Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
JAN 1981		**00-00-1981 to 00-00-1981**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Biological Effects of Beach Restoration on the Southern California Coast	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **U.S. Army Corps of Engineers (USACE),Coastal and Hydraulics Laboratory,3909 Halls Ferry Road,Vicksburg,MS,39180**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**2**	

TN-V-7
1/81

Coastal Engineering Technical Note

BIOLOGICAL EFFECTS OF BEACH RESTORATION ON THE SOUTHERN CALIFORNIA COAST

PROBLEM: Beach restoration with dredged material provides a feasible means of counteracting beach erosion in many coastal areas. Therefore, the Corps is moving more and more toward beach fills to solve coastal erosion problems. As an Environmental Impact Statement is required for these projects, the Corps is being asked to answer complex environmental questions about the effects of beach restoration. At present, available information is generally inadequate to substantiate the required evaluations. A study at Imperial Beach, California, provides some preliminary guidance for evaluating beach restoration projects in southern California.

EFFECTS OF BEACH RESTORATION: The immediate adverse effects of beach restoration at Imperial Beach, California were few except for direct burial of less mobile organisms. With the initial increase in silt fractions caused by beach restoration, the diversity and abundance of intertidal organisms increased. This effect was of short duration (less than 2 months) and largely exhibited by mobile crustaceans. The increased diversity and abundance was also correlated with the low wave energy and the corresponding less physically disturbed intertidal area during the summer. However, there was little long term effect in this intertidal area. More long term impacts were realized with the onset of winter storms and the accompanying offshore movement of deposited sediments. This movement caused a decline in the abundance of benthic animals and a lowered species diversity at water depths of 12 to 20 feet at that time. The burial of more stable offshore populations by fine sediments transported from beach restoration material had a greater adverse impact (more lasting) than the initial burial of the more resilient intertidal organisms.

U.S. Army Corps of Engineers, Coastal Engineering Research Center, Kingman Building, Fort Belvoir, VA 22060

CONCLUSIONS:

1. Adverse ecological impacts can be minimized when the size of the beach fill sediments closely match that of natural beach sediments at the restoration site.

2. Siltation and consequent smothering of offshore organisms can be kept to a minimum when the percentage of fine sediments (smaller than 125 millimeters) in the nourishment material is kept low.

3. There was little lasting impact on the intertidal benthic animals.

4. Deposition of restoration material near the intertidal zone ensures the least harm to the more stable but less resilient offshore populations.

5. The winter is generally the period of lowest abundance of benthic animals and probably the best period biologically for beach restoration. It is however, still necessary to assure that there are no sensitive resources in the area during this period.

ADDITIONAL INFORMATION: Contact the CERC Coastal Ecology Branch, (202) 325-7393.

REFERENCE:

PARR, T., LACY, S., and DIENER, D., "Effects of Beach Replenishment on the Nearshore Sand Fauna at Imperial Beach, California," MR 78-4, U.S. Army Corps of Engineers, Coastal Engineering Research Center, Fort Belvoir, VA, December 1978.