Appendix C

Consolidated Goals and Objectives for the Regional Stormwater Monitoring Program (RSWMP)

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January 5, 2008

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January 5, 2008

To: RSWMP Core Group

From: Alan Heyvaert and John Reuter, TSC

RE: Consolidation of RSWMP Goals and Objectives

Programmatic Directives for Tahoe Regional Stormwater Monitoring Program (RSWMP)

A. Develop a stormwater monitoring program that is directly responsive to the needs of both regulatory agencies and project implementers.

B. Provide consistency in sampling design, data reporting and quality assurance.

C. Develop data management and communication tools for efficient and effective reporting on current conditions and trends.

D. Assure cost-effective high benefit from regional stormwater monitoring through a coordinated program that informs priority management decisions.

E. Implement sustainable RSWMP organizational structure with stable funding, dedicated personnel and adequate resources.

Consolidated Tahoe RSWMP Monitoring Goals

1. Pollutant Source Monitoring

   Identify specific sources of urban stormwater pollutants.

2. Pollutant Reduction Monitoring

   Quantify progress in pollutant reduction and restoration efforts.

3. BMP Design, Operation and Maintenance Monitoring

   Develop information for improvements in BMP design, operation and maintenance.

4. Data Management, Analysis and Dissemination

   Provide data reporting, analysis and access for better project design, prioritization and long-term performance.

Consolidated RSWMP Monitoring Objectives

Monitoring Goal 1 (Pollutant Source Monitoring):

- Identify largest source areas and consequently where projects are needed.
- Refine relationships between land use and pollutant generation.
- Provide periodic updates to event mean concentrations (EMC) for basin-scale modeling within an adaptive management framework.

Monitoring Goal 2 (Pollutant Reduction Monitoring):

- Determine existing concentrations and loads to support pollutant reduction crediting.
- Document progress toward TMDL and other regulatory goals.
- Provide data required to fulfill permit reporting.
- Provide data to evaluate and update discharge standards and thresholds.
- Update data for project-scale modeling (e.g. Pollutant Load Reduction Model) and for linking to basin-scale models (e.g. LSPC).
- Distinguish restoration effects from inter-annual variability and climate trends.

Monitoring Goal 3 (BMP Design, Operation and Maintenance Monitoring):

- Field evaluations on the effectiveness of individual BMPs and projects to lower pollutant loads over time.
- Evaluate BMP maintenance strategies and track maintenance data.
- Verify correct project construction according to engineering specifications.
- Track BMP physical and biogeochemical conditions over time.
- Develop effectiveness matrix for BMP design variables.
- Determine maximum practical effectiveness (concentrations and loads).
- Provide data for pre- and post-project assessments.

Monitoring Goal 4 (Data Management, Analysis and Dissemination):

- Provide data repository for compilation and management.
- Evaluate monitoring data regularly to provide quarterly reports and annual data analysis, synthesis of findings and recommendations.
- Conduct biennial programmatic review to evaluate monitoring program goals, objectives and products.
- Include any new or existing data that meet standard protocol requirements.
- Provide participant access to data, products and tools after QA/QC review.

Note: the following compilation of agency and implementer documents have been annotated (as red text) to show correspondence with consolidated RSWMP monitoring goals and any additional comments.

M E M O R A N D U M

REGIONAL STORMWATER MONITORING PROGRAM (RSWMP) Core Group
Lake Tahoe Basin Project Implementers

DATE: Draft of September 27, 2007

TO: RSWMP Core Group - TSC

FROM: RSWMP Core Group - Implementers

SUBJECT: LIST OF SPECIFIC MONITORING PROGRAM OBJECTIVES

Greetings TSC Core Group:

The purpose of this memorandum is to provide a list of specific monitoring program objectives that could be considered the highest priority from the Tahoe Basin water quality project implementer's perspective. Over the last several months, many good ideas have been discussed to be a part of a framework for a comprehensive stormwater monitoring program. Whilst all of these ideas are likely important for such a program, the implementers of the RSWMP Core Group have identified an initial list of specific objectives that are believed to the most paramount in the near to mid-term to help fulfill the broad goals of the RSWMP as summarized below. We trust that this list will be helpful for building on Phase 2 efforts for designing the specific monitoring program that will meet both agency (funding and regulatory) and implementer needs. In the short-term, we hope this memo helps in upcoming discussions with the regulatory agencies and prepares the Core Group for presentation at the upcoming TIE meeting.

RSWMP GOALS

RG1) Utilize existing and future monitoring data to build better and refine prioritization of water quality improvement projects in each jurisdiction for helping fulfill TMDL and Basin thresholds for improved Lake Tahoe water clarity and quality. (Monitoring Goal 3)

RG2) Receive periodic report cards for water quality project efforts through assessment of storm water quality at major outfalls. These report cards should provide information to help fulfill 1. above, but also aid jurisdictions with fulfilling some of their compliance monitoring requirements. (Monitoring Goal 4)

RG3) Development of user friendly data base for all to use to support goals of 1. and 2. above. (Directive C and Monitoring Goal 4)

RG4) Provide coordinated framework for consistency in monitoring protocols and reporting allowing for valid data comparison efforts, data report defensibility and uniform format for compliance monitoring. (Directive B and Monitoring Goal 4)

RSWMP OBJECTIVES

Organizing premise: Generation of the TMDL has focused intense scrutiny on urban stormwater runoff. Unfortunately, there has not been an organized effort like LTIMP to do long term monitoring of urban stormwater before it mixes with upland runoff or in intervening zones before discharge into the Lake. Another issue is that we need to acknowledge that BMPs to get 7 NTU water to 0.5 NTU water are not widely available and not generally viable in a space-constrained place such as Tahoe. That means we are developing new BMPs, new BMP systems, and new applications for existing BMPs. Therefore the primary questions to answer are:

RO1) What is the flow and pollutant load from urban areas and what is the trend? (Monitoring Goal 2)

- Representative watersheds should be highly monitored in order to completely understand the sources and quantities of urban pollutants. Data reported should include flows, pollutant concentrations and pollutant loading along with land use characteristics of watersheds to facilitate compliance with and verify TMDL allocations as well as be a tool for prioritizing future projects and defining their scopes. (Combination of Monitoring Goals 1 and 2)
- This effort should be independent of political jurisdictions, but ultimately data needs to be deciphered and applied to each jurisdiction for appropriate regulatory responsibility. At least one representative urban-dominated watershed or subwatershed should be monitored in each jurisdiction. In the case of NDOT and Caltrans having jurisdiction over a predominantly linear ROW, strong coordination between agencies will be required to accurately assess the distribution of pollutants amongst multiple jurisdictions in the same watershed. (Consider this in the RSWMP monitoring design.)
- Existing monitoring efforts would be leveraged to add to the general body of knowledge. This requires standardized data collection, analysis, and reporting protocols. (Directive E and Monitoring Goal 4. What's out there, what's being done or will be done, and how does RSWMP interact with or incorporate these other programs? We should show the main elements in Phase 1, but this will need to be fully developed in Phase 2.)

- Sampling and Reporting Frequency: Sampling frequency will vary dramatically, but reporting frequency should be at least quarterly. (Directive B and Monitoring Goal 4)

RO2) What is the best BMP for a particular application and what average effluent concentration can reasonably be expected? (Monitoring Goal 3. Describe how RSWMP can contribute to recommendations for better BMPs and projects; for example flow-effectiveness relationships, optimal pool size, etc. Pick a couple of BMPs from TRPA BMP Manual to use as examples.)

- If traditional BMPs can not meet the performance requirements, what can? (Monitoring Goals 3 and 4; RSWMP could monitor/test promising new selected BMPs and approaches in their initial applications.)
- A list of example BMP systems with expected performance parameters that meet Lake Tahoe unique requirements should be developed. (Monitoring Goal 3)
- Reporting Frequency: Annually.

RO3) Are jurisdictions and/or subwatersheds meeting allocation and discharge limits? (Monitoring Goal 2)

- Compare monitoring information to relevant benchmarks, such as TMDL allocations and NPDES permits. (Monitoring Goal 2)
- Sampling and Reporting Frequency: Quarterly.

RO4) What tools are available to better identify the source of urban pollutants? (Monitoring Goal 1)

- Can RSWMP tailor general urban pollutant reduction guidelines (i.e., BMP applications) to meet unique needs of a specific area)? (Include an adaptive management element in the RSWMP program to consider new issues and pollutants of concern.)

  For example (Distinguish between relative contributions of anthropogenic versus natural sources; Monitoring Goal 1.):

  - Understand the pollutant distribution in the littoral zone.
  - Fingerprint suspended sediment particles to determine if they are native or associated with urban runoff.
  - Determine if nitrogen or phosphorus sources are natural or anthropogenic.
- Reporting Frequency: Annually.

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MEMORANDUM

REGIONAL STORMWATER MONITORING PROGRAM (RSWMP) Core Group
Water Quality Regulators

Date: October 4, 2007

From: Larry F. Benoit, TRPA Water Quality Program Manager

To: WQ Regulators for October 17 Report to RSWMP Core Group

Subject: Draft TRPA (Regulator) RSWMP Goals and Objectives

The regulatory agency focus for stormwater monitoring stems from the Lake Tahoe Clarity Standards and Thresholds, which are the basis of the Lake Tahoe TMDL for pollutant load reductions for fine particulate, nitrogen and phosphorus. Stormwater discharge standards in California and TRPA threshold standards for surface waters, and land treatment or infiltration are focused on urban development and highway corridors (urban uplands). The TMDL Technical Report (Lahontan and NDEP September 2007) identifies these urban uplands as the major sources of fine particulate, and phosphorus loading to Lake Tahoe. A comprehensive Regional Stormwater Monitoring Program is critical for meeting the Lake Clarity Standard, Threshold, and TMDL load reduction goals. Such a comprehensive stormwater monitoring program has never existed, although there have been huge expenditures in the Tahoe Basin for water quality project implementation, and project effectiveness monitoring to address stormwater loading to Lake Tahoe. As a matter of cost effectiveness and feasibility this RSWMP must be able to use the same monitoring protocols to gather the same basic stormwater data in order to meet multiple goals and objectives for regulators, funding agencies and implementers. The goals that follow are in the context of what we want to know, and the objectives are in terms of how we want to know it.

General Comments about the Proposed Monitoring Program

- Please consider using the "Lake Tahoe Management System" manual (Chapter 3 of the report; www.tiims.org) to frame and guide the RSWMP. (Get this document from TIIMS website to include in RSWMP bibliography review.)
- Provide additional introductory information about what specifically the program's focus is envisioned to be in comparison to today. For example, will it focus only on monitoring and evaluating the effectiveness of engineered BMP's (sediment catchment basins, drop inlets, curb and gutter retrofit, etc) or will it attempt to also monitoring and evaluate stream restoration, forest restoration, etc (define the scope of the program). Make sure to tie the purpose of the program back to bigger picture regional goals (i.e., lake clarity) and what you ultimately want the program to be (in say 5 years). For example, the program will establish a inter-jurisdictional monitoring network, use standardized monitoring and evaluation procedures, will pool funding from a variety of sources,…to improve our

understanding of sources of fine sediment, nitrogen, and phosphorous pollution and effectiveness of capital improvement BMP projects to capture these pollutants. That is, provide decision makers with an overall vision and purpose and need for the program. (Build these elements or equivalent into funding and organizational structure of RSWMP, and explain why or modify as appropriate.)

- Make sure goals statements are consistent with achieving the vision set forth in the previous bullet (above). Goals, taken together, should demonstrate attainment of the overall vision of the program.
- Objectives should be measurable, quantifiable, time limited and are required to achieve a goal. If a goal is to have a system in place that partners could enter and retrieve data related to storm water, then an objective would be to "build a relational database and make it available to partners on the TIIMS website by March 1, 2008" and to "provide partner training on the use of the database by April 1, 2008". (This won't be available by March/April 2008 as part of Phase 1; initial elements will show up in the BMP database.)
- For "big" objectives, provide action item(s) to detail step-by-step events needed to achieve the objective. (Break objectives down to a series of steps.)
- Budget - Provide an estimate of cost associated with starting and maintaining the program over time. (Directive E; define stable budgets, funding mechanisms and organizational structure for RSWMP.)
- Personnel – provide a description of the people, skill sets, and equipment needed to make the program work. (Directive E; define stable budgets, funding mechanisms and organizational structure for RSWMP.)
- Monitoring Plan – consider the development and subsequent implementation of a monitoring plan as an objective. Recommend that the template provided in the Lake Tahoe Management System Report be used to guide its development. (Get this document, Lake Tahoe Management System Report, from the TRPA.)

Draft TRPA (Regulator) RSWMP Goals

Goal 1) Provide continuing refinement of land use based stormwater runoff loads (Event Mean Concentrations) for urban land uses and wildfire. The limited land use pollutant loading data to date has not discriminated between pervious and impervious surfaces in these urban land uses, or been able to address the benefit of planning programs intended to limit disturbance (IPES and development allocations) of land or mitigation of that disturbance (BMPs) for stormwater quality benefit. This goal is important for providing a more certain baseline for application of pollutant control options and supporting other management decisions as well as evaluation of pollutant load reduction under goal 4 below. (Monitoring Goal 1; plus source data to help show progress in restoration and regulatory implementation for Monitoring Goal 2.)

Goal 2) Provide statistically valid evaluation of stormwater discharge standards and thresholds for surface water and land treatment / infiltration. This goal required to

evaluate the usefulness of existing discharge standards, on average, as surrogates for necessary pollutant load reductions for Lake Tahoe Clarity. (Monitoring Goal 2, plus includes the adaptive management feedback loop for continual evaluation and improved performance of models and regulations. So show feedback steps in design of RSWMP organizational structure and as part of Monitoring Goal 4.)

Goal 3) Provide pollutant source control (PSC), hydrologic source control (HSC) and stormwater treatment (SWT) effectiveness analysis on a regional basis to increase confidence in selection, design and operation of SWT and water quality project implementation for pollutant load reduction. (Important elements to build into RSWMP monitoring design. This is most closely related to Monitoring Goal 3, but also contributes to Monitoring Goal 2.)

Goal 4) Provide evaluation of pollution reduction from stormwater management and water quality project implementation relative to TMDL targets for Lake Tahoe Clarity attainment over time. This goal is critical to the adaptive management approach being incorporated into the update of Regional Plans and the TMDL Implementation Plan. (Monitoring Goal 2)

Draft Objectives

Objective 1) To the extent possible focus land use load monitoring for fine particulate, nitrogen and phosphorus on small drainages where within land use sources can be separated, in addition to evaluating benefits of limiting disturbance and implementation of PSC and HSC BMPs. If the same locations can also provide inlet / discharge standard data for SWT locations, that would be additional efficiency benefit for utilization of Autosamplers and sample analysis cost. (RSWMP monitoring design consideration; most closely related to Monitoring Goal 1.)

Objective 2) Provide the largest number of data points per sample site with consistent sampling protocols (to meet various goals with the same data to the extent possible), input QA/QC'd data directly into a RSWMP database for the broadest analysis possible (without waiting for written reports from any data source). Cooperating monitoring programs must agree to submit data directly under the same protocols and constituent parameters and requirements. (RSWMP monitoring design considerations, plus elements of Monitoring Goal 4.)

Objective 3) Model direct discharge standard data, calculated PSC, HSC, and EMC data for Basin-wide extrapolation for analysis, and findings for adaptive management reporting cycles. (RSWMP may not be running models, but would provide input data for periodic updating of models. However, RSWMP would encourage some sort of periodic model update/review by providing new data on a regular basis. Actually, in setting up and designing RSWMP we will need to know important input variables plus sensitivity analysis results, as part of Phase 2 RSWMP development.)

Objective 4) Provide for objective third party analysis and reports on findings for RSWMP management group decision support. (This may be related to 5 year external peer-review; otherwise the scientific community provides the third party along with regulatory and implementer groups, for objective independence.)

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M E M O R A N D U M

REGIONAL STORMWATER MONITORING PROGRAM (RSWMP)

DATE: **November 6, 2007**

TO: **RSWMP Core Group**

FROM: **Lahontan Water Board – Lake Tahoe TMDL Unit and Nevada Division of Environmental Protection**

SUBJECT: **DRAFT LIST OF MONITORING PROGRAM GOALS AND OBJECTIVES**

The Lahontan Water Board and Nevada Division of Environmental Protection have recently completed two major products; the Lake Tahoe TMDL Technical Report, and the Pollutant Reduction Opportunity Report. These reports represent both the science and provide the basis for developing a range of management strategies required to improve Lake Tahoe's clarity. The next step in the Lake Tahoe TMDL process is to develop an implementation plan and to determine load allocations with associated pollutant reductions. Critical for any water quality improvement program is a system to track progress to meet overall goals. The RSWMP has been identified as a way to fill the data gaps with consistent protocols for a Basin-wide application. The program goals and objectives discussions are important to determine how RSWMP can be a useful program for both Basin Managers/Regulators and Implementers.

The purpose of this memorandum is for the Lahontan Water Board and NDEP to provide a list of broad storm water monitoring goals and objectives. Internal discussions will continue over the next few months—and we hope to have identified specific targets and allocations to further inform this monitoring program. This collaborative effort will ultimately offer valuable information on (1) project/program implementation, 2) BMP projects and programs effectiveness and design improvements specific to reducing fine sediment and nutrient loading to Lake Tahoe, and 3) storm water status and trends.

RSWMP GOALS

1. Provide a basis for continuous improvement to assist project implementers to more efficiently develop and implement and maintain storm water improvement

projects and programs to help meet the Lake Clarity objective. (Monitoring Goals 3 and 4, w/ adaptive management)

2. Prioritize water quality improvement projects on a representative project, sub-watershed, or jurisdictional scale to help meet Lake Tahoe TMDL targets and Basin thresholds for improved water quality and lake clarity. (Monitoring Goal 1, with source data to help prioritize)

3. Provide coordinated framework for consistency in monitoring protocols and reporting allowing for valid data comparison efforts, data report defensibility, and uniform format for compliance monitoring. (Directive B and Monitoring Goal 4)

RSWMP Objectives

1. Develop and refine load estimates for identified storm water outfall points to identify where the largest storm water pollutant loads originate, and where the largest load reductions can occur. (Monitoring Goal 1; macro scale as with LTIMP, with scales like nested wheels/gears)

2. Compare modeled or predicted project effectiveness to measured project effectiveness, both at implementation and over time (possibly include operation and maintenance schedules in the reporting of project effectiveness). (Monitoring Goals 2 and 3, at meso scale)

3. Identify and monitor representative project areas and/or sub watersheds to evaluate pre and post project pollutant trends to (1) refine land use Event Mean Concentrations for representative watersheds with and without BMP applications within the Basin; and (2) support refinement and validation of project-scale load evaluation tools. (Combination of Monitoring Goals 1 through 4)

4. Identify and establish representative watersheds or sub-watersheds for long term, detailed monitoring to completely understand the sources and quantities of urban pollutants and project/program effectiveness. Monitoring should include flows, pollutant concentrations (fine sediment, phosphorus and nitrogen) to facilitate load calculation. (Combination of Monitoring Goals 1 and 2; meso scale.)

5. Develop database linked to a GIS layer for accessibility hosted on a secured website (TIIMS or TSC). (Consider including GIS functionality for Monitoring Goal 4.)

6. Dedicate a percentage of funding annually to monitoring specific pilot study implementation projects or research efforts to determine anticipated pollutant load reduction potential of innovative projects. Evaluate the effectiveness of new and innovative BMP applications for removing fine sediment from urban storm water. (This would be assigned by the steering committee, TAC and staff, we need to

show how this type of need would be developed by RSWMP; same for BMP metrics, maintenance, innovation.)

7. Standardized and uniform monitoring, analytical, and reporting protocols. (Directive B and Monitoring Goal 4)

8. Standardized reporting including: (Monitoring Goal 4)
   - Progress towards achieving water quality improvements on a sub-watershed or jurisdictional scale.
   - Comparison of measured data with anticipated/estimated pollutant loading budget.
   - Recommendations based on the findings, both on an annual basis and a 5 year summary of trends report.

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M E M O R A N D U M

REGIONAL STORMWATER MONITORING PROGRAM (RSWMP)

DATE: **November 16, 2007**

TO: **RSWMP Core Group**

FROM: **CA Tahoe Conservancy**

SUBJECT: **DRAFT LIST OF MONITORING PROGRAM GOALS AND OBJECTIVES**

The CA Tahoe Conservancy strongly supports coordinated efforts to monitoring stormwater. The entities in the basin have long needed this type of program to help meet our water quality goals. Our goals and objectives are similar to the other agencies in the basin, although, as our funding directs, our focus is on the project level effectiveness monitoring. We recommend that the format for the goals and objectives be a broad goal followed by specific objectives that will achieve that goal. We feel that developing the goals is most critical at this time, and see objectives development as being a continuous process and will be updated periodically as we meet objectives or determine new ones. We do not see the objectives we have provided as being a comprehensive list, but simply building off the others as a start. (Include a discussion of this approach in the Phase 1 document.)

As a potential funding agency of this program we are concerned some of goals may be difficult to fund. Activities such as compliance monitoring, specifically NPDES compliance, and TMDL monitoring (trend and validation monitoring) may not be eligible for funding. Although the funding strategies are to be developed in phase 2 of this

program we feel it is important at this point, as we try and gain support for sustainable funding, we consider how we present the goals and objectives. It may behoove us to consider developing goals and objectives by potential funding sources. In this scenario goals could be broken down by the type of monitoring conducted. Are the regulatory and local jurisdictions going to be responsible for funding the compliance monitoring? Is there a portion of permit fees going to be used to fund the TMDL and compliance monitoring? Understanding that we fund permit fees for projects, this may be an avenue to generate funding. (Issues in this paragraph need to be addressed as part of developing Directive E)

RSWMP GOALS

1. Conduct project and specific BMP effectiveness monitoring in order to better inform project managers on developing the most effective projects. (Monitoring Goal 3)
2. Develop specific monitoring methods so that monitoring is consistent regardless of the entity implementing the monitoring. (Directive B and Monitoring Goal 4)
3. Create a reporting procedure that details the results of monitoring. The reporting should be user friendly and should focus on giving clear direction to managers on how to best design projects. (Directive C, with Monitoring Goals 3 and 4; but we will need to be clear in Phase 2 to what extent this will be expected from the program and how it is to be funded as part of Directive E.)
4. Help inform the TMDL and Pathway programs to determine progress towards their goals. (Monitoring Goal 2)

RSWMP Objectives

We felt the objectives developed by the various agencies started an excellent list and are adding just a few more. As stated above we see the objectives evolving and changing over time. The program should develop a procedure, perhaps annually, to evaluate objectives to determine if they have been answered and to add new ones. (Directive D and Monitoring Goal 4)

1. Determine how various BMP perform with different levels of maintenance. (Monitoring Goal 3)
2. Reporting shall not only provide monitoring results and analysis, but also provide recommendations on designing projects in the future. (Which BMP is best in different scenarios. We have a vast toolbox for projects but we need a better understanding of which tool to use in which situation). (Directive D and Monitoring Goals 3 and 4)

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Memorandum

Date: December 5, 2007

To: Regional Stormwater Monitoring Program Core Group

From: Scott McGowen
Chief Environmental Engineer
California Department of Transportation
Division of Environmental Analysis

Subject: List of Monitoring Program Goals and Objectives

The California Department of Transportation (Department) supports a coordinated stormwater monitoring program to ensure a science-based, date-driven approach to achieving monitoring goals and objectives. We support the development of an effective monitoring plan that has realistic and economically achievable goals. The monitoring plan should include information on the specific regulatory requirements being fulfilled by the monitoring activities and reporting. (As this information becomes available, include a description of anticipated TMDL and NPDES permit requirements.) Monitoring goals and objectives should be reviewed and updated periodically.

As you are aware, the Department has conducted extensive discharge characterization and research of Best Management Practices (BMPs) within the Lake Tahoe Basin since the mid 1990s. Results of the Lake Tahoe Basin monitoring and this research are available on the Department's stormwater management website, http://www.caltrans.ca.gov/hq/env/stormwater. The Department is focused on developing cost effective and efficient BMPs that help meet reasonable water quality objectives.

As a potential funding partner of this program, we are concerned that some goals may be difficult to fund. The Department will commit to collaborating with the coordinated monitoring plan; however, funding contributions should be based on a pro-rata, cost-shared basis. (A brief discussion of this should be included in the Phase 1 document.) Also, please note that any monitoring the Department will conduct within the Lake Tahoe Basin must be consistent with the Department's Comprehensive Monitoring Protocols Guidance Manual, CTSW-RT-03-105.51.42.

Please consider the following goals and objectives:

RSWMP Goals:

1. Obtain scientifically defensible monitoring data through the consistent and technically valid monitoring protocols and reporting. (Directive B)
2. Obtain data to support sound management decisions and verify progress of programs to meet the Lake Tahoe TMDL. (Directive D)

3. Optimize fiscal and technical resources by promoting multiple purpose monitoring efforts at sites and BMPs applicable to the entire Basin. (Directive D; but make sure multiple purpose monitoring approach is addressed in monitoring design.)
4. Obtain data to support model validations for the Lake Tahoe TMDL, including continuing refinement of land use-based stormwater runoff loads. (Monitoring Goal 1)
5. Obtain data to support tools (BMPs) that will help comply with the TMDL and other stormwater regulations. (Monitoring Goal 3)
6. Focus on source identification and quantification by developing and implementing a watershed based monitoring program that includes all sources of pollutants inside and transported into the basin. (Monitoring Goal 1)

RSWMP Objectives:

1. Optimize use of previous monitoring efforts and data (e.g., characterization and BMP pilot studies) where the data meets the standard monitoring protocol (see Objective 2 below) or an equivalent protocol. (Monitoring Goal 4)
2. Establish standard monitoring (including analytical methods and QA/QC requirements) and reporting protocols for past, current and future monitoring efforts consistent with the Lake Tahoe TMDL data needs (e.g., land use loadings for fine sediment and nutrients, BMP effectiveness). Ensure these protocols are consistent with the Department's protocols. (Directive B)
3. Establish a central data repository for all groups to submit their data. It is recommended that all data submissions be in the same format and QA/QC is done by the partnering agency prior to submittal. Overall QA/QC should be done after submittal as well. (Monitoring Goal 4)
4. Make central data repository accessible to all RSWMP participants. (Monitoring Goal 4)
5. Identify and monitor representative project areas, BMPs, and/or sub-watersheds to evaluate pre- and post-project pollutant trends to (1) refine land use Event Mean Concentrations for representative watersheds with and without BMP applications within the Basin; (2) support refinement and validation of project-scale load evaluation tools; and (3) identify current and new BMPs suitable for implementation. (Combination of Monitoring Goals 1 through 4)
6. Identify and establish representative watersheds or sub-watersheds for long term, detailed monitoring to understand the source and quantities of urban and non-urban pollutants and project/program effectiveness. Monitoring would include flows, pollutant concentrations (fine sediment, phosphorus and nitrogen) to facilitate load calculations. (Combination of Monitoring Goals 1 and 2)

7. Establish a fair and equitable funding formula for overall monitoring efforts considering estimated pollutant loads and watershed characteristics. (Make sure this is addressed in the funding section of Phase 1 document.)
8. Develop a representative monitoring network based on watershed characteristics. Ensure Caltrans' ongoing and planned characterization studies, BMP pilot studies, and source identification studies are incorporated. (Monitoring Goal 1; be sure to include in monitoring design.)
9. Ensure participants (particularly funding agencies) are actively involved in the annual review and evaluation of the data. (Directive A and Monitoring Goal 4)
10. Evaluate the program annually to confirm the monitoring needs and goals are being met. (Monitoring Goal 4)
11. Employ annual adaptive management techniques to adjust the program's monitoring needs and goals if necessary. (Directives A and D, with Monitoring Goal 4)
12. Create and maintain a core group of stakeholders (funding agencies and others) to develop and assure the goals and objectives of the monitoring efforts are maintained. (Directives A and D, with Monitoring Goal 4; be sure this is addressed in design of RSWMP organizational structure)
13. Develop a representative monitoring program that is cost effective and takes advantage of economy of scale. (Directive D)
14. Define compliance credit for participating agencies in this monitoring program. (Some text on this should be developed with regulatory agencies for Phase 1 document; but would be developed as part of Phase 2.)
15. Monitoring data should support the development and implementation of appropriate BMPs. (Monitoring Goal 3)

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