

# Recreation Management TechTips

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## Test of Pit Toilet Treatment—Earth Pure for Pits *Brenda Land, Sanitary Engineer*

### INTRODUCTION

In remote locations that receive high recreational use, resource managers may choose to use pit toilets for environmental protection. When the pit fills up, a new pit is dug. However, a site may have limited locations to dig new pits in. This project evaluated the effectiveness of a prototype product—Earth Pure for Pits—from Phillips Environmental that increases the rate of decomposition, and prolongs the useful life of pit toilets. Their material worked in a controlled laboratory setting, and this evaluation was intended to determine if it worked in a field environment.

The evaluation was conducted on the Bureau of Land Management (BLM) section of the Rogue River because a number of pit toilets are located along the river corridor. Todd Calvert, a BLM Park Ranger, was invaluable in completing this project (figure 1).



*Figure 1. Brian Phillips, Phillips Environmental, and Todd Calvert, BLM Park Ranger, Rogue River Program, preparing to treat the pit toilets on the Rogue River.*

### EVALUATION

To evaluate the product's effectiveness we monitored each pit's use, and the level of waste. We installed a pressure-mat counter and datalogger in each toilet building to record the number of users (figure 2). Each time someone entered the building and stepped on the pressure mat it counted as one use. The datalogger had a 30-second delay so that it would not record again until there was 30 seconds of no pressure. (Someone sitting with their feet on the mat would keep pressure on the mat; someone shifting their feet would not exceed 30 seconds with no pressure.) This delay was programmed into the system to eliminate double- or triple-counting the same person.



*Figure 2. Pressure-mat counter installed in toilet.*



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The waste level in each pit was measured at the center of the waste pile and at each corner. A straight edge was placed across the toilet riser and a tape measure was used to measure the depth of accumulated waste (figure 3).

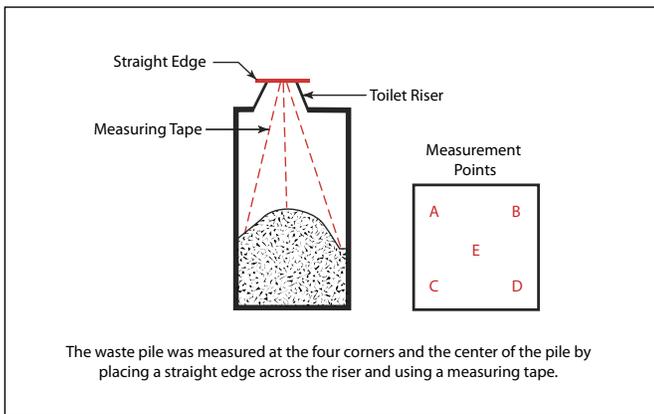


Figure 3. Location of measurements.

The pits were separated into two groups. One group was treated with the product before float season began; the other group remained untreated and was used as the control. Brian Phillips of Phillips Environmental treated the pits. Measurements were taken before treatment began and several times during the season. The dataloggers were downloaded at the beginning and end of the river's float season. Final measurements were taken in the fall of 2007.

## RESULTS

No consistent results could be attributed to treatment of the pits (table 1). It appears that other factors may have influenced the results.

Table 1. Visitor counts and change in pit depth (positive numbers – filling up, negative numbers – going down). Shaded boxes indicate treated sites.

Site	Summer 7/06-10/06			Winter 10/06-5/07		Summer 5/07-10/07			Study Total	
	T/C	Visitor Count	Change in Depth	Visitor Count	Change in Depth	T/C	Visitor Count	Change in Depth	Visitor Count	Change in Depth
Missouri	T	4,692	13.2 In	864	-1.2 In	T	7,121	16.4 In	12,677	28.4 In
Whiskey Creek	T	3,376	6.0 In	866	new pit	C	6,293	19.2 In	10,535	New Pit
Tyee	T	3,382	8.8 In	552	6.4 In	C	4,154	2.4 In	8,088	17.6 In
Battle Bar	C	3,091	2.9 In	930	-2.0 In	T	4,950	7.7 In	8,971	8.6 In
Horseshoe	C	3,146	5.8 In	818	6.8 In	T	4,971	5.0 In	8,935	17.6 In
Doe Creek	T	3,044	2.9 In	261	2.9 In	C	3,403	8.2 In	6,708	14.0 In
Ranch	T	2,602	9.9 In	1,188	0.3 In	C	1,310	9.4 In	5,100	19.6 In
Little Windy	T	2,238	5.8 In	338	-4.2 In	C	1,695	5.8 In	4,271	7.4 In
Big Windy	C	1,374	-1.5 In	111	1.3 In	T	828	-1.4 In	2,313	-1.6 In
Jenny Creek	C	1,667	4.6 In	303	-4.6 In	T	1,764	2.2 In	3,734	2.2 In
Long Gulch	C	961	0.6 In	19	-1.1 In	C	372	0.9 In	1,352	0.4 In
Meadow Creek	T	883	1.5 In	97	0.1 In	C	675	-0.4 In	1,655	1.2 In
Big Slide	C	653	-0.1 In	102	-3.3 In	T	409	1.2 In	1,164	-2.2 In

When the product did not work as anticipated during the summer of 2006, the manufacturer changed the formula. The treated and untreated pits were switched, so that no residual from the first season would interfere with results for the second season. The exception was Long Gulch, which remained a control, and Missouri, which remained a treated site.

As Tyee and Battle Bar show (table 1), there is no correlation between treated and untreated pits.

The Earth Pure for Pits did not demonstrate a dramatic and noticeable increase in the decomposition rate as expected based on laboratory studies. Based on these results, the Forest Service cannot recommend the use of this product.

San Dimas Technology and Development Center thanks Brian Phillips of Phillips Environmental; Todd Calvert, BLM Park Ranger; and Kathie Snodgrass, facilities architect, Missoula Technology and Development Center for their technical review of this publication.

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