

MEMORANDUM

Public Works Department

To: Honorable Mayor and City Council

Through: Michelle Skaggs Lawrence, City Manager
Deanna Lorson, Assistant City Manager

From: Kiel Koger, Public Works Director

Date: October 9, 2018

Subject: City sponsored sand replenishment/retention project options

Per direction given by the City Council at the August 8th Council meeting, this memo is being provided to give options and recommendations going forward regarding City sponsored sand replenishment or retention projects (not just Corps of Engineers projects). Staff contacted numerous people while researching this subject which included consultants, geologists, coastal engineers and scientists, dredging contractors, and representatives from SANDAG, Corps of Engineers and other coastal cities.

Project Options

Moffatt and Nichol Engineers completed a Regional Beach Sand Retention Strategy report for SANDAG in 2001 which evaluated retention strategies along the County's shoreline from Oceanside to Imperial Beach. The study addressed both existing natural and man-made features that function as effective sand-blocking structures and assessed both their performance as well as potential future impacts. Opportunities to further enhance the beneficial sand blocking effect while not producing unacceptable down coast impacts were also assessed. Structures including groins, offshore breakwaters and artificial reefs were considered based on site specific needs and coastline characteristics. Life cycle cost analysis to include construction and maintenance costs was provided for all three structures, each providing a 50 year life span. The study also performed a life cycle cost analysis for a continuous beach nourishment project over 50 years similar to what is being proposed in Solana Beach and Encinitas by the Corps.

| <u>Structure or Nourishment</u> | <u>Acres (beach retained)</u> | <u>Estimated Cost (2001)</u> | <u>Estimated Cost (2018)</u> |
|---------------------------------|-------------------------------|------------------------------|------------------------------|
| Offshore breakwater | 17 acres | \$33,400,000 | \$47,595,000 |
| Artificial reef | 2 acres | \$9,300,000 | \$13,252,500 |
| Series of groins | 17 acres | \$20,400,000 | \$29,070,000 |
| Nourishment | 2 acres | \$20,300,000 | \$28,972,500 |
| Nourishment | 17 acres | \$57,000,000 | \$81,225,000 |

These estimated costs are based on constructing and maintaining one structure over 50 years or one continuous beach nourishment project over 50 years. It does not include costs for multiple projects throughout the County which would be required in several locations. Beaches retained by structures are 40% - 65% less in costs over 50 years as compared to beaches maintained by nourishment only. Based solely on life cycle cost analysis, a sand retention strategy to include man-made structures such as an offshore breakwater or series of groins made the most sense for the most erosive beaches in San Diego County which includes the beaches in Oceanside.

Staff also contacted a dredging contractor for estimated costs to dredge sand from an offshore borrow site. Costs can vary by a considerable amount dependent on the location of the borrow site selected and the distance sand would need to be transported. The estimated costs are listed below:

| | |
|--|---------------|
| Mobilize and demobilize equipment | \$1.7M |
| Dredging (*assumed 150,000 cubic yards at \$11/cy) | \$1.65M |
| Project mgmt., environmental surveys, permitting, plans, specs, etc... | <u>\$700K</u> |
| Total Project Costs | \$4.05M |

* City is allowed to deposit up to 150,000 cubic yards of sand per year on beaches under the Sand Compatibility Opportunistic Use Permit (SCOUP).

Staff was also recently notified of 400,000 cubic yards of beach quality sand being made available from a new Doug Manchester development in downtown San Diego on the bay. The cost for trucking 100,000 cubic yards of sand from San Diego to Oceanside using belly dump trucks and placing it on our beach with bulldozers was approximately \$1,600,000 which includes labor, equipment and materials (sand is free). Opportunistic sand made available from development projects doesn't typically make financial sense unless the free material is delivered to our beaches by others.

Staff could pursue any of these options listed above and the City would be required to provide all funding and resources for the initial studies, permitting, design and construction although some partial funding assistance may be available at the state or federal levels.

Recommendations

Going forward, the best opportunity for beach sand is to partner with other coastal cities and push SANDAG to perform another regional beach nourishment project similar to the projects performed in 2001 and 2012. These projects provided the best value to the coastal cities as the state paid 85% of the total project and cities divided the remaining 15% of the project based on linear miles of coastline.

SANDAG doesn't currently have any plans for another regional beach nourishment project but they are performing a 5 year survey of offshore borrow sites which will be completed this year and is supplemental to their annual shoreline monitoring program. If the decision is made to perform another nourishment project, it would most likely take at least 3 years to complete environmental permitting before project construction could begin.

A pilot project to study temporary groins along the coastline should also be requested of SANDAG although possibly a long shot. The installation of permanent structures is typically not supported by the California Coastal Commission as there is debate about these measures producing unacceptable down coast impacts to other communities as well as the impacts on surfing and living resources, aesthetics, etc...

The City will continue to search for opportunities for beach quality sand from development projects through our Sand Compatibility Opportunistic Use Permit (SCOUP). Staff will assess all future Oceanside construction projects such as the beach resort for potential sources of sand. Under the SCOUP permit, the City can deposit up to 150,000 cubic yards of sand per year on beaches. Finalizing a multi-year agreement with the Corps so the City has the option of contributing extra funding to the dredging project every year going forward should be a priority dependent on additional sand being available from the project.

In addition, the City should consider hiring a consultant experienced in federal coastal infrastructure policies, regulations and projects to actively engage the Corps at the District, Division and Headquarters levels to get the shoreline feasibility study funded at little or no cost to the City. Completion of the study would move the project forward to be considered for design funding and eventually construction. The consultant along with City staff and representatives from other coastal cities should also engage SANDAG to perform a 3rd regional beach nourishment project with the possibility of looking into more permanent solutions.

City staff will continue to push the Corps of Engineers to complete the shoreline feasibility study, annual harbor maintenance dredging and San Luis Rey River sediment removal project as well as other sediment removal projects. Staff will also consider partnering with other coastal cities throughout the state to see if this issue can be elevated beyond regional efforts to the state level.

If you have any questions, please call Kiel Koger at (760) 435-5089.