



## PLACER COUNTY DEPARTMENT OF PUBLIC WORKS

Ken Grehm, Director  
Peter Kraatz, Deputy Director

Robert Larsen  
Lahontan Water Board  
2501 Lake Tahoe Blvd  
South Lake Tahoe, CA 96150

September 15, 2011

**SUBJECT: COMMENT LETTER – DRAFT UPDATED WASTE DISCHARGE  
REQUIREMENTS/NPDES PERMIT AND MONITORING AND REPORTING PROGRAM FOR  
THE CITY OF SOUTH LAKE TAHOE, EI DORADO COUNTY, AND PLACER COUNTY  
STORM WATER/URBAN RUNOFF DISCHARGE, EL DORADO AND PLACER COUNTIES**

Thank you for the opportunity to comment on the draft updated Tahoe NPDES Permit. We recognize and appreciate the challenges the Board and its staff have in crafting a reasonable and balanced permit that will ultimately result in improved water quality. To that end, we hope that our comments on this draft permit and monitoring program are received as constructive and beneficial.

Placer County supports the continued improvement of Lake Tahoe water quality and transparency, and we remain committed to doing the best that we can with the resources available. While Lake Tahoe is an obvious priority due to its world-wide recognition and status, its outstanding clarity, and numerous beneficial uses, it is not the only water quality priority for Placer County. In addition to this Lake Tahoe NPDES permit, Placer County is also permitted under the NPDES Phase 2 municipal program for the Truckee River Watershed and for the Western Placer County urbanized area. Proposed NPDES Phase 2 permit revisions are quite extensive and are expected to impact water quality program implementation costs and efforts on the order of 3 to 5 times greater than current levels. This County is, like most California municipalities, struggling with severe economic distress, staffing reductions and reassignments, budget reductions, and declining revenues. Implementation of expanding water quality permit requirements under both the NPDES Phase 1 and Phase 2 permits, even in the best of times, will be very difficult and challenging, and certainly will not be immune from the effects of today's economic realities.

During your Board's consideration of the Lahontan Region Water Quality Control Plan (Basin Plan) late last year, Placer County, and others, expressed concern about the feasibility and practicality of meeting proposed (now approved) Total Maximum Daily Load (TMDL) load reductions and implementation schedules. As mentioned above, the primary concern relates to our ability to secure necessary funding and staffing resources to complete the actions deemed necessary to meet stated TMDL load reduction milestones. An essential consideration in meeting the TMDL goals are assurances of, not only continuing State and Federal funding participation, but the need to do so at levels exceeding historical participation. These concerns

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were outlined in our letter dated March 16, 2011 to the State Water Resources Control Board during their consideration of the Basin Plan amendment. A copy of that letter is attached (Attachment 1), and is hereby incorporated into our comments regarding the draft permit and its implementation requirements.

For your consideration, we have attached a spreadsheet (Attachment 2) with a number of specific comments, questions, and suggestions from our review of the draft permit and its attachments. In addition we would also like to present the following commentary on some of the broader concerns regarding the permit's implementation requirements:

### **Jurisdictional Baseline Loads**

In February, 2011 the Lahontan Regional Board sent to California NPDES Permittees in the Tahoe Basin, a directive entitled "*Order to Submit Technical Reports in Accordance with Section 13267 of the California Water Code – Lake Tahoe Urban Stormwater Implementation*". Included in the submittal requirements was a jurisdictional TMDL baseline pollutant load computation, using the available Pollutant Load Reduction Model (PLRM) or equivalent. Baseline load estimates are intended to be used in the NPDES permit, for purposes of specifying enforceable volumetric load reduction targets.

Limitations in the current PLRM modeling capabilities, particularly with regard to hydraulic and hydrologic connectivity, raise concerns about baseline load modeling accuracy. This has been discussed with Lahontan Regional Board staff and was the subject of letter from the TMDL implementing agencies to your Executive Officer, dated September 1, 2011 (Attachment 3). We fully expect a continuing refinement of modeling capabilities, providing opportunity to reevaluate baseline loading with greater confidence in the results. As it relates to the draft permit, we would like to see language added that assures opportunity to update baseline load information at any time during the permit term where better information is available.

### **Monitoring**

The draft permit includes water quality monitoring requirements to help assess the effectiveness of TMDL implementation actions, and to help validate and refine the various implementation tools developed to measure progress. We appreciate that the specified monitoring requirements are reasonable and expected to provide direct and valuable information related to TMDL implementation, and that there is opportunity for co-permittees to work together for a cost-effective monitoring approach.

For many years, there has been an on-going effort in the Lake Tahoe Basin to implement a Regional Storm Water Monitoring Program (RSWMP). An effective basin-wide monitoring program is needed to provide comprehensive and meaningful insight on water quality impacts and TMDL implementation efforts. Placer County is supportive of such a program, as we've heard expressed by many other entities in the Tahoe Basin. Unfortunately, the RSWMP effort has been hindered by a lack of funding and leadership.

We see the monitoring component of this NPDES permit as a reasonable first-step toward implementation of RSWMP but, more importantly, provides information directly relating to the

Permittees TMDL implementation effort. Full RSWMP implementation is beyond the capability of the Permittees; it really requires basin-wide and multi-disciplined support, leadership, participation, and funding. However, the Permittees have strategized on implementing permit-required monitoring in a consistent manner that recognizes and supports its future application in a regional monitoring program. We have also identified potential funding to implement the permittees monitoring requirement for the next two to five years.

### **TMDL Implementation and Permitting**

With adoption of the updated permit, California NPDES Permittees (Placer County, El Dorado County, City of South Lake Tahoe, and Caltrans) will be the only Tahoe Basin jurisdictions with enforceable TMDL implementation requirements. The State of Nevada, through its Department of Environmental Protection (NDEP) is not proposing that municipalities be permitted under the NPDES program for TMDL implementation. Instead, it is proposed that Nevada municipalities and Nevada Department of Transportation enter into cooperative agreements for TMDL implementation. Federal agencies, such as the United State Forest Service, own extensive lands within the Tahoe Basin; they, likewise, are not regulated for stormwater discharges and TMDL implementation in the same manner as the California Permittees.

We understand and respect your Board's authority and discretion in establishing and implementing the TMDL. However, the impairment of Lake Tahoe is a function of impacts from all jurisdictions, owners, visitors, and even external sources. There seems a disproportionate implementation burden placed upon the California Permittees faced with regulatory compliance standards, monitoring and reporting requirements, TMDL accounting and crediting, additional programmatic Clean Water Act requirements, and possible sanctions for non-compliance. TMDL implementation should be consistently applied and enforced throughout the Tahoe Basin, and "additional" requirements imposed as a function of the NPDES permitting should be minimized to insure that Permittees can effectively implement TMDL requirements.

### **Funding Support**

Since the early 1980's, there has been tremendous capital investment in water quality improvement and protection infrastructure in the Lake Tahoe Basin. Various Federal and State grant sources have funded most of this infrastructure, supported by local matching funds and long-term maintenance commitments. The TMDL places a new emphasis on fine sediment controls, which redirects water quality improvement efforts to different treatment technologies and operational strategies. Capital projects will be more expensive to build, operate and maintain. Operational improvements, such as improved street sweeping and winter vehicle traction control strategies, will not be as costly to implement, but have historically not been eligible for grant funding support.

Successful TMDL implementation at Lake Tahoe will necessitate a strong and continuing commitment from our Federal and State funding partners, including additional flexibility to support non-capital aspects of implementation strategies. Without such support, local Permittees will not be able to meet established TMDL load reduction milestones.

**Minimum Control Measures**

The Federal Clean Water Act requires that NPDES permits include six specific minimum control measures: Public Education and Outreach; Illicit Discharge Detection and Elimination; Public Involvement; Construction Site Controls; Post- Construction Controls; Municipal Operations Controls. These elements are found in the current NPDES permit, along with additional requirements for commercial and industrial inspections, fiscal analysis, and specific requirements crafted in anticipation of the TMDL. Many of the required actions and activities were generating data needed to support TMDL development and its future implementation.

The proposed draft permit appropriately emphasizes the TMDL implementation over these other elements, as this provides greater and more direct benefit to water quality and is, therefore, the best use of limited resources and funding. We recognize the value of the six minimum control measures, and acknowledge the need for their inclusion in the NPDES permit. We commend Regional Board staff in crafting a reasonable and balanced approach that will allow Permittee resources to be applied to TMDL implementation in the most cost effective manner.

As mentioned above, the State Water Resources Control Board is proposing extensive changes to the NPDES Phase 2 General Permit. The proposed draft general permit is far more prescriptive than the existing permit, and includes many requirements that we believe are impractical, infeasible, and which have questionable benefit to water quality protection or improvement. The initial public review and comment period for the draft general permit has just concluded, with extensive and loud opposition to the proposed permit expressed by Permittees and business representatives. Again, we appreciate that the draft Tahoe Basin permit has not incorporated these types of inefficient, ineffective, and wasteful permit requirements.

**Unfunded Mandate**

The draft permit includes findings to support the State's position that the permit provisions do not constitute an unfunded mandate. Placer County has not yet made a determination as to our position on the unfunded mandate question and thus, cannot comment on that matter at this time. Our legal counsel will continue their review as the terms of this draft permit evolve, and we reserve our right to address the issue of unfunded State mandate at a later time.

**Environmental Protection Agency Concerns**

At the Lahontan Board meeting September 14, 2011, the EPA representative provided an overview of concerns that they have regarding the draft permit. Based on their presentation, the concerns appear to relate to the need for greater clarity and specificity regarding permit requirements. We have not seen the changes that they are proposing and, therefore, cannot comment on any specific permit sections or language that might be affected. Our concerns would be any proposed modifications for additional implementation actions or activities, especially if those that might detract from the TMDL implementation, or might have less value in terms of direct water quality benefit. As mentioned in our presentation at the Board meeting, and earlier in these written comments, it is essential that our limited resources be focused toward the most effective TMDL implementation strategy.

**Permit Adoption Schedule**

Also discussed at the Lahontan Board meeting on September 14<sup>th</sup> was the proposed schedule for adoption of the permit at the Board's November 2011 meeting. We agree with the comments made about insuring permit quality and completeness over meeting a desired adoption schedule. Delaying adoption of the permit would allow for additional input and review, including opportunity for Placer County to engage in discussions about the permit, TMDL implementation, and program funding needs with our Board of Supervisors. Delaying adoption would also allow us opportunity to more fully consider the implications of the updated NPDES Phase 2 permit, scheduled for adoption by the State Water Board in January 2012, and how all of these actions will impact the County-wide water quality program. For these reasons we request that the adoption schedule for this permit be postponed until, at least, January 2012.

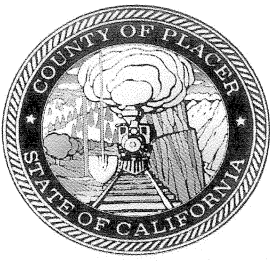
Thank you for your consideration of these comments; we look forward to working with State Water Board staff as we move toward development and adoption of a renewed NPDES permit. Should you have any specific questions or comments regarding this letter, please contact me at 530-745-7524, or Mary Keller at 530-745-7503.

County of Placer  
Department of Public Works



Robert Costa  
Public Works Manager

w/ Attachments



## Attachment 1

# PLACER COUNTY DEPARTMENT OF PUBLIC WORKS

Ken Grehm, Director  
Peter Kraatz, Deputy Director

March 16, 2011

State Water Resources Control Board  
Jeanine Townsend, Clerk to the Board  
P.O. Box 100  
Sacramento, CA 85812-2000

Subject: Comment Letter- Lake Tahoe TMDL

This letter has been prepared in response to the State Water Resources Control Board's recent "Notice of Opportunity to Comment" on their proposed approval of an amendment to the Lahontan Region Water Quality Control Plan (Basin Plan). The Basin Plan amendment, incorporating Lake Tahoe TMDLs and an implementation plan, was approved by the Lahontan Water Board on November 16, 2010.

Placer County submitted extensive comments and questions in a letter dated September 9, 2010 for consideration by the Lahontan Water Board prior to their action approving the Basin Plan amendment. In general, staff's written responses to Placer County's comments, supplemented by responses to other agency and individual comments and discussion at the November 16 hearing, adequately responded to the majority of our technical and editorial concerns and questions.

However, we continue to have serious concerns about the feasibility and practicality of achieving the stated TMDL load reductions and implementation schedules. Though TMDL –supporting documents prepared by the Lahontan Water Board have been referenced as demonstrating the feasibility of achieving stated load reductions and milestones, such conclusions are based on theoretical and historical considerations, as well as numerous generalized assumptions. For example, the March 2008 *Integrated Water Quality Management Strategy*, Page 18, includes the assumption that "Funding in the amount of \$500 million is available and expendable in each 5-year period". This is supported by a statement that reads: "... the assumption is plausible given the capacity that the Basin has gained during the first round of the EIP. This is the extent of the feasibility analysis that was considered for this assumption".

Current fiscal realities being experienced at all governmental levels, and by all entities involved in Lake Tahoe environmental protection, suggest that this, and other TMDL implementation actions are overly ambitious. Historical funding levels are below those needed, and are not likely to increase in today's compromised and struggling economy. Local governments, mandated to comply with the TMDL standards, are experiencing funding and staffing reductions. As such, maintaining local resources needed to sustain the "capacity that the Basin has gained", as mentioned in the previous paragraph, is an unlikely scenario. Feasibility, by definition, relates to the reasonableness and likelihood of achieving stated objectives, as well as the capacity to do so; it could easily be argued that these TMDL implementation objectives are not feasible, particularly at this time.

Placer County is fully committed to doing its best to implement the Tahoe TMDLs, within the limitations of available staffing and funding resources. It is imperative that stakeholder interests at federal, state and local levels are fully engaged in the TMDL implementation, such that the burden of implementation, including possible enforcement actions, does not rest solely on the California NPDES municipal permittees. The TMDL implementation plan must provide flexibility to account for local resource limitations, which are often constrained or impacted by external factors beyond local government control. This includes funding of capital improvement projects and staffing resources through a variety of federal and state grant programs which are competitive and for which future funding levels are uncertain.

Thank you for the opportunity to provide written comments on this very important matter. Placer County believes in the value and benefit of the Tahoe TMDL approach. We are committed to its implementation, to the best of our ability. However, we request that your board recognize that there are, and will be, conditions that impact resources and schedules that justify flexibility in the TMDL implementation plan. Without such flexibility, there is potential to waste unnecessary State and local resources on enforcement actions that would be better applied to furthering TMDL implementation.

Sincerely,

A handwritten signature in cursive script that reads "Ken Grehm". The signature is written in dark ink and is positioned above a horizontal line.

Ken Grehm  
Director of Public Works

## ***Attachment 2 - Placer County Draft Permit Comments***

<b>Comment #</b>	<b>Section</b>	<b>Page</b>	<b>Comment</b>
<b><i>General Comments</i></b>			
1	General		We appreciate the Lahontan Water Board's work to create a balanced program that has attainable goals without being overly prescriptive or burdensome.
<b><i>Order</i></b>			
2	F.3	9	First sentence; after "...enforcement, and other actions" please replace "will" with "are intended to".
3	F.4	9	After "Lake Clarity Crediting Program" please add "(Attachment D of this permit)".
4	F.7	10	Municipalities are required to annually demonstrate on a catchment basis that land disturbing activities have not increased loading of fine sediment, nitrogen, and phosphorus. This provision will require registration of <u>every</u> catchment where <u>any</u> development/re-development occurs, just to demonstrate that project has installed the appropriate (and required) BMPs, and that the permittee isn't counting such activities toward load reduction requirements. Catchment registration should not be required simply to prove that point; there is much effort required for catchment registration, and land disturbing activities can occur anywhere.
5	F.6	10	Where is Basin Plan Table 5.6-1? Please add as an attachment
6	I.B	11	Lawn watering, individual residential car washing, de-chlorinated swimming pool, spa, or hot tub water, and fire fighting flows have been removed from this list of discharge exceptions. Have these been removed due to a revision of federal law, or is this a Regional Board decision? What is the rationale/justification for doing so?
7	II.E	12	States that the Executive Officer is the only one that can grant a grading variance. Historically, this responsibility has been delegated to TRPA. Is that still the case? If so, the way the statement is written is unclear. Maybe reword to say .....may be granted in writing by the Executive Officer
8	II.B	12	What is the definition of "condition of nuisance"? This is a very broad and subjective provision, especially when included in a list of prohibitions.
9	II.G	12	This should be placed into appropriate context. Isn't the concern discharge to surface waters or land surface?
10	II. H	12	Isn't this essentially the same as II.K? Couldn't these be combined?
11	III.A.1.b	13	Prohibiting discharge of non-stormwater to the permittee's collection, conveyance, and treatment facilities from the listed sources seems to preclude the concept of public/private partnerships for treatment facilities.
12	III.A.1.b (5)	13	Is all swimming pool and hot tub water prohibited, or just chlorinated pool and hot tub water? If it can be discharged if non-chlorinated than please indicate.
13	III.A.2.a	14	We cannot regulate or control runoff from another municipality. It may be possible to enter into an agreement whereby that agency agrees to certain standards or conditions, but each would retain responsibility for their own compliance.
14	III.A.2.d, f	14	Request that "Control" be changed to "Monitor and enforce". We can not "control" actions by others but we can establish regulations and implement enforcement actions to maintain water quality.
15	III.A.2.d	14	This provision should acknowledge the exceptions listed in III.A.1.b



COUNTY OF PLACER  
 COMMENTS ON DRAFT TAHOE MUNICIPAL PERMIT  
 SEPT 15, 2011

16	III.A.3	14	The March 15, 2012 due date will not allow adequate time to provide a legal statement of authority, especially if ordinance changes are necessary. Additionally, the pending draft NPDES Phase II General Permit will require many revisions to current ordinances and standards; it would make sense for Placer County to consider all needed revisions at the same time, for both permits. Suggest adding a year to the date shown.
17	III.B.1.b	15	For prioritization of construction sites this provision requires permittees to consider "fine sediment source potential". How is this to be evaluated on project scale? Is this only a subjective assessment, or is it anticipated that calculations of some type be generated?
18	IV.A	19	Third paragraph indicates that if permittee wants to revised baseline loads based on better information following permit adoption, that "it may submit a request to the Water Board to amend its baseline load estimate". This implies that the Water Board has complete/sole discretion regarding consideration of the new/better information. We would like to see a commitment by the Regional Board to revisit baseline load estimates if/when better information is available. Our concerns regarding the modeling limitations and future refinement are detailed in the September 1, 2011 letter, attached.
19	Table IV.B	20	Table needs to be completed before adoption.
20	IV.C	20	First sentence; suggest changing "how they will meet" to "how they intend to meet".
21	IV.C.1	20	Requires the PLRP to "include a list of catchments that will likely be registered". This is fine, except that (see comment regarding F.7) unpredictable catchment registration may result from having to include all land disturbing activities. Our objective would be to register catchments based on planned water quality projects/actions that provide the greatest benefit. The notion of catchment registration for other purposes does not seem productive.
22	IV.D	21	Development Impacts - is this information in addition to the Catchment registration we are completing? How does the Regional Board expect to see this requirement met? Does this imply that we must register every catchment where any land disturbance occurs? If our load reductions are based on the PLRP that shows work in only certain catchment areas, why is it necessary to register other catchment areas just to demonstrate that project impacts have been mitigated?
23	IV.E.1	22	What is the "documentation of all projects" mean? In what form?
24	IV.E.2	22	What if the catchment registration process has not been completed for all projects completed up to October 15, 2011? How can that information be reported in the Progress Report?
25	Table V	22	Table of Required Submittals - please include <u>all</u> permit submittal dates including VI D where the permittee must file 180 days in advance of order expiration, and monitoring /reporting dates per Attachment C.
26	VI.B	22	Reference should be to Attachment G not F.
27	VI.C	22	Last sentence; "All Permittee submittals must be adequate to implement the requirements of this Order"- This is a very subjective statement, open to interpretation and disagreement.
<b>Attachment A Fact Sheet</b>			
28		3	Last sentence; "14 percent" should be "17 percent", per Appendix B.
29		4	Third paragraph; This statement suggests that the California permittees are solely responsible for achieving TMDL requirements.
30		5	Fifth paragraph, last sentence; What does "and if appropriate" mean in this context?
31		6	First paragraph, last sentence; What does "and if appropriate" mean in this context?
32		7	Storm Water Management Plans section, sentence 2. The word "pervious", should be "previous".
<b>Attachment C Monitoring Program</b>			

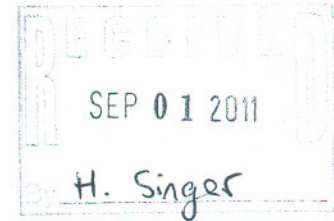
COUNTY OF PLACER  
 COMMENTS ON DRAFT TAHOE MUNICIPAL PERMIT  
 SEPT 15, 2011

33	Table I.B	3	Table need to be completed.
34	I.C	3	References Lake Crediting Program Handbook as version 1.0, but Attachment D is version 0.99. Are these the same or should a different version of the handbook be attached? Also, if the handbook is updated during the course of the permit will the updated version meet permit requirements?
35	I.C	3	References the Crediting Program Handbook as "Attachment 1". It should be "Attachment D".
36	I.D	4	Requires registration of 2 catchments by March 15, 2012. If permit adoption is delayed, will this date change?
37	General	all	Please add a table of required submittals with dates (such as in the order) as well as making reference in the order that there are additional submittal dates included in Attachment C.
38	III.A.4	8	Second paragraph; how will permittees be expected to "demonstrate" the approach adequacy? What form will this take?
39	III.B.10	10	Is there any conflict between section 1 and section 10, with regard to the monitoring term, ie, "three successive years" vs. "remainder of this permit term"? Doesn't the permit term continue until adoption of a new permit?
40	III.C	11	For BMP effectiveness monitoring - reference should be Section III B not III A
41	III.D	11	CEDEN reference - please add website address of <a href="http://ceden.org">ceden.org</a> . Will Lahontan Regional Board be using this site as well? Currently there does not appear to be any data that is available to review in Region 6.
42	IV.A	12-13	Is it anticipated that anytime there is any development activity permitted within a catchment, that catchment must then be registered? See also our comment for Section IV.D above.
43	IV.B	13	In the section heading, please add "Stormwater" before "Facilities Inspections" for clarification. Also , the section referenced should be Section II A not IA.
44	IV.E	13	Does "annually submit a comprehensive electronic report", mean through the SMARTS system, or in a different form? If different, what format is expected?
45	IV.G	15	States that "Permittees shall comply with the "General Provisions for Monitoring and Reporting dated Sept 1, 1994". Is this "Attachment G", or some other document ?
<b>Attachment G Standard Provisions</b>			
46	A.9.c (4)	4	Reference to Attachment C is incorrect.
47	B.1	5	States the Order expires October 15, 2010. This needs to be updated.
48	B.5.b (1) and (3)	7	References to SDRWCQB are incorrect.

## Attachment 3

September 1, 2011

Mr. Harold Singer  
Executive Officer  
California Regional Water Quality Control Board, Lahontan Region  
2501 Lake Tahoe Boulevard  
South Lake Tahoe, CA 96150



Dear Mr. Singer,

On February 9<sup>th</sup>, 2011, the Lahontan Regional Water Quality Control Board sent a letter titled "ORDER TO SUBMIT TECHNICAL REPORTS IN ACCORDANCE WITH SECTION 13267 OF THE CALIFORNIA WATER CODE – LAKE TAHOE URBAN STORMWATER IMPLEMENTATION" to the Tahoe Basin NPDES permittees. That order outlined many requirements for the local jurisdictions to meet and included a series of timelines for baseline pollutant loading deliverables. Section B.2 of that order specifically requires local jurisdictions to analyze hydraulic connectivity while calculating baseline pollutant loads. In response to that request, the basin-wide jurisdictional agencies and representatives have since begun investigations to develop a consistent method to analyze hydraulic connectivity.

The basin-wide, bi-state, implementers agree that there is a need to address the best approach to calculate average annual catchment connectivity. Implementers are concerned about quantifying connectivity using varying methods, which will likely yield inconsistent and incomparable results. We would like baseline load estimates to be as meaningful, consistent and accurate as possible. As a result, we are requesting an extension beyond the NPDES permit adoption to allow for further evaluation and understanding of connectivity issues and modeling considerations so that accurate baseline pollutant loads can be reflected in the NPDES permit. We do not see value in essentially 'guessing' or rushing to model results with very limited understanding just to meet a submittal deadline. The City of South Lake Tahoe has taken it upon themselves to analyze connectivity in their efforts to develop baseline load estimates. Basin-wide jurisdictions intend to review the City's deliverables when they are complete; this may help in understanding more about the connectivity issues, but will not guarantee that implementers will establish baseline loads using consistent methodologies. The Nevada implementers have much more time to develop baseline loads, which means they will benefit from better information and modeling refinement. But, that also means that the baseline estimates from all implementers will be generated with inconsistent methodologies. In cooperation with California, the Nevada jurisdictions are committed to understanding the hydraulic connectivity process and are in full support of developing consistent standardized methodologies to evaluate it. This will help make all basin-wide data comparable and thoroughly understandable from a baseline pollutant loading standpoint. The science of connection is not well understood; the modeling of connectivity is not standardized and results are subject to interpretation depending on who performs the work and how it is completed.

Therefore, the California regulated jurisdictions, with support from Nevada jurisdictions, **request the following:**

- An extension of at least **1 year** beyond the permit adoption to allow a consistent connectivity methodology to be developed and used to accurately recalculate baseline pollutant loads estimates.
- Inclusion of a **reopening clause** within the NPDES permit, allowing baseline loads to be revised once connectivity and model assumptions are more fully understood / investigated.

Although Nevada jurisdictions may be 1-2 years behind California jurisdictions, the bi-state group of implementers is dedicated to working together for consistency and coordination. As a result, the implementers have taken it upon themselves to meet and discuss how to best use the tools created by Lahontan, NDEP and their consultants, how uncertainties and assumptions in the models and tools affect baseline loading estimates, how connectivity processes need to be further understood and how monitoring requirements and strategies are meaningful toward TMDL compliance.

The undersigned jurisdictional representatives request that you grant the local NPDES permittees the opportunity to adjust baseline load estimates submitted in compliance with the 13267 Order, once connectivity and modeling issues are further evaluated and developed. These agencies are dedicated to the improvement of Lake Tahoe and are unified in the goal of meeting TMDL objectives. We appreciate and thank you for your continued support and cooperation.

Sincerely,



Brendan Ferry / Russell Wigart  
El Dorado County



Kris Klein  
Washoe County



Leslie Case  
California Department of Transportation



Matt Nussbaumer  
Nevada Department of Transportation



Robert Costa  
Placer County

**Attachment – Connectivity Technical Discussion**

**cc: Dave Gaskin – Nevada Department of Environmental Protection  
Joanne Marchetta – Tahoe Regional Planning Agency**

## Connectivity Technical Discussion

In order for fine sediment suspended in urban stormwater to be a detriment to the clarity of Lake Tahoe there must be hydrologic connectivity between the stormwater outfall and Lake Tahoe. The TMDL used a watershed segmentation modeling approach used for the Total Maximum Daily Load (TMDL) which is based on a series of hydrologically connected subwatersheds (Tetra Tech, 2007). We know that many watersheds in the Basin do not have hydrologic connectivity, however quantifying this connection requires large amounts of data collection and complex field / office techniques to quantify and understand. To date, there is not standard protocol or guidance for assessing this complex process.

### *Request for information from Lahontan on hydraulic connectivity*

On February 9<sup>th</sup>, 2011, the Lahontan Regional Water Quality Control Board sent a letter titled "ORDER TO SUBMIT TECHNICAL REPORTS IN ACCORDANCE WITH SECTION 13267 OF THE CALIFORNIA WATER CODE – LAKE TAHOE URBAN STORMWATER IMPLEMENTATION". This request outlines many requirements for the local jurisdictions as well as a series of timelines for deliverables for implementation. In section B.2 of that order, it specifically calls out that the jurisdictions analyze hydraulic connectivity as part of this required deliverable. The following are noted deficiencies with this request as well as information on the lack of understanding and scientific credibility with regard to this topic.

Hydraulic connectivity is not completely understood nor are there exact methods or models in place to be able to account for it. Factors that affect hydraulic connectivity include, but are not limited to soil moisture (McNamra et. al, 2005), surface to groundwater separation, slope, and seasonal precipitation. To date, there has been little guidance from regulatory agencies for use of standard methods for analysis of hydraulic connectivity; yet having all entities evaluating it differently using different methods will yield in varying results. The PLRM was developed as a continuous simulation model for use in the TMDL with the Regional Board endorsing it as the preferred method for load calculation. This system does not have a hydraulic connectivity element, however does account for hydrologic directly connected / indirectly connected areas within the catchment for use in modeling, however no hydraulic connectivity elements or guidance have been established to date post outfall.

In the Regional boards February 9, 2011 request it specifically states that hydraulic connectivity be quantitatively assessed. Hydraulic connectivity is an issue of rising concern for all stormwater managers, however, lack of knowledge regarding connectivity and lack of data to support analysis of the impacts of groundwater extraction has made it difficult to assess the implications of connectivity at the basin-scale (REM 2006). The Australian government Department of sustainability, environment, water, population and communities has a large body of knowledge on this topic. In the report titled "*Evaluation of the connectivity between surface water and groundwater in the Murray-Darling Basin*" (REM 2006) have defined connectivity as the following in italics:

*The fundamental knowledge gap in dealing with connected groundwater – surface water systems is the lack of a consistent definition of connectivity.*

*Such a definition should be supported by the establishment of a set of guiding principles within which a definition can be framed. This report suggests a set of principles to support the definition of connectivity. It is recommended that the definition of connectivity should:*

- *describe the nature of the interaction between the surface water and groundwater resources for the developed state of the resource;*
- *convey the rate at which the interaction is occurring;*
- *have regard to the timeframe over which the interaction occurs;*
- *be quantifiable; and*
- *be able to be applied to a range of spatial scales (e.g. should cover river reaches or whole of aquifers).*

The following draft definition of connectivity has been proposed as a basis for discussion between jurisdictions:

- *Highly connected for systems where the conductance is high and there can be an expectation that groundwater extraction impacts will have an influence within a specified timeframe which is short. In these types of systems it might be expected that more than 70% of the volume of groundwater extracted is derived from stream flow within a specified timeframe of 10 to 50 years from the onset of groundwater extraction;*
- *Moderately connected for systems where both the conductance and hydraulic gradients are moderate. In these types of systems it might be expected that between 10 and 70% of the volume of groundwater extracted is derived from stream flow within the specified timeframe;*
- *Poorly connected for systems where the conductance is low. As well, there may be an expectation that groundwater extraction, whilst impacting on surface flows within a specified timeframe, will have a full impact at some time in the future that is outside the specified timeframe. In these types of systems it might be expected that less than 10% of the volume of groundwater extracted is derived from stream flow within the specified timeframe;*
- *Disconnected for systems where the base of the river or stream lies above the water table.*

Urbanization has a profound effect on a catchment water balance and hydrological regime. Increasing impervious surfaces alters the pathway by which rainwater is transferred to surface water networks and groundwater systems. It is broadly accepted that due to the impact of impervious surfaces, urbanization leads to an increase in runoff from individual storm events and annual runoff (Grove et al., 2001; Jennings and Jar- 6722 Jarnagian 2002). It has also been reported that urbanization increases the magnitude of peak runoff and the rate of hydrograph rise and recession, but reduces the lag time between rainfall and runoff response, as well as the mean residence time of stream flow (Burns et al., 2005; Rose and Peters, 2001). The magnitude of this impact is dependent on the proportion of urban development to the total catchment area and the intensity of rainfall events. The greatest effect on stormwater yields was found in medium and low intensity rainfall events rather than in extreme rainfall conditions (Niehoff et al., 2002; Camorani et al., 2005).

In the paper "Evaluation of catchment connectivity and storm runoff in flat terrain subject to urbanization (Barron et al. 2009)", it was demonstrated that the change in land use resulted in much greater catchment volumetric runoff than expected simply as a result of the increase in proportion of impervious urban surfaces. As urbanization leads to an increase in catchment hydrological connectivity, the catchment contributing area to the river flow also becomes greater (Barron et al. 2009). In peer review of this document through *Hydrology and Earth Systems Science Discussions* a commenter stated; "*I am not convinced about the way the term connectivity is used within the paper. I understand the concept of hydrological connectivity to be more about the ways in which runoff is connected and transmitted in river catchments (see Bracken LJ and Croke J 2007 for more details). I see this paper much more about exploring changes in contributing area. This is obviously related to the development of hydrological connectivity within a catchment and hence implicitly related and hence could be discussed in this way later in the paper. As similar comments came from two reviewers it is obvious that we need to define to clearly what definition of **hydraulic connectivity** was used.*"

It is understood that hydraulic connectivity and hydrologic connectivity have different meanings.

El Dorado County was successful the development of a "Maximum Hydrologic Connectivity Transmission Distance Envelope Curve for South Lake Tahoe Urban Outfalls" (EDOT 09-10). The study was focused on measuring the maximum connectivity of urban stormwater for regions within El Dorado County with the greatest connectivity between the County right of way (ROW) and stormwater discharge outfall pipes. The results of this study documented the relationship between County ROW impervious area, rainfall intensities, and maximum stormwater transmission distances for disconnected outfalls in the South Lake Tahoe region and concluded that transmission distances were greatest for the rainfall condition compared with the snowmelt condition. The measurements demonstrated that only a portion of the total suspended solids (tss)

from the County ROW is connected to Lake Tahoe contrary to the approach used in the TMDL (Tetra Tech, 2007). Understanding this relationship is necessary to accurately evaluate the impact of urban stormwater from El Dorado County on Lake Tahoe clarity, and is fundamental in determining the benefits of water quality improvement projects within El Dorado County on Lake Tahoe clarity.

The NTCD also generated an Outfall Connectivity Rapid Assessment Methodology (RAM), which intended to provide a simple repeatable method to estimate the likelihood that stormwater would flow directly to Lake Tahoe or a perennial stream. The results of OCRAM attempt to rank connectivity of all outfalls and identify the most urgent treatment opportunities. This simple method looked at the location of the outfall, distance from the outfall to a receiving water body (with assumptions), sediment deposition and then used a very simple computation to estimate connection, however this method does not take into account the impervious area size (a critical component).

Both methods have their benefits and drawbacks, which emphasizes that there are many ways to come to an end product that will yield varying results. The jurisdictions do not want to use over simplified field techniques to analyze a very complex process, therefore in order to fully understand and quantify this connection, a uniform, standardized process must be evaluated, so all agencies have consistent information and comparable results.

Lastly, the Regional Board needs to be more descriptive in what they are asking for with regard to connectivity. Does the Regional Board want the local agencies submitting information to report on surface water - groundwater interactions as described by hydraulic connectivity methods or urbanization increase affects on catchment connectivity? Again, the processes involved in this analysis cannot be analyzed using varying techniques and if completed as such will yield inconsistent results with varying data that may be meaningless when evaluated as a whole with regard to the crediting and tracking program developed to date.

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