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April 15, 2013

Ms. Helen S. Young, MBA
Deputy Commissioner, Coastal Resources
Texas General Land Office
1700 N. Congress Avenue
Austin, Texas 78701

Via Email: helen.young@glo.texas.gov

RE: Galveston Park Board Seawall Beautification Project Update

Dear Ms. Young:

On behalf of the Galveston Park Board of Trustees (Park Board) I wanted to let you know how much we appreciated the assistance provided by the General Land Office (GLO) that led to the development and implementation of the Seawall Beautification Pilot Project; we also wanted to provide a brief project update on its performance over the previous month since it was installed.

Overall the project has been very successful, and the recently planted vegetation is growing at a rapid rate, with estimates by some that it has doubled in size. Additionally, in the project area it appears that sand is accumulating adjacent to the new sand fencing at a possibly higher rate than adjacent beaches without the fencing. However, this good news does not mean there are not some less than desirable severe weather impacts affecting the project.

Included among the primary goals of the project was the intent to reduce beach erosion on two fronts—through wind transport loss over the seawall; and, through beach scour loss at the various Seawall Boulevard outfall drainage points. We believe the project has been more successful reducing wind transport loss than correcting the outfall impacts that are causing the beach scour. The geocells were placed directly in the path of the outfalls with the intent to slow the speed of the discharge to less than 3ft./second. Unfortunately, that has not been the case. Following a moderate rainfall the drainage outfalls are generating water speed rates greatly in excess of 3ft./second causing the geocells to be overwhelmed; resulting in a failure to serve their intended purpose. In these respective areas storm water runoff drains toward the beach rather than towards the bay as it should.

These failures have resulted in scour troughs approaching 4ft. deep in several locations. Park Board staff has taken quick action to protect public safety through identification of, and shielding these areas from the public; and to offset these impacts by making repairs to the outfall locations through routine beach cleaning stacking and the use of naturally occurring seaweed vegetation.



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Looking into the future, the Park Board is proposing a sequential series of alternatives that could be implemented in a multi-step approach for a near term soft solution and pending performance review, a long term structural solution could be implemented on a location by location basis.

Any longer term solution would certainly require additional consultation with the GLO, City of Galveston, Corp of Engineers and Galveston County; and we believe it is important to begin that discussion process sooner, rather than later. Included on the following page is a bullet point outline of potential alternatives that can serve as a starting point for discussion.

Potential Alternatives-

- Seaweed-
 Park Board staff currently grooms the seawall beaches through a permit with the City of Galveston that authorizes this practice. Seaweed and small amounts of sand can be placed into these scour troughs to immediately reduce their depth and when combined with seaweed could potentially assist in slowing water velocity.
- Incorporation of Driftwood
 Driftwood is a common item on Galveston beaches, and is removed by Park Board staff on an almost daily basis. The intent of this alternative is to incorporate naturally occurring driftwood into the erosion scours combined with seaweed to help create a natural structure that will slow the velocity of the outfalls and provide additional contact time with the geocells to further slow and dissipate the water.
- Bio-Degradable Erosion Control Blanket-
 Manufactured by Tensar the erosion control blanket could be incorporated into the sand in various configurations that would slow the water. The blankets are made with coconut fiber and are bio-degradable. Vegetation can be sprigged through the blanket and can serve as a support basis until the plantings have stabilized.
- Outfall Inlet Modification
 Outfalls from Seawall Boulevard are focusing stormwater run-off into the beach causing extreme cases of scour and beach erosion. The preferred solution is to modify drainage to flow storm water run-off away from the beach and toward the bay as is customary. However, in this situation that does not appear to be possible. During minor to moderate rainfall run-off flows from Seawall Boulevard, through relatively wide diameter ductwork under the sidewalk and onto the beach. This alternative envisions reducing the size of the inlet on the street side to reduce the flow of water draining onto the beach; it would increase retention time adjacent to the sidewalk and water levels on the street.
- Splash Pad with Bullrock
 Originally considered the potential solution to offset the scour impacts of the outfall discharge onto the beach at the beginning of the project. "Bullrock" is a concrete tumbled stone, without



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rebar that can be transported by dump truck and placed below each location, the material is approximately 8 – 12 inches in diameter, and would largely attach to itself due to its irregular circular shapes. The rock material would be placed atop a fiber ground cover that would also serve to slow the water velocity. It is understood the described alternatives from this point forward would require extensive coordination and could not be implemented until the fall following nesting season.

- Stabilization of Sediment

Beach sand is highly mobile, and is easily moved by prevailing winds. In various parts of the country a “clotting agent” is amended into the sand to help the sediment become more firm and less likely to erode. Drawbacks to this technique are the not fully understood impacts to bird and other dune nesting species.

- Structural Solution

Potential placement of a large diameter culvert, open end facing up and filled with rock placed atop a synthetic splash pad. The run-off would fall into the culvert and its energy would be dissipated among the rock contained inside. Other potential variations include drilling “weep holes” into the container.

- Gabions at Outfalls

Placement of large diameter rocks contained within stainless wire rectangular baskets (gabions) beneath each outfall would be a very quick solution to dissipate the water velocity. A gabion could be placed or removed very quickly as the situation warranted.

The Park Board is very interested to discuss potential alternatives that would provide the best solution with the least impact to this heavily used area. A “soft” solution is optimal, as other more concrete solutions are less desirable and will entail a longer consultation process with their outcome less than certain.

It is our hope this project will continue to meet its objectives to retain sand on the beach and help to protect limited natural resources through the reduction of beach erosion by actively managing seawall run-off. Erosion of the beach has the potential to negatively impact the granite footings at the base of the seawall;

Should you have any questions or need additional information please do not hesitate to let us know.

Sincerely,

Kelly de Schaun, Executive Director
 Galveston Park Board of Trustees

Enclosures: Post rainfall photographs