ALTERNATIVE ANALYSIS

MIXED USED MARINA DEVELOPMENT
SPOONBILL BAY HOLDINGS, L.P.

A key provision of the 404(b)(1) guidelines is the "practicable alternative test" which requires that "no discharge of fill material shall be permitted if there is a practicable alternative to the proposed fill which would have a less adverse impact on the aquatic ecosystem." This is especially true when the proposed project is not water dependent. The Applicant must demonstrate that there are no less damaging sites available and that all onsite impacts to waters of the United States have been avoided to the maximum practicable extent possible. For an alternative to be considered "practicable," it must be available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose.

The Applicant, (Spoonbill Bay Holdings, L.P.) proposes to impact a total of 2.73 acres of Waters of the U.S. for the purpose of constructing a mixed-use marina development. In order to construct the proposed marina and associated residential lots, portions of jurisdictional areas will be excavated to create the marina and two canals; other portions of tidal wetlands will be filled to grade residential lots and streets. More specifically, the Applicant proposes fill 0.14 acres of tidal wetlands and excavate 2.00 acres pf tidal wetlands, 0.43 acres of Section 10 Waters, and 0.16 acres of sand/salt flats. The proposed project is located on a 117 acre tract situated between Farm-to-Market (FM) 3005 and West Galveston Bay, northeast of Mendocino Drive, in Galveston County, Texas.

Four (4) alternatives were considered based on the following *siting criteria*: minimum size of the tract and property availability, direct access to West Galveston Bay, cost to develop the site, environmental impact of the project and State Owned Land impacts.

I. Target Market Area

The Applicant is proposing to develop a mixed-used marina development with direct water access to West Galveston Bay. The proposed project will provide water-front residential housing options to meet the growing demand for second home/resort housing in Galveston County, Texas. The proposed marina and canals will provide direct water access for boats as well as a means of boat storage. In addition, the proposed construction of two circulation canals will address the potential problems associated canal developments, particularly the poor water quality inherently created a single canal system.

Therefore, the proposed project needs to be located directly adjacent to West Galveston Bay to allow for proper circulation within the proposed canal system and provide adequate access to West Galveston Bay for recreational boat activities associated with the marina and residential housing. Thus the Target Market Area encompasses the entire West End of Galveston Island, particularly in close proximity to San Luis Pass.

II. Siting Criteria

Criteria #1: Minimum tract size and availability.

The project tract must be a minimum of 100 acres in size in order for the Applicant to construct the desired number and size of residential lots, two circulation canals, and a marina. The project requires a parcel(s) directly adjacent to West Galveston Bay; therefore the availability of such property is a key limiting factor.

Criteria #2: Direct access to West Galveston Bay.

In order to meet the Applicant's needs, the proposed plan must be directly adjacent to West Galveston Bay to provide the proposed marina and water-front residential lots with direct access to West Galveston Bay. An adjacent minimum water depth of six feet was considered a requirement in order to achieve desired Dissolved Oxygen (DO) levels within the marina and circulation canals.

Criteria #3: Cost to develop the site.

The project must allow the Applicant to develop the site in an economical fashion in order to create a sufficient number of housing lots, two circulation canals and a marina. The main limiting factor for this criterion is the cost for infrastructure and development.

Criteria #4: Environmental impact of the project.

The proposed project tract must avoid and minimize impacts to high quality jurisdictional wetlands and non-vegetated waters. The aquatic resources on the tract must be situated in a manner that allows the Applicant to avoid significant impact to high quality jurisdictional areas (such as wetlands and sand flats) while still providing the Applicant with the necessary developable acreage to make the project economically viable. If proposed impacts to jurisdictional Waters of the U.S. cannot be completely avoided, the alternative plan must minimize impacts and propose sufficient mitigation for all impacts that are determined to be unavoidable.

Criteria # 5: State Owned Land impacts.

The proposed alternative plan must consider ways to avoid and minimize impacts within the Texas General Land Office (TGLO) State Owned Land (SOL) in order to construct the housing lots, circulation canals, and marina. This is includes, but is not limited to, impacts to open waters subject to the daily tide and submerged aquatic vegetation such as seagrass habitats. Any dredging or filling within SOL would likely require a lease from the TGLO prior to construction.

III. Proposed Alternatives

No Action Alternative:

This alternative involves permit denial. Under this scenario, the Applicant would incur a significant financial loss due to the fact that they would not be able to recover the cost for the land or the engineering/consulting fees because the profit generated by the proposed project would not be available. The overall purpose of the proposed project is to create a mixed-use marina development with direct water access to West Galveston Bay as well as direct access to FM 3005. The proposed residential lots, canal, and marina will provide direct water access for boats and as well as a means of boat storage. In addition, the proposed construction of two circulation canals will address the potential problems associated with canal developments to meet TCEQ requirements.

Onsite Alternatives:

1) **Onsite Alternative #1:** ***Preferred Alternative***

The Applicant's preferred alternative is the project as described above. More specifically, the Applicant proposes fill 0.14 acres of tidal wetlands and excavate 2.00 acres pf tidal wetlands, 0.43 acres of Section 10 Waters, and 0.16 acres of sand/salt flats. The proposed project is located on a 117 acre tract situated between Farm-to-Market (FM) 3005 and West Galveston Bay, northeast of Mendocino Drive, in Galveston County, Texas.

The Applicant is proposing to avoid 31.84 acres of jurisdictional areas. Thus, approximately 90% of the jurisdictional areas identified onsite and verified by the USACE will be avoided with the proposed development plan. The Applicant has minimized impacts to the most practicable extent while still accomplishing the overall goals of the proposed mixed-use marina development, by reducing impacts to adjacent wetlands and waters from 25.55 acres to 2.73 acres.

The preferred alternative meets all of the client's onsite needs and siting criteria, while minimizing impacts to high quality jurisdictional areas. In addition, the preferred alternative allows the Applicant to create two circulation canals to meet the necessary water quality requirements of the TCEQ. The proposed plan results in impacts to primarily low-quality, non-tidal wetlands dominated by rattlepod (*Sesbania drummondii*) rather than high-quality forested wetlands or tidal marsh. Impacts to tidal habitats have been reduced to the most practicable extent in order to avoid over 85% of all tidal marsh, sand flat, and open water habitat.

Furthermore, the Applicant is proposing to preserve 20.33 acres of tidal wetlands and high marsh adjacent to the tract.. The Applicant also proposes the construction of a living shoreline along the eastern-most circulation canal, which will provide additional high quality, tidal habitat and erosion control onsite.

2) Onsite Alternative #2

The Applicant analyzed several land plans and configurations before deciding on the preferred alternative. In order for the project to be a profitable mixed-use marina development, all space currently proposed to be impacted is required for the success of the development, particularly the construction of the circulation canal system. Altering portions of the site layout would change the size and number of housing lots while also complicating the proposed canal system.

One potential onsite land plan, other than the Applicant's preferred alternative, was even remotely viable given the Applicant's needs. This plan involved a smaller canal system, less circulation capability as the preferred alternative, and an alternate entrance onto the subject property, located further west. While this plan would in effect avoid the impact to more of the non-tidal wetlands in the southern portion of the property, the narrower and shorter canal design would not allow for proper water circulation. The proposed entrance/roadway located further west would impact more non-tidal wetlands than the entry roadway as depicted in the preferred alternative plans. Furthermore, due to the location of the existing non-tidal wetlands along the southern boundary of the project site, it would not feasible to completely avoid these wetlands as this would limit access to the remainder of the project site.

Offsite Alternatives:

The applicant's preferred site is the 117 acre tract described in the proposed project plans. The applicant analyzed two (2) other potential sites located within their target market area, specifically to the northeast of the proposed project site. The applicant did not investigate any properties further south/southwest of the current proposed project site (towards San Luis Pass) due to the increasing probability of encountering critical habitat for threatened and endangered species as well as other fragile aquatic ecosystems. Based on aerial photography, it is estimated that the majority of the bay-side parcels to the southwest of the proposed project site contain approximately 90% marsh habitat and sand flat habitat. Therefore, all properties to the southwest of the proposed project site have been eliminated from this analysis as the least environmentally damaging practicable alternative.

The analysis of the two (2) offsite alternatives is described below:

1) Offsite Alternative #1

Offsite Alternative #1 is approximately 119.78 acres in size and is located directly adjacent to the preferred tract along the eastern-most boundary. This site would provide direct access to both West Galveston Bay and FM 3005.

The site appears to contain both tidal and non-tidal wetlands that cover over 50% of the site as indicated by the National Wetland Inventory (NWI) maps. Based on an analysis of current aerial imagery and 1995 infrared aerial imagery, there appear to be signatures on the site that would indicate the presence of wetlands, sand flats, and

tidal waters that would meet or exceed the proposed impact acreage of the preferred alternative plan. Specifically, the amount of sand flat habitat as well as tidal marsh habitat is significantly higher than that of the preferred site. Due to the higher amount of open water within the property, it is likely that additional review, coordination, and mitigation would be required for impacts in State Owned Land.

Offsite Alternative #1 does not meet siting criteria 4 or 5 and has the potential to not meet siting criteria 3 due to potential increased mitigation and coordination costs that would be associated with development of the site. Therefore, Offsite Alternative #1 was eliminated from consideration as a practicable alternative.

2) Offsite Alternative #2

Offsite Alternative #2 is approximately 95.75 acres in size and is located 0.40 miles northeast of the preferred tract. This site would provide direct access to both West Galveston Bay and FM 3005 but is smaller in size than the preferred alternative.

Similar to Offsite Alternative #1, the second alternative site appears to contain both tidal and non-tidal wetlands that cover the majority of the northern portion of the site as indicated by the National Wetland Inventory (NWI) maps. Based on an analysis of current aerial imagery and 1995 infrared aerial imagery, there appear to be signatures on the site that would indicate the presence of wetlands, sand flats, and tidal waters that would meet or exceed the proposed impact acreage of the preferred alternative plan. Specifically, the amount of sand flat, tidal marsh, and open water habitat is significantly higher than that of the preferred site.

Furthermore, Offsite Alternative #2 contains additional open water that would infringe on the dry land needed to construct the adequate number of housing lots and the adequate number/size of circulation canals to meet project requirements. In addition, it is likely that additional review, coordination, and mitigation would be required for impacts in State Owned Land.

Offsite Alternative #2 does not meet siting criteria 1, 4, or 5 and has the potential to not meet siting criteria 3 due to potential increased mitigation and coordination costs that would be associated with development of the site. Therefore, Offsite Alternative #2 was eliminated from consideration as a practicable alternative.

Location: Galveston County, Texas
Image Source: NAIP (2012)
Projection: NAD 83, UTM Zone 15N
GIS Contact: Haille Carter (hcarter@bergoliver.com)

Legend	Acres
Proposed Project Site	115.37
Alternative Tract #1	119.78
Alternative Tract #2	97.75

ALTERNATIVE ANALYSIS - OVERVIEW
SPOONBILL BAY HOLDINGS, L.P.

REVISIONS
2/23/15 by HNC

BERG•OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE & LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com

Project #: 9293N-IP
For: Spoonbill Bay Holdings, L.P.
Location: FM 3005
Galveston County, Texas

OFFSITE ALTERNATIVE - TRACT #1

Project #: 9293N-IP
For: Spoonbill Bay Holdings, L.P.
Location: FM 3005
Galveston County, Texas

REVISIONS
2/23/15 by HNC

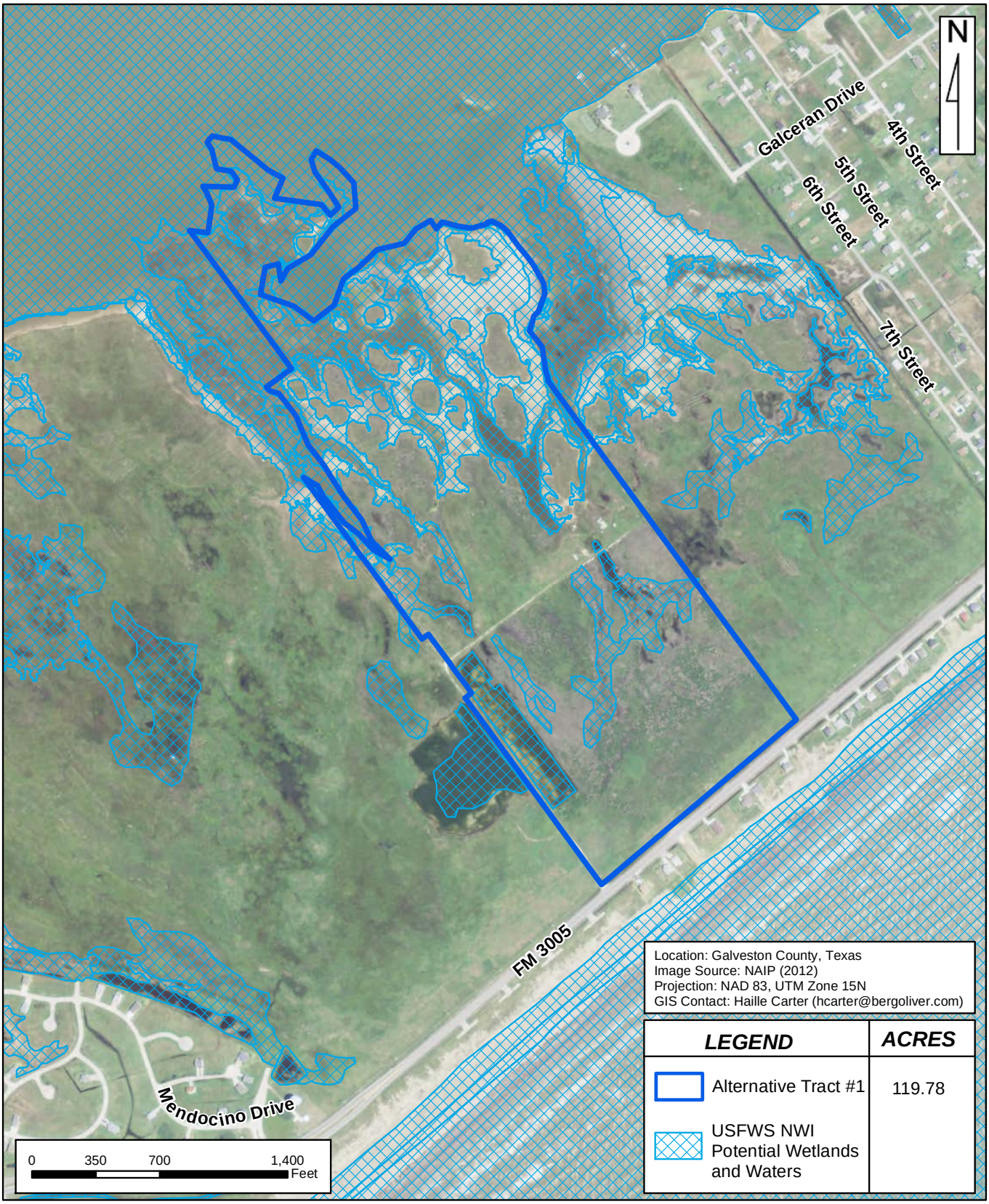
BERG OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE & LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com

OFFSITE ALTERNATIVE - TRACT #1

Project #: 9293N-IP
For: Spoonbill Bay Holdings, L.P.
Location: FM 3005
Galveston County, Texas

REVISIONS
2/23/15 by HNC

BERG OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE & LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com



OFFSITE ALTERNATIVE - TRACT #1

Project #: 9293N-IP
For: Spoonbill Bay Holdings, L.P.
Location: FM 3005
Galveston County, Texas

REVISIONS
2/23/15 by HNC

BERG OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE & LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com

Location: Galveston County, Texas
Image Source: NAIP (2012)
Projection: NAD 83, UTM Zone 15N
GIS Contact: Haille Carter (hcarter@bergoliver.com)

LEGEND	ACRES
Alternative Tract #2	95.75

OFFSITE ALTERNATIVE - TRACT #2

Project #: 9293N-IP
For: Spoonbill Bay Holdings, L.P.
Location: FM 3005
Galveston County, Texas

REVISIONS
2/23/15 by HNC

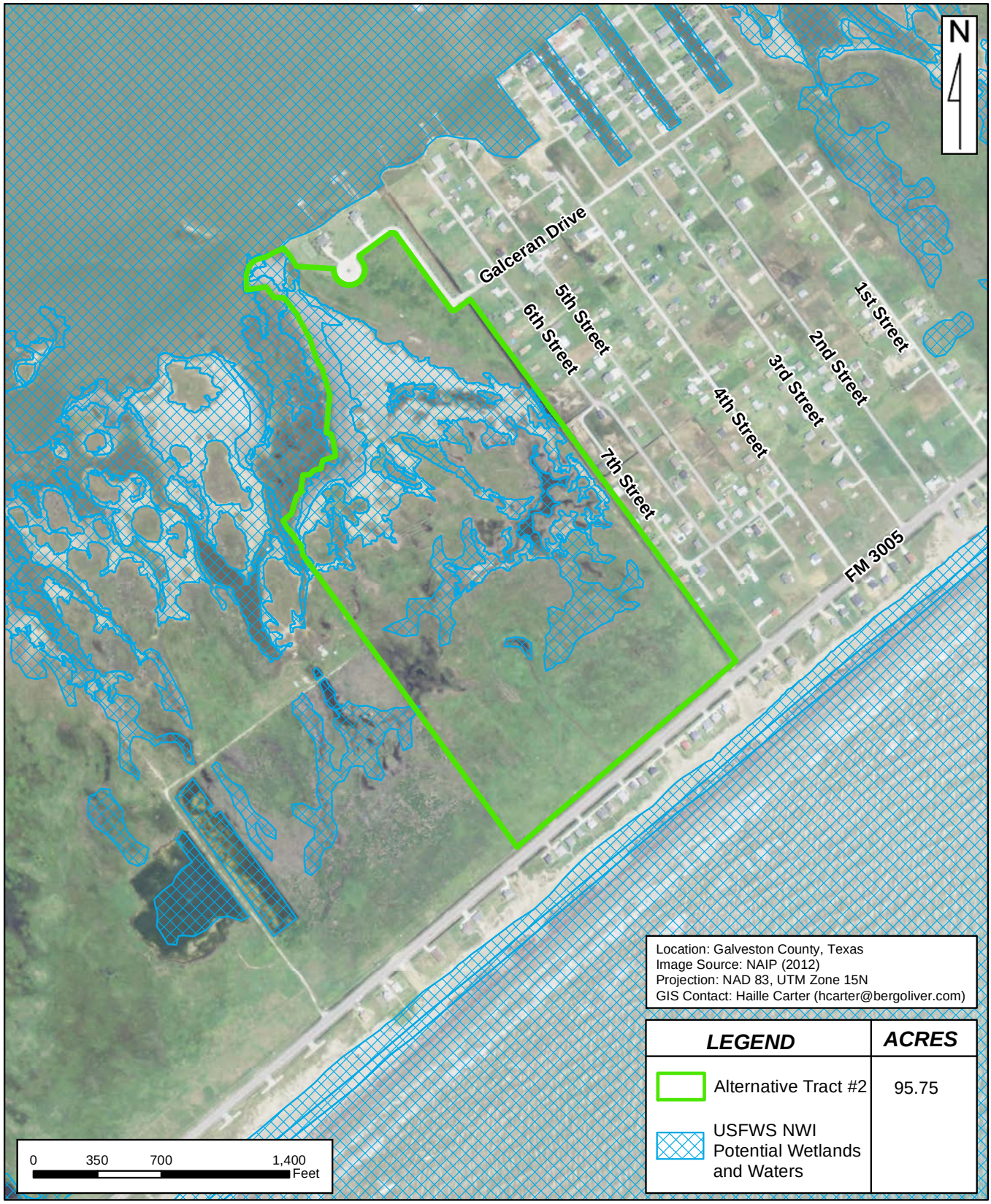
BERG OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE & LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com

OFFSITE ALTERNATIVE - TRACT #2

Project #: 9293N-IP
For: Spoonbill Bay Holdings, L.P.
Location: FM 3005
Galveston County, Texas

REVISIONS
2/23/15 by HNC

BERG OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE & LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com



OFFSITE ALTERNATIVE - TRACT #2

Project #: 9293N-IP
For: Spoonbill Bay Holdings, L.P.
Location: FM 3005
Galveston County, Texas

REVISIONS
2/23/15 by HNC

BERG OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE & LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com

MITIGATION PLAN
SWG-2007-01475
SPOONBILL BAY HOLDINGS, L.P.

Spoonbill Bay Holdings, L.P. (Applicant) proposes to impact a total of 2.73 acres of Waters of the U.S. for the purpose of constructing a proposed waterfront canal residential development and associated marina/boat launch. More specifically, the Applicant proposes to 2.14 acres of tidal wetlands; 0.16 acres if salt/sand flat, and 0.43 acres of Section 10 Waters of the U.S. within 98.00 acres of a 117 acre tract of land with direct access to Farm-to-Market Road (FM) 3005 and direct access to West Galveston Bay for recreational boating. The USGS Quad reference map is *San Luis Pass* and *Sea Isle* and the center of the project area is located approximately at UTM NAD 83 Zone 15 coordinates 297,296.00 E; 3,222,977.00 N (**Attachment A**).

To offset these impacts, the Applicant has agreed to preserve a 20.33 acre tract immediately adjacent. The tract contains 2.9 acres of sand/salt flats, 7 acres of tidal wetlands, and 1.16 acres of adjacent freshwater wetlands. The total on-site avoidance and adjacent off-site preservation will provide greater than 10:1 overall compensation of critical habitat resources.

Table 1: Wetland Mitigation Summary

Type	Impact (acres)	On-Site Avoidance (acres)	Adjacent Off-site Preservation (acres)	Preservation to Impact Ratio	Total Ratio (on and off site)
Tidal Wetland	**2.14**	**9.85**	**7**	**3.27:1**	**7.87:1**
Section 10 Water	**0.43**	**19.99**	**0**	**0**	**19:1**
Sand/Salt Flat	**0.16**	**2.58**	**2.90**	**18:1**	**34.25:1**

1) Goals and Objectives

2) Baseline Information

The 98.00-acre tract of land is located between FM 3005 and West Galveston Bay, northeast of Mendocino Drive, in Galveston County, Texas. The subject property is directly bordered by undeveloped land to the northeast and southwest. Existing residential developments can be found approximately 0.80 miles to the northeast and 0.40 miles to the southwest of the subject property. West Galveston Bay is directly adjacent to the northern portion of the property and FM 3005 borders the southern portion of the property.

A wetland delineation was verified by the USACE in June 2017. As a result, the subject property contains 16.90 acres of jurisdictional non-tidal (freshwater) wetlands, 11.99 acres of jurisdictional tidal wetlands, 2.74 acres of non-jurisdictional sand flats, and 2.89 acres of jurisdictional Section 10 Waters of the U.S. In upland areas, the subject property was dominated by hogwort (*Croton capitatus*), annual ragweed (*Ambrosia artemisiifolia*), rattlepod (*Sesbania drummondii*), gulf cordgrass (*Spartina spartinae*), and southern dewberry (*Rubus trivialis*). In non-tidal wetlands, the subject property was dominated by marsh seedbox (*Ludwigia palustris*), rattlepod (*Sesbania drummondii*), swamp smartweed (*Persicaria*

hydropiperoides), gulf cordgrass (*Spartina spartinae*), and grass-leaf rush (*Juncus marginatus*). In tidal wetland areas, the subject property was dominated by saltgrass (*Distichlis spicata*), dwarf saltwort (*Salicornia bigelovii*), gulf cordgrass (*Spartina spartinae*), and smooth cordgrass (*Spartina alterniflora*). The sand flat habitats were mostly denude of vegetation, but some contained sparse patches of turtleweed (*Batis maritima*) and dwarf saltwort (*Salicornia bigelovii*).

According to the Web Soil Survey of Galveston County, the 98.00-acre tract of land is underlain by Mustang fine sand, slightly saline-Strongly saline complex (Ms), Mustang fine sand, saline (Mp), Mustang-Nass complex (Mt), and Galveston-Nass complex (Gc). The entire subject property is located within the mapped tidal surge zone of West Galveston Bay.

The 20.60-acre tract directly to the east was purchased by the Applicant to provide an opportunity to offset impacts of the proposed development. A preliminary wetland study has been conducted on this property and the site contains approximately 2.90 acres of sand flats, 7.00 acres of tidal wetlands, 1.16 acres of freshwater wetlands, and 9.27 acres of uplands.

3) Site Selection

In order to comply with the Final Compensatory Mitigation Rule (2008) the Applicant initially proposed to purchase the appropriate number of mitigation credits through an approved mitigation bank. However, there are no approved mitigation banks that serve the area of the proposed project site. In addition, there are no in-lieu fee programs available in this area. Therefore, as a secondary option, the Applicant has agreed to construct permittee responsible mitigation by enhancing the 7.80 acres of existing and avoided non-tidal (freshwater) wetlands, creating 12.48 acres of non-tidal (freshwater) wetlands within the existing upland areas on the project site, and creating 3.36 acres of tidal wetlands.

4) Mitigation Work Plan

The construction of the created wetland habitat (both tidal and non-tidal) would begin within twelve (12) months following the initiation of construction within permitted jurisdictional areas. The USACE, Regulatory Branch, Chief of Compliance would be notified in writing when the mitigation and project construction has begun.

The mitigation would be completed, including planting, within twelve (12) months of the initiation of the construction in jurisdictional areas. Within sixty (60) days following the completion of the mitigation area, the USACE, Regulatory Branch Chief of Compliance would be supplied with the following information: A) an as-built plain view drawing of the boundaries of the wetland area surveyed by a Registered Professional Surveyor, and B) based on the survey, total acreage of created wetlands.

A. Non-tidal (Freshwater) Wetland Enhancement & Creation

The Applicant is proposing to enhance the existing and avoided 7.80 acres of non-tidal (freshwater) wetlands and create 12.48 acres of non-tidal (freshwater) wetlands within the existing upland areas. The 12.48 acres of created non-tidal (freshwater) wetlands would be located directly adjacent to existing non-tidal (freshwater) wetlands along the southern portion of the subject property and in the adjacent conservation easement tract. By creating non-tidal wetlands in this location, a larger and more contiguous non-tidal (freshwater) wetland habitat would be established. The wetlands would be engineered to allow for variation in water level and would be planted with desirable hydrophytic herbaceous vegetation that can flourish in various water depth conditions. Two (2) culverts would be placed below the entrance road of the property in order to allow for continuous flow and exchange of water between wetlands on either side of

the roadway. This would provide hydrology to the entire wetland complex as well as provide runoff filtration for the entire site.

Planting would take place within six (6) months following the start of construction in jurisdictional areas and the wetlands would be planted on three (3) to four (4) foot centers to maximize aerial coverage of desirable vegetation.

The proposed created non-tidal (freshwater) wetlands would be created by planting a mix of desirable hydrophytic herbaceous species including, but not limited to, pickerel-weed (*Pontederia cordata*), arrowhead (*Sagittaria sp.*), iris (*Iris sp.*), soft rush (*Juncus effusus*), and squarestem spike rush (*Eleocharis quadrangulata*). The exact composition of planted species would be dependent upon the species availability at the time of planting. A complete list of desirable wetland vegetation species is located under **Attachment B**.

B. Tidal Wetland Creation

The Applicant is proposing to create 3.36 acres of tidal wetlands on-site and constructed in the form of high marsh, low marsh, and subtidal marsh. The created 3.36 acres of tidal wetlands would be located near existing marsh habitat along the eastern-most boundary of the property. The tidal wetlands would border the eastern edge of the proposed circulation canal to provide erosion control and act as a buffer between the proposed development and existing marsh habitat. The tidal mitigation wetlands would be engineered to allow for variation in water level and would be planted with desirable hydrophytic herbaceous vegetation that can flourish in normal tidal flux.

The proposed 3.36 acres of tidal wetlands would be created by planting a mix of desirable hydrophytic herbaceous species including, but not limited to: widgeongrass (*Ruppia maritima*), smooth cordgrass (*Spartina alterniflora*), saltgrass (*Distichlis spicata*), turtleweed (*Batis maritima*), dwarf saltwort (*Salicornia bigelovii*), Chickenclaws (*Sarcocornia ambigua*), or Jesuit's bark (*Iva frutescens*) (**Attachment B**). The exact composition of planted species would be dependent upon the species availability at the time of planting. Planting would take place within twelve (12) months following the start of construction within jurisdictional areas and the wetlands would be planted on three (3) to four (4) foot centers to maximize aerial coverage of desirable vegetation.

5) Site Protection and Maintenance

The Applicant would place a USACE approved deed restriction on both the 98.00-acre subject property and adjacent 20.33-acre tract within thirty (30) days from completion of construction of the mitigation areas. The two tracts would contain a total of 12.48 acres of non-tidal created wetlands, 7.80 acres of enhanced non-tidal wetlands, and 3.36 acres of created tidal wetlands. The Applicant would provide the USACE, Regulatory Branch, Chief of Compliance a copy of the recorded deed restriction within thirty (30) days from the date the restriction is recorded. The Applicant would submit a copy of the deed restriction to the USACE for approval prior to recording the deed restriction with the county clerk.

Prior to the expiration of the permit, the adjacent 20.33-acre tract would be placed under an approved Conservation Easement.

The Applicant would be responsible for the maintenance of the mitigation area in perpetuity. The Applicant would notify the USACE thirty (30) days prior to any change in ownership of the mitigation area. If the Applicant does transfer ownership, the Applicant's obligations with respect to the mitigation area hereunder shall transfer to any such subsequent owner of the mitigation area. The Applicant would also transfer the permit to the subsequent owner and would notify the USACE that the permit has been transferred within thirty (30) days prior to change of ownership.

6) Performance Standards

The Applicant agrees to maintain the integrity of the mitigation area so as to inhibit its degradation due to structural erosion during the monitoring period. In addition, the mitigation area would be monitored for noxious plant species in the created wetland areas. Noxious plant species, specifically Chinese tallow (*Triadica sebifera*) and black willow (*Salix spp*) would be eradicated by physical removal or careful hand application of herbicide approved for use in aquatic areas if they exceed 10% of the created wetland areas.

The 7.80 acres of enhanced non-tidal wetlands and 12.48 acres of created non-tidal wetlands would be considered to have met minimum success criteria (MSC) if, for two consecutive years, the mitigation areas attain 70% areal coverage of "desirable" native vegetation which are considered FACW or wetter.

The 3.36 acres of created tidal mitigation wetlands would be considered to have met minimum success criteria if, for two consecutive years, the mitigation area attains 60% aerial coverage of any of the following: widgeongrass (*Ruppia maritima*), smooth cordgrass (*Spartina alterniflora*), saltgrass (*Distichlis spicata*), turtleweed (*Batis maritima*), dwarf saltwort (*Salicornia bigelovii*), Chickenclaws (*Sarcocornia ambigua*), or Jesuit's bark (*Iva frutescens*). Once the mitigation areas have been determined to have met the minimum success criteria, the U.S. Army Corps of Engineers, Regulatory Branch, Chief of Compliance would be notified in writing within thirty (30) days that the mitigation area has met minimum success. The USACE, Regulatory Branch, Chief of Compliance will make the final determination that the mitigation area has met MSC and will decide when monitoring of the mitigation area will cease; with monitoring not exceeding five (5) years if MSC is met within the five (5) year monitoring period.

7) Monitoring Plan

The Applicant would conduct an initial transplant survival survey seven (7) days after the site has been planted and would conduct a follow up survey forty-five (45) days after initial planting. A copy of this transplant survival study would be sent in to the USACE, Regulatory Branch, Chief of Compliance with information relating to the total number of plant species planted and total number of plant species which survived. If less than 35% of the planted species survive, additional planting efforts would take place in order to achieve aerial coverage of greater than 35%.

The mitigation areas would be monitored on a quarterly basis for the first year following the completion of the constructed mitigation areas and transplant survival survey. Thereafter, the mitigation area s be monitored annually on the approximate construction anniversary for an additional four (4) years and a copy of the annual monitoring report would be submitted to the USACE, Regulatory Branch Chief of Compliance until MSC has been met. Monitoring shall continue for a minimum of five (5) years and would be considered complete when the mitigation has met the MSC and the proposed HGM lift is achieved.

Mitigation monitoring reports will be submitted to the USACE, Regulatory Branch, Chief of Compliance and would include the following information: *A) a summary of the percent ground cover and species composition at fixed pre-established observation points; B) list of dominant vegetation and their indicator status; and C) photo documentation of the mitigation area.*

8) Long Term Management Plan

Once the mitigation areas are established, the created wetlands would be self-sustaining. Hydrology into and out of the mitigation areas would be controlled by engineering design of the surrounding area. The sole source of hydrology for non-tidal wetlands would be natural precipitation and runoff and would

fluctuate on the seasonal rainfall basis. Culverts would provide increased circulation of water and nutrients between areas of these constructed non-tidal, wetlands and existing, natural wetlands, creating a more self-sustaining habitat. Tidal wetlands would receive hydrology mainly from tidal influences, with minimal input from natural precipitation and runoff. Circulation channels would allow for transport of water and nutrients in and out of these constructed tidal wetlands. The Applicant is responsible for the long-term management of the mitigation area. The Applicant would notify the USACE thirty (30) days prior to any change in ownership of the mitigation area.

9) Adaptive Management Plan

The mitigation areas would be re-planted if 70% aerial coverage of "desirable" vegetation species is not achieved within three (3) years following the completion of the construction. If the mitigation areas do not meet MSC after the fifth (5^{th}) year of monitoring, the Applicant would re-coordinate with the USACE, Regulatory Branch, Chief of Compliance to review the mitigation plan. At that time, appropriate changes to the mitigation plan would be made until the mitigation area meets the MSC.

In the event of Force Majeure that significantly impacts the success of the mitigation areas; the Applicant would work with the USACE to develop a restoration plan for the mitigation areas.

Force Majeure is defined as substantial damage caused by a natural or human-caused catastrophic event or a deliberate or unlawful act, that the USACE in consultation with the Applicant, determined has had significant adverse impact on the quality of aquatic functions, native vegetation, soils, or wildlife of the mitigation areas and is beyond control of the Applicant. A natural catastrophic event includes, but is not limited to, a flood of equal or greater magnitude than the 100-year flood event, as well as debilitating disease, wildfire, or regional pest infestation. A human-caused catastrophic event includes, but is not limited to war, insurrection, riot or other civil disorders, spill of a hazardous or toxic substance, or fire. A deliberate and unlawful act includes, but is not limited to, the dumping of a hazardous or toxic substance, as well as significant acts of vandalism or arson.

10) Financial Assurances

The Applicant would be financially responsible for creation of the mitigation area and for any subsequent maintenance required to achieve the MSC.

11) Long Term Financing

The Applicant would be responsible for any long term financial responsibility of the mitigation area.