



# Waddle Ranch Road Infiltration Basin As-Built Report



Prepared By Lorenzo Worster

IERS Restoration Foreman



## Project Location

---

Waddle Ranch is a 150 acre parcel located just outside of the town of Truckee, CA to the east of Martis Creek Lake reservoir. Foot traffic access can be gained via the east end of the Martis Creek Lake dam. Vehicle access is by permission only via Sawmill Flat Road (Figure 7).

## Personnel

---

Don Triplat, IERS Project Manager; Lorenzo Worster, IERS Foreman; Kate Gross, IERS Restoration Technician; Brad Lariviere, IERS Restoration Technician; Peter Ceccon, IERS Restoration Technician/Equipment Operator.

## Restoration Date(s)

---

September 24, 2009 – September 30, 2009

## Site Description

---

The infiltration basin is located .8 miles down Sawmill Flat Road, on the right side after passing into the forested area from Martis Valley. It is located where a historic logging road crosses Sawmill Flat Road. The infiltration basin was installed in the moderately compacted historic road area which had little to no preexisting vegetative growth. The portion of Sawmill Flat Road adjacent to the basin site was relatively flat, but it did not have a defined water path before the rolling dip was constructed as part of this project. Sawmill Flat road was highly compacted above the infiltration basin site and had a low to moderate slope, however, it was graded lower than the surrounding area on both sides and trapped water from higher up on the road.

## Treatment Area

---

Two distinct treatments were implemented at the infiltration site. First, a rolling dip was created on the road to direct water into the basin. Next, the infiltration basin, which is 8 ft wide, 20 ft long and 1 ft deep, was constructed. The basin included a rock dissipation pad at the entrance to dissipate force from road runoff.

## Project Goals

---

The goal of the infiltration basin project is to capture and infiltrate sediment-laden runoff from a dirt road to prevent the water and sediment from reaching nearby waterways, while maintaining the same level of access for logging vehicles and equipment. A rolling dip constructed in the roadway was used to re-direct road surface flow into the infiltration basin, while still allowing large vehicle access. Once the runoff reaches the basin, sediment capture will occur.



Monitoring will begin during spring runoff to determine whether the basin reaches capacity and whether a similar size basin should be used for future improvements. A maintenance cycle will also be recommended next season based on road use and water impacts.

## Materials Used

---

The materials used on this project were all from local sources (Table 1).

- Woodchips were sourced onsite from a regional timber harvest and fuels reduction program.
- Biosol Organic Fertilizer (6-1-3) was sourced from Pacific Coast Seed.
- Native seed mix was sourced from Comstock Seed and consisted of a Tahoe specific mix of grass, shrub, and forb seed (Table 2).
- Pine needles were collected from North Lake Tahoe.

## Treatment Description

---

At the infiltration basin site, topsoil was removed and salvaged (Figure 3). During excavation of the basin, the spoils were used to create the rolling dip in the road. After excavation, the basin was covered in the salvaged topsoil and 10 inches of woodchip amendment. Graduated pitchforks were used during woodchip application to ensure consistent amendment depths (Table 3). A Kubota KX161 mini excavator with a standard 36" bucket was used to till the area to approximately 18 inches to loosen the soil as well as to incorporate the woodchips. Biosol was applied at 2000lbs/acre and raked in followed by a shrub, forb, and grass seed mix at 125lbs pure live seed/acre. The area was then covered with 2.5 inches of pine needle mulch and pine needle filled coir fabric wattles were installed across the basin. A rock dissipation pad was added between the road and the basin as well as in the basin outflow.



**Table 1. Materials source and Quantity list.**

Materials	Type	Source	Quantity
<b>Amendment</b>	Green Wood Chips	Local forestry operation	5 yds <sup>3</sup>
<b>Fertilizer</b>	6-1-3 Biosol	Pacific Coast Seed	7 lbs
<b>Seed</b>	IERS Upland Mix	Comstock Seed	.5 lbs
<b>Mulch</b>	Pine Needles	Meeks Bay Fire Collection Program	2 yds <sup>3</sup>

**Table 2. IERS upland Shrub, Forb, Grass mix.**

Scientific Name	Common Name	Pure Live Seed (%)	Rate (lbs/acre)
<i>Elymus elymoides</i>	Squirreltail or bottlebrush	28.33	35.42
<i>Elymus glaucus</i>	Blue wildrye	33.33	41.67
<i>Bromus carinatus</i>	Mountain brome	27.50	34.38
<i>Purshia tridentata</i>	Antelope bitterbrush	6.67	8.33
<i>Ribes cereum</i>	Wax currant	0.42	0.52
<i>Eriogonum umbellatum</i>	Sulphur flower buckwheat	2.08	2.60
<i>Arctostaphylos patula</i>	Geenleaf manzanita	1.67	2.08

**Table 3. Treatment Matrix**

Materials		Infiltration Basin
<b>Amendment</b>	<b>Type</b>	Green woodchips (<50% pine needles)
	<b>Depth</b>	10"
<b>Soil Loosening</b>	<b>Type</b>	Mini Ex Bucket Full Till
	<b>Depth</b>	17.54"
<b>Fertilizer</b>	<b>Type</b>	Biosol 6-1-3
	<b>Rate</b>	2,000 lbs/acre
<b>Seed</b>	<b>Mix</b>	IERS Upland mix
	<b>Rate</b>	125l bs/acre PLS
<b>Mulch</b>	<b>Type</b>	Pine Needles
	<b>Depth</b>	2.5"
<b>Dimensions in ft<sup>2</sup></b>		20' x 8' = 160ft <sup>2</sup>
<b>Dimentions in m<sup>2</sup></b>		4.5m x 9m = 40.5m <sup>2</sup>





Figure 1. Rolling dip site on Sawmill Flat Road pre-construction (PPA). The basin site is on the right.



Figure 2. Track packing rolling dip. Basin is on the left (PPC).



Figure 3. Removing topsoil and shaping basin.



Figure 4. Looking across post construction (PPB).



Figure 5. Pre-construction (PPD).



Figure 6. Site post construction (PPB).



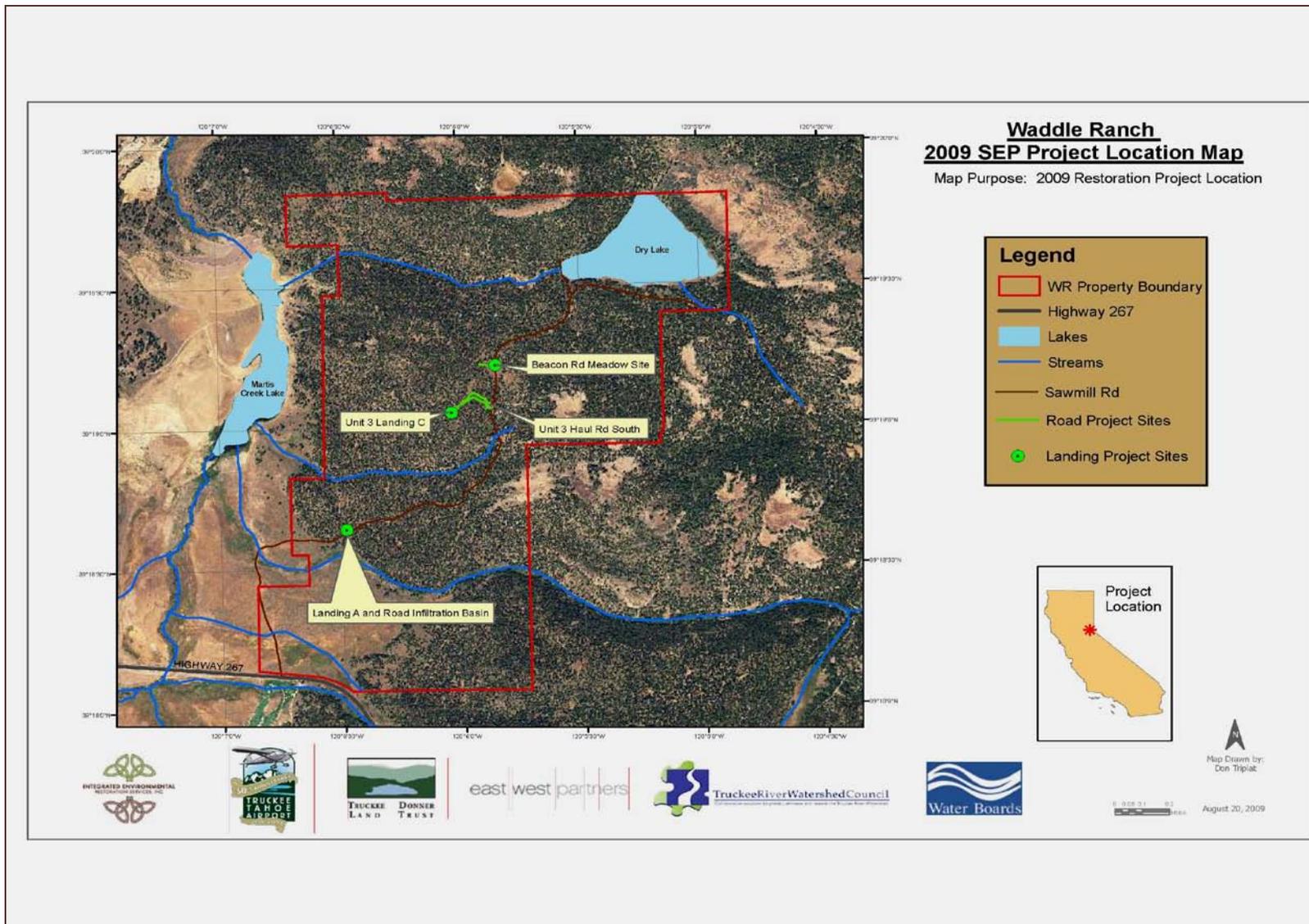


Figure 7. Overview map of Waddle Ranch 2009 restoration project locations.







Figure 8. As Built map of the infiltration basin.

