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State: Michigan

Program Categories: Infrastructure and Economic Development
 Environmental Protection
 Public Safety

1. Program Name
 Public Private Partnership with Benton Charter Township and TTM to stabilize bluffs along the western shore of Michigan, provide convenient emergency access to shoreline and facilitate economic development.
2. Administering Agency
 Benton Charter Township, Berrien County, Michigan
3. Contact Person's Name and Title
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9. Succinct Description of Program
 This is an example of a cooperative public private collaboration that facilitates economic development by the generous investment of ingeniously devised infrastructure to stabilize bluffs and provide emergency vehicular access to the shore.
10. Operational Length of Program
 The subdivision was originally approved in August 2005. Construction of the improvements began in earnest in the spring of 2006. The installation of the retaining walls and earthwork to create the terraces that stabilize the bluffs began in late summer 2006. The installation of other infrastructure, such as sanitary sewers, water, storm drainage, etc. proceeded thereafter. Finally a fifteen feet wide switchback road from the state highway to the shore was cast in concrete in 2008.
11. Program's Impetus, Problems, Issues Addressed

 This program aimed to accomplish three goals that are distinctly different but

certainly mutually reinforcing.

- a. the first goal is the economic benefit of development; this goal is mentioned first only because this is the economic driver that enables the other, more important objectives to be achieved. In the current uncertainty of these perilous economic times, it is imperative that local government address the sustained viability of its tax base. The increased assessed valuation of the improved property enhances the tax base of all governmental entities in the township. There are, of course, interim increases in construction related employment during the installation of the site's improvements. There is a definite overall enhancement of economic activity due to this development.

- b. the second goal is the elimination of the potential hazards associated with the topography of this portion of Michigan's western shore. The lake bluffs along the western shore of Lake Michigan have long attracted residents for their picturesque views. Subdivision of land over the years has afforded many with these magnificent views but has effectively curtailed easy access to the beach. Otherwise innocuous activities become potentially dangerous ones when they are affected by tortuous path that an emergency response must take. Points of access are restricted over land to those infrequent stabilized paths through the bluffs; access by water is limited to the response from the harbors at the mouths of the rivers along the shore. It is not uncommon for these bluffs to rise 200 feet above the lake's normal level with slopes much steeper than 30%. The sandy soils that underlay these bluffs are extremely susceptible to crumble and slide toward the lake often carrying trees and houses down to the beach below. In this specific case, the fact that these sandy bluffs are taller than 100 with nearly vertical slopes renders them highly unstable. It is for this reason that MDEQ has designated this shoreline as "high risk" for erosion. There are some stretches in Benton Township, Berrien County that the MDEQ considers even more severe with a "critical" designation. The winter storms that commonly buffet this shoreline hasten the likelihood of such erosion. The MDEQ designations seek to protect the fragility of these bluffs from the natural urge of residents who seek proximity to the shore. Such regulations, however, do nothing to mitigate the potential for catastrophic damage to existing residences or structures. This endeavor sought to improve this situation with an impressive series of terraces anchored by massive retaining walls that stabilize the soil and its slopes. The secure stability afforded by these terraces prompted the MDEQ to remove its "high risk" designation for this stretch of these bluffs.

- c. the final issue concerns public safety. The topography of these imposing but essentially fragile bluffs are relieved only at the mouths of the rivers that drain to the lake. Therefore, from the mouth of the St. Joseph River at Benton Harbor/St. Joseph to South Haven, a distance of more than thirty miles, access to the shore in any emergency is problematic. This improvement provides safe, easy, convenient, efficient, all-weather access for public vehicles and equipment responding to emergencies along the shore or toe of these bluffs. The alternative mode of access, by water from marinas at the rivers, can easily occur only during the narrow window from late spring to early autumn. Yet it is during the time of year with more inclement weather that disasters requiring an emergency

response are more likely to occur.

12. Specific Activities and Operations in Chronological Order

During the township's review process and public hearings in 2005, it became apparent that an opportunity presented itself to address the issues described above. The township approved a subdivision with some novel features to address the challenges of the site's topography. The developer was willing to invest in retained terraces to stabilize the shore's bluff from erosion. More important, the unique design of the infrastructure allows vehicular access to the beach. Emergency public safety vehicles can now drive easily down to the shore in response to emergencies.

As previously described, actual construction of the improvements began in earnest in the spring of 2006. The installation of the retaining walls and earthwork to create the terraces that stabilize the bluffs began in late summer 2006. The installation of other infrastructure, such as sanitary sewers, water, storm drainage, etc. proceeded thereafter. Finally a fifteen feet wide switchback road from the state highway to the shore was cast in concrete in 2008.

13. Novel and Creative Approach.

What distinguishes this collaborative program's approach from others is its amelioration of the potential for troubles from the outset. For example by contrast, regulations are often enacted to prohibit future folly long after the dangers of living in a flood plain or a coastal zone are evident. Structural measures are the only remedy in the feeble attempt to protect existing structures from the very real damage that nature's storms can inflict. This collaborative effort, however, melds the foresight of the township officials with the generosity and ingenuity of the developer to emplace the stabilizing structures before any other development occurs.

14. Program's Start-Up Costs

The capital costs of these various structural measures, consisting of the terraces, retaining walls and drainage were approximately \$3 million. They were borne entirely by the private developer.

15. Program's annual operational costs

The annual maintenance of these terraces and the roadway is intended to be financed by the subdivision's homeowners' association. The massiveness of these improvements is intended to impart a durability that should not require much maintenance. The cost of public emergency response to the beach and shoreline is borne by the township and/or various state agencies. The ease and convenience of this vehicular access point should actually serve to decrease budgetary allocations for such emergency response.

16. How is Program Funded

The annual maintenance of these improvements is intended to be financed by the subdivision's homeowners' association. The cost of public emergency response to the beach and shoreline is borne by the township.

17. Requirement of Enabling Legislation, Executive Orders or Regulation

Other than the public approval of the subdivision, there were no other legislative acts, executive orders or promulgation of regulations that were required to enable this public/private collaboration to occur.

18. Equipment, Technology and Software Used to Operate and Administer Program
The actual construction of the improvements required, of course, the use of heavy equipment. No other technology or special software is necessary to implement the public response to emergencies.

19. Origination of this Innovation in State

Proximity to water is a powerful attraction. Residents are drawn to the scenic beauty and recreational opportunities of a shoreline. Commercial and industrial sites are selected for the convenience of transportation of raw materials and finished products by water. While elaborate structural measures such as revetments, ports, retaining walls are commonly expected improvements for commercial activities, their application to facilitate residential development is less common. Regulations that restrict the placement of residential structures in harm's way are common in all states; they are the usual non-structural measure to protect both the environment and prospective resident from jeopardy. The innovative feature of this program is its application of structural measures at the outset to effectively stabilize a tenuous situation. It is more common for structural measures to be utilized as a last resort to correct the unforeseen damage.

This progressive approach would be impossible without the ingenuity and generosity of the developer. He has a demonstrated record for such innovative spirit. He is Tony Floramo TTM Development, 1804 Garnet Circle, New Lenox, IL 60451. 815 726 6660. Email address is Tonyfloramo@floramocorp.com.

20. Awareness of Similar Programs in Other States

An exhaustive survey of all coastal states has not been completed. The usual method of protecting the shoreline is the enactment of coastal regulations at the state and federal level. Structural measures are almost always employed as a remedy to correct a predicament that affects existing structures or uses. This is the first known example of the generous application of structural measures to stabilize a significant environmental feature before residential development occurs.

21. Status of Implementation of Program

The structural measures that created the stable terraces have been constructed. The switchback roadway that offers convenient access to the shore by emergency vehicles has been paved in concrete.

22. Evaluation of Program's Effectiveness in Addressing Defined Problems

The MDEQ has acknowledged the efficacy of these structural terraces at alleviating the potential for catastrophic erosion by removing the restrictive "high risk" designation on this stretch of shoreline and bluff. The ease of this vehicular access for emergency vehicles in a serious emergency has not yet been tested.

23. Change And/or Growth of Program since its Inception

There has been no change to this program.

24. Limitations or Obstacles to Adoption of this Program

The obvious bar to its more widespread adoption is the hesitancy to participate collaboratively in such a bold manner to squarely address such issues. More important, this approach could not occur without the generous willingness and creative ingenuity of one who is willing to invest such resources to create such economic development.