

## MITIGATION PLAN

### SAM HOUSTON AREA COUNCIL - BOY SCOUTS OF AMERICA NEW CAMP STRAKE

The Sam Houston Area Council of the Boy Scouts of America (Applicant) proposes to construct the “New Camp Strake” on a 573.35-acre tract of land located north of TX-150 and west of Hines Lake Boulevard, in San Jacinto County, Texas. The USGS Quad reference map is *Maynard, Texas* and the center of the project area is located approximately at UTM NAD 83 Zone 15 coordinates 284,110.103 E; 3,389,441.264 N.

In order to construct the proposed “New Camp Strake”, the Applicant proposes to fill 0.9663 acres (6,139 linear feet) of jurisdictional Waters of the U.S. for the purpose of creating a proposed recreational and educational lake amenity feature. Additionally, five (5) associated road crossings will be constructed on-site to provide access to the camp amenities. The Applicant is proposing to avoid 0.04 acres of jurisdictional adjacent wetlands and 23,213 linear feet of jurisdictional ephemeral tributaries to the East Fork San Jacinto River.

#### 1) Goals & Objectives

The overall goal of the project is to provide a secluded camping and recreational area for the exclusive use of the Boy Scouts of America. The proposed “New Camp Strake” will provide scouts access to a variety of outdoor recreational and educational opportunities such as camping, horseback riding, canoeing/kayaking, fishing, bird watching, hiking, etc. Specifically, the proposed 18-acre lake will provide scouts the opportunity to canoe/kayak, fish, and swim. The majority of the proposed project impacts are associated with the construction of this proposed lake. The 18-acre lake is integral to the camp and is necessary to provide the best recreational and educational opportunities for the scouts.

The proposed lake will impact 0.9663 acres (6,139 linear feet) of jurisdictional, ephemeral tributaries to the East Fork San Jacinto River. A water control structure will be constructed at the downstream portion of the tributary system and the upland area around the existing tributaries will be excavated to match the lowest elevation point of the tributaries. A clay liner will then be installed in the bottom of the lake to ensure a constant water level in the lake. Flow upstream of the lake and downstream of the water control structure will be maintained at current natural levels.

In order to compensate for the proposed impacts to 6,139 linear feet of ephemeral tributaries, the Applicant is proposing to construct a high quality lacustrine system on-site. Additionally, the Applicant is proposing to preserve approximately 210 acres of riparian buffer along 61,100 linear feet of potential jurisdictional tributaries within a 1,400 acre tract of land located adjacent to the northern boundary of the proposed project tract. The Applicant is also proposing light buffer planting (<400 stems per acre) along the 61,100 linear feet of tributaries within the preserved 210 acres of riparian buffer. The proposed preserved and planted riparian buffer will extend 200 feet outward from the centerline of the tributaries on both banks.

The *Pennsylvania Lacustrine Condition Level 2 Rapid Assessment Protocol* was utilized as a resource to determine the optimal lake conditions. Four (4) parameters were assessed to determine the overall quality of the lake once it has been constructed and naturalized. These four (4) parameters are as follows: 1) average water depth (approximately 50 feet inward from the shoreline); 2) riparian shoreline (approximately 50 feet outward from the shoreline); 3) riparian shoreline zone of influence

(approximately an additional 50 feet outward from the riparian zone), and 4) shoreline and near-shoreline human alterations (approximately 50 feet outward from the shoreline). Below is a summary of each parameter that demonstrates how each parameter will help achieve the development of a high quality lacustrine system on-site.

1) Average Water Depth

Approximately 90% of species within a lacustrine environment utilize or live within the littoral zone for critical life stages. This includes macrophytic, fish and amphibian species. The littoral zone is the area where enough sunlight reaches the bottom for plants to grow. Generally six (6) foot water depth or less is ideal for an optimal littoral zone. The proposed water depth will average 6-feet across the entirety of the lake creating an optimal environment for fish production. Additionally, shallower areas will be created to promote fish spawning areas, macrophyte habitat, and amphibian habitat. These shallower areas will mainly be located in the eastern and southeastern portions of the lake. The lake will also be stocked with desirable native fish species such as fathead minnows, bluegill sunfish, redear sunfish, largemouth bass, channel catfish, and black crappie.

2) Riparian Shoreline

The optimal riparian shoreline (approximately 50 feet outward from the shoreline) for a lacustrine system would be comprised of 100% homogenous cover of mature forest. The proposed riparian shoreline around the lake will be comprised of about 40-60% mature forest along the western and southwestern portions of the lake and 70-80% mature forest along the eastern and southeastern portions of the lake. While the proposed riparian zone will not meet the optimal definition, there will still be a considerable amount of mature forest surrounding the lake and could be classified as sub-optimal and high quality.

3) Riparian Shoreline Zone of Influence

The optimal riparian shoreline zone of influence (approximately 50 feet outward from the riparian shoreline) for a lacustrine system would be comprised of 100% homogenous cover of mature forest. The proposed riparian shoreline zone of influence will be similar to the riparian shoreline described above for the lake and would still be considered high quality.

4) Shoreline and Near-Shoreline Human Alterations

The shoreline and near-shoreline human alterations measures the amount of anthropogenic alteration to the shoreline or in this case, measures the amount of constructed features at or near the shoreline. This measured approximately 50 feet outward from the shoreline. The only proposed construction within 50 feet of the shoreline are boat docks, an observation tower, and a swimming area all concentrated in the southwest portion of the lake. All other camp facilities will be a minimum of 100 feet off of the shoreline.

In order to determine the appropriate amount of compensatory mitigation required to off-set the loss of aquatic resource function caused by the construction of the lake, the Applicant ran the 2013 Galveston District Corps of Engineers Level 1- Stream Condition Assessment for All Ephemeral and Intermittent Streams and for Impacts Less Than 500 Linear Feet to Intermittent Streams with Perennial Pools, Perennial Streams and Wadeable Rivers on the impacted streams. According to this assessment, the impacted streams have an average Reach Condition Index (RCI) of 3.33.

Given the high quality lacustrine system that will be constructed to replace the streams, it is the opinion of the Applicant that the impacts to the overall aquatic environment will be minimal and only temporary in nature during construction of the lake. Therefore, an Impact Factor (IF) of one (1) was utilized to calculate the Credit Requirement (CR) for compensatory mitigation (**Table 1**).

**Table 1: Credit Requirement Calculation**

Linear Feet of Impact	Average RCI	Impact Factor	Credit Requirement
6,139	3.33	1	20,443

To offset the minimal or temporary loss of aquatic resource function, the Applicant is proposing to preserve 210 acres of riparian buffer along 61,100 linear feet of ephemeral tributaries and light buffer planting within the 210 acres of riparian buffer. **Tables 2.1 and 2.2** illustrate the Credit Compensation (CC) for this proposed work.

**Table 2.1: Credit Compensation Calculation (Preservation)**

Mitigation Type	Linear Feet	100-Foot Buffer (LF x 0.05)	100-200-Foot Buffer (LF x 0.05)	Credit Compensation
Preservation	61,100	3,055	3,055	6,110

**Table 2.2: Credit Compensation Calculation (Light Buffer Planting)**

Mitigation Type	Linear Feet	100-Foot Buffer (LF x 0.25)	100-200-Foot Buffer (LF x 0.25)	Credit Compensation
Buffer Planting	61,100	15,275	15,275	30,550

Based on the Level I Stream Assessment conducted on the project impacts, the total CR for the project is 20,443. The total proposed CC for the proposed mitigation plan is 36,660. This results in a net gain of 16,217 credits. Therefore, there will be no net loss of aquatic resource function by the proposed project. See **Table 3** below for a breakdown of the proposed project impacts and the proposed mitigation.

**Table 3: Mitigation Summary**

Project Impacts	Credit Requirement
6,139 Linear Feet	20,443
Proposed Mitigation	Credit Compensation
Preservation (61,100 Linear Feet)	6,110
Light Buffer Planting 61,100 (Linear Feet)	30,550
<b>Total Net Gain</b>	<b>16,217</b>

## 2) Baseline Information

The 573.35-acre subject property is located north of Texas State Highway 150 and west of Hines Lake Road, in San Jacinto County, Texas. The subject property is directly bordered by undeveloped land to the north, south, east and west. The 573.35-acre subject property contains 0.04-acre of jurisdictional adjacent wetlands and 4.81 acres (~29,352 linear feet) of jurisdictional Waters of the U.S., and 568.50 acres of uplands.

The USDA Web Soil Survey of San Jacinto County was, for the most part, reasonably accurate in identifying the basic soil types on the property as Hatliff-Pluck-Kian complex (HatA), 0 to 1 percent slopes; Leggett fine sandy loam (LgB) 0 to 3 percent slopes; Pinetucky fine sandy loam (PfB), 1 to 5 percent slopes; Stingtown-Bonwier association (STE), 5 to 15 percent slopes; Woodville fine sandy loam (WoB), 1 to 5 percent slopes; and Woodville fine sandy loam (WoD), 5 to 12 percent slopes.

In upland areas, the subject property was dominated by loblolly pine (*Pinus taeda*), sweetgum (*Liquidambar styraciflua*), yaupon (*Ilex vomitoria*), American beautyberry (*Callicarpa americana*), common greenbrier (*Smilax rotundifolia*), and golden rod (*Solidago altissima*). In wetland areas, the subject property was dominated by sweetgum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), and willow oak (*Quercus phellos*).

The proposed 1,400 acre mitigation site is located immediately adjacent to the north of the proposed project tract. A preliminary assessment of the mitigation tract identified 61,100 linear feet of potential jurisdictional tributaries to the East Fork San Jacinto River and the East Fork San Jacinto River itself. A wetland delineation according to the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (v.2) has not been conducted on the mitigation tract at this time.

## 3) Site Selection

In order to comply with the Final Compensatory Mitigation Rule (2008) the Applicant initially proposed to purchase the appropriate number of stream 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, the Applicant is proposing off-site permittee responsible mitigation on a 1,400 acre tract located immediately adjacent to the northern boundary of the proposed project tract. The permittee responsible off-site mitigation will consist of the preservation of 210 acres of riparian buffer along 61,100 linear feet of streams and light buffer planting within the 210 acre preservation area.

## 4) Mitigation Work Plan

The Applicant is proposing to preserve 210 acres of natural riparian buffer along 61,100 linear feet streams on the proposed off-site mitigation tract. Additionally, the Applicant is proposing light buffer planting within the 210 acre riparian buffer area. The buffer area will be planted with 200 live stems per acre. The live stems will consist of native pine and hardwood seedlings. Species to be planted include, but are not limited to, loblolly pine (*Pinus taeda*), sweetgum (*Liquidambar styraciflua*), and oak (*Quercus sp.*).

The seedlings will be planted over a ten (10) year period following the start of construction in jurisdictional areas. Approximately 10% of the 210 acre riparian buffer area will be planted per year

resulting in approximately 21 acres of light buffer planting per year. The planting will be conducted by the Boy Scouts members in order to provide education on the importance of streams and surrounding riparian areas. Planting will occur only in December through February of each year and will begin in the calendar year when work commences in jurisdictional areas.

#### **5) Site Protection and Maintenance**

The Applicant will place a conservation easement on the 210 acre riparian buffer area held by a qualified third party land trust. The Applicant will provide the USACE, Regulatory Branch, Chief of Compliance a copy of the draft conservation easement prior to recordation. The Applicant will also provide the USACE, Regulatory Branch, Chief of Compliance a copy of the recorded conservation easement within ninety days (90) days from the date the easement is recorded.

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 Applicant has developed and will implement a forestry management plan on the entire property owned by the Applicant. The plan is a "Forestry 60" plan which provides for a total of sixty (60) trees per acre. The proposed light buffer planting will adhere to this plan with the proposed 200 live stems per acre of planting when assuming a seventy percent (70%) mortality rate.

#### **7) Monitoring Plan**

The Applicant will conduct a Transplant Survival Survey (TSS) forty-five (45) days after each 21 acre site has been planted. A copy of the TSS results will be sent in to the USACE, Regulatory Branch, Chief of Compliance with information pertaining to the total number of plant species planted and total number of plant species survived. If less than fifty percent (50%) of the planted species survive, additional planting efforts will take place in order to achieve a minimum fifty percent (50%) survivability rate.

Each 21 acre planting area will be monitored on an annual basis for a five (5) year period to ensure a minimum survival rate of thirty percent (30%). Monitoring for each 21 acre planting area shall not exceed five (5) years if the mitigation has met the minimum success criteria. Copies of the annual monitoring reports will be submitted to the USACE, Regulatory Branch Chief of Compliance until minimum success criteria has been met. Total monitoring for the 210 acres of riparian buffer will be fifteen (15) years.

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**

The Applicant has development and will implement a long-term forestry management plan on the site to ensure tree survivability and management. The Applicant has retained a qualified forestry management professional to oversee the management of the mitigation tract.

#### **9) Adaptive Management Plan**

The mitigation areas will be re-planted if thirty percent (30%) survivability of the planted seedlings is not achieved by year 5 of for each 21 acre mitigation area.

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**

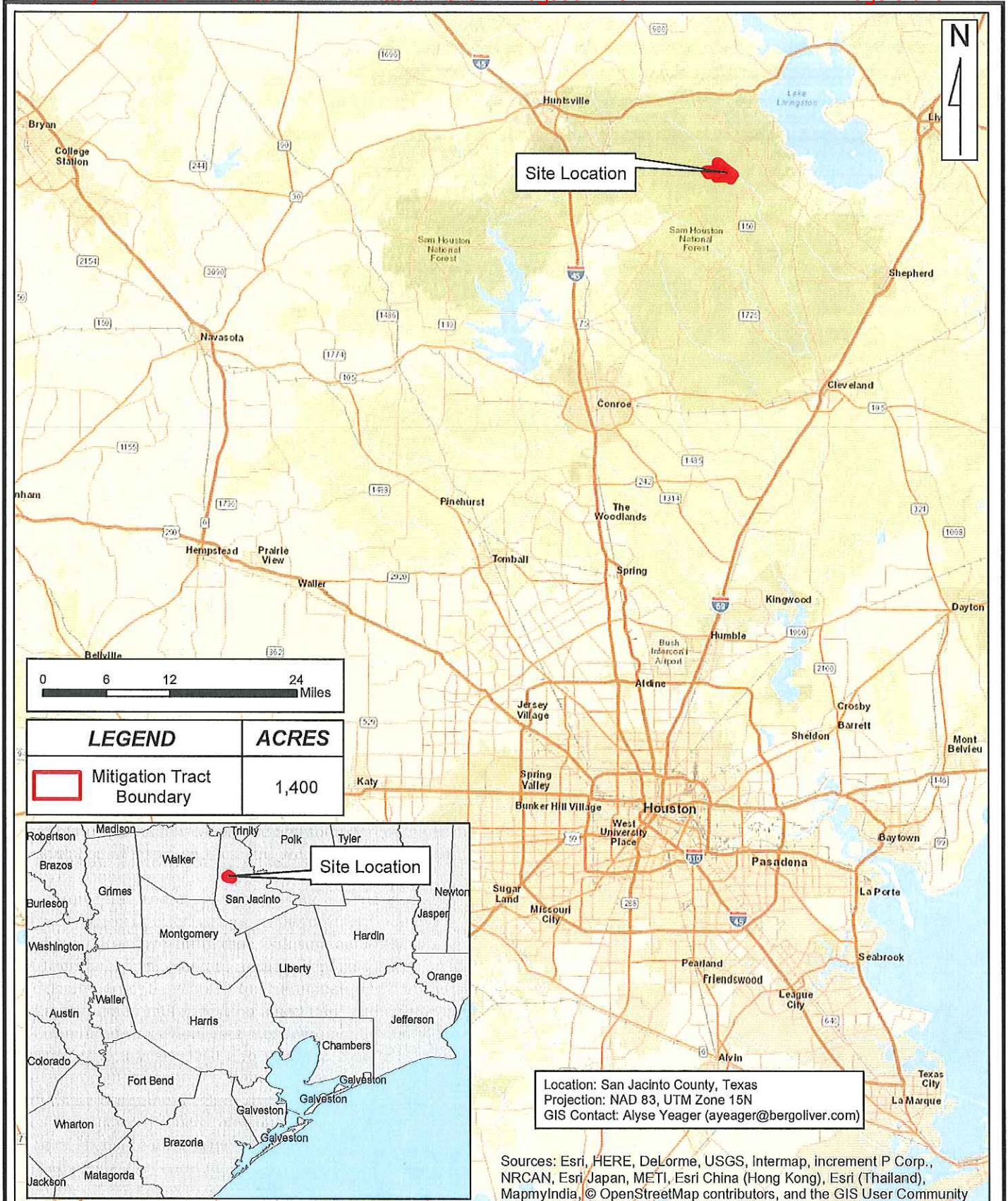
The Applicant will be responsible for the financial assurances necessary to plant, monitor, and maintain the mitigation areas.

#### **11) Long Term Financing**

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

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**ATTACHMENT A**  
**MITIGATION LOCATION MAP**



**SITE VICINITY MAP**

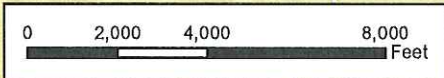
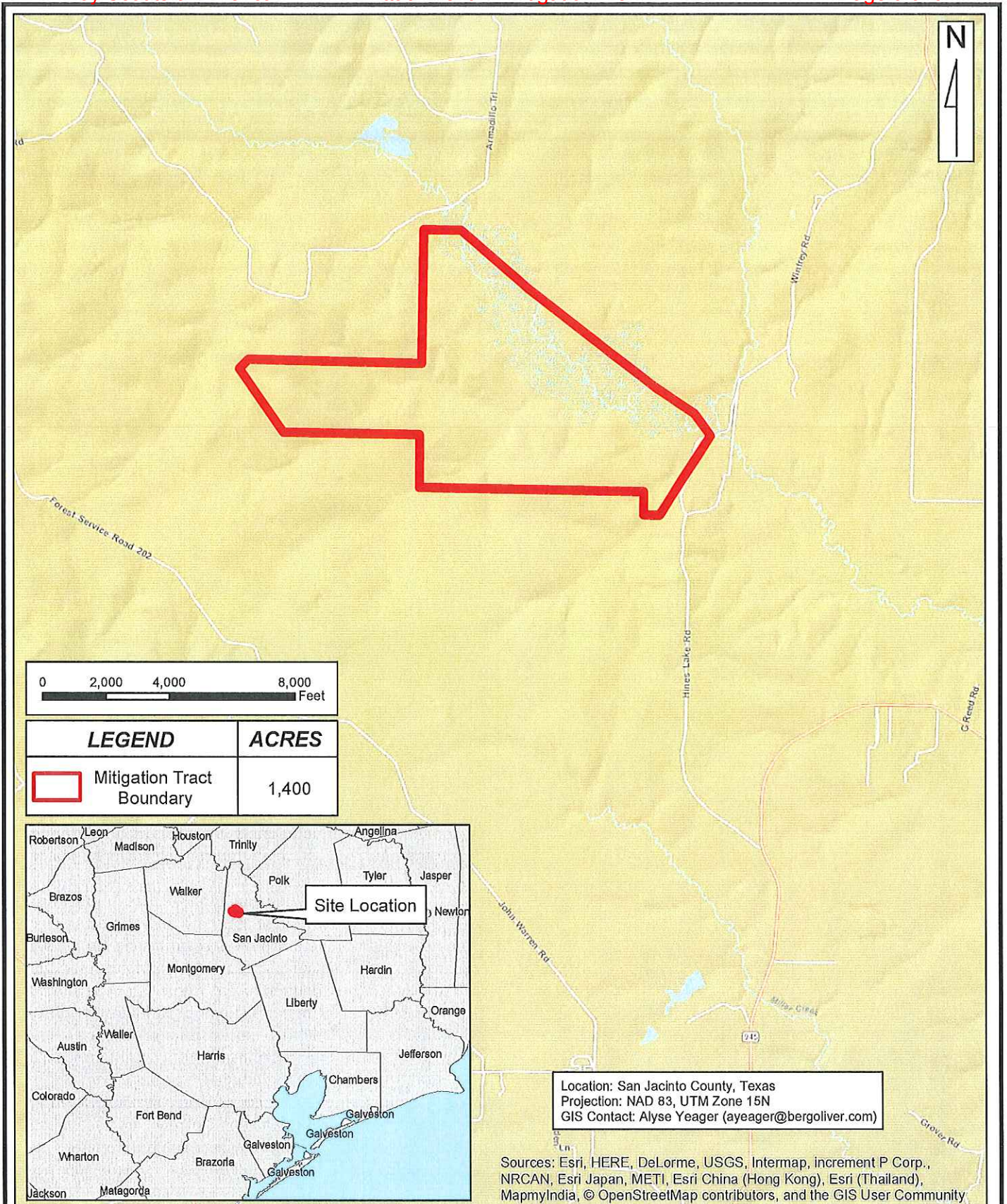
Project #: 9589N-WD  
 For: Boy Scouts of America  
 Location: New Camp Strake Phase I Area  
 San Jacinto County, Texas

REVISIONS
9/29/16 by JKM

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LEGEND	ACRES
Mitigation Tract Boundary	1,400



Location: San Jacinto County, Texas  
 Projection: NAD 83, UTM Zone 15N  
 GIS Contact: Alyse Yeager (ayeager@bergoliver.com)

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

**SITE LOCATION MAP**

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