COASTWIDE PROJECTS

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Project Number	Project Proposals
CW-01	Coastwide Canal Backfilling Pilot
CW-02	Coastwide Sandfencing
CW-03	Coastwide Oyster Reef Shoreline Protection
CW-04	Coastwide Breach Management, Prevention & Response

CW-01

Coastwide Canal Backfilling Pilot

PPL24 PROJECT NOMINEE FACT SHEET
February 11, 2014

Project Name

Coastwide Canal Backfilling Pilot Project

Master Plan Strategy

Region 4: 004.MC.13, 004.MC.16
Region 3: 004.MC.07, 03b.MC.05, 03a.MC.07, 03b.MC.07
Region 2: 002.MC.05e
Region 1: 001.MC.09

Project Location

"Coastwide", with multiple locations in the four Regions available for selection in or near the Master Plan project areas indicated above.

Problem

Canal dredging has contributed significantly to land loss in Louisiana, yet little has been done to reverse the damage caused by canals and spoil banks. Canals have turned marsh and swamps to open water, and spoil banks have replaced wetlands with an upland environment. Spoil banks also restrict water flow above and below the wetland surface and cause increased periods of flooding and drying of the wetlands behind them. Increased flooding can lead to stress and mortality of wetland vegetation, while drying the soil increases subsidence through oxidation of organic matter. These hydrologic alterations also limit sediment deposition in the adjacent wetlands.

Proposed Project Features

This project will backfill oil and gas, pipeline, and/or residential development canals within one or several Master Plan project areas. Actual backfilling locations and features will be based on proposals from willing landowners. We want to stress the unique aspect of this proposed coastwide canal backfilling project, is to implement a completely voluntary program, to be based on proposals from landowners and mineral owners, to backfill canals. Proposals will be competitively selected based on criteria to be developed, that would represent factors considered to be most important to successful backfilling. This idea was specifically recommended last year by the CWPPRA Academic Assistance Group in response to a previous coastwide backfilling proposal.

Typically, these backfill areas are too far removed from sediment borrow sources to be deemed viable. As an alternative, this project proposes to backfill the canals by removing the existing spoil banks and disposing of the dredged material in the canals. While there is not sufficient sediment volume remaining in most spoil banks to completely fill the canals to adjacent wetland elevation, typically there is enough to significantly shallow the canals, and over time some additional filling to the target elevation is observed. Those areas returned to adjacent wetland elevation rapidly re-vegetate without the need for planting. In addition, removal of the spoil banks will restore natural hydrology across the wetland surface over a larger area in the vicinity of the canals.

Goals

- Backfill approximately 52 miles of canals by the end of year 4[1]
- Convert approximately 923 acres of upland spoil bank habitat to emergent wetlands by the end of year 9[2]
- Convert approximately 51 acres of open water (canal) to emergent wetlands by year 9[3]
- Net benefits over 20 years through conversion of spoil bank and canal to emergent wetland habitat will be calculated using the appropriate mapping sub-unit loss rates once the preferred sites are selected.
- Convert approximately 462 acres of open water (canal) to shallow water habitat by year 9[4]
- Increase SAV cover from 10% to 59% in 462 acres of open water by year 9[5]
- Convert 1437 acres of canal and spoil bank to emergent wetlands or shallow water habitat by year 9[6]
- Partially restore hydrology over 82,717 ac of emergent wetlands[7]

Preliminary Project Benefits

- Preliminary benefits=goals (see above)

Preliminary Construction Costs

The estimated maximum construction cost, including 25% contingency is $25 million. Final cost is dependent on the project areas chosen and may be significantly less.

Preparer of Fact Sheet

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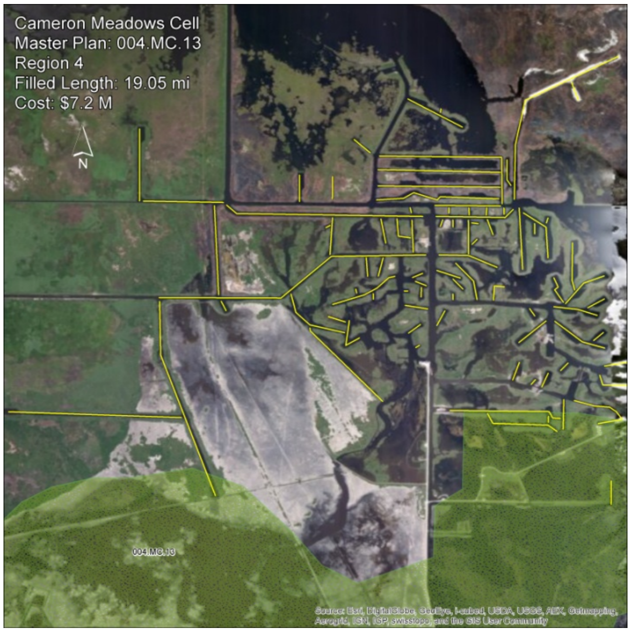
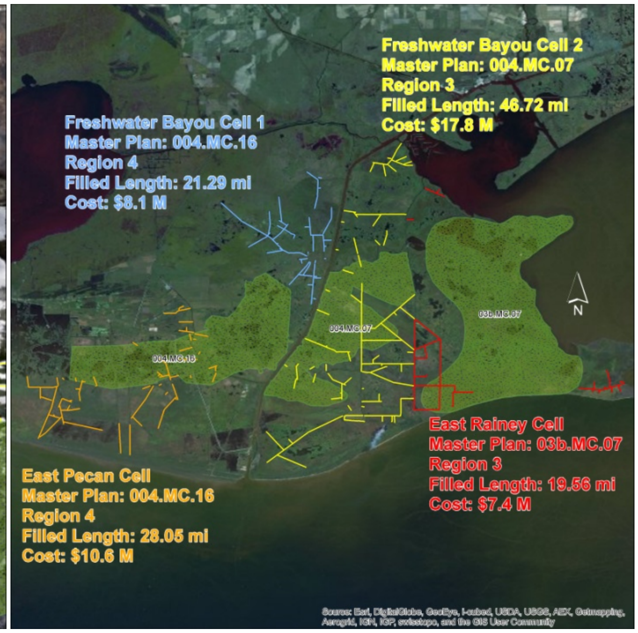
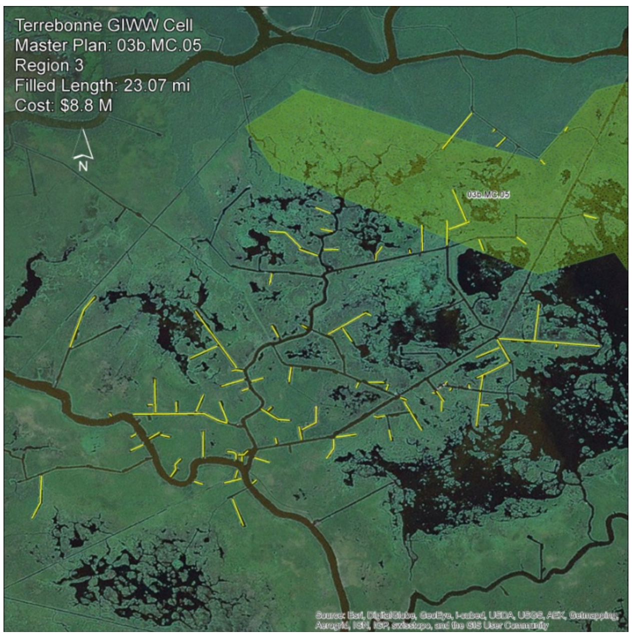
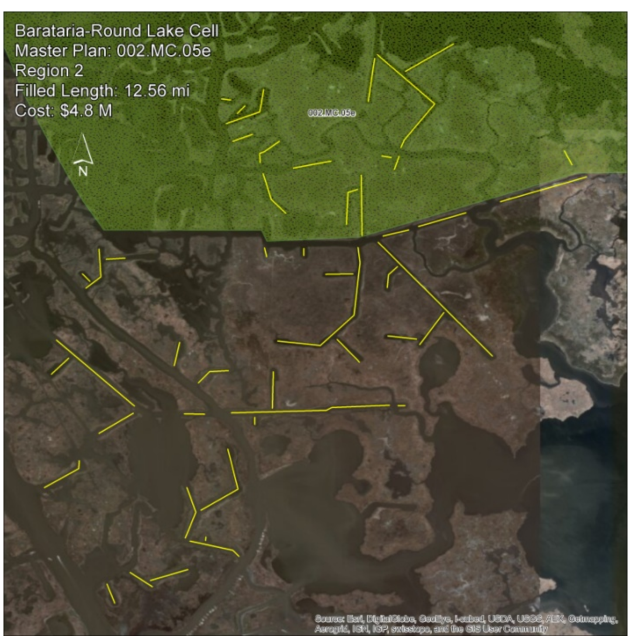
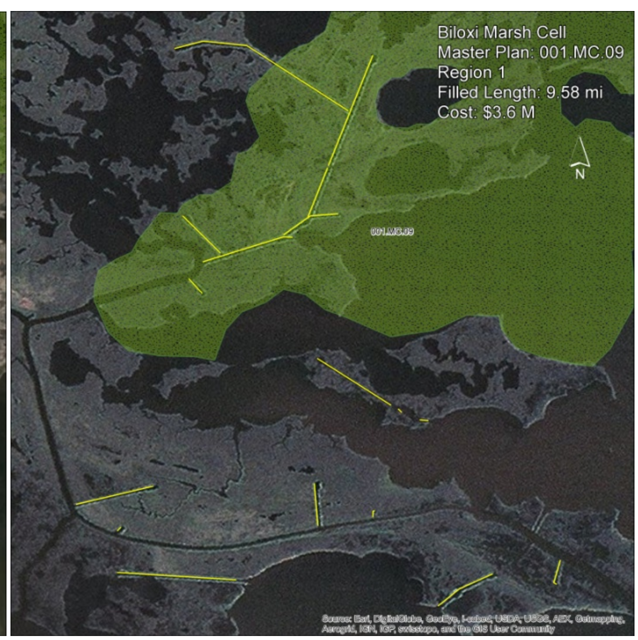

Cameron Meadows Cell
Master Plan: 004.MC.13
Region 4
Filled Length: 19.05 mi
Cost: $7.2 M
N
004.MC.13


Freshwater Bayou Cell 2
Master Plan: 004.MC.07
Region 3
Filled Length: 46.72 mi
Cost: $17.8 M
Freshwater Bayou Cell 1
Master Plan: 004.MC.16
Region 4
Filled Length: 21.29 mi
Cost: $8.1 M
N
East Rainey Cell
Master Plan: 03b.MC.07
Region 3
Filled Length: 19.56 mi
Cost: $7.4 M
East Pecan Cell
Master Plan: 004.MC.16
Region 4
Filled Length: 28.05 mi
Cost: $10.6 M


Terrebonne GIWW Cell
Master Plan: 03b.MC.05
Region 3
Filled Length: 23.07 mi
Cost: $8.8 M
N


Bayou Lafourche-Leeville Cell
Master Plan: 03a.MC.07
Region 3
Filled Length: 3.7 mi
Cost: $1.4 M
N


Barataria-Round Lake Cell
Master Plan: 002.MC.05e
Region 2
Filled Length: 12.56 mi
Cost: $4.8 M
N


Biloxi Marsh Cell
Master Plan: 001.MC.09
Region 1
Filled Length: 9.58 mi
Cost: $3.6 M
N

PPL 24
Coastwide Canal Backfilling Pilot Project
February 11, 2014

Supporting Documentation

[1] The length of canal to be restored was based on information taken from communication with the National Park Service (NPS) seen below:

"We've been able to average about $72/foot of canal reclaimed and $11,725/acre(total area) or $22,578/acre(spoilbank area) on three separate IDIQ contract task orders this year. We estimate that we have about 84,299 feet (about 16 miles) to go. If we were to get similar pricing per foot, we estimate that we have approximately $6.1 million worth of work remaining. However, we have had different pricing for each of our task orders, and other factors can be expected to increase costs for the remaining project areas. We would need to construct plugs on several of the remaining canals which would increase costs, and we have no current pricing for that construction. Plug construction was 46.8% of the non-dredging cost of a pilot project in the park which reclaimed 1.1 miles of canal and required two plugs. Assuming that we have four plugs to construct in the remaining 16 mile long project area, we can extrapolate based on the pilot project and add about 6.64% for plugs giving us $6.5 million." (excerpt from an email from Dusty Paite, NPS, to Ken Teague, EPA).

Based on this information, the cost per foot of backfilling was assumed to be $72/ft. With a target budget of $25 million, the 25% contingency is removed, leaving $20 million. After converting for miles, $20 million will cover a little over 52 miles of backfilling if not plugs are used.

[2] NPS estimated that backfilling 16 mi of canals in the Jean Lafitte National Historical Park and Preserve would result in conversion of 284 ac of spoil bank habitat to emergent marsh habitat. A simple proportionality calculation was applied to arrive at an estimate of the total area of spoil bank habitat that would be converted to emergent marsh (923 ac). Neill and Turner (1987) reported 50% or more marsh vegetation cover on 17 of 31 re-graded spoil banks five years after backfilling, so our assumptions should be valid.

[3] NPS estimated that backfilling 16 mi of canals in the Jean Lafitte National Historical Park and Preserve would result in conversion of 158 ac of canal to emergent marsh and shallow water habitat. Again, a proportionality calculation was applied to arrive at an estimate of the total area of canal that would be converted to emergent marsh or shallow water habitat from this project (514 ac). However, Neill and Turner (1987) stated "it is reasonable to expect that after five years backfilling will generally restore no more than 10% of the marsh cover in an average canal, or no more than 50% cover in exceptional cases". Based on this, we estimate that 51 ac of canal (deep water habitat) would be converted to emergent marsh in this project.

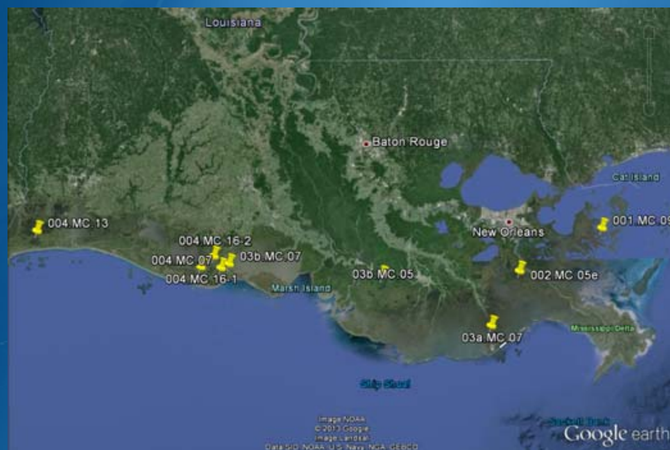
[4] Based on the estimates made in footnote #3, it is estimated that 51 ac of canal (deep water habitat) would be converted to emergent marsh in this project. Subtracting 51 ac from 514 ac, leaves 462 ac of canal (deep water habitat) assumed to be converted to shallow water habitat.

[5] As per above, assume 462 ac of deepwater canal habitat is converted to shallow water habitat. Reed and Rozas (1995) concluded that SAV would be likely to become established in backfilled canals in brackish areas. SAV was present in 18 of 27 backfilled canals studied by Neill and Turner (1987). Abernethy and Gosselink (1988) found backfilled canal in fresh/intermediate marsh had 59% SAV cover, 23% in the brackish marsh, and 10% in the salt marsh. A nominal 10% SAV cover is assumed in non-backfilled canals.

[6] NPS estimated that backfilling 16 mi of canals in the Jean Lafitte National Historical Park and Preserve would result in conversion of 284 ac of spoil bank habitat to emergent marsh habitat and 158 ac of canal to emergent marsh and shallow water habitat. Again, we simply applied a proportionality calculation to arrive at estimates of the total area of spoil bank habitat (923 ac) and canal (514 ac; deep water habitat) habitat that would be converted to emergent marsh or shallow water habitat (1437 ac).

[7] Turner and Rao (1990) stated that the effect of a spoil bank and canal on land loss can extend up to 2 km from the canal. Again, we assume that we will backfill 52 miles of canals. Assume a 4 km-wide corridor of marsh/swamp surrounding each backfilled canal, for which backfilling is assumed to partially restore hydrology, and thus reduce landloss rates. Also assume this wetland area is 70% marsh/swamp, 30% water. Based on this, the area benefitted by backfilling is 82,717 ac. This is a rough estimate and does not take into account land loss rates. If/when actual project areas are selected, land loss rates from their specific mapping sub-units will be used, and a nominal reduction in landloss rate of 5% FWP would be applied, based on partial restoration of hydrology. If the project is selected for Phase 0 analysis in CWPPRA, a new landloss rate will be estimated using the values for each project area mapping sub-unit, which will change this benefit estimate.

Coastwide Canal Backfilling Pilot Project



Coastal Wetlands Planning, Protection and Restoration Act

Problem

- Canal dredging is a significant contributor to Louisiana wetland loss
- Little effort put forth to reverse damage
  - Canals convert wetlands to open water
  - Spoil banks convert to upland habitat
- Spoil banks restrict water flow and can impound
  - Flooding stressses
  - hydrologic alterations

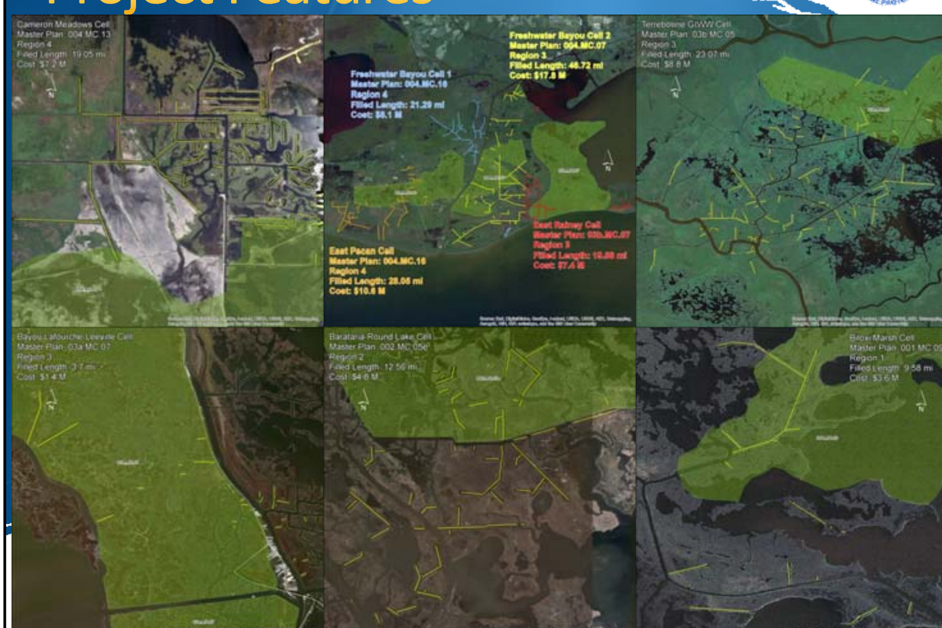
Coastal Wetlands Planning, Protection and Restoration Act

Solution

- Construction Cost Target - up to $25 Million
- Allow for 52 miles of canals to be backfilled
- Current plan calls for all in-situ work, no dredge
- Convert 923 ac of spoil banks and 51 ac of open water to emergent wetlands (974 total)
- Convert 462 ac of open water to shallow water
- Partially restore hydrology over 82,717 acres

Coastal Wetlands Planning, Protection and Restoration Act

Project Features



Questions?

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Coastal Wetlands Planning, Protection and Restoration Act

CW-02

Coastwide Sandfencing

PPL24 PROJECT NOMINEE FACT SHEET
February 2014

Project Name: Coast-wide Programmatic Sand Fencing

Master Plan Strategy: Barrier Island and Headland Restoration

Project Location: All Basins

Problem: Barrier islands are the first line of defense against storm waves and protect the interior wetlands and infrastructure from open ocean wave effects. They ensure the estuaries behind them are low energy environments capable of supporting wetlands and emerging deltas. Stabilized sand dunes reduce the likelihood of island breaching and erosion from wave action, storm waves, and surges (Mendelssohn and Hester 1988; Mendelssohn et al. 1991). Plants accumulate sand and can colonize over wash areas after storm events providing a stabilizing effect on island sands. The management of new placed sediment is typically conducted thru fencing and planting efforts and this programmatic effort would supplement existing project O&M and provide a longer-term sediment management capacity

Goals:

1) promote development of dunes and associated habitats
2) manage Aeolian transported sediments along the Gulf shoreline
3) provide sediment to the beaches during storm events

Proposed Solution: Systematic/Strategic deployment of sand fencing to manage sediments and dunes along the Gulf shoreline. Sediment Fences are proven technique to capture aeolian transported sands and increase elevations, develop habitat diversity, and supply sediment to the beaches during storm impacts. CWPPRA would conduct Post-Hurricane season assessment of the shoreline to note locations of over wash, denuded dunes, and dune breaches, previously deployed fence status, etc… and then select and prioritize appropriates sites (is there available sediment for aeolian transport, suitable elevation to prevent immediate and continuous impacts, and other factors like existing land rights and permits, etc...). Standard Plans and Specs are already available, and CWPPRA would then develop final locations and configurations, determine access and staging areas, obtain permits etc... if required, and bid out fencing and planting efforts if needs were determined for that year.

Preliminary Project Benefits:

Identification of Potential Issues: Permits and landrights for areas not covered thru existing projects (very few areas, but some permits are expiring due to project age)

Preliminary Construction Costs: $5.0 million (including 25% contingency)

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CW-03

Coastwide Oyster Reef Shoreline Protection

PPL24 PROJECT NOMINEE FACT SHEET
January 30, 2014

Project Name:
Coastwide - Oyster Reef Shoreline Protection

Project Location:
"Coastwide", with locations to be selected through a competitive process. Dependent on locations proposed and proposal selection criteria based on factors known to be related to critical landscape, erosion rates, and potential oyster growth.

Problem:
Protecting shorelines from wind induced waves has been and will continue to be a challenge along the Louisiana coastline. Several of these challenges include the high initial cost of traditional shoreline protection, costs associated with the maintenance of that structure, poor substrate, and the use of materials not native to Louisiana. Poor substrate along the coast is usually the cause the high maintenance costs and restricts the ability to build certain types of shoreline protection structures.

Goals:
- Protect coastal shorelines through the creation of oyster reefs with suitable material placed foreshore and/or gabion mattresses placed adjacent to the shore.

Proposed Solutions:
This project would protect coastal shorelines through the construction of habitats suitable for the establishment of oyster reefs. This would be done by installing rock-filled gabion mats along the shoreline and/or foreshore structures across any open water areas to enhance oyster reef production. This would promote the creation of oyster reefs which would reduce shoreline erosion rates with little to no maintenance. This project should reduce project area land loss rates by over 95% and protect highly productive naturally occurring marshes. It is estimated that shorelines with average shoreline erosion rates of 15 ft./yr. or greater would be selected for this project. Project areas would also contain a minimum of 75% emergent marsh.

The project would protect an estimated twelve miles of shoreline (63,360 LF) in four increments of 3 miles each (15,840 LF). The first of the four increments would be completed within 3 years and the next three increments would be completed every two years thereafter. This would allow the group to apply what they have learned from the first increment to the other three increments.

Preliminary Project Benefits:

1) *What is the total acreage benefited both directly and indirectly?*
The total acreage that would be benefited directly and indirectly is 436 ac.

2) *How many acres of wetlands will be protected/created over the project life?*
284 ac of wetlands will be protected/created over the project life.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74%, and >75%)?*
The anticipated loss rate reduction throughout the area of direct benefits is >75%.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc.?*
It is anticipated that the project would help maintain or restore some lake rims and/or natural or artificial levee ridges within the coastal ecosystem.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
The net impact of the project on critical and non-critical infrastructure is uncertain at this time, since the locations of shoreline protection have not yet been determined.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
The extent to which the project provides a synergistic effect with other approved and/or constructed restoration projects is uncertain at this time, since the locations to be protected have not yet been determined.

Identification of Potential Issues:
Potential issues include landrights and oyster leases, but any significant issues would be eliminated as part of the actual project selection process.

Preliminary Construction Costs:
The estimated construction cost including 25% contingency is < $24 M.

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CW-04

Coastwide Breach Management, Prevention, & Response