COMPENSATORY WETLAND MITIGATION PLAN
NASH FM 529, LLC.

NASH FM 529, LLC. (Applicant) proposes to construct a mixed-use development on a 92.40-acre tract of land located at the northeast intersection of Beckendorff Road and Peek Road, in Harris County, Texas. The USGS Quad reference map is *Katy NE, Texas* and the center of the project area is located approximately at UTM NAD 83 Zone 15 coordinates 232,203.70 E; 3,307,061.80 N. The proposed mixed-use development will have associated parking lots and access roads connecting to Peek Road, Beckendorff Road.

In order to construct the proposed mixed-use development, the Applicant proposes to fill 1.67 acres of jurisdictional adjacent wetlands within the 92.40-acre tract of land. The 1.67 acres of adjacent wetlands will be filled with clean earthen material for the purpose of creating lots, pad sites, and associated roads within the development.

1) Goals & Objectives

The Applicant utilized the Interim Riverine/Herbaceous Shrub Hydrogeomorphic Model (iHGM) on the 1.67 acres of herbaceous wetlands proposed to be impacted. The iHGM calculated each wetlands' Functional Capacity Units (FCU) to be 0.806 Physical, 0.901 Biological, and 0.770 Chemical (**Table 1**). The corresponding iHGM summary tables and iHGM data sheets and are included in **Attachment A**.

Table 1: Natural Existing Values Functional Capacity Units (FCU) - Year "0"

WAA	Acreage	HGM Wetland Type	Physical	Biological	Chemical
WAA 1	1.33	Herbaceous Wetland	0.638	0.709	0.612
WAA 2	0.14	Herbaceous Wetland	0.067	0.075	0.064
WAA 3	0.20	Herbaceous Wetland	0.101	0.117	0.094
Total	**1.67**	**Herbaceous Wetland**	**0.806**	**0.901**	**0.770**

In order to compensate for the impacts to 1.67 acres of jurisdictional adjacent wetlands, the Applicant is proposing to create and protect 2.00 acres of herbaceous wetlands within at 4.00-acre tract of land located off-site directly north of Bear Creek, southeast of Porter Road and Longenbaugh Road, in Harris County (**Attachment B**). The proposed wetland mitigation area will be planted with desirable hydrophytic vegetation species (**Appendix C**). The Applicant has conducted the iHGM on the proposed establishment area to determine the proposed FCU's generated by the establishment (**Table 2**).

Table 2: Proposed Establishment Lift- Created 2.00-acre Wetland

Mitigation Site	HGM Wetland Type	Acreage	Physical	Biological	Chemical
Natural Existing Values (Year '0')	Upland	2.00	0.000	0.000	0.000
Created Values (Year '1')	Herbaceous Wetland	2.00	1.420	1.067	1.007
Created Values (Year '3')	Herbaceous Wetland	2.00	1.481	1.233	1.067
Created Values (Year '5')	Herbaceous Wetland	2.00	1.481	1.233	1.253
Total Lift		**N/A**	**1.481**	**1.233**	**1.253**

The 2.00-acre mitigation is proposed to generate 1.420 Physical FCU, 1.067 Biological FCU, and 1.007 Chemical FCU at Year "1"; 1.481 Physical FCU, 1.233 Biological FCU, and 1.067 Chemical FCU at Year "3"; and 1.481 Physical FCU, 1.233 Biological FCU, and 1.253 Chemical FCU at Year "5" (**Table 2**).

Therefore, the proposed mitigation will result in a net increase of 2.00 acres of wetlands, 0.675 Physical FCU, 0.332 Biological FCU, and 0.483 Chemical FCU (**Table 3**).

Table 3: Total Proposed Net FCU Increase

Site	Acreage	HGM Wetland Type	Physical	Biological	Chemical
Natural Values (Impacted)	1.67	Herbaceous Wetland	0.806	0.901	0.770
Total Mitigation Values (Lift)	2.00	Herbaceous Wetland	1.481	1.233	1.253
Total FCU Increase	**0.33**	**Herbaceous Wetland**	**0.675**	**0.332**	**0.483**

2) Baseline Information

The 92.40-acre tract of land is located at the northeast intersection of Beckendorff Road and Peek Road, in Harris County, Texas. The property is directly bordered by undeveloped land to the north and east, Peek Road to the west, and existing residential development to the south across Beckendorff Road. The 92.40-acre subject property contains 1.67 acres of jurisdictional adjacent wetlands.

According to the USDA Web Soil Survey of Harris County, the 92.40-acre tract is underlain by Aris-Gessner complex (Ar), Gessner fine sandy loam (Ge), and Katy fine sandy loam (Kf).

In upland areas, the subject property was dominated by Bahia grass (*Paspalum notatum*), southern carpet grass (*Axonopus fissifolius*), prairie three-awn (*Aristida oligantha*), and annual ragweed (*Ambrosia artemisiifolia*). In the wetland areas, the subject property was dominated by swamp smartweed (*Persicaria hydropiperoides*), sand spike-rush (*Eleocharis montevidensis*), southern carpet grass (*Axonopus fissifolius*), gaping panicum (*Steinchisma hians*), and woodrush flatsedge (*Cyperus entrerianus*).

AUG 2 4 2017

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 off-site permittee responsible mitigation by creating 2.00 acres of in-kind herbaceous wetlands within a 4.00-acre mitigation area located directly north of Bear Creek, southeast of Porter Road and Longenbaugh Road, in Harris County.

4) Mitigation Work Plan

The Applicant is proposing to establish 2.00 acres of wetlands out of existing undeveloped herbaceous uplands within a 4.00-acre tract of land located directly north of Bear Creek, southeast of Porter Road and Longenbaugh Road, in Harris County.

The 2.00 acres of wetlands will be constructed by excavating existing undeveloped uplands within the 4.00-acre tract of land. The established herbaceous wetlands will allow for variation in water level and will be planted with desirable hydrophytic vegetation that can flourish in various water depth conditions. The off-site mitigation will be completed, including planting, within twelve (12) months of the initiation of construction within jurisdictional areas on-site. Within sixty (60) days following the completion of the mitigation area, the USACE, Regulatory Branch Chief of Compliance will 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 established and enhanced wetlands.

The proposed off-site established mitigation wetlands will be created by planting a mix of desirable hydrophytic shrub and herbaceous species including, but not limited to wax myrtle (*Morella cerifera*) and eastern baccharis (*Baccharis halimifolia*), pickerel-weed (*Pontederia cordata*), arrowhead (*Sagittaria sp.*), soft rush (*Juncus effusus*), and squarestem spike rush (*Eleocharis quadrangulata*). The exact composition of planted species will be dependent upon the species availability at the time of planting. A complete list of desirable wetland planting species is included under **Attachment C**.

5) Site Protection and Maintenance

The Applicant will place a USACE approved Deed Restriction on the created 2.00 acres of wetland mitigation located within the 4.00-acre tract of land located off-site. The Applicant will 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 will submit a copy of the Deed Restriction to the USACE for approval prior to recording the Deed Restriction with the county clerk.

The Applicant will be responsible for the maintenance of the mitigation area during the monitoring period. The Applicant will notify the USACE prior to any change in ownership of the mitigation area during the monitoring period. 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 will also transfer the permit to the subsequent owner and will notify the USACE that the permit has been transferred prior to change of ownership during the monitoring period.

6) Performance Standards

The Owner 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 will be monitored for noxious plant species in the established wetland areas. Noxious plant species referred to herein are defined as Chinese tallow (*Triadica sebifera*) and willow (*Salix sp.*) and will be eradicated by physical removal or careful hand application of herbicide approved for use in aquatic areas if they exceed 10% aerial coverage of the established wetland areas.

The mitigation site will be considered to have met minimum success criteria (MSC) if the mitigation area, for two consecutive years, meets seventy percent (70%) aerial coverage of "desirable" native vegetation that are considered FACW or OBL. Once the mitigation area has been determined to have met the MSC, the USACE, Regulatory Branch, Chief of Compliance will be notified in writing within thirty (30) days that the mitigation area has met MSC. 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 during the five (5) year monitoring period.

7) Monitoring Plan

The Owner will conduct an initial Transplant Survival Survey (TSS) seven (7) days after the site has been planted and will conduct a follow up survey forty-five (45) days post initial planting. A copy of the TSS results will be sent in to the USACE, Regulatory Branch, Chief of Compliance with information relating to the total number of plants planted and total number of plants survived. If less than 50% of the plants survive, additional planting efforts will take place in order to achieve a minimum 50% survivability rate.

The mitigation area will be monitored on a quarterly basis for the first year following the completion of the constructed mitigation areas and transplant survival survey. The mitigation area will be monitored annually on the approximate construction anniversary for an additional four (4) years and a copy of the annual monitoring report will be submitted to the USACE, Regulatory Branch Chief of Compliance until MSC has been met. Monitoring shall not exceed five (5) years if the mitigation has met the MSC.

Mitigation monitoring reports will be submitted to the USACE, Regulatory Branch, Chief of Compliance and will 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 area is established the created wetlands will be self-sustaining. Hydrology into and out of the mitigation area will be controlled by engineering design of the surrounding area. The sole source of hydrology will be natural precipitation, runoff from natural precipitation from surrounding areas, and overflow from Bear Creek during heavy rainfall events. Additional source of hydrology will be the overflow of Bear Creek during heavy rainfall events. With normal rainfall fluctuations, the created wetlands will function as natural wetlands do in the surrounding areas of west Harris County. The Owner is responsible for the management of the mitigation area during the monitoring period.

9) Adaptive Management Plan

The mitigation areas will be re-planted if 70% areal coverage of "desirable" vegetation species is not achieved within three (3) years following the completion of the construction.

If the mitigation area does not meet MSC after the fifth year of monitoring, the Owner will re-coordinate with the USACE, Regulatory Branch, Chief of Compliance to review the mitigation plan. At that time, appropriate changes to the mitigation plan will be made until the mitigation area meets the MSC.

In the event of Force Majeure that significantly impacts the success of the mitigation area; the Owner will work with the USACE to develop a restoration plan for the mitigation area.

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 area 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.

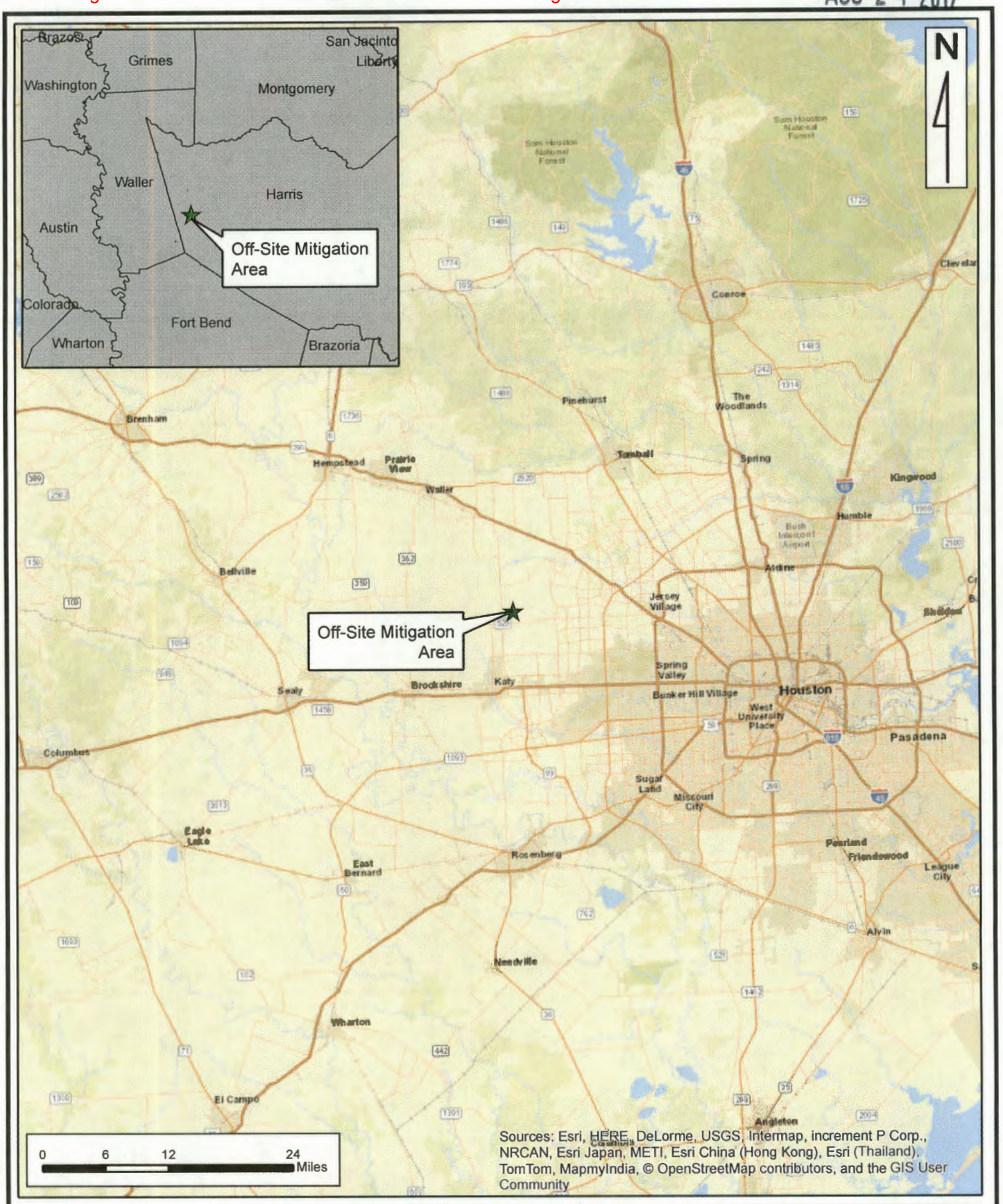
10) Financial Assurances

The Applicant will be responsible for the financial assurances necessary to construct, monitor, and maintain the mitigation area.

11) Long Term Financing

The Owner will be responsible for any long term financial responsibility of the mitigation area until such a time as the MSC described above are met.

AUG 2 4 2017

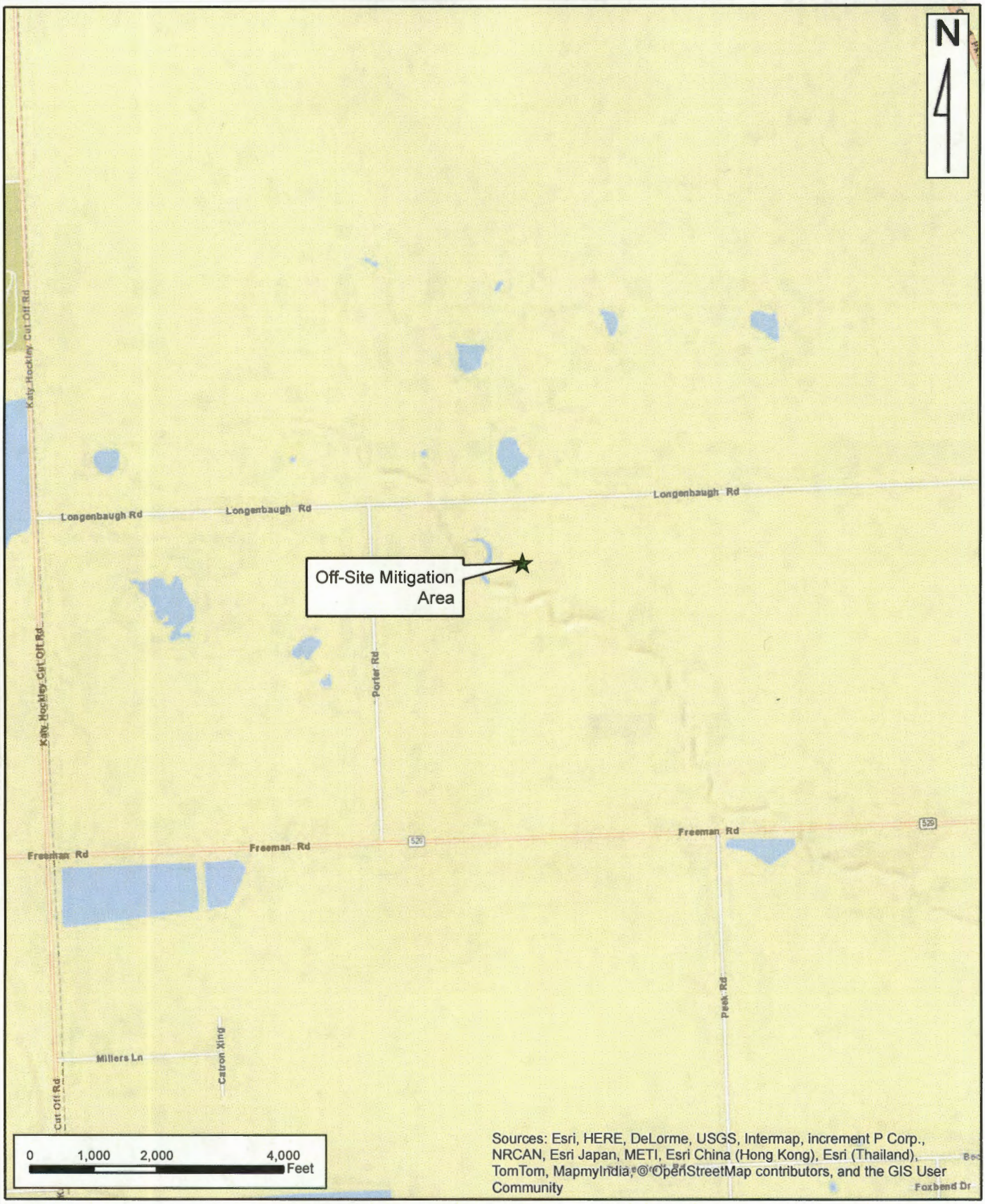


OFF-SITE MITIGATION PLAN
VICINITY MAP

Project #: 10420 N-IP
For: NASH FM 529, LL C
Location: Porter Rd. & Longenbaugh Rd.
Harris County, Texas

REVISIONS

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



OFF-SITE MITIGATION PLAN
LOCATION MAP

Project #: 10420 N-IP
For: NASH FM 529, LL C
Location: Porter Rd. & Longenbaugh Rd.
Harris County, Texas

REVISIONS

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

AUG 2 4 2017

OFF-SITE MITIGATION PLAN
PLAN VIEW

Project #: 10420 N-IP
For: NASH FM 529, LL C
Location: Porter Rd. & Longenbaugh Rd.
Harris County, Texas

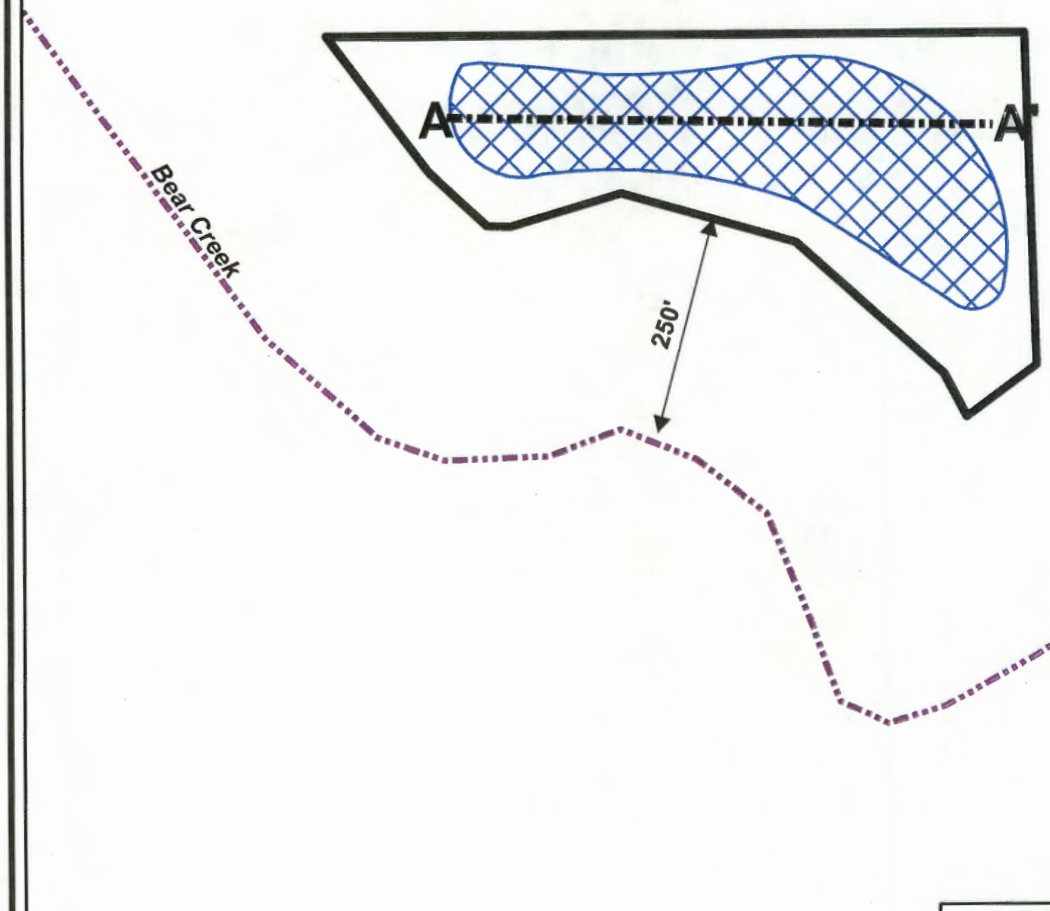
REVISIONS

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

AUG 2 4 2017

N

4



LEGEND	ACRES
Wetlands - to be Created	2.00
Off-Site Mitigation Area	4.00

0 100 200 400 Feet

OFF-SITE MITIGATION PLAN
PLAN VIEW

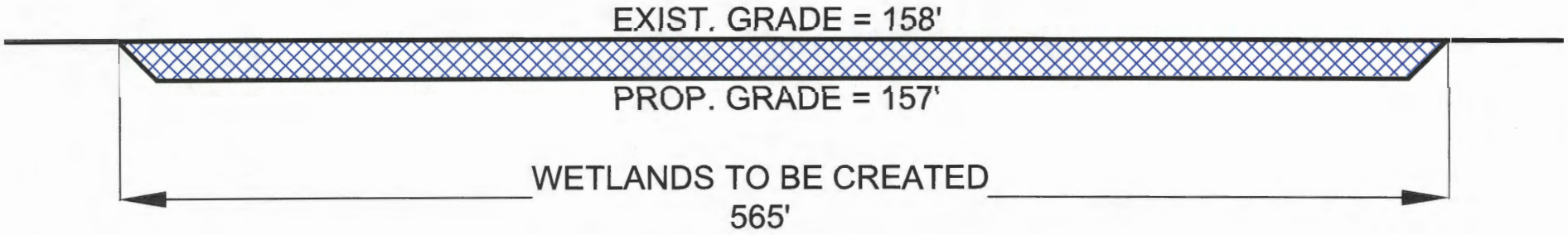
Project #: 10420 N-IP
For: NASH FM 529, LL C
Location: Porter Rd. & Longenbaugh Rd.
Harris County, Texas

REVISIONS

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

A

A'



OFF–SITE MITIGATION PLAN
CROSS SECTION A–A'

PROJECT #: 10420 N–IP
FOR: NASH FM 529, LL C
LOCATION: Porter Rd. & Longenbaugh Rd.
Harris County, Texas

REVISIONS:

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

AUG 2 4 2017

Desired Native Wetland Plants

Mid-story (Shrub) Plants	
Common Name	**Scientific Name**
Wax myrtle	(*Morella cerifera*)
Eastern false willow	(*Baccharis halimifolia*)

Herbaceous Plants	
Common Name	**Scientific Name**
Arrowheads and Burheads	(*Alismataceae*)
Bladderwort	(*Utricularia spp.*)
Camphor Weed	(*Pluchea odorata*)
Canna	(*Canna glauca*)
Hydrolea	(*Hydrolea ovata*)
Iris	(*Iris spp.*)
Lake Acanthus	(*Hygrophila lacustris*)
Spider Lily	(*Hymenocallis spp.*)
Mallows	(*Malvaceae*)
Mermaid Weed	(*Proserpinaca palustris*)
Milkweeds	(*Asclepias spp.*)
Pickerelweed	(*Pontederia cordata*)
Powdery Thalia	(*Thalia dealbata*)
Smartweeds	(*Persicaria spp.*)
Water Primroses	(*Ludwigia spp.*)
Yellow-eyed Grass	(*Xyris spp.*)
Beakrushes	(*Rhynchospora spp.*)
Bulrushes	(*Scirpus spp.*)
Cattail	(*Typha spp.*)
Cordgrasses	(*Spartina spp.*)
Cutgrasses	(*Leersia spp.*)
Gama Grass	(*Tripsacum dactyloides*)
Jointed Flatsedge	(*Cyperus articulatus*)
Long-spiked Tridens	(*Tridens stricta*)
Maidencane	(*Panicum hemitomon*)
Paspalums	(*Paspalum spp.*)
Plume Grass	(*Erianthus spp.*)
Rushes	(*Juncaceae*)
Sedges	(*Carex spp.*)
Square-stemmed Spikerush	(*Eleocharis quadrangulata*)
Switch Grass	(*Panicum virgatum*)
Jamaica Sawgrass	(*Cladium jamaicense*)

AUG 2 4 2017

Desired Native Prairie Plants

Prairie Wetland	
Common Name	**Scientific Name**
Slough Grass	(*Spartina pectinata*)
Marsh Hay Cordgrass	(*Spartina patens*)
Jamaica Sawgrass	(*Cladium jamaicense*)
Gama Grass	(*Tripsacum dactyloides*)
Long-spiked Tridens	(*Tridens stricta*)
Switch Grass	(*Panicum virgatum*)
Sugar Cane Plume Grass	(*Erianthus giganteus*)
Rushes	(*Juncus spp.*)
Spikerushes	(*Eleocharis spp.*)
Beakrushes	(*Rhynchospora spp.*)
Jointed Flatsedge	(*Cyperus articulatus*)
Bulrushes	(*Scirpus spp.*)
Sedges	(*Carex spp.*)
Longleaf Milkweed	(*Asclepias longifolia*)
Catchfly Grass	(*Leersia spp.*)
Water primrose	(*Ludwigia linearis*)
Mexican Hat	(*Ratibida spp.*)
Rattlesnake Master	(*Eryngium yuccifolium*)
Gaping Panicum	(*Panicum hians*)
Wrinkled Joint-tail	(*Coelorachis rugosa*) (if sandy soil)
Little bluestem	(*Schizachyrium scoparium*)
Brownseed Paspalum	(*Paspalum plicatulum*)
Yellow Indian Grass	(*Sorghastrum nutans*)
Florida Paspalum	(*Paspalum floridanum*)
Prairie Cone Flower	(*Rudbeckia spp.*)
Milkweed	(*Asclepias spp.*)
False Indigo	(*Baptisia sphaerocarpa*)
Gayfeather	(*Liatris spp.*)
Golden Rod	(*Solidago spp.*)
Bushy Aster	(*Aster dumosus*)
Boneset	(*Eupatorium spp.*)
Hairyawn Muhlenbergia	(*Muhlenbergia capillaris*)
Purple Lovegrass	(*Eragrostis spectabilis*)
Bigtop Lovegrass	(*Eragrostis hirsuta*)
Arrowfeather Threeawn	(*Aristida purpurescens*)
Scribners Rosettegrass	(*Dichanthelium oligosanthes*)
Silk-grass	(*Heterotheca graminifolia*) (if sandy)
Passion Flower	(*Passiflora incarnata*)