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Division of Water Quality
State Water Resources Control Board
1001 I Street, 15th Floor
Sacramento, California 95814



Re: Comments on State Board Waiver for Forest Service Projects and Activities

Dear Mr. Lee:

I am submitting these comments on the revised Waiver and monitoring section (Attachment C). To understand these documents, I have also reviewed the Forest Service BMPs and the adaptive management and monitoring sections of the Forest Service's draft Water Quality Management Handbook (WQMH).

I am a principal author of the "Sediment Source Control Handbook An Adaptive Approach to Restoration of Disturbed Areas" published in conjunction with the Lahontan Regional Water Quality Control Board. A copy of my CV is attached to this letter.

1. Comments on Adaptive Management

In my experience, the most critical component of effectively regulating non-point source pollution on National Forests is an adaptive management system that utilizes monitoring to ensure that 1) pollutant discharges from activities such as logging or OHV riding are promptly fixed in the field, and 2) BMPs are improved over time. For an adaptive management program to be successful in curbing excessive pollution and damage to streams and wetlands, there must be clear standards that are measurable in the field through monitoring that trigger agency action.

As presented in the Sediment Source Control Handbook, adaptive management is based on the principal that there are uncertainties in how to regulate effectively, and that mechanisms for changing regulatory oversight must be built into the system in order to ensure the achievement of regulatory goals.

Adaptive management is a structured decision-making process that includes the following components: 1) articulate clear project goals, objectives and success criteria; 2) collect existing knowledge/practices relative to achieving the goals; 3) identify information gaps and related research needs; 4) develop a strategy and apply knowledge and relevant practices toward achieving the clear project goals; 5) develop a clearly defined and defensible monitoring program to determine whether the goals/objectives are being achieved; 6) identify pre-defined potential management responses if project goals/objectives are not met; 7) use monitoring data to determine whether success criteria have been met and whether a management response is necessary; 8) reassess and improve practices and reconsider the goals or outcomes.

In my opinion, the revised Waiver lacks these elements. The revised Waiver states: The USFS BMPs are programmatic performance standards, not detailed prescriptions nor solutions to specific nonpoint pollution sources. Rather, they are action-initiating

mechanisms, processes, and practices that call for the development of site-specific detailed prescriptions designed at the project scale during planning. Development of prescriptions is aided by results from ongoing monitoring, and may also follow direction developed at the National Forests.

(See revised Waiver, p. 8.)

Based on my review of the WQMP, I strongly disagree with this statement. In my opinion, the revised Waiver and monitoring conditions, and the Forest Service BMPs, do not establish an adaptive management program that will ensure that significant impacts from activities such as logging, OHV road and trail use, and grazing will be avoided in the future. For several reasons, the lack of triggering standards and measurable data means that the Waiver will not ensure that substantial water quality impacts will be avoided in the future.

First, the Waiver lacks clear objectives that are susceptible to measuring whether the objective has been achieved. Clear project objectives, as opposed to a general policy goals, are a key component of an adaptive management program. The words "goals" and "objectives" refer to similar concepts but differ in detail. Goals are broad, general, and non-specific statements such as "controlling erosion on the ski run." Objectives are more specific and often measurable. For an adaptive management strategy to be successful, project objectives must be: 1) specific; 2) measurable; 3) realistic and attainable (physically and economically); 4) directly related to the problem; 5) time specific (i.e., clearly stated when and how long); 6) be tied to specific measurable success criteria. For example, a statement such as "reducing erosion on the ski run by 50% within two seasons through the use of mulch and revegetation treatment" would qualify as an "objective."

The Waiver and Forest Service BMPs set forth a series of policy "goals" but lack measurable project objectives. For example, the revised Waiver proposes to protect water quality, or to avoid excessive discharge of pollution. (See revised Waiver, p. 8 ("The planning framework sets a process for determining and implementing measures not only to mitigate potential water quality impacts, but also to enhance and protect water quality.")

Similarly, the WQMP BMPs set forth a series of vague goals, but no measurable objectives. For example, BMP 1.16 (Log Landing Erosion Control) states as its objective to "reduce the impacts of erosion and subsequent sedimentation associated with log landings by use of mitigating measures." BMP 1.17 (Erosion Control on Skid Trails) states as an objective to "protect water quality by minimizing erosion and sedimentation derived from skid trails." BMP 1.19 (Streamcourse and Aquatic Protection) includes as an objective to "control sediment and other pollutants entering streamcourses."

All of these so-called "objectives" are in fact vague policy goals, not specific, measurable or tied to any particular success criteria. From this language, there is no standard for what constitutes a significant water quality impact, or what is meant by "minimizing erosion" or "controlling sediment pollution."

Further, the objectives lack any timetable for success. In my opinion, without a timetable tied to quantifiable standards, the WQMP BMPs do not qualify as "performance standards" as asserted in the Revised Waiver.

Second, and in similar fashion, the revised Waiver and BMPs do not establish measurable standards that would trigger the need for agency action, nor any timetable that would lead to effective changes to ensure that water quality is protected. The revised Waiver and monitoring plan (revised Attachment C) also lacks clearly defined parameters under which monitoring would trigger the need for regulatory action. In sum, there is no defined trigger that requires agency action in the event of pollution discharge.

Third, the revised Waiver and BMPs do not establish a pre-defined management response such as closure of an ongoing problematic activity or clean up of a sediment source within a specific time frame. Instead, the revised Waiver and BMPs only require that Forest Service officials to confer and discuss effectiveness of BMPs. If BMPs are not effective, the revised Waiver does not require any particular action to be taken.

It is my understanding that the Forest Service has referred the public to pages 204-206 of its WQMP (Response procedures for monitoring program components) in response to public comments that the Service lacks an effective adaptive management system tied to monitoring. I have reviewed these pages and disagree that the requirements set forth there ensure any responsive action. In my opinion, the standards for agency action are entirely subjective and not based on any measurable criteria, nor is there any timetable for remedial action to occur.

In my opinion, these inadequacies make it likely that the revised Waiver's adaptive management program will be unsuccessful in avoiding significant water quality impacts in the future. In my experience, when there are no measurable standards for corrective action, no action will occur. This is particularly true where there is a general lack of resources and funding to carry out enforcement or restoration activities. In my opinion, without any standards to trigger remedial action, and lacking adequate funding or staffing, it is highly unlikely the Forest Service will be able to take the actions necessary to prevent or remedy activities that cause substantial impacts to water quality and riparian and wetland ecosystems.

2. Comments on Monitoring

In my opinion, the revised Waiver and monitoring requirements (revised Attachment C) have the potential for significant impacts to water quality and stream and wetland resources by allowing the Forest Service to avoid effectiveness and forensic monitoring for high risk projects such as logging on steep slopes or within stream corridors.

The monitoring attachment C requires that Forest Service to check a box that BMPs were actually implemented at a particular project. In my opinion and experience, checklist monitoring does not provide info for whether BMPs are effective or even implemented correctly.

The revised Waiver also requires random monitoring according to the BMP Evaluation Program ("BMPEP"). In my experience this type of monitoring does not evaluate the

effectiveness of BMPs that have been implemented on the vast majority of projects. On projects in sensitive areas, such as on steep slopes or stream zones, this has the potential to allow for ongoing pollution discharge to occur, without detection by the overseeing agency. In my experience working in the Sierra Nevada, I have observed that the logging activities on steep slopes and within stream zones have the potential to discharge substantial amounts of sediment. This is particularly true where heavy equipment is used. Effectiveness and forensic monitoring is needed to determine the influences of large events such as rain on snow events that have been shown to produce some of the largest flood impacts in the Sierra. In these extreme conditions, it will be important to establish if BMPs and other erosion control remedies are able to perform. In my opinion, the absence of such monitoring could lead to substantial amounts of sediment discharge in flooding events because the problems would not be identified in a timely manner.

The monitoring provisions also offer instream channel monitoring as a means to identify adverse effects. In my opinion, in-stream monitoring as described in this section will be inadequate to identify potentially significant discharges of pollution at a project site, or site specific damage to the riparian or wetland environment, because 1) the effects are diluted; 2) there is no assessment of whether BMPs at project site have been successful; 3) there are no timing requirements to ensure that effects are observed in relation to project implementation; and 4) there is no way to track whether any effects observed are traceable back to the project.

The monitoring provisions also allow for project specific monitoring where in-channel monitoring had not occurred and the project occurs in a watershed found to be above a "threshold of concern." As discussed, instream monitoring as proposed in the Waiver is not an adequate replacement for effectiveness and forensic monitoring on high risk projects.

Further, the test for whether a watershed is above or below a "threshold of concern" is not a valid basis for whether projects in the watershed may still be causing significant effects on water quality or beneficial uses of streams and wetlands. In my experience for example, the Forest Service will utilize the "equivalent roaded area," (ERA) within a watershed to determine whether a threshold of concern has been exceeded. The ERA measures the relative permeable surface areas within a particular watershed, In my opinion, this type of measurement has little to do with whether particular projects in the watershed are causing significant impacts. In fact, many projects such as logging in stream zones or on steep erodible slopes may not contribute to the ERA for a watershed, but will contribute to significant pollution discharge to streams and wetlands.

I would also point out that the Threshold of Concern approach does not address the situation where a subwatershed drains into a water body that is listed as water quality impaired, such as the case in the Lake Tahoe Basin where I have my business. The current Lahontan Waiver adopted in 2009 requires the Forest Service to conduct effectiveness and forensic monitoring on high risk projects for all watersheds that drain to Lake Tahoe, which constitute all watersheds within the Basin. The proposed monitoring in the revised Waiver would override this requirement by limiting effectiveness monitoring to only a few watersheds in the Tahoe Basin. This approach is likely to have significant impacts to Lake Tahoe, an already impaired water body.

The monitoring inadequacies discussed above raise a strong likelihood that significant discharges of pollution and damage to riparian and wetland habitats may go undetected for several seasons, if not longer. As a result, the Forest Service's proposed monitoring responses discussed at pages 204-206 of its WQMP will not even come into play, because the Forest will lack the necessary monitoring data to take action.

3. Consideration of an Alternative Approach

In my opinion, it is unfortunate that the State Board has not provided the public an alternative Waiver strategy for addressing non-point source pollution, which would be based on comprehensive monitoring tied to a meaningful adaptive management program. As an expert in this field, I participated in the stakeholder review process. However, during that process, the Water Board staff rejected any adaptive management approach that would have established clear project objectives and measurable triggers for action. As a result, the public was never afforded the opportunity to assess the difference between an effective and an ineffective program as part of this environmental review process.

Regulatory tools such as adaptive management and monitoring are usually not considered an important component of review processes to determine whether an agency action will have significant effects on the environment. When one is addressing the effects of a regulatory regime such as in this case, however, it is my opinion that the effectiveness of these tools is the critical factor in determining whether the revised Waiver will avoid significant impacts to water quality and the environment over time. As discussed, in my opinion, the revised Waiver's adaptive management and monitoring sections are inadequate and thus the revised Waiver is unlikely to avoid future significant impacts due to non-point source pollution on Forest Service lands.

In sum, I urge the Water Board to reconsider its proposed decision and adopt a Waiver that ensures that water quality on Forest Service lands will be protected in the future.



Qualifications

Michael Hogan is the founder and president of Integrated Environmental Restoration Services, Inc., a firm involved in the development and application of cutting edge revegetation, erosion control and restoration technology. Mr. Hogan has been instrumental in developing and implementing a range of practices in the Lake Tahoe Basin that have improved performance of erosion control and restoration projects. These practices include use of advanced soil physical and biological treatment, development and use of statistically defensible monitoring protocols and development and use of an applied adaptive management system that is being adopted and used widely throughout the Tahoe region. Hogan and IERS are involved in active research partnerships with UC Davis, Caltrans, Lahontan Regional Water Quality Control Board, and the US Forest Service in projects designed to develop and demonstrate the most effective restoration-based technology for drastically disturbed sites in the Sierra Nevada. Michael also incorporates proactive partnerships designed for finding comprehensive win-win outcomes to common erosion and related environmental issues, as demonstrated by his pine needle programs, Caltrans Demonstration and Development Program and the Ski Area Erosion Control Guideline program, Tahoe Basin TMDL Forest Upland lead and others. Michael is also involved in the Pathway 2007 process as a member of the Soils SEZ Technical Working Group, was an alternate National Conservation seat and is a member of the advisory group to the Tahoe Science Consortium for soil restoration and research.

Education

M.S. Soil Science, focus on disturbed site nutrient cycling and restoration; UC Davis, 2003

B.S. Soil and Water Science, UC Davis, 1995 with honors; Commencement speaker, College of Agriculture and Environmental Sciences; Certificate of Outstanding Performance, Phi Kappa Phi

Measuring and Monitoring Plant Populations 7 day intensive course, Lake Tahoe, CA, BLM, Nature Conservancy, 2000

Biotechnical Slope Protection and Erosion Control, University of Michigan, Ann Arbor, 1990

Selected Project Experience

Homewood Mountain Resort Cumulative Watershed Effects Analysis, 2009-2010

Client: JMA Ventures

Prepared the Homewood Cumulative Watershed Effects (CWE) analysis, a component of the Homewood Redevelopment EIR. This CWE used state of the art modeling linked with real-time sediment and erosion assessment in the subject watersheds in order to link ongoing erosion and restoration research into the EIR process. This CWE was able to show the amount of sediment associated with each project alternative and compare that to a watershed threshold. This CWE study is considered to be one of the most complete and accurate studies of its kind to date in the Tahoe-Truckee region.

Homewood/Lahontan RWQCB TMDL Implementation Research Program, 2008-2011

Client: California State Water Quality Resources Control Board

Implementation study with the Lahontan Regional Water Quality Control Board, based on ongoing work at Homewood Mountain Resort that will help determine the most effective restoration

techniques and to define success metrics for measuring, crediting, and tracking sediment reduction efforts for the Lake Tahoe TMDL.

Lake Tahoe TMDL Forest Uplands Source Category Group, 2006-2007

Client: Lahontan Regional Water Quality Control Board

Lead investigator for the Lake Tahoe TMDL Phase II for Forest Uplands. Responsible for developing sediment and nutrient reduction values for forest uplands in the Lake Tahoe Basin and scaling those values to a Basin-wide scale.

Caltrans Demonstration, Development and Evaluation Program, 2000-2008

Client: Caltrans

Program developed jointly with UC Davis Soils and Revegetation Group to integrate soils research into upland erosion control and revegetation practices on Caltrans right of ways in order to assist Caltrans to meet water quality objectives. Close coordination with Caltrans, UC Davis and various Tahoe agencies.

Ski Area Sediment Source Control Guidelines Program and Handbook, 2004-2008

Client: California State Water Quality Resources Control Board

Funded by a grant from the State Water Quality Control Board, Michael Hogan developed a program to improve erosion control practices within Sierra Nevada ski resorts through collaboration, applied research and information sharing. The ongoing program has included the development of a cooperative, adaptive management approach to planning, implementing, and assessing erosion control projects in ski resorts and other disturbed sites. This innovative effort is responsible for improving environmental practices and accountability at ski resorts statewide (CA) and is already being used as a model for upland restoration and erosion control on other types of land throughout the state. The Draft Sediment Source Control Handbook, developed as part of this grant, is available at <http://www.swrcb.ca.gov/rwqcb6/cerec.html>

Publications

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- Grismer, M.E., C. Schnurrenberger, R. Arst and **M.P. Hogan**. 2008. Integrated Monitoring and Assessment of Soil Restoration Treatments in the Lake Tahoe Basin. Environ. Monitoring & Assessment. In-press.
- Hatchett, B., **Hogan, M.P.** and M.E. Grismer. 2006 Mechanical mastication thins Lake Tahoe forest with few adverse impacts. California Agriculture 60 no 2
- Claassen, V. P. and **M. P. Hogan**. Generation of water-stable soil aggregates for improved erosion control and revegetation success. 1998. Springfield, Virginia, National Technical Information Service.
- Claassen, V. P. and **M. P. Hogan**. 2002. Soil Nutrients Associated with Revegetation of Disturbed Sites in the Lake Tahoe Basin. *Restoration Ecology* 10, no. 2:195-203.
- Grismer, M.E. and **M.P. Hogan**. 2004. Evaluation of Revegetation/Mulch Erosion Control Using Simulated Rainfall in the Lake Tahoe Basin: 1. Method Assessment. *Land Degradation & Dev.* 13:573-588.
- Grismer, M.E. and **M.P. Hogan**. 2005. Evaluation of Revegetation/Mulch Erosion Control Using Simulated Rainfall in the Lake Tahoe Basin: 2. Bare Soil Assessment. *Land Degradation & Dev.* 16:397-404.
- Grismer, M.E. and **M.P. Hogan**. 2005. Evaluation of Revegetation/Mulch Erosion Control Using Simulated Rainfall in the Lake Tahoe Basin: 3. Treatment Assessment. *Land Degradation & Dev.* 16:489-501.
- Hogan, Michael. Objectives and Guidelines for Revegetation Success Under the Nevada Tahoe Bond Act. 1999. Carson City, Nevada, Division of State Lands, State of Nevada.
- Hogan, Michael. Luther Pass Monitoring Report: Plant and Soil Cover Monitoring for Evaluating Sediment Source Control Success in the Lake Tahoe Basin. 2003. South Lake Tahoe, CA, Lahontan Regional Water Quality Control Board.