



MITIGATION PLAN
CROSSINGS AT PLUM CREEK
KYLE, HAYS COUNTY, TEXAS

I. Project Information

Project Name: Crossings at Plum Creek
Permit Number: SWF-2010-375
Project Location: Northwest corner of IH-35 and Burleson Street
Kyle, Hays County, Texas
30°0'20.87"N; 97°52'8.67"W (Appendix A, Sheet 1 of 3)
Mitigation Location: Within the Project Location
Watershed: San Marcos – HUC #12100203
County: Hays
Date: 10 January 2011

II. Avoidance and Minimization

The Project Area contains Plum Creek and an unnamed intermittent tributary. To avoid the jurisdictional waterways, the proposed roadways will span the tributaries and will not involve the placement of any support structures within the ordinary high water mark (OHWM). The permittee has further minimized the impact to the unnamed intermittent tributary by removing a road crossing from the initial site plan.

III. Compensatory Mitigation Plan

The proposed project will include the development of the site into a mixed-use development consisting of retail space, office space, hotel, multi-family units, parkland and associated roadways. The proposed project plans include the loss of “waters of the US” consisting of fill of low-quality herbaceous wetlands to facilitate the placement of general lot fill, and an off-channel water quality detention pond. The off-channel water quality detention pond is necessary to collect stormwater runoff from the development. A road crossing over Plum Creek and the unnamed tributary will span the waterways to avoid impacts to the jurisdictional waterways.

1. Goals and Objectives: The goals and objectives of the mitigation plan are to compensate for impacts to 0.358 acres of low-quality herbaceous wetlands with the creation and preservation of 0.5 acres of higher-quality herbaceous wetlands, preservation of approximately 0.4 acres (1100 linear feet) of an intermittent tributary, and native tree plantings for enhancement within the Mitigation Area (~4 acres) (Appendix A, Sheet 2 of 3).
2. Site Selection: No US Army Corps of Engineers (USACE) Approved Mitigation Banks are within the primary or secondary area of the Project Area; therefore, purchasing mitigation credits from a mitigation bank is not an option for this project. The permittee intends to conduct on-site, in-kind mitigation. The Mitigation Area was chosen due to its proximity to the impact

sites, location within the same watershed, and ability to satisfy the stated fundamental objective of the 2008 Compensatory Mitigation Rule, which is to provide compensation in a location where it is most likely to successfully replace lost functions and services.

3. Easements or Encumbrances: There are no existing easements or encumbrances within the proposed Mitigation Area.

4. Baseline Information: The Mitigation Area consists of approximately 4 acres of rangeland consisting of improved pastureland with active grazing livestock and an unnamed intermittent tributary of Plum Creek. The Mitigation Area is situated within the Blackland Prairie vegetational area of Texas (Gould, 1975). Vegetation species within the Mitigation Area are firewheel (*Gaillardia pulchella*), horse mint (*Pycnanthemum incanum*), Mexican hat (*Ratibida columnifera*), silver bluestem (*Bothriochloa saccharoides*), annual ragweed (*Ambrosia artemisiifolia*), sumpweed (*Iva annua*), Texas prickly pear cactus (*Opuntia lindheimeri*), mesquite (*Prosopis glandulosa*), and hackberry (*Celtis laevigata*).

Topography on the Mitigation Area is gently sloping towards the unnamed tributary of Plum Creek (USGS, 1968). The entire Mitigation Area is within the 100-year floodplain associated with Plum Creek (FEMA, 2005).

5. Mitigation Work Plan:

The created herbaceous wetlands will be constructed by excavation of 2 separate 0.25 acre depressional polygons that will be approximately 1 to 2 feet deeper than the adjacent natural gradient. The created herbaceous wetlands will be within the 100-year floodplain. The northeast portion of the wetlands will be hydrologically connected to the unnamed intermittent tributary. This activity will be accomplished by reducing the height of the tributary bank with bucket-type machinery to avoid loss of "waters of the US." This will allow the over-bank flow to enter the wetlands and increase the sustainability of the aquatic features. Once constructed, the wetlands will be planted with native hydrophytic herbaceous vegetation. The native hydrophytic herbaceous vegetation list is provided in Appendix B.

No mitigation work is planned for the existing stream channel within the Mitigation Area. Since the existing stream channel is functioning as "waters of the US," modification to the aquatic resources may cause an adverse rather than a beneficial effect.

Beyond compensatory mitigation, the Mitigation Area will be utilized as a scenic backdrop for the mixed-use development. Therefore, the Mitigation Area will not be fenced to keep the aesthetic appeal of the aquatic resource. Signage will be posted along the boundary of the Mitigation Area to convey that this is a USACE Mitigation Area and to provide information to educate the general public about the benefits of wetland ecology. Additionally, warning signs to remain outside of the Mitigation Area boundary will be posted. Livestock grazing will be prohibited within the Mitigation Area.

The habitat enhancement portion of the mitigation plan will consist of planting 55 native trees. A list of native tree species is provided in Appendix B. The trees will be planted along the boundary of the Mitigation Area approximately 30 feet apart. Trees will not be planted within the middle portion of the Mitigation Area to prevent restriction of hydrology flow and destruction

of planted trees. A cross-section view drawing of the Mitigation Area is provided in Appendix A, Sheet 3 of 3.

6. **Determination of Credits:** A functional assessment of the Project Area and Mitigation Area was not conducted for this mitigation plan because of the absence of mitigation banks in the area. However, the mitigation plan is designed to provide the largest practicable and suitable mitigation-to-impact ratio, while still providing compensation in a location where it is most likely to successfully replace lost function. A wetland acreage/stream channel linear foot comparison shows that the proposed mitigation plan will provide a 2.5:1 ratio of in-kind credits within the Mitigation Area (0.90 acres) to compensate for the Project Area's impacts (0.358 acres). Additionally, the Mitigation Area will mitigate for the impacted low-quality herbaceous wetland with creation, preservation, and enhancement of higher quality herbaceous wetlands, intermittent stream channel, and native hardwood plantings within a riparian habitat.

7. **Site Protection Instrument:** Upon the completion of the Mitigation Work Plan, the Mitigation Area will be placed under the protection of a deed restriction that will specify that 1) the deed restriction will remain in perpetuity, and 2) the deed restriction cannot be modified without prior written authorization from the USACE and may require a permit. A copy of the deed restriction will be provided to the USACE within 30 days of filing and final approval with Hays County.

The permittee and Horizon are aware of the USACE's preference for placing mitigation areas within conservation easements. However, since the Mitigation Area is located within a mixed-use development, is fragmented from similar habitat, and is relatively small (4 acres), finding a willing land conservation organization to take ownership of the Mitigation Area is not practicable. A deed restriction for this Mitigation Area is an appropriate instrument for site protection.

8. **Performance Standards:** Performance standards of the proposed mitigation plan include:

- construction of the newly created herbaceous wetlands, the created herbaceous wetlands functioning as "waters of the US," 80% survival rate of native hydrophytic herbaceous vegetation after 5 years, and monitoring the suitability of the created herbaceous wetlands for 5 years;
- planting 55 native hardwood trees along the boundary of the Mitigation Area with a minimum 80% survival rate after 5 years of monitoring;
- installation of the Mitigation Area signage
- placing a deed restriction on the 4-acre Mitigation Area.

9. **Monitoring Requirements:** The permittee shall establish and implement a self-monitoring program that includes the following actions:

- a. designation, in writing, of a responsible party to coordinate with the USACE concerning on-site inspections and compliance with permit conditions; and
- b. implementation of a reporting program that shall include annual written compliance reports to the USACE, due October 1 for annual reporting, each year, beginning in October 2011. The permittee shall include in each report any schedule changes and a summary of all activities that occurred during the reporting period, including

demonstration of the permittee's compliance with the permit conditions, and documentation of the progress and/or completion of all authorized work, including mitigation activities. Each report shall address whether disturbed areas such as stream banks, temporary road crossings, and temporary impact areas are revegetating adequately and not suffering erosion damage. The permittee shall detail in the first report the pre-construction conditions of the Mitigation Area. The permittee shall include in each report photographs, maps, and a description of the impacts to "waters of the US." Compliance reports are required even if no work is conducted during the reporting period. The permittee shall submit compliance reports until the USACE verifies that the permittee has successfully completed all compensatory mitigation plan requirements, the Mitigation Area has met the performance standards, and all authorized construction activities have been either completed or deleted from the project.

10. Long-term Management Plan: The long-term management of the Mitigation Area will be provided by the permittee. In the event of transfer of ownership of the development area and Mitigation Area, management of the Mitigation Area will be the responsibility of the transferee and a letter identifying the transfer of ownership will be provided to USACE in accordance with NWP General Condition #25. Furthermore, the legal instrument (deed restriction) established by the prospective permittee will ensure that the Mitigation Area will remain protected in its post-construction vegetative and hydrologic condition in perpetuity.

11. Adaptive Management Plan: Constructing a depression for the herbaceous wetland and planting native trees is a common construction activity. It is anticipated that these initial construction items will not require an Adaptive Management Plan. However, within the 5 years of monitoring the Mitigation Area, situations may arise that require additional mitigation work to meet the Performance Standards. This work may include replanting of native trees and native hydrophytic herbaceous vegetation to remain above the required 80% survival rate. If unforeseen circumstances occur that alter the condition of the mitigation site to a state where its functions are no longer upheld, the permittee will reassess the mitigation plan and make adjustments accordingly.

12. Financial Assurances: All lands that will be used for mitigation purposes are currently owned by the permittee. The permittee currently has the necessary equipment and personnel at their disposal to carry out this proposed mitigation plan.

IV. References

(ESRI) Environmental Systems Research Institute, Inc. Data and Maps DVD, 2008.

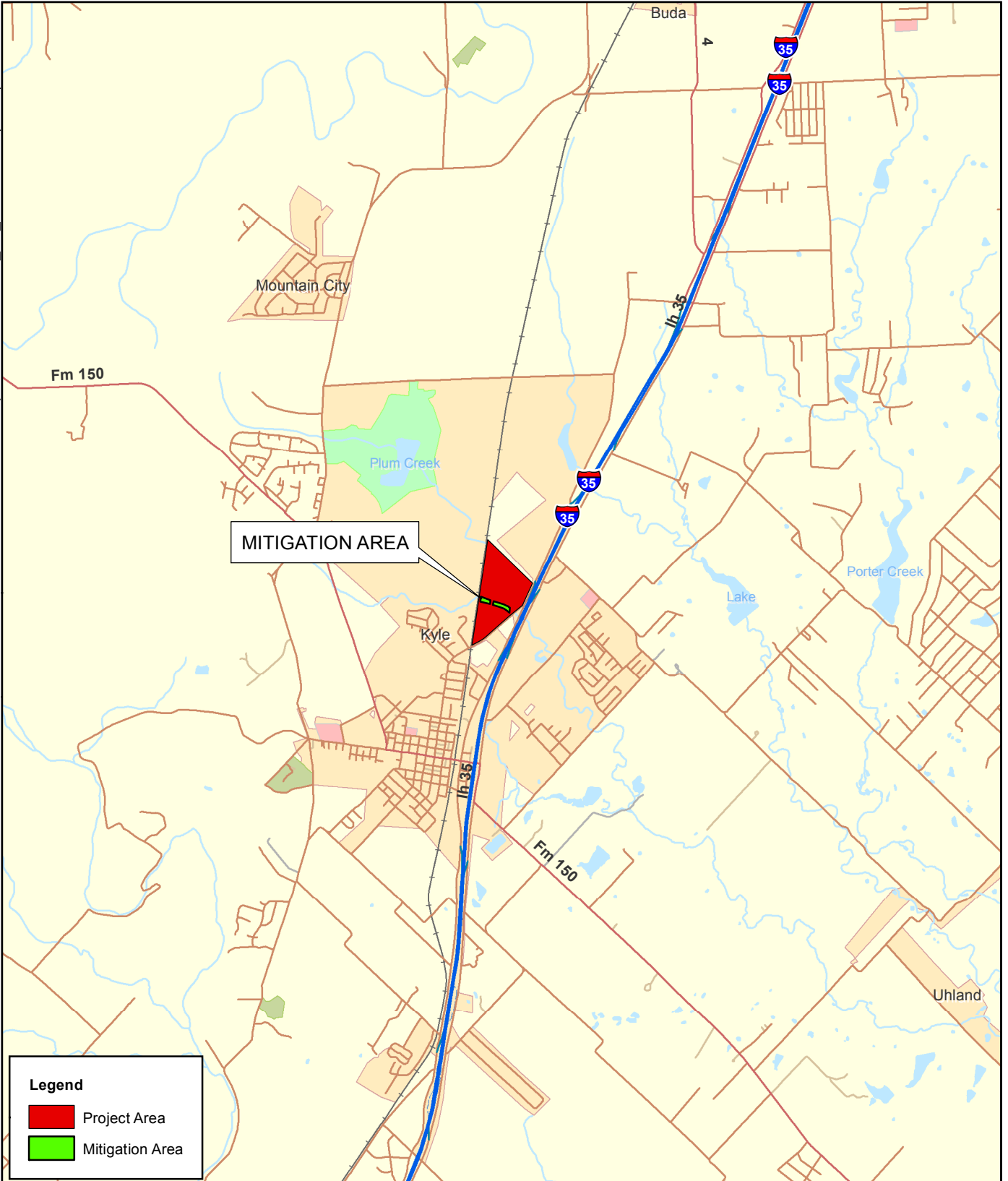
(FEMA) Federal Emergency Management Agency. Flood Insurance Rate Map (FIRM) Panel No. 48209C0120F & 48209C0185F, Hays County, Texas. 2 September 2005.

Gould, F.W. *Texas Plants – A Checklist and Ecological Summary*. College Station: Texas A&M University. 1975.

(USDA) US Department of Agriculture. Digital orthophoto quarter-quadrangle, Hays County, Texas. National Agriculture Imagery Program, Farm Service Agency, Aerial Photography Field Office. 2010.

(USGS) US Geological Survey. 7.5-minute Series Buda, Texas. Topographic Quadrangle Maps. 1968.

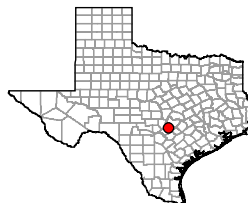
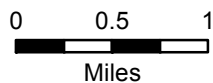
APPENDIX A
FIGURES



Legend

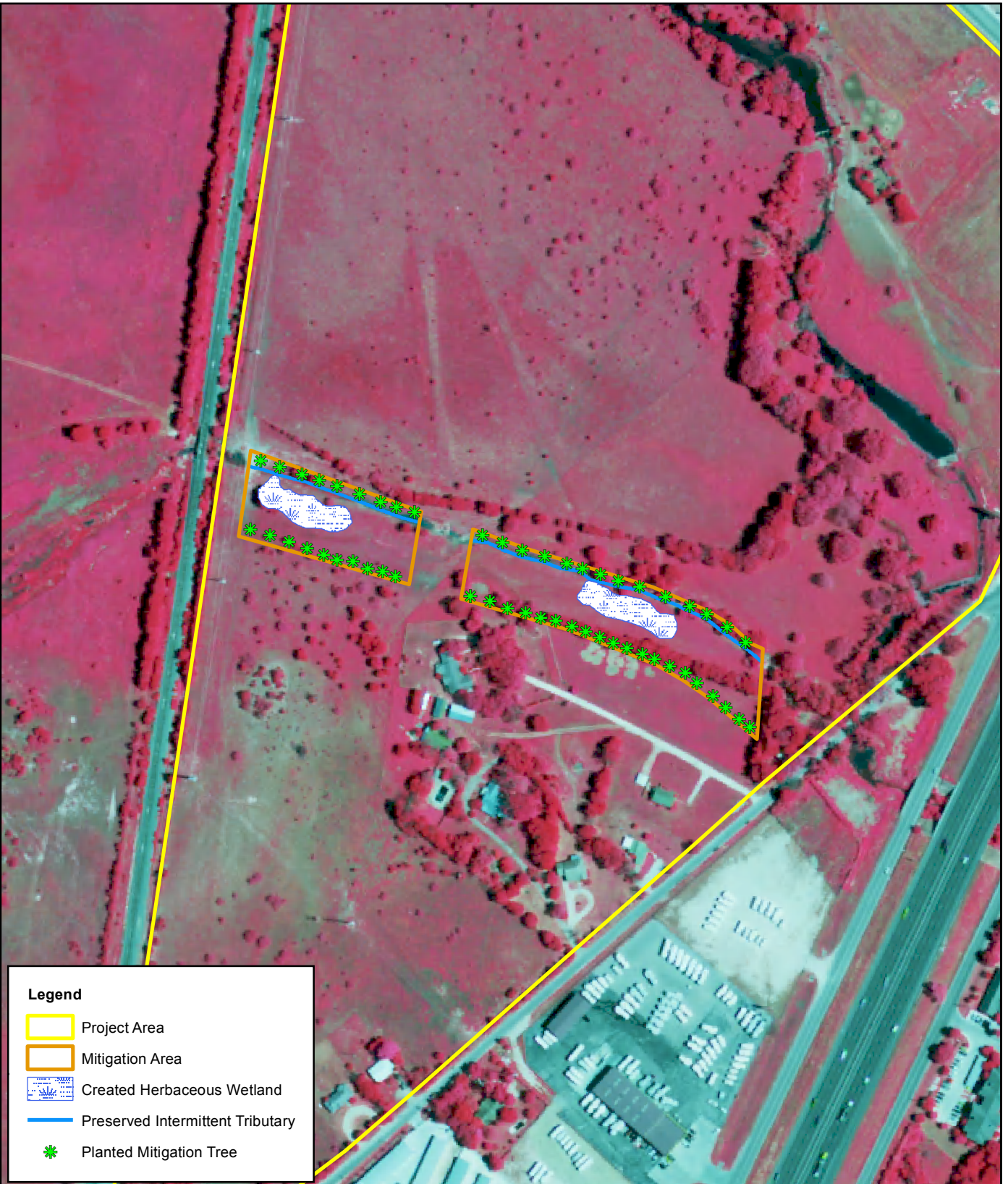
- Project Area
- Mitigation Area

MAP SOURCE: ESRI, 2008.



SHEET 1 OF 3

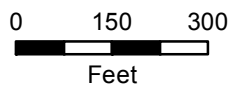
VICINITY MAP
MITIGATION PLAN
CROSSING AT PLUM CREEK
KYLE, HAYS COUNTY, TEXAS



Legend

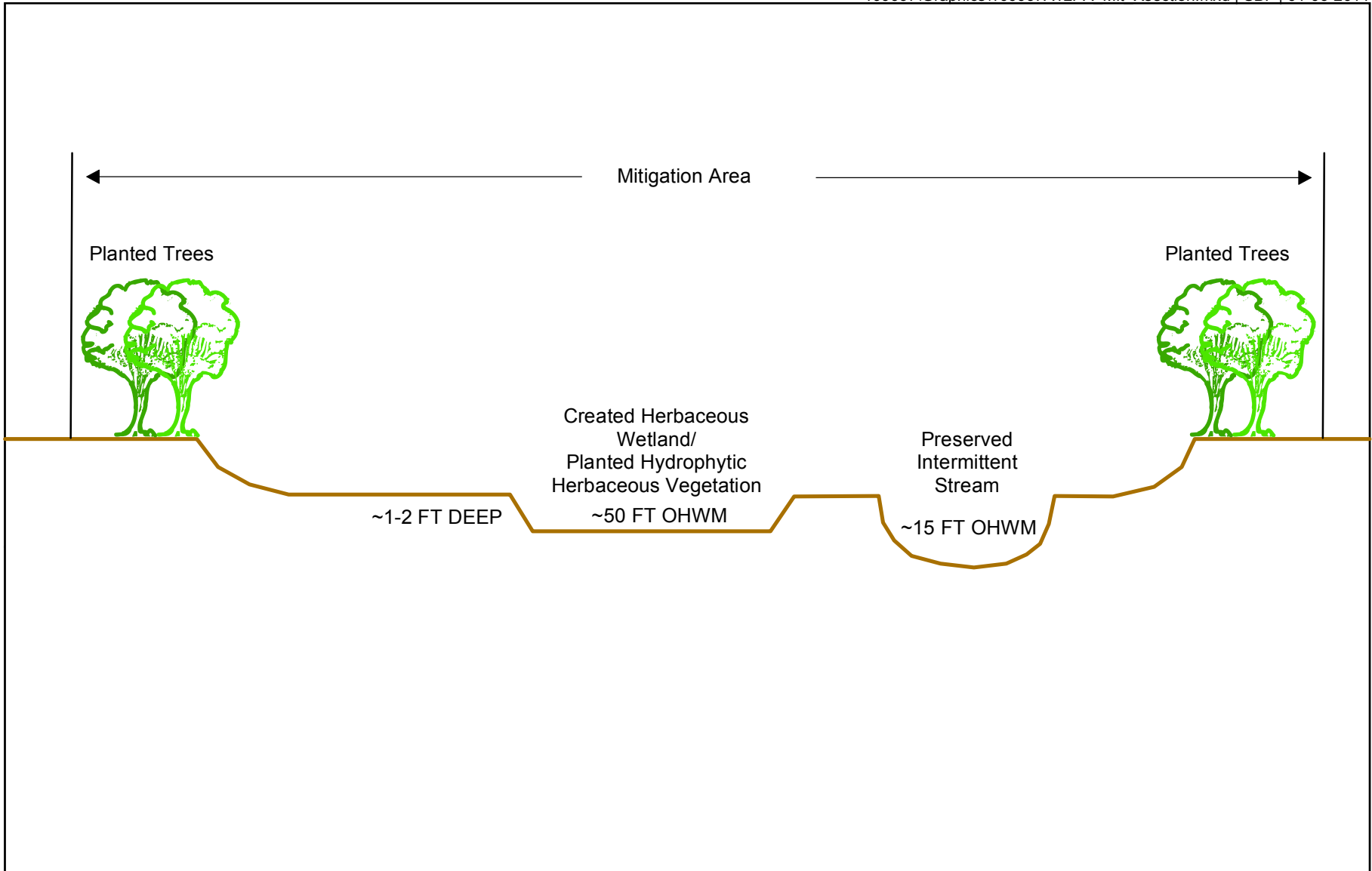
- Project Area
- Mitigation Area
- Created Herbaceous Wetland
- Preserved Intermittent Tributary
- Planted Mitigation Tree

MAP SOURCE: USDA, HAYS COUNTY, 2010.



SHEET 2 OF 3

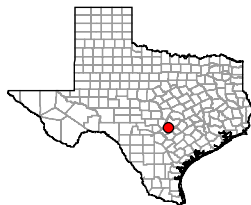
MITIGATION PLAN
CROSSING AT PLUM CREEK
KYLE, HAYS COUNTY, TEXAS



"Do Not Scale This Drawing"



Horizon
Environmental Services, Inc.



SHEET 3 OF 3

CROSS-SECTION DRAWING
MITIGATION PLAN
CROSSING AT PLUM CREEK
KYLE, HAYS COUNTY, TEXAS

APPENDIX B
RECOMMENDED PLANT LIST

RECOMMENDED SPECIES LIST

URBAN GREENBELT AREA

Trees

<u>Scientific Name</u>	<u>Common Name</u>	<u>Region 6 Indicator Status</u>
<i>Carya illinionensis</i>	pecan	FAC+
<i>Cercus canadensis</i>	Texas redbud	UPL
<i>Quercus macrocarpa</i>	bur oak	FAC
<i>Quercus buckleii</i>	Texas oak	NL
<i>Quercus fusiformis</i>	plateau live oak	NL
<i>Taxodium distichum</i>	bald cypress	OBL

CREATED WETLANDS

Herbaceous

<u>Scientific Name</u>	<u>Common Name</u>	<u>Region 6 Indicator Status</u>
<i>Andropogon glomeratus</i>	bushy bluestem	FACW+
<i>Cyperus acuminatus</i>	flat sedge	OBL
<i>Polygonum</i> spp.	smartweed	OBL
<i>Pontederia cordata</i>	pickerelweed	OBL
<i>Panicum virgatum</i>	switchgrass	FACW
<i>Ludwigia linearis</i>	seedbox	OBL
<i>Eleocharis parvula</i>	spikerush	OBL
<i>Juncus effusus</i>	inland rush	OBL
<i>Scirpus americanus</i>	Olney's bulrush	OBL
<i>Sagittaria graminea</i>	arrowhead	OBL
<i>Nymphaea odorata</i>	white waterlilly	OBL

Subject to availability. Substitutions may be made with USACE approval.