

JAN 07 2019

## **Attachment 10**

# **Waters of the U.S./Wetlands Conditional and Functional Assessment & Mitigation Plan**



# Waters of the U.S./Wetlands Conditional & Functional Assessment & Mitigation Plan

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US 59 from Fostoria Road to State  
Loop 573  
(CSJ 0177-03-096)

Prepared by: Spirit Environmental, LLC  
Date: December 2018

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

## Introduction

Spirit Environmental, LLC (Spirit) has conducted an identification of functions of waters of the United States (WOTUS), including wetlands, within the proposed United States (US) Highway 59 (US 59) roadway expansion project located between Fostoria Road at the Montgomery-Liberty County line and State Loop (SL) 573 in Cleveland, Texas. This project is approximately 4.47 miles long (Refer to Figures 1 through 3 in Attachment 7 of the Individual Permit Application). The identification of forested wetland functions is based on the US Army Corps of Engineers (USACE) - Galveston District (SWG) Riverine Forested interim Hydrogeomorphic Approach (iHGM) model, while the emergent wetland functions are based on the SWG Riverine Herbaceous/Shrub iHGM model. The stream functions within the project are based on the May 2013 Level 1 Stream Condition Assessment. The three (3) functional assessment procedures are specific to the USACE - Galveston District.

According to the current project plans, the proposed construction will have unavoidable impacts to wetlands and WOTUS. Under the current Clean Water Act (CWA) regulations, all unavoidable impacts to wetlands and WOTUS as a result of construction activities must be compensated for in accordance with the 2008 Final Mitigation Rule (Title 33 Code of Federal Regulations [CFR] 332). This document contains the results of the conditional and functional assessments. Attachment 1 of this report contains maps of the wetlands and WOTUS, Attachment 2 contains detailed results of the iHGM models, and Attachment 3 contains the Level 1 Stream Assessment Data Forms.

## Existing Conditions

Four (4) wetland delineation reports were compiled for the overall project area and utilized for this conditional and functional assessment. A map of the delineated aquatic features within the project area is presented in Attachment 1.

The identification and delineation of WOTUS has not been verified by the USACE. The USACE is the only agency that can determine the boundaries and jurisdictional status of WOTUS, including wetlands. Currently the USACE utilizes the guidance issued following the Supreme Court ruling of *Rapanos v. United States* and *Carabell v. United States* for determining what WOTUS are jurisdictional. The *Rapanos Guidance* was utilized to identify potentially jurisdictional features delineated in the wetland delineation reports and create the functional assessment and proposed mitigation requirements within this report. After USACE verification of the WOTUS, changes in the jurisdictional findings may change the mitigation requirements discussed in this report.

Table 1 below summarizes the aquatic features observed onsite.

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*Table 1: Summary of Aquatic Resources*

Feature Type	Aquatic Resources in Project Area	
	Acres	Linear feet
<b>Potentially Jurisdictional Features</b>		
PEM Wetlands	0.115	-
PFO Wetlands	7.129	-
Streams	1.462	3,219
<b>Total</b>	<b>8.706</b>	<b>3,219</b>
<b>Potentially Non-Jurisdictional Features</b>		
PEM Wetlands	0.128	-
Drainage Ditches	2.836	7,123
<b>Total</b>	<b>2.964</b>	<b>7,123</b>

Forty aquatic features were identified and delineated within the project right-of-way (ROW). Of these features, 13 are herbaceous wetlands and 11 are forested wetlands. Three (3) of the 24 wetlands are identified as isolated (i.e. no significant nexus with other WOTUS) and may be determined by the USACE to be non-jurisdictional. Three (3) of the wetlands (Detention Pond Wetlands 2, 3, and C) within the proposed detention basin were identified and delineated using aerial photography because ROE to this section of the detention basin was not available at the time of the field investigations. The functional assessment data sheets are provided for the potentially jurisdictional wetlands in Attachment 2.

Sixteen waters were identified and delineated within the project ROW. Seven (7) of the waters were identified as drainage ditches (Drainage Ditch 1, Drainage Ditch 2, Drainage Ditch 3, Drainage Ditch 4, Unnamed Tributary 1, Unnamed Tributary 6b, and Unnamed Tributary 8) and were considered non-jurisdictional because they are man-made, upland-cut stormwater drainage ditches for existing roadways. Conditional assessments were conducted for the remaining nine (9) waters considered to be potentially jurisdictional streams (Attachment 3).

**Proposed Impacts**

Proposed construction plans include drainage improvements (i.e., removal of existing culverts, addition of new culverts, re-alignment of ditches) and roadway improvements (i.e., widen the US 59 highway, rebuild frontage roads, extend and widen the bridge crossing over the East Fork San Jacinto River) to fulfil the national and state need to improve the existing highway system, to provide service for a growing Texas population, to accommodate the increase in

traffic that accompanies population growth, to improve emergency evacuation routes, and to maintain and improve economic competitiveness. Impacts were determined by evaluating project design plans as compared to the aquatic resources that were delineated on the project site. Impacts to aquatic resources are proposed to occur due to realignment of drainage ditches and construction of the frontage roads and associated embankments. For linear transportation projects in the USACE Galveston District, mitigation is required for all impacts to wetland and water crossings that are greater than 0.10-acre in size or 200 linear feet in length.

The table below summarizes the proposed impacts for all aquatic features identified in the project area. The drawings provided in Attachment 7 of the Individual Permit application illustrate the locations of the proposed impacts to aquatic features.

*Table 2: Summary of Proposed Impacts*

Feature Name	Feature Type	Feature Impact Size (acres)	Feature Impact Length (linear feet)	Mitigation Required?
<b>Potentially Jurisdictional Features</b>				
Wetland 3	PEM	0.016	–	Yes
Wetland 4	PEM	0.017	–	Yes
Wetland 5	PFO	0.229	–	Yes
Wetland 6	PEM	0.003	–	Yes
Wetland 7	PEM	0.012	–	Yes
Wetland 8	PFO	1.918	–	Yes
Wetland 9	PFO	0.070	–	Yes
Wetland 10	PFO	0.076	–	Yes
Wetland 11	PEM	0.008	–	Yes
Wetland 12	PEM	0.010	–	Yes
Wetland 13	PFO	0.299	–	Yes
Wetland 14	PEM	0.016	–	Yes
Wetland 15	PEM	0.016	–	Yes
Wetland 16	PEM	0.007	–	Yes
Wetland 17	PEM	0.010	–	Yes
Detention Pond Wetland 1	PFO	0.455	–	Yes
Detention Pond Wetland 2	PFO	0.413	–	Yes

Feature Name	Feature Type	Feature Impact Size (acres)	Feature Impact Length (linear feet)	Mitigation Required?
Detention Pond Wetland 3	PFO	0.884	–	Yes
Detention Pond Wetland A	PFO	1.409	–	Yes
Detention Pond Wetland B	PFO	0.324	–	Yes
Detention Pond Wetland C	PFO	1.052	–	Yes
Unnamed Tributary 2	Stream	0.044	241	Yes
Unnamed Tributary 3	Stream	0.001	14	Yes
Unnamed Tributary 4	Stream	0.001	7	Yes
Unnamed Tributary 5	Stream	0.000	0	Yes
Unnamed Tributary 6a	Stream	0.028	166	Yes
Unnamed Tributary 7	Stream	0.013	52	Yes
East Fork Downstream	Stream	0.001	3	Yes
East Fork Middle	Stream	0.000	0	Yes
East Fork Upstream	Stream	0.002	30	Yes
<b>Potentially Non-Jurisdictional Features</b>				
Wetland 1	PEM	0.000	–	No
Wetland 2	PEM	0.042	–	No
Wetland 18	PEM	0.036	–	No
Unnamed Tributary 1	Drainage Ditch	0.016	110	No
Unnamed Tributary 6b	Drainage Ditch	0.133	653	No
Unnamed Tributary 8	Drainage Ditch	0.041	193	No
Drainage Ditch 1	Drainage Ditch	0.464	762	No
Drainage Ditch 2	Drainage Ditch	0.135	715	No
Drainage Ditch 3	Drainage Ditch	0.790	1,509	No
Drainage Ditch 4	Drainage Ditch	0.204	1,644	No

Wetland 1 is outside of the proposed construction area and will not be impacted. The six (6) PFO wetlands identified within the proposed detention basin area would be excavated, drained, or filled. The ROW within the proposed construction area would be filled and graded for drainage. Impacts to all of the wetlands, except those considered to be non-jurisdictional (Wetlands 1, 2, and 18), would require mitigation.

The list below summarizes the proposed impacts to each stream or drainage feature described above.

- Drainage Ditches 1, 2, and 3 were identified as potentially non-jurisdictional drainage ditches. Ditches 1 and 3 would be impacted as a result of the construction for the proposed U-turn lane at the north end of the project area. Ditch 2 will be filled with approximately 75 cubic yards of clean fill material as a result of roadway improvements on the north end of the project area.
- Drainage Ditch 4 along SH 105 was also identified as potentially non-jurisdictional. Drainage Ditch 4 will be deepened and widened in its current position.
- Unnamed Tributary 1 was identified as potentially non-jurisdictional as it is a man-made upland-cut drainage ditch adjacent to the existing roadway. The project plans to impact this feature by filling 110 linear feet with the construction of the southbound frontage lanes.
- Unnamed Tributary 2 is considered jurisdictional and will involve fill within 241 linear feet of the stream with construction of the southbound frontage lanes.
- Unnamed Tributary 3 is considered jurisdictional and drains directly into the East Fork San Jacinto River Downstream segment. Unnamed Tributary 3 will be impacted by the installation of three (3) 36-inch drilled-shaft pilings.
- Unnamed Tributary 4 is considered jurisdictional and will be impacted by the installation of two (2) 36-inch drilled-shaft pilings.
- Unnamed Tributary 5 is considered jurisdictional and will be avoided. No impacts to this feature are anticipated.
- Unnamed Tributary 6 is comprised of two (2) segments; Unnamed Tributary 6a and Unnamed Tributary 6b. Unnamed Tributary 6a appears to be a potentially naturally occurring stream feature downstream of Unnamed Tributary 6b. Unnamed Tributary 6b is a roadside drainage ditch that appears to be an upland-cut man-made roadside drainage ditch that accommodates drainage from the US 59 southbound frontage lane and is connected to Unnamed Tributary 6a. The portion of this feature that is an obvious maintained upland drainage ditch is considered to be potentially non-jurisdictional (Unnamed Tributary 6b). Construction activities will completely impact both Unnamed Tributary 6a and Unnamed Tributary 6b by grading activities and channelizing of both features.
- Unnamed Tributary 7 occurs downstream of Unnamed Tributary 6a, is considered jurisdictional, and will be completely impacted by construction of the new southbound frontage lanes.
- Unnamed Tributary 8 is a man-made, culverted feature that is located under the existing US 59 main lanes. This feature is man-made, upland-cut, and is considered potentially non-jurisdictional. Unnamed Tributary 8 will be completely re-graded as a result of the construction activities.

No stream mitigation is proposed for the potentially non-jurisdictional drainage ditches noted above because they, according to the *Rapanos Guidance*, are not jurisdictional WOTUS.

The East Fork San Jacinto River intersects the project ROW at three (3) locations, Downstream, Middle, and Upstream. This feature is considered jurisdictional according to the *Rapanos Guidance* definition for a relatively permanent water (RPW). Furthermore, the East Fork San Jacinto River becomes a traditional navigable water (TNW) approximately 11 miles south of the project site. The East Fork San Jacinto River Downstream segment will be impacted by one (1) 36-inch drilled-shaft piling. The East Fork San Jacinto River Middle segment will not be impacted as a result of the construction. The East Fork San Jacinto River Upstream segment will be impacted by ten (10) 36-inch drilled-shaft pilings. No concrete aprons or rip-rap are associated with these pilings; therefore, this minimizes the impact to the East Fork San Jacinto River.

**Conditional and Functional Assessment Methods and Credit Determination**  
**Wetland Functional Assessment**

The USACE Galveston District requires the use of separate methodologies for determining the wetland functions of different wetland types. For forested wetlands, the USACE Galveston District requires the SWG Riverine Forested iHGM model. For emergent, herbaceous, and shrub wetlands, the USACE Galveston District requires the SWG Riverine Herbaceous/Shrub iHGM model. Both models use various attributes that are measured in the field and in the office using aerial photography to calculate the existing and post-project functional capacity indices (FCIs) and the functional capacity units (FCUs). FCUs are determined by multiplying the wetland acreage by the FCI values for each wetland. The difference between the existing condition and post-project condition FCUs is the number of FCUs that would be required to be replaced by compensatory mitigation to achieve a no net loss of the functions and services of the existing wetlands. Each FCU type (physical, biological, and chemical) is required to be mitigated separately. A total of 11 PFO wetlands and 10 PEM wetlands were determined to require mitigation for the proposed project. It is assumed that all wetlands within the roadway ROW will be completely impacted; therefore, the post construction conditions are zero (0). The table below summarizes the FCUs for each wetland. Detailed results of the iHGM calculations for the wetlands can be found in Attachment 2 of this report.

*Table 3: Summary of Functional Capacity Units*

Feature Name	Acreage	Impact FCUs			
		Physical	Biological	Chemical	TOTALS
PEM Wetlands					
Wetland 3	0.016	-0.011	-0.009	-0.011	-0.031
Wetland 4	0.017	-0.011	-0.009	-0.012	-0.032

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Feature Name	Acreage	Impact FCUs			
		Physical	Biological	Chemical	TOTALS
Wetland 6	0.003	-0.002	-0.001	-0.002	-0.005
Wetland 7	0.012	-0.006	-0.004	-0.008	-0.018
Wetland 11	0.008	-0.004	-0.003	-0.004	-0.011
Wetland 12	0.010	-0.005	-0.004	-0.006	-0.015
Wetland 14	0.016	-0.009	-0.007	-0.011	-0.027
Wetland 15	0.016	-0.008	-0.010	-0.010	-0.028
Wetland 16	0.007	-0.004	-0.003	-0.004	-0.011
Wetland 17	0.010	-0.006	-0.004	-0.007	-0.017
<b>PFO Wetlands</b>					
Wetland 5	0.229	-0.162	-0.122	-0.183	-0.467
Wetland 8	1.918	-1.547	-1.128	-1.497	-4.172
Wetland 9	0.070	-0.049	-0.042	-0.053	-0.144
Wetland 10	0.076	-0.043	-0.031	-0.051	-0.125
Wetland 13	0.299	-0.270	-0.206	-0.273	-0.749
Detention Pond Wetland 1	0.455	-0.195	-0.322	-0.246	-0.763
Detention Pond Wetland 2	0.413	-0.177	-0.293	-0.223	-0.693
Detention Pond Wetland 3	0.884	-0.379	-0.626	-0.477	-1.482
Wetland A	1.410	-0.604	-0.999	-0.761	-2.364
Wetland B	0.320	-0.137	-0.227	-0.173	-0.537
Wetland C	1.052	-0.450	-0.745	-0.568	-1.763
<b>TOTALS</b>	<b>7.242</b>	<b>-4.078</b>	<b>-4.795</b>	<b>-4.581</b>	<b>-</b>

**Stream Condition Assessment**

The USACE Galveston District requires the use of the May 2013 Level 1 Stream Condition Assessment (2013 SCA1) to determine stream functions for all ephemeral and intermittent streams. In addition, Level 1 may be used to assess the functional condition of intermittent streams with perennial pools, perennial streams, and wadeable rivers when the proposed impact is less than 500 linear feet. This qualitative assessment is designed to evaluate relative potential of a stream to support and maintain a diverse community of organisms by visually assessing hydrogeomorphic and fluvial geomorphic characteristics such as active floodplain, width/depth ratios, bed elevation and floodplain storage and release. For

proposed impacts to less than 500 linear feet of an ephemeral or intermittent stream, three (3) 350-linear foot transects are evaluated for each stream. For proposed impacts to 500 linear feet or greater to an ephemeral or intermittent stream, the assessment requires the addition of one (1) 350-linear-foot transect for each additional 500 feet of impact. Each transect is visually assessed to calculate a condition index (CI). The arithmetic mean of the transect CI scores is calculated to determine the reach condition index (RCI) for each stream segment. The 2013 SCA1 methodology was modified for potentially jurisdictional streams less than 1,300 linear feet, since only one (1) transect could fit within the assessment reach.

The nine (9) potentially-jurisdictional stream segments identified within the project area include the East Fork of the San Jacinto River (Downstream, Middle, and Upstream segments) and Unnamed Tributaries to the East Fork of the San Jacinto River numbered 2, 3, 4, 5, 6A, and 7 (Table 4). No impacts are proposed to Unnamed Tributary 5 or the Middle segment of the East Fork San Jacinto River. For the stream assessment performed, the entire stream lengths of Unnamed Tributaries 2, 4, 5, 6A, and 7 were used as transects for the determination of the stream condition indexes. The Level 1 Stream Condition Data Forms completed for each of the impacted stream segments are included in Attachment 3.

The existing stream RCI values calculated for these segments are presented below in Table 4. Table 4 also summarizes the impacted length of each stream, the impact factor, and calculated credits necessary for mitigation of each impacted stream. The impact factors for each stream were chosen based on the 2013 SCA1 guidelines.

**Table 4: Permanent Impacts to Streams**

Stream Reach Name	Existing CI	Post-Project CI	CI Δ	Impacted Length	Impact Factor	Credits
<b>Unnamed Tributary 2</b>						
1	3.11	0	3.11	241	5	3,748
<b>RCI</b>	<b>3.11</b>	<b>0</b>	<b>3.11</b>	<b>241</b>	<b>5</b>	<b>3,748</b>
<b>Unnamed Tributary 3</b>						
1-Downstream	3.05	2.75	0.30	-	-	-
2-Middle	3.55	3.55	0	-	-	-
3-Upstream	3.86	3.86	0	-	-	-
<b>RCI</b>	<b>3.49</b>	<b>3.39</b>	<b>0.10</b>	<b>14</b>	<b>2</b>	<b>3</b>
<b>Unnamed Tributary 4</b>						
1	3.06	2.50	0.56	7	2	8

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Table 4: Permanent Impacts to Streams

Stream Reach Name	Existing CI	Post-Project CI	CI Δ	Impacted Length	Impact Factor	Credits
RCI	3.06	2.50	0.56	7	2	8
Unnamed Tributary 5						
1	2.55	2.50	0.05	0	2	0
RCI	2.55	2.50	0.05	0	2	0
Unnamed Tributary 6A						
1	2.69	1.75	0.94	166	5	781
RCI	2.69	1.75	0.94	166	5	781
Unnamed Tributary 7						
1	3.00	2.75	0.25	52	5	65
RCI	3.00	2.75	0.25	52	5	65
East Fork Upstream						
Downstream	4.50	4.12	0.38	-	-	-
Middle	4.09	2.10	1.99	-	-	-
Upstream	3.57	3.57	0.00	-	-	-
RCI	4.05	3.26	0.79	30	2	48
East Fork Downstream						
1-Downstream	4.13	4.13	0	-	-	-
2-Middle	2.53	2.50	0.03	-	-	-
3-Upstream	4.00	3.75	0.25	-	-	-
RCI	3.55	3.46	0.09	3	2	1
East Fork Middle						
1-Downstream	4.00	3.75	0.25	-	-	-
2-Middle	4.06	3.91	0.15	-	-	-
3-Upstream	4.13	4.13	0.00	-	-	-
RCI	4.06	3.93	0.13	0	2	0
TOTALS				513	-	4,654

## **Conceptual Mitigation Plan**

In accordance with the 2008 Final Rule for Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Parts 325 and 332), before compensatory mitigation can be considered, all appropriate and practicable steps to avoid and then minimize adverse impacts to the aquatic ecosystem must occur. Compensatory mitigation can be carried out using restoration, enhancement, creation, or preservation.

### **Avoidance**

To meet the required purpose and need to widen US 59 and the interstate highway design standards, new ROW would be required in the vicinity of the current US 59 crossing of the East Fork San Jacinto River. With the Union Pacific railroad located along the eastern edge of the US 59 ROW and the historical Riggs Cemetery located between the existing divided traffic lanes approximately 0.3 miles north of the river, the only area available for new roadway within or adjacent to the existing ROW is to the west of the existing US 59 alignment. The width of the new ROW in the vicinity of the East Fork San Jacinto River would be designed to be as narrow as practicable to minimize impacts to the river's floodplain, numerous braided channels within the floodplain, and associated wetlands. The expanded bridge plans have avoided the majority of the aquatic resources and minimized the number of drilled shafts placed within each of the aquatic resources.

### **Minimization**

Construction of roadways and bridges typically directly impacts wetlands within the construction zone. Construction vehicles and heavy construction equipment need access to the proposed lanes for construction, and long-term highway maintenance would require access. As currently designed, minimizing the width of the new ROW, and bridging the majority of the floodplain would minimize the overall impacts of the proposed project and WOTUS.

Stream crossings would be restored to original contours, and banks vegetated as soon as practicable after construction.

### **Mitigation**

#### **Wetlands**

TXDOT plans to mitigate for the proposed wetland impacts by purchasing credits from an existing wetland mitigation bank. Blue Elbow Swamp Mitigation Bank (BESMB) is within the primary service area of the project site and has available credits for wetlands. The BESMB is sponsored by TXDOT and utilizes a ratio method to calculate mitigation credits. Project credits are assigned at a ratio of seven (7) credits for each acre of in-kind high-quality wetland adversely impacted, five (5) credits for each acre of in-kind medium quality wetland adversely impacted, and three (3) credits for each acre of in-kind low-quality wetland adversely impacted. Based on the iHGM assessment of wetland impacts within the project area, PFO wetlands would be considered high-quality wetlands, and PEM wetlands would be considered low-quality wetlands. For TXDOT projects that utilize the TXDOT-managed BESMB, there is no

cost associated with the credits. The table below summarizes the proposed credits to be debited from the BESMB.

*Table 5: Proposed Wetland Mitigation Credits*

Wetland Type	Impact Size (acres)	Ratio	Debits
PFO	7.129	7	49.903
PEM	0.115	5	0.575
<b>TOTAL</b>	<b>7.244</b>	-	<b>50.478</b>

**Streams**

There is one (1) stream mitigation bank with available credits that serves the proposed project area: Houston-Conroe Mitigation Bank (HCMB). The HCMB has sufficient stream credits available. It is recommended that TXDOT purchase credits wherever possible due to the difficulty of stream mitigation creation and the need to perform long-term monitoring and maintenance in order to demonstrate permit compliance and success. The HCMB has credits available for approximately \$250 per credit which would mean TXDOT would pay \$1,163,500 for 4,654 credits to cover the cost of stream impacts.

## Conclusion

The table below summarizes the credits to be purchased for proposed impacts to WOTUS and wetlands.

*Table 6: Summary of WOTUS and Wetlands Impacts and Proposed Mitigation Credits*

Feature Type	Impact Size (acres)	Impact Length (linear feet)	Credits
PFO Wetlands	7.129	-	49.903
PEM Wetlands	0.115	-	0.575
Streams	0.090	513	4,654

TXDOT plans to utilize the TXDOT-managed BESMB to purchase credits to compensate for the proposed impacts to wetlands and will purchase credits from the HCMB for the proposed impacts to the streams.

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## **8.0 Attachments**

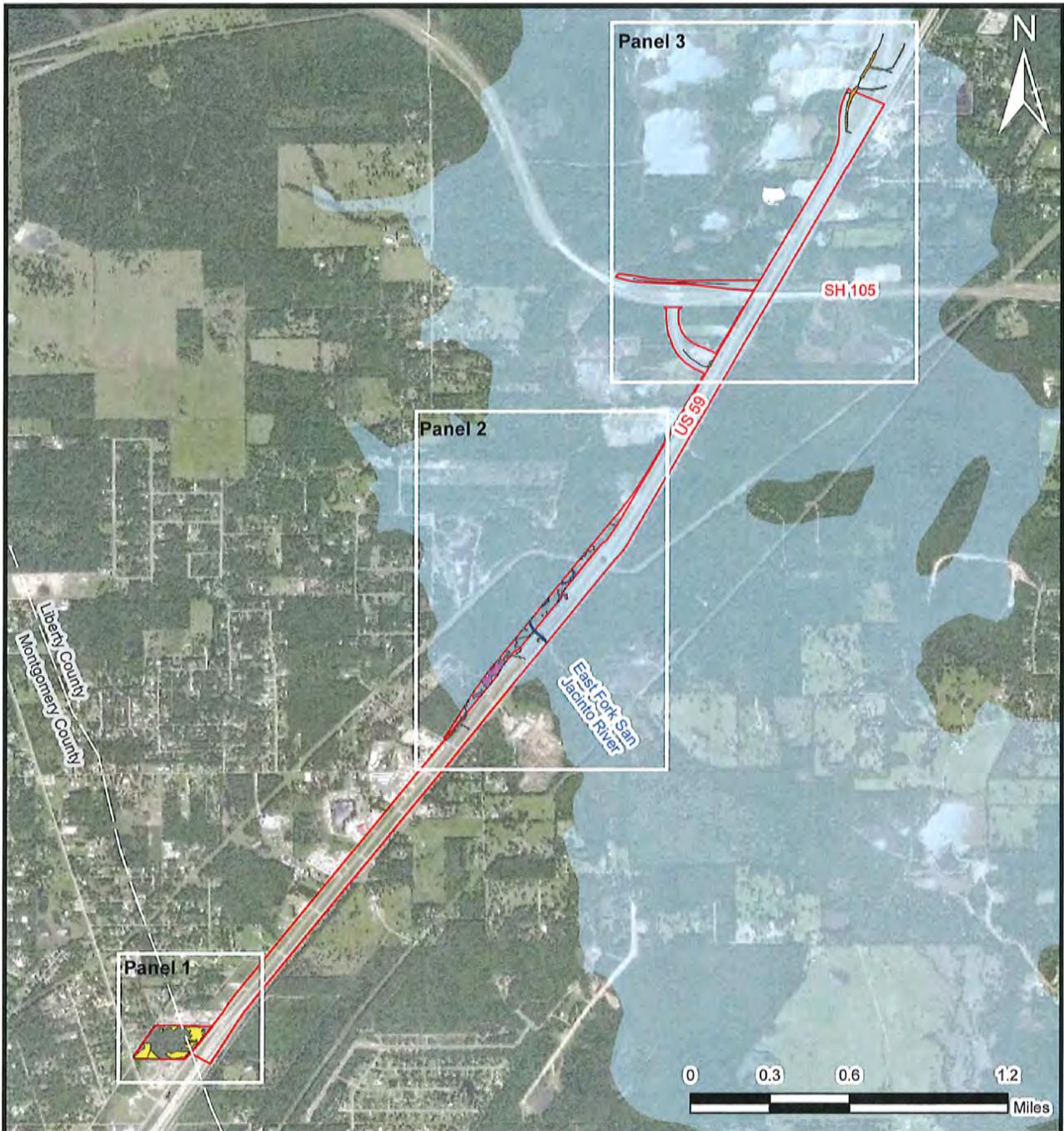
1. Figures
2. IHGM model results
3. Level 1 Stream Assessment Data Forms

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**Attachment 1**

**Figures**

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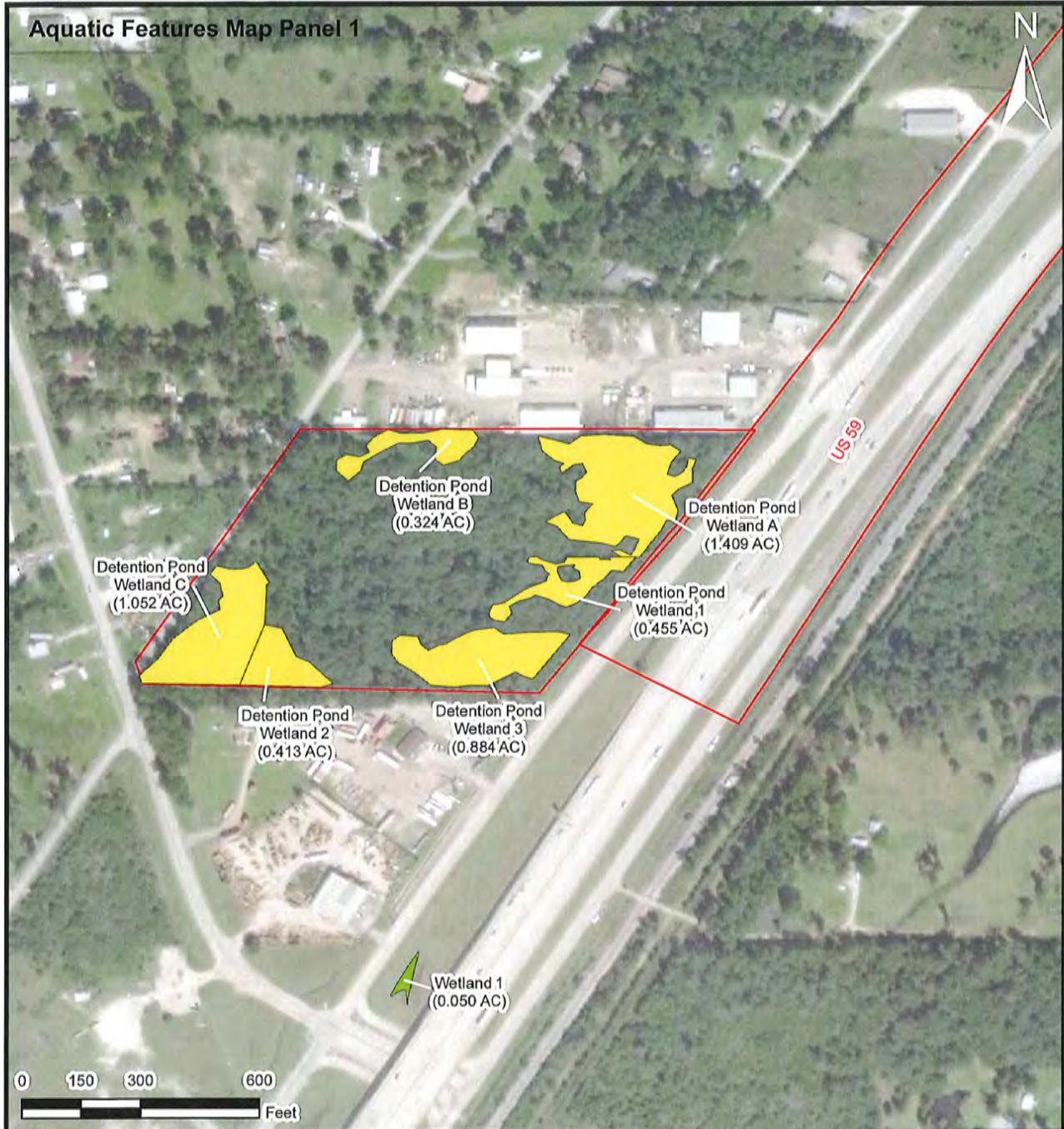


Legend	
Project Area	Potentially Jurisdictional WOTUS
FEMA 100-YR Floodplain	Potentially Non-Jurisdictional Drainage Ditches
Forested Wetlands	Potentially Non-Jurisdictional Herbaceous Wetlands
<b>AJD</b>	
Potentially Jurisdictional Forested Wetlands	
Potentially Jurisdictional Herbaceous Wetlands	

**US 59 (CSJ 0177-03-096)  
 AQUATIC FEATURES MAP  
 TEXAS DEPARTMENT OF  
 TRANSPORTATION  
 MONTGOMERY AND LIBERTY  
 COUNTIES, TEXAS**

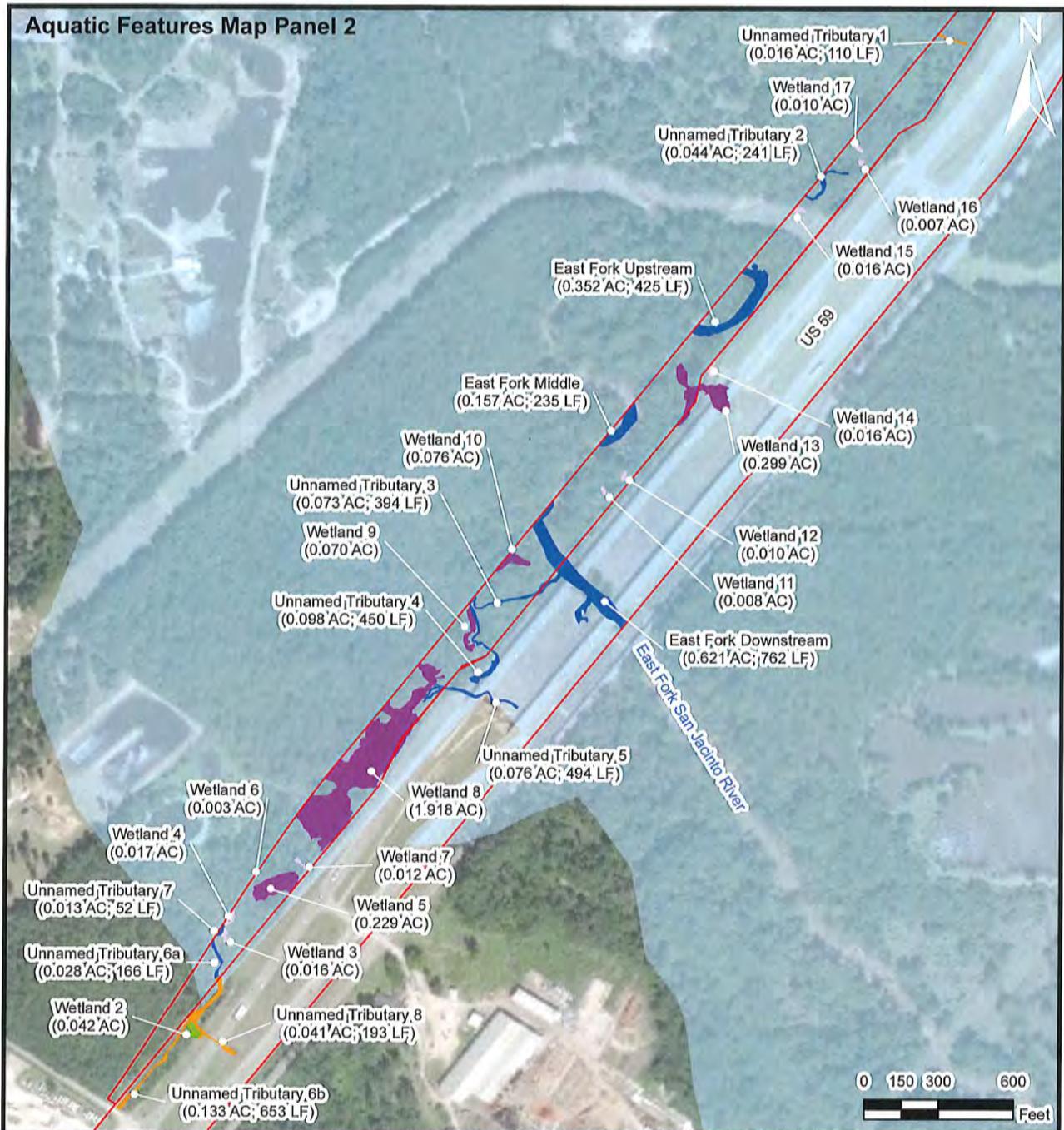
**SPIRIT**  
 ENVIRONMENTAL  
 20465 State Highway 249, Suite 300  
 Houston, TX 77070

Figure No.: 2
Date: 9/24/2018
Project No.: 17465.00N
Drawn By: JPrescott
Revision No.: 1
<i>Note: This is not a Property Boundary Survey</i>
<i>Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community</i>

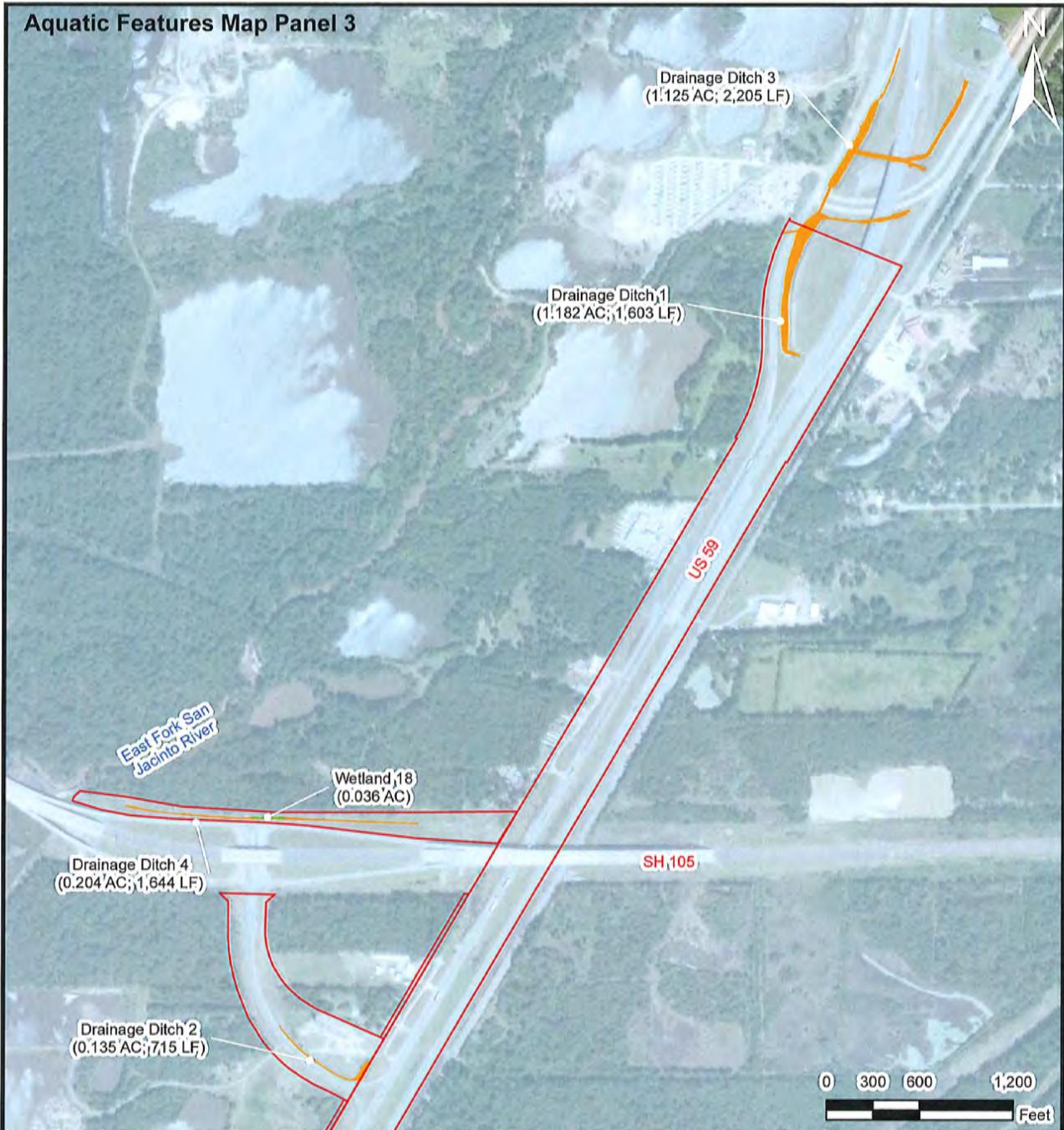


<p><b>Legend</b></p> <p><span style="border: 1px solid red; display: inline-block; width: 20px; height: 10px;"></span> Project Area</p> <p>FEMA 100-YR Floodplain</p> <p><b>PJD</b></p> <p><span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Forested Wetlands</p> <p><b>AJD</b></p> <p><span style="background-color: purple; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Potentially Jurisdictional Forested Wetlands</p> <p><span style="background-color: lightpurple; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Potentially Jurisdictional Herbaceous Wetlands</p> <p><span style="background-color: blue; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Potentially Jurisdictional WOTUS</p> <p><span style="background-color: orange; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Potentially Non-Jurisdictional Drainage Ditches</p> <p><span style="background-color: lightgreen; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Potentially Non-Jurisdictional Herbaceous Wetlands</p>	<p><b>US 59 (CSJ 0177-03-096)</b></p> <p><b>AQUATIC FEATURES MAP</b></p> <p><b>PANEL 1</b></p> <p><b>TEXAS DEPARTMENT OF TRANSPORTATION</b></p> <p><b>MONTGOMERY AND LIBERTY COUNTIES, TEXAS</b></p>	<p>Figure No.: 2-1</p> <p>Date: 9/24/2018</p> <p>Project No.: 17465.00N</p> <p>Drawn By: JPrescott</p> <p>Revision No.: 1</p> <p><i>Note: This is not a Property Boundary Survey</i></p> <p><i>Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community</i></p>
	 <p><b>SPIRIT</b> ENVIRONMENTAL</p> <p>20465 State Highway 249, Suite 300 Houston, TX 77070</p>	

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<b>Legend</b> 		<p><b>US 59 (CSJ 0177-03-096)</b>  <b>AQUATIC FEATURES MAP</b>  <b>PANEL 2</b>  <b>TEXAS DEPARTMENT OF</b>  <b>TRANSPORTATION</b>  <b>MONTGOMERY AND LIBERTY</b>  <b>COUNTIES, TEXAS</b></p>	Figure No.: 2-2 Date: 9/25/2018 Project No.: 17465.00N Drawn By: JPrescott Revision No.: 1
<p><b>Legend</b></p> <ul style="list-style-type: none"> <li> Project Area</li> <li> FEMA 100-YR Floodplain</li> <li><b>PJD</b></li> <li> Forested Wetlands</li> <li><b>AJD</b></li> <li> Potentially Jurisdictional Forested Wetlands</li> <li> Potentially Jurisdictional Herbaceous Wetlands</li> <li> Potentially Jurisdictional WOTUS</li> <li> Potentially Non-Jurisdictional Drainage Ditches</li> <li> Potentially Non-Jurisdictional Herbaceous Wetlands</li> </ul>			<p><b>SPiRiT</b>                  ENVIRONMENTAL</p> <p>20465 State Highway 249, Suite 300                  Houston, TX 77070</p>



**Legend**

- Project Area
- FEMA 100-YR Floodplain
- PJD**
- Forested Wetlands
- AJD**
- Potentially Jurisdictional Forested Wetlands
- Potentially Jurisdictional Herbaceous Wetlands
- Potentially Jurisdictional WOTUS
- Potentially Non-Jurisdictional Drainage Ditches
- Potentially Non-Jurisdictional Herbaceous Wetlands

**US 59 (CSJ 0177-03-096)  
 AQUATIC FEATURES MAP  
 PANEL 3  
 TEXAS DEPARTMENT OF  
 TRANSPORTATION  
 MONTGOMERY AND LIBERTY  
 COUNTIES, TEXAS**

**ENVIRONMENTAL**  
  
 20465 State Highway 249, Suite 300  
 Houston, TX 77070

Figure No.: 2-3  
 Date: 9/25/2018  
 Project No.: 17465.00N  
 Drawn By: JPrescott  
 Revision No.: 1

*Note: This is not a Property Boundary Survey*  
 Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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**Attachment 2**  
**IHGM Model Results**

### ***Riverine Forested HGM Interim (FCI formulas)***

Temporary Storage & Detention of Storage Water:

$$\sqrt{\left[ \sqrt{(V_{dur} * V_{freq})} * \frac{(V_{topo} + V_{cwd} + V_{wood})}{3} \right]}$$

Maintain Plant and Animal Community:

$$\frac{V_{tree} + V_{cwd} + V_{rich} + \left[ \frac{V_{basal} + V_{density}}{2} \right] + \left[ \frac{(V_{mid} + V_{herb})}{2} \right] + V_{connect}}{6}$$

Removal & Sequestration of Elements & Compounds:

$$\frac{V_{wood} + V_{freq} + V_{dur} + \left[ \frac{(V_{topo} + V_{cwd} + V_{wood})}{3} \right] + \left[ \frac{(V_{detritus} + V_{redox} + V_{sorpt})}{3} \right]}{5}$$

---

Need values for: use the existing methods describes in the Riverine Interim model

V <sub>dur</sub>	V <sub>mid</sub>
V <sub>freq</sub>	V <sub>herb</sub>
V <sub>topo</sub>	V <sub>detritus</sub>
V <sub>cwd</sub>	V <sub>redox</sub>
V <sub>wood</sub>	V <sub>sorpt</sub>
V <sub>tree</sub>	V <sub>connect</sub>
V <sub>rich</sub>	
V <sub>basal</sub>	
V <sub>density</sub>	

\* The Riverine HGM interim model is limited to the use of estimated potential impacts to wetlands that are located along floodplains and/or floodways located along riparian corridors. These wetlands share a surface hydrology connection with the waters of the riverine system at least for a portion of the time. This type of model should be used for a rapid non-controversial estimate of the potential impacts to forested riparian wetlands and to see if the proposed mitigation will adequately address the wetland functions that are being impacted.

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***Riverine Herbaceous/Shrub HGM Interim  
(FCI formulas)***

Temporary Storage & Detention of Storage Water:

$$[\{V_{dur} \times V_{freq}\}^{1/2} \times \{V_{topo} + \{V_{herb} + V_{mid}/2\}/2\}]^{1/2}$$

Maintain Plant and Animal Community:

$$\{V_{mid} + V_{herb} + V_{connect}\}/3$$

Removal & Sequestration of Elements & Compounds:

$$[[V_{wood} + V_{freq} + V_{dur} + [\{V_{topo} + V_{herb} + V_{mid}\}/3]] + [\{V_{detritus} + V_{redox} + V_{sorpt}\}/3]]/5$$

---

$V_{dur}$

$V_{freq}$

$V_{topo}$

$V_{wood}$

$V_{mid}$

$V_{herb}$

$V_{connect}$

$V_{detritus}$

$V_{redox}$

$V_{sorpt}$

\* The Riverine model is designed to be used to produce an assessment of the potential function of wetlands that share a surface hydrologic connection (at least periodically during anticipated high flows) with a riverine system {i.e. it is limited to wetlands located in the floodplain and/or floodway}. This model is to be used for a rapid non-controversial estimate of the potential impacts to herbaceous riparian wetlands and to see if the proposed mitigation will adequately address the wetland functions that are being impacted.

**Interim Riverine/Herbaceous Shrub Hydrogeomorphic Analysis Worksheet**  
**Project # 8414T-EA**

**Wetland 3**  
**Acreeage = 0.02**

Variable	Sub-Index	Notes:
V <sub>dur</sub>	1.00	In average year, 80% of WAA floods for 14 consecutive days.
V <sub>freq</sub>	1.00	WAA floods annually.
V <sub>topo</sub>	0.40	Less than 15% of WAA is represented by topographic features.
V <sub>wood</sub>	0.10	WAA consists of 0-10% woody vegetation.
V <sub>mid</sub>	0.25	WAA consists of 1-25% midstory coverage.
V <sub>herb</sub>	0.75	WAA consists of 50-76% herbaceous coverage.
V <sub>connect</sub>	0.75	Three habitat types (open water, forested, lawn) other than wetland.
V <sub>detrifus</sub>	1.00	Greater than 85% of the area possesses O or A horizon.
V <sub>redox</sub>	1.00	Redox concentrations >20% of pedon.
V <sub>sort</sub>	1.00	WAA is dominated by clayey soils.

**Functional Capacity Index (FCI)**

Physical	0.67
Biota	0.58
Chemical	0.71

**Functional Capacity Units (FCU)**

Physical	0.01
Biota	0.01
Chemical	0.01

**Interim Riverine/Herbaceous Shrub Hydrogeomorphic Analysis Worksheet**  
 8414T-EA

**Wetland 4**  
**Acreage = 0.02**

Variable	Sub-Index	Notes:
V <sub>dur</sub>	1.00	In average year, 80% of WAA floods for 14 consecutive days.
V <sub>freq</sub>	1.00	WAA floods annually.
V <sub>topo</sub>	0.40	Less than 15% of WAA is represented by topographic features.
V <sub>wood</sub>	0.25	WAA consists of 11-33% woody vegetation.
V <sub>mid</sub>	0.10	WAA consists of 1-25% midstory coverage.
V <sub>herb</sub>	0.75	WAA consists of 50-75% herbaceous coverage.
V <sub>connect</sub>	0.75	Three habitat types (open water, forested, lawn) other than wetland.
V <sub>detritus</sub>	1.00	Greater than 85% of the area possesses O or A horizon.
V <sub>redox</sub>	1.00	Redox concentrations >20% of pedon.
V <sub>soipt</sub>	1.00	WAA is dominated by clayey soils.

**Functional Capacity Index (FCI)**

Physical	0.64
Biota	0.53
Chemical	0.73

**Functional Capacity Units (FCU)**

Physical	0.01
Biota	0.01
Chemical	0.01

**Interim Riverine Forested Hydrogeomorphic Analysis Worksheet**

Project # 8414T-EA

**Wetland 5**

Acreage = 0.229

Variable	Subindex	Notes:
V <sub>dur</sub>	1.00	In an average year 80% of the WAA either floods and/or ponds for at least 14 consecutive days
V <sub>freq</sub>	1.00	Floods or ponds annually 5 out of 5 years (floodway)
V <sub>topo</sub>	0.70	15-30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
V <sub>cwd</sub>	0.30	Less than 3 pieces of cwd greater than 3" diameter along 100' transect
V <sub>wood</sub>	0.50	34-66% of the WAA is covered with woody vegetation
V <sub>tree</sub>	0.30	Less than 20% of the stand is oak, hickory, cypress, maple and/or elm
V <sub>rich</sub>	0.60	Three tree species present
V <sub>basal</sub>	0.40	The average basal area of the WAA is less than 60 square ft/acre
V <sub>density</sub>	0.60	The WAA averages a tree density of 250-500 trees/acre or 50-100 trees/acre
V <sub>mid</sub>	0.50	Midstory coverage of the WAA is between 11-30
V <sub>herb</sub>	1.00	Herbaceous cover in the WAA averages between 5-30%
V <sub>debris</sub>	1.00	Greater than 85% of the area possesses an O or A horizon
V <sub>redox</sub>	1.00	Redox concentrations represent at least 20% of the pedon within the top 4 inches of the soil surface, or feature masked due to parent material but conditions are conducive redoximorphic processes (many mottles)
V <sub>soil</sub>	1.00	The WAA is dominated by montmorillonitic clayey soils (clay, clay loams, silty clay loams) or soils with high organic (2/1, 2/2, 3/1)
V <sub>connect</sub>	0.75	Wetland plus two or more habitat types (other than forested) or three or more habitat types

**Functional Capacity Index (FCI)**

Temp. Storage of Water (1)

Maintain Plant & Animal Com. (2)

Removal of Elements (3)

**Functional Capacity Units (FCU)**

**Pre-Project**

Calculated FCU (Temp Storage)	<input type="text" value="0.162"/>	<i>physical</i>
Calculated FCU (Maintain Plan & Animal)	<input type="text" value="0.122"/>	<i>biological</i>
Calculated FCU (Removal of Elements)	<input type="text" value="0.183"/>	<i>chemical</i>

**Tree Calculations Data (Wetland 5)**

Tree DBH and Basal Area		Species
Tree DBH (in.)	Tree Basal Area (Sq.Ft.)	
6.7	0.245	Triadica sebifera
4.2	0.096	Triadica sebifera
7.1	0.275	Liquidambar styraciflua
4.5	0.110	Liquidambar styraciflua
3.6	0.071	Liquidambar styraciflua
5.0	0.136	Platanus occidentalis
14.2	1.100	Liquidambar styraciflua
4.0	0.087	Triadica sebifera
3.2	0.056	Triadica sebifera
<b>Total</b>		
52.5	2.176	

Average Basal Area (Sq.Ft. per acre)		
Plot Size (Sq.ft.)	4356	<i>0.10 (30 ft radius plot)</i>
Sq.ft. per acre	43560	
Total Basal Area (Sq.ft.)	2.176	
Total BA per acre	21.763	

Number of Trees (per acre)		
Plot Size (Sq.ft.)	4356	<i>0.10 (30 ft radius plot)</i>
Number of Trees	9	
Total number of trees per acre	90	

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**Interim Riverine/Herbaceous Shrub Hydrogeomorphic Analysis Worksheet**  
 Project # 8414T-EA

**Wetland 6**  
**Acreeage = 0.003**

Variable	Sub-Index	Notes:
V <sub>dur</sub>	1.00	In average year, 80% of WAA floods for 14 consecutive days.
V <sub>freq</sub>	1.00	WAA floods annually.
V <sub>topo</sub>	0.40	Less than 15% of WAA is represented by topographic features.
V <sub>wood</sub>	0.25	WAA consists of 11-33% woody vegetation.
V <sub>mid</sub>	0.25	WAA consists of 1-25% midstory coverage.
V <sub>herb</sub>	0.25	WAA consists of 1-25% herbaceous coverage.
V <sub>connect</sub>	0.75	Three habitat types (open water, forested, lawn) other than wetland.
V <sub>detritus</sub>	1.00	Greater than 85% of the area possesses O or A horizon.
V <sub>redox</sub>	1.00	Redox concentrations >20% of pedon.
V <sub>soipt</sub>	1.00	WAA is dominated by clayey soils.

**Functional Capacity Index (FCI)**

Physical	0.57
Biota	0.42
Chemical	0.71

**Functional Capacity Units (FCU)**

Physical	0.002
Biota	0.001
Chemical	0.002

**Interim Riverine/Herbaceous Shrub Hydrogeomorphic Analysis Worksheet**  
 Project # 8414T-EA

**Wetland 7**  
 Acreage = **0.01**

Variable	Sub-Index	Notes:
V <sub>dur</sub>	1.00	In average year, 80% of WAA floods for 14 consecutive days.
V <sub>freq</sub>	1.00	WAA floods annually.
V <sub>topo</sub>	0.40	Less than 15% of WAA is represented by topographic features.
V <sub>wood</sub>	0.10	WAA consists of 0-10% woody vegetation.
V <sub>mid</sub>	0.10	WAA consists of <1% midstory coverage.
V <sub>herb</sub>	0.25	WAA consists of 1-25% herbaceous coverage.
V <sub>connect</sub>	0.75	Three habitat types (open water, forested, lawn) other than wetland.
V <sub>detritus</sub>	1.00	Greater than 85% of the area possesses O or A horizon.
V <sub>redox</sub>	1.00	Redox concentrations >20% of pedon.
V <sub>sorpt</sub>	1.00	WAA is dominated by clayey soils.

**Functional Capacity Index (FCI)**

Physical	0.54
Biota	0.37
Chemical	0.67

**Functional Capacity Units (FCU)**

Physical	0.01
Biota	0.00
Chemical	0.01

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**Interim Riverine Forested Hydrogeomorphic Analysis Worksheet**

Project # 8414T-EA

**Wetland 8**

Acreage = 1.92

Variable	Subindex	Notes
V <sub>dur</sub>	1.00	In an average year 80% of the WAA either floods and/or ponds for at least 14 consecutive days
V <sub>freq</sub>	1.00	Floods or ponds annually 5 out of 5 years (floodway)
V <sub>topo</sub>	0.70	15-30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
V <sub>cwd</sub>	1.00	More than 7 pieces of cwd greater than 3" diameter along 100' transect
V <sub>wood</sub>	0.25	11-33% of the WAA is covered with woody vegetation
V <sub>tree</sub>	0.30	Less than 20% of the stand is oak, hickory, cypress, maple and/or elm
V <sub>rich</sub>	0.60	Three tree species present
V <sub>basal</sub>	0.40	The average basal area of the WAA is less than 60 square ft/acre
V <sub>densly</sub>	0.60	The WAA averages a tree density of 250-500 trees/acre or 50-100 trees/acre
V <sub>mid</sub>	0.25	Midstory coverage of the WAA is less than 10%
V <sub>herb</sub>	0.50	Herbaceous cover in the WAA averages between 31-50%
V <sub>detritus</sub>	1.00	Greater than 85% of the area possesses an O or A horizon
V <sub>redox</sub>	1.00	Redox concentrations represent at least 20% of the pedon within the top 4 inches of the soil surface, or feature marked due to parent material but conditions are conducive redoximorphic processes (many mottles)
V <sub>soipt</sub>	1.00	The WAA is dominated by montmorillonitic clayey soils (clay, clay loams, silty clay loams) or soils with high organic (2/1, 2/2, 3/1)
V <sub>connect</sub>	0.75	Wetland plus two or more habitat types (other than forested) or three or more habitat types

**Functional Capacity Index (FCI)**

Temp. Storage of Water (1)

Maintain Plant & Animal Com. (2)

Removal of Elements (3)

**Functional Capacity Units (FCU)**

**Pre-Project**

Calculated FCU (Temp Storage)	<input type="text" value="1.547"/>	<i>physical</i>
Calculated FCU (Maintain Plant & Animal)	<input type="text" value="1.127"/>	<i>biological</i>
Calculated FCU (Removal of Elements)	<input type="text" value="1.497"/>	<i>chemical</i>

**Tree Calculations Data (Wetland 8)**

<b>Tree DBH and Basal Area</b>		
Tree DBH (in.)	Tree Basal Area (Sq.Ft.)	Species
5.0	0.134	Liquidambar styraciflua
12.0	0.779	Triadica sebifera
12.5	0.852	Liquidambar styraciflua
3.8	0.077	Liquidambar styraciflua
3.7	0.075	Ulmus crassifolia
4.2	0.096	Ulmus crassifolia
<b>Total</b>		
41.1	2.012	

<b>Average Basal Area (Sq.Ft. per acre)</b>		
Plot Size (Sq.ft.)	4356	<i>0.10 (30 ft radius plot)</i>
Sq.ft. per acre	43560	
Total Basal Area (Sq.ft.)	2,012	
Total BA per acre	20.122	

<b>Number of Trees (per acre)</b>		
Plot Size (Sq.ft.)	4356	<i>0.10 (30 ft radius plot)</i>
Number of Trees	6	
Total number of trees per acre	60	

**Interim Riverine Forested Hydrogeomorphic Analysis Worksheet**

Project # 8414T-EA

**Wetland 9**

Acreage = 0.07

Variable	Subindex	Notes:
V <sub>dur</sub>	1.00	In an average year 80% of the WAA either floods and/or ponds for at least 14 consecutive days
V <sub>freq</sub>	1.00	Floods or ponds annually 5 out of 5 years (floodway)
V <sub>topo</sub>	0.40	Less than 15% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
V <sub>owd</sub>	0.30	Less than 3 pieces of owd greater than 3" diameter along 100' transect
V <sub>wood</sub>	0.75	67-90% of the WAA is covered with woody vegetation
V <sub>tree</sub>	1.00	At least 60% of the stand is oak, hickory, maple and/or elm. Black willow, cottonwood, tallow and sycamore do not represent more than 5% of the stand
V <sub>rich</sub>	0.40	One to two tree species present
V <sub>basal</sub>	0.40	The average basal area of the WAA is less than 60 square ft/acre
V <sub>density</sub>	0.40	The WAA averages less than 49 trees/acre or greater than 500 trees/acre
V <sub>mid</sub>	0.50	Midstory coverage of the WAA is between 11-30
V <sub>herb</sub>	1.00	Herbaceous cover in the WAA averages between 5-30%
V <sub>deliv</sub>	1.00	Greater than 85% of the area possesses an O or A horizon
V <sub>redox</sub>	0.10	Redox features less than 20%
V <sub>soil</sub>	0.50	The WAA is dominated by loamy (silt loams, very fine sandy loams, loam) or non-montmorillonitic clays
V <sub>connect</sub>	0.75	Wetland plus two or more habitat types (other than forested) or three or more habitat types

**Functional Capacity Index (FCI)**

Temp. Storage of Water (1)

Maintain Plant & Animal Com. (2)

Removal of Elements (3)

**Functional Capacity Units (FCU)**

**Pre-Project**

Calculated FCU (Temp Storage)	<input type="text" value="0.049"/>	physical
Calculated FCU (Maintain Plan & Animal)	<input type="text" value="0.042"/>	biological
Calculated FCU (Removal of Elements)	<input type="text" value="0.053"/>	chemical



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**Interim Riverine Forested Hydrogeomorphic Analysis Worksheet**

Project # 8414T-EA

**Wetland 10**

Acreeage = 0.08

Variable	SubIndex	Notes:
V <sub>dur</sub>	1.00	In an average year 80% of the WAA either floods and/or ponds for at least 14 consecutive days
V <sub>freq</sub>	1.00	Floods or ponds annually 5 out of 5 years (floodway)
V <sub>topo</sub>	0.40	Less than 15% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
V <sub>owd</sub>	0.30	Less than 3 pieces of owd greater than 3" diameter along 100' transect
V <sub>wood</sub>	0.25	11-33% of the WAA is covered with woody vegetation
V <sub>tree</sub>	0.30	Less than 20% of the stand is oak, hickory, cypress, maple and/or elm
V <sub>rich</sub>	0.40	One to two tree species present
V <sub>basal</sub>	0.40	The average basal area of the WAA is less than 60 square ft/acre
V <sub>density</sub>	0.40	The WAA averages less than 49 trees/acre or greater than 500 trees/acre
V <sub>mid</sub>	0.25	Midstory coverage of the WAA is less than 10%
V <sub>herb</sub>	0.30	Herbaceous cover in the WAA is less than 5% or greater than 50%
V <sub>detritus</sub>	0.30	Less than 10% of the area possesses an O or A horizon
V <sub>redox</sub>	1.00	Redox concentrations represent at least 20% of the peison within the top 4 inches of the soil surface, or feature marked due to parent material but conditions are conducive redoximorphic processes from soil
V <sub>soipt</sub>	1.00	The WAA is dominated by montmorillonitic clayey soils (clay, clay loams, silty clay loams) or soils with high organic (2/1, 2/2, 3/1)
V <sub>connect</sub>	0.75	Wetland plus two or more habitat types (other than forested) or three or more habitat types

**Functional Capacity Index (FCI)**

Temp. Storage of Water (1)	0.563
Maintain Plant & Animal Com. (2)	0.404
Removal of Elements (3)	0.667

**Functional Capacity Units (FCU)**

**Pre-Project**

Calculated FCU (Temp Storage)	0.043	physical
Calculated FCU (Maintain Plan & Animal)	0.031	biological
Calculated FCU (Removal of Elements)	0.051	chemical

**Tree Calculations Data (Wetland 10)**

Tree DBH and Basal Area		Species
Tree DBH (in.)	Tree Basal Area (Sq.Ft.)	
4.4	0.106	Triadica sebifera
4.3	0.101	Ulmus alata
3.8	0.079	Ulmus alata
<b>Total</b>		
12.5	0.285	

Average Basal Area (Sq.Ft. per acre)		
Plot Size (Sq.ft.)	4356	0.10 (30 ft radius plot)
Sq.ft. per acre	43560	
Total Basal Area (Sq.ft.)	0.285	
Total BA per acre	2.852	

Number of Trees (per acre)		
Plot Size (Sq.ft.)	4356	0.10 (30 ft radius plot)
Number of Trees	3	
Total number of trees per acre	30	

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**Interim Riverine/Herbaceous Shrub Hydrogeomorphic Analysis Worksheet**  
 Project # 8414T-EA

**Wetland 11**  
**Acreage = 0.008**

Variable	Sub-Index	Notes:
V <sub>dur</sub>	0.75	In average year, 80% of WAA floods for 7 consecutive days.
V <sub>freq</sub>	1.00	WAA floods annually.
V <sub>topo</sub>	0.40	Less than 15% of the WAA is represented by topographic features.
V <sub>wood</sub>	0.10	0-10% of the WAA is covered with woody vegetation.
V <sub>mid</sub>	0.10	Midstory coverage of the WAA less than 1%.
V <sub>herb</sub>	0.25	WAA consists of 1-25% herbaceous coverage.
V <sub>connect</sub>	0.75	Three habitat types (open water, forested, lawn) other than wetland.
V <sub>detritus</sub>	0.30	Less than 10% of the area possesses O or A horizon.
V <sub>redox</sub>	1.00	Redox concentrations >20% of pedon.
V <sub>srpt</sub>	0.10	WAA is dominated by sandy soils.

**Functional Capacity Index (FCI)**

<b>Physical</b>	0.50
<b>Biota</b>	0.37
<b>Chemical</b>	0.51

**Functional Capacity Units (FCU)**

<b>Physical</b>	0.004
<b>Biota</b>	0.003
<b>Chemical</b>	0.004

**Interim Riverine/Herbaceous Shrub Hydrogeomorphic Analysis Worksheet**  
 Project # 8414T-EA

**Wetland 12**  
**Acreage = 0.01**

Variable	Sub-Index	Notes:
V <sub>dur</sub>	0.75	In average year, 80% of WAA floods for 7 consecutive days.
V <sub>freq</sub>	1.00	WAA floods annually.
V <sub>topo</sub>	0.40	Less than 15% of the WAA is represented by topographic features.
V <sub>wood</sub>	0.10	0-10% of the WAA is covered with woody vegetation.
V <sub>mild</sub>	0.10	Midstory coverage of the WAA is equal to or less than 1%.
V <sub>herb</sub>	0.25	WAA consists of 1-25% herbaceous coverage.
V <sub>connect</sub>	0.75	Three habitat types (open water, forested, lawn) other than wetland.
V <sub>detritus</sub>	1.00	Greater than 85% of the area possesses O or A horizon.
V <sub>redox</sub>	1.00	Redox concentrations >20% of pedon.
V <sub>soipt</sub>	1.00	WAA is dominated by clayey soils.

**Functional Capacity Index (FCI)**

Physical	0.50
Biota	0.37
Chemical	0.62

**Functional Capacity Units (FCU)**

Physical	0.00
Biota	0.00
Chemical	0.01

**Interim Riverine Forested Hydrogeomorphic Analysis Worksheet**

Project # 8414T-EA

**Wetland 13**

**Acreage = 0.30**

Variable	Subindex	Notes:
V <sub>dur</sub>	1.00	In an average year 80% of the WAA either floods and/or ponds for at least 14 consecutive days
V <sub>freq</sub>	1.00	Floods or ponds annually 5 out of 5 years (floodway)
V <sub>topo</sub>	0.70	15-30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
V <sub>cwd</sub>	1.00	More than 7 pieces of cwd greater than 3" diameter along 100' transect
V <sub>wood</sub>	0.75	67-90% of the WAA is covered with woody vegetation
V <sub>tree</sub>	1.00	At least 60% of the stand is oak, hickory, maple and/or elm. Black willow, cottonwood, tallow and sycamore do not represent more than 5% of the stand
V <sub>rich</sub>	0.60	Three tree species present
V <sub>basal</sub>	0.40	The average basal area of the WAA is less than 60 square ft/acre
V <sub>density</sub>	0.60	The WAA averages a tree density of 250-500 trees/acre or 50-100 trees/acre
V <sub>mid</sub>	0.25	Midstory coverage of the WAA is less than 10%
V <sub>herb</sub>	0.30	Herbaceous cover in the WAA is less than 5% or greater than 50%
V <sub>detritus</sub>	1.00	Greater than 85% of the area possesses an O or A horizon
V <sub>redox</sub>	1.00	Redox concentrations represent at least 20% of the pedon within the top 4 inches of the soil surface, or feature masked due to parent material but conditions are conducive redoximorphic processes (many mottles)
V <sub>soipt</sub>	1.00	The WAA is dominated by montmorillonitic clayey soils (clay, clay loams, silty clay loams) or soils with high organic (2/1, 2/2, 3/1)
V <sub>connect</sub>	0.75	Wetland plus two or more habitat types (other than forested) or three or more habitat types

**Functional Capacity Index (FCI)**

Temp. Storage of Water (1)

Maintain Plant & Animal Com. (2)

Removal of Elements (3)

**Functional Capacity Units (FCU)**

**Pre-Project**

Calculated FCU (Temp Storage)	<input type="text" value="0.270"/>	<i>physical</i>
Calculated FCU (Maintain Plan & Animal)	<input type="text" value="0.206"/>	<i>biological</i>
Calculated FCU (Removal of Elements)	<input type="text" value="0.273"/>	<i>chemical</i>

**Tree Calculations Data (Wetland 13)**

<b>Tree DBH and Basal Area</b>		
Tree DBH (in.)	Tree Basal Area (Sq.Ft.)	Species
3.1	0.052	Celtis occidentalis
3.5	0.067	Ulmus crassifolia
4.1	0.092	Ulmus crassifolia
7.5	0.307	Ulmus crassifolia
3.5	0.067	Ulmus crassifolia
11.7	0.747	Ulmus crassifolia
12.8	0.894	Triadica sebifera
<b>Total</b>		
46.2	2.225	

<b>Average Basal Area (Sq.Ft. per acre)</b>		
Plot Size (Sq.ft.)	4356	<i>0.10 (30 ft radius plot)</i>
Sq.ft. per acre	43560	
Total Basal Area (Sq.ft.)	2.225	
Total BA per acre	22.247	

<b>Number of Trees (per acre)</b>		
Plot Size (Sq.ft.)	4356	<i>0.10 (30 ft radius plot)</i>
Number of Trees	7	
Total number of trees per acre	70	

**Interim Riverine/Herbaceous Shrub Hydrogeomorphic Analysis Worksheet**  
 Project # 8414T-EA

**Wetland 14**  
**Acreage = 0.02**

Variable	Sub-Index	Notes:
V <sub>dur</sub>	1.00	In average year, 80% of WAA floods for 14 consecutive days.
V <sub>freq</sub>	1.00	WAA floods annually.
V <sub>topo</sub>	0.40	Less than 15% of the WAA is represented by topographic features.
V <sub>wood</sub>	0.25	11-33% of the WAA is covered with woody vegetation.
V <sub>mid</sub>	0.25	Midstory coverage of the WAA is 1-25%.
V <sub>herb</sub>	0.25	WAA consists of 1-25% herbaceous coverage.
V <sub>connect</sub>	0.75	Three habitat types (open water, forested, lawn) other than wetland.
V <sub>detritus</sub>	1.00	Greater than 85% of the area possesses O or A horizon.
V <sub>redox</sub>	1.00	Redox concentrations >20% of pedon.
V <sub>sorpt</sub>	1.00	WAA is dominated by clayey soils.

**Functional Capacity Index (FCI)**

Physical	0.57
Biota	0.42
Chemical	0.71

**Functional Capacity Units (FCU)**

Physical	0.01
Biota	0.01
Chemical	0.01

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**Interim Riverine/Herbaceous Shrub Hydrogeomorphic Analysis Worksheet**  
 Project # 8414T-EA

**Wetland 15**  
**Acreage = 0.02**

Variable	Sub-Index	Notes:
V <sub>dur</sub>	0.75	In average year, 80% of WAA floods for 7 consecutive days.
V <sub>freq</sub>	1.00	WAA floods annually.
V <sub>topo</sub>	0.10	Smooth, flat, or very gentle undulating; little or no topographic features
V <sub>wood</sub>	0.10	0-10% of the WAA is covered with woody vegetation.
V <sub>mid</sub>	0.10	Midstory coverage of the WAA is 0-1%.
V <sub>herb</sub>	1.00	WAA consists of >75% herbaceous coverage.
V <sub>connect</sub>	0.75	Three habitat types (open water, forested, lawn) other than wetland.
V <sub>detritus</sub>	0.30	Less than 10% of the area possesses O or A horizon.
V <sub>redox</sub>	1.00	Redox concentrations >20% of pedon.
V <sub>sorpt</sub>	1.00	WAA is dominated by clayey soils.

**Functional Capacity Index (FCI)**

Physical	0.53
Biota	0.62
Chemical	0.60

**Functional Capacity Units (FCU)**

Physical	0.01
Biota	0.01
Chemical	0.01

**Interim Riverine/Herbaceous Shrub Hydrogeomorphic Analysis Worksheet**  
 Project # 8414T-EA

**Wetland 16**  
**Acreage = 0.007**

Variable	Sub-Index	Notes:
V <sub>dur</sub>	0.75	In average year, 80% of WAA floods for 7 consecutive days.
V <sub>freq</sub>	1.00	WAA floods annually.
V <sub>topo</sub>	0.40	Less than 15% of the WAA is represented by topographic features
V <sub>wood</sub>	0.10	0-10% of the WAA is covered with woody vegetation.
V <sub>mid</sub>	0.10	Midstory coverage of the WAA is 0-1%.
V <sub>herb</sub>	0.50	WAA consists of 25-50% herbaceous coverage.
V <sub>connect</sub>	0.75	Three habitat types (open water, forested, lawn) other than wetland.
V <sub>detritus</sub>	0.30	Less than 10% of the area possesses O or A horizon.
V <sub>redox</sub>	1.00	Redox concentrations >20% of pedon.
V <sub>soil</sub>	0.50	WAA is dominated by loamy or non-montmorillonitic clay soils.

**Functional Capacity Index (FCI)**

Physical	0.55
Biota	0.45
Chemical	0.56

**Functional Capacity Units (FCU)**

Physical	0.004
Biota	0.003
Chemical	0.004

### Interim Riverine/Herbaceous Shrub Hydrogeomorphic Analysis Worksheet

Project # 8414T-EA

#### Wetland 17

Acreage = 0.01

Variable	Sub-Index	Notes:
$V_{dur}$	1.00	In average year, 80% of WAA floods for 14 consecutive days.
$V_{freq}$	1.00	WAA floods annually.
$V_{topo}$	0.40	Less than 15% of WAA is represented by topographic features.
$V_{wood}$	0.25	WAA consists of 11-33% woody vegetation.
$V_{mid}$	0.25	WAA consists of 1-25% midstory coverage.
$V_{herb}$	0.25	WAA consists of 1-25% herbaceous coverage.
$V_{connect}$	0.75	Three habitat types (open water, forested, lawn) other than wetland.
$V_{detritus}$	1.00	Greater than 85% of the area possesses O or A horizon.
$V_{redox}$	1.00	Redox concentrations >20% of pedon.
$V_{sorpt}$	1.00	WAA is dominated by clayey soils.

#### Functional Capacity Index (FCI)

<b>Physical</b>	0.57
<b>Biota</b>	0.42
<b>Chemical</b>	0.71

#### Functional Capacity Units (FCU)

<b>Physical</b>	0.01
<b>Biota</b>	0.00
<b>Chemical</b>	0.01

**Interim Riverine Forested Hydrogeomorphic Analysis Worksheet**

Project # 8414T-EA

**Wetland 1**

(Proposed Detention Pond Tract)

Acreage = 0.45

Variable	Subindex	Notes
V <sub>dur</sub>	0.25	In an average year 25-50% of the WAA either floods and/or ponds for at least 7 consecutive days
V <sub>freq</sub>	0.25	Floods or ponds less than 2 out of 5 years (100-500 yr floodplain grey w/out elevations)
V <sub>topo</sub>	0.70	15-30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
V <sub>cwd</sub>	0.50	From 3-7 pieces of cwd greater than 3" diameter along 100' transect
V <sub>wood</sub>	1.00	Greater than 90% of the WAA is covered with woody vegetation
V <sub>tree</sub>	1.00	At least 60% of the stand is oak, hickory, maple and/or elm. Black willow, cottonwood, tallow and sycamore do not represent more than 5% of the stand
V <sub>rich</sub>	0.80	Four tree species present
V <sub>basal</sub>	0.60	The average basal area of the WAA is between 60-80 square ft/acre
V <sub>density</sub>	1.00	The WAA averages a tree density of 100-250 trees/acre
V <sub>mid</sub>	0.50	Midstory coverage of the WAA is between 11-30
V <sub>herb</sub>	0.30	Herbaceous cover in the WAA is less than 5% or greater than 50%
V <sub>delitkus</sub>	0.30	Less than 10% of the area possesses an O or A horizon
V <sub>redox</sub>	1.00	Redox concentrations represent at least 20% of the pedon within the top 4 inches of the soil surface, or feature masked due to parent material but conditions are conducive redoximorphic processes (many mottles)
V <sub>soipt</sub>	0.10	The WAA is dominated by sandy soils (sands, loamy fine sands, loamy sands)
V <sub>connect</sub>	0.75	Wetland plus two or more habitat types (other than forested) or three or more habitat types

**Functional Capacity Index (FCI)**

Temp. Storage of Water (1)

Maintain Plant & Animal Com. (2)

Removal of Elements (3)

**Functional Capacity Units (FCU)**

**Pre-Project**

Calculated FCU (Temp Storage)	<input type="text" value="0.193"/>	physical
Calculated FCU (Maintain Plan & Animal)	<input type="text" value="0.319"/>	biological
Calculated FCU (Removal of Elements)	<input type="text" value="0.243"/>	chemical

**Tree Calculations Data (Wetland 1)**

**Proposed Det. Pond Tract**

Tree DBH and Basal Area		Species
Tree DBH (in.)	Tree Basal Area (Sq.Ft.)	
14.3	1.115	Quercus phellos
13.1	0.936	Quercus phellos
3.3	0.059	Quercus phellos
6.0	0.196	Quercus phellos
5.3	0.153	Quercus phellos
4.5	0.110	Quercus phellos
9.5	0.492	Liquidambar styraciflua
8.4	0.385	Liquidambar styraciflua
5.6	0.171	Liquidambar styraciflua
7.8	0.332	Liquidambar styraciflua
12.9	0.908	Triadica sebifera
7.9	0.340	Triadica sebifera
8.2	0.367	Triadica sebifera
8.9	0.432	Triadica sebifera
<b>Total</b>		
115.7	5.997	

Average Basal Area (Sq.Ft. per acre)	
Plot Size (Sq.ft.)	4356
Sq.ft. per acre	43560
Total Basal Area (Sq.ft.)	5.997
Total BA per acre	59.973

*0.10 (30 ft radius plot)*

Number of Trees (per acre)	
Plot Size (Sq.ft.)	4356
Number of Trees	14
Total number of trees per acre	140

*0.10 (30 ft radius plot)*

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Impacts to Detention Pond Wetland 2 (PFO)								
Pre-Construction Conditions					Post-Construction Conditions			
Acres	0.41				Acres	0.41		
Hectares	0.17				Hectares	0.17		
<b>Variable</b>	<b>Subindex</b>				<b>Variable</b>	<b>Subindex</b>		
Vdur	0.25				Vdur	0.00		
Vfreq	0.25				Vfreq	0.00		
Vtopo	0.70				Vtopo	0.00		
Vcwd	0.50				Vcwd	0.00		
Vwood	1.00				Vwood	0.00		
Vtree	1.00				Vtree	0.00		
Vrich	0.80				Vrich	0.00		
Vbasal	0.60				Vbasal	0.00		
Vdensity	1.00				Vdensity	0.00		
Vmid	0.50				Vmid	0.00		
Vherb	0.30				Vherb	0.00		
Vdetritus	0.30				Vdetritus	0.00		
Vredox	1.00				Vredox	0.00		
Vsorpt	0.10				Vsorpt	0.00		
Vconnect	0.75				Vconnect	0.00		
<b>Function Type</b>	<b>FCI</b>	<b>FCU</b>			<b>Function Type</b>	<b>FCI</b>	<b>FCU</b>	
Physical Function	0.428	0.177			Physical Function	0.00	0.00	
Biological Function	0.708	0.293			Biological Function	0.00	0.00	
Chemical Function	0.540	0.223			Chemical Function	0.00	0.00	

Function Type	Detention Pond Wetland 2 Impact FCU
Physical Function	-0.18
Biological Function	-0.29
Chemical Function	-0.22

Impacts to Detention Pond Wetland 3 (PFO)					
Pre-Construction Conditions			Post-Construction Conditions		
Acres		0.88	Acres		0.88
Hectares		0.36	Hectares		0.36
Variable	Subindex		Variable	Subindex	
Vdur	0.25		Vdur	0.00	
Vfreq	0.25		Vfreq	0.00	
Vtopo	0.70		Vtopo	0.00	
Vcwd	0.50		Vcwd	0.00	
Vwood	1.00		Vwood	0.00	
Vtree	1.00		Vtree	0.00	
Vrich	0.80		Vrich	0.00	
Vbasal	0.60		Vbasal	0.00	
Vdensity	1.00		Vdensity	0.00	
Vmid	0.50		Vmid	0.00	
Vherb	0.30		Vherb	0.00	
Vdetritus	0.30		Vdetritus	0.00	
Vredox	1.00		Vredox	0.00	
Vsorpt	0.10		Vsorpt	0.00	
Vconnect	0.75		Vconnect	0.00	
Function Type	FCI	FCU	Function Type	FCI	FCU
Physical Function	0.428	0.379	Physical Function	0.00	0.00
Biological Function	0.708	0.626	Biological Function	0.00	0.00
Chemical Function	0.540	0.477	Chemical Function	0.00	0.00

Function Type	Detention Pond Wetland 3 Impact FCU
Physical Function	-0.38
Biological Function	-0.63
Chemical Function	-0.48

### iHGM Calculations

Impacts to Wetland A (PFO)								
Pre-Construction Conditions					Post-Construction Conditions			
Acres	1.410				Acres	1.41		
Hectares	0.57				Hectares	0.57		
Variable	Subindex				Variable	Subindex		
Vdur	0.25				Vdur	0.00		
Vfreq	0.25				Vfreq	0.00		
Vtopo	0.70				Vtopo	0.00		
Vcwd	0.50				Vcwd	0.00		
Vwood	1.00				Vwood	0.00		
Vtree	1.00				Vtree	0.00		
Vrich	0.80				Vrich	0.00		
Vbasal	0.60				Vbasal	0.00		
Vdensity	1.00				Vdensity	0.00		
Vmid	0.50				Vmid	0.00		
Vherb	0.30				Vherb	0.00		
Vdetritus	0.30				Vdetritus	0.00		
Vredox	1.00				Vredox	0.00		
Vsorpt	0.10				Vsorpt	0.00		
Vconnect	0.75				Vconnect	0.00		
Function Type	FCI	FCU			Function Type	FCI	FCU	
Physical Function	0.428	0.604			Physical Function	0.00	0.00	
Biological Function	0.708	0.999			Biological Function	0.00	0.00	
Chemical Function	0.540	0.761			Chemical Function	0.00	0.00	

Function Type	Wetland A Impact FCU
Physical Function	-0.60
Biological Function	-1.00
Chemical Function	-0.76

Impacts to Wetland B (PFO)					
<b>Pre-Construction Conditions</b>			<b>Post-Construction Conditions</b>		
Acres	0.32		Acres	0.32	
Hectares	0.13		Hectares	0.13	
<b>Variable</b>	<b>Subindex</b>		<b>Variable</b>	<b>Subindex</b>	
Vdur	0.25		Vdur	0.00	
Vfreq	0.25		Vfreq	0.00	
Vtopo	0.70		Vtopo	0.00	
Vcwd	0.50		Vcwd	0.00	
Vwood	1.00		Vwood	0.00	
Vtree	1.00		Vtree	0.00	
Vrich	0.80		Vrich	0.00	
Vbasal	0.60		Vbasal	0.00	
Vdensity	1.00		Vdensity	0.00	
Vmid	0.50		Vmid	0.00	
Vherb	0.30		Vherb	0.00	
Vdetritus	0.30		Vdetritus	0.00	
Vredox	1.00		Vredox	0.00	
Vsorpt	0.10		Vsorpt	0.00	
Vconnect	0.75		Vconnect	0.00	
<b>Function Type</b>	<b>FCI</b>	<b>FCU</b>	<b>Function Type</b>	<b>FCI</b>	<b>FCU</b>
Physical Function	0.428	0.137	Physical Function	0.00	0.00
Biological Function	0.708	0.227	Biological Function	0.00	0.00
Chemical Function	0.540	0.173	Chemical Function	0.00	0.00

Function Type	Wetland B Impact FCU
Physical Function	-0.14
Biological Function	-0.23
Chemical Function	-0.17

Impacts to Wetland C (PFO)					
<b>Pre-Construction Conditions</b>			<b>Post-Construction Conditions</b>		
Acres		1.05	Acres		1.05
Hectares		0.43	Hectares		0.43
<b>Variable</b>	<b>Subindex</b>		<b>Variable</b>	<b>Subindex</b>	
Vdur	0.25		Vdur	0.00	
Vfreq	0.25		Vfreq	0.00	
Vtopo	0.70		Vtopo	0.00	
Vcwd	0.50		Vcwd	0.00	
Vwood	1.00		Vwood	0.00	
Vtree	1.00		Vtree	0.00	
Vrich	0.80		Vrich	0.00	
Vbasal	0.60		Vbasal	0.00	
Vdensity	1.00		Vdensity	0.00	
Vmid	0.50		Vmid	0.00	
Vherb	0.30		Vherb	0.00	
Vdetritus	0.30		Vdetritus	0.00	
Vredox	1.00		Vredox	0.00	
Vsorpt	0.10		Vsorpt	0.00	
Vconnect	0.75		Vconnect	0.00	
<b>Function Type</b>	<b>FCI</b>	<b>FCU</b>	<b>Function Type</b>	<b>FCI</b>	<b>FCU</b>
Physical Function	0.428	0.450	Physical Function	0.00	0.00
Biological Function	0.708	0.745	Biological Function	0.00	0.00
Chemical Function	0.540	0.568	Chemical Function	0.00	0.00

Function Type	Wetland C Impact FCU
Physical Function	-0.45
Biological Function	-0.75
Chemical Function	-0.57



**Attachment 3**

**Level 1 Stream Assessment Data Forms**



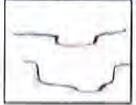
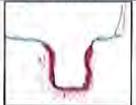
## Stream Assessment Summary Form (Form 2)

### Galveston District Stream Condition Assessment SOP

<b>Project #</b>	<b>Applicant</b>	<b>Date</b>
	Texas Department of Transportation - Beaumont District	Dec-18
<b>Evaluators</b>		<b>HUC</b>
J. Prescott, A. Greuter, E. Donato		1204103.00
		<b>Locality</b>
		Liberty/Montgomery Counties

<b>Stream Name</b>	<b>Transect ID</b>	<b>Condition Index Before (RCI)</b>	<b>Condition Index After (RCI)</b>
Unnamed Tributary 2	1	3.11	0.00
Unnamed Tributary 3	1	3.05	2.75
Unnamed Tributary 3	2	3.55	3.55
Unnamed Tributary 3	3	3.86	3.86
Unnamed Tributary 4	1	3.06	2.50
Unnamed Tributary 5	1	2.55	2.50
Unnamed Tributary 6A	1	2.69	1.75
Unnamed Tributary 7	1	3.00	2.75
East Fork San Jacinto River - Downstream (EFD)	1	4.13	4.13
East Fork San Jacinto River - Downstream (EFD)	2	2.53	2.50
East Fork San Jacinto River - Downstream (EFD)	3	4.00	3.75
East Fork San Jacinto River - Midstream (EFM)	1	4.00	3.75
East Fork San Jacinto River - Midstream (EFM)	2	4.06	3.91
East Fork San Jacinto River - Midstream (EFM)	3	4.13	4.13
East Fork San Jacinto River - Upstream (EFU)	1	4.50	4.12
East Fork San Jacinto River - Upstream (EFU)	2	4.09	2.10
East Fork San Jacinto River - Upstream (EFU)	3	3.57	3.57
<b>Average RCI</b>		<b>3.522</b>	<b>3.036</b>
<b>Impact Factor</b>		<b>Ranges from 2-5 - see report</b>	
<b>Linear Feet of Impact</b>		<b>513</b>	
<b>Compensation Requirement</b>		<b>4,651 Credits</b>	

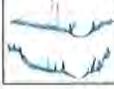
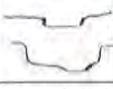
JAN 07 2019

<b>Stream Assessment Data Form for Level 1</b>						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TxDOT	1	1204103	12/17/2014	1	Existing
Name(s) of Evaluator(s)			Stream Name and Type			
T.Love, H. Carter			Unnamed Tributary 2 Intermittent			
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
						
	Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 80-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.	
Score	5	4	3	2	1	2.0
Notes: Intermittent Stream with no pools.						
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal		Marginal	Poor	Severe
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.
Condition Scores	5	High = 4.5	Low = 4	3	2	1
Notes: Right bank has optimal native woody species that represent greater than 60% of the coverage and the right bank includes wetlands. The left bank includes both optimal native woody species and an area that is within maintained ROW.						
Right Bank	% Riparian Area >	100%				100%
	Score >	5				
Left Bank	% Riparian Area >	62%	38%			100%
	Score >	5	2			
CI = (5um % RA * Scores*0.01)/2						
					Rt Bank CI >	5.00
					Lt Bank CI >	3.86
						4.43
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	1.00
Notes: This stream has not been assessed by the TCEQ and is an intermittent stream with no pools.						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
	TxDOT	Liberty Co.	R3	1204103	12/17/2014	1	Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
<b>SCORE</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>AV</b> <b>5.00</b>	
<b>Notes:</b> No channeling or alterations are present; therefore, the channel alteration is optimal.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
<b>THE CONDITION INDEX (CI) &gt;&gt;</b>							<b>3.11</b>

INSERT PHOTOS:

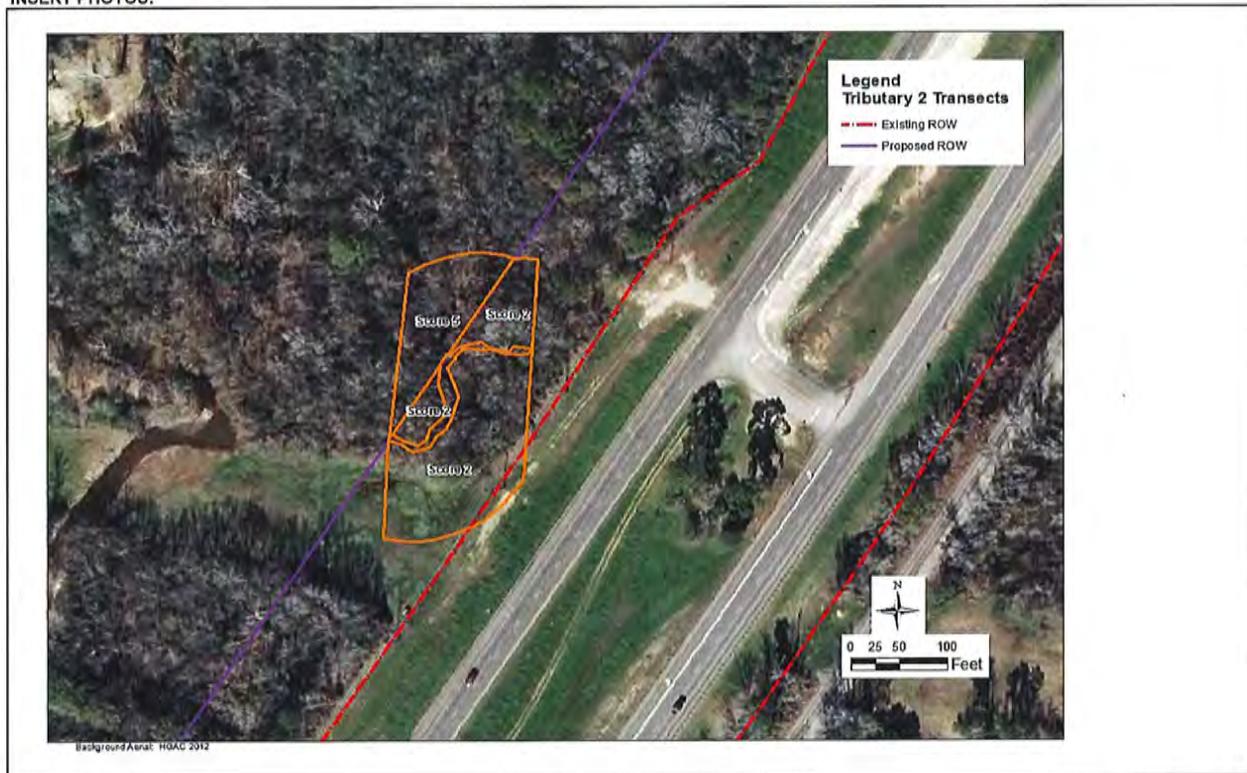


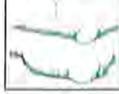
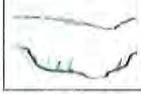
Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TxDOT	1	1204103	12/17/2014	1	Post-Project
Name(s) of Evaluator(s)			Stream Name and Type			
T.Love, H. Carter			Unnamed Tributary 2 Intermittent.			
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 60-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	0.0
Notes: The stream will be removed or placed in culverts.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	<p>Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.</p> <p>Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.</p>	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
Notes: The stream will be removed or placed in culverts.						
Right Bank	% Riparian Area > 100%					100%
	Score > 0					
Left Bank	% Riparian Area > 100%					100%
	Score > 0					
CI = (Sum % RA * Scores)/0.01/2						
					Rt Bank CI > 0.00	BV
					Lt Bank CI > 0.00	0.00
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	0.00
Score	5	4	3	2	1	0.00
Notes: This stream has not been assessed by the TCEQ and is an Intermittent stream.						

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Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
	TxDOT	Liberty Co.	R3	1204103	12/17/2014	1	Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
	<b>SCORE</b>	5	4	3	2	1	<b>AV</b> 0.00
<b>Notes:</b> This stream has not been assessed TCEQ and is an intermittent stream.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
<b>THE CONDITION INDEX (CI) &gt;&gt;</b>							0.00

INSERT PHOTOS:



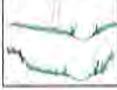
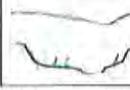
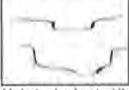
Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT		12040103	3/21/2018	1	Downstream - Existing
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		Unnamed Tributary 3 - Intermittent				
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-60% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	3.0
Notes: Channel is widened with indicators of instability.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
Condition Scores	5	High = 4.5 Low = 4	3	2	1	
Notes: Native woody community ranges in some areas between <30% coverage and greater than 50% coverage in other areas. Almost no maintenance or grazing activities.						
Right Bank	% Riparian Area >	60%	40%			100%
	Score >	4	2			
Left Bank	% Riparian Area >	60%	40%			100%
	Score >	4	2			
						CI= (Sum % RA * Scores*0.01)/2
						Rt Bank CI > 3.20
						Lt Bank CI > 3.20
						BV 3.20
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	2.00
Notes: This stream has not been assessed by the TCEQ and is an intermittent stream with perennial pools.						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Downstream
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
<b>SCORE</b>	5	4	3	2	1	AV <b>4.00</b>	
<b>Notes:</b> Evidence of past alterations and recovery.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
						THE CONDITION INDEX (CI) >>	<b>3.05</b>

INSERT PHOTOS:



JAN 07 2019

<b>Stream Assessment Data Form for Level 1</b>						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT		12040103	3/21/2018	1	Downstream Post-Project
Name(s) of Evaluator(s)			Stream Name and Type			
J. Prescott, A. Greuter			Unnamed Tributary 3 - Intermittent			
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	 Channel is over-widened or incised with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the pooling depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 90-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in braided channels. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the pooling depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 90-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in braided channels. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	
<b>Score</b>	5	4	3	2	1	CV 3.0
Notes: No impacts to the visual channel condition are anticipated as a result of construction; any temporary impacts to the streams will be restored to pre-construction contours after construction.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 80% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
<b>Condition Scores</b>	5	High = 4.5 Low = 4	3	2	1	
Notes: ROW will be cleared as a result of construction; therefore, the riparian buffer will be dominated by maintained ROW under the US-59 bridge.						
Right Bank	% Riparian Area:	100%				
	Score >	2				
						CI# (Sum % RA * Scores*0.01)/2
Left Bank	% Riparian Area:	100%			100%	Rt Bank CI > 2.00 Lt Bank CI > 2.00
	Score >	2				BV 2.00
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
<b>Score</b>	5	4	3	2	1	UV 2.00
Notes: This stream has not been assessed by the TCEQ and is an Intermittent stream with perennial pools. No change in aquatic use for the stream will occur as a result of this project.						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Downstream Post-Project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
<b>SCORE</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>AV</b>	
							<b>4.00</b>
<b>Notes:</b> Evidence of past alterations and recovery.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
							<b>THE CONDITION INDEX (CI) &gt;&gt;</b>
							<b>2.75</b>

INSERT PHOTOS:

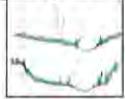
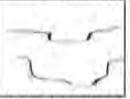
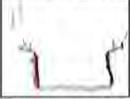


Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT		12040103	3/21/2018	2	Midstream - Existing
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		Unnamed Tributary 3 - Intermittent				
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	
	Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 80-90% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-60% of the Transect.	Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.	
Score	5	4	3	2	1	CV 3.0
Notes: Channel is slightly incised and denotes indicators of instability.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawn, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.
Condition Scores	5	High = 4,5 Low = 4	3	2	1	
Notes: Wetlands likely within the surrounding riparian buffer though not all species are native.						
Right Bank	% Riparian Area > Score >	80% 4.5	20% 3			100% CI = (Sum % RA * Scores)/2
Left Bank	% Riparian Area > Score >	80% 4.5	20% 3			100% Rt Bank CI > 4.20 Lt Bank CI > 4.20
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	UV 2.00
Notes: This stream has not been assessed by the TCEQ and is an intermittent stream; though, lidar suggests perennial						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	2	Midstream
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
<b>SCORE</b>	5	4	3	2	1	<b>AV</b> 5.00	
<b>Notes:</b> No man-made channel alterations along this reach. Pooling occurs when low surface runoff due to intermittent nature.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
						THE CONDITION INDEX (CI) >>	3.55

INSERT PHOTOS:



<b>Stream Assessment Data Form for Level 1</b>											
U.S. Army Corps of Engineers Galveston District											
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description					
	TXDOT		12040103	3/21/2018	2	Midstream - Post-project					
Name(s) of Evaluator(s)			Stream Name and Type								
J. Prescott, A. Greuter			Unnamed Tributary 3 - Intermittent								
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).											
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	Score					
											
	Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient, sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-80% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 50-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the stream bed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or rills are present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in braided channels. The stream does not have access to an active floodplain.	5	4	3	2	1	3.0
Notes: No impacts to the visual channel condition are anticipated as a result of construction; any temporary impacts to the streams will be restored to pre-construction contours after construction.											
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.											
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores					
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.		The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	5	High = 4.5 Low = 4	3	2
Notes: Wetlands likely within the surrounding riparian buffer though not all species are native.											
Right Bank	% Riparian Area > Score >	80% 4.5	20% 3			100%					
Left Bank	% Riparian Area > Score >	80% 4.5	20% 3			100%	CI= (Sum % RA * Scores*0.01)/2	Rt Bank CI > 4.20	Lt Bank CI > 4.20	BV 4.20	
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.											
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	Score					
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.		5	4	3	2	1
Notes: This stream has not been assessed by the TCEQ and is an intermittent stream; though, lidar suggests perennial											

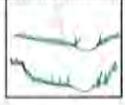
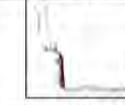
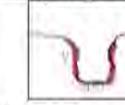
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### Stream Impact Assessment Form Page 2

Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	2	Midstream - Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
<b>SCORE</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>AV</b>	<b>5.00</b>
<b>Notes:</b> No man-made channel alterations along this reach. Pooling occurs when low surface runoff due to intermittent nature.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
<b>THE CONDITION INDEX (CI) &gt;&gt;</b>							<b>3.55</b>

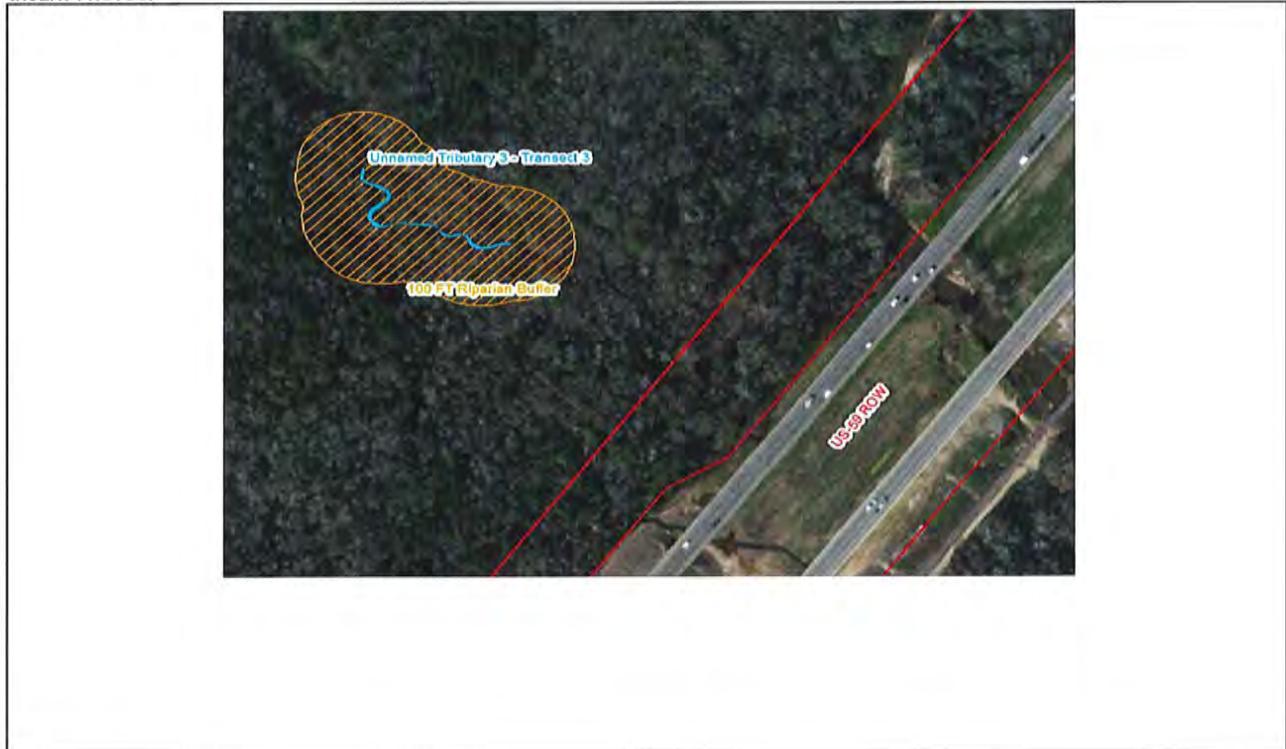
INSERT PHOTOS:

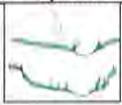
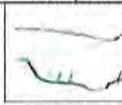
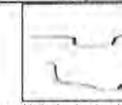
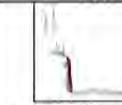
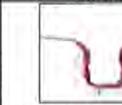


Stream Assessment Data Form for Level 1							
U.S. Army Corps of Engineers Galveston District							
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description	
	TXDOT		12040103	3/21/2018	3	Upstream - Existing	
Name(s) of Evaluator(s)			Stream Name and Type				
J. Prescott, A. Greuter			Unnamed Tributary 3 - Intermittent				
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).							
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe		
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 00-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	 Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 60-80% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or row banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.		
Score	5	4	3	2	1		CV 4.0
Notes: Channel has access to bankfull benches with developed floodplains. No bulkhead or riprap.							
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.							
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe		
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with <i>NO</i> wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with <i>NO</i> wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
Condition Scores	5	High = 4,5 Low = 4	3	2	1		
Notes: Wetlands likely within the surrounding riparian buffer though not all species are native.							
Right Bank	% Riparian Area >	90%	10%				100%
	Score >	4.5	4				
Left Bank	% Riparian Area >	90%	10%				100%
	Score >	4.5	4				
						CI+ (Sum % RA * Scores*0.01)/2	
						Rt Bank CI >	4.45
						Lt Bank CI >	4.45
BV 4.45							
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.							
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe		
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.		
Score	5	4	3	2	1		UV 2.00
Notes: This stream has not been assessed by the TCEQ and is an intermittent stream; though, lidar suggests perennial							

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	3	Upstream
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
<b>SCORE</b>	5	4	3	2	1	AV <b>5.00</b>	
Notes: No man-made channel alterations along this reach. Pooling occurs when low surface runoff due to intermittent nature.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
						<b>THE CONDITION INDEX (CI) &gt;&gt;</b>	<b>3.86</b>

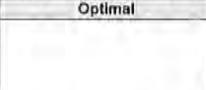
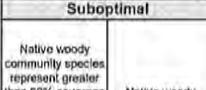
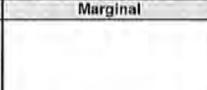
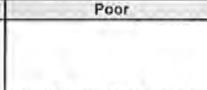
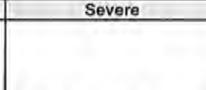
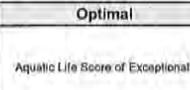
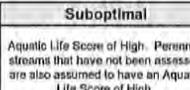
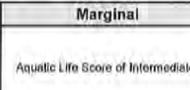
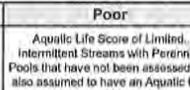
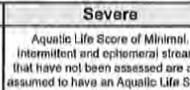
INSERT PHOTOS:



<b>Stream Assessment Data Form for Level 1</b>						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT		12040103	3/21/2018	3	Upstream - Post-project
Name(s) of Evaluator(s)			Stream Name and Type			
J. Prescott, A. Greuter			Unnamed Tributary 3 - Intermittent			
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	Score
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient, sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	 Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 60-80% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.	
	5	4	3	2	1	4.0
Notes: No impacts to the visual channel condition are anticipated as a result of construction; any temporary impacts to the streams will be restored to pre-construction contours after construction.						
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
	5	High = 4.5 Low = 4	3	2	1	
Notes: Wetlands likely within the surrounding riparian buffer though not all species are native.						
Right Bank	% Riparian Area >	90%	10%			100%
	Score >	4.5	4			
Left Bank	% Riparian Area >	90%	10%			100%
	Score >	4.5	4			
						CI= (Sum % RA * Scores*0.01)/2
						Rt Bank CI > 4.46
						Lt Bank CI > 4.46
						BV 4.45
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	Score
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
	5	4	3	2	1	2.00
Notes: This stream has not been assessed by the TCEQ and is an intermittent stream; though, lidar suggests perennial						

<b>Stream Impact Assessment Form Page 2</b>							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	3	Upstream - Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock.							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
	<b>SCORE</b>	5	4	3	2	1	<b>AV</b>
Notes: No man-made channel alterations along this reach. Pooling occurs when low surface runoff due to intermittent nature.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
<b>THE CONDITION INDEX (CI) &gt;&gt;</b>							<b>3.86</b>

INSERT PHOTOS:

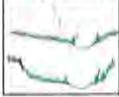
<b>Stream Assessment Data Form for Level 1</b>						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT		12040103	3/21/2018	1	Existing
Name(s) of Evaluator(s)			Stream Name and Type			
J. Prescott, A. Greuter			Unnamed Tributary 4 - Intermittent			
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	
						
	Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-20% of the Transect.	Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-50% of the Transect, vegetative cover or natural rock only found on 40-50% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-50% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in breasted channels. The stream does not have access to an active floodplain.	
Score	5	4	3	2	1	CV 3.0
Notes: Channel is slightly incised in areas and widened in other portions of the transect. This suggests instability of the stream. Existing pilings for US 59 bridge exists within the streambed.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	
						
	Native woody species represent greater than 80% coverage with NO wetlands present within the buffer OR native woody community species represent 30-50% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent greater than 80% coverage with NO wetlands present within the buffer OR native woody community species represent 30-80% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	This buffer is dominated by one or more of the following: lawn, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
Condition Scores	5	High = 4.5 Low = 4	3	2	1	
Notes: small portion of maintained ROW under existing bridge but mostly native woody community with greater than 80% cover.						
Right Bank	% Riparian Area >	10%	90%			100%
	Score >	2	4.5			
Left Bank	% Riparian Area >	10%	90%			100%
	Score >	2	4.5			
						CI = (Sum % RA * Scores*0.01)/2
						Rt Bank CI > 4.25 Lt Bank CI > 4.25
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	
						
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	UV 1.00
Notes: This stream has not been assessed by the TCEQ and is an intermittent stream						

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Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV	4.00
Notes: Impacted by pilings of US-59 bridge.							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							3.06

INSERT PHOTOS:



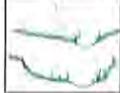
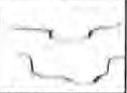
Stream Assessment Data Form for Level 1							
U.S. Army Corps of Engineers Galveston District							
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description	
	TXDOT		12040103	3/21/2018	1	Post-project	
Name(s) of Evaluator(s)				Stream Name and Type			
J. Prescott, A. Greuter				Unnamed Tributary 4 - Intermittent			
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).							
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe		
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-20% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of unformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in braided channels. The stream does not have access to an active floodplain.</p>		
Score	5	4	3	2	1		CV 3.0
Notes: No impacts to the visual channel condition are anticipated as a result of construction; any temporary impacts to the streams will be restored to pre-construction contours after construction.							
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.							
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe		
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
Condition Scores	5	High = 4.5 Low = 4	3	2	1		
Notes: ROW will be cleared as a result of construction; therefore, the riparian buffer will be dominated by maintained ROW under the US-59 bridge.							
Right Bank	% Riparian Area >	100%				100%	
	Score >	2					
Left Bank	% Riparian Area >	100%				100%	CI = (Sum % RA * Scores*0.01)/2
	Score >	2				Rt Bank CI >	2.00
						Lt Bank CI >	2.00
							BV 2.00
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.							
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe		
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.		
Score	5	4	3	2	1		UV 1.00
Notes: This stream has not been assessed by the TCEQ and is an intermittent stream							

JAN 07 2019

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
	<b>SCORE</b>	5	4	3	2	1	AV 4.00
Notes: Impacted by pilings of US-59 bridge.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
						THE CONDITION INDEX (CI) >>	2.50

INSERT PHOTOS:

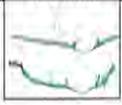
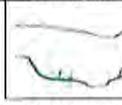
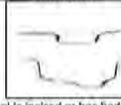
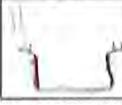


<b>Stream Assessment Data Form for Level 1</b>							
U.S. Army Corps of Engineers Galveston District							
<b>File Number</b>	<b>Applicant</b>	<b>Stahler Stream Order</b>	<b>8 Digit HUC</b>	<b>Date</b>	<b>Transect #</b>	<b>Transect Description</b>	
	TXDOT		12040103	3/21/2018	1	Existing	
<b>Name(s) of Evaluator(s)</b>				<b>Stream Name and Type</b>			
J. Prescott, A. Greuter				Unnamed Tributary 5 - Intermittent			
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).							
<b>Visual Channel Condition Parameter</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
							
	Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	Channel is incised or has had its course widened. Indicators of instability include the presence of rotational scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 60-80% of the Transect.	Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in breached channels. The stream does not have access to an active floodplain.		
<b>Score</b>	5	4	3	2	1	CV	
Notes: Riffle & Pool sequencing with substantial sediment deposition.							
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.							
<b>Riparian Buffers</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
<b>Condition Scores</b>	5	High = 4.5 Low = 4	3	2	1		
Notes: Under US-59 bridge for a portion of the stream, therefore vegetation is more maintained (no tree cover).							
<b>Right Bank</b>	% Riparian Area >	80%	20%			100%	
	Score >	2	3				
<b>Left Bank</b>	% Riparian Area >	80%	20%			100%	
	Score >	2	3				
						CI = (Sum % RA * Scores*0.01)/2	
						RT Bank CI >	2.20
						Lt Bank CI >	2.20
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.							
<b>AQUATIC USE</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.		
<b>Score</b>	5	4	3	2	1	UV	
Notes: Intermediate Stream unclassified by TCEQ; therefore, 2							

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1		
							AV
							4.00
Notes: Only a portion of the stream is affected by the US-59 bridge ramp (a portion of the left bank is concreted/filled for the bridge ramp skirt)							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
							THE CONDITION INDEX (CI) >>
							2.55

INSERT PHOTOS:

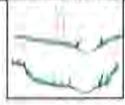


Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT		12040103	3/21/2018	1	Post-project
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		Unnamed Tributary 5 - Intermittent				
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	Score
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-60% of the Transect.	 Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 50-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.	
	5	4	3	2	1	2.0
Notes: Riffle & Pool sequencing with substantial sediment deposition.						
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
	5	High = 4.5 Low = 4	3	2	1	
Notes: ROW will be completely cleared as a result of construction - therefore, riparian buffer will be maintained under the US 59 bridge.						
Right Bank	% Riparian Area >	100%				100%
	Score >	2				
						CI = (Sum % RA * Scores)/0.01/2
Left Bank	% Riparian Area >	100%				100%
	Score >	2				
						Rt Bank CI > 2.00 BV
						Lt Bank CI > 2.00 2.00
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	Score
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
	5	4	3	2	1	UV 2.00
Notes: Intermediate Stream unclassified by TCEQ; therefore, 2						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
	SCORE	5	4	3	2	1	AV
Notes: Only a portion of the stream is affected by the US-59 bridge ramp (a portion of the left bank is concreted/filled for the bridge ramp skirt)							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							2.50

INSERT PHOTOS:



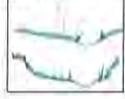
<b>Stream Assessment Data Form for Level 1</b>						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT		12040103	3/21/2018	1	Existing
Name(s) of Evaluator(s)			Stream Name and Type			
J. Prescott, A. Greuler			Unnamed Tributary 6A - Intermittent			
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
<b>Visual Channel Condition Parameter</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>	<b>Score</b>
						
	Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-60% of the Transect.	Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or rill banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.	<b>CV</b>
	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>3.0</b>
Notes: channel is slightly incised and indicates instability. Sediment deposition.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
<b>Riparian Buffers</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>	<b>Condition Scores</b>
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
	<b>5</b>	<b>High = 4,5</b> <b>Low = 4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Notes: Portions are maintained ROW while others are dominated by native woody species with greater than 60% coverage and is surrounded by wetlands.						
<b>Right Bank</b>	% Riparian Area > Score >	<b>26%</b> <b>5</b>	<b>74%</b> <b>2</b>		<b>100%</b>	
<b>Left Bank</b>	% Riparian Area > Score >	<b>91%</b> <b>5</b>	<b>9%</b> <b>2</b>		<b>100%</b>	
						<b>CI = (Sum % RA * Scores)/0.01/2</b>
						<b>Rt Bank CI &gt; 2.78</b>
						<b>Lt Bank CI &gt; 4.73</b>
						<b>BV 3.76</b>
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
<b>AQUATIC USE</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>	<b>Score</b>
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>UV</b> <b>2.00</b>
Notes: This stream has not been assessed by TCEQ and is an intermittent stream with pools.						

<b>Stream Impact Assessment Form Page 2</b>							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>			
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
<b>SCORE</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>		
						<b>AV</b>	<b>2.00</b>
<b>Notes:</b> Impacted by drainage structures. Evidence of past alteration is present.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
						<b>THE CONDITION INDEX (CI) &gt;&gt;</b>	<b>2.69</b>

INSERT PHOTOS:

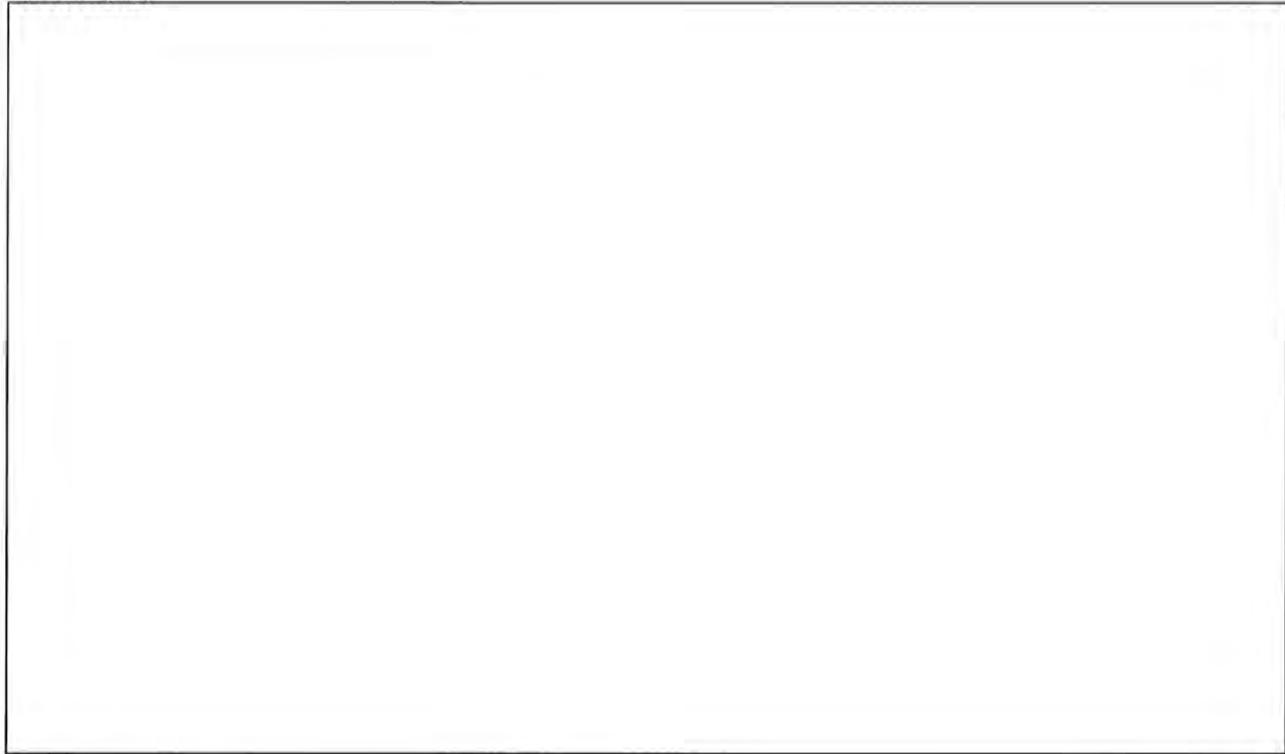


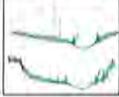
JAN 07 2019

Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT		12040103	3/21/2018	1	Post-project
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		Unnamed Tributary 6A - Intermittent				
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	Score
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock projection only present along 50-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-60% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 60-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.</p>	
	5	4	3	2	1	3.0
Notes: completely impacted with fill material and construction grading						
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	<p>Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-50% coverage with wetlands present. No maintenance or grazing activities.</p> <p>Native woody community species represent between 30-50% coverage with NO wetlands present. No maintenance or grazing activities.</p>	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
	5	High = 4,5 Low = 4	3	2	1	
Notes: Stream will be channelized as a result of construction. ROW will be maintained along US 59 roadway corridor.						
Right Bank	% Riparian Area >	100%				100%
	Score >	2				
Left Bank	% Riparian Area >	100%				100%
	Score >	2				
						CI = (Sum % RA * Scores*0.01)/2
						Rt Bank CI > 2.00
						Lt Bank CI > 2.00
						BV
						2.00
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	Score
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
	5	4	3	2	1	UV
						1.00
Notes: Stream will be channelized as a result of construction.						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
	<b>SCORE</b>	5	4	3	2	1	<b>AV</b>
Notes: completely impacted with fill material and construction grading							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
THE CONDITION INDEX (CI) >>							1.75

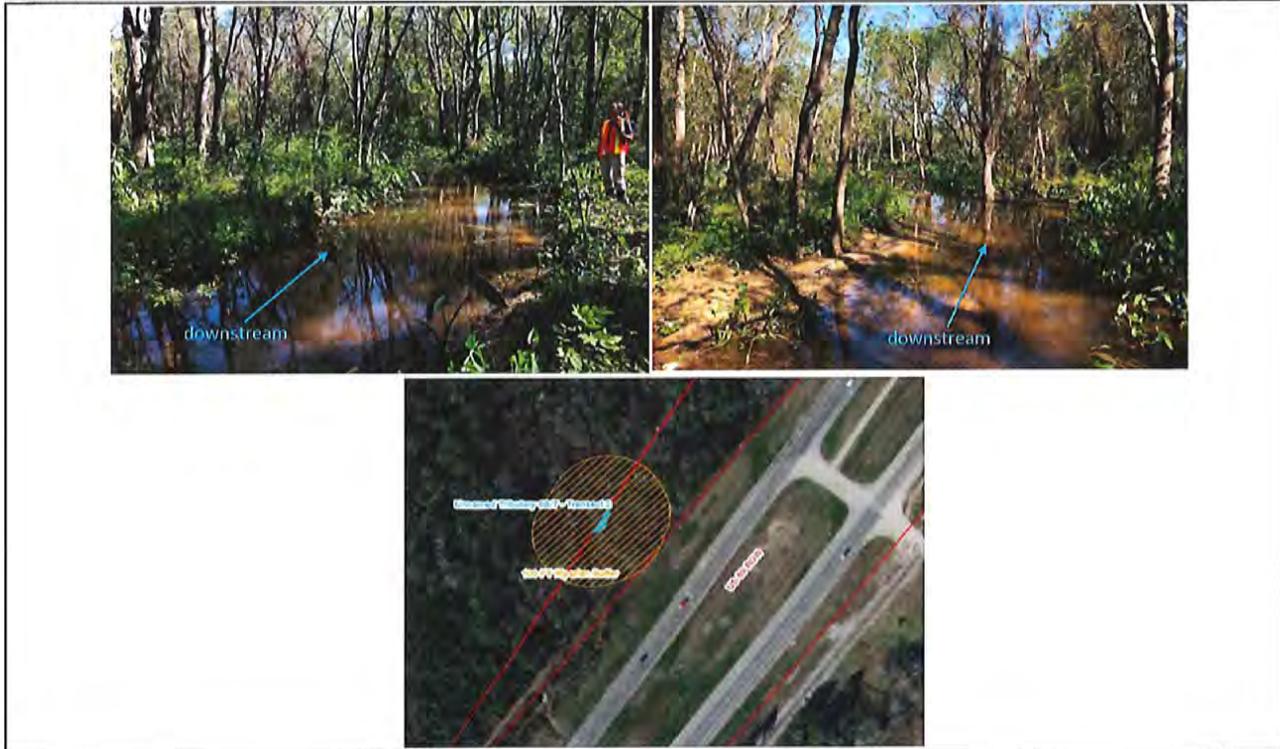
INSERT PHOTOS:

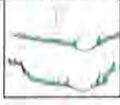
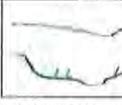


Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT		12040103	3/21/2018	1	Existing
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		Unnamed Tributary 7 - Intermittent				
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-20% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in braided channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	3.0
Notes: channel is widening and has increased sediment deposition.						
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
Condition Scores	5	High = 4.5 Low = 4	3	2	1	
Notes: Mix of native woody community and non-native species. No maintenance activities.						
Right Bank	% Riparian Area >	100%				100%
	Score >	3				
Left Bank	% Riparian Area >	100%				100%
	Score >	3				
						CI = (Sum % RA * Scores)/0.01/2
						Rt Bank CI > 3.00
						Lt Bank CI > 3.00
						BV
						3.00
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	2.00
Notes: This stream has not been assessed by the TCEQ and is an intermittent stream with perennial pools						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable effect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV	4.00
Notes: Ephemeral stream is ponded in some areas; however, the obstructions are not man-made.							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							3.00

INSERT PHOTOS:



Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT		12040103	3/21/2018	1	Post-project
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		Unnamed Tributary 7 - Intermittent				
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches are present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-2% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 60-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in treed channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	3.0
Notes: completely impacted with fill material and construction grading						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	BV
	<p>Native woody species represent greater than 60% of the coverage and wetlands are present.</p>	<p>Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.</p>	<p>Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.</p>	<p>Native woody community represents less than 30% coverage with no maintenance or grazing activities.</p>	<p>The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.</p>	
Condition Scores	5	High = 4.5 Low = 4	3	2	1	2.00
Notes: Stream will be channelized as a result of construction. ROW will be maintained along US 69 roadway corridor.						
Right Bank	% Riparian Area >	100%				100%
	Score >	2				
Left Bank	% Riparian Area >	100%				100%
	Score >	2				
CI = (Sum % RA * Scores)/0.01/2						
	Rt Bank CI >					2.00
	Lt Bank CI >					2.00
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	<p>Aquatic Life Score of Exceptional.</p>	<p>Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.</p>	<p>Aquatic Life Score of Intermediate.</p>	<p>Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.</p>	<p>Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.</p>	
Score	5	4	3	2	1	2.00
Notes: This stream has not been assessed by the TCEQ and is an Intermittent stream with perennial pools. The stream will have the same aquatic use post project.						

JAN 07 2019

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, liveslock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
	<b>SCORE</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>AV</b>
Notes: Ephemeral stream is ponded in some areas; however, the obstructions are not man-made.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
<b>THE CONDITION INDEX (CI) &gt;&gt;</b>							<b>2.75</b>

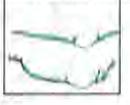
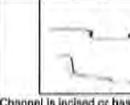
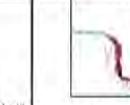
INSERT PHOTOS:

Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT	3	12040103	3/20/2018	1	Downstream - Existing
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott; A. Greuter		East Fork San Jacinto River - Downstream ("EFD")				
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of unformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	4.0
Notes: Stream has access to bankfull benches and developed floodplains. No bulkhead or riprap.						
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	<p>Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.</p> <p>Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.</p>	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
Condition Scores	5	High = 4.5 Low = 4	3	2	1	
Notes: Majority native woody community and wetlands.						
Right Bank	% Riparian Area >	100%				100%
	Score >	4.5				
Left Bank	% Riparian Area >	100%				100%
	Score >	4.5				
						CI= (Sum % RA * Scores*0.01)/2
					Rt Bank CI >	4.50
					Lt Bank CI >	4.50
						BV
						4.50
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	4.00
Notes: Perennial stream.						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/20/2018	1	Downstream - Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV	4.00
Notes: Upstream is impacted directly by US-59 bridge, this section is not directly impacted by man-made alterations.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
						<b>THE CONDITION INDEX (CI) &gt;&gt;</b>	<b>4.13</b>

INSERT PHOTOS:

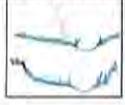
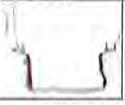


Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT	3	12040103	3/20/2018	1	Downstream Post-project
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott; A. Greuler		East Fork San Jacinto River - Downstream ("EFD")				
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-60% of the Transect.	 Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in breasted channels. The stream does not have access to an active floodplain.	
Score	5	4	3	2	1	4.0
Notes: No impacts to channel condition as a result of the project.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	BV
	Native woody species represent greater than 50% of the coverage and wetlands are present.	Native woody community species represent greater than 80% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
Condition Scores	5	High = 4.5 Low = 4	3	2	1	4.50
Notes: No impacts to the riparian buffer as a result of the project.						
Right Bank	% Riparian Area >	100%				100%
	Score >	4.5				
						CI* (Sum % RA * Scores*0.01)/2
Left Bank	% Riparian Area >	100%				100%
	Score >	4.5				
						Rt Bank CI > 4.50
						Lt Bank CI > 4.50
						4.50
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	4.00
Notes: No impacts to the aquatic use as a result of the project.						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/20/2018	1	Downstream Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable effect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable effect on flow, but no observable effect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable effect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1		AV 4.00
Notes: no channel alterations as a result of the project.							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							4.13

INSERT PHOTOS:

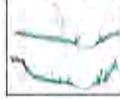
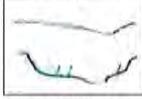
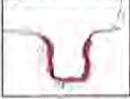


Stream Assessment Data Form for Level 1							
U.S. Army Corps of Engineers Galveston District							
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description	
	TXDOT	3	12040103	3/21/2018	2	Middle - Existing	
Name(s) of Evaluator(s)			Stream Name and Type				
J. Prescott, A. Greuter			East Fork San Jacinto River - Downstream ("EFD")				
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).							
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe		
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-20% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	 Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.		
Score	5	4	3	2	1		CV 2.0
Notes: Perennial stream under US-59 bridge. Channel is incised and includes bulkheading and pilings associated with US 59 bridge.							
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.							
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe		
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
Condition Scores	5	High = 4.5 Low = 4	3	2	1		
Notes: Portions of this transect are dominated by roadway bridges associated with US 59 that contain maintained ROW. Some native woody community lines the banks.							
Right Bank	% Riparian Area >	90%	10%				100%
	Score >	2	3				
Left Bank	% Riparian Area >	90%	10%				100%
	Score >	2	3				
							CI = (Sum % RA * Scores*0.01)/2
						Rt Bank CI >	2.10
						Lt Bank CI >	2.10
							BV 2.10
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.							
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe		
	Aquatic Life Score of Exceptional	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.		
Score	5	4	3	2	1		UV 4.00
Notes: Perennial stream.							

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	2	Middle - Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severa loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV 2.00	
Notes: Impacted by existing pilings of the US-59 bridge.							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							2.53

INSERT PHOTOS:

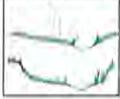


Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT	3	12040103	3/21/2018	2	Middle - Post-project
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		East Fork San Jacinto River - Downstream ("EFD")				
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient, sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 50% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	2.0
Notes: Perennial stream under US-59 bridge. Channel is incised and includes bulkheading and pilings associated with US 59 bridge. Will have additional piling as a result of the project.						
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	<p>Native woody community species represent greater than 60% coverage with <i>NO</i> wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.</p> <p>Native woody community species represent between 30-60% coverage with <i>NO</i> wetlands present. No maintenance or grazing activities.</p>	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
Condition Scores	5	High = 4.5 Low = 4	3	2	1	
Notes: Post project buffer will result in maintained ROW.						
Right Bank	% Riparian Area >	100%				100%
	Score >	2				
Left Bank	% Riparian Area >	100%				100%
	Score >	2				
						CI= (Sum % RA * Scores)/2
						Rt Bank CI > 2.00
						Lt Bank CI > 2.00
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermittent.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	4.00
Notes: Perennial stream.						

<b>Stream Impact Assessment Form Page 2</b>							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	2	Middle - Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
	<b>SCORE</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>AV</b>
<b>Notes:</b> Impacted by pilings of the US-59 bridge.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
THE CONDITION INDEX (CI) >>							<b>2.50</b>

INSERT PHOTOS:



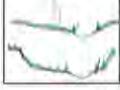
<b>Stream Assessment Data Form for Level 1</b>										
U.S. Army Corps of Engineers Galveston District										
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description				
	TXDOT	3	12040103	3/21/2018	3	Upstream - Existing				
Name(s) of Evaluator(s)			Stream Name and Type							
J. Prescott, A. Greuter			East Fork San Jacinto River - Downstream ("EFD")							
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).										
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV				
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or rickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-60% of the Transect.	 Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.		<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>
Notes: Stream has access to bankfull benches and developed floodplains. No bulkhead or riprap.										
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.										
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores				
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-50% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-80% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: farms, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.		The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	<b>5</b>	<b>High = 4.5</b> <b>Low = 4</b>	<b>3</b>
Notes: Native woody vegetation and no maintenance activities.										
Right Bank	% Riparian Area >	100%				100%				
	Score >	4								
Left Bank	% Riparian Area >	100%				100%				
	Score >	4								
						CI = (Sum % RA * Scores)/0.01/2				
						Rt Bank CI > <b>4.00</b>				
						Lt Bank CI > <b>4.00</b>				
<b>4.00</b>										
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.										
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	Score				
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Potential Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.		<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>
Notes: Perennial stream.										

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	3	Upstream - Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV	4.00
Notes: Downstream is altered by US-59 bridge but this reach is not impacted by man-made alterations.							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							4.00

INSERT PHOTOS:



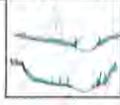
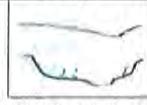
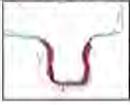
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<b>Stream Assessment Data Form for Level 1</b>							
U.S. Army Corps of Engineers Galveston District							
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description	
	TXDOT	3	12040103	3/21/2018	3	Upstream - Post-project	
Name(s) of Evaluator(s)			Stream Name and Type				
J. Prescott, A. Greuter			East Fork San Jacinto River - Downstream ("EFD")				
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).							
<b>Visual Channel Condition Parameter</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
							
	Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars of raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.		
<b>Score</b>	5	4	3	2	1	<b>CV</b> 4.0	
Notes: No impacts to channel condition as a result of the project.							
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.							
<b>Riparian Buffers</b>	<b>Optimal</b>	<b>Suboptimal</b>		<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>	
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, cleared surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
	<b>Condition Scores</b>	5	High = 4.5 Low = 4	3	2	1	
Notes: Right bank will be impacted by project and will be maintained ROW.							
<b>Right Bank</b>	% Riparian Area >	100%				100%	
	Score >	2					
<b>Left Bank</b>	% Riparian Area >	100%				100%	
	Score >	4					
						CI = (Sum % RA * Scores)/0.01/2	
						<b>Rt Bank CI &gt;</b> 2.00	
						<b>Lt Bank CI &gt;</b> 4.00	
						<b>BV</b> 3.00	
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.							
<b>AQUATIC USE</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.		
	<b>Score</b>	5	4	3	2	1	
						<b>UV</b> 4.00	
Notes: Perennial stream.							

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	3	Upstream - Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV	4.00
Notes: no channel alterations as a result of the project.							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							3.75

INSERT PHOTOS:



Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Sfahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT	3	12040103	3/21/2018	1	Downstream - Existing
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		East Fork San Jacinto River - Midstream ("EFM")				
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertical or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-60% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	4.0
Notes: Stream has access to bankfull benches and developed floodplains. No bulkhead or riprap.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	BV
	<p>Native woody species represent greater than 60% of the coverage and wetlands are present.</p>	<p>Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.</p>	<p>Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.</p>	<p>Native woody community represents less than 30% coverage with no maintenance or grazing activities.</p>	<p>The buffer is dominated by one or more of the following: limps, mowed or maintained right-of-way, no till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.</p>	
Condition Scores	5	High = 4.5 Low = 4	3	2	1	4.00
Notes: Native woody vegetation and no maintenance activities.						
Right Bank	% Riparian Area >	100%				100%
	Score >	4				
						CI = (Sum % RA * Scores)/2
Left Bank	% Riparian Area >	100%				100%
	Score >	4				
						Rt Bank CI > 4.00
						Lt Bank CI > 4.00
4.00						
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UY
	<p>Aquatic Life Score of Exceptional.</p>	<p>Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.</p>	<p>Aquatic Life Score of Intermediate.</p>	<p>Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.</p>	<p>Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.</p>	
Score	5	4	3	2	1	4.00
Notes: Perennial stream.						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Downstream - Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV	4.00
Notes: Downstream is altered by US-59 bridge but this reach is not impacted by man-made alterations.							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							4.00

INSERT PHOTOS:

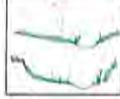
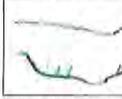


Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT	3	12040103	3/21/2018	1	Downstream Post-project
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		East Fork San Jacinto River - Midstream ("EFM")				
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present. mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-80% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or two banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.	
Score	5	4	3	2	1	4.0
Notes: No impacts to channel condition as a result of the project.						
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
	5	High = 4.5 Low = 4	3	2	1	
Notes: Right bank will be impacted by project and will be maintained ROW.						
Right Bank	% Riparian Area >	100%				100%
	Score >	2				
						CI <sup>10</sup> (Sum % RA * Scores*0.01)/2
Left Bank	% Riparian Area >	100%			100%	Rt Bank CI > 2.00
	Score >	4				Lt Bank CI > 4.00
						BV 3.00
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	4.00
Notes: Perennial stream						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	1	Downstream Post-project
4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
	SCORE	5	4	3	2	1	AV
Notes: no channel alterations as a result of the project.							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							3.75

INSERT PHOTOS:

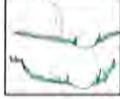


Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT	3	12040103	3/21/2018	2	Middle - Existing
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		East Fork San Jacinto River - Midstream ("EFM")				
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of unformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	4.0
Notes: No bulkhead or riprap. Channel has access to bankfull benches and developed floodplains.						
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 80% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	This buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
Condition Scores	5	High = 4.5 Low = 4	3	2	1	
Notes: Native woody community with wetlands. No maintenance activities.						
Right Bank	% Riparian Area >	100%				100%
	Score >	4.5				
Left Bank	% Riparian Area >	100%				100%
	Score >	4				
						CI = (Sum % RA * Scores * 0.01) / 2
						Rt Bank CI > 4.50
						Lt Bank CI > 4.00
						BV 4.25
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	4.00
Notes: Perennial stream.						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	2	Middle - Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV 4.00	
Notes: Not impacted by man-made structures. Stream pattern is stable.							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							4.06

INSERT PHOTOS:



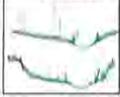
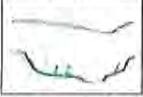
Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TXDOT	3	12040103	3/21/2018	2	Middle - Post-project
Name(s) of Evaluator(s)		Stream Name and Type				
J. Prescott, A. Greuter		East Fork San Jacinto River - Midstream ("EFM")				
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in braided channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	4.0
Notes: No impacts to channel condition as a result of the project.						
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 80% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one of more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
	5	High = 4.5 Low = 4	3	2	1	
Notes: Right bank will be impacted by project.						
Right Bank	% Riparian Area >	50%	50%			100%
	Score >	4.5	2			
Left Bank	% Riparian Area >	100%				100%
	Score >	4				
						CI <sup>2</sup> (Sum % RA * Scores/0.01)/2
						Rt Bank CI > 3.25
						Lt Bank CI > 4.00
						BV 3.63
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	4.00
Notes: Perennial stream						

JAN 07 2019

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	2	Middle - Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gablions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
<b>SCORE</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>AV</b>	
							<b>4.00</b>
Notes: Channel alteration will not occur as a result of this project.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
							<b>THE CONDITION INDEX (CI) &gt;&gt;</b>
							<b>3.91</b>

INSERT PHOTOS:

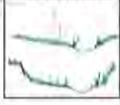


Stream Assessment Data Form for Level 1							
U.S. Army Corps of Engineers Galveston District							
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description	
	TXDOT	3	12040103	3/21/2018	3	Upstream - Existing	
Name(s) of Evaluator(s)				Stream Name and Type			
J. Prescott, A. Greuter				East Fork San Jacinto River - Midstream ("EFM")			
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).							
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe		
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of unforned-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.</p>		
Score	5	4	3	2	1		CV 4.0
Notes: No bulkhead or riprap. Channel has access to bankfull benches and developed floodplains.							
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.							
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe		
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	
Condition Scores	5	High = 4.5 Low = 4	3	2	1		
Notes: Native woody community with wetlands. No maintenance activities.							
Right Bank	% Riparian Area >	100%				100%	
	Score >	4.5					
Left Bank	% Riparian Area >	100%				100%	Rt Bank CI > 4.50 Lt Bank CI > 4.50
	Score >	4.5					BV 4.50
CV = (Sum % RA * Scores)/0.01/2							
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.							
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe		
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.		
Score	5	4	3	2	1		UV 4.00
Notes: Perennial stream.							

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
				12040103	3/21/2018	3	Upstream - Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV	4.00
Notes: Not impacted by man-made structures. Stream pattern is stable.							
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH							
THE CONDITION INDEX (CI) >>							4.13

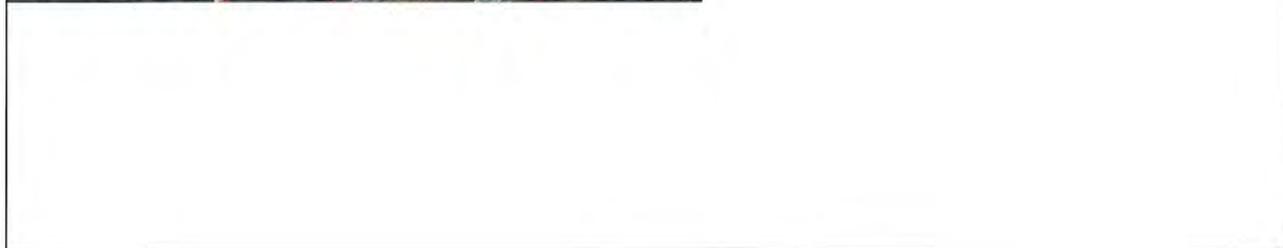
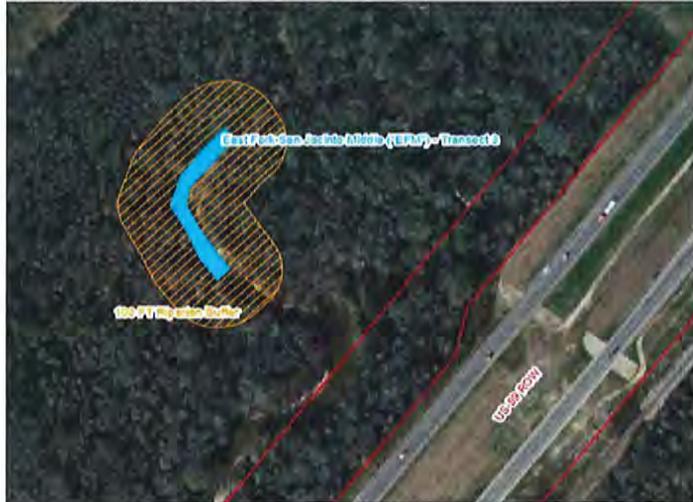
INSERT PHOTOS:

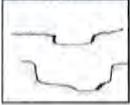


Stream Assessment Data Form for Level 1										
U.S. Army Corps of Engineers Galveston District										
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description				
	TXDOT	3	12040103	3/21/2018	3	Upstream - Post-project				
Name(s) of Evaluator(s)					Stream Name and Type					
J. Prescott, A. Greuter					East Fork San Jacinto River - Midstream ("EFM")					
1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation).										
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe					
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplains or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-60% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in braided channels. The stream does not have access to an active floodplain.</p>					
Score	5	4	3	2	1	CV				4.0
Notes: No impact as a result of the project.										
2. RIPARIAN BUFFERS: Assess both banks' 100-foot riparian areas along the entire Transect.										
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe					
	Native woody species represent greater than 60% of the coverage and wetlands are present.	<p>Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-80% coverage with wetlands present. No maintenance or grazing activities.</p> <p>Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.</p>	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.					
Condition Scores	5	High = 4.5 Low = 4	3	2	1					
Notes: No impact as a result of the project.										
Right Bank	% Riparian Area >	100%						100%		
	Score >	4.5								
Left Bank	% Riparian Area >	100%						100%	Rt Bank CI >	4.50
	Score >	4.5							Lt Bank CI >	4.50
CI = (Sum % RA * Scores*0.01)/2										
3. AQUATIC USE: The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.										
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe					
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.					
Score	5	4	3	2	1	UV				4.00
Notes: Perennial stream.										

Stream Impact Assessment Form Page 2						
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #
				12040103	3/21/2018	3
Transect Description						
Upstream - Post-project						
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock						
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>	
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.	
	<b>SCORE</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
						<b>4.00</b>
Notes: No impact as a result of the project.						
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>						
						THE CONDITION INDEX (CI) >>
						<b>4.13</b>

INSERT PHOTOS:

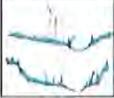
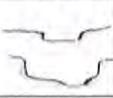
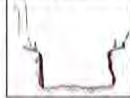


<b>Stream Assessment Data Form for Level 1</b>						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TxDOT	3	1204103	10/7/2014	1	Downstream - Existing
Name(s) of Evaluator(s)			Stream Name and Type			
T.Love, K. Moczygemba, H. Carter, A. Yeager			East Fork San Jacinto River - Upstream ("EFU")			
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
<b>Visual Channel Condition Parameter</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>	
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	 Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 60-80% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or ravy banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.	<b>CV</b>
<b>Score</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>4.0</b>
<b>Notes:</b> Channel has access to bank full benches and developed floodplains. No bulkheads or riprap.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
<b>Riparian Buffers</b>	<b>Optimal</b>	<b>Suboptimal</b>		<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.
<b>Condition Scores</b>	<b>5</b>	<b>High = 4.5</b>	<b>Low = 4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Notes:</b> Native woody species throughout the riparian buffers.						
<b>Right Bank</b>	% Riparian Area >	100%			100%	
	Score >	5				
<b>Left Bank</b>	% Riparian Area >	100%			100%	RT Bank CI > 5.00
	Score >	5				LT Bank CI > 5.00
<small>CI = (Sum % RA * Scores*0.01)/2</small>						
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
<b>AQUATIC USE</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>	
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	<b>UV</b>
<b>Score</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>4.00</b>
<b>Per TCEQ the aquatic use is listed as high.</b>						

Stream Impact Assessment Form Page 2								
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
	TxDOT	Liberty Co.	R3	1204103	10/7/2014	1	Downstream - Existing	
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock								
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe			
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.			
	SCORE	5	4	3	2	1	AV	5.00
<b>Notes</b> No channelization or man-made alterations.								
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>								
THE CONDITION INDEX (CI) >>								4.50

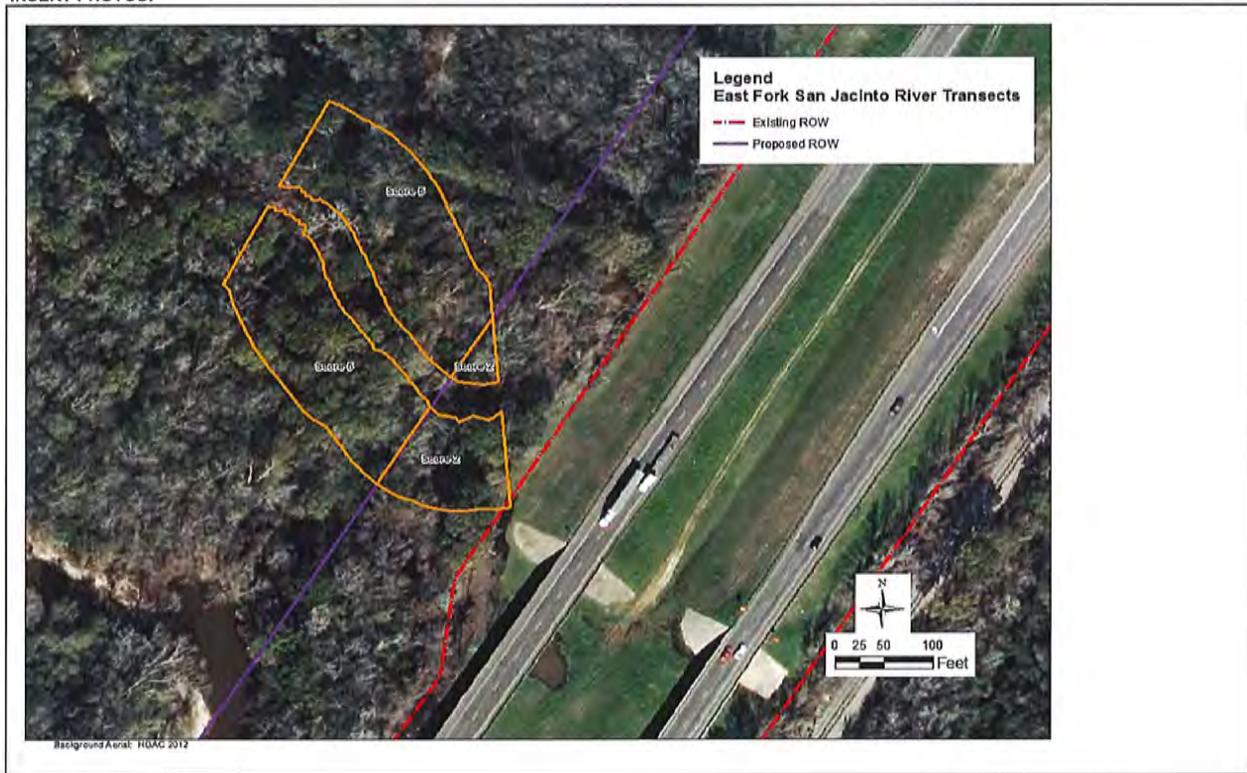
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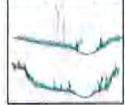
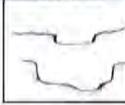
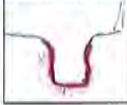
Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TxDOT	3	1204103	10/7/2014	1	Downstream Post-project
Name(s) of Evaluator(s)			Stream Name and Type			
T.Love, K. Moczygemba, H. Carter, A. Yeager			East Fork San Jacinto River - Upstream ("EFU")			
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 60-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	4.0
Notes: No impacts to channel condition as a result of this project						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
	5	High = 4.5 Low = 4	3	2	1	
Notes: Bridge construction will have impact on portions of the riparian buffer.						
Right Bank	% Riparian Area >	6%	94%			100%
	Score >	2	5			
Left Bank	% Riparian Area >	28%	72%			100%
	Score >	2	5			
						CI = (Sum % RA * Scores)/2
						Rt Bank CI > 4.81 BV
						Lt Bank CI > 4.15 4.48
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	Score
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
	5	4	3	2	1	4.00
Per TCEQ the aquatic use is listed as high.						

<b>Stream Impact Assessment Form Page 2</b>							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
	TxDOT	Liberty Co.	R3	1204103	10/7/2014	1	Downstream Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
	<b>SCORE</b>	5	4	3	2	1	<b>AV</b> 4.00
<b>Notes</b> Piling associated with the US 59 bridge							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
<b>THE CONDITION INDEX (CI) &gt;&gt;</b>							<b>4.12</b>

INSERT PHOTOS:



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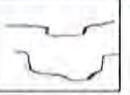
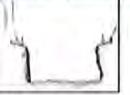
<b>Stream Assessment Data Form for Level 1</b>						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TxDOT	3	1204103	10/7/2014	2	Middle - Existing
Name(s) of Evaluator(s)			Stream Name and Type			
T.Love, K. Moczgomba, H. Carter, A. Yeager			East Fork San Jacinto River - Upstream ("EFU")			
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
<b>Visual Channel Condition Parameter</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>	
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 50-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	 Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-90% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 60% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.	
<b>Score</b>	5	4	3	2	1	CV 3.0
<b>Notes:</b> Channel is widened with minor man-made alterations.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
<b>Riparian Buffers</b>	<b>Optimal</b>	<b>Suboptimal</b>		<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.
<b>Condition Scores</b>	5	High = 4.5 Low = 4	3	2	1	
<b>Notes:</b> Left bank has maintained ROW, majority of the stream extent is dominated by native woody species community with wetlands.						
<b>Right Bank</b>	% Riparian Area > Score >	100% 5			100%	
<b>Left Bank</b>	% Riparian Area > Score >	42% 2	58% 5		100%	CI = (Sum % RA * Scores*0.01)/2 Rt Bank CI > 5.00 Lt Bank CI > 3.74
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
<b>AQUATIC USE</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>	
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
<b>Score</b>	5	4	3	2	1	UV 4.00
Per TCEQ the aquatic use is listed as high.						

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
	TxDOT	Liberty Co.	R3	1204103	10/7/2014	2	Middle - Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV	5.00
<b>Notes</b> Channel has not been altered. No dams, dikes, or rip-rap within teh stream.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
THE CONDITION INDEX (CI) >>							4.09

INSERT PHOTOS:



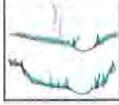
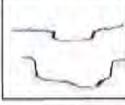
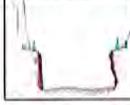
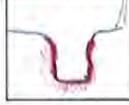
Looking upstream from downstream end of transect.

<b>Stream Assessment Data Form for Level 1</b>							
U.S. Army Corps of Engineers Galveston District							
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description	
	TxDOT	3	1204103	10/7/2014	2	Middle - Post-project	
Name(s) of Evaluator(s)			Stream Name and Type				
T.Love, K. Moczygomba, H. Carter, A. Yeager			East Fork San Jacinto River - Upstream ("EFU")				
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).							
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV	
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-60% of the Transect.	 Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect and substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 60-80% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.		2.0
<b>Score</b>	5	4	3	2	1		
<b>Notes:</b> Project will impact the channel condition by placing piling associated with US 59 bridge							
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.							
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores	
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.		The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.
<b>Notes:</b> The project will impact portions of this segment by constructing the US 59 bridge.							
Right Bank	% Riparian Area >	86%	14%			100%	CI = (Sum % RA * Scores) / 0.01 / 2
	Score >	0	5				
Left Bank	% Riparian Area >	42%	58%			100%	Rt Bank CI > 0.72 Lt Bank CI > 2.09
	Score >	5	0				BV 1.41
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.							
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	Score	
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.		5 4 3 2 1
<b>Per TCEQ the aquatic use is listed as high.</b>							
						UV 4.00	

<b>Stream Impact Assessment Form Page 2</b>						
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #
	TxDOT	Liberty Co.	R3	1204103	10/7/2014	2
<b>Transect Description</b>						
Middle - Post-project						
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock						
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>	
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.	
	<b>SCORE</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Notes</b> The project will impact the channel by placing pilings associated with the US 59 bridge.						
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>						
<b>THE CONDITION INDEX (CI) &gt;&gt;</b>						<b>2.10</b>

INSERT PHOTOS:



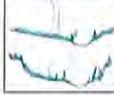
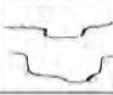
Stream Assessment Data Form for Level 1						
U.S. Army Corps of Engineers Galveston District						
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description
	TxDOT	3	1204103	10/7/2014	3	Upstream - Existing
Name(s) of Evaluator(s)			Stream Name and Type			
T.Love, K. Moczygemba, H. Carter, A. Yeager			East Fork San Jacinto River - Upstream ("EFU")			
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).						
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV
	 <p>Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.</p>	 <p>Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.</p>	 <p>Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.</p>	 <p>Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.</p>	 <p>Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.</p>	
Score	5	4	3	2	1	4.0
Notes: Channel is wide but indicates stability. Has access to bankfull benches and floodplains.						
<b>2. RIPARIAN BUFFERS:</b> Assess both banks' 100-foot riparian areas along the entire Transect.						
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 60% coverage with NO wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.	
Notes: Riparian buffer consists of both native woody vegetation with surrounding wetlands and a maintained utility ROW.						
Right Bank	% Riparian Area > 66%	34%			100%	
	Score > 2	5				
Left Bank	% Riparian Area > 50%	50%			100%	
	Score > 2	5				
						CI = (Sum % RA * Scores)/2
						Rt Bank CI > 3.02
						Lt Bank CI > 3.50
						BV
						3.26
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.						
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	UV
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.	
Score	5	4	3	2	1	4.00
Per TCEQ the aquatic use is listed as high.						

<b>Stream Impact Assessment Form Page 2</b>							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
	TxDOT	Liberty Co.	R3	1204103	10/7/2014	3	Upstream - Existing
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
<b>Channel Alteration</b>	<b>Optimal</b>	<b>Suboptimal</b>	<b>Marginal</b>	<b>Poor</b>	<b>Severe</b>		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
	<b>SCORE</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>AV</b>
<b>Notes</b> Contains man-made alterations within maintained ROW.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
<b>THE CONDITION INDEX (CI) &gt;&gt;</b>							<b>3.57</b>

INSERT PHOTOS:



Looking downstream from middle of transect.

<b>Stream Assessment Data Form for Level 1</b>							
U.S. Army Corps of Engineers Galveston District							
File Number	Applicant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect Description	
	TxDOT	3	1204103	10/7/2014	3	Upstream - Post-project	
Name(s) of Evaluator(s)			Stream Name and Type				
T.Love, K. Moczygemba, H. Carter, A. Yeager			East Fork San Jacinto River - Upstream ("EFU")				
<b>1. Channel Condition:</b> Assess the cross-section of the stream and prevailing condition (erosion, aggradation).							
Visual Channel Condition Parameter	Optimal	Suboptimal	Marginal	Poor	Severe	CV	
	 Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	 Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect.	 Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect.	 Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniform-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect.	 Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain.		<b>Score</b> 5                      4                      3                      2                      1
<b>Notes:</b> Will not be impacted as a result of this project.							
<b>2. RIPARIAN BUFFERS:</b> Assesses both banks' 100-foot riparian areas along the entire Transect.							
Riparian Buffers	Optimal	Suboptimal	Marginal	Poor	Severe	Condition Scores	
	Native woody species represent greater than 60% of the coverage and wetlands are present.	Native woody community species represent greater than 50% coverage with NO wetlands present within the buffer OR native woody species represent 30-60% coverage with wetlands present. No maintenance or grazing activities.	Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or grazing activities.	Native woody community represents less than 30% coverage with no maintenance or grazing activities.	The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition.		The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.
<b>Notes:</b> Will not be impacted as a result of this project.							
Right Bank	% Riparian Area >	66%	34%			100%	CI = (Sum % RA * Scores*0.01)/2 Rt Bank CI >      3.02 <b>BV</b> Lt Bank CI >      3.50 <b>3.26</b>
	Score >	2	5				
Left Bank	% Riparian Area >	50%	50%			100%	CI = (Sum % RA * Scores*0.01)/2 Rt Bank CI >      3.02 <b>BV</b> Lt Bank CI >      3.50 <b>3.26</b>
	Score >	2	5				
<b>3. AQUATIC USE:</b> The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.							
AQUATIC USE	Optimal	Suboptimal	Marginal	Poor	Severe	Score	
	Aquatic Life Score of Exceptional.	Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High.	Aquatic Life Score of Intermediate.	Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited.	Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal.		5                      4                      3                      2                      1
<b>Per TCEQ the aquatic use is listed as high.</b>						<b>4.00</b>	

JAN 07 2019

Stream Impact Assessment Form Page 2							
Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description
	TxDOT	Liberty Co.	R3	1204103	10/7/2014	3	Upstream - Post-project
<b>4. CHANNEL ALTERATION:</b> Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock							
Channel Alteration	Optimal	Suboptimal	Marginal	Poor	Severe		
	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow.	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota.	Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota.	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.		
SCORE	5	4	3	2	1	AV	3.00
Notes Will not be impacted as a result of this project.							
<b>REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH</b>							
THE CONDITION INDEX (CI) >>							3.57

INSERT PHOTOS:



This report was written on behalf of the Texas Department of Transportation by



20465 State Highway 249, Suite 300  
Houston, TX 77070  
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## **Attachment 11**

### **Section 401 Water Quality Certification**

#### **Information**

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8350 EASTEX FREEWAY | BEAUMONT, TEXAS 77708-1701 | 409-892-7311 | WWW.TXDOT.GOV

October 12, 2018

Texas Commission on Environmental Quality  
Attn: 401 Coordinator (MC-150)  
P.O. Box 13087  
Austin, TX 78711-3087

Re: TCEQ Tier II – 401 Certification – SWG-2018-00221 – US 59 from Fostoria Road to State Loop 573 (CSJ 0177-03-096) in Montgomery and Liberty Counties, Texas

## TCEQ TIER II – 401 CERTIFICATION QUESTIONNAIRE

### ***I. Impacts to surface water in the State, including wetlands***

#### ***A. What is the area of surface water in the State, including wetlands, that will be disturbed, altered or destroyed by the proposed activity?***

The project will result in an impact of 7.334 acres of jurisdictional wetlands and waters of the US. Approximately 22,584 cubic yards (CY) of clean soil fill material and 560 CY of concrete material will be placed onsite for the proposed project. Additionally, 4,554 CY of material will be cut/excavated from WOTUS for the proposed project.

#### ***B. Is compensatory mitigation proposed? If yes, submit a copy of the mitigation plan. If no, explain why not.***

The applicant proposes to accomplish all required compensatory mitigation through the purchase of credits from the Blue Elbow Swamp Mitigation Bank for unavoidable impacts to wetlands and from the Houston-Conroe Mitigation Bank for unavoidable impacts to streams. The applicant prepared a conditional and functional assessment using the interim hydrogeomorphic (iHGM) model for unavoidable impacts to wetlands and the May 2013 Level 1 Stream Condition Assessment method for unavoidable impacts to streams. A copy of the functional assessment can be provided to the TCEQ if requested.

#### ***C. Please complete the attached Alternatives Analysis Checklist***

The Alternatives Analysis Checklist is provided immediately following this questionnaire.

### ***II. Disposal of waste materials***

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**A. Describe the methods for disposing of materials recovered from the removal or destruction of existing structures.**

The Applicant plans to utilize municipal solid waste landfills for disposing of non-hazardous materials removed from the site. All hazardous materials will be processed and handled according to local, state, and federal regulations.

**B. Describe the methods for disposing of sewage generated during construction. If the proposed work establishes a business or a subdivision, describe the method for disposing of sewage after completing the project.**

Self-contained portable toilets for construction works will be located onsite during construction and will be serviced accordingly. No residential areas or facilities with sewage capabilities are proposed for this project.

**C. For marinas, describe plans for collecting and disposing of sewage from marine sanitation devices. Also, discuss provisions for the disposing of sewage generated from day-to-day activities.**

Not applicable.

**III. Water quality impacts**

**A. Describe the methods to minimize the short-term and long-term turbidity and suspended solids in the waters being dredged and/or filled. Also, describe the type of sediment (sand, clay, etc.) that will be dredged or used for fill.**

Approximately 22,584 cubic yards (CY) of clean soil fill material and 560 CY of concrete material will be placed onsite for the proposed project. Fill material will include suitable and clean construction grade fill. Best Management Practices (BMPs) including biodegradable erosion control logs, sediment control fences, and sediment traps will be utilized to maintain water quality standards and minimize short-term turbidity and suspended solids during and after construction. Silt fencing will be installed around the perimeter of the areas to keep sediments from running off during rain events into surrounding aquatic habitats. Periodic inspections will be conducted to ensure silt fences remain functioning. After construction activities, exposed sediments will be seeded and/or sodded. No long-term effects to water quality are anticipated.

**B. Describe measures that will be used to stabilize disturbed soil areas, including: dredge material mounds, new levees or berms, building sites, and construction work areas. The description should address both short-term (construction related) and long-term (normal operation or maintenance) measures. Typical measures might include containment structures, drainage modifications,**

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***sediment fences, or vegetative cover. Special construction techniques intended to minimize soil or sediment disruption should also be described.***

Approximately 22,584 of clean soil fill material and 560 CY of concrete will be placed within WOTUS for the proposed project. Silt fencing will be installed around the perimeter of the areas to be filled to keep sediments from running off during rain events into surrounding aquatic habitats. Exposed soils will be vegetated via seeding or sodding to assist with soil stabilization upon completion of the backfill process. Furthermore, the design for the proposed detention pond helps to improve water quality by increasing the time water is detained allowing additional sediments to fall out.

***C. Discuss how hydraulically dredged materials will be handled to ensure maximum settling of solids before discharging the decant water. Plans should include a calculation of minimum settling times with supporting data (Reference: Technical Report, DS-7810, Dredge Material Research Program, GUIDELINES FOR DESIGNING, OPERATING, AND MAINTAINING DREDGED MATERIAL CONTAINMENT AREAS). If future maintenance dredging will be required, the disposal site should be designed to accommodate additional dredged materials. If not, please include plans for periodically removing the dried sediments from the disposal area.***

Not applicable.

***D. Describe any methods used to test the sediments for contamination, especially when dredging in an area known or likely to be contaminated, such as downstream of municipal or industrial wastewater discharges.***

Not applicable.

## TCEQ TIER II – ALTERNATIVE ANALYSIS CHECKLIST

### ***I. Alternatives***

For a detailed description of the alternatives analysis, please refer to Attachment A enclosed with this questionnaire. The alternatives considered for this project include the Alternatives 1, 2, and 3.

***A. How could you satisfy your needs in ways that do not affect surface water in the State?***

The proposed project cannot be accomplished without affecting surface waters of the State. The proposed project is to expand United States Highway 59 (US 59) from a four-lane divided highway to a six-lane divided highway for an approximate 4.7-mile

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stretch from Fostoria Road to State Loop (SL) 573 in Montgomery and Liberty County, Texas. The proposed project will also include an approximate 14-acre detention basin near the Montgomery-Liberty county line. The purpose of this project is to fulfil the national and state need to improve the existing interstate highway system, to provide service for a growing Texas population, to accommodate the increase in traffic that accompanies population growth, to improve emergency evacuation routes, and to maintain and improve economic competitiveness.

***B. How could the project be re-designed to fit the site without affecting surface water in the State?***

No practicable alternatives exist that do not affect surface waters of the State. Project alternatives were considered to minimize impacts to wetlands and waters of the State to the greatest extent possible; however, project activities will require permanent impacts to 7.334 acres of wetlands and waters. Proposed construction activities include the removal of existing culverts, addition of new culverts, widening of existing roadway, construction of bridges, and addition of new roadway. The proposed project will minimize impacts to aquatic resources by only clearing portions of the ROW necessary to complete the project.

***C. How could the project be made smaller and still meet your needs?***

The proposed project requires the construction of a bridge to accommodate a six-lane divided highway, with northbound and southbound frontage lanes. By repurposing the existing northbound main lanes as the northbound frontage road, impacts are being minimized to the maximum practicable extent. Due to transportation and safety standards, the project area cannot be made smaller. The build alternative will minimize impacts to aquatic resources by only clearing portions of the ROW necessary to complete the project and by constructing a bridge over the East Fork of the San Jacinto River and its associated aquatic features.

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**D. What other sites were considered?**

**1. What geographical area was searched for alternative sites?**

Due to the purpose of this project, proposed construction activities are restricted to the existing US 59 corridor and adjacent areas.

**2. How did you determine whether other non-wetland sites are available for development in the area?**

Due to the purpose of this project, proposed construction activities are restricted to the existing US 59 corridor and adjacent areas.

**3. In recent years, have you sold or leased any lands located within the vicinity of the project? If so, why were they unsuitable for the project?**

No lands were sold or leased by the Applicant within the vicinity of the proposed project in recent years.

**E. What are the consequences of not building the project?**

Not building the project would not meet the project's purpose and need. If the purpose and need are not addressed by adoption of this project, increasing traffic counts commensurate with on-trend population growth, and an increase in the associated safety risks, will continue on their current trajectory.

**II. Comparison of alternatives**

**A. How do the costs compare for the alternatives considered above?**

Costs associated with the no build alternative (Alternative 1) would include: maintenance of the existing system – the longer the improvements and/or reconstruction are postponed, the higher maintenance costs on inadequate facilities. Alternative 2 would be the least cost-efficient alternative due to the need for acquisition and relocation of an existing active railroad owned by Union Pacific east of US 59. Alternative 3 would have the most reasonable construction and ROW acquisition costs as it includes expansion of the existing facilities to the west of the US 59 roadway. The existing northbound main lane will be re-purposed as the northbound frontage road. Existing ROW will be used to the greatest extent possible and additional ROW will be purchased as needed.

**B. Are there logistical (location, access, transportation, etc.) reasons that limit the alternatives considered?**

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Yes, due to the purpose and scope of the project, possible alternatives are limited to the existing US 59 corridor.

**C. Are there technological limitations for the alternatives considered?**

No.

**D. Are there other reasons certain alternatives are not feasible?**

The no build alternative would not address the purpose or need of the project. Alternative 2 would not be practical due to the high cost associated with relocating the Union Pacific Railroad to the east of the existing US 59 ROW.

**III. If you have not chosen an alternative which would avoid impacts to surface water in the State, please explain:**

**A. Why your alternative was selected.**

Alternative 3 was identified as the preferred alternative. Under this scenario, TXDOT would acquire additional ROW to the west of the existing US 59. Although Alternative 3 would also impact forested vegetation and wetlands, it would minimize impacts on aquatic resources by placing a bridge over the East Fork of the San Jacinto River, and its associated wetlands and tributaries. This alternative would also avoid impacts to the historical Riggs Cemetery and would not have the potential to impact threatened and endangered species.

**B. What do you plan to do to minimize adverse effects on the surface water in the State impacted.**

BMPs will be in place during all proposed activities to minimize turbidity and total suspended solids. All BMPs would be incorporated by the Applicant or the Applicant's construction contractor to monitor and maintain water quality standards during construction. No permanent or significant temporary impacts to water quality are expected following the implementation of these measures.

The construction of the detention pond will help improve water quality by increasing the time water is detained allowing additional sediments to fall out.

**IV. Please provide comparison of each criteria (from Part II) for each site evaluation in the alternatives analysis.**

Please refer to the alternatives analysis included as Attachment A of this questionnaire.

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October 12, 2018

## Attachment A – Alternatives Analysis



# Alternatives Analysis

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## US 59 from Fostoria Road to State Loop 573 (CSJ 0177-03-096)

Prepared by: Spirit Environmental, LLC  
Date: October 2018

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

## **Introduction**

The Texas Department of Transportation (TXDOT) is proposing to complete highway improvement activities to a 4.47-mile stretch of US 59 from Fostoria Road to State Loop (SL) 573 in Montgomery and Liberty Counties, Texas. The proposed project will also include an approximately 14-acre detention basin near the Montgomery-Liberty County line. Figures 1 through 3 included in Attachment 7 of the Individual Permit application illustrate the project location. Within the project area, US 59 is the same roadway as Interstate Highway 69 (I-69).

## **Purpose and Need**

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) designated certain nationally significant highway corridors to be included in the National Highway System. Twenty-one "high priority corridors" were designated in areas not well-served by the existing interstate highway system. At that time, the Interstate Highway 69 (I-69) corridor was identified as a High Priority Corridor. The project termini were determined by the Federal Highway Administration (FHWA) as part of the overall planning effort for the National I-69 Corridor.

The need for this project was determined and documented through public outreach and the collaboration of citizen-led committees overseen by TXDOT. During the I-69 planning process that was implemented in Texas, the following needs for this segment of I-69 were identified:

- Provide service for a growing Texas population
- Accommodate the increase in traffic that accompanies population growth
- Improve emergency evacuation routes – such as hurricane evacuation routes
- Maintain and improve economic competitiveness

The purpose of this project is to upgrade US 59 to meet current interstate highway design standards in a manner sensitive to the environment while also serving the access and mobility needs of the public. After construction, this portion of US-59 will be designated as part of the I-69 system in Texas, in accordance with Section 1105(e)(5) of ISTEA.

## **Practicable Alternatives for Placement of Proposed Facility**

A key provision of the 404(b)(1) guidelines is the "practicable alternative test" which states 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." For an alternative site to be considered "practicable," it must be available and capable of being done after considering cost, existing technology, and logistics in light of the overall project.

This section provides an evaluation and comparison of developmental and environmental impacts of the "No Action Alternative" compared to development of the two (2) "Build

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Alternatives" in light of what is considered practicable. Due to the purpose, need, and scope of the project, there is no proposed offsite alternative.

The following goals were developed for the proposed US 59 improvement project:

- Improve public safety
- Improve and maintain area mobility
- Avoid or minimize adverse social, economic, and environmental effects to protected or sensitive resources, including historic properties and aquatic resources
- Contribute to air quality attainment
- Maximize use of existing ROW
- Minimize potential effects to floodplains
- Minimize displacements and effects to sensitive receptors

#### *Alternative 1 – No Action Alternative*

Under this alternative, TXDOT would not complete the proposed roadway improvements. This alternative would not result in potential impacts to wetlands or waters of the U.S. and would not affect threatened and endangered species habitat or cultural resources. This alternative would not meet the project's purpose and need. If the purpose and need are not addressed by adoption of a build alternative, increasing traffic counts commensurate with on-trend population growth, and an increase in the associated safety risks, will continue on their current trajectory.

#### *Build Alternatives*

Both build alternatives would add two (2) additional travel lanes (one [1] lane in each direction) to provide a six-lane divided interstate freeway with a central barrier. The proposed additional lanes would be constructed adjacent to the existing US 59 roadway; tie into the existing I-69 designated freeway at the Montgomery-Liberty County line; have a grade-separated intersection at State Highway (SH) 105, with shared-use lanes and sidewalks; and have other grade-separated intersections, as needed, based on traffic and design studies.

#### Alternative 2 – East of Existing US 59

Alternative 2 would require the acquisition of new ROW to the east of the existing US 59 roadway to construct the proposed improvements. Under this scenario, TXDOT would acquire the existing Union Pacific Railroad ROW and, relocate the rail line. This alternative would result in impacts on dense forest vegetation and wetlands. This alternative will avoid impacts to the historical Riggs Cemetery and would not have the potential to impact threatened and endangered species. Although this alternative would fulfil the project's purpose and need, acquiring and relocating the rail line is not practicable; therefore, this alternative was removed from detailed study.

Alternative 3 – West of Existing US 59 – Preferred Alternative

Alternative 3 was identified as the preferred alternative. Under this scenario, TXDOT would acquire additional ROW to the west of the existing US 59. Although Alternative 3 would also impact forest vegetation and wetlands, it would minimize impacts on aquatic resources by placing a bridge over the East Fork of the San Jacinto River, and its associated wetlands and tributaries. This alternative would also avoid impacts to the historical Riggs Cemetery and would not have the potential to impact threatened and endangered species.

The table below summarizes the total aquatic resources located within the project area proposed under the preferred alternative (Alternative 3), the amount of aquatic resources proposed to be impacted under the preferred alternative (Alternative 3), and the amount avoided.

**Table 1: Summary of Proposed Impacts, Avoidance, and Minimization to Aquatic Resources Under the Preferred Alternative**

Feature Type	Aquatic Resources in Project Area		Proposed Impacts to Aquatic Resources		Aquatic Resources Avoided	
	Acres	Linear feet	Acres	Linear feet	Acres	Linear feet
<b>Potentially Jurisdictional Features</b>						
PEM Wetlands	0.115	–	0.115	–	0.000	–
PFO Wetlands	7.129	–	7.129	–	–	–
Streams	1.461	3,219	0.090	513	1.371	729
<b>Total</b>	<b>8.705</b>	<b>3,219</b>	<b>7.334</b>	<b>513</b>	<b>1.371</b>	<b>729</b>
<b>Potentially Non-Jurisdictional Features</b>						
PEM Wetlands	0.128	–	0.078	–	0.050	–
Drainage Ditches	2.836	7,123	1.783	5,586	1.053	1,537
<b>Total</b>	<b>2.964</b>	<b>7,123</b>	<b>1.861</b>	<b>5,586</b>	<b>1.103</b>	<b>1,537</b>

**Onsite Options for the Preferred Alternative (Alternative 3)**

During construction plan development, several strategies were discussed between TXDOT representatives, environmental consultants, and engineering firms for avoiding and minimizing impacts to the aquatic resources onsite. A cost benefit analysis was completed for three (3) options for constructing the bridge over the East Fork San Jacinto River.

### *Option 1 – Base Condition*

Option 1 would include construction from below the bridge which would impact the tributaries of the East Fork San Jacinto River. This option would result in the complete loss of all aquatic resources delineated below the bridge with the exception of the main channel of the East Fork of the San Jacinto River. Permanent impacts on the tributaries draining into the East Fork San Jacinto River at this location would be considered a total loss. Option 1 would cost approximately \$20.1 million.

### *Option 2 – Top-Down Construction*

Option 2, construction of the bridge from the top-down, would result in no impacts on the aquatic resources located under the bridge at the East Fork San Jacinto River crossing. However, because Option 2 would cost approximately \$40.2 million, it is not practicable and has been eliminated from consideration.

### *Option 3 – Construction from Below with Temporary Structures*

Option 3 includes construction from below the bridge and would utilize temporary bridge structures to avoid impacts on tributaries of the East Fork San Jacinto River below the bridge. Construction equipment would be placed outside of the ordinary high water mark (OHWM) footprint of all the streams beneath the bridge, thereby avoiding impacts to the stream features. Construction of the southbound bridge would include three (3) temporary bridges that would span the East Fork San Jacinto River to allow the drilling of the shafts for each of the bents from the top down. Drilling from a barge was considered infeasible due to the small size of the river. The only unavoidable permanent impacts on the stream features would include drilled-shaft pilings within Unnamed Tributaries 3 and 4 and the East Fork San Jacinto River. The estimated construction cost of Option 3 is \$24.1 million.

Based on the evaluation of the preferred alternative options, the project design includes Option 3.

### **Compensation**

Although avoidance and minimization measures have been built into the project design, unavoidable impacts would result, as follows: 0.115 acre of palustrine emergent (PEM) wetlands, 7.129 acres of palustrine forested (PFO) wetlands, and 513 linear feet of streams (0.090 acre). TXDOT proposes to provide compensatory mitigation for unavoidable impacts by purchasing credits from USACE-approved mitigation banks. TXDOT completed conditional/functional assessment of the impacted waters of the U.S. and determined that they would be offset by deduction/purchase of 50.5 wetland credits from Blue Elbow Swamp and 4,654 stream credits from Houston-Conroe Mitigation Bank. For detailed information on the conditional and functional assessment, refer to TXDOT's stand-alone report "Waters of the U.S./Wetlands Conditional & Functional Assessment & Mitigation Plan (October 2018)," found as Attachment 10 to this Individual Permit application.

This report was written on behalf of the Texas Department of Transportation by



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