

Engineering With Nature

Project Fact Sheet



Title

Engineering with Nature using native vegetation

Background

Dredged material placement areas (DMPAs) and Confined disposal facilities (CDFs) which provide temporary or permanent confinement of dredged materials excavated during dredging of waterways including navigable channels, bays, rivers, harbors or berthing areas, can be opportunities to demonstrate the use of native vegetation. While DMPA construction techniques are well documented, sufficient vegetative treatments, planting regimes, and guidance to stabilize and promote healthy ecosystems on placement areas are lacking. Opportunistic plant species colonize DMPAs/CDFs during idle periods or following closure. DMPAs/CDFs should be managed to prevent interference with disposal operations. Native plant communities may also be beneficial in preventing the erosion of dikes and dredged material from active DMPAs/CDFs through wind and wave action, and may reduce the cost and environmental impact of more aggressive and undesirable vegetation management alternatives such as herbicide application and mechanical removal. Placement areas (nearshore or islands) can contribute to coastal resilience by providing protection from storm surge, add structural integrity to shorelines, and contribute to ecological benefits such as wildlife habitat and linkage of greenways to sustain migratory fauna along the coasts and inland ecosystems.



Objectives

To develop a suite of guidance materials which will highlight the use of native plant communities as vegetative treatments providing effective, low cost solutions on placement areas. In addition, hands-on demonstrations of nature based features will be provided to stabilize DMPAs/CDFs, and public use areas while providing engineering and environmental benefits. Workshops will also be held to demonstrate planting techniques with native plant communities that will go into natural succession, and all products will be featured on the EWN webpage dedicated to the use of native vegetation.

Approach

Field demonstrations will be performed and used as case studies. Planting schemes will be developed based on the native plant communities identified using the National Vegetation Classification and based on peculiar ecosystem characteristics of each workshop site. A literature reference section will also be included in the final publication to provide more information on placement area construction and biotechnical planting. A series of guidance materials will be developed through this research. Helpful resources on plant selection will be available within the publications. We will develop four technical notes, one technical report, and one guidance manual. Different plant treatments will be developed for different ecosystems, and as appropriate to the life stage of DMPAs/CDFs based on related management objectives.



Outcomes

Series of publications including technical notes, a technical report, and others will be written. Two workshops will be conducted. The workshops will be synthesized in the final technical report. The report will present a design guidance incorporating native plant communities for the management of placement areas. The approach will provide self-sustaining features on DMPAs/CDFs that will require less maintenance after project implementation, and will offer cost savings with greater ecological benefits to the environment. Engineering and environmental benefits include: protection from storm surge, structural integrity for vegetated shorelines, wildlife habitat and linkage of greenways to sustain migratory fauna, recreational and aesthetic value, and prevention of invasive species through careful selection of desirable native plant communities.

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