

Heavenly Mountain Resort

Mitigation and Monitoring Plan
Annual Report (October 2016 –
September 2017)



Prepared for
Tahoe Regional Planning Agency



May 1, 2018

Photo courtesy of Heavenly Mountain Resort

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Document Information

Prepared for	Tahoe Regional Planning Agency
Project Name	Mitigation and Monitoring Plan Annual Report (October 2016 – September 2017)
File Reference	Heavenly MMP Annual Report (2017) Final.docx
Date	May 1, 2018

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Executive Summary

On April 25, 2007, the Tahoe Regional Planning Agency's Governing Board unanimously approved Heavenly Mountain Resort's 2006 Master Plan Amendment (MPA). "In 2013 Heavenly applied for applications with the USDA Forest Service and TRPA to amend the MPA 07 to expand non-skiing and summer use opportunities within the resort. The 2013 proposal, titled Epic Discovery, utilizes existing infrastructure and facilities (e.g., ski lifts, lodges and roads) to provide a wide variety of new summer activities for guests. The proposal was developed following the passage of the Federal Ski Area Recreational Opportunity Enhancement Act of 2011 which allows ski resorts operating on National Forest System lands to propose year round non-skiing activities in order to attract a wider range of visitors to National Forests and help support employment and economic activity in local communities. The 2015 Master Plan amendment is referred to as the Heavenly Master Development Plan (MDP)."¹ This annual report summarizes monitoring and evaluation activities conducted at Heavenly Mountain Resort (Heavenly) between October 2016 and September 2017 as a result of the implementation of the Mitigation and Monitoring Plan (MMP) contained in the approved Master Plan Amendment.

The Mitigation and Monitoring Plan consists of planning measures, construction measures, operations and maintenance measures, and management response to monitoring and evaluation. The content of each measure is developed to mitigate potentially adverse effects from the implementation of Heavenly's Master Development Plan. As Heavenly implements the Master Development Plan, they must meet each applicable measure and utilize monitoring and evaluation results to adapt the measures if necessary.

Monitoring and evaluation is conducted by Heavenly, the Tahoe Regional Planning Agency (TRPA), the USDA Forest Service, Lahontan Regional Water Quality Control Board, and local and county offices. Heavenly and TPRA employ the services of Cardno (formerly Cardno ENTRIX, Inc.), Resource Concepts, Inc., J.C. Brennan and Associates, and Sierra Ecotone Solutions (Garth Alling formerly with Hauge Brueck Associates), to conduct monitoring in their field of expertise. This annual report summarizes the monitoring results based on the data evaluation.

In summary, Heavenly is in compliance with all applicable mitigation measures of the MMP with the exception of partial compliance with regards to measure 7.4-3 (water quality), 7.5-6 (maintain flows in Heavenly Valley Creek), and non-compliance with measure 7.5-11 (snowmaking noise at Base areas). Heavenly is working to decrease water quality exceedances by decreasing the amount of huck salt applied on the mountain, addressing on-mountain erosion source areas, and implementing liquid brine solution to the parking lots and roadways leading to California Base Lodge to help limit the amount of deicer needed on the roadways. Additionally, Heavenly is continuing to make improvements to the StormFilter vault system to improve and optimize performance (Catalyst 2017). Heavenly has also started to replace inflow stream gage equipment allowing for more accurate measurements of flow into and out of the California reservoir. However, substantial snow depths during the 2016-2017 ski season damaged some of the new equipment and additional repairs are needed to accurately monitor flows into and out of the reservoir. Snowmaking noise exceedances above the PAS boundary limits at the Base areas will continue unless the existing snowmaking equipment is replaced with quieter models, or infrastructure barriers are built around the lodge areas. However, there have been no reported noise complaints associated with snow making over the past few years. Table 1-1 summarizes each of the measures contained in the MMP, the relevance of the measure to the time period of interest, and whether or not Heavenly is in compliance with the measure.

¹ Heavenly Mountain Resort Master Development Plan, Page 1-1

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Chapter 1 – Introduction

Heavenly Mountain Resort is located on the south shore of Lake Tahoe within El Dorado and Alpine Counties of California and Douglas County of Nevada (Figure 1-1). Land ownership is shared between the United States Department of Agriculture Forest Service (Forest Service) and Heavenly. Heavenly operates on National Forest lands through a special use permit, renewed in 2002 for a period of 40 years.

A Mitigation and Monitoring Plan was first adopted during the approval of the 1996 Heavenly Master Plan. The MMP was revised based on measures that have been completed, measures that are no longer necessary, and new measures that are required to reduce potential impacts from implementation of the Master Plan Amendment. The amended Master Plan described the long-range development plans for Heavenly Mountain Resort. The latest EIR/EIS/EIS (Heavenly Mountain Resort Epic Discovery Project, February 2015) and August 2014 Master Plan Amendment, known as the Heavenly Master Development Plan (MDP), was finalized in May 2015 and contained updated environmental mitigation conditions, monitoring and reporting requirements. A number of past measures that were no longer applicable were removed, while there were a few additional measures added to address the Epic Discovery Projects.

The MMP requires continued compliance from the Heavenly Mountain Resort with existing local, regional, state, and national regulatory programs both in and out of the Tahoe Basin (Heavenly, 2007). The MMP also contains planning, construction, operations and maintenance measures, and management responses to monitoring and evaluations. Table 1-1 summarizes the measures contained in the MMP and MDP, their relevance to the time period of interest, and whether or not Heavenly is in compliance. As discussed above, additional measures were implemented, revised and/or removed based on the latest EIR/EIS/EIS document and MDP (May 2015). Table 1-1 provides a brief summary and update of these measures.

Implementation of the MMP is conducted through the work of numerous agencies and private consultants including Heavenly, Tahoe Regional Planning Agency (TRPA), the USDA Forest Service, Cardno (formerly Cardno ENTRIX and ENTRIX, Inc.), Resource Concepts, Inc. (RCI), j.c. Brennan and Associates, Sierra Ecotone Solutions, and Liquid Innovations. The monitoring period of October 2016 through September 2017 was chosen for the Annual Report in order to include the 2016–2017 ski season the 2017 water year and the 2017 summer construction season.

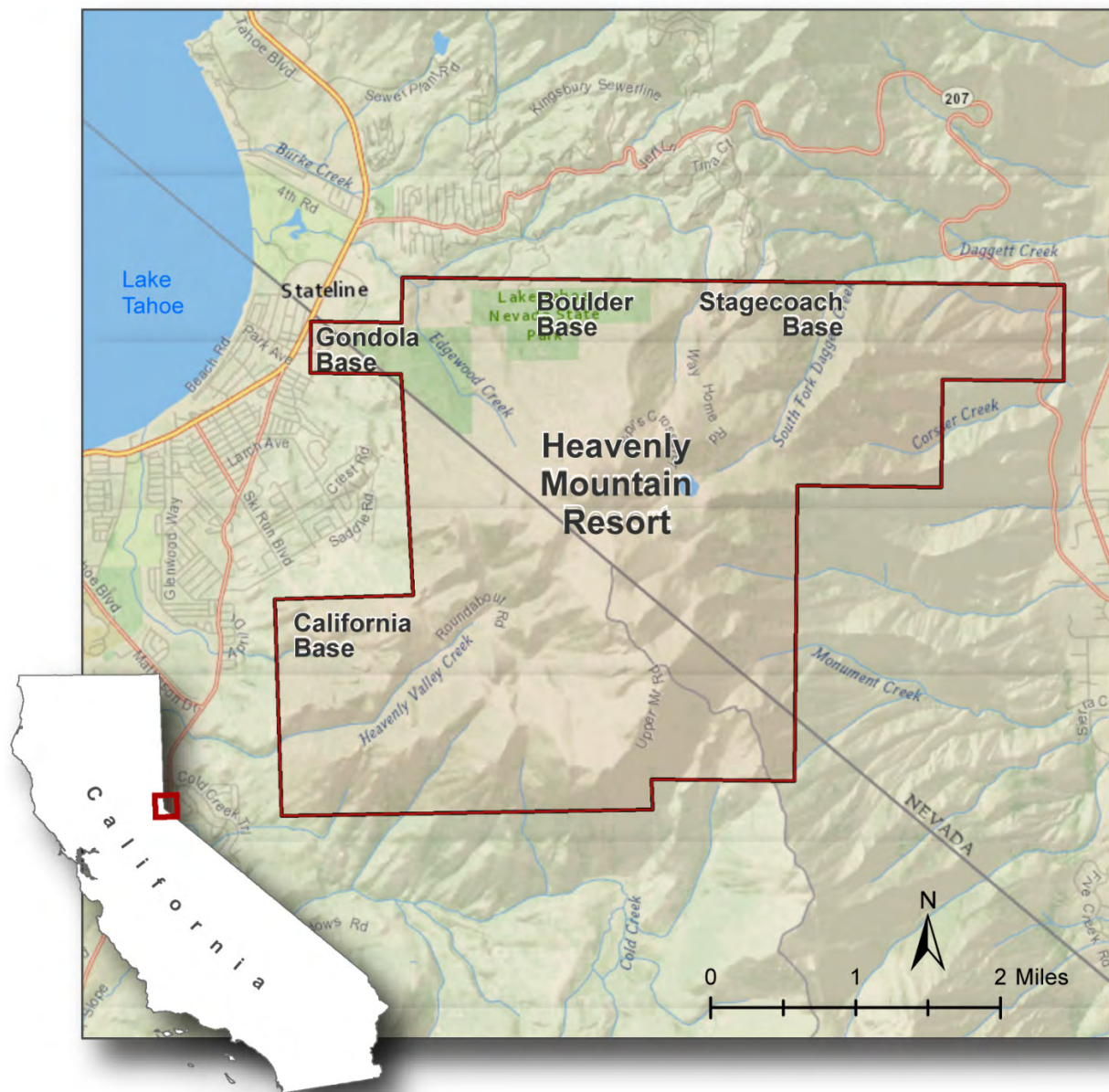


Figure 1-1 Location of Heavenly Mountain Resort

Table 1-1 Summary of Mitigation and Monitoring Plan Measures

Measure Number	Measure	2016-2017 Applicability	October 2017 Status	Discussed in Current Report	Compliance
Planning Measures					
7.3-1	TRPA Mitigation Monitoring Activities	All Projects and Operations	Complete	Yes	Yes
7.3.2	Design and site the proposed Powderbowl Lodge to minimize visibility from off-site views	None	Not Built	No	N/A
7.3-3	Design and Site the Proposed Gondola Mid-Station Restaurant to Minimize Visibility From Off-Site Views	None	Not Built	No	N/A
7.3-4	Design and Site the Proposed Sand Dunes Lodge to Minimize Visibility From Off-Site Views	None	Not Built	No	N/A
Construction Measures					
7.4-1	Implement the Construction Erosion Reduction Program	All Projects and Operations	Ongoing	Yes	Yes
7.4-2	Construct Infiltration Facilities	Annual CWE Work List	Ongoing	Yes	Yes
7.4-3	Meet Water Quality Standards	All Projects and Operations	Ongoing	Yes	Partial
7.4-4	Implement Adaptive Ski Run Prescriptions	Existing Ski Slopes and Future Trail Widening Projects	Ongoing	Yes	Yes
7.4-5	Control Runoff due to Future Construction and Long-Term Operation Facilities	All Projects and Operations	Ongoing	Yes	Yes
7.4-6	Avoid and/or Restore Future Disturbed SEZs	No existing projects triggered this measure. Improvements to the Galaxy Chari and associated roadway may trigger this measure in 2018.	Project-Specific	Yes	N/A
7.4-7	Avoid and/or Restore Future Disturbed Jurisdictional Wetlands and Waters	All Projects and Operations	Project-Specific	Yes	Yes
7.4-8	TRPA Land Coverage Mitigation	Updated with 2017 Projects	Ongoing	Yes	Yes
7.4-9	(BIO-1) Delay Sky Meadows Challenge Course, Sky Basin Coaster and East Peak Lake Water Activities Until Sierra Nevada Yellow-legged Frog Surveys and USFWS Consultation are Complete	Third Year of Monitoring Conducted	Completed	Yes	Yes

Measure Number	Measure	2016-2017 Applicability	October 2017 Status	Discussed in Current Report	Compliance
7.4-10	Reduce and Control Fugitive Dust	Summer Operations	Ongoing	Yes	Yes
7.4-11	Minimize Removal/Modification of Deciduous Trees, Wetlands, and Meadows	All New Projects	Project-Specific	Yes	N/A
7.4-12	Active Raptor and Migratory Bird Nest Site Protection Program	All Projects	Ongoing	Yes	Yes
7.4-13	Monitor and Protect Northern Goshawk	All Projects	Ongoing	Yes	Yes
7.4-14	(BIO-4) Wildlife Nursery Site Survey	Surveys were completed prior to the 2017 construction season	Ongoing	Yes	Yes
7.4-15	Utilize Boundary Management Plan to Manage Skier Access on Adjacent NFS Lands	Winter Operations	Revised/ Ongoing	Yes	Yes
7.4-16	Evaluate and Monitor Known Archaeological Resources Within Comstock Logging Historic District	No Significant Changes	Ongoing	Yes	Yes
7.4-17	Identify and Protect Undiscovered Archaeological Resources	All Projects	Ongoing	Yes	Yes
7.4-18	Protect the Tahoe Rim Trail	None – No projects were built in the vicinity of the Tahoe Rim Trail.	Not Built	Yes	N/A
Operations and Maintenance Measures					
7.5-1	Watershed Maintenance and Restoration Program	Summer Operations	Ongoing	Yes	Yes
7.5-2	(Water-C1b) Ongoing Environmental Monitoring Program	All Projects and Operations	Ongoing	Yes	Yes
7.5-3	(WATER-C1a) CA-1 Erosion Reduction Measures	All Projects and Operations	Ongoing	Yes	Implementing
7.5-4	(Water-C3) NV-1 Erosion Reduction Measures	All Projects and Operations	Ongoing	Yes	Implementing
7.5-5	Maintain Water Rights Balance	All Operations	Ongoing	Yes	Yes
7.5-6	Maintain Water Flows in Heavenly Valley Creek	All Operations	Ongoing	Yes	Partial
7.5-7	Maintain Water Flows in Daggett Creek	All Operations	Ongoing	Yes	Yes
7.5-8	Maintain Compliance with Water Entitlements	All Operations	Ongoing	Yes	Yes
7.5-9	Reduce Vehicle Emissions	All Operations	Ongoing	Yes	Yes

Measure Number	Measure	2016-2017 Applicability	October 2017 Status	Discussed in Current Report	Compliance
7.5-10	Snow Removal Noise Mitigation Methods	Winter Operations	Ongoing	Yes	Yes
7.5-11	Snowmaking Noise Mitigation Methods for Base Areas	Winter Operations	Ongoing	Yes	No
7.5-12	Rock Busting Noise Mitigation Methods	None	Not Built	No	N/A
7.5-13	Restrict Hours of Amphitheater Operations	None	Not Built	No	N/A
7.5-14	(TRANS-1) Traffic and Air Quality Mitigation Program	Heavenly paid into the Air Quality Mitigation Fund.	Completed	Yes	Completed
7.5-15	Implement the Coordinated Transportation System (Public Transit Services)	All Operations	Ongoing	Yes	Yes
7.5-16	Protect Tahoe Draba Populations within Heavenly Mountain Resort	All Projects and Operations	Project-Specific	Yes	Yes
7.5-17	Minimize Loss/Degradation of Sensitive Plant Species	All Operations	Ongoing	Yes	Yes
7.5-18	Invasive Plant Management	All Projects and Operations	Ongoing	Yes	Yes
7.5-19	Monitor and Protect Nesting and Fledgling Bird Species	No concerns occurred	Not Built	Yes	Yes
7.5-20	(BIO-3) Migratory Bird and Habitat Utilization Survey	Surveyed Proposed Epic Discovery Project Locations	Ongoing	Yes	Implementing
7.5-21	(BIO-8) Wildlife Trash Management and Education Program	All Operations	Ongoing	Yes	Implementing
7.5-22	Maintain Timber Thinning Practices	All Operations	Ongoing	Yes	Yes
7.5-23	Provide Employee Housing	All Operations	Ongoing	Yes	Yes
Management Response to Monitoring and Evaluation					
7.6-1	Soil and Water Quality	All Projects and Operations	Ongoing	Yes	Yes
7.6-2	Traffic and Parking	All Operations	Ongoing	Yes	Yes
7.6-3	Late Seral/Old Growth Enhancement	All Operations	Completed	Yes	Yes

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Chapter 2 – Planning Measures

2.1 Introduction

A majority of the planning measures are addressed within individual Tahoe Regional Planning Agency permits. Table 2-1 provides an update to the previous season's report (October 2015 to September 2016) project list and updates any existing open permits. Projects and permits completed and closed are not shown. A few of the projects listed are completed but are waiting to receive final inspections for revegetation and Best Management Practices (BMPs) and closure.

Table 2-1 Update on Projects Constructed Prior to the 2017 Construction Season

Project	TRPA Permit #	Status as of October 2017
Tamarack Lodge	ERSP 2009-3571	Completed December 2010. BMP security released on 10/21/11. Still holding security until CFA is transferred/relocated allowing summer usage. Permit open until CFA transfer is complete.
Bear Cave Children's Ski School Lodge (Includes tubing hill modifications)	ERSP 2011-0513 & ERSP 2017-0589	Lodge completed in October 2011. Tubing lift road completed* Permit still active waiting for final inspection in the summer of 2018.
Summer Activity Improvements (Multi-Line Zipline/Gondola Enclosure) and Wedding Arch Site Development	ERSP 2012-1147 & ESRP 2012-1147-01	No additional funding for future projects. Requesting final inspection in the summer of 2018.
Complete Waterfall Lift Removal Top Station Regrading (Top of Epic Mix race Course)	ERSP 2004-0299STD	No additional work will take place under this permit as the permit is closed.
Bear Cave Children's Ski School Lodge	ERSP 2017-0589	Heavenly confirming that all project elements are completed and are ready for final inspection in the summer of 2018.*

*Construction is complete. Revegetation and BMPs have not received final inspection.

Table 2-2 Project Status as of November 2017

Project	TRPA Permit #	Status as of October 2017
Tamarack Area Improvements	ERSP 2016-0149	Trail widening was completed in 2016, while the installation of temporary sales kiosk, decommissioning of timber yard and BMP implementation/ winterization occurred in 2017. Heavenly plans to remove Red Fir towers, install the new Magic Carpet Lift, decommission temporary lift access road, install temporary BMPs/winterize in 2018. The 2019 construction season should conclude the project as construction of a permanent kiosk, Tamarack Lodge deck expansion and final BMPs for inspection and closure are proposed.
Epic Discovery East Peak	ERSP 2013-0490 & ENVR2013-0001	Past projects completed under this permit include the Mid-Station Canopy Tour, Alpine Coaster, Kids Zipline, East Peak Canopy Tour, and marked the beginning of Mountain Excursion Tours, hiking pathways, signage and welcome area. The 2017 construction season saw the opening of the Epic Discovery Center, additional trail signage/connections as well as repairs to the Alpine Coaster with additional permanent BMP implementation. Future work under this permit includes: additional repairs to the Alpine Coaster, Panorama trail installation, Sky Meadows Observation Deck, Sky Meadows Zipline Canopy Tour and Challenge Course, Mountain bike demo center park and trails, Ridge Run Lookout Tower, East Peak Lake water activities, Sky Cycle and all various required BMPs that will all occur through 2021.

2.2 Measure No. 7.3-1 TRPA Mitigation Monitoring Activities

This measure describes the Mitigation and Monitoring Agreement that Heavenly must enter into with TRPA.

Heavenly, TRPA, and Cardno ENTRIX entered a three-party ongoing monitoring agreement in January 2008. This 5-year agreement ended in December 2012. TRPA and Heavenly began the public process requesting proposals for contracting work related to the MMP. In February 2013, Cardno (formerly Cardno ENTRIX) was selected to continue this work for an additional four-year period through July of 2017, which required all three parties annually renew funding. Cardno was again selected as the preferred consultant in a new five-year three-party monitoring agreement in August 2017 through July 2022. In addition to the three-party agreement, Heavenly Mountain Resort separately provides funding to TRPA for staffing review related to the MMP measures and report.

2.3 Conclusion

Heavenly complied with all applicable planning measures during the 2016-2017 monitoring period. Project-specific measures such as 7.3-2 (Powderbowl Lodge), 7.3-3 (Gondola Mid-Station Restaurant) and 7.3-4 (Sand Dunes Lodge) have yet to be constructed and will be discussed in future MMP annual reports upon planning, construction and/or completion.

Chapter 3 – Construction Measures

3.1 Introduction

The construction measures contained in the MMP are designed to limit the environmental impacts both during and following the construction of new projects within Heavenly Mountain Resort. Resource Concepts Inc. (RCI) assists Heavenly in developing their BMPs and conducts on-mountain monitoring of temporary construction BMPs and permanent BMPs for all of Heavenly's capital improvement projects and Watershed Maintenance and Restoration Program (WMRP) projects. During the summer season of 2017, Resource Concepts Inc. (RCI) replaced Integrated Environmental Restoration Services (IERS) role and monitoring effort associated with the MMP as the firm transitions into retirement. RCI along with Heavenly staff, assisted in restoration treatment monitoring and directed implementation at troublesome erosive locations in prioritized watersheds within the resort boundaries. In the past, IERS led this effort in addition to providing various slope and soil cover treatment experiments. Adaptive management of these slope treatments provided a guide on which soil cover treatment were successful. Building upon the successful areas, Heavenly restoration crews now implement these documented beneficial slope treatments on continual problem areas to limit erosion runoff and enhancing soil characteristics.

3.2 Measure 7.4-1 Implement the Construction Erosion Reduction Program

Implement the Construction Erosion Reduction Program (CERP) would minimize the rate of soil loss related to construction activities at Heavenly. The CERP and Watershed Management Guidebook are design features that will be incorporated into construction activities through the Master Development Plan.

Heavenly contracts with RCI to ensure effective BMPs and restoration treatments are designed and implemented for each of their construction projects. During the 2017 construction season, RCI inspected both permanent and temporary constructed BMPs for implementation and effectiveness. RCI completed 95 permanent BMP inspection evaluations at 54 different locations. The 2017 inspection reports showed that 100% of the permanent BMPs were fully implemented, maintaining these scores for the fourth year in a row. Maintenance and inspection following storm events during the construction season led to permanent BMP "effective" score of 96%. Knowledge gained from years of monitoring and reporting have proven which "methods and structures" are successful to limit erosion runoff on the mountain. In 2017, Heavenly continues to share this knowledge by expanding BMP training program and "increasing general BMP awareness company-wide."²

Due to the record winter, only one construction project employed temporary BMPs during the 2017 construction season. Temporary BMPs were used to repair the Alpine Coaster which was damaged due to excessive snow fall. In total, three temporary BMP evaluations were performed at the coaster project site³. The temporary BMPs were determined to be 100% installed and 100% effective, resulting in an overall score of "Excellent in accordance with the rating criteria in the WDR.

The 2017 BMP Effectiveness Monitoring Report (Appendix I) lists conclusions and recommendations for monitoring in 2017. A brief summary of a few of the recommendations are listed below.

- > Maintain collaboration efforts between departments to maximize staff time and resources to complete Annual Work List projects. Clear and consistent communication between management and field crews is critical to successful project completion.

² Heavenly Mountain Resort BMP Effectiveness Monitoring 2017 Annual Report and Construction Season Summary. Page 9 (Appendix I)

³ Heavenly Mountain Resort BMP Effectiveness Monitoring 2017 Annual Report and Construction Season Summary. Page 11 (Appendix I)

- > Review the CERP prior to developing plans or projects to help select suitable Temporary and Permanent BMPs.
- > Continue to develop project designs and specifications using temporary and permanent BMPs that are the most effective at Heavenly. Tables 2 and 4 in Appendix I, Attachment D should be referred to during the BMP plan development process.
- > Continue to ensure all staff and especially new employees attend the annual “BMP Breakfast” training session to become familiar with compliance requirements and the internal water quality program. It is essential for conveying the importance of BMPs to staff, third party vendors, utility companies and outside contractors with Mountain access. The training program reinforces Heavenly’s commitment to resource protection and BMP compliance.
- > Maintain dedication to experimenting with new erosion and sediment control techniques and technologies. Tables 3 and 5 in Appendix I, Attachment D should be used as a reference for reviewing project BMPs for effectiveness.
- > Continue to schedule regular maintenance inspections and coordinate on action items to support BMP effectiveness. The Snow Surfaces Manager and the Environmental Manager plays a vital role in the BMP Effectiveness Monitoring Program at Heavenly coordinating training sessions, tracking project status and directing maintenance work at Heavenly, all of which are key to achieving BMP effectiveness.
- > Review USFS National Core BMP program to analyze applicability of monitoring requirements at Heavenly.
- > Review the TMDL reporting requirements for potential applicability for monitoring.

Since 2015 the USFS Region 5 has adhered to the new National US Forest Service BMP monitoring program. Protocols from this plan assess BMP implementation and effectiveness for a wide variety of land management practices. Roadways, facilities, and ski runs on USFS lands are included in the sample pool to be randomly selected for annual monitoring. USFS staff will conduct and report results from this monitoring effort.”⁴ This USFS monitoring effort will supplement RCI’s on-mountain monitoring effort. RCI’s 2017 BMP Effectiveness Monitoring Report is contained in Appendix I. Heavenly is in compliance with this measure.

3.3 Measure 7.4-2 Construct Infiltration Facilities

This measure states that all new projects contributing to impervious surface shall be designed to infiltrate the 20-year, 1-hour storm.

The 2017 Annual Project and Work List listed ten source locations to be improved within the Heavenly Valley Creek watershed (CA-1). This included three Master Plan Projects proposed. Following the 2017 construction season, eight locations were completed and addressed, with one Master Plan Implementation Project (Magic Carpet Ski School Lift) moved to the following year (2018 Annual Project Work List). The other remaining project (Top of Epic Mix Race Course), which would complete grading and slope stabilization around removal of the old Waterfall lift was not completed and instead was removed for completion at a later date. The Adventure Peak/Epic Discovery project was the only Master Plan Project completed last summer. This completed project consisted of landscaping around the Tamarack Lodge Meadow, adding shade umbrellas and a kids tubing lane, and completing three hiking trails that were not finished in 2016.

Other completed source locations on the 2017 Work List are projects tied to “hotspot” (highly erosive areas) inventory areas mapped and defined per IERS’ 2015 Restoration and Monitoring Annual Report.

⁴ Environmental Monitoring Program Annual Report - Heavenly Mountain Resort Water Year 2014. Cardno, Zephyr Cove, Nevada. Page 30.

Erosion “Hot spots” required by the EIR/EIS/EIS and completed within Heavenly Valley Creek watershed CA-1 in 2017 included: Converting the incised gully near Blue Angel Chute (#6), removing the water bar and mulching middle Maggie’s Run (#3), Hand Grenade Chute restoration (#1), treatment of middle Maggie’s Run (#5) stabilization of sedimentation area near Groove Chair (#9), improvements in the gulley below Cal Dam (#4), and continued monitoring of Hellwinkel’s Road (# 45 and 46).

Within the Bijou Creek watershed (CA-6), Heavenly replaced the top of the tram top station deck as maintenance project in 2017. There was also one completed maintenance project within Daggett Creek watershed (NV-2+5) in 2017 that consisted of mechanically removing buildup sediment within rock-lined areas between the Comet and Dipper Chair lift terminals. Within the same Daggett Creek watershed, the final (4) Master Plan Implementation Project (Galaxy Road Improvements) consisting of re-routing the summer road at the bottom of the lift terminal was not completed and instead moved to 2018 work list and construction season.

Resort-Wide efforts addressing BMP maintenance were also scheduled and completed in 2017. The BMP maintenance includes inspecting and restoring all areas damaged or affected by winter resort operations, erecting and maintaining vehicle barriers and/or fences to keep unauthorized vehicles in designated areas and inspecting and maintaining drainage structures. Road maintenance is performed throughout the resort as outlined in the annual Heavenly Forest Service maintenance and monitoring agreement protocol.

Additional details of the 2017 completed projects can be found in RCI’s 2017 BMP Effectiveness Monitoring Report (Appendix I, Attachments A and B), while the updated 2017 Work List can be found in Appendix III. No new impervious capital improvement projects were constructed in 2017; however all new and future projects will be designed to infiltrate the 20-year design storm runoff.

3.4 Measure 7.4-3 Meet Water Quality Standards

To meet water quality standards, several items are identified in the Master Development Plan’s MMP. These measures include implementing the Watershed Maintenance and Restoration Program, implementing the CERP, implementing the Environmental Monitoring Program, installation of BMPs at all facilities and parking lots, installation of a monitoring site on Daggett Creek, and prohibiting grooming on ski trails deficient of adequate snow cover.

From the period of October 2016 to September 2017, Heavenly Mountain Resort continued to implement both the CWE Restoration Program and Watershed Maintenance and Restoration Program. Each year, RCI helps Heavenly utilize adaptive management practices to prioritize maintenance and restoration projects. The completed BMP maintenance and project list for 2017 is located in RCI’s 2017 BMP Effectiveness Monitoring Report (Table 1 of Attachment D, Appendix I). Detailed information concerning maintenance, monitoring, and implementation of Watershed Maintenance and Restoration Program projects is located in Appendix I.

The Environmental Monitoring Program is reported on an annual basis and has been ongoing since 1991. The 2017 water year water quality monitoring was conducted monthly between October 1, 2016 and September 30, 2017. Additional biweekly spring runoff samples were collected for all seven of the stream monitoring sites from the beginning of April through the end of June.

More stringent water quality parameters took effect during the 2008-2009 water year at the California Parking Lot site (above Bijou Park Creek). Permit conditions stated that more stringent water quality standards would become effective once the BMP Retrofit Project and treatment system were in place at the California Parking Lot. For the 2017 water year, Heavenly reported annual average violations at Bijou Park Creek (43BPC-4) for the following constituents: total nitrogen, total phosphorus, chloride, and turbidity. Five storm samples were collected during the 2017 water year at the effluent monitoring location at the California parking lot StormFilter vault (43HVP-2). Of the five samples collected at the effluent sampling compliance location for the California parking lot filter vaults (43HVP-2), the not to exceed limits

for total nitrogen, total phosphorus, and oil and grease were each exceeded in only one of the collected samples. Turbidity standards were exceeded in all five of the collected samples

Annual average standards were exceeded along Heavenly Valley Creek at Sky Meadows (43HVC-1A) for total phosphorus, total nitrogen, and chloride during the 2017 water year, and for total phosphorous and chloride at Below Patsy's Chair (43HVC-2), and the Property Line (43HVC-3) location. Total phosphorous and chloride were also exceeded at the reference reach along Hidden Valley Creek (43HDVC-5). Because the Hidden Valley Creek site (43HDVC-5) is the undeveloped and undisturbed watershed reference reach for the Heavenly stream monitoring locations, exceedances at this site demonstrate that Heavenly Mountain Resort operations are not solely responsible for elevated total phosphorus and chloride concentrations. The water year 2017 annual Monitoring Report is provided in Appendix II, and provides further discussion and results from water quality sampling at each monitoring location.

In an effort to reduce the amount of huck salt and subsequent chloride readings in the stream samples, Heavenly now requires management approval for any application use above one 40-pound bag in and around the terrain parks. Huck salt is used to lower the freezing point of the snow surface, helping to limit thawing of the snow and create a more stable base for taking off and landing areas around terrain park jumps. As reported in the 2017 Annual Monitoring Report, huck salt application increased compared to 2016 (Chapter 5, Table 5-2). The 2017 water year marked the third year salt application totals were monitored on a monthly basis at the California parking lot. An increase in salt application values can be attributed to the higher precipitation totals, more frequent storm events, and the addition of three new huck salt monitoring locations.

The Lahontan Water Quality Board amended the monitoring and reporting program in May 2011. The revised permit conditions intent was to provide a better representation of mountain operations with respect to environmental impact. Many of these amended conditions were incorporated into the Waste Discharge Requirements and Monitoring Program (R6T-2015-0021) finalized on May 14, 2015. Heavenly actively works to address mapped treatment areas to meet monitoring goals emphasizing soil and vegetation treatment approaches to reduce runoff and sediment transport. The treatment goals include: implementation measures that will not cause an increase in runoff or sediment transport; sediment source control treatments that are self-sustaining or accompanied by an ongoing maintenance plan; and an adaptive management program for development, management, and future maintenance of problem source areas. As IERS has transitioned out of the Watershed Maintenance and Restoration Program, the 2017 construction season marks the first season that RCI has been retained to continue this effort. RCI will continue to provide watershed monitoring and inventory mapping and while the methodology may differ from IERS' the end goal of this program is to improve future water quality results.

Additionally, RCI continues to collect flow data at the Daggett Creek flow monitoring station for compliance with water use permits as discussed in Chapter 4 (measure 7.5-7). If and when Ski Lift Z, or Ski Trails Z1, Z2, Z4, or Z8 are proposed for construction, a year prior to construction the Nevada Department of Environmental Quality (NDEP) and Forest Service will determine the location and if water quality monitoring along Daggett Creek is necessary. Appendix VI contains the Daggett Creek Flow Monitoring report provided by RCI.

Heavenly, with guidance provided from the Lake Tahoe Basin Management Unit (LTBMU) - Forest Service, is required to have a minimum of 12-inches of compacted snow cover over all obstacles before grooming with snow cats is allowed. This policy protects soil and water resources along with preventing significant damage to snow cats and has been the standard practice for a number of years.

Annual average water quality exceedances along Heavenly Valley Creek and Bijou Park Creek denote that even following the Watershed Maintenance and Restoration Program and implementation of mountain wide BMPs, Heavenly is in partial compliance for this measure.

3.5 Measure 7.4-4 Implement Adaptive Ski Run Prescriptions

This measure requires all new ski runs to be revegetated according to the ski trail prescriptions in the Easy Street Run Hazard Reduction Program. It also calls for the evaluation of existing ski trails to determine if the prescription would be appropriate.

Heavenly and IERS have worked together since 2006 to restore and monitor project-specific construction areas using site-specific soil function improvement and revegetation prescriptions built off of an adaptive management approach. Over the years IERS, in conjunction with Heavenly, have attempted a number of treatment methods limiting erosion and runoff. Treatment modifications have been made over time continuously improving restoration techniques and success leading to this adaptive management approach. During the 2015, 2016 and 2017 seasons, Heavenly with past assistance from IERS and now RCI have focused restoration treatment efforts on high and medium high hot spots identified in the CA-1 and NV-1 watersheds based on methodology developed and addressed in IERS's *Watershed Management Guidebook*. Heavenly crews are familiar with the prescribed treatment methodology and address the "hotspots" issues previously described in measure 7.4-2. No new ski trails have been established in recent years and all restoration efforts and slope prescriptions follow the recommended treatment listed in Table 2 of *Heavenly Mountain Resort Outcome-Based Watershed Management, 2016 Restoration and Monitoring Annual Report* (included in last year's 2016 Mitigation and Monitoring Plan Annual Report as Appendix II).

3.6 Measure 7.4-5 Control Runoff Due to Future Construction and Long-Term Operation Facilities

Both broad and project-specific measures are identified for Heavenly to comply with the MMP. Each new project is to have permanent and temporary BMPs as part of its design and construction. New snowmaking should be above ground, with certain exceptions. A formal BMP maintenance program shall be continued including annual mapping documenting maintenance activities.

As discussed in measure 7.4-2, only one of the four master plan projects were completed during the 2017 construction season. Two were moved to 2018 work list and the last one was delayed to some future date (see 2017 Annual Work List, Appendix III). Both the Magic Carpet Ski School Lift and Galaxy Road Improvement master plan projects were not constructed in 2017. Instead both of these two project have been added to the 2018 Work List. The completed project listed as the Adventure Peak/Epic Discovery project involved landscaping improvements around Tamarack Lodge Meadow and completion of adjacent hiking trails. All master plan projects include infiltration BMP's designed both within the project plans and permit packages to address construction and project facility runoff (upon project completion). Additional resort-wide work focused on the maintenance of temporary and permanent BMPs on existing facilities.

Proposed projects, hotspot areas to address, as well as proposed maintenance to exiting BMPs for the 2018 construction season can be found in the 2018 Annual Watershed Maintenance Restoration Program Work List (informally called the CWE work list) found in Appendix VII. All permanent BMPs are designed and maintained to infiltrate at least the 20-year, 1-hour storm. BMP effectiveness and maintenance monitoring is performed by RCI as part of the Environmental Monitoring Program. The 2017 BMP monitoring results are included in the annual report contained in Appendix I.

No new snowmaking lines were installed in 2017; however, repairs to the existing snow making lines were addressed around the mountain. All existing lines were repaired in kind. Future snowmaking lines will be constructed above ground unless additional mitigation measures are included allowing for underground installation. As discussed in measure 7.4-4, IERS previously mapped the location of primary sources of erosion "hot spot" locations in past annual reports. These locations have been prioritized and are included in future years' restoration and maintenance projects and Work Lists.

Heavenly actively works with both the Tahoe Regional Planning Agency (TRPA) and local entities for permit coverage on all new and future projects. Temporary erosion control plans denoting proposed BMP locations are included with project design permit packages.

Heavenly is currently in compliance with this measure.

3.7 Measure 7.4-6 Avoid and/or Restore Future Disturbed SEZs

A number of project-specific mitigation measures for avoiding disturbance to SEZs are identified in the MMP.

While no new facilities were constructed that required future mitigation measures to reduce SEZ disturbance; modifications regarding the Galaxy Chair Lift replacement through an existing SEZ enacted this measure. RCI is working with Heavenly on project-specific measures to aid in avoiding the SEZ during the chairlift modification. Heavenly expects to almost entirely avoid any SEZ or jurisdictional wetland during construction, with the exception of one lift tower, which may require minimal SEZ disturbance that will subsequently be restored appropriately. Further, any tree felling will be away from the stream corridor. During the 2018 construction season, Heavenly plans to improve the roadway to the bottom of the Galaxy Chairlift which will include an improved roadway surface as well as drainage improvements along the roadway.

3.8 Measure 7.4-7 Avoid and /or Restore Future Disturbed Jurisdictional Wetlands and Waters

This measure requires that any project implemented by Heavenly will be located off jurisdictional wetlands and that Sky Meadows Deck and Boulder Operations be relocated off wetlands. If development within the wetlands cannot be avoided, Heavenly is required to obtain a Section 404 permit from the USACE and comply with all requirements set forth in the permit including coordinating with CDFW to comply with Section 1600 if removal of vegetation is needed. Additionally, any tree removal activity needed for ski lifts or trails will be conducted in a fashion that does not disturb wetlands.

No capital improvement projects within wetlands were implemented in 2017, however Heavenly began planning measures for the Galaxy Chair Lift replacement project to begin in 2018. This project is expected to occur completely outside of any jurisdictional wetlands or waters of the US, and Heavenly does not anticipate involvement with USACE or the State of Nevada. Additional actions regarding this measure will be implemented if and when the Powderbowl Lodge is built and/or the Sky Meadows Deck is relocated. The Sky Meadows log deck area adjacent to Heavenly Valley Creek was restored in 2013 and the area under the deck received a shade tolerant seed mixture and a thin layer of pine needles to protect the seeds in 2016. The hazard reduction tree removal prescription was applied to approximately 32 trees within the resort boundary in 2017 in accordance with the TRPA Code of Ordinance Chapter 6 (tree removal). Heavenly removed four trees, two along Nevada Trail, and one each along Lower Olympic Downhill and Roundabout. While Heavenly hired Ed Cook's Tree Service to remove more difficult hazard trees in the following locations: two near Tower Seven Road/ 100 Dollar Saddle area near the base of the Olympic Express chairlift; approximately ten trees near the Canyon Express lift line; ten trees near the Powderbowl Express lift line; and six trees near the Boulder Chair lift line area. When additional trail widening occurs near a stream environmental zone (SEZ), tree removal operations will occur over existing snowpack reducing and limiting ground disturbance and impacts within the watershed and jurisdictional waters.

3.9 Measure 7.4-8 TRPA Land Coverage Mitigation

To utilize available land coverage within the Heavenly Project area, TRPA must make appropriate relocation findings included in the Code of Ordinances and BMPs must be installed and maintained as outlined in the CERP.

As outlined in the Draft 06 EIR/EIS/EIS, Heavenly had 434,580 square feet of available banked and available land coverage within the Heavenly Project area. RCI provided the following table (Table 3-1) which reflects changes throughout the years to this initial land coverage value based on completed and proposed projects (updated November 2, 2017). At the present time Heavenly has 213,839 square feet of available banked land coverage in non-wetland land capability areas.

Table 3-1 Heavenly Mountain Resort Land Coverage Calculations

Coverage Summary Table (2017-11-02)			
Maximum Allowable Coverage (per Master Plan)	1a	1b	Total
Maximum Allowable Coverage per Master Plan			2,053,854
Balance Remaining of Coverage and Banked Coverage per Table 3.4-4 of the Final EIR/EIS/EIS ¹	434,580	4,464	439,044
Project Subtotals			
Northbowl/Olympic Express Lifts Project Balances	960	396	1,356
Gondola Hiking trails	54,501	0	54,501
Mid-Station Road	50,469	0	50,469
Northbowl/Olympic Express Lifts - Plan Revision	216	0	216
World Cup/East Bowl Snowmaking - Plan Revision	283	0	283
Calif. Base Surface Lift Replacement	1,572	0	1,572
Skyline Trail Grading and Snowmaking	1,134	0	1,134
Top of the Gondola Lodge	42,387	0	42,387
Adjusted Gondola Permit Coverage	-27,519	0	-27,519
Umbrella Bar Relocation	651	0	651
Covered Surface Lift and Snowmaking	10,039	0	10,039
California Side Trail Widening	0	0	0
Adventure Peak Improvements	6,207	0	6,207
Zipline Adventure Ride	4,916	0	4,916
Verizon Angel's Roost Cell Tower and Back-up Bldg	584	0	584
Epic Race Course Electrical	0	0	0
Summer Activities	22,213	0	22,213
Tamarack Lodge Modifications	537	0	537
Adventure Peak Epic Discoveries	58,154	0	58,154
Removal of Gondola Hiking Trails	-54,501	0	-54,501
East Peak Basin Epic Discoveries	1,210	0	1,210
Sky Meadows Basin Epic Discoveries	26,816	772	27,588
Top of Gondola Temporary Hub	150	0	150
Summer Activities - Climbing Wall Revisions ²	0	0	0
Tamarack Project Area Additional Activities	6,090	0	6,090
Adventure Peak Epic Discoveries Revisions	8,885	0	8,885

Coverage Summary Table (2017-11-02)			
2016 Trail Widening and Hazard Reduction	0	0	0
ATC Projects	4,787		4,787
<i>Subtotals</i>	<i>220,741</i>	<i>1,168</i>	<i>221,909</i>
Balance Remaining Upon Project Completion	213,839	3,296	217,135

¹. Includes 10,541 square feet of existing coverage attributed to Sky Deck

². Revises original coverage numbers submitted as a part of the Summer Activities Project.

3.10 Measure 7.4-9 (BIO-1) Delay Sky Meadows Challenge Course, Sky Basin Coaster and East Peak Lake Water Activities Until Sierra Nevada Yellow-legged Frog Surveys and USFWS Consultation Are Complete

Heavenly shall delay implementation of projects in Sky Meadows or East Peak Lake until protocol surveys are completed. If Sierra Nevada yellow-legged frog (SNYLF) are found present, Heavenly will consult with agencies regarding impacts to the species and required protection measures that may or may not allow for the projects to proceed. If SNYLF are not determined to be present, Heavenly may start informal consultation with the California Department of Fish and Wildlife and USFWS regarding habitat protection measures that may allow for the projects to proceed.

Surveys for the SNYLF were completed in 2014 and 2015 marking the first two years of monitoring. In 2016, visual encounter surveys were also completed at East Peak Lake and Sky Meadows monitoring locations. Protocol requirements state that at least one survey must be completed following a year having at least 80% snowpack. The 2016-2017 average snowfall winter season produced enough snow to meet the 80% snowpack requirement. Surveys were completed according to protocol and no additional surveys are required to meet this measure. Collected survey information will be presented to the agencies prior to project implementation related to the Epic Discovery Projects in Sky Meadows and East Peak Lake.

3.11 Measure 7.4-10 Reduce and Control Fugitive Dust

During project construction, Heavenly employees and contractors are required to implement mitigation measures to minimize the generation and transport of fugitive dust. These measures may include the use of chemical dust suppressants and/or water on unpaved roads, grading and excavated areas, as well as cleaning onsite paved roadways daily in order to remove excess dirt and mud.

Resource Concepts Inc. (RCI) monitors the effectiveness of the Heavenly Mountain Resort dust control measures during their temporary and permanent BMP inspections. According to Heavenly's Grooming Manager (Tyler Lehman), "Heavenly continue(s) to water (the) main road network with a 2,000 gallon water truck for dust abatement (during the summer months). Heavenly water(s) approximately half of the 30 miles of roads daily, unless it rains." (Lehman, 2017). The average water fills per day was 15-20 truckloads, with an average of approximate 15 miles of mountain roads wetted per day (Lehman 2018). Watering duties and dust abatement began on June 15, 2017 and concluded on October 16, 2017. Road base and/or binder was applied on the following road segments in 2017: Hellwinkel's steeps, various sections of Roundabout, Orion's summer road, Powderbowl Express to the top of Canyon Express, various sections of Nevada Trail between Nevada gate and East Peak pump house, at the base of Olympic Express, and at various locations along Pepi's and Crossover roads.

Table 3-2 summarizes the roadway segments that were improved, regraded or resurfaced with road base. This information can also be found in the in Attachment F of Appendix I.

A total of 7.1 miles of Heavenly Forest Service roads have been repaired, maintained and resurfaced (with old asphalt grindings) by Heavenly staff. The Heavenly environmental and compliance manager was

in close contact with the driver throughout the summer season discussing watering strategy, truckloads and problem areas.

Table 3-2 Description of Work Completed at each Road Segment

Road Segment	Distance (miles)	Description of Work
12N40	0.4	Improved/ re-built water bars and sediment ponds on Maggie's below Cal Dam.
12N40	0.3	Covered approximately 17,000 square feet of Hellwinkel's steeps with second treatment of FSB 1000 soil emulsion/binder to harden the road surface.
12N40.1	2.4	Regraded and added road base to various locations on Roundabout.
12N41	0.1	Regraded upper vehicle shop access road/yard with grader.
13N52A	0.4	Regraded, added road base and sprayed FSB 1000 road binder to Orion's summer road.
13N52i	1.4	Road improved from top of Powderbowl Express to top of Canyon Express. Added road base at various locations and installed a CMP under the road at High Roller for improved runoff. Reestablished water bars in this area.
13N53B	1.1	Improved water bars and added road base to various sections of NV Trail between the NV gate and East Peak pump house.
13N53D	0.1	Added road base to the first section of the road to the base of Olympic Express.
13N54	0.9	Miscellaneous maintenance of Pepi's and Crossover Road. Added road base in multiple locations, filled in rills on Crossover and NV fuel farm area. Improved runoff.

Additionally, quarterly and annual reports to the California Lahontan Water Board document all California base lodge sweeping, cinder and dirt removal in the main lodge parking areas. The 2017 water year parking lot sweeping numbers can be found in Appendix II (electronic copy only).

3.12 Measure 7.4-11 Minimize Removal/Modification of Deciduous Trees, Wetlands, and Meadows

Before any construction project Heavenly must have a qualified biologist conduct a vegetation survey and identify all deciduous trees, wetlands, and meadows located within or adjacent to the proposed construction corridor. Heavenly is then required to implement a final engineered alternative that avoids the loss or degradation of the identified riparian or wetland communities. If these communities are unable to be avoided, Heavenly must mitigate for the impacts.

Surveys for wetlands, meadows, and deciduous trees occur during the planning stages of the project. Rare plant surveys identify any deciduous trees that may occur in the area and also alert the project managers of any potential wetlands. During the 2017 construction season, Heavenly began planning for roadway and culvert repairs associated with the above average snowfall. Increased runoff damaged the roadway culvert crossings across Daggett Creek and the Galaxy roadway. Preceding culvert repair and replacement, Sierra Nevada Yellow-legged Frog surveys were conducted twice in 2017 to ensure that repairs would not impact frog populations/species. Unfortunately repairs were unable to be completed so additional surveys are scheduled along Daggett Creek in 2018 in association with the roadway/culvert repairs (Alling, 2018). Heavenly actively works with RCI on individual projects located in sensitive areas containing deciduous trees, wetlands, and/or meadows.

3.13 Measure 7.4-12 (BIO-2) Active Raptor and Migratory Bird Nest Site Protection Program

This measure requires that before construction activities, a migratory bird nest site survey will be conducted to identify any active raptor nest sites within the project area. During initial construction activities, a Forest Service biological monitor is required to be onsite to evaluate if any migratory bird nests are within 100 feet of the construction corridor. If any nests are found, the biological monitor will stop construction and consult with the Forest Service and TRPA staff within 24 hours to determine the next appropriate actions.

Under the direction and oversight of the Forest Service, qualified staff from Sierra Ecotone Solutions conduct annual raptor and migratory bird nest surveys. The project area surveys were completed on June 21, 22 and 23, 2017. The following areas were surveyed for nesting bird species: Skyway Canopy Tour, Silver Rush Canopy Tour, Hot Shot Zip Line, Blue Streak Zip Line, Red Tail Zip Line and all ropes courses. These areas were surveyed for the presence of nesting birds in accordance with the design features identified in the Biological Evaluation and Epic Discovery EIR/EIS/EIS. As noted in previous surveys, a few snags exist within the project areas that contain cavities (none of which were active) that are suitable⁵.

Additionally, Sierra Ecotone Solutions performed surveys for auditory and visual detection of the California spotted owl. These surveys are conducted and completed in potentially suitable habitat within the surrounding project areas. Protocol for surveying habitat conservation areas and spotted owls is followed as outlined by the Forest Service. The survey points used since the 2007 field season were utilized again in 2017 to provide continuity of data collected. No auditory or visual detections of California spotted owls were documented within the survey area during 2017.

The nesting bird survey indicated there were no active nests within the project areas. However, snags containing cavities were observed and although none of the snags were currently active, they are known to be suitable nesting locations for a variety of present bird species. Sierra Ecotone Solutions recommends retaining these snags within the project area, where feasible, in order to maintain suitable nesting locations for cavity nesters.

California spotted owl surveys conducted in 2017 resulted in no auditory or visual detection of the species within the survey area. Spotted owl protocol states if there has been no detection for two consecutive years, it can be assumed the results are accurate for an additional 2 years without performing additional surveys. The completion of the 2017 field surveys for the California spotted owls results in meeting the 2-year protocol for this species. The 2-year timeline starts on the last day of the last survey, which would be June 26, 2017; therefore, if implementation of projects would commence prior to June 26, 2019, no further surveys for the California spotted owl would be necessary. However, if construction does not commence prior to this date, 2-year protocol surveys must be conducted. A review of the surveyed results can be found in the 2017 Biological Survey Results Summary located in Appendix VIII.

3.14 Measure 7.4-13 Monitor and Protect Northern Goshawk

Any projects that propose to affect or are within half a mile of any suitable northern goshawk habitat are required to have preconstruction surveys completed for northern goshawks. All surveys will be in accordance with the most recent Forest Service Region 5 protocol. Additionally, Heavenly Mountain Resort is required to fund updated northern goshawk habitat maps at 5-year intervals throughout the life of the Master Plan Amendment. These maps will be used when conducting any preconstruction surveys.

Sierra Ecotone Solutions is approved by the Forest Service to conduct northern goshawk surveys. Surveys were conducted and completed in suitable habitat within and adjacent to the project area for northern goshawk based on the updated habitat map generated by the Forest Service for the

⁵ Alling, Garth. Memo: Heavenly Mountain Resort 2017 Summer Activities Nesting Bird Survey Results. July 13, 2017. Page 1.

environmental analysis of the Master Plan Amendment. In 2017, both dawn acoustical and broadcast survey methods were utilized and completed to protocol. No auditory or visual detections of the northern goshawk were documented within the survey area in 2017. The completion of the 2017 field surveys for the northern goshawk meet the 2-year protocol. The northern goshawk protocol does not include any discussion as to the validity of surveys for any duration of time after protocol has been met. However, since northern goshawks have been detected in previous years, Sierra Ecotone Solutions recommends the continuation of goshawks surveys to determine if goshawks are nesting within the special use permit boundary. Results and data sheets from the surveys conducted in 2017 are contained in the 2017 Biological Survey Results Summary located in Appendix VIII.

3.15 Measure 7.4-14 (BIO-4) Wildlife Nursery Site Survey

Heavenly shall conduct preconstruction wildlife nursery and den site surveys within 100 meters of ground disturbance activities. Findings of the survey will be reported to the USFS LTBMU, which has the authority to effect the construction schedule, dates of active construction, and/or modify the facility location to provide adequate protection.

Sierra Ecotone Solutions completed preconstruction surveys for marten den sites at the following project areas: Tamarack Lodge, Waterfall Lift, Red Fir Tow Lift, Blue Angel Chute, Middle Maggie's Run, Hand Grenade Chute, Groove Chair, below Cal Dam, Hellwinkel's Road, upper Tram Deck, Galaxy Road, and the bottom of Comet and Dipper lifts. These areas were surveyed for marten den locations and for the presence of wildlife species in accordance with the design features identified in the Biological Evaluation and the Epic Discovery EIR/EIS/EIS. The Blue Angel Chute, Maggie's Run, Groove Chair, and Cal Dam locations were surveyed on June 16, 2017. The Waterfall lift and Hellwinkel's Road locations were surveyed on June 20, 2017. The Tamarack Lodge Meadow, Red Fir Tow Lift, and upper Tram Deck locations were surveyed on June 21, 2017 and the Galaxy road, Comet, and Dipper Chair locations were surveyed on June 26, 2017.

Each survey was conducted on foot up to 100 meters from the respective proposed project area which resulted in no nursery and/or den sites being observed at any of the surveyed locations.

A review of the surveyed results can be found in the 2017 Biological Survey Results Summary located in Appendix VIII

3.16 Measure 7.4-15 Utilize Boundary Management Plan to Manage Skier Access on Adjacent NFS Lands.

This measure requires that Heavenly Mountain Resort prohibits skier access from the gondola mid-station. Access is permitted through managed skier gates along the ski area boundary.

Heavenly provides stationed employees at the Gondola mid-station to explain to skiers and riders that the mid-station is only for sightseeing and that one more stop is available where one can ski or ride. If guests with skis or snowboard equipment stop at the mid-station, Heavenly employees require them to leave their equipment on a rack near the gondola where it can be monitored. In past years, during and after larger snow storm events, rider tracks can be seen from the mid-station. The Heavenly Mountain Resort policy calls for employees to contact dispatch and security to apprehend the violators at the bottom of the Gondola.

The mid-station also acts as a physical barrier to accessible skiable terrain. It is an elevated platform with a 10-15 foot drop to the ground. The stairs leading to an area below the mid-station are roped off and marked "For Authorized Personnel Only." Heavenly does its due diligence to maintain compliance with this measure prohibiting skier access from the mid-station

In years of increased precipitation and snowfall (example being the 2015-2016 ski season and the recent 2016-2017 ski season), skiing and prohibiting access from the Gondola mid-station becomes more problematic. The physical barrier and height is limited due to snow depth. Evidence of ski/snowboard tracks below the deck have been visible after large snow events. Unlike in past drought years, the 2016-2017 marked a well above average precipitation year; and therefore snowfall totals were significant enough to provide adequate depth and continuous skiing/access from the Gondola mid-station.

The revised Boundary Management Plan (2016), states that new signage and metal gates in perimeter areas will require “physical action” by a skier/rider to open them will be installed at various locations to provide backcountry access. A steel gate will hang horizontally from one post and will be held against the other by a self-closing mechanism; these gates would be closed when Heavenly staff is actively performing avalanche control with explosive in the adjacent permit area, but would not typically be closed otherwise as this area would be the same as any other backcountry access area.⁶ The new warning signs will state the avalanche danger scale, backcountry checklist, and acknowledgement that one will accept full responsibility for their actions and cost associated with their rescue. The gate postings will also include the North American Public Avalanche Danger scale and USDAFS Access Point Notice among other signage. Skiers may also be cited by local authorities and charged for the cost of their rescue.

The gate locations will be placed in areas in which people have traditionally accessed out-of-bounds areas. The five access points and gates will be located at the following locations: Fire Break, Raley’s Gulch, Fulstone Canyon, Stateline Gate, the Breach and Broad Daylight. Heavenly will provide and maintain counters at each of the gates for the entire ski season, and gate use will be monitored and reported to the Forest Service. Detailed information on Heavenly’s Boundary Management policies can be found in Appendix IX.

3.17 Measure 7.4-16 Evaluate and Monitor Known Archaeological Resources within Comstock Logging Historic District

Prior to construction activities, a qualified professional must formally evaluate the project area for the National Register of Historic Places (NRHP). The LTBMU Heritage Resources staff keeps a record of possible historic sites at Heavenly Mountain Resort.

Communication with LTBMU Heritage Resources staff revealed that evaluations of archaeological resources sites within the Comstock Logging Historic District occurred before 2007. Evaluations concluded that all sites but one (the Flume Site) were eligible for the NRHP (Maher, 2012). Monitoring of these eligible sites occurred throughout 2009 and 2010. Proposed ski runs and potential construction in the Galaxy Pod area prompted monitoring in this area in 2011 (Maher 2012). Likewise surveys, in 2011, were conducted for the trail widening project on the California side to ensure that there was no conflict with the Comstock Logging District site.

New surveys in the area adjacent to the California trails for the Heavenly Mountain Resort Tamarack Project were completed during the 2015 summer months. The survey was performed due to the improvement of winter and summer activities in the area of the Tamarack Pod of Heavenly Mountain Resort. The proposed improvements include a new activity ticketing sales kiosk, relocation of the existing Red Fir handle tow lift, addition of new Magic Carpet ski school lift, Tamarack return trail ski widening and the Blue Streak Zip line tree removal. According to the Heritage Resources Inventory Report, all improvements except for much of the Blue Streak Zip Line tree removal and Tamarack return trail ski widening were previously surveyed. An intensive pedestrian survey of the un-surveyed portions of the Area of Potential Effect (APE) was performed on October 22nd, 2015 and observed no cultural resources (Fuller, 2015). The project will have no effect on cultural resources listed on or eligible for inclusion in the

⁶ Heavenly Mountain Resort Boundary Management Plan, 2015. Revised April 2017.

National Register of Historic Places. Per communications with Laura Vicknair of the USFS in January of 2018, no additional surveys were conducted in 2017 (Vicknair, 2018).

The LTBMU Heritage Resources staff keeps a record of possible historic sites at Heavenly Mountain Resort. If and when future projects lie within the known study area, Heavenly will plan for and avoid any known prehistoric site and additional surveys will be conducted as needed.

3.18 Measure 7.4-17 Identify and Protect Undiscovered Archaeological Resources

The LTBMU Heritage Resources staff will spot-check any proposed construction areas in consultation with the appropriate State Historic Preservation Office. If previously undiscovered resources are discovered during construction, all activity will be put on hold until the LTBMU Heritage Resources staff for either California or Nevada assess it for eligibility to the NRHP, compliance with TRPA Code Section 29, and/or (in the event of a prehistoric or ethnographic find) for Native American values.

LTBMU Heritage Resources staff has prepared a comprehensive list of historical sites within the Heavenly boundary. Surveys are done prior to choosing locations for projects. Heavenly employees and contracted construction workers receive training prior to project commencement on the protocol for an encounter with possible archaeological resources.

In 2009, to assist in project scoping and field study, a general meeting at the offices of Heavenly Mountain Resort and a site visit focusing on the Gondola's APE was conducted (Lindstrom and Blom 2009). Heritage concerns were addressed by project archaeologist Susan Lindstrom and John Maher, Heritage Resource Coordinator for the USFS LTBMU. A surface archaeological reconnaissance was conducted by Devin Gonzales Blom and Susan Lindstrom from October 26th through 29th, 2009. In accordance with the Ski Area Recreational Opportunity Enhancement Act of 2011 (SAROE), Heavenly Mountain Resort moved forward with the proposal to add multiple summer use activities on Heavenly Mountain naming this effort the Epic Discovery Proposal. Projects under this proposal aim to attract a large segment of summer and non-ski/ride visitors seeking more managed recreation opportunities. Activities at the following locations: Adventure Peak, East Peak Basin and Sky Meadows Basin include (but are not limited to): zip lining, mountain biking, hiking, kayaking, paddle boarding, fishing and construction of observations points and lookout towers. Additionally, educational opportunities, mountain excursion tours and emergency evacuation protocol will be implemented mountain-wide.

Supplemental archaeological studies were completed in 2013 reviewing the Top of the Gondola Summer Activities. It was determined that 95% of the area was already surveyed and no cultural resources were found. A screening undertaking letter was submitted finding that "little or no potential to affect historical properties"⁷. "All other projects for the Heavenly Mountain Resort 2013 Summer Activities (list) are within previously surveyed areas and do not endanger any cultural sites" (Fuller 2013). It was concluded that these undertakings fell within Stipulation 7.4 (b) of the PA (Fuller, 2015), therefore, the proposed improvements may be implemented without any further Section 106 consultation or review. Furthermore, survey of the project area is documented in multiple previous HRRs with the most current and relevant being R2005051900022 (Fuller, 2015). As the scope or design of the proposed projects are altered, additional review by the Heritage Resources Program will be required.

Improvements in the Tamarack Pod area of the resort required tree removal along the Blue Streak Zip Line and the Tamarack Return Trail. The tree removal areas were inventoried for cultural resources in 2015 and no cultural resources were located in either area (Fuller, 2016). Additional improvements on the Nevada portion of the Heavenly Mountain Resort are being proposed which include an aerial challenge course called the Discovery Forest Zipline Canopy Tour (which will be self-guided routes consisting of

⁷ Lake Tahoe Basin Management Unit, TB-2013-01. RT2013051900013. Screened Undertaking (Class B Undertaking) Letter. 2013.

wooden columns, platforms and rope walkways/bridges), the Zipline Center and portions of the Bear Cave Challenge Course similar to the Boulder Cove Challenge Park. “These projects will mostly use current standing trees for support of aerial course and ziplines, two post holes will be dug for the Zipline Center so the total disturbance will be less than one cubic meter of cumulative ground disturbance per acre” (Fuller, 2013).

The 2016/2017 ski season saw record snowfall and a snowpack that was sufficiently higher than the previous extended period of drought conditions. The snow depth allowed for the Galaxy Pod sites to be open to the public for skiing. In general, Heavenly closes the Galaxy Pod area and archaeological sites when there is insufficient snow cover. The lack of snow prevents skiable trails to the Galaxy Lift Chair and return to higher concentration ski zones. When open, recreational users cross the sensitive site without knowledge and past summer surveys have shown no evidence of impact due to snow cover skiing/ridding usage (Fuller, 2016). Per communications in January 2018 with Laura Vicknair of the USFS, archaeological surveys were not conducted in the Galaxy Pod Area, nor anywhere else on Heavenly (Vicknair, 2018).

Two road segments were discovered as extensions of a Comstock-era wood haul road which was first recorded by S&S Archaeological Consultants in 1992, as leading downward from the Mott Canyon area to the upper reaches of the South Fork of Daggett Creek (Lindstrom and Blom 2009). These new heritage resources have been recorded on State of Nevada IMACS archaeological site records in accordance with established guidelines. Updates to these forms were completed. Copies of this report and accompanying site records have been forwarded to the USFS LTBMU for their review and processing. An additional copy has been placed on file with the Nevada State Museum, which maintains the archaeological inventory for the State of Nevada (Lindstrom and Blom 2009).

3.19 Measure 7.4-18 Protect the Tahoe Rim Trail

In order to protect the Tahoe Rim Trail (TRT) and allow for its continued use during construction of resort facilities, Heavenly Mountain Resort is required to rope off any hazardous areas within or adjacent to the TRT, prohibit construction of permanent structures which may block the use of the trail, as well as inform the public of any potential closures along the TRT.

There have been no new Heavenly Ski Resort projects implemented within the vicinity of the TRT during the 2017 construction season. The most recent construction near the TRT was Tahoe Rim Trail Association and Tahoe Area Mountain Biking Association construction of the Van Sickle Connector trail as well as the Daggett Reroute Project in 2013. The Van Sickle Connector ties in the casino corridor in South Lake Tahoe (Van Sickle Park) area with the Rim Trail. The new 3.5 mile trail allows mountain biking and hiking usage in both directions providing views of Lake Tahoe. The Tahoe Rim Trail Association completed maintenance work on the Van Sickle trail in June 2015. The Daggett Reroute project was completed in 2013 rerouting the old existing trail off of the roadways of North and South Benjamin to 7 new miles of trail. Heavenly Mountain Resort operations crews assisted in construction of the two trails and neither project interfered with Mountain Operations.

Heavenly is planning for the Galaxy Chair Lift upgrade project scheduled for the summer of 2018 and elements of constructing this project may include possible trail closure, delays and/or re-routing of the Tahoe Rim Trail for public safety reasons. Heavenly will work with the Tahoe Rim Trail Association to notify the public on potential trail disruptions.

3.20 Conclusion

During construction, measures of the MMP are implemented during each specific proposed project. Heavenly Mountain Resort maintains compliance with these measures during the planning, design, construction, and post-construction phases for each project. Only one Master Plan Implementation Project was completed during the 207 construction window and Heavenly followed mitigation and permit

requirements for construction. Annual creek water quality results do not meeting the state water board limits (measure 7.4-3), though Heavenly is actively limiting salt and deicer applications and monitoring/tracking salt on-mountain applications. In addition, the *Bijou Park Creek Evaluation Report* was completed and submitted as an appendix to the 5-year Comprehensive Report in January 2017. The evaluation of Bijou Park Creek and the surrounding watershed lists three specific recommendations for improvements. “The first measure calls for the continued source reduction for chloride. The second measure suggests modifying and improving the StormFilter system and the third potential recommendation is to develop a site-specific standard for chloride in Bijou Park Creek or establish an alternative background location to better reflect the development of Bijou Park Creek.”⁸ The two newest biological monitoring measures (7.4-9 and 7.4-14) were implemented in 2015 and monitoring continued through the 2017 monitoring period. Data collected for the Sierra Nevada Yellow-legged Frog and marten populations will be presented to the appropriate agencies prior to the implementation of projects related to Epic Discovery.

⁸ Catalyst Environmental Solutions. Bijou Park Creek Evaluation Report – Heavenly Mountain Resort Waste Discharge Requirements Associated with Lahontan Regional Water Quality Control Board Order No. R6T-2015-0021. WDID 6A090033000. January 2017. Page 62.

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Chapter 4 – Operation and Maintenance Measures

4.1 Introduction

The operation and maintenance measures contained in the MMP govern both summer and winter activities necessary to run Heavenly Mountain Resort. While construction measures are project-specific, operation and maintenance measures encompass annual daily resort operations. These ongoing measures are usually related to either summer or winter activities.

4.2 Measure 7.5-1 Watershed Maintenance and Restoration Program

Heavenly will implement the Watershed Maintenance and Restoration Program. This program will be updated determined by ongoing monitoring. Cumulative Watershed Effects (CWE) tools were used to assess the Epic Discovery Project; however these tools are no longer sensitive enough to be useful on project-level scale. The Forest Service will monitor road maintenance which will be incorporated in developing the restoration and maintenance schedule for road segments. Future Master Plan implementation and monitoring will be reviewed as part of the Ongoing Environmental Monitoring Program (Measure 7.5-2). The Waste Discharge Requirements (WDRs) ensure that measures are implemented and maintained (Heavenly, 2015).

In the past, each year Heavenly had prioritized CWE projects based on maintenance needs, costs, funds, proximity to water bodies and erosion potential as well as construction implementation. Beginning with last construction season (2016) all future projects moving forward will be prioritized based on the Watershed Maintenance and Restoration Program (Epic Discovery Draft EIR/EIS/EIS Appendix 3.1-D). These projects have been “organized in phases based on Priority ski trails and road segments treatment needs as well as tied to capital project implementation phasing.”⁹ RCI continued BMP implementation and effectiveness monitoring during the 2017 construction season. Results from the 2017 monitoring effort are located in Appendix I. Based on revisions to this measure, RCI will continue to monitoring and inspect BMPs shifting from the CWE tools and instead focus on compliance with the WDRs. Appendix III contains the updated status of the 2017 construction season work list of Watershed Maintenance and Restoration Program projects. Additional BMP and maintenance projects completed are listed in the *Heavenly Mountain Resort BMP Effectiveness Monitoring – 2017 Annual Report & Construction Season Summary Report* (found in Appendix I). Appendix VII contains the list of proposed Watershed Maintenance and Restoration Program projects planned for 2018.

4.3 Measure 7.5-2 (WATER-C1b) Ongoing Environmental Monitoring Program

This measure addresses the Lahontan Board Order No. R6T-2003-0032A2 waste discharge requirements (WDRs) and implements the monitoring and reporting program for Heavenly Mountain Resort. The Program includes monitoring the following components: Water Quality, BMP Effectiveness, Riparian Condition and Condition/Trend Monitoring. Additional roads and trails will be monitored within the special use permit boundary to comply with current Forest Service protocols (includes the Mountain Bike Park as it applies only to watershed NV-1); and in-stream fine sediment monitoring will be required for the Heavenly Valley Creek Sky Meadows Reach only. This effort will help to assess poor biotic health scores and document the effectiveness of mitigation measures in the area (Heavenly, 2015).

The Environmental Monitoring Program continues to be funded by Heavenly, but has been implemented by Cardno (formerly Cardno ENTRIX) and RCI since 2005. Heavenly renewed their contract with Cardno

⁹ Heavenly Mountain Resort Master Development Plan, Page 7-20

(formerly Cardno ENTRIX) and RCI to complete water quality monitoring and BMP effectiveness monitoring in January 2008 for a 5-year period - 2012 marked the end of the contracted work. Through the public process, TRPA and Heavenly again selected Cardno and their sub-consultant team to continue this work through July 2017, at which another request for proposal was solicited through the public process. Cardno and their sub-consultant teams were again selected through the formal selection process to continue work for the next 5-year period (2017-2022).

Water quality monitoring was conducted monthly between October 1, 2016 and September 30, 2017 and biweekly during spring runoff at the seven sites specified in the previous measure. The 2017 water year marked the second year that the sampling locations abided by the new Waste Discharge Requirements (R6T-2015-0021) and Monitoring and Reporting Program (2015-0021). The biggest change in the revised/new program was with regards to runoff sampling. In the past, runoff sampling was required weekly; however, the revised program only requires biweekly sampling during the runoff season (typically late March to June). The two Nevada Edgewood Creek monitoring locations are outside of the Lahontan Water Control Board's jurisdiction, but will continue to be monitored on a similar frequency. The 2017 water year results were reported to Lahontan and the Forest Service in the quarterly and annual report and as an electronic copy only in Appendix II of this report.

The Lahontan WDR permit also requires storm samples from the three California Base Parking Lot area StormFilter™ sampling locations (43HVP-2, 43HVP-1a and 43HVP-1b). Five storm samples were collected during the 2017 water year. Results from these samples are included as an appendix in the Heavenly Water Year 2017 Annual Report (Appendix II).

Pursuant the latest State Water Quality Control Board's Mitigation and Monitoring Program (MMP) amendment, BMP effectiveness reporting is now only submitted annually as an appendix to this report. Results from BMP effectiveness monitoring were discussed previously within measure 7.4-1 and can be found in Appendix I. Through an adaptive management approach, the effective soil cover program shifted from a photo monitoring program to an implementation of slope stability and cover at prioritized "hot spots" within the watershed. This approach and shift was previously documented in the in the Environmental Monitoring Program 2014 Annual Report and is reflected in the Mitigation and Monitoring Program.

Riparian stream condition inventory (SCI) monitoring was last collected during the summer of 2015. This information was previously presented and reported in the Environmental Monitoring Program 2015 Annual Report. Trend analysis of the SCI data was reported and discussed in Comprehensive Annual Report submitted in January 2017. The next round of riparian condition monitoring for the California and Nevada streams is not scheduled again until the 2019 summer season.

A portion of the stream riparian studies includes benthic macro-invertebrate (BMI) studies. Samples are collected, scored, and analyzed in order to provide trends for stream health. Sampling occurs on a 2-year on and 2-year off schedule with results collected in 2006/2007, 2010/2011 and 2014/2015. Additional BMI sampling was collected at both the Sky Meadows and Upper Hidden Creek locations in both 2015 and 2016. Due to the poor BMI scores at the Sky Meadows reach, the Upper Hidden Creek reference reach was established in 2015 to compare results at two meadow reach environments. Additional samples were collected at these two sites during the summer of the 2016 water year providing two consecutive years of BMI data for the reference reach. According the new WDR schedule, BMI sample collection will occur again in 2018. Both water quality and BMI results at the Sky Meadows Reach (43HVC-1a) will need to show improvement before this site can be removed from the sampling regiment. Unfortunately, due to the relatively low number of samples collected and variability in results over the years, "upward trends in biotic conditions at the Heavenly Valley Creek sites cannot be confirmed."¹⁰

¹⁰ Suk, Thomas. 2015. Heavenly Valley Creek—Bioassessment Site Scores for 2014. Unpublished internal memo, Lahontan Regional Water Quality Control Board, South Lake Tahoe, California. April 2, 2015.

Proposed Mountain Bike Park Trails will be monitored in compliance with Forest Service protocol upon completion (Nevada side); while fine sediment monitoring along Heavenly Valley Creek at the Sky Meadows established reach will be monitored during the next round of stream condition inventory sampling in 2019.

4.4 Measure 7.5-3 (WATER-C1a) CA-1 Erosion Reduction Measures

Prior to or concurrent to disturbance in Sky Basin, sources of erosion that will directly affect Heavenly Valley Creek and BMI scores will be mitigated as outlined in Epic Discovery Draft EIR/EIS/EIS Appendix 3.1F. This measure lists the priority of each project prior to disturbance. The status and implementation of these mitigation measures will be documented through measure 7.5-2 (Heavenly, 2015).

During the 2017 construction, RCI monitored and documented the listed phase hotspot locations for compliance and potential future construction in Sky Basin. The CA-1 Erosion Hot Spot Summary Matrix table is found in the RCI Report (Appendix I, Attachment A). Most of the high priority California “hotspot” locations within the Sky Basin CA-1 watershed have been addressed and many of the additional medium risk locations were also completed in 2017 as documented in measure 7.5-2 and Attachment A of Appendix I.

4.5 Measure 7.5-4 (WATER-C3) NV-1 Erosion Reduction Measures

Prior to or concurrent to disturbance in Mott Canyon watershed (NV-1), highest risk (greatest potential for sediment loading into the channel) sources of erosion shall be implemented as outlined in Epic Discovery Draft EIR/EIS/EIS Appendix 3.1G. This measure lists the priority of each project prior to disturbance. The status and implementation of these mitigation measures will be documented through measure 7.5-2 (Heavenly, 2015).

During the 2016 construction season IERS and RCI monitored and documented the listed phase hotspot locations for compliance and potential future construction affecting the Mott Canyon watershed (NV-1). The NV-1 Erosion Hot Spot Summary Matrix table was previously provided in IERS 2016 Restoration and Monitoring Annual Report (Appendix II, Table 4, in the 2016 MMR). As proposed projects are planned and built, these high priority “hotspot” locations will be addressed.

4.6 Measure 7.5-5 Maintain Water Rights Balance

This measure specifies that Heavenly shall implement a water use/water rights monitoring program to estimate the quantity of water supplied by each source and where the water is used.

The Water Use Balance Report for the 2016-2017 season contains detailed records on water used for snowmaking and can be found in Appendix V. The Heavenly Mountain Resort’s snowmaking system consumed a total of 143.3 million gallons of water during the 2016-2017 ski season, up from 120.1 million gallons of water during the 2015-16 season. Snowmaking water use in California totaled 87.99 million gallons, and snowmaking water use in Nevada totaled 55.33 million gallons during the 2016-2017 ski season. During the 2016-2017 ski season, Heavenly purchased a total of 55.94 million gallons of water. South Tahoe Public Utility District (STPUD) provided Heavenly with 42.64 million gallons, while Kingsbury General Improvement District (KGID) supplied the remaining 13.30 million gallons purchased. All purchased water supplied by outside utility providers has been supplied in compliance with their approved water rights or similar permits. Results from the water balance report state that 0.11 million gallons of water were transferred out of Basin (Lake Tahoe), while approximately 6.42 million gallons were transferred from California to Nevada during the 2016-2017 ski season.

The sources and use of water for the calendar year of 2017 are as discussed below. Water usage for each of the facilities below fluctuate from past year’s values due to increased summer activities on the

mountain as well as increased usage at the Boulder Lodge on the Nevada side helping to better distribute guests and usage.

- > **California Main Lodge:** Water for the lodge is supplied by South Tahoe Public Utility District. No consumption data is provided by STPUD. Annual flat fee charges for STPUD water are based on the size of the water meter.
- > **Lakeview Lodge/Snow Beach Community Water System:** Water for these facilities is supplied by an underground well. The estimated consumption for the 2017 calendar year is 290,200 gallons.
- > **Sky Deck Barbeque and Bathrooms:** Water for these facilities is supplied by an underground well and two new consumption meters were installed in October, 2017: A single 2-inch meter for the bathrooms and a single 1-inch meter for the restaurant. The estimated total consumption for the 2017 calendar year, which was mostly unmetered, was approximately 300,000 gallons.
- > **Adventure Peak (Top of Gondola/Gondola Mid-Station):** Water for these facilities is supplied by an underground well. The estimated consumption for the period is 1,879,000 gallons.
- > **Boulder Lodge:** Water for the lodge is supplied by Kingsbury Improvement District (KGID). Estimated consumption for the period based on water invoices from KGID is 193,930 gallons. The water usage increased modestly from 2016, which is likely due to the additional operation length associated with significant precipitation and snow depths
- > **Stagecoach Lodge:** Water for the lodge is supplied by KGID. Estimated consumption for the period based on water invoices from KGID is 304,315 gallons, which is a slight increase from 2016 usage.
- > **East Peak Lodge:** Water for this facility is supplied by an underground well. Estimated potable consumption for the 2017 period is 1,706,400 gallons. The usage value at East Peak Lodge increased substantially from 2016, which again is likely due to the extended ski season and duration of operation.
- > **East Peak Well:** Water from the well is used to recharge the East Peak Lake/Reservoir and subsequent snowmaking operation. For the 2017 calendar year, 22,765,415 gallons of water were used, a significant decrease from the 2016 usage of 47,851,375 gallons, likely due to the decreased need for snowmaking during wet year conditions.

4.7 Measure 7.5-6 Maintain Water Flows in Heavenly Valley Creek

This measure requires a water use/water rights monitoring program specific to the California Reservoir and Heavenly Valley Creek.

This mitigation measure requires that Heavenly manage the reservoir and dam such that, “the dam releases equal inflow to the reservoir during the summer such that in-stream flows are not increased” (Heavenly, 2015). A flowmeter was installed on the existing transfer line between the Cal Dam reservoir and East Peak system¹¹, helping to calculate interstate water transfers. Additional solar powered equipment, batteries and data loggers were installed at both the Sky Meadows (upstream of the reservoir) and Patsy’s flume (downstream) retrofit sites in the summer of 2016 to gauge in the inflow and outflow from the reservoir. Unfortunately additional equipment and phone lines were needed in order for the equipment and recorded data to work properly. It was anticipated that these two gauges would be online for the 2017-2018 ski season and snowmaking effort; however, the repaired equipment was further damaged due to the 2016-2017 snow totals¹². For the 2016-2017 ski season, 48.3 million gallons were discharged from Cal Dam versus 51.8 million gallons flowing into the reservoir, indicating that there was no net increase in flows throughout the ski season. Heavenly is in partial compliance with this measure as they attempt to maintain and balance flows into and out of the California reservoir continuously to ensure

¹¹ Barthold, Scott. Heavenly Mountain Resort Water Use Report, 2015-2016 Season. Snomatic Controls and Engineering, Inc. Page 3.

¹² Papandrea, Frank. Personal communication April 24, 2017.

that water rights are not exceeded. Additional monitoring equipment and repairs are needed to ensure the water balance usage associated with the California reservoir is correct.

Prior to the 2015-2016 ski season, Heavenly had an increased need for snowmaking due to the lack of natural snowfall. The operation of the East Peak well was thought to have reversed the historical experience of transferring water from California to Nevada. The most recent water balance report calculates that a net total of 0.11 million gallons of water were transferred out of the basin during the 2016-2017 ski season. However, despite a transfer of 4.6 million gallons from Nevada to California for snowmaking during the 2015-2016 ski season, 6.4 million gallons were transferred from California to Nevada during the 2016-2017 ski season. The water transfer numbers show very good balance between in and out of basin water, while “Future net transfers will be minimized by further balancing water supplies during the season and managing summer irrigation practices.”¹³

The revised measure also requires another source for summertime irrigation besides Heavenly Valley Creek. In future years, other watering sources and drought resistant plants will be incorporated helping to ease the reliance on water from Heavenly Valley Creek, dam and reservoir.

4.8 Measure 7.5-7 Maintain Water Flows in Daggett Creek

The MMP specifies that Heavenly shall install a flow gauge at East Peak Lake, monitor input via precipitation and output from East Peak Lake, and maintain release rates that satisfy water right permit 50525.

The water rights permit is based on snow making usage as opposed to maintaining flows in Daggett Creek. The permit states that 0.5 cfs of water can be used from November through March for snow making operations. There are a number of inputs to determine this value such as: well usage, stream flows out of the dam, and water pumped in and out of the reservoir used for snow making. Appendix V contains the 2016-2017 snowmaking report, while Appendix VI contains the 2016-2017 estimated stream flow data collected and prepared by RCI on Daggett Creek. Data are collected continuously at 15-minute intervals at the gage located below East Peak Lake on the south fork of Daggett Creek; stored flow data are collected and downloaded twice a year from this location.

In addition to collecting periodic flow measurements, an additional data logger was installed during Water Year 2017. However, the data reported for 2017 are from the original data logger, and data from the new logger will be reported beginning in Water Year 2018. Additional flow measurements were collected throughout the summer to update the calibration curve. Previous reports have noted that due to the non-uniform cross section location and low flows in the channel the discharge correlation is inaccurate during low flow measurements (less than 0.4 cfs). The peak discharge graphs provided by RCI show that peak runoff occurred in late June, with an estimated runoff peak of approximately 2 cfs, which was substantially higher than the previous highest estimated peak of 1.2 cfs. Additionally, over 5.25 inches of rain were observed in the rain gage near the Top of the Gondola which resulted in an estimated peak flow of 2.5 cfs and a storm occurring on September 25th resulted in a peak discharge of approximately 1.8 cfs¹⁴. Overall, the data demonstrate that minimum flows were maintained in Daggett Creek throughout Water Year 2017.

4.9 Measure 7.5-8 Maintain Compliance with Water Entitlements

Similar to measure 7.5-5, Heavenly shall implement a water use/water rights monitoring program and comply with existing California, Nevada, and local provider water restrictions on an annual basis.

¹³ Barthold, Scott. Heavenly Mountain Resort Water Use Report, 2016-2017 Season. Snomatic Controls and Engineering, Inc. Page 4.

¹⁴ Barthold, Scott. Heavenly Mountain Resort Water Use Report, 2016-2017 Season. Snomatic Controls and Engineering, Inc. Page 4.

Heavenly complied with all applicable water rights during the 2016-2017 monitoring period and prepared a water use/water rights report which is contained in Appendix V. Heavenly purchases additional water supplies from both KGID (Nevada) and STPUD (California) to meet water demands above and beyond their water rights. To help combat water needs, the East Peak well was dug, constructed and began operation during 2011-2012 snowmaking season. For the 2016-2017 ski season, 39.3 million gallons of water were pumped from the East Peak Well; a reduction from 2015-2016 pumping numbers.

4.10 Measure 7.5-9 Reduce Vehicle Emissions

Heavenly is to work with responsible agencies to implement a mitigation package that will reduce the potential increase of ambient carbon concentrations. The mitigation package includes using contributions to develop best available control technologies and using these technologies for construction, expansion and improvement of the bus system, and improved parking management. In addition, Heavenly shall consider offering skiers/riders the option of both a morning and afternoon half-day lift ticket to reduce peak parking hour traffic.

To mitigate the resort's contribution to carbon emissions, Heavenly has implemented a carbon mitigation package that is centered on reducing vehicular traffic. Heavenly uses low emission vehicles for both transit and operations. The entire fleet of Heavenly snowmobiles has 4-stroke engines. Heavenly also uses state-of-the-art snowcats with Tier 3 California Air Resources Board (CARB) engines. The emissions from Tier 3 snowcats are the cleanest available on the market.

During the ski season, Heavenly provides free shuttle service between all base areas and lodging facilities. Personal vehicular traffic and parking is discouraged at the gondola base through limited paid parking. Employees can buy subsidized monthly bus passes and Heavenly provides free bus service on existing routes to employees from 8:00AM to 6:00PM. During the 2016-2017 ski season, Heavenly coordinated with the operation of 51 ski tour bus trips that included an approximate total of 1,632 guests¹⁵. Heavenly also contributed to the start-up and operation of the Coordinated Transit System (CTS) and continues to contribute the 20% required local match for Capital Vehicle Replacement Grants from the Federal Transit Administration. Since 2005, all new and replacement buses on the BlueGo system have been low emission, alternative fuel vehicles.

Additionally, Heavenly currently offers skiers and riders half-day afternoon lift tickets as discussed as a mitigation measure to help reduce the influx of skiers/riders during the morning rush.

4.11 Measure 7.5-10 Snow Removal Noise Mitigation Methods

To reduce noise created from the snow removal process; this measure states that Heavenly should minimize night time snow removal and attempt to construct noise barriers along the perimeters of parking lots using snow.

There are no formal noise measurements conducted to determine snow removal operations' effect on the CNEL at the base parking areas; however, there were no known complaints filed with the local jurisdictions, Heavenly, TRPA, or the Forest Service. Additionally, Heavenly's snow removal plan calls for constructing snow berm barriers along the perimeter of the California Base, Boulder, and Stagecoach parking lots. Snow is typically removed early in the morning, prior to opening to the public, beginning with areas furthest from adjacent houses and pushed towards the houses to build noise barriers. The 2016-2017 ski season and above average precipitation amounts allowed for snow storage and snow berm noise barriers for form around the perimeter.

¹⁵ Papandrea, Frank. Heavenly Mountain Resort. Environmental Sustainability & Compliance Manager. Vail Resorts, Inc., Personal Communication. February 23, 2018

4.12 Measure 7.5-11 Snowmaking Noise Mitigation Methods for Base Areas

This measure calls for a reduction of Community Noise Equivalent Levels (CNELs) at the base areas to 1982 values or TRPA Plan Area Statement (PAS) noise standards, whichever is less, through the implementation of snowmaking technology.

The CNEL are measured annually by j.c. Brennan and Associates. Results for the 2016-2017 season are contained in the Heavenly Ski Resort Master Plan Noise Monitoring Survey located in Appendix X.

Heavenly has maintained a long-term noise monitoring station at the California Base area which is located on the USFS property directly east of the California Base parking area and across from Keller Road (PAS 085). As discussed in past reports the previous noise monitoring location (adjacent to the Tahoe Seasons Resort) had reached its limitations due to noise associated with vehicular traffic. Continuous snowmaking noise level measurements, at the permanent noise monitoring site, were conducted between November 1, 2016 and March 31, 2017. The monitoring equipment used for the noise level measurements is a Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter, calibrated with an LDL Model CAL 200 acoustical calibrator. Each month the equipment was checked for calibration and data was downloaded. (Brennan, 2017)

The 2016-2017 ski season CNEL value recorded at the Heavenly Base monitoring location exceeded the 55 dBA standards for PAS 085 and 087 (56.1 dBA) - this is a reduction from last year's recorded measurement of 57.1 dBA. The CNEL measured on days with snowmaking increased slightly from the previous season value of 57.8 dBA to 59.5 dBA. The CNEL measurement on days without snowmaking was 58.3 dBA. All measurement with and without snowmaking operations were not in compliance with the 085 and 087 Plan Area CNEL standards. It was still noted that when snowmaking did not occur there was influence from roadway traffic, wind, and individuals recreating on USFS property where the sound level meter is located.¹⁶

Heavenly has completely replaced the air-water snowmaking nozzles at the base of California with fan guns.¹⁷ However even with consistent use of fan guns for snowmaking at the lower portion of the California Mountain CNEL level associate with snowmaking are exceeded. (Brennen, 2017) Heavenly has implement all but the following Master Plan noise mitigation methods to help reduce CNEL levels:

- > Use of setbacks to reduce noise exposures at PAS boundaries;
- > Use of noise reduction housings for air/water nozzles;
- > Use of barriers at low-mounted air/water nozzles.

In an effort to help reduce CNEL levels, Heavenly staff closely monitored the snowpack produced and snowmaking operations, during the 2016-2017 ski season, to determine the appropriate timeframe for discounting snowmaking operations and reduction of nighttime snowmaking noise levels.

Short-term noise level measurements of snowmaking operations were conducted during the 2016/2017 ski season at the Boulder Base on December 18, 2016. The noise measurements for the Boulder Base area were as follows: 67 dBA at Boulder Base and 62 dBA at the corner of Jack Circle and Bonnie Court. The predicted values at these locations, assuming continual operation for a 24 period are 74 dBA and 69 dBA. For the 2016-2017 ski season, these measured values exceed both the Kingsbury Drainage (50 dBA) and Upper Kingsbury (55 dBA) PAS 24 hour CNEL criteria established by the TRPA Environmental Thresholds for Lake Tahoe.

¹⁶ j.c. Brennan & Associates, Inc., Master Plan Mitigation Monitoring – 2016-2017 Heavenly Ski Resort. j.c. Brennan & Associates, Inc. Auburn, CA. Page 9.

¹⁷ j.c. Brennan & Associates, Inc., Master Plan Mitigation Monitoring – 2016-2017 Heavenly Ski Resort. j.c. Brennan & Associates, Inc. Auburn, CA. Page 16.

During the 2016-2017 ski season, short term noise measurements were not conducted at the Stagecoach Base area, due to the fact that snowmaking occurred for a very short period of time. Likewise, noise measurements for the Remote Plan Areas (Party Rock and Liz's/Canyon Run) were not conducted since snowmaking operations ceased in early January due to storm cycles and increased snowpack.

Heavenly has actively pursued several of the mitigation measures for noise reduction at base areas listed in the Master Plan Amendment. Additionally, the increased precipitation during the 2016-2017 limited snowmaking to early season snow base-building efforts. However, the measured CNELs values measures still exceed the 080, 082, 085, 086, 087, 088, and 095 Plan Area CNEL Standards and the time period for replacing equipment with quieter fan gun technology has been exceeded. Therefore, this measure is listed as non-compliant.

4.13 Measure 7.5-12 Rock Busting Noise Mitigation Methods

In order to mitigate the impact to a less than significant level, Heavenly must control the number, size and location of "rock busting" blasts (to meet PAS noise standards). Heavenly will continue to implement Rock Busting Noise Mitigation from the Master Plan.

There were no rock busting activities and subsequent noise monitoring mitigation measures performed during the 2017 construction season. The Heavenly Noise Monitoring Survey states that, "rock busting is such an infrequent event, and is not considered to be a significant noise source, and therefore it is recommended that this mitigation monitoring measure is removed." (Brennan 2017). This measure shall be reviewed during the next amendment or Master Plan update.

4.14 Measure 7.5-13 Restrict Hours of Amphitheater Operations

This measure restricts the hours of concert noise to the daytime and early evening hours and restricts the concerts to less than 6 hours.

Heavenly has conducted a concert simulation noise study; however, no concerts occurred or were monitored during the 2017 summer season. At this time this measure is not applicable.

4.15 Measure 7.5-14 (TRANS-1) Traffic and Air Quality Mitigation Measure

This measure requires that Heavenly contribute to the Air Quality Mitigation Fund in accordance with Chapter 65 – Traffic and Air Quality Mitigation Program of the TRPA Code of Ordinances. Fees generated will be used to support programs that reduce VMT, improve air quality, and encourage alternate modes of transit (Heavenly 2015).

Pursuant to Heavenly receiving the TRPA Epic Discovery Summer Improvements Permit, Heavenly contributed to the Air Quality Mitigation Fund in 2016. Contributions to the Air Quality Mitigation Program complete this measure. If and when additional projects are proposed that increase new daily vehicle trips by 200 or more, Heavenly will again be required to contribute to the Mitigation Fund in accordance with the mitigation fee schedule in the TRPA Rules of Procedure.

4.16 Measure 7.5-15 Implement the Coordinated Transportation System (Public Transit Services)

This measure states that Heavenly shall continue to implement their portion of the ongoing air quality and traffic mitigation measures contained in the Coordinated Transportation System (CTS) Memorandum of Understanding (MOU).

Heavenly continues to fund the CTS Mitigation Fund as well as operate the winter bus fleet and a portion of the summer fleet in accordance with this measure.

4.17 Measure 7.5-16 Protect Tahoe Draba Populations within Heavenly Mountain Resort

Seven specific measures to protect Tahoe draba populations are identified for implementation in the MMP: surveys, fencing, boardwalks, avoidance, rock removal, monitoring, and an interpretive program.

During the 2017 construction season, Heavenly Mountain Resort complied with all applicable measures regarding protection of the Tahoe draba populations. Tahoe draba surveys are required prior to projects located within potential draba habitat. In 2017, surveys for Tahoe draba were performed in the vicinity of the trail map/sign at the top of Dipper Lift that was to be repaired/replaced, by the LTBMU and Sierra Ecotone Solutions. All species data were recorded with a GPS unit and provided to LTBMU staff for use in future environmental documents.¹⁸ Refer to the LTBMU Botanical Field Reconnaissance Report located in Appendix VIII for species occurrence information.

Each summer, Heavenly places interpretive signs about Tahoe draba along well-used driving and hiking routes to alert employees and visitors. Mandatory summer employee orientation includes a section on Tahoe draba and habitat protection. Future Master Plan projects will incorporate the new out of Basin fencing and boardwalks spanning sensitive area requirements along with the other mitigation measures to protect draba populations.

4.18 Measure 7.5-17 Minimize Loss/Degradation of Sensitive Plant Species

To protect sensitive plants at Heavenly, projects must be surveyed prior to construction and buffers must be placed around sensitive plants species. Facilities should also be sited to avoid riparian and old growth habitats.

During the 2017 construction season, sensitive plant monitoring efforts focused on maintenance projects in the vicinity of the Dipper Lift trail map sign. Documentation of this monitoring effort was provided to the LTBMU. At this time, no recommendations were made by LTBMU staff for minimizing loss and degradation of sensitive plant species within the Botanical Field Reconnaissance Reports. 7

4.19 Measure 7.5-18 Invasive Plant Management

To prevent the spread of noxious weeds, Heavenly must develop and implement a long-term integrated weed management plan, use clean vehicles and materials for construction and stage them in weed-free areas, monitor new construction for 3 years, and implement an annual employee orientation and training program.

At the beginning of 2017, there were 12 known invasive plant sites on Heavenly. However, invasive plants were previously eradicated on 4 of those sites, reducing the total number of sites to eight. U.S. Forest Service Botanical Plant Technicians visited the eight sites on Heavenly Mountain on August 8th, 2017. Only one of the eight sites contained invasive plants, *Lepidium latifolium* (Perennial pepperweed), and a total of 23 plants were manually removed from 0.25 acres on September 7, 2017. At the end of the 2017 season, two more of the Heavenly sites were changed to an “eradicated” status, and therefore Heavenly will enter 2018 with only six invasive plant sites. In accordance with this measure, the annual BMP breakfast/training provides employees and contractors information regarding invasive plant species and the need for contracted vehicles to be free of debris and seeds prior to driving in/around the mountain.

4.20 Measure 7.5-19 Monitor and Protect Nesting and Fledgling Bird Species

This measure specifies allowable dates (after August 1) for summer concerts at the Gondola top station.

¹⁸ Alling, Garth. Memo: Heavenly Mountain Resort 2017 Biological Survey Results Summary. October 30, 2017. Page 1.

No concerts occurred at the top of the Gondola during 2017 summer season. Furthermore, no concerts have been held since 2009. If and when concerts are scheduled, they will be scheduled after the mitigated August 1 date. There are three top-of-mountain wedding venues at Heavenly Mountain Resort: Lakeview Lodge, Tamarack Lodge, and the Blue Sky Terrace. The Tamarack Lodge is located near the vicinity of the Gondola top station, while the Blue Sky Terrace is located at the Gondola mid-station. The Lakeview Lodge is located near the top of tram. There are no noise restrictions at the upper mountain venue locations, however noise restrictions are in place for base lodges. Hours are restricted for noise associated with concerts to daytime and early evening and start dates after August 1. If concerts were to occur they would need to cease operations by 10 p.m.; however, it is recommended that concerts cease operation by sunset per the Final EIR/EIS/EIS (February 2015). In addition, concerts should not extend for more than 6 hours. These conditions are consistent with the hours of operations assumed for the amphitheater noise study in the EIR/EIS/EIS. If warranted, Heavenly may conduct additional nesting and fledgling bird species surveys at the top of the gondola area to provide information regarding no detrimental effect allowing for modifications to the hours of limitations associated with concerts. Despite the fact that no concerts were scheduled for the 2017 summer season, nesting bird surveys were performed on June 21-23, 2017 at the top of the Gondola venue and surrounding areas in accordance with the Epic Discovery EIR/EIS/EIS. No active nests were observed within the immediate vicinity (Sierra Ecotone Solutions, 2017). See Appendix VII, 2017 Summer Activities Nesting Bird Survey Results for more details.

4.21 Measure 7.5-20 (BIO-3) Migratory Bird and Habitat Utilization Survey

Heavenly shall perform annual nesting bird surveys for the following projects: Mid-Station Canopy Tour, Sky Cycle Canopy Tour, East Peak Zipline Canopy Tour, Sky Meadows Zipline Canopy Tour and the Sky Meadows Challenge Course. These surveys shall be completed prior to the start of project operations during the breeding season and shall identify migratory birds nesting on or immediately adjacent to proposed structures and equipment associated with the projects listed above.

Nesting bird surveys for the top of the Gondola and surrounding areas were performed on June 21st, 22nd, and 23rd, 2017 by Sierra Ecotone Solutions. The following project areas were surveyed for nesting birds: Skyway Canopy Tour, Silver Rush Canopy Tour, Hot Shot Zip Line, Blue Streak Zip Line, Red Tail Zip Line and all associated ropes courses (Alling, 2017). No active nests were found, though there is suitable habitat (snags with cavities) for a variety of bird species. “Efforts should be made to retain these snags within the project area where feasible in order to maintain suitable nesting locations for cavity nesters”¹⁹. The nesting bird results/letter is included in Appendix VIII. The 2018 monitoring season will be the first year that migratory birds will be monitored (Alling, 2018).

4.22 Measure 7.5-21 (BIO-8) Wildlife Trash Management and Education Program

Heavenly shall create and implement a trash management operation for the entire resort consisting of wildlife proof trash containers and a trash removal and management plan. The removal and management plan will include specified storage areas and practices to prevent access to refuse by wildlife species. Additionally, an educational component will be included in an effort to decrease litter and improper feeding and ramifications to wildlife. The plan shall be reviewed annually by Forest biologists.

A wildlife trash management and education plan was started in 2016 as a condition of the approved EIR/EIS/EIS for the Epic Discovery Program. The program will be implemented annually and reviewed by Heavenly and the U.S. Forest Service (USFS) LTBMU. The goal of this program is for timely removal of refuse from deposit points; educate Heavenly guests and staff about proper waste management; and to keep interactions between wildlife and humans to a minimum. Wildlife proof receptacles in and around

¹⁹ Alling, Garth. 2017 Summer Activities Nesting Bird Survey Results. Letter dated July 13, 2017.

Adventure Peak/Top of Gondola area are serviced each day of operations, and garbage removed from the remote receptacles are consolidated to the Tamarack Lodge loading dock or TOG for transportation down to Heavenly Village trash compactor. These waste operations are handled by the Heavenly Adventure Peak grounds crew, staff, and/or lift personnel. Removing food and garbage waste daily is vital to the success of the program. Dumpsters are located at the California Main Lodge lower parking lot for different waste streams such as garbage and kitchen food waste recycling. These dumpsters are animal proof and are serviced by the South Tahoe Refuse and Recycling Services and are closely monitored by Heavenly environmental staff and Food and Beverage management staff. Since 2013, all of these California Base dumpsters were made animal proof and the wildlife incidents have been significantly reduced. Bear Bins will be deployed before summer operations and activities begin at the Adventure Peak/Top of Gondola location. These bins will be relocated from the TOG area at the end of the summer season, as to not interfere with winter operations. They were stored at the East Peak Canopy Tour gear-up deck after the summer 2017 operating season concluded.

The program will expand into Sky Meadows and East Peak Lake/Lodge as these regions come online. Details regarding the Wildlife Trash Management and Education Program can be found in Appendix IV.

4.23 Measure 7.5-22 Maintain Timber Thinning Practices

Heavenly must work with the Forest Service to determine areas that require timber thinning as established by the LTBMU Land and Resource Management Plan. Practices should help prevent catastrophic wildfire but be consistent with management criteria for maintenance and enhancement of wildlife values.

Each year, Heavenly and Forest Service vegetation management specialists review thinning and hazard reduction needs. When areas are identified for thinning, timber thinning practices will be consistent with both the Forest Service management criteria and the TRPA Code of Ordinance Chapter 6 (tree removal). No tree removal projects or projects that had tree removal components were completed during the 2017 construction season. Only hazardous trees were removed during the 2017 construction season as discussed in Measure 7.4-7. As new projects and plans are developed, trees to be removed will be mapped, surveyed and submitted for review prior to removal.

4.24 Measure 7.5-23 Provide Employee Housing

Heavenly must assist in providing employee housing as well collect and report monthly employee housing. Heavenly will continue to maintain its housing program.

Based on revisions to this measure, the percentage of occupancy (occupied beds) will be tracked monthly moving forward. Table 4-1 lists the monthly occupancy totals starting in October 2016. Calendar Year 2017 average occupancy values were also calculated. Heavenly's employee housing assistance program matches workers with available housing. The EIR/EIS/EIS and subsequent Master Development Plan and mitigation measures no longer require employee housing survey information.

Table 4-1 Heavenly Employee Housing Occupation

Month/Year	% Occupied	Beds Occupied (88 Total Available Beds decreased to 73 mid- November)
October 2016	40%	35
November 2016	70%	62
December 2016	70%	62
January 2017	73.5%	65

Month/Year	% Occupied	Beds Occupied (88 Total Available Beds decreased to 73 mid- November)
February 2017	73%	64
March 2017	69%	61
April 2017	50.5%	44
May 2017	35%	31
June 2017	70%	62
July 2017	71%	63
August 2017	64%	56
September 2017	21%	19
Average Occupancy Ski Season Rate (Oct.-Sept.)	58.9%	51.9
Average Annual Rate (Jan.-Dec.)	51.4%	44.5

4.25 Conclusion

Compliance with the operations and maintenance portion of the MMP is an ongoing process. Heavenly complies with the MMP through careful planning, implementation, utilization of industry experts, and educating employees on the importance of each measure. Heavenly is in compliance with nearly all of the existing Operation and Maintenance measures and they are actively addressing newer measures established in the Final EIR/EIS/EIS Epic Discovery Project and MDP. In-stream monitoring equipment in Heavenly Valley Creek is in the process of being upgraded to effectively measure flows in and out of the California reservoir. Snowmaking noise measurements are in non-compliance with the planned CNEL plan area statement levels at the California and Nevada Base Areas.

Chapter 5 – Management Response to Monitoring and Evaluation

5.1 Introduction

The Heavenly Mountain Resort response to monitoring and evaluation is as important as the monitoring and evaluation itself. This portion of the MMP is to encourage an adaptive management approach through collaboration between Heavenly and relevant interested agencies and parties.

5.2 Measure 7.6-1 Soil and Water Quality

To comply with measure 7.6-1, the results of various monitoring reports on soil and water quality are contained in this report. Heavenly's response to these reports is integral in achieving environmental improvements. Within 60 days of receiving completed monitoring reports, Heavenly, Forest Service, Lahontan, and TRPA will collaborate as necessary to develop an action plan based on monitoring results.

Heavenly has employed Cardno in a three-party contract with the TRPA to implement water quality monitoring services. During the 2017 water year (from October 2016 through September 2017) Cardno provided Quarterly Reports to Lahontan, the Forest Service, and the TRPA in fulfillment of the monitoring and reporting requirements set forth in the Lahontan Waste Discharge Requirements (WDR's). Quarterly reports were submitted on the following dates: January 31, May 1, and August 1, of 2017. The 2017 Annual Report which included the fourth quarter results for the 2017 water year, was submitted on January 15, 2018. Due to the close working relationship of Heavenly staff and field monitors, Heavenly often responds to field directives and implements corrective actions before field and work order reports are generated.

Annual averages for total phosphorus and chloride exceeded the state standard for Property Line (43HVC-3) and Below Patsy's (43HVC-2); and for total phosphorus, total nitrogen, and chloride at Sky Meadows (43HVC-1A). The total phosphorus and chloride exceedances cannot be attributed solely to the Heavenly Mountain Resort operations as annual averages of these two parameters were also exceeded at the reference site located along Hidden Valley Creek (43HDVC-5). The annual averages for total phosphorus, total nitrogen, chloride, and turbidity all exceeded the state standards at the Bijou Park Creek (43BPC-4) location for the 2017 water year. Although annual average total phosphorus and chloride standards were exceeded at the reference site along Hidden Valley Creek, values at Bijou Park Creek were substantially higher than the reference reach values.

The 2017 water year marked the sixth year the California Parking Lot Filter Vault Effluent point results were reported to the State Water Board. Not to exceed values for total phosphorus and total nitrogen were each exceeded in separate storm samples. Five samples were collected during the 2017 water year and the not to exceed turbidity standard was exceeded in each of the five samples. Heavenly has continued to prioritize their maintenance and filter replacement efforts. In the fall of 2017(September), a total of 107 filters were replaced including the fourteen sacrificial filters which include the Phosphosob™ media. This media has shown some improvement with efficiency of total phosphorus removal, which is demonstrated by the fact that only one of the five samples exceeded the state standard. Heavenly continues to be proactive in attempting to limit discharge exceedances; and the latest WDR's required a feasibility study with regards to chloride levels within Bijou Park Creek in association with California Parking Lot runoff. The feasibility study included additional sampling along Bijou Park Creek and led to the *Bijou Park Creek Evaluation Report* (Catalyst 2017). The evaluation report concluded that Heavenly should: 1) continue to limit chloride usage; 2) modify and improve the StormFilter system; and, 3) formulate a new site-specific chloride standard for Bijou Park Creek or establish an alternate background

reference location for Bijou Park Creek.²⁰ At this point in time, Heavenly has not implemented the last two action items, though they are attempting to limit chloride/salt usage. The 2017 ski season marked the first use of brine application as a deicer agent; however the frequency of storms and snowfall limited application to one single event.

The 2016-2017 winter season was marked by well above average precipitation, and followed an average precipitation year in WY 2016 preceded by a prolonged period of drought in the Tahoe basin. As such, the water year 2017 saw a substantial increase in storms, snowfall, and precipitation which correlated with an increase in use of roadway deicer. Heavenly used 230,644 lbs. of deicer and abrasives in water year 2017, an increase from 178,735 lbs. in 2016. However, almost 75 percent (171,620 lbs.) of the deicer applied in 2017 was collected via sweeping and removed from the watershed.

Usage of deicer is highly dependent on precipitation storm cycles and cold temperatures which vary year to year. Prior to the 2016-2017 season, the 2011 season precipitation and deicer application amounts reflect the most comparable winter season in the last 10 years (980,960 lbs. of deicer applied in 2011). Heavenly has moved forward with only using the smaller spreader truck as opposed to the older less accurately reporting dump truck. Heavenly's spreader truck is fitted with a deicer application sensor gauge which accounts for both road conditions and temperature controlling the ideal amount of deicer application needed for success. The sensor also records the amount of deicer applied more accurately. Reducing the amount of deicer applied to the roadways helps limit the amount of chloride detected in the water ways. Residual chloride tends to remain in the environment and is difficult and expensive to remove. Deicer application and recovery results can be found in Table 6-1 of the Heavenly 2017 Annual Report (Appendix II, electronic copy only).

BMP effectiveness and monitoring is performed by RCI. The State Water Board's latest Waste Discharge Requirements/Monitoring and Reporting Program (R6T-2015-0021) requires all quarterly and annual BMP reporting reports to be included and submitted with this Mitigation and Monitoring Plan. The BMP Effectiveness Monitoring 2017 Annual Report is included in Appendix I. This report summarizes findings, results, and trends that occurred throughout the summer/construction season. The annual report also lists recommendations for improving existing and proposed BMP implementation helping to increase the effectiveness. Feedback and comments from each of the agencies as well as lessons learned are passed along for incorporation and implementation by Heavenly's operations staff. The monitoring goal is to always be in compliance with BMP installation and maintenance, with all involved parties in agreement, limiting runoff, erosion, and sediment transport. Modified mitigation measures in the EIR/EIS/EIS and MDP suggest a change in the reporting and monitoring effort; however BMP effectiveness and erosion prevention will remain the focus. Heavenly and their team of consultants will adapt to these changes ensuring compliance with this measure.

Prior erosion resistance monitoring efforts focused on treating primarily high and medium priority hotspots identified in both Sky Basin and Mott Canyon watersheds (CA-1 and NV-1). Due to the watershed drainage area and proximity to Lake Tahoe, the CA-1 watershed remains a priority for addressing erosion hotspot issues as shown on the 2017 and 2018 Watershed Maintenance Restoration Program (WMRP) Work Lists (Appendix III and VII). The 2017 summer and construction season marked the fifth season Heavenly continued to follow the outcome-based watershed management approach formerly in collaboration with IERS and now transitioning to collaboration with RCI. The past 7 years has marked a major shift in the watershed management approach employed at Heavenly, moving from an 'effective soil cover' model and largely replaced with targeted assessments and treatment. Heavenly has also implemented and demonstrated the success of a range of new erosion treatment and restoration techniques, such as water bar to swale conversion; use of mulch filter berms; large scale mulch application; switch from erosion modelling to on the ground ecological soil based treatment approaches; and prioritizing

²⁰ Catalyst Environmental Solutions. Bijou Park Creek Evaluation Report – Heavenly Mountain Resort Waste Discharge Requirements Associated with Lahontan Regional Water Quality Control Board Order No. R6T-2015-0021. WDID 6A090033000. January 2017. Page 62

treatment of 'hot spot' erosion areas with high connectivity to surface waters. The 2017 results are discussed in the Heavenly Mountain Resort Watershed Maintenance and Restoration Program (WMP) 2017 Annual Report and Construction Season Summary found in Appendix I.

RCI has recommended vital improvements in processes related to: planning and communication, treatment and implementation, effectiveness and maintenance, and monitoring and assessment. The management and communication process focuses on the following efforts. Continuing to integrate erosion hot spot treatments into the annual work list so these small scale projects can be scheduled along with other capital and maintenance projects. Prioritizing the annual work list using erosion and water quality risk (among other criteria) as criteria for ranking and creating a set of maps showing locations of all projects on annual work lists with key watershed features such as streams, SEZs, roads, and lifts to support clear communication between management and field staff while providing a simple format for both field documenting erosion hot spots and reporting/communicating watershed management efforts and completed projects.

The treatment and implementation processes includes: continuing to experiment with creating mulch berms across large ski runs, especially those where equipment access is a big challenge; continuing to utilize equipment such as the hydroseeder or Shred-Vac to assist in restoration of large ski runs; starting the wood chip aging process for at least one year prior to application wherever possible to begin the decomposition process; using low flow deep-cycle irrigation methods where irrigation is necessary in order to minimize water use, eliminating irrigation-caused erosion and establishing deeper-rooting plants; utilizing a consistent form to document restoration treatments; and developing project designs that utilize the most effective temporary and permanent BMPs while remaining diligent on staff education.

The effectiveness and maintenance process includes: maintaining dedication of monitoring logs associated with new erosion and sediment control techniques; scheduling regular maintenance inspections and coordinating on action items to support BMP effectiveness; and utilizing tracking spreadsheets to account and prioritize project tasks, materials, staff, and equipment needs. The monitoring and assessment process includes continuing to conduct monitoring and reporting for the WMP and BMP effectiveness concurrently to increase efficiency and consistency as well as requesting that field crews utilize internal tracking documents to encourage staff to take active roles in creating successful projects. The Heavenly crews can also identify, assess, and develop integrated plans to resolve road system drainage issues such as converting more water bars to infiltration swales, as nearly all erosion issues observed on ski runs are related to concentration of flows from roads and water bars upslope. Additionally, review of the USFS National Core BMP Program and TMDL reporting requirements will aid in the selection of applicable BMP methodologies. Detailed recommendations from the 2017 RCI report are located in Appendix I.

Through a combined multi-agency effort and key monitoring implementations, Heavenly is presently in compliance with this ongoing mitigation measure. Agency and public responses to this annual report during the 60-day comment period will be assessed and integrated into an action plan if necessary. No comments were received for the 2016 report. The implementation of any action plan items will be discussed in the annual report the following year (2017). Removed, modified and new measures in this report were established in the EIR/EIS/EIS Epic Discovery Project and subsequent MDP. In response to this measure, an electronic copy of this report will be linked from the Heavenly website to the report posting on TRPA's website. Heavenly is currently in compliance with all of their reporting requirements.

5.3 Measure 7.6-2 Traffic and Parking

Heavenly is to prepare a parking monitoring report at the end of each ski season that includes the following:

- > *Days during which overflow parking was used on Ski Run Boulevard, South Benjamin Drive, and Galaxy Bowl and any days when overflow parking was full.*
- > *The number of parking spaces used at Galaxy Bowl each day this area was used for overflow parking.*
- > *An explanation regarding any days during which these overflow parking areas were filled.*

The monitoring reports are to be shared with the TRPA, Douglas County, El Dorado County, and the City of South Lake Tahoe and posted on the appropriate websites, not limited to the Heavenly website. Based on the results of the monitoring reports, an action plan will be devised by Heavenly and interested parties within 60 days.

The California off-site parking areas are typically used during the holiday weekends and the week between Christmas and New Year's. During the 2017 water year (and 2016/2017 ski season), off-site parking was utilized 33 days between December 16, 2016 and April 1, 2017. A total of 8,551 vehicles were counted along California off-site parking locations at the lower Ski Run Boulevard roadway, Saddle roadway, and Keller roadway. The roadway width along Ski Run Boulevard allows for additional paved parking along both sides of the street; while still allowing ample width for two-way traffic. Additional overflow parking, available on the Nevada side of the Heavenly Ski Resort, was not utilized during the 2016-2017 ski season due to the amount of snow and safety protocols implemented by the Douglas County Sheriff's Department.

To assess Heavenly compliance with the mitigation measure to reduce vehicle traffic, data was gathered from Nevada Department of Transportation (NDOT) and the California Department of Transportation (Caltrans) on average annual daily traffic (AADT) on US Highway 50 and Kingsbury Grade. Sites along these two passes were chosen to represent major points of access to Heavenly. These sites are displayed in Figure 5-1. AADT values from 2008 through 2016 for each site are shown in Table 5-1 and graphically displayed in Figure 5-2. Traffic volume values are reported for the prior year of record and the 2017 values will be reported in next year's report.

Traffic numbers, for the major access points to Heavenly Mountain Resort for the 2016 year, increased from the 2015 values for all of the traffic monitoring sites except at the US Hwy 50/Ski Run Intersection location (CA – MP 79.29). The US Hwy 50/Ski Run Intersection values decreased from 32,000 counts in 2015, to 29,400 in 2016. Traffic counts for state station NV-0050036, located 0.4 mile west of SR-28 (Spoooner Summit) increased from 13,000 in 2015, to 13,500 in 2016. Likewise, state station NV-0053150 located on Kingsbury Grade (SR-207) increased from 10,000 in 2015 to 10,800 in 2016 and the 2016 traffic count number at state station NV-0050044 increased from 25,000 in 2015 to 26,000 in 2016. Traffic counts for vehicles traveling east into the basin along US Hwy 50 at Echo Summit (CA-MP 79.29) increased from 10,000 in 2015 to 10,800 in 2016. State stations at NV-0050044 and CA-MP 79.29 continue to show the highest traffic counts compared to all the other major access routes traveling towards Heavenly Mountain Resort.

While vehicular numbers to South Lake Tahoe fluctuate year to year, these values do not necessarily correlate with skier visits or Heavenly's influence on traffic numbers. Media coverage of drought cycles and snow storm events tend to correlate better with the number of skier visits. Figure 5.2 shows graphical representation of the traffic count data from 2007 through 2016. With this limited data set, it is hard to draw finite conclusions or trends; however in recent years the traffic count values appear to be increasing. Reviewing the ten years of traffic data collected, the general trend for four of the five traffic monitoring locations show an increase traffic volume. The 2015-2016 ski season was an average precipitation and snowfall year that followed a number of consecutive drought years. The increased snowfall may correlate with the increased traffic counts reported. In next year's report, it will be interesting to see if the epic winter and precipitation totals from the 2016-2017 ski season correlate with even higher traffic count numbers.

As stated above, this report which includes the traffic information will be posted on TRPA's website.

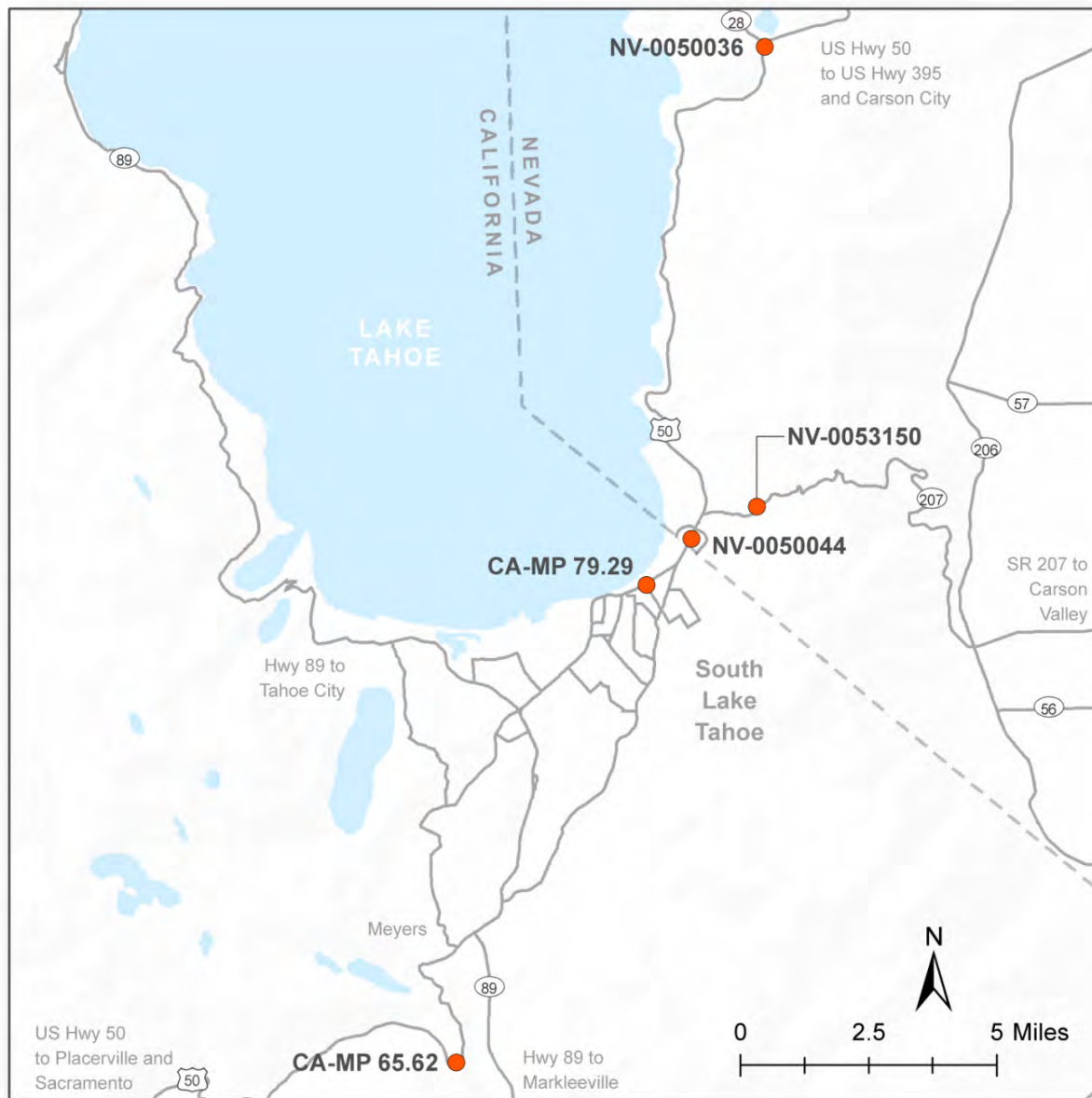


Figure 5-1 Mapping Locations of the Traffic Count Sites

Table 5-1 Traffic Data on US Highway 50 and State Route 207

State – Station	Location	AADT 2008	AADT 2009	AADT 2010	AADT 2011	AADT 2012	AADT 2013	AADT 2014	AADT 2015	AADT 2016
NV - 0050036	US-50, 0.4 Mile West of SR-28 at MP 12	10,000	10,000	12,000	12,000 ¹	11,500 ¹	11,500	13,000	13,000	13,500 ¹
NV – 0053150	SR-207 (Kingsbury Grade) 0.5 Mile East of US-50	11,000	11,000	11,100 ¹	11,100 ¹	10,000	10,200	9,500	10,000	10,800
NV – 0050044	US-50, 300' East of the NV-CA State line	25,000	24,000	24,000 ¹	27,000	22,500	21,500	21,500 ¹	25,000	26,000 ¹
CA – MP 79.29	US-50 at the intersection of Ski Run Blvd. ²	31,500	31,500	30,000	30,500	30,500	30,500	31,500	32,000	29,400
CA – MP 65.62	US-50 at the intersection of Echo Lakes Road ³	8,900	8,900	8,900	8,900	8,000	8,000	8,100	10,000	10,800

Sources:

NDOT Data: <https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/operations/traffic-information/-folder-347>

Caltrans Data: <http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm>

Notes:

¹ Data Adjusted or Estimated

² Annual Average Daily Traffic (Back AADT) Traveling West Bound

³ Annual Average Daily Traffic (Ahead AADT) Traveling East Bound

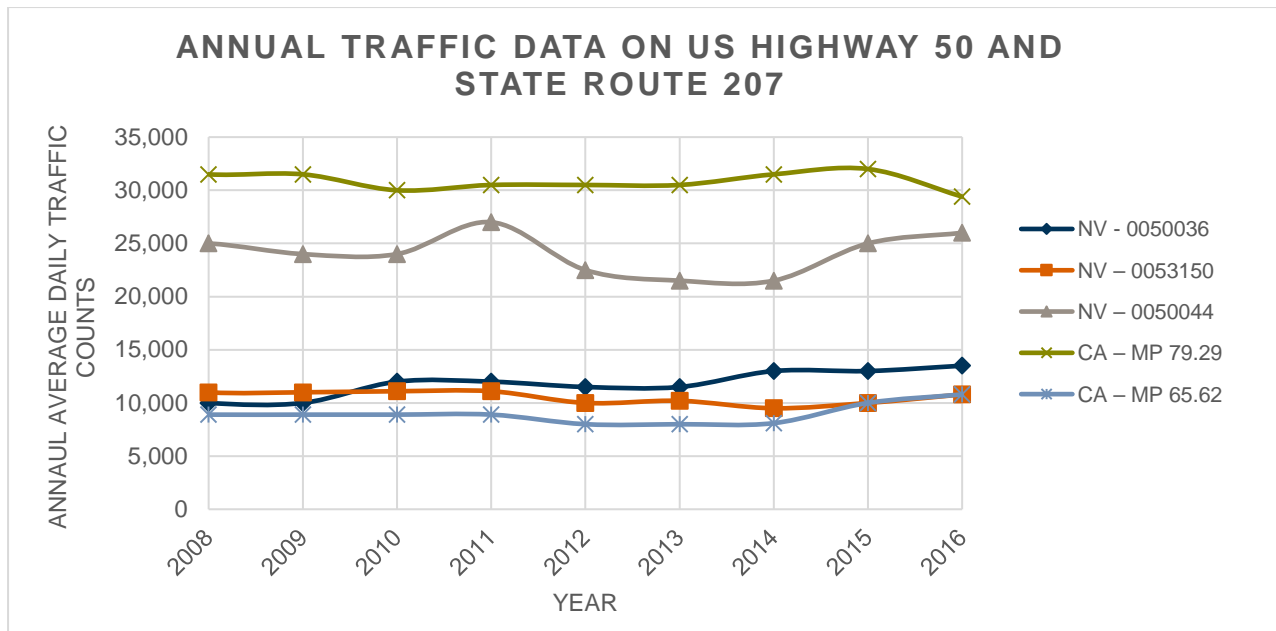


Figure 5-2 Graphical AADT Values 2008-2016

5.4 Measure 7.6-3 Late Seral/Old Growth Enhancement

Monitoring is required every 5 years to track the progress of any enhanced forest or stand.

The forestry work for the restored stand was completed in 2007. In 2013, the LTBMU staff visited the restoration stand site to review the mitigation measure requirements. Results from the monitoring effort proved that the past mitigation measure objectives have been met. The EIR/EIS/EIS Epic Discovery Project and MDP removed past mitigation measure VEG-3 (7.5-25 Late Seral/Old Growth Forest Enhancement) in response to the monitoring conclusions. The LTBMU compliance letter is included in Appendix XIII. No new additional late seral/old growth stands were removed during the 2017 construction season, nor were there additional stands that required monitoring. If and when an old growth stand is scheduled for removal, a new stand of equal or greater acreage will be established and future monitoring of the new stand will be governed by this measure. Heavenly is currently in compliance with this ongoing measure.

5.5 Conclusion

Heavenly continues to work proactively with their subject-area experts and their own trained employees to immediately respond and address on-mountain erosion issues and problem areas. More often than not, Heavenly modifies and repairs minor BMP and erosion source issues before they become potential problems and larger issues. The 2017 BMP monitoring results exemplify this methodology as results show that permanent BMPs were 100% implemented and 96% effective, while temporary BMPs were 100% implemented and effective. Resolving and preventing erosion is one key component in improving future water quality monitoring results. Heavenly's active on-mountain involvement and attention to each of mitigation measures listed in the Master Development Plan have not triggered an action plan. If measures fall out of compliance, action plans will be developed ensuring a path for future compliance while addressing responses and feedback gathered from the local agencies and interested parties generated from this report.

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Chapter 6 – Reference List

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Heavenly Mountain Resort
Mitigation and Monitoring Plan
Annual Report (October 2016 –
September 2017)

APPENDIX

I

HEAVENLY MOUNTAIN RESORT WATERSHED
MAINTENANCE AND RESTORATION
PROGRAM (WMRP) 2017 ANNUAL REPORT &
CONSTRUCTION SEASON SUMMARY (RCI)

April 2018

Heavenly Mountain Resort

Watershed Maintenance and Restoration Program (WMRP)
2017 Annual Report & Construction Season Summary



Prepared for:

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Introduction

The following report provides a summary of the Heavenly Mountain Resort (Heavenly) Watershed Maintenance and Restoration Program (WMRP) activities for the 2017 construction season. The monitoring program is required for compliance with the Resort 2007 and 2015 Master Plan Amendments based on requirements of the USDA Forest Service – Lake Tahoe Basin Management Unit (LTBMU), Tahoe Regional Planning Agency (TRPA) and the Lahontan Regional Water Quality Control Board (Lahontan) Waste Discharge Requirements (WDR Board Order No. R6T-2015-0021, WDID No. 6A090033000).

Resource Concepts, Inc. (RCI), contracted by Cardno, has conducted Best Management Practice (BMP) Effectiveness Monitoring since 2005. BMP Effectiveness Monitoring is an element of the Watershed Maintenance and Restoration Program (WMRP). In past years, elements of the monitoring and reporting were completed by RCI and Integrated Environmental Restoration Services (IERS). In 2017, RCI completed monitoring for both BMP Effectiveness and the WMRP. The WDR requires submittal of an annual monitoring report and the monitoring efforts for the WMRP are combined herein.

Regulatory Overview

This report provides a summary of monitoring required by the following sections in the referenced WDR, and the following activities are required by Section C of the WDR:

1. Track and report the status of mitigation/restoration projects included in the WMRP.
2. Complete an annual erosion hot spot assessment of the ski area and identify restoration projects to be completed. In accordance with the prescribed schedule, hot spot assessments were conducted in the Bijou Park Creek watershed and followed the procedures presented in the *Watershed Management Guidebook*¹.
3. Develop and report an Annual Worklist with maintenance and restoration projects to be completed during the summer construction season of each year. The Annual Work List includes mitigation projects required from previous Master Plan commitments and project identified by the annual erosion hot spot assessment. Projects are prioritized based upon links or triggers to capital projects, erosion risk, site stability, and proximity/connectivity to surface waters or stream environment zones (SEZs).
4. Implement and report the results of the Construction Erosion Reduction Program (CERP), including the review of the temporary and permanent construction BMPs implemented at the Facility.

¹Drake, K. and M. Hogan. 2013. *Watershed Management Guidebook: An Outcome-Based Guide to Watershed Management*. Prepared for the California State Water Resources Control Board.

Rating criteria is provided in the WDRs, listed as follows. According to Section I.A.D, Table 3 “Heavenly Valley Creek TMDL Targets,” both the BMP Effectiveness and WMRP monitoring must result in a rating of “Good” or better.

WMRP Implementation

Excellent:	All WMRP projects implemented and maintained according to Annual Work List timeline
Good:	All WMRP projects implemented according to Annual Work List; but some project components need reestablishing (for example, reseeding is necessary on some revegetation sites)
Fair:	Only partial implementation of Annual Work List projects has been achieved according to timeline; or Annual Work List projects are one year behind schedule
Poor:	No Annual Work List projects have been implemented, or Annual Work List projects are two years or more behind schedule

BMP Effectiveness Rating Criteria

Excellent:	90% of BMPs implemented correctly and functioning effectively; no evidence of sediment leaving the site and entering the stream channel
Good:	75% to 90% of BMPs implemented correctly and functioning effectively; some evidence of sediment leaving the site, but no sediment reaching the stream channel
Fair:	50% to 75% of BMPs implemented correctly and functioning effectively; some evidence of sediment leaving the site, some sediment reaching the stream channel
Poor:	Less than 50% of BMPs implemented correctly and functioning correctly; evidence of sediment leaving the site, excessive sediment reaching the stream channel

2017 Construction Season Overview

The historic 2016-2017 winter was California’s wettest on record² and delivered a total of 54.9 feet (659 inches)³ of snow at Heavenly. No major capital projects were constructed at Heavenly during the 2017 construction season since resources were directed to maintenance projects to address erosion from snowmelt runoff. Fortunately, the snow melted relatively slowly so minimal erosion issues were noted on ski runs or roads after the winter season. Heavenly continued a proactive approach to addressing erosion as snow levels moved up the mountain during spring/early summer snowmelt.

The 2017 construction season began in late June following snowmelt and ended with the storms received in mid-November. As explained in previous reports, while this monitoring period is logical for seasonal operation of the Resort, it does not correspond directly with the Water Year reporting timeframe indicated in the Waste Discharge Requirements, as noted below:

² California-Nevada Climate Applications Program (CNAP). Precipitation Water year 2017. Sept 2017.

³ Heavenly Mountain Resort via Unofficial Networks <https://unofficialnetworks.com/2017/07/13/top-10-snowfall-totals-of-the-2016-2017-ski-season/>

- The first quarter of the 2017 Water Year (October 1 through December 31, 2016) was reported previously as part of the 2016 Construction Season Summary (RCI, April 2016).
- Evaluations were not conducted during the second quarter of the 2017 Water Year (January 1 through March 31, 2017) because Heavenly was covered with snow.
- Evaluations were not conducted during the third quarter of the 2017 Water Year (April 1 through June 30, 2017) due to late season snow and Mountain access.

Evaluations were conducted during the 4th quarter of the 2017 Water Year (July 1 through September 30, 2017) and the 1st quarter of the 2018 Water Year (October 1 through December 31, 2017). These evaluations have been combined into one report to incorporate the logical conclusion of summer maintenance and construction projects. This report satisfies the WDR requirement of submittal of an annual report for WMRP & BMP Effectiveness Monitoring.

Monitoring Programs & Goals

The WMRP monitoring includes the Hot Spot Assessment and CERP implementation and reporting. The BMP Effectiveness Monitoring falls under the CERP program. Both monitoring programs utilize the adaptive management approach and as noted in previous reports, the Heavenly monitoring program continues to be one of the most successful, multi-year examples of adaptive management applied to improve sediment source control in the Lake Tahoe Basin. The goals of the program have been listed in previous annual reports and include the following:

Treatment Goals

- To implement projects that result in no net increase in runoff or sediment transport;
- To implement sediment source control treatments that are either self-sustaining OR are accompanied by a plan for ongoing maintenance and management to maintain erosion resistance; and,
- To develop and demonstrate an applied adaptive management program for development, management and maintenance activities in upper watersheds.

Monitoring Goals

- To quantitatively assess whether projects result in no net increase in runoff or sediment transport;
- To identify and quantify indices of long-term ecosystem sustainability to the greatest extent possible;
- To use monitoring data to determine the cost-effectiveness of restoration techniques; and,
- To use monitoring data to improve effectiveness of future treatments.

Outcome-Based Watershed Management Approach

Heavenly has been utilizing an outcome-based management system that both meets compliance standards and assesses actual performance of BMPs. IERS pioneered this outcome-based watershed approach in the *Watershed Management Guidebook* prepared for the California State Water Resources Control Board. This management style acknowledges the complexities of a watershed and allows for collection of useful information to make decisions that result in measurable sediment control. Outcome-based management provides a framework to encourage new ideas and methods that achieve quantifiable

results. The *Watershed Management Guidebook* outlines five steps that drive the outcome-based management process being used at Heavenly:

AIMING: articulating goals and objectives, defining success criteria, and identifying known and unknown information.

GAINING UNDERSTANDING: gathering on-the-ground information the site/project and watershed and assessing strategies for a site-specific implementation plan. Monitoring results from past projects are used as the basis for developing treatment strategies for new projects that are most likely to achieve project objectives and success criteria. Often this step includes small-scale development plots to test different treatment approaches.

DOING: the part of the process where the plan is understood, implemented, and documented to support monitoring and continual improvement.

ACHIEVING: directly assessing project performance/effectiveness relative to goals and success criteria and reporting this information annually.

IMPROVING: embracing unexpected project outcomes, sharing project successes and failures with others, making adjustments to projects that did not achieve their intended outcome(s), and integrating lessons learned into future projects.

One of the results of this outcome-based watershed management approach is the shift from “effective soil cover” based heavily on vegetative cover to “erosion resistance.” Erosion resistance combines a wide range of factors including mulch, rock, soil density, infiltration, slope and surface roughness as well as vegetation⁴. Over many years of implementing erosion control projects, Heavenly has invested significant material, labor and monetary resources to fertilize, seed and irrigate vegetation on disturbed soil.

As noted in previous IERS reports, the change from plant cover to erosion resistance has been applied to all aspects of the WMRP. By shifting the approach to consider erosion resistance, “soil edaphic factors” (the physical, chemical and biologic conditions of the soil) are paramount. Well-established vegetation thriving in stabilized soil provides an erosion resistant ecosystem rather than landscaping that requires continual maintenance. Much of the work done by IERS has helped Heavenly to shift efforts away from projects that require temporary irrigation and repeated reseeding of disturbed areas. By emphasizing soil edaphic factors, projects have become more successful over time since plant cover is not the only contributor to erosion resistance.

Watershed Maintenance & Restoration Program Monitoring

In 2014, this outcome-based watershed management approach was formally incorporated into the Mitigation and Monitoring Program for the Heavenly Epic Discovery EIS and additional erosion hot spot assessment was completed in the upper portion of the CA-1 watershed (Sky Basin) and the NV-1 watershed (Mott Canyon). Projects in 2015 and 2016 focused on treating the high and medium priority

⁴ 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.

hot spots identified in both the CA-1 and NV-1 watersheds. Efforts in 2017 concentrated on completing the remaining hot spot projects; hot spot assessments were focused on the CA-6 Bijou Park Creek, in accordance with the schedule outlined in the WDR. The WMP program is based on prioritizing treatments through assessing erosion, treating the priority areas, and then measuring the outcomes. Hot Spot Summary Tables are included in Attachment A and Key Project and Hot Spot Photos are included in Attachment B.

Erosion-Focused Rapid Assessment

By shifting the emphasis to erosion resistance, a new methodology for assessing erosion has been utilized at Heavenly. The erosion-focused rapid assessment (EfRA) process described in the *Watershed Management Guidebook* is based on locating erosion sources or “hot spots” by identifying flow patterns using GIS mapping followed by field assessment. Treatments are prioritized by actual observed erosion, high hydrologic connectivity and/or connectivity to surface waters. The BMP Effectiveness Monitoring Program has utilized this approach for erosion evaluations on facilities and construction projects for over a decade. The EfRA process provides a similar method for evaluating larger areas such as ski runs to identify sources of erosion. This approach is more targeted as opposed to utilizing modeling and estimation to make assumptions about sediment transport in the watershed as a whole. The following criteria is used to rank hot spots:

Erosion Hot Spot Ranking Criteria

- Erosion Risk (high/medium/low – H/M/L): combination of soil and site factors that directly influence erosion potential such as soil density/compaction, slope angle (steepness), total surface cover, and presence of flow concentration features (e.g. gully, water bar).
- Active Erosion (Y/N): visual evidence of erosion observed.
- Active Deposition (Y/N): visual evidence of sediment deposition observed.
- Proximity to Stream/SEZ (H/M/L): distance from hot spot to stream or SEZ (as the crow flies). Categories are: H = < 100ft, M = 100-500ft, L = > 500ft
- Connectivity to Stream/SEZ (H/M/L): likelihood of runoff and sediment from hot spot being transported to a stream or SEZ. Assessing connectivity requires basic understanding of hydrologic processes and a keen eye in the field yet can be somewhat subjective. In general, high connectivity is characterized by a well-defined drainage path with minimal potential for storage or infiltration (e.g. a relatively steep gully/ditch). Low connectivity is generally characterized as having broad topographic definition and little to no evidence of recent concentrated flow.
- Watershed Priority (H/M/L): overall treatment priority for improving watershed conditions, based on above criteria.

Treatment of Priority Areas

After erosion hot spots are identified and ranked, treatments are developed based on site conditions. By using the Assessment Tiers, treatment goals and operational requirements can be developed. Each hot spot may require a different treatment level ranging from mulch to the “full restoration” with mulch, soil

tilling, seeding and compost application. Heavenly has implemented a range of restoration methods over more than a decade of erosion control work; the goal is to continue to explore innovative approaches to increase cost efficiencies and ecologically sound outcomes in watershed management.

Measurement of Outcomes

For years, monitoring programs at Heavenly have been using protocols that quantify erosion reductions and indicators of erosion resistance. Typically, these methods are used before implementation of erosion control treatments and repeated one year after treatments to assess the effectiveness of a project at reducing erosion and establishing erosion resistance.

Erosion hot spot monitoring methods that are used at restoration sites at Heavenly are listed below is a brief description of the primary assessment approaches being used to measure erosion resistance and treatment effectiveness at Heavenly restoration sites. These methods can be used individually or in combination as assessment “tiers”, included in Attachment A. Monitoring approaches can be adjusted to best suit site conditions, assessment and management needs, and treatment goals for specific projects and/or watersheds. Monitoring will be more intensive on some projects and less intensive on others, depending on the site’s erosion risk and confidence in the repeatability of results from past projects with similar treatments.

Erosion Hot Spot Monitoring Methods

- Visual Erosion Assessment: visually identify physical signs of erosion from direct or indirect field evidence in order to trace them to their source, characterize their nature and cause(s), and use this information to develop appropriate treatments.
- Cone Penetrometer: depth to refusal at a given pressure (typically 350 PSI) is relatively rapid and easy to measure and provides an important index of soil density/compaction.
- Cover Characterization: assess percent total cover, mulch cover, and plant cover using photo grid method and/or ocular estimates. These methods are far more rapid than transect-based approaches and since vegetation cover alone has been shown to have little to no correlation with sediment yield reductions at Heavenly, it is not necessary to be overly precise with plant cover measurements. Dominant vegetation species will be noted, as well as presence of any noxious weeds.
- Soil Assessment: field assessment of soil color, structure/texture, and other edaphic factors that provide insights into longer-term erosion resistance and the site’s ability to eventually support an appropriate deficiencies) and then again 2-3 years post-treatment for lab analysis of key indicators of soil “capital” such as organic matter and total nitrogen.
- Runoff Simulation: less time required than rainfall simulation and provides useful information about erosion processes and a site’s erosion resistance, particularly with the coarse granitic soils at Heavenly (simulates snowmelt rather than rainfall). Runoff simulation is typically conducted on plots 1 meter wide and 2-4 meters in length, which enables assessment of runoff and erosion processes that are likely to be more representative of larger areas. Erosion measurements include: surface runoff velocity (ft/min), time and distance to rilling, rill characterization (#, soil loss), as well as site description elements such as slope angle, cover composition and litter depth.

- **Rainfall Simulation:** provides direct measurement of soil infiltration rate (in/hr), sediment yield (lbs/acre/inch), time to runoff, and other key erosion-related factors. Rainfall simulation is conducted on 1 square meter plots (smaller than runoff simulation plots) and resulting data is readily comparable to other sites and the large database of rainfall simulation data collected on past Heavenly projects and other projects throughout the Tahoe Basin.

BMP Effectiveness Monitoring & CERP Reporting

In 2017, RCI performed BMP Effectiveness monitoring in accordance with the 2005 modified protocol. The WDR requires Heavenly to implement and report the results of the CERP, including the review of the temporary and permanent construction BMPs implemented at the Resort. The existing monitoring protocol (developed from the USFS BMP Effectiveness Program and modified specifically for Heavenly) satisfies the WDR and has the benefit of producing results that can be compared to data collected since 2005.

The goal of the BMP Effectiveness Monitoring Program is to assess temporary BMPs at on-going construction sites and permanent BMPs after construction completion. BMPs are structural and non-structural measures used to reduce soil movement and resist erosion, control surface runoff, and improve runoff water quality. BMPs at Heavenly are applied to roads, ski runs, construction projects, and facilities such as buildings, lift terminals, utilities, and parking lots.

BMP Effectiveness evaluation forms have been updated and streamlined over more than a decade of monitoring but still include the same assessments for comparison purposes, which aids in preparation of the comprehensive report required every 5 years. Temporary BMP evaluations (Form HV-1) are generally conducted biweekly during construction. Permanent BMP evaluations (Form HV-2) are conducted upon construction completion and at one-year post-construction. Sites in close proximity to surface waters and SEZs are evaluated on three-year intervals after construction completion. Both types of BMPs are also monitored following storm events. BMP Effectiveness Monitoring reports have provided annual recommendations for enhanced planning, implementation, effectiveness and monitoring of BMPs at Heavenly since 2005. Following the adaptive management approach, Heavenly has reviewed the results and recommendations in the reports to improve the BMP implementation and maintenance program each year. Attachment C includes the BMP Monitoring Field Instructions with Rating Criteria Tables, Attachment D includes 2017 BMP Effectiveness Recommendation & Response Tables, Attachment E includes the 2017 BMP Effectiveness Monitoring Assessment Summary, and BMP Assessment Forms are included in Attachment G.

Planning

Heavenly's planning for BMP related projects begins during the winter season when annual reporting is in progress. The Annual Work List provides a reference for Heavenly and consultants conducting monitoring to track anticipated capital projects, maintenance projects and BMP related projects. During the year, Heavenly staff provide status updates on project progress; at the end of the construction season, the completion status of each project is at the end of the construction season. Table 1 (Attachment C) includes the BMP retrofit and maintenance projects completed in 2017 based on recommendations made

in 2016, Erosion Hotspots identified in the Epic Discovery EIR/EIS/EIS, and ongoing maintenance inspections conducted by Heavenly.

A new addition to the planning process in 2017 was the inventory maintained by Heavenly's Snow/Ground Surfaces Manager. Maintenance and capital projects were tracked and updated throughout the construction season. The inventory includes useful information such as project tasks and location, schedule, personnel required, estimated hours of labor required, priority ranking, materials anticipated, and actual material imported or utilized. Projects were categorized by "mountain inspections/monthly tasks," "BMPs, waterbars, water control and repair", "Epic Discovery", "Trees and Brushwork", and "Other Projects." This inventory helped facilitate and track projects for Heavenly's budgeting and scheduling purposes throughout the year as well as coordinate with BMP inspection, maintenance and monitoring.

Additional recommendations developed from monitoring effectiveness of temporary and permanent BMPs are summarized in Attachment E. Inspectors consistently refer to these observations as supplemental guidance for assessing project implementation.

BMP Implementation & Effectiveness

Heavenly continues to utilize observations and recommendations made through the BMP monitoring program to improve BMP implementation and maintenance practices using the adaptive management approach. Over more than a decade, Heavenly has tested different temporary construction BMPs to determine the most effective methods to utilize on the Mountain. The BMP training program continues to expand at Heavenly and increase general BMP awareness company-wide. Recommendations for Permanent BMPs and Temporary BMPs from past years and Heavenly's solutions are summarized in Tables in Attachment D.

Proper BMP implementation and consistent maintenance leads directly to increased BMP effectiveness. Experienced supervisors and field crews have taken an active role in applying past knowledge of what works and what does not (adaptive management) to create successful BMP projects. This knowledge has led to Heavenly tackling complex projects that address erosion from multiple sources such as roads, ski runs, and facilities. Examples of these projects completed this year are the Hand Grenade Chute project which addressed erosion from road switchbacks crossing a ski run and a road segment and Maggie's Run which provided stabilization to road shoulders, conversion of water bars to infiltration swales, and water bar outlet protection and maintenance. Combining the elements learned from restoration and erosion control work over the years has produced effective, multi-layered projects with high success rates.

Commitment to successful restoration and erosion control projects is reflected in inventory tracking list developed by Heavenly. To complete BMP and restoration projects in 2017, 112 pounds of seed, 175 cubic yards of pine needles, 54 cubic yards of wood chips, 259 tons of drain rock and riprap, 710 tons of road base and 2 totes of liquid road binder were used on the Mountain. In addition to materials used, nearly 4,100 staff hours were dedicated to these projects.

As required by the WDR, roads monitoring is required to be conducted in accordance with USFS protocols as required by Heavenly's Road Maintenance Agreement with the LTBMU for system roads. This annual monitoring has replaced previous protocols that required roads monitoring on three-year intervals including Water Erosion Prediction Program (WEPP) Modeling, water quality risk assessment protocol (WQRAP) ratings and the BMP Effectiveness Program monitoring for roads. In keeping with the WMRP

approach to provide targeted monitoring to address on-the-ground erosion issues, Heavenly has moved to track road projects on a more regular basis (annually).

Heavenly maintained or improved 7.1 miles of roads on the Mountain in 2017. Road improvements include road base placement (Orion, NV Trail, Round-about) and application of emulsifying liquid road binder (Orion's Run and Hellwinkel's in 2016). Additionally, many road shoulders throughout the Mountain were covered with pine needle or wood chip mulch to slow sheet flow leaving road surfaces and discourage vehicle traffic outside of road corridors. A 2,000-gallon water tanker truck was used for dust abatement on roads, which are the largest potential source of dust on the Mountain. Approximately half of the 30 miles of roads are watered daily; unless rain events provide sufficient moisture. The most effective road BMPs continue to be regularly completed maintenance to repair roads after snowmelt and storm events. Road Maintenance Monitoring documentation is included in Attachment F.

Monitoring

As discussed previously, the BMP Effectiveness Monitoring Program has been conducted in conjunction with the WMRP. The BMP Effectiveness Monitoring Program continued to follow similar protocols to produce results comparable to previous years. As a result, new streamlined evaluation forms were used to collect data in the field using a tablet and printable on one sheet to save paper and increase efficiency. The forms were developed to coincide with the existing MS Access database where evaluations have been logged since 2004.

Conclusions

In 2017, Heavenly was committed to maintaining a targeted approach to watershed management by controlling erosion, managing sediment and improving water quality. Focusing on effective soil cover at restoration sites and treatment of high priority erosion hot spots remain top goals. Heavenly continues to explore innovative, new techniques that are specifically tailored to the unique mountain environment. The combined WMRP monitoring and BMP effectiveness monitoring help support the watershed management efforts by providing insights that Heavenly can incorporate into the program. The following provides an overview of some of the methods used and efforts made in 2017.

WMRP Monitoring & Hot Spot Assessments

Methods that have been employed as a result of the WMRP monitoring and the hot spot assessments include mulch application on large scales, mulch filter berms, converting water bars to swales, soil-based treatment approaches, and prioritizing projects with high connectivity to surface waters.

In past years, ski runs were seeded and irrigated throughout the summer growing season. This vegetation was extremely difficult to maintain since irrigation can only occur in areas where snowmaking water lines are located. Studies conducted by IERS in past years have found that surface mulch cover is more effective at reducing erosion than vegetative cover. However, large-scale mulch application can be difficult on steeper ski runs. In 2016, a mulch blower or Shred-Vac was used to spread mulch in areas above Sky Meadows and Heavenly Valley Creek. In 2017, hand crews spread mulch in larger areas such as Middle Stagecoach and the Groove Upper Terminal. A hydroseeder was borrowed from Northstar and used to

blow seed and tackifier on the Hand Grenade Chute restoration project. In areas where mulch or tackifier had been applied, less erosion and sediment transport was observed.

Mulch filter berms were implemented in 2016 on large ski runs above Sky Meadows. Following the large snow year and subsequent runoff of 2017, some of the filter berms were unable to infiltrate runoff and had blow-outs. Rilling down the ski slopes was relatively minor but, in some areas, soil slumping was observed. This indicates that mulch filter berms may operate effectively to infiltrate typical runoff flows or storm events but not surprisingly, are less effective at abating erosion from historic winter snowmelt or very large thunderstorm events.

Water bars are prevalent throughout the Mountain on roads and ski runs to collect runoff and direct it to adjacent rock or wooded areas. If water bar outlets are not properly stabilized, they can result in excess erosion. Heavenly continued working on converting some water bars to infiltration swales, which are wider, shallower and have deeply tilled in mulch treatments and are sometimes seeded and given the full restoration treatment. These infiltration swales slow and disperse flows and prevent larger scale erosion from occurring.

According to the rating criteria in the WDR, WMRP projects for 2017 received an overall score of “Excellent” since all WMRP projects (erosion hot spots) were implemented and maintained according to Annual Work List timeline.

BMP Effectiveness

As previously stated, the annual monitoring conducted for facility maintenance and construction projects during this construction season utilized updated versions of the HV-1 and HV-2 forms using the same BMP Effectiveness monitoring protocols followed in past years. A total of 95 Permanent BMP evaluations were performed at 54 different sites. The evaluations included post-construction monitoring at 3-year intervals and follow up visits after maintenance activities. Post-storm event monitoring was also performed after three events; rain gauges installed throughout the Mountain captured 0.75 inches, 1.2 Inches and 2.0 inches for the three events.

Permanent BMPs monitored were fully implemented at 100% of the sites evaluated, which indicates permanent BMPs were installed in accordance with project specific plans and the CERP throughout the Resort. Further, 96% of the sites monitored for permanent BMPs were effective. Scheduled maintenance of existing structures continues to be a priority at Heavenly, which results in high effectiveness scores. Heavenly brings knowledge from over a decade of experience with BMP installation and maintenance methods to positively influence permanent BMPs installed on the Mountain. Due to the heavy winter snow, the only one construction project was evaluated for temporary BMPs; this project was the repair work on the Alpine Coaster. Three temporary BMP evaluations were performed at this site, which received scores of 100% implemented and 100% effective. A summary of BMP Evaluation Forms are included in Attachment G.

According to the rating criteria in the WDR, BMP Effectiveness for 2017 received an overall score of “Excellent” since 90% or more of the BMPs were implemented correctly and functioning effectively; there was no evidence of sediment leaving sites and entering the stream channels.

Recommendations

Planning & Communication Process

- Continue to prioritize projects on the Annual Work List using erosion potential and water quality risk and provide status updates throughout the construction season.
- Continue to integrate capital and maintenance projects with erosion hot spot treatments into the Annual Work List to support coordination for scheduling, budgeting and staffing.
- Maintain collaboration efforts between departments to maximize staff time and resources to complete Annual Work List projects. Clear and consistent communication between management and field crews is critical to successful project completion.
- Distribute maps to supervisory staff and field crews showing locations of projects on the Annual Work List with features such as streams, SEZs, roads and lifts. Mapping can support communication between management and field staff and provide a simple format for both field-documenting erosion hot spots and reporting/communicating watershed management efforts and completed projects.
- Review the CERP prior to developing plans or projects to help select suitable Temporary and Permanent BMPs.

Implementation Process

Restoration Treatments

- Continue to experiment with creating mulch berms across large ski runs, especially in areas with limited equipment access and not in close proximity to SEZs.
- Continue utilizing equipment like the hydroseeder or Shred-Vac to assist in restoration treatments on large ski runs.
- Continue to age wood chips for one year prior to application when possible to facilitate the decomposition process.
- Increase areas of mulch application especially along road shoulders, near SEZs and where it can be a first step toward a full restoration treatment in a future season.
- Where irrigation is required to support vegetation establishment, utilize low-flow, deep-cycle irrigation methods to minimize water use, eliminate irrigation-caused erosion and establish deeper-rooting plants.
- Develop field forms to coincide with the inventory tracking efforts to document site-specific treatments to help understand and improve treatment cost effectiveness.

BMPs

- Continue to develop project designs and specifications using temporary and permanent BMPs that are the most effective at Heavenly. Tables 2 and 4 in Attachment D should be referred to during the BMP plan development process.
- Continue to ensure all staff and especially new employees attend the annual “BMP Breakfast” training session to become familiar with compliance requirements and the internal water quality program. It

is essential for conveying the importance of BMPs to staff, third party vendors, utility companies and outside contractors with Mountain access. The training program reinforces Heavenly's commitment to resource protection and BMP compliance.

- Remind all employees throughout the construction season including outside contractors to obey closure areas and look out for erosion issues or BMP deficiencies on the Mountain and report them to supervisors.
- Maintain commitment to prioritize BMP implementation during the construction season. The experienced team of the Environmental Manager, Base Operations Manager, Snow Surfaces Manager, Trail Crew Supervisors and seasonal trail crews provide continuity and commitment to environmental stewardship on the Mountain.

Effectiveness & Maintenance Process

- Maintain dedication to experimenting with new erosion and sediment control techniques and technologies. Tables 3 and 5 in Attachment D should be used as a reference for reviewing project BMPs for effectiveness.
- Continue to schedule regular maintenance inspections and coordinate on action items to support BMP effectiveness. The Snow Surfaces Manager and the Environmental Manager plays a vital role in the BMP Effectiveness Monitoring Program at Heavenly coordinating training sessions, tracking project status and directing maintenance work at Heavenly, all of which are key to achieving BMP effectiveness.
- Utilize the summer trails work list tracking spreadsheet developed to track and prioritize project tasks, materials, staff and equipment needs. This was an extremely useful tool for planning as well as developing effective BMP treatments.

Monitoring & Assessment Process

- Continue conducting monitoring and reporting for the WMRP and BMP Effectiveness concurrently to increase field efficiency and report consistency.
- Request field crews to use internal tracking documents such as the Resort Excavation Authorization Form to encourage staff working on BMP implementation, maintenance and restoration to take active roles in creating successful projects.
- Identify, assess and develop integrated plans to resolve road system drainage issues.
- Review the USFS National Core BMP Program for selecting, implementing and monitoring water quality BMPs and applicability to the monitoring requirements at Heavenly.
- Review the TMDL reporting requirements for potential applicability for monitoring.

Attachment A

2017 Erosion Hot Spot Summary Tables

Hot Spot #	Erosion Risk	Active Erosion	Active Deposition	Proximity to Stream/SEZ	Connectivity to Stream/SEZ	Watershed Priority	Problem Description	Treatment <i>Recommended/ Implemented</i>
2017								
1	H	Y	Y	L	L	M	Gully formed on slope from road drainage above.	Rock Armor Gully, Restore Water Bar above switchback to function properly or convert to infiltration swale, Rip and chip steep ski slope, install new 12" culvert at the road crossing.
3	H	Y	Y	H	H	H	Ski run with dense soil, little cover and drains direct to creek.	This area is located uphill of the culvert crossing where Maggie's Run intercepts the Summer Road below the switchback at the aspens. Mulch application and removal/re-grade of 1-2 Water Bars into infiltration spreading areas.
4	H	Y	Y	H	H	H	Small gully connecting road runoff to creek.	Chip and rip road shoulder (To spread and infiltrate runoff) & add Pine Needle wattles as a sediment barrier. This is the area near the first Water Bar below Cal Dam.
5	H	Y	Y	H	H	H	Water bar creates quasi-basin off Maggie's, which overtops to down drain direct to creek when full.	Minor reshaping of "Basin" area & chip & rip treatment to maximize infiltration and reduce overtopping and runoff to the creek.
6	H	Y	Y	L	L	M	Giant sediment plume and incising waterbars downslope of road, all caused by concentrated road runoff.	Create infiltration spreading area by loosening deep gully and restoring it as in an infiltration swale.
9	H	Y	Y	H	H	H	Large plume of deposited sediment and eroding slope above (just downslope of 277 sidehill).	Stabilize bare soil areas with full restoration treatment and/or rip and chip; mulch filter berm or Pine Needle wattles needed.

Hot Spot #	Erosion Risk	Active Erosion	Active Deposition	Proximity to Stream/SEZ	Connectivity to Stream/SEZ	Watershed Priority	Problem Description	Treatment <i>Recommended/ Implemented</i>
45	H	Y	Y	H	H	H	Very steep section of road (Hellwinkle's) is delivering sediment downslope into a fingered section of the north fork of the SEZ channel above Sky Meadows culvert. Rills and gullies formed on hillside below road and above channel.	Continue monitoring and maintaining treatments annually.
Prior Years								
2	H	Y	Y	H	H	H	Powderbowl lower slope (directly above creek).	2012: Full Hogan treatment completed. Slope remains stable
7	M	Y	Y	L	L	M	Road drainage to breached WB formed gully down fir-covered ski run.	<i>Maintain drainage to WB on ski run. Rake out gully. Apply thick mulch to lower ski run above road.</i>
8	H	Y	Y	H	M	M	Gully down 277 sidehill below mid-slope WB.	2015: Road drainage re-directed. Gully filled in and wood chips. Incorporated seed and mulch.
10	H	Y	Y	H	H	H	Road drainage/erosion issues into SEZ above snow beach.	PN wattles already installed as temp protection. Stabilize compacted/bare source areas along roads upslope (e.g. Chip 'n' rip). Heavy chip 'n' rip below road to create spreading/infiltration area with high surface roughness
11	H	Y	Y	M	M	L	Gully on slope created from concentrated road drainage.	<i>Re-orient road drainage or rock-armor gully.</i>

Hot Spot #	Erosion Risk	Active Erosion	Active Deposition	Proximity to Stream/SEZ	Connectivity to Stream/SEZ	Watershed Priority	Problem Description	Treatment <i>Recommended/ Implemented</i>
12	M	Y	Y	M	M	M	Combination of ski run erosion and road drainage near Patsy's chair. Head cutting along rock swale near summer road. Roadside swale buried in sediment. Several bare areas and gullies on ski run.	2016: Basin maintained and rock swale apron rebuilt. <i>Consider surfacing road to reduce erosion. Stabilize bare/eroding areas on ski run. Maintain portions of rock armored swales and till in chips under swales to increase infiltration.</i>
13	H	Y	Y	M	H	L	Water bar draining to reservoir.	2015: Infiltration swale constructed and wattles installed.
14	H	Y	Y	M	M	L	Water bar draining to reservoir.	2015: Infiltration swale constructed and wattles installed.
15	H	Y	Y	H	M	L	Water bar draining to reservoir.	2015: Infiltration swale constructed and wattles installed.
16	H	Y	Y	H	H	L	Water bar draining to reservoir.	2015: Infiltration swale constructed and wattles installed.
17	H	Y	Y	H	H	H	1st WB below reservoir on Maggie's, drains direct to creek.	2014: Wood chips applied along shoulders. PN wattles installed and maintained throughout season. Check dams and wattles added above creek.
18	H	Y	Y	H	H	H	2nd WB below reservoir on Maggie's, drains direct to creek.	2014: Wood chips applied along shoulders. PN wattles installed and maintained throughout season. Check dams and wattles added above creek.
19	H	Y	Y	M	M	M	WB along Maggie's, first below intersecting road (drops of steep slope).	2014: Wood chips applied along shoulders. PN wattles installed and maintained throughout season.
20	H	Y	Y	M	M	M	WB along Maggie's.	2014: Wood chips applied along shoulders. PN wattles installed and maintained throughout season.
21	H	Y	Y	M	H	H	WB along Maggie's, obvious flow accumulated above road.	2014: Wood chips applied along shoulders. PN wattles installed and maintained throughout season.

Hot Spot #	Erosion Risk	Active Erosion	Active Deposition	Proximity to Stream/SEZ	Connectivity to Stream/SEZ	Watershed Priority	Problem Description	Treatment <i>Recommended/ Implemented</i>
22	H	Y	Y	M	M	M	WB along Maggie's, starting to flatten out (geogrid on slope).	2014: Wood chips applied along shoulders. PN wattles installed and maintained throughout season.
23	M	Y	Y	H	H	H	Lower Pioneer Poma - several water bars concentrate surface runoff into swale down middle of ski run, which routes sediment to SEZ.	2013: Full Hogan and chip 'n' rip treatments completed.
24	H	Y	Y	H	H	H	Water bar drains direct to creek.	2014: PN wattles installed and maintained above Creek
25	H	Y	Y	H	H	M	Ditch between road and eroding cut slope. Major deposition. Requires frequent maintenance.	<i>Stabilize cut slope (install a few small test treatments). Use pine needle check dams to trap sediment and determine slope areas producing most sediment.</i>
30	L	N	Y	H	H	M	Bare and poorly vegetated area under Sky Deck (~3000sf).	2016: 12 pounds of riparian seed raked in and mulched with pine needles under Sky deck.
31	M	Y	Y	H	H	H	Erosion from bare ski run area above road (and on road) directly to meadow below.	2015: Mulch application completed on road shoulders above meadow. Erosion from compacted bare areas above road still needs to be addressed.
32	M	Y	Y	H	H	H	Rock-lined swale around Canyon base filled with sediment. Sediment plume into meadow.	2015: Sediment removed and pine needle check dams added to drainage.
33	H	Y	Y	H	M	H	Steep ski run (Lower Double Down) with low surface cover and sparse trees. Water bar near bottom of run filled with sediment and overtopped.	2015: Pine needle filter berms installed across slope. Water bar tilled and converted to infiltration swale.

Hot Spot #	Erosion Risk	Active Erosion	Active Deposition	Proximity to Stream/SEZ	Connectivity to Stream/SEZ	Watershed Priority	Problem Description	Treatment <i>Recommended/ Implemented</i>
34	H	Y	Y	H	H	<u>H</u>	Steep ski run (Lower Ridge Run/Sky Chute) with little surface cover and widespread erosion. Several v-shaped water bars direct water to a culvert system that leads to meadow and several water bars have overtopped (causing erosion downslope).	2015: Water bar to swale conversation. Nearly 1 acre of mulching and mulch berms completed on ski run.
35	M	N	N	H	H	<u>H</u>	Bare, compacted vehicle turnaround and access to Sky lift base ~20ft from creek channel.	2014: Thick wood chip mulch added to turnaround.
36	H	Y	Y	M	H	<u>H</u>	Water bar in road causing erosion under large ski run sign, compromising power box, and contributing runoff and sediment to ski run below (Lower Ridge Run - Hot Spot #34).	2015: Infiltration swale created, and pine needle wattle installed.
37	H	Y	Y	L	H	<u>H</u>	Road drainage collects at V-shaped water bar with culvert direct to meadow. Erosion along water bar (head cutting). Water bar overtopped at culvert inlet, causing erosion downslope.	2015: Infiltration swale created and pine needle wattle installed.
38	H	Y	Y	L	H	<u>H</u>	Road drainage directed along water bar on ski run. Erosion along water bar and downslope where water bar has overtopped.	2015: Infiltration swale created and pine needle wattle installed.

Hot Spot #	Erosion Risk	Active Erosion	Active Deposition	Proximity to Stream/SEZ	Connectivity to Stream/SEZ	Watershed Priority	Problem Description	Treatment <i>Recommended/ Implemented</i>
39	H	Y	Y	L	H	L	Large ephemeral drainage. Lots of woody debris in flow line and moderate mulch cover in surrounding areas.	<i>No action recommended.</i>
40	H	Y	Y	L	M	L	Many water bars on High Roller ski run above and below summer road. Many had failures where they overtopped, causing erosion downslope.	<i>Rehab water bars at failure points and convert into infiltration swales through soil loosening, wood chip incorporation (~10,000-15,000sf).</i>
41	H	Y	Y	L	H	M	Ski run (Upper Ridge Run) with 6 eroding water bars that direct runoff into large drainage that eventually outlets at the Canyon lift base and connects to Sky Meadow. Many water bars have failures.	2016: All 6 water bars were chipped, deeply loosened (>24"), seeded and mulched in 2016. Pine needle wattles were installed at inlets along road.
42	M	N	N	H	H	M	South fork of SEZ channel above Sky Meadow culvert with mostly bare soil and moderately steep slopes on both sides of channel. Old decomposed jute and plastic netting observed from previous USFS erosion control efforts. Generally, no visible erosion from banks. Channel is somewhat straight and incised but no significant head cuts or bank erosion observed.	2016: Full restoration treatment implemented on approx. ~5000sf of bare soil along channel. 25 lbs. of seed, 40 pounds of Biosol fertilizer, 4+ cubic yards of wood chips moved to site with trash cans and spread as mulch.

Hot Spot #	Erosion Risk	Active Erosion	Active Deposition	Proximity to Stream/SEZ	Connectivity to Stream/SEZ	Watershed Priority	Problem Description	Treatment <i>Recommended/ Implemented</i>
43	M	Y	Y	H	H	M	Bank erosion and sediment plume in south fork of SEZ channel above Sky Meadows culvert.	2016: Rock riprap installed for bank protection.
44	M	Y	Y	H	H	M	Sediment plume in south fork of SEZ channel above Sky Meadows culvert. Sediment appears to have come from short section of rock-lined swale upslope of creek. No obvious bank erosion.	2016: Decommissioned the rock-lined swale, which unnecessarily collected dispersed runoff from rocky slope above it (~1000sf). Pulled the rocks from lower half of the rock lined swale and loosened the soil, applied small amount of seed and PN. Used rocks to line the upper portion, left side of the stream banks below. The upper section above the log seemed to be working well collecting sediment, and the lower section was filled in with vegetation. Lower ½ of the rock lined ditch angular rock removed and relocated to stream bank edge for stability of bank.
46	H	Y	Y	H	H	H	Very steep section of road (Hellwinkle's) is delivering sediment downslope into a fingered section of the north fork of the SEZ channel above Sky Meadows culvert. Minor rilling on hillside below road and above channel.	2016: Road treated with surface stabilizing agent. French mattress drain installed to prevent spring from daylighting on road. Both water bar outlets have multiple wattles and rock riprap to protect minimize erosion and sediment transport to meadow/creek below. Continue monitoring and maintaining these treatments annually.

Hot Spot #	Erosion Risk	Active Erosion	Active Deposition	Proximity to Stream/SEZ	Connectivity to Stream/SEZ	Watershed Priority	Problem Description	Treatment <i>Recommended/ Implemented</i>
47	M	Y	Y	L	H	L	Large ephemeral drainage at crossing with lower California trail. Relatively stable and well vegetated with small meadow below road crossing. Evidence of flow during rain events but no obvious sediment transport.	<i>No action recommended</i>
48	M	Y	Y	L	M	L	Well-established gully formed at downslope end of lower California trail. Collects water from large drainage area. Moderate amount of erosion and deposition observed from rain events.	2016: Full restoration treatment along gully (maintain general swalelike shape) to slow and infiltrate surface runoff during spring snowmelt and rain storms. Installation of mulch filter berms (~1500sf). 250 gallons of WC transported by hand (via garbage cans/wheel barrow) to treatment area. 1300 gallons of pine needles transported by hand to treatment site. Soil loosened by hand and full restoration treatment completed. 3 pounds of seed and 15 pounds of Biosol fertilizer applied.
49	H	Y	Y	H	M	H	Steep ski run (Lower Liz's) with compacted soil, moderate veg cover, and visible rilling. Water bar near bottom of run filled with sediment and overtopped in several locations.	2015: Water bar converted to infiltration swale and mulch berms installed on ski run upslope.

Heavenly Erosion Assessment Tiers

Tools	Tier 1 - Visual	Tier 2 – Soil/Site Condition	Tier 3 - Performance
Visual Erosion Assessment	X	X	X
Cone Penetrometer		X	X
Cover Characterization (mulch and veg cover, litter depth, veg composition)		X	X
Soil Assessment		X Visually assess texture, color, root penetration, soil development, etc.	X Same as Tier 2 + collect samples for analysis (organic matter, N)
Runoff/Rainfall Simulation			X
Purpose	Identify erosion problems and trace them to their source(s).	Characterize the nature/cause of erosion areas and develop appropriate treatments. This level of assessment will be applied to most sites before/after treatment and can be efficient at larger scales.	Directly assess erosion processes and post-treatment erosion reductions. This level of assessment will be applied at a smaller number of selected sites where new types of treatments and/or site conditions are being assessed.
Level of Effort	Low	Low to moderate	Moderate to intensive
Spatial Scale	Small catchment to whole watershed	Plot scale up to project treatment area (< 1 acre)	Plot scale up to project treatment area (< 1 acre)

Attachment B

2017 Key Project Summaries & Hot Spot Photos

Key Project Summary – Hand Grenade Chute/Corner: CA-1 Hot Spot #1

Hand Grenade Chute (Corner) received a full restoration treatment and culvert installation to address drainage from multiple locations. The steep ski slope was receiving runoff from upgradient road switchbacks and discharging across the lower switchback of the road. An existing waterbar was directing runoff from the upper switchbacks to the lower road which resulted in continual maintenance issues after storm events. A gully was also forming from the upper switchback and causing additional maintenance issues.

The goal for the restoration treatment was to install rock armor on the gully, restore the water bar above the switch back to function properly, “rip and chip” the steep ski slope and install a new culvert at the road crossing. The restoration treatment included 21 cubic yards of pine needle mulch, 18 cubic yards of wood chips, 22 tons of riprap and 20 pounds of Heavenly seed mix. A hydroseeder was used to apply mulch and seed to the slope. A row of pine needle wattles was installed at the toe of the slope. The “rip and chip” method involves tilling and loosening the soil to provide depressions for water to collect (“rip”) and mulch application provides organic matter to support microorganism growth in the existing soils (“chip”).

Following the large rain events in August and September, post-storm visual assessments were conducted. By visually assessing the treatments following rain events, a cursory view of the performance was established. If failures had been identified, corrective actions would have been taken. However, as the photos below show, the project site looked excellent following the rain events. Additional project performance will be evaluated after the winter season in 2018.



Hand Grenade Chute Before: bare soils, rilling, water bar minimally functioning



Hand Grenade Chute After: erosion resistance significantly improved on steep slope and toe of slope protection provided by cutoff ditch and pine needle wattle



Hand Grenade Chute After: erosion resistance significantly improved on lower road shoulder with pine needle mulch and seed



Hand Grenade Chute After: rock riprap protection on gully with geotextile and covered culvert inlet to pass flows across roadway

Key Project Summary – Maggie’s Run: CA-1 Hot Spot #3, 5

Maggie’s Run is comprised of a road segment bordered by a flat shoulder on one side and Heavenly Valley Creek on the other side. Without controls, sediment from the roadway has the potential to impact the stream segment. Over the past several years, Heavenly has refurbished water bars and established effective outlet controls using a series of pine needle wattles and rock check dams to prevent sediment transport to the creek.

In 2017, additional efforts were made to convert an existing water bar into an infiltration spreading area and reconnect a culvert to pass runoff. The lower portion of the run was mulched with 75 cubic yards of pine needles to further slow and infiltrate runoff. In addition, the water bars on the road shoulder were refurbished with wood chips. The wood chips were incorporated into the soil after it was loosened and waterbars were reshaped to reduce flow concentration. The goal was to transform the water bars, which were originally designed to concentrate runoff. The photos on the following page show Heavenly’s thorough effort to improve erosion resistance on these high priority erosion hot spots.

While this road segment requires continual maintenance during the summer season, Heavenly makes it a priority to address this section of road following storm events. Visual assessments conducted following storm events showed sediment capture in the water bar outlets and flow spreading throughout the mulched areas. Heavenly prioritizes removing sediment from the water bar outlets to ensure sufficient capacity before subsequent storm events deposit additional sediment. Additional performance monitoring will be conducted in 2018 following the winter season.



Maggie's Run Before: bare soils, waterbar not functioning properly



Maggie's Run After: erosion resistance significantly improved with pine needle mulch and regrading of water bar acting as a basin



Maggie's Run After: gully formed alongside road improved with pine needle mulch



Maggie's Run After: erosion resistance significantly improved with pine needle mulch

CA-1 – Erosion Hot Spot Photos of Completed Work in 2017

Hot Spot 1



Before: Bare ski slope impacted by drainage from switchback above & drainage flowing across roadway.



After: Area hydroseeded, tilled and mulched. Riprap channel directing flows to culvert under road.

Hot Spot 3



Before: Existing vegetation requiring irrigation with little erosion resistance.



After: Mulch application and re-grading of water bars into infiltration spreading areas to increase erosion resistance.

Hot Spot 4



Before: Small gully connecting road runoff to creek.



After: Road shoulder ripped and chipped to spread and infiltrate runoff; pine needle wattles added as sediment barrier.

Hot Spot 5



Before: Water bar creating quasi-basin off Maggie's, which overtops to down drain direct to creek when full.



After: Minor reshaping of "basin" area & chip & rip treatment to maximize infiltration and reduce overtopping and runoff to the creek.

Hot Spot 6



Before: Sediment plume and incising waterbars downslope of road, all caused by concentrated road runoff.



After: Infiltration spreading area created by loosening deep gully and restoring it as in an infiltration swale.

Hot Spot 9



Before: Large plume of deposited sediment and eroding slope above (just downslope of 277 sidehill).



After: Stabilized bare soil areas with full restoration treatment and mulch filter berm. Sediment removed from rock lined channel below sediment plume area.

Hot Spot 45



Before: very steep section of road (Hellwinkel's) delivering sediment downslope near SEZ channel above Sky Meadows culvert. Rills and gullies formed on hillside below road and above channel.



After: Road treated with surface stabilizing agent in 2016. French mattress drain installed to prevent spring from daylighting on road. Both water bar outlets have multiple wattles and rock riprap to protect minimize erosion and sediment transport to meadow/creek. Annual maintenance of treatments.

Hot Spot 46

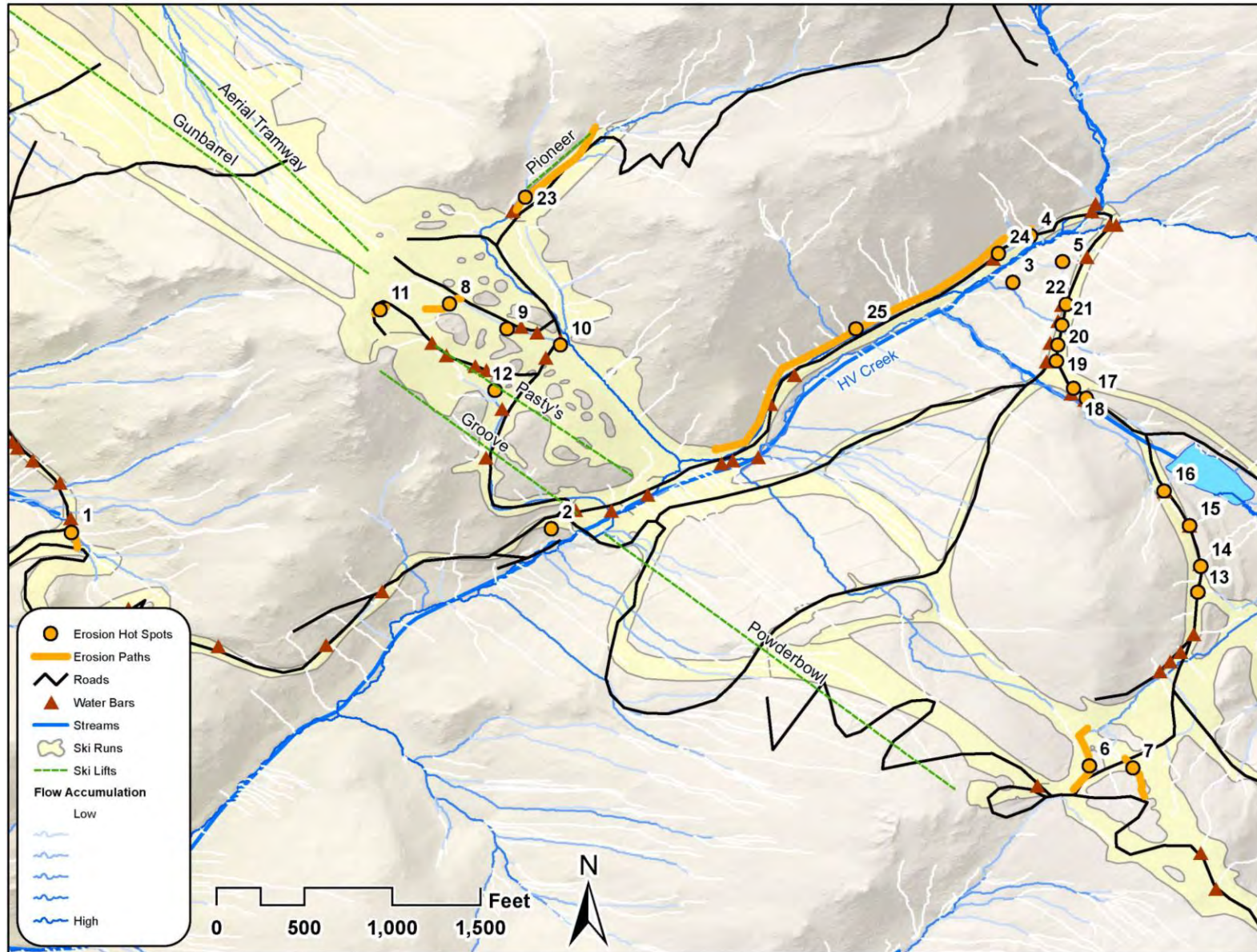


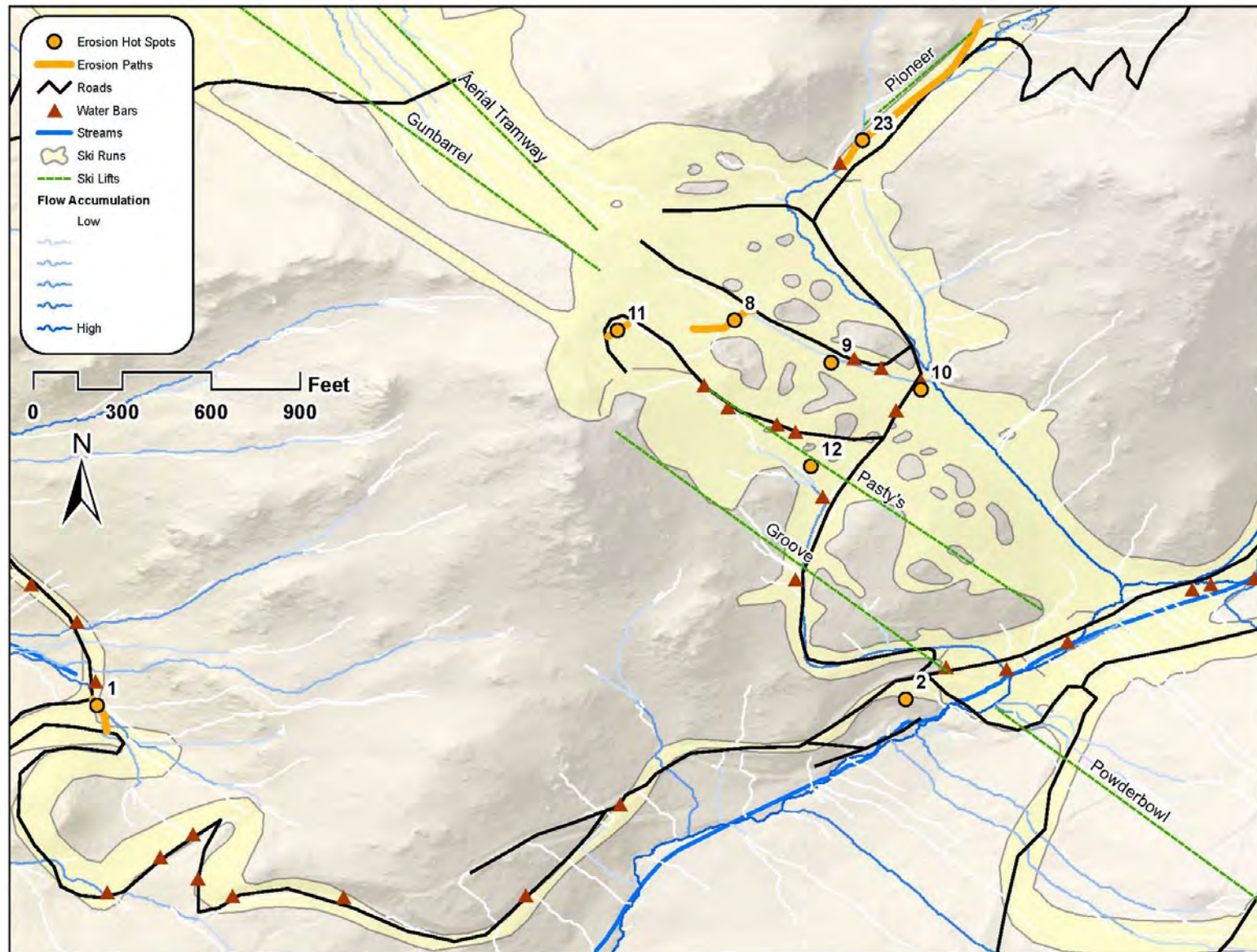
Before: very steep section of road (Hellwinkel's) delivering sediment downslope near SEZ channel above Sky Meadows culvert. Rills and gullies formed on hillside below road and above channel.

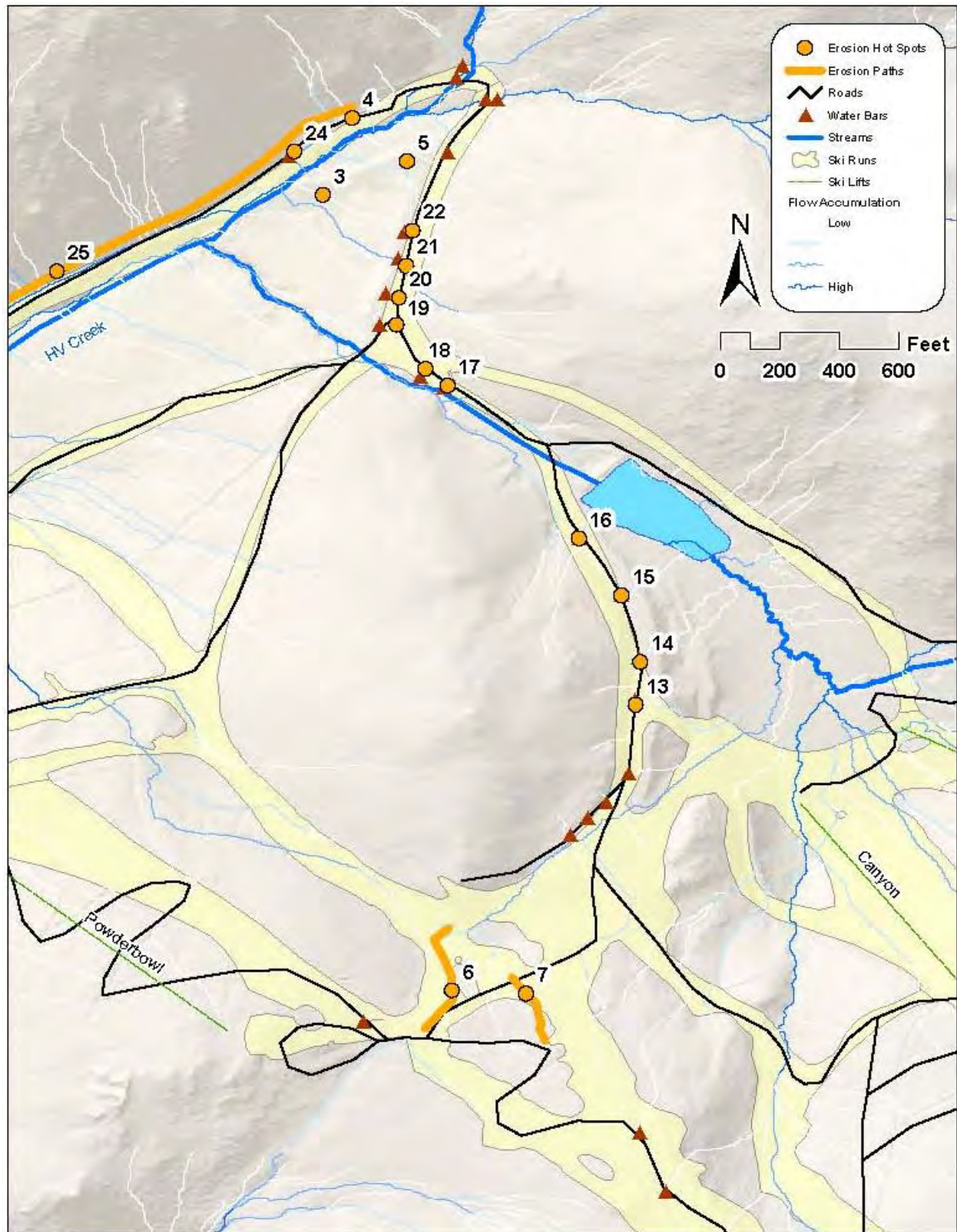


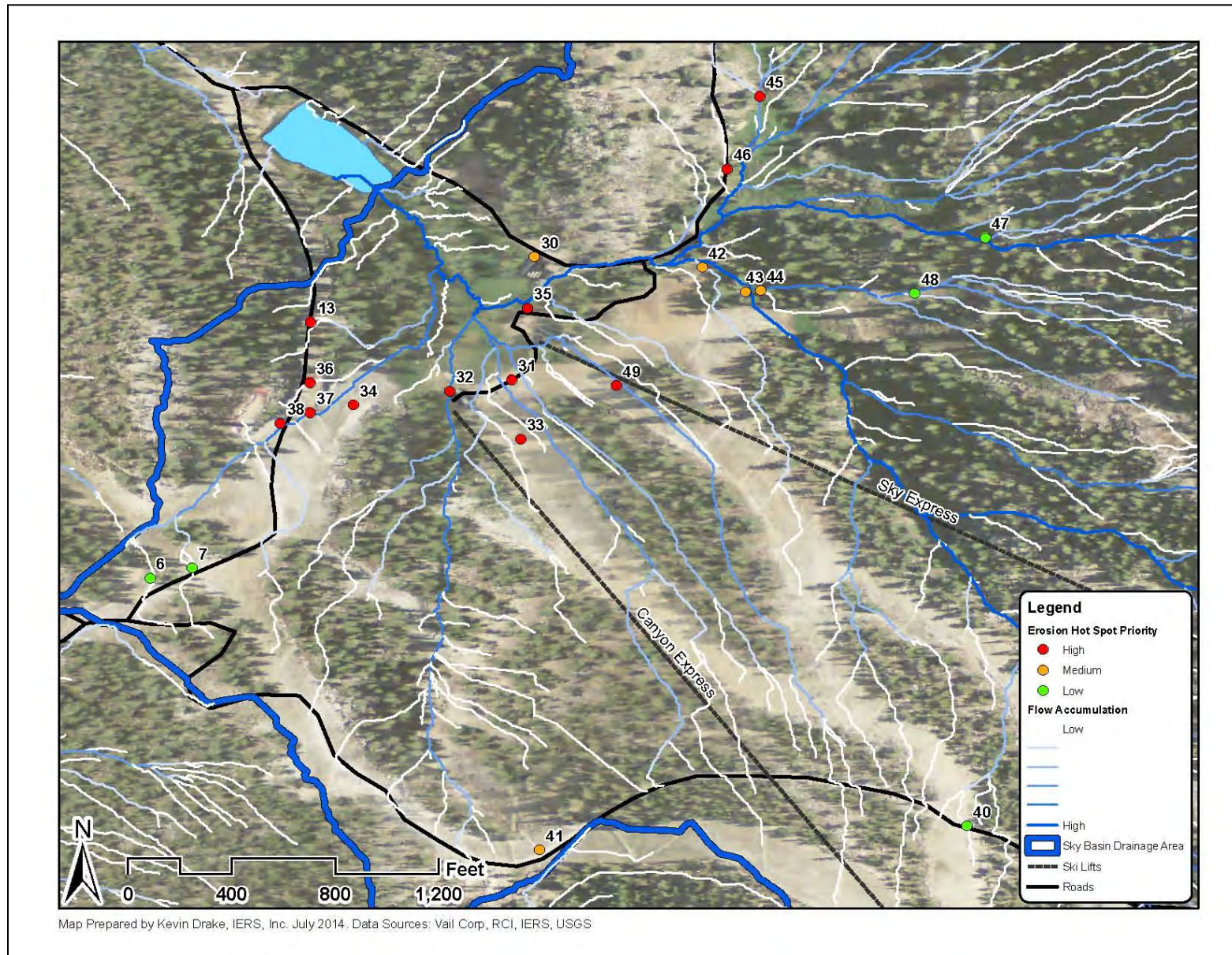
After: Road treated with surface stabilizing agent in 2016. French mattress drain installed to prevent spring from daylighting on road. Both water bar outlets have multiple wattles and rock riprap to protect minimize erosion and sediment transport to meadow/creek. Annual maintenance of treatments.

Hot Spot Summary Maps for Heavenly Creek Watershed (CA-1). Created by IERS









Attachment C

BMP Monitoring Field Instructions and Rating Criteria

Form HV1: Temporary BMP Effectiveness Monitoring
Detailed Evaluation Questions & Answers

Implementation

Implementation Answer Key:

- 1 = Meets/Exceeds 20-yr 1-Hr standards and/or no resource concerns
- 2 = Minor departure from standards and/or minor resource concerns
- 3 = Major departure from standards and/or major resource concerns
- 4 = Repeated departure from standards/failure to address concerns

1. Were source control, drainage and infiltration systems, and hazardous material control systems designed to maintain resource protection during a 20-year, 1-hour storm event, to achieve Forest Service and State water quality standards?
2. Are BMP measures constructed according to contract design specifications?

Effectiveness

Note: Effective and adequate maintenance of BMP measures should be included within the effectiveness evaluation. When topic is not applicable, please make informational comment.

On data sheet, options are meets/exceeds, minor, major, and Not Applicable. Answers correspond with the following for each question:

- 1) Source Control BMP
 - a. Are soil protection measures providing effective cover and erosion resistance?

Select one answer:

- Soil protection measures are effective and no erosion is evident, or expected, on-site or immediately off-site. OR no soil disturbance is associated with project.
- Exposed and/or disturbed soil areas have less than full cover, OR minor erosion, such as infrequent rills or small depositional fans, are evident near erodible soil areas; however, no evidence is observed of sediment delivery to SEZ.
- Substantial areas of exposed erodible soil are not protected and evidence of erosion processes, such as rills or sediment deposition are readily observed. OR any evidence of sediment runoff to SEZ.
- N/A

- b. Are cut and fill slopes protected from surface erosion and slope failure potential?

Select one answer:

- Temporary BMP measures (such as erosion control or geotextile blankets, mulch or pine straw application, encompassing filter fences, berms or designed swales) applied to slope protection is adequate to prevent or severely limit erosion initiation and transport processes. OR project does not require the construction and maintenance of cut and fill slopes.
- Minor erosion and sediment deposition is noted from storms <20-year 1-hour event; however, sediment transport to any SEZ, on- or off-site, is not observed.

- Temporary BMP measures are inadequate to protect erosion from cut and fill slopes from storms <20 year--1-hour event; or any observation of sediment transport and/or deposition within SEZ.
- N/A

2) Runoff infiltration and drainage control system effectiveness

Note: Evaluate any on-site runoff control features, or lack thereof, including any measure designed to direct site runoff or dissipate erosive energy at system outlets, including drainage ditches, constructed berms, erosion cloth placement, constructed swales, driplines, or other designated infiltration areas. Maintenance of these features should also be addressed. When available, verification with water quality monitoring data may be essential to assess the degree of effectiveness.

a. Are erosion control measures applied limiting erosion processes and sediment delivery to SEZ?

Select one answer:

- No evidence of erosion on-site, and no evidence of associated off-site erosion. Existing, or newly constructed, runoff and drainage control measures are adequate to eliminate erosion and sediment transport processes induced by a 20-year 1-hour storm event.
- Observed evidence of minor on-site erosion and sediment transport. Specifically, only minor erosion and/or deposition observed adjacent to any runoff control measures, such as infrequent rill formation near ditch-lines, or at erosion control measures; however, sediment delivery to SEZ is not observed or anticipated.
- Observed evidence of major or substantial project induced erosion, either on- or off-site, such as frequent rills (>3) or any gully exhibiting direct sediment delivery to ditch-line, or erosion control measures overwhelmed (e.g. substantial erosion around or overtop of straw bales/sediment fence/erosion cloth/etc.). OR any evidence of sediment delivery to SEZ.
- N/A

b. Are constructed detention ponds stable and is the site free from unexpected ponding of runoff?

Select one answer:

- No evidence of unexpected ponding on-site, or constructed detention ponds and outlets are stable (naturally stable, stabilized with planted vegetation, or other type of armor) and exhibit no signs of erosion or downstream resource concerns.
- Some evidence of on-site ponding, but does not appear to threaten integrity of fill slopes or foundations. Or minor erosion and/or downslope resource concerns, are evident at constructed basin outlet, such as sediment plumes or small rill formation. However, sediment is not transported to SEZ and is not anticipated from events <20-year 1-hour storm.
- On-site ponding observed that is threatening fill slope or foundation integrity. And/or outlet of ponded area, or constructed basins, exhibit major erosion including substantial scour, rill or gully formation. Or the evidence of any sediment transport to SEZ.
- N/A

c. Are natural or constructed infiltration zones effectively collecting and treating runoff to ensure resource protection during a 20 year, 1-hour storm event?

Select one answer:

- Natural or constructed infiltration zones are effective and properly maintained to ensure resource protection during a 20-year 1-hour storm event.
- Minor resource concern is evident at infiltration zones (for storms <20-yr 1-hr), such as improper maintenance or the lack of proper/adequate bordering material to control distribution of infiltration area; however, SEZ contamination is not observed or likely.
- Major impacts observed on- or off-site or any evidence of contamination within SEZ, such as capacity of infiltration BMP measures have been noticeably breached or exceeded. Major resource concerns (or the need for immediate maintenance) should be brought to the attention of Management.
- N/A

3) Designation of construction zone and any equipment exclusion zones

- a. Are sensitive areas and construction zones adequately flagged and designated as "Equipment Boundary Zones" and is construction equipment observing these zones?

Select one answer:

- Adjacent or inclusive wet/sensitive areas as well as construction site are adequately flagged, and equipment operations avoid infringement upon designated zones.
- Minor breach of designated boundaries, with limited adverse impacts upon sensitive zones or off-site.
- Major breach of designated boundary zones by equipment operation, and observed soil or vegetation impacts off-site or any activity induced impact within SEZ. If mitigation is required, please make recommendations in comment section.
- N/A

4) Effectiveness of hazardous substance control measures

Note: Evaluate the effectiveness, or lack of, BMP applied to control hazardous chemical delivery to soils, groundwater or surface water bodies. Contact Hazardous Spill Coordinator if accidental spill has occurred.

- a. Are BMPs in place for hazardous/toxic substances used for building and vehicle maintenance and controlling chemical delivery to soils, groundwater and surface water?

Select one answer:

- Adjacent or inclusive wet/sensitive areas as well as construction site are adequately flagged, and equipment operations avoid infringement upon designated zones.
- Minor evidence of improper use of hazardous substances, such as chemical or mineral stains; however, evidence of SEZ contamination is not observed and ground water contamination is limited (consider approximate volume, micro topography, vicinity to SEZ, permeability of soil, depth of stain and recent weather events).
- Substantial resource concern is evident, such as direct/indirect evidence of SEZ or groundwater contamination. If immediate action is warranted, contact Management and Hazardous Spill Coordinator.
- N/A

Form HV2: Permanent BMP Effectiveness Monitoring
Detailed Evaluation Questions & Answers

Implementation

Answer Key

- 1=Meets/Exceeds 20-yr 1-Hr standards and/or no resource concerns
2=Minor departure from standards and/or minor resource concerns
3=Major departure from standards and/or major resource concerns
4=Repeated departure from standards/failure to address concerns

1. Were source control, drainage and infiltration systems, and hazardous material control systems designed to maintain resource protection during a 20-year 1-hour Storm Event, to achieve Forest Service and State water quality standards?
2. Are BMP measures constructed according to contract design specifications?

Effectiveness

Note: Effective and adequate maintenance of BMP measures should be included within the effectiveness evaluation. When topic is not applicable, please make informational comment.

On data sheet, options are meets/exceeds, minor, major, and Not Applicable. Answers correspond with the following for each question:

- 1) Source area erosion control. Protection and stabilization of structure site, particularly any erosive areas.
Note evidence of erosion processes such as rills, gullies, sediment scour and/or deposition on- or off-site, specifically areas naturally devoid of vegetation (e.g. pumice slopes, or deteriorated granitic areas) or areas identified for revegetation in structure plan, see structure sketch. Constructed cut and fill slopes are addressed separately
 - a. Soil Protection measures, artificial or vegetative, designed to eliminate erosion by runoff and rain-drop impact

Select one answer:
 - Nearly 70% coverage of any erodible surfaces, and no evidence of erosion.
 - Structure site exhibits less than full cover of soil; however, only minor erosion is evident and subsequent deposition is limited to on-site areas excluding deposition within any on-site SEZ.
 - Areas of exposed soil are observed, and erosion is evident and extensive (for example sediment is transported off-site or directly to SEZ.
 - N/A
 - b. Observed progression/improvement of areas identified for revegetation in structure plan as scheduled; and adequate erosion protection measures applied for successful revegetation, such as temporary armoring measures (including mulch, rock, erosion cloth or other) applied while vegetation becomes established.

Select one answer:

- Revegetation establishment proceeding as expected--new and existing vegetative cover in combination with temporary BMP measures are effective at eliminating/ mitigating erosion processes from those areas.
- Revegetation efforts are not proceeding as expected. Minor additional efforts are required for successful revegetation establishment, or minor maintenance/retrofit of temporary BMP measures applied (for erosion control during revegetation efforts) is needed.
- Temporary BMP measures provide inadequate erosion control, and/or specified revegetation efforts are deemed unsuccessful, as major modifications are needed to achieve vegetative ground cover goals and success. OR major on-site erosion, or any evidence of sediment delivery to SEZ.
- NA

c. Cut and fill slope protection (including surface erosion and slope failure potential).

Select one answer:

- BMP measures (including seeding/planting, with mulch of pine straw, designed swales, retention walls or use of erosion control blankets) applied to cut or fill slopes are adequate to prevent erosion. Cracks or slumping is not evident.
- BMP measures applied (see the previous checkbox) exhibit minor erosion and/or deposition is noted at base of cut or fill slope, near retention walls or around erosion control blankets or mulch. However, erosion is limited to on-site areas excluding any transport to SEZ. Or retaining wall integrity is showing signs of concern, such as bulging or wavy appearance.
- BMP measures are inadequate to protect erosion on cut and fill slopes from storms <20 year--1 hour event; or any evidence of sediment transport and/or deposition within SEZ is observed. Or cracks are present and appear to be threatening integrity of fill and/or retaining wall. Or the occurrence of any fillslope failure has occurred.
- NA

2) Runoff infiltration and drainage control system effectiveness.

Evaluate any on-site runoff control features, or lack thereof, including any measure designed to direct site runoff or dissipate erosive energy at system outlets, including drainage ditches, constructed berms, erosion cloth placement, constructed swales, driplines, or other designated infiltration areas. Maintenance of these features should also be addressed. When available, verification with water quality monitoring data may be essential to assess the degree of effectiveness.

a. Functioning condition (potential for sediment and/or nutrient delivery to SEZ) of designated infiltration zones, such as detention basins, settling ponds, driplines, gravel armor areas or infiltration trenches, as well as any system outlets.

Select one answer:

- Natural or newly constructed drainage control and infiltration systems are adequate to eliminate erosion and sediment transport processes. No evidence of erosion or sediment movement on-site.
- Observed evidence of minor on-site erosion and sediment transport, but limited to on-site deposition, and no evidence of transport to any SEZ.
- Observed evidence of substantial on-site erosion such as frequent rill formation or any observation of gully features observed, or any evidence of sediment transport to SEZ. OR

where major maintenance or adaptive erosion control strategies are required for resource protection. OR where water quality data indicates exceedance of state standards.

- N/A

b. Ponding of runoff.

Note: for this item, consideration should be given to the location of ponded water with respect to foundation, cut and fill slope integrity, health concerns, as well as soil displacement and erosion induced from pond outlet.

Select one answer:

- No evidence of unexpected ponding on-site, or constructed detention ponds and outlets are stable (naturally stable, stabilized with planted vegetation, or other type of armor) and exhibit no signs of erosion or downstream resource concerns.
- Some evidence of on-site ponding, but does not appear to threaten integrity of fillslopes or foundations. Or minor erosion and/or downslope resource concerns, are evident at constructed basin outlet, such as sediment plumes or small rill formation. However, sediment is not transported to SEZ and is not anticipated from events <20-year 1-hour storm.
- On-site ponding observed that is threatening fillslope or foundation integrity. And/or outlet of ponded area, or constructed basins, exhibit major erosion including substantial scour, rill or gully formation. Or the evidence of any sediment transport to SEZ.
- N/A

3) Effectiveness of hazardous substance control measures

Evaluate the effectiveness, or lack of, BMP applied to control hazardous chemical delivery to soils, groundwater or surface water bodies. Contact Hazardous Spill Coordinator if accidental spill has occurred.

a. Evaluate the occurrence and mitigation of hazardous/toxic substances used for building and vehicle maintenance, and associated direct and indirect effects upon water quality.

Select one answer:

- Hazardous substance control measures provide effective mitigation.
- Minor evidence of improper use of hazardous substances, such as chemical or mineral stains; however, evidence of SEZ contamination is not observed and, ground water and soil contamination is limited (consider approximate volume, microtopography, vicinity to SEZ, permeability of soil, depth of stain and recent weather events).
- Substantial resource concern is evident, such as direct/indirect evidence of SEZ or groundwater contamination. If immediate action is warranted, contact Management and Hazardous Spill Coordinator and Water Quality Monitoring Crew Leader.
- N/A

Rating Criteria

BMP Monitoring Rule Set Adapted from USFS BMPEP for Heavenly

Implementation (2 questions)	Effectiveness (6 to 7 questions)
<p style="text-align: center;">Implemented</p> <p>All questions answered “meets/exceeds” and/or less than ½ of the questions are “minor concern”. None are “major concern.”</p> <p><i>(Note: Implementation protocols have only two questions so both must be answered “meets/exceeds” to score Implemented.)</i></p>	<p style="text-align: center;">Effective</p> <p>All questions answered “meets/exceeds” and/or less than ½ of the questions are “minor concern”. None are “major concern.”</p>
<p style="text-align: center;">Minor Concern/At Risk</p> <p>Greater than or equal to ½ the questions are answered “minor concern”.</p> <p><i>(Note: Implementation protocols have only two questions so both must be answered “meets/exceeds” to score Implemented.)</i></p>	<p style="text-align: center;">Minor Concern/At Risk</p> <p>Greater than or equal to half the questions are answered “minor concern.”</p> <p>No more than one question answered “major concern.”</p>
<p style="text-align: center;">Not Implemented</p> <p>At least one question answered “major concern” or both questions answered “minor concern.”</p>	<p style="text-align: center;">Not Effective</p> <p>At least one question answered “major concern” or greater than half of questions answered “minor concern.”</p>

Attachment D

2017 BMP Recommendation & Response Tables

Table 1. 2017 Completed Projects and BMP Installation/Maintenance

Location	Treatment
California Projects	
Adventure Peak/Epic Discovery	Completed landscaping around Tamarack Lodge Meadow, added new shade umbrellas, added Kids' tubing lane, finished incomplete hiking trails.
Blue Angel Chute	Created infiltration spreading area by loosening deep gully; restored as an infiltration swale.
Maggie's Run	Applied mulch and re-graded 2 Water Bars into infiltration spreading areas in location upgradient of culvert crossing where Maggie's Run intercepts summer road.
Hand Grenade Chute/Run of Middle Roundabout	Rock Armored Gully. Restored Water Bar above switchback to function properly. Ripped and chipped steep ski slope. Installed new 12" culvert at the road crossing.
Middle Maggie's Run	Reshaped basin area. Ripped and chipped to maximize infiltration and reduce overtopping and runoff to the creek in area below summer road & before switch- back with 2 culverts.
Sedimentation Area between Face Patrol and Groove Upper Terminal	Stabilized bare soil areas with full restoration treatment.
Gully from road run-off to creek below California Dam	Ripped and chipped road shoulder. Added Pine Needle coir logs as a sediment barrier.
Hellwinkel's Road	Maintained previous BMP treatments.
Tram Deck	Replaced Tram Top Station Deck.
Nevada Projects	
Orion's Run	Applied 300 tons of road base, 10 yards of pine needle mulch and 1 tote of FSB-1000 road binder.
Comet and Dipper Lower Terminals	Removed sediment buildup in rock-lined areas.

Table 2. Permanent BMP Implementation – Recommendations and Responses

Year Added	Observations/Recommendation	2017 Responses/Actions
2004/2005	Revegetation specifications need to be updated to present standards in the Lake Tahoe Basin.	Heavenly seed mix was used for the Hand Grenade Chute, Middle Stagecoach, Lower Olympic Downhill.
2004/2005	Design of facilities to treat or infiltrate the 20-yr 1-hour event need to be site-specific. Infiltration areas should be flat bottomed, filled with sufficient gravel or drain rock, bordered with rocks (4 to 8" diam.).	Maintenance and reconstruction of infiltration facilities was implemented at the Face Patrol Rock Lined Ditch,
2004/2005	Trench settlement can be prevented by compaction and mounding.	Backfill for trenching was compacted for the snowmaking lines for the Red Fir Tow Lift Relocation.
2004/2005	Use fiber rolls for long-term slope stabilization as well as temporary erosion control.	Permanent fiber rolls (pine needle coir logs and compost filter socks) were installed at the Upper Maintenance Shop, Hellwinkel's Road and Maggie's Corner water bar outlets.
2006	Gravel and riprap specifications should include: sizing, gradation, angularity and geotextile installation underneath.	Hand Grenade Chute was implemented with riprap and geotextile
2007	Geotextile fabric installation for slope stabilization must address anchor trenches at fabric edges, overlaps, and appropriate anchor intervals for lined channels and steep slopes/	Riprap was installed with geotextile underneath for the Hand Grenade Chute riprap slope stabilization.
2008	New prescriptions for soil amendments and revegetation need better coordination regarding timing, accessibility, and materials availability.	The tracking spreadsheet developed and updated by the snow surfaces manager was immensely helpful in coordination on revegetation materials.
2009	Water bars should be elongated and installed at an angle to the direction of traffic.	Hellwinkel's and Orion's Road Projects include installation of elongated and angled water bars.
2009	Road base should be applied in areas with steep slopes, water quality concerns (proximity to SEZ/stream crossings), and high traffic areas where rutting and dust may be a problem.	Road base was applied on road segments including Powderbowl Express Upper Terminal to Canyon Express Upper Terminal, Hellwinkel's Road and at select switchbacks and high traffic areas throughout the Mountain.
2010	Excess fill could be reused on-site to build up road base in depressed areas and improve drainage.	Sediment from collection areas was placed in low areas on roads during maintenance activities.
2011	Riprap installation on steep slopes provides better stabilization than cover with mulch.	Riprap for slope stabilization was placed on a portion of the Hand Grenade Chute project.

Year Added	Observations/Recommendation	2017 Responses/Actions
2012	Incorporation of wood chip mulch provides erosion resistance and effective cover.	Wood chip mulch was incorporated at Hand Grenade Chute and at Adventure Peak.
2013	Wattles constructed by Heavenly in-house from coir fabric and pine needles on-site provide a cost effective, easily constructible alternative to straw wattles.	Pine needle coir logs were deployed at active construction sites, at the Upper Shop SEZ, at water bar outlets on Hellwinkle's and Cal Dam to Maggie's Corner.
2014	Removal of sediment from collection areas can be achieved by dry vactoring for extra capacity.	Sediment vactoring of drop inlets at the California Main Lodge Parking Lot, Upper Maintenance Shop.
2015	Testing of new available BMP technology helps determine innovative methods to incorporate into plans.	Tested hydroseeder on Mountain to spray tackifier and seed to stabilize steep slope with chronic erosion on Hand Grenade Chute.
2016	Compost filter socks may be used as an alternative to straw wattles for permanent stabilization in select areas.	Compost filter socks were not implemented again on the Mountain since winter conditions caused them to freeze and hinder snow cat traffic.
2017	Culvert installation in locations of concentrated flows can help pass runoff under roads rather than across.	Culverts were installed at the Upper Shop SEZ crossing, Hand Grenade Chute and the High Roller culvert was maintained.

Table 3. Permanent BMP Effectiveness – Recommendations and Responses

Year Added	Observations/Recommendation	Responses/Actions
2004/2005	Soil cover was not typically achieved with straw mulch after the first construction season.	Pine needle and wood chip mulch was reapplied at Adventure Peak in high traffic areas, along road shoulders, and larger scale restoration projects like Orion's, Hand Grenade Chute, Maggie's Run and smaller hot spot projects. No straw has been used on the Mountain for more than a decade.
2004/2005	Revegetation develops minor deficiencies after construction requiring on-going correction for several years to provide effective soil cover.	New method of mulch incorporation/tilling has resulted in higher revegetation success rates so less need for ongoing correction than past years. Move to erosion resistance rather than effective soil cover.
2006	Fabric installed on steep slopes often slides down in small sections, even anchored securely during installation. Geotextile needs continuing maintenance if vegetation is not established.	Geotextile fabric and revegetation has been phased out in favor of riprap or mulching and tilling restoration treatments. In 2017, geotextile fabric was installed beneath riprap at Hand Grenade Chute.
2007	Projects using wood chip mulch and soil amendments appear to provide longer lasting effective cover, particularly in high traffic areas. Heavenly will continue spot treatments at facility sites where barren areas occur.	Bare areas throughout the resort were refurbished with wood chip and pine needle mulch, particularly in high traffic areas and along road shoulders. New wood chips added annually throughout high traffic areas at Adventure Peak/Gondola Top Station area where most Summer Activities are located.
2008	Sediment from outside the project area has the potential to impair the long-term effectiveness of SEZ restoration and soil stabilization projects unless follow-up work is performed.	Follow-up work completed this year to address sediment from upgradient areas at Lower Olympic, CML Parking Lot, Maggie's Run, Lower Groove rock lined ditches, and Face Patrol rock lined ditch.
2009	Wood borders for infiltration areas and trenches are often caught and pulled out by equipment in the winter, particularly in areas alongside roadways. Rock borders keyed into the soil are a more stable option to prevent movement of gravel.	Wood borders have been replaced with rock borders around all infiltration areas. Rock borders were observed to hold up well from previous years; wood borders are no longer used.
2010	Rock armored channels routing runoff from drip lines to infiltration areas are more effective than drip line trenches. Channel low points must be well defined; otherwise, new channels erode around rocks.	Channels were refurbished throughout the Resort as routine maintenance. Sediment was removed from rock lined ditches near Lower Powderbowl Express and Lower Groove Terminals, Face Patrol, Lower Dipper and Lower Comet, and Middle Stagecoach.
2011	Water bar outlet protection using energy dissipaters and enhanced infiltration is effective.	Maggie's Run and Hellwinkel's water bar outlets were protected with compost filter socks, pine needle coir logs and rock check dams.

Year Added	Observations/Recommendation	Responses/Actions
2012	Channels lined with rock or fabric accumulate sediment over time. Sediment should be routinely removed from the channels and used for fill in low areas on roads or removed from the site.	Sediment removal remains a priority for maintaining capacity of existing sediment capture areas, especially in the Heavenly Valley Creek watershed. Channels were refurbished throughout the Resort as routine maintenance. Sediment was removed from rock lined ditches near Lower Powderbowl Express and Lower Groove Terminals, Face Patrol, Lower Dipper and Lower Comet, and Middle Stagecoach.
2013	On steep slopes requiring pedestrian access, rock steps provide access without causing erosion.	Rock steps were not installed on projects this year.
2014	Water bar outlets, energy dissipaters and areas to enhance infiltration of road runoff accumulate sediment and need to be cleaned periodically.	Ongoing road maintenance is conducted after storm events on projects with water bar outlets directed to SEZs include Hellwinkel's and Maggie's Run.
2014	New mulch incorporation and revegetation treatment for slope stabilization should be implemented in areas prone to erosion or with erosive soils.	Slope stabilization and restoration of larger ski runs are effective when seeded and mulch is incorporated to a depth of 12 to 18 inches and the surface has been roughened to allow water to infiltrate. Hand Grenade Chute and Orion's are excellent examples of mulch incorporation.
2015	New available BMP technology should continue to be considered (past years: "Filtrexx Compost Filter Socks", "Durawattles" and "Shred Vac") and evaluated for effective erosion resistance.	In 2017, a hydroseeder was used to spray tackifier and seed on Hand Grenade Chute, which held up during storm events. Effectiveness will be evaluated after the next winter and spring runoff season. Filtrexx Compost Filter Socks at Hellwinkel's Road left in place were not feasible to utilize again due to freezing in winter conditions. Durawattles and Shred Vac were evaluated as not effective at Heavenly.
2016	Pine needle filter berms along ski slopes are effective at slowing and infiltrating runoff.	Filter berms installed on ski runs above Sky Meadows in 2015 effectively slowing runoff/erosion in 2016; however, they were not effective at slowing all runoff produced after the large winter of 2017.
2017	Culverts installed where concentrated flows cross roadways help to abate chronic erosion and protect water quality.	New culverts were effective at passing flows at the Upper Shop SEZ and Hand Grenade Chute as observed during post-storm inspections. The culvert at High Roller was also maintained and functioning well.

Table 4. Temporary BMP Implementation – Recommendations and Responses

Year Added	Observations/Recommendation	Responses/Actions
2004/2005	BMPs should not be disassembled prematurely. Specifically, plans did not specify clearly that fiber rolls were to remain after construction.	Sediment fence is always removed before the end of the season. Fiber rolls/coir logs typically remain in place at water bar outlets and parallel to slopes.
2004/2005	Place BMPs prior to construction, to ensure readiness for summer storms or winter closures.	BMPs were in place prior to construction project initiation, including small maintenance projects and stockpiles.
2004/2005	Clean out/repair BMPs after runoff events.	Repairs to and maintenance of water bars, rock lined channels and sediment basins at Hellwinkel's, from Cal Dam to Maggie's, at Lower Powderbowl/Lower Groove.
2004/2005	Maintain BMPs through project, to ensure readiness for summer storms or winter closures.	Temporary BMPs in place at one active construction site, at staging areas and at waterbars acting as check dams.
2006	Temporary BMPs may concentrate runoff to a discharge point (sediment fence, fiber rolls, temporary diversion). Provide energy dissipation and stabilization at the point where the temporary BMPs terminate.	Sediment barriers were used for Hellwinkel's Road parallel to the slope curved for outlet protection. Waterbar outlets are protected with rock and fiber rolls or filter socks at Cal Dam to Maggie's Corner.
2006	If a construction project initially proposed for a single season must be extended over the winter, winterization plans should be added to the design documents.	Construction was completed on projects started in; no winterization plans were required.
2007	Maintenance of sediment fence can be reduced by using proper T-Posts for support and adequate burial of fabric edges. Designs should allow for alternative fencing at sites with substantial rock or limited access.	Fiber rolls and filter socks were used in lieu of sediment fence throughout the mountain. Sediment fence is only implemented in select locations near slopes.
2007	Dust control for soil stockpiles can be improved. If snowmaking water is unavailable, stockpiles should be covered with plastic sheeting.	Primarily, soil stockpiles were in place for a short period and did not require covering with plastic sheeting and were protected with fiber rolls.
2008	Location of sediment barriers shown on project plans needs to be parallel to slopes or with energy dissipaters along the flow line and at discharge points.	Sediment barriers were shown correctly on plans and implemented properly by experienced field crews.

Year Added	Observations/Recommendation	Responses/Actions
2009	Staging areas should have Temporary BMPs in place before materials stockpiled on-site.	Staging areas were located in close proximity to active construction sites; mulch stockpiles do not require BMPs.
2011	Rope fencing for road delineation is typically removed prior to winter. Vehicles and equipment should observe road corridors when fencing is not in place.	Crews were reminded at the beginning of the construction season and throughout the season to observe delineated road corridors.
2012	Communication with outside contractors regarding importance of observing BMPs.	Outside contractors were notified of BMPs during the BMP Breakfast Training and were diligent in respecting construction equipment boundaries and sediment barriers.
2013	Coir logs constructed in-house from coir fabric and pine needles can be used in lieu of straw wattles.	Coir logs were used at the Upper Shop SEZ, outlets from Maggie's Corner to Stein's.
2014	Employee training on BMPs including field installation methods should be conducted for all new employees and as a refresher for continuing employees.	Employee training for key employees includes the annual BMP Breakfast reviewing the Water Quality Program and BMP program.
2015	Reports completed by field crews can be beneficial in tracking materials used, types of BMPs installed and manpower required to help in project planning.	Tracking documents were maintained by the Environmental Manager and Snow Surfaces Manager to track quantities of pine needles, wood chips, fiber rolls, water truck loads and road base.
2016	Compost filter socks are a good alternative to straw wattles and sediment fence in select areas.	Filtrex Compost Filter Socks at Hellwinkel's Road left in place were not feasible to utilize again due to freezing in winter conditions.
2017	Stockpiling wood chip or pine needle mulch in several strategic locations (near active construction sites, near observed erosion) provides quick access for field crews to spread mulch for erosion resistance.	Pine needle mulch was stockpiled at the Alpine Coaster, Orion's Road Segment, and Middle Stagecoach Ski Run, for quick access during construction.

Table 5. Temporary BMP Effectiveness – Recommendations and Responses

Year Added	Observations/Recommendation	Responses/Actions
2004/2005	Disturbance outside construction limits should be controlled by delineating access areas with rope fencing.	Heavenly employees and outside contractors observed construction equipment boundaries at the Alpine Coaster project and along road corridors.
2006	Exposed soils with potential for sediment delivery to SEZ should be managed with sediment barriers.	Pine needle wattles and rock check dams were replaced as needed at water bar outlets on Hellwinkel's and Maggie's Run to prevent sediment delivery to SEZ.
2007	Dust control for stockpiles is more effective when snowmaking water can wet down soils. Plastic sheeting is less effective and difficult to keep anchored in windy conditions.	No projects with soil stockpiles were completed this year so alternatives to plastic sheeting were not required.
2008	Sediment fence is effective in containing excavated stockpiled soils. If stockpiles are larger than initially anticipated, the fence must be extended.	No projects with soil stockpiles were completed this year; road base stockpiled for road projects was protected with pine needle coir logs.
2010	Despite proper installation, buried sediment fence edges can still be pulled out by wind requiring consistent maintenance.	Pine needle coir logs manufactured by Heavenly continue to be used as an alternative to sediment fence which reduces maintenance needs.
2011	Fiber rolls are most effective when keyed into the native soil and anchored securely.	Fiber rolls and coir logs in construction areas were keyed in and staked per the plans. Compost filter socks are heavy enough to not require staking or anchoring.
2012	Communication to all outside contractors and subcontractors to convey importance of observing and maintaining temporary BMPs around an active construction site.	Outside contractors were required to attend the BMP Breakfast to learn about BMPs and non-Heavenly staff working on the Alpine Coaster were aware of the construction corridor and wattles.
2013	Coir logs constructed by Heavenly in-house from coir fabric and pine needles appear to be an effective alternative to typical straw wattles.	Pine needle coir logs were installed at water bar outlets on Hellwinkel's and Maggie's Run, Hand Grenade Chute, and at road base stockpiles.
2014	Pine needle coir logs constructed by Heavenly in-house can be used in erosion prone areas but usually need to be replaced annually.	Pine needle coir logs were installed in areas throughout the Mountain and maintained annually at locations such as the Upper Maintenance Shop SEZ.

Year Added	Observations/Recommendation	Responses/Actions
2015	Reports from field crew supervisors can help determine effective BMPs based on material availability, manpower required and type of BMP most often utilized.	A project inventory list was developed with materials, staff hours, and priority by task which was extremely helpful for tracking project completion status and budgeting.
2016	Compost filter socks provide a good alternative to straw wattles which decompose rapidly and sediment fence which requires near constant maintenance.	Compost filter socks were installed at the Hellwinkel's Road Project and acted as an alternative sediment barrier requiring less maintenance and left in place after construction; however, they are not feasible to be left in place
2017	Stockpiling wood chip or pine needle mulch in strategic locations (near active construction sites, near observed erosion) allows crews to quickly access and spread mulch for erosion resistance.	Pine needle mulch located throughout the mountain was effective to provide erosion resistance at the Alpine Coaster, Orion's, Maggie's and Middle Stagecoach.

Table 6. 2018 Annual Work List Projects & Related BMPs

Location	Treatment
Priority Projects in California	
Magic Carpet Ski School Lift	Install Adventure Peak Magic Carpet with drip line infiltration trenches. Remove Red Fir towers and restore disturbed areas.
Upper Shop	Maintain existing waterbars, ditches and culverts. Reduce mud in shop yard (method to be determined).
Groove Chair Base	Install new drop inlet and culvert at Base of Groove Chair to the base of the Powderbowl basin.
Heavenly Valley Creek Culvert	Repair existing gate valve.
Ridge Bowl	Stabilize gully in Ridge Bowl above Canyon Express Lift, remove and replace degraded geotextile fabric, place rock check dams or riprap.
Ridge Run above Test Plots	Hot Spot #7: Repair, loosen and restore gully above and below summer road near snowmaking vault.
Maggie's Sediment Basins	Hot Spot #25: Maintain and clean out sediment build up in Maggie's road shoulder sediment basins.
Top of Gondola	Complete drainage improvements to manage snowmelt runoff including swales, shallow basins, and piping.
Top of Gondola Loop Line	Snowmaking line and high voltage conduit maintenance from Von Schmitt's Trail towards water tank. Replace Malcom's vault and add metering capability. Stabilize disturbed areas following construction.
Magic Carpet Ski School Lift	Install Adventure Peak Magic Carpet with drip line infiltration trenches. Remove Red Fir towers and restore disturbed areas.
World Cup	Hot Spot #50 - Stabilize gully on World Cup Run and protect existing drop inlets.
First Ride	Hot Spot #51 - Stabilize gully on First Ride Run, reestablish waterbar and manage sediment moving towards lift terminal.
Priority Projects in Nevada	
Galaxy	Replace existing Galaxy Lift in its current alignment. Improve specific summer road segments to allow lift construction and ongoing maintenance access. Daggett Creek realignment and stabilization.
Olympic Downhill	Replace 3000' of 8" water line and Way Home snowmaking vault. Stabilize disturbed areas following construction.
Big Dipper Run Waterbar Maintenance	Maintenance to waterbars, ditches and culverts.

Attachment E

2017 BMP Effectiveness Monitoring Assessments

Assessments

The 2017 construction season at Heavenly began in early July following snowmelt and ended in late October. The RCI Field Team performed 95 total BMP evaluations at 55 different sites: 40 within the Lake Tahoe Basin and 15 outside the Lake Tahoe Basin during the 2017 construction season.

Temporary BMP monitoring (Form HV-1) was only performed at one site during the 2017 construction season since most projects were focused on erosion hot spots, maintenance and road repair after the historic winter of 2016/2017. The sole construction project was repair of the Alpine Coaster, which was severely damaged by massive snow loads.

Permanent BMP monitoring (Form HV-2) included the following 54 project sites:

- Angel's Roost Cell Tower
- Bear Cave (Adventure Peak) Ski School
- Bear Cub Ropes Course
- Big Easy - Lower Terminal
- Black Bear Ropes Course
- Boulder Cove Challenge Course
- Calif. Main Lodge Parking Lot
- California Trail Waterbars
- Canyon Express - Lower Terminal
- Canyon Express - Upper Terminal
- Comet Express - Lower Terminal
- Dipper Express - Lower Terminal
- East Peak Grading Area
- East Peak Lodge
- East Peak Patrol
- Edgewood Creek SEZ at Northbowl
- Ellie's Ski Run
- Face Patrol (227)
- Face Patrol (227) - Rock Lined Ditch
- Gondola Mid Station
- Gondola Top Station & Facilities
- Gondola Top Station Drainage
- Granite Peak Climbing Wall
- Groove - Lower Terminal
- Hand Grenade Chute
- Hellwinkle's Road Segment
- High Roller Terrain Park
- Hot Shot Zipline
- Lower Maggie's Corner
- Maggie's Corner to Cal Dam
- Mid Station Wedding Arch
- Mombo Ski Run
- Mott Canyon - Lower Terminal
- Mott Canyon Upper Terminal
- Nevada Trail - Rock Lined Ditch
- Nevada Trail Ski Run
- Olympic Express - Upper Terminal
- Olympic Express Lower Terminal
- Orion's
- Pioneer Poma
- Powderbowl Express - Lower Terminal
- Sky Deck Restaurant
- Sky Deck Stream Crossing
- Sky Express - Lower Terminal
- Sky Express - Upper Terminal
- Sky Meadows Stream Crossing
- Stagecoach - Middle
- Stagecoach - Utilities
- Stagecoach Lower Terminal
- Stein's (Snow Beach, Patsy's Hut)
- Tamarack Trail Widening
- Tubing Lift
- Upper Maggie's Corner
- Upper Maintenance Shop

Tables 1 and 2 provide a summary of types of monitoring and locations evaluated to in 2017 by state, watershed and location.

Table 1. Types of Evaluations Performed

CALIFORNIA SITES		NEVADA SITES	
Lake Tahoe Basin		Lake Tahoe Basin	
Permanent BMP Evaluations	68	Permanent BMP Evaluations	5
Temporary BMP Evaluations	3	Temporary BMP Evaluations	0
Carson River Basin		Carson River Basin	
Permanent BMP Evaluations	0	Permanent BMP Evaluations	19
Temporary BMP Evaluations	0	Temporary BMP Evaluations	0
Total BMP Sites Evaluated – 55		Total Evaluations Performed – 95	

Table 2. Sites Evaluated by Location

CALIFORNIA SITES	NEVADA SITES
Lake Tahoe Basin	Lake Tahoe Basin
1. Angel's Roost Cell Tower	1. Alpine Coaster
2. Bear Cave Ski School	2. Big Easy - Lower Terminal
3. Black Bear Ropes Course	3. Edgewood Creek SEZ at Northbowl
4. Boulder Cove Challenge Course	4. Olympic Express - Upper Terminal
5. Calif. Main Lodge Parking Lot	5. Olympic Express Lower Terminal
6. California Trail Waterbars	6. Tubing Lift
7. Canyon Express - Lower Terminal	
8. Canyon Express - Upper Terminal	
9. Ellie's Ski Run	
10. Face Patrol	
11. Face Patrol - Rock Lined Ditch	
12. Gondola Mid Station	
13. Gondola Top Station & Facilities	
14. Gondola Top Station Drainage	
15. Granite Peak Climbing Wall	
16. Groove - Lower Terminal	
17. Hand Grenade Chute	
18. Hellwinkle's Road Segment	
19. High Roller Terrain Park	
20. Hot Shot Zipline	
21. Lower Maggie's Corner	
22. Maggie's Corner to Cal Dam	
23. Mid Station Wedding Arch	
24. Mombo Ski Run	
25. Pioneer Poma	
26. Powderbowl Express - Lower Terminal	

27. Sky Deck Restaurant	
28. Sky Deck Stream Crossing	
29. Sky Express - Lower Terminal	
30. Sky Express - Upper Terminal	
31. Sky Meadows Stream Crossing	
32. Stein's	
33. Tamarack Trail Widening	
34. Upper Maggie's Corner	
35. Upper Maintenance Shop	
Carson River Basin	Carson River Basin
None	1. Comet Express - Lower Terminal
	2. Dipper Express - Lower Terminal
	3. East Peak Grading Area
	4. East Peak Lodge
	5. East Peak Patrol
	6. Mott Canyon - Lower Terminal
	7. Mott Canyon Upper Terminal
	8. Nevada Trail - Rock Lined Ditch
	9. Nevada Trail Ski Run
	10. Orion's
	11. Stagecoach - Middle
	12. Stagecoach - Utilities
	13. Stagecoach Lower Terminal

Implementation and Effectiveness Scoring

The database scoring was adapted from the regional “rule set” developed for the Region 5 BMPEP program (USFS, 2002), which has been modified to correspond with the Heavenly rating system and streamlined data forms (Attachment C). Scoring results for temporary and permanent BMP evaluations are summarized below. Evaluation forms for California and Nevada sites are included in Attachment G.

Temporary and Permanent BMPs

During the 2017 construction season, 95 Permanent BMP evaluations were conducted at 54 sites. All BMPs were fully implemented. Effectiveness evaluations resulted in 91 effective and 4 minor concerns for a total of 96% effective. Two with minor concerns were at the Hellwinkel’s Road Segment and two evaluations at the Upper Maintenance Shop. Hellwinkel’s Road Segment concerns were related to waterbar outlet sediment build up following storm events; timely maintenance addressed the sediment and resulted in effective scores during the following inspections. The Upper Maintenance Shop concerns were related to the road crossing of the SEZ. After a culvert was installed, water quality impacts from the road crossing were reduced and subsequent inspections scored effective. Of the permanent BMP evaluations conducted, 5 were post construction inspections, 15 were routine inspections, 23 were follow-up inspections, and 51 were post-storm event inspections. The three temporary BMP evaluations conducted at the Alpine Coaster in 2017 resulted in 100 percent implemented and effective scores.

Attachment F

Road Maintenance Monitoring

HEAVENLY 2017 ROAD MAINTENANCE TRACKING

<u>FS ROAD #</u>	<u>DISTANCE (MILES)</u>	<u>DESCRIPTION OF WORK</u>
12N40	0.4	*Improved/ re-built waterbars and sediment ponds on Maggies below Cal Dam
13N52i	1.4	*Road improved from top of Powderbowl Express to top of Canyon Express. Added road base at various locations and installed a CMP and DI under the road at High Roller for improved runoff. Re-established waterbars in the area.
.		
12N40	0.3	*Covered approx. 17,000sf of Hellwinkel's steeps with second treatment of FSB 1000 soil emulsion/binder, in order to harden the road surface.
12N41	0.1	*Regraded upper vehicle shop access road/yard with grader.
13N52A	0.4	*Regraded, added road base and sprayed FSB 1000 road binder to Orion's summer road
12N40.1	2.4	*Regraded and added road base to various locations on Roundabout.
13N53D	0.1	*Added road base to the first section of the road to the Base of Olympic Express.

- 13N53B 1.1 *Improved water bars and added road base to various sections of NV Trail between the NV gate and East Peak pump house.
- 13N54 0.9 *Misc. maintenance on Pepi's and Crossover roads. Added road base in multiple locations, filled in rills on crossover and NV fuel farm area. Improved runoff.

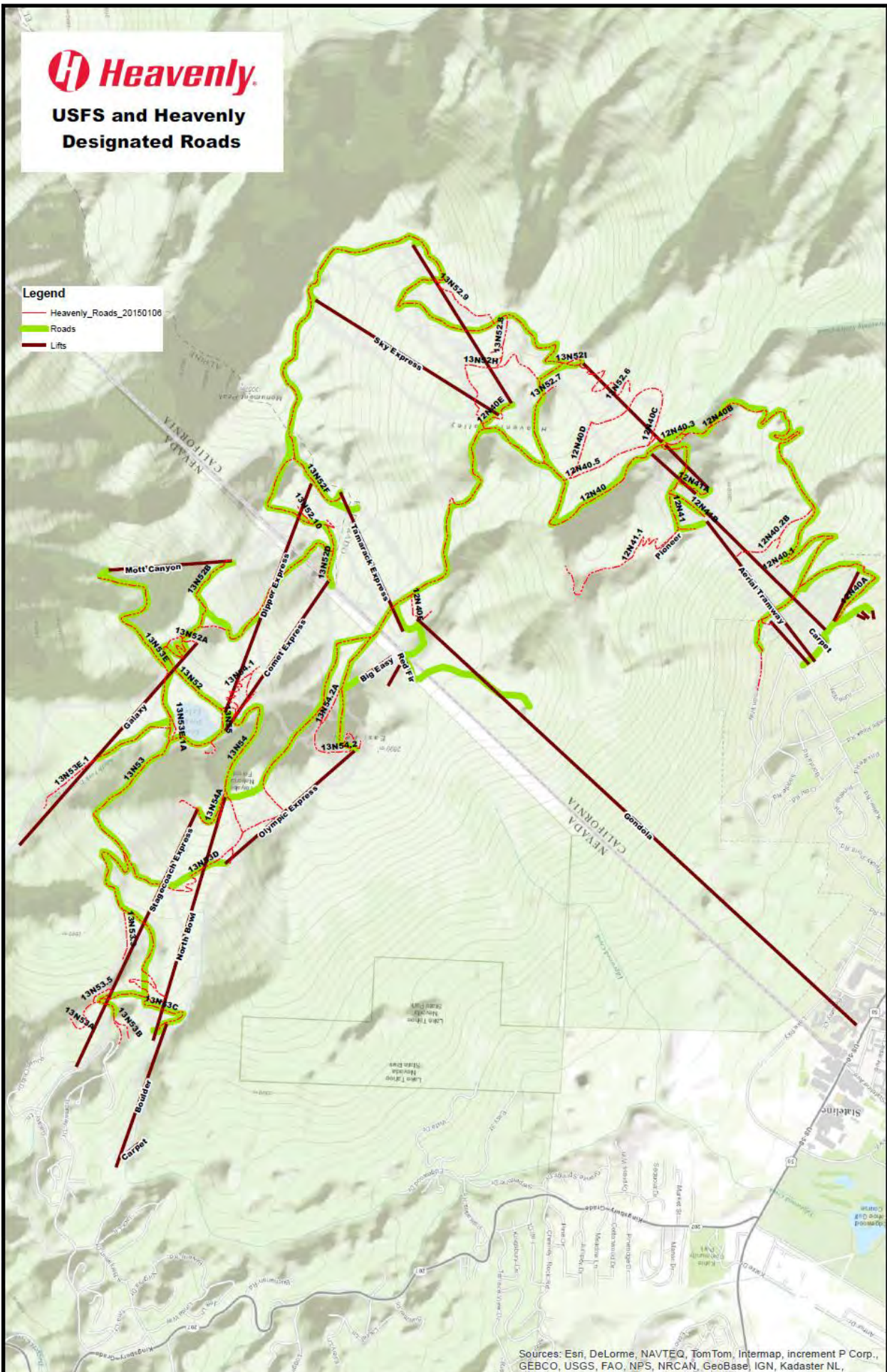
			ML1	ML2	ML3	ML4	ML5
Roads Improved			0	0	2.8	0	0
Roads Maintained			0	0	4.3	0	0
Roads Decommissioned			0	0	0	0	0



USFS and Heavenly Designated Roads

Legend

- Heavenly_Roads_20150106
- Roads
- Lifts



Attachment G

BMP Assessment Forms

UTM Zone <input type="text" value="11"/>		Form HV2: Permanent BMPs for Buildings and Structures				ID# <input type="text" value="661"/>	
Easting <input type="text" value="247850"/>	Building/Structure Name <input type="text" value="Alpine Coaster"/>		Survey Date <input type="text" value="9/13/2017"/>	Selection Code <input type="text" value="S03"/>			
Northing <input type="text" value="4313936"/>	Reviewer Name(s) <input type="text" value="K. Roaldson, J. Azevedo"/>		Township <input type="text" value="12N"/>	Range <input type="text" value="18E"/>	Section <input type="text" value="1"/>		
Date Project Start <input type="text" value="6/15/2015"/>	Date Project End <input type="text" value="11/15/2015"/>	Watershed <input type="text" value="CA-1"/>		State <input type="text" value="CA"/>			
Date BMP Implementation Complete <input type="text" value="11/15/2015"/>	Date Last BMP Maintenance <input type="text" value="11/15/2015"/>	Job No <input type="text" value="15-102.1"/>	Storm Depth <input type="text" value="1.16"/>				
Structure Type <input type="text" value="Other"/>	Other (Describe) <input type="text" value="Coaster"/>	Survey Type <input type="text" value="Post Storm Survey"/>					
Plan Title <input type="text" value="Forest Flyer Alpine Coaster"/>	Plan Date <input type="text" value="4/27/2015"/>	Plan Revision Date <input type="text" value="NA"/>					

Specific concerns associated with construction project and BMP measures designed to achieve resource protection

Attainment of effective ground cover, splash and scour erosion protection: roofline infiltration trenches, wood chip mulch

Implementation	<input type="text" value="1"/>	1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs	Implementation Score:	<input type="text" value="I"/>
	<input type="text" value="1"/>	2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications		

Effectiveness			Effectiveness Score:	<input type="text" value="E"/>
1) Source area erosion control, protection/stabilization of site, especially erosive areas				
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact	<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion	<input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion	<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness				
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ	<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened	<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures				
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality	<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			

Additional Comments

Form HV2: Permanent BMPs for Buildings and Structures													
UTM Zone	11						ID#	680					
Easting	247850	Building/Structure Name		Alpine Coaster		Survey Date	9/27/2017	Selection Code		S03			
Northing	4313936	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1		
Date Project Start	6/15/2015	Date Project End		11/15/2015		Watershed		CA-1		State	CA		
Date BMP Implementation Complete		11/15/2015		Date Last BMP Maintenance		11/15/2015		Job No		15-102.1	Storm Depth	0.75	
Structure Type		Other		Other (Describe)		Coaster		Survey Type		Post Storm Survey			
Plan Title						Forest Flyer Alpine Coaster			Plan Date		4/27/2015	Plan Revision Date	NA
Specific concerns associated with construction project and BMP measures designed to achieve resource protection													
Attainment of effective ground cover, splash and scour erosion protection: roofline infiltration trenches, wood chip mulch													
Implementation										Implementation Score:			
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								<input type="text" value="1"/>			
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications											
Effectiveness										Effectiveness Score:			
										<input type="text" value="E"/>			
1) Source area erosion control, protection/stabilization of site, especially erosive areas													
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
2) Runoff infiltration and drainage control system effectiveness													
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
3) Effectiveness of hazardous substance control measures													
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
Additional Comments		Area in good condition with wood chip mulch in place near lower terminal. erosion. Good maintenance of BMPs throughout construction with surface treatment upkeep.											

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	688			
Easting	247850	Building/Structure Name		Alpine Coaster		Survey Date	10/25/2017	Selection Code		S03	
Northing	4313936	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	6/15/2015	Date Project End	11/15/2015				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	11/15/2015	Date Last BMP Maintenance	11/15/2015				Job No	15-102.1	Storm Depth	0.75	
Structure Type	Other	Other (Describe)		Coaster		Survey Type	Follow-up				
Plan Title	Forest Flyer Alpine Coaster					Plan Date	4/27/2015	Plan Revision Date	NA		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Attainment of effective ground cover, splash and scour erosion protection: roofline infiltration trenches, wood chip mulch											
Implementation										Implementation Score:	I
		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	E
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		No change from 9/27/17. Area in good condition with wood chip mulch in place near lower terminal. Construction vehicles and crew have caused wood chip treatment to spread and create bare soil areas; not connected to SEZ and low priority. No evidence of soil erosion. Wood chip mulch and pine needle treatment should be reapplied post construction.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	626			
Easting	245882	Building/Structure Name		Angel's Roost Cell Tower		Survey Date	8/22/2017	Selection Code		S03	
Northing	4312774	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	9/12/2012	Date Project End				Watershed	CA-6	State		CA	
Date BMP Implementation Complete	10/15/2013	Date Last BMP Maintenance		10/15/2013		Job No		Storm Depth			
Structure Type	Other	Other (Describe)		Monopine Cell Tower		Survey Type	3 Year Post Construction				
Plan Title	Mobilitie Telecommunications Infrastructure Angel's Roost					Plan Date	06/24/2011	Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Erosion and sediment transport prevention, revegetation establishment											
Implementation							Implementation Score:		I		
		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness							Effectiveness Score:		E		
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input type="radio"/> Meet/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Riling of road surface and slope face. Areas with dense pine needle treatment in good condition and provides adequate cover.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	654			
Easting	247850	Building/Structure Name		Bear Cave Ski School		Survey Date	9/13/2017		Selection Code	S03	
Northing	4313936	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	7/1/2011	Date Project End	10/14/2012		Watershed		CA-1		State		CA
Date BMP Implementation Complete	10/15/2013	Date Last BMP Maintenance	10/15/2013		Job No	09601.2		Storm Depth	1.16		
Structure Type	Building	Other (Describe)				Survey Type	Post Storm Survey				
Plan Title	Adventure Peak Ski School and Summer Tubing					Plan Date	March 14, 2		Plan Revision Date	June 28, 2	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Drip line infiltration trenches surrounding building, revegetation in disturbed areas.											
Implementation										Implementation Score:	
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								I	
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Drip line infiltration installed per plans. Exposed soils covered with wood chip mulch in most areas; wood chip mulch eroded in some areas. Good ground cover; recommend wood chip mulch in bare areas.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	653			
Easting	247861	Building/Structure Name		Big Easy - Lower Terminal		Survey Date	9/13/2017		Selection Code	S03	
Northing	4313796	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start		Date Project End	10/15/2003		Watershed		CA-1		State		NV
Date BMP Implementation Complete	9/30/2003		Date Last BMP Maintenance	7/1/2009		Job No	C9806, 0		Storm Depth	1.16	
Structure Type	Lift		Other (Describe)		Survey Type		Post Storm Survey				
Plan Title	Gondola Improvement Plan and Plan Revisions 2003					Plan Date	01-19-2000		Plan Revision Date	07-11-200	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Dripline protection, effective cover											
Implementation										Implementation Score:	
		<input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								I	
		<input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Drip line infiltration areas are in good condition around/under operator's booth and lift terminal. Wood chip treatment in place around terminal. Ponding in unintended area. Will address with TOG drainage plan to be implemented next year.									

Form HV2: Permanent BMPs for Buildings and Structures										
UTM Zone	10						ID#	657		
Easting	0	Building/Structure Name	Black Bear Ropes Course		Survey Date	9/13/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo		Township		Range		Section	
Date Project Start		Date Project End			Watershed	CA-1		State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance			Job No		Storm Depth	1.16		
Structure Type		Other (Describe)			Survey Type	Post Storm Survey				
Plan Title					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection										
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					Implementation Score: <input type="text" value="1"/>			
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications								
Effectiveness							Effectiveness Score: <input type="text" value="E"/>			
1) Source area erosion control, protection/stabilization of site, especially erosive areas										
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness										
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures										
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Wood chip mulch in place. Area well maintained. No recommendations as no evidence of erosion, ponding or sediment movement.								

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone		11						ID#	656		
Easting	247777		Building/Structure Name		Boulder Cove Challenge Course		Survey Date	9/13/2017	Selection Code	S02	
Northing	4313572		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	
Date Project Start		6/30/2013		Date Project End		10/15/2013		Section	1		
Date BMP Implementation Complete		10/15/2013		Date Last BMP Maintenance		10/15/2013		Watershed	CA-1	State	CA
Structure Type		Other		Other (Describe)		Ropes Course/Climbing Str		Job No	09601.2	Storm Depth	1.16
Plan Title		Adventure Peak Ski School and Summer Tubing (new plan set updated from original plans)					Survey Type	Post Storm Survey			
Plan Date		March 14, 2		Plan Revision Date		June 28, 2					
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Effective cover/erosion resistance beneath climbing structure.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score:									
		E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		Wood chip mulch in place. Area well maintained. No recommendations as no evidence of erosion, ponding or sediment movement.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone		11						ID#	589		
Easting	244964		Building/Structure Name		Calif. Main Lodge Parking Lot		Survey Date	7/27/2017	Selection Code	S03	
Northing	247137		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	
Date Project Start		8/27/2007		Date Project End		9/13/2006		Section	1		
Date BMP Implementation Complete		10/1/2009		Date Last BMP Maintenance		7/11/2017		Watershed	CA-6	State	CA
Structure Type		Other		Other (Describe)		Parking Lot		Job No	00-607.5	Storm Depth	
Plan Title		Phase III, Calif. Base Lodge Parking Lot Water Quality Treatment System					Survey Type	Follow-up			
Plan Date							05-05-2007	Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Revegetation, groundwater											
Implementation										Implementation Score:	
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								<input type="text" value="1"/>	
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		No change in conditions since 7/11/2017									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	579			
Easting	244964	Building/Structure Name		Calif. Main Lodge Parking Lot		Survey Date	7/11/2017		Selection Code	S03	
Northing	247137	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/27/2007	Date Project End	9/13/2006				Watershed	CA-6	State	CA	
Date BMP Implementation Complete	10/1/2009	Date Last BMP Maintenance	7/11/2017				Job No	00-607.5	Storm Depth		
Structure Type	Other	Other (Describe)	Parking Lot				Survey Type	Follow-up			
Plan Title	Phase III, Calif. Base Lodge Parking Lot Water Quality Treatment System					Plan Date	05-05-2007	Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Revegetation, groundwater											
<hr/>											
Implementation		<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs <input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div> <div> Implementation Score: <input type="text" value="I"/> </div> </div>									
<hr/>											
Effectiveness		<div style="display: flex; justify-content: space-between;"> <div> 1) Source area erosion control, protection/stabilization of site, especially erosive areas a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion 2) Runoff infiltration and drainage control system effectiveness a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened 3) Effectiveness of hazardous substance control measures a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality </div> <div> Effectiveness Score: <input type="text" value="E"/> </div> </div>									
		<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div>									
		<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div>									
		<div style="display: flex; justify-content: space-between;"> <div> <input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div>									
		<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div>									
		<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div>									
		<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div>									
Additional Comments		Very successful BMP maintenance. Wattles in place directing drainage to underground treatment. BMPs from prior years remain in good condition with regular upkeep.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	683			
Easting	244964	Building/Structure Name		Calif. Main Lodge Parking Lot		Survey Date	10/2/2017	Selection Code		S03	
Northing	247137	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/27/2007	Date Project End	9/13/2006				Watershed	CA-6	State		CA
Date BMP Implementation Complete	10/1/2009	Date Last BMP Maintenance	7/11/2017				Job No	00-607.5	Storm Depth		
Structure Type	Other	Other (Describe)		Parking Lot		Survey Type		Follow-up			
Plan Title	Phase III, Calif. Base Lodge Parking Lot Water Quality Treatment System					Plan Date	05-05-2007	Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Revegetation, groundwater											
Implementation										Implementation Score:	
1		1) BMPs are designed to maintain resource protection and meet water quality standards								1	
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Some areas received asphalt patch work. Stockpiles in parking lot have wattle barriers to prevent sediment movement. Rock lined ditch and drop inlet in good condition with wattles on top of banks.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	10						ID#	638	
Easting	0	Building/Structure Name	California Trail Waterbars		Survey Date	8/28/2017	Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo		Township		Range		Section
Date Project Start		Date Project End			Watershed	CA-1	State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance			Job No		Storm Depth		
Structure Type		Other (Describe)			Survey Type	Routine			
Plan Title					Plan Date		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					Implementation Score: <input type="text" value="1"/>		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							
Effectiveness							Effectiveness Score: <input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion					<input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		Waterbars in excellent condition; many waterbars have been reshaped during summer. Waterbars shown to be effective in directing runoff to intended areas.							

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	629			
Easting	247158	Building/Structure Name		Canyon Express - Lower Terminal		Survey Date	8/22/2017	Selection Code		S03	
Northing	4312234	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/18/2015	Date Project End	9/30/2016				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/30/2016	Date Last BMP Maintenance					Job No		Storm Depth		
Structure Type	Lift-Base	Other (Describe)				Survey Type	Routine				
Plan Title	Infiltration BMP Maintenance, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date	10/15/2006	Plan Revision Date	10/15/200		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Roof downspout outfall infiltration, soil erosion. Reference construction plans job #00-607-11 4/14/2003 revision date 7/14/2003, Canyon lift replacement and Ridge lift removal erosion control.											
Implementation		<div style="border: 1px solid black; padding: 2px;">1</div> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					Implementation Score:		I		
		<div style="border: 1px solid black; padding: 2px;">1</div> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
							Effectiveness Score:		E		
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Rock lined ditch contains excessive debris. Wattles in place though sediment has overtopped in areas; maintenance required. Vegetation provides excellent cover in most areas.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	583			
Easting	247158	Building/Structure Name		Canyon Express - Lower Terminal		Survey Date	7/11/2017	Selection Code		S03	
Northing	4312234	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/18/2015	Date Project End	9/30/2016				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/30/2016	Date Last BMP Maintenance					Job No		Storm Depth		
Structure Type	Lift-Base	Other (Describe)				Survey Type	2 Year Post Construction				
Plan Title	Infiltration BMP Maintenance, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date	10/15/2006	Plan Revision Date	10/15/200		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Roof downspout outfall infiltration, soil erosion. Reference construction plans job #00-607-11 4/14/2003 revision date 7/14/2003, Canyon lift replacement and Ridge lift removal erosion control.											
Implementation										Implementation Score:	I
		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	E
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Flat, vegetated area adjacent to lift terminal needed additional stabilization measures shows marked improvement with revegetation treatment. Previously installed vegetated swale with coir material matting and pine needle check dams in existing rock lined ditch adjacent to the operator's booth remain in good condition.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	11							ID#	675
Easting	247740	Building/Structure Name	Canyon Express - Upper Terminal	Survey Date	9/27/2017	Selection Code	S03		
Northing	4311300	Reviewer Name(s)	K. Roaldson, J. Azevedo	Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End	9/1/2006			Watershed	CA-1	State	CA
Date BMP Implementation Complete	9/1/2006	Date Last BMP Maintenance	10/1/2010	Job No		Storm Depth	0.75		
Structure Type	Lift-Top	Other (Describe)	Completed BMP Proj.	Survey Type	Post Storm Survey				
Plan Title					Plan Date		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Effective soil cover on steep slopes. Stabilized driplines and infiltration BMP for runoff from structure. Delineated parking and access to minimize disturbance.									
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs						Implementation Score: <input type="text" value="1"/>	
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							
Effectiveness								Effectiveness Score: <input type="text" value="E"/>	
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact				<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion				<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion				<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ				<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened				<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality				<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Rock riprap in place, no signs of rilling. Reveg growing in some locations; rock more effective at higher altitude.							

UTM Zone <input type="text" value="11"/>		Form HV2: Permanent BMPs for Buildings and Structures				ID# <input type="text" value="618"/>	
Easting <input type="text" value="248918"/>	Building/Structure Name <input type="text" value="Comet Express - Lower Terminal"/>		Survey Date <input type="text" value="8/8/2017"/>	Selection Code <input type="text" value="S03"/>			
Northing <input type="text" value="4314281"/>	Reviewer Name(s) <input type="text" value="K. Roaldson, J. Azevedo"/>		Township <input type="text" value="13N"/>	Range <input type="text" value="19E"/>	Section <input type="text" value="31"/>		
Date Project Start <input type="text"/>	Date Project End <input type="text" value="10/15/2006"/>	Watershed <input type="text" value="NV-2+5"/>		State <input type="text" value="NV"/>			
Date BMP Implementation Complete <input type="text"/>	Date Last BMP Maintenance <input type="text"/>	Job No <input type="text" value="N/A"/>		Storm Depth <input type="text" value="2.01"/>			
Structure Type <input type="text" value="Lift-Base"/>		Other (Describe) <input type="text"/>		Survey Type <input type="text" value="Post Storm Survey"/>			
Plan Title <input type="text" value="No plan set, CERP applies"/>			Plan Date <input type="text" value="N/A"/>	Plan Revision Date <input type="text" value="N/A"/>			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection							
<input type="text" value="Water quality of E. Peak Lake and general erosion concerns. Infiltration trench and wood chip mulch."/>							
Implementation		<input type="text" value="1"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs				Implementation Score: <input type="text" value="1"/>	
		<input type="text" value="1"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications					
Effectiveness		Effectiveness Score: <input type="text" value="E"/>					
1) Source area erosion control, protection/stabilization of site, especially erosive areas							
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact			<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion			<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion			<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness							
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ			<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened			<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures							
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality			<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		<input type="text" value="Wood chip cover throughout area. Excessive water ponding under lift pole 1. Standing water does not show evidence of transport to reservoir."/>					

Form HV2: Permanent BMPs for Buildings and Structures													
UTM Zone	11						ID#	591					
Easting	248916	Building/Structure Name		Dipper Express - Lower Terminal		Survey Date	7/27/2017	Selection Code		S03			
Northing	4314165	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E	Section	31		
Date Project Start		Date Project End				Watershed		NV-2+5		State	NV		
Date BMP Implementation Complete				Date Last BMP Maintenance		7/27/2017		Job No		N/A	Storm Depth		
Structure Type		Lift-Base		Other (Describe)				Survey Type		Routine			
Plan Title						No plan set, CERP applies			Plan Date		N/A	Plan Revision Date	N/A
Specific concerns associated with construction project and BMP measures designed to achieve resource protection													
Water quality of E. Peak Lake and general erosion concerns. Infiltration trench and pine needle mulch.													
Implementation										Implementation Score:			
		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div> <div style="display: flex; justify-content: space-between;"> 1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>								1			
Effectiveness										Effectiveness Score:			
1) Source area erosion control, protection/stabilization of site, especially erosive areas													
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
2) Runoff infiltration and drainage control system effectiveness													
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
3) Effectiveness of hazardous substance control measures													
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA							
Additional Comments		Lower terminal in good condition. Drainage and infiltration remain in good working condition. One culvert pipe free of debris and flowing smoothly. Second culvert pipe blocked by sediment within pipe; needs cleanout maintenance.											

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	665			
Easting	248916	Building/Structure Name		Dipper Express - Lower Terminal		Survey Date	9/13/2017	Selection Code		S03	
Northing	4314165	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E	Section	31
Date Project Start		Date Project End				Watershed		NV-2+5		State	NV
Date BMP Implementation Complete				Date Last BMP Maintenance				Job No	N/A	Storm Depth	1.16
Structure Type		Lift-Base		Other (Describe)				Survey Type		Post Storm Survey	
Plan Title						No plan set, CERP applies			Plan Date		N/A
						Plan Revision Date			N/A		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water quality of E. Peak Lake and general erosion concerns. Infiltration trench and pine needle mulch.											
Implementation										Implementation Score:	
1		1) BMPs are designed to maintain resource protection and meet water quality standards								I	
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
Additional Comments		Wood chip mulch provides sufficient erosion resistance, no evidence of erosion. Only 1 culvert with water flow (though not at full capacity yet); second culvert blocked with sediment and requires cleanout.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	664			
Easting	248918	Building/Structure Name		East Peak Grading Area		Survey Date	9/13/2017	Selection Code		S03	
Northing	4314281	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E	Section	31
Date Project Start		Date Project End		10/15/2006		Watershed		NV-2+5		State	NV
Date BMP Implementation Complete				Date Last BMP Maintenance				Job No	08-609.1	Storm Depth	1.16
Structure Type		Other		Other (Describe)				Survey Type		Post Storm Survey	
Plan Title						Skyline Trail Grading Snowmaking, and Dipper Knob Trail Grading					
Plan Date						06/04/2008		Plan Revision Date		07/07/200	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water quality of E. Peak Lake and general erosion concerns. Infiltration trench and wood chip mulch.											
Implementation										Implementation Score:	
1		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								I	
1		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Wood chip mulch provides sufficient erosion resistance in area beneath sign and between road and East Peak Lake. Some riling present originating on slope above riprap area; recommended reapplication of wood chip mulch.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	11						ID#	681	
Easting	248918	Building/Structure Name		East Peak Grading Area		Survey Date	9/27/2017	Selection Code	S03
Northing	4314281	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E
Date Project Start		Date Project End		10/15/2006		Watershed		NV-2+5	State
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No	08-609.1	Storm Depth	0.75
Structure Type	Other	Other (Describe)				Survey Type		Post Storm Survey	
Plan Title	Skyline Trail Grading Snowmaking, and Dipper Knob Trail Grading					Plan Date	06/04/2008	Plan Revision Date	07/07/200
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Water quality of E. Peak Lake and general erosion concerns. Infiltration trench and wood chip mulch.									
Implementation									
<div style="display: flex; justify-content: space-between;"> <div> <p>1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs</p> <p>1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications</p> </div> <div style="text-align: right;"> <p>Implementation Score:</p> </div> </div>									
Effectiveness									
Effectiveness Score:									
<p>1) Source area erosion control, protection/stabilization of site, especially erosive areas</p> <div style="display: flex; justify-content: space-between;"> <div> <p>a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact</p> <p>b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion</p> <p>c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion</p> </div> <div> <p><input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA</p> <p><input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA</p> <p><input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA</p> </div> </div> <p>2) Runoff infiltration and drainage control system effectiveness</p> <div style="display: flex; justify-content: space-between;"> <div> <p>a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ</p> <p>b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened</p> </div> <div> <p><input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA</p> <p><input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA</p> </div> </div> <p>3) Effectiveness of hazardous substance control measures</p> <div style="display: flex; justify-content: space-between;"> <div> <p>a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality</p> </div> <div> <p><input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA</p> </div> </div>									
Additional Comments		Wood chip mulch being replenished and gully that formed during storm events repaired. Excellent effort to restore road shoulder and slope below.							

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	619			
Easting	248957	Building/Structure Name		East Peak Lodge		Survey Date	8/8/2017	Selection Code		S03	
Northing	4314314	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E	Section	31
Date Project Start		Date Project End				Watershed		NV-2+5		State	NV
Date BMP Implementation Complete				Date Last BMP Maintenance				Job No	None	Storm Depth	2.01"
Structure Type		Building		Other (Describe)				Survey Type		Post Storm Survey	
Plan Title						No plan set, CERP applies			Plan Date		None
						Plan Revision Date			None		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water quality of E. Peak Lake. Erosion potential from concentrated flows as a result of hard coverings (road, parking areas, decks, etc.).											
Implementation										Implementation Score:	
		<input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								1	
		<input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
		1) Source area erosion control, protection/stabilization of site, especially erosive areas a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		2) Runoff infiltration and drainage control system effectiveness a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		3) Effectiveness of hazardous substance control measures a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
Additional Comments		Post storm event, no signs of erosion from manhole cover to East Peak Lake. Rock lined ditch does not sufficiently transport water to reservoir. Excessive water ponding on road surface. Rock line ditch requires expansion to capture and direct all runoff.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone		11						ID#	616		
Easting	248976		Building/Structure Name		East Peak Patrol		Survey Date	8/8/2017	Selection Code	S02	
Northing	4314389		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E	
Date Project Start		9/20/2008		Date Project End		10/15/2008		Section	31		
Date BMP Implementation Complete		9/1/2008		Date Last BMP Maintenance		9/1/2008		Watershed	NV-3	State	NV
Structure Type		Other		Other (Describe)				Job No		Storm Depth	2.01"
Plan Title		No plan set, CERP applies				Plan Date			Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Drip line infiltration trenches around East Peak Patrol Building, improve effective cover around building											
Implementation									Implementation Score:		
		<input type="text" value="1"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs							<input type="text" value="1"/>		
		<input type="text" value="1"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness									Effectiveness Score:		
									<input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		Drip line infiltration trenches with sedimentation basins have some sediment but still functioning. Effective cover could be improved and slope on west side of building has evidence of minor erosion.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone		10						ID#	635
Easting	0	Building/Structure Name		Edgewood Creek SEZ at Northbowl		Survey Date	8/28/2017	Selection Code	R01
Northing	0	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township		Range	
Date Project Start		9/12/2006		Date Project End		11/1/2006		Watershed	NV-3
Date BMP Implementation Complete		10/29/2006		Date Last BMP Maintenance		8/1/2008		State	NV
Structure Type		Other		Other (Describe)		SEZ restoration		Job No	04-452
Plan Title		Edgewood Creek North Bowl Restoration Project				Survey Type		Routine	
Plan Date						10/02/05		Plan Revision Date	
						08-10-200			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Stream restoration with permanent BMPs: channel reconstruction, fabric lining, willow salvage and planting, hydroseed and mulch									
Implementation									
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div> <div>Implementation Score:</div> </div>									
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div> <div></div> </div>									
Effectiveness									
Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
Additional Comments		Rock lined ditch in good condition with minimal sediment build-up. Area well vegetated. Pine needle treatment in place in erosive areas. Drop inlet in good condition with lid in place and minimal debris in ponding area.							

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	588			
Easting	247727	Building/Structure Name		Ellie's Ski Run		Survey Date	7/11/2017	Selection Code		S03	
Northing	4313595	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/20/2015	Date Project End	9/25/2015				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/25/2015	Date Last BMP Maintenance	9/25/2015				Job No		Storm Depth		
Structure Type	Other	Other (Describe)	Ski Run				Survey Type	2 Year Post Construction			
Plan Title	Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Soil stabilization, prevention of sediment transport, improve erosion resistance.											
Implementation							Implementation Score:				
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness							Effectiveness Score:				
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Water bar in good condition. Slope shows signs of riling and forming gullies due to above average runoff from heavy snow season.									

Form HV2: Permanent BMPs for Buildings and Structures												
UTM Zone	11						ID#	627				
Easting	245909	Building/Structure Name		Face Patrol		Survey Date	8/22/2017	Selection Code		S03		
Northing	4312841	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1	
Date Project Start	8/7/2006	Date Project End				Watershed		CA-1		State	CA	
Date BMP Implementation Complete				Date Last BMP Maintenance				Job No				
Structure Type		Building		Other (Describe)				Survey Type		1 Year Post Construction		
Plan Title						Face Patrol Building Retrofit			Plan Date			
						Plan Revision Date						
Specific concerns associated with construction project and BMP measures designed to achieve resource protection												
Attainment of effective ground cover, splash and scour erosion protection: roofline infiltration trenches, wood chip mulch												
Implementation										Implementation Score:		
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								<input type="text" value="1"/>		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications										
Effectiveness										Effectiveness Score:		
										<input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas												
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
2) Runoff infiltration and drainage control system effectiveness												
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
3) Effectiveness of hazardous substance control measures												
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
Additional Comments		Slight evidence of riling present due to increase in seasonal precipitation. Treatment may be necessary if issue worsens; slope appears stable and does not indicate future erosion potential.										

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	644			
Easting	245909	Building/Structure Name		Face Patrol - Rock Lined Ditch		Survey Date	9/13/2017		Selection Code	S03	
Northing	4312841	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End				Watershed	CA-1		State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No		Storm Depth	1.16		
Structure Type	Building	Other (Describe)				Survey Type	Post Storm Survey				
Plan Title	Face Patrol Building Retrofit					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Attainment of effective ground cover, splash and scour erosion protection: roofline infiltration trenches, wood chip mulch											
Implementation											
		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards Implementation Score: <input type="text" value="I"/> </div> <div style="display: flex; justify-content: space-between; font-size: small;"> 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div>									
		<div style="display: flex; justify-content: space-between;"> 1) 2) BMPs are constructed according to contract design specifications </div> <div style="display: flex; justify-content: space-between; font-size: small;"> 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>									
Effectiveness											
		<div style="display: flex; justify-content: space-between;"> 1) Source area erosion control, protection/stabilization of site, especially erosive areas Effectiveness Score: <input type="text" value="E"/> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 60%;">a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact</div> <div> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 60%;">b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion</div> <div> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 60%;">c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion</div> <div> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div>									
		<div style="display: flex; justify-content: space-between; margin-top: 10px;"> 2) Runoff infiltration and drainage control system effectiveness </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 60%;">a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ</div> <div> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 60%;">b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened</div> <div> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div>									
		<div style="display: flex; justify-content: space-between; margin-top: 10px;"> 3) Effectiveness of hazardous substance control measures </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 60%;">a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality</div> <div> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div>									
Additional Comments		Rock lined ditch in good condition with moderate sediment build-up; cleanout not immediately necessary. Area of ditch receiving runoff from waterbar requires maintenance from movement of rock lining.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	11						ID#	674	
Easting	245909	Building/Structure Name		Face Patrol - Rock Lined Ditch		Survey Date	9/27/2017	Selection Code	S03
Northing	4312841	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E
								Section	1
Date Project Start	8/7/2006	Date Project End				Watershed		CA-1	State
								CA	
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No		Storm Depth	0.75
Structure Type	Building	Other (Describe)				Survey Type		Post Storm Survey	
Plan Title	Face Patrol Building Retrofit					Plan Date		Plan Revision Date	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Attainment of effective ground cover, splash and scour erosion protection: roofline infiltration trenches, wood chip mulch									
<hr/>									
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					Implementation Score:		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications					<input type="text" value="I"/>		
<hr/>									
Effectiveness							Effectiveness Score:		
							<input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
Additional Comments		Cleaning out rock lined ditch in progress, excellent effort to remove sediment and refurbish drainage capacity.							

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone		11						ID#	663		
Easting	247036		Building/Structure Name		Gondola Mid Station		Survey Date	9/13/2017	Selection Code	S03	
Northing	4314190		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	18E	
Date Project Start				Date Project End				Section	35		
Date BMP Implementation Complete		10/1/2010		Date Last BMP Maintenance		10/1/2010		Watershed	CA-7	State	CA
Structure Type		Lift		Other (Describe)				Job No		Storm Depth	1.16
Plan Title						Survey Type		Post Storm Survey			
Plan Date				Plan Revision Date							
Specific concerns associated with construction project and BMP measures designed to achieve resource protection Soil stabilization, prevention of sediment transport, infiltration for structure runoff. Detention basins, dripline infiltration trenches, and infiltration areas.											
Implementation		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							Implementation Score: <input type="text" value="1"/>		
Effectiveness									Effectiveness Score: <input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion											
							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened											
							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality											
							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		Rock areas providing good cover. No evidence of soil erosion or sediment movement however, pine needle treatment has since eroded.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	593			
Easting	247710	Building/Structure Name		Gondola Top Station & Facilities		Survey Date	7/27/2017	Selection Code	S03		
Northing	4313606	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start		Date Project End				Watershed	CA-1	State	CA		
Date BMP Implementation Complete		Date Last BMP Maintenance		7/11/2017		Job No		Storm Depth			
Structure Type	<input type="checkbox"/> Lift-Top <input type="checkbox"/> Other (Describe)						Survey Type	Routine			
Plan Title	Gondola Top Station Winterization Plan					Plan Date	10/11/2002	Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection Soil stabilization, prevention of sediment transport, infiltration for structure runoff. Detention basins, dripline infiltration trenches, and infiltration areas.											
Implementation		<input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					Implementation Score:		<input type="text" value="1"/>		
		<input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness							Effectiveness Score:		<input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Wood Chip mulch in place. Ponding of water still in foot traffic areas.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	613			
Easting	247777	Building/Structure Name	Gondola Top Station Drainage			Survey Date	8/8/2017		Selection Code	S03	
Northing	4313572	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township	12N	Range	18E	Section	1
Date Project Start	6/17/2013	Date Project End	9/10/2015			Watershed	CA-1		State	CA	
Date BMP Implementation Complete	9/10/2015	Date Last BMP Maintenance				Job No	12-602.4		Storm Depth	2.01"	
Structure Type	Other	Other (Describe)	Drainage System			Survey Type	Post Storm Survey				
Plan Title	Heavenly Summer Activities					Plan Date	11/9/2012		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection Effective cover/erosion resistance, permanent drainage system piping, infiltration areas and berms.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score:									
		E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Water infiltrating/evaporating following large storm event, signs of ponding and rilling but not impacting SEZ.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	652			
Easting	247777	Building/Structure Name		Gondola Top Station Drainage		Survey Date	9/13/2017		Selection Code	S03	
Northing	4313572	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	6/17/2013	Date Project End	9/10/2015				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/10/2015	Date Last BMP Maintenance					Job No	12-602.4	Storm Depth	1.16	
Structure Type	Other	Other (Describe)	Drainage System				Survey Type	Post Storm Survey			
Plan Title	Heavenly Summer Activities					Plan Date	11/9/2012	Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Effective cover/erosion resistance, permanent drainage system piping, infiltration areas and berms.											
Implementation										Implementation Score:	
		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div> <div style="display: flex; justify-content: space-between;"> 1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Water ponding in unintended areas. Runoff in unintended areas causing sediment movement and minor riling. Drainage not connected to SEZ; low priority of minor concern. Plan to address drainage to be implemented next year.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	632			
Easting	247777	Building/Structure Name		Gondola Top Station Drainage		Survey Date	8/22/2017	Selection Code		S03	
Northing	4313572	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	6/17/2013	Date Project End	9/10/2015				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/10/2015	Date Last BMP Maintenance					Job No	12-602.4	Storm Depth		
Structure Type	Other	Other (Describe)	Drainage System				Survey Type	Routine			
Plan Title	Heavenly Summer Activities					Plan Date	11/9/2012	Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Effective cover/erosion resistance, permanent drainage system piping, infiltration areas and berms.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		No change as of 8/2/2017.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone		11						ID#	601		
Easting	247777		Building/Structure Name		Gondola Top Station Drainage		Survey Date	8/2/2017	Selection Code	S03	
Northing	4313572		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	
Date Project Start		6/17/2013		Date Project End		9/10/2015		Section	1		
Date BMP Implementation Complete		9/10/2015		Date Last BMP Maintenance				Watershed	CA-1	State	CA
Structure Type		Other		Other (Describe)		Drainage System		Job No	12-602.4	Storm Depth	
Plan Title		Heavenly Summer Activities				Plan Date		11/9/2012	Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Effective cover/erosion resistance, permanent drainage system piping, infiltration areas and berms.											
Implementation										Implementation Score:	
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								<input type="text" value="1"/>	
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Wood chips maintain in place and in good condition. Riling present in some areas due to above average runoff. Construction fencing/rubber mats blocking wood chips from entering drains. Water movement through unintended areas.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	687			
Easting	247777	Building/Structure Name	Gondola Top Station Drainage			Survey Date	10/25/2017		Selection Code	S03	
Northing	4313572	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township	12N	Range	18E	Section	1
Date Project Start	6/17/2013	Date Project End	9/10/2015			Watershed	CA-1		State	CA	
Date BMP Implementation Complete	9/10/2015	Date Last BMP Maintenance				Job No	12-602.4		Storm Depth	0.75	
Structure Type	Other	Other (Describe)	Drainage System			Survey Type	Follow-up				
Plan Title	Heavenly Summer Activities					Plan Date	11/9/2012		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection Effective cover/erosion resistance, permanent drainage system piping, infiltration areas and berms.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score:									
		E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		No change from 9/13/2017. Plan to address drainage to be implemented next year.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	679			
Easting	247777	Building/Structure Name		Gondola Top Station Drainage		Survey Date	9/27/2017		Selection Code	S03	
Northing	4313572	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	6/17/2013	Date Project End	9/10/2015				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/10/2015	Date Last BMP Maintenance					Job No	12-602.4	Storm Depth	0.75	
Structure Type	Other	Other (Describe)	Drainage System				Survey Type	Post Storm Survey			
Plan Title	Heavenly Summer Activities					Plan Date	11/9/2012	Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Effective cover/erosion resistance, permanent drainage system piping, infiltration areas and berms.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Water following storm event present in many low lying areas. Runoff in unintended areas causing sediment movement and minor riling. Not major concern since not in close proximity to SEZ.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	586			
Easting	247777	Building/Structure Name		Gondola Top Station Drainage		Survey Date	7/11/2017	Selection Code		S03	
Northing	4313572	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	6/17/2013	Date Project End		9/10/2015		Watershed		CA-1		State	CA
Date BMP Implementation Complete	9/10/2015	Date Last BMP Maintenance				Job No	12-602.4	Storm Depth			
Structure Type	Other	Other (Describe)		Drainage System		Survey Type		2 Year Post Construction			
Plan Title	Heavenly Summer Activities					Plan Date	11/9/2012	Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Effective cover/erosion resistance, permanent drainage system piping, infiltration areas and berms.											
Implementation										Implementation Score:	
		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div> <div style="display: flex; justify-content: space-between;"> 1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>								I	
Effectiveness										Effectiveness Score:	
		1) Source area erosion control, protection/stabilization of site, especially erosive areas									
		a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		2) Runoff infiltration and drainage control system effectiveness									
		a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened								<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		3) Effectiveness of hazardous substance control measures									
		a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
Additional Comments		Effective cover achieved with wood chip mulch. Drop inlet in Adventure Peak area surrounded by wattles to prevent wood chips from entering drain. Water from snowmelt runoff impacting access; plan to improve drainage next year.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	10						ID#	658	
Easting	0	Building/Structure Name	Granite Peak Climbing Wall		Survey Date	9/13/2017	Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo		Township		Range		Section
Date Project Start		Date Project End			Watershed	CA-1	State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance			Job No		Storm Depth	1.16	
Structure Type		Other (Describe)			Survey Type	Post Storm Survey			
Plan Title					Plan Date		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					Implementation Score: <input type="text" value="1"/>		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							
Effectiveness							Effectiveness Score: <input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		Wood chip mulch in place. Area well maintained. No recommendations as no evidence of erosion, ponding or sediment movement.							

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	11						ID#	677	
Easting	246183	Building/Structure Name		Groove - Lower Terminal		Survey Date	9/27/2017	Selection Code	S03
Northing	4312513	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E
						Section	1		
Date Project Start	9/1/2016	Date Project End	9/19/2016			Watershed	CA-1	State	CA
Date BMP Implementation Complete	9/19/2016	Date Last BMP Maintenance	9/19/2016			Job No		Storm Depth	0.75
Structure Type	Lift-Base	Other (Describe)				Survey Type	Post Storm Survey		
Plan Title	Infiltration BMP Maintenance					Plan Date		Plan Revision Date	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Dripline infiltration, drywell, rock-lined ditch, soil stabilization									
Implementation									
<div style="display: flex; justify-content: space-between;"> <div> <p>1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs</p> <p>1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications</p> </div> <div> <p>Implementation Score:</p> <p style="font-size: 24px; text-align: center;">I</p> </div> </div>									
Effectiveness									
Effectiveness Score:									
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
Additional Comments		Rock lined ditch remains in excellent condition with minimal sediment build-up. No recommendations.							

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	628			
Easting	246183	Building/Structure Name		Groove - Lower Terminal		Survey Date	8/22/2017	Selection Code		S03	
Northing	4312513	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	9/1/2016	Date Project End	9/19/2016				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/19/2016	Date Last BMP Maintenance	9/19/2016				Job No		Storm Depth		
Structure Type	Lift-Base	Other (Describe)				Survey Type	Follow-up				
Plan Title	Infiltration BMP Maintenance					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Dripline infiltration, drywell, rock-lined ditch, soil stabilization											
Implementation											
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div> <div>Implementation Score:</div> </div>											
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div> <div></div> </div>											
Effectiveness											
Effectiveness Score: E											
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Rock lined ditch in great condition. Little sediment build-up in ditch. Captured all runoff and performed as designed.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	646			
Easting	246183	Building/Structure Name		Groove - Lower Terminal		Survey Date	9/13/2017	Selection Code		S03	
Northing	4312513	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	9/1/2016	Date Project End	9/19/2016				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/19/2016	Date Last BMP Maintenance	9/19/2016				Job No		Storm Depth	1.16	
Structure Type	Lift-Base	Other (Describe)				Survey Type	Post Storm Survey				
Plan Title	Infiltration BMP Maintenance					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Dripline infiltration, drywell, rock-lined ditch, soil stabilization											
Implementation											
<div style="display: flex; justify-content: space-between;"> <div> <p>1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs</p> <p>1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications</p> </div> <div> <p>Implementation Score:</p> </div> </div>											
Effectiveness											
Effectiveness Score:											
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Rock lined ditch in excellent condition. Ditch effectively captured runoff and allowed infiltration. Minimal sediment build-up.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	10						ID#	684			
Easting	0	Building/Structure Name	Hand Grenade Chute			Survey Date	10/2/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township		Range		Section	
Date Project Start		Date Project End				Watershed	CA-4		State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance	7/11/2017			Job No		Storm Depth	0.75		
Structure Type		Other (Describe)				Survey Type	Follow-up				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar refurbishment, slope stabilization, prevention of sediment transport, improve erosion resistance, culvert installation											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		BMPs still in great condition. Ditch at toe of slope still has moderate sediment build-up; maintenance recommended before future storm events. Slope in excellent condition with no evidence of sediment movement. Culvert outlet in great condition with wattles in place.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	10						ID#	602			
Easting	0	Building/Structure Name	Hand Grenade Chute			Survey Date	8/8/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township		Range		Section	
Date Project Start		Date Project End				Watershed	CA-4		State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance	7/11/2017			Job No		Storm Depth	2.01"		
Structure Type		Other (Describe)				Survey Type	Post Storm Survey				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar refurbishment, slope stabilization, prevention of sediment transport, improve erosion resistance, culvert installation											
Implementation											
<input checked="" type="radio"/> 1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
<input checked="" type="radio"/> 1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Excellent cover of ground surface with wood chips and seed. Ground surface loosened to allow seed to take hold of slope. Rock lined channel installed with sediment basin and drop inlet. Drop inlet has cover and channel/basin free of debris and sediment. Wattles in place near roadway in excellent condition and anchored properly. Treatment appears stable and beyond sufficient for water quality goals.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	10						ID#	622			
Easting	0	Building/Structure Name	Hand Grenade Chute			Survey Date	8/22/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township		Range		Section	
Date Project Start		Date Project End				Watershed	CA-4		State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance	7/11/2017			Job No		Storm Depth			
Structure Type		Other (Describe)				Survey Type	Follow-up				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar refurbishment, slope stabilization, prevention of sediment transport, improve erosion resistance, culvert installation											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		No change since 8/8/2017. Remains in excellent condition.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	10						ID#	672			
Easting	0	Building/Structure Name	Hand Grenade Chute			Survey Date	9/27/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township		Range		Section	
Date Project Start		Date Project End				Watershed	CA-4		State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance	7/11/2017			Job No		Storm Depth	0.75		
Structure Type		Other (Describe)				Survey Type	Post Storm Survey				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar refurbishment, slope stabilization, prevention of sediment transport, improve erosion resistance, culvert installation											
Implementation										Implementation Score:	1
		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	E
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		BMPs still in great condition. Ditch at toe of slope has moderate sediment build-up; maintenance recommended before future storm events.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	10						ID#	642			
Easting	0	Building/Structure Name	Hand Grenade Chute			Survey Date	9/13/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township		Range		Section	
Date Project Start		Date Project End				Watershed	CA-4		State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance	7/11/2017			Job No		Storm Depth	1.16		
Structure Type		Other (Describe)				Survey Type	Post Storm Survey				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar refurbishment, slope stabilization, prevention of sediment transport, improve erosion resistance, culvert installation											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		BMPs effective in capturing most runoff; sediment in channel at toe of slope overtopped wattle at end of channel requires cleanout. Slope shows little signs of erosion. Rock lined ditch in great condition.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	612			
Easting	247287	Building/Structure Name		Hellwinkle's Road Segment		Survey Date	8/8/2017	Selection Code		S03	
Northing	4312392	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End	9/30/2006				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/30/2006	Date Last BMP Maintenance	7/11/2017				Job No		Storm Depth	2.01"	
Structure Type	Other	Other (Describe)		Road		Survey Type		Post Storm Survey			
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: m									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Water bar outlets collecting sediment. Wattles may overtop if not maintained before next storm event. Road surface in good condition with no signs of riling. Wood chips in place and in good condition.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone		11						ID#	678		
Easting	247287		Building/Structure Name		Hellwinkle's Road Segment		Survey Date	9/27/2017	Selection Code	S03	
Northing	4312392		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	
Date Project Start		8/7/2006		Date Project End		9/30/2006		Section	1		
Date BMP Implementation Complete		9/30/2006		Date Last BMP Maintenance		7/11/2017		Watershed	CA-1	State	CA
Structure Type		Other		Other (Describe)		Road		Job No		Storm Depth	0.75
Plan Title		CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score:									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		Pine needle treatment still intact and in great condition. Waterbars have moderate sediment build-up; maintenance may be required before end of season.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	590			
Easting	247287	Building/Structure Name		Hellwinkle's Road Segment		Survey Date	7/27/2017	Selection Code		S03	
Northing	4312392	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End	9/30/2006				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/30/2006	Date Last BMP Maintenance	7/11/2017				Job No		Storm Depth		
Structure Type	Other	Other (Describe)	Road				Survey Type	Follow-up			
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.											
Implementation										Implementation Score:	
1		1) BMPs are designed to maintain resource protection and meet water quality standards								I	
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
Additional Comments		Surface treatment remains in good condition. Drain rock still in place on roadway. Water bars and outlets stable in good, working order.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	600			
Easting	247287	Building/Structure Name		Hellwinkle's Road Segment		Survey Date	8/2/2017	Selection Code		S03	
Northing	4312392	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End	9/30/2006				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/30/2006	Date Last BMP Maintenance	7/11/2017				Job No		Storm Depth		
Structure Type	Other	Other (Describe)	Road				Survey Type	Follow-up			
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.											
Implementation											
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs <input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div> <div>Implementation Score: <input type="text" value="I"/></div> </div>											
Effectiveness											
Effectiveness Score: <input type="text" value="E"/>											
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		No change since 7/27/2017									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	582			
Easting	247287	Building/Structure Name		Hellwinkle's Road Segment		Survey Date	7/11/2017	Selection Code		S03	
Northing	4312392	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End	9/30/2006				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/30/2006	Date Last BMP Maintenance	7/11/2017				Job No		Storm Depth		
Structure Type	Other	Other (Describe)		Road		Survey Type	Follow-up				
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Pine needle wattles and riprap stabilization at water bar outlets effectively captured sediment before leaving roadway. Surface treatment of drain rock and road binder effectively implemented.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	686			
Easting	247287	Building/Structure Name		Hellwinkle's Road Segment		Survey Date	10/25/2017	Selection Code		S03	
Northing	4312392	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End	9/30/2006				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/30/2006	Date Last BMP Maintenance	7/11/2017				Job No		Storm Depth	1.16	
Structure Type	Other	Other (Describe)		Road		Survey Type	Follow-up				
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.											
Implementation										Implementation Score:	
1		1) BMPs are designed to maintain resource protection and meet water quality standards								I	
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
Additional Comments		Pine needle treatment still intact and in great condition. Waterbars have moderate sediment build-up; maintenance may be required before end of season. Water bar outlets along edge of road have moderate sediment build-up.									

Form HV2: Permanent BMPs for Buildings and Structures												
UTM Zone		11						ID#	651			
Easting	247287		Building/Structure Name		Hellwinkle's Road Segment		Survey Date	9/13/2017	Selection Code	S03		
Northing	4312392		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E		
Date Project Start		8/7/2006		Date Project End		9/30/2006		Section	1			
Date BMP Implementation Complete		9/30/2006		Date Last BMP Maintenance		7/11/2017		Watershed	CA-1	State	CA	
Structure Type		Other		Other (Describe)		Road		Job No		Storm Depth	1.16	
Plan Title		CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Survey Type	Post Storm Survey				
Plan Date								Plan Revision Date				
Specific concerns associated with construction project and BMP measures designed to achieve resource protection												
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.												
Implementation										Implementation Score:		I
		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs										
		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications										
Effectiveness										Effectiveness Score:		E
1) Source area erosion control, protection/stabilization of site, especially erosive areas												
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
2) Runoff infiltration and drainage control system effectiveness												
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
3) Effectiveness of hazardous substance control measures												
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
Additional Comments		Pine needle treatment still intact and in great condition. Waterbars have moderate sediment build-up; maintenance may be required before end of season.										

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	631			
Easting	247287	Building/Structure Name		Hellwinkle's Road Segment		Survey Date	8/22/2017	Selection Code		S03	
Northing	4312392	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End	9/30/2006				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/30/2006	Date Last BMP Maintenance	7/11/2017				Job No		Storm Depth		
Structure Type	Other	Other (Describe)	Road				Survey Type	Routine			
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.											
Implementation											
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div> <div>Implementation Score:</div> </div>											
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div> <div></div> </div>											
Effectiveness											
Effectiveness Score: E											
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Water bar outlets have been maintained and in good condition. Treatment on road surface beginning to show signs of degradation; future treatment reapplication may be necessary.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone		11						ID#	676		
Easting	247740		Building/Structure Name		High Roller Terrain Park		Survey Date	9/27/2017	Selection Code	S03	
Northing	4311300		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	
Date Project Start		8/7/2006		Date Project End		9/1/2006		Section	1		
Date BMP Implementation Complete		9/1/2006		Date Last BMP Maintenance		10/1/2010		Watershed	CA-1	State	CA
Structure Type		Other		Other (Describe)		Terrain Park		Job No		Storm Depth	0.75
Plan Title		No plan set, CERP applies					Plan Date		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Erosion identified from snowmelt runoff.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		Culvert functioning and sediment maintained in basin. Road surfaced with road base and erosion resistance is effective.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	637			
Easting	247740	Building/Structure Name		High Roller Terrain Park		Survey Date	8/28/2017	Selection Code		S03	
Northing	4311300	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End	9/1/2006				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/1/2006	Date Last BMP Maintenance	10/1/2010				Job No		Storm Depth		
Structure Type	Other	Other (Describe)	Terrain Park				Survey Type	Follow-up			
Plan Title	No plan set, CERP applies					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Erosion identified from snowmelt runoff.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Pine needle treatment in place and effective in most areas; pine needle treatment sparse and eroded in some areas that show erosion potential.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	10						ID#	660			
Easting	0	Building/Structure Name	Hot Shot Zipline			Survey Date	9/13/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township		Range		Section	
Date Project Start		Date Project End				Watershed	CA-1		State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No		Storm Depth	1.16		
Structure Type		Other (Describe)				Survey Type	Post Storm Survey				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Implementation											
		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs Implementation Score: <input style="width: 50px;" type="text" value="1"/> </div>									
		<div style="display: flex; justify-content: space-between;"> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>									
Effectiveness											
		<div style="display: flex; justify-content: space-between;"> 1) Source area erosion control, protection/stabilization of site, especially erosive areas Effectiveness Score: <input style="width: 50px;" type="text" value="E"/> </div>									
		a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
		b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
		c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
		2) Runoff infiltration and drainage control system effectiveness									
		a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
		b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
		3) Effectiveness of hazardous substance control measures									
		a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		Wood chip mulch in place. Area well maintained. No recommendations as no evidence of erosion, ponding or sediment movement.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	10						ID#	655			
Easting	0	Building/Structure Name	Kiddie Zipline & Ropes Course			Survey Date	9/13/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township		Range		Section	
Date Project Start		Date Project End				Watershed	CA-1		State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No		Storm Depth	1.16		
Structure Type		Other (Describe)				Survey Type	Post Storm Survey				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs							Implementation Score:		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							Implementation Score:		
Effectiveness									Effectiveness Score:		
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Wood chip mulch in place. Area well maintained. No recommendations as no evidence of erosion, ponding or sediment movement.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	650			
Easting	246846	Building/Structure Name		Lower Maggie's Corner		Survey Date	9/13/2017		Selection Code	S03	
Northing	4312787	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/1/2016	Date Project End	8/1/2016				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	8/1/2016	Date Last BMP Maintenance	7/27/2017				Job No		Storm Depth	1.16	
Structure Type	Other	Other (Describe)	Road				Survey Type	Post Storm Survey			
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Wattles in place around drainage basin. Basin sediment build-up prevalent and wattles were overtopped. Rock lined ditch has prevalent sediment build-up. Maintenance required (cleanout of sediment started already).									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	11						ID#	594	
Easting	246846	Building/Structure Name		Maggie's Corner to Cal Dam		Survey Date	7/27/2017	Selection Code	S03
Northing	4312787	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E
						Section	1		
Date Project Start	8/1/2016	Date Project End	8/1/2016			Watershed	CA-1	State	CA
Date BMP Implementation Complete	8/1/2016	Date Last BMP Maintenance	7/27/2017			Job No		Storm Depth	
Structure Type	Other	Other (Describe)	Road			Survey Type	Follow-up		
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.									
Implementation									
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div> <div>Implementation Score:</div> </div>									
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div> <div></div> </div>									
Effectiveness									
Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
Additional Comments		Wattles in place at water bar outlets, may need sediment clean out.							

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	599			
Easting	246846	Building/Structure Name		Maggie's Corner to Cal Dam		Survey Date	8/2/2017	Selection Code		S03	
Northing	4312787	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/1/2016	Date Project End	8/1/2016				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	8/1/2016	Date Last BMP Maintenance	7/27/2017				Job No		Storm Depth		
Structure Type	Other	Other (Describe)	Road				Survey Type	Follow-up			
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Wattles in place at water bar outlets, sediment build up needs to be addressed before next storm event. Road shoulders mulched and in good condition.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	10						ID#	662	
Easting	0	Building/Structure Name	Mid Station Wedding Arch		Survey Date	9/13/2017	Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo		Township		Range		Section
Date Project Start		Date Project End			Watershed	CA-7	State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance			Job No		Storm Depth	1.16	
Structure Type		Other (Describe)			Survey Type	Post Storm Survey			
Plan Title					Plan Date		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					Implementation Score:		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							
Effectiveness							Effectiveness Score:		
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments	Area in excellent condition with little signs of soil erosion or sediment movement. Some minor rilling North of wedding arch, downslope from structure due to previous pine needle treatment erosion; pine needle or wood chip mulch application recommended.								

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	639			
Easting	246817		Building/Structure Name	Mombo Ski Run		Survey Date	8/28/2017		Selection Code	S03	
Northing	4312030		Reviewer Name(s)	K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	10/1/2010		Date Project End	10/15/2010		Watershed	CA-1		State	CA	
Date BMP Implementation Complete	10/15/2010		Date Last BMP Maintenance	10/15/2010		Job No			Storm Depth		
Structure Type	Other		Other (Describe)	Ski Run		Survey Type	Follow-up				
Plan Title	None					Plan Date			Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Soils very fine and sandy. Water bars needed to prevent gullies down slope. Road waterbar diverts drainage away from slope.											
Implementation											
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs <input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div> <div>Implementation Score: <input type="text" value="I"/></div> </div>											
Effectiveness											
Effectiveness Score: <input type="text" value="E"/>											
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Currently under maintenance for rock lined ditch. Waterbars have been repaired and reshaped. Pine needle and wood chip mulch treatment in place and in excellent condition.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	610			
Easting	246817	Building/Structure Name		Mombo Ski Run		Survey Date	8/8/2017	Selection Code		S03	
Northing	4312030	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	10/1/2010	Date Project End	10/15/2010				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	10/15/2010	Date Last BMP Maintenance	10/15/2010				Job No		Storm Depth	2.01"	
Structure Type	Other	Other (Describe)		Ski Run		Survey Type	Post Storm Survey				
Plan Title	None					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection Soils very fine and sandy. Water bars needed to prevent gullies down slope. Road waterbar diverts drainage away from slope.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score:									
		E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Waterbar is effectively directing runoff off the ski run but highly erosive soils require additional treatment. On Annual Work List to address.									

Form HV2: Permanent BMPs for Buildings and Structures												
UTM Zone	11						ID#	636				
Easting	249656	Building/Structure Name		Mott Canyon - Lower Terminal		Survey Date	8/28/2017	Selection Code		S02		
Northing	4313289	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township		Range		Section		
Date Project Start		Date Project End				Watershed		NV-1		State	NV	
Date BMP Implementation Complete		10/25/2009		Date Last BMP Maintenance		10/25/2009		Job No			Storm Depth	
Structure Type		Lift-Base		Other (Describe)				Survey Type		Routine		
Plan Title								Plan Date				
Plan Revision Date												
Specific concerns associated with construction project and BMP measures designed to achieve resource protection												
Implementation										Implementation Score:		
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								I		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications										
Effectiveness										Effectiveness Score:		
										E		
1) Source area erosion control, protection/stabilization of site, especially erosive areas												
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
2) Runoff infiltration and drainage control system effectiveness												
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
3) Effectiveness of hazardous substance control measures												
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA						
Additional Comments		Area well vegetated and maintained. Stream free of debris. Minor riling shown in steeper gradient areas. Prior surface treatments have since eroded; maintenance may be required in some areas.										

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	587			
Easting	248893	Building/Structure Name		Mott Canyon Upper Terminal		Survey Date	7/11/2017	Selection Code		S02	
Northing	4313233	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	19E	Section	6
Date Project Start		Date Project End				Watershed		NV-1	State		NV
Date BMP Implementation Complete				Date Last BMP Maintenance				Job No		Storm Depth	
Structure Type		Lift-Top		Other (Describe)				Survey Type		Routine	
Plan Title						None, CERP applies			Plan Date		
						Plan Revision Date					
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Dripline trenches, effective cover/erosion resistance											
Implementation										Implementation Score:	
		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div> <div style="display: flex; justify-content: space-between;"> 1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>								<input style="width: 40px;" type="text" value="I"/>	
Effectiveness										Effectiveness Score:	
		1) Source area erosion control, protection/stabilization of site, especially erosive areas								<input style="width: 40px;" type="text" value="E"/>	
		a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		2) Runoff infiltration and drainage control system effectiveness									
		a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		3) Effectiveness of hazardous substance control measures									
		a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality								<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
Additional Comments		Dripline infiltration areas in place; may require maintenance in upcoming years. Wood chip mulch in place. Grease and oil drips under lift terminal.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	11						ID#	682	
Easting	249410	Building/Structure Name		Nevada Trail - Rock Lined Ditch		Survey Date	9/27/2017	Selection Code	S06
Northing	4315724	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E
Date Project Start		Date Project End				Section	30		
Date BMP Implementation Complete		Date Last BMP Maintenance				Watershed	NV-4	State	NV
Structure Type		Other		Other (Describe)		Job No		Storm Depth	0.75
				Ski Run		Survey Type	Post Storm Survey		
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Erosion resistance along roadway									
Implementation									
<div style="display: flex; justify-content: space-between;"> <div> <p>1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs</p> <p>1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications</p> </div> <div> <p>Implementation Score:</p> <p style="font-size: 24px; text-align: center;">I</p> </div> </div>									
Effectiveness									
Effectiveness Score:									
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
Additional Comments		Rock lined channel still has only very minor sediment build-up, no evidence of erosion. Excellent coverage on surrounding slope that has remained stable with no signs of erosion. Area remains in excellent condition; no recommendations.							

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	669			
Easting	249410	Building/Structure Name		Nevada Trail - Rock Lined Ditch		Survey Date	9/13/2017	Selection Code	S06		
Northing	4315724	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E	Section	30
Date Project Start		Date Project End				Watershed	NV-4	State	NV		
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No		Storm Depth	1.16		
Structure Type	Other	Other (Describe)	Ski Run			Survey Type	Post Storm Survey				
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Erosion resistance along roadway											
Implementation											
		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs Implementation Score: <input style="width: 50px;" type="text" value="1"/> </div>									
		<div style="display: flex; justify-content: space-between;"> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>									
Effectiveness											
		<div style="display: flex; justify-content: space-between;"> 1) Source area erosion control, protection/stabilization of site, especially erosive areas Effectiveness Score: <input style="width: 50px;" type="text" value="E"/> </div>									
		a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
		b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
		c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
		2) Runoff infiltration and drainage control system effectiveness									
		a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
		b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
		3) Effectiveness of hazardous substance control measures									
		a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		Rock lined channel has very minor sediment build-up, no evidence of erosion. Excellent coverage on surrounding slope. Area in excellent condition; no recommendations.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	634			
Easting	249410	Building/Structure Name		Nevada Trail Ski Run		Survey Date	8/22/2017	Selection Code		S06	
Northing	4315724	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E	Section	30
Date Project Start		Date Project End				Watershed	NV-4	State		NV	
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No		Storm Depth			
Structure Type	Other	Other (Describe)		Ski Run		Survey Type	Follow-up				
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Erosion resistance along roadway											
Implementation										Implementation Score:	
1		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								I	
1		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Rock lined channel in good condition. Wood chip mulch application appears to be effective and in good condition.									

Form HV2: Permanent BMPs for Buildings and Structures												
UTM Zone	11						ID#	617				
Easting	248867	Building/Structure Name		Olympic Express - Upper Terminal		Survey Date	8/8/2017	Selection Code		S03		
Northing	4315031	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E	Section	31	
Date Project Start	7/23/2007	Date Project End				Watershed	NV-3	State		NV		
Date BMP Implementation Complete				Date Last BMP Maintenance				Job No	00-607.3	Storm Depth	2.01"	
Structure Type		Lift-Top		Other (Describe)				Survey Type		Post Storm Survey		
Plan Title						2007 Implementation - Northbowl/Olympic Express Lift Replacement Project			Plan Date	06/27/2007	Plan Revision Date	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection												
Erosion and sediment transport prevention, revegetation establishment												
Implementation										Implementation Score:		
1		1) BMPs are designed to maintain resource protection and meet water quality standards								I		
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs										
1		2) BMPs are constructed according to contract design specifications										
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications										
Effectiveness										Effectiveness Score:		
1) Source area erosion control, protection/stabilization of site, especially erosive areas												
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA										
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA										
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA										
2) Runoff infiltration and drainage control system effectiveness												
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA										
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA										
3) Effectiveness of hazardous substance control measures												
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA										
Additional Comments		Drip line infiltration shows little sediment accumulation. Large cobble border around infiltration area in decent condition; maintenance may be required in upcoming years. Wood chips in place and stable. Good ground surface cover.										

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	666			
Easting	248867	Building/Structure Name		Olympic Express Lower Terminal		Survey Date	9/13/2017		Selection Code	S03	
Northing	4315031	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E	Section	31
Date Project Start	7/23/2007	Date Project End				Watershed	NV-3		State	NV	
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No	00-607.3		Storm Depth	1.16	
Structure Type	Lift-Base	Other (Describe)				Survey Type	Post Storm Survey				
Plan Title	2007 Implementation - Northbowl/Olympic Express Lift Replacement Project					Plan Date	06/27/2007		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Erosion and sediment transport prevention, revegetation establishment											
<hr/>											
Implementation										Implementation Score:	I
		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
		1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
<hr/>											
Effectiveness										Effectiveness Score:	E
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Decent coverage with pine needle and wood chip mulch beneath terminal and surrounding area; recommended reapplication. Moderate sediment build-up in geotextile fabric (pyramid) lined channel. Rock riprap slope below road appears very stable. No signs of erosion after rain event.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	10						ID#	640			
Easting	0	Building/Structure Name	Orion's			Survey Date	8/28/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township		Range		Section	
Date Project Start		Date Project End				Watershed	NV-1		State	NV	
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No		Storm Depth			
Structure Type		Other (Describe)				Survey Type	Post Storm Survey				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Implementation										Implementation Score:	
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								I	
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Waterbars in excellent condition and appear effective in directing runoff to surface treatment areas. Treatment to road surface on-going, should help to stabilize road surface.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	10						ID#	685			
Easting	0	Building/Structure Name	Orion's			Survey Date	10/2/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township		Range		Section	
Date Project Start		Date Project End				Watershed	NV-1		State	NV	
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No		Storm Depth			
Structure Type		Other (Describe)				Survey Type	Follow-up				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Implementation											
		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs Implementation Score: <input style="width: 50px;" type="text" value="1"/> </div>									
		<div style="display: flex; justify-content: space-between;"> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>									
Effectiveness											
		Effectiveness Score: <input style="width: 50px;" type="text" value="E"/>									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Slopes adjacent to road in great condition with excellent surface cover. Road surfacing looks effective; will evaluate again after winter season.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	10						ID#	620	
Easting	0	Building/Structure Name	Orion's		Survey Date	8/8/2017	Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo		Township		Range		Section
Date Project Start		Date Project End			Watershed	NV-1	State	NV	
Date BMP Implementation Complete		Date Last BMP Maintenance			Job No		Storm Depth	2.01"	
Structure Type		Other (Describe)			Survey Type	Post Storm Survey			
Plan Title					Plan Date		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
???									
Implementation							Implementation Score:		
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					I		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							
Effectiveness							Effectiveness Score:		
							E		
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments	Pine needle and wood chip mulch application provides erosion resistance. Excellent condition of surface treatments. Waterbars in excellent condition and appear effective in directing runoff to surface treatment areas.								

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	623			
Easting	246148	Building/Structure Name		Pioneer Poma		Survey Date	8/22/2017	Selection Code		S03	
Northing	4313086	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start		Date Project End				Watershed		CA-1		State	CA
Date BMP Implementation Complete		7/31/2002		Date Last BMP Maintenance				Job No		00-607-0	
Storm Depth				Survey Type		Routine					
Structure Type		Lift		Other (Describe)							
Plan Title						Pioneer Poma Lift Replacement					
Plan Date						12-14-2001		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Soil stabilization and sediment transport to SEZ, revegetation.											
Implementation										Implementation Score:	
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								I	
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
										E	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Run area in great condition with excellent surface cover. Few areas of bare soil, good revegetation growth from full restoration treatment.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone		11						ID#	592		
Easting	246207		Building/Structure Name		Powderbowl Express - Lower Terminal		Survey Date	7/27/2017	Selection Code	S02	
Northing	4312490		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	
Date Project Start		9/1/2016		Date Project End		9/10/2016		Section	1		
Date BMP Implementation Complete		9/10/2016		Date Last BMP Maintenance				Watershed	CA-1	State	CA
Structure Type		Lift-Base		Other (Describe)				Job No		Storm Depth	
Plan Title		BMP Maintenance, CERP applies					Survey Type	Routine			
Plan Date								Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Sediment basin capacity, rock lined ditch,											
Implementation		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs Implementation Score: <input type="text" value="I"/> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> 1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>									
Effectiveness		<div style="display: flex; justify-content: space-between;"> <div> <p>1) Source area erosion control, protection/stabilization of site, especially erosive areas</p> <p>a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact</p> <p>b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion</p> <p>c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion</p> <p>2) Runoff infiltration and drainage control system effectiveness</p> <p>a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ</p> <p>b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened</p> <p>3) Effectiveness of hazardous substance control measures</p> <p>a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality</p> </div> <div style="margin-top: 10px;"> <div style="display: flex; justify-content: space-between; border: 1px solid black; padding: 2px;"> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> <div style="display: flex; justify-content: space-between; border: 1px solid black; padding: 2px;"> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> <div style="display: flex; justify-content: space-between; border: 1px solid black; padding: 2px;"> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> <div style="display: flex; justify-content: space-between; border: 1px solid black; padding: 2px;"> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> <div style="display: flex; justify-content: space-between; border: 1px solid black; padding: 2px;"> <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div> </div>									
Additional Comments		Rock lined ditch and drainage area in great condition. Build-up of sediment in basin and ditch not yet apparent.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	673			
Easting	246207	Building/Structure Name		Powderbowl Express - Lower Terminal		Survey Date	9/27/2017		Selection Code	S02	
Northing	4312490	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	9/1/2016	Date Project End	9/10/2016				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/10/2016	Date Last BMP Maintenance					Job No		Storm Depth	0.75	
Structure Type	Lift-Base	Other (Describe)				Survey Type	Post Storm Survey				
Plan Title	BMP Maintenance, CERP applies					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Sediment basin capacity, rock lined ditch,											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score: E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Rock lined ditch and drainage area remain in great condition. Build-up of sediment in basin and ditch still not apparent.									

Form HV2: Permanent BMPs for Buildings and Structures										
UTM Zone	11							ID#	643	
Easting	246207	Building/Structure Name	Powderbowl Express - Lower Terminal		Survey Date	9/13/2017	Selection Code	S02		
Northing	4312490	Reviewer Name(s)	K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	9/1/2016	Date Project End	9/10/2016		Watershed	CA-1	State	CA		
Date BMP Implementation Complete	9/10/2016	Date Last BMP Maintenance			Job No		Storm Depth	1.16		
Structure Type	Lift-Base	Other (Describe)			Survey Type	Post Storm Survey				
Plan Title	BMP Maintenance, CERP applies				Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection										
Sediment basin capacity, rock lined ditch,										
Implementation		<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div> <div> Implementation Score: <input type="text" value="1"/> </div> </div> <div style="margin-top: 10px;"> <input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>								
Effectiveness		<div style="display: flex; justify-content: space-between;"> <div> 1) Source area erosion control, protection/stabilization of site, especially erosive areas <div style="margin-top: 5px;"> a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> <div style="margin-top: 5px;"> b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> <div style="margin-top: 5px;"> c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div> <div> 2) Runoff infiltration and drainage control system effectiveness <div style="margin-top: 5px;"> a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> <div style="margin-top: 5px;"> b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div> <div> 3) Effectiveness of hazardous substance control measures <div style="margin-top: 5px;"> a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> Additional Comments Rock lined ditch and drainage area in good condition. Minimal build-up of sediment in basin and ditch. Area remains stable in good condition. </div> <div> Effectiveness Score: <input type="text" value="E"/> </div> </div>								

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	585			
Easting	247287	Building/Structure Name		Sky Deck Restaurant		Survey Date	7/11/2017	Selection Code		S03	
Northing	4312392	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End				Watershed		CA-1		State	CA
Date BMP Implementation Complete	9/30/2006	Date Last BMP Maintenance				Job No		Storm Depth			
Structure Type	Building	Other (Describe)		Completed BMP Proj.		Survey Type		Routine			
Plan Title	No plan set, CERP applies					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Revegetation, infiltration areas, erosion resistance on bare areas.											
Implementation										Implementation Score:	
1		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								I	
1		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Wood chip mulch degrading in parking area. Rope fencing still intact. Wattles deteriorating and losing effectiveness; maintenance required in near future.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	11						ID#	630	
Easting	247287	Building/Structure Name		Sky Deck Restaurant		Survey Date	8/22/2017	Selection Code	S03
Northing	4312392	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E
						Section	1		
Date Project Start	8/7/2006	Date Project End				Watershed	CA-1	State	CA
Date BMP Implementation Complete	9/30/2006	Date Last BMP Maintenance				Job No		Storm Depth	
Structure Type	Building	Other (Describe)	Completed BMP Proj.			Survey Type	Routine		
Plan Title	No plan set, CERP applies					Plan Date		Plan Revision Date	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Revegetation, infiltration areas, erosion resistance on bare areas.									
<hr/>									
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					Implementation Score: <input type="text" value="1"/>		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							
<hr/>									
Effectiveness							Effectiveness Score: <input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
Additional Comments		Wood chip mulch intact over bare parking area. Rope fencing adjusted to allow parking access for two vehicles. Straw wattles in place and anchored down.							

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	611			
Easting	247287	Building/Structure Name		Sky Deck Stream Crossing		Survey Date	8/8/2017	Selection Code		S03	
Northing	4312392	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End				Watershed		CA-1		State	CA
Date BMP Implementation Complete	9/30/2006	Date Last BMP Maintenance				Job No		Storm Depth		2.01"	
Structure Type	Building	Other (Describe)		Completed BMP Proj.		Survey Type		Post Storm Survey			
Plan Title	No plan set, CERP applies					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Revegetation, infiltration areas, erosion resistance on bare areas.											
Implementation											
1		1) BMPs are designed to maintain resource protection and meet water quality standards									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness											
		Effectiveness Score:									
		E									
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Wood chip mulch intact over bare parking area. Rope fencing adjusted to allow parking access for two vehicles. Straw wattles in place and anchored down (anchored using stones). Wattles show signs of degradation; maintenance may be required.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	584			
Easting	247202	Building/Structure Name		Sky Express - Lower Terminal		Survey Date	7/11/2017	Selection Code		S03	
Northing	4312286	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/7/2006	Date Project End				Watershed		CA-1	State		CA
Date BMP Implementation Complete				Date Last BMP Maintenance				Job No		Storm Depth	
Structure Type		Lift-Base		Other (Describe)				Survey Type		Follow-up	
Plan Title						Infiltration BMP Maintenance			Plan Date		
						Plan Revision Date					
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Infiltration trenches for impervious surfaces (roof drip lines), prevent soil erosion, erosion resistance											
Implementation										Implementation Score:	
		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								I	
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
										E	
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Infiltration trenches in good condition; may require maintenance in upcoming years. Minimal trash and debris, and are well maintained. No evidence of sediment transport or erosion. Wood chip mulch in place and in good condition.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone		11						ID#	597
Easting	248355		Building/Structure Name		Sky Express - Upper Terminal		Survey Date	7/27/2017	
Northing	4311630		Reviewer Name(s)		K. Roaldson, J. Azevedo		Selection Code	S03	
Date Project Start		8/7/2006		Date Project End				Township	12N
						Range		18E	Section
								1	
Date BMP Implementation Complete				Date Last BMP Maintenance				Watershed	CA-1
								State	CA
Structure Type		Lift-Top		Other (Describe)		Completed BMP Proj.		Job No	
								Storm Depth	
Plan Title		Infiltration BMP Maintenance				Survey Type		Routine	
						Plan Date			
						Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Perm BMPs to minimize erosion: infiltration BMPs, effective cover and slope stabilization.									
Implementation									
1		1) BMPs are designed to maintain resource protection and meet water quality standards						Implementation Score:	
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs						I	
1		2) BMPs are constructed according to contract design specifications							
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							
Effectiveness									
								Effectiveness Score:	
								E	
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
Additional Comments		Infiltration areas in decent condition with moderate sediment build-up. Some bare areas around lift but characteristic of surrounding area.							

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	11						ID#	595	
Easting	247277	Building/Structure Name		Sky Meadows Stream Crossing		Survey Date	7/27/2017	Selection Code	S02
Northing	4312421	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E
						Section	1		
Date Project Start	6/15/2016	Date Project End	6/15/2016			Watershed	CA-1	State	CA
Date BMP Implementation Complete	6/15/2016	Date Last BMP Maintenance	6/15/2016			Job No		Storm Depth	
Structure Type	Other	Other (Describe)	Road			Survey Type	Routine		
Plan Title	CERP Applies					Plan Date		Plan Revision Date	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Protection of SEZ crossing with wattles/fiber rolls									
Implementation									
<div style="display: flex; justify-content: space-between;"> <div> <p>1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs</p> <p>1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications</p> </div> <div> <p>Implementation Score:</p> <p style="font-size: 24px; text-align: center;">I</p> </div> </div>									
Effectiveness									
Effectiveness Score:									
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
Additional Comments		Coir wattles in place with proper placement and anchoring. Wattles filled with sediment near max capacity and compacted to ground surface. Stream crossing in good shape. Culverts in excellent condition and functional.							

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	10						ID#	667	
Easting	0	Building/Structure Name	Stagecoach - Middle		Survey Date	9/13/2017	Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo		Township		Range		Section
Date Project Start		Date Project End			Watershed	NV-5	State	NV	
Date BMP Implementation Complete		Date Last BMP Maintenance			Job No		Storm Depth	1.16	
Structure Type		Other (Describe)			Survey Type	Post Storm Survey			
Plan Title					Plan Date		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					Implementation Score: <input type="text" value="1"/>		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							
Effectiveness							Effectiveness Score: <input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments	Area in excellent condition with wood chip mulch and pine needle treatment in place. Treatment provides excellent cover and appears in stable condition. No signs of erosion or sediment movement.								

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	10						ID#	668			
Easting	0	Building/Structure Name	Stagecoach - Utilities			Survey Date	9/13/2017		Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo			Township		Range		Section	
Date Project Start		Date Project End				Watershed	NV-5		State	NV	
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No		Storm Depth	1.16		
Structure Type		Other (Describe)				Survey Type	Post Storm Survey				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs								Implementation Score:	1
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	E
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments	Area in excellent condition with wood chip mulch and pine needle treatment in place. Treatment provides excellent cover and appears in stable condition. No signs of erosion or sediment movement.										

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	11						ID#	633	
Easting	249840	Building/Structure Name		Stagecoach Lower Terminal		Survey Date	8/22/2017	Selection Code	S02
Northing	4316356	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E
Date Project Start		Date Project End		10/15/2008		Watershed		NV-2+5	State
Date BMP Implementation Complete		Date Last BMP Maintenance		7/1/2013		Job No		98604.1	Storm Depth
Structure Type		Lift-Base		Other (Describe)		Completed BMP Proj.		Survey Type	
Plan Title		1998 Implementation: Stagecoach Lift Erosion Control				Plan Date		08/11/98	Plan Revision Date
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Effective cover around lift, drip line infiltration areas.									
Implementation		<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs </div> <div> <input checked="" type="checkbox"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div> </div>					Implementation Score: <input type="text" value="I"/>		
Effectiveness							Effectiveness Score: <input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
Additional Comments		Gully has been repaired. Pine needle and wood chip mulch treatment applied to area and provides excellent cover. Appears adequate to prevent future erosion.							

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	11						ID#	621	
Easting	249840	Building/Structure Name		Stagecoach Lower Terminal		Survey Date	8/8/2017	Selection Code	S02
Northing	4316356	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	13N	Range	19E
Date Project Start		Date Project End		10/15/2008		Watershed		NV-2+5	State
Date BMP Implementation Complete		Date Last BMP Maintenance		7/1/2013		Job No		98604.1	Storm Depth
Structure Type		Lift-Base		Other (Describe)		Completed BMP Proj.		Survey Type	
Plan Title		1998 Implementation: Stagecoach Lift Erosion Control				Plan Date		08/11/98	Plan Revision Date
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Effective cover around lift, drip line infiltration areas.									
Implementation									
<div style="display: flex; justify-content: space-between;"> <div> <p>1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs</p> <p>1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications</p> </div> <div> <p>Implementation Score:</p> </div> </div>									
Effectiveness									
Effectiveness Score:									
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA			
Additional Comments		Gully formed on ski slope area due to above average snowfall from past season. Gully worsened by storm event and requires repair. Wood chips remain in place and in good condition.							

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	596			
Easting	246312	Building/Structure Name		Stein's		Survey Date	7/27/2017		Selection Code	S05	
Northing	4312609	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start		Date Project End	10/15/2006				Watershed	CA-1	State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance					Job No		Storm Depth		
Structure Type	Building	Other (Describe)				Survey Type	Follow-up				
Plan Title	No plan set, CERP applies					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
No plans available. Resource concern is soil stabilization accomplished by providing effective cover. Containment of the 20-yr 1-hr event is a requirement.											
Implementation											
		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs Implementation Score: <input type="text" value="I"/> </div>									
		<div style="display: flex; justify-content: space-between;"> 1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>									
Effectiveness											
		<div style="display: flex; justify-content: space-between;"> 1) Source area erosion control, protection/stabilization of site, especially erosive areas Effectiveness Score: <input type="text" value="E"/> </div>									
		<div style="display: flex; justify-content: space-between;"> a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
		<div style="display: flex; justify-content: space-between;"> b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
		<div style="display: flex; justify-content: space-between;"> c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
		<div style="display: flex; justify-content: space-between;"> 2) Runoff infiltration and drainage control system effectiveness </div>									
		<div style="display: flex; justify-content: space-between;"> a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
		<div style="display: flex; justify-content: space-between;"> b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
		<div style="display: flex; justify-content: space-between;"> 3) Effectiveness of hazardous substance control measures </div>									
		<div style="display: flex; justify-content: space-between;"> a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
Additional Comments		Rock lined channel in great condition with little sediment build-up. Drop inlet in good condition with cover in place. Area is well vegetated and stable. Debris in channel may need clean-up.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	647			
Easting	246312	Building/Structure Name		Stein's		Survey Date	9/13/2017		Selection Code	S05	
Northing	4312609	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start		Date Project End	10/15/2006				Watershed	CA-1	State	CA	
Date BMP Implementation Complete		Date Last BMP Maintenance					Job No		Storm Depth	1.16	
Structure Type	Building	Other (Describe)				Survey Type	Post Storm Survey				
Plan Title	No plan set, CERP applies					Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
No plans available. Resource concern is soil stabilization accomplished by providing effective cover. Containment of the 20-yr 1-hr event is a requirement.											
Implementation											
		<div style="display: flex; justify-content: space-between;"> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs Implementation Score: <input type="text" value="I"/> </div>									
		<div style="display: flex; justify-content: space-between;"> 1) 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications </div>									
Effectiveness											
		<div style="display: flex; justify-content: space-between;"> 1) Source area erosion control, protection/stabilization of site, especially erosive areas Effectiveness Score: <input type="text" value="E"/> </div>									
		<div style="display: flex; justify-content: space-between;"> a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
		<div style="display: flex; justify-content: space-between;"> b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
		<div style="display: flex; justify-content: space-between;"> c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
		<div style="display: flex; justify-content: space-between;"> 2) Runoff infiltration and drainage control system effectiveness </div>									
		<div style="display: flex; justify-content: space-between;"> a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
		<div style="display: flex; justify-content: space-between;"> b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
		<div style="display: flex; justify-content: space-between;"> 3) Effectiveness of hazardous substance control measures </div>									
		<div style="display: flex; justify-content: space-between;"> a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality <input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA </div>									
Additional Comments		Rock lined ditch in good condition with minimal sediment build-up. Drop inlet in good condition with cover in place. Area is well vegetated and stable.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	615			
Easting	247883	Building/Structure Name		Tamarack Trail Widening		Survey Date	8/8/2017	Selection Code		S03	
Northing	4313456	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start		Date Project End				Watershed	CA-1	State		CA	
Date BMP Implementation Complete		Date Last BMP Maintenance				Job No		Storm Depth		2.01"	
Structure Type	Other	Other (Describe)		Snowmaking Line		Survey Type	Post Storm Survey				
Plan Title						Plan Date		Plan Revision Date			
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Temp BMPs to address erosion control, including: boundary fence, restricted access, water truck for dust control, covered/watered stockpiles, sediment barriers.											
Implementation										Implementation Score:	I
		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	E
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Trail in great condition. Effective slope stabilization. Wood chips, boulders, logs, and drain rock cover most surface area on ski slope. Minimal signs of sediment transport.									

Form HV2: Permanent BMPs for Buildings and Structures									
UTM Zone	10						ID#	659	
Easting	0	Building/Structure Name	Tubing Lift		Survey Date	9/13/2017	Selection Code	S02	
Northing	0	Reviewer Name(s)	K. Roaldson, J. Azevedo		Township		Range		Section
Date Project Start		Date Project End			Watershed	CA-1	State	NV	
Date BMP Implementation Complete		Date Last BMP Maintenance			Job No		Storm Depth	1.16	
Structure Type		Other (Describe)			Survey Type	Post Storm Survey			
Plan Title					Plan Date		Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection									
Implementation		<input checked="" type="radio"/> 1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs					Implementation Score: <input type="text" value="1"/>		
		<input checked="" type="radio"/> 2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							
Effectiveness							Effectiveness Score: <input type="text" value="E"/>		
1) Source area erosion control, protection/stabilization of site, especially erosive areas									
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness									
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures									
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality					<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments	Wood chip mulch in place and in good condition. Turf in bottom foot traffic area to reduce movement of wood chip treatment. Area well maintained. No recommendations as no evidence of erosion, ponding or sediment movement.								

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	649			
Easting	246846	Building/Structure Name		Upper Maggie's Corner		Survey Date	9/13/2017		Selection Code	S03	
Northing	4312787	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/1/2016	Date Project End	8/1/2016					Watershed	CA-1	State	CA
Date BMP Implementation Complete	8/1/2016	Date Last BMP Maintenance	7/27/2017					Job No		Storm Depth	1.16
Structure Type	Other	Other (Describe)	Road					Survey Type	Post Storm Survey		
Plan Title	CERP applies, Erosion Hotspot Inventory Epic Discovery EIR/EIS/EIS					Plan Date			Plan Revision Date		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
Water bar connection to SEZ, road shoulder effective cover, soil stabilization, prevention of sediment transport, improve erosion resistance, water bar outlet protection.											
Implementation										Implementation Score:	
1		1) BMPs are designed to maintain resource protection and meet water quality standards								I	
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
1		2) BMPs are constructed according to contract design specifications									
		1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	
1		1) Source area erosion control, protection/stabilization of site, especially erosive areas								E	
		a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact								<input type="radio"/> Meets/Exceeds. <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion								<input checked="" type="radio"/> Meet/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
1		2) Runoff infiltration and drainage control system effectiveness									
		a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
		b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
1		3) Effectiveness of hazardous substance control measures									
		a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality								<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA	
Additional Comments		Basin sediment build-up moderate. Rock lined ditch along road has sediment build-up. Basin appears to have captured most of runoff. Maintenance required (cleanout of sediment started already).									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone		11						ID#	624		
Easting	246118		Building/Structure Name		Upper Maintenance Shop		Survey Date	8/22/2017	Selection Code	S03	
Northing	4312927		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	
Date Project Start		8/22/2006		Date Project End		10/15/2010		Section	1		
Date BMP Implementation Complete		9/19/2016		Date Last BMP Maintenance		7/11/2017		Watershed	CA-1	State	CA
Structure Type		Maintenance Station		Other (Describe)				Job No	00-607-4	Storm Depth	
Plan Title		Upper Shops Water Quality and Stream Environment Zone Improvements					Survey Type	Follow-up			
Plan Date							4/25/06	Plan Revision Date		8/31/06	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
BMPs to protect adjacent SEZ - drainage diversion, concrete wall, SEZ drop pool design, revegetation											
Implementation									Implementation Score:		
1		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs							1		
1		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness									Effectiveness Score:		
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ							<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality							<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA				
Additional Comments		Sediment build-up in rock lined drainage basins and channel. Wattles may need maintenance.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone	11						ID#	645			
Easting	246118	Building/Structure Name		Upper Maintenance Shop		Survey Date	9/13/2017		Selection Code	S03	
Northing	4312927	Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	Section	1
Date Project Start	8/22/2006	Date Project End	10/15/2010				Watershed	CA-1	State	CA	
Date BMP Implementation Complete	9/19/2016	Date Last BMP Maintenance	7/11/2017				Job No	00-607-4	Storm Depth	1.16	
Structure Type	Maintenance Station	Other (Describe)				Survey Type	Post Storm Survey				
Plan Title	Upper Shops Water Quality and Stream Environment Zone Improvements					Plan Date	4/25/06	Plan Revision Date	8/31/06		
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
BMPs to protect adjacent SEZ - drainage diversion, concrete wall, SEZ drop pool design, revegetation											
Implementation										Implementation Score:	I
		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs									
		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications									
Effectiveness										Effectiveness Score:	E
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality						<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA					
Additional Comments		Installation of culvert over road crossing greatly improved area; sediment capture at culvert outlet.									

Form HV2: Permanent BMPs for Buildings and Structures											
UTM Zone		11						ID#	598		
Easting	246118		Building/Structure Name		Upper Maintenance Shop		Survey Date	7/27/2017	Selection Code	S03	
Northing	4312927		Reviewer Name(s)		K. Roaldson, J. Azevedo		Township	12N	Range	18E	
Date Project Start		8/22/2006		Date Project End		10/15/2010		Section	1		
Date BMP Implementation Complete		9/19/2016		Date Last BMP Maintenance		7/11/2017		Watershed	CA-1	State	CA
Structure Type		Maintenance Station		Other (Describe)				Job No	00-607-4	Storm Depth	
Plan Title		Upper Shops Water Quality and Stream Environment Zone Improvements					Survey Type	Follow-up			
Plan Date							4/25/06	Plan Revision Date		8/31/06	
Specific concerns associated with construction project and BMP measures designed to achieve resource protection											
BMPs to protect adjacent SEZ - drainage diversion, concrete wall, SEZ drop pool design, revegetation											
Implementation									Implementation Score:		
		1) BMPs are designed to maintain resource protection and meet water quality standards 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to address BMPs							1		
		2) BMPs are constructed according to contract design specifications 1 = Meets/Exceeds 2 = Minor concerns 3 = Major concerns 4 = Failure to follow specifications							1		
Effectiveness									Effectiveness Score:		
1) Source area erosion control, protection/stabilization of site, especially erosive areas											
a) Soil protection measures, artificial or vegetative, eliminating erosion by runoff and rain-drop impact		<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
b) Revegetation establishment proceeding as expected, vegetative cover mitigating erosion		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
c) Cut/fill slope protection (vegetation, erosion control blankets, retention walls) preventing erosion		<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
2) Runoff infiltration and drainage control system effectiveness											
a) Infiltration zones (detention basins, driplines, gravel armor areas, infiltration trenches, system outlets) functioning properly with little potential for sediment and/or nutrient delivery to SEZ		<input type="radio"/> Meets/Exceeds <input checked="" type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
b) Ponding of runoff does not threaten fill slope or foundation integrity, erosion is not evident and no downstream resources are threatened		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
3) Effectiveness of hazardous substance control measures											
a) Mitigation measures of hazardous/toxic substances sufficient with no potential risk to water quality		<input checked="" type="radio"/> Meets/Exceeds <input type="radio"/> Minor Concern <input type="radio"/> Major Concern <input type="radio"/> NA									
Additional Comments		Sediment build-up in rock lined drainage basins and channel below road. Wattles in place in stream may need maintenance.									

Heavenly Mountain Resort
Mitigation and Monitoring Plan
Annual Report (October 2016 –
September 2017)

APPENDIX



ENVIRONMENTAL MONITORING
ANNUAL REPORT HEAVENLY
MOUNTAIN RESORT WATER YEAR 2017
(ELECTRONIC COPY ONLY)



January 15, 2018

Ms. Elizabeth van Diepen
Engineering Geologist
Lahontan Regional Water Quality Control Board
2501 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150

Re: Heavenly Mountain Resort 2017 Environmental Monitoring Program Annual Report

Dear Ms. van Diepen:

Enclosed, please find for your review the Environmental Monitoring Program Annual Report for the 2017 water year submitted in fulfillment of the monitoring and reporting requirements set forth in the California Regional Water Quality Control Board Lahontan Region Monitoring and Reporting Program No. 2015-0021 for Heavenly Mountain Resort. This report also fulfills the fourth quarter sampling, covering the months of July, August and September, 2017. The annual reporting requirements and location found in the report are listed below:

- Water Quality Monitoring Results and Laboratory Analysis (Appendix A)
- Storm Vault Water Quality Monitoring Results and Laboratory Analysis (Appendix B)
- Facilities Maintenance Monitoring (Appendix D)
- Snow Conditioning and Snowmaking Monitoring (Appendix D)
- Deicer and Abrasives Application and Recovery (Appendix D)
- USFS Road Monitoring (Appendix E)
- Facilities/Watershed Awareness Training (Appendix F)

Should you require additional information or have questions regarding this report and its contents, please contact Chris Donley of Cardno at 208-272-9178.

Sincerely,

A handwritten signature in black ink that reads 'ANDREW STRAIN'.

Andrew Strain
Vice President of Planning & Governmental Affairs

Cc: Stephanie Heller, USDA Forest Service LTBMU
Julie Roll, Tahoe Regional Planning Agency

Date: 01/15/2017

California Regional Water Quality Control Board
Lahontan Region
2501 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150

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WDR/NPDES Order Number: R6T-2015-0021
WDID Number: 6A090033000

Type of Report (circle one): Monthly Quarterly Semi-Annual **Annual** Other

Month(s) (circle applicable month(s)*:

JAN FEB MAR APR MAY JUN
JUL AUG SEP **OCT** NOV DEC

*Annual Reports (circle the first month of the reporting period)

Year: Water Year 2017

Violation(s)? NO YES* X

(Please check one)

*If YES is marked complete a-g (Attach Additional information as necessary)

a) Brief Description of Violation:

1. Heavenly Valley Creek station 43HVC-1A, the Sky Meadow's site, has an annual average value exceedance of the Lahontan standards for: Total Nitrogen, Total Phosphorus and Chloride
2. Heavenly Valley Creek station 43HVC-2, the Below Patsy's site, has an annual average value exceedance of the Lahontan standards for: Total Phosphorus and Chloride.
3. Heavenly Valley Creek station 43HVC-3, at Property Line site, has an annual average value exceedance of the Lahontan standards for: Total Phosphorus and Chloride.
4. Bijou Park Creek station 43HVC-4, the CA Parking Lot site, has annual average exceedances of the Lahontan standards for: Turbidity, Total Nitrogen, Total Phosphorus and Chloride.

5. California Parking Lot Filter Vault Effluent Point station 43HVP-2, exceeded not to exceed limits of the Lahontan standards for: Turbidity, Total Phosphorus, Total Nitrogen, and Oil & Grease in Water Year 2017. In the 4th Quarter of water year 2017, 43HVP-2 exceeded not to exceed limits of the Lahontan standards for: Turbidity and total phosphorus.

b) Section(s) of WDRs/
NPDES Permit Violated:

Board Order No. R6T-2015-0021, WDID NO. 6A090033000

c) Reported Value(s) or
Volume:

43HVC-1A: Total Nitrogen: 0.182 mg/L
Total Phosphorus: 0.048 mg/L
Chloride: 0.39 mg/L.

43HVC-2: Total Phosphorus: 0.036 mg/L.
Chloride: 0.68 mg/L.

43HVC-3: Total Phosphorus: 0.053 mg/L.
Chloride: 0.66 mg/L.

43BPC-4: Turbidity: 22.8 NTU
Total Nitrogen: 0.570 mg/L
Total Phosphorus: 0.113 mg/L.
Chloride: 61.1 mg/L.

43HVP-2: (Results from the 4th Quarter)
Turbidity: 26 NTU.
Total Phosphorus: 0.11 mg/L.

d) WDRs/NPDES
Limit/Condition:

Maximum concentrations not to exceed for discharge to surface waters in the Lake Tahoe Hydrologic Unit (Applies to the Effluent Storm Filter Site 43HVP-2):

Turbidity: 20.0 NTU
Total Nitrogen: 0.5 mg/L
Total Phosphorus: 0.10 mg/L
Oil and Grease: 2.0 mg/L

Annual average concentrations for discharge to surface waters in the Lake Tahoe Hydrologic Unit (Applies to the Bijou Park Creek Site 43BPC-4):

Turbidity: 20 NTU
Total Nitrogen: 0.15 mg/L
Total Phosphorus: 0.008 mg/L
Chloride: 3.0 mg/L
Total Suspended Solids: 60 mg/L¹

Annual average concentrations for discharge to surface waters in the Heavenly Valley Creek watershed (Applies to 43HVC-1A, 43HVC-2, 43HVC-3 and the reference site 43HDVC-5):

Total Nitrogen: 0.19 mg/L
Total Phosphorus: 0.015 mg/L
Chloride: 0.15 mg/L
Total Suspended Solids: 60 mg/L¹

¹Total Suspended Solids (TSS) value based on Lake Tahoe Basin 90th percentile value.

e) Date(s) and Duration of
Violation(s):

Water Year 2017 (October 1, 2016 – September 30, 2017)

f) Explanation of Cause(s):

Heavenly Valley Creek – The Sky Meadows (43HVC-1A) monitoring location was impacted by sustained flood conditions and overbank flows for at least 1 month during spring runoff. The total nitrogen concentrations were likely impacted by the increased exposure of meadow vegetation to overbank flows. During high flow conditions total nitrogen was also exceeded at the reference reach sampling location (43HDVC-5). The annual averages for total phosphorus and chloride were exceeded at each of the three sampling locations along Heavenly Valley Creek (43HVC-1A, 43HVC-2, and 43HVC-3). The annual average for total phosphorus and chloride were also exceeded at the reference reach sampling location (43HDVC-5). Heavenly Mountain Resort operations are not solely responsible for water quality exceedances since the background levels at the reference reach site are also high.

Bijou Park Creek –Annual averages for turbidity, total nitrogen, total phosphorus and chloride exceeded the state standard for the below California Parking lot sampling site along Bijou Park Creek (43BPC-4). Total phosphorus and chloride values were also exceeded at the reference site along Hidden Valley Creek (43HDVC-5); however, the annual averages for Bijou Park Creek (43BPC-4) are well above the reference reach exceedance values. The turbidity exceedances correlate to the sustained high flow conditions due to record precipitation.

California Parking Lot Filter Vault Effluent Sampling Location (43HVP-2) – The not to exceed standard was exceeded at least once throughout the water year for turbidity, total phosphorus, total nitrogen and oil & grease. Total phosphorus, total nitrogen, and oil & grease were only exceeded once out of the five sampling events, while turbidity was exceeded in all five samples. During the 4th quarter of water year 2017, turbidity and total phosphorus were the only parameters in exceedance. All of these parameters were also in excess of the standard at the two inlet locations (43HVP-1A and 43HVP-1B). Comparing the inlet and effluent concentrations shows a reduction in turbidity, total phosphorus and total nitrogen. Although annual maintenance of the vaults and cartridge replacement continued in 2017, storm and snow melt runoff samples at all three monitoring locations continue to be in exceedance and problematic. The Bijou Park Creek Evaluation Report, submitted with the Comprehensive Report in January 2017, outlines additional vault improvement recommendations that Heavenly should undertake in the future to help improve the filter vault water quality results.

g) Corrective Action(s): (Specify actions taken and a schedule for actions to be taken)

The new board order required Heavenly to complete a feasibility study regarding the Bijou Watershed and deicer application. This report was submitted in the winter of 2016 and was followed with the Bijou Park Creek Evaluation Report submitted in January 2017. Recommendations within the Bijou Park Creek watershed included: switching to Washoe sand (from cinders) and continuing to use a 5:1 deicer mixture composed of Washoe sand and salt to limit chloride in the watershed. In addition, Heavenly began implementation of applying liquid brine to the roadways prior to storm events in an effort to limit the amount of deicer needed and thus limit the amount of salt/chloride introduced to the watershed. Unfortunately the frequency of storm cycles this past winter (2016/2017) and persistent snow on the roadways and removal operations only allowed for one application last year. Heavenly is planning on continuing brine application for the 2017/2018 season in hopes to reduce deicer application while still providing safe travel for their employees and guests.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision following a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my knowledge of the person(s) who manage the system or those directly

and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

If you have any questions or require additional information, please contact Andrew Strain at the number provided above.

Sincerely,

Signature: ANDREW STRAIN

Name: Andrew Strain

Title: Vice President of Planning and Governmental Affairs

Environmental Monitoring Program Annual Report

Heavenly Mountain Resort Water
Year 2017

January 2018



Document Information

Prepared for Heavenly Mountain Resort

Project Name Environmental Monitoring Program Annual Report
 Heavenly Mountain Resort Water Year 2017

WDID Number 6A090033000

Project Number E317602500

Project Manager Chris Donley

Date January 2018

Prepared for:



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224 Kingsbury Grade, (State Route 207), Suite 200, Stateline, NV 89449

Submitted to:



Lahontan Regional Water Quality Control Board
2501 Lake Tahoe Boulevard, South Lake Tahoe, CA 96150

&



Lake Tahoe Basin Management Unit (LTBMU) USFS
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Prepared by:



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Acronyms

TBD	To Be Determined
BMI	Benthic Macro Invertebrate
BMPs	Best Management Practices
BMPEP	Best Management Practices Effectiveness Program
CERP	Construction Erosion Reduction Program
CRWQCB	California Regional Water Quality Control Board
CWE	Cumulative Watershed Effects
cm	Centimeter
ESC	Effective Soil Cover
EIR/EIS	Environmental Impact Report / Environmental Impact Statement
GIS	Arc-Geo Information Systems
IBI	Index of Biological Integrity
Lahontan	Lahontan Regional Water Quality Control Board (of the state of California)
LTBMU	Lake Tahoe Basin Management Unit (USDA Forest Service)
M or m	Meter
mm	Millimeter
Mg/L	milligrams/liter
MRP	Monitoring and Reporting Program
NDEP	Nevada Department of Environmental Protection
NTU	Nephelometric Turbidity Units
RCI	Resources Concepts Inc.
RIVPACS	River Invertebrate Prediction and Classification System

SCI	Stream Control Inventory
SOP	Standard Operating Procedure
SWAMP	Surface Water Ambient Monitoring Program
SWE	Snow Water Equivalent
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TRPA	Tahoe Regional Planning Agency
TSS	Total Suspended Sediment
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United States Geological Survey
WDR	Waste Discharge Requirements
WMPR	Watershed Maintenance and Restoration Program

1 Introduction

This annual report is submitted in partial fulfillment of monitoring and reporting requirements set forth in the Lahontan Regional Water Quality Control Board and Monitoring and Reporting Program Order No. R6T-2015-0021. This report summarizes monitoring and evaluation activities conducted at Heavenly Mountain Resort (Heavenly) during the 2017 water year as a result of the implementation of the Water Quality and Best Management Practices Monitoring Program. This program is a component of the Heavenly Mountain Resort Master Plan (Heavenly 1996), and the Heavenly Mountain Resort Master Plan Amendments (Heavenly 2007 and 2015).

The Monitoring Program was originally developed and implemented by the United State Department of Agriculture (USDA) Forest Service (USFS) as part of the Heavenly Master Plan Draft Environmental Impact Statement (USFS 1996a) and later incorporated into the Heavenly Ski Resort Master Plan as Chapter 7 (Heavenly 1996). In 2003, the Lahontan Regional Water Quality Control Board (Lahontan) issued a Revised Board Order and a Revised Monitoring Plan. In 2005, monitoring and reporting duties were transferred from the USFS to ENTRIX, Inc. (now Cardno) who were retained by Heavenly. The 2007 amendment to the Heavenly Mountain Resort Master Plan, approved by the Tahoe Regional Planning Agency (TRPA) on April 25, 2007, went into effect and began the implementation stage of the plan by Heavenly in collaboration with Lahontan, the USDA Forest Service, and TRPA. Modifications resulting from the Master Plan Amendment included incorporating all mitigation monitoring into a single report that is to be submitted annually in May to the TRPA, USDA Forest Service, and Lahontan. The mitigation and monitoring report schedule and submittal is ongoing and due annually.

Due to newly proposed on mountain expansion plans, a joint Environmental Impact Report/Environmental Impact Statement/Environmental Statement (EIR/EIS/EIS) was developed and approved in the spring of 2015. The EIR/EIS/EIS followed the past report format and submittal which (where appropriate) updated and refined mitigation measures from the previous Master Plan. The Master Plan represents a comprehensive twenty-year development plan for Heavenly Mountain Resort. Master Plan and Master Plan Amendment implementation objectives of Heavenly, TRPA, and the USDA Forest Service regarding protection of the environment include (Heavenly 1996):

Making optimal use of the natural attributes of the site without creating a significant impact on the environment (Heavenly):

- Restoring the health of sub-watersheds and other natural resource values disturbed by past activities (Heavenly);
- Protecting the environmental quality of the area (USDA Forest Service);
- Providing a quality ski experience within the resort with ski runs and other disturbed areas stabilized to reduce the potential for soil erosion (USDA Forest Service);
- Improving the visual quality of the area (USDA Forest Service); and
- Providing for long-term preservation and restoration of Stream Environment Zones (TRPA).

The requirements of the Annual Water Quality and Best Management Practices Monitoring Reports remain the same following approval of the Master Plan Amendment. As the CEQA lead agency, the Water Board is the responsible party for ensuring all mitigation measures are in accordance with the program. "The Water Board recognizes that another agency (Forest Service or TRPA) has responsibilities

for ensuring implementation” for monitoring mitigation measures outside of the Water Boards authority.¹ As with past annual report submittals, the BMP monitoring report will be submitted with the TRPA Annual Mitigation and Monitoring report due on May 1st of the following year (May 2018).

Implementation of the Collection/Monitoring Agreement between Heavenly and the USDA Forest Service (Monitoring Program) provides sufficient data to determine compliance with agency water quality standards and validate the efficiency of management practices in protecting against adverse cumulative watershed effects.

1.1 Location

Heavenly Mountain Resort is located on the south shore of Lake Tahoe within El Dorado and Alpine Counties of California and Douglas County of Nevada (Figure 1-1). Land ownership is shared between the USDA Forest Service and Heavenly. Heavenly operates on National Forest lands through a special use permit, renewed in 2002 for a period of 40 years. Heavenly has been a special-use permittee from the USDA Forest Service since 1955. In 2002, Heavenly was acquired by the current owners Vail Resorts, Inc.

The California/Nevada state line divides the special use permit boundary with approximately 60 percent of the ski area in Nevada and 40 percent in California. Approximately 60 percent of Heavenly lies within the jurisdiction of the Tahoe Regional Planning Agency (TRPA) within the Lake Tahoe Basin (Heavenly 1996).

¹ California Regional Water Quality Control Board-Lahontan Region. Board Order No. R6T-2015-0021. WDID No. 6A090033000. Waste Discharge Requirements for Heavenly Mountain Resort. 2015 (pages 16-17).

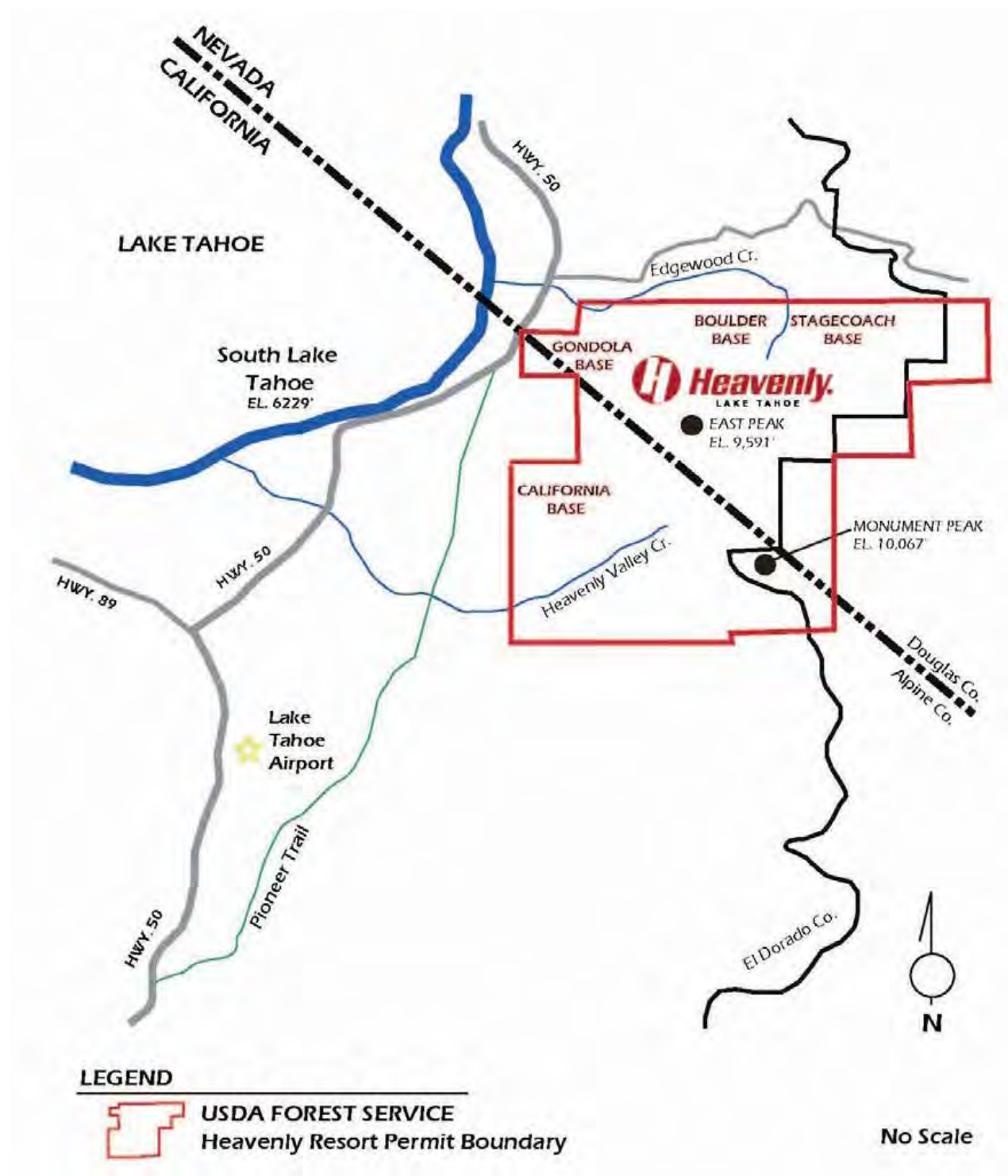


Figure 1-1 Location of Heavenly Mountain Resort (Heavenly 2007)

1.2 Environmental Monitoring Program

The overall objective of the Environmental Monitoring Program is to evaluate and monitor water quality and overall ecological health of Heavenly creeks and watersheds while satisfying California, Nevada, and TRPA regulatory water quality requirements. The Environmental Monitoring Program is made up of five major components (Heavenly 1996):

- Water quality monitoring to comply with regulatory monitoring requirements;
- ~~➤ Soil cover monitoring to gain understanding of how to prevent soil loss and protect water quality;~~
- Monitoring to determine BMP effectiveness under the various conditions at the ski area;
- Riparian condition monitoring to determine riparian area response to Heavenly Mountain Resort activities; and,
- Overall watershed condition and trend monitoring.

Four of the objectives of the Environmental Monitoring Program have not changed; however amendments and modifications regarding the objectives have with acceptance of the EIR/EIS/EIS (2015). Soil cover monitoring was removed as a standalone objective due to the difficulty monitoring and assessing improvement and instead was converted and covered under BMP monitoring (hot spot and roadways monitoring) and overall watershed condition monitoring.

1.3 Mitigation and Monitoring Plan

The Environmental Monitoring Program Plan was Chapter 7 of the Draft Master Plan Amendment (updated in 2007). Revised measures were addressed in the Heavenly Mountain Resort Epic Discovery Project EIR/EIS/EIS and shall replace and update the Heavenly Master Plan measures (EIR/EIS/EIS 2015). The Monitoring Program was designed to satisfy the requirements of Lahontan Board Order No. R6T-2015-0021. The Monitoring Plan addresses the four components stated above. Key plan requirement updates are summarized as follows.

1.3.1 Water Quality Monitoring

The waste discharge requirements, monitoring, and reporting program were updated by Lahontan Board Order Number R6T-2003-0032 in 2003. The monitoring and reporting program was amended in 2011 under Board Order Number 2003-0032A1 and again in November 2013 under Board Order Number 2003-0032A2. In conjunction with the EIR/EIS/EIS Master Development Plan to protect water quality, the Water Board rescinded Board Order Number R6T-2003-0032 with the passage of new Board Order Number R6T-2015-0021 (May 14, 2015).

The new Monitoring Program includes water quality monitoring at five California stream stations as well as three California Base Parking Area StormFilter™ locations. Monitoring and sampling is stated to occur at all California stream sites monthly as safety and stream flows permit. During the spring snowmelt period, sampling is to occur bi-weekly (every two weeks). Five runoff sampling events at each of the three California Base Parking Area StormFilter™ locations shall be collected to reflect rainfall and snow runoff to assess performance of the StormFitlers™.²

²California Regional Water Quality Control Board-Lahontan Region. 2015. Monitoring and Reporting Program No. 2015-0021 WDID NO. 6A090033000 for Heavenly Mountain Resort. 2015 (pages 1-2).

Results and discussion are to be reported to Heavenly, TRPA, and Lahontan in this annual report.

Constituents are identified in the Monitoring Program for sampling at each of the stations. The following primary list of constituents are monitored at each of the receiving water sampling stations:

- Discharge (Flow)
- Turbidity
- Suspended Sediment
- Total Nitrogen (Total Kjeldahl Nitrogen+Nitrate+Nitrite)
- Total Phosphorus
- Chloride

Influent and effluent sampling locations for the StormFilters™ at the California Base Parking Area shall include monitoring the following list of constituents:

- Oil and Grease with silica gel treatment
- Total Nitrogen (Total Kjeldahl Nitrogen+Nitrate+Nitrite)
- Total Phosphorus
- Turbidity
- Chloride

1.3.2 BMP Effectiveness

The Monitoring Program includes Best Management Practices (BMP) monitoring to determine the effectiveness of the BMPs in preventing soil erosion and protecting water quality under various conditions. The BMP component of the Environmental Monitoring Program was developed and initiated by the USDA Forest Service LTBMU in 2004. RCI assisted in finalizing the monitoring methods and began conducting the monitoring in 2005 through the Revised Environmental Monitoring Program (December 2005) as set forth in the 1996 Master Plan and the approved Master Plan Amendment (2007). The Epic Discovery EIR/EIS/EIS (February 2015) included updates to the Environmental Monitoring Program at Heavenly and the current Lahontan Waste Discharge Requirements (WDR) (May 2015) provided additional monitoring requirements. The Watershed Maintenance and Restoration Program (WMRP) updates the requirement for status updates of restoration/mitigation projects as well as annual hot spot assessments on the mountain. This monitoring and reporting effort complies with regulatory jurisdictions Lahontan, TRPA, Nevada Division of Environmental Protection (NDEP), and USDA Forest Service.

The BMP monitoring program is currently being implemented by Resource Concepts Inc. (RCI). Implementation and monitoring reporting results for both temporary and permanent BMPs for the 2017 construction season (through the end of November 2017) will be presented in the TRPA Annual Mitigation and Monitoring Report submitted in May 2018 as outlined by the Waste Discharge Requirements (WDR).

1.3.3 Riparian Condition Monitoring

Waste Discharge Requirements outline the sampling schedule and monitoring requirements for stream condition inventory (SCI) collection, as well as macro-invertebrate monitoring to assess the desired conditions for Heavenly Valley Creek³:

- Over time, show a trend of increasing stability in channel morphology.
- Over time, there should be improving trends in benthic macroinvertebrate (BMI) community metrics, approaching conditions in Hidden Valley Creek.

Since inception, the riparian condition monitoring program has evolved with many of the changes captured in Riparian Conditions Monitoring Plan developed by ENTRIX (now Cardno) in 2005. These monitoring efforts were implemented in 2006, 2009, 2011 and most recently in 2015. *The Environmental Monitoring Program Comprehensive Report – Heavenly Mountain Resort Water Years 2012-2016* discuss both the past monitoring schedule as well as the monitoring results. The 2015 monitoring effort included both the Edgewood and Daggett Creeks reaches to align with the California stream surveys in future monitoring years. The next schedule for SCI monitoring will occur in 2019 in line with the WDR requirement for monitoring once every four years.

Macro-invertebrate monitoring occurred in 2006, 2007, 2010, 2011, 2014 and 2015 for the California stream sites. The historical methodology, sampling schedule and data are included in *The Environmental Monitoring Program Comprehensive Report – Heavenly Mountain Resort Water Years 2012-2016*. As discussed in the comprehensive report, additional BMI samples were collected by Cardno and Heavenly at the Sky Meadows reach along Heavenly Valley Creek as well as the Upper Hidden Creek reach in 2016 to provide additional data for comparison and baseline analysis. The 2016 sampling results are included in this report since they were not yet available to be included in the comprehensive report.

In accordance with the WDR and Monitoring and Reporting Program, macro-invertebrate monitoring for all three reaches along Heavenly Valley Creek (Sky Meadows, below Pasty's, and USFS property line) as well as the reaches at Lower Hidden Valley Creek and Upper Hidden Valley Creek is expected to occur during the summer of 2018 and 2019. The latest Monitoring and Reporting Program includes additional stream samples for pebble counts and cobble embeddedness in conjunction with BMI sampling. This protocol will be followed for the future sampling efforts (2018 and beyond).

1.3.4 Condition and Trend Monitoring

Condition and trend monitoring encompasses a number of monitoring requirements outlined in the Monitoring and Reporting Program. Monitoring requirements pertinent to the Annual Report are listed below with further discussion and annual results found embedded in the body of this report.

1.3.4.1 Facilities Maintenance Monitoring

As required by the Mitigation and Reporting Program in the WDR, the operation and maintenance program requires “quarterly inspection at all lodges, maintenance shops and paved parking areas where snow removal and deicing activities are conducted”⁴. At a minimum, storm water collection facilities as

³ California Regional Water Quality Control Board-Lahontan Region. 2015. Monitoring and Reporting Program No. 2015-0021 WDID NO. 6A090033000 for Heavenly Mountain Resort. 2015. Attachment A: *Heavenly Mountain Resort Epic Discovery Project Environmental Impact Report (CEQA)*, page 8.

⁴ California Regional Water Quality Control Board-Lahontan Region. 2015. Monitoring and Reporting Program No. 2015-0021 WDID NO. 6A090033000 for Heavenly Mountain Resort. 2015 (page 7).

well as erosion control and sediment vaults are inspected for damage, blockage and sediment build up. If required, corrective measures are documented. In a good faith effort, Heavenly provides monthly inspections of their California base lodge parking lot facility. Fourth quarter facilities and maintenance inspection monitoring logs covering the months of July, August and September are included in Appendix D. Detailed discussion of the findings can be found in Section 4. Additionally during the summer months when on-mountain vehicular access is available, Heavenly photo monitors on mountain erosion control and drainage infrastructure for documentation and potential maintenance concerns. See Section 9 for additional information regarding on-mountain monitoring.

1.3.4.2 *Snow Conditioning and Snowmaking Materials*

Heavenly actively tracks and reports monthly snow conditioning totals. Huck salt is added during winter operations around pedestrian walkways and heavily congested areas to prevent slip and falls. In addition, huck salt can be applied in terrain parks at jump feature interfaces (lips) to melt the very top layer of snow which essentially freezes and hardens to increase the longevity and durability of the snow at the jump. No snow enhancement chemicals or additives were used around the lodges or on-mountain slopes during the fourth quarter of water year 2017. On mountain snow operations are non-existent during the fourth quarter (July, August and September) as these months are typically the warmest and driest of the water years. Snow making did not occur during the fourth quarter. In addition, Heavenly does not add any additional snowmaking enhancement chemicals during their snowmaking practices. Heavenly's snowmaking equipment and operations only require water and compressed air for their on-mountain snow making efforts. Annual summaries of application can be found in Section 5.

1.3.4.3 *Deicer and Abrasives Application and Recovery*

Heavenly actively tracks the amount of deicer and abrasives it applies to the parking lot and roadways leading to and from the California base parking lot as required by the WDR and monitoring and reporting program. Monthly application and recovery totals are reported with the monthly inspection and monitoring logs found in Appendix D. Typically recovery (sweeping) occurs during the third and fourth quarters of the water year after winter resort operations and when the asphalt roadways and parking areas are free of snow. Recovered materials are collected and delivered to South Tahoe Refuse for disposal. Heavenly includes the dumpster material weight sheets with the maintenance and inspection logs for recovery tracking purposes. Fourth quarter application and recovery totals as well as 2017 water year annual totals are discussed in Section 6.

As part of the WDR and monitoring and reporting program, Heavenly is also required to analyze the chemical composition of the deicer applied to the roadways. The deicer applied must meet the Caltrans "specifications H" or similar⁵. Heavenly has provided this information to Lahontan Water Board for past deicer samples and through discussions with Board, it was determined that as long as the material (sand and ice) was being purchased from the same vendor and same source no additional analysis was needed. Analysis of the source material was last performed in December 2015 and the results were presented in the First Quarter 2016 water year report submitted on January 29th, 2016.

⁵ California Regional Water Quality Control Board-Lahontan Region. 2015. Monitoring and Reporting Program No. 2015-0021 WQID NO. 6A090033000 for Heavenly Mountain Resort. 2015 (page 8).

1.3.4.4 *USFS Roads Monitoring*

The WDR and monitoring and reporting program requires that Heavenly conduct road monitoring in accordance with the Road Maintenance Agreement (between Heavenly and the LTBMU)⁶. The signed agreement outlining Heavenly's maintenance and inspection requirements as well as the Forest Service standards regarding on-mountain roadways is included in Appendix E. Additional discussion regarding the roadway monitoring requirements is discussed in Section 7.

1.3.4.5 *Facilities Watershed Awareness Training*

Heavenly provides awareness training for its summer employees, subcontractors and vendors annually as part the WDR and monitoring and reporting program. Confirmation and discussion of this training is provided in Section 8 and Appendix F.

⁶ California Regional Water Quality Control Board-Lahontan Region. 2015. Monitoring and Reporting Program No. 2015-0021 WDID NO. 6A090033000 for Heavenly Mountain Resort. 2015 (page 9).

2 Water Quality

2.1 Station Description

Heavenly Mountain Resort (Heavenly) measures water quality parameters along four creeks to determine the effects of ski area development on background conditions. Water samples were collected at seven stations for the 2017 water year. Stations and sampling rationale are given in Table 2-1 and include the required filter vault sampling locations. The approximate location of each station is shown in Figure 2-1.

Table 2-1 Heavenly Valley Mountain Resort Monitoring Program Water Quality Stations

Site	Site Description	Site Rationale
43HVC-1A	Heavenly Valley Creek at Sky Meadows, Above Snowmaking Pond	Characterized water quality in Heavenly Valley Creek drainage from the developed ski area
43HVC-2	Heavenly Valley Creek Below Patsy's and Groove Chair Lifts	Characterized water quality in Heavenly Valley Creek drainage from the developed ski area
43HVC-3	Heavenly Valley Creek located at the Forest Service Property Line	Characterized water quality in Heavenly Valley Creek leaving National Forest Lands below Heavenly Mountain Resort
43BPC-4	Bijou Park Creek located below the Heavenly California Base Parking Lot	Characterized water quality in Bijou Park Creek below the California Main Lodge and parking area
43HDVC-5	Hidden Valley Creek Baseline Station	Characterized water quality in creek draining a similar, mostly undeveloped watershed
43HVE-1	Edgewood Creek Above Boulder Parking Lot	Characterized water quality in Edgewood Creek above Boulder parking lot and below the ski runs
43HVE-2	Edgewood Creek Below Boulder Parking Lot	Characterized water quality in Edgewood Creek below Boulder parking lot
43HVP-1A	North Manhole Influent Pipe Into the Filter System	Characterized water quality inflow from the lower parking lot into the filter system
43HVP-1B	South Manhole Influent Pipe into the Filter System	Characterized water quality inflow from the upper parking lot into the filter system
43HVP-2	West Manhole Effluent Pipe Out Of The Filter System	Characterized water quality exiting the filter system

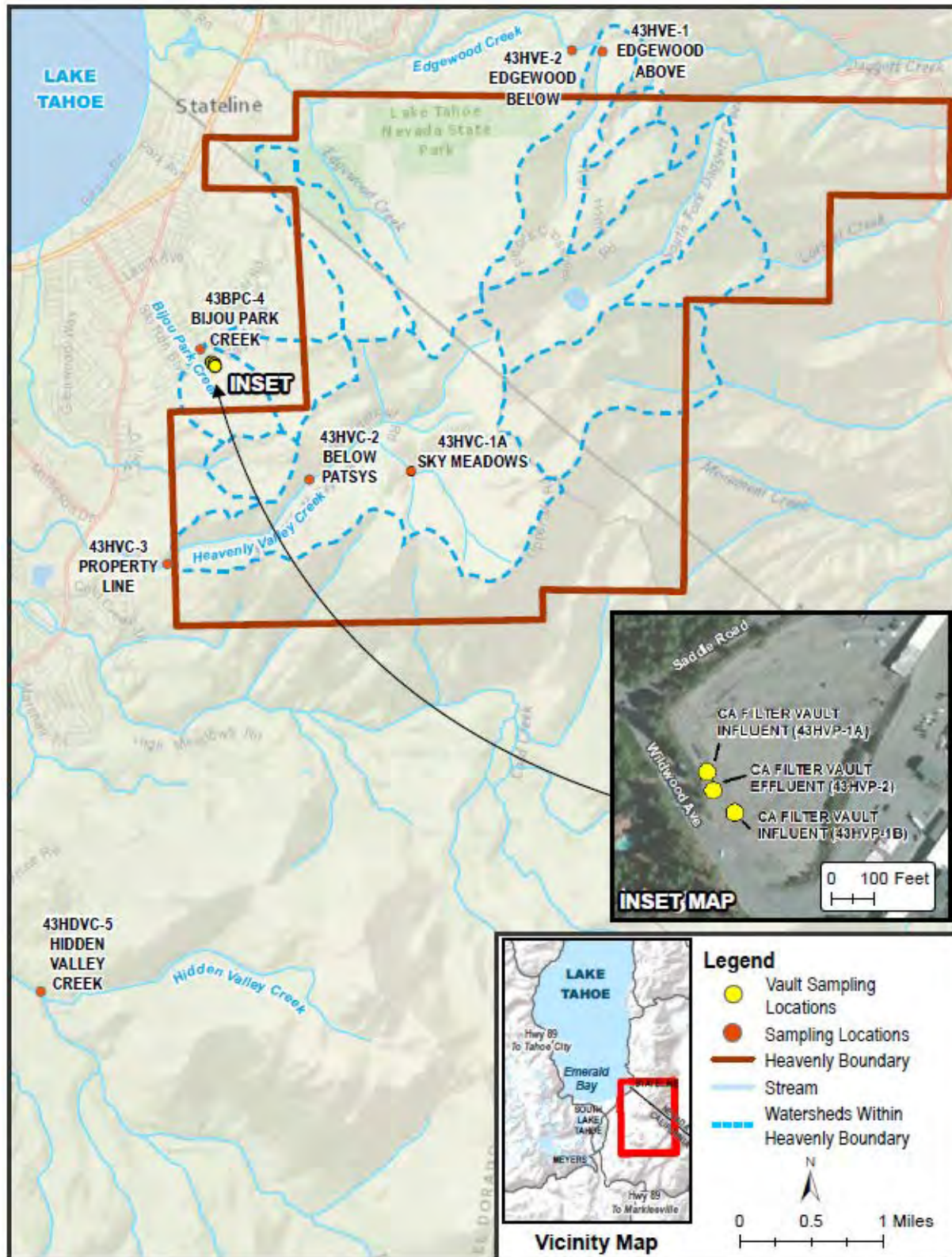


Figure 2-1 Approximate Location of Water Quality Sampling Sites

2.2 Precipitation Summary

Record amounts of precipitation fell throughout the Lake Tahoe Basin during water year 2017. Precipitation data taken from the National Resource Conservation Service, National Water and Climate Center website (<http://www.wcc.nrcs.usda.gov>) are summarized in Figure 2-2. This graph represents accumulated precipitation and snow water equivalent (SWE) measured at SNOTEL Station 19L24S ("Heavenly Valley"), operated by the USDA Natural Resource Conservation Service. This station is located in the upper watershed of Heavenly Valley Creek near the current Sky Meadows monitoring station (43HVC-1A) at latitude 38° 56' N, longitude 119° 54' W, and elevation 8,850 feet.

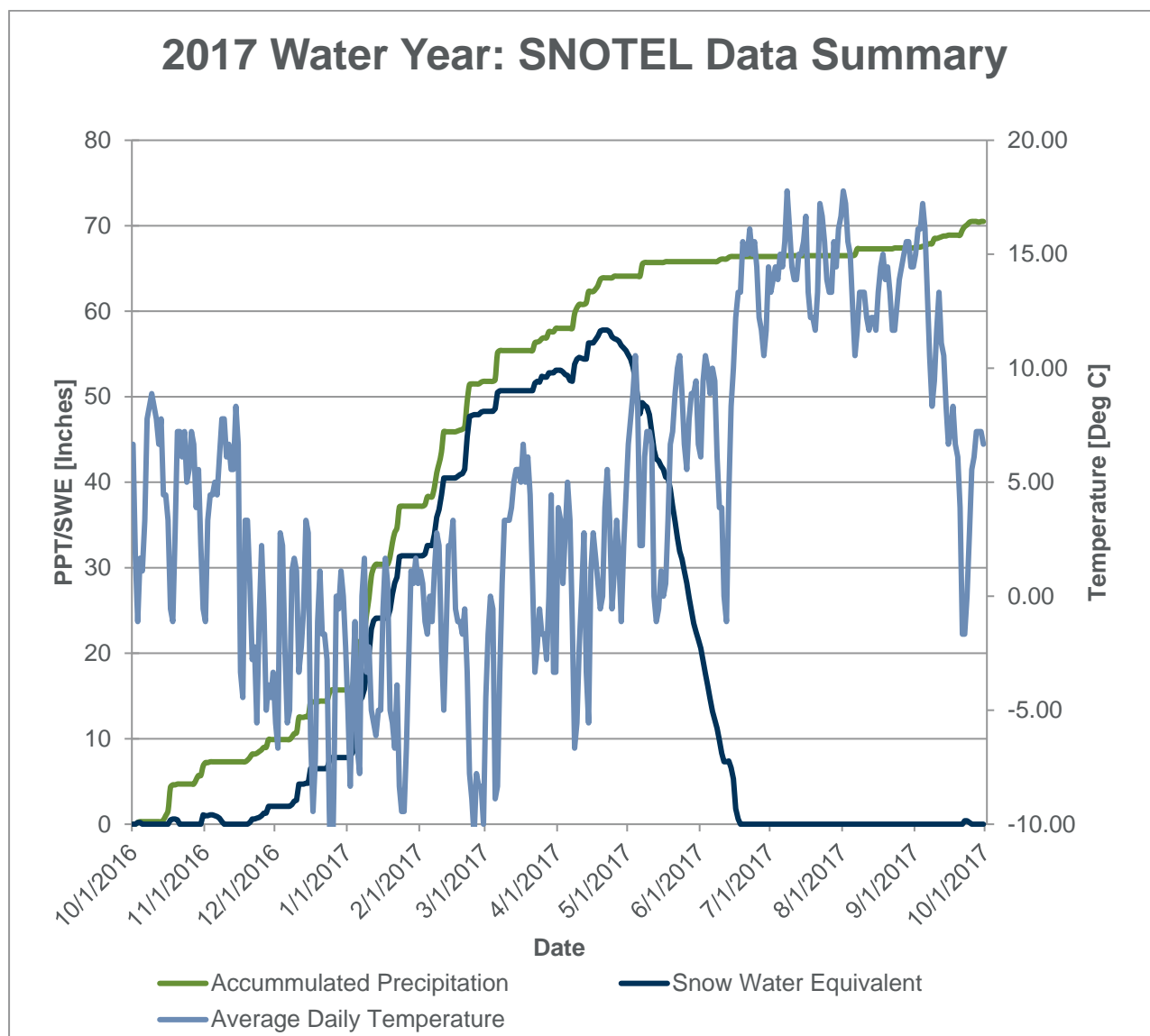


Figure 2-2 SNOTEL Weather Graph for the Water Year 2017

2.3 Sampling Frequency and Analysis

A total of 109 stream samples were collected during the 2017 water year. Seventeen samples were collected at Bijou Park Creek (43BPC-4), Hidden Valley Creek (43HDVC-5), Property Line (43HVC-3), and Below Patsy's Chair (43HVC-2) locations. Seventeen samples were also collected at the Sky Meadows (43HVC-1A) location, however discharge was not measured on one occasion due to unsafe access and flooding conditions during peak runoff in June. Only ten samples were collected at the Upper Edgewood (43HVE-1) site, although discharge was not measured on one occasion as the creek was too low to accurately measure flow. A total of fourteen samples were collected at Lower Edgewood site (43HVE-2) during water year 2017. Due to significant snow depths and unsafe conditions the site was inaccessible in the middle of winter. The number of samples collected along the two Edgewood Creek sites vary typically due to low flow conditions and resort activities that prevent sampling. An additional five storm samples were collected for each influent and effluent sample at the California Base Parking Area filter vault locations (43HVP-1A, 43HVP-1B, and 43HVP-2). Table 2-2 provides a summary of sampling and analysis for the 2017 water year.

Analyses for specific conductivity, turbidity, suspended sediment, total nitrogen (nitrate/nitrite and total Kjeldahl nitrogen), total phosphorus, soluble reactive phosphorus, and dissolved phosphorus were performed by High Sierra water Lab located near Tahoe City, California. Analyses for chloride were performed by Western Environmental Testing Laboratory (WET Lab) in Reno, Nevada. Additionally, WET Lab performed all constituent testing for the influent and effluent filter vault samples. Analytical results by sampling location are provided in Appendix A and Appendix B.

Table 2-2 Summary of Sampling Analysis Conducted for the Water Year of 2017

Station ID	Station Name	# of Samples	Constituents Tested
43HVC-1A	Heavenly Creek at Sky Meadows	17	Full Suite ³
43HVC-2	Heavenly Creek Below Patsy's	17	Full Suite
43HVC-3	Heavenly Creek at Property Line	17	Full Suite
43BPC-4	Bijou Park Creek Below the California Parking Lot	17	Full Suite
43HDVC-5	Hidden Valley Creek	17	Full Suite
43HVE-1	Edgewood Creek Above Boulder Parking Lot	10	Full Suite, Specific Conductivity, SRP, & DP ³
43HVE-2	Edgewood Creek Below Boulder Parking Lot	14	Full Suite, Specific Conductivity, SRP, & DP
43HVP-1A	North Manhole Influent Pipe Into the Filter System	5	Full Suite, and Oil & Grease ²
43HVP-1B	South Manhole Influent Pipe into the Filter System	5	Full Suite, and Oil & Grease ²
43HVP-2	West Manhole Effluent Pipe Out Of The Filter System	5	Full Suite, and Oil & Grease ²

¹Full suite = Discharge, turbidity, suspended sediment, nitrate/nitrite, total Kjeldahl nitrogen, total nitrogen, total phosphorus, and chloride.

²Suspended sediment analysis is not required for the filter system sampling locations.

³Discharge was not measured on 2 separate occasions due to unsafe conditions (43HVC-1A), and low flow (43HVE-1).

2.4 Results and Discussion

2.4.1 Discharge

Stream flow was measured using a Marsh-McBirney meter at all of the stream sites except at the Heavenly Valley Creek below Patsy's (43HVC-2) site where flow was calculated from stage values in a Parshall Flume. There is also a Parshall flume at the Sky Meadows (43HVC-1A) site, however the outlet of the flume has become submerged over time thus reducing the accuracy of the stage-discharge relationship. As such, flow is also measured with the Marsh-McBirney meter at the Sky Meadows site when conditions permit. During the winter months, the flume is the only viable option for estimating flow due to significant snow depths (greater than 15 feet in water year 2017) that make accessing the stream very difficult and unsafe. Heavenly Valley Creek monitoring locations at Below Patsy's (43HVC-2) and Property Line (43HVC-3), as well as the monitoring location at Hidden Valley Creek (43HDVC-5) exhibited peak discharge values near the end of June. The values displayed for the Sky Meadows (43HVC-1A) during the month of June are underestimated as the creek was at flood stage and the flume was overtopped and flanked by overbank flows for a prolonged period. The Upper and Lower Edgewood Creek (43HVE-1 and 43HVE-2, respectively) sampling sites exhibited peak discharge values in the beginning of June. Peak discharge values for the Bijou Park Creek (43BPC-4) monitoring location were determined to occur towards the beginning of May. While there was variation in the timing of peak flows at the various monitoring locations throughout the spring runoff period, the peaks occurred within the May-June window which is typical of the Sierra Nevada Mountains. Variations in watershed size and elevation are likely to be the cause for the earlier runoff peaks along Edgewood Creek and Bijou Park Creek. It does not appear that the minimal snowmaking efforts performed during the 2016/2017 ski season had a significant impact on the Heavenly Valley Creek watershed, as the runoff peaked at approximately the same time as the Hidden Valley Creek reference reach monitoring location.

Accumulated precipitation during the 2017 water year was more than twice the 1981-2010 average of 33.5 inches, and far greater than the four previous water years which were below average. As such, the peak runoff values are substantially higher than previous years and the creeks were flowing at bankfull to flood stage for a prolonged period. While the 2016 water year experienced relatively normal precipitation compared to the previous four years of prolonged drought, precipitation and snow water equivalent (SWE) measurements for the 2017 water year were substantially higher than those calculated for the 2016 water year, as well as those for the previous 12 water years. The total precipitation values show a significant increase from the 2016 water year, and the peak SWE was almost twice that of the 2016 water year. Figure 2-3 represents the past twelve water years of SNOTEL precipitation data. Figures 2-4 through 2-7 represent the hydrographs at each of the seven sampling stations and associated creeks.

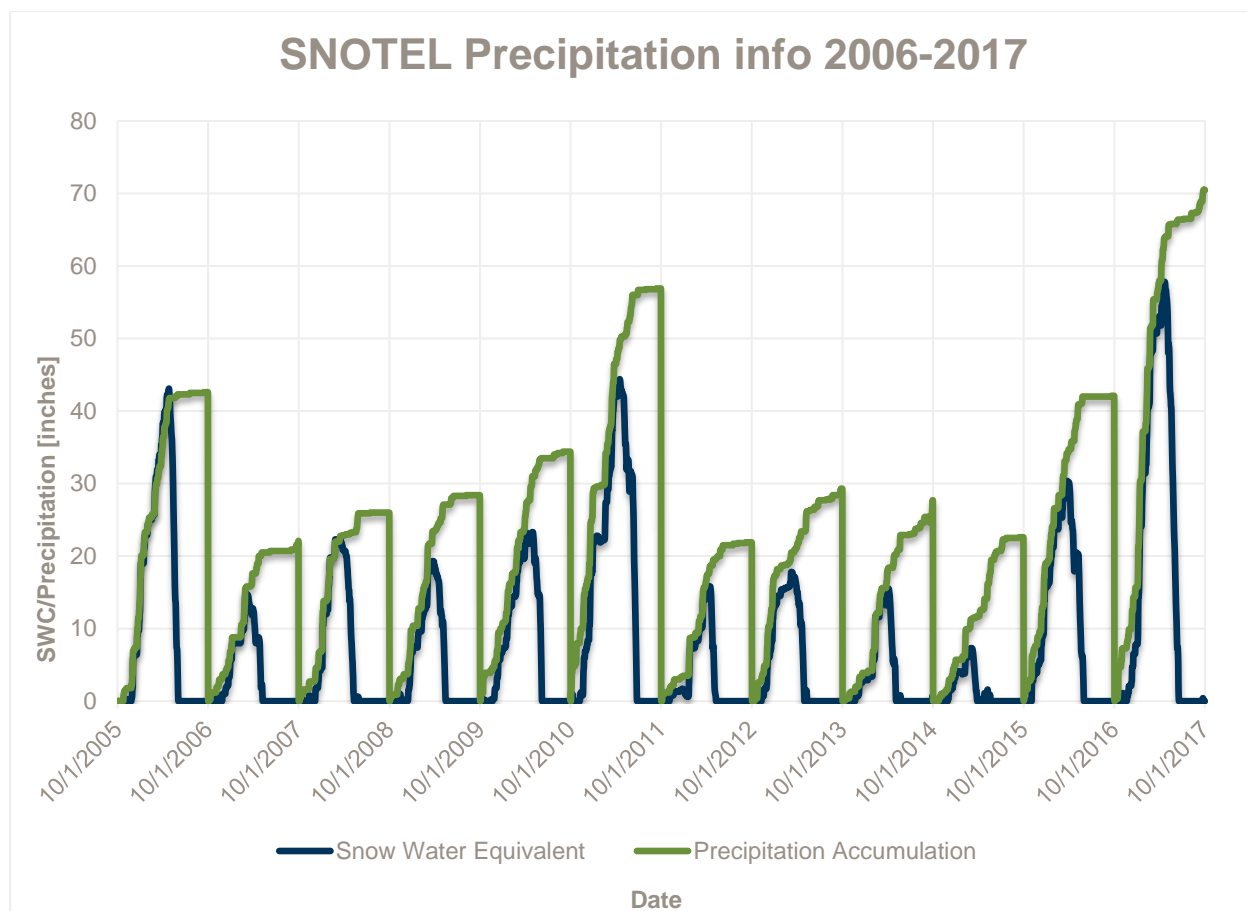


Figure 2-3 SNOTEL Precipitation Graph for Water Years 2006-2017

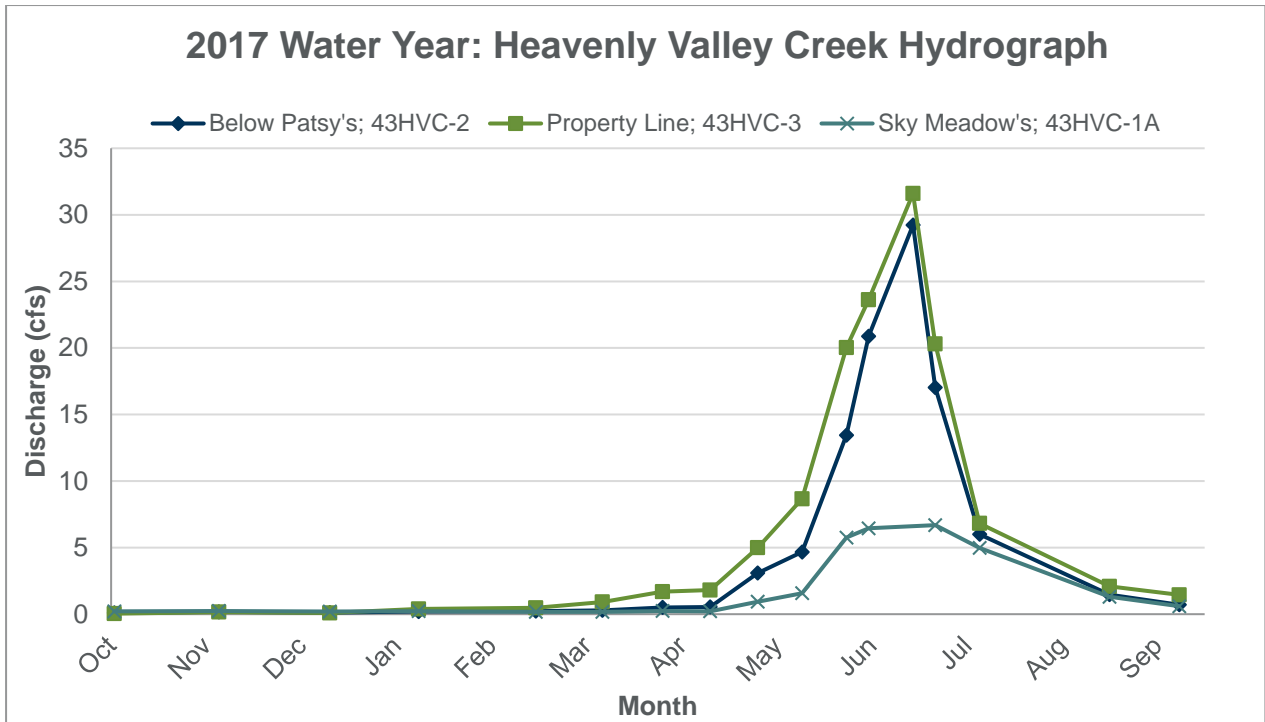


Figure 2-4 Hydrographs Representing Heavenly Valley Creek for the Water Year Ending in 2017

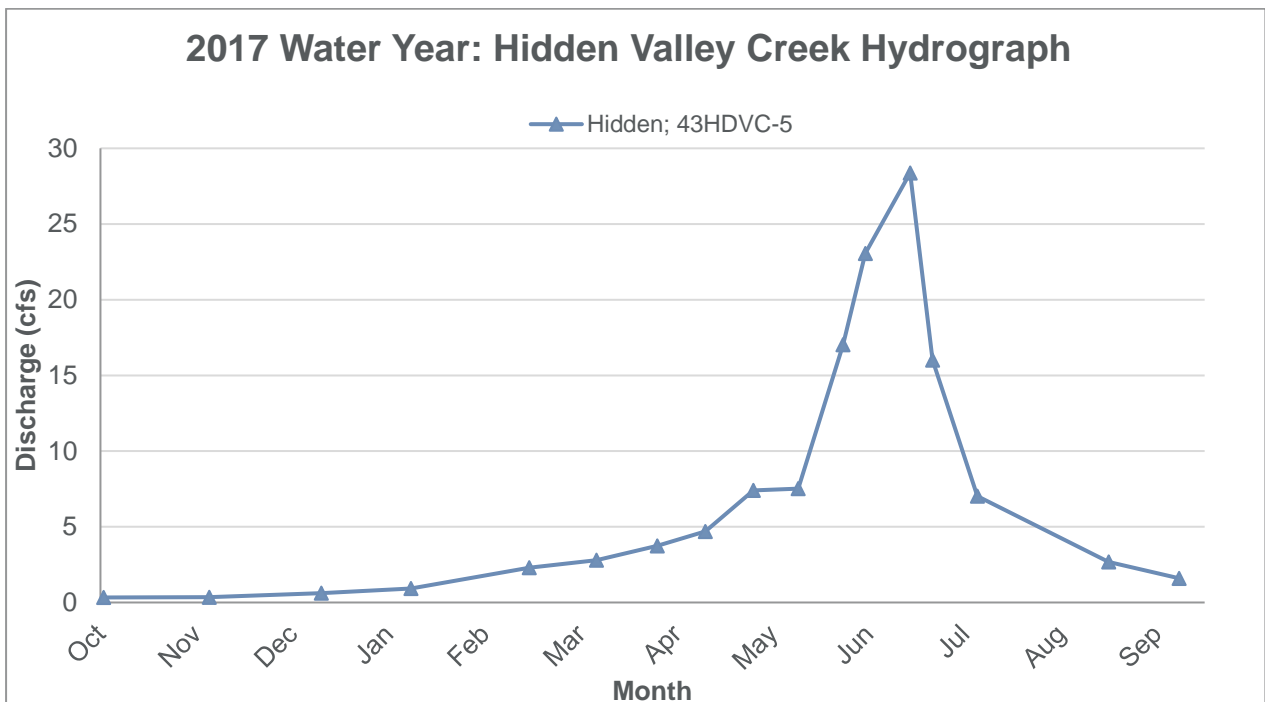


Figure 2-5 Hydrograph Representing Hidden Valley Creek for the Water Year Ending 2017

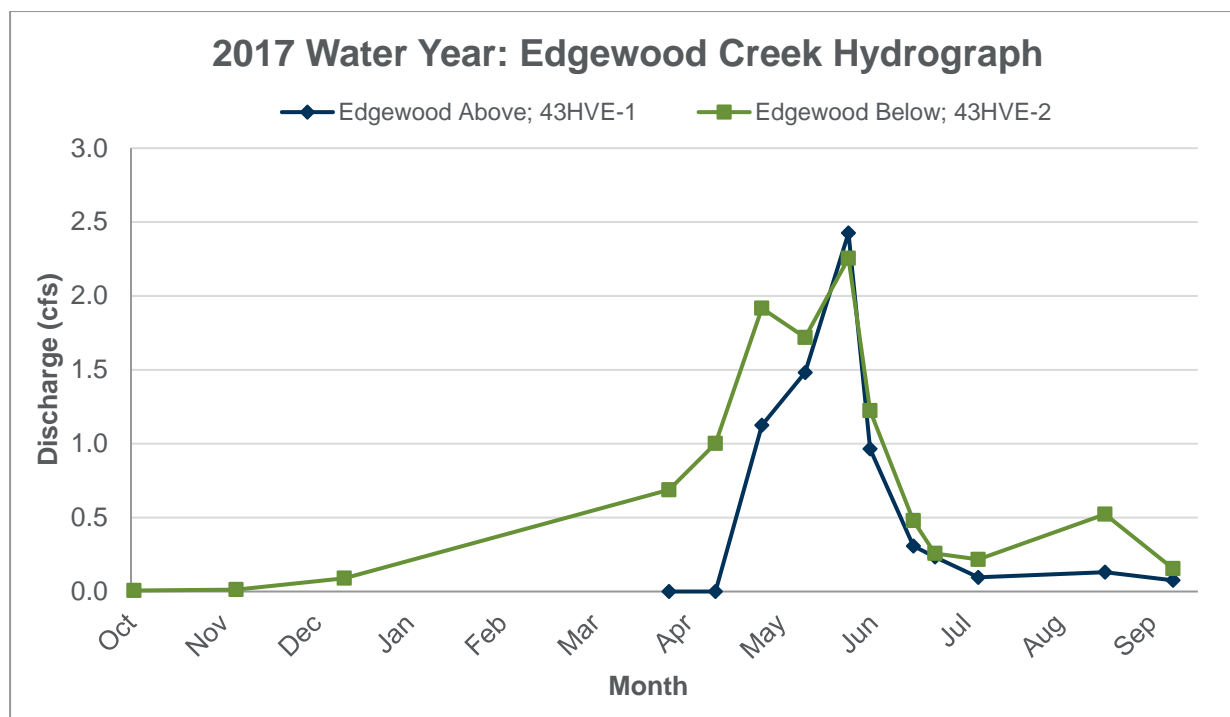


Figure 2-6 Hydrographs Representing Edgewood Creek for the Water Year Ending in 2017

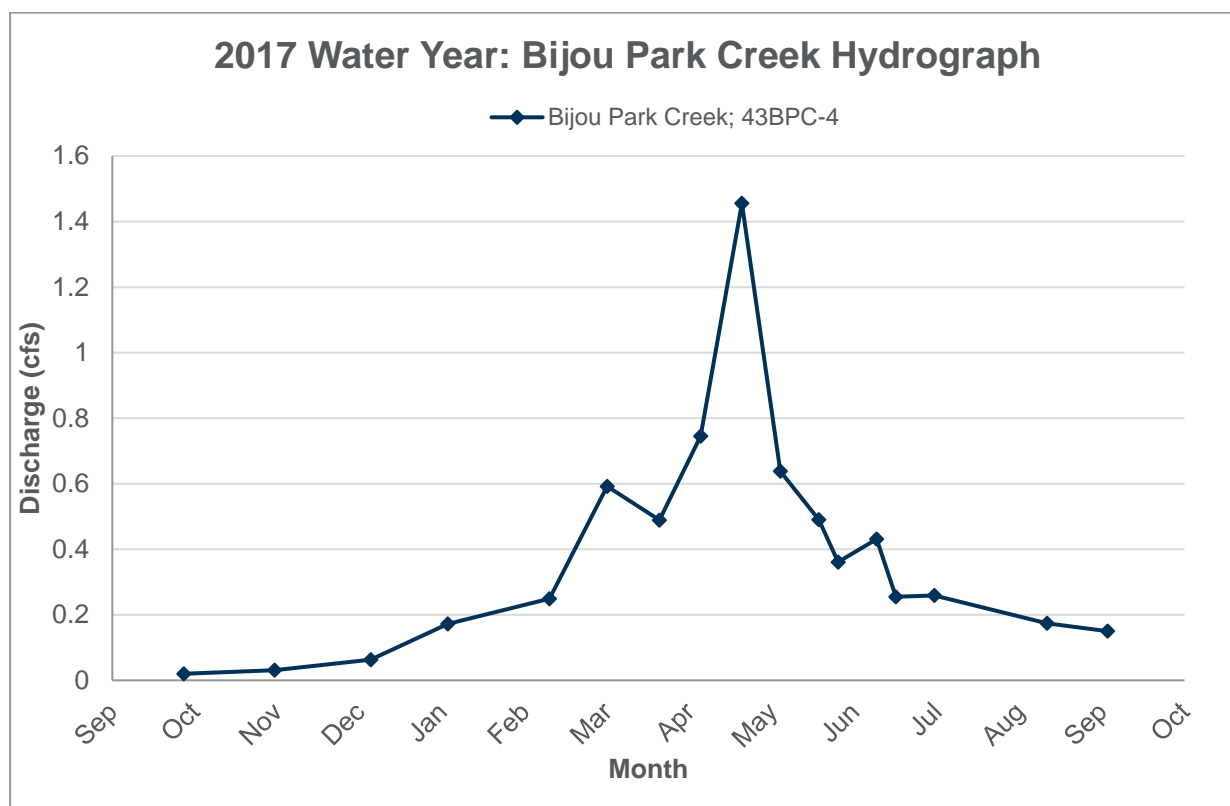


Figure 2-7 Hydrographs for Bijou Park Creek for the Water Year Ending in 2017

2.5 Annual Load Estimates

Table 2-3 presents the annual load values calculated from flow-weighted concentration data for total nitrogen, total phosphorus and suspended sediment at Heavenly Valley Creek at Property Line sampling location and at the Hidden Valley Creek baseline station from 2013 through the 2017 water year. Annual load values are calculated by weighting the number of days between sample collections and multiplying the weighted average times the discharge measurements collected in the field. This calculated value represents the weighted flow. Laboratory values for total nitrogen, total phosphorus and suspended sediment are multiplied and summed. The final unit conversion is applied and the annual loading values are reported in Table 2-3 and Table 2-4. The method used to calculate annual loading values is based on constituent concentrations, discharge, and days between samples as discussed above. The methodology has been used in previously submitted annual reports and was verified by Lahontan staff in the spring of 2010.

The Total Maximum Daily Load (TMDL) for sediment at Heavenly Valley Creek is a five-year rolling average. The calculated 5-year rolling average from water years 2013 through the 2017 is shown in Table 2-4 and equates to a total of 33.97 tons/year along Heavenly Valley Creek. This is approximately 32 tons/year more than that calculated in the 2016 water year. The Lahontan permit TMDL standard along Heavenly Valley Creek for suspended sediment is 58 tons/year. For comparison, the suspended sediment rolling average for Hidden Valley Creek was also calculated to be 15.15 tons/year. Despite the fact that the suspended sediment load for the 2017 water year was calculated as 161.8 tons, the weighted average is still relatively low due to the previous four years of drought, and thus low sediment load, conditions. Overall, the increase in constituent loading (total nitrogen, total phosphorus and suspended sediment) from the 2016 water year is consistent with expectations given the substantially higher precipitation totals and sustained high flow conditions during spring runoff.

Table 2-3 Annual Load Values at Heavenly Valley Creek (Property Line 43HVC-3) and Hidden Valley Creek (43HDVC-5).

Year	Discharge (m ³ /yr)	Total Nitrogen (kg/yr)	Total Phosphorus (kg/yr)	Suspended Sediment (tons/yr)
Property Line (43HVC-3)				
2013	382,367	37	5	1.0
2014	149,688	19	3	0.24
2015	92,131	8	2	0.16
2016	977,818	30	30	6.63
2017	3,912,677	983	431	161.84
Hidden Valley Creek (43HDVC-5)				
2013	873,425	102	21	3.5
2014	594,447	93	15	1.5
2015	412,713	48	10	1.4
2016	1,498,026	365	64	18.8
2017	4,277,635	770	164	50.5

Table 2-4 Five Year Suspended Sediment Rolling Average for Heavenly Valley Creek (Property Line 43HVC-3) and Hidden Valley Creek (43HDVC-5) Stations.

Water Year	Property Line (HV-C3) Suspended Sediment (Tons/Year)	Hidden Valley Creek (HV-H5) Suspended Sediment (Tons/Year)
2009	0.5	1.9
2010 ¹	70.5	18.6
2011	118.6	60.9
2012	1.7	3.4
2013	1.0	3.5
2014	0.24	1.5
2015	0.16	1.4
2016	6.63	18.8
2017	161.84	50.5
5 Year Rolling Average	33.97	15.15

2.6 Heavenly Valley and Hidden Valley Creeks

2.6.1 Summary Statistics for Water Quality Constituents: Water Year 2017

Statistical summaries for Heavenly Valley and Hidden Valley Creeks for water year 2017 are shown in Tables 2-5 through 2-8. The raw data are provided in Appendix A. The statistics were computed over the seventeen samples for each site, which consist of twelve monthly monitoring samples and an additional five samples collected during spring runoff in May and June at each site. The one exception is discharge at Sky Meadows (43HVC-1A), for which the statistics were computed over the sixteen discharge measurements that were obtained. Annual average values for total phosphorus and chloride exceeded the state standard for all three sites on Heavenly Valley Creek (43HVC-1A, 43HVC-2, and 43HVC-3), as well as at the reference site (43HDVC-5).

Three of the four sampling sites (43HVC-1A, 43HVC-2, and 43HDVC-5) had total suspended sediment (TSS) values below the 90th percentile state standard value of 60 mg/L. The exception was the Property Line site (43HVC-3), which had a 90th percentile TSS concentration of 74.2 mg/L for the 2017 water year. The maximum observed TSS concentrations coincide with the rising limb and peak of the spring runoff hydrograph, which is to be expected as suspended sediment is typically mobilized along the stream banks and transported during sustained high flows. Additionally, substantial bank erosion was observed in the vicinity of the Property Line (43HVC-3) monitoring site, where toe cutting of the streambank caused the bank to collapse, thus acting as a localized source of fine sediments. Given that the other monitoring sites along the Heavenly Valley Creek Reach are upstream of the Property Line site, the observed bank erosion could have caused localized increases in suspended sediment concentrations relative to the rest of the reach, which could explain the exceedence of the state standard. Throughout all four of the sampling sites, TSS concentrations were elevated from previous water years, as higher flows tend to alter the stream channel and mobilize sediment that had otherwise been trapped behind woody debris and fallen trees. As flows steadily decrease during extended periods of drought; sediment and debris are trapped above the water line and during peak storm events these materials become mobilized causing a rise in suspended sediment concentrations.

The California Lahontan Water Board's annual state standard for total nitrogen (0.19 mg/L) is the sum of the total Kjeldahl nitrogen (TKN), which is representative of the ammonia and organic nitrogen

concentrations, total nitrate, and total nitrite. Although there were exceedances on individual dates throughout the water year, the annual average total nitrogen concentrations at all four of the monitoring sites along both Heavenly Valley and Hidden Valley Creeks (43HVC-1A, 43HVC-2, 43HVC-3, and 43HDVC-5) are below the state standard. The highest total nitrogen concentrations were observed at Sky Meadows (43HVC-1A), which could be due to the prolonged exposure of meadow vegetation to overbank flows, which can act as a nitrogen source. Overall, the total nitrogen concentrations on Heavenly Valley Creek were similar to those on Hidden Valley Creek, suggesting that resort operations have a less than significant impact on total nitrogen concentrations, even during high precipitation years.

Annual averages for total phosphorus are required to be below the 0.015 mg/L Lahontan state standard for Heavenly Valley Creek and Hidden Valley Creek. The annual average total phosphorus concentrations for water year 2017 were above the state standard at all four of the monitoring sites (43HVC-1A, 43HVC-2, 43HVC-3 and 43HDVC-5). Average values for the four stations were as follows: Sky Meadows (43HVC-1A) 0.048 mg/L, Below Patsy's Chair (43HVC-2) 0.036 mg/L, Property Line (43HVC-3) 0.053 mg/L and Hidden Valley Creek (43HDVC-5) 0.030 mg/L. Elevated phosphorus concentrations are expected during wet years, as some forms of phosphorus are particle bound and therefore a portion of the increased phosphorus levels can be attributed to mobilized sediments that occur during sustained high flows. Resort activities along Heavenly Valley Creek appear to have a less than significant impact on total phosphorus levels, as concentrations in the reference reach also exceeded state standards.

Annual average chloride values along Heavenly Valley Creek at Sky Meadows (43HVC-1A), Below Patsy's Chair (43HVC-2) and Property Line (43HVC-3) exceeded the state annual standard of 0.15 mg/L for the 2017 water year. All seventeen of the daily samples collected throughout the water year also exceeded the state standard for each of the Heavenly Valley Creek sites. Sixteen of the seventeen daily samples collected at the reference site on Hidden Valley Creek (43HDVC-5) also equaled or exceeded the state standard, suggesting that chloride is naturally occurring in this region of the Lake Tahoe Basin. Chloride levels at all of these sites have been problematic in exceeding the state standard over the past decade. While the annual average chloride concentration was also above the state standard at Hidden Valley Creek (43HDVC-5), the values throughout the water year were relatively low compared to those obtained along Heavenly Valley Creek (43HVC-1A, 43HVC-2 and 43HVC-3). The exact cause for these increased chloride levels along Heavenly Valley Creek is unknown. Application of salts on the terrain parks within the Heavenly Valley watershed may be one plausible cause; however, the fact that the undisturbed watershed reference site along Hidden Valley Creek (43HDVC-5) also exhibits relatively high chloride concentrations suggests that there may be additional naturally occurring sources.

Following the implementation of the Amended Monitoring and Reporting Program in May 2011, monitoring requirements for specific conductivity, soluble reactive phosphorus (SRP) and total iron were removed from the daily sampling regime along the Heavenly Valley Creek sites (43HVC-1A, 43HVC-2 and 43HVC-3) as well as the Hidden Valley Creek site (43HDVC-5).

Table 2-5 Heavenly Valley Creek Sky Meadows 2017 Water Year Statistical Summary

Exceedances of the California Lake Tahoe Receiving Water Limits – Sky Meadows (43HVC-1A)						
	Q (cfs)	Turbidity (NTU)	Total Suspended Sediment (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)
CA State Standard	-	-	60	0.19	0.015	0.15
# Samples	16	17	17	17	17	17
Min	0.17	1.06	1.0	0.090	0.013	0.27
Max	6.7	40.30	93.5	0.543	0.271	0.57
Annual Average	1.87	5.37	11.9	0.182	0.048	0.39
90 th Percentile	-	-	46.3	-	-	-

Table 2-6 Heavenly Valley Creek Below Patsy's Chair 2017 Water Year Statistical Summary

Exceedances of the California Lake Tahoe Receiving Water Limits – Below Patsy's Chair (43HVC-2)						
	Q (cfs)	Turbidity (NTU)	Total Suspended Sediment (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)
CA State Standard		-	60	0.19	0.015	0.15
# Samples	17	17	17	17	17	17
Min	0.10	0.45	1.0	0.118	0.011	0.35
Max	29.23	20.50	47.5	0.315	0.137	1.40
Annual Average	5.81	4.43	7.4	0.169	0.036	0.68
90 th Percentile	-	-	29.1	-	-	-

Table 2-7 Heavenly Valley Creek Property Line 2017 Water Year Statistical Summary

Exceedances of the California Lake Tahoe Receiving Water Limits – Property Line (43HVC-3)						
	Q (cfs)	Turbidity (NTU)	Total Suspended Sediment (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)
CA State Standard	-	-	60	0.19	0.015	0.15
# Samples	17	17	17	17	17	17
Min	0.04	0.20	1.00	0.050	0.011	0.36
Max	31.60	40.50	87.00	0.461	0.213	1.10
Annual Average	7.36	7.52	15.06	0.151	0.053	0.66
90 th Percentile	-	-	74.20	-	-	-

Table 2-8 Hidden Valley Creek (Lower Hidden) 2017 Water Year Statistical Summary

Exceedances of the Lake Tahoe Receiving Water Limits for Trout Creek - Hidden Valley Creek (43HDVC-5)						
	Q (cfs)	Turbidity (NTU)	Total Suspended Sediment (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)
CA State Standard			60	0.19	0.015	0.15
# Samples	17	17	17	17	17	17
Min	0.33	0.37	0.50	0.053	0.017	0.13
Max	28.38	47.20	26.00	0.290	0.066	0.42
Annual Average	7.44	5.71	5.85	0.140	0.030	0.26
90 th Percentile	-	-	21.60	-	-	-

2.7 Bijou Park Creek and California Parking Lot Effluent

2.7.1 Summary Statistics for Water Quality Constituents: Water Year 2017

Raw data for both the Bijou Park Creek (Below California Parking 43BPC-4) and Effluent of the California Base Parking Lot (43HVP-2) can be found in Appendices A and B. Table 2-9 summarizes the Lahontan State Standards relative to Bijou Park Creek that have been in place in the past. The State Standards that apply to the Bijou Park Creek sampling site (43BPC-4) are governed by the Lake Tahoe Receiving Water Limits for: total dissolved solids (TDS), total nitrogen, total phosphorus and chloride. The maximum concentration for discharge to a surface water governs the turbidity standard at the Bijou Park Creek sampling site (43BPC-4). Likewise, the sampling location for effluent from the parking lot filter system (43HVP-2) is governed by the maximum not to exceed concentrations for discharge to surface water. These standards took effect in May 2011, when the Amended Monitoring and Reporting Program was finalized. Table 2-10 shows the water quality analysis results for Bijou Park Creek sampling site for the 2017 water year.

Table 2-9 Summary of the Sampling Analysis Limits for the 2017 Water Year

Constituents	Units	Maximum Concentration for Discharge to Land Treatment ¹	Maximum Concentration for Discharge to Surface Water ²	Lake Tahoe Receiving Water Limits ³
Turbidity	NTU	200	20	
Total Dissolved Solids	mg/L	-	-	60
Total Nitrogen	mg/L	5.0	0.5	0.15
Total Phosphorus	mg/L	1.0	0.1	0.008
Chloride	mg/L	-	-	3.0

¹The effluent limits for discharge to land were effective for discharge from the California Base area on December 31, 2004.

²The effluent limits not to exceed for discharge to surface waters were effective for discharge from the California Base area beginning November 30, 2008.

³The amended monitoring and reporting program, effective May 30, 2011, for the 2012 Water Year and beyond required monitoring of the outfall of the filter vault system. Bijou Creek effluent limits to discharge moved to Lake Tahoe receiving water limits and the outfall to the filter vaults effluent limits fall under the maximum concentration for discharge to surface waters.

Table 2-10 Bijou Park Creek 2017 Water Year Statistical Summary

Exceedances of the California Lake Tahoe Receiving Water Limits for Bijou Park Creek - Below the California Parking Lot (43BPC-4)						
	Q (cfs)	Turbidity (NTU)	Total Suspended Sediment (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)
CA State Standard		20	60	0.15	0.008	3.0
# Samples	17	17	17	17	17	17
Min	0.02	12.30	4.50	0.392	0.067	23.0
Max	1.46	63.90	64.00	0.799	0.230	250.0
Annual Average	0.39	22.8	16.38	0.570	0.113	61.1

The annual average turbidity measurement at the Bijou Park Creek (43BPC-4) sampling location was 22.8 NTU, which exceeded the annual state standard of 20 NTU for receiving water bodies. Five of the seventeen samples collected at this site were above the turbidity standard with the highest turbidity reading recorded on March 16th (63.9 NTU). Due to relative smaller size of the watershed and increased impervious areas associated with housing, parking lots and roadways, sheet flow runoff likely mobilizes suspended particulates, thereby increasing turbidity readings at this location.

The annual average for TSS of 16.38 mg/L was well below the state standard of 60 mg/L for Bijou Park Creek (43BPC-4). The maximum daily measurement for TSS was 64 mg/L and was collected on March 16th, 2017. With the exception of this maximum reading, the remaining sixteen samples collected throughout the 2017 water year were below the state standard limit. As stated in the discussion of Heavenly Valley and Hidden Valley Creeks, increases in TSS concentrations typically correspond to increases in precipitation, runoff, and high stream flows. However, the Bijou Park Creek monitoring location is downstream of the storm filtration system, which can potentially impact the occurrence and timing of increased TSS levels in the stream.

The annual average for total nitrogen at Bijou Park Creek (43BPC-4) of 0.570 mg/L was above the state standard of 0.15 mg/L. All seventeen of the daily samples collected were well above the state standard. In the time since the state standard for total nitrogen was lowered from 0.50 mg/L to 0.15 mg/L, the concentrations at the Bijou Park Creek (43BPC-4) monitoring site have consistently exceeded the standard. Table 2-11 shows the annual average total nitrogen concentrations for Bijou Park Creek (43BPC-4) over the past eleven years of monitoring, clearly demonstrating these exceedances.

Table 2-11 Total Nitrogen Annual Average Values versus Flow at Bijou Park Creek (43BPC-4)

Water Year	Annual Average Total Nitrogen Values – (mg/L)	Annual Average Flows – (cfs)
2007	1.47	0.26
2008	1.88	0.33
2009	0.88	0.20
2010	0.73	0.15
2011	0.66	0.46
2012	0.61	0.24
2013	0.74	0.22
2014	0.54	0.14
2015	0.54	0.11
2016	0.69	0.12
2017	0.57	0.39

The annual average for total phosphorus at Bijou Park Creek (43BPC-4) for the water year 2017 was 0.113 mg/L. This annual average is also above the state receiving water standard of 0.008 mg/L. Annual average concentrations of total phosphorus also exceeded the state receiving water standard along Heavenly Valley Creek (43HVC-1A, 43HVC-2 and 43HVC-3) and the reference reach along Hidden Valley Creek (43HDVC-5) for the water year 2017, indicating that phosphorus is naturally present within the watersheds surrounding Heavenly Mountain Resort. Total phosphorus and total nitrogen concentrations in surface water can vary with vegetation uptake, decay, and removal, as well as changes in the hydrologic cycle such as fluctuations in precipitation and flows.

All seventeen daily samples collected exceeded the state standard for annual average chloride concentrations at Bijou Park Creek (43BPC-4) during the water year of 2017. The 2017 annual average for chloride was 61.1 mg/L, which is substantially higher than the state standard of 3.0 mg/L. The annual average for chloride was also exceeded at the reference reach at Hidden Valley Creek (43HDVC-5). However, the relative level of exceedence was approximately 20 times the state standard at Bijou Park Creek (43BPC-4), versus 1.7 times the state standard at Hidden Valley Creek (43HDVC-5). Chloride readings have been problematic at Bijou Park Creek for the past decade, as Heavenly and the City of South Lake Tahoe sand and salt the roadways during storm events and prolonged freezing periods the as icy roads can be a public safety concern. Residual chloride is known to accumulate in the environment and removal mechanisms/processes are not readily available or affordable.

With the signing of the Amended Monitoring and Reporting Program in May 2011, monitoring and constituent test requirements for specific conductivity, soluble reactive phosphorus (SRP) total iron, total lead, dissolved ammonia and total petroleum hydrocarbons (TPH) were removed from the daily sampling regime at the Bijou Park Creek site below the California Parking Lot (43BPC-4).

The signed Amended Monitoring and Reporting Program also enforced the submittal of the California Parking Lot filter vault effluent results. The filter vault system collects storm and snow melt runoff from both the upper and lower parking lots. Table 2-12 provides a summary of the results for the water year 2017. Five storm samples were collected during the 2017 water year. See Appendix B, for the storm filter sampling results for the two inlet and outlet locations (43HVP-1A, 43HVP-1B and 43HVP-2).

At the effluent sampling location (outlet 43HVP-2) in water year 2017, all five of the samples collected exceeded the not-to-exceed limit for turbidity of 20 NTUs. One out of the five samples collected exceeded the not-to-exceed limit for total nitrogen (0.50 mg/L); while two of the five samples collected equaled or exceeded the total phosphorus not-to-exceed state limit (0.10 mg/L). Only one oil and grease sample exceeded the state not-to-exceed limit (2.0 mg/L). These storm samples typically reflect the first flush effect, where the highest concentrations of constituents are expected to be mobilized and transported into and through the filter system.

Since 2011, the sacrificial filters have been replaced annually due to sediment loading. Due to the variable storm and sediment loading, not all filters require replacement each year. In September 2013 the media in the sacrificial filters was changed from the originally installed Zeolite, Perlite and Granular Activated Carbon media (ZPG™) to a PhosphoSorb™ absorbent media in hopes to reduce total phosphorus exceedances. Due to the added cost associated with the PhosphoSorb™ media, only the sacrificial filters have this media. The remaining filters are still using and being replaced with ZPG™ media.

In total 107 total filters were replaced on September 20th, 2017. All 14 filters in the two sacrificial units were replaced with PhosphoSorb™ media, while an additional 93 units were replaced in unit 4 (the large southeast vault) which collects bypass water from the upper parking lot and California base lodge. Additional maintenance was performed on the Hydro-Dynamic Separator located near the intersection of Wildwood Avenue and Saddle Road. Maintenance records along with photographs regarding the filter replacement and separator are included with the September Facilities Maintenance Monitoring Reports in Appendix D.

Comparing the water quality results with the annual PhosphoSorb™ media and filter replacement show slight improvements with regards to the minimum tested constituent values; however total phosphorus and total nitrogen levels are still above the exceedance limits. Continued annual maintenance and filter replacement appear to show some water quality improvement as exceedance and maximum constituent values (spikes) have not risen significantly over time. Chloride and turbidity results from the 2017 water year remain high.

Table 2-12 California Base Storm Filter Effluent 2017 Water Year Statistical Summary

Exceedances of the California Maximum Concentration for Discharge to Surface Waters Limits for the Storm Filter Effluent Site (43HVP-2)					
	Turbidity (NTU)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)	Oil & Grease (mg/L)
CA State Standard	20	0.5	0.10	-	2.0
# Samples	5	5	5	5	5
Min	26	0.24	0.03	5.4	ND
Max	72	1.6	0.11	33	3.9
% of the time in Exceedance	100%	20%	20%	-	14%

2.8 Edgewood Creek

Edgewood Creek is located in Nevada, outside of Lahontan's jurisdiction, and included in this report for compliance with the Master Plan Amendments that are within TRPA's basin jurisdiction. The two Edgewood Creek locations are sampled for compliance with the Nevada Department of Environmental Protection (NDEP) standards. Data are summarized in Tables 2-13 and 2-14, and the raw data tables are provided for reference in Appendix A.

Out of the ten daily samples collected at the Upper Edgewood Creek sampling site (43HVE-1), no exceedances occurred for turbidity, suspended sediment, total nitrogen and total phosphorus. Four daily samples exceeded the NDEP state standard for turbidity at the Lower Edgewood Creek sampling site below the Boulder Parking Lot (43HVE-2). Exceedances at Lower Edgewood Creek site (43HVE-2) occurred in April and May, as well as in mid-September. The turbidity exceedances ranged from 11 to 30 NTUs, with the maximum occurring on May 4th, 2017. The exact cause of these turbidity spikes are not known, although the exceedances in April and May occurred during sustained high flows on the rising limb of the hydrograph. There were also two daily exceedances each of suspended sediment and total phosphorus, which occurred on days when the turbidity standard was also exceeded, suggesting that most of the exceedances are likely correlated with sediment transport and high flows.

Table 2-13 Edgewood Creek Above the Boulder Parking Lot 2017 Water Year Statistical Summary

Exceedances of the State (NDEP) Standards for the Edgewood Creek Site – Above the Boulder Parking Lot (43HVE-1)								
	Q (cfs)	Specific Conductivity (mmhos)	Turbidity (NTU)	Suspended Sediment (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	SRP (mg/L)	DP (mg/L)
NDEP Standards¹	-	-	10.0	25	0.6 ²	0.10	-	-
# Samples	9	10	10	10	10	10	10	10
Min	0.076	39.80	0.73	0.50	0.088	0.017	0.005	0.015
Max	2.426	105.70	20.80	8.50	0.359	0.070	0.017	0.029
Annual Average	0.760	73.09	3.88	3.11	0.180	0.038	0.012	0.022
¹ NDEP Standards are from the Nevada Administrative Code (NAC) Chapter 445A.1915. All listed numbers are standards for single values no greater than a given parameter unless otherwise noted								
² Annual Average								

Table 2-14 Edgewood Creek Below the Boulder Parking Lot 2017 Water Year Statistical Summary

Exceedances of the State (NDEP) Standards for the Edgewood Creek Site – Below the Boulder Parking Lot (43HVE-2)								
	Q (cfs)	Specific Conductivity (mmhos)	Turbidity (NTU)	Suspended Sediment (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	SRP (mg/L)	DP (mg/L)
NDEP Standards¹	-	-	10.0	25	0.6 ²	0.10	-	-
# Samples	14	14	14	14	14	14	14	14
Min	0.007	57.40	0.53	1.00	0.103	0.011	0.003	0.010
Max	2.255	185.30	30.0	39.00	0.398	0.155	0.012	0.029
Annual Average	0.753	120.21	8.69	8.96	0.249	0.053	0.008	0.019

¹NDEP Standards are from the Nevada Administrative Code (NAC) Chapter 445A.1915. All listed numbers are standards for single values no greater than a given parameter unless otherwise noted

²Annual Average

2.9 Conclusions and Recommendations

The 2017 water year experienced record setting amounts of precipitation and followed a prolonged period of drought from water years 2012 through 2015. The 2016 water year experienced above average precipitation; however, almost twice as much precipitation fell during the 2017 water year. Figure 2-3 presents a great comparison for the amount of snow water equivalent (water) and precipitation totals since 2005. Annual noncompliance values are typically less frequent in low water years than in higher precipitation years, which result in increased stream flows during storm events and spring runoff. The monitoring results demonstrate that constituent values in noncompliance are not solely due to mountain operations associated with the resort activities, as values at the baseline reference station at Hidden Valley Creek (43HDVC-5) also exceeded annual averages. This observation is especially true during wet years when sustained high flows mobilize and transport more of the constituents for longer durations. The following sections include a summary of the monitoring program and the 2017 findings for each creek and applicable recommendations.

2.9.1 Heavenly Valley Creek

Annual average values for both total phosphorus and chloride were exceeded at all three sampling locations along Heavenly Valley Creek (43HVC-1A, 43HVC-2 and 43HVC-3). Annual averages for these two constituents were also exceeded for the 2015 and 2016 water years. Total phosphorus and chloride annual average values have also been consistently exceeded at the reference site along Hidden Valley Creek (43HDVC-5). The exceedances observed at the reference reach demonstrate that resort operations and development within the watershed are not solely responsible for these exceedances along Heavenly Valley Creek.

Suspended sediment Total Maximum Daily Load (TMDL) weighted annual average values have been calculated since 2001 and the five year rolling average has been below the limit since 2005. Low precipitation and runoff during the prolonged drought period, which correlate with lower sediment loading, likely lowered the 5-year rolling average despite the total suspended sediment load at Property Line (43HVC-3) in water year 2017 being substantially higher than the previous 4 years. Additional erosion control resources (BMPs), increased employee awareness, and on mountain improvements are also likely

contributors to an overall reduction in sediment loading. While total suspended sediment values are in compliance for Heavenly Valley Creek, other metrics such as benthic macroinvertebrate (BMI) and stream condition inventory results (Section 3) will need to show improvement before possible discussion and potential (TMDL) de-listing of the Heavenly Valley Creek were to occur.

2.9.2 Bijou Park Creek / California Parking Lot Effluent

Since the state standards along Bijou Park Creek were lowered to the Lake Tahoe receiving water limits, the annual average values obtained at the monitoring location have not met the standards for total nitrogen, total phosphorus and chloride. The amended monitoring and reporting program in 2011 lowered the standards by almost a factor of ten for these three constituents. As discussed above, total phosphorus and chloride levels were also exceeded at the reference reach along Hidden Valley Creek (43HDVC-5), suggesting concentrations of these constituents can be elevated due to natural factors. However, the exceedances at Bijou Park Creek (43BPC-4) relative to state standards were substantially greater than those at Hidden Valley Creek.

The amended monitoring and reporting program in 2015 also lists turbidity “contributing to a condition of pollution or nuisance in Bijou Park Creek and its downstream receiving waters (Lake Tahoe)”⁷. As discussed above, elevated turbidity values at this location are likely due to the increased impervious area in this smaller watershed contributing sheet flow and dissolved nutrient loading to the creek. Corrective actions have been listed in the past and are summarized in the Bijou Park Creek Evaluation Report (Catalyst, 2016) previously submitted with the 2012-2016 Comprehensive Report.

Chloride exceedances continue to be problematic at the Bijou Park Creek and Parking lot effluent locations, as well as the other California stream monitoring locations (i.e., Heavenly Valley Creek and Hidden Valley Creek). Last season the 2016 water year (or 2015/2016 ski season) marked the first year Heavenly implemented a 5:1 Washoe sand to salt mixture as their deicer for parking lots and roadways assessing the California base lodge. The smaller spreader truck and sensor allows for adequate deicer application, where in the past the large dump truck had problems dispensing a Washoe sand mixture. Heavenly continued this mixture and practice for the 2017 water year and 2016/2017 ski season. In addition to limiting the amount of crystalized salt applied to the roadways, Heavenly also contracted with an outside vendor to apply liquid brine (salt/chloride) when plausible prior to storm events to aid in limiting icing of roadways and the amount of deicer needed after a storm. Due to the frequency of storms, brine application was only applied once throughout the season. In order to maintain safe road conditions for their guests during and following storm events, Heavenly continues to apply deicer to the roadways leading to the California parking lot. Further discussion on this issue can be found in Chapter 7.

The 2017 water year marks the sixth year that effluent results from the California Parking Lot filter vault system were reported to the State Water Board. All five effluent storm samples collected had constituents that exceeded the not-to-exceed state standard. Turbidity, total phosphorus, total nitrogen and oil and grease values each were exceeded on at least one occasion in the five samples collected. Although there is no state standard exceedance limit for the filter vault outlet location (43HVP-2), it is worth noting that the average chloride concentration in the effluent was calculated to be approximately 14 mg/L, which is substantially lower than the annual average concentration of 61.1 mg/L for Bijou Park Creek (43BPC-4) located downstream. However, there is a larger cumulative watershed area and additional inputs at Bijou Park Creek, which would be expected to contribute additional chloride mass to the stream. The Water Board language does state that the metric for exceedance is 10% above background levels; however,

⁷ California Regional Water Quality Control Board-Lahontan Region. 2015. No. 2015-0021 WDID NO. 6A090033000 for Heavenly Mountain Resort. 2015 (page 10).

there is not a sampling location upstream of the parking lot and vault inlet locations to determine the background value.

As mentioned above, a total of 107 filters were replaced in September 2017. The 2017 water year marks the fourth year of data collected using the new Phosphosorb™ media. Water quality results demonstrate that the use of this new media has limited the total phosphorus exceedance spikes; however, there are still exceedances. Despite the increase in precipitation and runoff, the peak exceedance values at the outlet monitoring location (43HVP-2) were similar or lower than those obtained in water year 2016, with the exception of total nitrogen which was slightly higher. Heavenly continues to be proactive in attempting to limit discharge exceedances by replacing cartridges, maintaining the system, updating sampling equipment and new filtration media. Continued filter inspections, maintenance and replacement is now annually budgeted for by Heavenly with the next round of inspections set to occur after the 2017/2018 winter season.

2.9.3 Edgewood Creek

Ten samples were collected at the Edgewood Creek site above the Boulder parking lot (43HVE-1), while fourteen samples were collected downstream the lower Edgewood Creek site (43HVE-2). The discrepancy between the total samples collected results from resort activities limiting access to the upper Edgewood site throughout the winter months, as well as a lack of flowing water during the baseflow period. No documented daily exceedances occurred at the Upper Edgewood Creek sampling site (43HVE-1) for the samples that were collected. NDEP daily standards at the Lower Edgewood Creek sampling site (43HVE-2) were exceeded for turbidity, suspended sediment and total phosphorus. Since the restoration project in 2007 along Edgewood Creek, there have only been three water years in which the daily not to exceed NDEP stream effluent limits were not met. A majority of the exceedances that occurred in water year 2017 are related to sediment transport or particle bound constituents, and are therefore likely a result of the sustained high flows that occurred.

3 Riparian Condition Summary

The objective of this long-term monitoring and data collection effort is to assess the effectiveness of erosion control measures and restoration activities on stream health. Monitoring is conducted to characterize stream and riparian conditions along selected stream reaches within the Heavenly Mountain Resort area as well as along reference reaches that are unaffected by Resort activity. The evaluation and comparison of monitoring data is used to assess changes in stream and riparian conditions over time, and if changes are encountered, determine whether they are associated with operations at the Resort.

In accordance with the EIR/EIS/EIS and subsequent Total Maximum Daily Load (TMDL) criteria from the Monitoring and Reporting Program, Heavenly is required to monitor and survey stream condition inventory (SCI) at least once every four years corresponding with the second year of the benthic macroinvertebrate (BMI) sampling on Heavenly Valley and Hidden Valley Creeks.⁸ The monitoring schedule is documented in the Lahontan Water Board's Monitoring and Reporting Program No. 2015-002 (WDID NO. 6A090033000).

The *Environmental Monitoring Program Comprehensive Report Heavenly Mountain Resort Water Years 2012-2016*⁹ (Comprehensive Report) submitted last winter provides detailed data regarding the riparian condition over time.

3.1 Benthic Macro Invertebrate Surveys

Although BMI data were collected at both Sky Meadows (HVC-1) and Upper Hidden Valley Creek (LHC-2) during the summer months of 2016, the laboratory analysis was not available for inclusion in the Comprehensive Report. Table 3-1 includes the 2016 scoring data for each of these two sites, while Tables 3-2 and 3-3 list the threshold criteria for both the Eastern Sierra IBI (ESIBI) and California Stream Condition Inventory (CSCI).

Table 3-1 Bioassessment scores for sampling events at five stream location near Heavenly Ski Resort (2006-2016)

Sample Year	Sample Dates	HVC-1 Sky Meadows		HVC-2 Below Patsy's		HVC-3 Property Line		LHC-1 Lower Hidden Valley Creek		LHC-2 Upper Hidden Valley Creek ¹	
		ESIBI	CSCI	ESIBI	CSCI	ESIBI	CSCI	ESIBI	CSCI	ESIBI	CSCI
2006	9/6 & 9/7	55.3	0.93	52.2	0.92	69.1	0.95	80.6	1.21	-	-
2007	8/29 & 8/30	23.6	0.41	67	0.96	74.7	0.98	93.3	1.15	-	-
2010	8/10 & 8/11	36.8	0.67	55.2	0.86	80.7	1.04	94.6	1.11	-	-
2011	8/29	49.8	0.61	75	0.75	83.5	1.01	87.8	0.90	-	-
2014	7/28 & 7/29	13.5	0.26	52.7	0.75	72.7	0.82	80.5	0.88	-	-

⁸ California Regional Water Quality Control Board-Lahontan Region. 2015. Monitoring and Reporting Program No. 2015-0021 WDID NO. 6A090033000 for Heavenly Mountain Resort. 2015 (pages 3-4).

⁹ Cardno 2017 Environmental Monitoring Program Comprehensive Report Heavenly Mountain Resort Water Years 2012-2016. Cardno, Zephyr Cove, Nevada.

Sample Year	Sample Dates	HVC-1 Sky Meadows		HVC-2 Below Patsy's		HVC-3 Property Line		LHC-1 Lower Hidden Valley Creek		LHC-2 Upper Hidden Valley Creek ¹	
		ESIBI	CSCI	ESIBI	CSCI	ESIBI	CSCI	ESIBI	CSCI	ESIBI	CSCI
2015 ¹	6/8 & 6/11	55.2	0.93	39.5	0.77	72.2	0.87	91.6	0.92	32.1	0.58
2016	7/21 & 7/22	56.0	0.88	-	-	-	-	-	-	44.8	0.73

¹ 2015, marked the first time BMI data was collected at Upper Hidden Valley Creek.

Scoring calculated using Eastern Sierra IBI (ESIBI), 9-point metric values and the California Stream Condition Index (CSCI).

Table 3-2 Thresholds applicable to Eastern Sierra IBI (from Herbst and Silldorff 2009)

Supporting (Unimpaired)				Impaired	
Acceptable		Intermediate supporting but uncertain		Partially Supporting	Not Supporting
>89.7	89.7-80.4	80.4 – 63.2		63.2 – 42.2	<42.2
A	B	C		D	F
Very Good	Good	Fair		Poor	Very Poor
Good		Fair		Poor	

Table 3-3 Thresholds used to Define Condition Classes for the CSCI (Suk, 2014)

Index	Very Likely Intact (≥0.50)	Likely Intact (0.30 to 0.50)	Possibly Altered (0.10 to 0.30)	Likely Altered (0.01 to 0.10)	Very Likely Altered (< 0.01)
CSCI	> 1.0	1.00 – 0.92	0.91 – 0.79	0.78 – 0.63	0.62 – 0.00

As stated and referenced in the Comprehensive Report, annual scores can be assigned a rating; however, definitive long term positive trending analysis cannot be made at this time due to the low number of samples collected (Suk, 2015). Using the tables above and the parameters established in the Heavenly Valley Creek – Bioassessment Site Scores for 2014 (Suk, 2015) memorandum, the 2016 scores indicate the following biotic conditions for the two sites sampled:

- HVC-1 (“Sky Meadows”) is in poor biotic condition according to the ESIBI, and is very likely intact according to the CSCI. The 2015 and 2016 scores show improvement in the biotic condition over the 2014 scores.
- LHC-2 (Upper Hidden Valley Creek “control” site) is in poor biotic condition according to the ESIBI, and is likely altered according to the CSCI. Both thresholds scores improved over the initial samples collected in 2015.

The inclusion of this high altitude undisturbed meadow reach, is to gather data to be used a baseline to compare and contrast future measurements at this site and against the disturbed meadow environment at Sky Meadows (HVC-1) along Heavenly Valley Creek. Future BMI samples along with snow pack and stream flow data are needed to help determine variability and stream health.

4 Facilities Maintenance Monitoring

Appendix D includes the facilities monitoring checklist for the months of July, August and September. Previous monthly facility monitoring checklists (October through June) can be found in past quarterly reports for the water year 2017. No salt application occurred on-mountain or in and around the parking lots during the fourth quarter since these months are typically the warmest months of the year and snow resort operations are non-existent with regards to skiing and snowboarding. During the fourth quarter, parking lot maintenance, inspections and sweeping occurred in and around the California parking lot facility. Sweeping and recovery is discussed in greater detail in Section 6. Clean Harbors inspected the oil and grease separator in July ensuring that they system was still working as designed. They also removed sediment accumulation within the sediment traps and sumps around the parking lot in late July, 2017.

Additional sediment removal by Clean Harbors occurred in late August prior to the storm vault's filter replacements. Appendix C contains the filter vaults maintenance inspection report and photos from Pacific Stormwater BMP Solutions maintenance report. A total of 107 new cartridges were replaced in September 2017. Also in late September, pavement repair occurred near and around the storm vault system. Asphalt patchwork repaired a number of potholes, cracks and asphalt riling that has been deteriorating over time and increasing the sediment (and nutrient) loading into the vault system. Pictures of repair are included with the September inspection report found in Appendix D.

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5 Snow Condition and Snowmaking Materials

Table 5-1 was created in order to summarize the annual water year's total application of huck salt applied at initially four recorded sites around the mountain. The CA parking lot site was added in water year 2015, while water year 2017 included three additional sites: Tamarack Lodge, Tram Base and World Cup Foundation Building. These additional sites have been added to adequately track all salt (deicer) applied in and around the resort during winter operations. Table 5-1 summarizes the annual application and water year totals, noting that no huck salt was applied during the fourth quarter of the 2017 water year.

Table 5-1 Location and the Application Amount of Huck Salt (Obtained from the Monthly Monitoring Logs, Water Year 2017)

Month/ Year	Top of the Gondola (lbs.)	World Cup Race Course (lbs.)	Terrain Park (lbs.)	Adventure Peak – Tubing Area (lbs.)	CA Parking Lot Application (lbs.)	Tamarack Lodge Deck (lbs.)	Tram Base Deck (lbs.)	World Cup Foundation Building (lbs.)
October 2016	0	0	0	0	5	N/A	N/A	N/A
November 2016	0	0	0	0	40	N/A	N/A	N/A
December 2016	0	0	0	0	1,200	N/A	N/A	N/A
January 2017	0	0	0	0	1,250	300	500	0
February 2017	0	0	0	0	650	100	275	26
March 2017	0	0	160	0	150	62.5	225	5
April 2017	0	0	395	0	0	0	50	0
May 2017	0	0	0	0	0	0	0	0
June 2017	0	0	0	0	0	0	0	0
July 2017	0	0	0	0	0	0	0	0
August 2017	0	0	0	0	0	0	0	0
September 2017	0	0	0	0	0	0	0	0
Totals	0 lbs.	0 lbs.	555 lbs.	0 lbs.	3,295 lbs.	463 lbs.	1,050 lbs.	31 lbs.

Snow and ice melt are applied to heavily used pedestrian areas including parking lots, walkways, and tram egress locations providing safer guest access during the ski/snowboarding season. Salt application at the Upper California Main Lodge, Tamarack Lodge, Tram Base and World Cup Foundation Building are addressed using a hand spreader or similar. Since no salt was applied during the fourth quarter, a letter stating this fact for each of the sites monitored is included in Appendix D.

Table 5-2 summarizes the past seven water year's salt application totals for each of the eight locations. As noted above, the 2017 water year marks the first year that the Tamarack Lodge, Tram Base and World Cup Foundation Building sites were monitored. Salt application usage increased in the 2017 water year

in part to an above average winter (see Section 2.2 and 2.4.1 for water year precipitation and stream discharge values) as well as the fact that three additional sites were added to the monitoring tracking list. Employee training and manager's salt application approval have been implemented over the years helping to limit salt usage and chloride levels in water samples. Application at the Adventure Peak Tubing location has ceased since the 2014 water year due to procedural changes and this site will no longer be included in future monitoring submittals. Additional application records over a longer period of time through varying precipitation years will help to verify the application relationship with water year precipitation (snow fall) totals.

Table 5-2 Annual Huck Salt Application Records (2011-2017).

Water Year	Top of the Gondola (lbs.)	World Cup Race Course (lbs.)	Terrain Park (lbs.)	Adventure Peak – Tubing Area (lbs.)	CA Parking Lot Application (lbs.)	Tamarack Lodge Deck (lbs.)	Tram Base Deck (lbs.)	World Cup Foundation Building (lbs.)	Total Summary (lbs.)
2011 Water Year	250	900	3,360	3,400	-	-	-	-	7,910
2012 Water Year	300	800	1,962	100	-	-	-	-	3,162
2013 Water Year	450	1,680	4,160	400	-	-	-	-	6,690
2014 Water Year	80	60	2,840	0	-	-	-	-	2,980
2015 Water Year ¹	16	50	418	0	544	-	-	-	1,028
2016 Water Year	38	240	0	0	2,982	-	-	-	3,260
2017 Water Year ²	0	0	555	0	3,295	463	1,050	31	5,394

¹ The 2015 Water Year marked the first year that deicer/salt application near and around the CA lodge was tracked on a monthly basis. Application has occurred in the past water years; however the amounts were not recorded.

² The 2017 Water Year marked the first year that deicer/salt application near and around the following locations: Tamarack Lodge, Tram Base and World Cup Foundation Building was tracked on a monthly basis. Application likely occurred in the past water years; however the amounts were not recorded.

6 Deicer and Abrasives Application and Recovery

Application of deicer and abrasives began on October 31st, 2016 during the first quarter of the water year 2017. Application continued through the winter/ski season into April 2017. As discussed in other sections, precipitation and snowfall totals were above average for the water year 2017. Excess snowfall required additional deicer application as the resort ensure safe travel to and from all access and parking lot locations. Late spring storms required additional application on April 8th and 13th; but breaks in the weather allowed for recovery in early April (3rd and 6th). Upon the resort closure (May), an additional 41,440 lbs. of abrasives were collected in and around the California parking lots. The last recovery/collection of abrasives occurred during July of the fourth quarter 2017 water year. Six separate days in July accounted for 138,060 lbs. of material collected by a mechanical sweeper. Daily and monthly deicer logs, for the fourth quarter, can be found in Appendix D. Table 6-1 provides the 2017 water year total balance values of deicer application and recovery.

For the water year 2017, approximately 74% of the material applied to the roadways was recovered by Heavenly and their subcontracted vendor for sweeping (vacator truck). The percentage of recovery is not entirely inclusive, since the City of South Lake Tahoe additionally sweeps the roadways leading up to Heavenly Mountain Resort. The City sweeper collects debris, cinders, and sand that Heavenly applies to roadways leading to the resort (Ski Run Blvd., Needle Peak Road, Wildwood Avenue and Saddle Road). In theory, the city's sweeper collection values should be added to the recovery number increasing the percentage of recovery. However, the city also applies deicer to the roadways adjacent the resort and at this time application and recovery is not tracked and accounted for.

Table 6-1 Summary of Deicer Application and Recovery (Water Year 2017)

Month/Year	Total Amount of Deicer and Abrasives Applied (lbs.)	Total Amount of Deicer and Abrasives Recovered (lbs.)	Total Amount of Liquid Brine Applied (Gallons)
October 2016	5	0	0
November 2016	1,717	0	0
December 2016	9,593	0	150
January 2017	128,447	0	0
February 2017	77,553	0	0
March 2017	9,896	0	0
April 2017	3,433	29,420	0
May 2017	0	41,440	0
June 2017	0	0	0
July 2017	0	138,060	0
August 2017	0	0	0
September 2017	0	0	0
Totals	230,644 lbs.	171,620 lbs.	150 Gallons

The 2016/2017 ski season marked the second year of Washoe sand deicer mixture and application. Previously, deicer consisted of a cinder base that had more porous spaces that was not as beneficial to

the environment due to the larger porous void space, nutrient attachment and durability. Improvements to the spreader equipment allowed Heavenly to switch to the Water Boards preferred abrasive/deicer material (Washoe sand). Heavenly has also maintained the sand to salt ratio of 5:1, respectively, limiting the amount of salt applied to the roadways and entering the water ways. December 30th marked the first time liquid brine was applied to the parking lots and roadways prior to a storm event. Liquid brine is made up of dissolved magnesium and sodium chloride and is used by the transportation districts and now in 2017, Heavenly, to pre-treat roadways. Unlike deicer, sprayed application of the liquid does not bounce off the asphalt roadway surface and provides more complete coverage in cracks helping to melts snow and prevent ice build-up. Due to the frequency of storm cycles, no additional brine applications occurred during the 2016/2017 season. Additional deicer (sand and salt) was purchased by Heavenly from CinderLite on March 8, 2017, due to increased precipitation as snowfall and colder temperatures during the winter months. Samples of this material were not sent to the laboratory for analysis, since the material purchased was supplied by the same vendor and source (pile) as previously collected samples.

Annual application and recovery amounts for the past six season are shown in Table 6-2 below. The collection and recovery of material in 2017 is the highest recorded amount (weight) to date as Heavenly has increased its effort to remove abrasives from the watershed.

Table 6-2 Deicer Application and Recovery 5-Year Totals

Yearly Totals	Total Amount of Deicer and Abrasives Applied (lbs.)	Total Amount of Deicer and Abrasives Recovered (lbs.)
2012	255,570	88,600
2013	390,121	105,020
2014	124,824	66,060
2015	59,076	33,900
2016	178,735	124,240
2017	230,644	171,620
Total	1,238,970 lbs.	589,440 lbs.

7 USFS Roads Monitoring

The latest Monitoring and Reporting Program (MRP) requires monitoring United States Forest Service (USFS) roads within the boundary of Heavenly Mountain Resort.¹⁰ In March 2015, Vail Resorts (Heavenly) and the Lake Tahoe Basin Management Unit (USFS) entered a roads maintenance and reporting agreement to coordinate and cooperate future maintenance and monitoring of the on-mountain roadway network¹¹. This agreement lays out the framework for roadway maintenance, new roadway construction, annual meetings and annual reporting activities.

The Heavenly Roads Maintenance Report for 2017 was submitted to the LTBMU Forest Service in September 2017. The 2017 summary and map are included in this report as Appendix E. During the 2017 construction season, 7.1 miles of on-mountain roadway network were improved and/or maintained. Of this total, 4.3 miles of roads were maintained, and 2.8 miles of roads were improved. These numbers have been updated since the September submittal since there was a mathematical error. Please use these values and this submittal as the correct totals. Effectiveness of road BMPs were also evaluated in 2017 fulfilling a separate monitoring requirement to be completed once every four years. In keeping with the past reporting schedule, BMP effectiveness evaluations for roads will be included in the BMP Effectiveness Annual Report to be submitted May 1, 2018.

In addition to the new MRP, the USFS Region 5 has phased out the Regional BMP Evaluation Program (BMPEP). In the past, this program provided additional roadway maintenance and monitoring protocol. Moving forward the USFS will require the new National US Forest Service BMP Monitoring Program that will address roadways, ski runs and facilities. The program and protocol are still in draft form at this time; however, the agency has actively been using the protocols over the past few years. A final version of the technical guide was due in fiscal year 2017; however, it is still not available to the public at this time. The new National BMP protocols programmatically assess BMP implementation and effectiveness for roadways and other land management practices (facilities and ski runs for example). All management practices associated with Heavenly Mountain Resort will be included in the sample pool for random selection and annual monitoring in which the USFS staff will conduct and report.

Due to the low number of sites selected and random monitoring associated with the National BMP monitoring targets (approximately six evaluations per Forest per year); Heavenly and their consultants will continue to identify and address erosion and BMP effectiveness on resort roadways, ski runs and facilities annually.

¹⁰ California Regional Water Quality Control Board – Lahontan Region. 2015. Monitoring and Reporting Program for Heavenly Mountain Resort. Board Order 2015-0021. WDID No. 6A090033000. 2015. Page 9. Section D.

¹¹ US Department of Agriculture. Forest Service Lake Tahoe Basin Management Unit. Forest Road Maintenance and Reporting Agreement between the USDA USFS LTBMU and Heavenly Mountain Resort. March 23, 2015.

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8 Facilities Watershed Awareness Training

As required by the Monitoring and Reporting Program, Appendix F includes the compliance letter stating that a Facilities Watershed Awareness Training was completed on June 13, 2017. In addition to the letter, Appendix F also includes the sign-in sheet documenting attendance to the training as well as a copy of the PowerPoint presentation. This training is typically called the “BMP Breakfast Training” and had 99 attendees sign-in in spring of 2017. The training covers: recent on-mountain projects, resort maintenance operations, identification of noxious weeds and sensitive species (Draba), the incorporation of lessons learned from past projects, information regarding the summer road rules (speed and dust), as well as providing information regarding new BMP technologies as well as reviewing correct BMP installation and implementation.

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9 On Mountain Monitoring

Additional on-mountain monitoring documentation can be found in Appendix G. The table and associated photos represent the fourth quarter of the 2017 water year (July through September) and assists with developing a draft of annual work list submitted with the Mitigation and Monitoring Report. Due to snow cover and limited on-mountain access, photo monitoring and documentation is typically limited to once per water year. The above average winter of 2016/2017 caused a number of on-mountain issues that were addressed by the summer maintenance crews. Hand grenade chute and Orion's run were two locations that erosion control methodologies (water bars, pine mulch, etc.) were incorporated to limit steep slope riling and gullying. In addition, annual storm vault inspections were performed and filter replacement occurred in September 2017 as discussed in Section 2.7.

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Heavenly Mountain Resort Water
Year 2017

APPENDIX

A

RAW WATER QUALITY
CONSTITUENTS, WATER YEAR 2017

Heavenly Valley Creek -Sky Meadows
(43HVC-1A)

Table A-1:		Heavenly Mountain Resort water year 2016/2017 water quality monitoring data from station 43HVC-1A, Heavenly Valley Creek at Sky Meadows. This station is located above the snowmaking pond at an elevation of 8,525 feet.									
Date	Time	Discharge (cfs)	Turbidity (ntu)	Suspended Sediment ² (mg/L)	Total Nitrite/Nitrate (mg/L)	Total Kjeldahl N (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)	Average Temperature (Deg C)	Precipitation (in)
Lahontan Standards ¹		N/A	N/A	60	N/A	N/A	0.190	0.015	0.15	N/A	N/A
First Quarter WY 2016-2017											
10/13/16	14:00	0.211	1.36	4.0	0.046	0.064	0.110	0.024	0.46	7.78	0
11/15/16	13:45	0.243	1.06	2.5	0.034	0.102	0.136	0.017	0.57	6.67	0
12/20/16	14:45	0.202	2.19	6.0	0.029	0.145	0.174	0.026	0.56	1.11	0.1
Second Quarter WY 2016-2017											
1/17/17	15:15	0.229	1.21	1.5	0.037	0.053	0.090	0.013	0.47	1.67	0
2/23/17	14:30	0.173	1.86	3.0	0.040	0.090	0.130	0.013	0.45	-8.89	0.1
3/16/17	14:05	0.173	3.74	3.5	0.038	0.096	0.134	0.020	0.42	5.00	0
Third Quarter WY 2016-2017											
4/4/17	14:00	0.244	2.87	5.0	0.033	0.140	0.173	0.024	0.38	2.78	0
4/19/17	13:50	0.215	4.25	5.0	0.034	0.157	0.191	0.027	0.40	2.78	0
5/4/17	13:30	0.939	4.48	8.0	0.064	0.241	0.305	0.034	0.36	10.56	0
5/18/17	13:35	1.58	2.40	4.0	0.035	0.117	0.152	0.023	0.36	3.33	0
6/1/17 ³	14:30	5.75	5.48	13.0	0.035	0.186	0.221	0.069	0.36	6.11	0
6/8/17 ³	14:00	6.45	5.18	13.5	0.057	0.151	0.208	0.058	0.36	6.11	0
6/22/17 ⁴	15:10	-	40.3	93.5	0.083	0.460	0.543	0.271	0.30	16.11	0
6/29/2017 ³	14:30	6.69	9.33	34.5	0.059	0.167	0.226	0.143	0.32	11.67	0
Fourth Quarter WY 2016-2017											
7/13/17	14:05	4.980	1.44	3.0	0.026	0.083	0.109	0.021	0.30	15.00	0
8/23/17	13:30	1.306	2.12	2.0	0.018	0.084	0.102	0.018	0.27	11.67	0.1
9/14/17	14:05	0.593	2.06	1.0	0.016	0.077	0.093	0.017	0.30	8.33	0
Annual Summary	Minimum	0.173	1.060	1.00	0.016	0.053	0.090	0.013	0.27	-8.9	-
	Maximum	6.690	40.300	93.50	0.083	0.460	0.543	0.271	0.57	16.1	-
	Average	1.874	5.372	11.94	0.040	0.142	0.182	0.048	0.39	6.3	-
90th Percentile		-	-	46.30	-	-	-	-	-	-	-

¹ Standards are annual averages for the receiving waters of Trout Creek.

² Standards are for receiving waters of Trout Creek, 90th Percentile.

³ Flow is approximate due to flume being overtopped

⁴ Unable to measure flow/depth at flume due to unsafe access at flood stage (Overtopping Flume and Stream Banks).

Heavenly Valley Creek - Patsy's
(43HVC-2)

Table A-2:		Heavenly Mountain Resort water year 2016/2017 water quality monitoring data from station 43HVC-2, Heavenly Valley Creek below Patsy's Chair. This station is located just beyond ski area development within this watershed at an elevation of 8,000 feet.									
Date	Time	Discharge (cfs)	Turbidity (ntu)	Suspended Sediment ² (mg/L)	Total Nitrite/Nitrate (mg/L)	Total Kjeldahl N (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)	Average Temperature (Deg C)	Precipitation (in)
Lahontan Standards ¹		N/A	N/A	60	N/A	N/A	0.190	0.015	0.15	N/A	N/A
First Quarter WY 2016-2017											
10/13/16	13:45	0.100	0.48	1.0	0.080	0.053	0.133	0.023	0.96	7.78	0
11/15/16	13:25	0.174	0.45	1.0	0.062	0.056	0.118	0.013	1.0	6.67	0
12/20/2016 ³	15:05	0.123	0.73	1.5	0.075	0.067	0.142	0.016	0.72	1.11	0.1
Second Quarter WY 2016-2017											
1/17/17	15:30	0.201	2.08	2.0	0.066	0.090	0.156	0.020	1.4	1.67	0
2/23/17	15:40	0.230	1.06	1.0	0.074	0.057	0.131	0.011	0.99	-8.89	0.1
3/16/17	14:45	0.292	1.06	1.5	0.068	0.063	0.131	0.016	0.87	5.00	0
Third Quarter WY 2016-2017											
4/4/17	14:35	0.505	0.96	1.5	0.078	0.065	0.143	0.015	0.78	2.78	0
4/19/17	14:30	0.544	1.58	1.0	0.096	0.060	0.156	0.019	0.81	2.78	0
5/4/17	13:45	3.09	14.6	20.0	0.073	0.242	0.315	0.075	0.54	10.56	0
5/18/17	13:45	4.67	2.43	3.5	0.064	0.104	0.168	0.025	0.56	3.33	0
6/1/17 ⁴	14:00	13.45	15.3	24.5	0.047	0.198	0.245	0.096	0.43	6.11	0
6/8/17 ⁴	14:20	20.88	5.79	9.0	0.052	0.166	0.218	0.047	0.39	6.11	0
6/22/17 ⁴	14:45	29.23	20.5	47.5	0.064	0.235	0.299	0.137	0.35	16.11	0
6/29/17	14:45	17.03	2.89	5.0	0.052	0.092	0.144	0.029	0.36	11.67	0
Fourth Quarter WY 2016-2017											
7/13/17	13:20	6.000	1.62	3.0	0.024	0.103	0.127	0.024	0.38	15.00	0
8/23/17	13:05	1.466	2.06	2.0	0.011	0.120	0.131	0.021	0.49	11.67	0.1
9/14/17	13:52	0.712	1.71	1.0	0.016	0.107	0.123	0.022	0.52	8.33	0
Annual Summary	Minimum	0.100	0.450	1.00	0.011	0.053	0.118	0.011	0.35	-8.9	-
	Maximum	29.230	20.500	47.50	0.096	0.242	0.315	0.137	1.40	16.1	-
	Average	5.806	4.429	7.41	0.059	0.110	0.169	0.036	0.68	6.3	-
90th Percentile		-	-	29.10	-	-	-	-	-	-	-

¹ Standards are annual averages for the receiving waters of Trout Creek.

² Standards are for receiving waters of Trout Creek, 90th Percentile.

³ The matrix spike/matrix spike duplicate (MS/MSD) values for the chloride sample were

⁴ Flow is approximate due to flume being overtopped

Heavenly Valley Creek -Property Line
(43HVC-3)

Table A-3:		Heavenly Mountain Resort water year 2016/2017 water quality monitoring data from station 43HVC-3, Heavenly Valley Creek at the Property Line. This station is located just above the Forest Service property line and subdivision development at an elevation of 6,620 feet.									
Date	Time	Discharge (cfs)	Turbidity (ntu)	Suspended Sediment ² (mg/L)	Total Nitrite/Nitrate (mg/L)	Total Kjeldahl N (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)	Average Temperature (Deg C)	Precipitation (in)
Lahontan Standards ¹		N/A	N/A	60	N/A	N/A	0.190	0.015	0.15	N/A	N/A
First Quarter WY 2016-2017											
10/13/16	12:15	0.042	6.25	1.0	0.005	0.057	0.062	0.023	0.82	7.78	0
11/15/16	12:00	0.158	0.20	1.0	0.003	0.050	0.053	0.011	0.95	6.67	0
12/20/16	12:00	0.088	1.77	4.0	0.003	0.094	0.097	0.021	1.1	1.11	0.1
Second Quarter WY 2016-2017											
1/17/17	13:50	0.394	1.47	2.0	0.001	0.075	0.076	0.018	1.1	1.67	0
2/23/17	12:30	0.475	0.75	1.0	0.002	0.048	0.050	0.011	0.95	-8.89	0.1
3/16/17	12:30	0.913	0.80	1.5	0.003	0.067	0.070	0.015	0.80	5.00	0
Third Quarter WY 2016-2017											
4/4/17	12:20	1.69	0.55	1.0	0.003	0.060	0.063	0.017	0.70	2.78	0
4/19/17	12:25	1.81	0.74	1.0	0.003	0.062	0.065	0.019	0.72	2.78	0
5/4/17	12:05	5.0	9.50	17.0	0.025	0.254	0.279	0.050	0.56	10.56	0
5/18/17	12:10	8.66	6.36	14.0	0.025	0.104	0.129	0.040	0.56	3.33	0
6/1/17	12:15	20.02	8.72	18.0	0.030	0.158	0.188	0.080	0.45	6.11	0
6/8/17	12:30	23.62	40.5	71.0	0.036	0.280	0.316	0.202	0.40	6.11	0
6/22/17	12:50	31.60	33.0	87.0	0.047	0.414	0.461	0.213	0.36	16.11	0
6/29/17	12:30	20.30	5.82	18.0	0.041	0.121	0.162	0.074	0.38	11.67	0
Fourth Quarter WY 2016-2017											
7/13/17	11:45	6.82	8.52	14.0	0.017	0.179	0.196	0.054	0.39	15.00	0
8/23/17	11:40	2.09	1.89	1.5	0.005	0.175	0.180	0.022	0.5	11.67	0.1
9/14/17	12:20	1.45	1.05	3.0	0.003	0.118	0.121	0.027	0.51	8.33	0
Annual Summary	Minimum	0.04	0.20	1.00	0.001	0.048	0.050	0.011	0.36	-8.9	-
	Maximum	31.60	40.50	87.00	0.047	0.414	0.461	0.213	1.10	16.1	-
	Average	7.36	7.52	15.06	0.015	0.136	0.151	0.053	0.66	6.3	-
90th Percentile		-	-	74.20	-	-	-	-	-	-	-

¹ Standards are annual averages for the receiving waters of Trout Creek.

² Standards are for receiving waters of Trout Creek, 90th Percentile.

Bijou Park Creek -
Below California Parking Lot
(43BPC-4)

Table A-4:		Heavenly Mountain Resort water year 2016/2017 water quality monitoring data from station 43BPC-4, Bijou Park Creek below California Parking Lot. This station is located 1/4 miles below the culvert outlet draining the parking lot off of Wildwood Avenue at an elevation of 6,530 feet.									
Date	Time	Discharge (cfs)	Turbidity (ntu)	Suspended Sediment (mg/L)	Total Nitrite/ Nitrate (mg/L)	Total Kjeldahl N (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)	Average Temperature (Deg C)	Precipitation (in)
Lahontan Standards ¹		N/A	20	60	N/A	N/A	0.15	0.008	3.0	N/A	N/A
First Quarter WY 2016-2017											
10/13/16	12:55	0.020	12.5	5.0	0.362	0.184	0.546	0.081	51	7.78	0
11/15/16	12:40	0.031	18.7	5.0	0.273	0.281	0.554	0.069	57	6.67	0
12/20/16	12:45	0.063	18.2	9.0	0.274	0.311	0.585	0.067	71	1.11	0.1
Second Quarter WY 2016-2017											
1/17/17	16:00	0.172	47.2	28.0	0.189	0.524	0.713	0.163	160	1.67	0
2/23/17	16:20	0.249	35.8	30.0	0.398	0.395	0.793	0.136	250	-8.89	0.1
3/16/17	15:30	0.592	63.9	64.0	0.207	0.592	0.799	0.230	58	5.00	0
Third Quarter WY 2016-2017											
4/4/17	13:05	0.489	19.9	17	0.471	0.304	0.775	0.093	53	2.78	0
4/19/17	13:10	0.745	15.4	11.5	0.432	0.278	0.710	0.088	48	2.78	0
5/4/17	12:45	1.46	24.2	33.0	0.211	0.365	0.576	0.155	23	10.56	0
5/18/17	12:50	0.638	14.0	11.5	0.240	0.228	0.468	0.094	31	3.33	0
6/1/17	13:00	0.490	24.0	19.5	0.174	0.288	0.462	0.117	33	6.11	0
6/8/17	14:50	0.361	15.1	5.5	0.168	0.283	0.451	0.082	35	6.11	0
6/22/17	13:50	0.431	16.9	9.5	0.135	0.257	0.392	0.117	33	16.11	0
6/29/17	15:10	0.255	16.4	10.0	0.207	0.275	0.482	0.107	36	11.67	0
Fourth Quarter WY 2016-2017											
7/13/17	12:36	0.259	17.6	10.0	0.159	0.294	0.453	0.108	32	15.00	0
8/23/17	12:25	0.174	15.4	5.5	0.158	0.271	0.429	0.119	33	11.67	0.1
9/14/17	13:10	0.150	12.3	4.5	0.171	0.335	0.506	0.103	34	8.33	0
Annual Summary	Min	0.020	12.30	4.50	0.135	0.184	0.392	0.067	23.0	-8.9	-
	Max	1.456	63.90	64.00	0.471	0.592	0.799	0.230	250.0	16.1	-
	Average	0.387	22.8	16.38	0.249	0.321	0.570	0.113	61.1	6.3	-

¹ Standards are for receiving water objectives from the Lahontan Basin Plan expressed as an annual average.

Hidden Valley Creek -
Reference Reach
(43HDVC-5)

Table A-5:		Heavenly Mountain Resort water year 2016/2017 water quality monitoring data from station 43HDVC-5, Hidden Valley Creek baseline station. This station is located just above the confluence with Trout Creek, at an elevation of 6,680 feet.									
Date	Time	Discharge (cfs)	Turbidity (ntu)	Suspended Sediment (mg/L)	Total Nitrite/Nitrate (mg/L)	Total Kjeldahl N (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Chloride (mg/L)	Average Temperature (Deg C)	Precipitation (in)
Lahontan Standards ¹		N/A	N/A	60	N/A	N/A	0.19	0.015	0.15	N/A	N/A
First Quarter WY 2016-2017											
10/13/16	11:00	0.331	0.37	1.0	0.005	0.048	0.053	0.030	0.26	7.78	0
11/15/16	10:45	0.350	0.44	2.5	0.003	0.070	0.073	0.017	0.29	6.67	0
12/20/16	10:35	0.619	3.05	2.5	0.005	0.099	0.104	0.024	0.42	1.11	0.1
Second Quarter WY 2016-2017											
1/17/17	11:33	0.92	47.2	3.5	0.005	0.124	0.129	0.026	0.40	1.67	0
2/23/17	10:30	2.30	2.37	1.5	0.004	0.125	0.129	0.020	0.35	-8.89	0.1
3/16/17	10:45	2.80	1.92	2.5	0.005	0.118	0.123	0.025	0.33	5.00	0
Third Quarter WY 2016-2017											
4/4/17	10:45	3.74	2.34	3.5	0.004	0.131	0.135	0.025	0.29	2.78	0
4/19/17	10:40	4.69	1.97	2.5	0.004	0.134	0.138	0.031	0.32	2.78	0
5/4/17	10:40	7.41	4.62	6.0	0.008	0.222	0.230	0.038	0.25	10.56	0
5/18/17	10:50	7.52	2.35	2.5	0.004	0.119	0.123	0.021	0.23	3.33	0
6/1/17	10:50	17.03	4.73	13.0	0.005	0.168	0.173	0.035	0.17	6.11	0
6/8/17	11:00	23.06	10.1	20.5	0.005	0.285	0.290	0.057	0.16	6.11	0
6/22/17	11:15	28.38	10.0	26.0	0.004	0.284	0.288	0.066	0.13	16.11	0
6/29/17	10:55	16.02	2.79	7.5	0.001	0.109	0.110	0.032	0.15	11.67	0
Fourth Quarter WY 2016-2017											
7/13/17	10:30	7.024	1.34	3.0	0.004	0.090	0.094	0.021	0.15	15.00	0
8/23/17	10:30	2.681	0.86	1.0	0.003	0.101	0.104	0.024	0.26	11.67	0.1
9/14/17	10:30	1.595	0.54	0.5	0.003	0.083	0.086	0.026	0.24	8.33	0
Annual Summary	Minimum	0.331	0.37	0.50	0.001	0.048	0.053	0.017	0.13	-8.9	-
	Maximum	28.38	47.20	26.00	0.008	0.285	0.290	0.066	0.42	16.1	-
	Average	7.440	5.71	5.85	0.004	0.136	0.140	0.030	0.26	6.6	-
90th Percentile		-	-	21.60	-	-	-	-	-	-	-

¹ Standards are annual averages for the receiving waters of Trout Creek. For Suspended Sediment, standards are for streams tributary to Lake Tahoe. Suspended Sediment concentrations shall not exceed a 90th percentile value of 60 mg/L.

Edgewood Creek -Above Boulder Parking Lot
(43HVE-1)

Table A-6:		Heavenly Mountain Resort water year 2016/2017 water quality monitoring data from station 43HVE-1, Edgewood Creek above Boulder Parking Lot. This station is located in Edgewood Bowl above the learn-to-ski center, at an elevation of 7,280 feet.											
Date	Time	Discharge (cfs)	Specific Conductivity (mmhos)	Turbidity (ntu)	Suspended Sediment (mg/L)	Total Nitrite/Nitrate (mg/L)	Total Kjeldahl N (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Soluble Reactive P (mg/L)	Dissolved P (mg/L)	Average Temperature (Deg C)	Precipitation (in)
NDEP Standards ¹		N/A	N/A	10	25.0	N/A	N/A	0.6 ²	0.1	N/A	N/A	N/A	N/A
First Quarter WY 2016-2017													
10/13/16	No Samples Collected Due to Low Flows											7.78	0
11/15/16	No Samples Collected Due to Low Flows											6.67	0
12/20/16 ³	16:00	-	92.9	2.33	2.5	0.003	0.284	0.287	0.045	0.015	0.028	1.11	0.1
Second Quarter WY 2016-2017													
1/17/17	No Samples Collected Due to groomed ski run over creek											1.67	0
2/23/17	No Samples Collected Due to groomed ski run over creek											-8.89	0.1
3/16/17	No Samples Collected Due to groomed ski run over creek											5.00	0
Third Quarter WY 2016-2017													
4/4/17	No Samples Collected Due to groomed ski run over creek											2.78	0
4/19/17	No Samples Collected Due to groomed ski run over creek											2.78	0
5/4/17	14:30	1.13	53.5	2.02	3.0	0.004	0.097	0.101	0.017	0.009	0.015	10.56	0
5/18/17	14:25	1.48	54.8	0.74	1.0	0.002	0.093	0.095	0.022	0.010	0.018	3.33	0
6/1/17	15:35	2.43	39.8	0.89	1.0	0.002	0.086	0.088	0.030	0.016	0.026	6.11	0
6/8/17	15:35	0.965	46.5	0.73	0.5	0.002	0.112	0.114	0.026	0.015	0.020	6.11	0
6/22/17	16:40	0.308	73.5	0.82	1.5	0.002	0.227	0.229	0.038	0.017	0.029	16.11	0
6/29/17	15:45	0.234	81.5	1.14	4.0	0.002	0.211	0.213	0.039	0.015	0.029	11.67	0
Fourth Quarter WY 2016-2017													
7/13/17	15:05	0.096	97.70	3.92	5.50	0.003	0.356	0.359	0.059	0.01	0.025	15.00	0
8/23/17	14:32	0.131	104.80	3.87	3.00	0.003	0.162	0.165	0.037	0.008	0.019	11.67	0.1
9/14/17	15:15	0.076	105.70	20.80	8.50	0.002	0.252	0.254	0.07	0.005	0.016	8.33	0
Annual Summary	Minimum	0.076	39.80	0.73	0.50	0.002	0.086	0.088	0.017	0.005	0.015	-8.89	-
	Maximum	2.426	105.70	20.80	8.50	0.004	0.356	0.359	0.070	0.017	0.029	16.11	-
	Average	0.760	73.09	3.88	3.11	0.002	0.177	0.180	0.038	0.012	0.022	6.34	-

¹ NDEP Standards are from the Nevada Administrative Code (NAC) Chapter 445A.1915. All listed numbers are standards for single values no greater than a given parameter unless otherwise noted.

² Annual Average

³ Flows too low to measure; however water quality samples collected.

Edgewood Creek - Below Boulder Parking Lot
(43HVE-2)

Table A-7:		Heavenly Mountain Resort water year 2016/2017 water quality monitoring data from station 43HVE-2, Edgewood Creek below Boulder Parking Lot. . This station is located 1/4 mile below the parking lot, underneath the power lines at an elevation of 7,120 feet.											
Date	Time	Discharge (cfs)	Specific Conductivity (mmhos)	Turbidity (ntu)	Suspended Sediment (mg/L)	Total Nitrite/Nitrate (mg/L)	Total Kjeldahl N (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Soluble Reactive P (mg/L)	Dissolved P (mg/L)	Average Temperature (Deg C)	Precipitation (in)
NDEP Standards ¹		N/A	N/A	10.0	25.0	N/A	N/A	0.6 ²	0.1	N/A	N/A	N/A	N/A
First Quarter WY 2016-2017													
10/13/16	15:00	0.007	141.7	0.68	2.0	0.035	0.068	0.103	0.023	0.004	0.022	7.78	0
11/15/16	15:00	0.013	154.9	0.53	1.0	0.046	0.102	0.148	0.011	0.003	0.010	6.67	0
12/20/16	16:20	0.090	185.3	3.16	1.5	0.069	0.256	0.325	0.02	0.006	0.011	1.11	0.1
Second Quarter WY 2016-2017													
1/17/17	No samples collected due to snow/access/winter resort operations											1.67	0
2/23/17	No samples collected due to snow/access/winter resort operations											-8.89	0.1
3/16/17	No samples collected due to significant snow depth											5.00	0
Third Quarter WY 2016-2017													
4/4/17	15:35	0.688	118.7	18.2	13.0	0.052	0.258	0.310	0.058	0.012	0.016	2.78	0
4/16/17	15:40	1.00	142.4	11.0	8.5	0.067	0.226	0.293	0.095	0.007	0.016	2.78	0
5/4/17	15:00	1.92	91.5	30.0	39.0	0.024	0.374	0.398	0.155	0.009	0.029	10.56	0
5/18/17	14:45	1.72	82.1	6.17	7.0	0.012	0.174	0.186	0.037	0.007	0.015	3.33	0
6/1/17	16:00	2.26	57.4	6.04	9.0	0.007	0.173	0.180	0.052	0.009	0.017	6.11	0
6/8/17	15:55	1.22	71.9	3.73	2.5	0.012	0.15	0.162	0.026	0.009	0.016	6.11	0
6/22/17	16:20	0.480	105.2	3.92	3.5	0.032	0.238	0.270	0.038	0.010	0.023	16.11	0
6/29/17	16:05	0.258	116.8	5.59	4.0	0.044	0.198	0.242	0.039	0.010	0.023	11.67	0
Fourth Quarter WY 2016-2017													
7/13/17	15:30	0.217	135.7	9.06	5.5	0.067	0.228	0.295	0.043	0.011	0.025	15.00	0
8/23/17	14:58	0.523	144.1	8.90	3.0	0.074	0.173	0.247	0.036	0.008	0.023	11.67	0.1
9/14/17	15:45	0.155	135.2	14.70	26.0	0.061	0.264	0.325	0.106	0.012	0.021	8.33	0
Annual Summary	Minimum	0.007	57.40	0.53	1.000	0.007	0.068	0.103	0.011	0.003	0.010	-8.9	-
	Maximum	2.255	185.30	30.00	39.000	0.074	0.374	0.398	0.155	0.012	0.029	16.1	-
	Average	0.753	120.21	8.69	8.964	0.043	0.206	0.249	0.053	0.008	0.019	6.3	-

¹ NDEP Standards are from the Nevada Administrative Code (NAC) Chapter 445A.1915. All listed numbers are standards for single values no greater than a given parameter unless otherwise noted.

² Annual Average

7/26/2017

Cardno
PO Box 1533
Zephyr Cove, NV 89448
Attn: Chris Donley

OrderID: 1707404

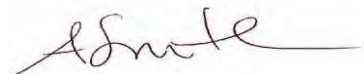
Dear: Chris Donley

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 7/14/2017. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,



Andy Smith
QA Manager

SPARKS

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Sparks, Nevada 89431
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tel (702) 475-8899
fax (702) 622-2868
EPA LAB ID: NV00932

Western Environmental Testing Laboratory

Report Comments

Cardno - 1707404

Specific Report Comments

None

Report Legend

B	-- Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	-- Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	-- Sample analyzed beyond the accepted holding time
J	-- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	-- The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	-- There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	-- Not calculated due to matrix interference
QD	-- The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	-- The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	-- Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	-- Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	-- The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:

A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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fax (702) 622-2868
EPA LAB ID: NV00932

Western Environmental Testing Laboratory

Analytical Report

Cardno

Date Printed: 7/26/2017

PO Box 1533

OrderID: 1707404

Zephyr Cove, NV 89448

Attn: Chris Donley

Phone: (775) 588-9069 Fax: (775) 588-9219

Customer Sample ID: 20170713 43 HDVC-5

Collect Date/Time: 7/13/2017 10:30

WETLAB Sample ID: 1707404-001

Receive Date: 7/14/2017 08:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	0.15	mg/L	1	0.10	7/14/2017	NV00925
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Customer Sample ID: 20170713 43 HVC-3

Collect Date/Time: 7/13/2017 11:45

WETLAB Sample ID: 1707404-002

Receive Date: 7/14/2017 08:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Anions by Ion Chromatography

Chloride	EPA 300.0	0.39	mg/L	1	0.10	7/14/2017	NV00925
----------	-----------	------	------	---	------	-----------	---------

Customer Sample ID: 20170713 43 HVC-1A

Collect Date/Time: 7/13/2017 14:05

WETLAB Sample ID: 1707404-003

Receive Date: 7/14/2017 08:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	0.30	mg/L	1	0.10	7/14/2017	NV00925
----------	-----------	------	------	---	------	-----------	---------

Customer Sample ID: 20170713 43 HVC-2

Collect Date/Time: 7/13/2017 13:20

WETLAB Sample ID: 1707404-004

Receive Date: 7/14/2017 08:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Anions by Ion Chromatography

Chloride	EPA 300.0	0.38	mg/L	1	0.10	7/14/2017	NV00925
----------	-----------	------	------	---	------	-----------	---------

Customer Sample ID: 20170713 43 BPC-4

Collect Date/Time: 7/13/2017 12:36

WETLAB Sample ID: 1707404-005

Receive Date: 7/14/2017 08:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	32	mg/L	1	0.10	7/14/2017	NV00925
----------	-----------	----	------	---	------	-----------	---------

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

Page 3 of 4

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 fax (702) 622-2868
 EPA LAB ID: NV00932

Western Environmental Testing Laboratory

QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17070567	Blank 1	Chloride	EPA 300.0	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17070567	LCS 1	Chloride	EPA 300.0	10.3	10.0	103	mg/L

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17070567	MS 1	Chloride	EPA 300.0	1707394-007	0.181	1.54	1.51	1.25	mg/L	108	106	2
QC17070567	MS 2	Chloride	EPA 300.0	1707404-003	0.299	1.62	1.67	1.25	mg/L	106	110	3

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tel (702) 475-8899 | fax (702) 776-6152

Page of

Please contact your Project Manager for details.  initial

ANALYSIS REPORT												
Client:		Cardno - Heavenly Water Quality Sampling					Lab:	High Sierra Water Lab				
		701 University Ave. Suite 200						Collin Strassenburgh				
		Sacramento, CA 95825						PO Box 843				
		(916) 923-1097						Tahoe City, CA 96145				
								Phone 530 584 2438				
		E-mail: chris.donley@cardno.com						Fax 530 584 2439				
								E-mail: collin@highsierrawaterlab.com				
Report Date: 8/3/2017 (file name: HV080317.xls)												
Site	ID	Date	Time	NO3/NO2-N	SRP-P	DP-P	TP-P	TKN	TSS	Cond	Turbidity	
				(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(mg/L)	(µs/cm)	(ntu)	
Patsy's	HV-C2	7/13/2017	13:20	24			24	103	3.0		1.62	
Parking	HV-C4	7/13/2017	12:36	159			108	294	10.0		17.6	
Prop Line	HV-C3	7/13/2017	11:45	17			54	179	14.0		8.52	
Hidden	HV-H5	7/13/2017	10:30	4			21	90	3.0		1.34	
Sky Meadow	HV-C1	7/13/2017	14:05	26			21	83	3.0		1.44	
ED Above	HV-E1	7/13/2017	15:05	3	10	25	59	356	5.5	97.7	3.92	
ED Below	HV-E2	7/13/2017	15:30	67	11	25	43	228	5.5	135.7	9.06	

9/1/2017

Cardno
PO Box 1533
Zephyr Cove, NV 89448
Attn: Chris Donley

OrderID: 1708721

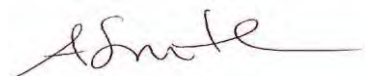
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Sincerely,



Andy Smith
QA Manager

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tel (702) 475-8899
fax (702) 622-2868
EPA LAB ID: NV00932

Western Environmental Testing Laboratory

Report Comments

Cardno - 1708721

Specific Report Comments

None

Report Legend

- B -- Blank contamination; Analyte detected above the method reporting limit in an associated blank
- D -- Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
- HT -- Sample analyzed beyond the accepted holding time
- J -- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
- M -- The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
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- NC -- Not calculated due to matrix interference
- QD -- The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
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- S -- Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
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General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:

A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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tel (702) 475-8899
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EPA LAB ID: NV00932

Western Environmental Testing Laboratory

Analytical Report

Cardno

Date Printed: 9/1/2017

PO Box 1533

OrderID: 1708721

Zephyr Cove, NV 89448

Attn: Chris Donley

Phone: (775) 588-9069 Fax: (775) 588-9219

Customer Sample ID: 20170823 43 HDVC-5

Collect Date/Time: 8/23/2017 10:30

WETLAB Sample ID: 1708721-001

Receive Date: 8/24/2017 08:46

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Anions by Ion Chromatography

Chloride	EPA 300.0	0.26	mg/L	1	0.10	8/25/2017	NV00925
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Customer Sample ID: 20170823 43 HVC-3

Collect Date/Time: 8/23/2017 11:40

WETLAB Sample ID: 1708721-002

Receive Date: 8/24/2017 08:46

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	0.50	mg/L	1	0.10	8/25/2017	NV00925
----------	-----------	------	------	---	------	-----------	---------

Customer Sample ID: 20170823 43 BPC-4

Collect Date/Time: 8/23/2017 12:25

WETLAB Sample ID: 1708721-003

Receive Date: 8/24/2017 08:46

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Anions by Ion Chromatography

Chloride	EPA 300.0	33	mg/L	1	0.10	8/25/2017	NV00925
----------	-----------	----	------	---	------	-----------	---------

Customer Sample ID: 20170823 43 HVC-2

Collect Date/Time: 8/23/2017 11:05

WETLAB Sample ID: 1708721-004

Receive Date: 8/24/2017 08:46

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	0.49	mg/L	1	0.10	8/25/2017	NV00925
----------	-----------	------	------	---	------	-----------	---------

Customer Sample ID: 20170823 43 HVC-1A

Collect Date/Time: 8/23/2017 13:30

WETLAB Sample ID: 1708721-005

Receive Date: 8/24/2017 08:46

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	0.27	mg/L	1	0.10	8/25/2017	NV00925
----------	-----------	------	------	---	------	-----------	---------

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

Page 3 of 4

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LAS VEGAS

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 tel (702) 475-8899
 fax (702) 622-2868
 EPA LAB ID: NV00932

Western Environmental Testing Laboratory

QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17081102	Blank 1	Chloride	EPA 300.0	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17081102	LCS 1	Chloride	EPA 300.0	10.3	10.0	103	mg/L

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17081102	MS 1	Chloride	EPA 300.0	1708721-005	0.266	1.65	1.63	1.25	mg/L	111	109	1

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Page 1 of 1

Email

☒ Yes ☐ No

Chloride		Spl. No.
X		1
X		2
X		3
X		4
X	1708 1	5
	721 5	

Instructions/Comments/Special Requirements:

Sample Matrix Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER: _____

*SAMPLE PRESERVATIVES: 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=HCl/VOA Vial

Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
9.2 °C	Y N <u>None</u>	5	8/21/17	0846	✓ [Signature]	[Signature]
°C	Y N None					
°C	Y N None					
°C	Y N None					

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636). _____ Initial

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

WETLAB will dispose of samples 90 days from sample receipt. Client may request a longer sample storage time for an additional fee.

Please contact your Project Manager for details. _____ Initials

301.2E

ANALYSIS REPORT												
Client:	Cardno - Heavenly Water Quality Sampling						Lab:	High Sierra Water Lab				
	701 University Ave. Suite 200							Collin Strassenburgh				
	Sacramento, CA 95825							PO Box 843				
	(916) 923-1097							Tahoe City, CA 96145				
								Phone 530 584 2438				
	E-mail: chris.donley@cardno.com							Fax 530 584 2439				
								E-mail: collin@highsierrawaterlab.com				
Report Date: 9/11/2017 (file name: HV091117.xls)												
Site	ID	Date	Time	NO3/NO2-N	SRP-P	DP-P	TP-P	TKN	TSS	Cond	Turbidity	
				(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(mg/L)	(µs/cm)	(ntu)	
Patsy's	HV-C2	8/23/2017	13:05	11			21	120	2.0		2.06	
Parking	HV-C4	8/23/2017	12:25	158			119	271	5.5		15.4	
Prop Line	HV-C3	8/23/2017	11:40	5			22	175	1.5		1.89	
Hidden	HV-H5	8/23/2017	10:30	3			24	101	1.0		0.86	
Sky Meadow	HV-C1	8/23/2017	13:30	18			18	84	2.0		2.12	
ED Above	HV-E1	8/23/2017	14:30	3	8	19	37	162	3.0	104.8	3.87	
ED Below	HV-E2	8/23/2017	14:50	74	8	23	36	173	3.0	144.1	8.90	

9/28/2017

Cardno
PO Box 1533
Zephyr Cove, NV 89448
Attn: Peter Benchetler

OrderID: 1709462

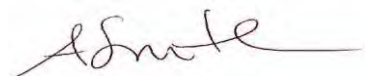
Dear: Peter Benchetler

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 9/15/2017. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,



Andy Smith
QA Manager

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fax (702) 622-2868
EPA LAB ID: NV00932

Western Environmental Testing Laboratory

Report Comments

Cardno - 1709462

Specific Report Comments

None

Report Legend

- B -- Blank contamination; Analyte detected above the method reporting limit in an associated blank
- D -- Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
- HT -- Sample analyzed beyond the accepted holding time
- J -- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
- M -- The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
- N -- There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
- NC -- Not calculated due to matrix interference
- QD -- The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
- QL -- The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
- S -- Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
- SC -- Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
- U -- The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:

A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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fax (702) 622-2868
EPA LAB ID: NV00932

Western Environmental Testing Laboratory

Analytical Report

Cardno

Date Printed: 9/28/2017

PO Box 1533

OrderID: 1709462

Zephyr Cove, NV 89448

Attn: Peter Benchetler

Phone: (775) 588-9069 Fax: (775) 588-9219

Customer Sample ID: 20170914 43 HDVC-5

Collect Date/Time: 9/14/2017 10:30

WETLAB Sample ID: 1709462-001

Receive Date: 9/15/2017 15:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	0.24	mg/L	1	0.10	9/19/2017	NV00925
----------	-----------	------	------	---	------	-----------	---------

Customer Sample ID: 20170914 43 HVC-3

Collect Date/Time: 9/14/2017 12:20

WETLAB Sample ID: 1709462-002

Receive Date: 9/15/2017 15:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	0.51	mg/L	1	0.10	9/19/2017	NV00925
----------	-----------	------	------	---	------	-----------	---------

Customer Sample ID: 20170914 43 BPC-4

Collect Date/Time: 9/14/2017 13:10

WETLAB Sample ID: 1709462-003

Receive Date: 9/15/2017 15:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	34	mg/L	1	0.10	9/19/2017	NV00925
----------	-----------	----	------	---	------	-----------	---------

Customer Sample ID: 20170914 43 HVC-2

Collect Date/Time: 9/14/2017 13:52

WETLAB Sample ID: 1709462-004

Receive Date: 9/15/2017 15:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	0.52	mg/L	1	0.10	9/19/2017	NV00925
----------	-----------	------	------	---	------	-----------	---------

Customer Sample ID: 20170914 43 HVC-1A

Collect Date/Time: 9/14/2017 14:05

WETLAB Sample ID: 1709462-005

Receive Date: 9/15/2017 15:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
---------	--------	---------	-------	----	----	----------	-------

Anions by Ion Chromatography

Chloride	EPA 300.0	0.30	mg/L	1	0.10	9/19/2017	NV00925
----------	-----------	------	------	---	------	-----------	---------

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

Page 3 of 4

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 tel (702) 475-8899
 fax (702) 622-2868
 EPA LAB ID: NV00932

Western Environmental Testing Laboratory

QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17090784	Blank 1	Chloride	EPA 300.0	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17090784	LCS 1	Chloride	EPA 300.0	10.3	10.0	103	mg/L

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17090784	MS 1	Chloride	EPA 300.0	1709462-005	0.299	1.63	1.64	1.25	mg/L	106	107	<1

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WETLAB

WESTERN ENVIRONMENTAL
TESTING LABORATORY

Specializing in Soil, Hazardous Waste and Water Analysis.

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3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102

tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 1709402

Sparks Control # _____

Elko Control # _____

LV Control # _____

Report Due Date _____

Page 1 of 1

Client Cardno

Address 5496 Reno Corporate Dr.

City, State & Zip Reno, NV 89511

Contact Peter Benchetler

Phone 775-828-4362 Collector's Name Sarah Brown

Fax _____ PWS/Project Name _____

P.O. Number _____ PWS/Project Number _____

Email Peter.Benchetler@Cardno.com

Billing Address (if different than Client Address)

Company _____

Address _____

City, State & Zip _____

Contact _____

Phone _____ Fax _____

Email _____

Turnaround Time Requirements

Standard X

5 Day* (25%) _____ 72 Hour* (50%) _____

48 Hour* (100%) _____ 24 Hour* (200%) _____

*Surcharges Will Apply

Samples Collected From
Which State?

NV _____ CA X

Other _____

Report Results Via

PDF EDD

Compliance Monitoring?

Yes X No _____

Other _____

Report to Regulatory Agency?

Yes _____ No X

Standard QC Required?

Yes X No _____

Analyses Requested

S
A
M
P
L
E
T
Y
P
E
S
NO.
OF
C
O
N
T
A
I
N
E
R
S

Chloride

SAMPLE ID/LOCATION

DATE

TIME

PRES
TYPE
*

**

Spl.
No.

20170914 43 HDVC-5

9/14/17 10:30

SW

1

X

20170914 43 HVC-3

12:20

1

1

X

20170914 43 BPC-4

1:10

1

1

X

20170914 43 HVC-2

1:52

1

1

X

20170914 43 HVC-1A

2:05

1

1

X

Instructions/Comments/Special Requirements:

Sample Matrix Key**

DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER: _____

*SAMPLE PRESERVATIVES: 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=HCl/VOA Vial

Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
9.6°C	Y N None		9/15/17	1517		
°C	Y N None					
°C	Y N None					
°C	Y N None					

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

WETLAB will dispose of samples 90 days from sample receipt. Client may request a longer sample storage time for an additional fee. Please contact your Project Manager for details.

ANALYSIS REPORT												
Client:		Cardno - Heavenly Water Quality Sampling					Lab:	High Sierra Water Lab				
		701 University Ave. Suite 200						Collin Strassenburgh				
		Sacramento, CA 95825						PO Box 843				
		(916) 923-1097						Tahoe City, CA 96145				
								Phone 530 584 2438				
		E-mail: chris.donley@cardno.com						Fax 530 584 2439				
								E-mail: collin@highsierrawaterlab.com				
Report Date: 9/24/2017 (file name: HV092417.xls)												
Site	ID	Date	Time	NO3/NO2-N	SRP-P	DP-P	TP-P	TKN	TSS	Cond	Turbidity	
				(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(mg/L)	(µs/cm)	(ntu)	
Patsy's	HV-C2	9/14/2017	13:50	16			22	107	1.0		1.71	
Parking	HV-C4	9/14/2017	13:10	171			103	335	4.5		12.3	
Prop Line	HV-C3	9/14/2017	12:20	3			27	118	3.0		1.05	
Hidden	HV-H5	9/14/2017	10:30	3			26	83	0.5		0.54	
Sky Meadow	HV-C1	9/14/2017	14:05	16			17	77	1.0		2.06	
ED Above	HV-E1	9/14/2017	15:15	2	5	16	70	252	8.5	105.7	20.8	
ED Below	HV-E2	9/14/2017	15:45	61	12	21	106	264	26.0	135.2	14.7	

Heavenly Mountain Resort Water
Year 2017

APPENDIX

B

RAW WATER QUALITY
CONSTITUENTS, CA FILTER
VAULTS, WATER YEAR 2017

California Parking Lot - StormFiltr
Influent (43HVP-1a)

Table B-1	Heavenly Mountain Resort water year 2017 water quality monitoring data from influent station 43HVP-1a (North), California Parking Lot Filter Vault influent point one. This station is located within the CA parking lot.									
Date	Notes ¹	Time	Turbidity (NTU)	Total Phosphorus (mg/L)	Nitrate Nitrogen (mg/L)	Nitrite Nitrogen (mg/L) ³	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen Calc. (mg/L)	Chloride (mg/L)	Oil & Grease (mg/L)
Lahontan Standards			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
First Quarter WY 2016-2017										
10/14/2016	^{2,3}	13:18	35	0.15	0.22	0.020	1.5	1.8	18	ND
10/27/2016	^{2,4}	13:30	28	0.13	0.080	ND	0.24	0.33	12	ND
12/15/2016	⁵	14:18	55	0.047	0.040	0.020	0.24	0.30	7.1	ND
Second Quarter WY 2016-2017										
No Samples were collected during the Second Quarter of water year 2016-2017.										
Third Quarter WY 2016-2017										
5/4/2017	^{6,7}	14:56	74	0.094	0.45	ND	0.40	0.86	61	ND
Fourth Quarter WY 2016-2017										
9/21/2017	⁸	18:02	23	0.088	0.11	ND	0.33	0.44	12	ND

¹ Reported values analyzed by WetLAB in Reno, NV.

² The matrix spike/matrix spike duplicate (MS/MSD) value for the analysis of TKN were outside acceptance criteria due to probable matrix interference. The reported values should be considered an estimate.

³ The sample collected on 10/14/16 was a grab sample. The automated units did not sample. Also, this storm infiltrated the sacrificial filters only upon inspection.

⁴ The sample collected on 10/27/16 was a grab sample. Visual inspection showed storm water entering both the sacrificial and large filter bays.

⁵ The sample collected on 12/15/16 was a grab sample. Visual inspection showed storm water entering both the sacrificial and large filter bays (Specifically ID4 & ID10). Beginning of large storm event.

⁶ The sample collected on 05/4/2017 was a snow melt runoff grab sample. Visual inspection showed runoff only entering the sacrificial unit from the North Inlet. Sacrificial bays were full of water and appeared to be functioning.

⁷ The matrix spike/matrix spike duplicate (MS/MSD) values for TKN were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.

⁸ Samples collected on 9/21/17 were triggered by the flow sensors collecting composite samples over an approximate one hour time period.

California Parking Lot - StormFiltr
Influent (43HVP-1b)

Table B-2		Heavenly Mountain Resort water year 2017 water quality monitoring data from influent station 43HVP-1b (South), California Parking Lot Filter Vault influent point two. This station is located within the CA parking lot.								
Date	Notes ¹	Time	Turbidity (NTU)	Total Phosphorus (mg/L)	Nitrate Nitrogen (mg/L)	Nitrite Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen Calc. (mg/L)	Chloride (mg/L)	Oil & Grease (mg/L)
Lahontan Standards			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
First Quarter WY 2016-2017										
10/14/2016	²	13:11	39	0.12	0.23	0.017	1.2	1.4	6.4	ND
10/27/2016	³	13:20	50	0.038	0.022	ND	0.24	0.26	1.8	ND
12/15/2016	⁴	14:49	99	0.059	0.073	0.026	0.43	99	15	ND
Second Quarter WY 2016-2017										
No Samples were collected during the Second Quarter of water year 2016-2017.										
Third Quarter WY 2016-2017										
5/4/2017	^{5,6}	14:56	33	0.12	0.17	ND	0.26	0.44	32	2.1
Fourth Quarter WY 2016-2017										
9/21/2017	⁷	17:54	24	0.11	0.075	ND	0.25	0.33	6.4	ND

¹ Reported values analyzed by WetLAB in Reno, NV.

² The sample collected on 10/14/16 was a grab sample. The automated units did not sample. Also, this storm infiltrated the sacrificial filters only upon inspection.

³ The sample collected on 10/27/16 was a grab sample. Visual inspection showed storm water entering both the sacrificial and large filter bays.

⁴ The sample collected on 12/15/16 was a grab sample. Visual inspection showed storm water entering both the sacrificial and large filter bays (Specifically ID4 & ID10). Beginning of large storm event.

⁵ The sample collected on 05/4/2017 was a snow melt runoff grab sample. Visual inspection showed runoff entering both the sacrificial and large filter bay (ID4) from the South Inlet. Sacrificial bays were full of water and appeared to be functioning.

⁶ The matrix spike/matrix spike duplicate (MS/MSD) values for total Phosphorus were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.

⁷ Samples collected on 9/21/17 were triggered by the flow sensors collecting composite samples over an approximate one hour time period.

California Parking Lot - StormFiltrer
Effluent (43HVP-2)

Table B-3		Heavenly Mountain Resort water year 2017 water quality monitoring data from effluent station 43HVP-2, California Parking Lot Filter Vault effluent point. This station is located within the CA parking lot.								
Date	Notes ²	Time	Turbidity (NTU)	Total Phosphorus (mg/L)	Nitrate Nitrogen (mg/L)	Nitrite Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen Calc. (mg/L)	Chloride (mg/L)	Oil & Grease (mg/L)
Lahontan Standards ¹			20.0	0.10	N/A	N/A	N/A	0.5	N/A	2.0
First Quarter WY 2016-2017										
10/14/2016	^{3,4}	13:34	59	0.076	0.24	0.018	1.4	1.6	9.2	ND
10/27/2016	^{5,6}	14:17	44	0.033	0.044	ND	ND	0.24	5.4	ND
12/15/2016	⁷	15:03	72	0.071	0.058	0.023	0.35	0.43	12	ND
Second Quarter WY 2016-2017										
No Samples were collected during the Second Quarter of water year 2016-2017.										
Third Quarter WY 2016-2017										
5/4/2017	⁸	15:04	30	0.10	0.17	ND	0.27	0.45	33	2.2
Fourth Quarter WY 2016-2017										
9/21/2017	⁹	18:21	26	0.11	0.11	ND	0.24	0.35	11	ND
Annual Summary		Min	26	0.033	0.044	0.018	0.24	0.24	5.4	ND
		Max	72	0.11	0.24	0.023	1.4	1.6	33	2.2
		# of Samples	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
# of Noncompliance Samples			5.0	1.0	-	-	-	1.0	-	1.0
% of Noncompliance Samples			100%	20%	-	-	-	20%	-	20%

¹ Standards are maximum concentration for discharge to surface waters not to exceed, effective November 30, 2008.

² Reported values analyzed by WetLAB in Reno, NV.

³ The matrix spike/matrix spike duplicate (MS/MSD) value for the analysis of Oil & Grease were outside acceptance criteria due to probable matrix interference. The reported values should be considered an estimate.

⁴ The sample collected on 10/14/16 was a grab sample. The automated units did not sample. Also, this storm infiltrated the sacrificial filters only upon inspection.

⁵ The matrix spike/matrix spike duplicate (MS/MSD) value for the analysis of total Phosphorus were outside acceptance criteria due to probable matrix interference. The reported values should be considered an estimate.

⁶ The sample collected on 10/27/16 was a grab sample. Visual inspection showed storm water entering both the sacrificial and large filter bays.

⁷ The sample collected on 12/15/16 was a grab sample. Visual inspection showed storm water entering both the sacrificial and large filter bays (Specifically ID4 & ID10). Beginning of large storm event.

⁸ The sample collected on 05/4/2017 was a snow melt runoff grab sample. Visual inspection showed runoff entering both the sacrificial and large filter bay (ID4) from the South Inlet and runoff was only entering the sacrificial unit from the North Inlet. No runoff was entering the Large Filter Vault from the North (ID10). Sacrificial vault inspections showed water over the filters which appear to be functioning correctly.

⁹ Samples collected on 9/21/17 were triggered by the flow sensors collecting composite samples over an approximate one hour time period. The outlet sample was collected approximately 15 minutes after the inlet locations providing residence time for filtration through the storm filter system.

10/5/2017

Cardno
PO Box 1533
Zephyr Cove, NV 89448
Attn: Chris Donley

OrderID: 1709676

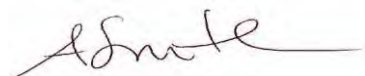
Dear: Chris Donley

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 9/22/2017. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,



Andy Smith
QA Manager

SPARKS

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EPA LAB ID: NV00932

Western Environmental Testing Laboratory

Report Comments

Cardno - 1709676

Specific Report Comments

None

Report Legend

- B -- Blank contamination; Analyte detected above the method reporting limit in an associated blank
- D -- Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
- HT -- Sample analyzed beyond the accepted holding time
- J -- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
- M -- The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
- N -- There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
- NC -- Not calculated due to matrix interference
- QD -- The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
- QL -- The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
- S -- Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
- SC -- Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
- U -- The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:

A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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EPA LAB ID: NV00932

Western Environmental Testing Laboratory

Analytical Report

Cardno

Date Printed: 10/5/2017

PO Box 1533

OrderID: 1709676

Zephyr Cove, NV 89448

Attn: Chris Donley

Phone: (775) 588-9069 Fax: (775) 588-9219

PO\Project: Heavenly

Customer Sample ID: HVP-1A (North)

Collect Date/Time: 9/21/2017 18:02

WETLAB Sample ID: 1709676-001

Receive Date: 9/22/2017 14:06

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>General Chemistry</u>							
Total Phosphorous as P	SM 4500-P E	0.088	mg/L	1	0.010	9/28/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	12	mg/L	1	1.0	9/27/2017	NV00925
Total Nitrogen	Calc.	0.44	mg/L	1	0.22	9/29/2017	NV00925
Turbidity (Nephelometric)	EPA 180.1	23	NTU	5	0.50	9/22/2017	NV00925
Oil & Grease (HEM)	EPA 1664	ND	mg/L	1	1.5	9/26/2017	NV00925
Oil & Grease (SGT-HEM)	EPA 1664	ND	mg/L	1	2.0	9/27/2017	NV00925
<u>Anions by Ion Chromatography</u>							
Chloride	EPA 300.0	12	mg/L	1	0.10	9/22/2017	NV00925
Nitrate Nitrogen	EPA 300.0	0.11	mg/L	1	0.010	9/22/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/22/2017	NV00925
<u>Flow Injection Analyses</u>							
Total Kjeldahl Nitrogen	EPA 351.2	0.33	mg/L	0.5	0.20	9/29/2017	NV00925

Customer Sample ID: HVP-1B (South)

Collect Date/Time: 9/21/2017 17:54

WETLAB Sample ID: 1709676-002

Receive Date: 9/22/2017 14:06

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>General Chemistry</u>							
Total Phosphorous as P	SM 4500-P E	0.11	mg/L	1	0.010	9/28/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	9	mg/L	1	1	9/27/2017	NV00925
Total Nitrogen	Calc.	0.33	mg/L	1	0.22	9/29/2017	NV00925
Turbidity (Nephelometric)	EPA 180.1	24	NTU	5	0.50	9/22/2017	NV00925
Oil & Grease (HEM)	EPA 1664	ND	mg/L	1	1.8	9/26/2017	NV00925
Oil & Grease (SGT-HEM)	EPA 1664	ND	mg/L	1	2.4	9/27/2017	NV00925
<u>Anions by Ion Chromatography</u>							
Chloride	EPA 300.0	6.4	mg/L	1	0.10	9/22/2017	NV00925
Nitrate Nitrogen	EPA 300.0	0.075	mg/L	1	0.010	9/22/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/22/2017	NV00925
<u>Flow Injection Analyses</u>							
Total Kjeldahl Nitrogen	EPA 351.2	0.25	mg/L	0.5	0.20	9/29/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

Page 3 of 5

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 EPA LAB ID: NV00932

Customer Sample ID: HVP-2 (Outlet)

Collect Date/Time: 9/21/2017 18:21

WETLAB Sample ID: 1709676-003

Receive Date: 9/22/2017 14:06

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>General Chemistry</u>							
Total Phosphorous as P	SM 4500-P E	0.11	mg/L	1	0.010	9/28/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	12	mg/L	1	1.0	9/27/2017	NV00925
Total Nitrogen	Calc.	0.35	mg/L	1	0.22	9/29/2017	NV00925
Turbidity (Nephelometric)	EPA 180.1	26	NTU	5	0.50	9/22/2017	NV00925
Oil & Grease (HEM)	EPA 1664	ND	mg/L	1	1.8	9/26/2017	NV00925
Oil & Grease (SGT-HEM)	EPA 1664	ND	mg/L	1	2.4	9/27/2017	NV00925
<u>Anions by Ion Chromatography</u>							
Chloride	EPA 300.0	11	mg/L	1	0.10	9/22/2017	NV00925
Nitrate Nitrogen	EPA 300.0	0.11	mg/L	1	0.010	9/22/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/22/2017	NV00925
<u>Flow Injection Analyses</u>							
Total Kjeldahl Nitrogen	EPA 351.2	0.24	mg/L	0.5	0.20	9/29/2017	NV00925

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Western Environmental Testing Laboratory

QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17090914	Blank 1	Chloride	EPA 300.0	ND			mg/L
		Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17090915	Blank 1	Turbidity (Nephelometric)	EPA 180.1	ND			NTU
QC17091052	Blank 1	Oil & Grease (HEM)	EPA 1664	ND			mg/L
QC17091054	Blank 1	Oil & Grease (SGT-HEM)	EPA 1664	ND			mg/L
QC17091123	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17091180	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17091197	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17090914	LCS 1	Chloride	EPA 300.0	10.4	10.0	104	mg/L
		Nitrate Nitrogen	EPA 300.0	0.512	0.500	102	mg/L
		Nitrite Nitrogen	EPA 300.0	0.468	0.500	94	mg/L
QC17090915	LCS 1	Turbidity (Nephelometric)	EPA 180.1	4.85	5.00	97	NTU
QC17091052	LCS 1	Oil & Grease (HEM)	EPA 1664	21.3	20.0	106	mg/L
QC17091054	LCS 1	Oil & Grease (SGT-HEM)	EPA 1664	9.10	10.0	91	mg/L
QC17091123	LCS 1	Total Phosphorous as P	SM 4500-P E	0.247	0.250	99	mg/L
QC17091180	LCS 1	Total Suspended Solids (TSS)	SM 2540D	205	200	102	mg/L
QC17091180	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17091197	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.980	1.00	98	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17090915	Duplicate 1	Turbidity (Nephelometric)	EPA 180.1	1709640-001	30.1	29.9	NTU	1 %
QC17090915	Duplicate 2	Turbidity (Nephelometric)	EPA 180.1	1709686-001	0.103	0.106	NTU	3 %
QC17091180	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1709606-001	41.6	44.0	mg/L	6 %
QC17091180	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1709640-002	31.5	35.0	mg/L	11 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17090914	MS 1	Chloride	EPA 300.0	1709666-001	6.35	7.66	7.69	1.25	mg/L	105	107	<1
		Nitrate Nitrogen	EPA 300.0	1709666-001	1.78	2.32	2.32	0.5	mg/L	108	109	<1
		Nitrite Nitrogen	EPA 300.0	1709666-001	ND	M 0.098	0.101	0.125	mg/L	NC	NC	NC
QC17091123	MS 1	Total Phosphorous as P	SM 4500-P E	1709640-003	0.137	M 0.325	0.325	0.25	mg/L	NC	NC	NC
QC17091123	MS 2	Total Phosphorous as P	SM 4500-P E	1709722-003	0.029	0.273	0.261	0.25	mg/L	98	93	4
QC17091197	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1709617-006	ND	U 0.458	0.440	0.5	mg/L	92	88	4
QC17091197	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1709676-001	0.330	0.840	0.825	0.5	mg/L	102	99	2

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

Page 5 of 5

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Heavenly Mountain Resort Water
Year 2017

APPENDIX

C

CALIFORNIA VAULT INSPECTION
REPORTS

Pacific Stormwater Solutions, LLC

P.O. Box 12246
Santa Rosa, Ca. 95406
Phone : 707.544.5012 - www.pacstorm.com

Stormwater Inspection Report 2017



Project Name: **Heavenly Ski Resort**

Weather Conditions: **Clear**

Project Address: **1504 Wildwood Ave, South Lake Tahoe**

Number of BMPs Inspected: **Four (4)**

Inspection Date: **6/29/2017**

Number of Pages: **Four**

REPORT INDEX

This report contains information regarding the results of inspection of BMP(s) for the above referenced project.

The following information is provided for each BMP inspected:

BMP Type
Product Name (if applicable)
Inspection Date
Date of Last Inspection (or install date if not previously inspected)
BMP& Site Description
BMP Condition
Pollutant Load Description
Additional Observations/Comments
BMP Photos (as appropriate)
Recommended Actions

Based on the results of the inspection it is recommended that:



No further action is required at this time. **Next inspection should be performed prior to:**



Cleaning of system(s) recommended. Review page two & Three.

INSPECTION RESULTS

GPS Coordinates:	<u>See sheet 3 & 4</u>	Model & Size:	<u></u>
Unit location:	<u>Parking lot/CDS</u>		<u></u>
Vault	<input checked="" type="checkbox"/>	StormFilter	<input checked="" type="checkbox"/>
Manhole	<input type="checkbox"/>	StormGate	<input type="checkbox"/>
Catchbasin	<input type="checkbox"/>	HDS	<input type="checkbox"/>
Date installed / Last Service:	<u>Sep-16</u>	Media	<u>ZPG</u>
Sediment Depth - Cart bay:	<u>See sheet 3 & 4</u>	Cart #	<u>See photos</u>
Sediment Depth - Forebay:	<u>See sheet 3 & 4</u>	Other	<u></u>
Water Depth:	<u>See Sheet 3 & 4</u>	Site Contact	<u>Frank</u>
Excessive Oil:	<u>No</u>		
Internal Condition of unit:	<u>Internal components appear in good condition</u>		

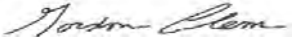
INSPECTION SUMMARY

Systems appear to be working properly. Maintenance recommended on the four systems on this report at this time.

This certifies the information contained on this report is accurate and was detailed using accepted industry procedures.

Inspector's Name: Gordon Clem

Company: Pacific Stormwater BMP Solutions, LLC

Signature: 

Date: 6/29/2017

Title/Qualifications: President/Owner

Project Name: Heavenly Ski Resort

Page 3

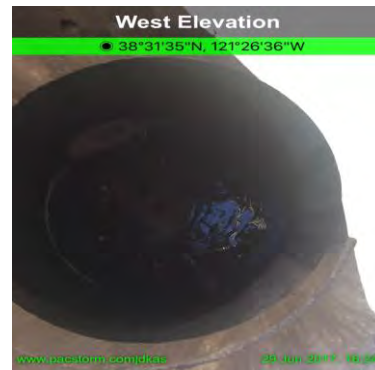
ATTACHMENT:

System Number: #3 & #4

(list site designation if available)



Unit #3 - 7 Phosphorous Cart MH



Cartridges submerged

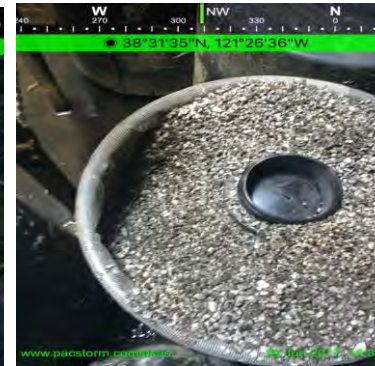
Maintenance recommended due to high water level



Unit #4 - 114 ZPG Cart MH



Maintenance recommended



impacted media

Notes: Unit #3 maintenance recommended due sacrificial filters submerged.

Unit #4 Maintenance

is recommended due to media discoloration and starting to clump..

Stormwater Inspection Report

Project Name: Heavenly Ski Resort

Page 4

ATTACHMENT:

System Number: CDS unit & Unit #9

(list site designation if available)



Unit #9 - 7 Phosphorous Cart MH



Partially submerged filters



CDS Hydrodynamic Separator



Maintenance recommended



Sediment in sump is 13\".

Notes: Unit #9 requires maintenance due to submerged filter cartridges. CDS Unit has large amount of organic debris and fine sediment. Maintenance recommended.

Heavenly Ski Resort Main Lodge Units 5, 10, 11

REPORT CONTENTS

This report contains information regarding the results off the BMP(s) maintenance performed at the Heavenly Ski site.

The following information is provided for each BMP:

Inspection Date
Inspector Information
Weather Conditions
BMP Location
BMP Designation, Type and Configuration
Sediment, Water, and Hydrocarbon Levels if present
BMP overall Condition
BMP Components Condition
Additional Comments and Observations
Inspection Photos
Any further recommended Action

INSPECTION SUMMARY

Based on the results of an inspection of BMP(s), the following action was completed:

- ☒ All inspected BMPs are operating within manufacturer's established specifications. Next inspection to take place Spring 2018
- ☐ Repairs to one or more off the inspected BMPs is required.
- ☐ Full service maintenance of one or more of the inspected BMPs requires maintenance. See report specifics for details.

Pacific Stormwater BMP Solutions

Stormwater Inspection Report

PROJECT INFORMATION

Name Heavenly Main Lodge Unit # 11
Address 1504 Wildwood Dr, South Lake Tahoe, Ca.

INSPECTION DETAILS

Field Manager Gordon Clem System ID .11
Date 6/29/2017 GPS Coordinates

Weather Dry

SYSTEM TYPE StormFilter SF
CONFIGURATION Vault
SIZE 11x34

MEDIA TYPE ZPG
CARTRIDGE# 93

Sediment Depth - inlet bay 3"

Pronounced Scum Line? Yes

Sediment Depth - Cartridge Bay 2"

Excessive Hydrocarbons? No

Sediment Depth - Annular N/A

Water Level - Static 1"

Physical Condition of Unit: Unit appears to be in good working condition.

Field Managers Comments:

Inspection completed and system is treating runoff as designed. Maintenance is not recommended.

Maintenance Required? No

Repairs Required? No

MAINTENANCE AUTHENTICITY

This hereby certifies that the information contained in this report is accurate and was obtained using accepted industry practices.

By: Gordon Clem

Company: Pacific Stormwater Solutions

Signature: 

Date: 7/26/17

Title: Maintenance Manager

Pacific Stormwater BMP Solutions

Stormwater Inspection Report

PROJECT INFORMATION

Name Heavenly Main Lodge Unit# 10
Address 1504 Wildwood Dr, South Lake Tahoe, Ca.

INSPECTION DETAILS

Inspector Gordon Clem System ID .10
Date 6/29/2017 GPS Coordinates

Weather Dry

SYSTEM TYPE StormFilter SF
CONFIGURATION Vault
SIZE 11x34

MEDIA TYPE ZPG
CARTRIDGE# 114

Sediment Depth - inlet bay 3"

Pronounced Scum Line? Yes

Sediment Depth - Cartridge Bay 1"

Excessive Hydrocarbons? No

Sediment Depth - Annular N/A

Water Level - Static 1"

Physical Condition of Unit: Unit appears to be in good working condition.

Inspector Comments:

Inspection completed and system is treating runoff as designed. Maintenance is not recommended.

Maintenance Required? No

Repairs Required? No

AUTHENTICITY

This hereby certifies that the information contained in this report is accurate and was obtained using accepted industry practices.

By: Gordon Clem

Company: Pacific Stormwater Solutions

Signature: 

Date: 7/26/17

Title: Maintenance Manager

Pacific Stormwater BMP Solutions

Stormwater Inspection Report

PROJECT INFORMATION

Name Heavenly Main Lodge Unit # 5
Address 1504 Wildwood Dr, South Lake Tahoe, Ca.

INSPECTION DETAILS

Inspector Gordon Clem System ID .05
Date 6/29/2017 GPS Coordinates

Weather Dry

SYSTEM TYPE StormFilter SF
CONFIGURATION Vault
SIZE 11x34

MEDIA TYPE ZPG
CARTRIDGE# 93

Sediment Depth - inlet bay 3"

Pronounced Scum Line? Yes

Sediment Depth - Cartridge Bay 1"

Excessive Hydrocarbons? No

Sediment Depth - Annular N/A

Water Level - Static 1"

Physical Condition of Unit: Unit appears to be in good working condition.

Inspector Comments:

Inspection completed and system is treating runoff as designed. Maintenance is not recommended.

Maintenance Required? No

Repairs Required? No

AUTHENTICITY

This hereby certifies that the information contained in this report is accurate and was obtained using accepted industry practices.

By: Gordon Clem

Company: Pacific Stormwater Solutions

Signature: 

Date: 7/26/17

Title: Maintenance Manager

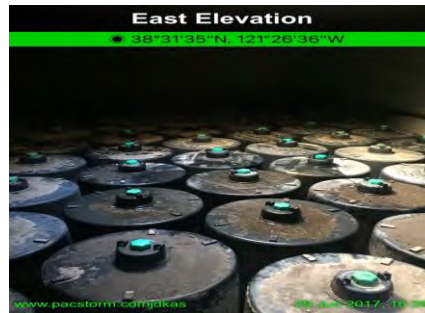
Pacific Stormwater BMP Solutions

Stormwater Inspection Report

INSPECTION PHOTOS



Unit #11



Cartridge bay



Loose clean media



Unit #10



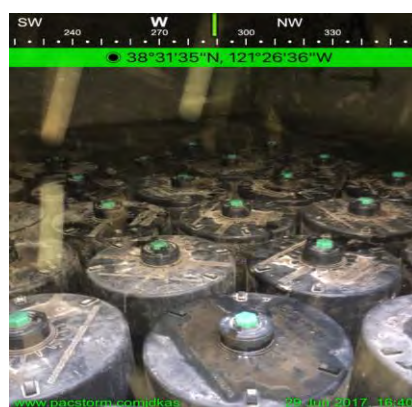
Cartridge bay



Loose clean media



Unit #5



Cartridge bay



Inlet bay sediment

STORMWATER TREATMENT UNIT MAINTENANCE COMPLIANCE 2017



**Heavenly Main Lodge
1504 Wildwood Ave
South Lake Tahoe, Ca.**

Let it be known that on June 30th, 2017 Three CONTECH stormwater Media Filter systems were inspected by a qualified professional at a frequency and in a manner consistent with the manufacturer's guidelines for general inspection and maintenance. All systems are operating as designed. Due to minimal sediment and low static water levels maintenance is not recommended at this time. Recommend next inspection Spring 2018.

Therefore, based on these activities and by signed authorization below, this hereby certifies that the StormFilter Stormwater treatment systems at the above referenced location are currently performing as designed.

CERTIFICATE AUTHORIZATION

Gordon Clem
Maintenance Manager
Pacific Stormwater BMP Solutions
7/26/17

Heavenly Ski Resort Main Lodge Wildwood Unit

REPORT CONTENTS

This report contains information regarding the results off the BMP(s) maintenance performed at the Heavenly Ski site.

The following information is provided for each BMP:

Inspection Date
Inspector Information
Weather Conditions
BMP Location
BMP Designation, Type and Configuration
Sediment, Water, and Hydrocarbon Levels if present
BMP overall Condition
BMP Components Condition
Additional Comments and Observations
Inspection Photos
Any further recommended Action

INSPECTION SUMMARY

Based on the results of an inspection of BMP(s), the following action was completed:

- ☒ All inspected BMPs are operating within manufacturer's established specifications. Next inspection to take place Spring 2018
- ☐ Repairs to one or more off the inspected BMPs is required.
- ☐ Full service maintenance of one or more of the inspected BMPs requires maintenance. See report specifics for details.

Pacific Stormwater BMP Solutions

Stormwater Inspection Report

PROJECT INFORMATION

Name Heavenly Main Lodge Unit # 5
Address Wildwood Ave, South Lake Tahoe

INSPECTION DETAILS

Inspector Gordon Clem System ID .05
Date 6/29/2017 GPS Coordinates

Weather Dry

SYSTEM TYPE StormFilter SF
CONFIGURATION Vault
SIZE

MEDIA TYPE ZPG
CARTRIDGE# 27

Sediment Depth - inlet bay 2"

Pronounced Scum Line? Yes

Sediment Depth - Cartridge Bay 1"

Excessive Hydrocarbons? No

Sediment Depth - Annular N/A

Water Level - Static 1"

Physical Condition of Unit: Unit appears to be in good working condition.

Inspector Comments:

Inspection completed and system is treating runoff as designed. Maintenance is not recommended.

Maintenance Required? No

Repairs Required? No

AUTHENTICITY

This hereby certifies that the information contained in this report is accurate and was obtained using accepted industry practices.

By: Gordon Clem

Company: Pacific Stormwater Solutions


Signature

Date: 7/26/17

Title: Maintenance Manager

Pacific Stormwater BMP Solutions

Stormwater Inspection Report

INSPECTION PHOTOS



Site location



Loose clean media/minimal
sediment



Outlet bay clean and clear of sediment. Repairs to outlet bay
holding well. No maintenance recommended.

STORMWATER TREATMENT UNIT MAINTENANCE COMPLIANCE 2017



**Heavenly Main Lodge
Wildwood Ave
South Lake Tahoe, Ca.**

Let it be known that on June 30th, 2017 the Wildwood Ave CONTECH stormwater Media Filter system was inspected by a qualified professional at a frequency and in a manner consistent with the manufacturer's guidelines for general inspection and maintenance. All systems are operating as designed. Due to minimal sediment and low static water levels maintenance is not recommended at this time. Recommend next inspection Spring 2018.

Therefore, based on these activities and by signed authorization below, this hereby certifies that the StormFilter Stormwater treatment systems at the above referenced location are currently performing as designed.

CERTIFICATE AUTHORIZATION

Gordon Clem
Maintenance Manager
Pacific Stormwater BMP Solutions
7/26/17

Heavenly Mountain Resort Water
Year 2017

APPENDIX

D

FACILITIES MAINTENANCE
MONITORING REPORTS
(4TH QUARTER)

**HEAVENLY SKI RESORT
DEICERS and ABRASIVES APPLICATION**

**(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015-0021
WDID 6A090033000**

WASTE DISCHARGE REQUIREMENTS

DAILY LOG

MONTH/YEAR: Jul-17

LOCATION NAME: California Main Lodge

For days when Heavenly Ski Resort (discharger) applies abrasives or ice control agents on parking lots and roadways, Heavenly Personnel shall record the following daily use for weekly submittal to supervisors and monthly submittal to Frank Papandrea for input into Quarterly reporting to LRWQCB:

Location Codes:

- 1 H/UL – Cal Base Upper Lot
- 2 H/LL – Cal Base Lower Lot
- 3 H/W – Entrance Road (Wildwood above Saddle)
- 4 C/WN CSLT – Wildwood – Needle Peak
- 5 C/SR CSLT - Ski Run
- 6 C/K CSLT – Keller
- 7 C/S CSLT-Sherman Way
- 8 C/R CSLT- Regina
- 9 Other – **Describe:**

Material Codes

- C – Cinders
- NaCl - Salt
- S - Sand
- Other – **Describe:**

<u>Date/Time</u>	<u>Quantity (lbs)</u>	<u>Location Code</u>	<u>Type of Material</u>
July	0	H/W, C/WN, C/SR,	NaCl, S
July	0	H/W, C/WN, C/SR, H/UL	NaCl, S

Total Monthly APPLICATION Heavenly (lbs?)

salt

sand

0.0

0.0

Total Monthly APPLICATION in CSLT (lbs?)

salt

sand

0.0

0.0

Submit Weekly to Supervisor.

Time period covered

7/1/2017

7/31/2017

Ryan Smith

7/24/2017

Employee Signature/DATE

HEAVENLY SKI RESORT
DEICERS and ABARSIVES APPLICATION and RECOVERY

Monthly Summary Report

(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015-0021
WDID 6A090033000
WASTE DISCHARGE REQUIREMENTS

Quantity of ice control agents and abrasives used on Heavenly property and on CSLT streets. When the Dischargers apply deicers and/or abrasives on parking lots, base facilities, private roads, or City of South Lake Tahoe roads to the California Base area, the Dischargers shall keep a daily log and report a monthly summary of the following to Frank Papandrea for Quarterly reporting to LRWQCB:

Month and Year: Jul-17 **Reporter:** Ryan Smith

Location Name: Heavenly California Base and City of South Lake Tahoe Roads

Total Monthly Application: 0 lbs

Total Monthly Recovery: 138,060 lbs

Location of Disposal Facilities: Carson Landfill (by Tahoe Refuse)

Ryan Smith
Employee Signature

HEAVENLY SKI RESORT
DEICERS and ABRASIVES RECOVERY
(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015-0021
WDID 6A090033000
WASTE DISCHARGE REQUIREMENTS
DAILY LOG

MONTH/YEAR: Jul-17

LOCATION NAME Heavenly Upper Lot (15 min, bus drop, tram)

For abrasives or ice control agents that Heavenly Ski Resort (discharger) **removed** from parking lots and roadways, Heavenly Personnel shall record the following in a daily log for weekly submittal to supervisors and monthly submittal to Frank Papandrea for input into Quarterly reporting to LRWQCB:

Location Codes:

H/UL – Cal Base Upper Lot

H/LL – Cal Base Lower Lot

H/W – Entrance Road (Wildwood above S S - Sand

C/WN CSLT – Wildwood – Needle Peak

C/SR CSLT - Ski Run

C/K CSLT – Keller

C/S CSLT- Sherman Way

C/R CSLT - Regina

Other – **Describe:**

Material Codes

DG - Spec H Sand

NaCl - Salt

Other – **Describe:**

Road debris

loosened by

snow removal

Equipment/Method Used: (first three loads from drainage improvement.

Mechanical Sweeper: Desert Commercial Sweeping

Date	Type of Material	Quantity (lbs)
7/5/2017	DG, other	8,180
7/11/2017	DG, other	20,260
7/11/2017	DG, other	16,740
7/13/2017	DG, other	17,480
7/18/2017	DG, other	17,580
7/19/2017	DG, other	14,520
7/19/2017	DG, other	21,220
7/31/2017	DG, other	22,080
Total Monthly RECOVERY Heavenly (lbs?)	138,060 Sand	0 salt
Total Monthly RECOVERY in CSLT (lbs?)	0 Sand	0 salt
Submit Monthly to Supervisor.	Time period covered	7/1/2017 to 7/31/2017

Ryan Smith

Employee Signature

Supervisor Signature

1.

Frank Papandrea

From: Christy Smithmier <csmithmier@southtahoerefuse.com>
Sent: Tuesday, July 11, 2017 9:41 AM
To: Frank Papandrea
Subject: Heavenly Weights

7/5/17 CML

Name: HEAVENLY VALLEY	Acct Nbr: 50400424	Internal Notes: NO RENT ON 33YD	Confid
Address: CA DROP BOXES VARIOUS LOCATIONS SEE WORK ORDER 50 LAKE TAHOE, CA 96150	Phone: 775-585-7000	Change	
Status: Active/Active	Blanket PO:	Authorized Contact:	

Aging	Unapplied	Unbilled	Current	30 Days	60 Days	90 Days	Total	Credit Avail
	0.00	0.00	25.11	1674.00	0.00	0.00	1699.11	899298.99

Order Nbr: 329389	Service: Drop Box - 10Y - Special	Created: 6/30/2017 2:45:00 PM
Status: DONE-EMOB	Action: DUMP & RE	Land: STR BUNKERS
Date: 05/05/17 12:00 AM	Route: 1-Rte 1 W	REQ BY: FRANK
PO/Rel: 50	Size: YD	L2
Site:	Driver: Thurman Ec	L3
	Vehicle: NONE	L4
	Unassign	L5
	Service	

Code	Qty	Rate
DB-10Y-29 ...	1.00	418.50

8,180

Materials (Billed)	Services	Materials (Actual Internal Cost)	Vehicle	Hours
Qty: 4.09		Site/Vendor: STR BUNKERS	Dist: 13	Material: 0.05
Rate: 0.0000	Subtotal: 418.50	Code/Ref: CONCRETE 3064205	Fuel: 0	Down: 0
Subtotal: 0.00	Tax/Fees: 0.0000	Qty / Rate: 4.09 0.0000	Hours: 0	Labor: 1.02
Tax/Fees: 0.00	Total \$: 418.5000	Wt/Taxes: 0 0.0000		Total: 0

Add	Edit	Void	Print	Attachments	Quotations	Material Ticket	Advanced	Find	Cancel	Save
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CLOUD29.DBSERVNCCI STR Access: SECURE Client ID: 874566545 Login Time: 7/11/2017 8:09:40 AM DV: 1130-master-s4-Sa

2.

Frank Papandrea

From: Christy Smithmier <csmithmier@southtahoerefuse.com>
Sent: Wednesday, July 12, 2017 4:02 PM
To: Frank Papandrea
Subject: Heavenly Weights

7/11/17

CML

Utilities Web Portal History

Name: HEAVENLY VALLEY Acct Nbr: 50400424 NO RENT ON 33YD Config
Address: CA DROP BOXES Phone: 775-586-7000 History Internal Notes
VARIOUS LOCATIONS Status: Active/Active Change
SEE WORK ORDER Blanket PO: Authorized Contact
50 LAKE TAHOE, CA 96150

Applied Unapplied Unbilled Current 30 Days 60 Days 90 Days Total Credit Avail
0.00 0.00 0.00 25.11 1674.00 0.00 0.00 25.11 897461.89

Order Nbr: 325487 Service: Drop Box - 10Y - Special Created: 7/10/2017 2:51:00 PM
Status: DONE-EMOB Action: DUMP & RE
Date: 7/11/17 12:00 AM Size: YD
PO/Release: Driver: Kemp Lovick Assign
Vehicle: NONE Unassign
Service: SADDLE - LOWER PARKING LOT 1 OF 2

Landfill: STR BUNKERS
REQ BY: FRANK
L2
L3
L4
L5

Code Qty Rate
DB-10Y-SF ... 1.00 418.50
20,260

Materials (Billed) Services Materials (Actual Internal Cost) Vehicle Hours
Qty: 10.13 Size/ Vendor: STR BUNKERS Dist: 13 Material: 0.28
Rate: 0.0000 Subtotal: 418.50 Code/Ref#: CONCRETE 3064625 Fuel: 0 Dump: 0
Subtotal: 0.00 Tax/Fees: 0.0000 Qty / Rate: 10.13 0.0000 Hours: 0 Labor: 1.02
Tax/Fees: 0.00 Total: 418.5000 WT/Taxes: 0 0.0000 Total: 0

Attachments Overview Material Ticket Advanced Find Cancel Save

CLOUD2\NDS\SERVERS\DCS1 STR Access: SECURE Client ID: 874566545 LogonTime: 7/12/2017 3:18:56 PM DV: 11:30 masterx64-3s

3.

Frank Papandrea

From: Christy Smithmier <csmithmier@southtahoerefuse.com>
Sent: Wednesday, July 12, 2017 4:02 PM
To: Frank Papandrea
Subject: Heavenly Weights

7/11/17

CML

queues web form history

Name: HEAVENLY VALLEY	Acct Nbr: 50400424	History	Internal Notes: NO RENT ON 33YD	Config
Address: CA DROP BOXES VARIOUS LOCATIONS SEE WORK ORDER 50 LAKE TAHOE, CA 96150	Phone: 775-585-7000	Change	Notes	
	Status: Active/Active	Authorized Contact		
	Blanket PO			

Unapplied	Unbilled	Current	30 Days	60 Days	90 Days	Total	Credit Avail
0.00	1555.50	25.11	1674.00	0.00	0.00	2954.61	897043.39

Order Nbr: 329483 Service: Drop Box - 10Y - Special Created: 7/10/2017 2:52:00 PM

Status: DONE EMOB Action: DUMP & RE

Date: 7/11/17 12:00 AM Route: 1-Rite 1 Tu Size: YD

PO/Rate: Driver: Kemp Loser Assign

Vehicle: NONE Unassign

Service

Code Qty Rate

DB-10Y-SP	1.00	418.50
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Notes: SADDLE - LOWER PARKING LOT 2 OF 2

Land: STR BUNKERS

REQ BY: FRANK

L2

L3

L4

L5

16,740

Materials (Billed)	Services	Materials (Actual Internal Cost)	Vehicle	Hours
Qty: 8.37	Subtotal: 418.50	Site/Vendor: STR BUNKERS	Dist: 11	Material: 0.23
Rate: 0.0000	Tax/Fees: 0.0000	Code/Ref: CONCRETE 3064627	Fuel: 0	Down: 0
Subtotal: 0.00	Total: 418.5000	Qty / Rate: 8.37 0.0000	Hours: 0	Labor: 0.77
Tax/Fees: 0.00		WT/Taxes: 0 0.0000		Total: 0

Attachments: Overview Material Ticket

Advanced Find Cancel Save

CLOUD21\08\ERY5\CCSI_STR Access: SECURE Client ID: 87458545 LogonTime: 7/12/2017 3:15:56 PM DV: 1130-master-64-9a

CML

4.

Frank Papandrea

From: Christy Smithmier <csmithmier@southtahoerefuse.com>
 Sent: Friday, July 14, 2017 1:31 PM
 To: Frank Papandrea
 Subject: Heavenly Weights

7/13/17

Name: HEAVENLY VALLEY	Acct Nbr: 50400424	History	Internal Notes: NO RENT ON 33YD	Config
Address: CA DROP BOXES VARIOUS LOCATIONS SEE WORK ORDER SO LAKE TAHOE, CA 96150	Phone: 775-586-7000	Change		
	Status: Active/Active	Authorized Contact		
	Blanket PO			

Agging	Unapplied	Unbilled	Current	30 Days	60 Days	90 Days	Total	Credit Avail
	0.00	1674.00	25.11	1674.00	0.00	0.00	3273.11	894634.69

Order Nbr: 329759	Service: Drop Box - 10Y - Special	Created: 7/12/2017 1:40:00 PM
Status/H: POSTED	Action: DUMP & RE	Landfill: STR BUNKERS
Date: 7/13/17 12:00 AM	Route: 1-Rite 1 Th	REQ BY: FRANK
PO/Rate	Size: YD	L2:
ase	Driver: Thuman Ec	L3:
	Vehicle: 118	L4:
	Assign: Unassign	L5:
	Service:	

Code	Qty	Rate
DB-10Y-SF	1.00	418.50

17480

Materials (Billed)		Services		Materials (Actual Internal Cost)		Vehicle		Hours	
Qty	8.74			Site/Vendor	STR BUNKERS	Dist	14	Material	0
Rate	0.0000	Subtotal	418.50	Code/Ref#	CONCRETE 3064758	Fuel	0	Open	0
Subtotal	0.00	Tax/Fees	0.0000	Qty / Rate	8.74 0.0000	Hours	0	Labot	1.15
Tax/Fees	0.00	Total \$	418.5000	WT/Taxes	0 0.0000			Total	0

Add	Edit	Void	Print	Attachments	Overview	Advanced	Find	Cancel	Save
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Frank Papandrea

From: Christy Smithmier <csmithmier@southtahoerefuse.com>
Sent: Wednesday, July 19, 2017 11:00 AM
To: Frank Papandrea
Subject: Heavenly Weights

7/18/17 CML

Name: HEAVENLY VALLEY Address: CA DROP BOXES VARIOUS LOCATIONS SEE WORK ORDER SO LAKE TAHOE, CA 96150		Acct Nbr: 50400424 Phone: 775-586-7000 Status: Active/Active Blanket PO:	History: Internal Notes: NO RENT ON 33YD Change	Authorized Contact:
---	--	---	--	----------------------------

Agree	Unagreed	Unbilled	Current	30 Days	60 Days	90 Days	Total	Credit Avail
	0.00	2672.00	28.10	1474.00	0.00	0.00	8732.10	186204.00

Order Nbr: 330505 Status/ID: IN TRUCK Date: 05/18/17 12:00 AM PO/Release: SADDLE	Service: Drop Box - 10Y / Special Route: 1-Rte 1 Tu Driver: Jesus Rodas Vehicle: 117	Action: DUMP & RE Size: YD Assign: Unassign: Service:	Created: 7/18/2017 10:21:00 AM Landfill: STR BUNKERS REQ BY: RON L2 L3 L4 L5
---	---	--	---

Code	Qty	Rate
DB-10Y-29	1.00	418.50

17,580

Materials (Bill): Qty: 8.79 Rate: 0.0000 Subtotal: 0.00 Tax/Fees: 0.00	Services: Subtotal: 418.50 Tax/Fees: 0.0000 Total \$: 418.5000	Materials (Actual Internal Cost): Site/Vendor: STR BUNKERS Code/Ref: CONCRETE 3085041 Qty / Rate: 6.75 0.0000 WT/Taxes: 0 0.0000	Vehicle: Dist: 11 Fuel: 0 Hours: 0	Hours: Material: 0 Dist: 0.4 Labor: 1.03 Total: 0
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[Add](#)
[Edit](#)
[Print](#)
[Attachments](#)

[Overview](#)
[Material Ticket](#)

[Advanced](#)
[Fax](#)
[Cancel](#)
[Save](#)

CML

6.

Frank Papandrea

From: Christy Smithmier <csmithmier@southtahoerefuse.com>
 Sent: Thursday, July 20, 2017 9:37 AM
 To: Frank Papandrea
 Subject: Heavenly Weights

7/19/17

NAME: HEAVENLY VALLEY Acct Nbr: 50400424 Internal: NO RENT ON 30YD Config
 Address: CA DROP BOXES VARIOUS LOCATIONS SEE WORK ORDER SO LAKE TAHOE, CA 96150 Phone: 775-586-7000 History Notes
 Status: Active/Active Change Authorized Contact
 Blanket PO: _____

Agging: Unapplied: 0.00 Unbilled: 2511.00 Current: 05.11 30 Days: 1674.00 60 Days: 0.00 90 Days: 0.00 Total: 4226.11 Credit Avail: 495787.99

Order Nbr: 330593 Service: Drop Box - 10Y - Special Created: 7/18/2017 2:52:00 PM
 Status: DONE-EMOB Action: DUMP & RE Landfill: STR BUNKERS
 Date: 05/19/17 12:00 AM Size: YD REQ BY: FRANK
 Route: 1 Rise 1 W Assign: _____
 Driver: Thurman Ec Unassign: _____
 Vehicle: NONE Service: _____

Code Qty Rate
 BB-10Y-20 1.00 418.50
 14,520

Notes: SADDLE - PLACE IN TOP CORNER OF PARKING LOT GATE COMBO 0422 GET WEIGHTS ON BOX - FAX 775 586-7056

Materials Billed: Qty: 7.26 Rate: 0.0000 Subtotal: 418.50
 Subtotal: 0.00 Tax/Fees: 0.0000
 Tax/Fees: 0.00 Total \$: 418.5000

Materials (Actual Internal Cost): Site/Vendor: STR BUNKERS Code/Rate: CONCRETE 3065071
 Qty / Rate: 7.26 0.0000 WT/Taxes: 0 0.0000

Vehicle: Dist: 14 Fuel: 0 Hours: 0
 Material: 0.3
 Hours: 0 Labor: 1.05
 Total: 0

Buttons: Add Edit Void Print Attachments Overview Material Ticket Advanced First Cancel Save

Footer: CLOUD26\B\SERV\SACCS\STR Access: SECURE Client ID: 874566545 LoginTime: 7/20/2017 8:04:43 AM DV: 1130-master\64-3s

Frank Papandrea

From: Christy Smithmier <csmithmier@southtahoerefuse.com>
Sent: Thursday, July 20, 2017 9:45 AM
To: Frank Papandrea
Subject: Heavenly Weights

7/19/17 CML

Name: HEAVENLY VALLEY	Acct Nbr: 50400424	Internal: NO RENT ON 33YD	Config
Address: CA DROP BOXES VARIOUS LOCATIONS SEE WORK ORDER SO LAKE TAHOE, CA 96150	Phone: 775-586-7000	History	Notes
	Status: Active/Active	Change	
	Blanket PO	Authorized Contact	

Aging	Unapplied	Unbilled	Current	30 Days	60 Days	90 Days	Total	Credit Avail
	0.00	2929.00	25.11	1674.00	0.00	0.00	4628.01	892269.39

Order Nbr: 330534	Service: Drop Box - 10Y - Special	Created: 7/18/2017 2:54:00 PM
Status: POSTED	Action: DUMP FINE	Landfill: STR BUNKERS
Date: 7/19/17 12:00 AM	Route: 1-Rte 1 W	REQ BY: FRANK
PO/Rele:	Size: YD	L2:
ate:	Driver: Thurman Ec	L3:
	Vehicle: NONE	L4:
	Assign:	L5:
	Unassign:	
	Service:	

Code	Qty	Rate
DB-10Y-SF	0.00	418.50

21,220

Notes: SADDLE GATE COMBO 0422 GET WEIGHTS ON BOX - FAX 775 586-7056

Materials (Billed)	Services	Materials (Actual Internal Cost)	Vehicle	Hours
Qty: 10.61		Site/Vendor: STR BUNKERS	Dist: 7	Material: 0
Rate: 0.0000	Subtotal: .00	Code/Rel#: CONCRETE 3065079	Fuel: 0	Costs: 0
Subtotal: 0.00	Tax/Fees: 0.0000	Qty / Rate: 10.61 0.0000	Hours: 0	Labor: 1.25
Tax/Fees: 0.00	Total \$: 418.5000	WT/Taxes: 0 0.0000		Total: 0

Add	Edit	Void	Print	Attachments	Overview	Material Ticket	Advanced	Find	Cancel	Save
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326\OBSERV\DCSI_STR Access: SECURE Client ID: 874586545 LogonTime: 7/20/2017 8:04:48 AM DV: 1130-master\64-9y

CML

8.

Name: HEAVENLY VALLEY
Address: CA DROP BOXES
VARIOUS LOCATIONS
SEE WORK ORDER
SO LAKE TAHOE, CA 96150

Acct Nbr: 50400424
Phone: 775-586-7000
Status: Active/Active
Blanket PO:

History
Change

Authorized Contact

NO RENT ON 33YD

Config

Agg: Unapplied: 0.00 Unbilled: 2929.50 Current: 0.00 30 Days: 25.11 60 Days: 1574.00 90 Days: 0.00 Total: 4628.61 Credit Avail: 995369.39

Order Nbr: 332086

Service: Drop Box - 10Y - Special

Created: 7/28/2017 1:26:00 PM

Status/It: POSTED

Action: DUMP FINA

Landfill: STR BUNKERS

Date: 07/31/17 12:00 AM

Route: 1-MON W/D

Size: YD

REQ BY: FRANK

PO/Ref: use

Driver: Thuman Eddy I

Assign:

L2

Vehicle: NONE

Unassign:

L3

Service:

L4

L5

Code	Qty	Rate
DB-10Y-S2	0.00	418.50

Notes: GATE COMBO 0422 GET WEIGHTS ON
BOX - FAX 775-586-7056
MAIN LODGE PARKING
DUMP AND DELIVER TO BOULDER

22,080

Materials (Billed)

Services

Materials (Actual Internal Cost)

Vehicle

Hour

Qty: 11.04

Subtotal: .00

Site/Vendor: STR BUNKERS

Dist: 9

Material: 0.92

Rate: 0.0000

Tax/Fees: 0.0000

Code/Ref: CONCRETE 3065612

Fuel: 0

Down: 0

Subtotal: 0.00

Total: 0.0000

Qty / Rate: 11.04 0.0000

Hours: 0

Labor: 1.53

Tax/Fees: 0.00

Total: 0.0000

WT/Taxes: 0 0.0000

Total: 0

Total: 0

Add

Edit

Void

Print

Attachments

Overview

Down

Advanced

Find

Cancel

Save

Material Ticket Labor

BVCCSI STR Access: SECURE ClientID: 874586545 LogonTime: 8/1/2017 8:00:22 AM DV: 1130-master-x64-9a

Loads

#1-3 = 45,180

#4-8 = 92,880

138,060 lbs in July 2017

First 3 loads from Drainage
Improvement projectLast 5 loads from Sweeping
Truck, and Piles left from Sweeping

[illegible]

**HEAVENLY SKI RESORT
CALIFORNIA PARKING LOT, LODGE and ROADS
MONITORING CHECKLIST**

(MONITORING AND REPORTING PROGRAM NO.R6T-2015-0021)

Date: Jul-17 Inspector: Ryan Smith

Complete the following inspection at the **CA Parking Lot, CA Base Lodge, and associated roads, at least once monthly** and **after significant storm events**. Turn in Checklists to Supervisor for submittal to Frank Papandrea for input into Quarterly reports to LRWQCB.

Were any of the following Observed?

a. Drop Inlets (CA parking Lot and Roads)

- 1) Clogged by Debris, ice, or sediment?
- 2) Runoff movement into the infiltration gallery?
- 3) Damaged by vehicles or snow plow?

b. Drainage Collection System (Ca Parking Lot, Roads)

- 1) Clogged by debris, ic, or sediment?
- 2) Movement of water through pipes, cahnnels, and appurtenances impeded?
- 3) Drainage collection system damages?
- 4) Inadequate energy dissipation?

c. Sediment Traps and Vaults (CA Prkng Lot & Roads)

- 1) sediment accumulated in each chamber of trap vaults, or galleries? If Yes, estimate depth and volume.
- 2) Traps and Vaults recently cleaned? List date of last cleaning
- 3) Presence of sheen, foam trash or scum?

d. Erosion Control (CA parking Lot, Lodges, and Maintenance Shops)

- 1) Vegetation appears unhealthy?
- 2) Gully or rill erosion on slopes?
- 3) Sediment buildup at toes of slopes?
- 4) Vegetation damages by vehicles or heavy foot

c. Culvert Outlet (west of Wildwood Ave)

- 1) Inadequate energy dissipation

Yes	No	Comments
Describe Problems, Locations and Corrective Actions		
	X	
X		
	X	
Describe Problems, Locations and Corrective Actions		
	X	
	X	
	X	
	X	
Describe Problem and Corrective Actions		
X		Clean Harbors inspected on 6/29. Water 2' from top of storm drains. Water in Sac Vault is to top of filters.
	X	Vaults cleaned August 29, sediment trap at base of entrance cleaned June 12.
X		Yes, visible oil.
Please Note Locations and Corrective Actions		
	X	
	X	
	X	
	X	
Please Note Locations and Corrective Actions		
	X	

2) Trash or debris needs to be removed from

d. Upstream Drainage Diversion (Located on First Ride Run)

1) Inadequate energy dissipation

2) Trash or debris needs to be removed from

f. Spilled Chemicals, Paints, Fuels, Sealants, Oils, Greases, Antifreeze, etc? (all locations)

g. Sediment/Sand Buildup in CA parking Lot?

h. Grease Interceptor Not Operating Properly? (CA Base Lodge)

	X	
Please Note Locations and Corrective Actions		
	X	
	X	
	X	
	X	Lower lot swept on July 18th.
	X	

Describe any problems / activities, dates and times of problems/activities and the personnel to which problems were reported:

Oil visible in storm vault in lower lot. On 7/14, Clean Harbors pulled samples and stated that the vaults are performing properly.

On 7/11, a DI was placed in the lower lot to assist with ground water not running over parking lot.

Documentation of resulting actions and dates problems corrected:

INSPECTION PURPOSE AND GOALS:

The purpose of the inspection is to identify actual or potential erosion and surface runoff on the project site and to identify BMP maintenance needs so that corrective measures may be immediately undertaken.

Any erosion, surface runoff problems, wastewater disposal problems, or other adverse conditions, which are found on the subject property, shall be clearly described and the corrective measures proposed by the Dischargers (Heavenly) shall be included in the quarterly monitoring report. **In the event that no such problems are found on the property, a statement certifying this condition must be included for each monthly inspection.**

PLEASE ADD ADDITIONAL INFORMATION IF NECESSARY AND ATTACH PHOTO DOCUMENTATION

HEAVENLY SKI RESORT SNOW CONDITIONING and SNOW ENHANCEMENT Water Year 2015		(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015- 0021 WDID 6A090033000 WASTE DISCHARGE REQUIREMENTS		If snow-conditioning or snowmaking enhancement chemicals or other additives are used on ski slopes (including tubing runs, half-pipes, jumps, other terrain parks, and ski race areas), a daily log of the following information shall be kept and reported to supervisors on a weekly basis and to the USDA Forest Service on a monthly basis for input into Quarterly reporting to LRWQCB:
LOCATION: <u>Heavenly Ski Resort</u> Department : Base Operations Reporter: <u>Ryan Smith</u>		California Main Lodge		Type of Materials Applied <u>"traction melt ci"</u> Approximate Acreage: <u>1 ACRE</u>
Date	Pounds used	ACRES		
7/1/2017	0.00	0.00		
7/2/2017	0.00	0.00		
7/3/2017	0.00	0.00		
7/4/2017	0.00	0.00		
7/5/2017	0.00	0.00		
7/6/2017	0.00	0.00		
7/7/2017	0.00	0.00		
7/8/2017	0.00	0.00		
7/9/2017	0.00	0.00		
7/10/2017	0.00	0.00		
7/11/2017	0.00	0.00		
7/12/2017	0.00	0.00		
7/13/2017	0.00	0.00		
7/14/2017	0.00	0.00		
7/15/2017	0.00	0.00		
7/16/2017	0.00	0.00		
7/17/2017	0.00	0.00		
7/18/2017	0.00	0.00		
7/19/2017	0.00	0.00		
7/20/2017	0.00	0.00		
7/21/2017	0.00	0.00		
7/22/2017	0.00	0.00		
7/23/2017	0.00	0.00		
7/24/2017	0.00	0.00		
7/25/2017	0.00	0.00		
7/26/2017	0.00	0.00		
7/27/2017	0.00	0.00		
7/28/2017	0.00	0.00		
7/29/2017	0.00	0.00		
7/30/2017	0.00	0.00		
7/31/2017				
Total	0.00	0.00		
Employee sign off, Ryan Smith				

**HEAVENLY SKI RESORT
DEICERS and ABRASIVES APPLICATION**

**(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015-0021
WDID 6A090033000**

WASTE DISCHARGE REQUIREMENTS

DAILY LOG

MONTH/YEAR: Aug-17

LOCATION NAME: California Main Lodge

For days when Heavenly Ski Resort (discharger) applies abrasives or ice control agents on parking lots and roadways, Heavenly Personnel shall record the following daily use for weekly submittal to supervisors and monthly submittal to Frank Papandrea for input into Quarterly reporting to LRWQCB:

Location Codes:

- 1 H/UL – Cal Base Upper Lot
- 2 H/LL – Cal Base Lower Lot
- 3 H/W – Entrance Road (Wildwood above Saddle)
- 4 C/WN CSLT – Wildwood – Needle Peak
- 5 C/SR CSLT - Ski Run
- 6 C/K CSLT – Keller
- 7 C/S CSLT-Sherman Way
- 8 C/R CSLT- Regina
- 9 Other – **Describe:**

Material Codes

- C – Cinders
- NaCl - Salt
- S - Sand
- Other – **Describe:**

Date/Time	Quantity (lbs)	Location Code	Type of Material
August	0	H/W, C/WN, C/SR,	NaCl, S
August	0	H/W, C/WN, C/SR, H/UL	NaCl, S

Total Monthly APPLICATION Heavenly (lbs?)	<u>salt</u>	<u>sand</u>
	0.0	0.0
Total Monthly APPLICATION in CSLT (lbs?)	<u>salt</u>	<u>sand</u>
	0.0	0.0
Submit Weekly to Supervisor.		
Time period covered	<u>8/1/2017</u>	<u>8/30/2017</u>

Ryan Smith 7/24/2017
Employee Signature/DATE

HEAVENLY SKI RESORT
DEICERS and ABARSIVES APPLICATION and RECOVERY

Monthly Summary Report

(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015-0021
WDID 6A090033000
WASTE DISCHARGE REQUIREMENTS

Quantity of ice control agents and abrasives used on Heavenly property and on CSLT streets. When the Dischargers apply deicers and/or abrasives on parking lots, base facilities, private roads, or City of South Lake Tahoe roads to the California Base area, the Dischargers shall keep a daily log and report a monthly summary of the following to Frank Papandrea for Quarterly reporting to LRWQCB:

Month and Year: Aug-17 **Reporter:** Ryan Smith

Location Name: Heavenly California Base and City of South Lake Tahoe Roads

Total Monthly Application: 0 lbs

Total Monthly Recovery: 0 lbs

Location of Disposal Facilities: Carson Landfill (by Tahoe Refuse)

Ryan Smith
Employee Signature

**HEAVENLY SKI RESORT
DEICERS and ABRASIVES RECOVERY
(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015-0021
WDID 6A090033000
WASTE DISCHARGE REQUIREMENTS
DAILY LOG**

MONTH/YEAR: Aug-17

LOCATION NAME Heavenly Upper Lot (15 min, bus drop, tram)

For abrasives or ice control agents that Heavenly Ski Resort (discharger) **removed** from parking lots and roadways, Heavenly Personnel shall record the following in a daily log for weekly submittal to supervisors and monthly submittal to Frank Papandrea for input into Quarterly reporting to LRWQCB:

Location Codes:

H/UL – Cal Base Upper Lot

H/LL – Cal Base Lower Lot

H/W – Entrance Road (Wildwood above SS - Sand

C/WN CSLT – Wildwood – Needle Peak

C/SR CSLT - Ski Run

C/K CSLT – Keller

C/S CSLT- Sherman Way

C/R CSLT - Regina

Other – **Describe:**

Material Codes

DG - Spec H Sand

NaCl - Salt

Other – **Describe:**

Road debris

loosened by

snow removal

Equipment/Method Used: (first three loads from drainage improvement.

Mechanical Sweeper: Desert Commercial Sweeping

Date	Type of Material	Quantity (lbs)
-------------	-------------------------	-----------------------

Total Monthly RECOVERY Heavenly (lbs?)	0 Sand	0 salt
---	--------	--------

Total Monthly RECOVERY in CSLT (lbs?)	0 Sand	0 salt
--	--------	--------

Submit Monthly to Supervisor.	Time period covered	8/1/2017	to	8/30/2017
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Ryan Smith

Employee Signature

Supervisor Signature

[illegible]

**HEAVENLY SKI RESORT
CALIFORNIA PARKING LOT, LODGE and ROADS
MONITORING CHECKLIST**

(MONITORING AND REPORTING PROGRAM NO.R6T-2015-0021)

Date: Aug-17 Inspector: Ryan Smith

Complete the following inspection at the **CA Parking Lot, CA Base Lodge, and associated roads, at least once monthly** and **after significant storm events**. Turn in Checklists to Supervisor for submittal to Frank Papandrea for input into Quarterly reports to LRWQCB.

Were any of the following Observed?

a. Drop Inlets (CA parking Lot and Roads)

- 1) Clogged by Debris, ice, or sediment?
- 2) Runoff movement into the infiltration gallery?
- 3) Damaged by vehicles or snow plow?

b. Drainage Collection System (Ca Parking Lot, Roads)

- 1) Clogged by debris, ic, or sediment?
- 2) Movement of water through pipes, cahnnels, and appurtenances impeded?
- 3) Drainage collection system damages?
- 4) Inadequate energy dissipation?

c. Sediment Traps and Vaults (CA Prkng Lot & Roads)

- 1) sediment accumulated in each chamber of trap vaults, or galleries? If Yes, estimate depth and volume.
- 2) Traps and Vaults recently cleaned? List date of last cleaning
- 3) Presence of sheen, foam trash or scum?

d. Erosion Control (CA parking Lot, Lodges, and Maintenance Shops)

- 1) Vegetation appears unhealthy?
- 2) Gully or rill erosion on slopes?
- 3) Sediment buildup at toes of slopes?
- 4) Vegetation damages by vehicles or heavy foot

c. Culvert Outlet (west of Wildwood Ave)

- 1) Inadequate energy dissipation

Yes	No	Comments
Describe Problems, Locations and Corrective Actions		
	X	
X		
	X	
Describe Problems, Locations and Corrective Actions		
	X	
	X	
	X	
	X	
Describe Problem and Corrective Actions		
	X	Clean Harbors began sucking vaults 8/29.
	X	Vaults cleaned August 29, sediment trap at base of entrance cleaned June 12.
	X	
Please Note Locations and Corrective Actions		
	X	
	X	
	X	
	X	
Please Note Locations and Corrective Actions		
	X	

2) Trash or debris needs to be removed from

d. Upstream Drainage Diversion (Located on First Ride Run)

1) Inadequate energy dissipation

2) Trash or debris needs to be removed from

f. Spilled Chemicals, Paints, Fuels, Sealants, Oils, Greases, Antifreeze, etc? (all locations)

g. Sediment/Sand Buildup in CA parking Lot?

h. Grease Interceptor Not Operating Properly? (CA Base Lodge)

	X	
Please Note Locations and Corrective Actions		
	X	
	X	
	X	
	X	Lower lot swept on July 18th.
	X	

Describe any problems / activities, dates and times of problems/activities and the personnel to which problems were reported:

Documentation of resulting actions and dates problems corrected:

INSPECTION PURPOSE AND GOALS:

The purpose of the inspection is to identify actual or potential erosion and surface runoff on the project site and to identify BMP maintenance needs so that corrective measures may be immediately undertaken.

Any erosion, surface runoff problems, wastewater disposal problems, or other adverse conditions, which are found on the subject property, shall be clearly described and the corrective measures proposed by the Dischargers (Heavenly) shall be included in the quarterly monitoring report. **In the event that no such problems are found on the property, a statement certifying this condition must be included for each monthly inspection.**

PLEASE ADD ADDITIONAL INFORMATION IF NECESSARY AND ATTACH PHOTO DOCUMENTATION

HEAVENLY SKI RESORT SNOW CONDITIONING and SNOW ENHANCEMENT Water Year 2015		(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015- 0021 WDID 6A090033000 WASTE DISCHARGE REQUIREMENTS		If snow-conditioning or snowmaking enhancement chemicals or other additives are used on ski slopes (including tubing runs, half-pipes, jumps, other terrain parks, and ski race areas), a daily log of the following information shall be kept and reported to supervisors on a weekly basis and to the USDA Forest Service on a monthly basis for input into Quarterly reporting to LRWQCB:
LOCATION: <u>Heavenly Ski Resort</u> Department : Base Operations Reporter: <u>Ryan Smith</u>		California Main Lodge		Type of Materials Applied <u>"traction melt ci"</u> Approximate Acreage: <u>1 ACRE</u>
Date	Pounds used	ACRES		
8/1/2017	0.00	0.00		
8/2/2017	0.00	0.00		
8/3/2017	0.00	0.00		
8/4/2017	0.00	0.00		
8/5/2017	0.00	0.00		
8/6/2017	0.00	0.00		
8/7/2017	0.00	0.00		
8/8/2017	0.00	0.00		
8/9/2017	0.00	0.00		
8/10/2017	0.00	0.00		
8/11/2017	0.00	0.00		
8/12/2017	0.00	0.00		
8/13/2017	0.00	0.00		
8/14/2017	0.00	0.00		
8/15/2017	0.00	0.00		
8/16/2017	0.00	0.00		
8/17/2017	0.00	0.00		
8/18/2017	0.00	0.00		
8/19/2017	0.00	0.00		
8/20/2017	0.00	0.00		
8/21/2017	0.00	0.00		
8/22/2017	0.00	0.00		
8/23/2017	0.00	0.00		
8/24/2017	0.00	0.00		
8/25/2017	0.00	0.00		
8/26/2017	0.00	0.00		
8/27/2017	0.00	0.00		
8/28/2017	0.00	0.00		
8/29/2017	0.00	0.00		
8/30/2017	0.00	0.00		
Total		0.00	0.00	
Employee sign off, Ryan Smith				

(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015-0021
WDID 6A090033000

Employee Signature/DATE

HEAVENLY SKI RESORT
DEICERS and ABARSIVES APPLICATION and RECOVERY

Monthly Summary Report

(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015-0021
WDID 6A090033000
WASTE DISCHARGE REQUIREMENTS

Quantity of ice control agents and abrasives used on Heavenly property and on CSLT streets. When the Dischargers apply deicers and/or abrasives on parking lots, base facilities, private roads, or City of South Lake Tahoe roads to the California Base area, the Dischargers shall keep a daily log and report a monthly summary of the following to Frank Papandrea for Quarterly reporting to LRWQCB:

Month and Year: Sep-17 **Reporter:** Ryan Smith

Location Name: Heavenly California Base and City of South Lake Tahoe Roads

Total Monthly Application: 0 lbs

Total Monthly Recovery: 0 lbs

Location of Disposal Facilities: Carson Landfill (by Tahoe Refuse)

Ryan Smith
Employee Signature

**HEAVENLY SKI RESORT
DEICERS and ABRASIVES RECOVERY
(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015-0021
WDID 6A090033000
WASTE DISCHARGE REQUIREMENTS
DAILY LOG**

MONTH/YEAR: Sep-17

LOCATION NAME Heavenly Upper Lot (15 min, bus drop, tram)

For abrasives or ice control agents that Heavenly Ski Resort (discharger) **removed** from parking lots and roadways, Heavenly Personnel shall record the following in a daily log for weekly submittal to supervisors and monthly submittal to Frank Papandrea for input into Quarterly reporting to LRWQCB:

Location Codes:

H/UL – Cal Base Upper Lot

H/LL – Cal Base Lower Lot

H/W – Entrance Road (Wildwood above SS - Sand

C/WN CSLT – Wildwood – Needle Peak

C/SR CSLT - Ski Run

C/K CSLT – Keller

C/S CSLT- Sherman Way

C/R CSLT - Regina

Other – **Describe:**

Equipment/Method Used:

Mechanical Sweeper: Desert Commerical Sweeping

Material Codes

DG - Spec H Sand

NaCl - Salt

Other – **Describe:**

Road debris

loosened by

snow removal

Date	Type of Material	Quantity (lbs)
-------------	-------------------------	-----------------------

Total Monthly RECOVERY Heavenly (lbs?)	0 Sand	0 salt
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Total Monthly RECOVERY in CSLT (lbs?)	0 Sand	0 salt
--	--------	--------

Submit Monthly to Supervisor.	Time period covered	9/1/2017	to	9/30/2017
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Ryan Smith

Employee Signature

Supervisor Signature

[illegible]

**HEAVENLY SKI RESORT
CALIFORNIA PARKING LOT, LODGE and ROADS
MONITORING CHECKLIST**

(MONITORING AND REPORTING PROGRAM NO.R6T-2015-0021)

Date: Sep-17 Inspector: Ryan Smith

Complete the following inspection at the **CA Parking Lot, CA Base Lodge, and associated roads, at least once monthly** and **after significant storm events**. Turn in Checklists to Supervisor for submittal to Frank Papandrea for input into Quarterly reports to LRWQCB.

Were any of the following Observed?

a. Drop Inlets (CA parking Lot and Roads)

- 1) Clogged by Debris, ice, or sediment?
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- 1) Clogged by debris, ic, or sediment?
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- 3) Drainage collection system damages?
- 4) Inadequate energy dissipation?

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- 1) sediment accumulated in each chamber of trap vaults, or galleries? If Yes, estimate depth and volume.
- 2) Traps and Vaults recently cleaned? List date of last cleaning
- 3) Presence of sheen, foam trash or scum?

d. Erosion Control (CA parking Lot, Lodges, and Maintenance Shops)

- 1) Vegetation appears unhealthy?
- 2) Gully or rill erosion on slopes?
- 3) Sediment buildup at toes of slopes?
- 4) Vegetation damages by vehicles or heavy foot

c. Culvert Outlet (west of Wildwood Ave)

- 1) Inadequate energy dissipation

Yes	No	Comments
Describe Problems, Locations and Corrective Actions		
	X	
X		
	X	
Describe Problems, Locations and Corrective Actions		
	X	
	X	
	X	
	X	
Describe Problem and Corrective Actions		
	X	Clean Harbors began sucking vaults 8/29.
	X	Vaults cleaned August 29, sediment trap at base of entrance cleaned June 12.
	X	
Please Note Locations and Corrective Actions		
	X	
	X	
	X	
	X	
Please Note Locations and Corrective Actions		
	X	

2) Trash or debris needs to be removed from

d. Upstream Drainage Diversion (Located on First Ride Run)

1) Inadequate energy dissipation

2) Trash or debris needs to be removed from

f. Spilled Chemicals, Paints, Fuels, Sealants, Oils, Greases, Antifreeze, etc? (all locations)

g. Sediment/Sand Buildup in CA parking Lot?

h. Grease Interceptor Not Operating Properly? (CA Base Lodge)

	X	
Please Note Locations and Corrective Actions		
	X	
	X	
	X	
	X	Upper Lot swept 9/27.
	X	

Describe any problems / activities, dates and times of problems/activities and the personnel to which problems were reported:

Pavement was patched and repaired above the vaults in the lower lot on 9/29

Documentation of resulting actions and dates problems corrected:

INSPECTION PURPOSE AND GOALS:

The purpose of the inspection is to identify actual or potential erosion and surface runoff on the project site and to identify BMP maintenance needs so that corrective measures may be immediately undertaken.

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PLEASE ADD ADDITIONAL INFORMATION IF NECESSARY AND ATTACH PHOTO DOCUMENTATION

SEE PHOTOS ON NEXT PAGE OF CA PARKING LOT ASPHALT REPLACEMENT/IMPROVEMENTS NEAR THE STORMWATER TREATMENT VAULTS ON 9/29/17.



HEAVENLY SKI RESORT SNOW CONDITIONING and SNOW ENHANCEMENT Water Year 2015		(MONITORING AND REPORTING PROGRAM) BOARD ORDER NO. R6T-2015- 0021 WDID 6A090033000 WASTE DISCHARGE REQUIREMENTS		If snow-conditioning or snowmaking enhancement chemicals or other additives are used on ski slopes (including tubing runs, half-pipes, jumps, other terrain parks, and ski race areas), a daily log of the following information shall be kept and reported to supervisors on a weekly basis and to the USDA Forest Service on a monthly basis for input into Quarterly reporting to LRWQCB:
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Date	Pounds used	ACRES		
9/1/2017	0.00	0.00		
9/2/2017	0.00	0.00		
9/3/2017	0.00	0.00		
9/4/2017	0.00	0.00		
9/5/2017	0.00	0.00		
9/6/2017	0.00	0.00		
9/7/2017	0.00	0.00		
9/8/2017	0.00	0.00		
9/9/2017	0.00	0.00		
9/10/2017	0.00	0.00		
9/11/2017	0.00	0.00		
9/12/2017	0.00	0.00		
9/13/2017	0.00	0.00		
9/14/2017	0.00	0.00		
9/15/2017	0.00	0.00		
9/16/2017	0.00	0.00		
9/17/2017	0.00	0.00		
9/18/2017	0.00	0.00		
9/19/2017	0.00	0.00		
9/20/2017	0.00	0.00		
9/21/2017	0.00	0.00		
9/22/2017	0.00	0.00		
9/23/2017	0.00	0.00		
9/24/2017	0.00	0.00		
9/25/2017	0.00	0.00		
9/26/2017	0.00	0.00		
9/27/2017	0.00	0.00		
9/28/2017	0.00	0.00		
9/29/2017	0.00	0.00		
9/30/2017	0.00	0.00		
Total	0.00	0.00		
Employee sign off, Ryan Smith				

Pacific Stormwater BMP Solutions

Stormwater Maintenance Report 2017

Heavenly Ski Resort - Base Lodge

Pacific Stormwater BMP Solutions

PO Box 12246

Santa Rosa, Ca. 95406

Phone 707.544.5012

www.pacstorm.com

REPORT CONTENTS

This report contains information regarding the results off the BMP(s) maintenance performed at the Heavenly Ski Resort site.

The following information is provided for each BMP:

Maintenance Date
Maintenance Information
Weather Conditions
BMP Location
BMP Designation, Type and Configuration
Sediment, Water, and Hydrocarbon Levels if present
BMP overall Condition
BMP Components Condition
Additional Comments and Observations
Maintenance Photos
Any further recommended Action

MAINTENANCE SUMMARY

Based on the results of an inspection of BMP(s), the following action was completed:

- ☒ All inspected BMPs are operating within manufacturer's established specifications. Inspection to take place Spring 2017.
- ☐ Repairs to one or more off the inspected BMPs is required. See report specifics for details.
- ☒ Full service maintenance of one or more of the inspected BMPs was completed. See report specifics for details.

Pacific Stormwater BMP Solutions

Stormwater Maintenance Report

PROJECT INFORMATION

Name Heavenly Ski Resort **Project#**
Address Wildwood Ave, South Lake Tahoe, Ca

MAINTENANCE DETAILS

Field Manager Gordon Clem **System ID** .03
Date 9/20/2017 **GPS Coordinates** See photos

Weather Dry

SYSTEM TYPE StormFilter SF
CONFIGURATION Manhole
SIZE 60"

MEDIA TYPE CSF
CARTRIDGE# 7

Sediment Depth - Sump _____

Pronounced Scum Line? No

Sediment Depth - Cartridge Bay 5"

Excessive Hydrocarbons? No

Sediment Depth - Annular N/A

Water Level - Static 19"

Physical Condition of Unit: Unit appears to be in good working condition.

Field Managers Comments:

Sacrificial Seven (7) cartridge manhole units #3. Sediment and static water and all spent filters removed and disposed of at approved landfill. Seven (7) filters in Sacrificial manhole unit replaced with OEM Phosphorous cartridge filters. Maintenance completed and system appears to be in good working order.

Maintenance Completed? Yes

Repairs Required? No

MAINTENANCE AUTHENTICITY

This hereby certifies that the information contained in this report is accurate and was obtained using accepted industry practices.

By: Gordon Clem

Company: Pacific Stormwater Solutions

Signature: 

Date: 9/20/17

Title: Maintenance Manager

Pacific Stormwater BMP Solutions

Stormwater Maintenance Report

PROJECT INFORMATION

Name Heavenly Ski Resort **Project#**
Address Wildwood Ave, South Lake Tahoe, Ca

MAINTENANCE DETAILS

Field Manager Gordon Clem **System ID** .09
Date 9/20/2017 **GPS Coordinates** See photos

Weather Dry

SYSTEM TYPE StormFilter SF
CONFIGURATION Manhole
SIZE 60"

MEDIA TYPE CSF
CARTRIDGE# 7

Sediment Depth - Sump _____

Pronounced Scum Line? No

Sediment Depth - Cartridge Bay 4"

Excessive Hydrocarbons? No

Sediment Depth - Annular N/A

Water Level - Static 18"

Physical Condition of Unit: Unit appears to be in good working condition.

Field Managers Comments:

Sacrificial Seven (7) cartridge manhole units #9. Sediment and static water and all spent filters removed and disposed of at approved landfill. Seven (7) filters in Sacrificial manhole unit replaced with OEM Phosphorous cartridge filters. Maintenance completed and system appears to be in good working order.

Maintenance Completed? Yes

Repairs Required? No

MAINTENANCE AUTHENTICITY

This hereby certifies that the information contained in this report is accurate and was obtained using accepted industry practices.

By: Gordon Clem

Company: Pacific Stormwater Solutions

Signature: 

Date: 9/20/17

Title: Maintenance Manager

Pacific Stormwater BMP Solutions

Stormwater Maintenance Report

PROJECT INFORMATION

Name Heavenly Ski Resort **Project#** 0
Address Wildwood Ave, South Lake Tahoe, Ca

MAINTENANCE DETAILS

Inspector Gordon Clem **System ID** .04
Date 9/20/2017 **GPS Coordinates**

Weather Dry

SYSTEM TYPE StormFilter SF
CONFIGURATION Vault
SIZE

MEDIA TYPE ZPG
CARTRIDGE# 93

Sediment Depth - Sump _____

Pronounced Scum Line? Yes

Sediment Depth - Cartridge Bay 4"

Excessive Hydrocarbons? No

Sediment Depth - Annular N/A

Water Level - Static 2"

Physical Condition of Unit: Unit appears to be in good working condition.

Inspector Comments:

Unit #4 Stormfilter with 93 ZPG 27" filter cartridges maintained. Sediment, static water and spent filters removed and disposed of at approved landfill. Stormfilter with Ninty Three (93) filters replaced with OEM ZPG 27" cartridge filters. Maintenance completed.

Maintenance Completed? Yes

Repairs required? No

AUTHENTICITY

This hereby certifies that the information contained in this report is accurate and was obtained using accepted industry practices.

By: Gordon Clem

Company: Pacific Stormwater Solutions

Signature: 

Date: 9/20/17

Title: Maintenance Manager

Pacific Stormwater BMP Solutions

Stormwater Maintenance Report

PROJECT INFORMATION

Name Heavenly Ski Resort **Project#** 0
Address Wildwood Ave, South Lake Tahoe, Ca

MAINTENANCE DETAILS

Inspector Gordon Clem **System ID** .10
Date 9/20/2017 **GPS Coordinates**

Weather Dry

SYSTEM TYPE Hydro-Dynamic Separator HDS **MEDIA TYPE** ZPG
CONFIGURATION Manhole **CARTRIDGE#** 93
SIZE

Sediment Depth - Sump 13" **Pronounced Scum Line?** Yes

Sediment Depth - Cartridge Bay N/A **Excessive Hydrocarbons?** No

Sediment Depth - Annular 1"

Water Level - Static 2'

Physical Condition of Unit: Unit appears to be in good working condition.

Inspector Comments:

CDS Hydrodynamic Separator maintained in accordance with manufacturers recommendations. Water decanted with MicroPump and sediment removed from Sump and Annular space. Maintenance completed.

Maintenance Completed? Yes **Repairs required?** No

AUTHENTICITY

This hereby certifies that the information contained in this report is accurate and was obtained using accepted industry practices.

By: Gordon Clem

Company: Pacific Stormwater Solutions

Signature: 

Date: 9/20/17

Title: Maintenance Manager

Pacific Stormwater BMP Solutions

Stormwater Maintenance Report

Maintenance Photos



Unit #3 location



During maintenance



Maintenance completed



Unit #9 location



During Maintenance



Maintenance completed



Unit #10



During maintenance



Maintenance completed



Pacific Stormwater BMP Solutions

Stormwater Maintenance Report

Maintenance Photos



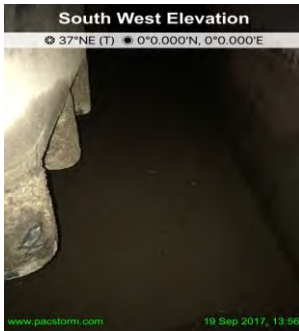
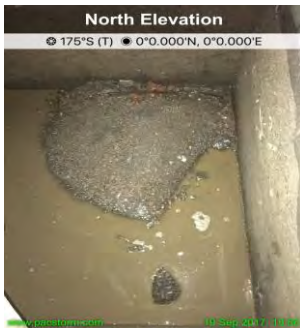
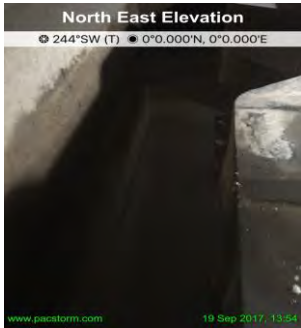
CDS location



During maintenance



Maintenance completed



Inlet bay cleanings

STORMWATER TREATMENT UNIT MAINTENANCE COMPLIANCE 2017



Heavenly Ski Resort Base Lodge

South Lake Tahoe, Ca.

Let it be known that on September 20th, 2017 Three (3) CONTECH StormFilter media systems and one CDS HDS system were maintained by a qualified professional at a frequency and in a manner consistent with the manufacturer's guidelines for general inspection and maintenance. All sediment and static water was removed. System internal components were inspected and OEM manufacturer supplied replacement filters were installed.

Therefore, based on these activities and by signed authorization below, this hereby certifies that the stormwater treatment systems at the above referenced location have met the requirements for maintenance compliance as specified by the manufacturer until Spring 2018 at which time an inspection should occur.

CERTIFICATE AUTHORIZATION



Gordon Clem
Maintenance Manager
Pacific Stormwater BMP Solutions
9/25/17



December 1st, 2017

Liz van Diepen
Engineering Geologist
Lahontan Regional Water Quality Control Board
2501 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150

Re: Heavenly Mountain Resort 2017 Fourth Quarter Snow Conditioning and Snowmaking Enhancement Monitoring

Dear Ms. van Diepen:

Pursuant to the Monitoring and Reporting Program Order R6T-2015-0021 Waste Discharge Requirements, Heavenly is required to submit monthly snow conditioning and snow enhancement monitoring logs. Instead of providing a number of zero reported usage forms for huck salt application on the mountain during the fourth quarter of Water Year 2017, this letter and the table below summarize the usage over the past three months (July, August, September 2017) at the following sites: Top of the Gondola Lift Station, World Cup Race Courses, Terrain Park(s), and Adventure Peak/Tubing Hill. Three additional sites were added during the second quarter of water year 2017, due to increased snowfall and unsafe conditions at the following locations: Tamarack Lodge Deck, Tram Base Deck and the areas around the World Cup Foundation/Mt. Operations Building. The Environmental Monitoring Program Annual Report provides a water year to date summary of the amount of huck salt applied for the 2017 Water Year.

Table 1-1 The Location and the Application Amount of Huck Salt

Month Year	Top of the Gondola (lbs.)	World Cup Race Course (lbs.)	Terrain Park (lbs.)	Adventure Peak - Tubing Area (lbs.)	Tamarack Lodge Deck (lbs.)	Tram Base Deck (lbs.)	World Cup Foundation Building (lbs.)
July 2017	0	0	0	0	0	0	0
Aug. 2017	0	0	0	0	0	0	0
Sept. 2017	0	0	0	0	0	0	0
Totals	0 lbs.	0 lbs.	0 lbs.	0 lbs.	0 lbs.	0 lbs.	0 lbs.

Should you require additional information or have any questions regarding this report and its contents, please contact Frank Papandrea at 775-586-2315.

Sincerely,

Frank Papandrea
Heavenly Environmental & Compliance Manager

P.O. Box 2180
Stateline, NV 89449
775/586-7000
www.skiheavenly.com

VAIL RESORTS
EXPERIENCE OF A LIFETIME™

Heavenly Mountain Resort Water
Year 2017

APPENDIX

E

2017 ROADS MONITORING

FOREST ROAD MAINTENANCE AND REPORTING AGREEMENT

BETWEEN THE

U.S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE LAKE TAHOE BASIN MANAGEMENT UNIT

AND

HEAVENLY MOUNTAIN RESORT

Parties to Agreement: This agreement, made and entered into this the 23rd day of MARCH 2015, by and between the Forest Service, Pacific Southwest Region, Lake Tahoe Basin Management Unit, hereinafter referred to as the "U.S. Forest Service." and Heavenly Mountain Resort (HMR) hereinafter called the "cooperator."

Purpose of Agreement: The purpose of this agreement is to set forth the general terms and conditions, acceptable to the parties hereto, for the cooperative planning, survey, design, construction, reconstruction, improvement, and maintenance of the National Forest System Roads in Douglas County, NV, Alpine County, CA and Eldorado County, CA, pursuant to the regulations issued by the Secretary of Agriculture.

1. **Intent to Cooperate.** It is the intention of the parties under this agreement to cooperate as follows:

- A. Agree that the road system to access Heavenly Mountain Resort is managed under special use permit to HMR.
- B. Agree on the extent of HMR's responsibility to maintain and inspect the road system. Spur roads that dead end to service lifts and other resort facilities are HMR's responsibility. All roads are listed and shown in Schedule A.
- C. Agree on the extent of the LTBMU's jurisdiction and the responsibility for inspection and coordination. The arterial road system consists of roads that join spurs and that connects to other roads. The arterial roads are the jurisdiction of the Forest Service. The arterial road system is generally maintained to a higher standard and receives more traffic than the local system and has more requirements for maintenance and inspection.
- D. Provide for a formal meeting at the beginning of each spring/summer season (before June 1st) and ongoing informal consultation as needed on a regular basis to discuss and agree on the specific opening Scope of Work with respect to the road system.

- E. Provide for regular and adequate maintenance of the road system, including the assignment of maintenance responsibilities.
 - F. Provide for defining Scope of Work beyond yearly opening and maintenance when improvements or changes to the road system have been identified.
2. Identification of Roads. The road system which meet the criteria set forth in item 1b is agreed upon and is marked "Schedule A" and attached as part of this agreement. Schedule A may be modified from time to time by agreement between the cooperator and Forest Service, by adding or removing roads or road segments, or by altering the description of a road or road segments, to give it proper identity. Each such modification shall be indicated by a revised Schedule A bearing the signatures of the parties or their authorized representatives and the effective date of the revision.
3. Maintenance Plans. At the annual meeting provided for in item 5, plans for maintaining the road system listed in Schedule A shall be agreed upon. In addition, such "plans" shall include assignment of responsibility for maintenance or particular elements of maintenance (such as tree clearing, tread repair, drainage cleaning, etc) to the cooperator or US Forest Service for the road system listed in Schedule A. To the extent practical, and subject to availability of funds, responsibility for maintenance shall be agreed upon between both parties.

Maintenance shall include preserving and keeping the road system, including structures and related facilities as nearly as possible in the conditions established by the Road Management Objectives and Forest Service standards to provide satisfactory and safe service recognizing the unique site conditions and other constraints

Project agreements may change the roads maintenance schedule while the project is implemented and it will revert back to the regular schedule when the project is done.

Road Standards

Local standards are developed by a combination of Forest Service manual direction (FSM 7700), Road Management Objectives, and local knowledge of the road and site conditions (traffic type, traffic volume, soil type, slopes, precipitation, etc.). The following general standards are useful as guidelines when planning for new road establishment or rerouting of existing routes requiring high maintenance or that have unacceptable impacts to the surrounding forest ecology such as erosion and sedimentation that can be demonstrated to adversely affect water quality:

- Typical road grades of 7%
- Drainage spacing of 150'
- Aggregate or other surfacing for road sections exceeding 10%
- Maximum grades of 15% for 300'
- Minimize number of stream crossings
- Avoid alignments that parallel drainages within 300' of drainages

Annual Maintenance

Roads require annual maintenance each year to protect both the road and the ecosystem. Annual maintenance activities include, berm removal, drainage maintenance, rolling dip maintenance, culvert cleaning, surface armoring, ditch cleaning, sign repair, dust control, etc (see Schedule B). Annual maintenance is required to be reported in the Forest Service Infra database each year before September 30 by the Forest Service. Heavenly will submit a list of roads and the maintenance activities performed on them that occurred by Sept 1 each year. Priorities for road maintenance will be established in an annual meeting between the Forest Service and HMR. Annual maintenance is covered under this Road Maintenance Agreement between the Forest Service and HMR.

New Construction and Reconstruction

A project level agreement is required for new construction, re-route or reconstruction of road segments.

Triggers and Mitigation - The following triggers are identified which may require corrective actions to prevent or mitigate impacts:

- Sedimentation of surface waters exceeding forest thresholds.
- Observation of chronic erosional sources generated by road storm water runoff impacting forest ecosystem health.
- Existing roads not meeting standards that are identified as chronic erosion features.
- Roads that do not meet access needs for the resort.
- Roads located in areas of sensitive habitat that are identified as negatively impacting biological resources.
- Changes to existing road use.

Actions:

- Additional monitoring to assess impacts.
- Development of proposals to address negative impacts and approval through annual meeting process and project or maintenance agreements.
- Road widening and additional pullouts to meet road service level needs.
- Installation of route marker identification at road intersections.
- Installation of informational or regulatory signage (i.e. speed limit for dust control, 4 wheel drive for surface protection, etc.) for resort personnel or public.
- Temporary or seasonal closures of roads.
- Identification of changes to maintenance frequency or actions to address impacts.
- Additional drainage structures.
- Increased maintenance frequency.
- Upsizing stream crossings (culverts or bridges).
- Other road Best Management Practices (National Best Management Practices for Water Quality Management on National Forest System Lands, USFS National BMP Handbook, 2012) .

- Upgrade of road maintenance level to meet changing service needs and/or to protect forest resources.
- Identification of reconstruction including reroutes to protect resources and reduce long term maintenance costs.

4. Project Agreements. When the Scope of Work for improvement or construction of the road system exceeds the annual "routine maintenance" of road opening, road maintenance tasks listed in Schedule B, and is to be financed in whole or in part from funds or resources provided by the party not having jurisdiction or responsibility, the parties shall enter into a project agreement providing for performing the improvement work and its financing. Project agreements shall be supplemental to this general agreement and subject to the provisions, and conditions herein contained.

- a. A project agreement shall be entered into prior to beginning of improvement or construction work for which a project agreement is required.
- b. The project agreement shall include the following elements:
 - (1) Identification of the road segment to be improved or constructed.
 - (2) Plans and specifications for the project or provision for their development and subsequent agreement thereon.
 - (3) Schedule of construction or improvement work and designation of the party or parties to perform the work.
 - (4) Estimates of cost of improvement or construction.
 - (5) Agreement as to how cost of work is to be borne including arrangements to share in the work or to deposit funds with the performing party for a share of the costs.

- c. If funds are provided by the cooperator on an advance basis for work to be performed by the Forest Service, they shall be deposited in the Treasury of the United States to the credit of cooperative work, Forest Service. Any unused balance of cooperative funds for the purposes outlined in the project agreement shall be returned to the cooperator after completion of the work performed or upon agreement with the the Forest Service. If the cooperative funds are made available on a reimbursement basis as the work progresses or upon its completion, the Forest Service shall submit to the cooperator periodic billings, but not more often than monthly, or a final billing as the case may be. The amount of cooperative funds as set forth in the project agreement shall be the maximum commitment of the cooperator to the project unless changed by a modification of the project agreement.

- d. If funds are provided by the Forest Service for work to be performed by the cooperator the arrangements shall be set forth in the project agreement. Payments to the cooperator shall be made as provided for in the project agreement. If it appears that the project cost may exceed the estimate and additional funds may be needed, no obligation shall arise against the Federal government with respect to the increased cost except by modification of the project agreement prior to incurring any commitment.

5. Annual Meeting and Continuing Consultation. The cooperator and Forest Service shall meet at least once each year following the close of Winter operations to review matters covered by this agreement and to identify and agree on actions to implement this agreement including, but not limited to, (1) approval of changes in the listing of roads on schedule A; (2) finalization of the annual road opening Scope of Work and maintenance plan; (3) approval of project agreements for construction or reconstruction; and (4) approval of transfer of jurisdiction of particular roads by easement conveyance. It is also the intent of the parties to arrange for continuing consultation between their representatives with the objective of reaching prompt agreement by the parties on all matters of mutual concern which are covered by this agreement. The Forest Supervisor of the Lake Tahoe Basin Management Unit for the Forest Service, and the designated agent for the cooperator shall be responsible for making the arrangements for formal meetings and continuing consultation.

6. Modification and Termination

- a. This agreement may be modified by mutual consent.
- b. This agreement may be terminated by either party upon at least 60 days prior written notice, except that such termination shall in no way affect or change any commitment made authorizing the use of roads or rights-of-way for purposes for which Federal funds were expended, or any operation in progress at time of notice, and provided that such termination shall in no way affect the agreement of the parties hereto with respect to any obligations incurred under the agreement until a full settlement has been made.

7. Miscellaneous

- a. It is understood that any default by a permittee or other authorized road user creates no liability on the part of the Forest Service.
- b. Nothing herein contained shall be construed to obligate the Forest Service or the cooperator beyond the extent of available funds allocated or programed for this work, or contrary to applicable laws, rules, and regulations.


- c. No Member of, or Delegate to, the Congress, or Resident Commissioner, shall be admitted to any share or part of this agreement or to any benefits that may arise therefrom, unless it is made with a corporation for its general benefit.
- d. Where applicable, any contract, agreement, or understanding entered into pursuant to this agreement providing for work to be performed shall include the requirements of Federal laws, Executive orders, and Regulations.

This agreement shall be effective as of the date herein written and shall supersede all prior existing agreements, if any, for the same roads.

Heavenly Valley Limited Partnership, a
Nevada limited partnership By
VR Heavenly I, Inc.,
Its General Partner

USDA FOREST SERVICE

PETER SONNTAG
VICE PRESIDENT and COO



JEFF MARSOLAIS
FOREST SUPERVISOR

Schedule A – Road Inventory

Roads at Heavenly

Route Number	Length - miles	Length - feet
12N40	5.32	28109.11
12N40.1	0.05	267.41
12N40.2A	0.05	243.62
12N40.2B	0.38	1999.53
12N40.3	0.06	301.37
12N40.3A	0.03	150.11
12N40.4	0.06	320.55
12N40.5	0.33	1747.98
12N40A	0.58	3062.30
12N40B	0.10	518.42
12N40C	0.45	2383.42
12N40D	0.46	2420.72
12N40E	0.18	943.43
12N40F	0.17	878.09
12N41	0.52	2769.53
12N41.1	0.79	4173.38
12N41A	0.13	691.72
12N41B	0.17	897.80
13N52	4.97	26243.68
13N52.10	0.09	459.27
13N52.11	0.08	418.58
13N52.2	0.09	465.93
13N52.6	0.50	2627.61
13N52.7	0.06	306.89
13N52.8	0.21	1128.64
13N52.8A	0.04	188.26
13N52.8B	0.06	294.39
13N52.9	0.33	1717.52
13N52A	0.06	324.14
13N52B	0.35	1842.44
13N52D	0.13	676.45
13N52F	0.26	1389.53
13N52H	0.62	3256.20
13N52I	0.14	765.57
13N53	2.12	11197.57
13N53.2	0.06	298.78

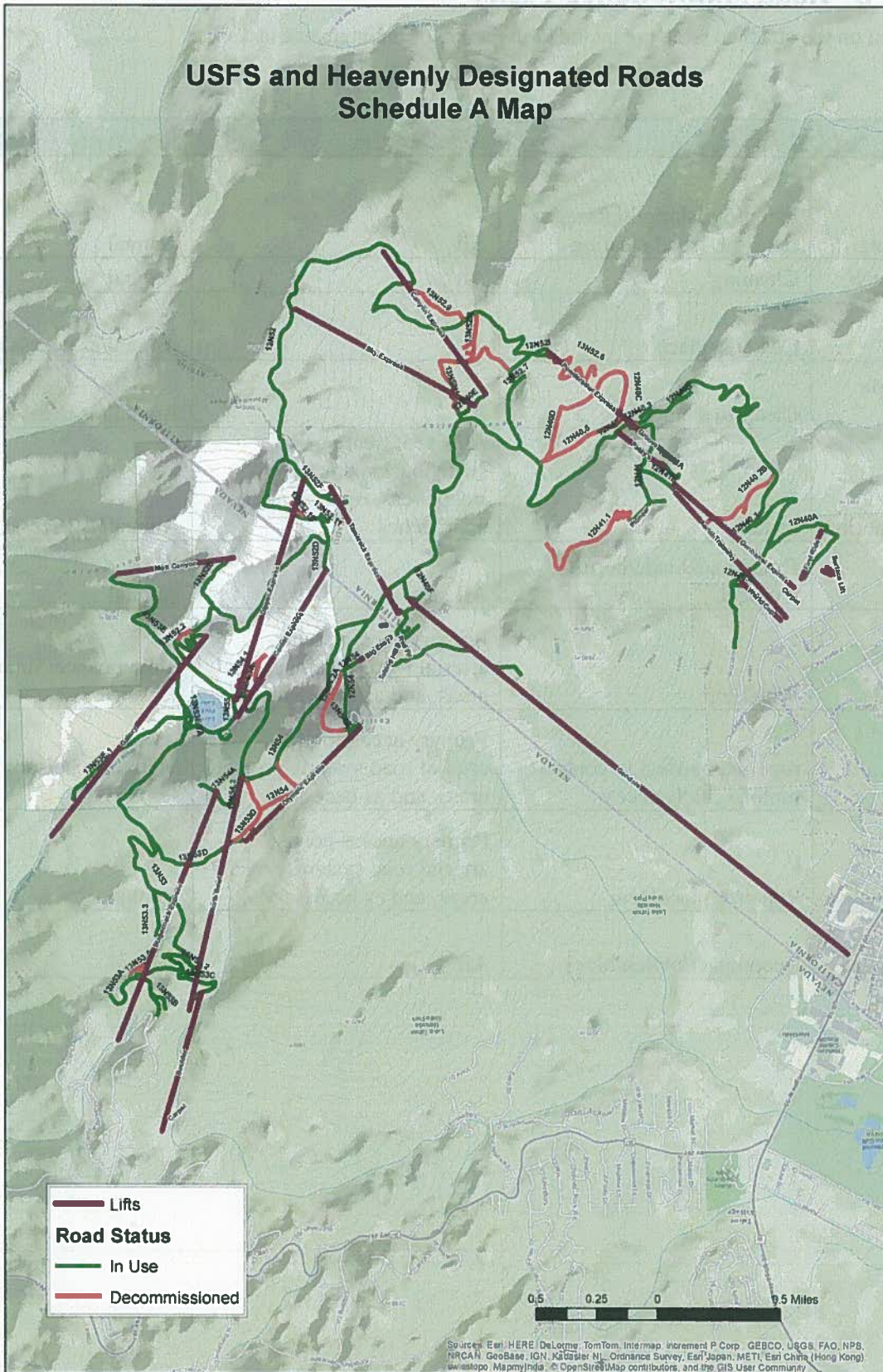
13N53.2A	0.07	351.09
13N53.3	0.20	1032.82
13N53.5	0.15	805.93
13N53A	0.22	1152.87
13N53B	0.10	552.30
13N53C	0.31	1647.14
13N53D	0.71	3766.66
13N53D.1	0.06	331.46
13N53E	0.93	4897.03
13N53E.1	0.61	3227.51
13N53E.1A	0.10	531.17
13N54	1.86	9827.12
13N54.1	0.36	1889.03
13N54.1A	0.20	1033.38
13N54.1A1	0.04	230.67
13N54.2	0.36	1887.78
13N54.2A	0.17	889.60
13N54.3	0.10	502.76
13N54A	0.31	1627.85
13N55	0.32	1698.02
13N55.1	0.09	460.02

Roads of Heavenly

John A. - Road Inventory

Route Number	Length - miles	Length - feet
13N40	0.00	2810.11
13N40.1	0.08	287.41
13N40.2A	0.05	247.82
13N40.3B	0.28	1299.83
13N40.5	0.00	201.37
13N40.5A	0.00	120.11
13N40.6	0.06	320.22
13N40.7	0.22	1247.88
13N40.8	0.28	3082.40
13N40.9	0.00	1718.42
13N41	0.45	2403.42
13N41.1	0.00	202.72
13N41.2	0.10	947.43
13N41.3	0.10	1248.09
13N41.4	0.22	3789.23
13N41.5	0.00	4732.88
13N41.6	0.00	897.12
13N41.7	0.10	521.80
13N41.8	0.00	1623.88
13N41.9	0.00	421.17
13N42	0.00	418.88
13N42.1	0.00	462.98
13N42.2	0.20	247.42
13N42.3	0.00	304.80
13N42.4	0.10	1170.40
13N42.5A	0.04	189.78
13N42.6B	0.00	284.30
13N42.7	0.00	1717.21
13N42.8	0.00	124.14
13N42.9	0.00	1642.44
13N43	0.10	874.42
13N43.1	0.00	1284.23
13N43.2	0.00	222.50
13N43.3	0.10	782.27
13N43.4	0.10	1287.27
13N43.5	0.00	138.78

USFS and Heavenly Designated Roads Schedule A Map



Schedule B - Road Maintenance Tasks

Roads shown on the attached table are included in the list of maintenance tasks.

Item	Task	Road System	Frequency
Road Opening	logout/brushing/limbing/rock removal - road clearing	All	Annual
Drainage Ditch	Cleaning	All	Annual
Culverts	Clean/Replace	All	Annual/as necessary
Rolling Grade Dips	Clean/Reshape/New	All	Annual/as necessary
Surface Armoring	Install	All - spot treat on switchbacks, drainages, steep areas, riparian area approaches	Annual/as necessary
Surface Maintenance	Grade/backblade/berm removal	All	Annual
Dust Control	Watering	Primary access points, arterial road system, project areas, and as necessary	Maintenance/Summer season
Vehicular controls	ropeline/barriers to control motor vehicle access	Primary access points, arterial road system, project areas, and as necessary	Maintenance/summer season
Sign Maintenance	Repair/replace/new	Primary access points, arterial road system, project areas, and as necessary	Annual
Road Narrowing	Decompact/mulch/block	All	Annual

Schedule C – Yearly Maintenance Plan/Schedule

ROAD MAINTENANCE

1. Initial Spring Maintenance

The Spring maintenance and repair program begins as soon as road segments are accessible during the melting of snow pack.

- Drainage maintenance
- Culvert and rock line ditch clean out
- Road surface maintenance
- Rolling dip maintenance

Equipment: Backhoe, loader, grader, water truck, hand work

2. Annual Maintenance

As part of Heavenly's annual maintenance plan select road segments are armoured with Road Base. These are maintained each year as part of ongoing maintenance and additional road sections are added.

- Increases the total mileage of armour road every year.
- Those sections close to water courses and steep climbs are first priority for armoring.

Equipment: Loader, Grader, Water Truck

3. Dust Control

Dust control is done in three phases (see map)

- Daily – Am and Pm watering on main access roads and hiking trails.
- Weekly or as needed – secondary roads are on an “as needed” basis depending on traffic associated with projects or additional road maintenance on specific sections.
- Projects – any special projects (construction) that increases construction traffic are maintained daily during the project.

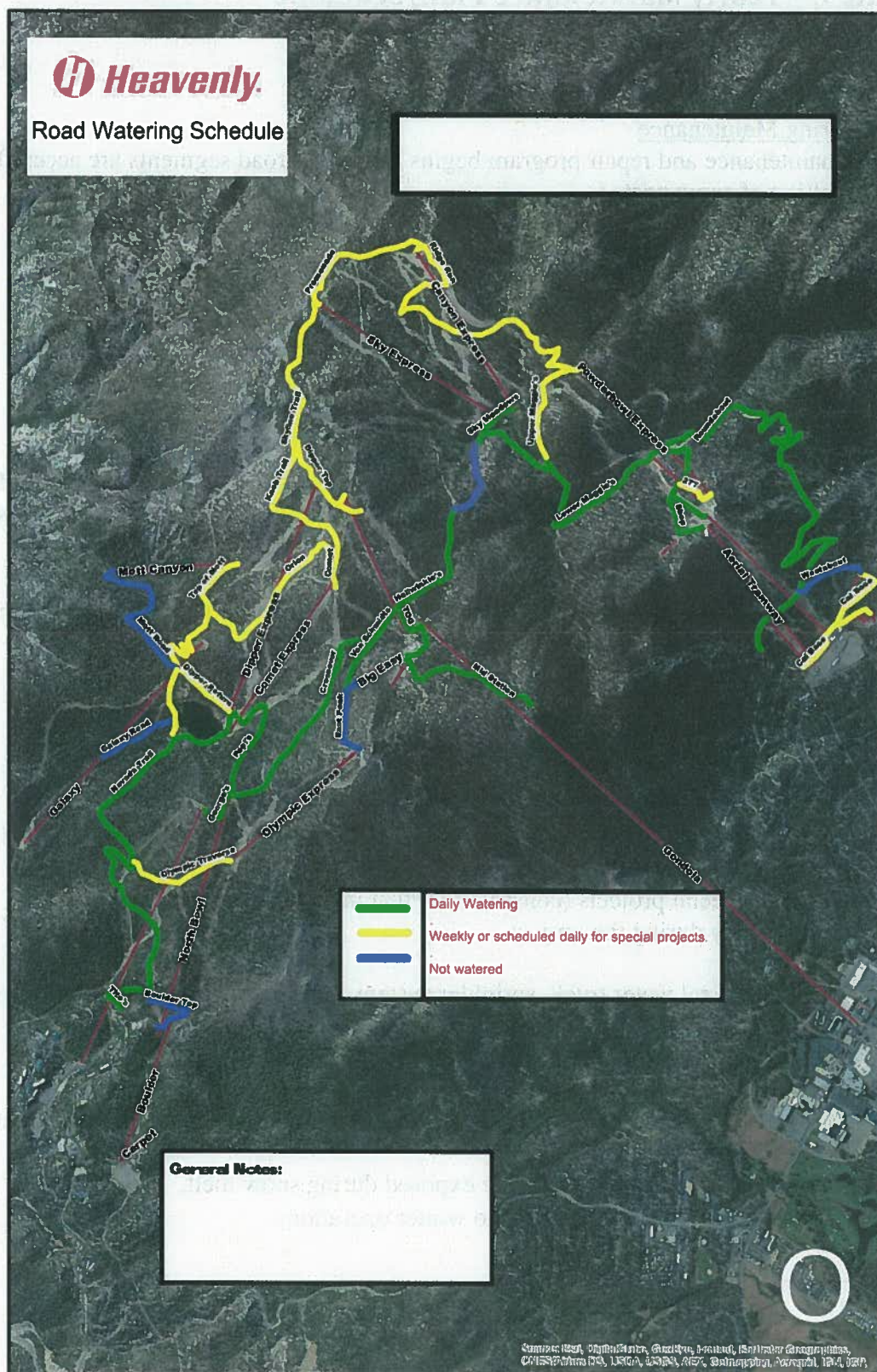
Equipment: 2000 gal water truck, sprinkler system, and fire hose for specific job sights. All water comes from the established snow making system.

4. Road Corridor Identification

Portions of the road system are identified by posts and rope corridors to identify travel routes, pull outs, and parking areas.

- Staked and roped in spring as roads are exposed during snow melt.
- Removed at the end of summer, prior to winter operations.

Map of Dust Control Schedule



HEAVENLY 2017 ROAD MAINTENANCE TRACKING

Table 1-1 2017 Heavenly Road Maintenance Tracking

Forest Service Road #	Distance (Miles)	Description of Work
12N40	0.4	Improved/ re-built waterbars and sediment ponds on Maggies below Cal Dam
13N52i	1.4	Road improved from top of Powderbowl Express to top of Canyon Express. Added road base at various locations and installed a CMP and DI under the road at High Roller for improved runoff. Re-established waterbars in the area.
12N40	0.3	Covered approx. 17,000sf of Hellwinkel's steeps with second treatment of FSB 1000 soil emulsion/binder, in order to harden the road surface.
12N41	0.1	Regraded upper vehicle shop access road/yard with grader.
13N52A	0.4	Regraded, added road base and sprayed FSB 1000 road binder to Orion's summer road
12N40.1	2.4	Regraded and added road base to various locations on Roundabout.
13N53D	0.1	Added road base to the first section of the road to the Base of Olympic Express.
13N53B	1.1	Improved water bars and added road base to various sections of NV Trail between the NV gate and East Peak pump house.
13N54	0.9	Misc. maintenance on Pepi's and Crossover roads. Added road base in multiple locations, filled in rills on crossover and NV fuel farm area. Improved runoff.

Table 2-1 2017 Heavenly Road Maintenance Level Tracking

Reporting Category	Maintenance Level (1-5) in miles*				
	ML-1	ML-2	ML-3	ML-4	ML-5
Roads Improved	0	0	2.8	0	0
Roads Maintained	0	0	4.3	0	0
Roads Decommissioned	0	0	0	0	0
Totals	0	0	7.1	0	0

* Notes:

Roads Improved: Unless rerouted, changed the surface type, or opened a closed road.

Roads maintained: Drainage improvements, blading, ditch cleaning, culvert replacement, etc.

Roads decommissioned: Any road, managed or not, decommissioned.

ML-1 are roads closed or in long term storage until they are upgraded to ML-2 roads.



USFS and Heavenly
Designated Roads

Legend

Heavenly_Roads_20150106

Roads

Lifts

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp.,
GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL,

Heavenly Mountain Resort Water
Year 2017

APPENDIX

F

FACILITIES WATERSHED
AWARENESS TRAINING



June 13, 2017

Mr. Jeff Brooks
Engineering Geologist
State of California Regional Water Control Board Lahontan Region
2501 Lake Tahoe Blvd
South Lake Tahoe, CA 96150

Dear Mr. Brooks:

HEAVENLY SKI RESORT UPDATED WASTE DISCHARGE REQUIREMENTS
BOARD ORDER NO. R6T-2015-0021, WDID NO. 6A090033000-VERIFICATION OF
FACILITIES AND WATERSHED AWARENESS TRAINING

This letter verifies the 2017 Facilities and Watershed Awareness training that was held at Heavenly Mountain Resort on June 13, 2017. A copy of the agenda and attendance list is attached.

Thank you for attending the meeting and speaking on behalf of your organization. Please contact me at 775.586.2313 if you have any further questions or comments.

Sincerely,

A handwritten signature in black ink that reads 'Andrew Strain'.

Andrew Strain
Vice President of Planning and Governmental Affairs

Enclosures

cc: Stephanie Heller, USDA Forest Service Lake Tahoe Basin Management Unit



6/13/17-BMP's/Facilities and Watershed Training

	FIRST NAME - PLEASE PRINT CLEARLY	LAST NAME - PLEASE PRINT CLEARLY	Employee ID/Company	Contact- Cell or E-mail
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15	Frank	Dyck	203832	
16	Ken	McAuliffe	130257	
17	Steve	McBride	128573	530-314-3787
18	MARK	Wetzel	246931	
19	Sherry	Lanz	130269	
20	KURT	HODGSON	741939	
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23	John	Tarmey	157041	Tarmeyjp@gmail.com
24	Traci	Vineyard		951-306-9913
25	Rory	Fitzgerald	226497	



6/13/17-BMP's/Facilities and Watershed Training

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7	Jack	Tippin	206494	248-770-1338
8	Phil	Domail	175256	
9	TRAVIS	BEISKY	214641	715 413 1125
10	Mike	Burt	237455	775 2nd 8383
11	Ryan	Albertson	161603	
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16	HEIDI MARINEAU	MARINEAU	212519	hmarineau@vailresorts.com
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18	Sean	Lealic	155506	715 111 136 mail.com
19	Dave	DoBo	128632	D2dobo@vailresorts
20	Brett	Zingaro	198559	775-586-2330
21	Greg	Grind		
22	Kevin	Alam	192245	530 721 7233
23	Dustin	Virex	146342	951-537-9212
24	BEN	GRAFTON	249071	
25	Paul	Ersmann	214619	715-701-2722



6/13/17-BMP's/Facilities and Watershed Training

	FIRST NAME - PLEASE PRINT CLEARLY	LAST NAME - PLEASE PRINT CLEARLY	Employee ID/Company	Contact- Cell or E-mail
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4	Bryan	Hickman	142876	
5	David	Hager	200421	
6	Charley	Hunter	128609	
7	KEVIN	MASULLO		KEVIN@KENERGYELECTRIC.COM
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6/13/17-BMP's/Facilities and Watershed Training

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6	RJ	W. F. Chow	208281	
7	Matt	Himmel	148726	
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13	Jeri	SESKOLA	211831	
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19				
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6/13/17-BMP's/Facilities and Watershed Training

	FIRST NAME - PLEASE PRINT CLEARLY	LAST NAME - PLEASE PRINT CLEARLY	Employee ID/Company	Contact- Cell or E-mail
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2017 BMP's, Facilities & Watershed Awareness Training

June 13th, 2017 7am-8am



Purpose/Agenda

- Review Heavenly's Watershed Protection Commitment, BMP's & Your Role
- Review the Summer Rules of the Road
- Meet Our Agency Partners
- Provide Contractor Awareness
- What to do when weather is expected



Our Commitment

- USDA Forest Service: Our partner in outdoor recreation & resource management
- Tahoe Regional Planning Agency: The Master Plan, Mitigation & Monitoring, Project Permit Conditions
- State of California Regional Water Quality Control Board, Lahontan Region: Waste Discharge Requirements (WDRs)
- Ourselves: – Do Right and Do Good



Agency Partners

- TRPA-Taylor Currier (BMP's) and Julie Roll (Associate Planner)
- Lahontan-Jeff Brooks (Engineering Geologist)
- Consultant- Kristen Roaldson (BMP's 3rd Party Inspector, w/ RCI)
- LTBMU – Stephanie Heller, Hydrologist US Forest Service



Major Erosion Control & BMP Project Locations

•Sky Meadows Erosion Hotspots

- A High Priority Hot Spot - Hellwinkels, and a number of Medium Priority Hot Spots will need attention after snow melts. Finish restoring Incised area at top of Blue Angel Chute. Create better infiltration on Middle Maggie's above the switchback (Left Side below Summer road)

•Adventure Peak/Summer Activities

- Signage, Shelters/Shade, Landscaping in front of Tamarack Lodge, and finish 3 approved hiking trails.
- Water Bars/Stabilization & Drainage Improvements
- Maintain effectiveness of ski run BMP's, including maintaining water bars and re-vegetation/cover. Fix Hand Grenade Chute (Culvert, Rock Ditch, Restore)



Restoration improvements

Pioneer/Poma prior to treatment

Pioneer/Poma after treatment





Finished Restoration

Nearing completion of this
nearly $\frac{3}{4}$ acre site 2013

Finished Project Grasses
growing in July 2015





Sky Basin Restoration Sites-

In 2015 prior to treatment

In late 2015 after treatment





More BMP and Maintenance Projects:

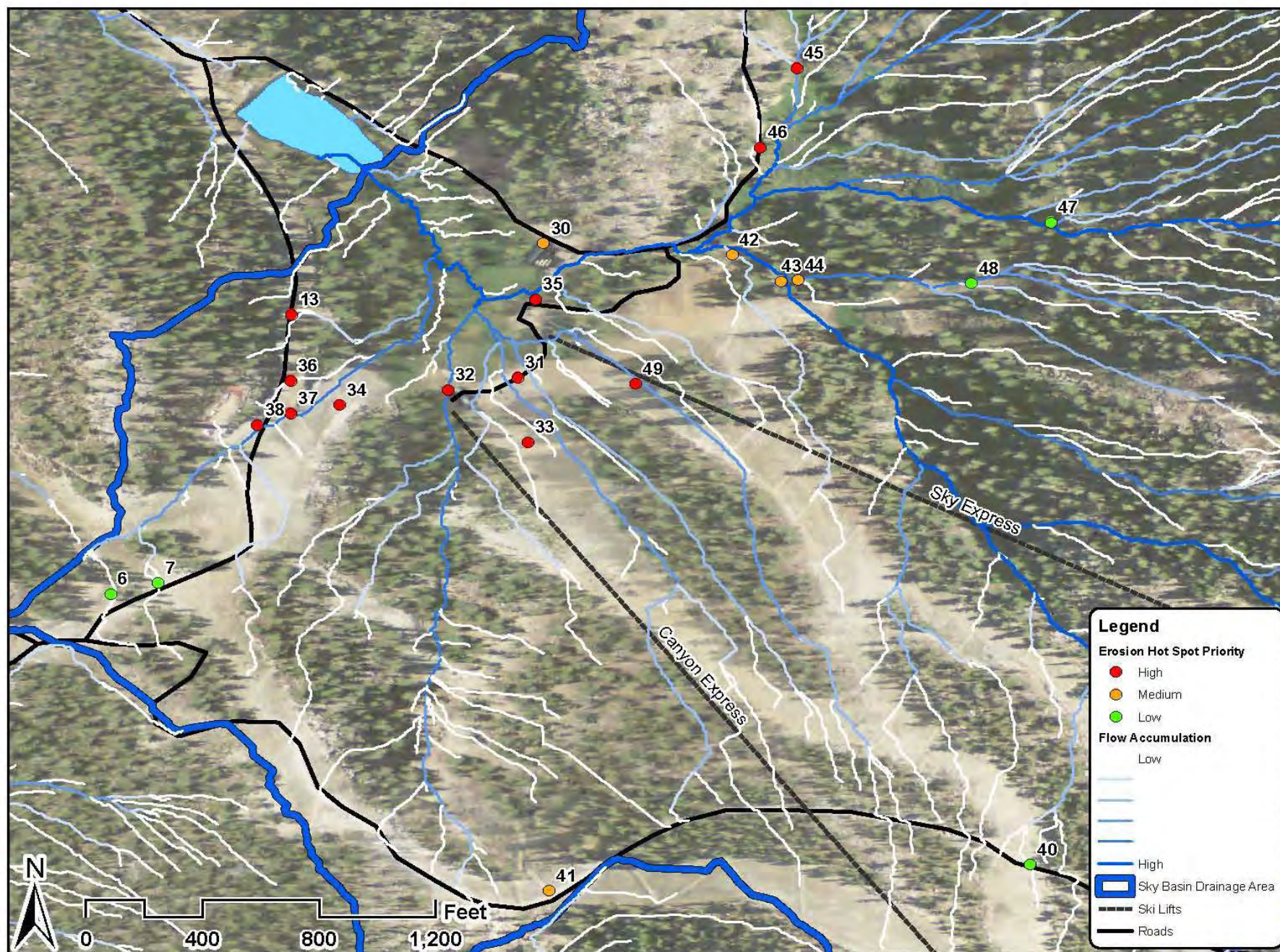
- Galaxy Road Improvements: Re-Route and improve existing summer road to the bottom of Lift terminal. Surface Treatment, and possible Drainage improvement's.
- Mechanically remove sediment build-up at bottom of Dipper/Comet chair Rock Lined ditches.



Maggie's Pits Vacuumed out in October 2014

After picture highlights the improvement in sediment capacity





Map Prepared by Kevin Drake, IERS, Inc. July 2014. Data Sources: Vail Corp, RCI, IERS, USGS



Wattles

Straw wattle with silt fence

Pine Needle Wattle





Implemented and effective?





Implemented and effective?





- Some Recent BMP's Pics from On Mountain





Top of Tram Deck Project BMP's:





CML Storm Filters

134 filters replaced in Fall
2016

Full cartridge replacement of
all 456 filter since installation
in 2008, completed in 2014

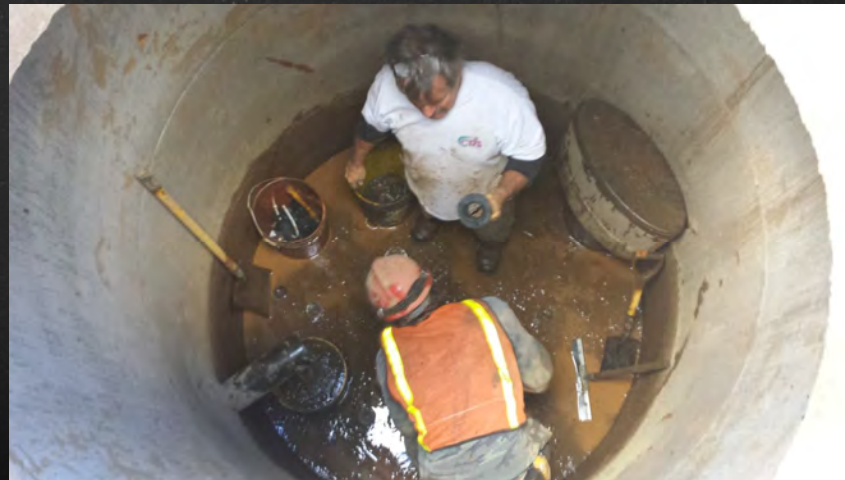




CML Storm Filters continued

~10+ cubic yards of spend filter media and sediment removed in October 2016

Sacrificial filters before being replaced with 14 new phosphorus filter media, which is showing some positive improvements in WQ, year 4 of use.





Tahoe Draba

Interpretive Signage at Top of
Tamarack Express



Photo of a plant from Heavenly





Protect Tahoe Draba Populations

Full grown plants

Draba like to grow in disturbed areas, under drip lines of rocks





Invasive Weeds are known to exist on top of Heavenly Mountain. Siting and treatments by the FS have occurred the last few summers. Top of Tamarack Lift

Tall Whitetop Identification: Tall whitetop (also called perennial pepperweed) has many stems. It reproduces from rhizomes (root-like under-ground stems) and from seed. In Truckee, this species is common in many of the round-abouts, as well as, low, wet areas.



Tall Whitetop showing root connection



Tall Whitetop in flower



Bull Thistle



Bull Thistle flower

Canada Thistle



Canada Thistle flowers are smaller than most other thistle flowers



Pine Needle Wattle Initiative

Manufacturing by trails crew began in 2013! Now in Year 5!

On mountain use for erosion control, in 2016 over 600 Ft built





Pine Needle Wattles

Pine Needle Wattles installed near Heavenly Valley Creek Fall 2013, replaced annually.

Pine needle wattles are successful after large precipitation events





Important takeaways for you to ponder, with regard to BMP's:

- Is it working? (rather than “are we in trouble?”)
- Source control – we’re trying to stop the “bleeding” at the source rather than chasing it downstream.
- Water flow – its all connected, “Think like a water droplet.” Look uphill of problem areas to determine if there is a root cause of the erosion issue...
- Prioritization – address the highest risk spot first (e/g/ nearest to creek, most erosive, problem spots, etc)



Keep Your Eyes Open During & Immediately After Rain and Thunderstorms (Listen to specific instructions from Dispatch on Radio, that might impacts operations, work sites, etc.)
These Are the “Events” That Can Cause Environmental Damage
If You See Damage Occurring Call Dispatch on the Radio
Immediately
This includes the Base Areas, particularly Cal Base.





Summer Rules of the Road

- Drive on the Designated Roads only
- Park only within Roped Designated Parking Areas
- If you feel that you can't do your job because of this, tell your supervisor FIRST before driving into any closed areas
- If you see someone not complying, tell them about it - IT IS UP TO US
- Just because you drive an ATV/Rhino does not mean you can drive, onto a ski slope or onto a decommissioned road or Ski Trail.
- When accessing the mountain all vehicles MUST be in 4WD to prevent erosion on the roads, and stay at or below 10 mph. Be especially aware of Fugitive Dust



More Summer Rules of the Road

- Stay out of erosion control projects & stream zone restoration sites.
- Report anything that looks like an obvious erosion, Water Quality issue, or sediment problem to your supervisor.
- All outside contractors and vendors must have a Mountain Access Permit issued by the Central Dispatch Dept., except utilities.
- Prior to accessing the mountain roads anyone from outside of the Tahoe Basin will need to spray the bottom of their vehicle to prevent the spread of invasive weeds.
- If you don't see a mountain access permit, stop them & ask to see their permit. Even if you see Utility trucks Like SW Gas or Liberty, ask them if they need any guidance or direction.



Summer Rules of the Road

- 
- A photograph of a white pickup truck parked on a dirt road in a forest. The road is surrounded by tall evergreen trees and some snow patches. The truck is parked on the left side of the road, and a person is visible standing near the back of the truck.
- **Park in Designated Areas only**
 - **Never Park on Vegetation, don't Idle!**
 - **Never pull down ropes to access unless you have permission from Mt. Ops. to do so.**
 - **Keep speeds to a minimum to reduce dust.**



Water Quality Program

- Best Practice initiative that is company wide
- Implemented now at all Major Vail Resorts. Ongoing here for many years
- CA Resorts do a great job of managing storm water and implementing BMP's
- CO is using CA as a template to initiate their ongoing program
- Rain Shut Down Process, Be mindful of the weather





Rain Shut Down Process Information:

- Weather Forecast and Construction Activity Guidelines
- The weather forecast should be checked daily on the NOAA forecast:
- www.noaa.gov (South Lake Tahoe, CA)
- **Days with 10% - 49% Chance of Rain or a Chance of Thunderstorms – Tier 1, Be prepared to Shut-Down active construction sites w/in 1 Hour**
- **Days with 50% or More Chance of Rain – Tier 2, Be prepared to Shut-Down Site immediately.**



Construction Rain Shut Down Process

- Know the Weather Forecast
- Listen closely to the radio
- Grading Operations and Exposed Soils—Pay attention to your work sites
- Stockpile BMP's supplies-KGID, Boulder
- Vehicle Access-open and closed roads
- BMP Inspections – Pre & Post Storm—Take Pictures!



Resort Excavation Authorization

Any projects that disturb the ground in any form and utilize equipment for the process are required to submit this form to James Grant for approval prior to construction.

Project Name:	Date:
Project Manager:	Project Location:
Approx. Area of Disturbance (sq. ft.):	Approx. Quantity of Excavation (cu. ft.):
Project Start and Completion Date:	Utilities Located (Y/N):
Sensitive Resources onsite (Stream, Wetlands):	Tree Removal (Y/N):

Construction Plan: Schedule, Staging, Site Access, Construction Plan, BMPs, Restoration/Revegetation

Required Steps:

- Mark out the excavation area with white paint or flagging.
- Inform the following departments to inspect and approve buried infrastructure and clearance for proximity to property:

• Lift Maintenance/Electrical	Lift Maintenance Director	_____
• Snowmaking	Snowmaking Manager	_____
• Information Technology	IT Manager	_____
• Building Maintenance	Building Maint Manager	_____
• USA DIGS to mark the area to excavate 1-800-227-2600		_____
• Snow Surfaces/Trails/BMP's	Sr. Manager of Snow Surfaces	_____
• Environmental	Environmental Manager	_____
- Proceed only when all signoffs have been completed. Electronic approval is acceptable and preferred. Attach electronic signatures/approval to completed form. Return completed form to Meagan Ballew.
- If the scope or area of excavation enlarges or changes, repeat steps above.



Third Party Excavations :

- Heavenly staff member must oversee the excavation.
- Must complete all steps above.
- Third party to communicate daily on their excavation plan by e-mail.

Approval signature below must be obtained before starting work:

James Grant: _____ Date: _____

Construction Plan Revision Approval Date (as applicable): _____





USFS Wildlife Trash Management and Education Program:

- As a condition of the approved EIS for the Epic Discovery Program a wildlife trash management and education plan will be implemented annually and reviewed by Heavenly and the US Forest Service LTBMU. The Heavenly Mountain Resort Master Redevelopment Plan (2015) includes a number of Operations and Maintenance Measures as part of the Mitigation and Monitoring Plan. 7.5-21 BIO 8: Wildlife Trash Management and Education Program.
- A number of the activities at Heavenly Mountain Resort are located at the Top of The Gondola region and are known as Adventure Peak. As part of the Epic Discovery Project implementation the resort shall create and implement a trash management and education program. The goal of this program is for timely removal of refuse from deposit points, education of our guests and staff about proper waste management, and to keep any interactions between humans and wildlife to a minimum.
- Deposit points where animal proof receptacles are now implemented at a number of AP key areas



Heavenly Hot Work Permit

Required for any hot work outside of a designated weld shop.

Know the PAL code for the day.

Issued by James Grant, Bryan Hickman, & Curtis Kezich.

Must be posted on site.

VAIL RESORTS HEALTH & SAFETY HOT WORK PERMIT	
THIS PERMIT IS REQUIRED TO BE POSTED AND VISIBLE IN ANY UNDESIGNATED HOT WORK AREA BEING USED FOR WELDING AND CUTTING OPERATIONS	
LOCATION	<input type="text"/>
DATE OF ISSUE	<input type="text"/>
TIME OF ISSUE	<input type="text"/>
TYPE OF WORK	<input type="checkbox"/> Welding, Cutting, Grinding <input type="checkbox"/> Other Heat, Flame, Spark Producing Tool(s) <input type="checkbox"/> Other
GENERAL PRECAUTIONS	
Is site free of combustible and/or flammable materials? 35 foot clear zone - floor, walls, work materials, radiant/ conductive heat transfer?	yes <input type="checkbox"/> no <input type="checkbox"/> n/a <input type="checkbox"/>
Are surrounding combustible materials properly shielded/guarded? Flame-proof covers where needed? Non-combustible screens in shared spaces?	yes <input type="checkbox"/> no <input type="checkbox"/> n/a <input type="checkbox"/>
Is mechanical ventilation required? Space less than 10,000 cubic feet - Room with ceiling height less than 16' - Cross-ventilation obstructed	yes <input type="checkbox"/> no <input type="checkbox"/> n/a <input type="checkbox"/>
Could atmosphere be flammable/explosive? If "YES" atmosphere must be tested.	yes <input type="checkbox"/> no <input type="checkbox"/> n/a <input type="checkbox"/>
Fire-fighting equipment inspected and ready for use? Extinguishers on-site? Charged? Proper type?	yes <input type="checkbox"/> no <input type="checkbox"/> n/a <input type="checkbox"/>
Means of contacting fire department in an emergency?	yes <input type="checkbox"/> no <input type="checkbox"/> n/a <input type="checkbox"/>
Is proper PPE available and in use? Gloves, Leathers, Shields, Eye Protection, Respiratory protection, etc.	yes <input type="checkbox"/> no <input type="checkbox"/> n/a <input type="checkbox"/>
*If any shaded boxes are checked, action must be taken prior to beginning work	
FIRE WATCH A TRAINED FIRE WATCH MUST BE EMPLOYED IF OPERATIONS OCCUR WITHIN 35' OF COMBUSTIBLE MATERIAL FIRE WATCH REQUIREMENTS: Fire suppression equipment on site Current (annual) training with suppression equipment Current (annual) training in emergency procedures Remain on site for 1/2 hour after operations conclude	
Is a trained fire watch in position? yes <input type="checkbox"/> no <input type="checkbox"/> n/a <input type="checkbox"/>	
CONFINED SPACE ? yes <input type="checkbox"/> no <input type="checkbox"/> If "yes", this is a Permit-Required Confined Space Entry <u>Hot Work Permit must be displayed with</u> <u>Confined Space Entry Permit</u>	
Precautions for Hot Work in Permit-Required Confined Spaces Mandatory Forced-Air Ventilation <input type="checkbox"/> Continuous Air-Quality Monitoring <input type="checkbox"/> OR Historical Monitoring Data can be provided <input type="checkbox"/> (data must have been collected during similar Hot Work activities) Gas Cylinders outside of Space & secured <input type="checkbox"/> Cylinders OFF & hoses CLEARED during breaks <input type="checkbox"/>	
The area of operations has been examined and all appropriate precautions have been taken.	
Work authorized by: <input type="text"/>	
Signature: <input type="text"/>	
Date: <input type="text"/> Time: <input type="text"/>	
This permit is valid for a single shift up to a 12-hour duration	
Sep-10	



Absolutely NO SMOKING

- Due to EXTREME wild fire danger, smoking is prohibited anywhere on the mountain at any time.
- This includes NO Smoking at any time in any company or 3rd Party vehicles.



Wildland Fire Awareness





Questions, Comments?



Heavenly Mountain Resort Water
Year 2017

APPENDIX

G

ON MOUNTAIN MONITORING
(4TH QUARTER)

Heavenly Mountain Resort
Erosion Control and Facilities Maintenance Monitoring
Inspection Log, by:
Frank G. Papandrea

Quarter Fourth

Year 2017

Location*	Date Inspected	Inspector's Name	Notes/Observations/ Any Problems Identified	Corrective Measures Taken	Schedule for Completion of Corrective Measures
a	9-29-17	Frank P.	In September 2017 Hand Grenade Chute on middle Roundabout Road was fully restored, Rock Lined ditches were installed and a Hydroseeder from Northstar was tested. A Blind Covered Culvert was installed on the uphill side of RB with a 12 inch CMP Culvert under the road. Overall vegetated sites look stable after the historic wet winter of 2017 Heavenly runoff season peaked the third week of June 2017, and vegetation seemed late.	Sprinkler use has been greatly reduced on the mountain due to changed management practices, and water reduction efforts. Heavenly is only irrigating key erosion areas that have been restored and seeded. In 2017 a number of areas were irrigated including the Tamarack Lodge lawn, Sky Chute, Ridge Bowl and Hand Grenade Chute Reveg on Hand Grenade Chute is being established as of Oct. 2017.	Work completed in August & September 2017
b	7-11-17	Frank P.	All 12", 24", and 36" culverts inspected were clear and free of any obstructions.	Some new 12" CMP culverts installed below the Upper Shop road, and below Hand grenade Chute under the road.	

Location*	Date Inspected	Inspector's Name	Notes/Observations/ Any Problems Identified	Corrective Measures Taken	Schedule for Completion of Corrective Measures
c.	7-11-17	Frank P.	Designated roadways are being used by employee vehicles and 3 rd party vendors. BMP rope lines do help keep vehicles contained.	N/A	
d.	7-11-16	Frank P.	Rope closures are in place, as of mid-July. Irrigation equipment in use at TOG (Tamarack).	N/A	
e.	7-11-17/9-29-17	Frank P.	Energy dissipaters on culverts in good shape.	N/A	
f	7-11-17	Frank P.	Sediment Basins have adequate capacity in most areas.	N/A	
g.	8-11-17	Frank P.	Rock Lined channels are in good condition. Rock Lined Ditch reestablished and maintained on 277 Road.	N/A	
h	9-29-17	Frank P.	Rip Rap at various locations on the mountain in great shape. No failures to note at this time. Large native rocks and small angular rock installed at Hand Grenade Chute drainage features as part of the restoration.	N/A	

Location*	Date Inspected	Inspector's Name	Notes/Observations/ Any Problems Identified	Corrective Measures Taken	Schedule for Completion of Corrective Measures
i.	7-11-17	Frank P.	Water bars and sinkhole failures observed on Orion's Run on the NV side of the mountain. NV Middle Orion's Run Water bar work and Road improvements occurred in July 2017.	NV Middle Orion's Run Water bar work and Road improvements occurred in July 2017	July 2017
j.	7-11-17	Frank P	All Infrastructure lines on the mountain are performing properly. Sewer line camera utilized by Building Maintenance Department to observe sewer lines and culverts when needed.	N/A	
k.	7-11-17	Frank P.	Stockpiles of soils or road base materials observed have proper BMP's. Road base materials piles typically do not sit very long as they are applied to the roads system often and right away.	N/A	
l.	7-11-17	Frank P.	Infiltration trenches appear to be functioning properly.	N/A	

Location*	Date Inspected	Inspector's Name	Notes/Observations/ Any Problems Identified	Corrective Measures Taken	Schedule for Completion of Corrective Measures
m.	7-11-17	Frank P.	Rills and erosion after rain events do occur on and near our roads system.	The trails crew staff utilizes heavy equipment to fix problem areas after precipitation events.	
n.	6-28-16	Frank P.	Clean Harbors Environmental Services maintained all of the CA parking lot drop inlet features in the entire parking lot footprint in August and September 2017. The CA Base parking lot storm vaults smart filter maintenance and replacement schedule occurred with Pacific Storm Water BMP solutions in September, 2017. 107 total Contech Filters were replaced, and loose sediment was removed. The Sacrificial Filters, and 1 Large Filter Unit were replaced. Inlet Bays were serviced.	Scheduled 3 rd party to conduct routine maintenance at the Drop Inlets in CML and Boulder parking lots in August and the storm vaults filter replacements occurred in September 2017.	Fall 2017 maintenance completed with success thanks to our 3 rd party vendors.

- A. Re-vegetated Areas
- B. Culverts and Drainage Crossing (all culverts > 36" should be inspected annually at a minimum)
- C. Designated Roadways
- D. Closures and use controls on closed roadways
- E. Energy Dissipaters on culverts
- F. Sediment basins/irrigation ponds
- G. Rock-Lined Channels
- H. Mechanical stabilization measures (i.e. Riprap and gabions)
- I. Water Bars
- J. Water Supply, sewer, snowmaking, and irrigation water line and holding tanks
- K. Unprotected soil piles
- L. Infiltration trenches
- M. Gully/Rill erosion on slopes
- N. Other erosion control and storm water runoff facilities

Water Year 2017 4th Quarter (July, August, September) Erosion and Facility Inspection –By Frank P.

Hand Grenade/Roundabout before restoration treatment 7-07-17:



Hand Grenade/Roundabout on 8-11-17, site is stable, and some vegetation was growing (above right) as of Oct. 2017



Trail Crew restored the groove rock line ditch photo taken 8-11-17:



Trails crew after restoring the groove rock lined ditch



Middle Stagecoach, a NV run erosion before treatment after historic 16/17 winter:



Middle Stagecoach Run Erosion Treatment finished:



Lower Cal Trail 36" culvert & all other HVC culverts inspected 7-20-17/Culvert connection Sky Road



Orion's Road restoration: Road Base and Soil Binder applied in late July 2017. Multiple sinkholes, and water bars fully restored and repaired on Orion's ski run proper above and below Dipper Chair Tower 11



Hellwinkel's Road soil binder and maintained in early July & Oct. 2017. Signs were in place at top and bottom for 5 MPH, and 4WD Low Required. This has kept speeds down, and improved road condition



Sky Meadows above the road, near base of Canyon Express:



Sky Meadows above the road near the base of Canyon Express after wood chips applied:



Below the Upper Shop, a new culvert crossing under road and drainage/road improvements in late June 2017:



French Drain improvements and a blind vertical culvert inlet installed at California Lower Parking lot July 2017:



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Heavenly Mountain Resort
Mitigation and Monitoring Plan
Annual Report (October 2016 –
September 2017)

APPENDIX



2017 WATERSHED MAINTENANCE
RESTORATION PROGRAM (WMRP)
WORK LIST

**HEAVENLY MOUNTAIN RESORT
2017 ANNUAL SUMMER WORK LIST
Completion Status as of 11/29/2017**

Project #	Source*	Location	Treatment	Completion Status as of 11/29/2017
<u>Watershed: CA-1 Heavenly Valley Creek</u>				
1	P	Adventure Peak/Epic Discovery	Landscaping around the Tamarack Lodge Meadow, add new shade umbrellas, add Kids tubing lane, finish 3 approved hiking trails not completed in 2016.	Completed
2	P	Top of Epic Mix Race Course	Complete Waterfall lift removal. Regrade top station area. Fill and stabilize as shown on approved project plans (2015 project).	Moved to Next Year
3	P	Magic Carpet Ski School Lift	Adventure Peak Magic Carpet near Red Fir Tow Lift to be installed with drip line infiltration trenches. Remove Red Fir towers and restore.	Moved to Next Year
4	EH-CA	Convert incised gully at top of slope and below summer road to infiltration swale at top of Blue Angel Chute	Hotspot #6 Create infiltration spreading area by loosening deep gully and restoring it as in an infiltration swale.	Completed
5	EH-CA	Remove Water Bar and add Mulch to Middle Maggie's Run	Hotspot #3 This area is located uphill of the culvert crossing where Maggie's Run intercepts the Summer Road below the switchback at the aspens. Mulch application and removal/re-grade of 1-2 Water Bars into infiltration spreading areas.	Completed
6	EH-CA	Hand Grenade Chute/Run of Middle Roundabout	Hotspot #1 Rock Armor Gully, Restore Water Bar above switchback to function properly or convert to infiltration swale, Rip and chip steep ski slope, install new 12" culvert at the road crossing.	Completed
7	EH-CA	Middle Maggie's just below the summer road before switch back with 2 culverts	Hotspot #5 Minor reshaping of "Basin" area & chip & rip treatment to maximize infiltration and reduce overtopping and runoff to the creek.	Completed
8	EH-CA	Sedimentation area between the face patrol facility and Groove Chair	Hotspot #9 Stabilize bare soil areas with full restoration treatment and/or rip and chip; mulch filter berm or Pine Needle wattles needed.	Completed

*Source Codes	
M	BMP Maintenance
P	Master Plan Implementation Project
RM	Resort Maintenance Project
EH-CA	Erosion Hotspot Inventory California
EH-NV	Erosion Hotspot Inventory Nevada

9	EH-CA	Small gully connecting road run-off to creek below Cal Dam	Hotspot #4 Chip and rip road shoulder (To spread and infiltrate runoff) & add Pine Needle wattles as a sediment barrier. This is the area near the first Water Bar below Cal Dam.	Completed
10	EH-CA	Hellwinkel's Road	Hotspots 45 & 46 continue monitoring and maintaining treatments annually.	Completed
<u>Watershed: CA-6 Bijou Creek</u>				
11	RM	Tram Deck	Replace Tram Top Station Deck and associated permanent BMPs.	
<u>Watershed: CA-7 Unnamed Creek - Gondola</u>				
		NONE		
<u>Watershed: NV-1 Mott Canyon Creek</u>				
		NONE		
<u>Watershed: NV-3 Edgewood Creek</u>				
		NONE		
<u>Watershed: NV-2 + 5 Daggett Creek</u>				
12	P	Galaxy Road Improvements	Re-route and improve existing summer road to bottom lift terminal, surface treatment and possible drainage improvements.	
13	M	Rock Lined drainage basins at the bottom of Comet and Dipper Chair	Mechanical Removal of sediment buildup from the T shaped drainage/rock-lined areas. Maintenance is between the bottom of Comet and Dipper Chair Lift Terminals.	Completed
<u>Resort Wide</u>				
14	M	Resort-Wide	Inspect & restore all areas damaged or affected by winter resort operations, including hydrants & pipe failures, & areas affected by snowcat operations; document treatment.	Ongoing
15	M	Resort-Wide	Erect and maintain vehicle barriers and/or fences to prevent unauthorized vehicle access off of designated summer roads and facility parking areas.	Ongoing
16	M	Resort-Wide	Inspect and maintain all drainage structures.	Ongoing
17	M	Base Areas	Maintain all BMPs and drainage structures. Erect and maintain vehicle barriers and/or fences to prevent unauthorized vehicle access from base areas.	Ongoing

*Source Codes	
M	BMP Maintenance
P	Master Plan Implementation Project
RM	Resort Maintenance Project
EH-CA	Erosion Hotspot Inventory California
EH-NV	Erosion Hotspot Inventory Nevada

Heavenly Mountain Resort
Mitigation and Monitoring Plan
Annual Report (October 2016 –
September 2017)

APPENDIX

IV

USFS WILDLIFE TRASH
MANAGEMENT AND EDUCATION
PROGRAM



USFS Wildlife Trash Management and Education Program:

As a condition of the approved 2015 EIS for the Epic Discovery Program a wildlife trash management and education plan will be implemented annually and reviewed by Heavenly and the US Forest Service LTBMU. The Heavenly Mountain Resort Master Development Plan (2015) includes a number of Operations and Maintenance Measures as part of the Mitigation and Monitoring Plan. 7.5-21 BIO 8: Wildlife Trash Management

and Education Program.

A number of summer activities at Heavenly Mountain Resort are located at the Top of The Gondola region which is known as Adventure Peak. As part of the Epic Discovery Project implementation the resort shall create and implement the trash management and education program. The goal of this program is for timely removal of refuse from deposit points, education of our guests and staff about proper waste management, and to keep any interactions between humans and wildlife to a minimum.

Deposit points where animal proof receptacles will be implemented at the following locations:

1. Bottom of the Gondola steps/Interpretive Welcome Center(1)
2. Base of Tamarack Express lift (1)
3. Top of the Blue Streak Zip Line/ Top of Tamarack Chair (1)
4. The Bottom of the Big Easy Chair area, gear on area near cowboy fence (1)
5. The Bottom of the Coaster (1)
6. The Base of the Rock Climbing Wall (1)
7. The Base of the Tubing Lift viewing area (1)
8. NW side of Tamarack Lodge (1)
9. Viewing area of the Bear Cave Challenge Course (1)
10. Kiddy Zip area (1)
11. Mid-Station Observation Deck of the Gondola (Existing), + 2 additional Dual Bear Boxes

Wildlife Proof receptacles in and around Adventure Peak will be serviced each day of operations. All garbage and recycling from the remote receptacles will be consolidated to the Tamarack Lodge loading dock or to the Top of the Gondola for transport down to the Heavenly Village Trash Compactor. This will be handled by the Adventure Peak Staff, and/or Lift Operations personnel. All refuse is to be kept inside of the Tamarack Lodge loading dock facility, or consolidated to the Top of Gondola wheeled grey carts. Daily refuse removal by the Food and Beverage Warehouse staff will continue for the Tamarack Lodge waste. Daily servicing of all refuse is necessary for the success of this program. All food service garbage, kitchen food waste recycling, and recyclables are taken to the California Main Lodge lower parking lot where

dedicated bear proof dumpsters are located. There are dumpsters clearly labeled for blue bag recycling, food waste recycling, garbage, and C&D materials from special projects. All dumpsters at this location are animal proof with locking lids, and doors. Dumpsters are serviced by South Tahoe Refuse and Recycling Services and are monitored by the Heavenly Environmental Compliance and Sustainability Dept. and the Food and Beverage management staff closely for frequency of service. Since 2013 all CA Base dumpsters transitioned to animal proof containers which has significantly reduced any wildlife incidents.

Bear Bins will be deployed before summer operations and activities begin at Adventure Peak. These bins will be relocated from winter storage for summer implementations. They were stored at the Eask Peak Canopy Tour gear up deck after the 2017 summer operating season concluded.

Future Expansion into Sky Meadows and East Peak Lake/Lodge to be developed as these regions come online.

Heavenly Mountain Resort
Mitigation and Monitoring Plan
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APPENDIX

V

2017 WATER USE BALANCE
REPORT

Heavenly Mountain Resort

Water Use Report, 2016-17 Operating Year



Heavenly Mountain Resort is furnishing this report on water usage during the 2016-17 Operating Year (9/1/2016 to 8/31/2017).

Snowmaking Water Usage

The Heavenly Mountain Resort snowmaking system consumed a total of 143.3 million gallons of water during the 2016-7 operating year to cover a total of 322 acres of terrain. The distribution of water sources and water consumption is described below:

Total Snowmaking Water Use--California	87.99	million gallons
Total Snowmaking Water Use--Nevada	55.33	million gallons
Net Total Snowmaking Water Use	143.32	million gallons
Water Supplied in California	94.41	million gallons
Water Used in California	87.99	million gallons
Net Surplus (flow out of California)	6.42	million gallons
Water Supplied in Nevada	48.91	million gallons
Water Used in Nevada	55.33	million gallons
Net Deficit (Flow into Nevada)	-6.42	million gallons
Water Supplied In Basin	94.41	million gallons
Water Used in Basin	94.29	million gallons
Difference (flow out of Basin)	0.11	million gallons
Water Supplied Out of Basin	48.91	million gallons
Water Used Out of Basin	49.02	million gallons
Difference (flow into Basin)	-0.11	million gallons
Water Purchased--STPUD	42.64	million gallons
Water Purchased--KGID	13.30	million gallons
TOTAL WATER PURCHASED	55.94	million gallons

Table 1 provides a breakdown of water usage between California and Nevada, along with the net transfer of water between the States.

Table 1...2016-17 Water Usage Summary--Inter State Transfers					
Pumping Region	MG used	In California		In Nevada	
		% of acre-ft	Water (MG)	% of acre-ft	Water (MG)
Cal Base	46.1	100%	46.1	0%	0.0
Cal Dam	30.9	100%	30.9	0.0%	0.0
E. Peak	66.3	16.6%	11.0	83.4%	55.3
Total	143.3		88.0		55.3
Water Supply- (Purchased + Recharge)			94.4		48.9
InterState Water Transfer			-6.4		6.4

Table 2a provides a breakdown of water usage between in-basin and out of basin regions, along with the net inter-basin transfer of water.

Table 2a...2016-17 Water Usage Summary--Inter Basin					
Pumping Region	MG used	In Basin		Out of Basin	
		% of acre-ft	Water (MG)	% of acre-ft	Water (MG)
Cal Base	46.1	100%	46.1	0%	0.0
Cal Dam	30.9	100.0%	30.9	0.0%	0.0
E. Peak--CA	11.0	10.6%	1.2	89.4%	9.8
Total California	88.0		78.2		9.8
E. Peak--NV	55.3	29.2%	16.1	70.8%	39.2
Total Nevada	55.3		16.1		39.2
TOTAL SNOWMAKING	143.3		94.3		49.0
Water Supply			94.4		48.9
Inter Basin Water Transfer			-0.1		0.1

Table 2b further breaks down the Nevada water use within 4 water right quadrants as listed below:

Table 2b...2016-17 Water Usage Summary--Inter Basin					
Pumping Region	MG used	In Basin		Out of Basin	
		% of acre-ft	Water (MG)	% of acre-ft	Water (MG)
Cal Base	46.1	100%	46.1	0%	0.0
Cal Dam	30.9	100%	30.9	0%	0.0
E. Peak--CA	11.0	11%	1.2	89%	9.8
Total California	88.0		78.2		9.8
Quadrant A	6.6	12.0%	6.6		
Quadrant B	32.1			58%	32.1
Quadrant C	6.9			13%	6.9
Quadrant D	9.7	18%	9.7		
Total Nevada	55.3		16.3		39.0
TOTAL SNOWMAKING	143.3		94.5		48.8
Water Supply			94.4		48.9
Inter Basin Water Transfer			0.1		-0.1

A - Within Tahoe Basin and south of the southern boundary of section 25, 26, 27 T. 13 N. R 18 E. and section 30 T. 13. N., R. 19 E.

B - Outside of Tahoe Basin and south of the southern boundary of section 25, 26, 27 T. 13 N. R 18 E. and section 30 T. 13. N., R. 19 E.

C - Outside of Tahoe Basin and North of the southern boundary of section 25, 26, 27 T. 13 N. R 18 E. and section 30 T. 13. N., R. 19 E.

D - Within Tahoe Basin and North of the southern boundary of section 25, 26, 27 T. 13 N. R 18 E. and section 30 T. 13. N., R. 19 E.

The following attachments provide documentation and calculations procedures used in determining these values:

Attachment 1....Map of Existing Meter Locations

Attachment 2....Schematic of Water Transfers

Attachment 3....California Snowmaking Trails

Attachment 4....Nevada Snowmaking Trails and Water Right Quadrants

Calculation Procedures

Water allocation calculations for Heavenly Mountain Resort are complicated by the fact that snowmaking occurs in both Nevada and California, as well as inside and outside the TRPA boundary. While the snowmaking piping distribution system for the entire resort is interlinked, there are 3 basic sub-regions:

1. Cal Base This region consists of the acreage on the California side falling below Cal Dam. This entire region falls within the State of California and within the Tahoe Basin.
2. Cal Dam This region consists of acreage on the California side that is above Cal Dam. This entire region falls within the State of California and within the Tahoe Basin.
3. East Peak This region consists of acreage above and below East Peak Lake. The region is predominantly in Nevada, though some trails serviced at the top fall inside California. A majority of this terrain is out of the Tahoe Basin, but 25% lies inside the Basin.

Attachment 2 provides a schematic of pumping operations, meter readings, and the calculation procedure for interstate water transfers. These calculations consist of performing a water balance between the STPUD and KGID supplies, water entering and exiting reservoirs, and a flowmeter installed on the existing transfer line between the Cal Dam and East Peak systems.

The methodology used this analysis to track inter-basin water usage involves calculating the total water usage within the 3 major sub-regions (Lower Cal, Cal Dam, and East Peak) and then allocating water proportionally based on snowmaking terrain within that region that falls inside and outside the Tahoe basin. Since different trails require different design depths of snow, the allocation is based on the trail acreage x design depth for each trail, as detailed in Attachments 3 and 4. The same methodology is used to allocate East Peak water between California and Nevada. No changes have been made in the metering locations, configuration, or calculation procedure from the previous year.

The trail data provided in Attachment 4 indicates that 16.6% of the East Peak design acre-ft of snow coverage occurs in California. Therefore, 16.6% of the total 66.3 MG used for snowmaking in the East Peak sub-region is calculated to fall in California (11 MG) while 83.4% is calculated to fall in Nevada (55.3 MG)¹. Of this 55.3 MG of East Peak water that is used in Nevada, 29.5% of the design acre-ft of snow production occurs within the Tahoe Basin. Therefore 29.5% of the 55.3 million gallons of water used in this sub-region are calculated to be used within the Basin (16.1 MG) while 70.5% are calculated to be used outside the basin (39.2 MG)².

Revised Operating Procedures

The calculations indicate that a net of .1 million gallons of water was transferred out of the basin during 2016-17 snowmaking season, while 6.4 MG was transferred from California to Nevada. Future net transfers will be minimized by further balancing water supplies during the season and managing summer irrigation practices.

Respectfully Submitted,

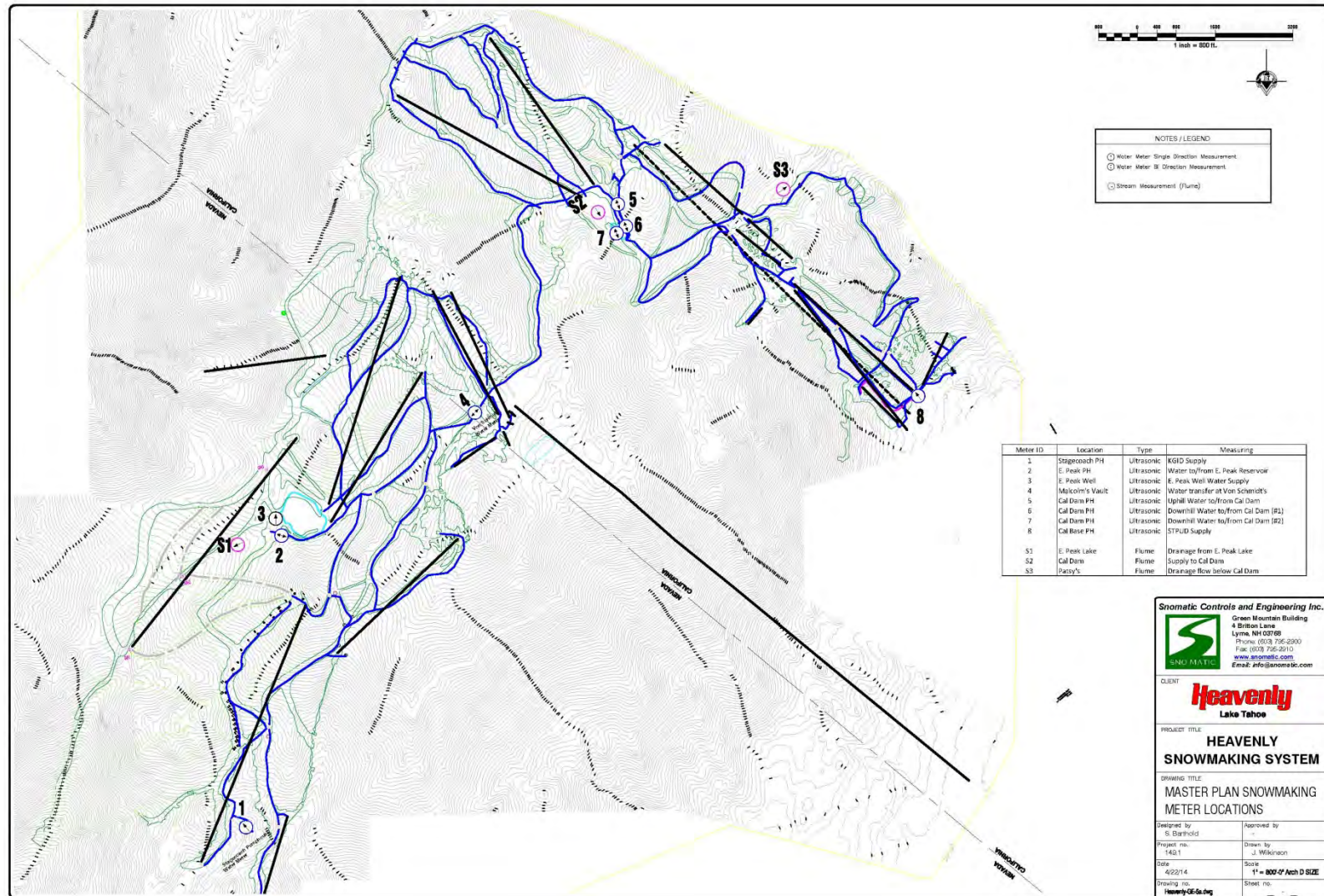


Scott Barthold, PE
Sno.matic Controls and Engineering, Inc.

¹ Refer to Table 1 for calculation

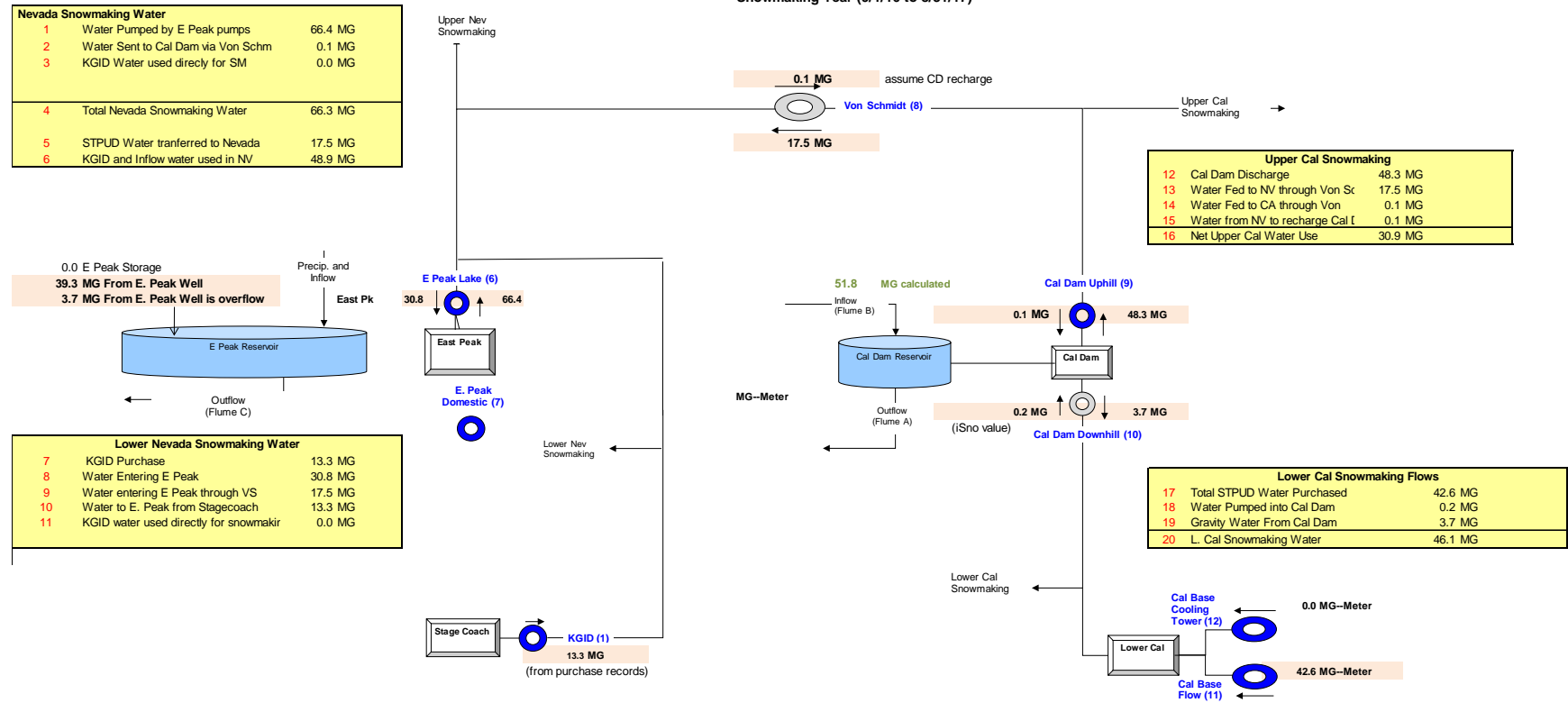
² Refer to Table 2a/b for calculation

Attachment 1...Existing meter locations



Attachment 2---Schematic

Attachment 2



ATTACHMENT 3---CALIFORNIA SNOWMAKING ACREAGE							
2007 Master Plan Amendment Trail #	Trail Name		2007 Master Plan Amendment Snowmaking Action (1)	Acreage (acres)	Acre ft. / Acre (2)	Acre ft. (3)	Sub Region
California In Basin.... 'pod' trails							
B1	EAST BOWL -THE FACE		EXISTING	16.3	5	81.3	Cal Base
B2	GUNBARREL		EXISTING	8.2	5	40.8	Cal Base
D1	WORLD CUP		EXISTING	6.0	2.7	16.1	Cal Base
E1	PATSY'S		EXISTING	7.9	2.7	21.4	Cal Dam
G1	MAGGIES		EXISTING	8.4	2.7	22.7	Cal Dam
G2	CAT TRACK		EXISTING	1.0	2.7	2.7	Cal Dam
G5	MOMBO MEADOWS		EXISTING	4.1	2.7	11.1	Cal Dam
G6	MOMBO		EXISTING	1.0	2.7	2.6	Cal Dam
G7	LOWER MOMBO		EXISTING	2.5	2.7	6.7	Cal Dam
H9	CANYON - SKY CANYON		EXISTING	6.1	2.7	16.5	Cal Dam
H10	JACKPOT (RUSUTSU)		EXISTING	4.3	2.7	11.6	Cal Dam
H11	HIGH ROLLER (STEAMBOAT)		EXISTING	3.3	2.7	8.9	Cal Dam
I1	LIZ'S		EXISTING	9.6	2.7	25.9	Cal Dam
I3	UPPER ELLIE'S / ELLIE'S	check of power at top	EXISTING	12.4	2.7	33.5	Cal Dam
K1	PERFECT RIDE (WEST BOWL)		EXISTING	8.7	2.7	23.4	Cal Base
*L1	LOWER SKI SCHOOL	DMZ	EXISTING	2.3	2.7	6.2	Cal Base
M1	CHILDRENS SKI CENTER	Enchanted Forest	EXISTING	0.9	2.7	2.4	Cal Base
N1	PIONEER PLATTER PULL		EXISTING	2.4	2.7	6.5	Cal Dam
O1	LEARN TO SKI CENTER		EXISTING	1.4	2.7	3.7	Cal Dam
*GG1	(UPR.) CALIFORNIA TRAIL		EXISTING	7.4	2.7	20.0	E. Peak
**GG2	SAM'S DREAM		EXISTING - UNBUILT	4.3	4	17.1	E. Peak
*GG3	TAMARACK RETURN		EXISTING	0.7	2.7	2.0	E. Peak
*GG6	CASCADE		EXISTING	8.0	2.7	21.7	E. Peak
*HH1	EASY STREET (1/2)		EXISTING	3.4	2.7	9.2	E. Peak
HH2	EASY STREET II (1/2)		EXISTING	2.1	2.7	5.6	E. Peak
B3	PISTOL		REMOVE	0.0	5	0.0	
B4	WEST BOWL		REMOVE	0.0	5	0.0	
E2	GROOVE		EXISTING	3.8	2.7	10.2	Cal Dam
G3	SWING TRAIL		NO ACTION	0.0	0	0.0	
G4	WATERFALL		RETAIN	3.5	5	17.4	
G8	POWDERBOWL		RETAIN	3.5	4	14.1	
G9	NEW - POWDERBOWL 2 (Gladed)		NEW	1.9	2.7	5.1	
H1	WOODS TRAIL		NO ACTION	0.0	0	0.0	
H2	BETTY'S SWING		NO ACTION	0.0	0	0.0	
H3	RIDGE BOWL		NO ACTION	0.0	0	0.0	
H4	RIDGE CHUTE		NO ACTION	0.0	0	0.0	
H5	HIGH ROLLER (BETTY'S RUN)		RETAIN	12.7	5	63.4	
H6	DOUBLE DOWN (BETTY'S BOWL)		RETAIN	0.0	0	0.0	
H7	LOWER BETTY'S	Soldiers	RETAIN	0.0	0	0.0	
H8	BETTY'S CUTOFF		NO ACTION	0.0	0	0.0	
H12	NEW - BETTY'S CUTOFF		NO ACTION	0.0	0	0.0	
H13	NEW - BETTY'S ESCAPE		NO ACTION	0.0	0	0.0	
I2	ELLIE'S SWING - EXTENSION		RETAIN	3.4	2.7	9.2	
I4	NEW - SKIWAYS 1 (GLADED)		NO ACTION	0.0	0	0.0	
I5	NEW - SKIWAYS 2 (GLADED)		NO ACTION	0.0	0	0.0	
GG5	49ER		RETAIN	1.6	4	6.3	
California In-Basin...non 'pod' transport trails							
1	ROUND-A-BOUT		EXISTING	15.6	2.7	42.1	Cal Base
2	RIDGE RUN		EXISTING	1.7	2.7	4.5	Cal Dam
3	LOWER RIDGE RUN		EXISTING	15.9	2.7	42.9	Cal Dam
5	CALIFORNIA TRAIL		EXISTING	5.5	2.7	14.9	Cal Dam
5A	NEW - CAL. TRAIL ALTERNATIVE		NEW	1.7	2.7	4.5	
10	VON SCHMIDT'S (1/4)		RETAIN	1.2	2.7	3.3	
**11	VON SCHMIDT'S - MEADOW		RETAIN	4.1	2.7	11.1	
1	ROUND-A-BOUT - REALIGNMENT		NEW	1.6	2.7	4.2	
4	SKYLINE TRAIL		RETAIN	2.8	2.7	7.6	
12	NEW - MAGGIES CANYON (GLADED)		NO ACTION	0.0	0	0.0	
In Basin Total--Master Plan				212.8		680.1	
In Basin Total--Cal Base Existing				57.9		212.4	
In Basin Total--Cal Dam Existing				91.2		246.2	
In Basin Total--E. Peak Existing				170.7	21.6	58.4	
California Out of Basin 'pod' trails							
V4	BIG DIPPER (1/5)		EXISTING	3.7	2.7	10.0	E. Peak
V8	ORION'S (1/2)		EXISTING	8.4	2.7	22.6	E. Peak
*V10	METEOR (1/2) - (GLADED)		EXISTING - UNBUILT	2.9	2.7	7.8	
**V11	METEOR II (1/3) - (GLADED)		REMOVE	0.0	2.7	0.0	
V7	DIPPER BOWL (1/2)		NO ACTION	0.0	2.7	0.0	
GG4	SAND DUNES		RETAIN	3.0	2.7	8.0	
V1	MILKY WAY BOWL (2/3)		NO ACTION	0.0	0	0.0	
V3	DIPPER KNOB	The Road	RETAIN	1.2	2.7	3.2	
Out of Basin Total--Master Plan				19.1		51.6	
Out of Basin Total--Cal Base Existing				0.0		0.0	
Out of Basin Total--Cal Dam Existing				0.0		0.0	
Out of Basin Total--E. Peak Existing				12.1		32.6	
California Total--Master Plan				231.9		731.8	
California Total--Existing				182.8		549.6	
Cal Base Total Existing				57.9		212.4	
Cal Dam Total Existing				91.2		246.2	
E Peak Total Existing				33.7		91.0	
Cal Base Existing---% In Basin				100%		100%	
Cal Dam Existing---% In of Basin				100%		100%	
E Peak Existing---% In Basin				64%		64%	
Notes:							
(1) Action proposed: EXISTING = currently exists, RETAIN =approved in MP (96) - retain in MPA (04), REMOVE =approved in MP (96) - remove in MPA (04), NEW =not considered in MP (96) - proposed in MP							
(2) Acre feet of water needed per acre of ski run to achieve complete snow coverage. 2.7 indicates a ski run will require 2.7 acre feet of water per ski run acre per year to achieve snow coverage of ground cover case for a ski season.							
(3) Total acre feet of water required for complete snow coverage of the ski run for a ski season. This number is calculated by multiplying the Snowmaking Acreage by the Acre ft/Acre column.							
(4) Change from Master Plan (1996) Approved to Master Plan Amendment (2007) Proposed build out.							
(5) Additional water requirements of Master Plan Amendment (2007) from Master Plan (1996).							
* All or partially implemented since adoption of the Master Plan in 1996.							
** Approved to be implemented but not yet constructed.							

ATTACHMENT 4--NEVADA SNOWMAKING ACREAGE							
2007 Master Plan Amended Facilities - Snowmaking at Buildout							
2007 Master Plan Amendment	Trail Name		2007 Master Plan Amendment	Acreage	Acre ft. /	Acre	
Trail #			Snowmaking Action (1)	(acres)	Acre (2)	ft. (3)	
Nevada In Basin 'pod' trails							
Q1	BOULDER (EDGEWOOD) BOWL		EXISTING	17.2	4	68.9	E. Peak
S1	OLYMPIC DOWNHILL (3/5)		EXISTING	15.5	2.7	41.8	E. Peak
X1	BOULDER SKI SCHOOL		EXISTING	2.8	2.7	7.6	E. Peak
*HH1	EASY STREET (1/2)	Assume this is Big Easy	EXISTING	3.4	2.7	9.2	E. Peak
S2	BOULDER CHUTE (075)		RETAIN	2.7	4	11.0	
S3	NORTH BOWL		RETAIN	7.8	5	38.9	
S4	UPPER NORTH BOWL		EXISTING	4.2	5	21.0	E. Peak
S8	NEW - NORTH BOWL 2	Cloud Nine	NEW	5.1	2.7	13.8	
S9	NEW - NORTH BOWL 3 (Gladed)	Pines	NEW	8.1	2.7	22.0	
S10	NEW - NORTH BOWL 4 (Gladed)	Bohemian Grove	NEW	7.8	2.7	21.2	
HH2	EASY STREET II (1/2)	Tubing Hill	EXISTING	2.1	5	10.3	E. Peak
(wasn't on snowmaking plan)							
Nevada In Basin non 'pod' transport trails							
9	STEVE'S		EXISTING	0.5	2.7	1.4	E. Peak
10	VON SCHMIDT'S (1/4)		RETAIN	1.2	2.7	3.3	
NV In Basin Total--Master Plan				78.5		270.3	
NV In Basin Existing Total (all E. Peak)				45.7		160.1	
Nevada Out of Basin 'pod' trails							
R2	(UPPER) STAGECOACH	Lower Downhill	EXISTING	4.2	4	16.6	E. Peak
S1	OLYMPIC DOWNHILL (2/5)		EXISTING	10.3	2.7	27.9	E. Peak
S5	CROSSOVER		EXISTING	6.7	2.7	18.1	E. Peak
V4	BIG DIPPER (4/5)		EXISTING	14.8	2.7	40.0	E. Peak
V6	ORION'S BELT		EXISTING - NOT EX 2017	1.1	2.7	2.9	E. Peak
V8	ORION'S (1/2)		EXISTING	8.4	2.7	22.6	E. Peak
V9	LOWER ORION'S		EXISTING	2.9	2.7	7.8	E. Peak
*V10	METEOR (1/2) - (GLADED)		EXISTING - UNBUILT	2.9	2.7	7.8	E. Peak
W3	LITTLE DIPPER		EXISTING	10.4	5	52.2	E. Peak
W4	COMET		EXISTING	14.2	2.7	38.3	E. Peak
Z1	NEW - WELLS FARGO 1		NEW	5.4	2.7	14.5	
Z2	NEW - WELLS FARGO 2		RETAIN	8.3	2.7	22.4	
Z3	NEW - WELLS FARGO 3		NEW	11.4	2.7	30.7	
Z4	NEW - WELLS FARGO 4		RETAIN	12.8	2.7	34.6	
Z5	NEW - WELLS FARGO 5		NEW	2.8	2.7	7.5	
Z7	NEW - WELLS FARGO 7		NEW	6.9	2.7	18.7	
R1	STAGECOACH		EXISTING	12.4	4	49.6	E. Peak
R3	NEW - STAGECOACH 2		NO ACTION	7.1	5	35.6	
R4	NEW - STAGECOACH 3		NO ACTION	0.0	5	0.0	
R5							
S6	PONDEROSA (BONANZA BOWL)	Bonanza	RETAIN	4.0	4	15.9	
S7	EAST PEAK	Ponderosa	RETAIN	3.9	4	15.8	
U1	PERIMETER		RETAIN	13.5	2.7	36.4	
U2	GALAXY		RETAIN	10.1	2.7	27.3	
U3	NEW - GALAXY 1		NEW	8.7	2.7	23.4	
U4	NEW - GALAXY 2		NEW	2.7	2.7	7.3	
V5	LOWER BIG DIPPER	Connection to Galaxy	RETAIN	3.7	2.7	9.9	
V12	NEW - ORION'S II	Nova	NEW	3.4	2.7	9.3	
W1	ARIES		RETAIN	1.3	2.7	3.4	
W2	JACK'S		NEW	3.0	2.7	8.0	
*HH3	SILVER SPUR		NO ACTION	0.5	2.7	1.4	E. Peak
Nevada Out of Basin Non 'pod' transport trails							
7	LOWER WAY HOME		EXISTING	5.2	2.7	14.1	E. Peak
8	PEPI'S		EXISTING	4.0	2.7	10.8	E. Peak
10	VON SCHMIDT'S (1/2)		EXISTING - NOT EX 2017	2.4	2.7	6.5	E. Peak
14	NEW - GALAXY ACCESS		NEW	6.4	2.7	17.3	
15	NEW - SCORPION		NEW	6.3	2.7	17.1	
6	NEW - NEVADA TRAIL (WAY HOME)		NEW	5.9	2.7	16.0	
16	NEW - FARGO TO GALAXY	Fargo to Stagecoach	NEW	1.1	2.7	2.9	
NV-Out of Basin Total MP				229.1		690.8	
NV Out of Basin Existing Total (all E. Peak)				93.5		298.1	
				Acreage total by Quadrant % of Total Acreage			
Nevada Total--Master Plan				307.6		961.1	
Nevada Total--Existing				139.2		458.2	
% In Basin--Existing				33%		35%	
% Out of Basin				67%		65%	
Grand Total--2007 Master Plan				539.6		1,692.8	
				Cal Base Total	57.9	212.4	
				% in CA	100%	100%	
				% In Basin	100%	100%	
				Cal DamTotal	91.2	246.2	
				% in CA	100%	100%	
				% In Basin	100%	100%	
				E. Peak Total	172.9	549.2	
				% in CA	19.5%	16.6%	
				E. Peak in CA	33.7	91.0	
				% of E. Peak in Nevada	12.5%	10.6%	
				E. Peak in NV	139.2	458.2	
				% of E. Peak in NV-In Basin	26%	29%	
				% E. Peak in Nevada	80.5%	83.4%	
				% of E. Peak in CA -out	7.0%	5.9%	
				% of E. Peak in NV -out	54.1%	54.3%	

Heavenly Mountain Resort
Mitigation and Monitoring Plan
Annual Report (October 2016 –
September 2017)

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VI

DAGGETT CREEK MEMORANDUM



April 16, 2018

Via: Email

Mr. Andrew Strain
HEAVENLY MOUNTAIN RESORT
P.O. Box 2180
Stateline, Nevada 89449

Re: Water Year 2017 Daggett Creek Flow Monitoring

Dear Mr. Strain:

Resource Concepts, Inc. (RCI) has assisted with monitoring flows on the South Fork of Daggett Creek downstream of East Peak Lake since 2004. The stream gauge has been installed to support Heavenly's Master Plan monitoring requirement to measure flow in Daggett Creek below East Peak Lake. Graphs generated from the data collected at the stream gauge help demonstrate flows are maintained in Daggett Creek. The following discussion is offered for Water Year 2017 (WY2017): October 1st, 2016 through September 30th, 2017.

Field activities during WY2017 included installation of a new data logger, as well as collection of flow measurements. Since the original data logger was operational throughout WY2017, data provided in this report is from the original data logger. Data from the new data logger will be used for reporting during Water Year 2018 (WY2018) after it has been in place for the entire water year. Data was downloaded twice from the existing data logger. Flow measurements were collected throughout the summer and used to update the calibration curve. Water level data has typically been collected continuously at 15-minute intervals and converted using calibration curves to estimate total flow.

Using the rating curve developed from discrete discharge measurements, flow is estimated from the pressure data by developing a relationship between the pressure transducer readings and stream discharge, measured in 2017 and previous years. Figure 1 shows pressure readings from data downloaded directly; Figure 2 provides the estimated discharge in cubic feet per second (cfs) using the pressure data (figures on following page).

Data collected indicates flows were maintained in Daggett Creek. WY2017 was California's wettest on record; the Heavenly Valley Snotel site maintained by the Natural Resource Conservation Service (NRCS) measured a value of 146 inches (over 12 feet) of snow on March 6th, 2017¹. This was equivalent to over 70.5 inches of accumulated precipitation. The unprecedented snowfall is reflected by the high spring snowmelt/runoff flows in Daggett Creek. In the past, the highest estimated discharge values were near 1.2 cfs while estimated discharge was over 2.0 cfs in May and June 2017. Several thunderstorm events are also exhibited in the estimated discharge in Daggett Creek. Over 5.25 inches of rain was observed in a rain gauge near the Top of the Gondola Area on August 8th, which can be seen in a peak discharge of nearly 2.5 cfs. A storm on September 25th produced more

¹ NRCS Heavenly Valley Snotel Site <https://wcc.sc.egov.usda.gov/nwcc/view>

CARSON CITY

340 North Minnesota St.
Carson City, NV 89703-4152
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**Engineering • Surveying • Water Rights
Resources & Environmental Services**

www.rci-nv.com

2018-04-16 ltr Strain Daggett Crk Monitoring 2017 03-255.16 Heavenly Mt - kr-jls-jm L4-25.doc

LAKE TAHOE

276 Kingsbury Grade, Ste. 206, Stateline, NV
PO Box 11796, Zephyr Cove, NV 89448-3796
(775) 588-7500 • fax: (775) 589-6333

Mr. Andrew Strain

April 16, 2018

Page 2

than 0.5 inches of rain in the rain gauges on the Mountain which is shown by a spike in discharge of approximately 1.8 cfs.

Please feel free to contact me or Kristin Roaldson with any comments or questions.

Sincerely,

A handwritten signature in black ink, reading "Jill Sutherland". The signature is fluid and cursive, with a long horizontal stroke extending from the end of the name.

Jill Sutherland, P.E.

Project Manager

JLS/jm

Attachment – Figures 1 & 2

Figure 1. Daggett Creek Transducer Readings
Water Year 2017

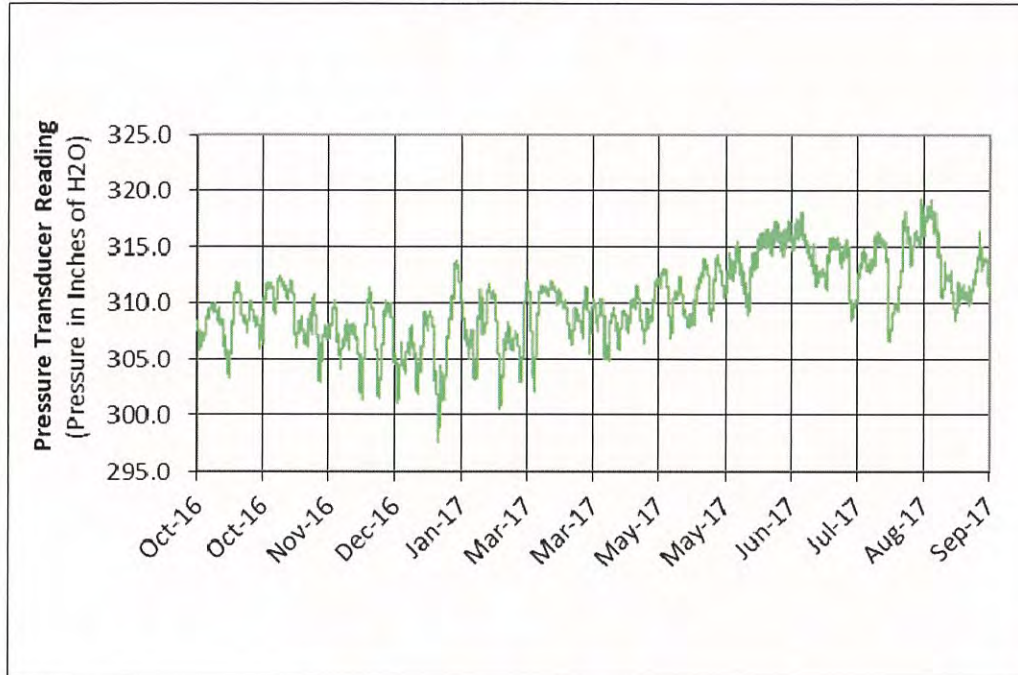
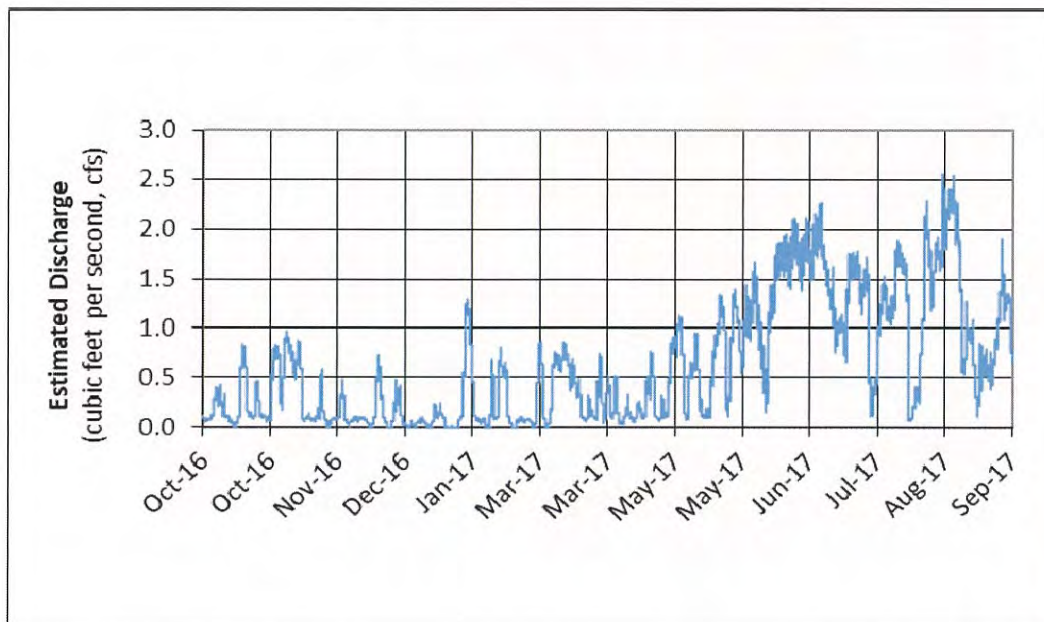


Figure 2. Daggett Creek Estimated Discharge
Water Year 2017



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VII

2018 WATERSHED MAINTENANCE
RESTORATION PROGRAM (WMRP)
WORK LIST

**HEAVENLY MOUNTAIN RESORT
2018 ANNUAL SUMMER WORK LIST
Final 4/4/2018**

Proj#	Source*	Location	Treatment	Status
Watershed: CA-1 Heavenly Valley Creek				
1	P	Magic Carpet Ski School Lift	Install Adventure Peak Magic Carpet with drip line infiltration trenches. Remove Red Fir towers and restore disturbed areas.	
2	M	Upper Shop	Maintain existing waterbars, ditches and culverts. Reduce mud in shop yard (method to be determined).	
3	M/RM	Groove Chair Base	Install new drop inlet and culvert at Base of Groove Chair to the base of the Powderbowl basin.	
4	RM	Heavenly Valley Creek Culvert	Repair existing gate valve.	
5	EH-CA	Ridge Bowl	Stabilize gully in Ridge Bowl above Canyon Express Lift, remove and replace degraded geotextile fabric, place rock check dams or riprap.	
6	EH-CA	Ridge Run above test plots	Hotspot #7: Repair, loosen and restore gully above and below summer road near snowmaking vault.	
7	EH-CA	Maggie's Sediment Basins	Hotspot #25: Maintain and clean out sediment build up in Maggie's road shoulder sediment basins.	
8	RM	Top of Gondola	Complete drainage improvements to manage snowmelt runoff including swales, shallow basins, and piping.	
9	RM	Top of Gondola Snowmaking/Electrical Infrastructure	Upgrade water metering capability in existing snowmaking valve vault known as "Malcolm's Vault." Repair and replace existing underground snowmaking line in the Von Schmidt's area to loop the line to allow for equal water pressure. Replace and repair existing underground electrical conduit in the same trench.	
Watershed: CA-6 Bijou Creek				
10	EH-CA	World Cup	Stabilize gully on World Cup Run and protect existing drop inlets.	
11	EH-CA	First Ride	Stabilize gully on First Ride Run, reestablish waterbar and manage sediment moving towards lift terminal.	

*Source Codes

M	BMP Maintenance
P	Master Plan Implementation Project
RM	Resort Maintenance Project
EH-CA	Erosion Hotspot Inventory California
EH-NV	Erosion Hotspot Inventory Nevada

<u>Watershed: CA-7 Unnamed Creek - Gondola</u>				
		NONE		
<u>Watershed: NV-1 Mott Canyon Creek</u>				
		NONE		
<u>Watershed: NV-3 Edgewood Creek</u>				
		NONE		
<u>Watershed: NV-2 + 5 Daggett Creek</u>				
12	P	Galaxy	Replace existing Galaxy Lift in its current alignment. Improve Specific summer road segments to allow lift construction and ongoing maintenance access. Daggett Creek realignment and stabilization.	
13	P	Olympic Downhill	Replace 3000' of 8" water line and Way Home snowmaking vault. Stabilize disturbed areas following construction	
14	M	Big Dipper Run Waterbar Maintenance	Maintenance to waterbars, ditches and culverts.	

Resort-Wide Annual Maintenance

Remove marked hazardous trees.
Water quality inspections, install summer BMPs.
Apply road base to summer roads after spring inspections.
Snowmaking systems repair and maintenance. Repairs to hydrants.
Repair and replace signage damaged by storm events.

*Source Codes	
M	BMP Maintenance
P	Master Plan Implementation Project
RM	Resort Maintenance Project
EH-CA	Erosion Hotspot Inventory California
EH-NV	Erosion Hotspot Inventory Nevada

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Mitigation and Monitoring Plan
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VIII

2017 BIOLOGICAL & NESTING
SURVEY RESULTS



SIERRA ECOTONE SOLUTIONS

530.416.2440 • PO Box 1297 Zephyr Cove, NV 89448 • SierraEcotoneSolutions.com

30 October 2017

Mr. Andrew Strain
Heavenly Mountain Resort
P.O. Box 2180
Stateline, NV 89449

SUBJECT: HEAVENLY MOUNTAIN RESORT 2017 BIOLOGICAL SURVEY RESULTS SUMMARY

Dear Mr. Strain,

In order to comply with US Forest Service LTBMU requirements and to allow for preparation of environmental documentation for future construction and implementation of projects, Sierra Ecotone Solutions LLC has performed wildlife and plant surveys in suitable habitat within the Special Use Permit Boundary in 2017. Surveys for both northern goshawk and California spotted owl were completed to protocol. Additional surveys were performed for nesting bird species in the areas surrounding 2017 capital projects (Skyway Canopy Tour, Silver Rush Canopy Tour, Hot Shot Zip Line, Blue Streak Zip Line, Red Tail Zip Line and all ropes courses). Tahoe draba (*Draba asterophora asterophora*) surveys were performed for 2017 maintenance projects. A summary of each species surveys is provided below:

Tahoe Draba

Surveys for Tahoe draba were performed in the vicinity of the trail map/sign at the top of Dipper Lift that was to be repaired/replaced. Plant locations were flagged and the area walked with Heavenly staff to ensure protection.

California Spotted Owl

Methods: Surveys were conducted and completed in potentially suitable habitat within and surrounding the project area. Surveys were conducted according to the United States Forest Service "Protocol for Surveying for Spotted Owls in Proposed Management Activity Areas and Habitat Conservation Areas" (March 12, 1991, Revised February 1993). The survey points used since the 2007 field season were utilized again in 2017 to provide continuity of data collected. Data sheets for 2017 surveys are attached to this letter.

Results: No auditory or visual detections of California spotted owls were documented within the survey area during 2017.

Northern Goshawk

Methods: Surveys were conducted and completed in suitable habitat within and adjacent to the project area for northern goshawk based on the updated habitat map generated by the US Forest Service for the environmental analysis of the Master Plan Amendment. In 2017, both dawn acoustical and broadcast survey methods were utilized and were completed to protocol. All surveys were conducted according

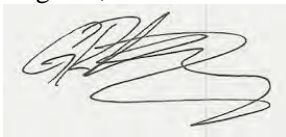
to "Survey Methodology for Northern Goshawks in the Pacific Southwest Region, U.S. Forest Service" (14 May 2002). Data sheets for 2017 dawn acoustical and broadcast surveys are submitted with this letter.

Results: No auditory or visual detections of northern goshawk were documented within the survey area in 2017.

The completion of the 2017 field surveys for northern goshawk and California spotted owl results in meeting the two-year protocol for these species. Based on Appendix A of the California spotted owl survey protocol, since no detections were documented, and the two year protocol was met, "the negative results may be considered accurate for two additional years without conducting additional surveys." The two-year timeline starts on the last day of the last survey, which would be 26 June 2017. Therefore, if implementation of projects would commence prior to 26 June 2019, no further surveys for California spotted owl would be necessary. However, if construction does not commence prior to this date, two-year protocol surveys must be conducted. The northern goshawk protocol does not include any discussion as to validity of surveys for any duration of time after protocol has been met. However, since northern goshawks have been detected in previous years, it is recommended surveys for northern goshawks are continued to determine if goshawks are nesting within the special use permit boundary.

If you should have any questions regarding the surveys performed for the 2017 season, please do not hesitate to contact me at (530) 416-2440.

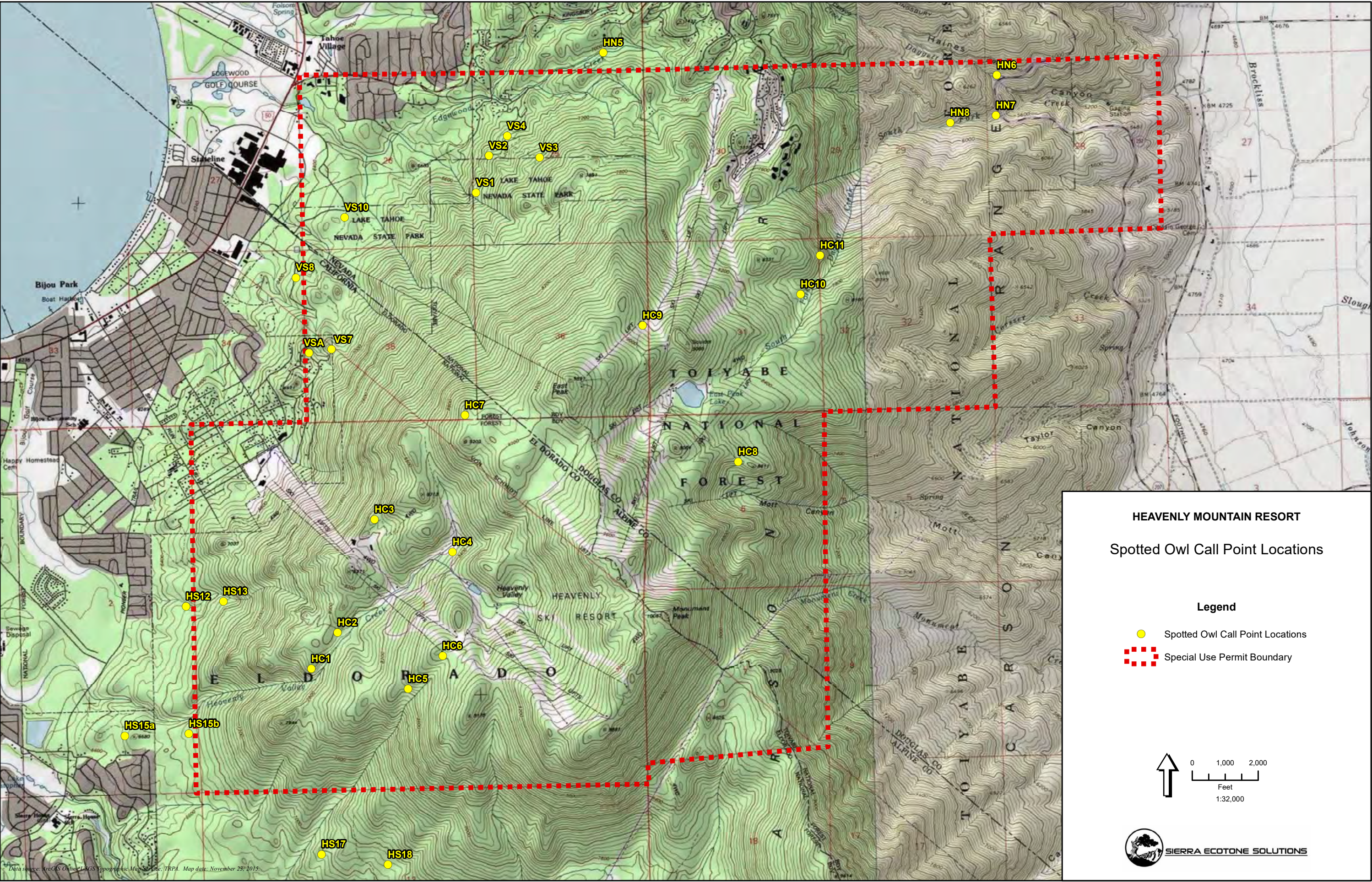
Regards,

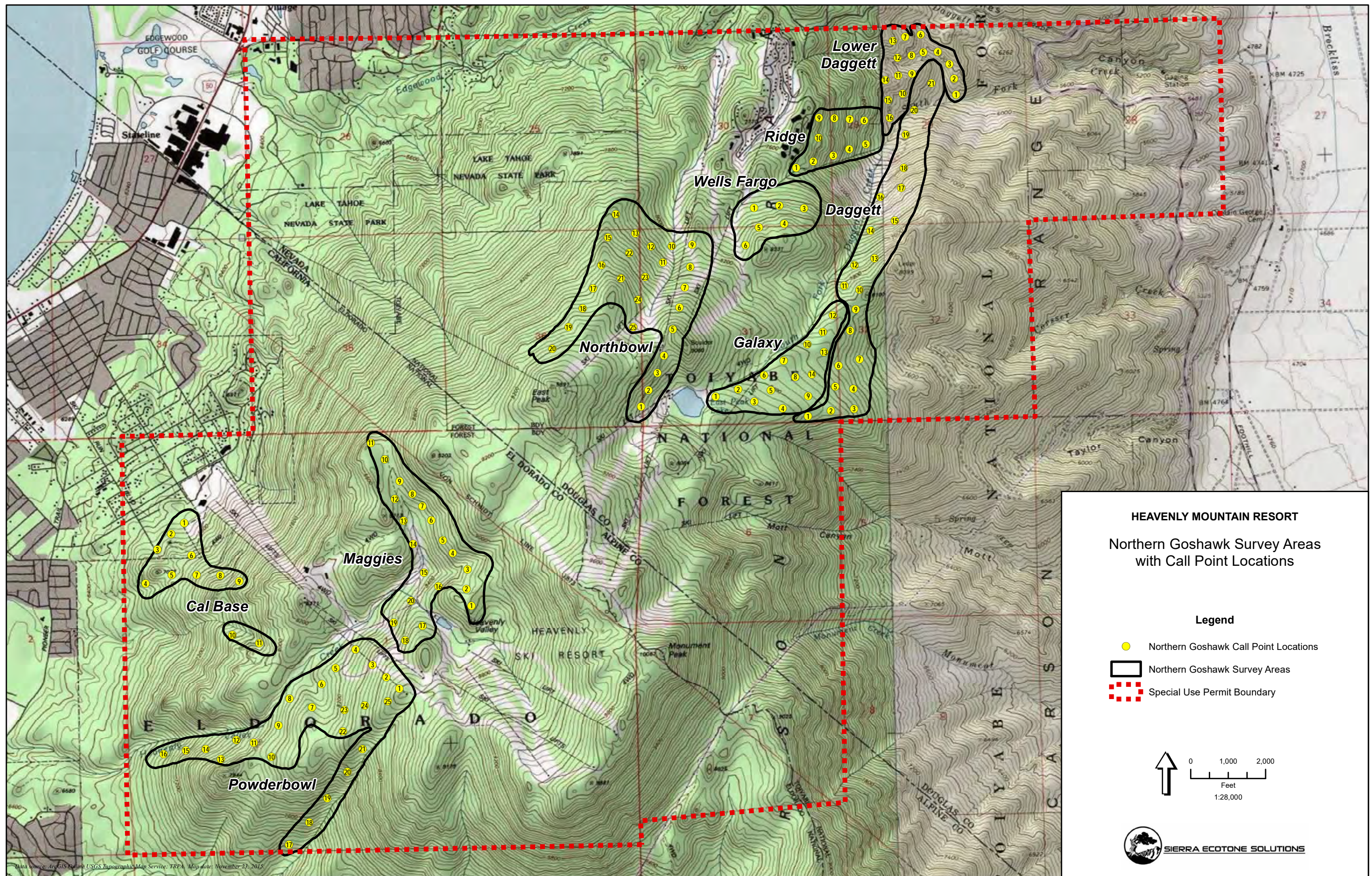
A handwritten signature in black ink, appearing to read 'Garth Alling', written over a light gray rectangular background.

Garth Alling
Principal Biologist

Enclosures

CC: Shay Zanetti , USFS LTBMU
Chris Donley, Cardno





Northern Goshawk Dawn Acoustical Survey- USFS-Lake Tahoe Basin Management Unit

Observer: C. ALLEN Affiliation: SAS Date: 13 NOV 2017
Additional Observers and affiliations: (each observer must complete separate data form)

Route name: Highway 1 Vol. # 1
Description of survey station location, and how accessed:
Station 100+00 is located on Highway 1, 100 miles from the south end of the island.

Weather: % cloud cover: 75% precip: 0 temp: 46 °F and 37 °F (max/min) wind speed: 46 °F and 37 °F

SUNRISE: 07:14 START SURVEY: 08:40 END SURVEY: 18:27

Detections: (include time and duration of vocalizations, type of vocalization, direction and distance of vocal or visual detection, UTM coordinates)

11.0 DEFINITIONS

[illegible]

Additional articles of interest:

Vocalization: heterophony: *Allegro* Call = 4 beats 1st-3rd 4th repeated many times
 Wall Call = 1 beat, objective stress not call

Height (in)	Weight (pounds)	Age (yr)
10	60	grades sixth/seventh
11	110	went to school by airplane
12	160	went to New Mexico
13	210	heaven, twice in California
14	250	lost his sports car
15	300	lost his wife
16	350	lost his brother's house

Northern Goshawk Dawn Acoustical Survey- USFS-Lake Tahoe Basin Management Unit

Observer: B. A. C. 1000 Affiliation: SFS Date: 12/1/2014
Additional Observers and affiliation: (each surveyor must complete separate data form)

Route name: NEPAVERA Visit #: 2

Description of survey station location, and how accessed:

Paula's father - Paul - says on the POWERSOURCE CASE
Growth 40% per year

Weather: % cloud cover: 2 precip: 0 temp max 30 °F min 3 °F Max/Min wind speed max 1 mph

SUNRISE: 0711 START SURVEY: 0632 END SURVEY: 0825

Detections: (include time and duration of vocalizations, type of vocalization, direction and distance of vocal or visual detection, UTM coordinates)

NO DOWNTIME

[illegible]

Additional species detected

Swimmer	Time (Sec)	Time (Min:Sec)
0	0	swims down vertically
1	1-5	and gl. thrown by stroke 1
2	4-7	swim up fast, swim
3	8-12	down, legs in narrowest part
4	13-15	tail a minimum stroke
5	16-20	swim back slowly
6	21-30	swim back slowly, swim

Visualizacijų komentaras: Didysis Eilės 4 bendrininkas (4) apima visą lauką. Visi Eilės 4 bendrininkai (4) apima visą lauką.

Northern Goshawk Dawn Acoustical Survey- USFS-Lake Tahoe Basin Management Unit

Observer: A. R. L. N. G. Affiliation: SES Date: 3 APR 2012
Additional Observers and affiliation: (each surveyor must complete separate data form)

Route name: HERBYNLY Visit #: 4

Description of survey station location, and how accessed:

DESCRIPTION OF SURVEY KITHON LOCATION, AND HOW ACQUIRED:
 ROAD 0.5 KM FROM KITHON, SET UP TO WAIT JACOB, CAN ENTER TO CASE STARTER
 IS IN AN OPENED FLYC AND

Weather: % cloud cover: _____ precip: _____ temp. air: _____ T_{soil}: _____ T_{water}: _____
 Barometer wind speed: _____ m/s _____ mph

SUNRISE: 0641 START SURVEY: 0609 END SURVEY: 0810

Detections: (include time and duration of vocalizations, type of vocalization, direction and distance of vocal or visual description, UTM coordinates)

NO DISTORTIONS

[illegible]

Additional species detected:

Quantity in	Price, pennies	Weight of 1 lb = 16 oz
0	0	nothing else worth buying
1	1-3	used the money by something
2	4-7	used for food, house
3	8-11	several things to improve house
4	12-15	start and improve house
5	16-20	build house more
6	21-25	some fine furniture more

Vollständige elektrophoretische Daten sind in Tabelle 4a und 4b angegeben. Tabelle 4a zeigt die Ergebnisse der Polymerisationen mit TiCl_4 als Katalysator, Tabelle 4b die Polymerisationen mit $\text{TiCl}_4/\text{AlR}_3$ -Komplexen.

Northern Goshawk Dawn Acoustical Survey- USFS-Lake Tahoe Basin Management Unit

Observer: G. ALLING Affiliation: SPS Date: 4 APR 2017
Additional Observers and affiliation: (each navigator must complete separate data form)

Route name: Herzogstrasse Visit n: 5

Description of survey station location, and how accessed:

Page 3 of 4
Date: 10/10/2019
Time: 10:10:10 AM
User: [redacted]
IP: [redacted]

Weather: % cloud cover: 0 precip: 0 temp: air 27 °F soil 23 °F Beaufort wind speed: air 2 soil 2

SUNRISE: 0634 START SURVEY: 0610 END SURVEY: 0805

Detections: (include time and duration of vocalizations, type of vocalization, direction and distance of vocal or visual detection, UTM coordinates)

NO DETECTABLE

[illegible]

Additional species detected:

Iteration k	Ymin Ymax	Interval [Ymin, Ymax]
0	0	interval starts with 0
1	5/3	interval: known by lemma 1
2	4/3	used in first step
3	5/3	interval: interval in condition 1
4	10/3	last interval known
5	10/3	interval ends
6	15/3	used from condition 2

Yeast strains were tested for Δ log₂CO₂-4/mesh tub-100 tub-100 point from strain
W4E100-4 tub-100, relative to the control.

Northern Goshawk Dawn Acoustical Survey- USFS-Lake Tahoe Basin Management Unit

Observer: G. B. L. N. M. Affiliation: SEE Date: 7 APR 2017
Additional Observers and affiliation: (each surveyor must complete separate data form)

Name: DAVID L. Visit #: 6

Description of survey station location, and how accessed:

Revised 2/10/01 Tumor Site Update NO common GUS/neo 4/1/01

Weather: % cloud cover: 40 precip: 0 temp: 17 °F and 24 °F Humidity: wind speed: 2 and 2

SUNRISE: 0632 START SURVEY: 0537 END SURVEY: 0800

Detections: (include time and duration of vocalizations, type of vocalization, direction and distance of vocal or visual detection, UTM coordinates)

[illegible]

Additional species identified:

Population	Weight assigned	Interpretation of weight
0	0	break down vertically
1	5.3	word in white by breakd
2	6.7	solid line from above
3	6.62	break, word in white, or
4	13.15	flat and words above
5	19.34	word break away
6	35.37	large flat flatness from

Illustrative description: *Algeri Cat* - a head-in-hat cat / round face
Wm Cat - a head-in-hat cat / round face

California Spotted Owl Visit Form-USFS-Lake Tahoe Basin Management Unit

Route Name/Territory: HARRISON CORSE LTB- Visit 1 Outing# 1 Date: 10 APR 2003

Observers (and affiliation): 2 TRAINING (SPS)

Type of Survey (specifying SE, follow-up TO, additional visit AD, SC Sunset/Sunrise: 5:15 / 08:00 Quad: 5CT

Weather: % cloud cover: 10 precip: 0 temp: air 70°F cat 54°F Beaufort wind speed: air 0 sea 3

Summary of Survey Results and Comments:

NO RESPONSE

SKIN FROM CA → NV & OUT

CS #	Start/Finish	V, A or B-sex (M,F,U)	Dir.	Dis.(m)	UTMs		GPS	Comments (include locals and elevation for detections)
					Northing	Easting		
W1	1439/1039							NR 
W2	1452/1003							
W3	0009/1003							
W4	0110/1023							
W5	0152/1002							
W6	0220/1030							
W7	0212/0352							
W8	0038/1048							
W9	0111/0131							
W10	0115/0203							
W11	0241/0051							SKIN SENT TO SPS

Travel to Area Survey of Area Travel from Area Time

Wg. Time _____
 End Time _____
 Total _____
 1st Day _____
 2nd Day _____
 Total _____

Count	Scale	Comments (if applicable)
0	0	no birds seen
1	1-3	birds seen, possibly singly
2	4-7	birds seen, possibly in pairs
3	8-12	birds seen, possibly in small groups
4	13-18	birds seen, possibly in larger groups
5	19-24	birds seen, possibly in large groups
6	25-30	birds seen, possibly in large groups

* Do not survey on wet conditions or if conditions

California Spotted Owl Visit Form-USFS-Lake Tahoe Basin Management Unit

Route Name/Territory: HEAVENLY NORTH LTB- Visit# 2 Outing# 1 Date: 2/24/17

Observer(s) (and affiliation): B. ALLING (SE)

Type of Survey (specify date if known as FD, otherwise as AC) EC Sunset/Sunrise 200% DEMS Quad 56T

Weather: % cloud cover 25 Precip 0 Temp. (air) 58 F and 15 F Barometer wind speed 0 mph and 2

Summary of Survey Results and Comments:

NO SPOT DETECTIONS

CB #	Start/Finish	V, A or B- sex (M,F,U)	Dir.	Dis. (m)	UTMs		GPS	Comments (include legals and elevation for detections)
					Northings	Eastings		
<u>V51</u>	<u>1036/1038</u>							<u>NR</u> 
<u>V52</u>	<u>1039/1039</u>							
<u>V53</u>	<u>1101/1102</u>							
<u>V54</u>	<u>1103/1103</u>							
<u>V55</u>	<u>1211/1212</u>							
<u>V56</u>	<u>1322/1322</u>							<u>NR</u> 
<u>V57</u>	<u>1400/1401</u>							
<u>V58</u>	<u>1403/1403</u>							

Total to Date: Surveys of Area: Total from Area: Total:

Reg. Time:

End Time:

Total:

Acc. 1st:

Acc. 2nd:

Total:

Position	Wind	Record of Wind Speed
0	0	no wind
1	1-3	light dr. blown by breeze if
2	4-7	light on face, leaves rustle
3	8-12	leaves, grass, or vegetation rustle
4	13-15	leaves and grass rustle
5	16-24	leaves rustle, grass
6	25-31	leaves rustle, grass

* Accurately at least within 4 (four)



SIERRA ECOTONE SOLUTIONS

530.416.2440 • PO Box 1297 Zephyr Cove, NV 89448 • SierraEcotoneSolutions.com

13 July 2017

Mr. Andrew Strain
Heavenly Mountain Resort
PO Box 2180
Stateline, NV 89449
-via e-mail-

SUBJECT: 2017 SUMMER ACTIVITIES NESTING BIRD SURVEY RESULTS

Mr. Strain:

A nesting bird survey was performed on 21, 22 and 23 June 2017 for 2017 summer activities located at the top of the Gondola and surrounding areas. The project areas were surveyed for nesting birds in accordance with the design features identified in the Biological Evaluation and the Epic Discovery EIR/EIS/EIS. The following project areas were surveyed for nesting birds: Skyway Canopy Tour, Silver Rush Canopy Tour, Hot Shot Zip Line, Blue Streak Zip Line, Red Tail Zip Line and all ropes courses.

Nesting Bird Survey: The project areas were surveyed for nesting birds on the above dates and project areas. No active nests were observed on the project facilities or within the immediate vicinity that would result in impacts. As noted in previous surveys, a few snags exist within the project areas that contain cavities (none of which were active) that are suitable nesting locations for a variety of bird species present within the project area. Efforts should be made to retain these snags within the project area where feasible in order to maintain suitable nesting locations for cavity nesters.

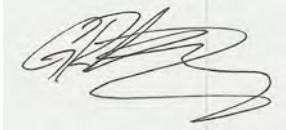
Species observed:

Avian species: Clark's nutcracker (*Nucifraga columbiana*), brown creeper (*Certhia americana*), western tanager (*Piranga ludoviciana*), Townsend's solitaire (*Myadestes townsendi*), mountain chickadee (*Poecile gambeli*), hermit warbler (*Setophaga occidentalis*), western wood pewee (*Contopus sordidulus*), dark-eyed junco (*Junco hyemalis*), common raven (*Corvus corax*), Stellar's Jay (*Cyanocitta stelleri*), downy woodpecker (*Picoides pubescens*), northern flicker (*Colaptes auratus*), white-breasted nuthatch (*Sitta carolinensis*), red-breasted nuthatch (*Sitta canadensis*), pygmy nuthatch (*Sitta pygmaea*), mourning dove (*Zenaidura macroura*), American robin (*Turdus migratorius*), yellow-rumped warbler (*Setophaga coronata*), mountain bluebird (*Sialia currucoides*), brewers blackbird (*Euphagus cyanocephalus*), red tailed hawk (*Buteo*

jamaicensis), pine siskin (*Carduelis pinus*), Cassin's finch (*Haemorhous cassinii*) and red crossbill (*Loxia curvirostra*).

Mammals: Douglas squirrel (*Tamiasciurus douglasii*), least chipmunk (*Tamias minimus*) and mule deer (*Odocoileus hemionus*).

Regards,

A handwritten signature in dark ink, appearing to read 'Garth Alling', on a light-colored background.

Garth Alling
Principal Biologist

CC: Stephanie Coppeto, LTBMU
James Grant, Heavenly Mountain Resort
Chris Donley, Cardno



SIERRA ECOTONE SOLUTIONS

530.416.2440 • PO Box 1297 Zephyr Cove, NV 89448 • SierraEcotoneSolutions.com

13 April 2018

Mr. Andrew Strain
Heavenly Mountain Resort
PO Box 2180
Stateline, NV 89449
-via e-mail-

SUBJECT: 2017 WILDLIFE NURSERY SITE SURVEYS RESULTS

Mr. Strain:

This memorandum is to inform you of the completion of wildlife nursery site surveys that were completed during the 2017 construction season. Survey areas for proposed project were determined by review of the 2017 Annual Summer Worklist provided by Heavenly Mountain Resort (Attachment A). Preconstruction surveys were conducted in the project areas on foot in an attempt to locate wildlife nursery and den site locations within 100 meters of each project area.

Preconstruction surveys were conducted on 16, 20, 21 and 26 June 2017. 16 June 2017 survey areas included: Projects 4, 5, 6, 7, 8 and 9. 20 June 2017 survey areas included: Projects 2 and 10. 21 June 2017 Surveys included: Projects 1, 3, and 11. 26 June 2017 Surveys included Projects 12, and 13.

No nursery sties and/or den sites were observed during the above surveys.

Regards,

Garth Alling
Principal Biologist

Attachment: 2017 Annual Summer Worklist (dated 4/24/17)

CC: Chris Donley, Cardno

**HEAVENLY MOUNTAIN RESORT
2017 ANNUAL SUMMER WORK LIST
4/ 24/ 17**

Final Version- This is subject to change after in-field verification

Project #	Source*	Location	Treatment
Watershed: CA-1 Heavenly Valley Creek			
1	P	Adventure Peak/ Epic Discovery	Landscaping around the Tamarack Lodge Meadow, add new shade umbrellas, add Kids tubing lane, finish 3 approved hiking trails not completed in 2016.
2	P	Top of Epic Mix Race Course	Complete Waterfall lift removal. Regrade top station area. Fill and stabilize as shown on approved project plans (2015 project).
3	P	Magic Carpet Ski School Lift	Adventure Peak Magic Carpet near Red Fir Tow Lift to be installed with drip line infiltration trenches. Remove Red Fir towers and restore.
4	E-H-CA	Convert incised gully at top of slope and below summer road to infiltration swale at top of Blue Angel Chute	Hotspot #6 Create infiltration spreading area by loosening deep gully and restoring it as in an infiltration swale.
5	E-H-CA	Remove Water Bar and add Mulch to Middle Maggie's Run	Hotspot #3 This area is located uphill of the culvert crossing where Maggie's Run intercepts the Summer Road below the switchback at the aspens. Mulch application and removal/ re-grade of 1-2 Water Bars into infiltration spreading areas.
6	E-H-CA	Hand Grenade Chute/ Run of Middle Roundabout	Hotspot #1 Rock Armor Gully, Restore Water Bar above switchback to function properly or convert to infiltration swale, Rip and chip steep ski slope, install new 12" culvert at the road crossing.
7	E-H-CA	Middle Maggie's just below the summer road before switch back with 2 culverts	Hotspot #5 Minor reshaping of "Basin" area & chip & rip treatment to maximize infiltration and reduce overtopping and runoff to the creek.
8	E-H-CA	Sedimentation area between the face patrol facility and Groove Chair	Hotspot #9 Stabilize bare soil areas with full restoration treatment and/or rip and chip; mulch filter berm or Pine Needle wattles needed.
9	E-H-CA	Small gully connecting road run-off to creek below Cal Dam	Hotspot #4 Chip and rip road shoulder (To spread and infiltrate runoff) & add Pine Needle wattles as a sediment barrier. This is the area near the first Water Bar below Cal Dam.
10	E-H-CA	Hellwinkel's Road	Hotspots 45 & 46 continue monitoring and maintaining treatments annually.

Watershed: CA-6 Bijou Creek				
11	RM	Tram Deck	Replace Tram Top Station Deck and associated permanent BMPs.	
Watershed: CA-7 Unnamed Creek - Gondola				
		NONE		
Watershed: NV-1 Mott Canyon Creek				
		NONE		
Watershed: NV-3 Edgewood Creek				
		NONE		
Watershed: NV-2 + 5 Daggett Creek				
12	P	Galaxy Road Improvements	Re-route and improve existing summer road to bottom lift terminal, surface treatment and possible drainage improvements.	
13	M	Rock Lined drainage basins at the bottom of Comet and Dipper Chair	Mechanical Removal of sediment buildup from the T shaped drainage/rock-lined areas. Maintenance is between the bottom of Comet and Dipper Chair Lift Terminals.	
Resort Wide				
14	M	Resort-Wide	Inspect & restore all areas damaged or affected by winter resort operations, including hydrants & pipe failures, & areas affected by snowcat operations; document treatment.	Ongoing
15	M	Resort-Wide	Erect and maintain vehicles barriers and/or fences to prevent unauthorized vehicle access off of designated summer roads and facility parking areas.	Ongoing
16	M	Resort-Wide	Inspect and maintain all drainage structures.	Ongoing
17	M	Base Areas	Maintain all BMPs and drainage structures. Erect and maintain vehicle barriers and/or fences to prevent unauthorized vehicle access from base areas.	Ongoing
* Source Codes				
	M	BMP Maintenance		
	P	Master Plan Implementation Project		
	RM	Resort Maintenance Project		
	E-H-CA	Erosion Hotspot Inventory California		
	E-H-NV	Erosion Hotspot Inventory Nevada		

Heavenly Mountain Resort
Mitigation and Monitoring Plan
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APPENDIX

IX

2017 BOUNDARY MANAGEMENT
PLAN

BOUNDARY MANAGEMENT

A. In perimeter areas, where it is likely for the skiing public to ski out of the patrolled area, Heavenly may utilize a gated boundary system consisting of the following elements:

1. Gates located in areas that people have traditionally gone through in order to reach an area out-of-bounds.

2. Appropriate signage will be placed at the gates, informing users this is true backcountry access. Heavenly will place signs indicating that terrain is not patrolled or maintained beyond this point. Avalanche danger exists. You are responsible for your own safety and survival. Searches may or may not be conducted due to hazardous conditions. Skiers who enter the Backcountry areas will do so knowingly and will accept full responsibility for property loss, injury and/or death. Gate postings will also include the Back Country Checklist, the North American Public Avalanche Danger Scale, USDAFS Access Point Notice and other signage. They may also be cited by local authorities and charged for the cost of their rescue.

3. Gated entries will be a well identified vertical structures through which a skier must pass. A steel gate will hang horizontally from one post and be held against the other by a self-closing mechanism.

For someone to enter the area they must pull the gate in front of them as they pass through, the gate will automatically close behind them. The bar will be height adjustable to allow it to remain at waist-height for a normal adult. The intent in doing this is to require a physical action beyond merely going through the posts to enter the area.

4. Due to the fact that this experience would be the same as any other backcountry experience, Heavenly will rarely “close” access into the terrain. these gates would be closed when Heavenly staff is actively performing avalanche control with explosives in the adjacent permit area.

There are other rare instances where a back country gate may be closed by the operating ski resort in order to halt access to the terrain by none authorized individuals.

5. “Closed Ski Area Boundary, Exit Through Gates Only” signage will be placed along perimeter ropes. These signs are placed at appropriate intervals so that individuals have the opportunity to read the warning from inside the area perimeter ropes. The signage will indicate that some routes may access private property.

6. Heavenly will provide and maintain counters at each of the gates for the entire ski season. Gate use will be monitored and reported to Forest Service

7. Heavenly will assist county search and rescue efforts when possible. Back Country Access gates will be monitored throughout the winter season to ensure signage is in place, the gates are functioning properly, and that they are at the appropriate height. The gates are installed at the following locations:

1. Fire Break : This gate is located to the north of the top of Olympic Chair. It accesses north/northwest terrain locally termed “The Palisades” continuing down towards lower 207 Kingsbury grade (lake side).

2. Raley's Gulch: This gate is located off the California Trail at the perimeter rope of Maggie's Canyon. It accesses north/northwest terrain that continues down the front side of the mountain towards Lake Tahoe.
3. Fulstone Canyon: This gate is located above the existing Gate "A" of Killebrew Canyon. It accesses east/northeast terrain to the southeast of Killebrew Canyon and continues down to the Foothill side of 207 Kingsbury grade.
4. Stateline Gate: This gate is located at the top of Red Fir Handle tow lift above and behind Tamarack Lodge. This gate accesses north/northwest terrain that continues down the front side of the mountain and areas under the gondola.
5. The Beach: This gate is located off of the upper area of the Skyline Trail. It accesses east facing terrain that continues down to Monument Pass and the lower Fullstone terrain.
6. Broad Daylight: This gate is located at the end of "The Cut" on upper Roundabout trail. It accesses north/northwest terrain that continues down to the "Powerline Trail", Pioneer Trail, and upper Ski Run areas.

Heavenly Mountain Resort
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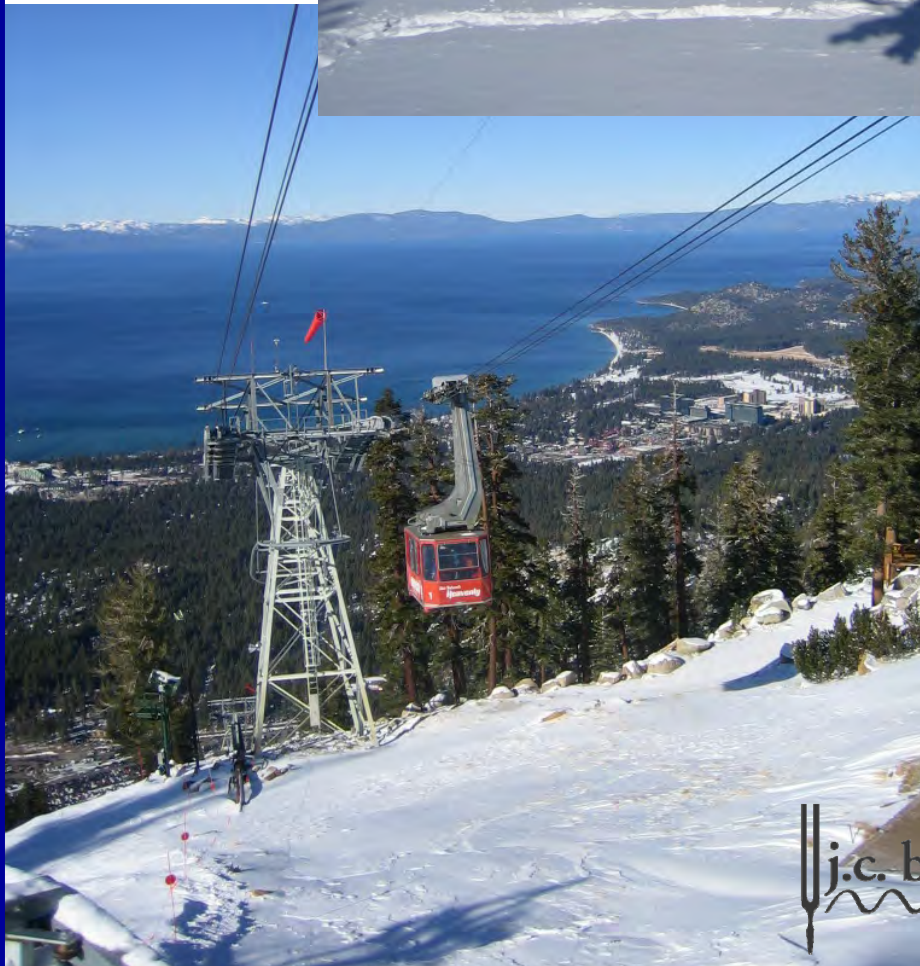
APPENDIX

X

2017 ANNUAL NOISE MONITORING
REPORT



Heavenly Ski Resort Master Plan Noise Monitoring Survey 2016-2017 Ski Season



 **j.c. brennan & associates**
consultants in acoustics

I INTRODUCTION

j.c. brennan & associates, Inc. is providing a final report for the Heavenly Master Plan Noise Mitigation Monitoring Plan, and analysis of noise measurement data collected during the 2016/2017 snowmaking operations at Heavenly Ski Resort. The noise measurements and analysis of data are required as a condition of approval for the Heavenly Master Plan EIS/EIR. This is the nineteenth annual analysis of snowmaking operations noise levels.

j.c. brennan & associates, Inc. staff have been involved in conducting the annual snowmaking operations noise analyses since the 1996/1997 ski seasons. The previous twelve noise analyses for the 2004/2005 through the 2016/2017 ski seasons were prepared by j.c. brennan & associates, Inc.

The conditions of approval for the Heavenly Master Plan EIS/EIR include instituting a comprehensive noise monitoring program, the replacement of older and louder air/ water nozzles with quiet model snowmaking equipment, sound control devices for snowmaking equipment, and participation with the snowmaking industry in the research and development of quiet snowmaking equipment and sound control devices for snowmaking equipment. The current technology considers quiet snowmaking equipment to include both fan guns and more efficient air/water nozzles (sometimes referred to as "stick guns"). Based upon noise measurement data collected for the various types of snowmaking equipment, fan guns are generally 10 or more dBA quieter than older model air/water nozzles. In recent years, significant reductions in noise have been realized from newer designs of some air/water nozzles. Generally, lower air pressure during the mixing process at the nozzle results in lower noise emissions.

Since the 1996/1997 ski season, Heavenly Ski Resort has committed to the installation of a permanent noise monitoring site at the base of the ski area near the California lodge, and to establishing the existing snowmaking noise levels at the Boulder Base and Stagecoach Base. Refer to Figure 1 for locations of noise monitoring sites.

According to the previous snowmaking noise reports, during the 1996/1997 ski season some quiet snowmaking equipment was installed and used at the California Base facilities. However, the use of quiet equipment was limited. During the 1997/1998 ski season, additional quiet snowmaking equipment was introduced into the fleet of snowmaking operations. During the 1998/1999 snowmaking operations, no additional quiet snowmaking equipment was implemented. Based upon review of the log of snowmaking activities provided by Heavenly, fan guns have been used in both the lower and upper locations of the California Base since the 1999/2000 ski season. Beginning with the 2008/2009 ski season, fan guns have been used extensively on the lower portion of the California Base area. Based upon the snowmaking logs, there has been limited use of air/water nozzles on the lower portion of the California side as an effort to reduce overall snowmaking noise levels.

Figure 1



II PURPOSE AND NEED

The purpose and need for the Annual Noise Monitoring Report is to address the attainment of performance standards contained within the Heavenly Master Plan and to address progress toward attainment of the TRPA noise level criteria.

TRPA Criteria

The Tahoe Regional Planning Agency (TRPA) has adopted Environmental Thresholds for the Lake Tahoe Region. The noise standards, or Thresholds as they are commonly referred to, are numerical Community Noise Equivalent Level (CNEL)¹ values for various land use categories and transportation corridors.

As a form of zoning, the TRPA has divided the Lake Tahoe Region into more than 175 separate Plan Areas. Boundaries for each of the Plan Areas have been established based upon similar land uses and the unique character of each geographic area. For each Plan Area, a Statement is made as to how that particular area should be regulated to achieve regional environmental and land use objectives. An outdoor CNEL standard is established based upon the Thresholds as a part of each Statement. Table 1 shows the existing CNEL standards for the Heavenly Plan Areas and adjacent Plan Areas.

Table 1 Plan Area Statement (PAS) CNEL Criteria		
PAS	Description	CNEL Criterion
087	Heavenly Valley California	55 dBA
085	Lakeview Heights (Location of California Base noise monitoring location)	55 dBA
094	Glenwood	50 dBA
095	Trout/Cold Creek	50 dBA
086	Heavenly Valley Nevada	55 dBA
082	Upper Kingsbury	55 dBA
080	Kingsbury Drainage	50 dBA
088	Tahoe Village	55 dBA

¹ For an explanation of these terms, see Appendix A: "Acoustical Terminology"

III COMPLIANCE REPORTING

III.1 Snow Grooming Noise

III.1a Master Plan Mitigation Methods

The Master Plan mitigation methods for snow grooming operations are to maintain an 85 foot setback from Plan Area boundaries that are adjacent to Heavenly. Operations of snow grooming equipment would not exceed Plan Area noise standards with a minimum of 85 feet of separation.

III.1.b Master Plan Milestone/Product

Snow grooming machines are not operated within 85 feet of PAS boundaries. Portions of the fleet are replaced continually with newer technology equipment

III.1c Responsible Party

Heavenly is responsible for educating snow groomers to maintain the 85 foot setback.

III.1d PAS Criteria

PAS 080 – 50 dB CNEL

PAS 082, 085, 086, 087, 088 – 55 dB CNEL

PAS 095, PAS 121 – 45 dB CNEL

III.1.e Results of Reporting and Determination of Compliance

In previous years this measure was included in the Cardno compliance report.

III.2 Snowmobile Noise

III.2.a Master Plan Mitigation Methods

Replace all snowmobiles with 4-stroke technology. This would ensure that snowmobiles would comply with the 82 dBA single event noise level standard. Currently, Heavenly only uses 4-stroke engine snowmobiles.

III.2.b Master Plan Milestone/Product

Snowmobile equipment is maintained and operated within 85 feet of PAS boundaries. Portions of the fleet are replaced with newer technology equipment on an annual basis.

III.2.c Responsible Party

Heavenly is responsible for replacing the fleet of snowmobiles with 4-stroke technology machines.

III.2.d Criteria

The TRPA single event noise level standard for snowmobiles is 82 dBA Lmax, at a distance of 50 feet.

III.2.e Results of Reporting and Determination of Compliance

Heavenly staff reported in 2008 that all snowmobiles in the fleet are 4-stroke engine technology. Noise measurement data collected for the snowmobiles indicate that they comply with the noise level criterion of 82 dBA Lmax. Therefore, this is in compliance with the TRPA thresholds.

Since the Heavenly snowmobile fleet has been converted to 4-stroke technology and the technology continues to focus attention on quiet operations, the Heavenly snowmobile fleet is expected to continue to become quieter over time. It is acknowledged within this report that this mitigation measure has attained compliance and can be removed from the master plan mitigation measures.

III.3 Snow Removal Noise

III.3.a Master Plan Mitigation Methods

Mitigation methods for snow removal noise impacts are to minimize nighttime snow removal operations, and by constructing noise barriers along the perimeters of the parking lots. At the California Base area, the upper parking lot should be cleared first, and clearing of the lower parking lot should be conducted during the daytime and evening hours.

III.3.b Master Plan Milestone/Product

Snow removal equipment is operated consistent with the measures listed above.

III.3.c Responsible Party

Heavenly is responsible for operating snow removal equipment consistent with the measures listed above.

III.3.d Criteria

PAS 080 – 50 dB CNEL

PAS 082, 085, 086, 087, 088 – 55 dB CNEL

PAS 095, PAS 121 – 45 dB CNEL

Results of Reporting and Determination of Compliance

To be provided in Cardno compliance report.

III.4 Snowmaking California Base Area Noise

III.4.a Master Plan Mitigation Methods

1. Use of fans in place of air/water nozzles or air/water guns which are low noise;
2. Re-direction of nozzles and fans to minimize noise exposures at PAS boundaries;
3. Reduction in the numbers of nozzles and/or fans;
4. Use of setbacks to reduce noise exposures at PAS boundaries;
5. Use of noise reduction housings for air/water nozzles;
6. Use of barriers at low-mounted air/water nozzles;
7. Reduction in snowmaking activities at nighttime;
8. Sponsor research into reducing noise produced by snowmaking. This may include support of industry-wide research activities, specific studies concerning nozzle design sponsored directly by Heavenly, and the study of alternatives in placement of guns and fans at Heavenly.

III.4.b Master Plan Milestone/Product

Heavenly has installed the long-term noise monitoring station at the California Base area. The annual noise monitoring occurs from approximately November 1st, and generally through March 31st, depending on the snowmaking activities. Heavenly has completely replaced the air-water snowmaking nozzles at the base of California with fan guns. Heavenly has not implemented items 4 through 6 listed above. However, Heavenly staff has closely monitored the snowpack produced through winter storms and snowmaking operations to determine the appropriate time for discontinuing snowmaking operations and reduce nighttime snowmaking noise levels. In addition, Heavenly continues to invest in conducting noise measurements of varying types of snowmaking equipment to determine the feasibility of introducing more quiet technology snowmaking equipment.

III.4.c Responsible Party

Heavenly is responsible for implementing the mitigation measures.

III.4.d PAS Criteria

PAS 080 – 50 dB CNEL

PAS 082, 085, 086, 087, 088 – 55 dB CNEL

PAS 095, PAS 121 – 45 dB CNEL

III.4.e Results of Reporting and Determination of Compliance

1996/1997 - 2016/2017 Snowmaking Noise Levels Summary:

Previous reports provide details on the analysis of past and present snowmaking seasons. Results of all noise monitoring surveys are provided in Tables 2 and 3.

2016/2017 Snowmaking Noise Levels Summary:

The ski season during the 2016/2017 spanned a total of approximately 181 days, however due to the amount of natural snowfall, snowmaking generally occurred between November 1, 2016 and December 31, 2016. Continuous noise level measurements were conducted between November 1, 2016 and March 31, 2017 at the permanent noise monitoring site, located on the USFS property located directly east of Heavenly Ski Area, and across Keller Road (PAS 085). The monitoring site is located on the southeast corner of the intersection of Keller Road and Saddle Road, with a direct line of sight to the California Base snowmaking operations. As mentioned in previous reports, the location of the noise monitor was at the northeast corner of Keller Road and Saddle Road, and adjacent to the Tahoe Seasons Resort. That monitoring location was reaching the limitations of its usefulness. Traffic noise from the intersection of Keller Road and Saddle Road was influencing the overall measured noise levels. The current location has sufficient setback to reduce the amount of noise associated with the traffic as it affected the overall measured noise levels and the noise levels associated with the snowmaking operations.

The equipment used for the noise level measurements was a Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter which was calibrated with an LDL Model CAL 200 acoustical calibrator. The sound level meter is powered by a solar panel with a deep cell battery back-up. The sound level meter was downloaded once per month, and was checked for calibration.

During the 2016/2017 ski season the Heavenly snowmaking staff continued the log of snowmaking operations, also noting the use and location of snowmaking equipment, during the hours of operation when snowmaking activity occurred. Upon review of the snowmaking activities log provided by Heavenly snowmaking personnel, the measured CNEL values during snowmaking activities was determined at the noise monitoring location. Noise associated with snowmaking activities was a function of the number and location of snowmaking nozzles and/or fans guns in operation. Table 2 summarizes the previous twenty years of snowmaking levels at the Tahoe Seasons Resort (PAS 085), as well as the 2016/2017 season.

<p align="center">Table 2 Summary of Measured Noise Levels at the Heavenly Base Area (Average Measured CNEL Values) Noise Monitoring Site GPS Coordinates (38° 56' 17.43" N - 119° 56' 18.43" W)</p>					
Year	CNEL on Days with Snowmaking	CNEL on Days without Snowmaking	CNEL During Measurement Period	Total # of Monitoring Days	Total # of Snowmaking Days
1996/1997	74.1 dBA	61.7 dBA	71.6 dBA	--	--
1997/1998	73.5 dBA	61.8 dBA	70.2 dBA	--	--
1998/1999	73.0 dBA	62.0 dBA	69.5 dBA	--	--
1999/2000	74.3 dBA	62.0 dBA	73.0 dBA	141	101
*2000/2001	74.1 dBA	60.0 dBA	72.2 dBA	140	89
*2001/2002	73.9 dBA	60.3 dBA	72.1 dBA	145	93
*2002/2003	72.0 dBA	63.1 dBA	68.3 dBA	150	61
*2003/2004	67.4 dBA	62.3 dBA	65.7 dBA	104	56
*2004/2005	65.3 dBA	61.5 dBA	63.1 dBA	149	51
*2005/2006	61.0 dBA	60.9 dBA	61.4 dBA	151	41
*2006/2007	63.7 dBA	58.1 dBA	62.6 dBA	149	75
*2007/2008	62.4 dBA	58.2 dBA	61.6 dBA	140	62
*2008/2009	62.4 dBA	59.7 dBA	61.2 dBA	119	75
**2009/2010	59.8 dBA	55.5 dBA	58.1 dBA	150	72
**2010/2011	57.9 dBA	55.6 dBA	56.5 dBA	150	52
**2011/2012	59.3 dBA	55.5 dBA	58.1 dBA	148	86
**2012/2013	60.1 dBA	55.9 dBA	58.6 dBA	143	77
**2013/2014	57.9 dBA	55.2 dBA	56.7 dBA	136	62
**2014/2015	58.7 dBA	52.5 dBA	57.0 dBA	148	86
**2015/2016	57.8 dBA	53.6 dBA	57.1 dBA	152	61
**2016/2017	59.5 dBA	58.3 dBA	56.1 dBA	151	43
<p>*The 2000/2001 - 2008/2009 measurement site was moved to the ground level of the Tahoe Seasons Resort. Previously this site was located at the roof-top of the Tahoe Seasons Resort. ** Noise measurement site located on USFS property @ northeast corner of Keller and Saddle. Year 2003-2004 Heavenly began Fan Gun Technology</p>					

The average measured CNEL value at the monitoring site for the 2016/2017 season was 59.5 dBA when snowmaking operations occurred. This is consistent with the lowest measured CNEL values since the reporting began. There continues to be significant progress in reducing snowmaking

noise since the introduction of the Fan Technology and improved noise reduction associated with air/water guns. In addition, the measured CNEL values on days without snowmaking operations was 58.8 dBA, and was not in compliance with the 085 and 087 Plan Area CNEL standards. It was still noted that when snowmaking did not occur there was influence from roadway traffic, wind and individuals recreating on the USFS property where the sound level meter is located. Figures 2 through 6 graphically show the results of the noise monitoring, as they compare to the TRPA CNEL criterion of 55 dBA for PAS 085 and 087.

Snowmaking can occur over a significant portion of the California side of the mountain. In addition, the array of snowmaking at the California Base can include air/water nozzle and fan-gun type snowmaking equipment. The fan-guns have been found to produce noise levels which are a minimum of 10 dBA less than the traditional air-water nozzle guns. Table 3 summarizes the last twelve years of CNEL values for varying types of snowmaking operations.

Table 3 Summary of Measured Noise Levels at the Heavenly Base Area Based upon Varying Arrays of Snowmaking Operations at the California Base					
Year	Days with Lower Snowmaking Only	Days with Upper Snowmaking Only	Days with Lower Air/Water Nozzles Only	Days with Upper Air/Water Nozzles Only	Days with Lower Fan-Guns Only
	Logarithmic CNEL				
2001-2002	74.7 dBA	63.7 dBA	72.2 dBA	63.7 dBA	NA ²
2002-2003	73.0 dBA	63.0 dBA	NA ³	62.8 dBA	NA ²
2003-2004	61.7 dBA	60.9 dBA	NA ³	60.3 dBA	61.1 dBA
2004-2005	64.1 dBA	60.3 dBA	66.1 dBA	NA ¹	NA ²
2005-2006	63.4 dBA	57.6 dBA	NA ³	NA ¹	63.4 dBA
2006-2007	65.4 dBA	60.2 dBA	NA ³	59.3 dBA	65.2 dBA
2007-2008	60.6 dBA	61.2 dBA	NA ³	62.0 dBA	60.1 dBA
2008-2009	64.3 dBA	58.1 dBA	NA ³	63.3 dBA	63.4 dBA
2009-2010	57.9 dBA	55.7 dBA	NA ³	58.4 dBA	57.9 dBA
2010-2011	58.8 dBA	52.7 dBA	NA ³	51.9 dBA	58.8 dBA
2011-2012	59.8 dBA	56.1 dBA	NA ³	53.4 dBA	58.5 dBA
2012-2013	60.2 dBA	55.5 dBA	NA ³	55.5 dBA	60.3 dBA
2013-2014	62.7 dBA	56.5 dBA	NA ³	55.3 dBA	62.7 dBA
2014-2015	62.1 dBA	54.2 dBA	NA ³	51.8 dBA	62.1 dBA
2015-2016	61.8 dBA	55.7 dBA	NA ³	56.3 dBA	61.8 dBA
2016-2017	NA ⁴	56.5 dBA	NA ³	60.1 dBA	NA ²
¹ NA - No snowmaking occurred with strictly Upper Air-Water Nozzles operating. ² NA - No snowmaking occurred with strictly Fan Guns operating. ³ NA - No snowmaking occurred with strictly Lower Air-Water Nozzles Only ⁴ NA- No snowmaking occurred with only lower snowmaking occurred					

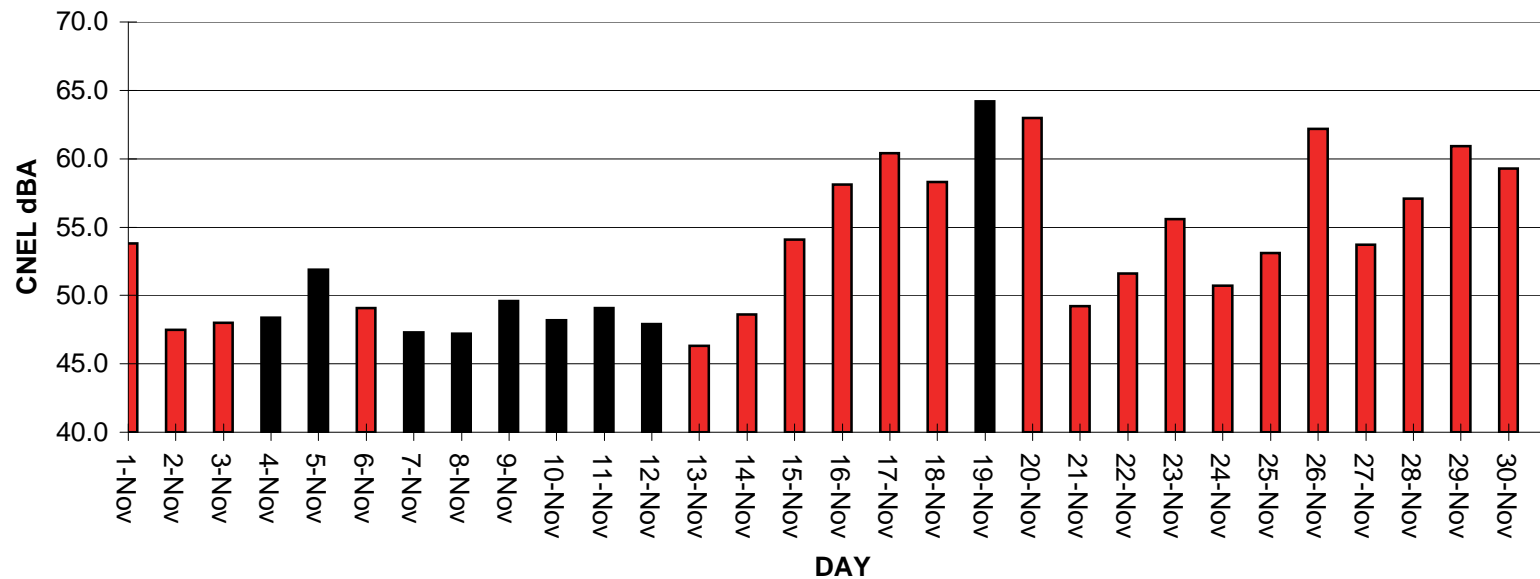
Figure 2

2016-101

Heavenly California Base Area Snowmaking Monitoring

Annual Snowmaking Report
Summary of CNEL
November-16

NOVEMBER 2016



NO SNOWMAKING



SNOWMAKING



CNEL Criterion

55 dBA

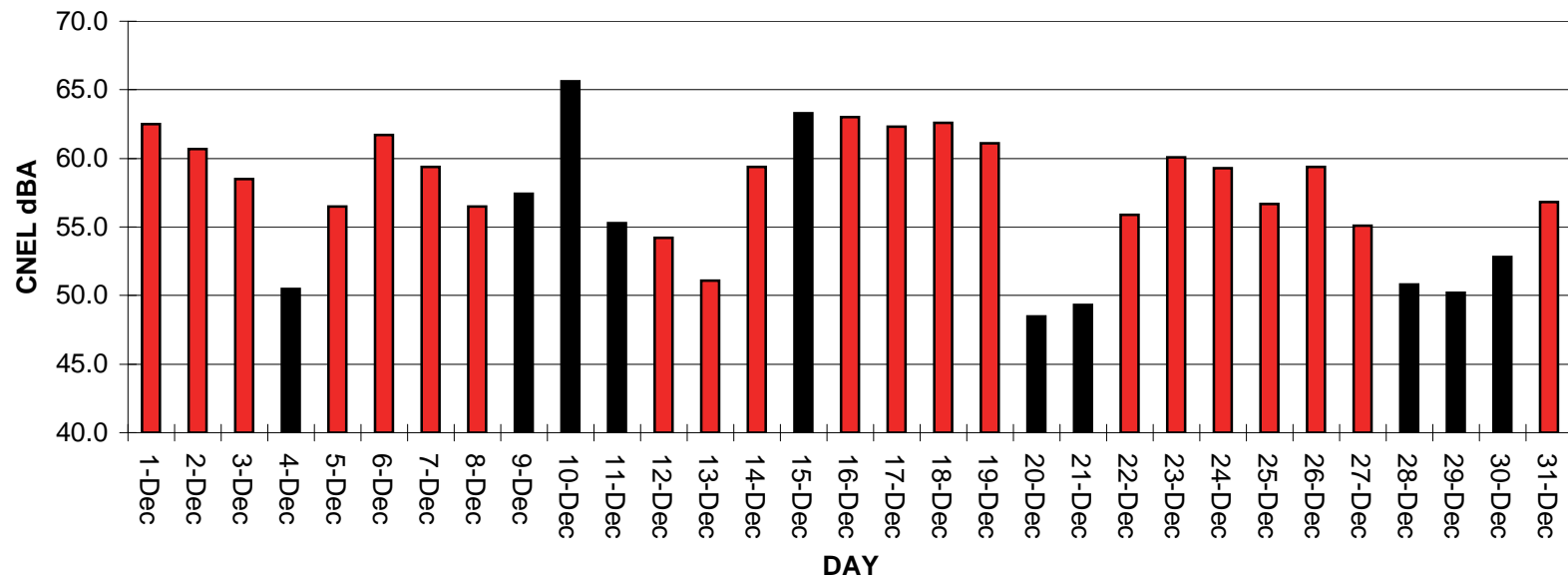
Figure 3

2016-101

California Base Area Heavenly Snowmaking Monitoring

Annual Snowmaking Report
Summary of CNEL
December-16

DECEMBER 2016



NO SNOWMAKING 
SNOWMAKING 
CNEL Criterion 55 dBA

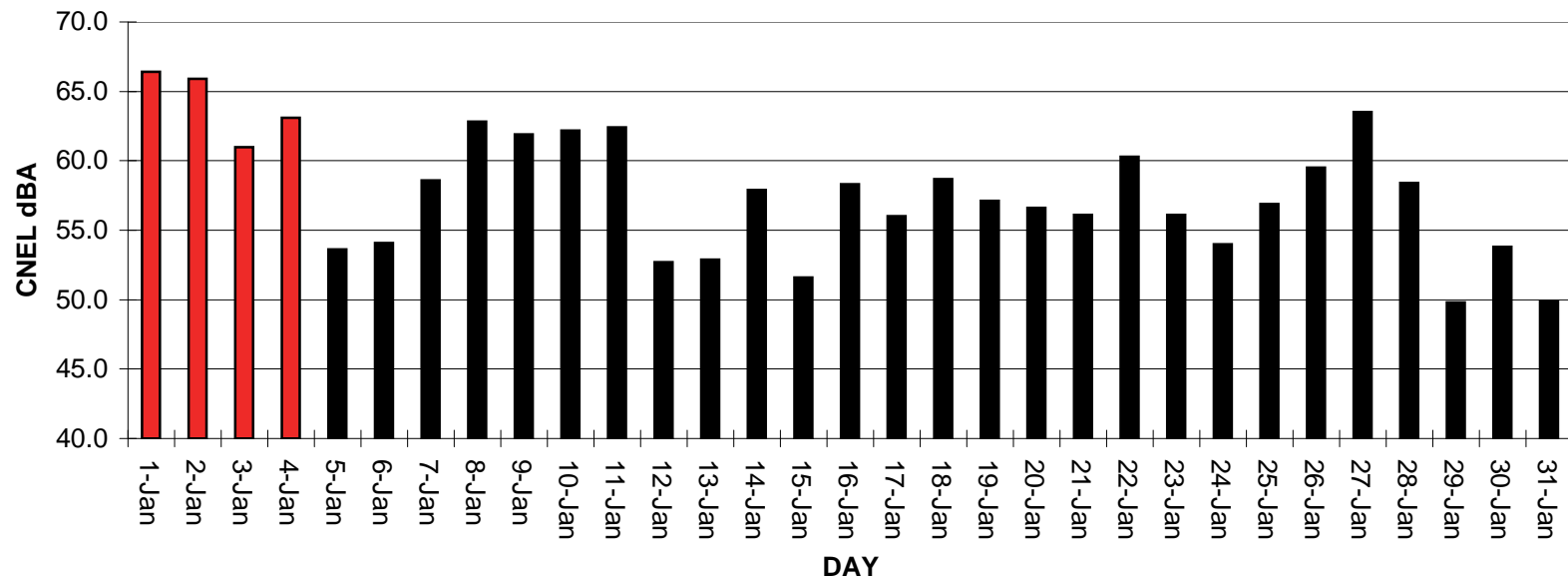
Figure 4

2016-101

California Base Area Heavenly Snowmaking Monitoring

Annual Snowmaking Report
Summary of CNEL
January-17

JANUARY 2017



NO SNOWMAKING



SNOWMAKING



CNEL Criterion

55 dBA

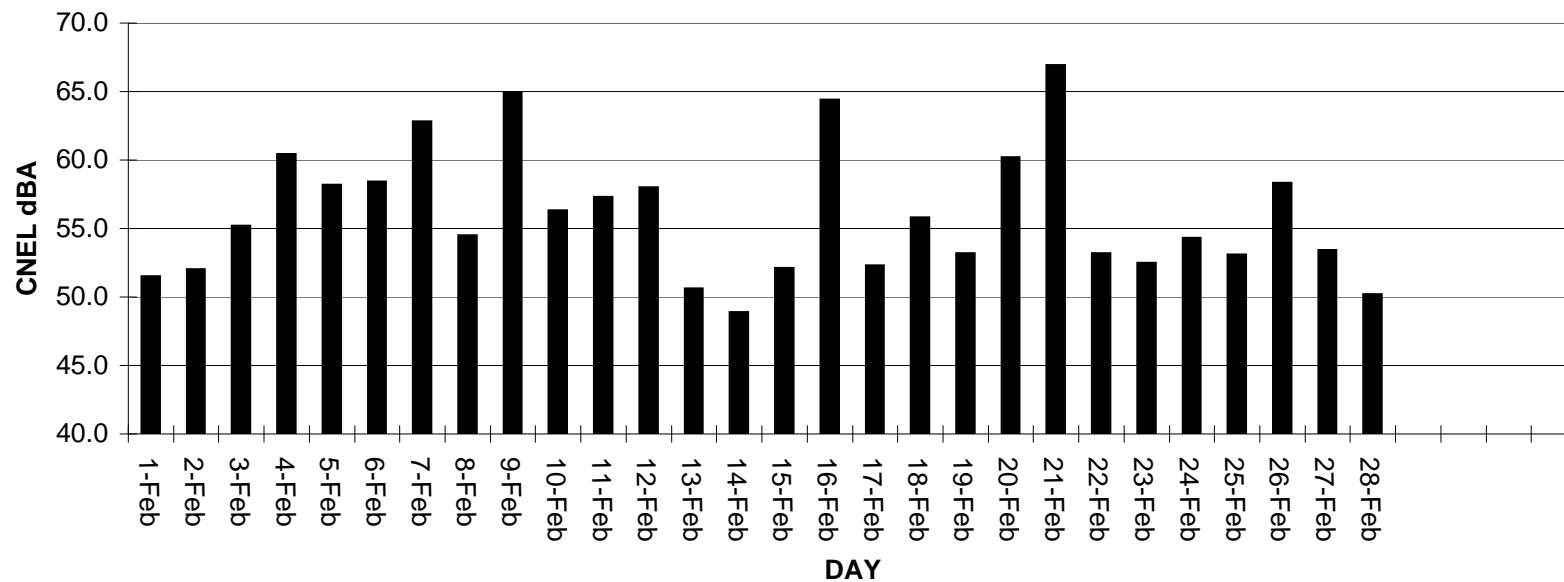
Figure 5

2016-101

California Base Area Heavenly Snowmaking Monitoring

Annual Snowmaking Report
Summary of CNEL
February-17

FEBRUARY 2017



NO SNOWMAKING



SNOWMAKING



CNEL Criterion

55 dBA

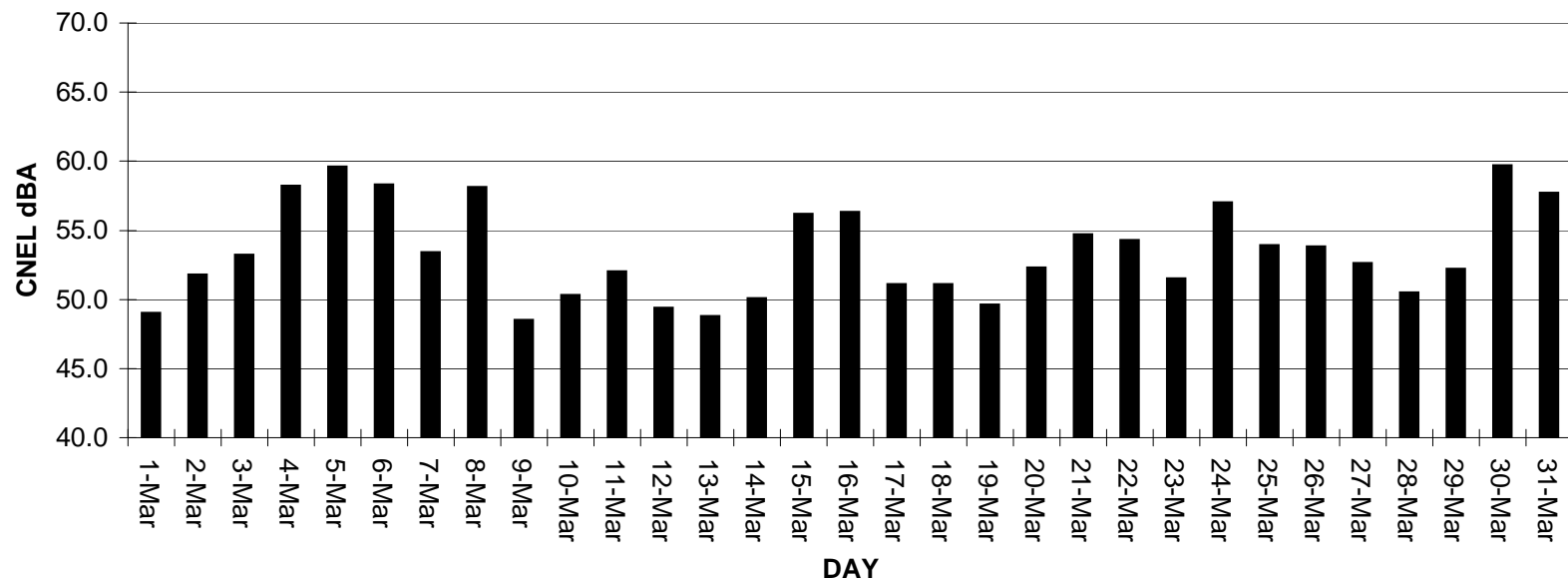
Figure 6

2016-101

California Base Area Heavenly Snowmaking Monitoring

Annual Snowmaking Report
Summary of CNEL
March-17

MARCH 2017



NO SNOWMAKING



SNOWMAKING



CNEL Criterion

55 dBA

Fan Gun Noise Levels

Heavenly has completed the process of converting the California Base snowmaking operations to the use of fan-guns. The lower mountain which includes the ski runs named Round About and Lower Gun Barrel. The types of fan guns which Heavenly is currently using include SMI Super Polecat and SMI Puma's. The air/water nozzle snowmaking guns are currently newer technology and produce lower noise levels than the older technology air/water nozzle snowmaking guns.

As Heavenly continues to introduce lower noise emission technology snowmaking equipment to the lower California snowmaking fleet, it is expected that a minimum noise level reduction of 3 dBA to 5 dBA can be achieved for all snowmaking operations. During the 2015/2016 ski season, Heavenly reported consistent use of fan guns for snowmaking at the lower portion of the California side. As the lower mountain converts to fan guns, it is expected that a reduction in snowmaking noise levels can be realized at the base areas.

The determining factors on overall noise from the snowmaking system include the types of snowmaking equipment, the number of air/water nozzles or fans operating at any time, and the total hours of operations. If fan gun technology is not capable of producing the amount of snow that the air/water nozzles produce, then snowmaking operations may require an increase in the number of fan guns operating at any one time and/or an increase in hours of operation.

III.5 Snowmaking at Boulder Base Area Noise

III.5.a Master Plan Mitigation Methods

1. Use of fans in place of air/water nozzles or using air/water nozzles which are low noise;
2. Re-direction of nozzles and fans to minimize noise exposures at PAS boundaries;
3. Reduction in the numbers of nozzles and/or fans;
4. Use of setbacks to reduce noise exposures at PAS boundaries;
5. Use of noise reduction housings for air/water nozzles;
6. Use of barriers at low-mounted air/water nozzles;
7. Reduction in snowmaking activities at nighttime;
8. Sponsor research into reducing noise produced by snowmaking. This may include support of industry-wide research activities, specific studies concerning nozzle design sponsored directly by Heavenly, and the study of alternatives in placement of guns and fans at Heavenly.
9. At the Stagecoach and Boulder Bases, Heavenly has replaced the older style air/water nozzles with newer generation Low-E "stick guns" and depending upon technological changes, may include fans.

III.5.b Master Plan Milestone/Product

During the 2016/2017 ski season, j.c. brennan & associates, Inc. has conducted short-term noise monitoring at the Boulder Base area. The noise monitoring occurs for short periods of time since the snowmaking only occurs for between 2 and 4 days per year. Heavenly anticipates replacing the air/water nozzles after complete replacement of nozzles with fan guns on the entire California face.

Heavenly is investing in low noise technology fan gun and air/water nozzles and anticipates this is the next area for replacement of noisy air/water nozzles. Heavenly has not implemented any of the other mitigation measures listed above.

III.5.c Responsible Party

Heavenly is responsible for implementing the mitigation measures.

III.5.d PAS Criteria

PAS 080 – 50 dB CNEL

PAS 082, 085, 086, 087, 088 – 55 dB CNEL

PAS 095, PAS 121 – 45 dB CNEL

III.5.e Results of Reporting and Determination of Compliance

Short-term noise level measurements of snowmaking operations were conducted during the 2016/2017 ski season at the Boulder Base on December 18, 2016. Measured noise levels at this location were approximately 67 dBA Leq during snowmaking operations. Measurements were also conducted at the corner of Jack Circle and Bonnie Court. The measured noise levels were approximately 62 dBA Leq. The results of the ambient noise measurements for the 2015/2016 ski season and previous ski seasons are shown in Table 4. The predicted CNEL value at the Boulder Base is 74 dBA. The predicted CNEL value at the Jacks Circle location is 69 dBA.

The CNEL calculations assume snowmaking operations occur continually for a 24-hour period.

Table 4 Ambient Noise Level Measurements for the Boulder Base Area				
Year	Date	Measured Sound Level, Leq		
		Boulder Base Site 1	Corner of Jack Cir. & Bonnie Ct. - Site 2	
			Measured	Measured for Master Plan
1999-2000	December 14, 1999	70 dBA	63 dBA	65 dBA
2000-2001	December 14, 2000	73 dBA	65 dBA	
2001-2002	NA ¹	NA ¹	NA	
2002-2003	February 4, 2003	71 dBA	53 dBA	
2003-2004	December 8, 2003	60 dBA	NA ¹	
2004-2005	December 3, 2004	66 dBA	58 dBA	
2005-2006	December 13, 2005	71 dBA	64 dBA	
2006-2007	December 28, 2006	68 dBA	63 dBA	
2007-2008	December 31, 2007	67 dBA	65 dBA	
2008-2009	December 24, 2008	67 dBA	65 dBA	
2009-2010	December 15, 2009	68 dBA	62 dBA	
2010-2011	December 15, 2010	67 dBA	64 dBA	
2011-2012	December 22, 2011	68 dBA	65 dBA	
2012-2013	December 17, 2012	67 dBA	63 dBA	
2013-2014	January 15, 2014	69 dBA	64 dBA	
2014-2015	December 18, 2014	68 dBA	62 dBA	
2015-2016	December 14, 2015	69 dBA	63 dBA	
2016-2017	December 18, 2016	67 dBA	62 dBA	
¹ Snowmaking operations did not occur at this location during this season. Boulder Base GPS Coordinates (38° 58.3' 3.98" N - 119° 53' 25.81"W) Jack Circle/Bonnie Ct. GPS Coordinates (38° 58' 5.14" N – 119° 53' 34.76" W)				

Currently, the snowmaking operations are out of compliance with the TRPA criteria.

III.6 Snowmaking at Stagecoach Base Area Noise

III.6.a Master Plan Mitigation Methods

1. Use of fans in place of air/water nozzles or air/water guns which are low noise;
2. Re-direction of nozzles and fans to minimize noise exposures at PAS boundaries;
3. Reduction in the numbers of nozzles and/or fans;
4. Use of setbacks to reduce noise exposures at PAS boundaries;
5. Use of noise reduction housings for air/water nozzles;
6. Use of barriers at low-mounted air/water nozzles;
7. Reduction in snowmaking activities at nighttime;

8. Sponsor research into reducing noise produced by snowmaking. This may include support of industry-wide research activities, specific studies concerning nozzle design sponsored directly by Heavenly, and the study of alternatives in placement of guns and fans at Heavenly.
9. At the Stagecoach and Boulder Bases, Heavenly will strive to replace all air/water nozzles with fans.

III.6.b Master Plan Milestone/Product

During the 2016/2017 ski season, noise measurements were not conducted at the Stagecoach Base area. This was due to the fact that snowmaking occurred for a very short period of time, and j.c. brennan & associates, Inc. was not notified of the operations in time to do the measurements. j.c. brennan & associates, Inc. is working with Heavenly staff to avoid any future miscommunication.

III.6.c Responsible Party

Heavenly is responsible for implementing the mitigation measures.

III.6.d PAS Criteria

This area is located outside of the TRPA area of influence.

III.6.e Results of Reporting and Determination of Compliance

Short-term noise level measurements of snowmaking operations were not conducted during the 2016/2017 ski season. Previous noise level measurements of snowmaking operations are shown in Table 5.

Table 5 Ambient Noise Level Measurements Stage Coach Base Area					
Year	Date	Measured Sound Level, L _{eq}			
		460 Quaking Aspen Rd. Site 3		Entrance to The Ridge Site 4	Eagles Nest Site 5
		Measured	Measured for Master Plan		
1999-2000	December 4, 1999	87 dBA	82-92 dBA	62 dBA	78 dBA
2000-2001	December 11, 2000	86 dBA		56 dBA	72 dBA
2001-2002	November 30, 2001	57 dBA		55 dBA	59 dBA
2002-2003	February 2, 2003	83 dBA		--	70 dBA
2003-2004	December 8, 2003	87 dBA		58 dBA	74 dBA
2004-2005	November 30, 2004	81 dBA		58 dBA	68 dBA
2005-2006	December 5, 2005	81 dBA		63 dBA	73 dBA
2006-2007	December 18, 2006	88 dBA		62 dBA	72 dBA
2007-2008	December 20, 2007	82 dBA		60 dBA	68 dBA
2008-2009	December 17, 2008	78 dBA		55 dBA	65 dBA
2009-2010	December 8, 2009	78 dBA		56 dBA	62 dBA
2010-2011	November 29, 2010	78 dBA		58 dBA	65 dBA
2011-2012	December 9, 2011	75 dBA		57 dBA	62 dBA
2012-2013	December 14, 2012	78 dBA		57 dBA	60 dBA
2013-2014	December 9, 2013	77 dBA		56 dBA	60 dBA
2014-2015	December 14, 2014	77 dBA		55 dBA	61 dBA
2015-2016	November 25, 2015	76 dBA		58 dBA	61 dBA
2016-2017	--	--	--	--	
Quaking Aspen GPS Coordinates (38° 57' 37.52" - 119° 53' 16.57" W) Entrance to Ridge GPS Coordinates (38°57' 46.68" N - 119° 56' 3.68" W) Eagles Nest GPS Coordinates (38° 57' 35.04" N - 119° 53' 23.63" W)					

III.7 Snowmaking Upper Mountain Noise

III.7.a Master Plan Mitigation Methods

In order to reduce overall snowmaking noise levels, Heavenly shall use fan guns or other similar noise reduction measures for all new snowmaking areas. In addition, where new snowmaking is placed adjacent to existing ski trails with snowmaking, Heavenly shall convert the existing air/water snowmaking nozzles with fan guns or use other similar noise reduction measures to maintain or reduce existing noise levels in that area.

III.7.b Master Plan Milestone/Product

Snowmaking noise from the upper mountain areas is monitored and evaluated from the California

Base Area permanent noise monitor, and through Remote Plan Area monitoring. The analysis to date indicates that upper mountain snowmaking does not exceed the ambient noise when snowmaking is not occurring. New snowmaking installations are fan guns.

III.7.c Responsible Party

Heavenly is the responsible party.

III.7.d PAS Criteria

PAS 080 – 50 dB CNEL

PAS 082, 085, 086, 087, 088 – 55 dB CNEL

PAS 095, PAS 121 – 45 dB CNEL

III.7.e Results of Reporting and Determination of Compliance

Noise measurements of Remote Plan Areas were not conducted for this report. This is due to the fact that those measurements are generally conducted in January or February. However, Heavenly discontinued snowmaking operations on January 4, 2017.

GPS coordinates for the Remote Plan Area measurements sites are as follows:

Party Rock (38° 56' 27.63" N - 119° 56' 1.35" W);

Liz's / Canyon Run (38° 54' 47.5" N - 119° 54' 43" W).

III.8 Rock Busting Noise

III.8.a Master Plan Mitigation Methods

Rock busting generally occurs through the use of explosives and blasting. Control the number, size and location of Rock Busting blasts.

III.8.b Master Plan Milestone/Product

None

III.8.c Responsible Party

Heavenly is the responsible party.

III.8.d PAS Criteria

PAS 080 – 50 dB CNEL

PAS 082, 085, 086, 087, 088 – 55 dB CNEL

PAS 095, PAS 121 – 45 dB CNEL

III.8.e Results of Reporting and Determination of Compliance

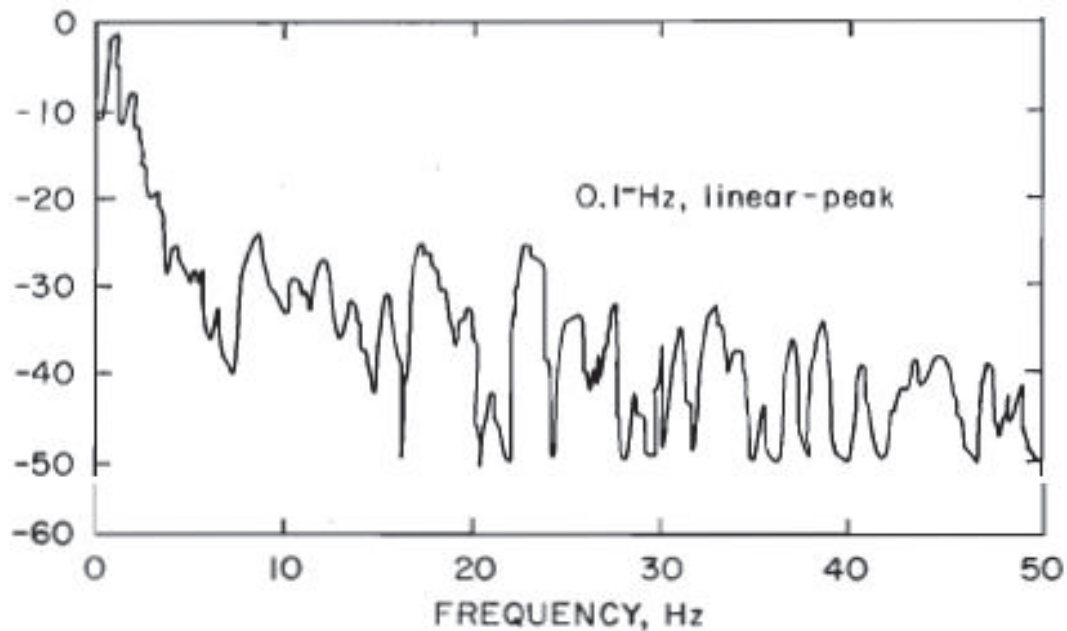
Heavenly has not contacted j.c. brennan & associates, Inc. to conduct noise measurements of blasting or rock busting. It is assumed that this activity has not occurred.

The process associated with rock busting includes setting explosive charges. The process includes drilling holes in the rock to set the charges. In general, blasting is controlled using micro delays between charges and by limiting charge size to minimize dispersal of the rock fragments, and to ensure the safety of the workers. Blasting is also controlled to prevent damage to nearby structures.

Airborne overpressures produced by blasting are typically measured in terms of the overall peak sound pressure level, without applying the A-weighting filter. The dominant frequencies of sound pressures associated with blasting lie in the very low frequency ranges of 2 Hz to 25 Hz, and the acoustical energy is concentrated below about 5 Hz. The figure below depicts a typical blast acoustical spectrum, which shows that the acoustical energy is concentrated well below 5 Hz.

Typical Blast Acoustical Spectrum

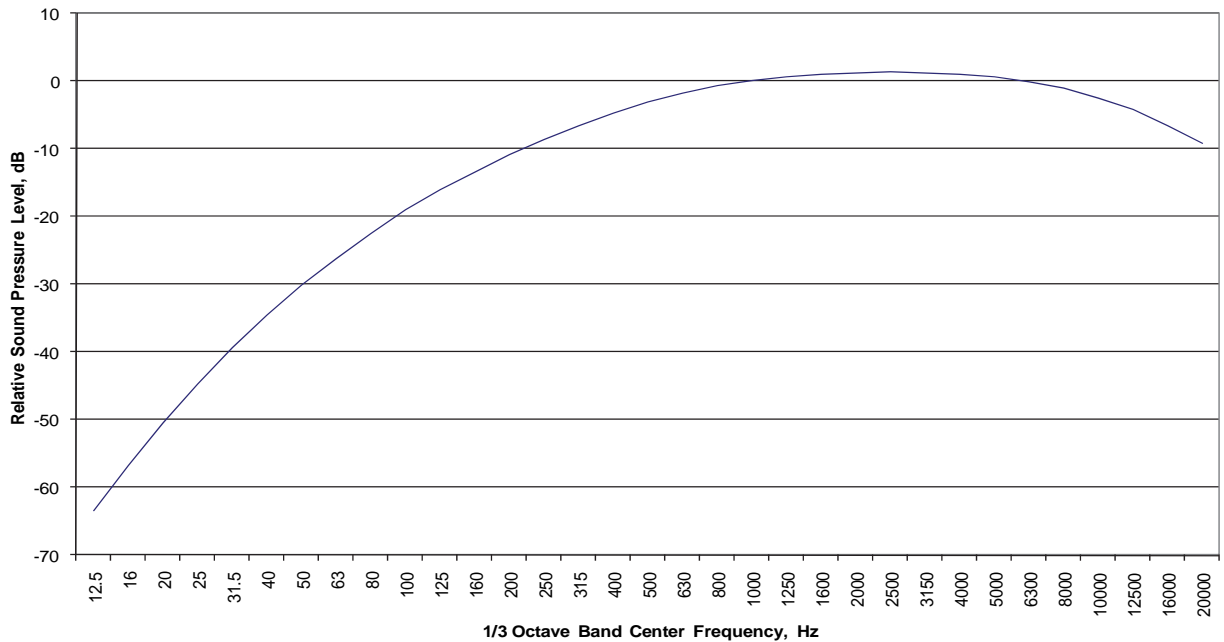
Relative Amplitude, dB



Source: "Airblast Instrumentation and Measurement Techniques for Surface Mine Blasting"
U.S. Dept. of the Interior Report of Investigations 8508.

Audible sound, in contrast, is usually assumed to begin at 20 Hz, ranging up to 20,000 Hz. People hear best at frequencies in the range of 1,000 Hz to 4,000 Hz, and people hear poorly at the low frequencies associated with blast overpressures. As a result, the A-weighting curve is usually applied to other environmental noise measurements. The A-weighting curve is shown by Figure 7 below.

Figure 7
A-Weighting Filter Response



The A-weighting adjustment factor for sound at 25 Hz (the upper limit of the dominant blast frequencies) is -44.7 dB. There are no published A-weighting correction factors below 12.5 Hz (where the A-weighting correction factor is -63.4 dB). These factors indicate that very high blast overpressures would be required to generate sound pressure levels that would be audible in an outdoor environment.

The audible sound associated with blasting is the result of escaping gases and falling (slumping) rock. Subjectively, audible blasting sound has been described as similar to the closing of a car trunk, or to rolling thunder. While these terms are subjective rather than quantitative, the described sounds are relatively benign. Audible noise due to blasting is not commonly considered to be a significant source of annoyance if blasting is controlled to meet safety standards on the project site.

Since rock busting is such an infrequent event, and is not considered to be a significant noise source, it is recommended that this mitigation monitoring measure is removed.

III.9 Amphitheater Operations Noise

III.9.a Master Plan Mitigation Methods

Restrict hours of concert noise to the daytime and early evening hours. This is consistent with the hours of operations assumed for the amphitheater noise study. In addition, concerts should not extend more than 6 hours in duration.

III.9.b Master Plan Milestone/Product

Heavenly has conducted a concert simulation and amphitheater noise study.

III.9.c Responsible Party

Heavenly is the responsible party

III.9.d PAS Criteria.

PAS 080 – 50 dB CNEL

PAS 082, 085, 086, 087, 088 – 55 dB CNEL

PAS 095, PAS 121 – 45 dB CNEL

III.9.e Results of Reporting and Determination of Compliance

No concerts were monitored.

Appendix A

Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three (+5 dB for TRPA calculations) and nighttime hours weighted by a factor of 10 (or +10 dB) prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.
RT₆₀	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

Appendix B

2016-101

Heavenly Snowmaking Monitoring

Annual Snowmaking Report

Summary of CNEL

November-16

Day	CNEL dB	Snow	California				Nevada				York		
			Upper		Lower		Upper		Lower		Base		
			A	F	A	F	A	F	A	F	F	CNEL Average	
1-Nov	53.8	Y	23	9								No Snowmaking	55.6
2-Nov	47.5	Y	31	8								Snowmaking	57.0
3-Nov	48.0	Y		8								Total	56.7
4-Nov	48.4	N											
5-Nov	51.9	N											
6-Nov	49.1	Y		8								# of No Snowmaking Days	9
7-Nov	47.3	N										# of Snowmaking Days	21
8-Nov	47.2	N										Total Days of Monitoring	30
9-Nov	49.6	N											
10-Nov	48.2	N											
11-Nov	49.1	N											
12-Nov	47.9	N											
13-Nov	46.3	Y		8									
14-Nov	48.6	Y		8									
15-Nov	54.1	Y		8									
16-Nov	58.1	Y	4	2									
17-Nov	60.4	Y	40	7									
18-Nov	58.3	Y	37	8		6							
19-Nov	64.2	N											
20-Nov	63.0	Y	5	8									
21-Nov	49.2	Y		8									
22-Nov	51.6	Y	20	5									
23-Nov	55.6	Y	6	2									
24-Nov	50.7	Y	15	6									
25-Nov	53.1	Y	7	3									
26-Nov	62.2	Y	8	3									
27-Nov	53.7	Y	14	5									
28-Nov	57.1	Y	16	4									
29-Nov	60.9	Y	11	1		6							
30-Nov	59.3	Y	16	4		8							

* A- Air Nozzles

F- Fan Guns

No Snowmaking Log Available

Snowmaking

Meter Downtime/Incomplete Data

Appendix B

2016-101

Heavenly Snowmaking Monitoring

Annual Snowmaking Report

Summary of CNEL

Dec-16

Day	CNEL dB	Snow	California				Nevada						
			Upper	Lower	Upper	Lower	Base	York					
			A	F	A	F	A	F	A	F	F	CNEL Average	
1-Dec	62.5	Y	15	4		9						No Snowmaking	58.7
2-Dec	60.7	Y	25	3		8						Snowmaking	59.6
3-Dec	58.5	Y	16	4		8						Total	59.4
4-Dec	50.5	N											
5-Dec	56.5	Y	12	3									
6-Dec	61.7	Y	8	3		14						# of No Snowmaking Days	10
7-Dec	59.4	Y	10	3		9						# of Snowmaking Days	21
8-Dec	56.5	Y	10	13								Total Days of Monitoring	31
9-Dec	57.4	N											
10-Dec	65.6	N											
11-Dec	55.3	N											
12-Dec	54.2	Y	23	4									
13-Dec	51.1	Y	32	5									
14-Dec	59.4	Y	25	1									
15-Dec	63.3	N											
16-Dec	63.0	Y	17			10							
17-Dec	62.3	Y	24			10							
18-Dec	62.6	Y	20			12							
19-Dec	61.1	Y	19			12							
20-Dec	48.5	N											
21-Dec	49.3	N											
22-Dec	55.9	Y	19	3		12							
23-Dec	60.1	Y	26										
24-Dec	59.3	Y	16	4		9							
25-Dec	56.7	Y	24			9							
26-Dec	59.4	Y	24			8							
27-Dec	55.1	Y	32			5							
28-Dec	50.8	N											
29-Dec	50.2	N											
30-Dec	52.8	N											
31-Dec	56.8	Y	25		12	1							

* A- Air Nozzles

F- Fan Guns

No Snowmaking Log Available

Snowmaking

Meter Downtime/Incomplete Data

Appendix B

2016-101

Heavenly Snowmaking Monitoring

Annual Snowmaking Report

Summary of CNEL

January-17

		California						Nevada						
Day	CNEL dB	Snow	Upper		Lower		Upper		Lower		Base	York		
			A	F	A	F	A	F	A	F	F			
1-Jan	66.4	Y	25		11	1							CNEL Average	
2-Jan	65.9	Y	20		11	9							No Snowmaking	58.7
3-Jan	61.0	Y	15		17	9							Snowmaking	65.0
4-Jan	63.1	N	15		17	9							Total	59.9
5-Jan	53.6	N												
6-Jan	54.1	N											# of No Snowmaking Days	28
7-Jan	58.6	N											# of Snowmaking Days	3
8-Jan	62.8	N											Total Days of Monitoring	31
9-Jan	61.9	N												
10-Jan	62.2	N												
11-Jan	62.4	N												
12-Jan	52.7	N												
13-Jan	52.9	N												
14-Jan	57.9	N												
15-Jan	51.6	N												
16-Jan	58.3	N												
17-Jan	56.0	N												
18-Jan	58.7	N												
19-Jan	57.1	N												
20-Jan	56.6	N												
21-Jan	56.1	N												
22-Jan	60.3	N												
23-Jan	56.1	N												
24-Jan	54.0	N												
25-Jan	56.9	N												
26-Jan	59.5	N												
27-Jan	63.5	N												
28-Jan	58.4	N												
29-Jan	49.8	N												
30-Jan	53.8	N												
31-Jan	49.9	N												

* A- Air Nozzles

F- Fan Guns

No Snowmaking Log Available

Snowmaking

Meter Downtime/Incomplete Data

Appendix B

2016-101

Heavenly Snowmaking Monitoring

Annual Snowmaking Report

Summary of CNEL

February-17

		California					Nevada								
		Snow	Upper		Lower		Upper		Lower		Base	York			
Day	CNEL dB		A	F	A	F	A	F	A	F	F		CNEL Average		
1-Feb	51.5	N												No Snowmaking	58.9
2-Feb	52.0	N												Snowmaking	#DIV/0!
3-Feb	55.2	N												Total	58.9
4-Feb	60.4	N													
5-Feb	58.2	N													
6-Feb	58.4	N												# of No Snowmaking Days	28
7-Feb	62.8	N												# of Snowmaking Days	0
8-Feb	54.5	N												Total Days of Monitoring	28
9-Feb	64.9	N													
10-Feb	56.3	N													
11-Feb	57.3	N													
12-Feb	58.0	N													
13-Feb	50.6	N													
14-Feb	48.9	N													
15-Feb	52.1	N													
16-Feb	64.4	N													
17-Feb	52.3	N													
18-Feb	55.8	N													
19-Feb	53.2	N													
20-Feb	60.2	N													
21-Feb	66.9	N													
22-Feb	53.2	N													
23-Feb	52.5	N													
24-Feb	54.3	N													
25-Feb	53.1	N													
26-Feb	58.3	N													
27-Feb	53.4	N													
28-Feb	50.2	N													

* A- Air Nozzles

F- Fan Guns

No Snowmaking Log Available

Snowmaking

Meter Downtime/Incomplete Data

Appendix B

2016-101

Heavenly Snowmaking Monitoring

Annual Snowmaking Report

Summary of CNEL

March-17

California							Nevada								
Day	CNEL dB	Snow	Upper		Lower		Upper		Lower		Base	York			
			A	F	A	F	A	F	A	F	F		CNEL Average		
1-Mar	49.0	N												No Snowmaking	54.7
2-Mar	51.8	N												Snowmaking	#DIV/0!
3-Mar	53.2	N												Total	54.7
4-Mar	58.2	N													
5-Mar	59.6	N													
6-Mar	58.3	N												# of No Snowmaking Days	31
7-Mar	53.4	N												# of Snowmaking Days	0
8-Mar	58.1	N												Total Days of Monitoring	31
9-Mar	48.5	N													
10-Mar	50.3	N													
11-Mar	52.0	N													
12-Mar	49.4	N													
13-Mar	48.8	N													
14-Mar	50.1	N													
15-Mar	56.2	N													
16-Mar	56.3	N													
17-Mar	51.1	N													
18-Mar	51.1	N													
19-Mar	49.6	N													
20-Mar	52.3	N													
21-Mar	54.7	N													
22-Mar	54.3	N													
23-Mar	51.5	N													
24-Mar	57.0	N													
25-Mar	53.9	N													
26-Mar	53.8	N													
27-Mar	52.6	N													
28-Mar	50.5	N													
29-Mar	52.2	N													
30-Mar	59.7	N													
31-Mar	57.7	N													

* A- Air Nozzles

F- Fan Guns

No Snowmaking Log Available

Snowmaking

Meter Downtime/Incomplete Data

Heavenly Mountain Resort
Mitigation and Monitoring Plan
Annual Report (October 2016 –
September 2017)

APPENDIX

XI

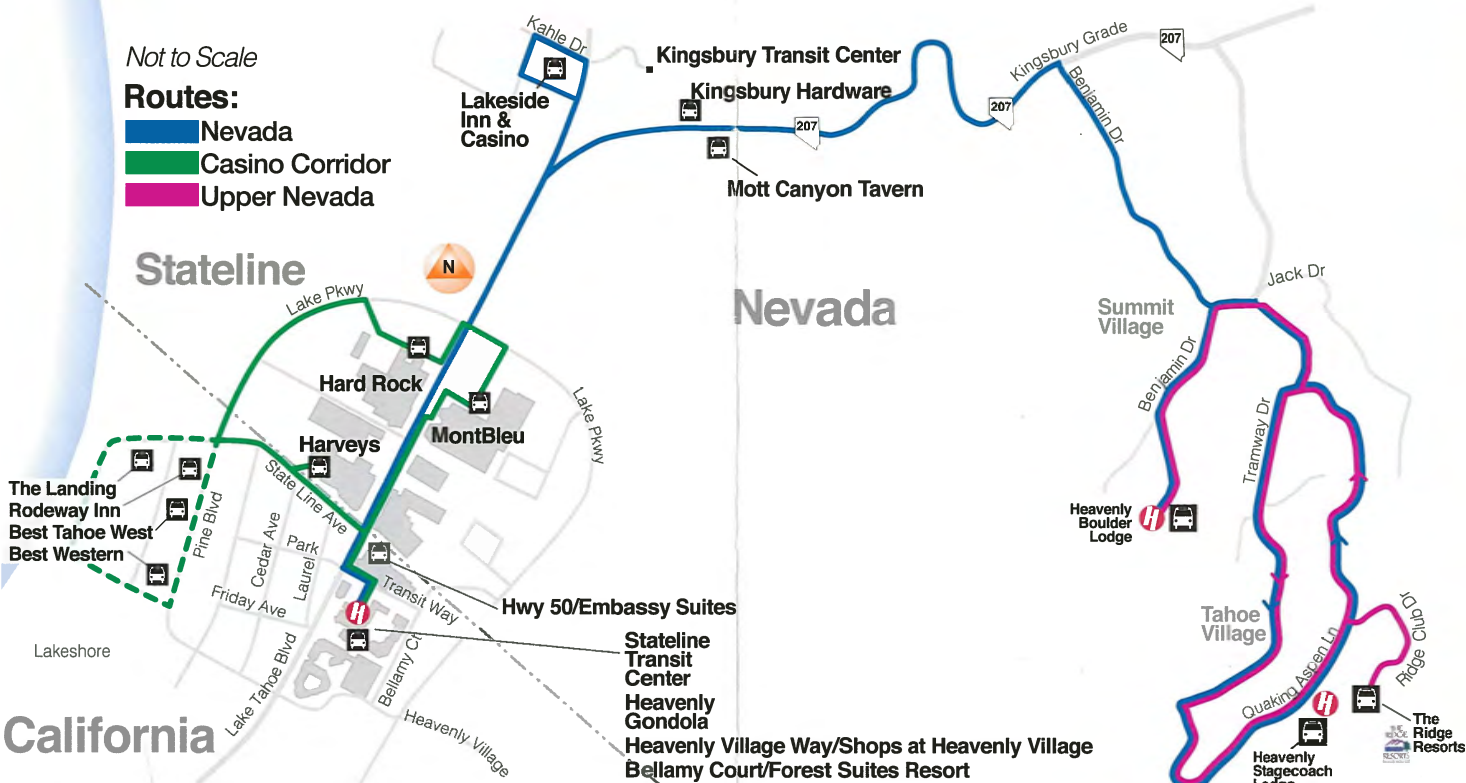
SKI SHUTTLE & ROUTE SCHEDULE

Kingsbury Grade & Stateline Shuttle Routes

Not to Scale

Routes:

- Nevada
- Casino Corridor
- Upper Nevada



WINTER SHUTTLE GUIDE



California South Lake Tahoe

NEVADA: WEEKEND/HOLIDAY

8AM TO 6PM

Heavenly Gondola	Lakeside Inn & Casino	Mott Canyon Tavern	Heavenly Boulder Lodge	Heavenly Stagecoach Lodge	Kingsbury Hardware	Lakeside Inn & Casino	Heavenly Gondola
:00	:05	:07	:20	:35	:48	:50	:55
:20	:25	:27	:40	:55	:08	:10	:15
:40	:45	:47	:00	:15	:18	:30	:35

NEVADA: WEEKDAY

8AM TO 6PM

Heavenly Gondola	Lakeside Inn & Casino	Mott Canyon Tavern	Heavenly Boulder Lodge	Heavenly Stagecoach Lodge	Kingsbury Hardware	Lakeside Inn & Casino	Heavenly Gondola
:00	:05	:07	:20	:35	:48	:50	:55
:30	:35	:37	:50	:05	:18	:20	:25

CASINO CORRIDOR

8AM TO 2PM*

Heavenly Gondola	MontBleu	Hard Rock	Rodeway Inn	Best Tahoe West Inn	Best Western & The Landing	Harvey's	Heavenly Gondola
:00	:08	:10	on request	on request	on request	:15	:18
:20	:28	:30	on request	on request	on request	:35	:38
:40	:48	:50	on request	on request	on request	:55	:58

UPPER NEVADA: HOLIDAY/WEEKEND

8:15-11:15AM & 2:15-5:45PM

Heavenly Boulder Lodge	Heavenly Stagecoach Lodge	The Ridge Resorts Clubhouse*	Heavenly Stagecoach Lodge	Heavenly Boulder Lodge
:15	:25	:30	:35	:45
:30	:40	:45	:50	:00
:45	:55	:00	:05	:15
:00	:10	:15	:20	:30

UPPER NEVADA: WEEKEND

11:15AM-2:15PM

UPPER NEVADA: WEEKDAY

8AM TO 6PM

Heavenly Boulder Lodge	Heavenly Stagecoach Lodge	The Ridge Resorts Clubhouse*	Heavenly Stagecoach Lodge	Heavenly Boulder Lodge
:00	:10	:15	:20	:30
:30	:40	:45	:50	:00

*Service to The Ridge Resorts begins at 8:15 a.m. Last Ridge Drop off at 5:45 p.m.



(530) 541-7149 ext. 0



(775) 586-7000



(530) 541-7149 ext. 0



Sacramento River

*The time tables are in service from 8:00 a.m. - 2:00 p.m. After 2:00 p.m. the shuttles make continuous loops from Stateline Transit Center to expedite guest return to their lodging properties until

Rock House Rentals	Black Bear Inn	Ski Run & Pioneer Trail	Heavenly California Lodge	Heavenly Valley Lodge	Tahoe Beach & Ski	Lakeland Village	Lakeshore Lodge	Beach Retreat & Lodge	Inn By The Lake	Highway 50 Safeway	Knight's Inn	Lake Tahoe Vacation Resort
:02	:04	:05	:10	:12	:15	:16	:17	:19	:21	:23	:25	:27
:32	:34	:35	:40	:42	:45	:46	:47	:49	:51	:53	:55	:57

vice from 8:00 a.m. - 2:00 p.m. After 2:00 p.m. the shuttles make continuous loops from the California base lodge to expedite guest return to their lodging properties until approximately 6:00 p.m.

& South Shore routes

lake Tahoe Blvd.
 California
 ski Run



Heavenly Gondola	Tahoe Beach & Ski	Lakeland Village	Lakeshore Lodge & Spa	Beach Retreat & Lodge	Inn By The Lake	Safeway	Knight's Inn	Lake Tahoe Vacation Resort	Econo Lodge	Heavenly Gondola
:00	:05	:06	:08	:10	:12	:14	:16	:20	:23	:25
:30	:35	:36	:38	:40	:42	:44	:46	:50	:53	:55

NOTE: Service begins at 8:12AM at Inn By The Lake
 *The time tables are in service from 8:00 a.m. - 2:00 p.m. After 2:00 p.m. the shuttles make continuous loops from Stateline Transit Center to expedite guest return to their lodging properties until approximately 6:00 p.m.

CALIFORNIA ROUTE 8AM TO 6PM								
Heavenly Gondola	Pioneer Tr 7-Eleven	Ski Run Blvd/Pioneer Trail	Heavenly CA Lodge	Ski Run/Heavenly Valley Lodge	Pioneer Tr Keller Ave.	Pioneer Tr Glen Road	Pioneer Tr 7-Eleven	Heavenly Gondola
:00	:04	:08	:15	:19	:21	:23	:24	:27
:10	:14	:18	:25	:29	:31	:33	:34	:37
:20	:24	:28	:35	:39	:41	:43	:44	:47
:30	:34	:38	:45	:49	:51	:53	:54	:57
:40	:44	:48	:55	:59	:01	:03	:04	:07
:50	:54	:58	:05	:09	:11	:13	:14	:17

Tahoe Transportation DISTRICT

Heavenly LAKE TAHOE

FOR WINTER SKI SHUTTLE QUESTIONS CONTACT:

(530) 541-7149 ext. 0
 tahoetransportation.org

FOR MOUNTAIN RESORT INFORMATION CONTACT:

(775) 586-7000
 skiheavenly.com

Information updated as ski or weather conditions change.



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Heavenly Mountain Resort
Mitigation and Monitoring Plan
Annual Report (October 2016 –
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APPENDIX

XII

2016-2017 HEAVENLY EMPLOYEE
SURVEY RESULTS

**Heavenly Employee Housing Occupancy Stats -
WY 2017, 88 beds available in 2017
(Located at 1100 Keller Rd, SLT 96150)**

Month/Year	% Occupied
Oct-16	40%
Nov-16	70%
Dec-16	70%
Jan-17	73.50%
Feb-17	73%
Mar-17	69%
Apr-17	50.50%
May-17	35%
Jun-17	70%
Jul-17	71%
Aug-17	64%
Sep-17	21%

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APPENDIX

XIII

FOREST SERVICE OLD GROWTH
COMPLETION LETTER



United States
Department of
Agriculture

Forest
Service

Lake Tahoe Basin
Management Unit

35 College Drive
South Lake Tahoe, CA 96150
530 543-2600

File Code:

Date: March 19, 2009

Andrew Strain
Heavenly Mountain Resort
PO Box 2180
Stateline, NV 89449

Dear Andrew,

The High Meadows stand identified for hand thinning to improve long-term habitat conditions for northern Goshawk per the Heavenly Master Plan Amendment was treated in the fall of 2007. All contract work was completed and accepted per the contract requirements on December 6 2007. I will fax you the signed copies of the Certificate of Final Inspection and the Contract Release for this project for your records. If you have questions, please give me a call at (530) 543-2687.

Sincerely,

SCOTT PARSONS
Contracting Officer's Representative



U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE CERTIFICATE OF FINAL INSPECTION <i>(Reference FSH 6309.31)</i>	CONTRACT NUMBER AG-9A63-C-08-0015	
	UNIT LTBMU	
	PROJECT South Shore hand Thin 2007	
TO: Matthew Gagnon CONTRACTING OFFICER	NAME AND ADDRESS OF CONTRACTOR Central Valley Forestry 18985C Road 256 Exeter, CA 93221	
<p>I hereby certify that the final inspection of the work under the above contract was made on <u>12-6-07</u>.</p> <p>The last day on which work was performed was <u>12-6-07</u> after which no calendar days should be charged against time. All materials have been furnished, all the work has been performed, and all the construction required by the contract in accordance with its terms has been completed.</p> <p>A copy of the inspection report is enclosed.</p>		
Enclosure(s) SIGNATURE Robert Guebard	TITLE Contracting Officer's Representative	DATE 12-6-07

Matthew 12-10-07

12/10/2007 14:37 FAX 530 543 2893

USDA FOREST SERVICE

005

FS-6300-18 (11/10)

USDA - Forest Service CONTRACT RELEASE (Reference FSH 6309.11)	CONTRACT NUMBER AG-8A63-C-08-0015 UNIT LTEMU PROJECT South Shore Hand Thin 2007
TO: Matthew Gagnon CONTRACTING OFFICER	NAME AND ADDRESS OF CONTRACTOR Central Valley Forestry 18985C Road 258 Exeter, CA 93221
<p>In consideration of the receipt of final payment in the amount of \$ <u>84,385.00</u> the undersigned hereby releases the United States of America from any and all obligations arising under this contract and any modifications thereof except as reserved below.</p> <p>Reservations: none</p>	
<p><u>12/10/07</u> Date (mm/dd/yyyy)</p> <p><u>Central Valley Forestry</u> Contractor</p> <p>By <u>[Signature]</u> Title <u>Owner</u></p>	

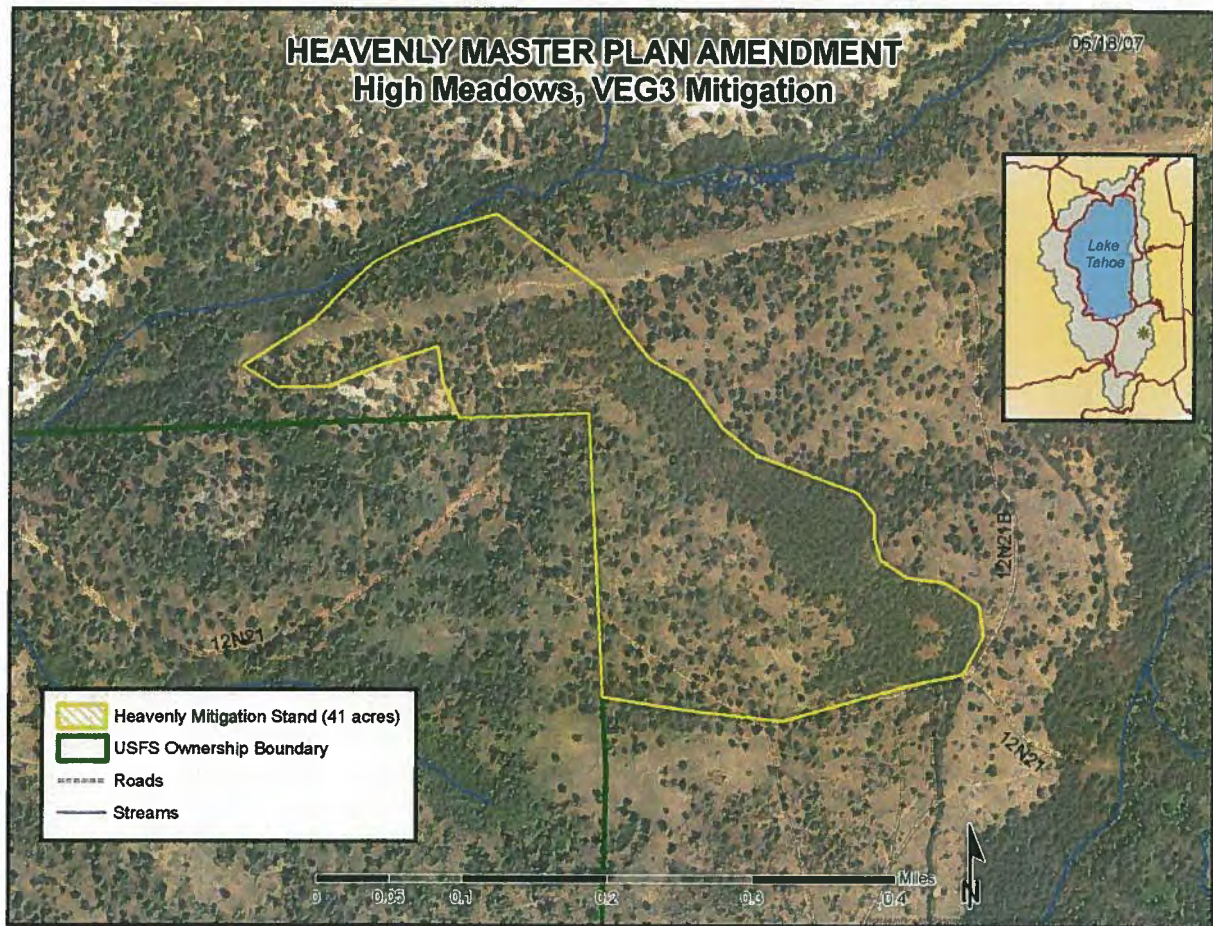
Microsoft Word 2003

7.5-25 Late Seral/Old Growth Forest Enhancement

To mitigate for any projects that involve the removal of late seral/old growth suitable habitat, Heavenly must enhance or restore twice the area to late seral/old growth characteristics.

Heavenly enhanced/restored a stand of forest equal to twice the area proposed for removal in the Master Plan Amendment. The enhanced forest was restored during the fall of 2007 and is located in the High Meadows area and is undergoing monitoring by the Forest Service every five years for success. The next monitoring report will be conducted in 2012. The Forest Service documentation certifying of completion of this task is located in Appendix XIII. (Text copied from the 2011 report.)

On May 1st 2013, Forest Silviculturist Rita Mustatia and Assistant VUFF Staff Officer David Fournier visited the Heavenly Mitigation Stand (see map below).



Portions of the mitigation stand included high levels of tree mortality that posed a high risk of stand replacing fire and relatively large older trees that were susceptible to bark beetle mortality.

The objectives of the mitigation were three-fold: 1) To reduce the fire hazard to the older forest portion of the stand, and 2) to improve the resiliency of the old forest stand to fire and insects, and 3) to monitor natural regeneration of early seral portions of the stand.

The result of the site visit to monitor the completion of these objectives proved satisfactory. The high levels of lodgepole mortality (from Mountain Pine Beetle) were cut, piled and burned, reducing the risk of stand replacing fire. The understory in the older portions of the stand was thinned to levels that would effectively improve resiliency for the long-term. There was evidence of adequate stocking of naturally regenerating seedlings throughout the treated area of the stand.

The photos below highlight the result of these treatments:

Photo 1: Reduction of fuel hazard and follow-up prescribed burning



Photo 2: Natural regeneration occurring within the stand.



Photo 3: Enhancement of older forest portion of the stand.



Photo 4: Enhancement of older portion of the stand.



This report certifies that the treatment goals for the mitigation stand have been met. As a result of the monitoring conducted, there is no further need for monitoring.

David P. Fournier

David Fournier, Assistant Staff Officer

4/10/2014

Rita Mustatia

Rita Mustatia, Silviculturist

4/10/2014

About Cardno

Cardno is a professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange

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