







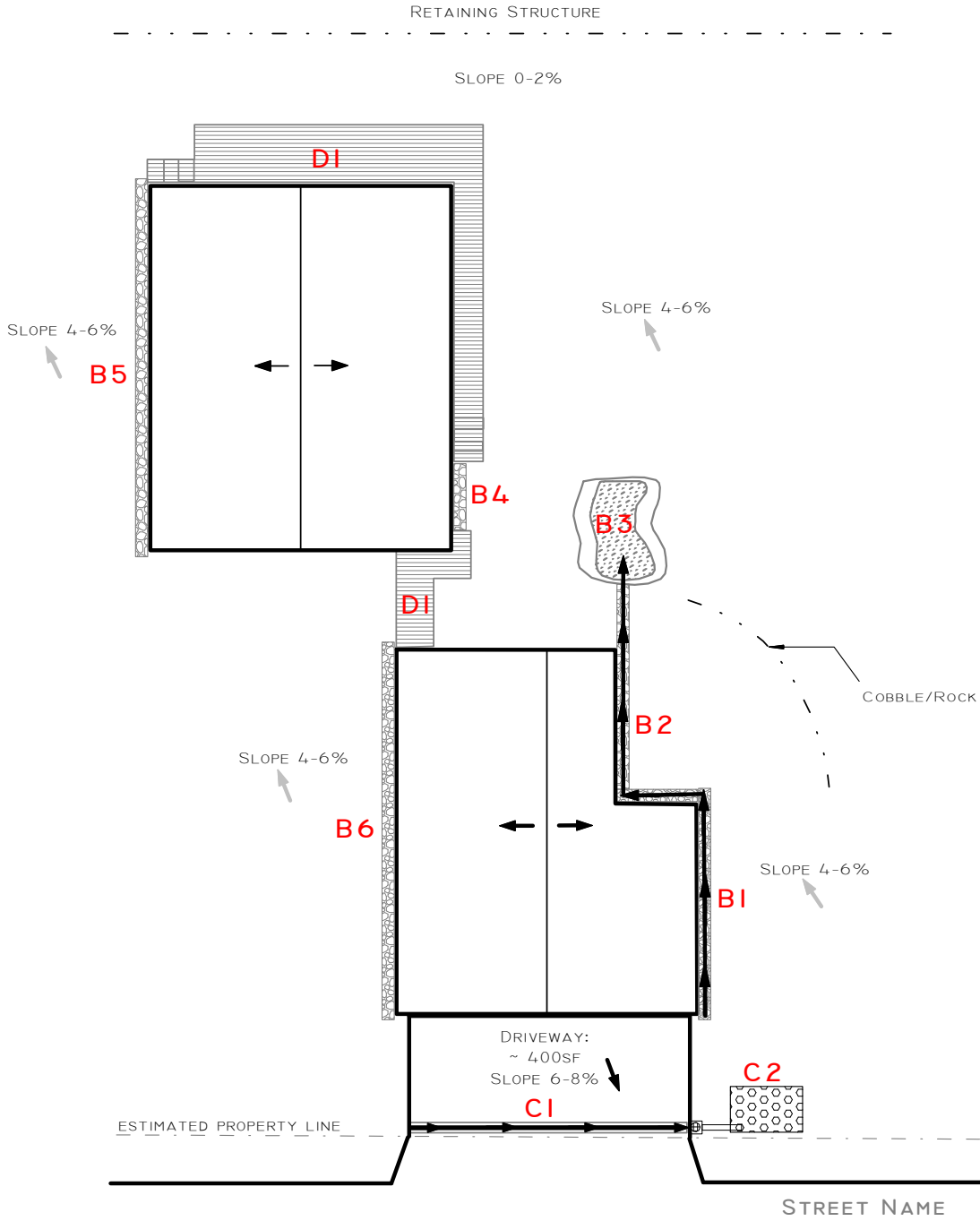


A SOIL TREATMENTS: REFER TO ATTACHMENT I - BMP TREATMENT DESCRIPTIONS

LEGEND

-  IMPERVIOUS SURFACE/ STRUCTURE OUTLINE
-  IMPERVIOUS SURFACE FLOW
- A** RECOMMENDED TREATMENT (SEE TREATMENTS FORM FOR EXPLANATION AND SIZING)
-  DRAIN ROCK INFILTRATION SYSTEM
-  INFILTRATION BASIN
-  PREFABRICATED INFILTRATION SYSTEM
-  DRIVEWAY CONVEYANCE SYSTEM AND SEDIMENT TRAP
-  SUBSURFACE CONVEYANCE
-  DECK/WALKWAY

PARCEL SLOPE 0-15% 



BMP RETROFIT SITE PLAN
 ADDRESS
 LAKE TAHOE, CA
 APN:



THIS BMP SITE EVALUATION IS FOR THE DESIGN AND INSTALLATION OF BEST MANAGEMENT PRACTICES ONLY. IT IS NOT A VERIFICATION OF LAND COVERAGE, LAND CAPABILITY, UNITS OF USE, OR OTHER DEVELOPMENT CAPACITIES REGULATED BY THE TAHOE REGIONAL PLANNING AGENCY (TRPA), NOR IS IT A CONCEPTUAL APPROVAL OF ANY UNRELATED FUTURE PROJECT. THESE VERIFICATIONS REQUIRE THE SUBMITTAL OF A SEPARATE APPLICATION TO THE TRPA FOR REVIEW AND APPROVAL. **BMP TREATMENTS MUST BE INSTALLED WITHIN THE PROPERTY BOUNDARY LINES. ANY REFERENCE TO A PROPERTY BOUNDARY LINE IS AN APPROXIMATION. BEFORE ANY INSTALLATION CONFIRM PROPERTY BOUNDARY LINES.**

TAHOE RESOURCE CONSERVATION DISTRICT
 870 EMERALD BAY ROAD, SUITE 108
 SOUTH LAKE TAHOE, CA 96150
 TAHOERCD.ORG 530-543-1501

DESIGNED	DATE
APPROVED	DATE

TRCD Backyard Conservation Program

Date Printed 3/12/2012

APN	000-000-000	Property Owner	Joe Homeowner		
Physical Address	1234 Lake Tahoe	Community	Cedar Flat	County	PL
Mailing Address		City	CARNELIAN BAY	State	CA
		Zip	96140		
Watershed	CEDAR FLATS		6	Priority	3
		ComplianceDate	2008		

Site Evaluation Recommended Treatments

Evaluation Date 1/15/2011

Tahoe Resource Conservation District
(530) 543-1501 ext. 113

Evaluator RCD

Soil Survey Map Data

Field Measurements:	Permeability Measurement 1 	Depth 1
Infiltration Rate 	Hydrophobic Soils? 	Slope (%)

#	RUNOFF (CF)	TREATMENT	DIMENSIONS	QUANTITY
A		Soil treatments. Refer to Attachment 1		
B1, B2		Install subsurface conveyance system; Refer to Lake Tahoe Standard Drawing BMP-005	as needed	
B3	31.0	Install infiltration basin; Refer to Lake Tahoe Standard Drawing BMP-008	Top: 10'L x 7"W x 10"D Bottom: 8'L x 5"W	
B4	18.2	Install drain rock infiltration trench under drip line and border system; Refer to Lake Tahoe Standard Drawing BMP-001	15.5'L x 24"W x 6"D	~1/2 cubic yard drain rock
B5	49.2	Armor bare soil under drip line with 3" layer of drain rock or cobble and border system; Refer to Lake Tahoe Standard Drawing BMP-009	42'L x 24"W	~1/2 cubic yards drain rock
B6	16.9	Install drain rock infiltration trench under drip line and border system; Refer to Lake Tahoe Standard Drawing BMP-001	40'L x 24"W x 6"D	~3/4 cubic yards drain rock
C1		Install slotted channel drain in driveway with sediment trap; Refer to Lake Tahoe Standard Drawing BMP-020		
C2	33.3	Install prefabricated infiltration system in conjunction with sediment trap	System: 7.2'L x 86"W x 18"D Units: 2L x 2W x 3D	~1/2 cubic yard drain rock + 12 rainstore units
D1		Install drain rock under elevated structures (decks/stairs/walkways) and border system; Refer to Lake Tahoe Standard Drawing BMP-010		as needed - Refer to Attachment 1

Reviewed by: _____

Approved by: _____

Title: _____

Title: _____

This BMP Site Evaluation is for the design and installation of Best Management Practices only. It is not a verification of land coverage, land capability, units of use, or other development capacities regulated by the Tahoe Regional Planning Agency (TRPA), nor is it a conceptual approval of any unrelated future project. These verifications require the submittal of a separate application to the TRPA for review and approval.

Attachment 1 / BMP Treatment Descriptions

The following descriptions explain the BMPs recommended for **Property Address**. Each recommended BMP treatment is labeled on the *Site Evaluation Recommended Treatments Form* and *BMP Retrofit Site Plan* which correlate to the following labeled descriptions. The treatments are recommended based on Chapter 60 Section 60.4 of the TRPA Code of Ordinances. To learn more about the ordinance, visit www.tahoebmp.org. Visit the Tahoe RCD website at www.tahoercd.org to download the most current tip sheets and BMP Standard Drawings and Installation Guidelines. Confirm all treatment dimensions before installation. Please contact the Tahoe RCD if any questions or conflicts arise.

Soil and Landscape Areas

A: Although bare ground may be effective in reducing wildfire threat around the property, there are other options to help stabilize soil. Please be aware that excessive bare ground may increase the soil erosion potential of the property and contribute to the decline in the water clarity of Lake Tahoe.

Bare soil protection employs vegetative, wood, or rock material to secure the soil surface and prevent wind and water erosion. Mulching is one of the simplest and most beneficial conservation practices a homeowner can use for erosion control. Mulch materials include organic mulch (pine needles, wood chips, bark chips) and inorganic mulch (rock, gravel, cobble, pea gravel). These materials uniformly laid over exposed or disturbed soil stabilize and protect the soil surface from raindrop impact, prevent sediment mobilization and transport by stormwater, snowmelt, and wind, and allow energy dissipation of surface water flow. Organic and inorganic mulch also enhances vegetation establishment and preservation by providing favorable conditions for seed germination and vegetative growth. These conditions include moderating soil temperature, conserving soil moisture, preventing soil compaction, and decreasing surface runoff.

Follow defensible space requirements when selecting and applying appropriate bare soil protection materials. Refer to *Living with Fire-Lake Tahoe Basin* for guidance and contact your local fire professional for site specific defensible space treatment options for your property.

Options to treat bare soil on the property include but are not limited to establishing a mosaic of vegetation, surface mulch and tilled-in wood chips. Combustible mulch should not be used in a widespread manner within 5' to 30' of structures and should not be used within 5' of structures. Sloped sites may require mechanical stabilization methods such as installing retaining walls, rock riprap slope protection and terracing. Soil treatment options that prevent erosion while minimizing fire risk can be found online in *Common Ground*. On-line slope stabilization and revegetation information is available at www.TahoeBMP.org, www.TahoeRCD.org and the *Home Landscaping Guide for Lake Tahoe and Vicinity*. Free copies of the *Home Landscaping Guide* are available at the Tahoe RCD and your local utility district office.

If your property has storage areas such as areas used for long term storage of vehicles, trailers, boats, snow or any other materials that are seldom moved off of the property, resulting in minimal soil erosion and compaction, those areas require the installation or maintenance of an associated BMP. If any of these areas have been compacted by regular vehicular traffic or use, the soil in these areas should be covered with 2 inches of organic material such as compost or composted woodchips and tilled to a depth of 6 to 8 inches so it can support vegetation and improve stormwater infiltration. A combination of native or adapted vegetation and mulch produces a low maintenance landscape that is highly effective at preventing erosion. There are many native and adapted grasses, plants, shrubs, and trees that can be used. Please review the recommended plant list in chapter 7 of the *Home Landscaping Guide* help identify species to suit individual property and landscaping goals. In order to prevent future soil degradation, parking barriers should be installed to restrict vehicular access to restored areas. Parking barriers can be made from a variety of materials such as split rail fencing, boulders, wood posts, or shrubs. Refer to Lake Tahoe Standard Drawing **BMP-026** for more information on parking barriers.

Lake friendly fertilizer and irrigation management should be practices in planting bed and turf areas. Please refer to available landscape conservation tip sheets for further information or request a landscape consultation from the Tahoe RCD.

Local fire districts prefer that gravel or well irrigated low growing, non-woody vegetation be implemented within 5 feet from the foundation of structures.

Drip Line Treatments

B1, B2: Install subsurface conveyance system; Refer to Lake Tahoe Standard Drawing BMP-005

Due to the steepness of the slope, install a subsurface conveyance system to convey the roof runoff to a suitable infiltration location (Treatment B3). It is a good building practice to convey concentrated runoff to an infiltration system installed a minimum of 10 feet from the foundation. Lining the trench adjacent to the house foundation with a heavy gauge plastic liner is imperative to convey all stormwater away from the structure. Install adequate cleanout ports to ease system maintenance thus extending the life of the system.

For all installations, surface armor must extend a minimum of 6” inside of the drip line and extend a minimum of 12” beyond the drip line of a single story roof, 18” beyond the drip line of a 2-story roof, and 24” beyond the drip line of a 3-story roof.

****Photographic documentation required for this treatment.**

B3: Install infiltration basin; Refer to Lake Tahoe Standard Drawing BMP-008

Install a vegetated infiltration basin to collect and infiltrate driveway runoff. It is a good building practice to convey concentrated runoff to an infiltration system installed a minimum of 10 feet from building foundations. The minimum dimensions required for this treatment are noted on the *Recommended Treatments Form*. Refer to the *Home Landscaping Guide* for vegetation establishment and care information.

B4, B6: Install drain rock infiltration trench under drip line and border system; Refer to Lake Tahoe Standard Drawing BMP-001

Install a drain rock infiltration trench under the drip line to infiltrate roof runoff. The bottom of all infiltration systems must be installed level to ensure even water dispersion throughout the holding area and promote infiltration rather than conveyance. For all installations, this treatment must extend a minimum of 6” inside of the drip line and extend a minimum of 12” beyond the drip line of a single story roof, 18” beyond the drip line of a 2-story roof, and 24” beyond the drip line of a 3-story roof. Before applying drain rock under drip lines, it is important to break up the existing soil with a hard rake or shovel. Border the treatment to retain the material and exclude adjacent soil. The minimum dimensions and drain rock quantity required for this treatment are noted on the *Recommended Treatments Form*.

****Photographic documentation required for this treatment.**

B5: Armor bare soil under drip line with 3” layer of drain rock or cobble and border system; Refer to Lake Tahoe Standard Drawing BMP-009

Install drain rock or cobble directly under the drip line to armor the soil in this area. For all installations, this treatment must extend a minimum of 6” inside of the drip line and extend a minimum of 12” beyond the drip line of a single story roof, 18” beyond the drip line of a 2-story roof, and 24” beyond the drip line of a 3-story roof. Border the treatment to retain the material and exclude adjacent soil. Before applying drain rock under drip lines, it is important to break up the existing soil with a hard rake or shovel. The minimum dimensions and drain rock quantity required for this treatment are noted on the *Recommended Treatments Form*.

Low growing, irrigated vegetation can be used in conjunction with armor. Refer to the *Living with Fire* guidelines or contact the local fire district for acceptable mulching materials and methods.

Driveway Treatments

C1: Install slotted channel drain in driveway; Refer to Lake Tahoe Standard Drawing BMP-020, 021

Install a slotted channel drain with a sediment trap (Treatment C1) to intercept driveway runoff and direct it to an infiltration system (Treatment C2) installed within the property boundary. A slotted channel drain is a metal-grated drain that transports water to a sediment trap and then to an infiltration system. Sediment traps remove sediment and debris from runoff before it can enter and clog the adjacent infiltration system. Remove accumulated sediment and debris from the system as needed. Discard dirty water and sediment in a contained area on the property, such as a planter bed.

The location of the right-of-way boundary was estimated by Tahoe RCD staff during the BMP evaluation; before installation, property boundaries should be confirmed by the property owner. All conveyance and infiltration systems must be installed within private property boundaries.

C2: Install prefabricated infiltration system in conjunction with sediment trap; Refer to Lake Tahoe Standard Drawing BMP- 006, 007, 030, 030A

Install a prefabricated infiltration system to capture and infiltrate driveway runoff. The bottom of all infiltration systems must be installed level to ensure even water dispersion throughout the holding area

and promote infiltration rather than conveyance. Border this system to retain the material and exclude adjacent soil. If a border is installed or already exists along the driveway edge to protect the asphalt, ensure that it is slightly below the surface of the driveway to allow runoff to flow into the infiltration system. Installing non woven needle punched geo-textile fabric around the system will greatly reduce maintenance; the non woven needle punched geo-textile fabric will need to be cleaned as sediment fills in the system.

Driveway infiltration systems function best when runoff is pre-treated with a sediment trap. The depth on the treatment form refers to the depth of the system below the inlet from the conveyance from the sediment trap; additional drain rock may be needed to fill the remainder of the system when the inlet is below grade. This system should be installed a minimum of **18** inches from the edge of the driveway to prevent damage to the driveway's sub-base. The minimum dimensions and number of units required for this treatment are noted on the *Recommended Treatments Form*. Enclosed are the installation instructions for the recommended product.

****Photographic documentation required for this treatment.**

The location of the right-of-way boundary was estimated by Tahoe RCD staff during the BMP evaluation; before installation, property boundaries should be confirmed by the property owner. All conveyance and infiltration systems must be installed within private property boundaries.

Decks / Stairs / Walkways

D1: Install drain rock under elevated structure and border system (decks/stairs/walkways); Refer to Lake Tahoe Standard Drawing *BMP-010*

Install a 3-inch layer of drain rock, cobble or rip rap under the footprint of the deck and extend one foot past the edges to protect the soil in this area from water and wind erosion. Border the treatment to retain the rock and exclude adjacent soil. To calculate drain rock quantities required, use the following formula: (Length in feet x Width in feet x Depth in feet)/27 = Cubic Yards.

Best Management Practices design and installation considerations

BMP Plan Expiration: As of May 1, 2009 all Best Management Practices (BMPs) evaluations expire three years from the date the evaluation was conducted. If homeowners do not complete the recommended BMP installation treatments within this three year time frame, they will be required to call the appropriate agency and have the evaluation reviewed and, if necessary, revised. This will ensure that all homeowners are incorporating the most current technology and Best Management Practices treatments on their property.

Photographic Records: As of May 1, 2009 a photographic records is required of all BMP installations that entail backfilled excavations on a homeowner's property. Please see *BMP Treatment Descriptions* for more information.

Soils: The Tahoe Resource Conservation District (Tahoe RCD) uses the Natural Resources Conservation Service (NRCS) Soil Survey to determine the soil type for properties in the Lake Tahoe Basin. This information is then used to assess the ability of soils to naturally infiltrate runoff and recommend BMPs.

Groundwater: Tahoe Regional Planning Agency water quality regulations prohibit BMPs from being installed within one foot of seasonal groundwater levels.

Property Lines: BMP treatment systems must be installed within the property boundary limits. The Tahoe RCD *does not* establish property boundary lines. Before installing BMPs, confirm property boundary lines and any setback requirements established by your local building or planning departments.

Fire Defensible Space: Tahoe RCD staff does not have the authority to perform fire defensible space inspections. Fire defensible space information is included with these BMP prescriptions as a courtesy to the Fire Protection Districts. All references and prescriptions for defensible space were provided by the Lake Tahoe Fire Prevention Officers. Through cooperation with the Tahoe Regional Planning Agency (TRPA), Tahoe RCD, Nevada Tahoe Conservation District, NRCS, and University of Nevada Cooperative Extension, efforts have been taken to provide a conservation plan and BMP designs that are compatible with Living with Fire guidelines. The final determination that landscaping and BMPs installed for water quality purposes meet defensible space requirements lies solely with the fire protection districts that have the proper authority.

Note that BMP minimum treatment dimensions do not always encompass the 0 to 5 foot non- combustible area. Therefore, the *Materials Calculator* can be used to determine quantities for drain rock armoring that will also meet the defensible space criteria.

Refer to *Living with Fire – Lake Tahoe Basin Second Edition* for more information regarding maintaining a fire defensible landscape while planning BMP implementation. Please contact the local fire district or department for defensible space requirements and inspections: North Tahoe FPD (530) 583-6913

Underground Utilities: Before excavating soil for the installation of BMPs, it is imperative that underground utilities be located and marked on the property to avoid damage or service interruption during construction. According to Government Code 4216, the individual conducting excavation is responsible for notifying utilities before digging. Underground Service Alert (USA), the one call system, enables this notification. **Call 811** at least two full working days and not more than 14 days before any excavation occurs. Additional information is available at www.usanorth.org.

Drainage: If stormwater from neighboring public or private properties flows onto the property, contact the local jurisdiction for technical assistance or more information. A licensed engineer may need to be consulted to develop an appropriate solution that protects structures from potential water damage.

TRPA Coverage: It is advisable to document existing conditions before making any changes to the property to avoid losing existing coverage rights. For information on land capability and land coverage, please visit www.trpa.org.

Grading and Temporary BMPs: TRPA regulations state that between October 15th and May 1st it is prohibited to grade or excavate more than 3 cubic yards of soil. Installation of temporary BMPs is also required on all sites where the vegetation and soil will be disturbed. Temporary BMP practices will help prevent sediment or contaminated water from leaving the site during construction activities. Temporary BMPs are site-specific, must be constantly maintained, and are usually good for only one year or one winter season. Temporary BMPs should be installed before starting construction and must be maintained until all construction activity is completed and/or until permanent BMPs are installed. In order to maintain properly functioning temporary BMPs, systems should be checked immediately before an impending storm as well as after the storm has passed.

Materials: The Tahoe RCD recommends the use of 3/4 inch to 1-1/2 inch washed drain rock; however, any kind of rock can be utilized to achieve desired aesthetic and use characteristics for the property. You may even use rock found on the property to create a more natural look and to reduce the cost of BMP installations.

Maintenance Considerations: Construct a border around drain rock treatments to contain materials and reduce maintenance. Economical border materials include used lumber, small logs, or cobble-sized rock found on site. Materials such as pressure-treated wood, landscape edging, and/or one of the many recycled composite products available can also be utilized. If using any type of flammable material, ensure that these materials do not connect to the structure to help protect the structure from fire.

Over time, infiltration systems fill in with sediment and fail; therefore, maintenance is required to keep these systems functioning properly. Visually check BMPs after major storms, in the spring, and just before winter to ensure they are working properly. For more information on BMP maintenance, visit the TRPA Stormwater Management Program at <http://www.tahoebmp.org/>.

Online Resources

TRPA Stormwater

Management www.tahoebmp.org

- BMP Sizing Worksheet
- BMP Property Status Search
- BMP Handbook
- BMP Materials and Providers Lists
- Lake Tahoe BMP Standard Drawings/Installation Guidelines
- BMP Contractors Handbook
- BMP Designer Tool
- Real Estate Disclosure Form
- Fertilizer Use Information
- *Home Landscaping Guide for Lake Tahoe and Vicinity*

TRPA www.trpa.org

- Site Assessment Application
- Land Coverage/Land Capability Information
- Permitting Information/Application
- Combining BMPs and Defensible Space Information

Fire Defensible Space

- *Living with Fire in the Lake Tahoe Basin Website and Publication* <http://www.livingwithfire.info/tahoe/>
- Public Resource Code 4291: <http://www.fire.ca.gov>

Tahoe Resource Conservation District

www.tahoercd.org

- Lake Tahoe BMP Standard Drawings/Installation Guidelines
- Landscape Conservation Tip Sheets/Information
- Calendar of Events
- Dirt Driveway Roadmaps
- *Home Landscaping Guide for Lake Tahoe and Vicinity*
- BMP Materials Calculator

