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Bridgeland South Mitigation Concept

October 21, 2024

RES will act as the Mitigation Agent for the Bridgeland South Development Project (Project) and will prepare and submit a comprehensive Permittee Responsible Mitigation (PRM) Plan. Implementation of the PRM Plan will restore (re-establish) forested, scrub/shrub, and herbaceous wetlands at the PRM Site located in Harris County, Texas, approximately 2 miles from the Project impacts (Attachment A, Figures 1-2). The PRM Site is in the same watershed (Spring; Hydrologic Unit Code [HUC] 12040102) as some of the Project impacts and only 0.4 mile from the 8-digit HUC, Buffalo-San Jacinto (where the rest of the Project impacts are located). The PRM Site is located in the floodway and 100-year floodplain of Cypress Creek.

According to USACE Memorandum for Record, Subject: SWG Watershed Approach for Compensatory Mitigation in the Addicks and Barker Project Region (Attachment B), "compensatory mitigation for impacts to aquatic resource functions occurring within the Addicks & Barker Project Regional Watershed (ABPRW) should be located within the ABPRW" in order to restore flood attenuation functions back to the region and watershed and to decrease risks to the Addicks and Barker Reservoirs. The memorandum states: "In identifying the watersheds affecting ABR [Addicks & Barker Reservoirs], the Addicks, Barker and Buffalo Bayou watersheds are included respectively. The Cypress Creek watershed is also included regarding its effect to ABR as it overflows into the Addicks Reservoir watershed under high flows. Accordingly, Reference 1e. identifies the ABR drainage area (Attachment B) as including the western portion of the Cypress Creek Watershed, therefore the ABPRW was delineated with the most contemporary watershed boundaries for these respective watersheds." All Project impacts are located in the ABPRW, specifically within the HCFCD Cypress Creek watershed; therefore, pursuant to the USACE 2013 Memorandum, the mitigation for the Project impacts should be located in the ABPRW.

As such, the Permittee followed the USACE 2013 Memorandum and hierarchy in the 2008 Final Rule by searching for wetland mitigation banks with the ABPRW and discovered that no approved wetland mitigation banks are located within the ABPRW. Mill Creek Mitigation Bank, Greens Bayou Mitigation Bank, and Tarkington Bayou Mitigation Bank have service areas that cover all or portions of some of the Project wetland impacts, but none are located within the ABPRW. Additionally, Greens Bayou Mitigation Bank is owned by Harris County Flood Control District and is not selling credits to the public. Mill Creek and Tarkington Bayou are located in the southern blacklands and flatwoods ecoregion, respectively, and 50 miles from the Katy Prairie. They both have a secondary service area that includes the Project impacts in the Spring HUC and have forested and non-forested wetland credits available but are not within the ABPRW. Purchasing credits from Mill Creek and Tarkington Bayou Mitigation Banks would not be compliant with the USACE 2013 Memorandum (Attachment B).

The Permittee searched for in-lieu fee programs in the ABPRW but found none. In accordance with the hierarchy, the Permittee is proposing one PRM in the ABPRW to mitigate all losses of wetland functions for the Project's impacts. Utilizing PRM in the ABPRW follows the guidelines of the USACE 2013 Memorandum and the hierarchy in the 2008 Final Rule and is therefore the preferred mitigation alternative.

The PRM Site is less than 5 miles from the Project impacts in the Spring HUC and less than 2 miles from the impacts located in the Buffalo-San Jacinto HUC. The PRM Site is located in the heart of the Katy Prairie and in the HCFCD Cypress Creek Watershed, which is in the ABPRW. The PRM Site is in the same Ecoregion and 6-digit HUC, San Jacinto, as the Project's impacts. The PRM Site is in the same 8-digit HUC, Spring HUC, as some of the impacts and only 0.4 mile from the 8-digit HUC, Buffalo-San Jacinto HUC.

RES will apply the *Riverine Forested* and *Riverine Herbaceous/Shrub HGM Interim* models to estimate the mitigation functional capacity units (FCUs) that would be provided within the PRM Site. The expected physical, biological, and chemical FCUs will be calculated for Year 10 following planting on the PRM Site. The expected Year 10 FCUs to be provided by a PRM Site would meet or exceed the physical, biological, and chemical FCUs that will be lost by the implementation of the Project.

It is highly likely that the entire PRM Site had longer hydroperiods and was all or nearly all wetland prior to European settlement. It is believed the PRM Site would have been dominated by coastal prairie and forested riparian corridors with prolonged hydroperiods, complex macro and microtopography, and a high degree of edge complexity prior to agricultural conversion. Therefore, wetland re-establishment is the most suitable term for the wetland mitigation method at the PRM Site because the PRM Plan implementation will "return natural/historic functions to the existing uplands that were likely a former aquatic resource" as defined in 33 CFR 332.2.

As early as the 1940's, the PRM Site was cleared and a series of berms were constructed for rice farming. Since the early 2000's, the PRM Site was then converted to a tree farm in the north and cattle pastureland to the south. These activities have significantly impacted the Site which has resulted in leveling of the topography, creation of a network of dirt roads, lower water table, suppression of native vegetation, and colonization of invasive species. Consequently, there has been a decrease in hydroperiods, wetland functions, biodiversity, and other ecological services.

Restoration (re-establishment) will be accomplished through hydrological modifications and native species afforestation and recolonization with a dominance of hydrophytic vegetation. The work plan will restore wetland hydrology by one or more of the following: 1) create berm(s) to lengthen hydroperiods; 2) establish low water crossing(s) within the berm(s) to allow overflow water to drain into the tributary of Cypress Creek; 3) remove existing mature trees and root balls which will leave potholes; 4) slightly grade the potholes to have more gradual margins and create slightly undulating topography; 5) construct herbaceous wetland depressions; and 6) restore surficial roughness.

Vegetation restoration will occur through direct planting, seeding, natural recruitment, and/or active invasive plant management. For forested and scrub/shrub wetland areas, bare root seedlings will be planted on approximately 10-foot by 9-foot centers for an approximate average of 484 stems per acre. The species composition will consist of wetland tree, scrub/shrub, and herbaceous species native to Harris County, Texas, the ecoregion, and/or found at a nearby reference site.

Timing of the construction and planting of the PRM Site is crucial to its success and plant survival. Construction prior to spring is often not possible because the ground is typically saturated in the winter, and early spring along the Gulf Coast and equipment is likely to become stuck. Planting and seeding to achieve restoration of plant communities will occur in the fall, winter, or early spring following construction activities. Planting in the dormant season of the winter helps to achieve higher rates of success. Therefore, implementation of the mitigation work plan will begin concurrently with the Project's impacts into jurisdictional areas and an as-built report will be submitted within 18 months of the first Project impacts in jurisdictional areas.

A perpetual conservation easement on the PRM Site will be secured in accordance with Texas Law, Natural Resources Code, Title 8, Chapter 183 Subchapter A. A third-party easement holder will be selected for the PRM site.

RES will conduct all maintenance activities required for the PRM Site through the 10-year minimum monitoring and achievement of performance standards, then in accordance with the long-term management phase requirements.

The purpose of the construction and establishment financial assurances is to ensure that sufficient funds are available for performance of the ecological restoration of the mitigation project and to provide a source of funding for the maintenance of the Property until the long-term success criteria are achieved. To accomplish these goals, The Mitigation Agent will provide a Performance Bond. The performance bond will be attached to the USACE permit approval for the Project and made a part hereof, to provide financial assurance for the performance of all obligations, covenants, terms, conditions, and agreements required of the Permittee. Specifically, the step-down or bond amortization provisions are incorporated and made a part of this PRM Plan.

In order to ensure that funds are available to provide for the perpetual management of the PRM Site, the Mitigation Agent will fund a long-term management investment account. The investment account is designed to be non-wasting with earnings sufficient to fund the annual maintenance cost while accounting for inflation. Long-term management is expected to begin after monitoring Year 10, which is approximately 12 years after approval of the PRM Site.

Attachment A
Figures

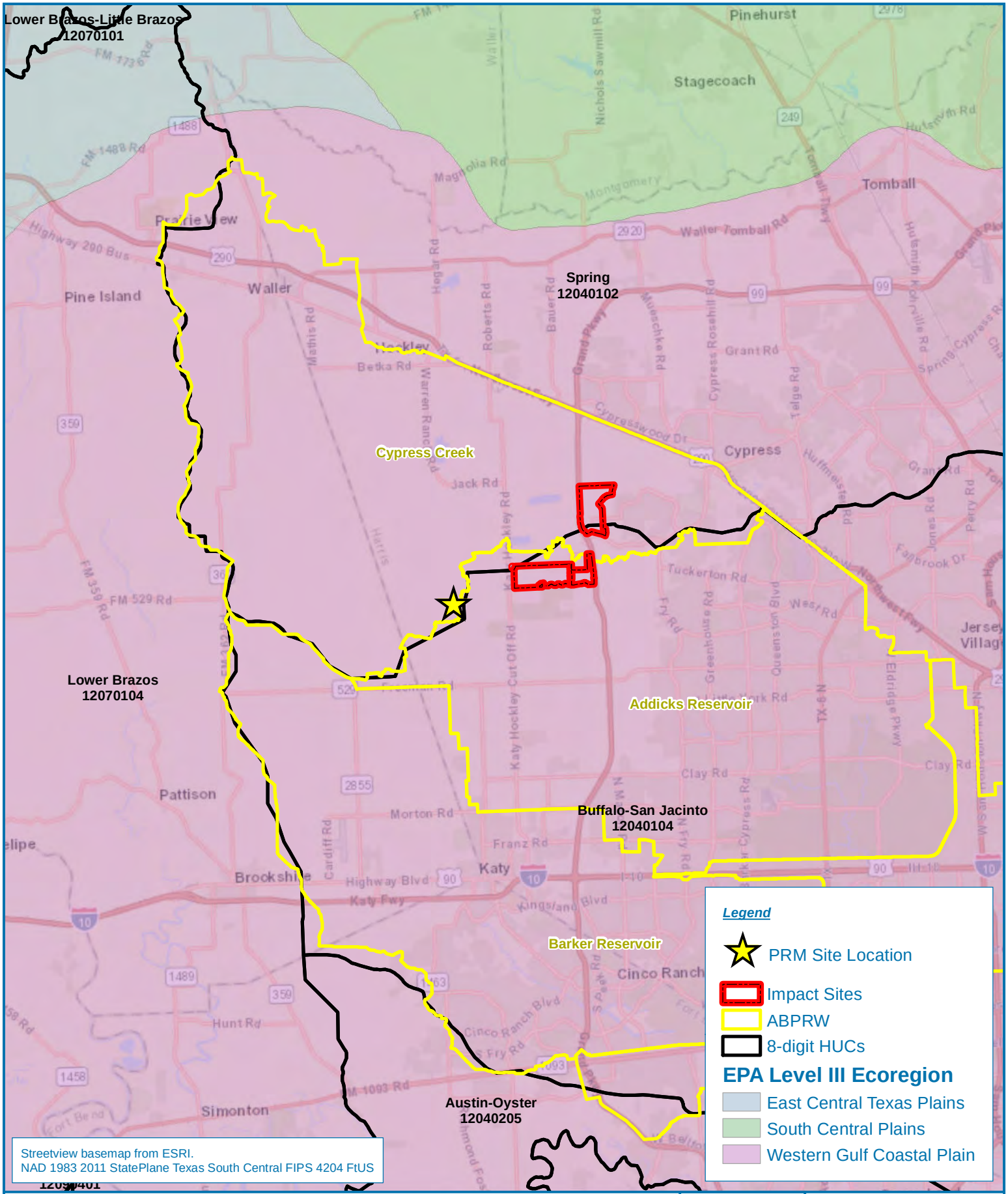

Figure 1. ABPRW and Project and Mitigation Sites

Permittee Responsible Mitigation
Bridgeland South Development

Harris County, Texas

Date: 7/30/2024

Drawn by: AJR

Checked by: MG

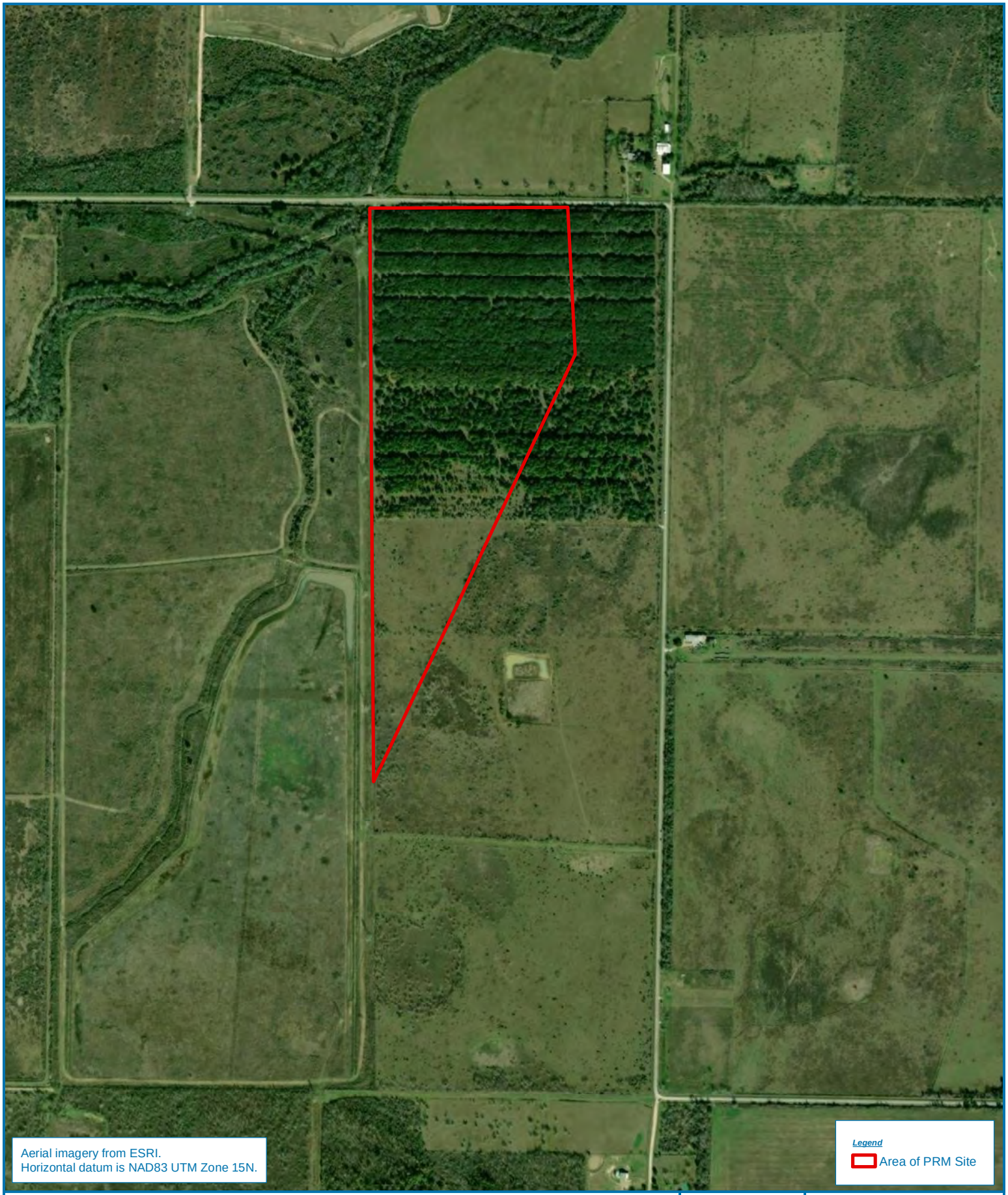

Figure 2. PRM Site Area Map

Permittee Responsible Mitigation
Bridgeland South Development

Harris County, Texas

Date: 10/15/2024

Drawn by: AJR

Checked by: MG