationship to standard tools, methods and monitoring – Pollutant controls are implemented in urban catchments. Condition assessment methods (BMP RAM & Road RAM) are used to inspect treatment BMPs and roads to determine how actual conditions compare to expected conditions used in load reduction estimates, using PLRM. Effectiveness monitoring 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.

[13] 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	☐	☐	☐		■	☐		☐	☐
	1.2	Verify Load Reduction Estimate & Catchment Credit Schedule	■	■	☐		☐	☐		☐	
	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	■	■	☐	☐			☐	☐	☐
	2.4	Report & Declare Credits					■				
	2.5	Award Credits	■	■	☐	☐					
Report Results & Improve Program	3.1	Translate TMDL Allocations to Credit Requirements	■	■	☐	☐	☐	☐		☐	
	3.2	Refine Protocols & Accepted Methods	■	■	☐	☐	☐	☐	☐	☐	
	3.3	Prioritize Research & Monitoring Needs	■	■	☐	☐	☐	☐	☐	☐	
	3.4	Guide Monitoring & Research	☐	☐	☐	☐	☐		■		
	3.5	Report Program Performance	■	■	☐		☐				
	3.6	Synthesize Findings	■	■	☐	☐	☐	☐	☐	☐	
	3.7	Engage Stakeholders	■	■	■	■	■	■	☐	☐	
	3.8	Develop Program Improvement Recommendations	■	■	☐	☐	☐	☐	☐	☐	
	3.9	Decide Upon Program Improvement	■	■							

Legend
■ Indicates a necessary or active role
☐ 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 have 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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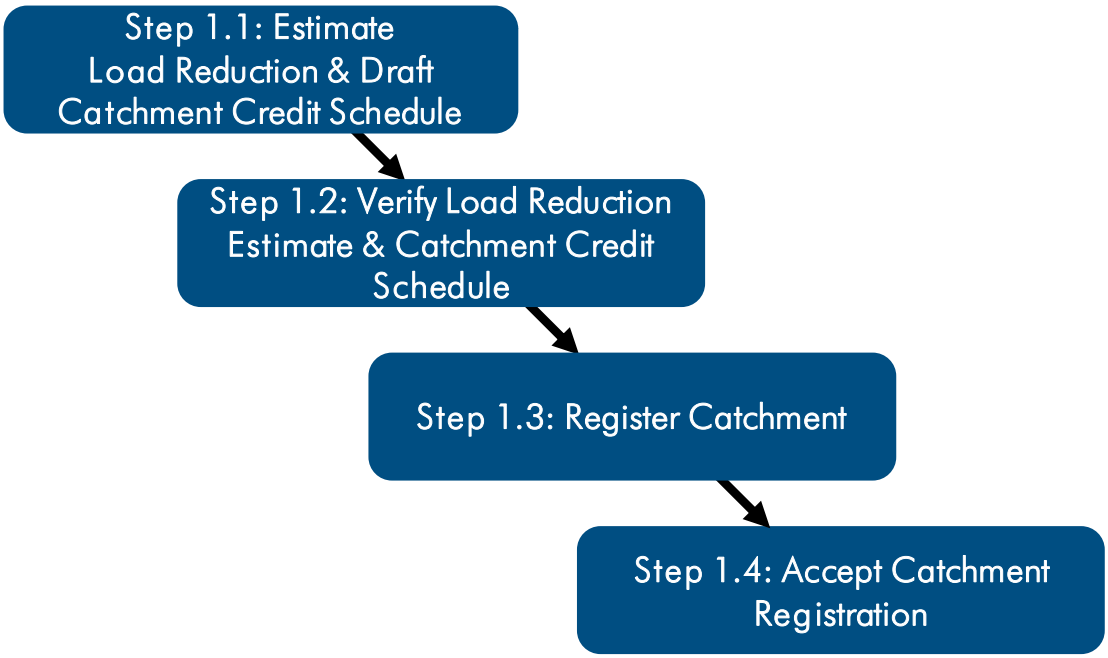
ESTIMATE LOAD REDUCTIONS & ESTABLISH CATCHMENT CREDIT SCHEDULES



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.

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 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.

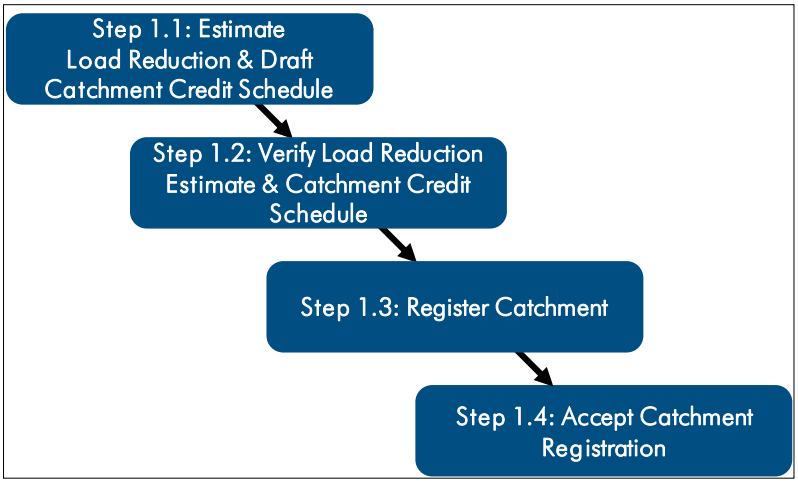


Figure 1.1: Overview of steps to establish a catchment credit schedule

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	1.1	■			Catchment Credit Schedule	Draft Catchment Credit Schedule
Verify Load Reduction Estimate & Catchment Credit Schedule	1.2	■	■	□	CCS Verification Checklist & Issue Resolution Punchlist	Final Catchment Credit Schedule
Register Catchment	1.3	■			Accounting & Tracking Tool	Registered Catchment
Accept Catchment Registration	1.4	□	■		Accounting & Tracking Tool	Accepted Catchment Registration

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

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 operations, 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.

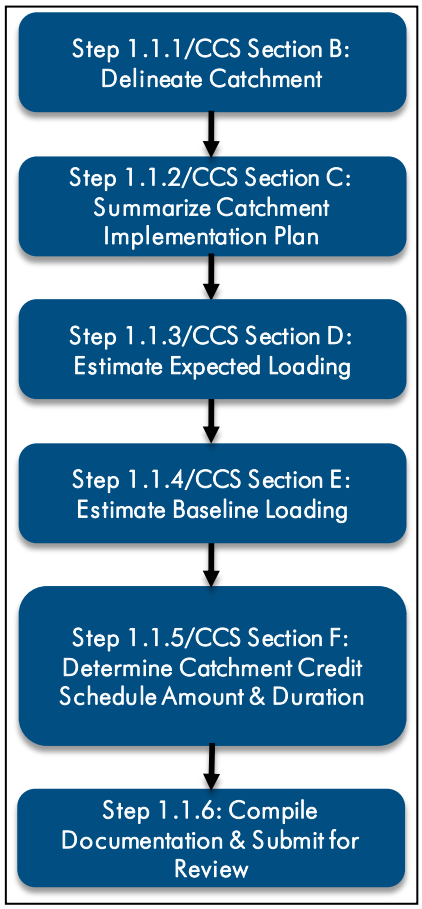


Figure 1.2: Load reduction estimate and catchment credit schedule development overview

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 and Templates 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 and describes cases where catchments share runoff from other jurisdictions or other source categories.

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 expected 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. However, changing connectivity of a catchment provides an opportunity for load reductions.

Product ■ Catchment Credit Schedule Section B: Catchment Delineation

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: 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.[14] 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: 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 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*** 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.

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

[14] 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 and Templates 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 (CCS) and supporting materials provided by the urban jurisdiction from Step 1.1 and reviews the entire submission using the CCS Verification Checklist to identify questions or issues to address prior to or at the verification meeting (Step 1.2.2).

PRODUCT ■ VERIFICATION CHECKLIST

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 CCS Verification Checklist. By the end of the meeting, the urban jurisdiction and regulator should be comfortable that once the items 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 cannot be resolved or agreed upon by both parties, urban jurisdictions should develop a formal Issue Resolution Punchlist.

PRODUCT ■ COMPLETE VERIFICATION CHECKLIST
PRODUCT ■ ISSUE RESOLUTION PUNCHLIST (IF NECESSARY)

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 and Templates 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 ■ COMPLETE ISSUE RESOLUTION PUNCHLIST ITEMS WITH RESPONSES AND DESCRIPTIONS OF CHANGES (IF NECESSARY)

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:

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

PRODUCT ■ VERIFIED CATCHMENT CREDIT SCHEDULE

PRODUCT ■ EMAIL CONFIRMATION

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:

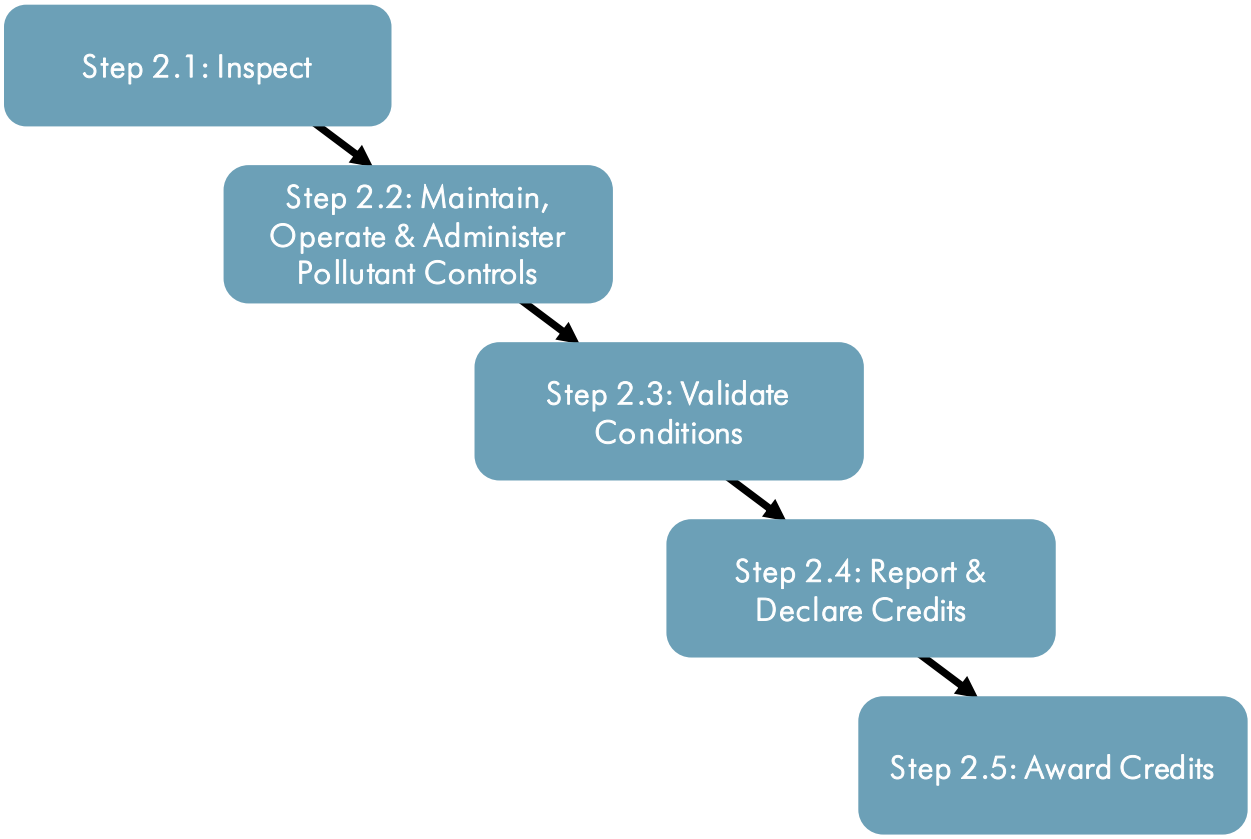
- Final catchment credit schedule and supporting documentation
- Accounting and Tracking Tool regulator login

1.4.1 ■ ACCEPT CATCHMENT CREDIT SCHEDULE

Within 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 or identifies an alternative schedule with rationale and an expected completion date.

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

REPORT CONDITIONS & AWARD CREDIT



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.

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 efficient 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.

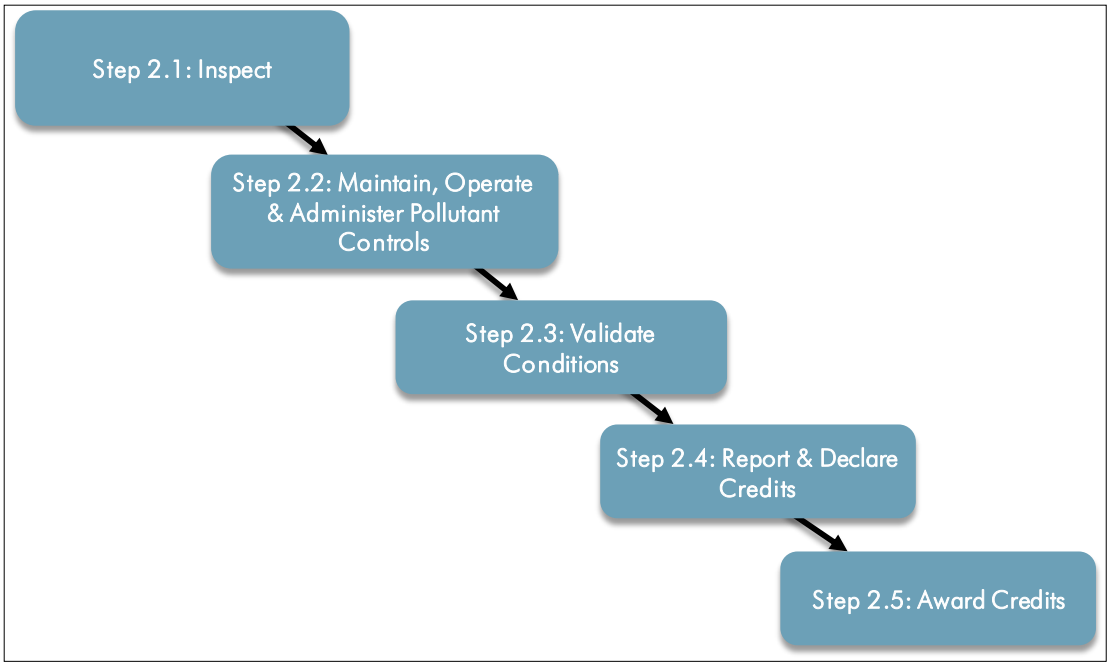


Figure 2.1: Overview of steps to award credits annually

Process Step	Step #	Urban Jurisdiction	Regulator	Stakeholders & Other Entities	Tools & Templates	Crediting Program Products
Inspect	2.1	■			BMP RAM; Road RAM	Inspection Results
Maintain, Operate & Administer Pollutant Controls	2.2	■				Inspection Results
Validate Conditions	2.3		■	□	Accounting & Tracking Tool	Inspection Results
Report & Declare Credits	2.4	■			Annual Stormwater Report – Credit Declaration Section Outline; Accounting & Tracking Tool	Annual Stormwater Report – Credit Declaration Section
Award Credits	2.5	□	■		Issue Resolution Punchlist; Accounting & Tracking Tool	Credit Awards

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 2.1: Overview of roles, tools & 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 classes, direct inspection efforts by personnel trained to use standard assessment methods (see Table TT.2 in the Tools and Templates section of this Handbook for a list of currently 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.2 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 the few treatment BMPs that create the largest load reductions. 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. 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 enhanced road operations are planned to reduce loads, road condition inspections may be necessary several 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, Section 2.4 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, Section 2.4 for additional discussion of establishing condition assessments and how they are used in awarding credits.

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 STRATEGIES 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

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 good for a particular road class, 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 poor for a particular road class, planned maintenance is infrequent and thus actual conditions may not be returned to expected conditions until sometime 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.

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.2 for a current list of the standard methods accepted by the Crediting Program).

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, Section 3. 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.

Discrepancy Magnitude & Frequency	Credit Award Adjustment	Inspection Practice Change
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 a list of 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 list of questions and issues 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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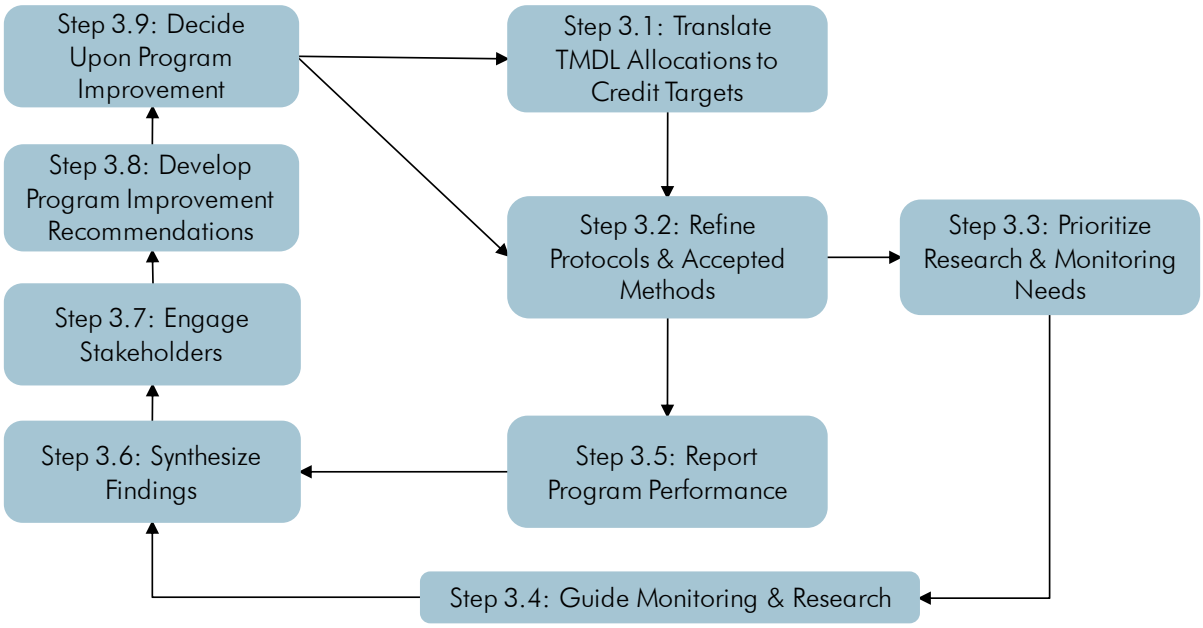
REPORT RESULTS & IMPROVE PROGRAM



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.

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.[15]

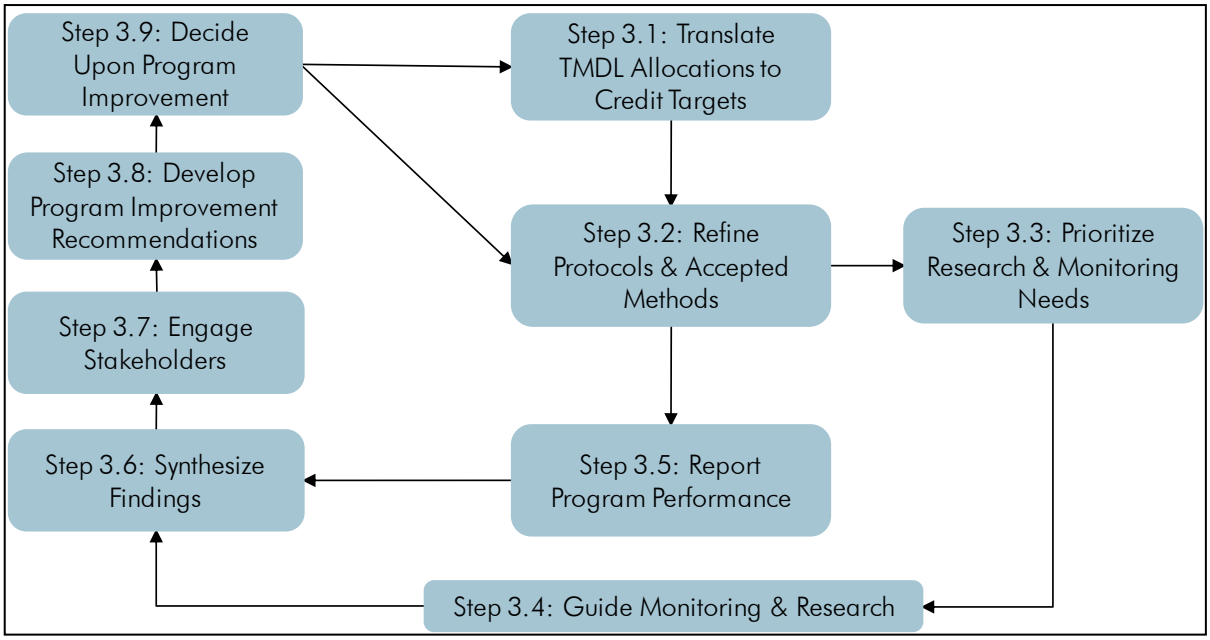


Figure 3.1:Overview of annual steps to evaluate new information, report results, and improve the Crediting Program.

Two reports are developed each year to provide information to all interested parties and inform program improvement decisions. The 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.

[15] A project to develop an overall TMDL Management System is expected to begin in Fall 2011.

Process Step	Step #	Urban Jurisdictions	Regulators	Scientists	Stakeholders & Other Entities	Tools & Templates	Crediting Program Products
Translate TMDL Allocations to Credit Requirements	3.1	☐	■		☐	Accounting & Tracking Tool	
Refine Protocols & Accepted Methods	3.2	☐	■	☐	☐	Lake Clarity Crediting Program Handbook	Updated Handbook; Updated Identified Operational Improvements List
Prioritize Research & Monitoring Needs	3.3	☐	■	☐	☐		Updated & Prioritized List of Areas for Investigation
Guide Monitoring & Research	3.4	☐	■	■	☐		
Report Program Performance	3.5	☐	■				Performance Report
Synthesize Findings	3.6	■	■	■	☐	Program Improvement Recommendation Form	Synthesis of Findings Report; Program Improvement Recommendation
Engage Stakeholders	3.7	☐	■	☐	■		
Develop Program Improvement Recommendations	3.8	■	■	☐	☐	Program Improvement Recommendation Form	Program Improvement Recommendations
Improve Program	3.9		■				Action Memo

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

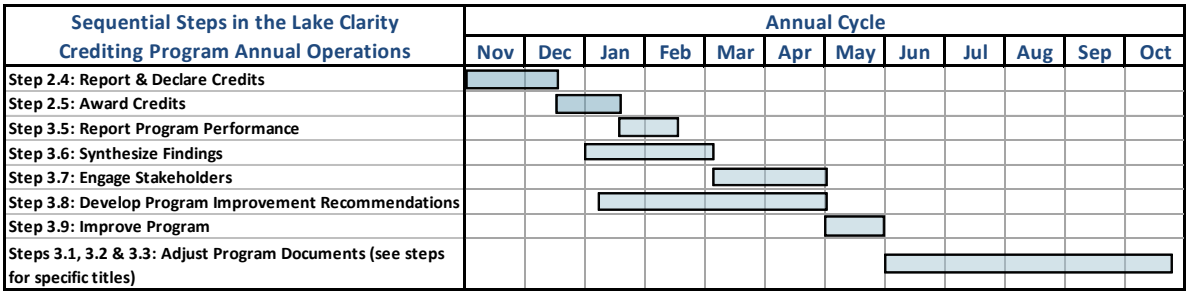


Figure 3.2: Annual crediting program report and decision timeframe – Information provided in urban jurisdiction annual stormwater reports is used to inform the Performance Report and Crediting Program Synthesis of Findings Report. These in-turn inform development of Program Improvement Recommendations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

- Action Memo 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.2 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:
> - Action Memo 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 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.2 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 achieve 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 research and monitoring efforts. 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:

- Action Memo 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 Action Memo from, and update the List of Areas for Investigation.

PRODUCT ■ UPDATED LIST OF AREAS FOR INVESTIGATION

3.4 GUIDE MONITORING & RESEARCH

Scientists, through research and monitoring 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:

- Specifying 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 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.

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); include clear findings

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); include clear findings

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 informaiton in the individual urban jurisdiction sections of the report.

PRODUCT ■ 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 ■ PERFORMANCE REPORT

3.6 SYNTHESIZE FINDINGS

Regulators convene a Science-Agency Working Group[16] 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.

> **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
> - 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

[16] A project to develop an overall TMDL Management System is expected to begin in Fall 2011.

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
- 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 and the Draft Program Improvement Recommendations (see Step 3.8) 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, List of Areas for Investigation or defined as new Program Improvement Recommendations. 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 take action.

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 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.

Recommendations are generally submitted on PIR forms and then summarized in a Program Improvement Recommendation Briefing designed for executive and engaged public audiences. Recommendations should be categorized by those that are "Administrative & Technical", "For Discussion" and "Requiring Additional Approval." Executive action may not be needed on Administrative & Technical recommendations, but they are implemented only after executive confirmation.

PRODUCT ■ PROGRAM IMPROVEMENT RECOMMENDATION FORMS

PRODUCT ■ DRAFT RECOMMENDATIONS BRIEFING

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. Ideally the Draft Recommendations Briefing is circulated to stakeholders with other reports in Step 3.7.1. For minor program changes, it may be sufficient to gain input through electronic communication or comment tables. However, for major program changes it may be necessary to hold a stakeholder review meeting to discuss and gain input on the proposed changes.

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 to the Recommendations Briefing as appropriate. Significant comments about specific recommendations should be noted in the Program Improvement Recommendations form. The revised Recommendations Briefing is posted to the Crediting Program web site and sent to the regulator agency executives for consideration.

PRODUCT ■ REVISED RECOMMENDATIONS BRIEFING

3.9 DECIDE UPON PROGRAM IMPROVEMENT

The Water Board and NDEP executives decide which Program Improvement Recommendations to officially act upon each year. These actions 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 the revised Recommendations Brifing with staff and consult stakeholders as appropriate to address any questions. This step provides important contact with program staff to ensure that information is flowing and executives have enough context to take action.

PRODUCT ■ UNDERSTANDING OF PROGRAM IMPROVEMENT RECOMMENDATIONS

3.9.2 ■ MEET & DECIDE

The agency executives meet to gain context on the Crediting Program and decide which items in the Recommendation Briefing to act upon. Action is taken when NDEP and the Water Board reach consensus. For policy decisions and those directly affecting certain permit requirements, the action 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 on recommendations that are categorized as "Requiring Additional Approval."

An Action Memodefines 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 ■ ACTION MEMO

3.9.3 ■ DOCUMENT & COMMUNICATE DECISIONS

The Action Memo, including rationale for actions and significant notes, are posted to the Crediting Program or appropriate agency web sites and stakeholders are notified.

PRODUCT ■ COMPLETE AND POSTED ACTION MEMO

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 identifies the tools and templates referenced in the Handbook that should be used to document information while Table TT.2. defines the current list of officially accepted standard methods.

Crediting Program Tools & Templates	Description	Related Crediting Program Steps
1. Catchment Credit Schedule (CCS) Form	Fillable form documenting all information related to a load reduction estimation and catchment credit schedule for an urban catchment	1.1 through 1.3
a. CCS 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
b. CCS 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
c. CCS Verification Checklist	Fillable checklist for regulators to use in asking questions and identifying issues for urban jurisdictions to respond to regarding the CCS and associated materials	1.1 through 1.3
2. Issue Resolution Punchlist (IRP)	Fillable form to define issues to be addressed that could not be resolved through informal communication	1.2, 1.4 & 2.5
a. Issue Resolution Punchlist Guidance & Instructions	Guidance for completing the Issue Resolution Punchlist in a consistent and clear manner	1.2, 1.4 & 2.5
3. 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
4. Program Improvement Recommendation Form (PIR)	Fillable form to recommend program improvements for consideration, including supporting information	3.6 through 3.9
5. 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: Tools and templates supporting the Crediting Program

Tool or Method Title	Approved Version	Used For
Pollutant Load Reduction Model	v1.1	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 roadways
TMDL Accounting & Tracking Tool	v1.0	Storing catchment credit schedule, load reduction requirement and credit information, and calculating credit awards

Table TT.2: Accepted standard methods & tools

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CCS CATCHMENT CREDIT SCHEDULE v1.0

The Catchment Credit Schedule (CCS) documents calculations of Lake Clarity Credits (credits) and supporting information underlying the calculation of credits for an urban jurisdiction. Guidance for calculating credits is provided in Chapter 1: Estimate Load Reductions & Establish Catchment Credit Schedules of the Lake Clarity Crediting Handbook (Handbook). Detailed instructions are available in the CCS Technical Guidance & Instructions section of the Handbook. If additional space is needed to record assumptions and detailed calculations, a CCS Memo can accompany this form.

SECTION A: CORRESPONDENCE & CATCHMENT CREDIT SCHEDULE SUMMARY

The Correspondence & Catchment Credit Schedule Summary section contains general contact information and a summary of later sections. This section is completed incrementally as subsequent sections of the Catchment Credit Schedule are completed.

I. GENERAL CATCHMENT INFORMATION SUMMARY

1. CATCHMENT STATUS — See Section A.I of CCS Technical Guidance & Instructions for assistance

- ☐ NEW CATCHMENT
- ☐ REVISION
- ☐ EXTENSION

Date of previous approval

2. CATCHMENT ID — See Section A.I of CCS Technical Guidance & Instructions for assistance

Catchment ID

Common Catchment Name

3. PRIMARY JURISDICTION — See Section A.I of CCS Technical Guidance & Instructions for assistance

- ☐ CALTRANS
- ☐ CSLT
- ☐ DOUGLAS
- ☐ EL DORADO
- ☐ NDOT
- ☐ PLACER
- ☐ WASHOE

Primary Contact

Phone Number | E-mail Address

4. REGULATORY AGENCY — See Section A.I of CCS Technical Guidance & Instructions for assistance

- ☐ LRWQCB
- ☐ NDEP

Primary Contact

Phone Number | E-mail Address

II. CATCHMENT CREDIT SCHEDULE SUMMARY

5. BASIC CATCHMENT POLLUTANT CONTROL STRATEGY NARRATIVE — See Section A.II of CCS Technical Guidance & Instructions for assistance

Basic Narrative

6. EFFECTIVE LOAD REDUCTION ESTIMATE — See Section A.II of CCS Technical Guidance & Instructions for assistance

Volume (ac-ft/yr)	Fine sediment mass (kg/yr)	Total phosphorous (kg/yr)	Total nitrogen (kg/yr)

7. CREDIT POTENTIAL AMOUNT — See Section A.II of CCS Technical Guidance & Instructions for assistance

CREDITS

8. ESTABLISHMENT DATE	See Section A.II of CCS Technical Guidance & Instructions for assistance	9. FINAL YEAR	See Section A.II of CCS Technical Guidance & Instructions for assistance
Establishment Date		Final Year	

III. COORDINATION CHECKLIST

10. SUBMITTED FOR VERIFICATION REVIEW

See Section A.III of CCS Technical Guidance & Instructions for assistance

Date Submitted	Name of Staff Person

11. STATEMENT OF COMPLETENESS & APPROPRIATENESS

See Section A.III of CCS Technical Guidance & Instructions for assistance

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

See Section A.III of CCS Technical Guidance & Instructions for assistance

I certify that the Verification Step is complete.

Printed Name	Date

Signature

13. REGISTERED AND SUBMITTED FOR APPROVAL

See Section A.III of CCS Technical Guidance & Instructions for assistance

Date

14. SUPPORTING MATERIALS FILENAMES AND CHECKLIST

See Section A.III of CCS Technical Guidance & Instructions for assistance

Checklist	Filename	Save Date
☐ CCS FORM		
☐ CCS MEMO (IF NECESSARY)		
☐ CATCHMENT DELINEATION MAP		
☐ OVERALL CATCHMENT MAP OF URBAN JURISDICTION		
☐ TREATMENT BMP INVENTORY MAP		
☐ TREATMENT BMP INVENTORY TABLE		
☐ ROADS INVENTORY MAP		
☐ ROADS CLASS MAP		
☐ ROADS SUMMARY TABLE		
☐ BASELINE MAP		
☐ BASELINE TREATMENT BMP INVENTORY TABLE		
☐ CATCHMENT REGISTRATION REPORT (FINAL ONLY)		
☐ LOAD REDUCTION CALCULATIONS (E.G. PLRM ELECTRONIC FILES)		
☐ AS-BUILT DRAWINGS AND EQUIPMENT SPECIFICATIONS (ELECTRONIC FILES ONLY)		
☐ CREDIT DISTRIBUTION AGREEMENTS (IF DISTRIBUTING CREDITS)		

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.

1. CATCHMENT ID

See Section B.I of CCS Technical Guidance & Instructions for assistance

Catchment ID

2. CATCHMENT DELINEATION MAP

See Section B.I of CCS Technical Guidance & Instructions for assistance

DOES MAP FOLLOW TECHNICAL GUIDANCE? ☐YES ☐ NO

If NO, note deviations & rationale

3. OVERALL CATCHMENT MAP OF URBAN JURISDICTION

See Section B.I of CCS Technical Guidance & Instructions for assistance

DOES MAP FOLLOW TECHNICAL GUIDANCE? ☐YES ☐ NO

If NO, note deviations & rationale

4. CATCHMENT HISTORY

See Section B.I of CCS Technical Guidance & Instructions for assistance

Previous Catchment Name	Establishment Date

5. CATCHMENT AREA

See Section B.I of CCS Technical Guidance & Instructions for assistance

Total Area (acres)

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.

I. DEFINE STRATEGIC LOAD REDUCTION IMPORTANCE

1. TREATMENT BMPS	See Section C.I of CCS Technical Guidance & Instructions for assistance	2. ROAD OPERATIONS	See Section C.I of CCS Technical Guidance & Instructions for assistance
☐ PRIMARY ☐ SECONDARY ☐ TERTIARY ☐ NONE		☐ PRIMARY ☐ SECONDARY ☐ TERTIARY ☐ NONE	
3. PRIVATE PARCEL BMPS	See Section C.I of CCS Technical Guidance & Instructions for assistance	**4. OTHER POLLUTANT CONTROL STRATEGY**	See Section C.I of CCS Technical Guidance & Instructions for assistance
☐ PRIMARY ☐ SECONDARY ☐ TERTIARY ☐ NONE		☐ PRIMARY ☐ SECONDARY ☐ TERTIARY ☐ NONE	

II. TREATMENT BMP IMPLEMENTATION SUMMARY

5. TREATMENT BMP INVENTORY TABLE	See Section C.II of CCS Technical Guidance & Instructions for assistance	6. TREATMENT BMP INVENTORY MAP	See Section C.II of CCS Technical Guidance & Instructions for assistance
DOES TABLE FOLLOW TECHNICAL GUIDANCE? ☐YES ☐ NO If NO, note deviations & rationale		DOES MAP FOLLOW TECHNICAL GUIDANCE? ☐YES ☐ NO If NO, note deviations & rationale	

7. TREATMENT BMP INSPECTION PLAN SUMMARY	See Section C.II of CCS Technical Guidance & Instructions for assistance and Appendix A: Attachment 1 for example CCS

8. TREATMENT BMP MAINTENANCE PLAN SUMMARY	See Section C.II of CCS Technical Guidance & Instructions for assistance and Appendix A: Attachment 1 for example CCS

9. IS ADDITIONAL TREATMENT BMP IMPLEMENTATION INFORMATION PROVIDED WITH CCS MEMO?	☐YES ☐ NO

III. ROADS OPERATION IMPLEMENTATION SUMMARY

10. ROADS INVENTORY MAP	See Section C.III of CCS Technical Guidance & Instructions for assistance

DOES MAP FOLLOW TECHNICAL GUIDANCE? ☐YES ☐ NO

If NO, note deviations & rationale

11. ROADS CLASS MAP	See Section C.III of CCS Technical Guidance & Instructions for assistance

DOES THE MAP FOLLOW TECHNICAL GUIDANCE? ☐YES ☐ NO

If NO, note deviations & rationale

12. ROADS SUMMARY TABLE	See Section C.III of CCS Technical Guidance & Instructions for assistance

DOES THE TABLE FOLLOW TECHNICAL GUIDANCE? ☐YES ☐ NO

If NO, note deviations & rationale

13. ROADS INSPECTION PLAN SUMMARY	See Section C.III of CCS Technical Guidance & Instructions for assistance and Appendix A: Attachment 1 for example CCS

14. ROADS MAINTENANCE PLAN SUMMARY	See Section C.III of CCS Technical Guidance & Instructions for assistance and Appendix A: Attachment 1 for example CCS

15. IS ADDITIONAL ROADS IMPLEMENTATION INFORMATION PROVIDED WITH CCS MEMO?	☐YES ☐ NO

IV. PRIVATE PROPERTY BMP IMPLEMENTATION SUMMARY	
16. PRIVATE PROPERTY BMP INVENTORY	See Section C.IV of CCS Technical Guidance & Instructions for assistance

17. OVERALL PRIVATE PROPERTY BMP IMPLEMENTATION Percent private property BMP implementation ____%	See Section C.IV of CCS Technical Guidance & Instructions for assistance
18. PRIVATE PROPERTY BMP PROGRAM SUMMARY	See Section C.IV of CCS Technical Guidance & Instructions for assistance

19. IS ADDITIONAL PRIVATE PROPERTY BMP INFORMATION PROVIDED WITH CCS MEMO?	☐YES ☐NO

V. OTHER POLLUTANT CONTROL STRATEGIES IMPLEMENTATION SUMMARY	
20. ARE "OTHER POLLUTANT CONTROL STRATEGIES" USED IN THIS CATCHMENT?	☐YES ☐ NO
21. OTHER POLLUTANT CONTROL STRATEGY #1 SUMMARY	Summarize the Other Pollutant Control Strategy based on Section C.V. of CCS Technical Guidance & Instructions, and the example in Appendix A, Attachment 1.

22. OTHER POLLUTANT CONTROL STRATEGY #2 SUMMARY	Summarize the Other Pollutant Control Strategy based on Section C.V. of CCS Technical Guidance & Instructions, and the example in Appendix A, Attachment 1.

23. OTHER POLLUTANT CONTROL PROGRAM #3 SUMMARY	Summarize the Other Pollutant Control Strategy based on Section C.V. of CCS Technical Guidance & Instructions, and the example in Appendix A, Attachment 1.

24. IS ADDITIONAL OTHER POLLUTANT CONTROL PROGRAM INFORMATION PROVIDED WITH CCS MEMO?	☐YES ☐ NO

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

1. LOAD ESTIMATION METHOD — See Section D.I of CCS Technical Guidance & Instructions for assistance

☐ POLLUTANT LOAD REDUCTION MODEL (PLRM) V1.1
☐ ALTERNATIVE (DESCRIBE COMPLETELY IN CCS MEMO)

Name and version (If Alternative is selected)

2. EXPECTED LOADING PARAMETERS, ASSUMPTIONS & DATASETS — See Section D.I of CCS Technical Guidance & Instructions for assistance

DID ANY PARAMETER VALUES, ASSUMPTIONS OR DATASETS DEVIATE FROM RECOMMENDED VALUES? ☐YES ☐NO

If Yes, please explain

3. EXPECTED LOADING PROJECT FILE — See Section D.I of CCS Technical Guidance & Instructions for assistance

IS THE EXPECTED LOADING ESTIMATE SCENARIO INCLUDED IN THE LOAD ESTIMATION PROJECT FILE? ☐YES ☐NO

4. EXPECTED LOAD ESTIMATES — See Section D.I of CCS Technical Guidance & Instructions for assistance

Volume (ac-ft/yr)	Fine sediment mass (kg/yr)	Total phosphorous (kg/yr)	Total nitrogen (kg/yr)

5. EXPECTED CATCHMENT CONNECTIVITY — See Section D.I of CCS Technical Guidance & Instructions for assistance

Expected Percent Connectivity

☐ 100% ☐ OTHER ____%

Rationale

6. EFFECTIVE EXPECTED LOAD ESTIMATES — See Section D.I of CCS Technical Guidance & Instructions for assistance

Volume (ac-ft/yr)	Fine sediment mass (kg/yr)	Total phosphorous (kg/yr)	Total nitrogen (kg/yr)

SECTION E: BASELINE LOADING ESTIMATE

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

I. BASELINE LOADING ESTIMATE

1. BASELINE INVENTORY TABLE	See Section E.I of CCS Technical Guidance & Instructions for assistance	2. BASELINE INFRASTRUCTURE MAP	See Section E.I of CCS Technical Guidance & Instructions for assistance
DOES TABLE FOLLOW TECHNICAL GUIDANCE? ☐YES ☐ NO If NO, note deviations & rationale		DOES MAP FOLLOW TECHNICAL GUIDANCE? ☐YES ☐ NO If NO, note deviations & rationale	

3. CATCHMENT CHANGES SINCE 2004	See Section E.I of CCS Technical Guidance & Instructions for assistance

4. BASELINE LOADING PARAMETERS, ASSUMPTIONS & DATASETS	See Section E.I of CCS Technical Guidance & Instructions for assistance
DID ANY PARAMETER VALUES, ASSUMPTIONS OR DATASETS DEVIATE FROM RECOMMENDED VALUES? ☐YES ☐NO	
If Yes, please explain	

5. BASELINE LOAD ESTIMATE		See Section E.I of CCS Technical Guidance & Instructions for assistance	
Volume (ac-ft/yr)	**Fine sediment mass (kg/yr)**	**Total phosphorous (kg/yr)**	**Total nitrogen (kg/yr)**

6. BASELINE CATCHMENT CONNECTIVITY	See Section E.I of CCS Technical Guidance & Instructions for assistance
Expected Percent Connectivity ☐ 100% ☐ OTHER ——%	
Rationale	

7. EFFECTIVE BASELINE LOAD ESTIMATES		See Section E.I of CCS Technical Guidance & Instructions for assistance	
Volume (ac-ft/yr)	**Fine sediment mass (kg/yr)**	**Total phosphorous (kg/yr)**	**Total nitrogen (kg/yr)**

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

1. LOAD REDUCTION ESTIMATE — See Section F.I of CCS Technical Guidance & Instructions for assistance

Volume (ac-ft/yr)	Fine sediment mass (kg/yr)	Total phosphorous (kg/yr)	Total nitrogen (kg/yr)

2. FINE SEDIMENT PARTICLE NUMBER CONVERSION — See Section F.I of CCS Technical Guidance & Instructions for assistance

Fine sediment particles (kg/yr)

3. CREDIT AMOUNT CALCULATION — See Section F.I of CCS Technical Guidance & Instructions for assistance

CREDITS

II. CREDIT SCHEDULE DURATION

4. CREDIT SCHEDULE DURATION — See Section F.II of CCS Technical Guidance & Instructions for assistance

☐ 5 YEARS ☐ 10 YEARS ☐ 15 YEARS

☐ OTHER (SPECIFY) ——YEARS

5. DURATION RATIONALE — See Section F.II of CCS Technical Guidance & Instructions for assistance

Explanation

III. ESTABLISHMENT SUMMARY

6. ESTABLISHMENT DATE — See Section F.III of CCS Technical Guidance & Instructions for assistance

Date

7. ESTABLISHMENT YEAR CREDIT POTENTIAL — See Section F.III of CCS Technical Guidance & Instructions for assistance

Percentage	Credit Amount
%	

8. FINAL YEAR OF CREDIT SCHEDULE — See Section F.III of CCS Technical Guidance & Instructions for assistance

Final Year

9. IS ADDITIONAL CCS AMOUNT AND DURATION INFORMATION PROVIDED WITH CCS MEMO? ☐YES ☐ NO

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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 to populate the TMDL Accounting and Tracking Tool (A&T Tool) in Step 1.3.

Figure CCS.1 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. Instructions and Technical Guidance are provided for each section, explaining how to complete analyses and consider information related to the content requested. The Technical Guidance relies upon the currently accepted versions of standard load estimation tools and condition assessment methodologies. Please see Table TT.2 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.

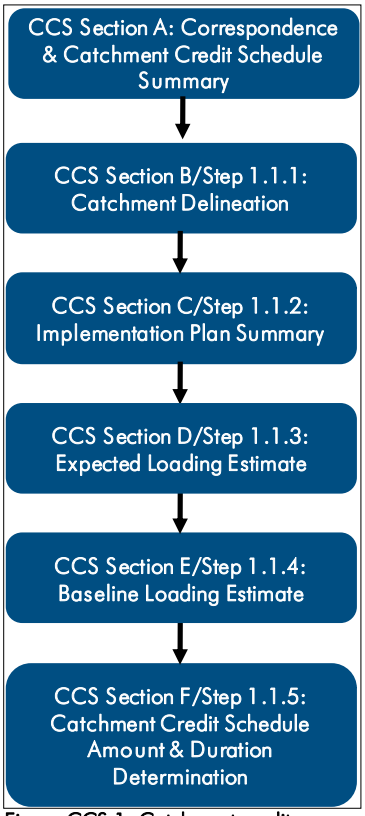

Figure CCS.1: Catchment credit schedule overview

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 or regulator. 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.

Step #	Step title	Regulator	Urban jurisdiction
1. Estimate Load Reductions & Establish Catchment Credit Schedules			
1.1	Estimate Load Reductions & Draft Catchment Credit Schedule	☐	■
1.2	Verify Load Reduction Estimate & Catchment Credit Schedule	■	■
1.3	Register Catchment	☐	■
1.4	Accept Catchment Registration	■	☐
■ = 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.

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 and the registration process. Some of the information cannot be provided until the rest of the CCS sections and related analyses are complete.

INSTRUCTIONS

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 Catchment ID defined in CCS Section B. Add a common name used for the catchment.

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. CATCHMENT CREDIT SCHEDULE SUMMARY

The section summarizes the pollutant control strategy, the resulting estimated load reduction and credit potential, and the establishment date and duration of the CCS. Items A.5 through A.14 require completion of Sections B through F of the CCS.

INSTRUCTIONS

5. Basic Catchment Pollutant Control Strategy Narrative

   In the space provided, provide an overview of the 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 class or other pollutant controls in the catchment, as described in Section C 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. Establisment 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.

INSTRUCTIONS

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 materials 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 File Names & Checklist
    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 Map of Urban Jurisdiction
    5. Treatment BMP Inventory Map
    6. Treatment BMP Inventory Table
    7. Roads Inventory Map
    8. Roads Class Map
    9. Roads Summary Table
    10. Baseline Map
    11. Baseline Treatment BMP Inventory Table
    12. Catchment Registration Report from the A&T Tool (final only)
    13. Load Reduction Calculations (e.g. PLRM electronic files including recommended range report as a .pdf)
    14. As-Built Drawings and Equipment Specifications (electronic files only)
    15. Credit Distribution Agreements (if distributing credits)

SECTION B: CATCHMENT DELINEATION

Credits and load reductions are tracked on the basis of urban catchments. This section of the CCS guides selection and mapping of a catchment as well as discussing some of the challenges associated with selecting catchments that share runoff among multiple jurisdictions.

INSTRUCTIONS

1. Catchment Identification
   The unique catchment identification should begin with the initials of the primary reporting jurisdiction and contain a number unique to the jurisdiction. Also record the catchment ID and name in CCS item A.2.

2. Catchment Delineation Map
   Create a catchment delineation map that clearly identifies the boundary of the urban catchment, points where concentrated runoff enters the catchment and all runoff outlets. Ensure that the catchment includes no area in another registered catchment. For road right of ways, all land within the right of way should be included in the catchment delineation, unless a relatively large area of undisturbed forested land is owned by the road jurisdiction. See Technical Guidance below for additional specifications and considerations. Record the file name in CCS item A.14.

3. Overall Urban Jurisdiction Catchment Map
   Ensure that all catchments registered by the urban jurisdiction are included, that each catchment is clearly labeled, and that no catchments overlap. Confirm that the file name for the most recent urban jurisdiction catchment delineation map is recorded in CCS item A.14.

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.

ADDITIONAL 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 outlets to a surface waterbody. The flexibility in defining a catchment is supported by the Pollutant Load Reduction Model (PLRM) use of distinct modeling drainage catchments within a single urban catchment. Figure CCS.2 shows the difference between a typical subwatershed, urban catchment and modeling drainage catchment.

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

A **shared hydrology *catchment*** is an area containing urban land uses with runoff entering the catchment from other urban jurisdictions or non-urban lands. These catchments involve additional analysis and coordination challenges.

A ***modeling drainage catchment*** is a unique area, defined in a load estimation model, which 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.

SHARED HYDROLOGY

In certain areas runoff from more than one jurisdiction contributes to the flow within a catchment. These situations include:

- Non-urban runoff - Runoff entering a catchment from an upslope non-urban area
- Shared urban runoff – Runoff from highways intermingles with municipal runoff or urban runoff flows across municipal boundaries

NON-URBAN RUNOFF

When delineating and modeling an urban catchment, jurisdictions should only include area that has an urban land use as designated by the Lake Tahoe TMDL Land Use layer. For example, runoff from a forested upland above an urban catchment should not be included in the delineation or modeling exercise because these loads are accounted for in other source categories of the TMDL. In general, this approach is consistent with typical project designs which bypass forested flows. It may be necessary to use other methods to estimate the amount of run-on delivered from these lands when sizing project infrastructure so that it can sufficiently drain the additional runoff volume from the forested upland or other contributing source.

SHARED URBAN RUNOFF

Catchments with shared *urban* runoff are present around the lake, where highway runoff and municipal runoff intermingle, and at urban boundaries, where urban runoff flows across municipal boundaries. In catchments with shared urban runoff a separate modeling drainage catchment should be defined in the load estimation tool. This enables the urban jurisdictions to understand the relative volume and load from each jurisdiction. The primary jurisdiction registering the catchment should contact the other jurisdiction(s) to discuss how to appropriately delineate and model loads from the catchment. Jurisdictions should not register load reductions from catchments with shared urban runoff before consulting with all associated jurisdictions. The following two options may be considered to account for load reductions from catchments with shared urban runoff.

Option 1: Coordinated catchment - Preferably, jurisdictions with shared urban runoff coordinate to most effectively reduce the combined loading from the area. The jurisdictions may cooperate to implement a joint project that shares the cost of treating runoff, or simply allow the primary jurisdiction to implement pollutant controls appropriate to reduce loading from all urban runoff. The partnering jurisdictions determine what portion of the credit generated from the catchment is distributed to each jurisdiction. See the Credit Distribution text box for considerations that inform distribution of credits generated within a single urban catchment to more than one urban jurisdiction. Agreements outlining the distribution of credit should be provided to the appropriate regulatory agency as supporting material for the CCS.

Option 2: Discontinuous catchments - When coordination is not practical, the primary jurisdiction can exclude the area of other jurisdictions from the modeling analysis. Thus, only loads that contribute to the primary jurisdiction's baseline are accounted. This option may result in multiple, discontinuous catchments delineated within the same drainage area. The catchment delineation for the discontinuous catchments must accurately map and identify which areas are within each discontinuous catchment to ensure no area is included in two different catchments. Further, the sum of the separated catchment load reductions must be less than or equal to the load reduction from the combined catchment. This ensures that there is no incentive to isolate flows just to receive additional credit; recognizing that the combined flows more accurately represent actual conditions.

Similarly, jurisdictions may aggregate small drainage areas into a single catchment with multiple outflows. This exception to the definition of an urban catchment is practical for road jurisdictions that may define linear catchments around highway segments. Care should be taken to ensure the land area in these linear catchments is not included in multiple catchments.

CREDIT DISTRIBUTION

The Crediting Program is designed to allow flexibility in distributing credits so that jurisdictions are encouraged to work together to maximize load reduction. Distributing credits can incentivize jurisdictions to combine capitol, maintenance personnel and equipment resources. The following approach is recommended to inform the distribution of credit between urban jurisdictions with coordinated catchments or cooperating to implement pollutant controls.

- Communicate early and thoroughly when delineating a catchment in which credits may be distributed. Estimate load reductions to ensure that the number of credits at stake is worth the effort to distribute credit.
- Develop a written agreement to clarify responsibilities for planning, design, administration and ongoing maintenance. Agreements should consider how credits are distributed in the event that less than full credit is awarded in a year due to actual conditions underperforming expected conditions (see Chapter 2 and Appendix C for descriptions of credit awards based on inspections and maintenance).
- Consider the potential for future changes in the catchment, such as ownership of land or water quality project implementation. Define what potential changes should result in redefining the catchment and document these considerations in the Catchment Credit Schedule memo, to inform regulators of the possible future changes.

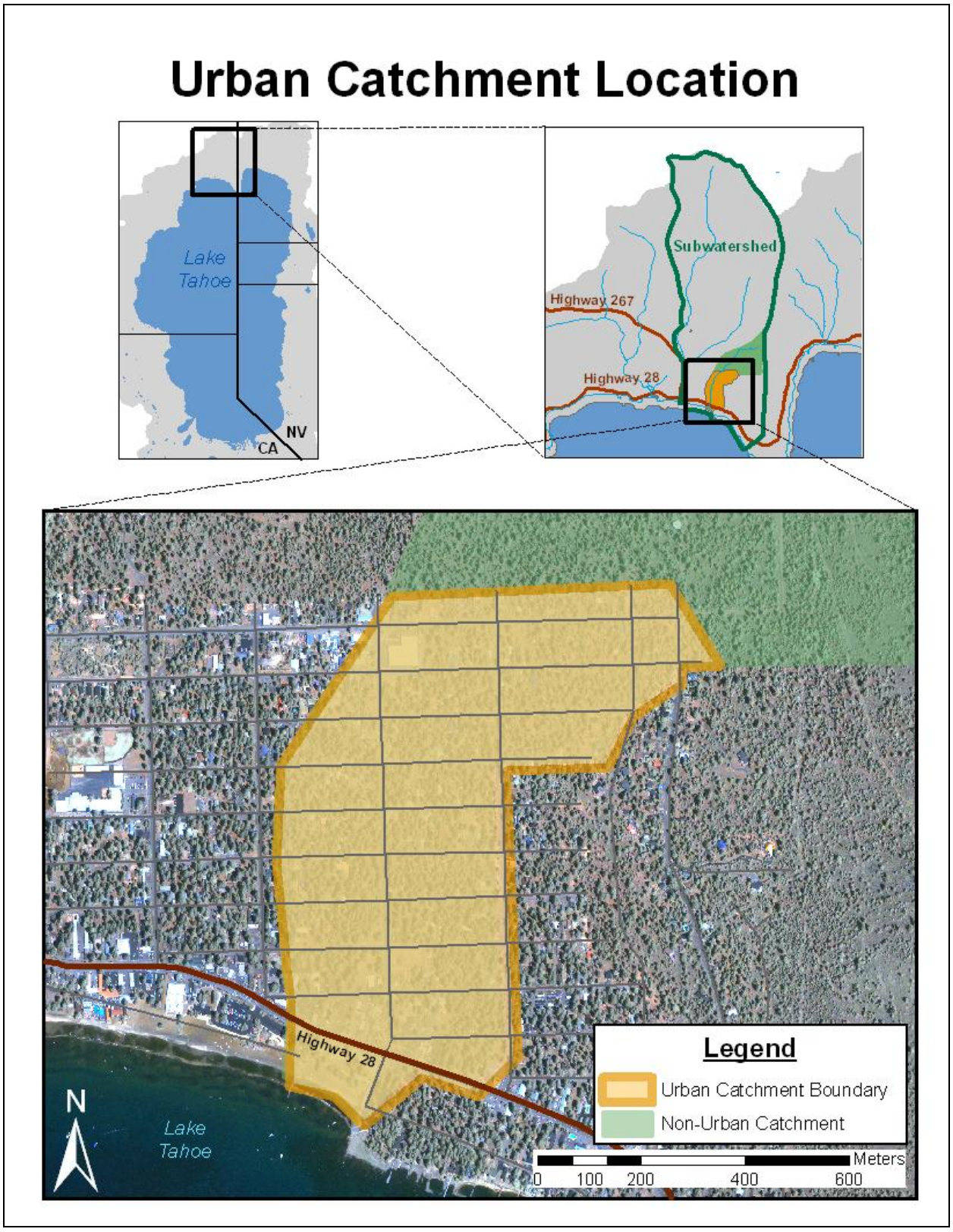

Figure CCS.2: Distinction between subwatershed, urban catchment and modeling drainage catchment. This example is inclusive of the portion of Highway 28 that bisects the catchment, and as such illustrates a coordinated catchment. However, if Highway 28 had been dissected, the example would illustrate a discontinuous 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 expected 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.

All pollutant load reductions from urban areas are eligible to be considered for meeting Lake Clarity Credit targets in stormwater permits and memoranda of agreement. This includes any urban stormwater load reductions resulting from improving stream environment zones that result in increased filtration and pollutant capture of stormwater runoff.

LOAD REDUCTION ELIGIBILITY

All load reductions achieved in addition to those identified in the Lake Tahoe TMDL Implementation Plan and supported by a rigorous load reduction estimate may be considered to contribute to an urban jurisdiction's lake clarity credits target. Load reductions resulting from stream restoration outside of the Upper Truckee River, Blackwood Creek or Ward Creek may be considered. Similarly, pollutant sinks not directly linked to a pollutant source in the TMDL may be considered, such as load reductions from increasing floodplain deposition of sediments. However, non-urban load reductions identified in the Implementation Plan of the Lake Tahoe TMDL may not be considered to contribute to an urban load reduction target, because they are already accounted for in the TMDL Implementation Plan.

IMPLEMENTATION PLANS & CREDITING PROGRAM FOCUS ON CONDITION

Implementation plans describe the actions the urban jurisdiction intends to implement in order to reduce stormwater loads within their respective jurisdiction. 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.

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 cost-effectively maintain the condition of treatment BMPs and roads. 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.

BACKGROUND

Each urban catchment may combine several different types of pollutant control strategies including (1) treatment BMPs, (2) pollutant controls on roads, (3) private property BMPs, and (4) other pollutant control actions, such as municipal ordinances or 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 inspection plan summary, and a brief maintenance plan summary for each pollutant control strategy.

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. Specific references to accepted standard methods (see Table TT.2) are used to facilitate understanding and demonstrate key functions. These standard methods are not required; alternatives that are functionally equivalent and documented are acceptable. 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.2* for a description of how to create and document acceptable condition assessment observations for unique situations.

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 class is treated independently. Private property BMPs and other pollutant control strategies are treated as two overall groups.

Strategic Importance – A general categorization of the relative load reduction importance of pollutant control types in an urban catchment. Each type of pollutant control is categorized as primary, secondary or tertiary based on professional judgment.

Water Quality Importance - Each treatment BMP and road class is defined as essential, key or supporting based on the relative load reduction it is expected to achieve. This categorization is used to determine the amount of credit to award when actual conditions during a year are significantly worse than expected conditions.

Observation Value – The specific numeric value observed during a condition assessment inspection such as those conducted with the BMP RAM. 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.

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 greater than 0.5 below 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.

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.[17] 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 few percent to 1/3 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

[17] See Appendix C for a complete discussion of the method to determine credit awards.

(see Appendix C, Section 3) and a penalty will apply if the conveyance infrastructure is not maintained or improved to restore flow.

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.3 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.3 below 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.

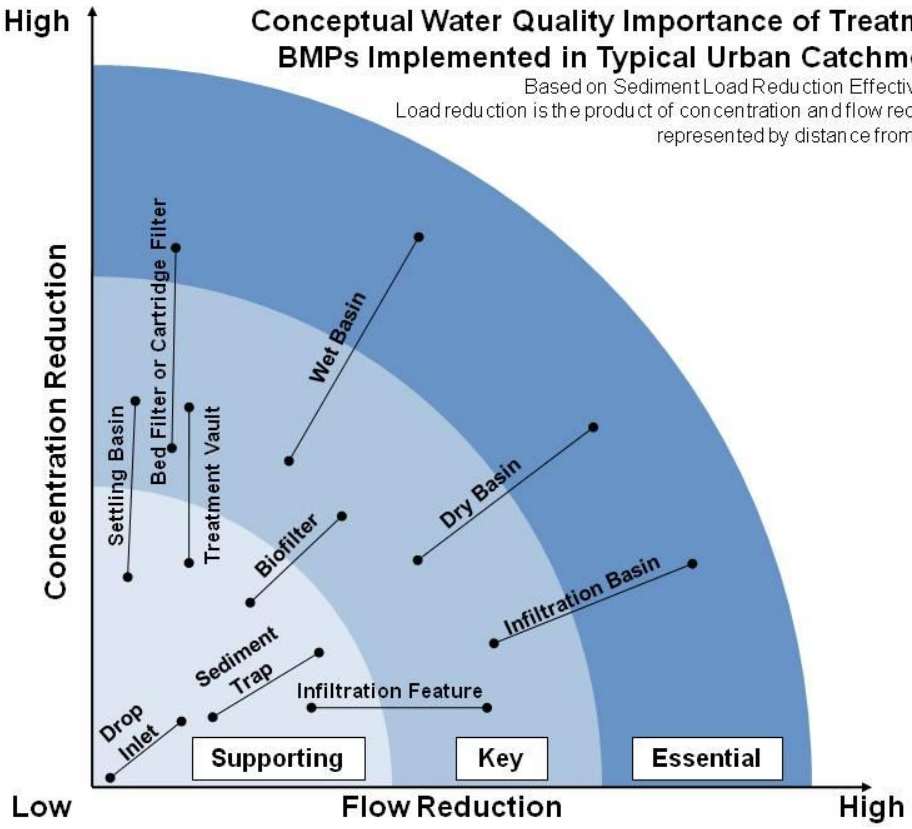

Figure CCS.3: Conceptual water quality importance of treatment BMPs implemented in typical urban catchments – Load reduction is the product of concentration and flow reductions and is represented as the distance from the origin. This figure is intended as a conceptual framework for reference during discussions 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.

I. DEFINE STRATEGIC LOAD REDUCTION IMPORTANCE

The overall load reduction strategy for the urban catchment provides an understanding of the relative strategic 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.

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

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

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.

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 control, 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.

INSTRUCTIONS

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

The treatment BMP implementation summary guides development of an inventory of important treatment BMPs through creation of a table and map. The table and map capture information related to expected infrastructure in the catchment. This section of the CCS also provides opportunity to describe the basics of how the urban jurisdiction will inspect and maintain treatment BMPs. Whenever possible the urban jurisdiction should summarize and reference existing jurisdiction-wide plans. Specific references to accepted standard methods (see Table TT.2) are used to facilitate understanding and demonstrate key functions. These standard methods are not required and alternatives that are functionally equivalent and documented are acceptable.

INSTRUCTIONS

5. Treatment BMP Inventory Table
   Use the guidance below (Table CCS.2) to populate the Treatment BMP Inventory Table template. (The template is available on regulator websites.) Complete the table for all essential and key treatment BMPs; supporting BMPs do not need to be included in the table. Acquire information from the BMP RAM database, implementation plans, and the additional sources as necessary. Check the box confirming the table is complete according to the guidance below and record the file name in item A.14. If not completed according to the guidance, explain deviations and rationale in the space provided or add a section to the CCS memo.

Column	Field Name	Field Description	Data Type
A	BMP_ID	The Treatment BMP ID used on the Treatment BMP Inventory	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	Identify if the treatment BMP is key or essential according to guidance in Section C, Background. *It is not necessary to include supporting BMPs in this table.*	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 Observation #1	Define a field observation that can be used to determine if the treatment BMP is performing as anticipated. Nearly all commonly used treatment BMP observations are listed in the BMP RAM User Manual, Table 6. Refer to Appendix C.2.4 for additional guidance if it is necessary to define an alternative observation.	Text
H	BMP Observation #1 Benchmark Value	Provide the value of Observation #1 that represents best achievable performance, such as the performance just after maintenance. Refer to BMP RAM User Manual, Step 3 for additional guidance if necessary.	Numeric
I	Observation #1 Threshold Value	Provide the value of Observation #1 that represents worst allowable performance, such as the performance that indicates water quality benefit is unacceptable and immediate maintenance is necessary. Refer to BMP RAM User Manual, Step 3 for additional guidance if necessary.	Numeric
J	Observation #1 Expected Condition Value	Using the BMP RAM equations defined for each observation; 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	Identify the parameter(s) used in PLRM that is related to Observation #1. Complete this item during Step 1.3 as described in the Additional Technical Guidance below.	Text
L	Observation #1 Related PLRM Value	Complete this item during Step 1.3 as described in CCS Section C. 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 guidance

6. **Treatment BMP Inventory Map**
   Produce a map of treatment BMPs that includes key and essential BMPs, but does not include supporting BMPs. Include additional physical features such as run-on points, stormwater flow paths and outlets. Check the box confirming the map is complete according to the guidance below and record the file name in item A.14. If not completed according to the guidance, explain deviations and rationale in the space provided or add a section to the CCS memo.

7. **Treatment BMP Inspection Plan Summary**
   In the space provided, summarize planned treatment BMP inspection approach and schedule for the catchment and describe how results will be used to prioritize maintenance actions. Incorporate specific sections of urban jurisdiction implementation planning documents by reference and briefly summarize them in a sentence or two. Carefully describe approaches or features that are unique to the catchment.

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

8. **Treatment BMP Maintenance Plan Summary**
   In the space provided, summarize planned treatment BMP maintenance actions for the catchment. Identify when and how maintenance will be performed. Incorporate specific sections of urban jurisdiction implementation planning documents by reference and briefly summarize them in a sentence or two. Carefully describe approaches or features that are unique to the catchment.

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," would be an appropriate statement for the Planned Maintenance field for a settling basin.

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.

ADDITIONAL TECHNICAL GUIDANCE

This additional technical guidance provides further information about the relationships between treatment BMP Observations and PLRM modeling that can help urban jurisdictions model expected conditions appropriately. This section also contains known issues regarding the BMP RAM database.

TREATMENT BMP RELATIONSHIPS

The BMP RAM User Manual provides additional insight for creation of a complete treatment BMP inventory, BMP inventory map, and for guidance on determining benchmark values and thresholds for each treatment BMP. The BMP RAM provides the best understanding of treatment BMP types and the field observations that determine condition of the treatment BMP. Treatment BMP observation values are related to input parameters for PLRM and expected condition values are translated to "Related PLRM Values" (Table CCS.2, column K, L). These input parameters are used to model loads in the expected conditions scenario. In many cases these relationships are clear, however there are some cases where policy guidance will be helpful in appropriately modeling load reductions. Table CCS.3 provides information describing the standard relationships between treatment BMPs and pollutant controls modeled in PLRM. Information in the table includes:

BMP Type – The officially recognized pollutant control types from BMP RAM.

RAM Observation – Field observations for each BMP type that can be related to PLRM modeling input parameters. In some cases more than one RAM observation can be associated to a single BMP type. Not all observations for each BMP type are included in this column.

Modeling Recommendation – the recommended pollutant control type to be used in PLRM. In some cases modeling hints are included in this field.

PLRM Parameter – The related input parameter for use in PLRM.

Conversion Policy – The acceptable method for converting RAM Observation values to PLRM Parameter values. In some cases relationships are based on well documented research. Policy guidance is provided in situations where these relationships are not clearly understood.

BMP Type	RAM Observation	Modeling Recommendation	PLRM Parameter	Conversion Policy
Dry Basin	Material Accumulation	Dry Basin	Volume (cu.ft)	Depth to volume curve
	Constant Head Permeameter (CHP)		infiltration rate [in/hr]	See Note Below [1]
Wet Basin	Material Accumulation	Wet Basin	Volume (cu.ft)	Depth to volume curve
Infiltration Basin	Constant Head Permeameter (CHP)	Infiltration Basin	infiltration rate [in/hr]	See Note Below [1]
Treatment Vault	Vault Capacity (Depth) [ft]	Treatment Vault	Treatment Flow Rate [CFS]	Assume treatment at full flow rate until ½ vault capacity reached

Cartridge Filter	Confined Space (presence & depth of standing water)	Cartridge Filter	Treatment Flow Rate [CFS]	If water depth is not changing appreciably during 24, and 48 hour (post storm) inspections, then BMP is considered to be "non-performing"
Bed Filter	Constant Head Permeameter (CHP)	Bed Filter	filtration rate [in/hr]	1:1, Direct comparison
Settling Basin	Material Accumulation	Dry Basin	Volume (cu.ft)	Depth to volume curve
Biofilter	Runoff	Treatment Vault	Treatment Flow Rate [CFS]	Empirically determine the maximum flow rate for which no runoff occurs
Infiltration Feature	Runoff	Infiltration Facility	infiltration rate [in/hr]	-
Porous Pavement	Infiltrometer	Infiltration Facility	Saturated Hydraulic Conductivity (Ksat)	There is not a direct correspondence between infiltrometer value and Ksat; best professional judgment to be used-document assumptions and/or methods
Sediment Trap[3]	Sediment Trap Capacity (Depth from outlet to sediment)	Not directly modelable	Unit Area Storage	Combine all Sediment Trap volumes, and model by adjusting unit area storage for all road surface area; use an average infiltration rate for the total sediment trap footprint

Table CCS.3: Treatment BMP relationships

Notes for Table CCS.3

1. Observe CHP values in the field and relate the range of field measurements to the top or bottom of the recommended range of Ksat in PLRM. For example: if field the best field measurements are 10 in/hr using the CHP, this is equivalent to 0.5 Ksat in PLRM (top of recommended range); if worst field observations are 1 in/hr CHP, this is equivalent to 0.05 Ksat in PLRM (bottom of recommended range).
2. BMP RAM "settling basins" should be modeled in PLRM as "dry basins" using input parameters that create low infiltration rates and small changes in influent vs. effluent pollutant concentrations.
3. Sediment Traps have not shown substantial load reductions and are not expected to be worth the effort to model. If urban jurisdictions classify these pollutant controls as "key", then they can be modeled with the described approach and documented in the CCS Memo.

KNOWN ISSUES

The BMP RAM Access database malfunctions when saving the database on a network hard drive. This permanently corrupts the database, necessitating reentry of all information. A local hard drive is the most robust place to store the BMP RAM database.

III. ROADS OPERATION IMPLEMENTATION SUMMARY

The Roads Operation Implementation Summary includes two maps, a tabular inventory of the roads and description of road inspection and maintenance plans. The Roads Inventory Map displays the expected road risk and shoulder conditions, based on PLRM GIS layers. The Roads Class Map groups roads according to pollutant management practices as determined by the urban jurisdiction using the Road RAM User Manual.

The Roads Summary Table includes information collected from both maps, highlighted by the expected condition score for each road class. Specific references to accepted standard methods (see Table TT.2) are used to facilitate understanding and demonstrate key functions. These standard methods are not required; alternatives that are functionally equivalent and documented are acceptable.

By defining the expected condition for each road class, the urban jurisdiction has the flexibility to vary road operations, such as abrasive application rates, abrasive type 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 a surface water more frequently than it sweeps roads in a modeling drainage catchment that drains to a dry meadow.

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

Road Class – A grouping of roads based on the combination of pollutant control practices employed on a particular road throughout the year. Sources and sinks can include the relative abrasive application priority during winter road conditions and relative sweeping priority when the weather is favorable for pollutant recovery. Road class is used to spatially extrapolate road segment scores to a greater area of roads to calculate Road RAM scores. The jurisdictions classify the roads in their jurisdiction based on actual maintenance 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.

INSTRUCTIONS

10. Roads Inventory Map

    Develop the Road Inventory Map using GIS layers available on the PLRM website at www.tiims.org/TIIMS-Sub-Sites/PLRM.aspx in the *Documents and Downloads* section. Include in the map expected road risk, road shoulder conditions, road shoulder connectivity and any other features that strongly affect load potential. In the long run, it may be less effort for an urban jurisdiction to develop a jurisdiction-wide Road Inventory Map and include this jurisdiction-wide map. After the map is complete, check the box confirming the map follows the guidance and record the file name in item A.14. If not completed according to the guidance, explain deviations and your rationale in the space provided or add a section to the CCS memo.

11. Roads Class Map

    Develop the Road Class Map by following instructions in Road RAM User Manual Step 3 – Classify Roads. The Road RAM Tool (www.tahoeroadram.com or http://ndep.nv.gov/bwqp/tahoe8.htm) can produce necessary maps once GIS files are uploaded. In the long run, it may be less effort for an urban jurisdiction to develop a jurisdiction-wide Road Class Map and include this jurisdiction-wide map. After the map is complete, confirm the map follows the Road RAM guidance and record the file name in item A.14. If not completed according to the guidance, explain deviations and your rationale in the space provided or the CCS memo.

12. Roads Summary Table

    Using the Road Summary Table guidance (Table CCS.4), populate the Roads Summary Table template for all road classes within the urban catchment. (The template is available on regulator websites.) Some columns will be easier to complete after considering Road Inspection Plans and Road Maintenance Plans in the two instructions below. The Road RAM Tool (www.tahoeroadram.com) can assist in calculating information for the table. After the table is complete, confirm the table follows the guidance and record the file name in item A.14. If not completed according to the guidance, explain deviations and your rationale in the space provided or add a section to the CCS memo.

Column	Field Name	Field Description	Data Type
A	Road Class	A Road Class is a group of roads with similar maintenance practices conducted by the urban jurisdiction. Road classes are used to minimize the number of field observations needed for urban jurisdictions to assess road conditions. See Appendix A - Attachment 8 for an example Road Inventory Table.	Text
B	Road Abrasive Application Strategy	Very briefly summarize the strategy for applying road abrasives. This should align with the inputs used in developing the expected loading estimate. If using PLRM, this is the "Road Abrasive Application Strategy" in the Road Conditions Editor for each modeling drainage catchment. Additional guidance for categorizing road abrasive application and other pollutant sources is available in the Road RAM User Manual Step 3 – Classify Roads.	Text
C	Sweeping Plan	Very briefly summarize the strategy for removing road abrasives. This should align with the inputs used in developing the expected loading estimate. If using PLRM, these are the Type of Sweeper and Sweeping Frequency inputs in the Road Conditions Editor. Additional guidance for categorizing sweeping and other pollutant sinks is available in the Road RAM User Manual Step 3 – Classify Roads.	Text
D	Other Source Control Plans	Identify any additional source control practices that will reduce loading from this road class.	Text
F	Expected Condition Score	Expected condition can be determined from field observation experience or interpreted from PLRM characteristic runoff concentrations. See the guidance below for additional information and to select one of two ways to select expected condition scores (Road RAM approach or PLRM approach).	Numeric (0.0-5.0)
G	Water Quality Importance	Identify the "water quality importance" of the combination of abrasive application, sweeping, and other pollutant controls for each road class (i.e. classify them as key or essential). See guidance for this item in Section C, Background.	Key or Essential
H	Notes	Make any brief notes related to the specific road class that may be useful for reviewers or for future reference.	Text

Table CCS.4: Road Summary Table guidance

EXPECTED CONDITION SCORES

As described in the PLRM Model Development Documentation, the PLRM determines road conditions and characteristic runoff concentrations on the basis of:

- road risk (a function of slope, traffic density and adjacent land use)
- planned abrasive application practices
- planned sweeping practices
- road shoulder protection and stabilization

The resulting characteristic runoff concentration produced by PLRM can be converted to a pollutant potential score using equation 2 in the PLRM Model Development Document, p. 52.[18] The pollutant potential score is comparable to a Road RAM condition score.

There are two acceptable approaches to selection of expected conditions and modeling them in PLRM.

Road RAM approach - Ideally urban jurisdictions use the Road RAM to assess conditions based anticipated operations protocols and empirically determine a reasonable Road RAM score for each road class. The score for each road class is converted to a FSP concentration using equation 2 from the PLRM Model Development Document. The resulting FSP concentration is matched to results from experimentation with the PLRM Roads Condition Editor to synthesize a reasonable load estimate for the expected conditions scenario.

PLRM approach - The alternative approach uses the expected road conditions (e.g. road shoulder conditions, abrasive management and sweeping) as input parameters to PLRM to determine a FSP CRC for each road class. Each road class is then converted to a pollutant potential score using equation 2 from the PLRM Model Development Document. These scores are then compared to actual conditions to determine if credits are awarded on an annual basis.

[18] Equation 2 of the PLRM Road Methodology is: FSP CRC = $1592*e^{(-0.850*\text{pollutant potential score})}$. This equation can be rearranged to calculate a pollutant potential score as: Score = $\ln((\text{FSP CRC})/1592))/-0.850$

Regardless of the approach selected by the urban jurisdiction, the expected road condition score for each road class is recorded in the Road Summary Table of the catchment credit schedule. The A&T Tool integrates road inspection scores for each road class to determine actual conditions and determine credit awards.

13. **Road Inspection Plan Summary**
    In the space provided, summarize roads inspection plans for the catchment and note any seasons or locations of particular focus. Reference and summarize the appropriate section(s) of the Road RAM Technical Document or the technical guidance in this section as necessary.

    Complete the Inspection Frequency & Timing field in the Road Summary Table by identifying the expected frequency and timeframe when condition assessment inspections will be conducted. See the Technical Guidance section below and Table 8.6 of the Road RAM Technical Document for guidance.

14. **Road Maintenance Plan Summary**
    In the space provided, summarize planned abrasive application, sweeping and other source control practices for maintaining the road conditions at near or better-than-expected conditions. Identify when and how maintenance will be performed. Incorporate specific sections of urban jurisdiction implementation planning documents by reference and briefly summarize them in a sentence or two. Carefully describe approaches or features that are unique to the catchment.

    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 class.

15. **Additional Roads Implementation Information**
    If additional information is required to adequately describe the roads or expected operations, within the urban catchment, indicate that additional information is provided in a Roads Implementation Summary section of the CCS memo. For example, use of a parking ordinance as an "Other Pollutant Control Strategy" should be described in this section of the CCS memo.

ADDITIONAL TECHNICAL GUIDANCE

This additional technical guidance provides further information about cut slope load estimation, the practicality of urban jurisdiction planning and known issues regarding the Road RAM.

CUT SLOPE LOAD ESTIMATION

Road cut slope stabilization is a component of many water quality improvement projects and urban jurisdictions desire a method for quantifying pollutant load reductions associated with cut slope stabilization. PLRM does not include an explicit method for simulating pollutant loading from cut slopes. Current PLRM guidance recommends that pollutant loading from cut slope erosion should be accounted for outside of a PLRM simulation, however a method is presented here because it is anticipated that there will be greater consistency between jurisdictions if estimates are made within the PLRM rather than through disparate, external methods.

The best available method for estimating loads from cut slopes is described in the Road Cut and Fill Slope Sediment Loading Assessment Tool (RCAT) User's Guide v1.0. The *Applying Results* section, *Option 2: Match loading outputs from RCAT with PLRM output for the same area*, describes five steps that can be pursued by experienced PLRM users to estimate loads under baseline and expected (i.e. "post-project" as discussed in the RCAT) conditions. Field measurements supporting sensitive input parameters will add confidence for reviewers of a CCS with cut slope load reductions included. The most sensitive parameters that can be field verified are saturated hydraulic conductivity and selection of erosion potential class land use.

PRACTICALITY OF ROAD INSPECTION & MAINTENANCE PLANS

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.

The Road RAM Technical Document provides guidance on integration with the Crediting Program in Section 3.3. This document also explains the number and timing of field observations necessary to adequately assess conditions while minimizing effort (see Road RAM Technical Document Chapter 8: Spatial and Temporal Extrapolation of Observations, including information in Table 8.6 may be helpful in formulating an adequate inspection plan.)

USE OF ROAD INSPECTION & MAINTENANCE PLANS

Road inspection and maintenance plans are important elements of the Crediting Program because they provide useful context for CCS reviewers and insight for urban jurisdictions about the level of effort needed to achieve the road conditions they select. They will not be used as rigid regulatory documents with checks to determine if they are being followed as represented. Regulators will only check that roads achieve the expected condition scores selected by the urban jurisdiction.

> **KNOWN ISSUES**
> Road RAM condition scores do not directly compare to PLRM Version 1 results. Additionally, certain concepts in the PLRM Road Methodology are not yet aligned with the concepts in Road RAM. This is an area of active program improvement. Until this situation is resolved, the Road RAM fine sediment particle concentration in Table 9.1 of the Road RAM Technical Document is directly comparable to the PLRM characteristic runoff concentration outputs from the Road Conditions Editor.

IV. PRIVATE PROPERTY BMP IMPLEMENTATION SUMMARY

The Private Property BMP Implementation Summary provides an overview of the urban jurisdiction's strategy for reducing pollutant loads from private property by treating this area with BMPs. Load reductions are calculated through the expected percentage of the catchment area that is mitigated, categorized by major land uses. The program summary should reference appropriate sections of private property BMP program documents whenever possible.

INSTRUCTIONS

16. **Private Property BMP Inventory**
    Provide catchment area and private property BMP implementation information as shown in Table CCS.5. If the PLRM is the load estimation method, simply paste a screenshot of the results from the "Land Use Conditions Editor" of the *expected* conditions scenario. Area that is currently certified can be determined using TRPA's BMP database at www.tahoebmp.org.

	# of Acres	% Area BMP Certified	% Area Source Control Certified
Single Family Residential			
Multi-Family Residential			
CICU			

Table CCS.5: Private Property BMP Inventory table

17. **Overall Private Property BMP Implementation**
    Calculate an area-weighted average of the percent certified area for the three land uses listed in Table CCS.5. Percent area BMP certified and percent area source control certified are added together before calculating the area-weighted overall average.
18. **Private Property BMP Program Summary**
    In the space provided, summarize any plans specific to this urban catchment. Refer to TRPA's or the urban jurisdiction's private property BMP program documents and briefly describe implementation, inspection and maintenance. If no special efforts will be made in this catchment, simply reference specific sections of the TRPA or urban jurisdiction plan.

19. Additional Private Property BMP Information
    If additional information is required to adequately describe private property BMP implementation or inspection, indicate "Yes" that additional information is provided in a Private Property BMP Summary section of the CCS memo.

ADDITIONAL TECHNICAL GUIDANCE

Be aware that the percent implementation declared in this section sets the assessment condition expected value. For any year when the actual percent implementation is less than 95 percent of the expected value, the overall private property BMP implementation will be deemed under-performing and will reduce the amount of credit awarded for the urban catchment. See Appendix C, Section 2.3 and Section 3.2 for an additional explanation.

In some cases, large-scale private properties employ pollutant controls that may earn the most credits when modeled using treatment BMPs rather than private property BMPs. This can be true in commercial redevelopment projects such as the Heavenly Village in South Lake Tahoe, CA. This project includes treatment basins that serve relatively large areas of commercial land use on private property. Urban jurisdictions may wish to model such catchments in several ways and choose the modeling approach that produces the most credit. If the area is modeled with treatment BMPs in PLRM (1) the treatment BMPs should be included in the treatment BMP Inventory Table, and (2) the contributing land area should be excluded from the private property BMP acres and percent area calculations.

V. OTHER POLLUTANT CONTROL STRATEGIES IMPLEMENTATION SUMMARY

Implementation of municipal ordinances and programs fall under the category of "other pollutant controls" that cannot be described as treatment BMPs or as part of the roads or private property BMP implementation strategies. For instance a parking ordinance that is designed to prevent pollutants from being tracked onto pavement would be categorized this way.

All implementers are encouraged to innovate and develop previously unexpected pollutant control strategies to cost effectively reduce pollutant loading and restore lake clarity. When urban jurisdictions identify effective non-urban load reduction opportunities that were not identified in the TMDL, they should discuss the opportunities with regulators to determine if the opportunities may be eligible to generate credits. For eligible load reduction opportunities the urban jurisdiction and regulator will determine acceptable methods to develop load reduction estimates, document expected conditions and assess conditions over time to determine ongoing performance. Depending on the circumstances, it may not be possible to determine an acceptable estimation method, or equivalency and uncertainty ratios may be applied that will provide assurances that the environmental benefit for non-urban pollutant controls are at least as beneficial to lake clarity as those achieved from urban stormwater reductions.

When a certain type of pollutant control becomes widely implemented, regulators and implementers will develop standard methods to estimate load reductions, document expected conditions and assess conditions over time. Once accepted, these standard methods will be adopted through the Lake Clarity Crediting Program's Program Improvement Process.

INSTRUCTIONS

1. Use of Other Pollutant Control Strategies
   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 check the "Yes" box. These strategies are described in the CCS memo in a section entitled Other Pollutant Control Strategies and summarized in the following items. See Technical Guidance below, Appendix A for an example CCS memo section and Appendix C Section 2.4 for a description of the credit award method for other pollutant control strategies.
2. Other Pollutant Control Strategy #1 Summary
3. Other Pollutant Control Strategy #2 Summary
4. Other Pollutant Control Strategy #3 Summary
   Briefly summarize the inventory, implementation, and inspection plans for the other pollutant control strategies expected in this catchment. See Technical Guidance below. Do not complete these items if no other pollutant control strategies are expected.

Additional Technical Guidance

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 Implemenation 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.

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. Specific references to accepted standard methods (see Table TT.2) are used to facilitate understanding and demonstrate key functions. These standard methods are not required; alternatives that are functionally equivalent and documented are acceptable.

Expected loads are estimated before baseline loads in an attempt to create a workflow that is easiest for urban jurisdictions. Typically the expected load scenario is optimized to cost-effectively minimize loads and then pollutant controls are removed until baseline conditions are represented in a model scenario. This minimizes effort for the urban jurisdiction and integrates with the project delivery process. If jurisdictions are working on existing conditions before they complete project design, it may be desirable to development a baseline loading estimate before the expected loading estimate. See Section E for guidance on developing baseline loading estimates.

I. EXPECTED LOADING ESTIMATE

The expected loading estimate reflects the expected loading from a catchment, assuming the pollutant controls are maintained near the expected conditions defined in the Implementation Plan Summary.

INSTRUCTIONS

1. Load Estimation Method

   Select the method to estimate the expected and baseline loading and create a scenario that estimates expected load.

   If proposing to use a load estimation method that is not approved (see Table TT.2 for approved methods) discuss with the appropriate regulator. Submit related documentation 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 in the Technical Guidance section below.

2. Expected Loading Parameters, Assumptions & Datasets

   Check "Yes" if the load estimation uses values outside of recommended ranges defined in the standard method's user guidance. Document the modifications, non-standard parameters and any other appropriate notes in the space provided or in a section of the CCS memo if additional space is needed.

3. Expected Loading Project File

   Confirm that the expected loading scenario is included in the Load Estimation project file and save it in the File structure defined in the template described at the end of the CCS Technical Guidance & Instructions section. Record the file name and save date in item A.14.

4. Expected Load 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 Section C: Implementation Plan Summary. Document the expected loads in the space provided for volume, fine sediment mass, number of fine sediment particles, total phosphorus and total nitrogen. Ensure that appropriate unit conversions are made between the load reduction estimation method's outputs and the CCS form.

5. Expected Catchment Connectivity

   Provide the expected catchment connectivity and rationale in the space provided. 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 outlet 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 specific methods for defining catchment connectivity are an active area of adaptive management for the Crediting Program and urban jurisdictions, thus no standard method is proposed. If a jurisdiction has developed a technically rigous approach to defining catchment connectivity, it may be used. Describe the

approach and specific assumptions related to the catchment being registered in the CCS memo. The urban jurisdictions are encouraged to use their favored approach and discuss it with the regulator early in the process of registering a catchment.

The following is recognized as potentially acceptable approach untill a standard method is adopted:

- **Flowpath & Distance** – The Table CCS.6 provides guidelines that will enhance consistency among urban jurisdictions as they categorize catchments based on the type of flowpath and distance between modeling drainage catchments and surface waters. Distances should be measured from last maintained infrastructure to a "blue line" on a USGS topographic map (i.e. a perennial surface water). Percentages are intended to provide consistency rather than accuracy, but are based on best professional judgement derived from knowledge of treatment processes including infiltration, evaporation, particle settling and nutrient cycling. This approach implicitly hypothesizes that loads will be reduced with greater distances; this hypothesis does not apply when active erosion occurs and users should analyze erosion loading using the method described in the PLRM User Guide.

Distance (ft.)	Flow Path Type	
	Pervious Channel (moderate slope; no active erosion)	Meadow (no defined channel; well vegetated)
<100	100%	100%
100-250	100%	75%
251-500	75%	50%
501-750	50%	25%
751-1000	25%	0%
>1000	0%	0%

Table CCS.6: Catchment connectivity by flowpath and distance table

Connectivity is expressed as a percentage and is used as a multiplier in expected and baseline load estimates to determine the effective load from the urban catchment. The ability to change connectivity between the baseline and expected conditions provides an opportunity to reduce pollutant loads, however these load reductions are estimated outside of the standard tools and care should be taken to be environmentally protective in the amount of credits estimated. Catchment connectively should only change between expected and baseline conditions when the flow path between the catchment and the receiving water has been modified.

In general all urban catchments with less than 100% connectivity should be analyzed seperately. However if load estimation methododology limitations on the size of the catchment (or other constraints) require partially connected catchments to be combined, use flow- or area-weighted averages to determine an integrated connectivity.

6. **Effective Expected Load Estimates**
   Multiply item 4, Expected Load Estimates by item 5, Expected Catchment Connectivity to determine effective expected load estimates for each pollutant.

ADDITIONAL TECHNICAL GUIDANCE

A consistent load estimation approach must be used for both baseline and expected loading estimates. A standard load estimation method has been adopted, but alternative methods are acceptable when documented according to the guidance contained in this section.

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.2 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 the 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.

ALTERNATIVE LOAD ESTIMATION METHODS

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.

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).

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 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.

I. BASELINE LOADING ESTIMATE

Baseline loads are estimated after expected loads in an attempt to create a workflow that is easiest for urban jurisdictions. It is envisioned that an expected load scenario will be optimized for cost-effectively minimizing loads and then pollutant controls will be removed until baseline conditions are represented. If jurisdictions are analyzing existing conditions before completing project design, development of a baseline loading estimate before expected loading estimate is permissible.

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.

INSTRUCTIONS

1. Baseline Inventory Table

   Use the guidance below (Table CCS.7) and template to populate the Baseline Treatment BMP Inventory Table. (The template is available on regulator websites.) Check the appropriate box regarding conformance with the guidance and provide a rationale for any deviations. Record the file name and date saved in item A.14.

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.7: Baseline Treatment BMP Inventory Table guidance

Determining land use and infrastructure conditions in place as of 2004 need not require a detailed investigation. Use the GIS layers supplied with PLRM and assume conditions are consistent unless there is a reason to believe that a significant change has occurred. If conditions have changed, document changes in the CCS Form or CCS Memo. 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) review records, (2) check with staff from urban jurisdiction, regulatory and funding agency, and (3) drive through the catchment, looking for the following changes that may 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.

2. **Baseline Infrastructure Map**

Develop the map by starting with the existing conditions map and eliminating treatment BMPs. Highlight changes in roads and land use that have occurred since 2004. Check the appropriate box regarding conformance with the guidance and provide a rationale for any deviations. Record the file name and date saved in item A.14.

3. **Catchment 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 whether any of the parameter values, assumptions or datasets deviates from 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. If using PLRM: (1) ensure that values outside of recommended ranges are explained, (2) ensure that directly connected impervious area values are appropriately adjusted from defaults and (3) carefully evaluate flow rates used for treatment vaults to reflect pollutants of concern (fine sediment particles <16 microns and nutrients).

5. **Baseline Load Estimate**

Create a baseline loading scenario in the load methodology and record the expected loads in the space provided for runoff volume, fine sediment mass, number of fine sediment particles, total phosphorus and total nitrogen. Ensure that appropriate unit conversions are made between the load reduction estimation method and the CCS.

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. When calculating baseline loading, use the standard baseline values defined in Table CCS.8. 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. For parameters not listed in Table CCS.8, use the best estimate of actual 2004 conditions.

PLRM User Inputs	Standard Baseline Values
Road Abrasive Application Strategy	None where applicable Minimal for secondary road classes Moderate for primary road classes
Type of Sweeper	Mechanical broom
Sweeping Strategy	Secondary Roads: Winter = 0 times, Summer = 1-2 times Primary Roads: Winter and Summer = 1-2 times per season
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.8: Standard Baseline Modeling Parameters

6. **Baseline Catchment Connectivity**
   Provide the *baseline* catchment connectivity and rationale in the space provided. See Section E.I for more guidance on acceptable approaches to determining connectivity.

7. **Effective Baseline Load Estimates**
   Multiply the item 4, Baseline Load Estimates by the item 5, Baseline Catchment Connectivity to determine effective baseline load estimates for each pollutant.

ADDITIONAL TECHNICAL GUIDANCE

This additional technical guidance provides further information about the rationale behind the baseline condition assumptions and the condition of treatment BMPs relative to the baseline.

BASELINE CONDITIONS

The values in Table CCS.8 represent an informed best professional judgment of standard practices during the 2000 to 2004 period.[19] 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:

1. 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.
2. 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.

It is possible that baseline conditions assumptions are better than expected conditions in a catchment. This has been noted with regard to private property BMPs in particular. Although this situation can result in negative load reductions, it reflects that the catchment is behind the Basin average and provides an incentive to make necessary improvements to achieve credit targets.

TREATMENT BMP CONDITIONS

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.

[19] Standard practices were based on results from TRPA's BMP database and de-icing reports submitted in the baseline timeframe.

SECTION F: CATCHMENT CREDIT SCHEDULE AMOUNT & DURATION

The final determination of the appropriate CCS credit potential 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 & CREDIT SCHEDULE AMOUNT

The credit potential amount defines the maximum amount of credit that may be awarded for the urban catchment in a year when all conditions are near or better than expected. See Appendix C Section 3 and Chapter 2 of the Handbook for discussion of the credit award method.

INSTRUCTIONS

1. Load Reduction Estimate
   Calculate load reduction by subtracting the expected loading estimate from the baseline loading estimate for runoff volume, fine sediment, total phosphorous and total nitrogen. Use the effective values that include adjustments for connectivity. After recording, copy this information into item A.6.

2. Fine Sediment Particle Number Conversion
   Using Equation 0.3, convert the fine sediment mass to fine particle number.

3. Credit Amount Calculation
   Using Equation 0.2, calculate the credit amount with the calculated load reduction estimates. Also copy this information into item A.7.

II. CREDIT SCHEDULE DURATION

INSTRUCTIONS

4. 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 Strategic Load Reduction Importance 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 provide 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.

5. Duration Rationale
   Briefly explain the rationale for the selected duration.

III. ESTABLISHMENT SUMMARY INSTRUCTIONS

6. Establishment Date

Record the date that the final CCS information is registered in the A&T Tool as described in Step 1.3.3. Also record this date in item A.8.

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 A&T Tool. The establishment date may not be the initial submittal if the regulator requires significant changes to load reduction estimates and supporting documentation provided with the initial submission.

7. Establishment Year Credit Potential

Note the appropriate establishment year percent and amount as described in Table CCS.9, below. 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.9: Establishment year credit potential

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.

8. Final Year of Credit Schedule

Note the final year of the credit schedule according to the CCS duration and establishment year selected in previous steps. Also copy this year into item A.9.

9. 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.

ADDITIONAL TECHNICAL GUIDANCE

The following two examples illustrate the establishment summary process and results.

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.

CATCHMENT CREDIT SCHEDULE VERIFICATION CHECKLIST

The Catchment Credit Schedule Verification Checklist (Verification Checklist) is a form that assists regulators in their review of a Catchment Credit Schedule (CCS). For regulators, the Verification Checklist can increase the consistency of review and reduce the level of effort. For urban jurisdictions, the Verification Checklist provides a place to respond to comments and gives insight into the level of detail that is specifically checked in a CCS.

The Verification Checklist should be used to track comments, questions and revisions to a draft CCS. The Verification Checklist may be passed back and forth between a jurisdiction and regulator several times as the CCS moves through the review process. Each entry into a "Notes" section should begin with the initials of the commenter and the date. Comments should be entered at the top of each notes section and older comments should not be erased; creating a record of the historical comments and responses about the CCS. The CCS Verification Checklist is displayed on the following pages and available for download at the websites of the Water Board and NDEP.

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CATCHMENT CREDIT SCHEDULE VERIFICATION CHECKLIST

Regulators and urban jurisdictions use this form to track comments, questions and revisions to a draft Catchment Credit Schedule. This form is intended to track the running dialogue, enter new comments at the top of each section, leaving older comments after to allow for historic tracking. This form should be completed in Adobe PDF format and submitted electronically.

CATCHMENT VERIFICATION SUMMARY

CATCHMENT ID	Name of the Catchment Credit Schedule this Verification Checklist refers to.
Catchment ID	

JURISDICTION NAME	Identify the primary urban jurisdiction & point of contact
Jurisdiction Name	Point of Contact

SECTION	STATUS
Section A: Correspondence & Catchment Credit Schedule Summary	☐ SEE NOTES ☐ APPROVED
Section B: Catchment Delineation	☐ SEE NOTES ☐ APPROVED
Section C: Implementation Plan Summary	☐ SEE NOTES ☐ APPROVED
Section D: Expected Loading Estimate	☐ SEE NOTES ☐ APPROVED
Section E: Baseline Loading Estimate	☐ SEE NOTES ☐ APPROVED
Section F: Catchment Credit Schedule Amount & Duration	☐ SEE NOTES ☐ APPROVED

SECTION A: CORRESPONDENCE & CATCHMENT CREDIT SCHEDULE SUMMARY

Check to ensure that summaries are concise but contain an adequate summary of the jurisdiction plan, and specifics for essential features and primary pollutant control strategies. Ensure that all coordination sections are complete and up to date. Technical guidance & instructions located in Crediting Program Handbook on page TT-14.

I. GENERAL CATCHMENT INFORMATION SUMMARY & III. COORDINATION CHECKLIST

SUMMARY INFORMATION & CHECKLIST	Checklist includes correct filenames and save dates
☐ APPROVED	

Notes:

SECTION B: CATCHMENT DELINEATION

Technical guidance and instructions located in Crediting Program Handbook beginning on page TT-17; example Appendix Attachment 1- p.3 of 9.

2 – 3. CATCHMENT MAPS	Confirm the catchment delineation map is complete and no portion of the catchment overlaps another catchment. If necessary, ensure that the CCS memo provides proper explanation for odd shapes, gaps and other anomalies in catchment delineation.

☐ APPROVED

Notes:

Required:
- ☐ Catchment Boundary
- ☐ Outlet(s)
- ☐ Points of Run-On
- ☐ PLRM Modeling Catchment(s)
- ☐ All Catchments Map
- ☐
- ☐

Optional:
- ☐ Flow Paths
- ☐ Land Uses
- ☐ TRPA Watershed(s)
- ☐ Bordering Catchments
- ☐ Jurisdiction Right of Way
- ☐

5. CATCHMENT AREA	Area is reasonable, includes all modeling catchments and only accounts for urban land uses

☐ APPROVED

Notes:

SECTION C: IMPLEMENTATION PLAN SUMMARY

Technical guidance and instructions located in Crediting Program Handbook beginning on page TT-21.

I. DEFINE STRATEGIC LOAD REDUCTION IMPORTANCE

1 – 4. LOAD REDUCTION STRATEGY IMPORTANCE	Confirm relative importance of LR strategy is rational and aligns with rough PLRM estimates.

☐ APPROVED

Notes:

II. TREATMENT BMP IMPLEMENTATION SUMMARY

5 – 6. TREATMENT BMP INVENTORY TABLE & MAP	Confirm that tables and map have consistent type and # of treatment BMPs. Confirm RAM or equivalent observations in table are properly correlated to PLRM expected condition parameters (see TT-20). Review & confirm all essential BMPs.

☐ APPROVED

Notes:

Checklist (Mandatory Items)
- ☐ BMP type & # match map
- ☐ RAM Observations match PLRM expected condition parameters
- ☐ Check all Essential BMPs
- ☐
- ☐
- ☐
- ☐

7. TREATMENT BMP <u>INSPECTION</u> PLAN SUMMARY	Summary references minimum inspection practices, standard protocols (approved jurisdiction SW inspection plan, BMP RAM, etc.), and deviations from standard actions in regard to specific treatment BMPs. All essential BMPs should be identified and the jurisdiction should adequately demonstrate how they will inspect to ensure on-going performance. It is especially important to document the specifics of the inspection plan if the BMP RAM is not used (see guidance in App. C, Section 2 for more information).

☐ APPROVED

Notes:

8. TREATMENT BMP <u>MAINTENANCE</u> PLAN SUMMARY	Summary references minimum maintenance practices, standard protocols (BMP RAM), and deviations from standard actions in regard to specific treatment BMPs. All essential BMPs should be identified and the jurisdiction should adequately demonstrate how maintenance will be triggered to ensure on-going performance.

☐ APPROVED

Notes:

III. ROADS OPERATION IMPLEMENTATION SUMMARY

10 - 12. ROAD MAPS & SUMMARY TABLE	See TT-22 for specific guidance. Confirm that tables and map have consistent type and # of roads. Confirm use of PLRM Road Risk Layer or Road RAM classes. Ensure that summary notes any deviations from default road values. It is especially important to document the specifics of the inspection plan if the Road RAM is not used (see guidance in App. C, Section 2 for more information).

☐ APPROVED

Notes:

Checklist (Mandatory Items)

Roads Inventory Map:
- ☐ Road risk
- ☐ Road shoulder conditions
- ☐ Road shoulder connectivity

Roads Class Map:
- ☐ All necessary road classes included

Roads Summary Table:
- ☐ All existing road classes (consistent with map)
- ☐ All items listed from Table CCS.4: Road Summary Table guidance
- ☐ Expected condition score

13. ROAD INSPECTION PLAN SUMMARY	Summary references abrasive application and sweeping/recovery plans, minimum inspection practices, standard protocols (approved jurisdiction SW inspection plan, Road RAM, etc.), and deviations from standard actions in regard to specific roads and problem areas. High risk roads should be identified and the jurisdiction should adequately demonstrate how they will inspect to ensure on-going performance.

☐ APPROVED

Notes:

14. ROAD MAINTENANCE PLAN SUMMARY	Summary references minimum maintenance practices, standard protocols (Road RAM), and deviations from standard actions in regard to specific road types and/or segments. All essential roads should be identified and the jurisdiction should adequately demonstrate how maintenance will be triggered to ensure on-going performance. Note: Road Maintenance Map is optional.

☐ APPROVED

Notes:

IV. PRIVATE PROPERTY BMP IMPLEMENTATION SUMMARY

16 - 17. PRIVATE PROPERTY BMP INVENTORY & RESULTS	Check that private parcel areas and implementation estimates are reasonable. As appropriate, confirm inventory with TRPA Data.

☐ APPROVED

Notes:

18. PRIVATE PROPERTY BMP PROGRAM SUMMARY	Ensure summary describes specific implementation plans (e.g., planned redevelopment in CICU leading to higher number of certificates, etc.).

☐ APPROVED

Notes:

V. OTHER POLLUTANT CONTROL STRATEGIES IMPLEMENTATION SUMMARY

20. OTHER POLLUTANT CONTROL PROGRAM SUMMARY	See TT-25 for instructions. Summary must include methods and specifics regarding baseline and expected conditions, assessment protocols, benchmarks, thresholds and modeling methods/assumptions.

☐ APPROVED

Notes:

SECTION D & E: EXPECTED AND BASELINE LOADING ESTIMATE

Technical guidance and instructions located in Crediting Program Handbook beginning on page TT-28.

LOAD ESTIMATION METHOD

PLRM OR OTHER MODELING APPROACH REVIEW	For PLRM review, see specific PLRM Checklist on Page 8.

☐ MODELING APPROVED (SEE PLRM CHECKLIST ON PAGE 8)

D-I. EXPECTED LOADING ESTIMATE

2-3. EXPECTED LOADING PARAMETERS, ASSUMPTIONS, DATASETS & PROJECT FILE	After completing full modeling review, note any major discrepancies or questions here for resolution.

☐ APPROVED

Notes:

4. EXPECTED LOAD ESTIMATES	Check that Expected loads listed in CSS match loads in modeling runs and that conversions (if any) are correct.

☐ APPROVED

5. EXPECTED CATCHMENT CONNECTIVITY	Check that catchment connectivity is reasonable and agreed upon.

☐ APPROVED

Notes:

6. EFFECTIVE EXPECTED LOAD ESTIMATES	Check that calculation is correct.

☐ APPROVED

E-I. BASELINE LOADING ESTIMATE

1 - 2. BASELINE INVENTORY TABLE AND INFRASTRUCTURE MAP	

☐ APPROVED

Notes:

Checklist (Mandatory Items)

☐ Follows Table CCS.8: Standard Baseline Modeling Parameters

3. CATCHMENT CHANGES SINCE 2004	See guidance on page TT-28

☐ APPROVED

Notes:

4. BASELINE LOADING PARAMETERS, ASSUMPTIONS, DATASETS	After completing full modeling review, note any major discrepancies or questions here for resolution. See TT-31 for guidance regarding Inventory Tables and requirements.

☐ APPROVED

Notes:

5. BASELINE LOAD ESTIMATE	Check that Baseline loads listed in CSS match loads in modeling runs and that conversions (if any) are correct.

☐ APPROVED

6. BASELINE CATCHMENT CONNECTIVITY	Check that catchment connectivity is reasonable and agreed upon.

☐ APPROVED

Notes:

7. EFFECTIVE BASELINE LOAD ESTIMATES	Check that calculation is correct.

☐ APPROVED

SECTION F: CATCHMENT CREDIT SCHEDULE AMOUNT & DURATION

Technical guidance and instructions located in Crediting Program Handbook beginning on page TT-32.

I. LOAD REDUCTION ESTIMATE & CATCHMENT CREDIT SCHEDULE AMOUNT

1 – 3. LOAD REDUCTION ESTIMATE, PARTICLE CONVERSION & CREDIT AMOUNT	Use Excel Crediting Program Calculation Check Tool to confirm unit conversions and values transferred to CCS.

☐ APPROVED

Notes:

II. CREDIT SCHEDULE DURATION & III. ESTABLISHMENT SUMMARY

4 – 9. CREDIT SCHEDULE DURATION & ESTABLISHMENT	Check duration and establishment year credit potential and final year date based on guidance TT-33-34. Review duration rationale and ensure it sufficiently explains chosen duration.

☐ APPROVED

Notes:

PLRM RAPID REVIEW CHECKLIST

1. Check for orphan .tmp files; existence of numerous files means that there were lots of crashes of PLRM and may indicate that the user was inexperienced or careless; or they stumbled into a bug in the PLRM
2. Quickly check to be sure that the PLRM files correspond to the CCS submitted- suggest doing this by checking the FSP load in PLRM report and Sec D & E of the CCS
3. Skim the PLRM schematics to familiarize yourself with how the Scenarios are plumbed (number of catchments, number of SWTs, routing, etc).
4. Skim land use distributions within catchments to familiarize yourself with the dominant land uses - e.g., SFR, CICU, lots of roads in one catchment, etc.
5. Confirm use of appropriate parameter values for baseline conditions in Table CCS.4 (P. TT-30)
    1. For all modeling catchments:
        A. Road abrasive application strategy
        B. Sweeper type and frequency
        C. BMP implementation percentages (ensure that standard baseline values are used)
6. Confirm same met grid used between scenarios
7. Compare volume and sediment reductions between baseline and expected conditions for catchments; this review allows you to assess the significance of PSCs and HSCs on load reductions
    A. Use .prpt files from each scenario folder – paste into excel and compare
    B. Use changes in hydrology or loads to see where (which modeling catchment) they have reductions/increases in runoff volumes and/or reductions/increases in pollutant loading
8. Be careful that catchment areas for each land use (and total area) haven't changed between baseline and expected conditions. If areas have changed this evaluation will be misleading. Catchment areas typically change because delineations need to be redone in PLRM when SWTs are implemented in the expected condition.
9. Check percent surface runoff in Baseline and Expected Scenario Reports; check to see if the value is reasonable with typical listed below (loose guidelines below, if DCIA is high or low these typical cases may not be appropriate)
        A. 1% is forested
        B. 5-10% is minimal development (westshore residential)
        C. 10-20% fairly dense SFR (sierra tract, al tahoe)
        D. 20-40% is urban core (casinos)
10. Check SWT % Capture Ratios in expected condition scenario report (and potentially baseline if SWTs present)
    A. Be wary of 100% capture; could be due to wasting money massively oversizing, well beyond 20yr-1hr; could also be due to using an excessively high treatment flow in a vault that isn't realistic for removal of pollutants of concern; very occasionally due to missing peak flow in a super small watershed
    B. 90-95% is typical capture ratio for something designed for 20yr-1hr on east shore
    C. 85% is typical capture ratio for something designed for 20yr-1hr on west shore
11. Check that Volume/Load Removed values are reasonable for each SWT (Scenario Reports) - e.g., will that treatment vault really retain and have that many lbs of FSP/year vactored out of it?
12. For catchments where you found large load reductions attributed to PSCs or HSCs, check Land Use Conditions Editor and Drainage Conditions editor for those catchment to decipher what has caused the large change
13. ADVANCED CHECK: check SWMM input file using Notepad++ (files are in scenario folder as tempSwmm.inp; "_toout" is to catchment outlet, "_toinf" is to infiltration facility)
    A. Check DCIAs (recall that SWMM inputs are 1-% given as input parameters - for example "0" is actually 100% DCIA)
    B. Be wary of 50% DCIA - this may mean the modeler didn't think about DCIA as the PLRM default is 50%
    C. In the Drainage Conditions Editor look for small volume infiltration devices that have default infiltration rate (0.5) this is too high in many cases, such as sed traps, forebays etc
14. Check Recommended Range Report – Check it for consistency between baseline vs. expected conditions; If Some PLRM parameters are outside of ranges; they must be justified in the CCS Memo
15. Use excel Credit Program Calculation Check Tool file to confirm unit conversions and values transferred to CCS (enter PLRM load results, and check calculated credits)
16. Live PLRM Files should be included in the file structure

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IRP ISSUE RESOLUTION PUNCHLIST

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 in Tools & Templates section of Handbook.

1. RELEVANT CATCHMENT ID OR ANNUAL REPORT	IDENTIFY THE SPECIFIC ITEM BEING REVIEWED
Catchment ID or Document Title	

2. BRIEF DESCRIPTION OF SITUATION	PROVIDE RELEVANT INFORMATION
Identify Topic Context ☐ New Catchment Credit Schedule ☐ Revision of Existing Catchment Credit Schedule ☐ Annual Report ☐ Other	For Credit Schedules, define the stage of review ☐ Step 1.2: Verify Catchment Credit Schedule ☐ Step 1.4: Accept Catchment Registration
Briefly describe the situation	
Attachment name (If necessary)	

3. URBAN JURISDICTION CONTACT INFORMATION	IDENTIFY PRIMARY CONTACT AND APPROPRIATE CONTACT INFORMATION
☐ Caltrans ☐ CSLT ☐ Douglas ☐ El Dorado ☐ NDOT ☐ Placer ☐ Washoe	Name / Phone E-Mail

4. REGULATORY AGENCY CONTACT INFORMATION	IDENTIFY PRIMARY CONTACT AND APPROPRIATE CONTACT INFORMATION
☐ LRWQCB ☐ NDEP	Name / Phone E-Mail

5. INITIATION DATE	REPORT THE DATE OF THE INITIAL TRANSMITTAL
Date	

6. STATEMENT OF RESOLUTION	REVIEW THE FOLLOWING STATEMENT AND SIGN YOUR ACKNOWLEDGMENT
☐ *ALL ISSUES HAVE BEEN RESOLVED TO THE DEGREE NECESSARY TO PROCEED.*	
Signature of urban jurisdiction representative	Signature of regulator representative
Date	Date

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 in Tools & Templates section of Handbook.

1. ISSUE NUMBER, TITLE AND TYPE

Issue #: _____ | Issue Title: _____

☐ Question ☐ Issue ☐ Change request ☐ 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**: _____

☐ Question ☐ Issue ☐ Change request ☐ 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 3.

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

Table 3: 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 (CCSs), 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 when issues arise that cannot be resolved through informal communication. All participants in the Crediting Program should use the CCS Verification Checklist to identify and track comments on the CCS. 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 CCS Verification Checklist to identify, track and respond to typical comments
- Use the IRP, and an associated memo if needed, to specify issues and document satisfactory resolution
- 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

10. Relevant Catchment ID or Annual Report
    Identify the specific item being reviewed.
11. 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) and 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.
12. Urban Jurisdiction Contact Information
    Identify the responsible urban jurisdiction, primary contact, and contact information.
13. Regulatory Agency Contact Information
    Identify the responsible regulatory agency, primary contact, and contact information.
14. Initiation Date
    Record the date of the initial transmittal of the document in question.
15. 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

16. 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
17. Issue Initially Identified By
    Indicate who initially identified the question.
18. 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.
19. 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.
20. 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.
21. 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 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 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.

PIR PROGRAM IMPROVEMENT RECOMMENDATION

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

1. TITLE USED TO IDENTIFY CHANGE	2. YEAR OF PROPOSED CHANGE DECISION
Date	Year

3. POINT OF CONTACT		Provide the contact information for the appropriate representative
Name	E-mail	Phone

4. CHANGE PROPOSED AND ACTIVELY SUPPORTED BY

Urban Jurisdictions

- ☐ CALTRANS
- ☐ CSLT
- ☐ DOUGLAS
- ☐ EL DORADO
- ☐ NDOT
- ☐ PLACER
- ☐ WASHOE

Funding Partners & Scientists

- ☐ CTC
- ☐ NDSL
- ☐ RSWMP INVESTIGATORS
- ☐ OTHER: _____

Regulatory Agencies

- ☐ LRWQCB
- ☐ NDEP
- ☐ TRPA
- ☐ U.S. EPA

Stakeholders (name of group or individual)

- ☐ OTHER:_____
- ☐ OTHER:_____
- ☐ OTHER:_____
- ☐ OTHER:_____

II. RECOMMENDATION

5. PROPOSED CHANGE — Indicate all of the following related to the proposed change.

- ☐ LOAD REDUCTION ESTIMATION METHODS
- ☐ PROGRAM OPERATIONS & CREDITING PROGRAM HANDBOOK
- ☐ CONDITION ASSESSMENT METHODS
- ☐ OTHER:_____

6. NEEDS ADDRESSED BY RECOMMENDATION — 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.

7. RECOMMENDED ACTION — Describe the specific changes that are required to implement the change. Include section references to documents and specific language, if appropriate.

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

9. ADDITIONAL MATERIALS — 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.

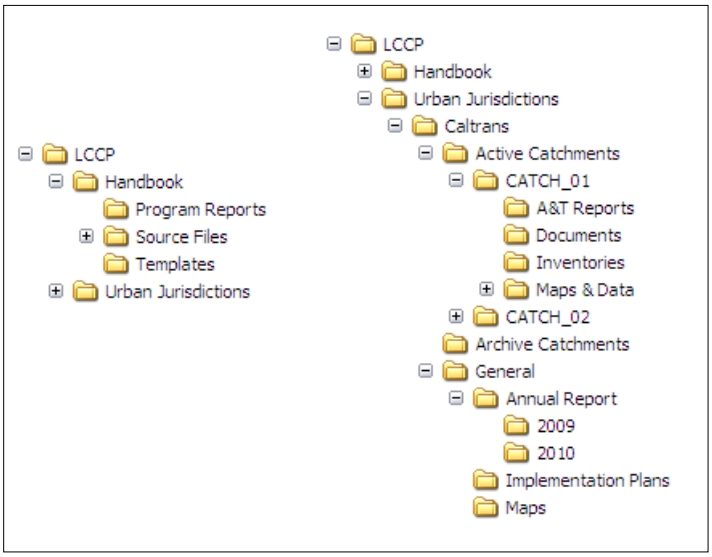

Figure FST.1: Digital file folder structure template

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The appendices to the Lake Tahoe Crediting Program Handbook provide additional information that may be helpful to urban jurisdiction stormwater managers, regulators and service providers who will be involved in details of implementing the Crediting Program.

- Appendix A complements Chapter 1. It contains a step-by-step example for developing a load reduction estimate and catchment credit schedule.
- 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.

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PURPOSE OF EXAMPLE

This example follows the steps described in Chapter 1 of the Lake Clarity Crediting Program Handbook (Handbook) to develop a load reduction estimate and establish a Catchment Credit Schedule (CCS). It illustrates how to apply the CCS Technical Guidance and Instructions (CCS Technical Guidance) to complete a CCS. It also describes typical interactions between an urban jurisdiction and a regulator. This example concludes with a description of how to register a catchment in the Accounting and Tracking Tool.

SITUATION & OVERVIEW

This example follows a hypothetical county stormwater manager, Pat, from the point of the initial development of a CCS for a typical urban catchment, Tahoe County Catchment 1. Catchment 1 includes single-family residential, multi-family residential and commercial areas as well as a network of secondary roads and a small portion of highway (see Attachment 3). Tahoe County received funding through the Environmental Improvement Program (EIP) in 2010 to design a water quality improvement project.

Pat began the Storm Water Quality Improvement Committee (SWQIC) Project Delivery Process (PDP) in 2010. Pat used the Pollutant Load Reduction Model (PLRM) to evaluate alternatives as part of the Formulating and Evaluating Alternatives (FEA) process. Maximizing load reduction was one of several goals that guided the evaluation of alternatives and discussions with the project Technical Advisory Committee (TAC). The TAC included active engagement from a Lahontan Regional Water Quality Control Board staff person, Chris.

A 1.0 GAIN INITIAL ENDORSEMENT

In 2011 the TAC agreed to a preferred alternative, and in January 2012 completed a load reduction estimate based on the preferred alternative. Pat included an expectation of implementing normal county road sweeping activities and a high degree of private property BMP implementation (71% BMP Certificates and 3% Source Control Certificates) in the load reduction estimate using PLRM.

Pat reviewed the initial load reduction estimates with Chris and gained initial endorsement that the project could generate approximately 50 credits, based on planned pollutant controls and maintenance activities. Chris suggested that Pat engage Caltrans to explore opportunities to partner in increasing sweeping effectiveness in the lower portion of the catchment to increase the credit potential from the catchment.

The project was constructed during the 2012 field season. During this time:

- Pat engaged Caltrans maintenance managers and found they were looking for opportunities to partner with the counties to gain credit for using their advanced sweepers. Together they developed a partnership agreement and an abrasive application and sweeping plan for the lower portion of Tahoe County Catchment 1.
- Pat realized that expectations for residential BMP implementation were overly optimistic. As of completion of construction on September 29, 2012, residential BMP implementation had reached 47% and the overall private property BMP implementation had reached 60%. While Pat expected continued implementation during 2013, 62% BMP certificates and 2% source control certificates seemed to be reasonable assumptions for future implementation rates.
- In August of 2012, Tahoe County supervisors approved a new ordinance to restrict off-pavement parking. Pat expected this to reduce the amount of road shoulder soil disturbance significantly.

Pat needed to revise the initial load reduction estimate to reflect these and other construction related changes during the development of the catchment credit schedule.

A 1.1 ESTIMATE LOAD REDUCTIONS & DRAFT CATCHMENT CREDIT SCHEDULE

On September 22, 2012, Pat opened the CCS Template from the Tools and Templates section of the Handbook and completed CCS Section A: Correspondence & Catchment Credit Schedule Summary portion I. General Catchment Information Summary as shown in Attachment 1: Final CCS for Tahoe County Catchment 1.

ORGANIZING THE CCS AND SUPPORTING MATERIALS

The CCS and supporting materials are included as attachments to this and should are referred to in the text throughout this example.

- **Attachment A.1:** Final CCS for Tahoe County Catchment 1
- **Attachment A.2:** CCS Memo for Tahoe County Catchment 1
- **Attachment A.3:** Catchment Delineation Map for Tahoe County Catchment 1
- **Attachment A.4:** Treatment BMP Inventory Map
- **Attachment A.5:** Treatment BMP Inventory Table
- **Attachment A.6:** Roads Inventory Map
- **Attachment A.7:** Roads Class Map
- **Attachment A.8:** Roads Inventory Table
- **Attachment A.9:** Baseline Treatment BMP Inventory Table
- **Attachment A.10:** Verification Checklist for Tahoe County Catchment 1
- **Attachment A.11:** Issue Resolution Punchlist
- **Attachment A.12:** Catchment Registration Summary

A 1.1.1 ▪ DELINEATE CATCHMENT (CCS SECTION B)

Pat used the subwatershed delineation from the Existing Conditions Analysis Memorandum (ECAM) to determine Catchment 1's urban catchment boundary following Section B: Catchment Delineation of the CCS Technical Guidance (Attachment 1). Because the outlet from Catchment 1 goes directly into Lake Tahoe, Pat accepted the default value of 100% for catchment connectivity. Attachment 3 shows the resulting boundary of Catchment 1.

A 1.1.2 ▪ SUMMARIZE CATCHMENT IMPLEMENTATION PLAN (CCS SECTION C)

Pat used the information developed with the preferred alternative, in addition to information from Tahoe County's Roadway Maintenance Plan and Treatment BMP Maintenance Plan, to develop the Implementation Plan Summary as per Section C: Implementation Plan Summary of the CCS Technical Guidance.

LOAD REDUCTION IMPORTANCE

Pat defined the strategic load reduction importance based on the extensive knowledge of Catchment 1 gained through the FEA process and while running PLRM for the post-project scenario. Pat completed portion I. Define Strategic Load Reduction Importance of Section C of the CCS as shown in Attachment 1.

TREATMENT BMP INSPECTION & MAINTENANCE PLAN SUMMARIES

Pat used the preferred alternative design plans to develop the Treatment BMP Inventory Map, shown in Attachment 4, and to complete columns A through D of the Treatment BMP Inventory Table as shown in Attachment 5. The CCS Memo, Attachment 2, addresses the use of a new substrate layering technique that is expected to maintain high infiltration rates. This is reflected in the expected loading estimate and treatment BMP inventory table.

Pat referred to the Tahoe County Treatment BMP Maintenance Plan document for details related to the typical maintenance and inspection practices for Tahoe County treatment BMPs and summarized the planned inspection and maintenance activities in the Treatment BMP Inspection Plan Summary and Treatment BMP Maintenance Plan Summary sections of portion II. Treatment BMP Implementation Summary of CCS Section C as shown in Attachment 1.

ROADS OPERATION IMPLEMENTATION SUMMARY

From the PLRM analyses of the preferred alternative, Pat knew that Catchment 1 was broken into two distinct modeling drainage catchments (MDCs). The upper portion of the urban catchment with the outlet to the dry basin was labeled MDC A, and the lower portion of the urban catchment with the outlet directly to the lake was labeled MDC B. Pat developed the Roads Inventory Map shown in Attachment 6 and completed columns A through E of the Roads Inventory Summary Table shown in Attachment 8.

Pat referred to the Tahoe County Roadway Maintenance Plan document for details about the typical inspection and maintenance practices for Tahoe County roads for and summarized the planned inspection and maintenance activities in the Roads Inspection Plan Summary and Roads Maintenance Plan Summary sections of portion III. Roads Operation Implementation Summary of CCS Section C as shown in Attachment 1.

PRIVATE PROPERTY BMP IMPLEMENTATION SUMMARY

Pat completed portion IV. Private Property BMP Implementation Summary of CCS Section C as shown in Attachment 1, using percentages that reflected the current BMP implementation percentages.

OTHER POLLUTANT CONTROL STRATEGIES IMPLEMENTATION SUMMARY

Pat included a description of the expected benefits from the county's new parking ordinance in the CCS memo, Attachment 2. The memo also includes a definition of the expected changes related to the parking ordinance that will be used as the basis for comparing actual to observed conditions.

A 1.1.3 ▪ ESTIMATE EXPECTED LOADING (CCS SECTION D)

Pat began the expected loading estimate using the PLRM preferred alternative scenario decided upon during discussions with the TAC. While all of the treatment BMPs were included in this preferred alternative scenario, Pat had to update some of the parameters to reflect the additional design work completed following the selection of the preferred alternative. Pat used the default design parameters and GIS road condition maps from TIIMS.ORG, whenever they were provided by PLRM, but was careful to adjust the DCIA values for each catchment because the defaults were not appropriate and load reductions are very sensitive to this parameter. Pat also took a more detailed look at the assumed road maintenance practices included in the scenario. Pat used the results of the expected loading scenario to complete Section D: Expected Loading Estimate of the CCS as shown in Attachment 1.

Pat also used these results to complete the Treatment BMP Inventory and Roads Summary Tables begun in Step 1.1.2. Pat used PLRM to run a scenario that completely eliminated the dry basin at the bottom of the upper catchment. The result was a 35-percent increase in loading over the scenario with the dry basin. This led Pat to indicate that the dry basin was "essential" and that all other treatment BMPs and source controls included in the inventory were "key". Pat did not include the drop inlets (DI) and sediment traps (ST) in the inventory because Pat does not expect any one DI or ST to result in more than a two-percent load reduction of fine sediment particles with diameter less than 16 μm, total nitrogen (TN) or total phosphorus (TP). Pat does, however, understand that the DIs and STs are important to facilitate maintenance, ensure proper conveyance to prevent flooding, and ensure that the downstream dry basin does not rapidly degrade and require frequent maintenance. (Note: Pat included supporting BMPs on the Treatment BMP Inventory Map (Attachment 4) but they are not required.)

A 1.1.4 ▪ ESTIMATE BASELINE LOADING (CCS SECTION E)

Pat created an existing conditions PLRM scenario in 2010, during the development of the ECAM. Pat did not, however, have a baseline scenario that reflected the development in Catchment 1 as of 2004.

Pat knew that, between 2004 and 2011, no water quality improvement projects had been completed in Catchment 1. Pat had driven and walked the catchment several times during the project design process and knew that several new homes had been built and one commercial property had been renovated in recent history. Pat searched county records and found that twelve new homes were built. A back-of-the-envelope calculation showed that this increased the single-family residential (SFR) percent coverage by 2% from baseline. Thus, Pat decreased the baseline SFR percent coverage by 2% from the value used in the expected loading scenario. Pat discussed the commercial property re-development with county and TRPA permitting staff and looked at the project file, determining that 25,000 square feet of coverage had been eliminated in

2007. This reduced the percent coverage of the Commercial/Institutional/Communications/Utilities (CICU) land use by 2% from baseline. Thus, Pat increased the percent impervious for CICU by 2% for the baseline scenario. No roads had been constructed or decommissioned since 2004 and no significant road shoulder upgrades had been completed since 2004.

Using this information Pat developed the Baseline Treatment BMP Inventory Table (Attachment 9). Pat used the standard baseline modeling parameters provided in Section E of the CCS Technical Guidance and Instructions to develop the baseline loading estimate. The results, as completed in CCS Section E: Baseline Loading Estimate, are shown in Attachment 1.

A 1.1.5 ▪ DETERMINE CATCHMENT CREDIT SCHEDULE AMOUNT & DURATION (CCS SECTION F)

Pat used the results of the expected loading and baseline loading estimates to determine the loading estimates for volume, fine sediment, TN and TP. Pat then used Equation 0.3 to convert from fine sediment mass to number of fine particles, and Equation 0.2 to calculate the associated amount of credit. Because long-lived treatment BMPs are the primary load reduction strategy for Tahoe County Catchment 1, Pat selected a 10-year CCS duration. Draft CCSs do not have an establishment date, so Pat left this field blank. Attachment 1 shows the resulting CCS Section F: Catchment Credit Schedule Amount & Duration.

A 1.1.6 ▪ SUMMARIZE, COMPILE DOCUMENTATION & SUBMIT FOR REVIEW (CCS SECTION A)

Pat used the information from CCS Sections B through F to complete the remaining information in CCS Section A. Pat completed the documentation checklist at the end of CCS Section A, item 14. Supporting Materials Filenames and Checklist.

Pat used the file structure defined in the Crediting Program File Structure Tool to organize all relevant files and posted the folder to the Tahoe County folder on the TMDL Management System workspace. On November 29, 2012, Pat sent Chris an email notifying him that all documents were posted, and delivered a copy of all printed materials. Pat made a special request for a rapid review and scheduled the verification field visit and meeting for December 4, to discuss the Draft Final CCS and supporting materials.

A 1.2 VERIFY LOAD REDUCTION ESTIMATE & CATCHMENT CREDIT SCHEDULE

Chris had visited the site during construction and was familiar with the constructed treatment BMPs; however, Chris shared Pat's desire to complete the verification meeting before snow obscured the road shoulders. So, Chris dedicated December 3, 2012 to completing a thorough review of the CCS and supporting materials.

A 1.2.1 ▪ REVIEW DRAFT FINAL DOCUMENTS

Chris identified several issues and questions, and entered them in the CCS Verification Checklist. One issue remained unresolved from the CCS Verification Checklist regarding the infiltration rate of DB01. Therefore, it was elevated to the Issue Resolution Punchlist and engineers were brought in to run analyses until it was resolved. Chris then sent the CCS Verification Checklist to Pat in advance of the verification meeting so that Pat could have an opportunity to address the questions prior to the meeting. Attachment 10 shows the completed Verification Checklist, including both the questions and issues identified by Chris in this step and the resolutions and responses from Pat following Step 1.4.2.

A 1.2.2 ▪ VERIFY ACTIONS, IMPLEMENTATION PLANS & LOADING ESTIMATE

Pat and Chris toured Tahoe County Catchment 1 on the morning of December 4, 2012. Chris verified that the treatment BMPs were installed as listed in the Treatment BMP Inventory Table, with the exception noted in the Verification Checklist. They encountered a Caltrans sweeper sweeping the secondary road in the lower portion of the catchment following the previous week's storm. Pat and Chris also looked at road shoulder conditions and discussed the assumptions related to the parking ordinance implementation plan.

Chris and Pat met back at the Tahoe County office in the afternoon. They determined that the high infiltration rate used for the dry basin was justified, and discussed the Other Pollutant Control Strategy #1 Summary from CCS Section C and the associated CCS Memo section. They discussed the parking

ordinance inspection plan and the proper way to model the benefits from the ordinance. Attachments 10 and 11 show the responses to the questions and issues raised regarding the infiltration rate.

At the conclusion of the meeting, both Chris and Pat agreed on final action items to be addressed prior to Chris' final approval of the CCS.

A 1.2.3 ▪ SUBMIT CATCHMENT CREDIT SCHEDULE & SUPPORTING MATERIALS

Pat updated the CCS and related materials as shown in the strikethrough and bold areas of the related attachments. Pat had the County Engineer review the materials and sign the signature field in CCS Section A, and filled in the establishment date, establishment year credit amount and final year of credit schedule.

Pat used the file structure defined in the Crediting Program File Structure Tool to organize all relevant files and posted the folder to the Tahoe County folder on the TMDL Management System workspace. On December 22, 2012, Pat sent Chris an email to indicate that all documents were posted, and delivered a printed copy of all necessary materials. This set the establishment date of December 22, 2012 for the CCS.

A 1.2.4 ▪ VERIFY CATCHMENT CREDIT SCHEDULE

Chris checked to make sure that all items defined in the IRP were changed as described. Chris checked that all materials were present and asked an intern to check that all modeling parameters were accurately reflected in the Inventory Tables and Maps. Chris had no issues or questions, and sent Pat a confirmation email on December 24, 2012

A 1.3 REGISTER CATCHMENT

Pat made the time to finish the adjustments to the CCS and supporting materials before the end of the year, in order to ensure the establishment date would be in December of 2012.

A 1.3.1 ▪ REGISTER CATCHMENT IN ACCOUNTING & TRACKING TOOL

With the Final CCS in hand, on December 31, 2012, Pat logged into the Accounting and Tracking Tool and followed the catchment registration instructions. Pat was sure to note that all Treatment BMP Expected Condition Scores were a three, as guided by the Catchment Credit Schedule Technical Guidance documentation.

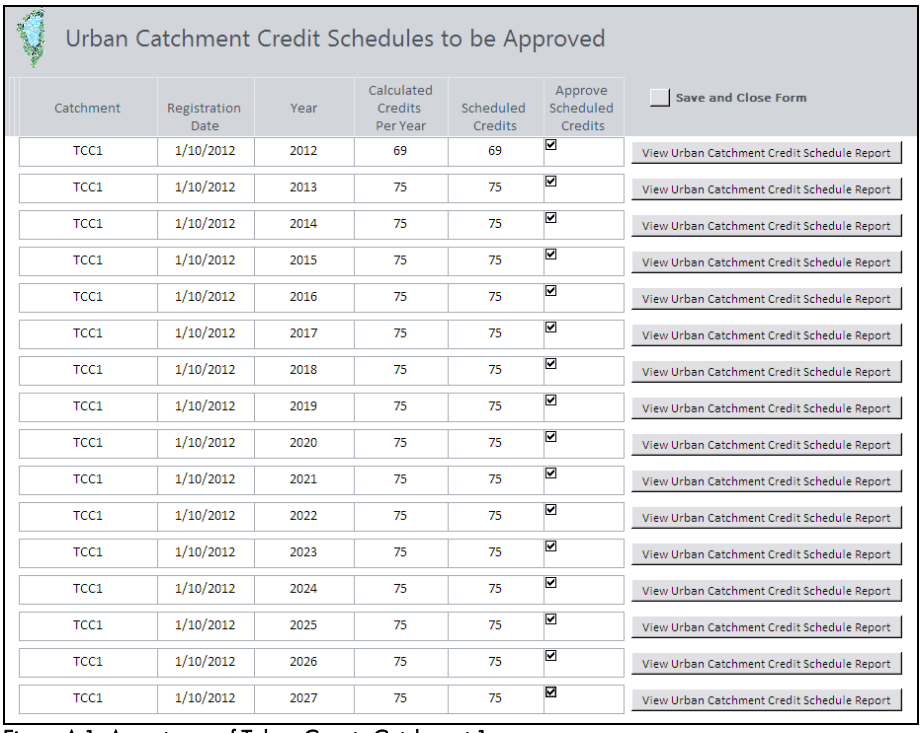
Pat uploaded the necessary fields from the Treatment BMP Inventory and Roads Summary Tables and filled out the other portions of the Urban Catchment Credit Schedule Registration Form. After saving the Urban Catchment Credit Schedule Registration Form, Pat printed the Tahoe County Catchment 1 Credit Schedule Report, provided in Attachment 12.

A 1.6 ACCEPT FINAL CATCHMENT CREDIT SCHEDULE

Chris was not able to review the submitted materials and accept the final CCS until January 4, 2013. As per the CCS Technical Guidance, the establishment date remained December 22, 2012 despite the delay in Chris's review.

A 1.6.1 ▪ ACCEPT CATCHMENT CREDIT SCHEDULE, FILE MATERIALS & SEND CONFIRMATION

On January 4, 2013, Chris logged in to the Accounting and Tracking Tool and proceeded to the Urban Catchment Credit Schedules Acceptance Form. Chris generated the Urban Catchment Credit Schedule Report and checked that all entered fields matched the CCS. Chris went back to the acceptance form and checked the box accepting the Tahoe County Catchment 1 Credit Schedule for each year, as shown in Figure A.1.



Urban Catchment Credit Schedules to be Approved

Save and Close Form

Catchment	Registration Date	Year	Calculated Credits Per Year	Scheduled Credits	Approve Scheduled Credits	
TCC1	1/10/2012	2012	69	69	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2013	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2014	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2015	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2016	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2017	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2018	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2019	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2020	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2021	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2022	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2023	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2024	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2025	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2026	75	75	☑	View Urban Catchment Credit Schedule Report
TCC1	1/10/2012	2027	75	75	☑	View Urban Catchment Credit Schedule Report

Figure A.1: Acceptance of Tahoe County Catchment 1

Chris then signed the acceptance line of CCS Section A, scanned a copy of the page for Pat, and filed all materials. Chris then sent Pat an email with the attached signature page. The email stated that the CCS had been accepted and thanked Pat for his attentiveness, creativity and clarity.

CCS CATCHMENT CREDIT SCHEDULE

The Catchment Credit Schedule (CCS) documents calculations of Lake Clarity Credits (credits) and supporting information underlying the calculation of credits for an urban jurisdiction. Guidance for calculating credits is provided in Chapter 1: Estimate Load Reductions & Establish Catchment Credit Schedules of the Lake Clarity Crediting Handbook (Handbook). Detailed instructions are available in the CCS Technical Guidance & Instructions section of the Handbook. If additional space is needed to record assumptions and detailed calculations, a CCS Memo can accompany this form.

SECTION A: CORRESPONDENCE & CATCHMENT CREDIT SCHEDULE SUMMARY

The Correspondence & Catchment Credit Schedule Summary section contains general contact information and a summary of later sections. This section is completed incrementally as subsequent sections of the Catchment Credit Schedule are completed.

I. GENERAL CATCHMENT INFORMATION SUMMARY

1. CATCHMENT STATUS — See Section A.I of CCS Technical Guidance & Instructions for assistance

- ☒ NEW CATCHMENT
- ☐ REVISION
- ☐ EXTENSION

Date of previous approval:

2. CATCHMENT ID — See Section A.I of CCS Technical Guidance & Instructions for assistance

Catchment ID	Common Catchment Name
TCC1	Tahoe County Catchment 1

3. PRIMARY JURISDICTION — See Section A.I of CCS Technical Guidance & Instructions for assistance

- ☐ CALTRANS
- ☐ CSLT
- ☐ DOUGLAS
- ☐ EL DORADO
- ☐ NDOT
- ☐ PLACER
- ☐ WASHOE
- ☒ TAHOE COUNTY

Primary Contact: Pat Kuchman

Phone Number	E-mail Address
530-745-5555	pkuchman@tahoecounty.gov

4. REGULATORY AGENCY — See Section A.I of CCS Technical Guidance & Instructions for assistance

- ☒ LRWQCB
- ☐ NDEP

Primary Contact: Chris Lawson

Phone Number	E-mail Address
530-542-5555	clawson@waterboard.gov

II. CATCHMENT CREDIT SCHEDULE SUMMARY

5. BASIC CATCHMENT POLLUTANT CONTROL STRATEGY NARRATIVE — See Section A.II of CCS Technical Guidance & Instructions for assistance

Basic Narrative

Road shoulder and conveyance infrastructure improvements prevent soil erosion and route stormwater to a dry basin that treats a large portion of the stormwater coming from the residential portion of the catchment. Aggressive sweeping of the roads in the lower portion of the catchment is also expected to achieve significant load reductions.

6. EFFECTIVE LOAD REDUCTION ESTIMATE — See Section A.II of CCS Technical Guidance & Instructions for assistance

Volume (ac-ft/yr)	Fine sediment mass (kg/yr)	Total phosphorous (kg/yr)	Total nitrogen (kg/yr)
49	14,991.4	55.1	15.4

7. CREDIT POTENTIAL AMOUNT — See Section A.II of CCS Technical Guidance & Instructions for assistance

75 CREDITS

8. ESTABLISHMENT DATE	See Section A.II of CCS Technical Guidance & Instructions for assistance	9. FINAL YEAR	See Section A.II of CCS Technical Guidance & Instructions for assistance
Establishment Date: 12/22/2012		Final Year: 2022	

III. COORDINATION CHECKLIST

10. SUBMITTED FOR VERIFICATION REVIEW — See Section A.III of CCS Technical Guidance & Instructions for assistance

Date Submitted	Name of Staff Person
11/29/2012	Pat Kuchman

11. STATEMENT OF COMPLETENESS & APPROPRIATENESS — See Section A.III of CCS Technical Guidance & Instructions for assistance

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
Pat Kuchman	11/26/2012

Signature

Pat Kuchman

12. VERIFIED BY REGULATOR — See Section A.III of CCS Technical Guidance & Instructions for assistance

I certify that the Verification Step is complete.

Printed Name	Date
Chris Lawson	1/4/2013

Signature

Chris Lawson

13. REGISTERED AND SUBMITTED FOR APPROVAL — See Section A.III of CCS Technical Guidance & Instructions for assistance

Date

12/21/12

14. SUPPORTING MATERIALS FILENAMES AND CHECKLIST — See Section A.III of CCS Technical Guidance & Instructions for assistance

Checklist	Filename	Save Date
☒ CCS FORM	TCC1 Draft CCS.doc	12/20/2012
☒ CCS MEMO (IF NECCESARY)	TCC1 Final CCS Memo.doc	12/21/2012
☒ CATCHMENT DELINEATION MAP	TCC1 Delineation.pdf	12/5/2011
☐ OVERALL CATCHMENT MAP OF URBAN JURISDICTION	Current is on file with Water Board	12/12/2010
☒ TREATMENT BMP INVENTORY MAP	TCC1 Inventory.pdf	12/20/2012
☒ TREATMENT BMP INVENTORY TABLE	TCC1 Inventory Tables.xls - Treatment BMP tab	12/20/2012
☒ ROADS INVENTORY MAP	TCC1 Roads Inventory.pdf	1/7/2012
☒ ROADS CLASS MAP	TCC1 Roads Class.pdf	1/7/2012
☒ ROADS SUMMARY TABLE	TCC1 Inventory Tables.xls - Roads tab	1/7/2012
☐ BASELINE MAP		
☒ BASELINE TREATMENT BMP INVENTORY TABLE	TCC1 Inventory Tables.xls - Baseline tab	1/9/2012
☐ CATCHMENT REGISTRATION REPORT (FINAL ONLY)		
☒ LOAD REDUCTION CALCULATIONS (E.G. PLRM ELECTRONIC FILES)	TCC1 Draft CCS Loads	12/17/2012
☐ AS-BUILT DRAWINGS AND EQUIPMENT SPECIFICATIONS (ELECTRONIC FILES ONLY)	N/A	N/A
☐ CREDIT DISTRIBUTION AGREEMENTS (IF DISTRIBUTING CREDITS)	N/A	N/A

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.

1. CATCHMENT ID

See Section B.I of CCS Technical Guidance & Instructions for assistance

Catchment ID

TCC1

2. CATCHMENT DELINEATION MAP

See Section B.I of CCS Technical Guidance & Instructions for assistance

DOES MAP FOLLOW TECHNICAL GUIDANCE? ☒YES ☐ NO

If NO, note deviations & rationale

3. OVERALL CATCHMENT MAP OF URBAN JURISDICTION

See Section B.I of CCS Technical Guidance & Instructions for assistance

DOES MAP FOLLOW TECHNICAL GUIDANCE? ☒YES ☐ NO

If NO, note deviations & rationale

4. CATCHMENT HISTORY

See Section B.I of CCS Technical Guidance & Instructions for assistance

Previous Catchment Name	Establishment Date

5. CATCHMENT AREA

See Section B.I of CCS Technical Guidance & Instructions for assistance

Total Area (acres)

185 acres

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.

I. DEFINE STRATEGIC LOAD REDUCTION IMPORTANCE

1. TREATMENT BMPS — See Section C.I of CCS Technical Guidance & Instructions for assistance

- ☒ PRIMARY
- ☐ SECONDARY
- ☐ TERTIARY
- ☐ NONE

2. ROAD OPERATIONS — See Section C.I of CCS Technical Guidance & Instructions for assistance

- ☐ PRIMARY
- ☒ SECONDARY
- ☐ TERTIARY
- ☐ NONE

3. PRIVATE PARCEL BMPS — See Section C.I of CCS Technical Guidance & Instructions for assistance

- ☐ PRIMARY
- ☐ SECONDARY
- ☒ TERTIARY
- ☐ NONE

4. OTHER POLLUTANT CONTROL STRATEGY — See Section C.I of CCS Technical Guidance & Instructions for assistance

- ☐ PRIMARY
- ☐ SECONDARY
- ☐ TERTIARY
- ☒ NONE

II. TREATMENT BMP IMPLEMENTATION SUMMARY

5. TREATMENT BMP INVENTORY TABLE — See Section C.II of CCS Technical Guidance & Instructions for assistance

DOES TABLE FOLLOW TECHNICAL GUIDANCE? ☒YES ☐ NO

If NO, note deviations & rationale

6. TREATMENT BMP INVENTORY MAP — See Section C.II of CCS Technical Guidance & Instructions for assistance

DOES MAP FOLLOW TECHNICAL GUIDANCE? ☒YES ☐ NO

If NO, note deviations & rationale

7. TREATMENT BMP INSPECTION PLAN SUMMARY — See Section C.II of CCS Technical Guidance & Instructions for assistance and Appendix A: Attachment 1 for example CCS

See the El Dorado County BMP Maintenance Plan 2010 for a description of the typical inspection practices implemented by the county to maintain BMPs and conveyance infrastructure. Typical practices include county maintenance personnel performing annual inspections in the late spring to determine maintenance priorities. The county intends to maintain all treatment BMPs with conditions scores lower than 3 and will maintain additional BMPs as resources are available.

8. TREATMENT BMP MAINTENANCE PLAN SUMMARY — See Section C.II of CCS Technical Guidance & Instructions for assistance and Appendix A: Attachment 1 for example CCS

See the El Dorado County BMP Maintenance Plan 2010 for a description of the typical maintenance practices implemented by the county to maintain BMPs and conveyance infrastructure. Typical practices include early summer maintenance of all basins, infiltration features and conveyance infrastructure that are deemed necessary to maintain based on inspection results. Maintenance is performed by county staff using vactor trucks, shovels and occasionally heavy equipment such as backhoes when required.

9. IS ADDITIONAL TREATMENT BMP IMPLEMENTATION INFORMATION PROVIDED WITH CCS MEMO? ☐YES ☒ NO

III. ROADS OPERATION IMPLEMENTATION SUMMARY

10. ROADS INVENTORY MAP	See Section C.III of CCS Technical Guidance & Instructions for assistance	11. ROADS CLASS MAP	See Section C.III of CCS Technical Guidance & Instructions for assistance
DOES MAP FOLLOW TECHNICAL GUIDANCE? ☒YES ☐ NO If NO, note deviations & rationale		DOES THE MAP FOLLOW TECHNICAL GUIDANCE? ☒YES ☐ NO If NO, note deviations & rationale	

12. ROADS SUMMARY TABLE	See Section C.III of CCS Technical Guidance & Instructions for assistance
DOES THE TABLE FOLLOW TECHNICAL GUIDANCE? ☒YES ☐ NO If NO, note deviations & rationale	

13. ROADS INSPECTION PLAN SUMMARY	See Section C.III of CCS Technical Guidance & Instructions for assistance and Appendix A: Attachment 1 for example CCS

See the El Dorado County Road Maintenance Plan 2011 for a description of the typical road inspection practices. We inspect once during summer and once during winter conditions, both before and after sweeping. This is used to develop average conditions. If maintenance staff notice problematic sediment build-up on a road surface they coordinate to send a sweeper to the site when it is next in the vicinity. In the lower watershed we will develop an operations-to-conditions relationship during 3 inspection periods during the year.

14. ROADS MAINTENANCE PLAN SUMMARY	See Section C.III of CCS Technical Guidance & Instructions for assistance and Appendix A: Attachment 1 for example CCS

See the El Dorado County Roadway Maintenance Plan 2011 for a description of the typical traction abrasive application and sweeping practices for different types of roads that will be used in the upper portion of the catchment. The typical county abrasive application practices moderate the amount of abrasives applied to protect safety and water quality and we run a tandem type sweeper on an occasional basis, usually three or four times per year in various seasons. The county is partnering with CalTrans to implement an aggressive roads sweeping program on all roads in the lower portion of the catchment. This will include using a dustless sweeper weekly in the winter and monthly in the summer and fall.

15. IS ADDITIONAL ROADS IMPLEMENTATION INFORMATION PROVIDED WITH CCS MEMO?	☐YES ☒ NO

IV. PRIVATE PROPERTY BMP IMPLEMENTATION SUMMARY

16. PRIVATE PROPERTY BMP INVENTORY — See Section C.IV of CCS Technical Guidance & Instructions for assistance

Parcel Methodology

	Area		BMP Implementation (% Area of Land Use)		
	% of Total	Acres	No BMPs	Source Control Certificate	BMP Certificate
Single Family Residential	54	99.9	50	0	50
Multi-Family Residential	10.8	20.0	20	0	80
CICU	16.2	30.0	34	0	66
Vegetated Turf	0	0	100	0	
Other	0	0			

17. OVERALL PRIVATE PROPERTY BMP IMPLEMENTATION — See Section C.IV of CCS Technical Guidance & Instructions for assistance

Percent private property BMP implementation

65%

18. PRIVATE PROPERTY BMP PROGRAM SUMMARY — See Section C.IV of CCS Technical Guidance & Instructions for assistance

The county maintains a map of private properties with BMP certificates that is updated on an annual basis with data acquired from TRPA BMP Program Managers. The county performs a simple count of single-family residential properties with BMPs and applies the fraction of homes to the overall single-family residential land use area. The county performs a map area analysis to determine the percent area of multi-family and commercial property BMPs.

19. IS ADDITIONAL PRIVATE PROPERTY BMP INFORMATION PROVIDED WITH CCS MEMO? ☐YES ☒NO

V. OTHER POLLUTANT CONTROL STRATEGIES IMPLEMENTATION SUMMARY

20. ARE "OTHER POLLUTANT CONTROL STRATEGIES" USED IN THIS CATCHMENT? ☒YES ☐ NO

21. OTHER POLLUTANT CONTROL STRATEGY #1 SUMMARY — Summarize the Other Pollutant Control Strategy based on Section C.V. of CCS Technical Guidance & Instructions, and the example in Appendix A, Attachment 2.

Tahoe County passed an ordinance in August of 2012 that establishes fines for parking off pavement. Resources were also allocated to county communications staff for community outreach to promote understanding of soil protection. County staff will conduct annual driving surveys to inspect at least 25% or the un-protected road shoulders withing the catchment.

22. OTHER POLLUTANT CONTROL STRATEGY #2 SUMMARY — Summarize the Other Pollutant Control Strategy based on Section C.V. of CCS Technical Guidance & Instructions, and the example in Appendix A, Attachment 2.

23. OTHER POLLUTANT CONTROL PROGRAM #3 SUMMARY — Summarize the Other Pollutant Control Strategy based on Section C.V. of CCS Technical Guidance & Instructions, and the example in Appendix A, Attachment 2.

24. IS ADDITIONAL OTHER POLLUTANT CONTROL PROGRAM INFORMATION PROVIDED WITH CCS MEMO? ☒YES ☐ NO

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

1. LOAD ESTIMATION METHOD — See Section D.I of CCS Technical Guidance & Instructions for assistance

☒ POLLUTANT LOAD REDUCTION MODEL (PLRM) V1.1
☐ ALTERNATIVE (DESCRIBE COMPLETELY IN CCS MEMO)

Name and version (If Alternative is selected)

2. EXPECTED LOADING PARAMETERS, ASSUMPTIONS & DATASETS — See Section D.I of CCS Technical Guidance & Instructions for assistance

DID ANY PARAMETER VALUES, ASSUMPTIONS OR DATASETS DEVIATE FROM RECOMMENDED VALUES? ☒YES ☐NO

If Yes, please explain

The infiltration rate for DB01 used was 3 inches based on the layered gravel and sand bed materials used to maintain high infiltration rates.

3. EXPECTED LOADING PROJECT FILE — See Section D.I of CCS Technical Guidance & Instructions for assistance

IS THE EXPECTED LOADING ESTIMATE SCENARIO IS INCLUDED IN THE LOAD ESTIMATION PROJECT FILE? ☒YES ☐NO

4. EXPECTED LOAD ESTIMATES — See Section D.I of CCS Technical Guidance & Instructions for assistance

Volume (ac-ft/yr)	Fine sediment mass (kg/yr)	Total phosphorous (kg/yr)	Total nitrogen (kg/yr)
9	5,952.5	22	8.8

5. EXPECTED CATCHMENT CONNECTIVITY — See Section D.I of CCS Technical Guidance & Instructions for assistance

Expected Percent Connectivity

☒ 100% ☐ OTHER ——%

Rationale

6. EFFECTIVE EXPECTED LOAD ESTIMATES — See Section D.I of CCS Technical Guidance & Instructions for assistance

Volume (ac-ft/yr)	Fine sediment mass (kg/yr)	Total phosphorous (kg/yr)	Total nitrogen (kg/yr)
9	5,952.5	22	8.8

SECTION E: BASELINE LOADING ESTIMATE

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

I. BASELINE LOADING ESTIMATE

1. BASELINE INVENTORY TABLE — See Section E.I of CCS Technical Guidance & Instructions for assistance

DOES TABLE FOLLOW TECHNICAL GUIDANCE? ☒YES ☐ NO

If NO, note deviations & rationale

2. BASELINE INFRASTRUCTURE MAP — See Section E.I of CCS Technical Guidance & Instructions for assistance

DOES MAP FOLLOW TECHNICAL GUIDANCE? ☒YES ☐ NO

If NO, note deviations & rationale

3. CATCHMENT CHANGES SINCE 2004 — See Section E.I of CCS Technical Guidance & Instructions for assistance

DB01 existed as a small, local Dry Basin. The EIP project expanded the drainage area flowing to the basin. 12 new SFR parcels were developed, increasing the percentage of pervious SFR by 2%. Also, there was a 10,000 square foot of impervious coverage reduction in commercial, reducing CICU coverage.

4. BASELINE LOADING PARAMETERS, ASSUMPTIONS & DATASETS — See Section E.I of CCS Technical Guidance & Instructions for assistance

DID ANY PARAMETER VALUES, ASSUMPTIONS OR DATASETS DEVIATE FROM RECOMMENDED VALUES? ☐YES ☒NO

If Yes, please explain

5. BASELINE LOAD ESTIMATE — See Section E.I of CCS Technical Guidance & Instructions for assistance

Volume (ac-ft/yr)	Fine sediment mass (kg/yr)	Total phosphorous (kg/yr)	Total nitrogen (kg/yr)
58	20,943.9	77.2	24.2

6. BASELINE CATCHMENT CONNECTIVITY — See Section E.I of CCS Technical Guidance & Instructions for assistance

Expected Percent Connectivity

☒ 100% ☐ OTHER _____%

Rationale

7. EFFECTIVE BASELINE LOAD ESTIMATES — See Section E.I of CCS Technical Guidance & Instructions for assistance

Volume (ac-ft/yr)	Fine sediment mass (kg/yr)	Total phosphorous (kg/yr)	Total nitrogen (kg/yr)
58	20,943.9	77.2	24.2

SECTION F: 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

1. LOAD REDUCTION ESTIMATE — See Section F.I of CCS Technical Guidance & Instructions for assistance

Volume (ac-ft/yr)	Fine sediment mass (kg/yr)	Total phosphorous (kg/yr)	Total nitrogen (kg/yr)
49	14,991.4	55.1	15.4

2. FINE SEDIMENT PARTICLE NUMBER CONVERSION — See Section F.I of CCS Technical Guidance & Instructions for assistance

Fine sediment particles (kg/yr)

7.5×10^{17}

3. CREDIT AMOUNT CALCULATION — See Section F.I of CCS Technical Guidance & Instructions for assistance

75 CREDITS

II. CREDIT SCHEDULE DURATION

4. CREDIT SCHEDULE DURATION — See Section F.II of CCS Technical Guidance & Instructions for assistance

☐ 5 YEARS ☒ 10 YEARS ☐ 15 YEARS
☐ OTHER (SPECIFY) ——YEARS

5. DURATION RATIONALE — See Section F.II of CCS Technical Guidance & Instructions for assistance

Explanation

The primary pollutant control strategy is long-lived treatment BMPs. The primary pollutant control strategies include both long-lived treatment BMPs and ongoing road operation practices.

III. ESTABLISHMENT SUMMARY

6. ESTABLISHMENT DATE — See Section F.III of CCS Technical Guidance & Instructions for assistance

7. ESTABLISHMENT YEAR CREDIT POTENTIAL — See Section F.III of CCS Technical Guidance & Instructions for assistance

Date	Percentage	Credit Amount
12/22/2012	92%	69

8. FINAL YEAR OF CREDIT SCHEDULE — See Section F.III of CCS Technical Guidance & Instructions for assistance

Final Year

2022

9. IS ADDITIONAL CCS AMOUNT AND DURATION INFORMATION PROVIDED WITH CCS MEMO? ☐YES ☒ NO

Tahoe County

Memo

To: Chris Lawson

From: Pat Kuchman

Date: 9/15/2012

Re: Tahoe County Catchment 1 Final CCS Additional Discussion Points

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Parking/Road Shoulder Inspection Plan

The Tahoe County Supervisors passed ordinance 2012-11 in August 2012 that establishes fines for parking off pavement. The Supervisors also allocated resources to county communications staff to provide community outreach and promote understanding of the importance to protect soils in neighborhoods.

As a result the county expects to see a noticeable decrease in road shoulder soil disturbance. This is reflected in the expected loading estimate by increasing the percent of road shoulder protected from 50%, which is the amount with curb and gutter, to 70%.

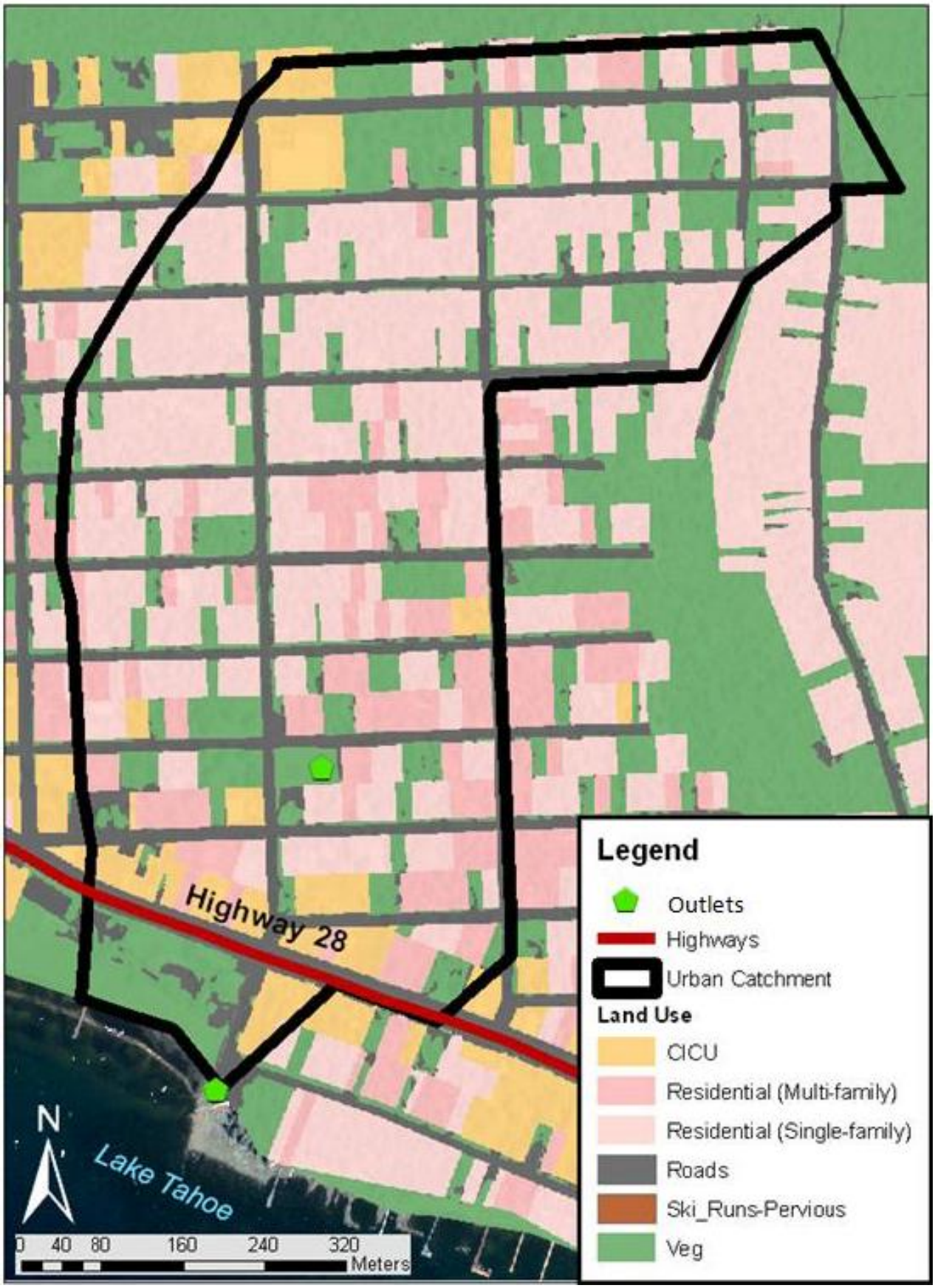
We expect to see a measurable reduction in road shoulder disturbance as a result of outreach and enforcement of the parking ordinance in this catchment. A survey in the summer of 2012, showed that 60% of un-curbed and un-protected road shoulders in single and multi-family residential neighborhoods showed visible signs of disturbance from off-pavement parking or other activities. County staff will conduct annual driving surveys to inspect at least 25% of the un-protected road shoulders within the catchment. Table 1 summarizes our condition scores that will result from this other pollutant control strategy.

1	2	3	4	5
60% disturbance	45% disturbance	30% disturbance	15% disturbance	0% disturbance

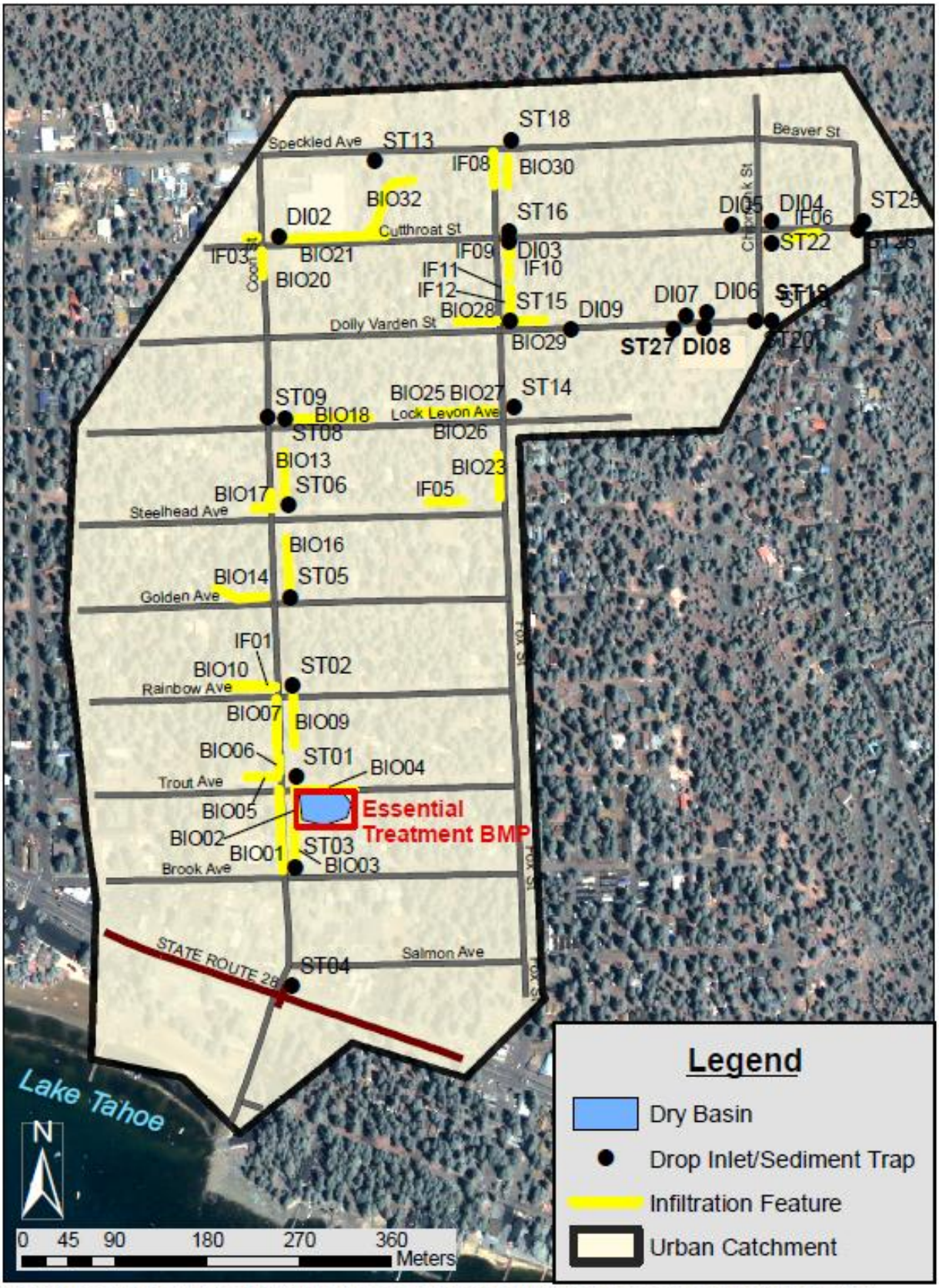
This parking ordinance is considered of key water quality importance. The expected condition is 30% road shoulder soil disturbance, which is related to a condition score of 3.

The expected loading estimate includes a high infiltration rate for the large dry basin (DB01) that treats runoff from the upper residential area of the catchment. The contractor used a substrate layering technique that has been shown to be effective at maintaining high infiltration rates over time with moderate maintenance. Because of the importance of this particular treatment BMP within Catchment 1, the county is committed to frequent inspections and, if necessary, maintenance in order to maintain its performance.

Delineation and Outlets



Treatment BMP Inventory Map



Note* This map includes supporting BMPs (drop inlets and sediment traps). However, only essential or key BMPs are required.

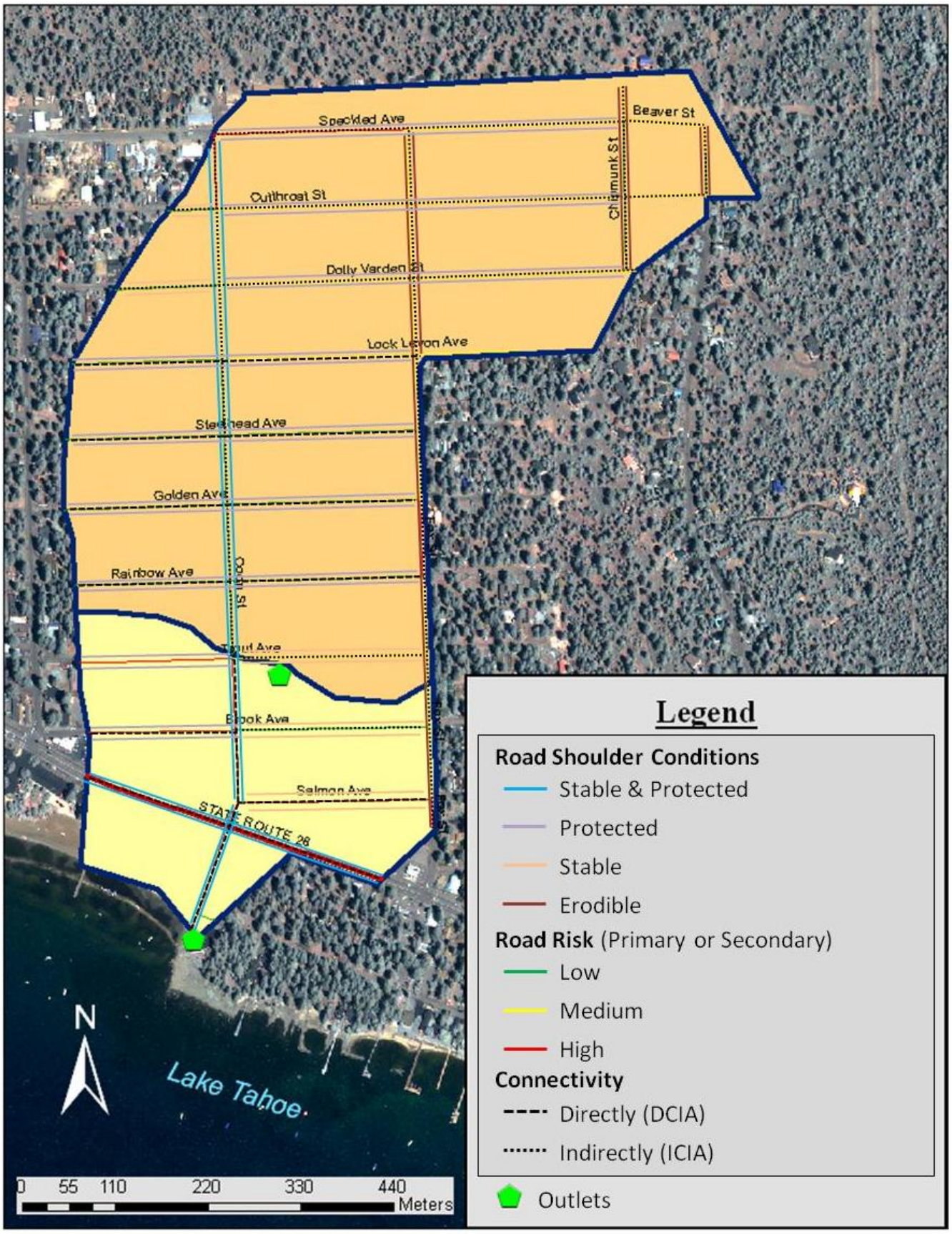
Treatment BMP Inventory Table

	A	B	C	D	E	F	G	H	I	J	K	L
1	**BMP_ID**	**BMP_Type**	**Planned Maintenance**	**Inspection Frequency & Timing**	**Water Quality Importance**	**Notes**	**BMP RAM Observation #1**	**Observation #1 Benchmark Value**	**Observation #1 Threshold Value**	**Observation #1 Expected Condition Value**	**Observation #1 Related PLRM Parameter**	**Observation #1 Related PLRM Value**
2	*BMP_ID*	*BMP_Type*	*Brief Description*	*Brief Description*	*Key or Essential*	*Text for reviewers/future reference (as necessary)*	*OBS_x*	*# or time*	*# or time*	*#*	*Parameter Name*	*#*
3	TCC1_DB01	Dry Basin	Sediment removal with backhoe as needed	Annual in Spring	Essential	Primary water quality treatment feature	Infiltration	5.0 in/hr	0.5 in/hr	2.0 in/hr	Infiltration Rate	3.0 in/hr
4	TCC1_DB02	Dry Basin	Sediment removal with backhoe as needed	Annual in Spring	Key		Infiltration	3.2 in/hr	.2 in/hr	1.2 in/hr	Infiltration Rate	1.2 in/hr
5	TCC1_IB01	Infiltration Basin	Sediment removal with backhoe as needed	Annual in Spring	Key		Infiltration	3.2 in/hr	.2 in/hr	1.2 in/hr	Infiltration Rate	1.2 in/hr
6	TCC1_IF01	Infiltration Feature	Sediment removal with backhoe as needed	Annual in Spring	Key		Runoff Observation	"No"	"Yes"	"No"	Pervious Dispersion Area	% area included in pervious dispersion area (not calculated for each unique feature)
7	TCC1_IF10	Infiltration Feature	Sediment removal with backhoe as needed	Annual in Spring	Key		Runoff Observation	"No"	"Yes"	"No"	Pervious Dispersion Area	% area included in pervious dispersion area (not calculated for each unique feature)
8	TCC1_IF12	Infiltration Feature	Sediment removal with backhoe as needed	Annual in Spring	Key		Runoff Observation	"No"	"Yes"	"No"	Pervious Dispersion Area	% area included in pervious dispersion area (not calculated for each unique feature)
9	TCC1_IF11	Infiltration Feature	Sediment removal with backhoe as needed	Annual in Spring	Key		Runoff Observation	"No"	"Yes"	"No"	Pervious Dispersion Area	% area included in pervious dispersion area (not calculated for each unique feature)
10	TCC1_BIO23	Biofilter	Sediment removal with backhoe as needed	Annual in Spring	Key		Veg Cover	100%	50%	83%	None	None
11	TCC1_BIO30	Biofilter	Sediment removal with backhoe as needed	Annual in Spring	Key		Veg Cover	100%	50%	83%	None	None
12	TCC1_BIO31	Biofilter	Sediment removal with backhoe as needed	Annual in Spring	Key		Veg Cover	100%	50%	83%	None	None
13	TCC1_BIO02	Biofilter	Sediment removal with backhoe as needed	Annual in Spring	Key		Veg Cover	100%	50%	83%	None	None
14	TCC1_BIO04	Biofilter	Sediment removal with backhoe as needed	Annual in Spring	Key		Veg Cover	100%	50%	83%	None	None

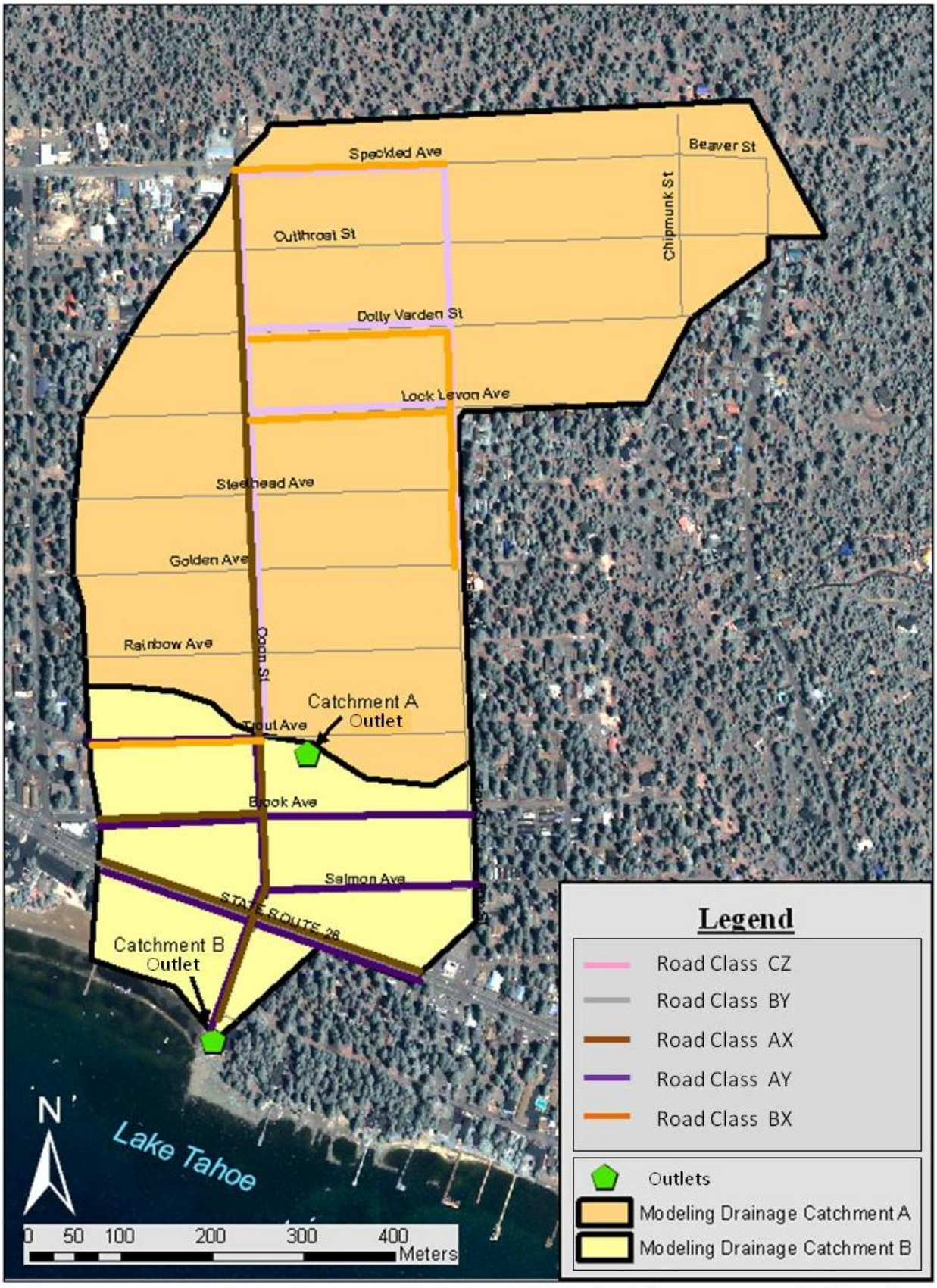
Treatment BMP Inventory Table

	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	**BMP_ID**	**BMP_Type**	**BMP RAM Observation #2**	**Observation #2 Benchmark Value**	**Observation #2 Threshold Value**	**Observation #2 Expected Condition Value**	**Observation #2 Related PLRM Parameter**	**Observation #2 Related PLRM Value**	**BMP RAM Observation #3**	**Observation #3 Benchmark Value**	**Observation #3 Threshold Value**	**Observation #3 Expected Condition Value**	**Observation #3 Related PLRM Parameter**	**Observation #3 Related PLRM Value**
2	*BMP_ID*	*BMP_Type*	*OBS_x*	*# or time*	*# or time*	*#*	*Parameter Name*	*#*	*OBS_x*	*# or time*	*# or time*	*#*	*Parameter Name*	*#*
3	TCC1_DB01	Dry Basin	Material Accumulation/ Depth	0 ft	-2.0 ft	-1.3 ft	Water Quality Volume	3450	Veg Cover	0%	20%	13%	None	None
4	TCC1_DB02	Dry Basin	Material Accumulation/ Depth	0 ft	-1.0 ft	-0.7 ft	Water Quality Volume	715	Veg Cover	0%	20%	13%	None	None
5	TCC1_IB01	Infiltration Basin	Veg Cover	0%	20%	13%	None	None						
6	TCC1_IF01	Infiltration Feature	Veg Cover	0%	10%	7%	None	None						
7	TCC1_IF10	Infiltration Feature	Veg Cover	0%	10%	7%	None	None						
8	TCC1_IF12	Infiltration Feature	Veg Cover	0%	10%	7%	None	None						
9	TCC1_IF11	Infiltration Feature	Veg Cover	0%	10%	7%	None	None						
10	TCC1_BIO23	Biofilter	Runoff Observation	"No"	"Yes"	"No"	Pervious Dispersion Area	% area included in pervious dispersion area (not calculated for each unique feature)						
11	TCC1_BIO30	Biofilter	Runoff Observation	"No"	"Yes"	"No"	Pervious Dispersion Area	% area included in pervious dispersion area (not calculated for each unique feature)						
12	TCC1_BIO31	Biofilter	Runoff Observation	"No"	"Yes"	"No"	Pervious Dispersion Area	% area included in pervious dispersion area (not calculated for each unique feature)						
13	TCC1_BIO02	Biofilter	Runoff Observation	"No"	"Yes"	"No"	Pervious Dispersion Area	% area included in pervious dispersion area (not calculated for each unique feature)						
14	TCC1_BIO04	Biofilter	Runoff Observation	"No"	"Yes"	"No"	Pervious Dispersion Area	% area included in pervious dispersion area (not calculated for each unique feature)						

Roads Inventory Map



Roads Class Map



*Several road classes are not used in this catchment

Roads Inventory Table

	A	B	C	D	F	G	H
1	**Road Class**	**Abrasive Application Plan**	**Sweeping Plan**	**Other Source Control Plans**	**Expected Condition Score**	**Water Quality Importance**	**Notes**
2	*"AX through "CZ"*	*Brief Description*	*Brief Description*	*Other Source Control Brief Description*	*# from 0.5-5*	*Key or Essential*	*As necessary for reviewers/future reference*
3	AX	Minimal control measures	Regen. Air - Winter: after application; summer: monthly	Parking Ordinance	3.5	Key	these are highly targeted areas that require high public safety - primarily bridges and steep hills
4	BX	Moderate control measures	Regen. Air - Winter: 2x monthly; summer: 1-2 times	Parking Ordinance	4.0	Key	
5	BY	Moderate control measures	Regen. Air - Winter: monthly; summer: 1-2 times	Parking Ordinance	3.0	Key	
6	BZ	Moderate control measures	Mech. Broom - Winter: Monthly; Summer: 1-2 times	Parking Ordinance	2.5	Key	
7	CY	Advanced control measures	Regen. Air - Winter: Monthly; Summer: 1-2 times	Parking Ordinance	4.0	Key	these areas receive very little traction abrasive application - they are flat and straight roads
8	CZ	Advanced control measures	Mech. Broom - Winter: Monthly; Summer: 1-2 times	Parking Ordinance	3.5	Key	these areas receive very little traction abrasive application - they are flat and straight roads
9	Other Road Classes not used						it is not necessary to use all road classes

	A	B	C	D	E	F
1	**BMP_ID**	**BMP_Type**	**Baseline & Expected**	**PLRM Baseline Parameter**	**PLRM Expected Parameter**	**Expec_v_Base Parameters**
2	*BMP_ID*	*BMP_Type*	*BMP_BASEOP*	*#, time, depth (assume RAM Score 2 equivalent)*	*#, time, depth*	*Text explaining the rationale for changes between expected and baseline parameter values that are not the obvious result of improved maintenance.*
3	TCC1_DB01	Dry Basin	Yes	Infiltration Rate, Water Quality Volume	0.4 in/hr, 700 CF	This basin is re-engineered and expanded considerably from its baseline condition
4	TCC1_BIO02	Biofilter	Yes	Dispersion areas in-place before EIP Project	Part of % dispersion areas	While these features are being re-habilitated during the EIP project, they were present and moderately function as of 2004
5	TCC1_BIO04	Biofilter	Yes	Dispersion areas in-place before EIP Project	Part of % dispersion areas	While these features are being re-habilitated during the EIP project, they were present and moderately function as of 2004

CATCHMENT CREDIT SCHEDULE VERIFICATION CHECKLIST

Regulators and urban jurisdictions use this form to track comments, questions and revisions to a draft Catchment Credit Schedule. This form is intended to track the running dialogue, enter new comments at the top of each section, leaving older comments after to allow for historic tracking. This form should be completed in Adobe PDF format and submitted electronically.

CATCHMENT VERIFICATION SUMMARY

CATCHMENT ID	Name of the Catchment Credit Schedule this Verification Checklist refers to.
Catchment ID: Tahoe County Catchment 1	
JURISDICTION NAME	Identify the primary urban jurisdiction & point of contact
Jurisdiction Name: Tahoe County	Point of Contact: Pat Kuchman

SECTION	STATUS
Section A: Correspondence & Catchment Credit Schedule Summary	☒ SEE NOTES ☐ APPROVED
Section B: Catchment Delineation	☐ SEE NOTES ☒ APPROVED
Section C: Implementation Plan Summary	☐ SEE NOTES ☒ APPROVED
Section D: Expected Loading Estimate	☒ SEE NOTES ☐ APPROVED
Section E: Baseline Loading Estimate	☐ SEE NOTES ☒ APPROVED
Section F: Catchment Credit Schedule Amount & Duration	☒ SEE NOTES ☐ APPROVED

SECTION A: CORRESPONDENCE & CATCHMENT CREDIT SCHEDULE SUMMARY

Check to ensure that summaries are concise but contain an adequate summary of the jurisdiction plan, and specifics for essential features and primary pollutant control strategies. Ensure that all coordination sections are complete and up to date. Technical guidance & instructions located in Crediting Program Handbook on page TT-12.

I. GENERAL CATCHMENT INFORMATION SUMMARY & III. COORDINATION CHECKLIST

SUMMARY INFORMATION & CHECKLIST	Checklist includes correct filenames and save dates
☒ APPROVED	

Notes:

PK 1/4 - A catchment should be labeled as "Revision" only if it has previously been verified in another CCS. Therefore, it will remain a "New Catchment".

CL 1/3 - The catchment should be changed from a "New Catchment" to "Revision" since this is the second round of review and edits.

SECTION B: CATCHMENT DELINEATION

Technical guidance and instructions located in Crediting Program Handbook beginning on page TT-16; example Appendix A1-p.1.

2 – 3. CATCHMENT MAPS	Confirm the catchment delineation map is complete and no portion of the catchment overlaps another catchment. If necessary, ensure that the CCS memo provides proper explanation for odd shapes, gaps and other anomalies in catchment delineation.

☒ APPROVED

Notes:

Required:
- ☒ Catchment Boundary
- ☒ Outfall(s)
- ☒ Points of Run-On
- ☒ PLRM Modeling Catchment(s)
- ☒ All Catchments Map
- ☐
- ☐

Optional:
- ☒ Flow Paths
- ☒ Land Uses
- ☒ TRPA Watershed(s)
- ☒ Bordering Catchments
- ☒ Jurisdiction Right of Way
- ☐

5. CATCHMENT AREA	Area is reasonable, includes all modeling catchments and only accounts for urban land uses

☒ APPROVED

Notes:

SECTION C: IMPLEMENTATION PLAN SUMMARY

Technical guidance and instructions located in Crediting Program Handbook beginning on page TT-17.

I. DEFINE STRATEGIC LOAD REDUCTION IMPORTANCE

1 – 4. LOAD REDUCTION STRATEGY IMPORTANCE	Confirm relative importance of LR strategy is rational and aligns with rough PLRM estimates.

☒ APPROVED

Notes:

II. TREATMENT BMP IMPLEMENTATION SUMMARY

5 – 6. TREATMENT BMP INVENTORY TABLE & MAP	Confirm that tables and map have consistent type and # of treatment BMPs. Confirm RAM or equivalent observations in table are properly correlated to PLRM expected condition parameters (see TT-20). Review & confirm all essential BMPs.

☒ APPROVED

Notes:

Checklist (Mandatory Items)
- ☒ BMP type & # match map
- ☒ RAM Observations match PLRM expected condition parameters
- ☒ Check all Essential BMPs
- ☐
- ☐
- ☐
- ☐

7. TREATMENT BMP <u>INSPECTION</u> PLAN SUMMARY	Summary references minimum inspection practices, standard protocols (approved jurisdiction SW inspection plan, BMP RAM, etc.), and deviations from standard actions in regard to specific treatment BMPs. All essential BMPs should be identified and the jurisdiction should adequately demonstrate how they will inspect to ensure on-going performance. It is especially important to document the specifics of the inspection plan if the BMP RAM is not used (see guidance in App. C, Section 2 for more information).

☒ APPROVED

Notes:

8. TREATMENT BMP <u>MAINTENANCE</u> PLAN SUMMARY	Summary references minimum maintenance practices, standard protocols (BMP RAM), and deviations from standard actions in regard to specific treatment BMPs. All essential BMPs should be identified and the jurisdiction should adequately demonstrate how maintenance will be triggered to ensure on-going performance.

☒ APPROVED

Notes:

III. ROADS OPERATION IMPLEMENTATION SUMMARY

10 - 12. ROAD MAPS & SUMMARY TABLE	See TT-22 for specific guidance. Confirm that tables and map have consistent type and # of roads. Confirm use of PLRM Road Risk Layer or Road RAM classes. Ensure that summary notes any deviations from default road values. It is especially important to document the specifics of the inspection plan if the Road RAM is not used (see guidance in App. C, Section 2 for more information).

☒ APPROVED

Notes:

Checklist (Mandatory Items)

Roads Inventory Map:
- ☒ Road risk
- ☒ Road shoulder conditions
- ☒ Road shoulder connectivity

Roads Class Map:
- ☒ All necessary road classes included

Roads Summary Table:
- ☒ All existing road classes (consistent with map)
- ☒ All items listed from Table CCS.4: Road Summary Table guidance
- ☒ Expected condition score

13. ROAD INSPECTION PLAN SUMMARY	Summary references abrasive application and sweeping/recovery plans, minimum inspection practices, standard protocols (approved jurisdiction SW inspection plan, Road RAM, etc.), and deviations from standard actions in regard to specific roads and problem areas. High risk roads should be identified and the jurisdiction should adequately demonstrate how they will inspect to ensure on-going performance.

☒ APPROVED

Notes:

14. ROAD MAINTENANCE PLAN SUMMARY	Summary references minimum maintenance practices, standard protocols (Road RAM), and deviations from standard actions in regard to specific road types and/or segments. All essential roads should be identified and the jurisdiction should adequately demonstrate how maintenance will be triggered to ensure on-going performance. Note: Road Maintenance Map is optional.

☒ APPROVED

Notes:

IV. PRIVATE PROPERTY BMP IMPLEMENTATION SUMMARY

16 - 17. PRIVATE PROPERTY BMP INVENTORY & RESULTS	Check that private parcel areas and implementation estimates are reasonable. As appropriate, confirm inventory with TRPA Data.

☒ APPROVED

Notes:

18. PRIVATE PROPERTY BMP PROGRAM SUMMARY	Ensure summary describes specific implementation plans (e.g., planned redevelopment in CICU leading to higher number of certificates, etc.).

☒ APPROVED

Notes:

V. OTHER POLLUTANT CONTROL STRATEGIES IMPLEMENTATION SUMMARY

20. OTHER POLLUTANT CONTROL PROGRAM SUMMARY	See TT-25 for instructions. Summary must include methods and specifics regarding baseline and expected conditions, assessment protocols, benchmarks, thresholds and modeling methods/assumptions.

☒ APPROVED

Notes:

SECTION D & E: EXPECTED AND BASELINE LOADING ESTIMATE

Technical guidance and instructions located in Crediting Program Handbook beginning on page TT-28.

LOAD ESTIMATION METHOD

PLRM OR OTHER MODELING APPROACH REVIEW	For PLRM review, see specific PLRM Checklist on Page 8.

☒ MODELING APPROVED (SEE PLRM CHECKLIST ON PAGE 8)

D-I. EXPECTED LOADING ESTIMATE

2-3. EXPECTED LOADING PARAMETERS, ASSUMPTIONS, DATASETS & PROJECT FILE	After completing full modeling review, note any major discrepancies or questions here for resolution.

☒ APPROVED

Notes:

PK 12/6 - I chose not to include them in the inventory because we do not expect any of them to result in more that a two-percent load reduction of fine sediment particles with diameter less than 16 µm, total nitrogen or total phosphorus. However, we recognize they are important in order to facilitate maintenance, ensure proper conveyance, and ensure that the downstream dry basin is not degraded and require frequent maintenance.

CL 12/5 - I saw a number of drop inlets and sediment traps on the catchment tour we took yesterday. Can you explain to me why these are not included in the inventory?

PK 12/2 - This is a good approach to resolve this issue. We will also get our engineer to run an analysis.

CL 12/1 - We need more concrete evidence that the dry basin will yield this high of an infiltration rate. Therefore, we are going to get our engineer to run an analysis to see what results we gather.

PK 11/30 - The county is committed to maintaining this high infiltration rate because we believe that the layered gravel and sand bed materials will yield this high of an infiltration rate. Furthermore, we have seen dry basins of similar design yield similar results.

CL 11/30 - The infiltration rate for DB01 seems unrealistically high even noting that a special substrate is being used. Is the county committed to maintaining this high infiltration rate?

4. EXPECTED LOAD ESTIMATES	Check that Expected loads listed in CSS match loads in modeling runs and that conversions (if any) are correct.

☒ APPROVED

5. EXPECTED CATCHMENT CONNECTIVITY	Check that catchment connectivity is reasonable and agreed upon.

☒ APPROVED

Notes:

6. EFFECTIVE EXPECTED LOAD ESTIMATES	Check that calculation is correct.

☒ APPROVED

E-I. BASELINE LOADING ESTIMATE

1 - 2. BASELINE INVENTORY TABLE AND INFRASTRUCTURE MAP	

☒ APPROVED

Notes:

Checklist (Mandatory Items)
☒ Follows Table CCS.8: Standard Baseline Modeling Parameters

3. CATCHMENT CHANGES SINCE 2004	See guidance on page TT-28

☒ APPROVED

Notes:

4. BASELINE LOADING PARAMETERS, ASSUMPTIONS, DATASETS	After completing full modeling review, note any major discrepancies or questions here for resolution. See TT-31 for guidance regarding Inventory Tables and requirements.

☒ APPROVED

Notes:

5. BASELINE LOAD ESTIMATE	Check that Baseline loads listed in CSS match loads in modeling runs and that conversions (if any) are correct.

☒ APPROVED

6. BASELINE CATCHMENT CONNECTIVITY	Check that catchment connectivity is reasonable and agreed upon.

☒ APPROVED

Notes:

7. EFFECTIVE BASELINE LOAD ESTIMATES	Check that calculation is correct.

☒ APPROVED

SECTION F: CATCHMENT CREDIT SCHEDULE AMOUNT & DURATION

Technical guidance and instructions located in Crediting Program Handbook beginning on page TT-32.

I. LOAD REDUCTION ESTIMATE & CATCHMENT CREDIT SCHEDULE AMOUNT

1 – 3. LOAD REDUCTION ESTIMATE, PARTICLE CONVERSION & CREDIT AMOUNT	Use Excel Crediting Program Calculation Check Tool to confirm unit conversions and values transferred to CCS.

☒ APPROVED

Notes:

II. CREDIT SCHEDULE DURATION & III. ESTABLISHMENT SUMMARY

4 – 9. CREDIT SCHEDULE DURATION & ESTABLISHMENT	Check duration and establishment year credit potential and final year date based on guidance TT-33-34. Review duration rationale and ensure it sufficiently explains chosen duration.

☒ APPROVED

Notes:

PK 1/4 - Per the CCS Technical Guidance, the 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 Tool.
CL 1/3 - Shouldn't the establishment date be the date that I review and accept the CCS?
PK 1/2 - The establishment year credit potential is 69 credits because the establishment date is 12/22/2012. Therefore, I multiplied 92 percent by 75 to get 69 credits
CL 1/1 - The establishment year credit potential that you have listed is 69 credits. However, by my calculations I get 63 credits (84 percent of 75 credits). Can you explain why you got a higher establishment year credit potential than I?

PK 12/2 - No, because no particular road group can reduce loads by 25% or more.
CL 12/1 - Further, should any of the road groups be considered essential?
PK 11/30 - After discussion a 10 year credit schedule seemed appropriate based on the secondary importance of the road proactices to the overall load reduction. This change will be made before submitting the final CCS.
CL 11/30 - The 15 year CCS duration is inappropriate given the importance sweeping is playing in the load reduction estimate. This should be changed to either 5 or 10 years.

IRP ISSUE RESOLUTION PUNCHLIST

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.

1. RELEVANT CATCHMENT ID OR ANNUAL REPORT | **IDENTIFY THE SPECIFIC ITEM BEING REVIEWED**

Catchment ID or Document Title

Tahoe County Catchment 1: Draft Final CCS

2. BRIEF DESCRIPTION OF SITUATION | **PROVIDE RELEVANT INFORMATION**

Identify Topic Context

- ☒ New Catchment Credit Schedule
- ☐ Revision of Existing Catchment Credit Schedule
- ☐ Annual Report
- ☐ Other

For Credit Schedules, define the stage of review

- ☒ Step 1.2: Verify
- ☐ Step 1.4: Approve

Briefly describe the situation

Specific items to resolve to finalize CCS.

Attachment name (If necessary)

3. URBAN JURISDICTION CONTACT INFORMATION | **IDENTIFY PRIMARY CONTACT AND APPROPRIATE CONTACT INFORMATION**

- ☐ Caltrans
- ☐ CSLT
- ☐ Douglas
- ☐ El Dorado
- ☐ NDOT
- ☐ Placer
- ☐ Washoe
- ☒ Tahoe County

Name: Pat Kuchman | Phone: 530-745-5555

E-Mail: pkuchman@tahoecounty.gov

4. REGULATORY AGENCY CONTACT INFORMATION | **IDENTIFY PRIMARY CONTACT AND APPROPRIATE CONTACT INFORMATION**

- ☒ LRWQCB
- ☐ NDEP

Name: Chris Lawson | Phone: 530-542-5555

E-Mail: clawson@waterboard.gov

5. INITIATION DATE | **REPORT THE DATE OF THE INITIAL TRANSMITTAL**

Date: 12/02/2012

6. STATEMENT OF RESOLUTION | **REVIEW THE FOLLOWING STATEMENT AND SIGN YOUR ACKNOWLEDGMENT**

☒ *ALL ISSUES HAVE BEEN RESOLVED TO THE DEGREE NECESSARY TO PROCEED.*

Signature of urban jurisdiction representative	Signature of regulator representative
Pat Kuchman	Chris Lawson
Date: 12/03/2012	Date: 12/03/2012

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.

6. ISSUE NUMBER, TITLE AND TYPE

Issue #: 1

Issue Title: DB01 Infiltration Rate

☐ Question ☒ Issue ☐ Change request ☐ Other

7. ISSUE INITIALLY IDENTIFIED BY

Name

Chris Lawson

8. ISSUE QUESTION OR ISSUE DESCRIPTION

CLEARLY DESCRIBE THE QUESTION OR ISSUE

The infiltration rate for DB01 seems unrealistically high even noting that a special substrate is being used. The jurisdiction believes that the dry basin will yield this high of an infiltration rate based on knowledge of another dry basin of similar design that yields similar results. We see the similarities between the two dry basins and why the jurisdiction believes they will yield similar results, but feel that we need more concrete evidence before we verify the CCS. Therefore, we are both having our engineers run analyses on the dry basin.

9. ISSUE QUESTION OR ISSUE RESOLUTION

BRIEFLY DESCRIBE THE ANSWER OR RESOLUTION

The jurisdiction's engineer found that the dry basin will yield an infiltration rate of 3.2 inches. Our engineer found that the dry basin will yield an infiltration rate of 2.8 inches. Therefore, we are going to keep the infiltration rate of 3.0 inches.

10. 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
PK	12/03/2012	CL	12/03/2012

11. ISSUE NUMBER, TITLE AND TYPE

Issue #: _____

Issue Title: _____

☐ Question ☐ Issue ☐ Change request ☐ Other

12. ISSUE INITIALLY IDENTIFIED BY

Name

13. 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

TCC1
Credit Schedule Report

Catchment	TCC1
Registration Date	12/21/2012
Jurisdiction	Tahoe County, NV

Catchment Registration Information

Establishment Date	12/22/2012
Credit Schedule Duration	10
Final Year of Credit Schedule	2022

Catchment is:	Active
As of:	12/21/2012
Registration Status	
Submitted	Accepted

Load Reduction Estimate Calculations

Method	PLRM v1.0
Date	1/10/2012

Fine Sediment Particles (kg/year)	6,800
Total Nitrogen (kg/year)	7
Total Phosphorous (kg/year)	25

FSP (# x 10^16 /year):	7.48
Calculated Credit per Year:	77
Establishment Year Credit:	69

Load Reduction Strategy

Treatment BMPs:	Roads:	Private Parcels:	Other:
Primary	Secondary	Tertiary	None

Treatment BMPs

Treatment BMP ID	Type	Expected Annual Condition	WQ Importance
TCC1_DB02	Dry Basin	3	Key
TCC1_DB01	Dry Basin	3	Essential
TCC1_IB01	Infiltration Basin	3	Key
TCC1_BIO04	Biofilter	3	Key
TCC1_BIO02	Biofilter	3	Key

Catchment	TCC1
Registration Date	12/21/2012
Jurisdiction	Tahoe County, NV

Roads

Road Group ID	Type	Risk	Expected Annual Condition	WQ Importance
TCC1_A_S_H	Secondary	High	2	Key
TCC1_A_S_L	Secondary	Low	4	Key
TCC1_A_S_M	Secondary	Moderate	3	Key
TCC1_B_P_H	Primary	High	1.9	Key
TCC1_B_S_H	Secondary	High	2.6	Key
TCC1_B_S_L	Secondary	Low	4.6	Key
TCC1_B_S_M	Secondary	Moderate	3.6	Key

Private Parcels

WQ Importance	Key
% SC Certified	3%
% BMP Certified	50%

Other Pollutant Control Strategy Name: WQ Importance:

Describe here.

Catchment Credit Distribution

Year	Scheduled Credit	Declared Credit	CalTrans	City of South Lake Tahoe	Douglas County	El Dorado County	NDOT	Placer County	Tahoe County
2012	69	69	0	0	0	0	0	0	69
2013	75		0	0	0	0	0	0	75
2014	75		0	0	0	0	0	0	75
2015	75		0	0	0	0	0	0	75
2016	75		0	0	0	0	0	0	75
2017	75		0	0	0	0	0	0	75
2018	75		0	0	0	0	0	0	75
2019	75		0	0	0	0	0	0	75
2020	75		0	0	0	0	0	0	75
2021	75		0	0	0	0	0	0	75
2022	75		0	0	0	0	0	0	75

PURPOSE OF EXAMPLE

This example follows the steps described in Chapter 2 of the Lake Clarity Crediting Program Handbook (Handbook) to develop the Credit Declaration Section of an annual stormwater report (ASR). It illustrates how an urban jurisdiction uses the TMDL Accounting and Tracking Tool (Accounting and Tracking Tool) and the ASR Credit Declaration Section Template. This example also describes how a regulator uses the Accounting and Tracking Tool to perform the steps in Chapter 2 related to awarding credits.

SITUATION & OVERVIEW

This example follows a hypothetical county stormwater manager, Pat, through the process of 1) ensuring condition inspections are performed, used to direct maintenance activities, and stored in the Accounting and Tracking Tool, and 2) developing the Credit Declaration Section of the ASR using the Accounting and Tracking Tool to declare credits related to specific Catchment Credit Schedules (CCSs) and to generate urban jurisdiction summaries and reports.

This example also follows a hypothetical regulator, Chris, through the annual process of 1) performing validation inspections, 2) comparing self-inspection results to validation inspection results in the Accounting and Tracking Tool, and 3) awarding credits based on ASRs from urban jurisdictions.

B 2.1 INSPECT

Pat begins the 2013 reporting year on October 1, 2012, by updating the previous year's inspection schedule and staffing assignments.

B 2.1.1 ▪ DEFINE INSPECTION NEEDS

Pat generated three inspection lists: (1) conveyance infrastructure and treatment best management practices (BMPs) requiring depth measurements and runoff tests only, (2) treatment BMPs requiring infiltration and other more time-consuming measurements, and (3) roadway inspections. The Tahoe County BMP database includes fields to assist Pat in filtering the database for each inspection type. Pat prioritized the inspection lists using the following screening criteria:

- Treatment BMPs in the five catchments with active CCSs
- Treatment BMPs that provide important water quality treatment in catchments not yet registered
- Treatment BMPs and conveyance infrastructure with a history of requiring frequent maintenance
- Treatment BMPs and conveyance infrastructure that were not maintained in 2012, but were approaching maintenance thresholds
- Roads and road shoulders in catchments with active CCSs

The Tahoe County inspection practices have evolved to send two types of crews. The first type of crew comprises two full-time or returning seasonal county maintenance personnel. These crews go into the field with a vactor truck and hand tools to inspect and, if necessary, immediately maintain conveyance infrastructure and treatment BMPs on the first inspection list.

The second type of crew comprises college interns who are hired in May and trained to use condition assessment methods that require infiltration measurements and other more time-consuming measurements. These crews inspect the treatment BMPs on the second inspection list.

The roadway and road shoulder inspections are split between the two types of crews. Summer inspections are performed by the college interns, and fall, winter and spring inspections are performed by maintenance personnel.

Pat provides each type of crew with inspection inventory tables and maps, as well as all the necessary equipment and data loggers necessary to perform the inspections and record results.

B 2.1.2 ▪ PERFORM INSPECTIONS

During the winter, spring and fall of 2013, county maintenance personnel performed road inspections in the registered catchments and provided Pat with the results. During May and June, the intern crews performed treatment BMP and roadway inspections.

B 2.1.3 ▪ RECORD INSPECTION RESULTS & DEFINE MAINTENANCE PRIORITIES

At the end of June, Pat compiled all BMP inspection information from the intern crews and entered the results in the Tahoe County BMP database. Pat prioritized maintenance based on equipment type before making assignments for county maintenance personnel. Pat had these assignments ready and equipment scheduled for the maintenance personnel once they completed the conveyance infrastructure inspections and maintenance.

When the summer roadway inspections were performed in mid-July, Pat compiled all road inspections for the year and analyzed how effective county road operations had been in maintaining expected conditions.

B 2.2 MAINTAIN, OPERATE & ADMINISTER POLLUTANT CONTROLS

Pat partnered the intern crews with the maintenance staff during the maintenance of basins and other equipment-intensive maintenance activities.

B 2.2.1 ▪ PERFORM MAINTENANCE, IMPLEMENT PROGRAMS & RE-INSPECT

While the maintenance crews performed maintenance using heavy equipment, the intern crews performed the summer roadway inspections in the vicinity near the maintenance crews. As soon as the maintenance crews completed maintenance of a basin, the intern crews came in to re-inspect the treatment BMPs to determine if additional maintenance would be necessary to achieve the desired state. When necessary, the maintenance crews performed additional maintenance and the intern crews re-inspected the treatment BMPs.

Pat held a review meeting and training with county maintenance personnel to gain input on inspection and maintenance practices and to address shortcomings in road operations based on issues identified from the analysis of road data. Chris also met with county outreach and enforcement staff to encourage them to increase their efforts to implement the parking ordinance in neighborhoods with identified road shoulder impacts.

B 2.2.2 ▪ LOG ACTIVITIES & RECORD RESULTS

At the beginning of each day, the crews uploaded the previous day's inspection results and maintenance activities from hand-held field devices to the Tahoe County BMP database.

B 2.3 VALIDATE CONDITIONS

On October 5, 2012, Chris held a meeting with regulatory and funding partner agencies to coordinate and schedule validation-inspections for the upcoming year.

B 2.3.1 ▪ SELECT VALIDATION INSPECTION POINTS & GATHER MATERIALS

During the coordination meeting, funding agency staff chose to inspect treatment BMPs funded by their agencies. They wanted to use this information both to determine if contractual maintenance requirements were being met and to provide information to validate county self-inspection results. The regulatory agency staff led the roadway validation inspection efforts.

Chris's intern used the Accounting and Tracking Tool to identify and compile summary inventory tables and maps with information related to treatment BMPs, roads, and road shoulders of interest from registered catchments with active CCSs. These tables were distributed to the regulatory and funding partners performing condition assessment inspections.

B 2.3.2 ▪ PERFORM VALIDATION-INSPECTIONS

Each regulatory and funding partner agency sent trained staff into the field at appropriate times throughout the year to perform validation-inspections. Road inspections occurred after at least two weeks without significant precipitation, providing the municipal and department of transportation (DOT) maintenance personnel ample time to perform any planned maintenance following precipitation events. Treatment BMP inspections were scheduled for September and October to gather information on conditions heading into the following water year to be used to validate self-inspection results from the spring and summer.

B 2.3.3 ▪ RECORD & SUBMIT RESULTS

Throughout the year, Chris's intern checked with regulatory and funding partners to assist and ensure that inspection results were routinely uploaded to the Accounting and Tracking Tool. In October of 2013, Chris held another coordination meeting that included a review of the past twelve months of inspection results to ensure all data had been submitted and correctly entered into the Accounting and Tracking Tool.

B 2.4 REPORT

In November 2013, Pat began the process of developing the ASR.

B 2.4.1 ▪ COMPILE DATA & UPDATE ACCOUNTING AND TRACKING TOOL

Pat exported all relevant data for catchments with active CCSs from the Tahoe County BMP database and Roads database. Pat logged into the Accounting and Tracking Tool and uploaded the data.

B 2.4.2 ▪ RUN REPORTS & REVIEW RESULTS

Pat generated the Tahoe County Annual Credit Summary from the Accounting and Tracking Tool, and noticed that the calculated credit for Catchment 5 was zero. After checking the inspection results, Pat discovered that the re-inspection results were not entered properly. Pat tracked down the original information, corrected the error, and worked with Chris to correct the data entry error in the Accounting and Tracking Tool. Pat was then able to create the Tahoe County Annual Credit Summary included in Attachment B.1.

Pat then ran each of the individual CCS reports for 2013 and checked the inspection data and calculated credits. Attachment B.2 is an example CCS Report for Tahoe County Catchment 1.

B 2.4.3 ▪ DEVELOP CREDIT DECLARATION SECTION NARRATIVE & COMPILE ANNUAL STORMWATER REPORT

At the end of November, Pat met with county staff and discussed maintenance, program implementation and capital improvement program progress, plans and issues. Pat used this information to develop the draft Credit Declaration Section of the ASR as described in the Annual Stormwater Report - Credit Declaration Section Template and circulated to staff for additional input. After incorporating input and gathering information from Tahoe County stormwater managers responsible for various sections of the ASR, Pat finalized the ASR.

B 2.4.4 ▪ REVIEW AND SUBMIT ANNUAL STORMWATER REPORT

On December 9, 2013, Pat developed the ASR file folder structure as defined in the File Structure Template of the Handbook. Pat uploaded the folder to the TMDL Workspace and sent a hard copy of the full report to Chris.

B 2.5 AWARD CREDITS

Chris received four ASRs from the California urban jurisdictions in early December. However, before reviewing the reports Chris compared self-inspection to validation inspection results.

B 2.5.1 ▪ REVIEW INSPECTION RESULTS

Chris compared the self-inspection and validation-inspection results that had been entered in the Accounting and Tracking Tool. After identifying the comparable inspection information, Chris developed a Tahoe County Inspection Comparison Summary. While many of the validation-inspection results were lower than the self-inspection results, more than ten percent were higher. Chris did not see the need to consider disputing credit declarations, but did note this as a topic for discussion in the annual program review meeting with Pat.

B 2.5.2 ▪ REVIEW SUBMITTED ANNUAL REPORTS & CREDIT DECLARATIONS

Chris reviewed the Tahoe County ASR on December 19 and 20, 2013. While the report provided valuable information to improve the Crediting Program, added to the importance of certain areas for scientific investigation and monitoring, and was nearly complete, Pat had not reported the results from the parking ordinance (see Appendix A for description related to the parking ordinance in Tahoe County Catchment 1). Chris added this item, as well as a few other questions related to the Tahoe County 2013 ASR to his list of topics for the annual program review meeting.

B 2.5.3 ▪ DISCUSS RESULTS

On January 16, 2014, Pat and Chris met and discussed the items on the IRP as well as the program improvement and scientific investigation items identified in the Tahoe County ASR Credit Declaration Section. Pat was surprised that the parking ordinance results were overlooked and on January 23 Chris sent an errata memo that documented the success of the parking ordinance implementation and inspection results.

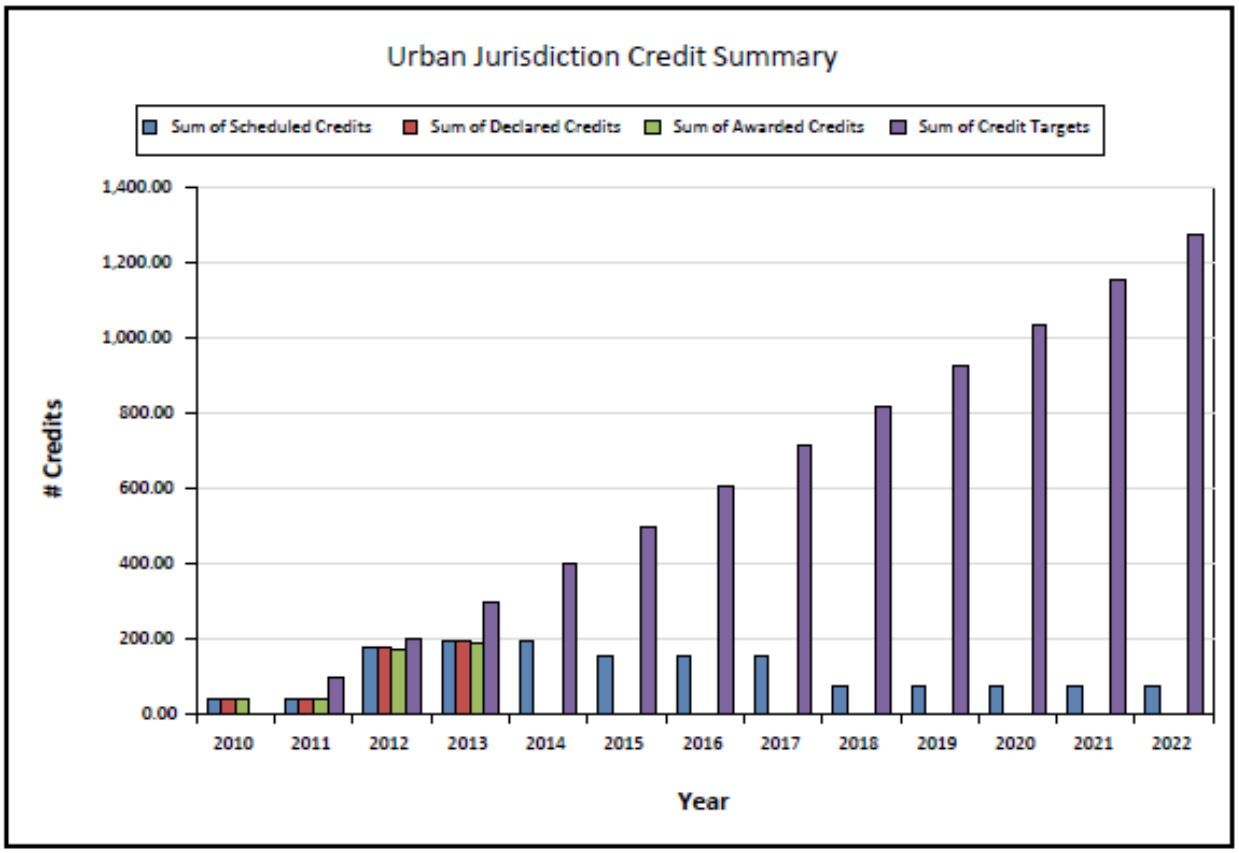
To address the discrepancies between the self-inspection and validation-inspection results, Chris and Pat decided to hold a joint condition assessment training with all trained inspectors in April (weather permitting) to review maintenance practices.

B 2.5.4 ▪ AWARD CREDITS

In January, Chris met with each of the other California urban jurisdictions to review their ASRs and on February 3, 2014 opened the Accounting and Tracking Tool to award credits for each CCS.

Tahoe County Credit Summary

Attachment B.1 - Tahoe County 2013 Credit Summary



2013

Credit Summary Statistics

Credit Target #:	300	% of Declared Credits Awarded:	98%
# of Scheduled Credits:	194	% of Credit Target Achieved:	63%
# of Declared Credits:	194		
# of Awarded Credits:	190		
# of Clarity Challenge Credits:	1,724	% to Clarity Challenge Awarded:	11%

2013 Tahoe County

Catchment Credit and Load Reduction Summary

Catchment ID	Status	Sched Credits	Declared Credits	% Sched Declared	Awarded Credits	% Sched Awarded	FSP (# x 10^16)	Load Reductions		TP (kg)
								FSP (kg)	TN (kg)	
TCC1	Awarded	75	75	100%	75	100%	7	6,800	7	25
TCC2	Awarded	41	41	100%	41	100%	4	3,700	1	1
TCC5	Awarded	78	78	100%	74	95%	7	6,745	1	0
Totals		194	194		190		19	17,245	9	26

TCC1
Credit Schedule Report

Catchment	TCC1
Registration Date	12/21/2012
Jurisdiction	Tahoe County

Catchment Registration Information

Establishment Date	12/22/2012
Credit Schedule Duration	10
Final Year of Credit Schedule	2022

Catchment is:	Active
As of:	12/23/2013
Registration Status	
Submitted	Accepted

Load Reduction Estimate Calculations

Method	PLRM v1.0
Date	1/10/2012

Fine Sediment Particles (kg/year)	6,800
Total Nitrogen (kg/year)	7
Total Phosphorous (kg/year)	25

FSP (# x 10^16 /year):	7.48
Calculated Credit per Year:	75
Establishment Year Credit:	69

Load Reduction Strategy

Treatment BMPs:	Roads:	Private Parcels:	Other:
Primary	Secondary	Tertiary	None

Treatment BMPs

Treatment BMP ID	Type	Expected Annual Condition	WQ Importance
TCC1_DB02	Dry Basin	3	Key
TCC1_DB01	Dry Basin	3	Essential
TCC1_IB01	Infiltration Basin	3	Key
TCC1_BIO04	Biofilter	3	Key
TCC1_BIO02	Biofilter	3	Key

Attachment B.2 - Tahoe County Catchment 1 Credit Schedule Report Example

Catchment	TCC1
Registration Date	12/21/2012
Jurisdiction	Tahoe County

Roads

Road Group ID	Type	Risk	Expected Annual Condition	WQ Importance
TCC1_A_S_H	Secondary	High	2	Key
TCC1_A_S_L	Secondary	Low	4	Key
TCC1_A_S_M	Secondary	Moderate	3	Key
TCC1_B_P_H	Primary	High	1.9	Key
TCC1_B_S_H	Secondary	High	2.6	Key
TCC1_B_S_L	Secondary	Low	4.6	Key
TCC1_B_S_M	Secondary	Moderate	3.6	Key

Private Parcels

WQ Importance	Key
% SC Certified	3%
% BMP Certified	50%

Other Pollutant Control Strategy | Name: | WQ Importance:

Catchment Credit Distribution

Year	Scheduled Credit	Declared Credit	CalTrans	City of South Lake Tahoe	Douglas County	El Dorado County	NDOT	Placer County	Tahoe County
2012	69	69	0	0	0	0	0	0	69
2013	75	75	0	0	0	0	0	0	75
2014	75		0	0	0	0	0	0	75
2015	75		0	0	0	0	0	0	75
2016	75		0	0	0	0	0	0	75
2017	75		0	0	0	0	0	0	75
2018	75		0	0	0	0	0	0	75
2019	75		0	0	0	0	0	0	75
2020	75		0	0	0	0	0	0	75
2021	75		0	0	0	0	0	0	75
2022	75		0	0	0	0	0	0	75

PURPOSE

The Crediting Program credit award method aligns design of effective water quality improvement projects and implementation plans with ongoing maintenance and program implementation. This appendix describes the Crediting Program framework for awarding credits by comparing actual conditions to expected conditions used in expected loading estimates. Section C.1 provides a conceptual overview of this process. Section C.2 describes how condition assessments are used to define expected conditions and determine actual conditions. Section C.3 defines the mathematical operations used to determine credit awards. Section C.4 identifies topics requiring adaptive management to improve on the credit award method so that it can more directly and accurately relate to actual load reductions.

It is not necessary for most Crediting Program participants to understand the details of the credit award method. However, it is critical for technical staff developing implementation plans and load reduction estimates to understand the relationship between load reduction estimates, condition assessments and credit awards.

C 1 CREDIT AWARD CONCEPTUAL OVERVIEW

Credits are awarded for effective, ongoing implementation of pollutant controls in urban catchments. The credit potential for a catchment is determined by comparing loading estimates for baseline conditions to loading estimates for expected conditions. The credit award method assumes a relationship between loading and observable conditions. The credit award method defines a technique to award credits based on the comparison of expected conditions – as defined in catchment credit schedules – to actual conditions – as determined through self-inspection results. This section describes the general concepts related to the credit award method.

Acceptable load estimation methods integrate the combined effect from pollutant controls within a catchment. Figure C.1 shows a schematic of the relationship between pollutant controls and loading.

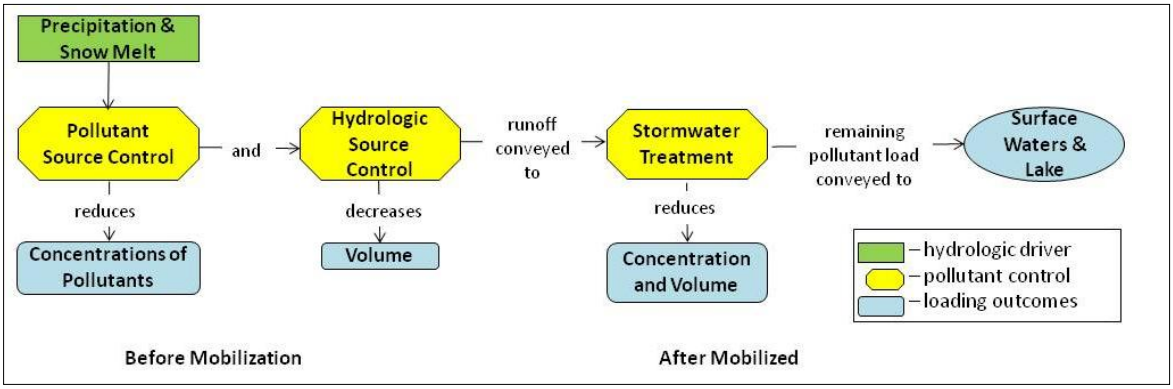


Figure C.1: Pollutant controls influence on pollutant loading – Showing the general relationship between pollutant source controls, hydrologic source controls, stormwater treatment and resulting pollutant loading.

The magnitude of load reduction from pollutant controls varies depending on several factors, including, but not limited to, the actual condition of the pollutant controls and the setting of the pollutant controls within a catchment. Figure C.2 shows the relationship between maintenance and conditions for three situations used to determine credit potential and credit awards for an urban catchment. Figure C.3 shows the relationship between the conditions of land use, infrastructure and treatment BMPs within an urban catchment and loading for these three situations. Figures C.2 and C.3 together define:

A: Baseline loading – Typical 2004 maintenance and program implementation practices are used to approximate baseline conditions of urban lands, infrastructure and treatment BMPs in place in 2004. Baseline conditions of 2004 land use, infrastructure and treatment BMPs are used to estimate baseline loading from a catchment.

B: Expected loading – Maintenance and program implementation plans anticipate variability based on meteorological events and human impacts, such as parking practices, road shoulder disturbances and fertilizer use to project expected conditions. Expected conditions of current urban lands, infrastructure and treatment BMPs are used to estimate the expected loading from a catchment.

C: Actual Loading – Actual maintenance and program implementation is performed in response to meteorological events and human impacts. The combined influence of these factors results in actual conditions. Actual conditions of current land uses, infrastructure and treatment BMPs in a catchment result in the actual loading from a catchment.

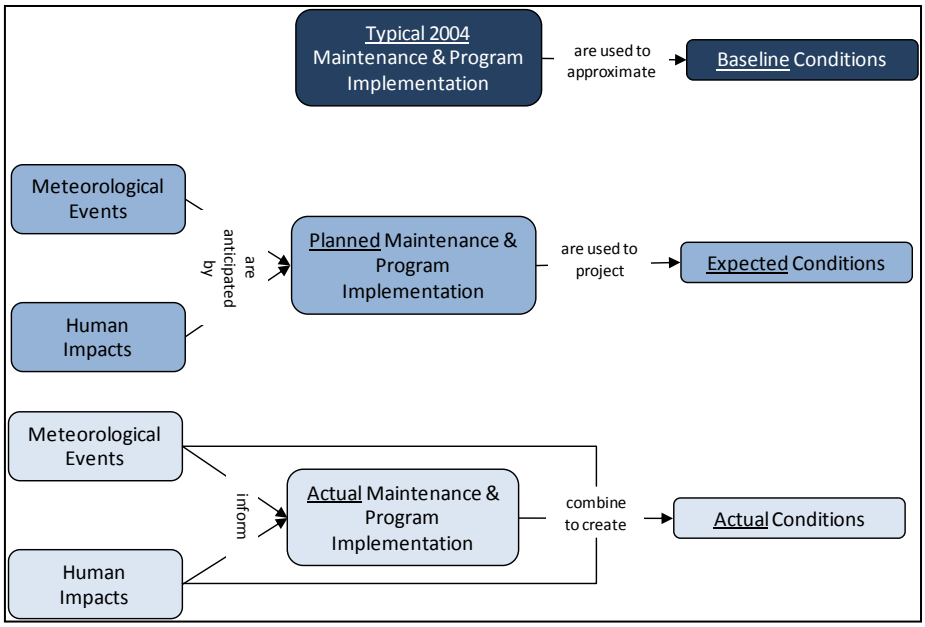


Figure C.2: Maintenance and program implementation relationships to baseline, expected and actual conditions – showing how meteorological events and human impacts relate to maintenance and program implementation plans and decisions.

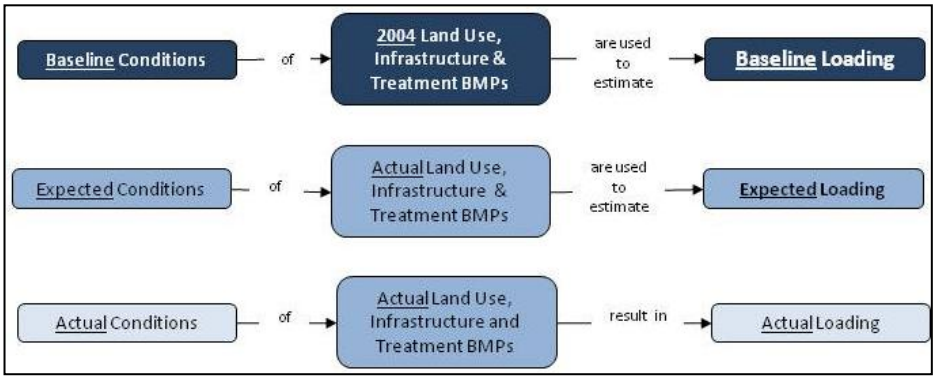


Figure C.3: Relationship between baseline, expected and actual conditions and baseline, expected and actual loading.

C 1.1 ▪ CREDIT POTENTIAL

The credit potential for a catchment is determined by a load reduction estimate. Load reduction is the difference between estimated baseline loading and estimated expected loading from an urban catchment. Figure C.4 combines these situations showing that:

- Baseline conditions of land use, infrastructure and treatment BMPs in place in 2004 are used to estimate baseline loading.
- Expected conditions of land use, infrastructure and treatment BMPs currently in place are used to estimate expected loading.
- Baseline loading and expected loading are compared to determine the load reduction estimate.
- The load reduction estimate is the basis for the credit potential for the catchment.

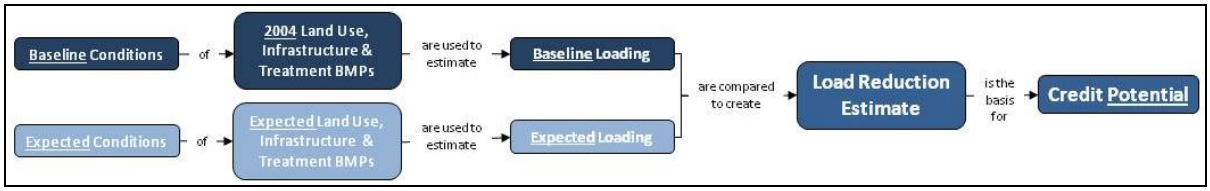


Figure C.4: Determination of credit potential from an urban catchment – Showing how changes in condition, land use, infrastructure and treatment BMPs result in different loading estimates between baseline and expected loading situations. This difference defines the load reduction estimate, which is the basis for determining credit potential.

C 1.2 ▪ CREDIT AWARDS

Credit awards are intended to reflect the difference between expected loading and actual loading. However, because loading is difficult to measure and model, conditions are used as a practical proxy to infer actual loading with respect to expected loading. Figure C.5 shows that credit awards are determined by comparing actual conditions to expected conditions. This comparison is related to the difference between actual loading and expected loading.

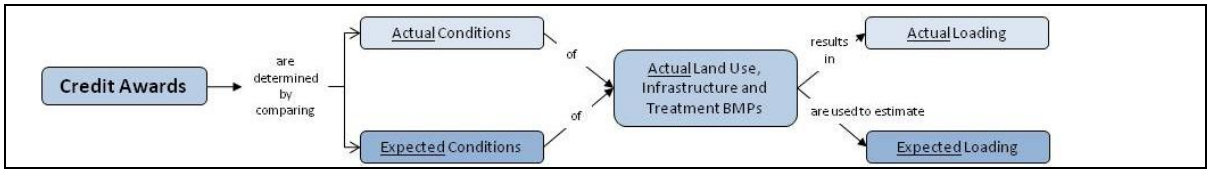


Figure C.5: Credit award relationship to conditions and loading estimates – While the expected loading estimate is used to determine credit potential, the comparison of actual to expected conditions is used as a practical proxy to determine credit awards.

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.

This credit award approach integrates the static features of a catchment with dynamic conditions in a manner that allows stormwater managers to make practical decisions to put available maintenance and program implementation resources to their best use. Land use, infrastructure and treatment BMPs are generally static on a year-to-year basis, and significant changes due to capital improvements are reflected in updated expected loading estimates. Actual conditions may vary between years and within a year, depending on maintenance and implementation of pollutant controls, weather, human impacts, and other factors. Ongoing maintenance and program implementation decisions are the result of daily operational decisions made by urban jurisdiction stormwater managers and maintenance personnel informed by their detailed knowledge of needs. 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 pollutant controls 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.

In the absence of condition assessments, regulations generally employ checklists derived from static implementation plans to determine compliance. These checklists assume that performing an action results in a water quality improvement. For example, a maintenance plan that calls for monthly sweeping of roads would be determined successful if a sweeper passed over a street within a month, independent of the road conditions before and after sweeping. By focusing instead on conditions, maintenance personnel can determine that sweeping may be required three times within a month following abrasive applications and high-traffic periods, and every other month during periods with little sediment producing activity. This enables available resources to be targeted to effectively implement pollutant controls and achieve load reductions.

C 2 CONDITION ASSESSMENTS & CONDITION SCORES

Condition assessment inspection results determine actual conditions and provide the basis for understanding whether maintenance or additional program implementation effort is required to achieve near-to or better-than expected conditions. Acceptable condition assessment methods measure specific attributes related to pollutant loading potential or pollutant fate and transport processes. The condition of any one pollutant control may require several different types of observations to determine its overall condition.

Condition assessment observations differ based on the type of pollutant control and the pollutant control's ability to reduce loading. In order to compare different types of observations relevant to different pollutant controls, all condition assessment results are translated into a 0-through-5 scale. When multiple observations are necessary to determine the condition of a pollutant control, each observation is converted to the 0-through-5 scale and then a weighted average of all condition assessments is used to determine the overall condition score for the pollutant control.

The condition scoring scale is defined such that the higher the score, the lower the resulting pollutant loading. Thus, a 5 indicates that a treatment BMP is expected to effectively reduce pollutant loads and a 0 indicates it is ineffective at reducing pollutant loads. Similarly, a 5 indicates a relatively low pollutant loading potential for a roadway and a 0 indicates a relatively high pollutant loading potential from a road.

The following sections describe standard condition assessment methods and approaches for treatment BMPs, roads, private property BMPs, and other pollutant control strategies. Section C.3 defines the mathematical operations for using the condition assessment inspection results to determine the amount of credit to award for a catchment.

C 2.1 ▪ TREATMENT BMP CONDITION ASSESSMENTS

The BMP Maintenance Rapid Assessment Methodology (BMP RAM) defines protocols to determine the condition of treatment BMPs. The BMP RAM Technical Document and User's Manual describe the specific procedures to:

- Determine the applicable observations for different types of treatment BMPs.
- Determine benchmark values that represent the best achievable observation values.
- Select threshold values that represent the point at which a treatment BMP is no longer functioning acceptably.
- Determine the relative weighting of individual observation results to arrive at a treatment BMP RAM score for each treatment BMP type.

Figure C.6 illustrates the relationship between observation results, observation scores, and the overall treatment BMP condition score for a dry basin. The remainder of this section describes how the Crediting Program uses observation scores to inform expected loading estimates and how inspection results are used to determine actual conditions in a year.

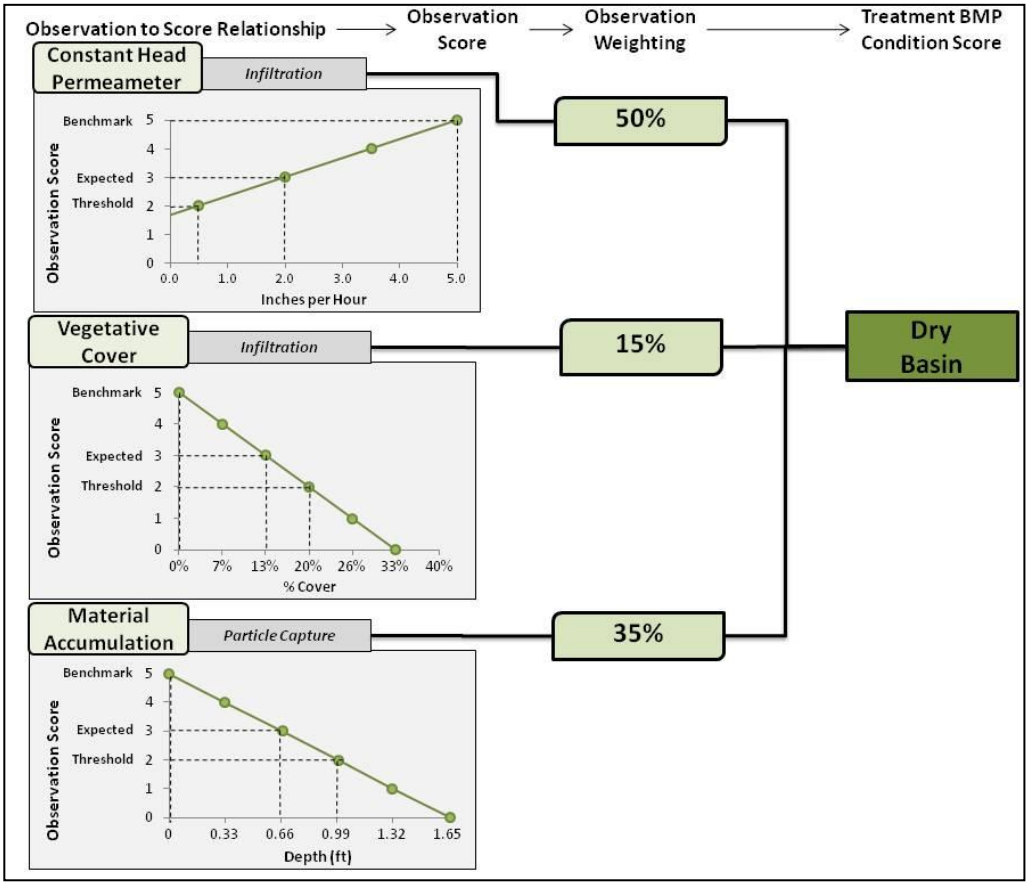


Figure C.6: Relationship between observation values, observation scores and the treatment BMP condition score – for a hypothetical dry basin.

EXPECTED CONDITIONS & EXPECTED LOADING ESTIMATE MODELING PARAMETERS FOR TREATMENT BMPS

Stormwater managers determine the expected values for treatment BMPs in relationship to benchmark and threshold values. The following describes the operations to determine expected values:

- As described in the BMP RAM, benchmark values are generally determined by performing observations immediately following the installation or maintenance of a treatment BMP. Benchmark values are intended to be the best achievable observation values and define the observation score of 5. For example, the constant head permeameter in Figure C.6 shows 5 inches per hour of infiltration is equal to the benchmark observation value of 5.
- The Crediting Program defines the expected condition of a treatment BMP with an observation value equivalent to an observation score of 3. The expected condition is the lowest expected average condition score for a treatment BMP and is used as the basis for selecting modeling parameters for treatment BMPs when calculating the expected loading estimate. For example, the constant head permeameter observation in Figure C.6 shows 2 inches per hour of infiltration is equal to the expected observation value of 3.
- Threshold values are selected by stormwater managers on the basis of desired maintenance frequency and desired load reduction for the treatment BMP. The BMP RAM provides default values for thresholds, however, threshold values may be changed by the user. Threshold values are intended to be the point at which the treatment BMP is no longer in acceptable condition; this defines the observation score of 2. For example, the constant head permeameter observation in Figure C.6 shows 0.5 inches per hour of infiltration is equal to the threshold observation value of 2.

RELATING OBSERVATION VALUES TO MODELING PARAMETERS

The expected values are used to determine the appropriate modeling parameters to include in expected loading estimates. Thus, for the example provided in Figure C.6, the water quality volume used by the Pollutant Load Reduction Model (PLRM) should be equal to the volume when 0.66 feet of material has accumulated in the dry basin. By using expected values, the expected loading estimate is intended to reflect the expected load reduction from a treatment BMP. In contrast, the use of design or optimal values would reflect better-than-expected actual conditions and would likely result in overestimation of actual load reductions.

> **USING EXPECTED VALUES TO DETERMINE EXPECTED LOAD REDUCTION**
> Expected values are used determine appropriate modeling parameters to include in the expected loading estimate. The expected loading estimate should reflect the expected load reduction from a treatment BMP.

The benchmark, threshold and expected observation values, as well as the related modeling parameters, are recorded in the Treatment BMP Inventory Table of the applicable catchment credit schedule. The relationship between observation values and modeling parameters requires professional judgment on the part of the modeler, and the regulator reviews the modeling parameters to ensure reasonable estimates are used. The need for scientific investigation to better understand the relationship between observation values and modeling parameters is addressed in Section C.4.

DETERMINATION OF ACTUAL CONDITIONS FOR TREATMENT BMPS

The Crediting Program assumes that, in general, the late spring condition of a treatment BMP is representative of the actual condition for the year unless maintenance is performed. The BMP RAM recommends performing field observations in the late spring, which provides the urban jurisdiction time to schedule and perform necessary maintenance before fall weather events complicate maintenance procedures. Degradation of a treatment BMP generally indicates that it is effectively capturing pollutants, thus some degradation is an expected and even desirable result of treating runoff. The TMDL load duration curves show that a majority stormwater runoff and loading occurs during the spring snowmelt period. Because the change in condition from fall to spring is expected to be greater than the change from spring to fall, the late spring condition is generally a conservative average.

In some situations, site conditions or particular types of summer and fall runoff events may result in more rapid condition changes and necessitate more frequent inspections. These situations are addressed in specific catchment credit schedules and an appropriate inspection and averaging method is agreed upon by the stormwater manager and regulator.

If maintenance is performed, the treatment BMP is re-inspected and the two condition scores are averaged to determine the actual condition score for the year. Averaging condition scores provides an incentive for stormwater managers to invest in maintenance to maintain treatment BMPs at near-to or better-than expected conditions in order to be awarded credit. It also recognizes that higher-than-expected conditions in the fall of one year result in better-than-expected load reduction during the winter and spring of the next year.

Table C.1 uses the observation scoring and weighting values shown in Figure C.6 to illustrate the determination of actual conditions in a year when the dry basin is maintained. The late spring weighted average of the observation scores for the dry basin yields a treatment BMP score of 3.9. The dry basin is re-inspected following maintenance in the summer and the resulting treatment BMP score is 4.8. The actual condition is the average of 3.9 and 4.8, which is 4.3. Conveyance is also evaluated for each treatment BMP. If conveyance problems are observed, the treatment BMP receives a score of 2, regardless of the other observation results.

								Pre-Maintenance			Post-Maintenance			
Treatment BMP	Observation	Observation Weighting	Benchmark Value (5 score)	Expected Value (3 score)	Threshold Value (2 score)	Observation Score Equation	Observation Unit	Observation Value	Observation Score	BMP Condition Score	Observation Value	Observation Score	BMP Condition Score	Actual Condition
Dry Basin	Constant Head Permeameter	50%	5.0	2.0	0.5	= 1.5 x - 2.5	in/hr	3.0	1.9		4.4	4.6		
	Vegetative Cover	15%	0%	13%	20%	= -15 x + 5	% of area	12.7%	3.1	3.9	0%	5.0	4.8	**4.3**
	Material Accumulation	35%	0.0	0.66	0.99	= 3 x + 5	feet	0.7	7.1		0.0	5.0		

Table C.1: Calculation of actual condition of a hypothetical treatment BMP – showing the operations performed by the BMP RAM database to determine the condition of a dry basin using inspection results, and the operation performed by the Accounting and Tracking Tool to determine the actual condition for the year.

The condition scoring equations shown in Table C.1 are defined by the BMP RAM using the benchmark and threshold values determined by the stormwater manager. The calculations shown in Table C.1 are performed by the BMP RAM database. The Accounting and Tracking Tool averages inspection results for a given year.

C 2.2 ▪ ROAD CONDITION ASSESSMENTS

Road RAM facilitates the rapid evaluation of road segments and the spatial extrapolation of discrete observations to many miles of a road network by road class. Road RAM provides a complete and consistent field evaluation and data management tool for jurisdictions to determine and track the condition of roads over time in response to future road water quality improvements.

The Crediting Program refers to the Road RAM Technical Document to describe specific procedures to:

- Assess conditions on large areas of roads while maintaining reasonable statistical defensibility.
- Use field observations to determine the actual condition of road segments and express them with road segment scores.
- Obtain, track and analyze Road RAM scores.

Road condition scores are related to the pollutant loading potential from individual road segments. A condition score of 5 indicates a cleaner road and a score of 0 indicates a dirtier road. Similar to treatment BMPs, the Crediting Program uses road condition scores to define expected conditions used in expected loading estimates and actual conditions used as the basis for annual credit awards. However there is a difference in the way expected values are chosen. For treatment BMPs, a RAM score of 3 is the expected condition that is based on an achievable level of a "BMP observation" that can be measured in the field (see Table CCS.2 in CCS Technical Guidance and Instructions). For roads, the expected condition for each road class can be any 0-5 value selected by the urban jurisdiction based on what is achievable. This difference exists because BMP RAM develops a *unique condition* scoring equation for each treatment BMP while the Road RAM (and PLRM) define a *consistent scale* from 0 to 5 for all roads.

Expected road conditions can be used with PLRM to calculate expected load reductions. This process involves conversion of expected conditions scores to fine sediment particle concentrations for comparison to PLRM road conditions parameters, as described by two approaches in the next section.[20]

EXPECTED CONDITIONS & EXPECTED LOADING ESTIMATE MODELING PARAMETERS FOR ROADS

Expected conditions and modeling parameters can be related through use of characteristic runoff concentrations produced by PLRM, the conversion equation on p. 52 of the PLRM Model Development Document, and Road RAM condition scores.[21] The following two approaches can be used to select and model expected conditions in PLRM.

[20] The relationship used in converting Road RAM scores to fine sediment particle concentrations is the same as the relationship PLRM uses to convert road conditions parameters into fine sediment particle concentrations. However, terminology and outputs of the PLRM do not align with Road RAM. Future updates to PLRM are expected to align PLRM with the most updated road assessment concepts used in the Road RAM.

[21] Equation 2 of the PLRM Road Methodology is: FSP CRC = $1592*e^{(-0.850*\text{pollutant potential score})}$. This equation can be rearranged to calculate a pollutant potential score as: Score = ln((FSP CRC)/1592))/-0.850

Road RAM approach - Ideally urban jurisdictions use the Road RAM to empirically determine a reasonable Road RAM score for each road class based on expected road operations. The score for each road class is then converted to a FSP concentration using equation 2 from the PLRM Model Development Document. PLRM Roads Condition Editor inputs are then adjusted through an iterative process until the runoff FSP concentration matches with the Road RAM FSP concentration.

PLRM approach - The alternative approach uses the expected road operations (e.g. road shoulder conditions, abrasive management and sweeping) as input parameters to PLRM to determine a FSP CRC for each road class. Each road class is then converted to a Road RAM score using equation 2 from the PLRM Model Development Document. These scores are then compared to actual conditions to determine if credits are awarded on an annual basis.

Regardless of the approach selected by the urban jurisdiction, the expected road condition score for each road class is recorded in the Road Summary Table of the catchment credit schedule. The Accounting and Tracking Tool integrates road inspection scores for each road class to determine actual conditions and determine credit awards.

INTEGRATING ROAD CONDITIONS OVER TIME

Road conditions can change rapidly and are expected to change throughout the year. Road conditions generally have relatively low scores following abrasive applications, and generally have relatively high scores following effective sweeping. Therefore, the determination of actual condition must integrate across many different situations throughout the year. The increase in understanding from frequent inspection results, however, must be balanced by the practical aspects of staffing constraints. While some staff time performing inspections can improve the effectiveness of maintenance efforts, spending significant amounts of staff time performing inspections can exhaust the necessary resources to perform the maintenance.

C 2.3 ▪ PRIVATE PROPERTY BMP CONDITION ASSESSMENTS

This section defines the condition assessment method for private property BMPs used by the Crediting Program. The expected percents of private property BMPs certificates and source control certificates in a catchment are defined and recorded in the catchment credit schedule and used in the expected loading estimate. The private property BMP condition score is based on the sum of scores from properties with BMP or Source Control certificates.

Using an analogous approach to the condition scoring mechanism for treatment BMPs, the expected percent private property BMP implementation defines the condition score value of 3. Other condition scores use the expected percent implementation and are set at 10-percent increases or decreases above and below the expected percent. Equation C.1 defines the observation-to-condition scoring equation. Figure C.7 illustrates this relationship for a hypothetical catchment with an expected 50 percent of properties awarded either BMP or Source Control certificates.

Equation C.1: Private Property BMP Condition Score Equation
Based on the sum of private properties with either BMP or Source Control certificates in a catchment

$$\text{Private Property BMP Condition Score} = 3 + 10^{*} ((\text{Actual \%} - \text{Expected \%}) / \text{Expected \%})$$

The Private Property BMP Condition Score can be a maximum of 5 and a minimum of 0

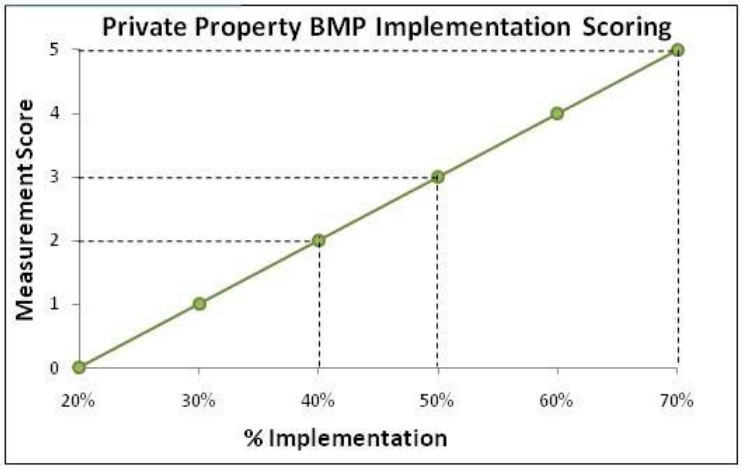


Figure C.7: Illustration of the Private Property BMP Condition Score Relationship – for a hypothetical catchment with 50 percent of private properties with either BMP or Source Control certificates.

Private property BMP databases are checked periodically and the percent implementation is entered into the Accounting and Tracking Tool. The Accounting and Tracking Tool performs the condition score calculation. See Section C of the Technical Guidance & Instructions for specific technical guidance on determining the percent of area with BMP or Source Control certificates.

C 2.4 ▪ OTHER POLLUTANT CONTROL STRATEGIES

Urban jurisdiction stormwater managers define condition assessment criteria and inspection methods in the Other Pollutant Control section of any catchment credit schedule that includes load reduction resulting from pollutant controls other than treatment BMPs, road maintenance operations and private property BMPs. Other pollutant controls can include implementation of municipal programs, ordinances and educational campaigns, as well as other actions performed that result in observable changes and expected pollutant load reductions.

Other pollutant control strategies must be reflected in the expected loading estimate to contribute to the credit potential for the catchment. This may be done by modifying default parameters for concentrations, by adjusting the percent of road shoulder protection, or using other justifiable techniques. The manner in which other pollutant control strategies are included in loading estimates is clearly described in the catchment credit schedule memo, and is expected to be an area of review and discussion by regulators.

This section describes three potential approaches for defining condition assessments. These approaches are provided as starting points and are improved upon with information from the specific catchment setting, monitoring results, best professional judgment, literature, and modeling sensitivity analyses. The specific approach and observation definitions are described in the catchment credit schedule memo for any catchment where other pollutant controls contribute as a key or essential pollutant control.

Each year, the urban jurisdiction calculates the actual condition score for alternative pollutant control strategies implemented in each registered catchment and enters the results in the Accounting and Tracking Tool.

DEFINING OBSERVABLE NUMERIC CONDITIONS

The preferred condition assessment method is based on observable numeric conditions. The condition assessment can be modeled after the method described for private property BMPs, and must be accepted by the appropriate regulator as part of the catchment credit schedule verification and acceptance. This involves:

- Determining an expected observation value, which defines the 3 score.
- Establishing percent deviations from the expected value to determine the scores above and below the 3 value.

- Defining weighting factors for each observation score, when multiple observations are related to the determination of overall condition of a pollutant control. See the Treatment BMP discussion above for discussion of weighting observations to determine an overall condition score.

As an example, consider a municipal parking ordinance that is expected to result in fewer cars parked off pavement and reduced soil disturbance within a catchment. The observations may be equated to an estimated level of road shoulder protection in the expected loading estimate. Visual surveys of road shoulder disturbance may provide a sufficient indication to determine the equivalent road shoulder protection. The catchment credit schedule memo would define the specific observation methods and inspection frequency. If the expected observable percent road shoulder protection is 80 percent, the other scores can be set based on 8-percent changes from the expected percent. Thus, an observation of 87 percent would equate to a condition score of 3.9.

DEFINING DESCRIPTIVE CONDITIONS

When numeric observations are not possible to define or practical to inspect, a descriptive definition of condition may be defined. At a minimum, descriptions should be clearly stated for condition scores of 1, 3 and 5. Intermediate values may be used when actual conditions fall between these defined descriptions of conditions. The 3 value description is the expected condition that should be related to the modeling parameters used in the expected loading estimate. When descriptive conditions are used, inspection results are confined to either integer values or approximated to the nearest 0.5 of a value. The specific inspection methods and frequency are defined in the catchment credit schedule memo, and accepted by the appropriate regulator as part of the catchment credit schedule verification and acceptance.

As an example, consider again a municipal parking ordinance that is expected to result in fewer cars parked off pavement and reduced soil disturbance within a catchment. The observations may be equated to an estimated level of road shoulder protection in the expected loading estimate. The catchment credit schedule memo could define the inspection approach and frequency as a driving survey of at least 50 percent of the roads in the catchment, at least 3 times per year during non-snow conditions. Table C.2 provides a hypothetical description of how visual surveys of parking behavior and road shoulder disturbance may be used to define conditions.

Score	1	3	5
Parking Practices	More than 1 vehicle observed parked off pavement per 0.1 miles	Not more than 1 vehicle observed parked off pavement per 0.2 miles	No cars observed parked off pavement
Shoulder Disturbance	Bare compacted soil with evidence of tire damage on parcels every 0.1 miles	Isolated soil disturbance including crushed vegetation or small areas of bare and compacted soils once every 0.2 miles	No soil disturbance of note

Table C.2: Illustration of a descriptive condition assessment definition for a hypothetical municipal parking ordinance.

MAINTENANCE CHECKLISTS

If neither observable numeric conditions or descriptive conditions are possible to define and practical to inspect, the urban jurisdiction may define an activity checklist that compares planned to actual activities. The checklist approach must describe how completion of implementation activities is likely to achieve expected conditions.

The checklist approach is not preferred because it focuses personnel on completing a list of rote activities, which reduces the urban jurisdiction's flexibility to innovate to most efficiently achieve expected conditions. For instance, it is more important to ensure that an infiltration basin is effectively infiltrating water than it is to know whether it has or has not been maintained within a year.

As an example, once again consider a municipal parking restriction ordinance that is expected to result in fewer cars parked off pavement and reduced soil disturbance within a catchment. Implementation activities may be equated to an estimated level of road should protection in the expected loading estimate. The catchment credit schedule memo could provide a detailed explanation of implementation activities, define the activity checklist and the rationale for how implementing the activities are likely to achieve expected conditions. Table C.3 provides a hypothetical activity checklist defining how implementation of the municipal ordinance may be used to define conditions.

Score	1	3	5
Education	No education effort in catchment	Flyers sent 2 times per year describing ordinance and rationale	Flyers sent 4 times per year and local classroom education reaching >25% of school-aged children in catchment
Enforcement	No warnings or tickets written	Monthly warnings and tickets to all vehicles parked off pavement	Weekly warnings and tickets checked at 4 different periods of the day to all vehicles parked off pavement
Community Engagement	No community engagement	Automated phone calls to households at least 1 time per year	Personal phone calls 2 times per year and representation at at least 2 community events, such as a fire safe council meeting or environmental faire within 1 mile of catchment

Table C.3: Illustration of an activity checklist condition assessment definition – for a hypothetical municipal parking ordinance.

C 3 CREDIT AWARD DETERMINATION

The credit award method defines a pragmatic, numeric approach to determine credit awards for catchments; and criteria to determine if individual pollutant controls are performing acceptably in a year. It also defines how performance of individual pollutant controls is used to determine the overall credit award for a catchment. The credit award method is intended to provide a logical relationship to actual pollutant loading from a catchment while being relatively easy to understand and implement within the Accounting and Tracking Tool. It is also intended to ensure credit awards are environmentally protective while providing an ongoing incentive to achieve load reductions.

C 3.1 ▪ DETERMINATION OF INDIVIDUAL POLLUTANT CONTROL PERFORMANCE

An individual pollutant control is considered performing when the actual condition in a year is greater than or equal to the expected condition minus 0.5. Therefore, any treatment BMP with expected condition of 3.0 is considered performing when the actual condition is greater than or equal to 2.5. As described in Section C.2.2 above, the expected condition score for a road class is between 0.0 and 5.0 depending on the road's potential to affect water quality. A road class is considered performing each year the actual condition is greater than or equal to the expected condition minus 0.5. Equation C.2 is the formal definition of performing and non-performing pollutant controls.

Treatment BMPs, Road Classes and Other Pollutant Control Strategies are all pollutant controls that are assessed as performing or non-performing annually. All essential and key pollutant controls contribute to the determination of the catchment credit award.

Expected conditions for Treatment BMPs, private property BMPs and other pollutant control strategies are set at a numerical score of 3. Expected conditions of roads are set at a user selected value from 0-5.

EQUATION C.2: DEFINITION OF INDIVIDUAL POLLUTANT CONTROL PERFORMANCE AND NON-PERFORMANCE

Performing: $Actual\ condition \geq Expected\ condition - 0.5$
Non-performing: $Actual\ condition < Expected\ condition - 0.5$

The Accounting and Tracking Tool uses self-inspection results to perform the comparison between expected and actual conditions and determines if a pollutant control is performing each year.

C 3.2 ▪ DETERMINATION OF CATCHMENT CREDIT AWARD

The credit award method uses the determination of performance for individual pollutant controls within a catchment to determine the overall credit award for the catchment. The maximum credit award for a catchment is 100 percent of the credit potential amount defined in the catchment credit schedule,[22] and the minimum amount of credit award for a catchment is 0.

Pollutant controls identified as essential in a catchment credit schedule are treated independently from key pollutant controls. The urban jurisdiction identifies essential and key pollutant controls in the catchment credit schedule on the basis of the magnitude of load reduction expected from individual pollutant controls (see Section C of the Catchment Credit Schedule Technical Guidance and Instructions for a description of essential, key and supporting pollutant controls). By definition there can be no more than 4 essential pollutant controls within a catchment. If any one essential pollutant control is non-performing the credit award for the catchment is 0. This reflects the importance of maintaining essential pollutant controls at near-to or better-than expected conditions.

When all essential pollutant controls are performing, the percent of key pollutant controls performing is used to determine the credit award. Equation C.3 defines the percent key pollutant controls performing. Table C.4 defines the percent of the credit potential amount awarded using the percent key pollutant controls performing.

EQUATION C.3: PERCENT KEY POLLUTANT CONTROLS PERFORMING WITHIN A CATCHMENT

% performing = # of key pollutant controls performing/total # of key pollutant controls

[22] Future iterations of the credit award method can include bonus credit for maintaining actual conditions better than expected conditions using the same numeric scoring approach.

Percent Key Pollutant Controls Performing	100%	90% - 99%	75% - 89%	50% - 74%	<50%
Credit Award	100%	75%	50%	25%	0%

Table C.4: Credit award amount – based on the percent of key pollutant controls performing within a catchment, when all essential pollutant controls are performing.

The conditions of supporting pollutant controls and conveyance infrastructure are not directly used in the credit award method; however, the importance of proper conveyance is recognized by the BMP RAM use of conveyance observations for all treatment BMPs.

The Accounting and Tracking Tool performs these calculations to determine the catchment credit award percent and the credit award amount for each registered catchment.

C 3.3 ▪ ENVIRONMENTALLY PROTECTIVE

The credit award method is used in the determination of regulatory compliance, and is intended to be environmentally protective. Environmental protection is achieved through the credit award method and through the processes of regulators reviewing individual catchment awards.

The credit award method assumes essentially no load reduction from non-performing pollutant controls while some load reduction is likely achieved when treatment BMP conditions are between 1 and 2.5. Further, the reduction of credit award for non-performing pollutant controls is generally greater than the expected increase in loading expected if the pollutant control were not in place. For instance, by definition an essential pollutant control is expected to be responsible for at least 25 percent of the load reduction from a catchment; however, it is very rare that a single pollutant control is responsible for 100 percent of the load reduction from a catchment. The credit method is protective by assigning a 100-percent reduction in credit if any one essential treatment BMP is non-performing.

While it is possible for non-performing key pollutant controls to result credit awards that are greater than the resulting load reduction, this is expected to be rare and may be corrected during the regulatory review of annual credit awards. If multiple key pollutant controls are non-performing within a catchment, the regulator reviews the relative importance of the non-performing pollutant controls, as well as the actual conditions of the non-performing pollutant controls. If the actual conditions of non-performing pollutant controls are within 1.5 of the expected conditions, then some load reduction may be achieved from the pollutant controls. Further, unless multiple non-performing pollutant controls are expected to be responsible for more than 10 percent of the load reduction each, the credit award method reduction in credit is nearly always more protective than the expected increase in loading.

C 4 ADAPTIVE MANAGEMENT NEEDS RELATED TO CREDIT AWARD METHOD

The credit award method and the underlying load estimation and condition assessment methods are areas of particular need for adaptive management. They are expected to improve through monitoring and research efforts. This section describes the conceptual relationship between effectiveness monitoring data and Crediting Program needs. It also identifies areas of the credit award method that require monitoring information to improve the credit award relationship to actual loading.

C 4.1 ▪ USE OF MONITORING RESULTS TO IMPROVE THE CREDITING PROGRAM

The Crediting Program combines several logical relationships to relate the expected magnitude of real load reductions to the ongoing implementation of pollutant controls. Expected loading estimates can be used as hypotheses to be tested. Further, evaluating the condition of pollutant controls during monitoring can expand the information about the catchment and can then be used to interpret monitoring results.

Actual loading can be approximated by targeted intensive stormwater monitoring and research. Load reduction estimates can be improved by comparing loading estimates to actual loading. The sensitivity of condition assessments can also be tested through targeted monitoring of treatment BMPs, runoff from roads and overall catchment loading.

Figure C.8 shows that:

- Intensive stormwater monitoring determines actual loading resulting from actual conditions of land uses, infrastructure and treatment BMPs in a catchment.
- Load estimation methods can estimate loading using the same actual conditions of land uses, infrastructure and treatment BMPs in the catchment.
- Expected loading can be compared to actual loading to improve both load estimation and condition assessment methods.

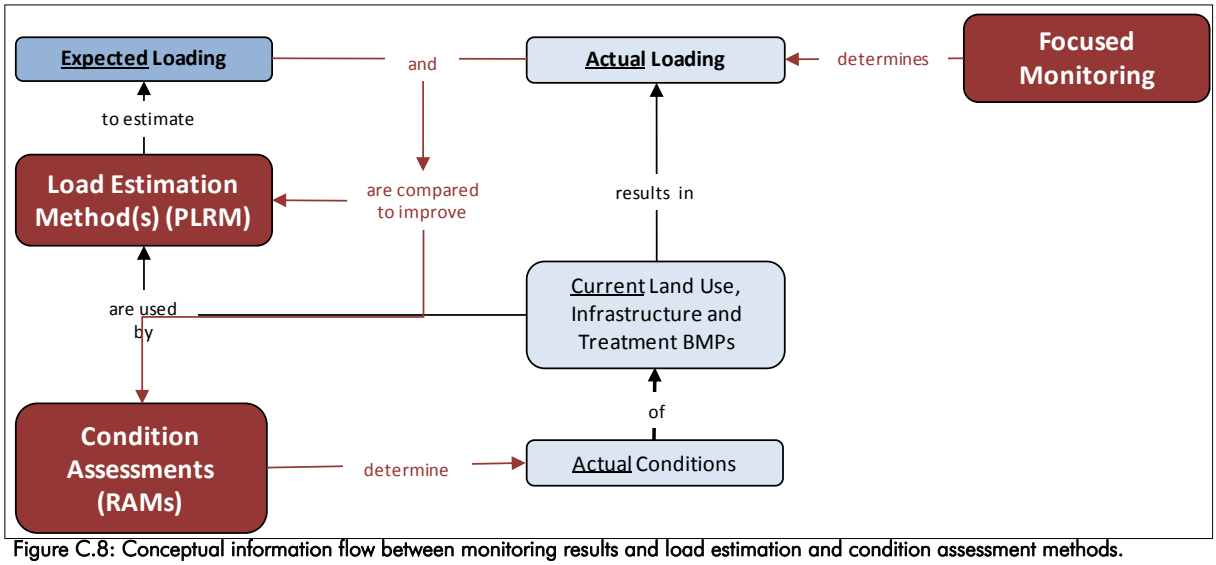


Figure C.8: Conceptual information flow between monitoring results and load estimation and condition assessment methods.

C 4.2 ▪ SPECIFIC QUESTIONS TO ADDRESS

The Crediting Program improvement process defined in Chapter 3 of the Handbook is designed to incorporate scientific findings from applied research and monitoring efforts on an annual basis. Three broad areas of potential adaptive management are described in Section 0.2 of the Handbook. Additional areas of identified need related to improving the relationship between credit awards and actual load reductions include, but are not limited to, the following:

- Relating load reduction modeling parameters to condition assessment observations.
- Calibrating the load reduction from individual treatment BMPs and roads to changes in condition scores, and improving the understanding of sensitivity between specific observations and loading.
- Developing a relationship between high condition scores and load reductions to support the incorporation of bonus credit into the credit award method.
- Refining the definition of water quality importance of pollutant controls to more precisely define the expected change in loading for non-performing pollutant controls.

ACRONYMS & ABBREVIATIONS

BMP RAM	BMP Maintenance Rapid Assessment Methodology
BMP	best management practices
Caltrans	California Department of Transportation
CCS	Catchment Credit Schedule
CICU	Commercial/Institutional/Communications/Utilities
DOT	Department of Transportation
ECAM	existing conditions analysis memoranda
EDCO	El Dorado County
EIP	Environmental Improvement Program
EPA	U.S. Environmental Protection Agency
FEA	Formulating and Evaluating Alternatives
IRP	Issue Resolution Punchlist
MOA	Memoranda of Agreement
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NPDES	National Pollutant Discharge Elimination System
PDP	Project Delivery Process
PIR	Program Improvement Recommendation
PLRM	Pollutant Load Reduction Model
RAM	Rapid Assessment Methodology
SWMP	stormwater management plan
SWQIC	Storm Water Quality Improvement Committee
TAC	Technical Advisory Committee
TMDL	total maximum daily load
TN	total nitrogen
TP	total phosphorus
TRPA	Tahoe Regional Planning Agency
Water Board	Lahontan Regional Water Quality Control Board

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GLOSSARY

Accounting and Tracking Tool – See TMDL Accounting and Tracking Tool

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

Baseline - The conditions present during the 2002-2004 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, as defined in the Catchment Credit Schedule Technical Guidance and Instructions, are used in baseline loading estimates.

BMP RAM (Rapid Assessment Methodology) – The standard condition assessment tool, defining simple and repeatable field observations, to determine the actual condition of an urban stormwater treatment BMP.

Catchment – see urban catchment

Catchment Credit Schedule (CCS) – Documentation of the assumptions, calculations and agreed upon results related to defining the credit potential for a specific urban catchment.

Catchment Percent Connectivity – The percent of pollutant loading leaving an urban catchment that is assumed to reach Lake Tahoe. 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 outlet 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. Each outlet with less than 100 percent connectivity must be modeled as a unique urban catchment and have a unique CCS.

CCS Verification Checklist – A form to guide regulators as they review and comment on the CCS and supporting materials. This form increases the consistency of review and can provide insight into the specific quality assurance performed on the CCS.

Clarity Challenge – An interim milestone to restore lake clarity to approximately 24 meters by reducing basin-wide loading of fine sediment particles by 32 percent. The ultimate lake clarity standard is 29.7 meters.

Condition Score – The numeric value, between 0 and 5, determined by comparing observation values to pre-determined benchmark (highest achievable) and threshold (no longer acceptable) values set by the urban jurisdictions. A condition score may be determined by one or more observation values according to a defined assessment method. See Table TT.2 for a list of the currently accepted standard condition assessment methods.

Credit Requirement – The number of credits, as defined in an NPDES Permit or MOA, that an urban jurisdiction must achieve in a year.

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. They are also the reference for determining annual credit awards.

Implementation Plan Summary – The brief descriptions and inventories of pollutant controls implemented in an urban catchment, including definition of 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 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.

Issue Resolution Punchlist (IRP) – A location to document substantive issues between regulators and urban jurisdictions that are not easily worked out through informal communications. Primary functions of the IRP are to ensure substantive issues are addressed and document how they are resolved.

Lake Clarity Credit – The relationship between fine sediment particles, total phosphorus and total nitrogen (defined by Equation 0.1) that is used to translate load reduction into regulatory requirements.

Load – The quantity of pollutants delivered from an urban catchment.

Load Estimation Method – A calculation approach, including the associate data inputs and assumptions, that integrates the benefits of pollutant controls within an urban catchment and produces an average annual load estimate. See Table TT.2 for a list of currently accepted load estimation methods.

Load Reduction – 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.

Load Reduction Estimate – An estimate of the average annual quantity of pollutants that will be prevented from leaving an urban catchment as a result of one or more pollutant controls.

Load Reduction Strategy – Describes the relative importance of each type of pollutant control strategy implemented in a specific urban catchment. This understanding informs Catchment Credit Schedule duration discussions, directs the attention of review of specific sections, and communicates the overall catchment approach to interested parties. 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.

Memoranda of Agreement (MOA) – The documents signed by NDEP, and Washoe or Douglas Counties, that define credit requirements and reporting requirements in a manner consistent with the requirements related to the Crediting Program found in California NPDES permits.

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.

National Pollutant Discharge Elimination System (NPDES) permit – The permit program authorized by CWA section 402 that covers stormwater discharges from municipal separate storm sewer systems and defines pollutant control implementation and reporting requirements for urban jurisdictions.

Observation Value – The specific numeric value observed during a condition assessment inspection. Observation values are compared to benchmark and threshold values to determine actual condition scores.

Pollutant Control Strategies – Actions that reduce pollutant loads in stormwater transported downslope, 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.

Pollutant Load Reduction Model (PLRM) – A standard load estimation method, which integrates loading achieved through combinations of source control practices and treatment BMPs in an urban catchment.

Private property BMPs – structural pollutant controls implemented to reduce or eliminate stormwater runoff from private parcels.

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

Road Class – 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).

Road RAM (Rapid Assessment Methodology) – The standard condition assessment method used to inspect and report actual conditions in comparison to the expected conditions that are used in load reduction estimations.

Road Risk – 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 PLRM. 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.

Source Control – Measures that prevent the mobilization of pollutants from their original source.

Secchi disk – A circular disk used to measure water clarity.

Shared hydrology catchment - An area containing urban land uses with runoff entering the catchment from other urban jurisdictions or non-urban lands. These catchments involve additional analysis and coordination challenges.

Strategic Importance – A general categorization of the relative load reduction importance of pollutant control types in an urban catchment. Each type of pollutant control is categorized as primary, secondary or tertiary based on professional judgment.

Threshold standards – Regulatory targets defined in the Tahoe Regional Planning Agency (TRPA) Regional Plan document. These are the same as "environmental threshold carrying capacities" referenced in the TRPA compact.

Treatment BMPs – Structural BMPs that are construed to accept, attenuate and treat urban stormwater. Treatment BMPs are implemented to reduce pollutant loading in stormwater transported downslope by either retaining/removing pollutants and/or by reducing surface water volumes.

Total Maximum Daily Load (TMDL) – A regulatory determination of the maximum amount of a pollutant, or pollutants, that a waterbody can receive while still meeting water quality standards. The Lake Tahoe TMDL defines ultimate load allocations (which define load reduction requirements) and interim milestones for urban upland runoff, forest upland runoff, direct atmospheric deposition to the lake, and stream bank erosion for fine sediment particles, total phosphorus and total nitrogen.

TMDL Accounting and Tracking Tool – The central credit and load reduction database that 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).

Urban catchment – A contiguous area containing urban land uses with runoff draining to a surface waterbody. (See also: Shared hydrology catchment)

Water Quality Importance - Each treatment BMP and road class is defined as essential, key or supporting based on the relative load reduction it is expected to achieve. This categorization is used to determine the amount of credit to award when actual conditions during a year are significantly worse than expected conditions.