

**2008 BEST MANAGEMENT PRACTICES EVALUATION PROGRAM
REPORT
USDA FOREST SERVICE
LAKE TAHOE BASIN MANAGEMENT UNIT**



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EXECUTIVE SUMMARY

In 2008, the Lake Tahoe Basin Management Unit (LTBMU) completed 39 Best Management Practices Evaluation Program (BMPEP) evaluations, as part of the Pacific Southwest Region's effort to evaluate the implementation and effectiveness of BMPs designed to protect soil and water resources associated with Timber, Engineering, Recreation, Grazing, and Revegetation activities. Of the 43 Regional targets, only 39 evaluations were conducted due to a lack of qualifying projects for the E13- In-channel Construction Practices (5 targets / 3 qualifying projects) and F25-Prescribed Fire (2 targets / 0 qualifying projects).

In 2008, 97% of the evaluations were rated as effective, which is above the average of 84%, for the previous two years. Only one BMP evaluation (3%), for the Ward Creek Trail Bridge reconstruction project, was rated not effective due to the transportation of eroded sediments into Ward Creek. Although the current volume of sediment delivered to Ward Creek is estimated to be less than 1 cubic yard, there is the potential for more erosion during a wet year. It is recommended that slope stabilizing BMPs, such as matting and/or geotextile fabric, be installed in this area which will reduce likelihood of sediment transport and facilitate the establishment of natural revegetation. This site will be scheduled for follow up evaluation in the 2009 field season to determine if erosion has increased, and subsequently to evaluate the success of bank stabilization BMPs when implemented.

There was also one evaluation in 2008 that was rated not implemented, but still effective. The road decommissioning rating for road 15N61 was rated not implemented, because the wire fence next to the gate has been cut, and there is no effective physical barrier to access. The amount of use incurred so far has not resulted in erosion problems yet, but additional efforts to prevent access are recommended.

Monitoring in 2008 included follow-up evaluations conducted at five site locations for deficiencies reported in 2006 and 2007. No work has occurred at four of these locations yet, but fortunately no further degradation was observed during the 2008 follow up evaluation. This includes the following project locations: A-Gate Landing, Echo Lake Parking Lot, Road #12N23 (Angora Watershed), and the Angora Lakes Trailhead. The follow up evaluation conducted at the fifth location, High Meadows Road (12N205), determined gravel installed after the 2007 evaluation was effective at stabilizing the road surface. The LTBMU Roads Manager has scheduled this site for annual evaluation and maintenance, and more complete BMPs will be evaluated and implemented as part of the Cold Creek High Meadows Project currently in the NEPA process. Evaluations and/or work are scheduled to occur in 2009 for all of these sites.

1. INTRODUCTION

This report summarizes the results of the 2008, United States Department of Agriculture, Forest Service (USFS) Best Management Practices Evaluation Program (BMPEP), for the Lake Tahoe Basin Management Unit (LTBMU). The objectives of this program are to (i) fulfill USFS monitoring commitments to the State Water Resources Control Board (SWRCB), as described in the SWRCB/USFS Management Agency Agreement and *Water Quality Management for National Forest System Lands in California (USDA Forest Service, 2000)*, (ii) assess and document the efficacy of the USFS water quality management program, specifically the implementation and effectiveness of BMPs; and (iii) facilitate adaptive management by identifying program shortcomings and recommending improvements.

2. OBJECTIVES AND METHODS

Onsite evaluations are used to assess both implementation and effectiveness of BMPs. Implementation evaluations determine the extent to which planned, prescribed and/or required water quality protection measures were actually put in place on project sites. Effectiveness evaluations gauge the extent to which the practices met their water quality protection objectives. Component ratings for project planning, implementation, and effectiveness are entered into the BMPEP database, along with the degree, duration, and extent of any problems that exist. Based on conditions observed during the evaluation, weight is applied to the component ratings to determine an overall rating for implementation and effectiveness.

Additional details regarding BMPs, protocols, and site selection can be found in *Investigating Water Quality in the Pacific Southwest Region, Best Management Practices Evaluation Program (BMPEP) User's Guide (USDA Forest Service, 2002)* and *Water Quality Management for National Forest System Lands in California (USDA Forest Service, 2000)*.

BMP implementation evaluation forms ask a variety of specific questions intended to determine whether the project was executed as specified in project documents. A range of possible scores are assigned to each question depending on its relative importance and the degree to which a particular requirement is met (e.g., whether the project exceeds, meets, departs immaterially or substantially from requirements). Scores for all implementation questions are then summed and compared to a pre-determined threshold to conclude whether BMPs were implemented completely. BMP effectiveness is determined through observations of qualitative water quality protection (e.g., evidence of sediment delivery to channels) and quantitative measurements (e.g. amount of ground cover, percent of stream shade).

This scoring approach results in a 2 x 2 matrix, where a given suite of BMPs are placed into one of four categories: implemented and effective (I-E); implemented, but not effective (I-NE); not implemented, but effective (NI-E) and not implemented and not effective (NI-NE). A score of NI-E results when BMPs were not implemented, or were not installed according to specifications, and there is no evidence of potential water quality impairment. No evidence of impairment can result when (i) incorrectly installed BMPs were still effective, (ii) no BMP was necessary for the specific situation, (iii) no precipitation event occurred to provide evidence of impairment, or (iv) only project planning deficiencies were noted.

For sites with poor implementation or effectiveness scores, observers are asked to identify reasons and suggest corrective actions. For those sites with poor effectiveness, evaluators estimate the degree, duration and magnitude of any existing or potential impacts to water quality, based on published Region 5 guidelines. This type of “hillslope monitoring” uses indirect measures to evaluate BMP effectiveness: Poor scores represent potential, rather than actual, impairment of beneficial uses by a given activity.

Best Management Practices Evaluation Program protocols are applied to both randomly and non-randomly selected project sites in the Basin. The number of random evaluations to be completed each year is assigned to the National Forests by the Regional Office based on (i) the relative importance of the BMP in protecting water quality in the Region and (ii) those management activities most common on the individual Forest. Forests can supplement these randomly selected sites with additional sites based on local monitoring needs, such as those prescribed in an environmental document. Only data from onsite evaluations made at randomly selected sites are used to assess BMP implementation and effectiveness at a Regional programmatic level.

Under certain circumstances, evaluations for E08 (Road Drainage Control), E09 (Stream Crossings), and E11 (Control of Sidecast Material) are conducted simultaneously at the same location.

3. RESULTS

3.1 Results Summary

The LTBMU targets are summarized in Table 1. The LTBMU completed 39 of the 43 Regional BMPEP assigned targets. Also seven follow up evaluations were conducted at five sites where BMP deficiencies were documented in previous years.

In 2008, fully 97% of the evaluations were rated as effective, which is substantially above the average of 84% for the previous two years. Of the 39 evaluations, 37 (95%) rated BMPs both implemented and effective, and one evaluation rated BMPs implemented and not effective, and one evaluation rated BMPs not implemented, but effective. The one observed deficiency occurred in the revegetation (V29) evaluation. It should be noted the spring of 2008 was one of the driest on record, which would have contributed to successful effectiveness ratings, as visible signs of erosion and sediment transport are much less likely to occur. Table 2 summarizes the above results.

Table 1. 2008 BMPEP Targets and Selections for the LTBMU.

<i>Evaluation</i>	<i>Form</i>	<i>Region 5 Target</i>	<i>Available Project Sites</i>	<i>Evaluations</i>	<i>Project Site</i>
Streamside Management Zones	T01	1	8	1	Blackwood Canyon 2006
Landings	T04	3	8	3	Blackwood Canyon 2006,x2, Ward Unit 18
Timber Sale Administration	T05	1	2	1	Blackwood Canyon 2006
Special Erosion Control & Revegetation	T06	3	8	3	Blackwood Canyon 2006, Blackwood 2005, Ward/Timberland
Road Surface & Slope Protection *	E08	5	8	5	Blackwood Phase II, Secret Harbor 1566a, Fountain Place/Powerline 12N08, Angora Fire Rehab 12N91, Lake Tahoe Blvd 12N31
Stream Crossings*	E09	4	8	4	Blackwood Phase II, Secret Harbor 1566a, Fountain Place/Powerline 12N08, Angora Fire Rehab 12N91
Road Decommissioning	E10	2	>30	2	15N60(near Marlette Reservoir), 15N61(near Marlette Lake)
Control of Sidecast Material*	E11	2	8	2	Blackwood Phase II, Secret Harbor 1566a
In-channel Construction Practices	E13	5	3	3	Blackwood Phase II, Cookhouse Meadow Restoration Project, Lam Watah Trail Boardwalk
Rip Rap Composition	E15	1	1	1	Angora Fire Rehab 12N91
Management of Roads During Wet Periods	E20	2	>30	2	14N33A Logan Ck Road, 12N01D Hell Hole Road
Developed Recreation Sites	R22	3	28	3	Newhall (Skunk Harbor), Stateline Lookout Observation Pt., Kaspain Picnic
Dispersed Recreation Sites	R30	4	13	4	Inspiration Point Vista, Secret Harbor Parking lot, McKinney Rubicon OHV Staging, Meeks Bay Trailhead
Range Management	G24	1	1	1	Baldwin Allotment
Prescribed Fire	F25	2	0	0	
Revegetation of Surface Disturbed Areas	V29	4	4	4	Lam Watah Trail Boardwalk, Cookhouse Meadow Restoration Project, Ward Creek Trailbridge, Pope Beach
TOTAL		43		39*	BASIN-WIDE

*Of the 43 Regional targets, only 39 evaluations were conducted due to a lack of qualifying projects for the E13- In-channel Construction Practices and F25-Prescribed Fire.

Table 2. Results of 2008 BMPEP Evaluations for the LTBMU by Program Area.

Program Area & Form	Number of Evaluations	EFFECTIVE		NOT EFFECTIVE	
		Implemented & Effective	Not Implemented & Effective	Implemented & Not Effective	Not Implemented & Not Effective
Timber					
T01	1	1	0	0	0
T04	3	3	0	0	0
T05	1	1	0	0	0
T06	3	3	0	0	0
Subtotal #	8	8	0	0	0
Engineering					
E08	5	5	0	0	0
E09	4	4	0	0	0
E10	2	1	1	0	0
E11	2	2	0	0	0
E13	3	3	0	0	0
E15	1	1	0	0	0
E20	2	2	0	0	0
Subtotal #	19	18	1	0	0
Recreation					
R22	3	3	0	0	0
R30	4	4	0	0	0
Subtotal #	7	7	0	0	0
Other					
G24	1	1	0	0	0
F25	0	0	0	0	0
V29	4	3	0	1	0
Subtotal #	5	4	0	1	0
Total # BMPs	39	37	1	1	0
Total Rating %		95%	3%	3%	0%
		97%		3%	

3.2 Results by Program Area

The following section outlines completed evaluations and provides a brief description of site specific issues and conditions.

~ Timber (Vegetation Management) ~

In 2008, BMPs within fuels reduction projects located in Blackwood Unit#1-4, 1-3, Ward Unit #18, and Ward Urban Lot/Timberland Unit. Treatments were completed in 2006 for these units. All eight timber evaluations rated BMPs implemented and effective. Vegetation management projects were conducted utilizing a cut-to-length harvester/forwarder logging system, as opposed to tractor skidding equipment traditionally used outside the Basin. This equipment operates over a slash-mat with a reported ground pressure ranging from 4 psi for the harvester to 13 psi for a fully loaded forwarder. The harvester cuts standing trees, strips branches and loads logs onto the forwarder, which transports them to a landing area where they are loaded onto trucks. Pre-existing roads or a chipped and slash covered area are used for landings to prevent additional ground disturbance. When fuels treatment/thinning operations are completed, residual slash consisting of limbs and branches is piled and burned, chipped, or masticated.

T01: Streamside Management Zones -1 evaluation.

T04: Landings – 3 evaluations.

All three evaluated landings were located on <10% slope and each landing was less than ½ acre in size.

T05: Timber Sale Administration – 1 evaluation

T06: Special Erosion Control and Revegetation – 3 evaluations.

For all evaluations chips or masticated material covered 99% of the unit, which exceeded the standard established in the NEPA document of 80%.

~ Engineering and Restoration ~

A total of 19 evaluations were conducted at 12 locations for BMPs related to roads and in channel construction BMPs. All evaluations were rated implemented and effective, except for an implementation failure at one of the sites evaluated for road decommissioning. The sixteen evaluations of road BMPS include drainage features (E08), stream crossing structures (E09), road decommission (E10), control of sidecast materials (E11), rip rap construction (E15), and management during wet periods (E20). In channel construction BMPs (E13) were rated at 3 sites. The BMPS implemented and rated at the sites are described below.

Secret Harbor Road 1566a - E08, E09, E11

Rolling dips were installed in 2003.

Blackwood Creek Phase II-Barker Pass Road Crossing - E08, E09, E11

The Barker Pass Road undersize culvert was replaced with a 150 foot long triple-span bridge and newly constructed natural channel to accommodate major flood event and fish passage in 2006.

Angora Fire Road Rehabilitation-Burn Area, Roads 12N19 (E08, E15) and 12N31(E08, E09)
These roads were rehabilitated immediately after fire suppression activities associated with the 2007 Angora Fire. The roads were bladed, culverts were replaced, some sections of the roads were obliterated, drainage dips and water bars were maintained, one culvert was replaced (12N31), and some riprap was installed (12N19).

Fountain Place/Powerline, Road 12N08 – E08, E09

Work conducted on this road in 2001 included maintenance and upgrading of drainage features and fencing to prevent off-road vehicle use.

Roads 15N69 and 15N61 – E10

These roads were decommissioned in 1998. Both roads are located on the east shore of Lake Tahoe near Marlette Creek. Although road prism is still evident there are no compacted surfaces, and surface cover is adequate to prevent erosion.

Marlette Lake Road 15N69

All 3.5 miles of this road was converted to trail and it is closed to motor vehicles. The work consisted of completely pulling up the fill slope for the first 0.75 miles and cutting a trail back in afterwards. The road prism was narrowed for the final length of the trail. Drainage dips were installed along the trail approximately every 250’.

Bliss Creek Road 15N61 – Not Implemented

A total of 0.66 miles of road 15N61 was decommissioned. Evidence of vehicle access was observed in the first 0.10 mile due to the wire fence being cut near the locked gate. Tire depressions, up to 2” deep, were observed in sandy soil on and off the decommissioned road. These have not yet and are not likely to form gullies or rills, however more substantial barricades are needed around this locked gate to prevent further entry.

Roads 12N01D and 14N33- E20

These are administrative use roads only. Under LTBMU policy, Forest Service staffs are directed to refrain from using administrative roads during wet periods except for emergencies. The evaluations were conducted on May 19 (14N33) and June 11, 2008 (12N01D).

In-Channel Construction Practices

The LTBMU fell two short of the regional target of five BMPEP evaluations for in channel construction practices (E13) due to lack of qualifying projects (i.e. the evaluation of effectiveness could be made within at least one, but no more than two years following implementation, and implementation monitoring was conducted during implementation). The Cookhouse Meadow Restoration Project and Blackwood Phase II (Barker Road Crossing) were completed in 2006, and the Lam Watah Trail Boardwalk was completed in 2007.

Cookhouse Meadow Restoration Project – E13

This project was completed in 2006. The old channel was abandoned and a new channel was constructed to reconnect the stream channel and floodplain. Construction BMPS included sediment fences, coir logs, rip rap and site delineation flagging.

Blackwood Phase II (Barker Road Crossing) – E13

The Barker Pass Bridge Crossing is located near the west shore of Lake Tahoe in Blackwood Canyon. The project included removal of an eight foot culvert under Barker Pass Road and replacing it with a multi-span bridge. Construction BMPs included sediment fences, coir logs, rip rap and site delineation flagging.

Lam Watah Trail Boardwalk – E13

The project consisted of decommissioning a one mile section of the trail, trail improvements on 0.5 miles, and installing a 200' foot boardwalk in the wetland area and at Burke Creek. Construction BMPs included sediment fences, coil logs, rip rap and site delineation flagging.

~ Recreation~

Developed Recreation Sites (R22)

Three recreation sites were randomly selected from all developed recreation sites where the Forest Service provides a service such as sanitation, water or refuse removal, etc.” Selected sites included Kaspian Picnic area, Newhall (Skunk Harbor), and Stateline Lookout Observation Point. All three developed recreation site evaluations (R22) were rated implemented and effective.

Kaspian Picnic area

The Kaspian Picnic area was built in the 1980's to serve as a recreation site with picnic table pedestal grill, flush toilet and water pumped from Lake Tahoe. The old restroom was demolished and replaced with a new accessible restroom in 2005.

Newhall (Skunk Harbor)

The rock building was constructed in 1924 and owned by George Whittell until the land was acquired by the Forest Service. This historic building is closed to the public however the beach is frequently used. Erosion control features include steps and retaining walls. There is very minor sand deposition and erosion around the exterior of the building.

Stateline Lookout Observation Point

The Stateline Lookout Observation Point used to consist of a lookout tower and garage that were built in 1956. In the 1980's these structures were removed and a vault toilet was constructed. The area now serves as a panoramic vista point with a short hiking trail. There are no water or garbage services at the site. The erosion control features included a concrete retaining wall and wooden steps installed in the 1980's.

Dispersed Recreation Sites (R30)

Four sites were randomly selected from the dispersed recreation sites present on the LTBMU. All four dispersed recreation site evaluations (R30) were rated implemented and effective. Sites evaluated include the Secret Harbor parking lot, Inspiration Point Vista, McKinney Rubicon OHV staging area, and Meeks Bay Trailhead.

Secret Harbor parking Lot

Log fences and rock barriers were used to limit soil disturbance in sensitive areas and delineate the beach trail. Erosion control measures and a concrete vault toilet were constructed in 1982.

Inspiration Point Vista

The Inspiration Point Vista parking lot, was built in the 1970's. Erosion control measures installed in 1983 include a sediment retention basin, retaining walls, steps, paved parking, and a vault toilet.

McKinney Rubicon OHV Staging Area

The McKinney Rubicon OHV staging area consists of a large gravel parking lot, concrete vault toilet and an oil disposal container, built in 2001. Refuse disposal and water service are not provided.

Meeks Bay Trailhead

The trailhead consists of a low sloped, 1000 square foot, unpaved parking area used year round by the public for access to the Meeks Bay Trail. Specific BMPs could not be identified, and the site (and the surrounding area) has zero slope and very limited erosion and sediment transport potential. This site did not score as "not implemented" simply because not much is needed in terms of BMPs, however this site is scheduled for paving and upgrades in 2010.

~ Other Evaluations ~

Range Management (G24)

The Baldwin Allotment is the only active grazing allotment in the Lake Tahoe Basin. The Allotment consists of five pastures through which horses are rotated throughout the grazing period. In 2008, horses were only permitted to graze for five days on one pasture (pasture C), which is an upland pasture, located out of the SEZ. Herbaceous vegetation and woody material met the 80% standard, and the entire evaluation was rated implemented and effective.

V29: Revegetation of Surface Disturbed Areas (V29)

In 2008, four sites which used revegetation as an erosion control BMP, were evaluated using the V29 protocol. Pope Beach Parking Lot BMP Retrofit and Cookhouse Meadow were implemented in 2006. Lam Watah and Ward Creek Trail Bridge were implemented in 2007. Revegetation prescriptions were implemented as designed for all four projects, however, the Ward Creek Trail Bridge revegetation prescription was rated *not effective*.

Cookhouse Meadow Restoration Project

During the channel reconstruction in 2006, the revegetation prescription included localized sod harvesting adjacent to the channel, vegetation plugs and native seed mix. Ground cover through the revegetated area of the project averaged 90%.

Pope Beach Parking Lot BMP Retrofit

The revegetation prescription included native seed mix under seed blankets. Ground cover was approximately 60%, which is less than the project objective of 70%. Even the cover objective is not fully met this meets the BMPEP criteria for a successful effectiveness rating (which is 80% of objective is met).

Lam Watah Trail

This project consists of the reconstruction of an existing trail, boardwalk, and parking area. The project is located adjacent to Hwy 50 in Stateline Nevada. The trail is approximately 1.5 miles long and terminates at the Nevada Beach on Lake Tahoe. The ingress/egress area for construction equipment was revegetated with mulch and native seeds as part of the reconstruction which took place in 2007. Groundcover was 97% (primarily grass) which exceeded the objective of 80% stated in contract documents. It should be noted that a user defined trail from the road to the boardwalk has developed.

Ward Creek Trail Bridge – Not Effective

This project consists of construction of a new bridge (54'L x 6'W) and removal of existing ford crossing across Ward creek, decommissioning of approximately 230 feet of existing trail and approximately 155 feet of new trail construction. The Trail Bridge was constructed in 2006, and streambank stabilization, trail decommissioning and new trail construction implemented in 2007. The trail was tilled to promote volunteer revegetation, and bank restoration also included willow plantings on both sides of the creek.

An area on the right side of the streambank below the bridge shows evidence of sediment transport directly into Ward Creek from erosion of the steep (45%) bank. Cover on this bank consists of 50% bedrock, 30% bare soil, and 20% forest duff. The dirt and duff is eroding from around the cracked bedrock and entering the creek. Although the current volume of sediment delivered to Ward Creek is estimated to be less than 1 cubic yard, the potential for greater rates of erosion exists. It is recommended that slope stabilizing BMPs, such as matting and/or geotextile fabric, be installed to prevent sediment transport and allow natural revegetation to occur. This site will be scheduled for follow up evaluation in the 2009 field season to determine if erosion has increased or if bank stabilization work has occurred.

4. FOLLOW UP EVALUATIONS

The 2007 BMPEP Report recommended follow-up evaluations at five site locations to verify whether corrective measures were taken to address issues of concern. Of the 5 site locations, four are currently in the program of work by the Engineering department for design evaluation and/or implementation of BMPs in 2009, therefore follow-up BMPEP evaluations were not conducted in 2008. These include the landing at the A-gate Fuels Reduction project, the Echo

Lake Trailhead, Road 12N23 (Angora), and Angora Lakes Trailhead. Followup BMPEP evaluations will be conducted once BMPs have been installed.

One follow-up evaluation was conducted in 2008, for High Meadows Road (12N05) which was rated as not effective for management of roads during wet periods. Gravel was put in place to stabilize approximately 120 feet of the road surface located in a wet seep area along the road, in the 2007 field season. The 2008 evaluation observed only a small tire depression in the road with no signs of erosion. The LTBMU Roads Manager has scheduled this site for annual evaluation and maintenance, and more complete BMPs will be evaluated and implemented as part of the Cold Creek High Meadows Project currently in the NEPA process.

5. SITE SPECIFIC EVALUATIONS

Blackwood Creek Phase IIIa, E13: In-Channel Construction Practices - Implementation only in 2008

Blackwood Creek was selected for site specific evaluation as one component of the comprehensive monitoring plan for this project (Blackwood Restoration Monitoring Plan, 2008). The Blackwood Creek Restoration Project Phase IIIa, resulted in 900 feet of reconstructed stream channel within the main channel of Blackwood Creek in the summer of 2008. Channel restoration included construction of flow deflection and floodplain deflection structures and the construction of a new channel with appropriate morphology in terms of channel width, depth, gradient, and sinuosity. This protocol requires at least one winter cycle before the effectiveness portion of the evaluation can be completed, thus only the implementation portion of the evaluation is reported this year.

Water quality protection design feature measures related to erosion control and sediment transport were identified in NEPA documents, design plans, and the Storm Water Pollution Prevention Plan. Field visits to the site during construction verified design measures were implemented according to specifications. These design features included water diversion structures, filter fabric, coil logs, equipment staging areas and project delineation flagging.

6. SUMMARY / RECOMMENDATIONS

Forest wide BMPs in **2008 were 97% effective**. Minor effectiveness deficiencies occurred in a revegetation evaluation for the Ward Creek Trailbridge construction and trail decommissioning project. Although the volume of sediment delivered to Ward Creek is estimated to be less than 1 cubic yard, the potential exists for erosion rates to increase. It is recommended that slope stabilization BMPs be installed on this steep bank that both stabilizes soils and enhances revegetation. This site will be scheduled for follow up evaluation in the 2009 field season to determine if erosion has increased or if bank stabilization work has occurred.

One implementation deficiency was documented related to a compromised barrier to access for a section of decommissioned road (Bliss Creek Road, 15N61). Additional measures to prevent access to the decommissioned section of Bliss Creek Road are recommended.

In addition, evaluations for four sites where deficiencies were noted in the 2007 BMPEP report have been deferred until after BMPs have been installed, possibly in 2009.

7. REFERENCES

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