

## Little River State Beach Nearshore Dune Habitat Restoration Project

In the winter 2004 – 2005, CSP initiated a pilot project to compare the efficacy and the cost-effectiveness of three heavy equipment methods to remove European beachgrass: dozer-rake, dozer-grade, and excavator (Forys and Transou 2004). There was little difference in the percent reduction of European beachgrass between treatment types. However, retreatment person hours were substantially different between treatment methods. The dozer-grade method required 30% less person hours and the dozer-rake required 10% less compared to the excavator method. Considering the treatment efficacy and resultant topography NCRD determined mechanical grading to be the most appropriate method for restoration of the nearshore dunes at LRSB. Nine acres were treated under the pilot project.

Based on the results of the pilot project, the NCRD completed a restoration plan for the entirety of LRSB (Forys et al. 2008). In 2009, CSP secured funding to begin implementation of the restoration plan and in November treated 26 acres of nearshore dune habitat using mechanical grading. An additional four acres were treated using hand removal methods due to the proximity of wetlands within the project area. Since the initial treatment was completed, five retreatment efforts have occurred. Since the first retreatment effort the amount of person hours required to retreat the entire 42-acre habitat restoration area (HRA) has decreased greatly. Volunteers and Cal Fire and CCC crews have been used to retreat the HRA. Since the sixth retreatment the European beachgrass in the HRA is considered at a maintenance level. Table 1 summaries person hours spent to treat European beachgrass at LRSB between 2005 and 2014.

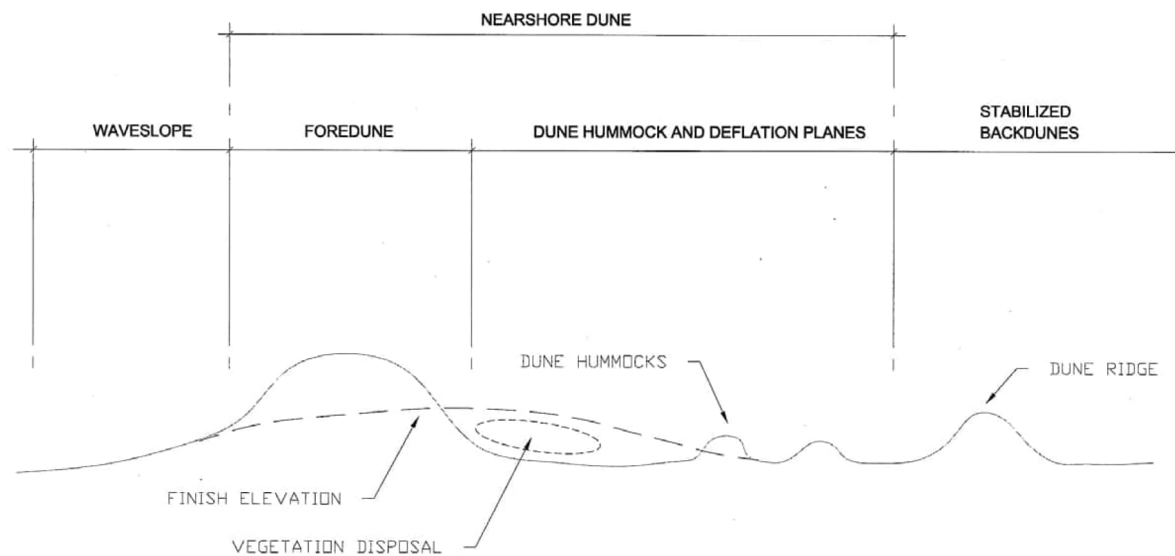
Table 1. Total person hours and days per retreatment effort removing resprouting European beachgrass from the HRA at LRSB.

Retreatment Effort	Date	Person Hours	Days to Retreat
1	Fall 2010	1,608	25
2	Spring 2011	665 <sup>1</sup>	9 <sup>1</sup>
3	Fall 2011	855	11
4	Spring 2012	351	6
5	Fall 2012	288	4
6	Spring 2013	120	3
7	Fall 2013	197	4
8	Spring 2014	157.5	3
9	Fall 2014	148.5	2

<sup>1</sup> Retreatment effort person hours and days are estimations, as detailed tracking did not occur.

Table 2. Total cost for initial treatment of 26 acres of European beachgrass at Little River State Beach using heavy equipment in November 2009.

<b>LRSB 2009 Heavy Equipment</b>		
Heavy Equipment	Rental	\$ 44,490.75
	Operators	\$ 6,352.77
	Fuel	\$ 3,774.09
	Equipment Total	\$ 54,617.61
	Acres Treated	26
	<b>Price per acre</b>	<b>\$ 2,100.68</b>
Personnel	ES Site Supervisor	\$ 8,472.59
	ESI Plover Monitor	\$ 1,868.92
	<b>RM Personnel Total</b>	<b>\$ 10,341.51</b>
	Total Acres Treated	26
	Grand Total	\$ 64,959.12
	<b>Total Price Per Acre</b>	<b>\$ 2,498.43</b>



NO SCALE

CALIFORNIA STATE PARKS  
NORTH COAST REDWOODS DISTRICT  
3431 Fort Ave.  
Eureka, CA 95503



LITTLE RIVER STATE BEACH  
RESTORATION AND ENHANCEMENT PLAN

DUNE CROSS  
SECTION

7/22/08

DRAWING

**A1**

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