

2014 BEST MANAGEMENT PRACTICES EVALUATION PROGRAM

ANNUAL REPORT

USDA FOREST SERVICE
LAKE TAHOE BASIN MANAGEMENT UNIT
ECOSYSTEM CONSERVATION DEPARTMENT



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EXECUTIVE SUMMARY

In 2014, the Lake Tahoe Basin Management Unit (LTBMU) completed 24 Regional Best Management Practices Evaluation Program (BMPEP) evaluations and seven National Core BMP Monitoring (NCBMPM) protocols as part of the Pacific Southwest Region's (Region 5) effort to evaluate the implementation and effectiveness of BMPs designed to protect soil and water resources associated with Timber, Engineering, Recreation and Revegetation activities.

Nineteen of the 24 evaluations conducted in 2014 were rated as implemented as planned and effective, 2 were rated as not implemented as planned but still effective at protecting water quality, 2 were rated as implemented but at risk of potential sediment transport, and 1 was rated as implemented as planned, but not effective at protecting water quality. This not effective rating was given at an intermittent stream crossing site in the Ward Creek watershed where channel condition above and below the large culvert stream crossing is in an unstable condition. The culvert is not the cause of this condition, but may contribute to future degradation because the culvert will constrict channel flows during large floods. No adaptive management is recommended at this location at this time, except for continued monitoring.

Of the seven National Core BMP monitoring evaluations conducted in 2014, only three rated as good or excellent. The other four evaluations identified implementation and/or effectiveness deficiencies that resulted in an overall composite rating of "poor" or "no plan". A no plan composite rating reflects an implementation deficiency related to not having appropriate BMP operations and maintenance planning documents in place. These are summarized below:

- Upper Truckee River Restoration Project - Effectiveness deficiency during stream crossing removal because of a check dam breach, resulting in short term in-stream turbidity spikes during stream crossing removal activities in exceedance of state water quality standards. Adaptive Management actions, included immediately correcting cause of check dam breach in the field, and a follow-up meeting with state regulators to discuss ideas for minor improvements to check dam removal procedures for the future.
- 64 acres River Access Recreation Site – Implementation deficiency due to absence of BMP operations and maintenance plan, as required by Special Use Permit. Effectiveness deficiency as a result of bare compacted surfaces from recreation use adjacent to the Middle Truckee River. Issues elevated to USFS Leadership Team. LTBMU will initiate coordination with partners to seek grant funding to address needs.
- Maggie's Ski Run at Heavenly Resort – Implementation deficiency due to lack of operations and maintenance plan provisions for ski run BMPS in Special Use permit (SUP). Effectiveness deficiency due to presence of chronic erosion features on ski run surfaces which are hydrologically connected to adjacent stream channels. The effectiveness deficiency will be addressed under the upcoming NEPA decision for the Heavenly EPIC Summer Uses Project, in which mitigations are identified to fix existing problems. An update to the Summer Operations and Maintenance Plan under the SUP will be conducted in 2015 following completion of the Heavenly EPIC EIS and ROD , to address implementation deficiencies.
- Echo Lakes Cabin Water System – Effectiveness deficiency as a result of there being no mechanism for monitoring water use. Implementation deficiency because there is currently no established Special Use Permit with associated operations and maintenance plan, as required by USFS Policy.

Adaptive management is currently occurring informally, through email communications with water system manager. Through these informal communications the water system manager has agreed to complete system upgrades by the spring of FY15 which includes the installation of flow meters, and annual reporting of water use. The establishment of a formal Special Use Permit is planned for FY15.

- Blackwood Creek Phase I Restoration – Although the overall rating was excellent , a minor effectiveness deficiency was observed at a 1.5 acre area within the floodplain utilized as temporary staging area during construction. Natural revegetation is not occurring at a sufficient pace at this location. Additional placement of woody debris with native seed will be implemented in FY15.

The National CBMPM protocols are much more comprehensive and walk an interdisciplinary evaluation team through a more thorough evaluation process to identify causes of deficiencies and identify appropriate management responses to identified deficiencies. As the USDA Forest Service BMP program continues to evolve towards full adoption of the National CBMPM program, a fewer number of evaluations will be conducted each year in Region 5 than have been conducted in the past. However these evaluations are more likely to identify deficiencies that may be institutional in nature. The National CBMPM protocol leads to a more thorough analysis of the plans, designs and procedures utilized by the implementing Unit, and whether those processes are sufficient to ensure appropriate BMPs are being applied.

1. INTRODUCTION

This report summarizes the results of the Best Management Practices Evaluation Program (BMPEP) at the Lake Tahoe Basin Management Unit (LTBMU) during 2014. The objectives of this program are (i) to 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) to assess and document the efficacy of the USFS water quality management program, specifically, by evaluation of the implementation and effectiveness of BMPs; and (iii) to facilitate adaptive management, by identifying opportunities to improve the program and recommending and tracking the 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 are actually put in place on project sites. Effectiveness evaluations gauge the extent to which the practices meet the 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.

The US Forest Service rolled out National BMP program guidance (National BMP Technical Guide, 2013), and initiated beta testing of a National BMP evaluation program in 2013. Region 5 (Pacific Southwest Region) of the USFS has had a Regional BMP Program in place since 2000. 2013 was the first year that the evaluations in the Regional Program has been scaled back (by about 25% for each Forest) in order to initiate the beta-testing of the National BMPEP program. Although the number of National BMPs went up in 2014 (from 2 to seven evaluations per forest), the number of Regional evaluations did not decrease from the 2013 targets.

The National BMPEP protocols are much more intensive and interdisciplinary in execution than the Region 5 protocols, therefore requiring many more man hours and documentation for each individual protocol. It is expected that the Regional BMPEP program will be completely replaced by the National Program in about two to three years.

Additional details regarding Regional 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)*.

Additional details regarding the National BMPs can be found in *National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core Technical Guide, FS990a (USDA, 2013)*. National BMP monitoring protocols are currently only available on a USFS intranet site as the process goes through this beta-testing period.

The following is a summary of the process used under each of the BMPEP protocols.

Region 5 BMPEP

BMP implementation evaluation forms are used to document answers to a variety of specific questions intended to determine whether the project was executed as specified in project planning documents. A range of possible ratings is 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). Ratings 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., visual evidence of sediment delivery to channels) and quantitative measurements (e.g. amount of ground cover, percent of stream shade).

This rating approach results in a 2 x 3 matrix, where a given suite of BMPs are placed into one of six categories: implemented and effective (I-E), not implemented but effective (NI-E), implemented and at risk (I-AR), and not implemented and at risk (NI-AR), implemented but not effective (I-NE), and not implemented and not effective (NI-NE):

- “implemented and effective (I-E)” A rating of I-E results when the BMP was both implemented and effective.
- “not implemented but effective (NI-E)” A rating of NI-E results when BMPs were not implemented, or were not installed according to specifications, yet there is no evidence of potential water quality impairment. The judgment that there is no evidence of potential water quality impairment is made when (i) BMPs are visually confirmed to be effective despite having been incorrectly installed, or (ii) no BMP was necessary for the specific situation, or (iii) no precipitation event occurred to provide evidence of impairment, or (iv) only project planning deficiencies were noted.
- “implemented but not effective (I-NE)” A rating of I-NE results when BMPs were implemented, but evidence of erosion and/or sediment delivery to an SEZ was observed.
- “not implemented and not effective (NI-NE)” A rating of NI-NE results when BMPs were not implemented and evidence of erosion and/or sediment delivery to an SEZ was observed.
- “implemented and at risk (I-AR)” A rating of I-AR results when BMPs were implemented, no evidence of sediment delivery to an SEZ was observed, however evidence of erosion and potential for sediment transport to an SEZ was observed.
- “not implemented and at risk (NI-AR)” A rating of NI-AR results when BMPs were not implemented, no evidence of sediment delivery to an SEZ was observed, however evidence of erosion and potential for sediment transport to an SEZ was observed.

The “at risk”-AR ratings are a new category that was added to the BMPEP scoring protocol starting in FY11.

For those locations where the BMPs receive poor ratings for implementation or effectiveness, observers are asked to identify the causes and to suggest corrective actions. The 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 “hill-slope monitoring” uses indirect measures to evaluate BMP effectiveness. Poor ratings represent potential, as well as actual, impairment of water quality at a given location. All BMPs for which there exists visual evidence of impairment receive poor ratings; but so do

some BMPs that have no actual impairment as yet, because the potential is significant for water quality impairments to occur in the future at those locations.

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 the Regional programmatic level.

National Core BMP Monitoring

The purpose of the National Core BMP monitoring (CBMPM) program is to establish a standardized set of procedures for monitoring the implementation and effectiveness of the national core BMPs.

It is designed to be implemented by Forest or Grassland-level interdisciplinary teams on a subset of the unit's projects and activities. The goal is to obtain a statistically significant set of monitoring results for each Forest Service Region within 5 years for each National Core BMP applied extensively in the Region. The National Core BMP monitoring protocols are expected to be published in the National BMP monitoring Technical Guide (volume 2) sometime in 2015.

The current draft protocols are quite lengthy so were not included as an attachment to this report, and they are not currently available on a publicly available website or document. However electronic copies of these draft protocols can be provided upon request. A scoring system is currently being applied (beta-testing) to the National BMP evaluations, but no information is currently available on exactly how this scoring system works.

3. RESULTS

A. Regional BMPEP

The LTBMU completed 24 of the 25 Regional Office assigned BMPEP targets, which are summarized in Table 1 below. Project BMPs were rated for effectiveness after spring runoff in 2014.

Activity	Not Rated	Imp/Eff	Not Imp/Eff	Imp/At Risk	Imp/Not Eff	Not Imp/At Risk	Not Imp/Not Eff	Evaluations
T01	0	2	0	0	0	0	0	2
T02	0	2	0	0	0	0	0	2
T04	0	1	0	0	0	0	0	1
T05	0	0	0	1	0	0	0	1
T06	0	1	0	0	0	0	0	1
E08	0	2	0	0	0	0	0	2
E09	0	1	0	0	1	0	0	2
E11	0	2	0	0	0	0	0	2
E13	0	1	0	0	0	0	0	1
E14	0	0	0	1	0	0	0	1
E15	0	1	0	0	0	0	0	1
E17	0	1	0	0	0	0	0	1
E20	0	0	1	0	0	0	0	1
R22	0	2	0	0	0	0	0	2
V29	0	0	1	0	0	0	0	1
R30	0	1	0	0	0	0	0	1
R31	0	2	0	0	0	0	0	2
F25	1	0	0	0	0	0	0	1
	1	19	2	2	1	0	0	25

Table 1: Regional BMPEP Results.

The Prescribe Fire Evaluation (F25) was not completed because there was no activity on the LTBMU to develop a sample pool from which to select an evaluation. Nineteen of the 24 evaluations conducted in 2014 were rated as implemented as planned and effective, 2 were rated as not implemented as planned but still effective at protecting water quality, 2 were rated as implemented, but at risk of potential sediment transport, and 1 was rated as implemented as planned, but not effective at protecting water quality. There are extenuating circumstances to this last rating which is discussed further below.

Timber (Vegetation and Fuels Management)

A total of six timber evaluations were rated implemented and effective at fuels reduction treatment projects, and one was rated as implemented but at risk.

- 2 - T01, Streamside Management Zones
- 2 - T02, Skid Trail.

- 1 - T04, Landings.
- 1 - T05, Timber Sale Administration.
- 1 - T06, Special Erosion Control and Revegetation

T01: Streamside Management Zones (I/E for both)

- South Shore Fuel Hazard Project, Unit 153 (cut to length treatment)
- Aspen Restoration , Unit 5A (cut to length treatment)

T02: Skid Trails (I/E for both)

- South Shore Fuel Hazard Project, Unit 20 (whole tree treatment)
- South Shore Fuel Hazard Project, Unit 4 (cut to length treatment)

T04: Landings (I/E)

- Angora Restoration Project or SS? , Unit 8C

T05: Timber Sale Administration (I/AR)

- South Shore Fuel Hazard Project, Meow CTL

Some erosion was observed below waterbars, but was less than <20 feet in length on less than 20 percent of the waterbar outlets. This evaluation should be placed in the pool for retrospective monitoring in 2015.

T06: Special Erosion Control and Revegetation (I/E)

- South Shore Fuel Hazard Project, Unit 5B

Engineering and Restoration

Six of the eight completed evaluations of Roads and In-channel Construction Practices were rated as implemented and effective. One evaluation was rated at implemented, and at risk, and one was rated as implemented, but not effective.

- 2- E08, Road Surface, Drainage and Slope Protection;
- 2- E09, Stream Crossing;
- 2- E11, Control of Sidecast Material,
- 1- E13, In-Channel Construction Practice;
- 1- E14: Temporary Roads;
- 1- E15: Rip Rap Composition;
- 1- E17: Snow Removal;
- 1- E20: Management of Roads during Wet Periods;

E08: Road Surface, Drainage and Slope Protection (I/E for both)

- Road 16N48 – Administrative Use Road, Maintenance
- Angora Road 10 (12N22) –Administrative Use Road , Re-construction

E09: Stream Crossing

- Road 16N48 - Administrative Use Road, Maintenance – (I/NE)

This road located in the Ward Creek Watershed, and was last maintained as part of work conducted under the Quail Hazardous Fuels Reduction Project in 2007. Although the channel crossing structure itself is stable (48" culvert), the channel for 50' immediately upstream and 200' downstream of the crossing is incised. The culvert crossing is constructed in a manner that constricts channel morphology to the dimensions of the culvert, with no inset floodplain. The banks above and below the culvert are steep, bare, and contain no vegetation or rock cover. Currently in the low flow condition observed (May 9, 2014), channel banks are not actively eroding, but the channel condition is very vulnerable to future large flow events.

The photo below illustrates the condition of the channel banks approximately 100 feet downstream of the channel crossing. The bank on the right is approximately 4 to 5 feet in height. The stream channel morphology changes both upstream and downstream of this incised 250' section of channel, into a stable morphology that is not incised, and is characterized by stable rock and vegetated bank cover. The



gradient of the incised reach is much less than the stable reaches located both above and below the incised reach, which is likely why the road and crossing were located in this area.

A restoration hydrologist and road engineer visited this site later in the summer to determine whether the current design of this channel crossing could contribute to the channel incision observed, and to provide an adaptive management recommendation.

After the follow-up visit, it was determined the primary cause of the erosion downstream of the culvert was

due to a wood jam probably formed during the 1997 flood, causing diversion of flows into the stream bank and resulting channel erosion. The dense conifer canopy is inhibiting the presence of riparian shrub vegetation, which would allow the channel to self-stabilize. This site will continue to be monitored to determine if further natural collapse of trees into the channel result in providing stabilizing structure to the channel. If future monitoring determines that the channel is continuing to degrade, a pro-active approach of selective tree thinning and placement of downed wood into the channel with riparian vegetation plantings may be warranted. These recommendations will be captured in the Watershed Improvement Tracking (WIT) database for future implementation. Ward Creek is within one of the priority watersheds identified for improving watershed condition on the LTBMU.

While traveling to this location to conduct the BMPEP evaluation two more issues were observed on this road that should be addressed. First, in approximately 100 feet from the start of the road (coming from the Ward Canyon end), the road comes to an intersection. The system road 16N48 heads to the right, but a visible road also extends to the left running parallel to the adjacent homes. From researching maps used for the Quail Hazardous Fuels Reduction Project, it is apparent that the road to the left is a relic forwarder trail that is still compacted and visible. From the map, the unauthorized road



extends for approximately .65 miles and crosses a perennial stream channel. This legacy forwarder trail/unauthorized road should also be revisited by a restoration hydrologist and road engineer, to determine appropriate restoration actions to capture in the WIT database.

And finally the photo above illustrates a downed tree plugging the downstream end of a culvert crossing for an ephemeral drainage located on road 16N48 on the way to the BMPEP evaluation. This situation will need to be addressed as part on ongoing road maintenance, or during future restoration actions that are planned on the road.

- Angora Road 10 (12N22)- Administrative Use Road , Re-construction **(I/E)**

E11: Control of Sidecast Material (I/E for both)

- Road 16N48 – Administrative Use Road, Maintenance
- Angora Road 10 (12N22) –Administrative Use Road , Re-construction

E13: In-Channel Construction Practice (I/E)

- Upper Truckee River Restoration (National CBMPM and Regional BMPEP)

E14: Temporary Roads (I/E)

- Upper Truckee River Restoration Project- Access Road

E15: Rip Rap Composition (I/E)

- Shawn Palmer Special Use Permit

E17: Snow Removal (I/E)

- Meyers Work Center

E20: Management of Roads During Wet Periods (NI/E)

- Grass Lake Road-11N13

No lock on the gate, gate only secured by a small carabineer. Situation was corrected immediately upon notifying engineering staff.

Recreation

All five BMP evaluations at a total of three Recreation Sites were rated as implemented and effective.

- 2 – R22, Developed Recreation Sites
- 1 – R30, Dispersed Recreation Site
- 2 - R31, OHV Trails

R22, Developed Recreation Sites (I/E for both)

- Camp Richardson Resort, Lodge and Campground

- 64 Acres Lakeside (National CBMPM and Regional BMPEP)

R30, Dispersed Recreation Sites (I/E)

- Rainbow Trail Head

R31, OHV Trails (I/E for both)

- Trail 13N31
- Trail 15N60

Revegetation of Surface Disturbed Areas and Prescribed Fire

The prescribed fire evaluation could not be conducted, because no broadcast burning activity had occurred in the time frame appropriate for monitoring. The Revegetation evaluation was rated as not implemented but effective.

V29, Revegetation of Surface Disturbed Areas (NI/E)

- Meeks Bay Hwy Corridor BMP Retrofit

Although many parking barriers were installed as part of the project, there are still some areas of insufficient protection of re-vegetated or existing vegetated areas, to prevent unauthorized parking on restored areas within the campground as well as the wilderness trail head parking area. The parking area partially exists within the Caltrans Right of Way. The area is being reviewed to be addressed as part of redevelopment of the Meeks Bay Resort, which is planned for construction in 2017.

B. Retrospective BMPs and Followup from 2013 Evaluations.

From the 2013 BMPEP Report recommended on informal follow-up evaluation at the Bayview Campground to determine whether the pedestal grill that was located within 10 feet of an intermittent stream has been moved to a more appropriate distance of 50 feet from the stream channel. Relocation of this grill was implemented in 2014.

C. National CBMPM Evaluations

The LTBMU was assigned seven National CBMPM evaluation targets in 2013. The following are the sites randomly selected for these evaluations. Adjustments were needed from the original targets assigned because for two of the originally assigned targets (Fire and Chem) there were no suitable project sites for evaluation. These targets were replaced with Veg evaluations.

AqEco -A: Construction of Aquatic Ecosystem Improvements (Poor)

- Upper Truckee River Reach 5 Restoration, Stream Crossing Installation for Temporary Access Road

The Upper Truckee River (UTR) Restoration project is a 3 year project that will result in the new construction of 1.25 miles of stream channel to replace an existing incised channel. The purpose of this project is to restore hydrologic connectivity to the adjacent floodplain, improve aquatic and riparian habitat, and reduce the rate of stream channel erosion. This evaluation was conducted to evaluate the BMPs implemented in 2014 during installation and removal of a temporary stream crossing, to evaluate effectiveness of all BMPs (including proper fish net installation) in preventing adverse impacts to water quality. The crossing included three 36" diameter culverts and base flows were approximately 12 cfs during installation and 7 cfs during removal. Pumps to reduce base flows to manageable levels included one 6 inch pump and two 3 inch pumps

Installation was successfully completed with no exceedance of in-stream turbidity standards. However, there was an exceedance of in-stream turbidity standards during removal of this temporary stream crossing. This occurred as a result of upstream flows overtopping the check dam, for a short period of time while the crossing material was being excavated from the channel bed. This resulted in a short term turbidity plume. Check dam sand bags were quickly relocated to contain upstream flows, but a pulse of turbid flow was released into the channel just below the crossing. This resulted in a short term increase of turbidity up to 172 NTUs at a grab sample monitoring site located 75 feet below the crossing. Turbidity returned to background levels within 2 hours, and turbidity did not exceed in-stream standards at a turbidity probe installed 400 hundred feet below this crossing during this incident. A follow-up meeting with regulatory staff on this incident resulted in agreement on minor changes in implementation procedures to reduce risk during future stream crossing removal, during the next year of implementation on this project.

AqEco-B: Completed Aquatic Ecosystem Improvements **(Excellent)**

- Blackwood Creek Reach 1 Restoration (completed in 2012).

This evaluation was conducted on a large scale stream channel restoration project. Restoration actions included channel and floodplain reshaping, and installation of rock grade control weirs and large wood bank stabilization structures. The long term goals of the project are expected to be achieved through natural processes, as the floodplain and channel experiences desired sediment aggradation in response to future high flow events. Short term goals of channel and floodplain stabilization has mostly been achieved, however a 1.5 acre area used as a staging areas within the project has been identified as needing additional placement of wood debris to help facilitate natural revegetation. This adaptive management work is planned for implementation in 2015.

Veg C: Mechanical Site Treatments **(Excellent)**

- South Shore Fuels Reduction Project, Taylor Creek Unit 206

Aspen suckers coming up in treatment unit. Very little evidence of forwarder trails, and 100% ground cover throughout area.

Fac-D: Completed Non-Corridor or Above-Ground Corridor Facility Reclamation **(Good)**

- Resolution of encroachment on US Forest Service Lands (Parcel No: APN 023-102-01).

A number of personal items belonging to an adjacent private property owner were being stored on US Forest Lands, including a trailer, trampoline, and other property. All personal property was removed. This encroachment presented no risk to water quality. In retrospect, for future monitoring, sites like this should not be included in the sample pool, and a more relevant evaluation should be selected.

Rec-A: Operations and Maintenance of a Developed Recreation Site (**No Plan**)

- 64 Acres-Lakeside

This recreation site consists of a parking lot and non-motorized river access for the Middle Truckee River, which is heavily used by small non-motorized crafts and tubers during the summer time. Effectiveness deficiencies were documented related to bare and compacted soils in close proximity to the river, including the river bank itself. In a review of the special use permit for this site (with the Tahoe City Public Utility District) it was discovered that no operating plan for this site was in place, even though the permit states one is to be developed and updated every two years. There also were no other specific provisions provided in the permit to protect soil and water quality, resulting in a finding of implementation deficiencies.

The following are recommended adaptive management actions at this site:

- 1) The expired TCPUD permit should be renewed and updated. Clarification of permittee vs. USFS role in protecting soil and water quality should be specified during this process, including seeking grant funding for implementation of BMPs (further described below).
- 2) Implement soil restoration and revegetation on bare compacted areas.
- 3) Implement bank stabilization along river where needed within the 64 acre site.
- 4) Provide better features to control pedestrian access at site, including more capacity for boat launching.
- 5) Move picnic tables and porta-potties to appropriate distances away from the river.

This site is currently in planning to relocate Highway 89 through the site, with implementation expected to begin in 2016. Highway relocation will need to be integrated into planning efforts for the recreation infrastructure, including soil and water quality protection BMPs.

Rec-H/I: H- Completed Ski Area Construction or Reconstruction Ski Run Operation , and I-Maintenance (**Poor**)

Maggie's Ski Run

Maggies is a heavily used green ski run, which serves as a major connector trail at the Heavenly Ski Resort. Effectiveness deficiencies were documented related to evidence of sheet, rill, and gully erosion depositing sediment directly to channels. This is consistent with the findings recently documented in a survey of erosion sites within the Sky Meadows watershed, conducted as part of the Heavenly Resort EPIC (Summer Uses) EIS. Mitigations to address these deficiencies will be included in the EIS and ROD due to be published in 2015.

Currently there are no provisions in the US Forest Service special use permit (SUP) summer operations and maintenance plan specific to protecting water quality. Much of the monitoring and mitigation

requirements at the resort are addressed through their NPDES permit with the Lahontan Regional Water Quality Control Board, which is currently being revised as a result of the Heavenly EPIC EIS. The SUP summer operations and maintenance plan will be updated to support the new NPDES permit, and incorporate relevant mitigations identified in the Heavenly EPIC EIS and ROD.

This site will also be placed in the pool for retrospective monitoring.

WatUses-E: Operation and maintenance of diversions and conveyances **(No Plan)**

Echo Lakes Cabins Water System

This evaluation was performed on a water diversion and conveyance system that currently supports permitted water rights for five individual cabins. The water system includes a diversion structure at a spring, diversion pipes, and water holding tanks. When 5 or more individual users are being supported by a water system, the USFS requires that system to be permitted and managed through a Special Use Permit (SUP) for the operations and maintenance of that system. There currently is no such permit in place. The SUP does not confer water rights, but provides provisions for protecting public property and safety, and ensuring resource damage does not occur from the water system infrastructure or over use of water. There is currently no visual evidence of effectiveness deficiencies related to erosion associated with the water system infrastructure, but there is currently no mechanism for monitoring water use to insure water use is within allocated water rights.

The Forest is currently working informally with the cabin owners and the water system manager to upgrade the water system. So far, one leaking water tank has been replaced, and an informal commitment has been made to replace an additional water tank in the Spring of FY15, as well as install flow meters at both the spring outlet as well as the water tank outlet. This informal agreement also includes a commitment to report water use annually. The LTBMU plans to formalize ongoing use, maintenance, and water use reporting of the Echo Lakes Cabin water system in a SUP in FY15.

D. Five-Year Summary of Region 5 BMPEP Results

As can be seen in the Table below there continues to be a gradual ramp down in implementation of the Region 5 BMPEP protocols, as the number of National BMP evaluations increases. The table below displays overall BMP effectiveness during this period (2010 through 2014). This includes both Regional target evaluations, as well as additional evaluations using the Regional protocols conducted that were project or precipitation event specific.

Year	Total # of BMPEP Evaluations	# of Effective Ratings **	# of Successfully Implemented Ratings*
2014	24	21	22
2013	31	31	31
2012	35	33	35
2011	38	36	37
2010	39	37	37
TOTAL	167	158	162

** Implemented - BMPs were implemented as specified in contract/NEPA/permit documents (not necessarily effective).*

*** Effective – no evidence of water quality impairment, or risk of impairment, was observed.*

The annual reports documents deficiencies where they occurred, recommended management actions, as well as follow up evaluations to evaluate whether deficiencies were resolved. This process has resulted in an effective and ongoing adaptive management response to correct observed deficiencies. All annual reports are posted on the LTBMU external website.

4. SUMMARY AND CONCLUSIONS

There was a drop in the number of Regional BMPEP targets rating as successfully implemented and effective in 2014, with 79% of BMPs given this rating (21 out of 24 evaluation). One of the documented deficiencies was corrected immediately following the evaluations (replacing the lock on a closed road), and the other two deficiencies will be placed in the pool for retrospective monitoring in 2015 (T05-Meow CTL Unit, and E09- Road 16N48).

The seven National Core BMP monitoring evaluations conducted in 2014 identified deficiencies that either resulted in, or have the potential to result in adverse impacts to soil, water quality, or riparian resources at 4 locations. The National CBMPM protocols are much more comprehensive and walk the interdisciplinary evaluation team through a more thorough evaluation process to identify causes of deficiencies and identify appropriate management responses to identified deficiencies, and are more likely to identify deficiencies that may be institutional in nature. The National CBMPM protocol leads to a more thorough analysis of the plans, designs and procedures utilized by the implementing Unit, and whether those processes are sufficient to ensure appropriate BMPs are being followed, and whether they are effective.

References

- USDA Forest Service. 2000. Water Quality Management for National Forest System Lands in California: Best Management Practices. Pacific Southwest Region; Vallejo, CA.
- USDA Forest Service. 2002. Investigating Water Quality in the Pacific Southwest Region: Best Management Practices Evaluation Program (BMPEP User's Guide. Pacific Southwest Region; Vallejo, CA.
- USDA Forest Service. 2012. National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core Technical Guide, FS990a

Appendix A: National Core BMP Evaluation Scoring

Evaluations by Fiscal Year for BMP Targets - Region 05 Admin unit 19 Lake Tahoe Basin

Fiscal year: 2014

Monitoring activity: **AqEco_A** Construction of Aquatic Ecosystem Improvements

Site	Evaluation Type	Date	Implementation	Effectiveness	Composite
Upper Truckee River Restoration Proje	Both implementation and effectiveness	07/10/2014	Fully	Not	Poor

Monitoring activity: **AqEco_B** Operation and Maintenance of Aquatic Ecosystem Improvements

Site	Evaluation Type	Date	Implementation	Effectiveness	Composite
Blackwood Creek Reach 1 Stream and	Both implementation and effectiveness	07/24/2014	Mostly	Effective	Excellent

Monitoring activity: **Fac_D** Facilities Reclamation

Site	Evaluation Type	Date	Implementation	Effectiveness	Composite
APN 023-102-01	Both implementation and effectiveness	05/19/2014	Marginal	Effective	Good

Monitoring activity: **Rec_A** Developed Recreation Sites

Site	Evaluation Type	Date	Implementation	Effectiveness	Composite
64 Acres - Parking, Day Use, and River	Both implementation and effectiveness	08/05/2014	No BMPs	Not	No Plan

Monitoring activity: **Rec_I** Ski Run Operation and Maintenance

Site	Evaluation Type	Date	Implementation	Effectiveness	Composite
Heavenly Mountain Resort, Maggie's S	Both implementation and effectiveness	08/21/2014	Mostly	Not	Poor

Monitoring activity: **Veg_C** Mechanical Site Treatments

Site	Evaluation Type	Date	Implementation	Effectiveness	Composite
South Shore Fuel Reduction Project, U	Both implementation and effectiveness	07/24/2014	Mostly	Effective	Excellent

Monitoring activity: **WatUses_E** Operation and Maintenance of Diversions and Conveyances

Site	Evaluation Type	Date	Implementation	Effectiveness	Composite
NA	Both implementation and effectiveness	06/18/2014	No BMPs	Mostly	No Plan

